zoo interchange

Project Management Plan (PMP)

March 2014

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Background

On August 10, 2005, President Bush signed into law the new surface transportation act, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users"

(SAFETEA-LU) (Pub.L. 109-59, 119 Stat. 1144). The requirement for a PMP and an Annual Financial Plan are contained in section 1904(a) of SAFETEA-LU. This provision amends 23 U.S.C. 106(h), as follows: "(h) MAJOR PROJECTS. -"(1) IN GENERAL. -Notwithstanding any other provision of this section, a recipient of Federal financial assistance for a project under this title with an estimated total cost of $500,000,000 or more, and recipients for such other projects as may be identified by the Secretary, shall submit to the Secretary for each project - "(A) a project management plan; and "(B) an annual financial plan. "(2) PROJECT MANAGEMENT PLAN.-A project management plan shall document - "(A) the procedures and processes that are in effect to provide timely information to the project decision makers to effectively manage the scope, costs, schedules, and quality of, and the Federal requirements applicable to, the project; and "(B) the role of the agency leadership and management team in the delivery of the project. "(3) FINANCIAL PLAN.-A financial plan shall - "(A) be based on detailed estimates of the cost to complete the project; and "(B) Provide for the annual submission of updates to the Secretary that are based on reasonable assumptions, as determined by the Secretary, of future increases in the cost to complete the project...."

Purpose

The PMP is the guide for implementing the major project and documents, assumptions and decisions regarding communication, management processes, execution and overall project control. The ultimate purpose of the PMP is to clearly define the roles, responsibilities, procedures and processes that will result in the major project being managed such that it is completed:

- On time
- Within budget
- With the highest degree of quality
- In a safe manner for both the individuals working on the project and for the traveling public
- In a manner in which the public trust, support, and confidence in the project are maintained

The PMP and WisDOT's Major Project Guidelines as well as FHWA's Project Management Guidelines provide the Zoo Interchange Project team guidance on how to manage a Major Project. The PMP will address all phases of the major project life cycle, and ensure the project is managed holistically and as a continuum and not incrementally as the project progresses. It is essential that the PMP establish the metrics by which the success of the project is defined. It is expected that all sponsoring agencies will endorse the PMP.

The Department continues to use the lessons learned from WisDOT's Major Project Guidelines to continually improve and provide updates to the Zoo Interchange Reconstruction PMP.

The project's cost and complexity dictate a well-conceived plan to manage cost, schedule, and quality. This document describes the management system to oversee the project. The purpose of this plan is to define preliminary design responsibilities, relationships, and decision-making processes required to complete the Zoo Interchange project on time, on budget, and in a way that meets quality and safety metrics.

The goal of this plan is to develop a quality project within budget (i.e., no unexpected or unbudgeted costs) and on schedule. It must create confidence that the design is being capably managed and should provide useful, accurate, and timely information. Ultimately, the implementation of the plan must minimize the potential for surprises to WisDOT, FHWA, and, most importantly, the public regarding cost and schedule. The key to preventing unexpected costs and schedule conflicts is to provide timely information to the relevant people so that proper action can be taken before cost and schedule issues grow to potentially unrecoverable proportions.

Primary audiences for this management plan are WisDOT project staff and senior management, FHWA, and other consultant staff and senior management. The plan follows the outline in FHWA's Project Management Plan Guidance. In an effort to maintain consistency within Southeast Freeways Construction, Project Management Plan – Best Practice Bulletins will be sent out to the Project Team as new information becomes available and as the project's management system evolves.

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACWP	Actual Cost of Work Performed
BBS	Bureau of Business Services
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
BSHP	Bureau of State Highway Programs
C&MM	Construction & Materials Manual
CAS	Construction Administration System
CC	Cost Control
CCO	Contract Change Order
CEC	Construction Engineering Consultant
CFR	Code of Federal Regulations
CM	Contract Modification
CMP	Construction Management Plan
CMT	Change Management Team
CPI	Cost Performance Index

CPM	Construction Project Manager
CPRR	Canadian Pacific Railroad
CRI	Cost Reduction Incentive
CV	Cost Variance
DBE	Disadvantaged Business Enterprise
DC	Document Control
DCC	Document Control Center
DCR	Detailed Cost Report
DCS	Document Control System
DEC	Design Engineering Consultant
DEIS	Draft Environmental Impact Statement
DIN	Design Issue Notice
DNR	State of Wisconsin Department of Natural Resources
DOH	Department of Highways
DOT	State of Wisconsin Department of Transportation
DPM	Design Project Manager
DRB	Dispute Review Board
DSR	Design Study Report
DTIM	Division of Transportation Investment Management
DTSD	Division of Transportation System Development
E&O	Errors & Omissions
EA	Environmental Assessment
EAPS	Encumbrance/Accounts Payable System
EB	Eastbound
E-document	Electronic document
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
E-services	Electronic services
FDM	Facilities Development Manual
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FIIPS	Financial Integrated Improvement Programming System
FITS	Field Information Tracking System
FONSI	Finding of No Significant Impact
FOS	Financial Operating System

FTA	Federal Transit Administration
Fwy	Freeway
HOV	High-Occupancy Vehicle
IAP	Independent Assurance Program
ID	Project Identification Number
IDR	Inspector's Daily Report
IH	Interstate Highway
IJR	Interstate Access Justification Report
IRT	Issues and Risk Team
IT	Information Technology
ITS	Intelligent Transportation System
ITS/FTMS	Intelligent Transportation Systems/Freeway Traffic Management Systems
IWP	Initial Work Plan
LCS	Lane Closure System
LD	Liquidated Damages
LPA	Locally Preferred Alternative
MIS	Major Investment Study
MONITOR	Milwaukee's Organized Network of Information and Traffic Operational Responses
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MPS	Master Program Schedule
MTS	Materials Tracking System
MUTCD	Manual of Uniform Traffic Control Devices
NB	Northbound
NCG	National Constructors Group
NEPA	National Environmental Policy Act
NHS	National Highway System
NTP	Notice to Proceed
OT	Oversight Team
OCIP	Owner Controlled Insurance Program

OGC	Office of General Counsel
OPA	Office of Public Affairs
OPBF	Office of Policy, Budget & Finance
Org	Organization
OSHA	Occupational Safety & Health Administration
OSOW	Over-Sized / Over-Weight
PC	Project Construction
PCCL	Project Construction Controls Leader
PCDT	Project Document Controls Technician
PCL	Project Construction Leader
PCMC	Program Construction Management Consultants
PER	Programmatic Environmental Report
PI	Public Information
PIO	Public Information Officer
PM	Project Manager
PMP	Project Management Plan
PQP	Project Quality Plan
PS	Program Schedule
PS&E	Plans, Specifications & Estimate
QA	Quality Assurance
QC	Quality Control
QMP	Quality Management Plan
RFI	Request for Information
RIMC	Regional Incident Management Coordinator
ROD	Record of Decision
ROM	Rough Order of Magnitude
RTMC	Regional Traffic Management Coordinator
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	Southbound
SDEIS	Supplemental Draft Environmental Impact Statement
SE	Southeast

SEWRPC	Southeastern Wisconsin Regional Planning Commission
SPI	Schedule Performance Index
SPO	Systems Planning and Operations
SQL	Sequential Query Language
STH	State Trunk Highway
STN	State Trunk Network
STOC	Statewide Traffic Operations Center
SUE	Subsurface Utility Excavations
SV	Schedule Variance
T	Time Variance
TBD	To Be Determined
TC	Traffic Control
TIA	Traffic Impact Analysis
TIP	Transportation Improvement Program
TPP	Transportation Project Plat
TS&L	Type, Size and Location
TSO	Time Sharing Option
UPRR	Union Pacific Railroad
VE	Value Engineering
WB	Westbound
WBE	Women Business Enterprise
WBS	Work Breakdown Structure
WDNR	Wisconsin Department of Natural Resources
WE	Wisconsin Energies
WEPA	Wisconsin Environmental Protection Agency
WisDOT	Wisconsin Department of Transportation
ZCG	Zoo Interchange Construction Group
ZDG	Zoo Interchange Design Group
ZOC	Zoo Interchange Oversight Committee
ZT	Zoo Interchange Team

1.0 Project Description and Scope of Work

1.1 Background

Construction of the Zoo Interchange ended in 1963. In 1966, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) completed a regional transportation system plan for the year 1990. This original transportation plan recommended several new freeway links, many of which were never constructed. An example is a once-planned outer beltway that would have connected I-94 in southern Milwaukee County to I-94 in Waukesha County and to US 41/45 in Washington County. In Milwaukee County, the planned Park West Freeway and Stadium Freeways were never completed. As a result, the freeway system now carries more traffic than initially projected.

In 1991, WisDOT began analyzing long-term improvements to three I-94 system interchanges in Milwaukee County: the Zoo Interchange, the Stadium Interchange, and the Marquette Interchange. By 1995, the Zoo Interchange Study was merged with the two other system interchange studies and a study evaluating light rail transit and bus options in the I-94 east-west corridor, referred to as the I-94 East-West Corridor Study.

A DEIS/Major Investment Study (MIS) for the I-94 East-West Corridor Study was published in October 1996. WisDOT advanced a Locally Preferred Alternative (LPA) that included all the transportation components of the Draft EIS/MIS, such as reconstruction of the Marquette Interchange with design and safety improvements, reconstruction of I-94 to modern design standards, high-occupancy vehicle (HOV) lanes on I-94, expanded bus transit, added through lanes, and light rail transit. The Milwaukee County Board accepted the LPA but did not endorse implementation and only endorsed further study, funded entirely with federal and state funds.

The Waukesha County Board supported studying the reconstruction and modernization of I-94, including adding HOV lanes and expanding bus service, but opposed constructing light rail. The Waukesha County Board also supported preliminary engineering, completing the Final EIS, and separating the study of transportation improvements so that each improvement could advance independently.

Since development of the LPA completed the MIS process, FHWA closed the MIS process for the I-94 east-west corridor in Milwaukee and Waukesha counties. FHWA issued a notice in the June 26, 2000, Federal Register that the I-94 East-West Corridor Draft EIS would not be followed by a corridor-wide Final EIS or Record of Decision, because the MIS was in place and the components of the LPA were unlikely to proceed on the same schedule. With WisDOT as the sponsor, only one element of the LPA (Marquette Interchange reconstruction) has advanced from preliminary engineering to final design and construction.

The West Suburban Traffic Impact Analysis (TIA) is also relevant to the Zoo Interchange Project. Based on rapid development in and around the Watertown Plank Road interchange with US 45, Milwaukee County, the City of Milwaukee, the City of Wauwatosa, and WisDOT examined traffic patterns in western Milwaukee County through this TIA study. The limits of the TIA study were Mayfair Road on the west, Bluemound Road on the south, 84th Street on the east, and the Menomonee River on the north. The study focused on the need for potential roadway improvements to enhance traffic operations on the local street system due to future

development at the Milwaukee County Research Park, the Milwaukee Regional Medical Center, and the Milwaukee County grounds. The Zoo Interchange corridor study is compatible with the recommendations of the West Suburban TIA study.

1.2 Project Description

The Zoo Interchange project limits are I-94 between 124th Street and 70th Street and I-894/US 45 between Lincoln Avenue and Burleigh Street. The design includes an adjacent arterials component. The project limits for the adjacent arterials are HWY 100 between I-94 and Watertown Plank Road; Watertown Plank Road between HWY 100 and 87th Street; and 84th Street/ Glenview Avenue between Bluemound Road and Wisconsin Avenue. View Figure 1, Zoo Interchange Preferred Alternative, to see the proposed Zoo Interchange project limits (reduced impacts alternative).

General design considerations will be the following:

- All exits on the right; through traffic stays left.
- Full 10- to 12-foot shoulders on all system ramps and freeways. (We have 18-foot wide inside shoulders through the core for I-94 traffic.)
- Widen approaches to the interchange to allow for proper access to system ramps.
- The interchange would have four levels rather than three, making it about 20 to 25 feet higher than it is today.
- Add lanes to the appropriate system ramps and freeway through movements where needed.
- Add lanes to the adjacent arterials where needed.
- The footprint of the Zoo Interchange core will stay mostly the same.

The project is currently in both the preliminary and final engineering phases. FHWA issued a record of decision (ROD) in February 2012. The objective of the engineering phase of the project is to develop plans for roadways and structures based upon the preferred alternative identified in the FEIS.

- Project activities during the engineering phase will include the following:
- Public involvement and agency coordination programs.
- Post-EIS Agency Coordination, permitting activities, and impact mitigation design.
- Conduct continued utility coordination.
- Railroad coordination.
- Additional field surveying and base mapping.
- Provide for Facilities Transportation Management Systems/Intelligent Transportation Systems (FTMS/ ITS) components.

- Prepare preliminary engineering plans for the roadway and structural elements including local intersecting roads and selected traffic mitigation routes.
- Prepare engineering reports.
- Conduct value-engineering evaluations.
- Prepare the required Transportation Management Plan, including design of off-system mitigation elements.
- Incorporate community-sensitive design concepts into plans for proposed improvements.
- Prepare right-of-way (non-TPP) plats for the roadway improvements.
- Conduct hazardous materials investigations.
- Conduct a geotechnical investigation.
- Obtain regulatory permits (U.S. Coast Guard bridge permits, Army Corps of Engineers Section 404 permit).
- Utility coordination including collecting information on utilities so that engineering decisions can be made with knowledge of potential utility impacts and their cost. The coordination also includes creating a 3D utilities model of the Zoo Interchange design for use with identifying geometric conflicts. The major task components of the Project's utility coordination efforts include:
  - Utility coordination work in accordance with Chapter 18 of the FDM, and Wisconsin Administrative Code Chapter Trans 220, UTILITY FACILITIES RELOCATION as started in the Environmental Study Phase.
  - Coordinate subsurface utility exploration.
  - Conduct utility coordination meetings.
  - Notice and plan to utilities.
  - Coordination of Trans 220 process.
  - Prepare release of right documents.
  - Prepare utility compensation agreements.
  - Track utility relocation permits, relocations, invoices, and develop status reports.
- Real estate plat development.
  - The Zoo team will prepare traditional plats including legal descriptions for temporary interests, permanent limited easements or fee acquisitions necessary for the construction of the project, and an encroachment report for the Project limits. The plat does not include any acquisition or release of rights for traffic mitigation elements. The plats will be based on Wisconsin County coordinate datum, NAD 83 (97) horizontal and NAVD 88 vertical and will be prepared in the latest version of MicroStation.

- Environmental work.
    - Phase 2 environmental sampling for the freeway mainline and core interchange will be performed under this task. The primary purpose of the Phase 2 investigation is to confirm the presence or absence of soil/groundwater contamination and gather initial subsurface information prior to the potential property acquisition or excavation activities, based on Phase I recommendations. The limits for this task are based on estimated construction limits, which are smaller than the project limits evaluated during the Phase 1 Report.

1.3 Purpose and Need

The project is needed to address the substandard characteristics of the study-area freeway system in order to maintain a key link in the local, regional, state, and national transportation network. The concrete box girder and voided slab bridges in the study-area freeway system are structurally deficient, and are difficult and expensive to rehabilitate due to their design. Other bridges in the study-area freeway system are substandard, deteriorating, and will require more frequent maintenance causing traveler inconvenience.

The study-area freeway system's configuration is functionally deficient in many areas. The horizontal and vertical alignment is substandard in several locations, which results in poor driver sight distance. Several areas have shoulders that are less than standard, and 22 bridges have a substandard vertical clearance.

The most notable functional deficiency is the closely spaced service interchanges and the combination of left- and right-hand entrance and exit ramps, which results in major safety problems such as weaving and congestion. All of the functional deficiencies combine to create hazardous conditions throughout the study-area freeway system, resulting in a higher-than-average crash rate in many locations. Several segments of the study-area freeway system have crash rates that are two to five times higher than the statewide average for urban freeways.

Current traffic volumes in the study area range up to 350,000 vehicles per day, and are expected to increase by up to18 percent by the design year of 2035. These high volumes result in congestion and delays for Zoo Interchange travelers and shippers. Anticipated development and redevelopment in the study area, in particular the US 45 corridor north of the Zoo Interchange, will add additional traffic onto the already congested freeway. By 2035, without improvements to the Interchange, the level of service is expected to be E or F, on a scale of A through F, for significant portions of the day on all four legs.

1.4 Proposed Construction Phasing

2013

HWY 100 from north of I-94 through Watertown Plank Road

- Bluemound Road and Watertown Plank Road reconstruction at HWY 100
- Widen the roadway from three to four lanes in both directions

- Includes UPRR tunnel extension underneath the intersection of Bluemound Road and HWY 100;

Greenfield Avenue bridge over I-894

Glenview Avenue from Bluemound Road to Wisconsin Avenue

Swan Blvd Realignment including the structure over US 45

2014

Widen Watertown Plank Road from two to three lanes in each direction between HWY 100 and 87th Street

Watertown Plank Road Interchange and bridges at US 45

HWY 100 interchange and bridges at I-94

76th Street bridge over I-94

Honey Creek Box Culvert under I-94

UP Railroad (UPRR) bridges over the Hank Aaron State Trail and I-94

2015 – 2018

Core interchange system ramps and service ramps

Greenfield Avenue interchange (ramps and roadway approaches, bridge to be completed in 2013)

84th Street interchange and bridges under I-94

Wisconsin Avenue Bridge and Bluemound Road interchange and bridges at US 45

Complete North Leg mainline north (Underwood Creek to Burleigh) and south of the Watertown Plank Road interchange

North Avenue Interchange.

View Figure 17 to see a map of the proposed construction sequencing of the Zoo Interchange

1.5 Major Project Implications

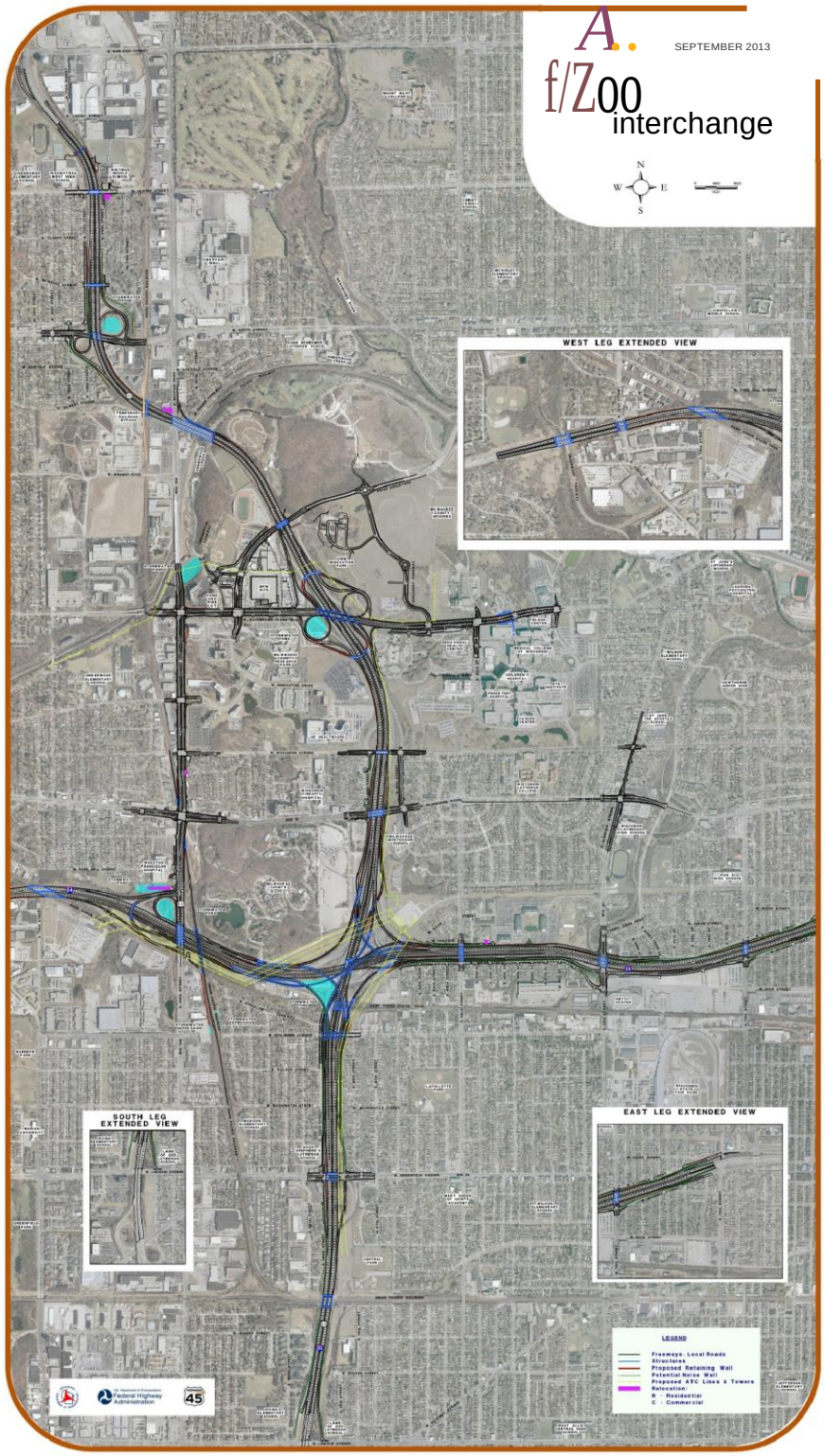
"Major" projects are projects with an estimated total cost greater than $500 million, or projects approaching $500 million with a high level of interest by the public, Congress, or the FHWA. FHWA senior management may designate projects as major projects due to a high level of interest. By nature, major projects are especially complex and involved, both from project management and financial management perspectives.

Based on prior experience with other major projects, FHWA established a national policy on the preparation and review of financial plans for major projects annually. This financial plan includes contingency plans to cover potential revenue shortfalls or cost overruns. Section 1305 (b) of the Transportation Equity Act for the 21st Century modified Section 106 of Title 23 by adding subsection "(h)," which requires the financial plan.

FHWA also recognized the need to continually ensure that cost containment measures and mitigation of delays and conflicts remain a high priority focus. Included in this would be rigorous controls to prevent scope change, to assure value engineering and constructability reviews throughout the design and construction processes, to include items such as fuel-price adjustments in contracts to minimize bid increases due to risk and to recover costs associated with consultant design errors and omissions. All initial financial plans and annual updates are submitted to the FHWA Division Office. The FHWA Division Office shall then submit a copy to the FHWA Project Delivery Team for concurrent review and consult with the team before making a formal acceptance back to the state. Prior concurrence of the financial plan and updates is required by the Program Manager, Office of Infrastructure, before acceptance by the Division Administrator.

Another major change in FHWA oversight on major projects is the FHWA approval requirement for all consultant final design contracts and subsequent amendments as outlined in the Federal Register of June 12, 2002.

Figure 1: Zoo Interchange Preferred Alternative



2.0 Values, Goals, and Objectives

The Wisconsin Department of Transportation (WisDOT) has identified both measurable and qualitative objectives for the Zoo Interchange Reconstruction project. These objectives helped WisDOT and the public identify those alternatives described in the project purpose and need as well as the goals and objectives identified by the community. Chapters 3-21 of this Project Management Plan (PMP) outline how these goals and objectives will be met by the project team.

2.1 WisDOT Zoo Interchange Team Values

See Figure 2.

2.2 Overall Goals and Objectives

- Deliver the project on time with the final scheduled construction completion date of late 2018.
- Deliver the project within budget, with the total program cost of approximately $1.717 billion. This cost is in year-of-expenditure dollars.
- Maintain public trust.
- Build it with the whole community.
- Modernize the freeway system to increase safety and improve operations by moving on and off ramps from the left to right sides; increase capacity by adding lanes on system ramps, adjacent arterials, and through movements where necessary. In addition, other safety improvements (including increased vertical clearances at structures, wider shoulders, better horizontal and vertical alignments, and improved sight distances) have been incorporated to the conceptual design of all modernization alternatives.
- Utilize a 75-year design life for the structures.
- Project completed with the highest degree of quality possible. Materials and construction processes will meet or exceed quality metrics.
- Minimize impact on the environment.
- Maintain existing or equivalent access to business and residential properties during and after construction.
- Provide consistent, high quality applications of methods, standards, and techniques where practical.
- Deliver the project using a diverse workforce and meet, or exceed, all DBE goals as defined by the WisDOT in collaboration with business and labor groups.
- Protect the safety of traveling public and workers during data gathering activities and construction.
- Maintain traffic within TMP goals.

Quality measurements, with appropriate targets and tolerances, are in use to monitor schedule, budget (including cost containment), quality, safety, scope control, public trust and confidence, and federal requirements. As initially implemented on the Marquette Interchange Project, and continued as the I-94 North/South project is constructed, a series of "controls" are implemented to ensure conformity and ultimate success. Tracking and reporting controls include use of a monthly report, an Oversight Committee (OC), and an Issues and Risk Management Committee in addition to having staff experienced in working on major projects.

2.3 Measurable Transportation Goals

The following objectives were identified during the scoping phase of the project as measurements of improving transportation needs and addressing the project purpose as identified in Chapter 1 of the EIS. These objectives were used in identifying the Preferred Alternative.

The ability of the Preferred Alternative to meet these transportation objectives is discussed in Chapter 2 of the Approved EIS.

- Maintain a key link in the local, state, and national transportation network.
- Improve safety and traffic operations.
- Replace deteriorating pavement and bridges.
- Address the outdated design of the study-area freeway system.
- Accommodate future traffic volumes at an acceptable level of service.

The proposed action would neither require nor foreclose future transportation improvements in the regional transportation plan. The proposed action would provide a safe and efficient transportation system in the Zoo Interchange corridor, while minimizing impacts to the natural and built environment to the extent feasible and practical.

These high level goals will be measured and tracked via the project's monthly reporting to Region and Central Office/Secretary's Office management. The region is briefed via the monthly issues and risk meeting. Central Office and the Office of the Secretary are briefed via the monthly oversight meetings in Madison. The key measures tracked by WisDOT, which will lead to accomplishment of the above goals, include:

- On time letting of PS&E packages.
- Conformance to requirements set forth in the project's quality plan.
- Conformance to DOT plan review process including adjudication of all plan comments from DOT reviewers.
- Monthly analysis of issues and risk to the project including tracking of action items and potential cost impacts.
- Change management of construction.
- Tracking and accomplishing action items set forth in the Zoo design/construction weekly leadership meetings; action items to last no longer than one month.

Figure 2: Zoo Interchange Team Values

TEAM VALUES

INVESTMENT

The Southeast Wisconsin Freeway System plays a vital role in the state's economic growth, the movement of goods and services, and job creation. A strong transportation infrastructure promotes the ability of Wisconsin businesses to compete nationally and internationally. Improved mobility and safety raises Wisconsin's status as a livable state for our residents.

RESPONSI81 LITY

We value our role as providers of cost-effective infrastructure solutions to decision-makers to provide for safe and efficient travel on all of Southeast Wisconsin's freeways. It is our responsibility to program for the long-term reconstruction based on real needs and real benefits to the public and economy. We prioritize infrastructure investments to maximize returns to the public.

PARTNERSHIPS

We value that we work for the public good. We will be responsive to needs, input from agencies, the public and elected officials. Public and private sectorexpertisecombineto provide the best talent for the planning, design, construction and maintenanee of the Southeast Wisconsin Freeway System.

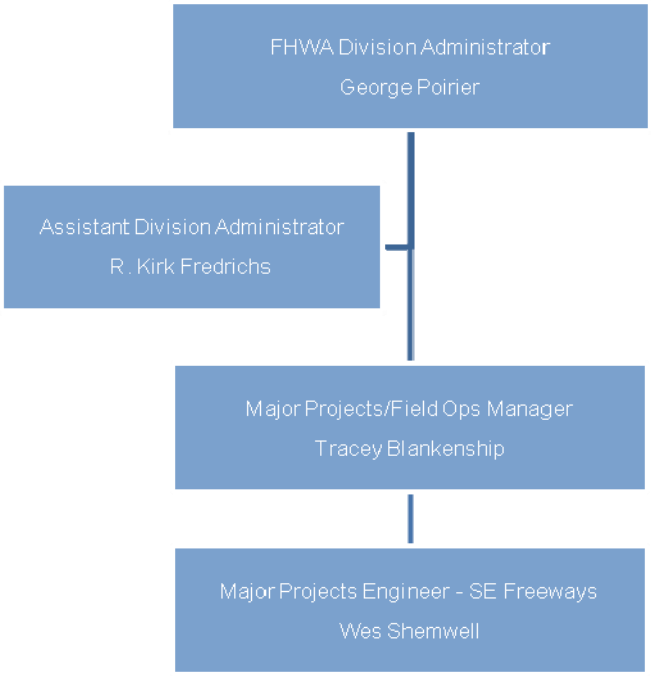
3.0 Project Organizational Charts, Roles and Responsibilities

This section details the organizational structure of the Zoo Interchange team including FHWA, WisDOT oversight committee, WisDOT Division of Transportation Investment Management (DTIM), and WisDOT Division of Transportation System Development (DTSD).

3.1 FHWA

FHWA's Wisconsin Division provides oversight and stewardship of WisDOT in the development of the Zoo Interchange project.

Figure 3: FHWA Oversight Team



WisDOT and FHWA are working cooperatively to improve the traditional, linear approval process. Both agencies recognize FHWA's early involvement to minimize review and approval time. As the integrated approval process evolves, FHWA still maintains its independent oversight responsibility.

Wes Shemwell attends the weekly Zoo Interchange Team progress meeting and other key meetings. He is a member of the Issues and Risks Team (IRT) and Change Management Team (CMT). He is responsible for day-to-day stewardship, oversight, and approvals. Wes Shemwell is FHWA's representative on contract administration issues and provides prior approval of all contract modifications involving non-structure items. He provides policy guidance, comments on design and construction issues and contract packaging and

coordinates all the other FHWA staff working on the project, including Joe Balice (structures), Lindsey Svendsen (real estate and civil rights project manager), and Lori Platz (financial).

Wes Shemwell informs FHWA Headquarters in Washington, DC about the project. Monthly updates are provided to FHWA Headquarters Major Project's Office. George Poirier is the FHWA Wisconsin Division Administrator.

By law, FHWA is responsible for ensuring compliance with federal requirements in the delivery of the federal highway program. This responsibility is achieved through stewardship and oversight. Stewardship is defined as the efficient and effective management of the public funds that have been entrusted to the FHWA. Stewardship reflects FHWA's responsibility for the development and implementation of the Federal Highway programs. It involves all FHWA activities in delivering the Federal Highway program, such as leadership, technology deployment, technical assistance, problem solving, program administration and oversight.

Oversight is defined as the act of ensuring that the Federal Highway program is delivered consistent with applicable federal laws, regulations, and policies. It is the compliance or verification component of FHWA stewardship activities. FHWA oversight and independent verification activities are similar to the quality assurance portion of quality control/quality assurance programs prevalent in many construction and materials programs. In addition to construction, federal oversight includes planning, right-of-way, finance, and DBE. FHWA will trust but will also verify.

FHWA has identified major projects like the Zoo Interchange Reconstruction for a heightened level of oversight because these projects are especially complex and involved, both from a project management and financial management perspective. As such, FHWA performs the following activities to ensure its oversight responsibilities:

- Coordinate between WisDOT and other federal agencies on controversial issues.
- Provide technical assistance and guidance to WisDOT in development and management of the project's initial Financial Plan and its annual updates. FHWA will also conduct an independent review of the program baseline cost estimate.
- Participate as a third party reviewer on design contract amendment proposals and other contract administration issues.
- Coordinate audits between WisDOT and FHWA and other federal agencies.
- Provide technical assistance and guidance to WisDOT in developing a Project Management Plan.
- Provide technical assistance and guidance to WisDOT in the development of preliminary and final roadway and bridge plans.
- Provide technical assistance and guidance to WisDOT in assuring that contract administration, constructability, cost, bid-ability, value engineering, construction, methods and materials, congestion mitigation, community sensitive design, and future maintenance are all considered in the development of the project.
- Provide technical assistance, guidance and approvals in assuring that federal contract administration requirements related to proprietary products, force account, state or locally-supplied materials and salvaged materials are adequately addressed.

- Provide technical assistance and guidance to WisDOT in developing a DBE program for the program's construction activities that produces an acceptable level of women and minority-owned business participation in the construction contracts.
- Work with WisDOT to provide information on innovative technologies and materials, and technical training opportunities.
- Conduct construction project inspections and process improvement reviews.
- Participate in Zoo Team meetings to monitor and provide input to cost control, schedule and contract modifications.
- Assist WisDOT Zoo Team managers in the final inspection of completed contracts.
- Review, accept and monitor the PMP.

3.1.1 FHWA Approval Actions

The division administrator, or designee, is delegated authority and responsibility for all approvals to implement the Zoo Interchange Reconstruction project, except for approval of modifications of interstate access and the approval of type, size, and location (TS&L) for unusual and unique structures. While the Division Administrator approves the financial plan, prior concurrence is required from FHWA Headquarters.

Since FHWA has deemed the Zoo Interchange Reconstruction project a major project, FHWA has additional approval actions that supplement regular oversight project actions. These required project approval actions are outlined in the oversight agreement between the FHWA Division Office and WisDOT (and can be found in the WisDOT Facilities Development Manual (FDM) procedure 5-5-15). These additional actions include approval of the Project Management Plan, the Initial Financial Plan, annual updates to the Financial Plan, and approval of all design consultant contracts and any subsequent contract amendments. FHWA approval actions can generally be described in a few categories including: environment, design/ PS&E, construction, and special major project. A detailed list of select approvals is shown in the following table.

Table 3-1: Select FHWA Approvals

Action	Date Approved	Notes
Environmental Process (NEPA)		
Environmental Assessment Re-Evaluation		
Supplemental Environmental Impact Statement	February 2011	SDEIS
Environmental Impact Statement	October 2011	FEIS
Environmental Impact Statement	February 2012	Record of Decision approved
Design Approvals		
Modifications of Interstate Access	May 2012	IJR
Design Exceptions	Future	FHWA Division Office approves all other TS&L submittals.
Type Size and Location	Future	FHWA Headquarters approval is required as a matter of policy for unique and unusual structures
Authorizations (Commitment of Federal Funds)		
Preliminary Engineering	September 2011	Preliminary design contract(s) to develop alignments and other pre-final design details.
Utility Preliminary Engineering	September 2011	As part of the functional plans contract.
Right-of-Way	February 2012	
Utility Relocation	February 2012	
Final Design	August 2012	Final design to be completed after approval of the FEIS with the acceptance of the ROD, and following completion of the preliminary design. Final design will occur over multiple years.
Construction (PS&E)	2012	Traffic mitigation projects to start in 2012. Major construction in 2013.
Plans, Specifications, Estimates		
Public Interest Findings	Future	Required for proprietary products, state furnished materials.
Cost Effectiveness Findings	Future	Required for local force account work.

Action	Date Approved	Notes
Approvals Specific to Major Projects		
Preliminary Design	Started in 2011	
Final Design	Approvals to start in 2012	
Contract Amendments	Various	FHWA approves all contract amendments for final design.
Financial Plan and Annual Updates	September 2012	Approved by Division Administrator with FHWA Headquarters Concurrence.
Regional Planning Approvals		
Annual Planning Review	Annual	FHWA reviews MPO (SEWRPC) for compliance with regulations.
Conformity Analysis	Various	FHWA and Federal Transit Authority (FTA) review plan for air quality conformity as needed when regionally significant projects are added or subtracted from TIP.
Transportation Improvement Program (TIP)	Ongoing process	All federal-aid projects must be listed in the TIP.
Salvaged materials for items that do not fall below the maximum threshold	Ongoing process	FHWA division office will review for concurrence
Traffic Management Plan	Ongoing process	FHWA division office will review for concurrence
Project Management Plan	Ongoing process	FHWA division office approved 11/05/12.
Construction Contract Addenda	Ongoing process	FHWA division office will review for concurrence
Contract Award	Ongoing process	FHWA division office will review for concurrence
Change Orders	Ongoing process	FHWA division office will review for concurrence

3.1.2 FHWA Design Standard Review

23 U.S.C. § 109 provides that design standards for projects on the National Highway System (NHS) must be approved by the Secretary of the U.S. Department of Transportation in cooperation with the state highway departments. The interstate system, all of which is included as part of the NHS, has a special set of standards as listed in 23 C.F.R. § 625. The Federal- Aid Highway Act of 1956 called for uniform geometric and construction standards for the interstate system. The standards, which have been revised periodically over the years, were developed by the state transportation departments, through the American Association of State Highway and Transportation Officials (AASHTO), and adopted by the FHWA. The design standards have been codified in 23 U.S.C. § 109(b). The Zoo Interchange Reconstruction is

utilizing design criteria that follows the AASHTO guidelines as well as the WisDOT FDM, and are outlined in the SE Freeways Design Manual.

An interstate justification report (IJR) must be prepared for any changes in interstate access. This is the first step in receiving FHWA approval in any proposed access change to the interstate system. The Zoo Interchange IJR was approved by FHWA in May 2012.

As described in the FHWA/ WisDOT Oversight Agreement, regardless of which design standards apply, case by case exceptions are allowed when justified and documented. For all NHS routes, which include the interstate system, the location and degree of deficiency relative to the 13 controlling design criteria must be reported.

The FHWA Division Office has authority to approve all TS&L reports except for unusual structures. Unusual bridges are those the Division has determined to have: (1) difficult or unique foundation problems, (2) new or complex designs with unique operational or design features, (3) exceptionally long spans, or (4) are being designed with procedures that depart from currently recognized acceptable practices. It is FHWA policy that TS&L documents for unique and unusual structures be approved by Headquarters. For the Zoo Interchange, this approval will be required for the potential "roll-in" construction of the UPRR Bridge over US 45. It should also be noted that dual designs (i.e. concrete and steel) are being developed for several of the system ramps within the Zoo Interchange core.

The final PS&E packages for all oversight projects are approved by the FHWA Division Office in accordance with 23 CFR 630.205. This approval is given through authorizing the construction of the project in the Fiscal Management Information System and/or the PS&E Trak System. The PS&Es will be approved at a future date. This process includes FHWA approval of all cost effectiveness findings and public interest findings for various things such as local force account work, proprietary products, and state furnished materials. The authorization of the construction contract will also be dependent on FHWA acceptance of the final right-of-way certificate and financial plan. The authorization of construction involves the approval of an electronic Federal-Aid Project Agreement. FHWA authorization is contingent on the project being in the most recent SEWRPC TIP. FHWA also verifies project eligibility for the proposed funding category. Note that FHWA does not approve the TIP or subsequent TIP amendments. FHWA performs annual planning reviews for all metropolitan planning organizations. FHWA along with the FTA review a conformity analysis of the TIP whenever a project of regional significance is added or removed from the TIP.

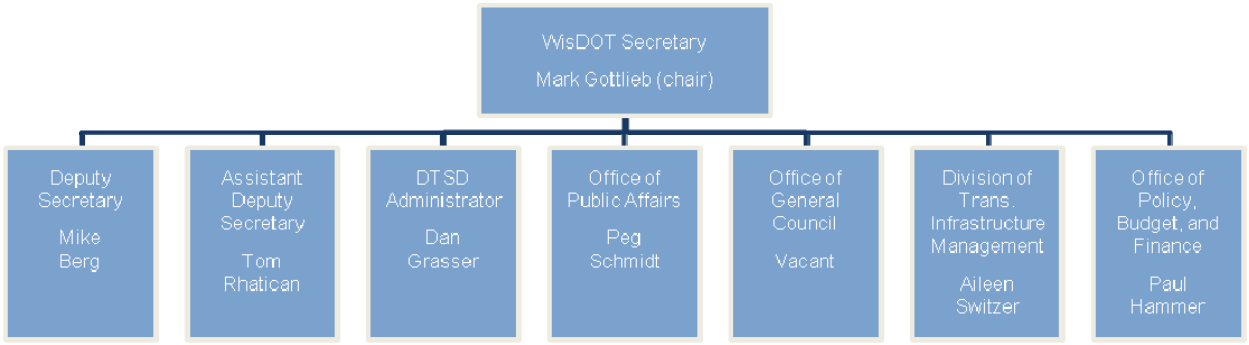
Once authorization is given, the state will advertise the project(s) for bids. Once all bids are received and a proper bid analysis has taken place, FHWA concurs in the award of the contract. Conversely, if problems in the bidding process arise, FHWA must also concur in the rejection of all bids received.

3.2 WisDOT Oversight Team

The Zoo Interchange Project is led by an oversight team chaired in conjunction with FHWA by the Wisconsin Secretary of Transportation, Mark Gottlieb, PE. The Oversight team provides policy decisions and guides project direction for major issues involving funding, human resources, community impacts, media outreach, and technical issues.

Oversight team meetings are scheduled monthly and the agenda's are set by the WisDOT Regional Directors. The WisDOT Zoo Interchange Design and Construction Chiefs are responsible for briefing the Oversight team on schedule, budget, DBE, public information, and risk by use of an executive summary.

Figure 4: WisDOT Oversight Team Members



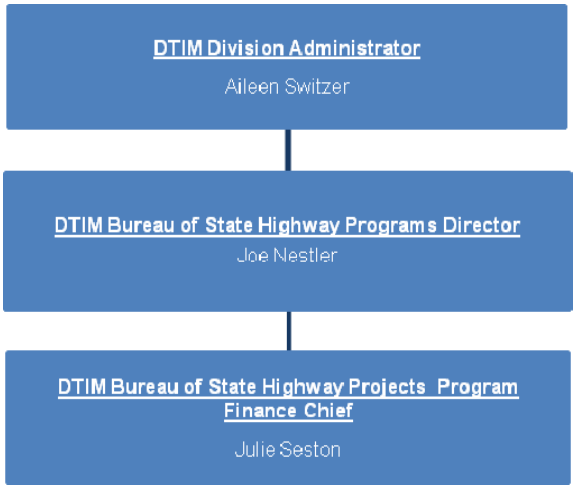
3.3 Division of Transportation Investment Management (DTIM)

DTIM will review the funding and authorize each project for charging. DTIM will work closely with the WisDOT Zoo Interchange Team in reviewing the schedule of projects and assignment of funds to ensure that budget levels are not exceeded.

DTIM conducts long-range, multimodal transportation planning, and guides the use of state and federal transportation dollars based upon research and data analysis of the state's transportation systems. DTIM has the following responsibilities for the study:

- Consult prior to cost shifts.
- Provide financial budget oversight.
- Be responsible for final financing of project.
- Provide State Transportation Improvement Program coordination.
- Maintain program and financial system.
- Provide liaison with Bureau of Financial Services.
- Interpret budget requirement and coordinate with other divisions.
- Coordinate SE Freeway system plans.
- Provide liaison with OPBF for budget contacts.
- Provide financial liaison with FHWA.

Figure 5: DTIM Zoo Interchange Project Liaisons

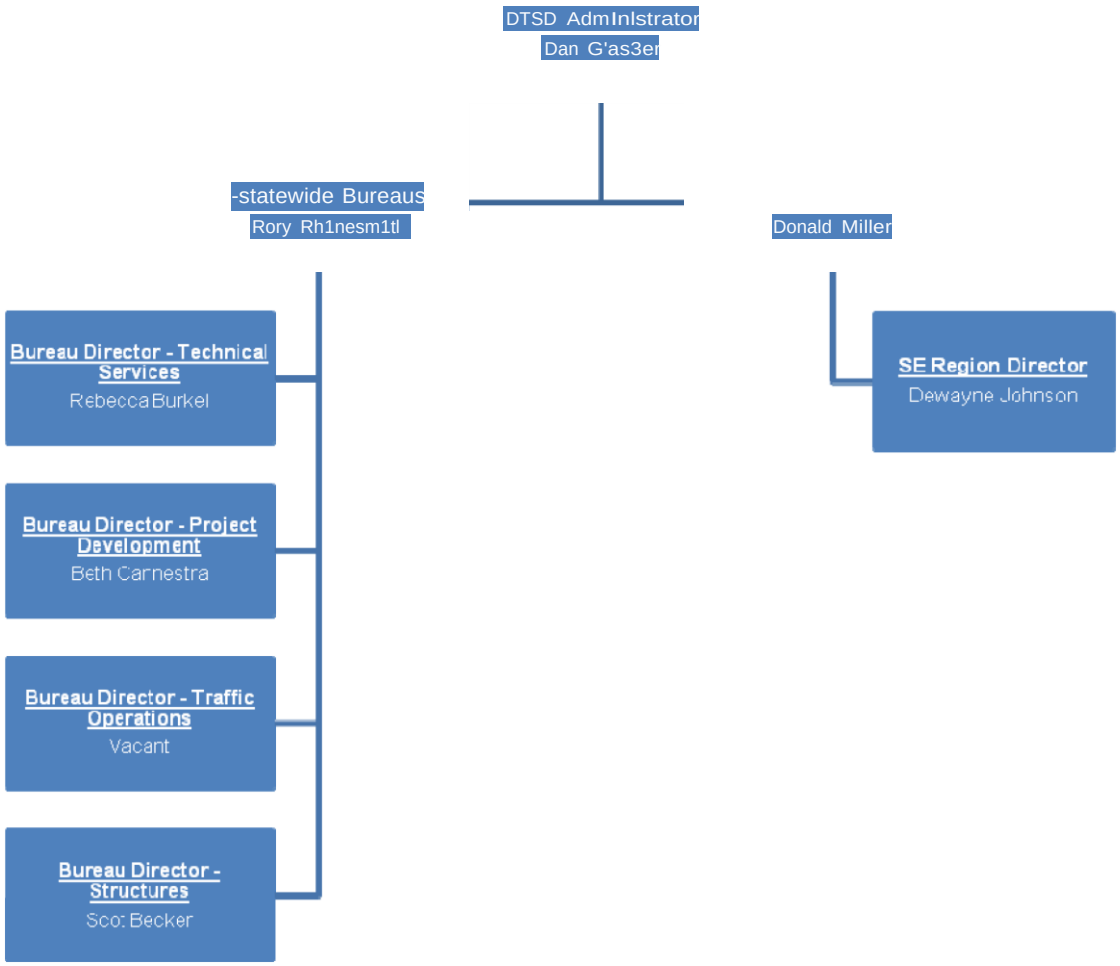


Division of Transportation System Development (DTSD)

The WisDOT SE Region Director, Deputy Director, project chiefs and project supervisors have overall responsibility for all aspects of the project as leaders of the Zoo Interchange Team. Project-level decisions are the responsibility of the Zoo Interchange Team. Major project issues are brought in front of the Oversight Committee to receive feedback and concurrence on action items/next steps.

The Zoo Interchange Team works within the SE Region structure (See Figure 7), and therefore is part of DTSD. The WisDOT team utilizes both full-time dedicated staff, who are dedicated to SE Freeways projects only, and ad-hoc region team members. The WisDOT SE Freeways team will closely coordinate with DTSD Central Office Liaisons (See Figure 6).

Figure 6: DTSD Central Office Zoo Interchange Liaisons



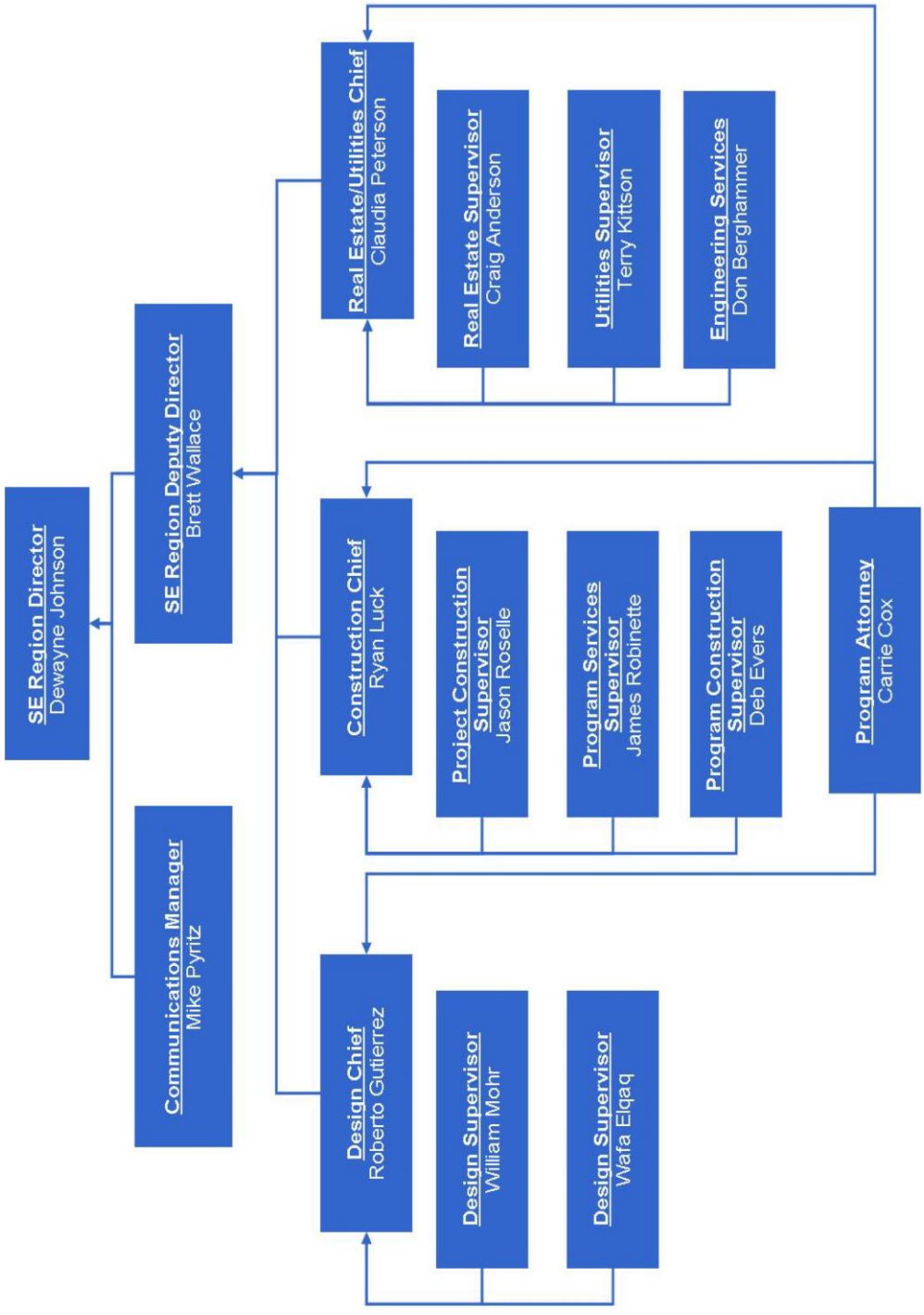


Figure 7 Zoo Interchange Project Management Team

Figure 8: WisDOT Zoo Interchange Design Team

WisDOT Zoo Interchange Design Team

The Zoo Interchange Team along with DTSD's Central Office staff has the following responsibilities for the project:

- Perform project implementation (Draft and Final EIS, preliminary and final design management process) in the region by the Zoo Interchange Team.
- Submit Project standards exceptions request to Bureau of Project Development.
- Review plans.
- Provide day-to-day information to external customers.
- Provide overall project management for the corridor.
- Develop FHWA financial plan with coordination from OPFB and DTIM.
- Coordinate legal issues with WisDOT OGC.
- Provide overall agency coordination.
- Provide consultant coordination/management.
- Provide the WisDOT/FHWA PMP.
- Maintain program costs within project budget.
- Maintain program schedule.
- Provide specific technical expertise.
- Provide ongoing technical expertise in design and construction.
- Provide standards, policies, and review exceptions to standards.
- Provide liaison/formal link to FHWA for changes to exception to standards.
- Provide centralized bid review and bid process and final contracts.
- Provide direction on labor compliance/disadvantaged business enterprise (DBE) issues.
- Provide liaison to other divisions.
- Provide some centralized material testing.
- Approve preliminary and final structure plans.
- Coordinate on any issues related Equal Opportunity Employment.
- Define role for roadway plan review and plans, specifications & estimates (PS&E) review.

Figure 9 [illegible] Zoo [illegible] ng Consultant—Forward 45

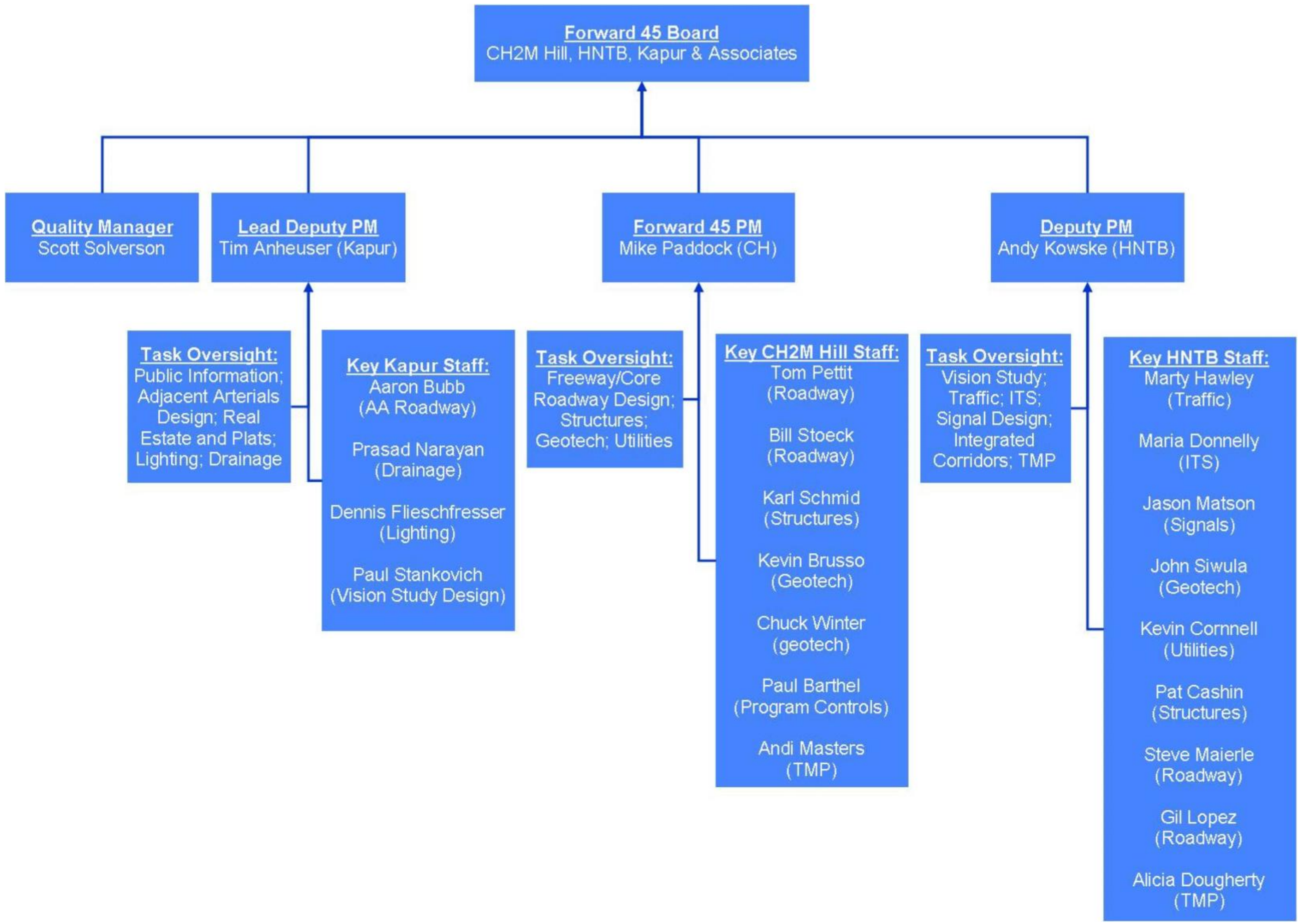


Figure 10: WisDOT Zoo Interchange Construction Project Team

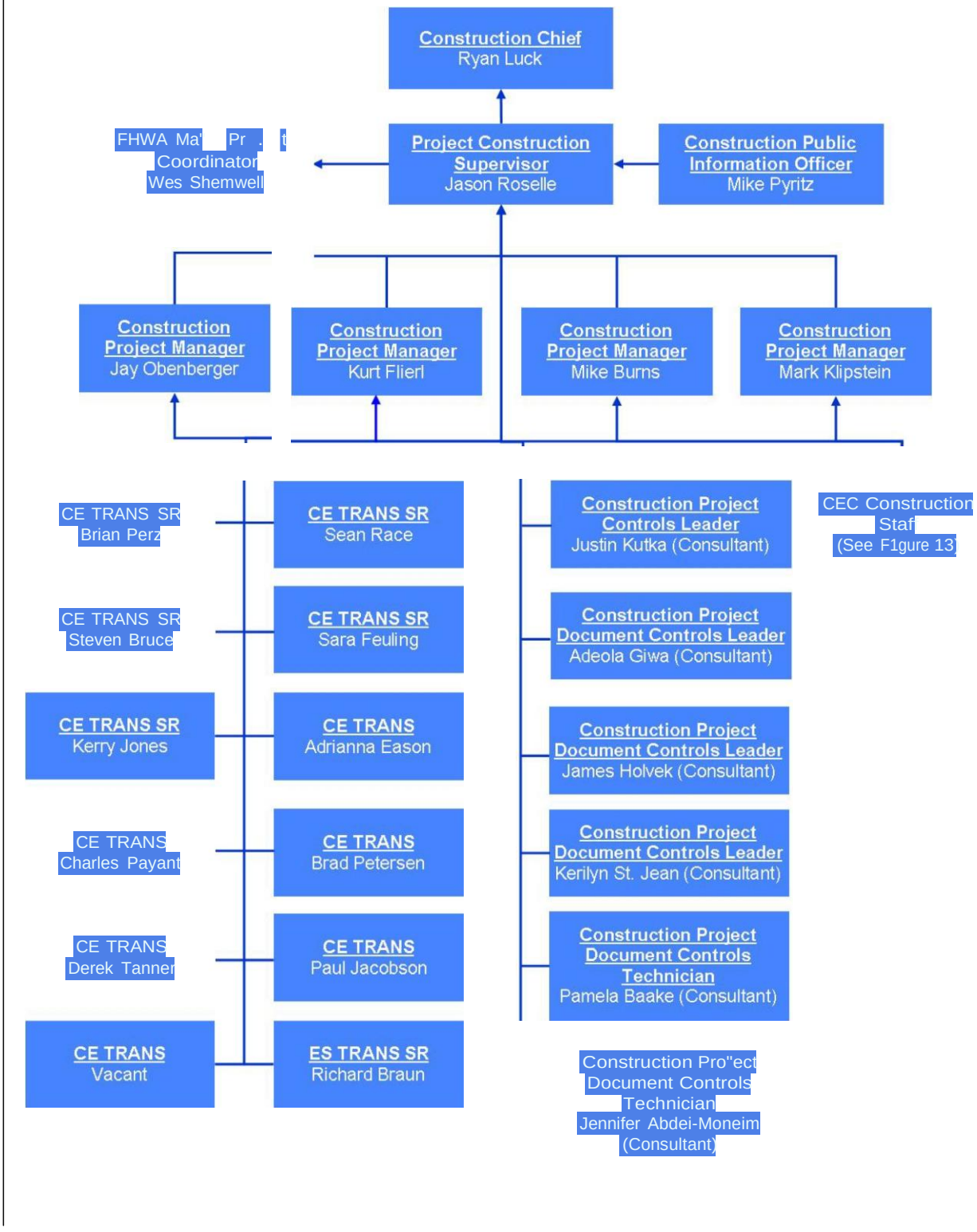


Figure 11: WisDOT Zoo Interchange Construction Program Team

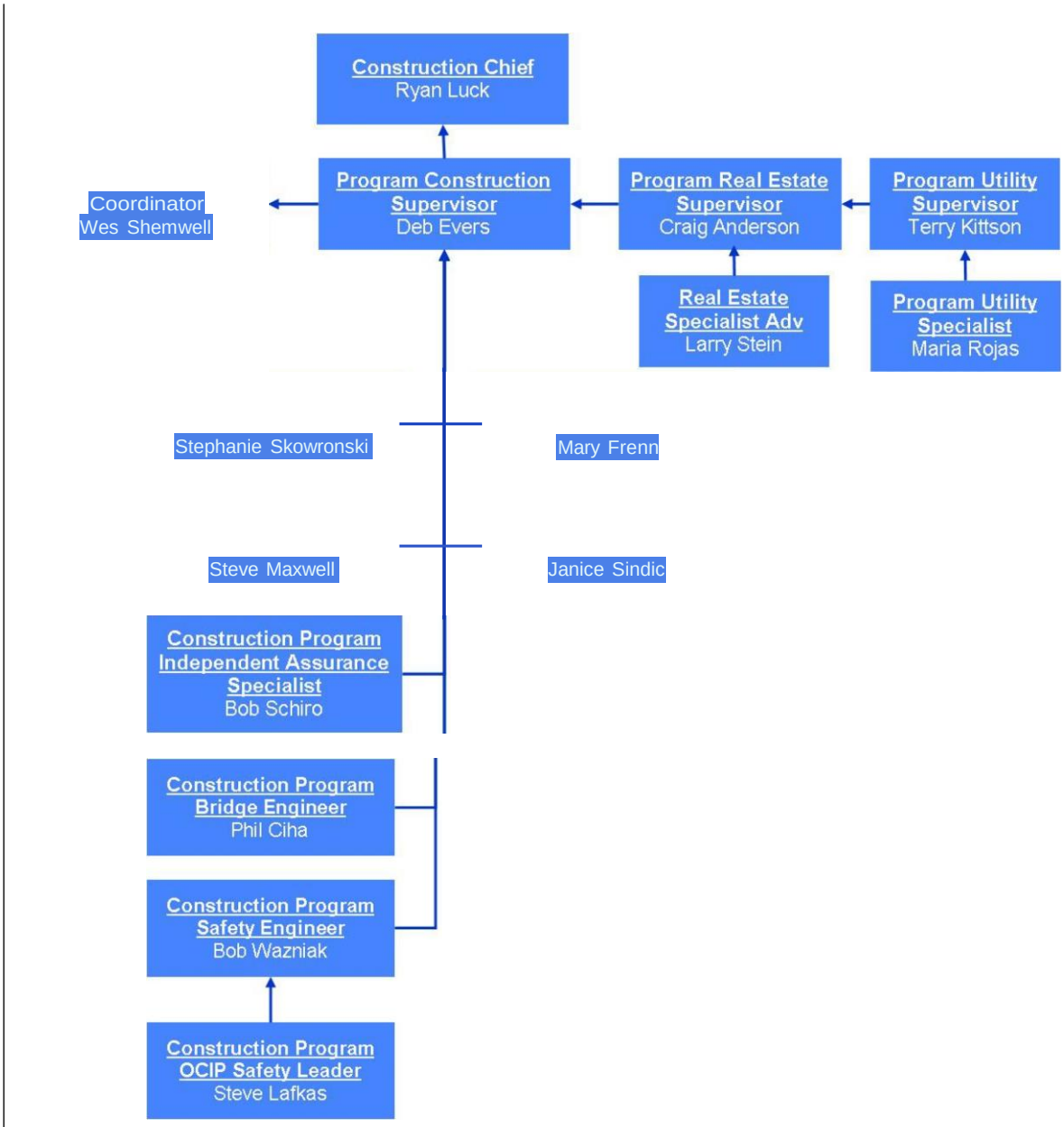


Figure 12: WisDOT Zoo Interchange Financial Team

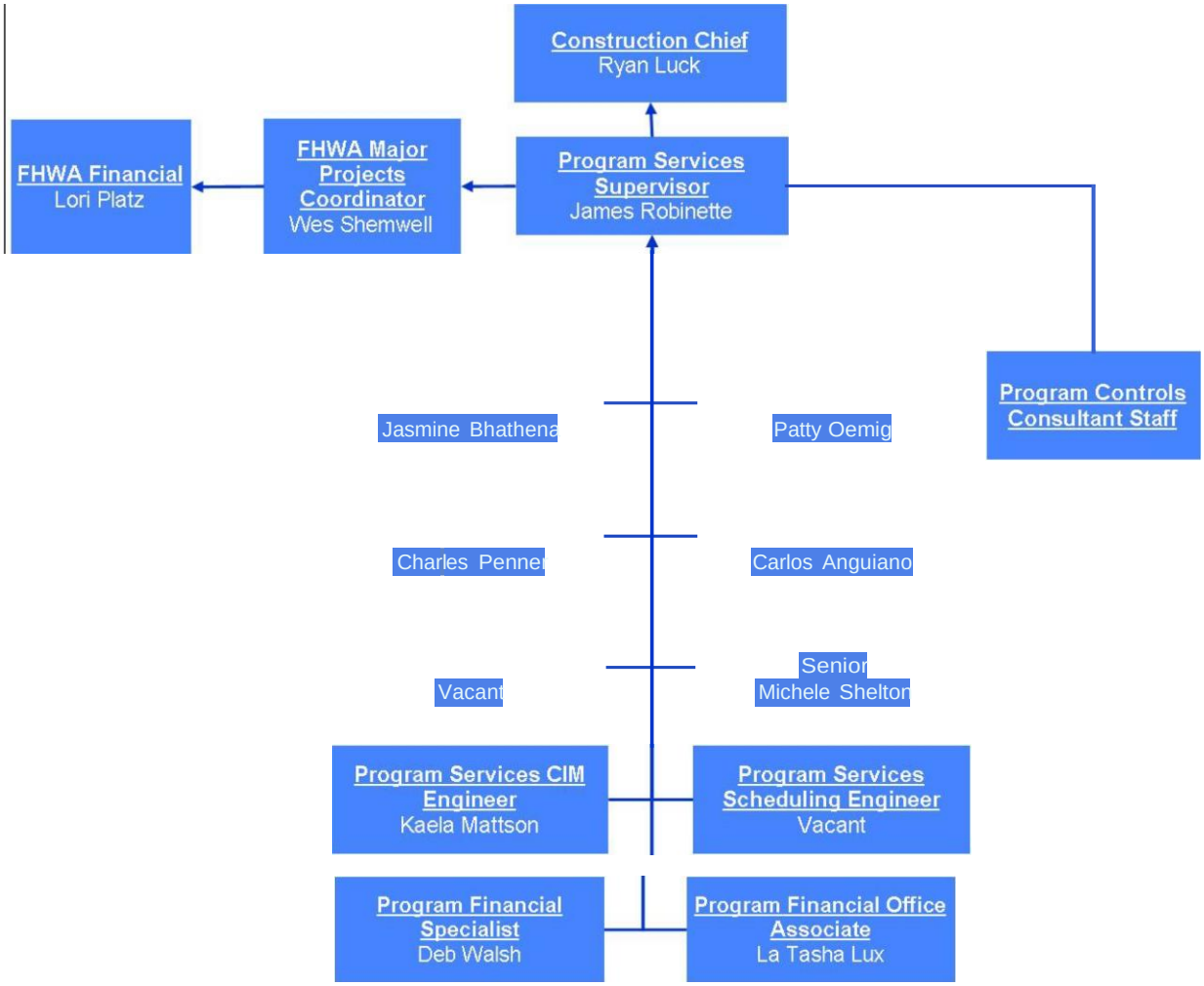
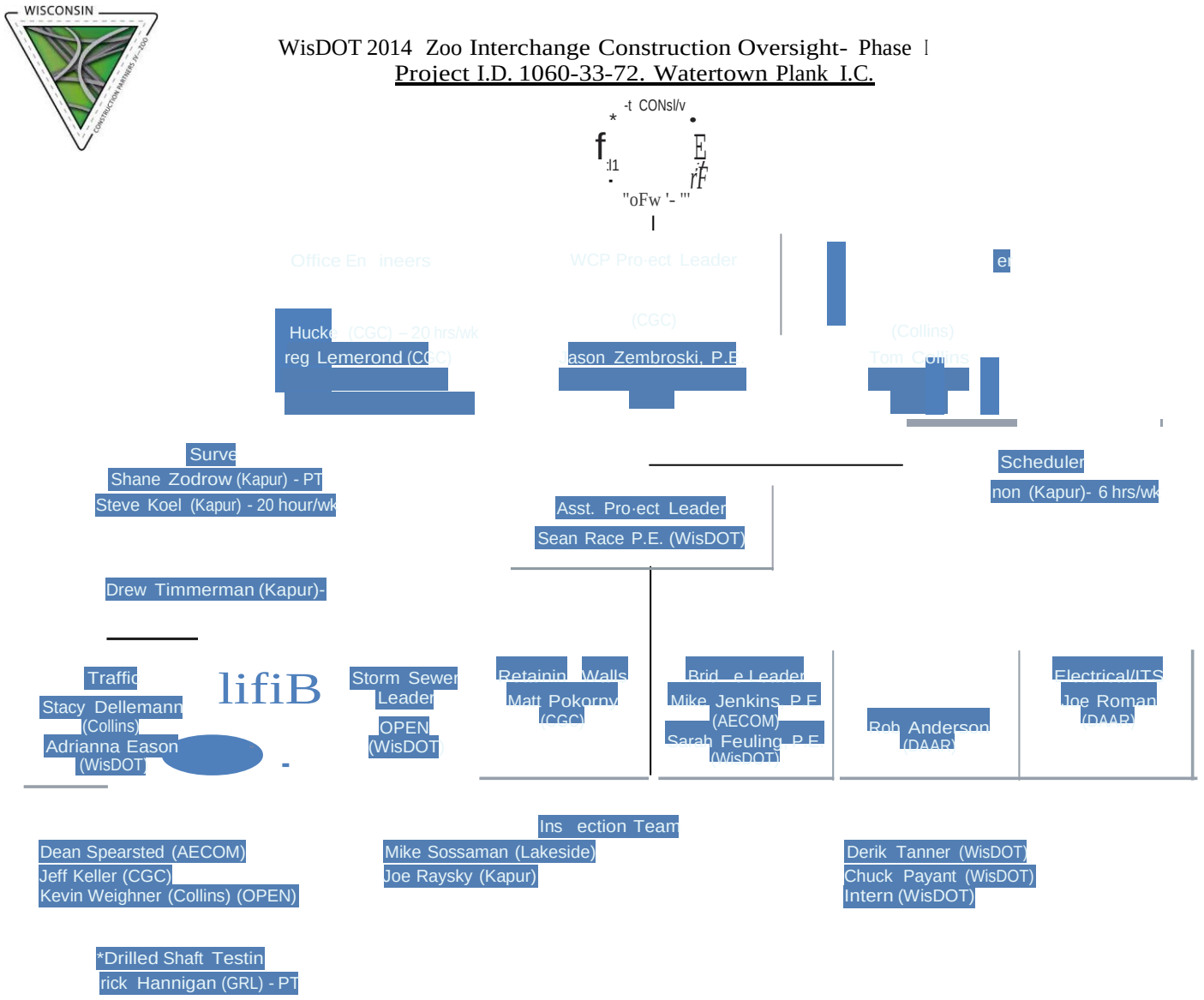


Figure 13: Watertown Plank Road (1060-33-72) 2014 Construction Engineering Consultants

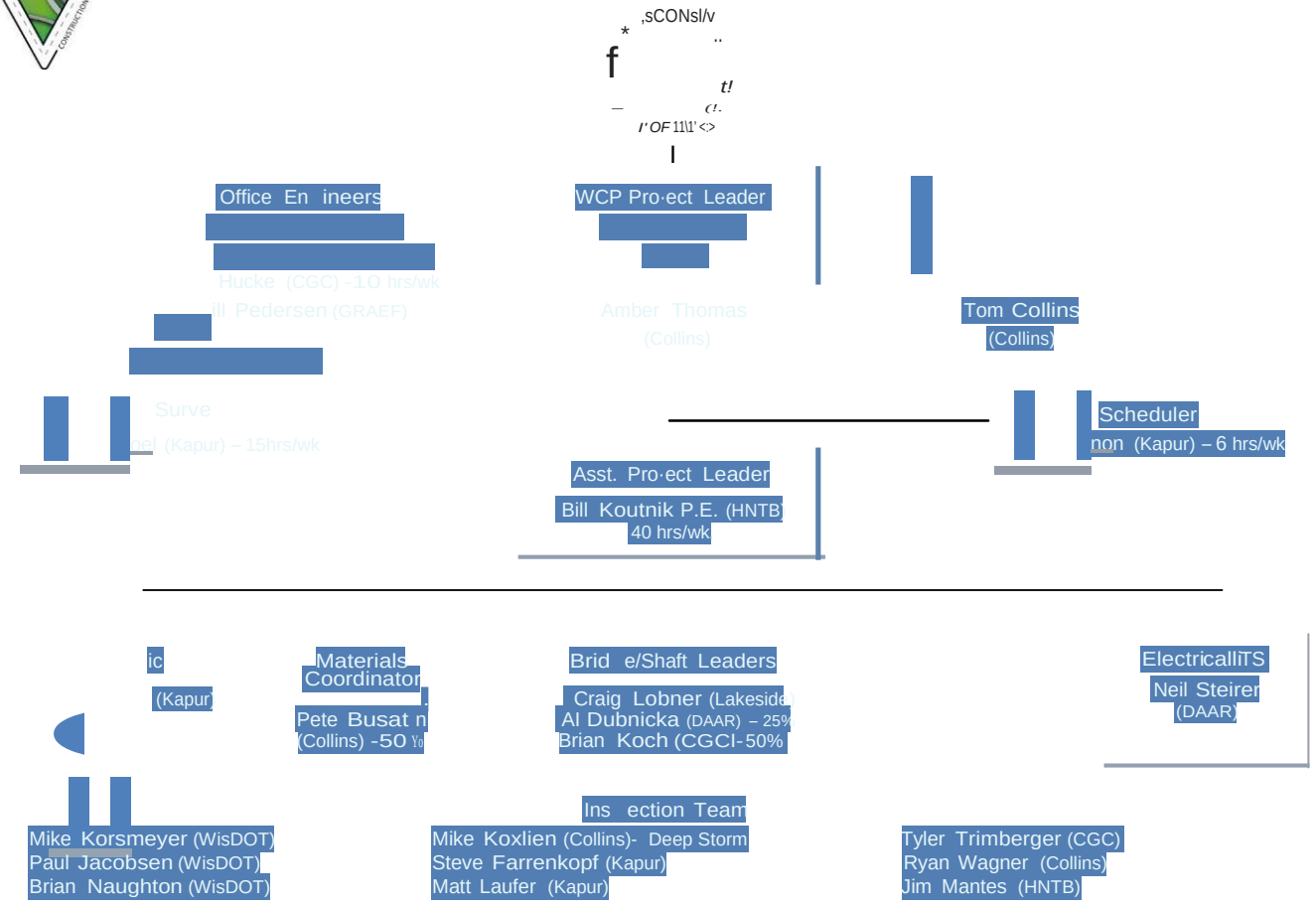


Construction: - October 14, 2013 to December 14, 2014

PROJECT ORGANIZATIONAL CHARTS
ROLES, & RESPONSIBILITIES

Figure 14: HWY 100 / UPRR Bridges over 1-94 (1060-33-75) 2014 Construction Engineering Consultants

WisDOT 2014 Zoo Interchange Construction Oversight- Phase I
Project I.D. 1060-33-75 UPRR & STH100 BRIDGE OVER 194



Construction: - October 14, 2013- December 14, 2014

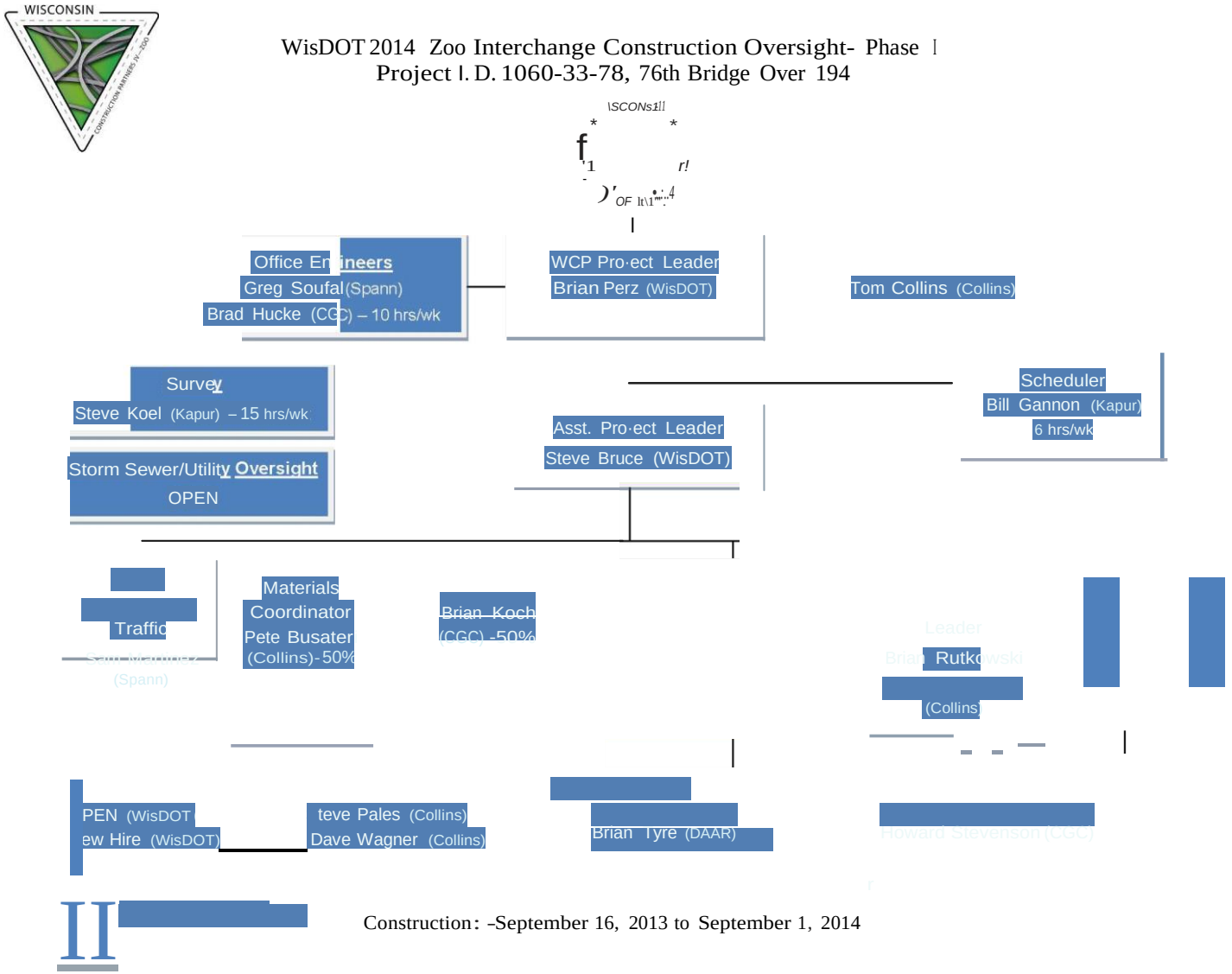
PROJECT ORGANIZATIONAL CHARTS, ROLES, & RESPONSIBILITIES

Shaft Testin

ck Hannigan (GRL) - PT

Construction: - October 14, 2013- December 14, 2014

Figure 15: 76th Street Bridge (1060-33-78) 2014 Construction Engineering Consultants



PROJECT ORGANIZATIONAL CHARTS, ROLES, & RESPONSIBILITIES

ed Shaft Testin

ck Hannigan (GRL) - PT

Ins ection Team

Chris Border (AECOM)

Construction: -September 16, 2013 to September 1, 2014

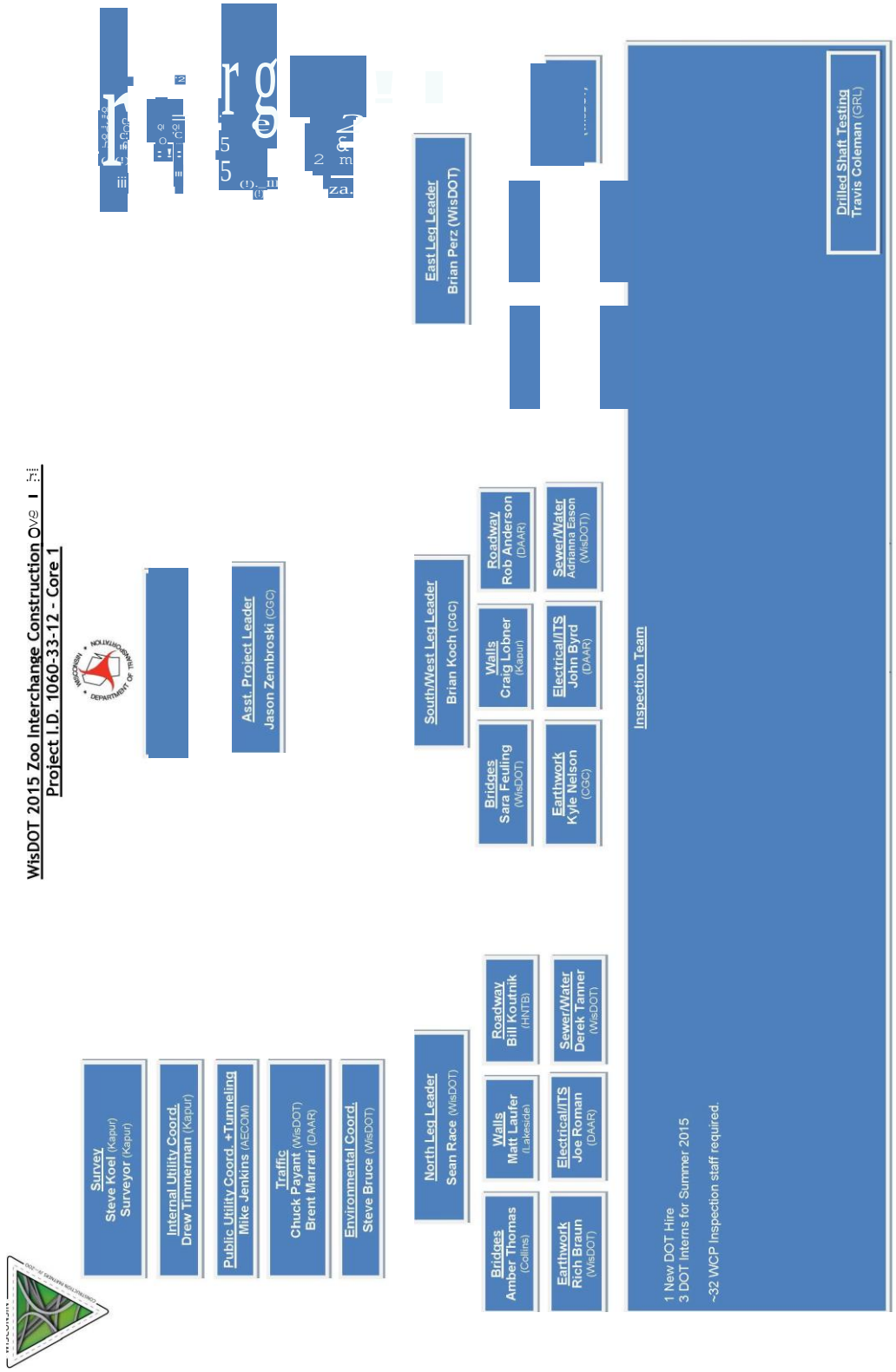

WisDOT 2015 Zoo Interchange Construction Ove
Project I.D. 1060-33-12 - Core 1
Survey
Steve Koel (Kapur)
Surveyor (Kapur)
Internal Utility Coord.
Drew Timmerman (Kapur)
Public Utility Coord. +Tunneling
Mike Jenkins (AECOM)
Traffic
Chuck Payant (WisDOT)
Brent Marrari (DAAR)
Environmental Coord.
Steve Bruce (WisDOT)
Asst. Project Leader
Jason Zembroski (CGC)
North Leg Leader
Sean Race (WisDOT)
Bridges
Amber Thomas (Collins)
Earthwork
Rich Braun (WisDOT)
Roadway
Bill Koutnik (HNTB)
Walls
Matt Laufer (Lakeside)
Electrical/ITS
Joe Roman (DAAR)
Sewer/Water
Derek Tanner (WisDOT)
South/West Leg Leader
Brian Koch (CGC)
Bridges
Sara Feuling (WisDOT)
Earthwork
Kyle Nelson (CGC)
Roadway
Rob Anderson (DAAR)
Walls
Craig Lobner (Kapur)
Electrical/ITS
John Byrd (DAAR)
Sewer/Water
Adrianna Eason (WisDOT)
East Leg Leader
Brian Perz (WisDOT)
Inspection Team
1 New DOT Hire
3 DOT Interns for Summer 2015
~32 WCP Inspection staff required.
Drilled Shaft Testing
Travis Coleman (GRL)

Figure 16

3.5.1 Staffing Plans

3.5.1.1 Purpose

The staffing plans are developed so that Zoo Construction Team has sufficient coverage of contractor work activities to verify quality assurance, measurement and payment, specification compliance, budget and schedule control, safety, DBE participation, traffic control, and maintain public trust and confidence in the Zoo Interchange Project.

3.5.1.2 Responsibilities

The Zoo Team's Construction Chief, with input from the Project, Program and Financial Supervisors, has the responsibility of managing the team from both an overall size and quality level. Individual PMs, through coordination with the Construction Chief and Supervisors, make decisions on their projects in regard to the number of technicians and inspectors on each contractor activity and fluctuations in staff levels over long periods of inclement weather.

3.5.1.3 WisDOT Construction Staffing

The following WisDOT positions work together with the consultant teams to provide oversight and ownership of all project details.

Position	Number	Full Time (FT) Part Time (PT)
Construction Chief	1	FT
Construction Project Supervisor	1	FT
Construction Program Supervisor	1	FT
Program Financial Supervisor	1	FT
Construction Project Manager	4	FT
Construction Project Engineer - Senior	3	FT
Construction Project Engineer	10 (1)	FT
Construction Project Engineer - Specialist	1	FT
Construction Program Bridge Engineer	1	FT
Construction Program Geotechnical Engineer	1	FT
Construction Program Traffic Engineer	1	FT
Construction Program Safety Engineer	1	FT
Construction Program Independent Assurance Spec.	1	FT
Construction Public Information Officer	1	PT
Program Financial Cost Control Engineer	2	FT
Program Financial Policy Analyst Advanced	2	FT
Program Financial Policy Analyst	2	FT
Program Financial Specialist	1	FT
Program Financial Contract Specialist Senior	1	FT
Program Financial Office Associate	(1)	FT
Program Real Estate Supervisor	1	FT
Program Utility Supervisor	1	FT
Program Utility Specialist	1	FT
Program Labor Compliance Officer	1	FT
Program Attorney	1	PT

Note: ( ) denotes number of positions currently vacant.

The staff listed below has primary responsibility for the corresponding scope of work tasks and deliverables:

POSITION	PRIMARY RESPONSIBILITIES
Construction Chief	This position focuses on performing highly responsible administrative and managerial functions in formulation, development, implementation and evaluation of policy, budgetary and organization components of the department's transportation programs. Provides overall direction and management of the Zoo Interchange Construction Program from pre-construction through construction phase activities. Activities require extensive communication and coordination with others within and outside the Department.
Construction Project Supervisor	This position focuses on construction oversight on day-to-day construction activities, including technical aspects of managing construction, quality assurance, special provision interpretation, and addressing specific project related issues. Serves in a leadership capacity**,** coordinates resources and develops staff to meet established goals and objectives. Applies discipline-specific technical expertise to meet defined project goals and objectives. Participates in policy development and implementation; determining mission-critical objectives, and determining ways and means of accomplishing the objectives. Performs highly responsible administrative and managerial functions, focusing team management decisions to minimize potential adverse effects of cost, schedule, quality, and safety or risk issues on the Zoo Interchange Program budget and schedule.
Construction Program Supervisor	This position oversees the consultant needs and contracts for the program and the projectized Construction Program Engineers for the following areas; Bridge, Traffic, Safety/OCIP, Geotech, Independent Assurance Specialist. Focuses on overall program delivery, and proactively advancing issues to resolution at the program level (issues impacting more than one project, schedule impacts, and projecting cost to complete). Coordinates resources and staff to meet established goals and objectives, and applies discipline-specific technical expertise to meet defined program goals and objectives.

Program Financial Supervisor	This position focuses on the preparation of, and updates to, the program's financial plan required by federal regulation. Establishes and manages budgets for the Zoo Interchange Program. Provides or directs high-level financial policy, program and operations analysis to the ZOC, Zoo Team, OPBF, other departmental groups, and other state agencies. Monitors and reports on financial cost management, cost to date vs. budget, and cost to complete vs. budget for each contract in the Zoo Interchange Program. Coordinates resources and develops staff to meet established goals and objectives.
Construction Project Manager (PM)	This position focuses on overseeing construction contracts. Responsible for each Federal Aid Construction Project that they are assigned. Documents and directs construction oversight with a focus on meeting project budget, quality, schedule completion and safety goals. Addresses contract and construction concerns by seeking input from program supervisors and designated technical specialists associated with the Zoo Team. Assists as needed with all pre-bid and pre-construction start-up issues and familiarization with guidelines and procedures, including OCIP and the CMP. Partners with the designer of record, the contractor, WisDOT and consultant staff to communicate effectively and provide timely decision-making. Scopes, solicits and assists Program Construction Management Supervisor with selection, negotiation and execution of consultant contracts to provide construction engineering oversight. Reviews, assesses and authorizes/recommends contract modifications and plan revisions within defined authorization levels. Communicates, collaborates and coordinates with other Zoo Team members in support of achieving project, contract and program goals. Works with the PIO to address media and public information requests. Responsible for the quality, safety, efficiency and customer satisfaction achieved by the project staff and contractors.

Construction Project Engineer Senior Construction Project Engineer Construction Project Engineering Specialist	These positions may serve as Construction Leaders or Assistant Construction Leaders. When not functioning in this capacity, these positions will function as field inspection staff. Field inspection staff's duties includes documenting and reporting contractor work operations. Maintains inspectors' diaries in accordance with Field Manager software, where diaries are recorded in the Inspector's Daily Report (IDR), as per Section 11.2.2 of the C&MM. Authority and duties of inspectors are as described in 105.8 of the Wisconsin Standard Specifications. Provides records of all significant information about the working conditions, progress of work, working force, and equipment and materials, which would be of value should the contractor file claims for extra compensation. The Field Inspectors make and record such measurements that are necessary to calculate and document quantities for pay items. Record preconstruction cross section surveys of the project site in those areas where earthwork (i.e., embankment, excavation, subsoil excavation, etc.), is part of the project, and schedule incidental engineering surveys as necessary. Perform samplings under the QMP program and schedules testing of component materials and completed work items with Zoo Team. Provide daily surveillance of the contractor's quality control activities and coordinate with Zoo Team for inspection of all project materials produced off the project site.
Construction Program Bridge Engineer	This position focuses on providing technical support and recommendations for structural issues to the construction project managers of the Zoo Team. Addresses design and construction issues related to quality, durability, constructability, schedule and cost. Serves as an engineering resource and advisor to the Zoo Team. Serves as the sole point of contact for all Zoo Team structural issues. Coordinates with Central Office Bridge as needed for support and guidance.
Construction Program Geotechnical Engineer	This position focuses on providing technical support and recommendations to the construction project managers of the Zoo Team on geotechnical issues. Coordinates solutions to geotechnical issues as they pertain to quality, durability, constructability, schedule and cost. Serves as an engineering resource and advisor to the Zoo Team. Serves as the sole point of contact for all construction geotechnical issues.

Construction Program Traffic Engineer	This position focuses on providing technical support and recommendations for traffic control issues to the construction project managers of the Zoo Team. Reviews contractor proposed changes to staging. Resolves conflicting traffic closure requests. Assesses conflicts with ingress and egress issues. Serves as the sole point of contact for traffic control on a program level.
Construction Program Safety Engineer	This position focuses on providing guidance and support to the Zoo Team and its consultant partners regarding approved safety regulations and procedures for highway and bridge construction, and understanding and compliance with the Zoo Interchange Project Safety Manual. Conducts workers compensation accident investigations. Reviews the design plans for safety defects and hazardous situations as they pertain to traffic control, fall protection, crane lift operations and other construction/work zone hazardous operations. Advises on public and worker safety concerns. Oversees OCIP Program compliance with WisDOT employees and WisDOT-hired consultants. Serves as sole point of contact for Zoo Team on all OCIP issues.
Construction Program Independent Assurance Specialist	This position focuses on assisting project managers by monitoring that the work is being completed according to the plans, the standard specifications and the construction and materials manual. Serves as liaison to WisDOT Central Office Lab and quality management section. Delivers and administers the Independent Assurance Program for the project annually, which entails observing contractor and department material sampling and testing methods, and coaching proper techniques and documentation. Reviews quality control plans. Oversees construction inspection and documentation.

Construction Public Information Officer (PIO)	This position focuses on coordinating and facilitating communications and information with the public and media. Implements, manages and executes the Zoo Interchange Program communications and public relations plan. Serves as public relations advisor to the Zoo Team Construction Chief in development of messages and proactive communications to the media, organizations, legislative/ executive staff, and general public. Identifies and analyses events or trends which could have an impact on the Program, and advises or recommends to the Zoo Team on communication strategies to effectively respond to these occurrences. Participates in or leads strategic planning outreach efforts. Coordinates public outreach activities involving the Zoo Team to educate and inform the public and other stakeholders of WisDOT's construction plans. Coordinates, or assists in coordinating, the Zoo Interchange Project public information meetings, ribbon cuttings or related media events, and preparation of public information, materials, announcements and news releases for the district, Secretary, Governor, DOH and OPA. Coordinates with the public information support unit for the southeast Region.
Program Financial Cost Control Engineer	This position focuses on tracking and reporting costs for each active contract or program component. Reports to the Financial Management Supervisor. Monitors, evaluates and reports on the overall project costs, including forecasts for total cost to complete and milestones. Works with other Zoo Team and PCMC staff to develop "best estimate" of total project cost to complete. Works with the program section to identify and track cost risk areas providing cost control recommendations to the Zoo Team. Reviews cost impacts associated with potential risk areas, and accurately evaluates and estimates the final cost to complete the program at least once every quarter, to completion of the overall Zoo Interchange Program.
Program Financial Policy Analyst Advanced	This position focuses on developing, monitoring, and reporting on the key functions and status of the Zoo Interchange program. These functions include budget, schedule, document control, change management, audit, reports, data systems and project closeout. Provides leadership and direction in the delivery of several key reports, which include the Federal Financial Plan, monthly and executive project reports, issue/risk assessments, quarterly cost estimates, and program build out budget. Provide direction to Cost Control Engineers, Financial Specialists, Policy Analysts, and specialized consultant support staff to ensure confidence and status of the financials of the program.

Program Financial Policy Analyst	This position focuses on supporting the financial team's efforts in developing, monitoring, and reporting on the key functions and status of the Zoo Interchange program. These functions include budget, schedule, document control, change management, audit, reports, data systems and project closeout. Supports the delivery of several key reports, which include the Federal Financial Plan, monthly and executive project reports, issue/risk assessments, quarterly cost estimates, and program build out budget.
Program Financial Specialist	This position focuses on the tracking and reporting costs for each active contract or program component. Reports to the Program Financial Supervisor. Monitors, evaluates and reports on the overall project costs, including forecasts for total cost to complete and milestones. Work with other Zoo Team staff to develop "best estimate" of total project cost to complete. Works with the program section to monitor, evaluate and report on commitments and expenditures by appropriate object codes. Reviews cost impacts associated with potential risk areas, and accurately evaluates and estimates the final cost to complete the program at least once every quarter, to the completion of the overall Zoo Interchange Program. Works with SE Freeways Planning Engineer and BSHP to monitor, evaluate and report current fiscal year program budget and commitments. Tracks and identifies contracts and project status, and initiates closing process if appropriate.
Program Financial Contract Specialist Senior	This position focuses on contract administration for the Zoo Interchange construction program, including contract administration leading to acceptance or denial of consultant contracts, work orders, and contract amendments, ensuring compliance with applicable state statutes, federal policies and departmental procedures. Supports the Team's Equal Rights Officer.
Program Financial Office Associate	This position focuses on administration of day to day functions of the Zoo Interchange Construction field office.

Program Real Estate Supervisor	This position focuses on administering and managing the real estate functional activities. Helps resolve higher level issues with Right of Way commitments. Provides real estate expertise to the Zoo Team.
Program Utility Supervisor	This position focuses on administering and managing the utility functional activities. Helps resolve higher level schedule and staging conflicts with utilities within the Zoo program. Responsible for monitoring utility company compliance with the terms of the Lump Sum agreements for the complex utility relocations required within the project. Provides utility expertise to the Zoo Team.
Program Utility Specialist	This position focuses on working with the construction project managers, consultants, contractors and utilities to address project related utility relocations and conflicts. Reviews and approves all work plans and permits for utility relocations. Monitors the progress and accuracy of utility relocations. Advises the construction project managers on utility related issues, providing recommendations related to addressing project cost and schedule needs. Serves as a resource and advisor to the Zoo Team. Works with cost engineers to develop “best estimate” of total utility costs for project cost to complete.
Program Labor Compliance Officer	This position focuses on labor and related regulatory issues. Maximizes the opportunities of Disadvantaged Business Enterprise firms and women and minority workers to participate in program contracts. Works with cost and schedule engineers to develop “best estimate” and accurately report on DBEs’ participation in each of the program contracts. Fosters good working relationships with people who work in the Civil Rights and Compliance Sections in WisDOT and FHWA. Works with community interest groups, employees on the job, contractors, DBE firms and firms that would like to become a certified DBE. Engages in items that relate to DBE, Labor Compliance and Equal Employment Opportunity on the Zoo Interchange Program.
Program Attorney	This position focuses on providing legal advice and expertise to the Zoo Interchange team. This position primarily supports real estate, utilities, and design functions.

3.5.2.4 CEC Construction Staffing

The staffing for each project varies with the size of the respective Zoo Interchange Projects. The positions below describe typical positions utilized:

TECHNICAL FOCUS	PRIMARY RESPONSIBILITIES
Project Construction Leader; Project Construction Lead Assistant	These positions focus on writing correspondence to the Contractor, when required for approval and distribution by WisDOT. Conduct planning and progress meetings. Provide timely answers to technical questions within their scope of work. Conduct a walk-through inspection, with the project manager and the Contractor, to develop a punch list, or a final list of items to be completed by the Contractor. Have overall responsibility for assisting the project managers with quality control, quality assurance and QMP of the projects. Supervise inspection/technicians.
Office Engineer/Scheduler; Clerical for Electronic Project; Field Secretary	This position focuses on the administration of the construction contract, including preparation of progress and payment estimates, as provided more fully in the contract documents. Provides reports of meetings and conferences. Records all sources of disputes and subsequent decisions.
Project Engineers; Senior Inspectors; Inspectors/ Technicians; Survey Sub-consultant	The field inspection staff focuses on the documenting and reporting of earthwork and related operations, base course placement, bituminous material placement, drainage installation, survey verification of the contractor's geometry control activities, acceptability and location of pilings or shafts, size and placement of reinforcement and hardware of the post-tensioning systems, concrete placement, contractor's post-tensioning operations, contractor's grouting operations for the post-tensioning systems. Maintain inspectors' diaries in accordance with FieldManager software, where diaries are recorded in the Item Daily Record (IDR), as per Section 11.2.2 of the C&MM. Authority and duties of inspectors are as described in 105.8 of the Wisconsin Standard Specifications. Provide records of all significant information about the working conditions, progress of work, working force, and equipment and materials, which would be of value should the contractor file claims for extra compensation.

Project Engineers; Senior Inspectors; Inspectors/ Technicians; Survey Sub-consultant (Continued)	The Field Inspectors/Technicians and Survey Sub-consultant staff focuses on making and recording such measurements that are necessary to calculate and document quantities for pay items. Record preconstruction cross section surveys of the project site in those areas where earthwork (i.e., embankment, excavation, subsoil excavation, etc.), is part of the project, and schedule incidental engineering surveys as necessary. Field Inspectors/Technicians perform sampling under the QMP program and schedule testing of component materials and completed work items with Zoo Team. Provide daily surveillance of the contractor's quality control activities and coordinate with Zoo Team for inspection of all project materials produced off the project site.
Traffic Control Inspector	This position focuses on monitoring and inspecting, daily and periodically during nights and weekends, the Contractors' traffic control setups of detours, closures and site-specific activities. Verifies the Contractors' compliance with TC plans and the MUTCD. Reviews the TC coordination with adjoining contracts, and makes recommendations for adjustments to maximize the safe and efficient flow of traffic. Prepares daily inspection reports in accordance with the FieldManager system to document quantities for payment and conditions.
Environmental Coordinator	This position focuses on assisting the Zoo Team with monitoring and inspection of all Contractor activities potentially impacting the environment including, but not limited to, hazardous materials, noise, dust, erosion control, stormwater pollution control, vibration and archeology. The primary focus is on the Contractors' compliance with the contract documents, and the fulfillment of environmental commitments contained in the EA, EIS, FONSI and permits. Additional details of the requirements for this position are covered in the C&MM, FDM, NEPA, WEPA and PER.

3.5.2.4 Project Construction Controls

The staffing for the Project Construction Controls team will be as follows:

Position	Number	Full Time (FT)/ Part Time (PT)
Project Construction Controls Leader	1	FT
Project Construction Document Controls Leader	3	FT
Project Construction Document Controls Technician	2	FT

The staff listed below has primary responsibility for the corresponding scope of work tasks and deliverables requested by the Department.

POSITION	PRIMARY RESPONSIBILITIES
Project Construction Controls Leader	This position focuses on construction management services including change management, meeting facilitation, and general office engineering support to monitor, track, review, and report on the contractor's efforts. Reviews and monitors the status of contracts' progress. Assists Project team with quantity overrun/ underrun projections. Directs Project Document Control Leaders and Technicians as necessary and attends coordination meeting as well as meetings with contractors. Assists in the interpretation of contract documents, the analysis of contract change order requests, and contract modifications. Provides management of construction project issue documentation related to construction cost (including open issues, RFIs, project submittals, contract modifications) scheduling, quality, and construction materials. Provides timely and accurate reporting of information to the Construction Project Manager. Performs cost estimates of contract modifications within the parameters of the WisDOT Standard Specifications as well as the Construction and Materials Manual. Assists Construction Project Manager and Construction Leader with expediting decisions on time-critical change management issues to prevent delays to the project. Performs independent reviews of contract progress payments when requested by the Construction Project Manager. Communicates and coordinates closely with Construction Leader and Construction Project Manager on a daily basis.

Project Construction Document Controls Leader	This position focuses on construction management services including change management, meeting facilitation, and general office engineering support to monitor, track, review, and report on the contractor's efforts. Reviews and monitors the status of contracts' progress. Assists Project team with quantity overrun/ underrun projections. Assists in the interpretation of contract documents, the analysis of contract change order requests, and contract modifications. Provides management of construction project issue documentation related to construction cost (including open issues, RFIs, project submittals, contract modifications) scheduling, quality, and construction materials. Provides timely and accurate reporting of information to the WisDOT Project Manager. Performs cost estimates of contract modifications within the parameters of the WisDOT Standard Specifications as well as the Construction and Materials Manual. Assists with expediting decisions on time-critical change management issues to prevent delays to the project. Assists in performing independent reviews of contract progress payments when requested by the Construction Project Manager. Communicates and coordinates closely with the Project Controls Team, Construction Leader and Construction Project Manager on a daily basis.
Project Construction Document Controls Technician	This position focuses on supporting the efforts of the Project Controls team, which includes construction management services, including document management, document retention, submittal management, record keeping, meeting documentation and general office engineering support necessary to identify, process, monitor, review and report on the project construction documents. Provides management of construction project documentation (including all incoming and outgoing correspondence, submittals, emails, faxes, phone calls, meeting notes, contract modifications). Ensures all original project documents are scanned, logged, copied, and filed in a timely manner. Makes and distributes copies of all original documents to project recipients in a timely manner. Assists Project Construction Controls Leader as needed with monitoring issues that include contract modifications, scheduling, quality, construction materials, RFIs, and open issues. Provides timely and accurate reporting of information. Communicate and coordinate closely with Project Controls Team, Construction Leader, and Construction Project Manager on daily basis.

4.0 Project Phases

Study Phase

This phase of the project is used to detail the environmental scoping, evaluation and documentation necessary to select a project's preferred design alternative. As shown in the Facilities Development Manual, the study phase is used to "evaluate alternatives and identify the impacts the project has on the environment and communities". This evaluation and documentation is required for all projects, and must meet NEPA guidelines before Final Design may begin. Most notable for this phase of the project is the creation of a Draft and Final Environmental Impact Statement (EIS), which is utilized by the FHWA for review by federal, state and local agencies and made available to the public for comment on the project. For the Zoo interchange project, a supplemental Draft EIS was also prepared in order to present a new alternative developed after the Draft EIS was circulated for review, the Reduced Impact Alternative (RIA).

The Final EIS identifies the preferred alternative and also provides a summary and disposition of substantive comments received during the review period of the Draft EIS. Included in the Final EIS are any resolution of environmental issues and documentation of compliance with applicable environmental laws and related requirements.

The selected alternative for the Zoo Interchange project, the Reduced Impact Alternative, is documented in a Final EIS and is recorded by the FHWA with the final approved environmental class action document – Record of Decision (ROD). The Zoo Interchange Project has an approved ROD dated February, 2012.

Preliminary Engineering

Preliminary Engineering is included as part of the Study Phase detailed above, and is typically developed to the 30% level of design detail for the project. Preliminary Engineering activities develop and document the engineering design with various function areas including: surveys, mapping, geotechnical investigations, design, utilities, railroad, structure design, traffic engineering, construction, and maintenance, among others. In unique situations like the Zoo Interchange Project, a high level of design detail may be required to aid in determining project costs, and impacts to adjacent properties along the project corridor.

The Preliminary Phase of the Zoo interchange project provided numerous alternatives as detailed in the Draft and Final EIS including a "No-Build" alternative as well as "Build" alternatives. The Zoo interchange project looked at both a Transportation Demand Management Alternative which strived to reduce automobile trips through the project limits by increasing transit, and a Transportation System Management Alternative which would maximize freeway efficiencies so as to alleviate or postpone the need for capacity expansion.

Preliminary Engineering during the Zoo Interchange Project also is used to help screen alternatives for inclusion into Final Design. Each alternative developed is assessed based on their ability to meet the project's purpose and need.

Final Design

This phase of the project commences with the approval of the environmental document with the Record of Decision, and typically begins at the 30% level and goes to full completion with Plans, Specification, and Estimate (PS&E) packages that will be LET as construction projects over the coming years (see chart below). Final design will also include plan sets from various Ad Hoc groups including: signals, lighting, traffic, signing and striping, drainage, structures as well as roadway design, to determine impacts to adjacent properties and utilities so that Right-of-Way Plats and utility workplans can be developed.

For the Zoo Interchange Project, final design is completed by a combined staff of in-house and consultant personnel, in conjunction with Ad Hoc staff from the Department. Final design also has detailed review meetings at the 60% and 90% (or Draft PS&E) levels, where plan sets are distributed to federal, state and local agencies as well as Department staff both in the region and statewide bureaus, for review and comment. Detailed cost estimates are completed in this phase before final PS&E packages are released for letting.

Highway 100 Construction

Highway 100 was the first major construction package to be LET in 2013 and included reconstructing the roadway from I-94 at the south limits to Watertown Plank Road at the north limits. This project added another through lane in both directions along Highway 100 for added capacity, and also included: a new signalized intersection with Wisconsin Avenue, additional turn lanes at Bluemound Road and Watertown Plank Road intersections, reconstructed storm sewer systems, extensive Community Sensitive Solution (CSS) elements such as landscaping and lighting, and new pedestrian crosswalks at all intersections.

Watertown Plank Road Construction

Watertown Plank Road is currently scheduled for 2014 construction and will reconstruct and provide an additional through lane in each direction from Highway 100 to 87th Street in the City of Wauwatosa. This phase of the project will be the first major segment to reconstruct a portion of US 45 with the new Watertown Plank Road interchange – a free-flow interchange utilizing “U”-ramps and loop ramps for traffic entering and leaving the freeway. Watertown Plank Road is also the gateway to the Milwaukee Regional Medical Complex (MRMC), the only Level 1 Trauma Center within the Milwaukee metropolitan area.

This phase of the project requires closure of Watertown Plank Road during construction. Traffic Mitigation Projects previously constructed in 2012 and 2013 will be utilized during this phase to alleviate traffic congestion during the construction timeframe. A detour route of the relocated Swan Boulevard and a new local roadway, Discovery Parkway, will also be used. 2014 construction will also include the reconstruction of the Highway 100 interchange with I-94, and the UPRR structure over I-94.

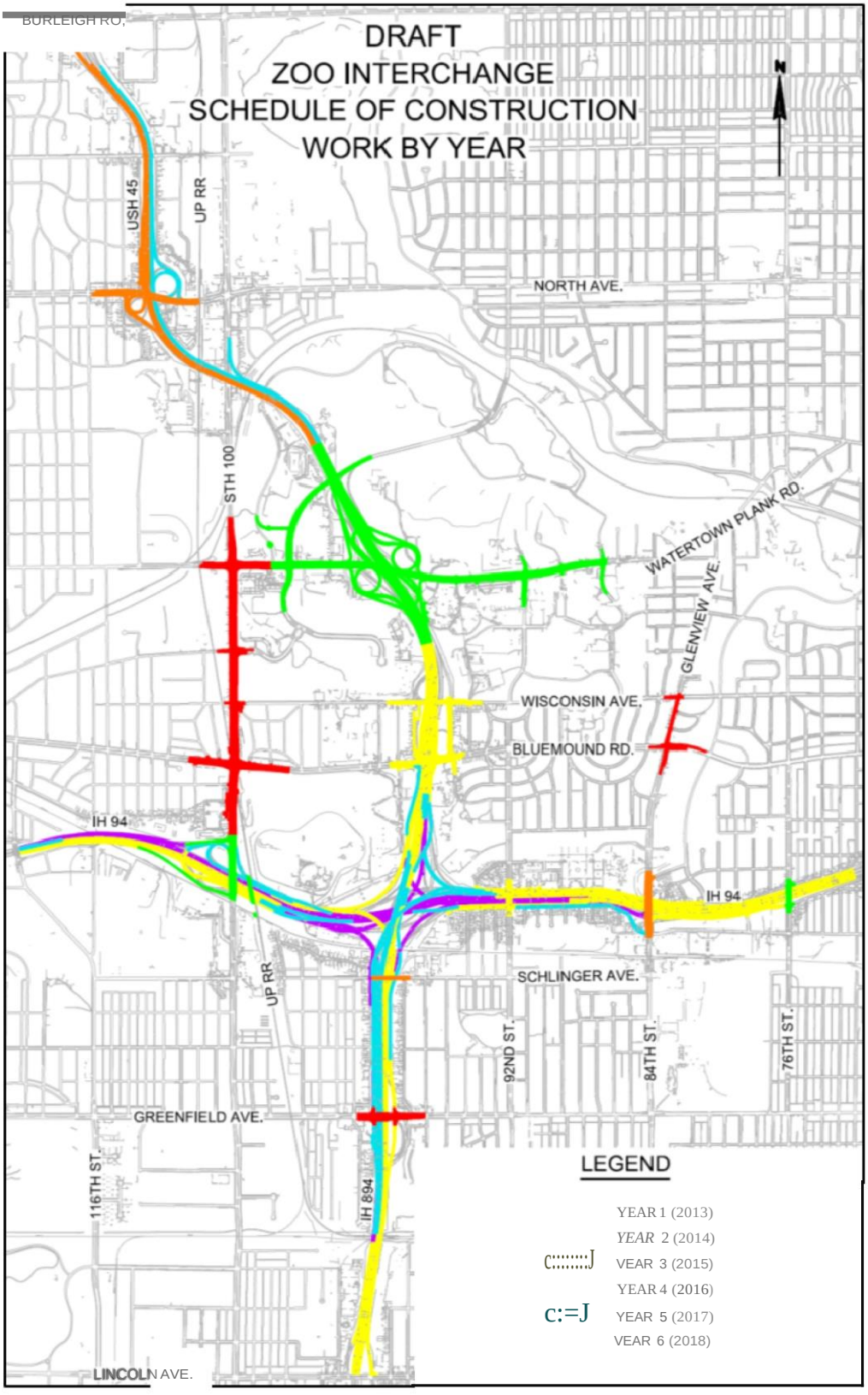
Freeway Core and Mainline Construction

With the reconstruction of Highway 100, Greenfield Avenue interchange and Glenview Avenue in 2013, and the reconstruction of Watertown Plank Road and the Highway 100 interchange in 2014, the arterials surrounding the Zoo Interchange Core will be completed and utilized as traffic mitigation routes in 2015 for when the mainline I-94 / US 45 / I-894 work commences. Work in this phase consists of reconstructing the freeway system to current standards and adding capacity along the freeways. The core Zoo Interchange work will consist of a new four-level system interchange with exit and entrance ramps relocated to the right-hand side of the freeway lanes. Additionally, the remaining service interchanges at 84th Street, Bluemound Road and North Avenue will be reconstructed during the 2015-2018 timeframe. More details on the proposeD work can be found in the approved EIS.

Table 4-1: Zoo Interchange Reconstruction Project Phases

	2011	2012	2013	2014	2015	2016	2017	2018
Study Phase	■							
Preliminary Engineering	■	■	■					
Final Engineering	■	■	■	■	■			
HWY 100 Construction			■					
Watertown Plank Road, HWY 100 Bridges, UPRR Bridge, and 76th Street Bridge Construction				■				
Freeway Core and Mainline Construction					■	■	■	■

Figure 17: Roadways by Construction Year



5.0 Procurement and Contract Management

5.1 Procurement

5.1.1 Procurement Planning

A project of this size is dependent on a procurement plan that aligns with the needs and strategies for delivering the project within a defined time period. Resource availability, organizational and budget constraints, and contracting methods require a management plan for acquiring both WisDOT in-house and consultant services. Qualification based selection and/or contracting for in-house and consultant services, and the administration of invoices and amendments are addressed under this plan. The Zoo Team design chief will approve final consultant work scopes prior to submitting to the FHWA for approval (see 23 C.F.R 172.9(c)).

Some project activities may be required prior to all information being available. The construction management team will evaluate the risk of performing this work with insufficient information. Assumptions may be incorporated into the project work activity that will need to be verified as information becomes available.

The WisDOT Facilities Development Manual Chapter 8 outlines the processes and procedures for procuring consultants, as well as identifying the roles of the personnel involved in the procurement process. The project scope document defines the project and provides important information about the project needs, strategies, technical issues or concerns, and constraints that would need to be considered during the procurement planning. The goal would be to achieve better utilization of resources to maximize efficiencies and minimize delivery costs, establish consistency in details, specifications and bid items, better communication of construction sequencing and traffic handling, and facilitate alternative delivery opportunities and to contract early and consistently.

The types of contracts for internal and external services that could be written for this project are Lump Sum (LS), Actual Costs plus a Fixed Fee, Combination of LS and Actual Cost, and Work Orders Standard contract language will be used.

5.1.2 Solicitation Planning

The process begins by submitting a Scope of Services Narrative/Notice of Interest Questionnaire Form to the WisDOT Central Office Contract Administration Unit and conducting a Cost/Benefit Analysis. The process continues by following standard WisDOT procedures for design or construction solicitation see below.

5.1.3 Solicitation

Design solicitations are done on a bi-monthly basis, the process and procedures can be reviewed and necessary forms can be retrieved from the following location: http://www.dot.wisconsin.gov/business/engrserv/index.htm

Construction solicitations for the Zoo Interchange will be done in a special bi-monthly solicitation. Current consultant contracts will start December 2012 and will cover three years.

There is a posted list of WisDOT FDM approved consultants. If applicable a conference may be scheduled to which prime consultants and DBE firms are invited. The conference will provide project information as well as encourage partnering between the prime consultants and DBE firms.

5.1.4 Source Selection

Consultants use the electronic application when submitting Notice of Interest forms (NOIs) for construction or design/related services solicitations.

Evaluations of submitted NOIs are Qualification Based Selection (QBS) and are evaluated to ensure that the firm meets the values and goals of the team.

The WisDOT Zoo Interchange team establishes and agrees on the Independent Effort Estimate as a check of the proposed effort and costs.

5.2 Contract Management

Consultant contract management is outlined in Chapter 8-25 of the WisDOT Facilities Development Manual. Chapter 8-25 includes the following sections:

- Progress Reports
- Performance Evaluations
- Consultant Contract payments
- Contract Amendments
- Conflict Resolution Process
- Process for Consultant Contract Claims and Disputes
- Audits

This process ensures that the consultant's performance meets the requirements and deliverables identified in the contract. Procedures and/or processes that have been identified in other sections of the Project Management Plan will be put into practice to monitor the consultant performance and progress, and to address changes to project scope, which may include additions or deletions of services or termination of services. Also part of the contract administration is the processing of invoices requesting payment for completed services, which will use the standard WisDOT Invoice form and follow procedures established within the SE Region and WisDOT Central Office.

The Contract Amendment Control System defines the process by which the contract may be modified. It addresses amendment procedures, task effort evaluation, scoping documentation and conflict/dispute resolution.

These procedures will help to ensure that timely contract approvals and resulting issuances of a Notice to Proceed, as well as timely amendment approval and payment request approvals.

5.2.1 DBE Monitoring

5.2.1.1 Purpose

The Zoo Interchange Project has targeted increased DBE participation in all phases of the program. The Wisconsin Department of Transportation is promoting DBE firm participation in prime and subcontract services. These efforts will enable DBE firms to enhance their service delivery and firms' capabilities.

In support of the Department's DBE participation initiative, a DBE Contracting Update newsletter is published for the DBE firm community. The newsletter provides a tally sheet of participation along with contact information for WisDOT Departmental staff support, to aid DBE firm participation.

Monitoring DBE participation and assisting firms in project participation aids in meeting WisDOT's established goals.

5.2.1.2 Responsibility

The Department's Program Labor Compliance Specialist and Program Contract and Disadvantaged Business Enterprise Bureau Chief are responsible for determining initial contract compliance and DBE firm certification and participation levels.

The Zoo Interchange Project Labor Compliance Officer is responsible for tracking labor participation levels for each contract as reported by the contractors, and reviews the information in the Civil Rights Labor Compliance and Tracking Payment System.

The Zoo Interchange Project Labor Compliance Officer compiles and reports DBE participation levels on a monthly basis.

5.2.1.3 Procedures

Each month, the Program Construction Controls Engineer and Equal Rights Officer compiles project cost data and tracking actual versus budgeted costs. As part of the cost analysis, the ERO will tabulate the costs for each project or contract by DBE firm, comparing the amounts actual versus budget, and actual percentage versus contract percentage. This information will then be prepared in a spreadsheet report format and provided to WisDOT management in the Monthly Reports presented to the ZOC and to the designated parties monitoring DBE participation.

The ERO will also monitor DBE participation as affected by contract modifications on the various construction contracts. DBE costs as a percentage of the contract modifications amount and revised contract totals will be tabulated and included in the DBE participation reports, which shall be included in the Monthly Report presented to the ZOC.

The DBE Labor Compliance Officer details the forecast participation of each DBE firm throughout the contractor's schedule. The DBE Payment Report is compared with the DBE schedule (if available) in order to conduct a comparative analysis to ensure that DBE participation is at appropriate levels.

5.3 Design Issue Resolution/ Errors and Omissions Procedures

5.3.1 Purpose

To establish a procedure to identify, investigate and document errors, omissions and deficiencies in consultant prepared construction plans and contract documents.

5.3.2 Scope

The principle users of this procedure are the ZCG members. They include the DPM, DMPM, CPM, PCL and Engineer of Record (DEC).

5.3.3 Definitions

Design Issue Notice (DIN): A notice provided to the DEC for the purpose of alerting the DEC of a design issue, to encourage the DEC to actively participate in the issue resolution and to notify the DEC of the Department's preliminary position as to whether the hours to be spent by the DEC are billable.

Errors and Omissions: Acts of negligence committed by the DEC in the performance of engineering design or creative work.

Timeframe: Depending upon the nature and urgency of the submission, the review duration ranges between 5 and 21 days. For general purposes, the approval process must be complete within 21 calendar days.

Premium Costs: The additional cost of a contract change that would not have been incurred if the work had been included in the original contract. More specifically, premium costs are dollar amounts paid to the contractor for non-value work. Delays, inefficiencies, rework or extra work as shown below, other than those caused by the contractor and/or his subcontractors or suppliers, DOT and/or his engineering representatives will be considered as non-value added work. Non-value added work could occur in three distinct situations.

- Work delays or inefficiencies. Premium costs are the total delay/inefficiency damages paid to the contractor.
- Rework. Premium costs are the dollar amounts of the original items of work that have to be removed and the costs to remove these items.
- Extra work. Premium costs are computed as the net difference between the final agreed prices paid to the contractor and the Engineer's Estimate (what the cost would have been had the extra work been included in the original bid at letting).

5.3.4 Process Steps and Responsibility

The Design Project Manager, in conjunction with the Program Construction Management Team Supervisor, the Project Construction Management Team Supervisor and the Financial Management Team Supervisor will work with the various Zoo Interchange Project members to identify potential plan errors and omissions, and define their impacts on the project. Once an error is identified and defined, the Design Project Manager will initiate the resolution process.

Step 1: Discovery of Problem and Initial Notification

The CPM and Design Project Manager shall promptly advise the DEC of any project issues for which the DEC may be liable through the use of the Design Issue Notice (DIN) which describes the design issue or question to be resolved **(refer to Attachment 5.3.4.1 – Design Issue Notice)**. When the CPM and Design Project Manager believe that project issues appear to have been caused by Errors or Omissions, they may further describe the project issues that may result in premium costs and contract time in the DIN. The DIN shall serve as official notification of E&O issues per FDM 8-25-25.

All DINs shall be sequentially numbered in each project by the Project Construction Controls Leader (PCCL). The DIN will be recorded and tracked by the PCMA in the Design Issue Notices Log **(refer to Attachment 5.3.4.2 – Design Issue Notices Log)**.

Step 2: Resolution of Design Issue and Compensation Response

As partners in the project, the Project Construction Supervisor, CPM, Design Project Supervisor, Design Project Manager, the DEC and Prime Contractor may determine the appropriate course of action to resolve project issues. With input from the DEC, the Project Construction Supervisor and Project Manager will negotiate any additional cost and time required to implement the solution with the construction contractor. The primary importance shall be the resolution of the issue to avoid construction delays, while the responsibility and financial implications shall be secondary.

Step 3: Assessment of Consultant Responsibility and Cost Impact

After receipt of an the DEC response to the DIN, the Design Project Manager and Design Project Supervisor shall review the consultant's scope of work, the professional engineering standards in effect when the contract was executed, project-specific information provided to the consultant, and any other Department instructions, to determine the consultant's responsibility for the project issues.

The Projects Construction Supervisor, Design Project Supervisor, CPM and Design Project Manager shall calculate the premium cost impact for Errors and Omissions, and assess consultant responsibility with input from the DEC.

The Projects Construction Supervisor, Design Project Supervisor, CPM and Design Project Manager shall calculate the premium cost impact for Errors and Omissions, and assess consultant responsibility with input from the DEC.

Step 4: DEC – Official E&O Notification

The Design Project Supervisor shall notify the DEC in writing of the Department's intent to correct project issues by contract modification **(refer to Attachment 5.3.4.3 – Notice of E&O Assessment Letter)**. The letter shall clearly state the Department's assessment of the project issues defining the extent of error/omission, identifying project impacts, assigning the DEC responsibility, and requesting a meeting and written response from the DEC.

Step 5: Recovery

The Project Construction Supervisor, Design Project Supervisor, CPM and Design Project Manager shall evaluate the DEC's response to the E&O Notification letter to complete the assessment of consultant responsibility. Determining this may require several discussions between the Project Construction Supervisor, DMPM, CPM, Design Project Manager and the DEC. If the Department determines that the consultant is not responsible for errors and omissions, the Design Project Manager shall promptly notify the DEC of the results, and all reasonable costs incurred by the DEC during this process may be billable as post-design services **(refer to Attachment 5.3.4.4 – DIN and E&O Procedures, and Attachment 5.3.4.5 – DIN and E&O Flowchart).**

In general, the Department should pursue the recovery of any premium costs that are the result of consultant errors and omissions. However, the extent of the Department's recovery effort should be guided by the anticipated recovery amount and the likelihood of a successful recovery effort. If, at any point in the process, the Department decides not to pursue recovery, the Design Project Manager, with aid from the Design Project Supervisor, need to document the appropriate justification.

The consultant may have valid reasons to dispute the Department's assessment of Errors and Omissions issues. The dispute shall be resolved using the responsible parties, at appropriate levels, listed in the escalation process of the Final Design Management Plan's Conflict Resolution section. When such disputes cannot be resolved at Levels 1 and 2, WisDOT can choose to table the issue, to be resolved no later than 120 working days after the issuance of notice of substantial completion of the project.

The overall frequency of the E&O Procedures is as follows:

Daily

- Requests for information submitted by the contractor to the PM, which is reviewed and addressed or forwarded to the DEC as a Design Issue Notice.
- PCL identifies a problem in the field and forwards the issue on to the DEC as a Design Issue Notice.

Weekly

- The Design Project Manager attends individual, weekly Project Issue Meetings, schedule permitting (CPM organizes).

Monthly

- The Design Project Manager organizes an E&O Review Meeting to meet individually with CPMs (Construction Project Leaders and select staff required to attend).

  Agenda

  1. Review of Design Issue Notices (DINs)
  2. Review Change Management Log
     a. Plan Change
     b. Plan Inadequacy
  3. Discuss/review any changes that have no DINs associated with them

- Quarterly E&O Review with Zoo Interchange Project IRT or Construction Management Team [organized by Design Project Managers, and includes the ZDG Chief, ZCG Chief, Project Design Supervisors, Project Construction Management Supervisor, Financial Management Supervisor and appropriate Construction Project Managers.
- Notice sent to the DEC asking for meeting to resolve (Level 1 of Process).
- Meet with the DEC (Level 1 of Process).
- Resolution (at Level 1) or elevation to Level 2 of Process (includes ZCG Construction Supervisor, ZDG Design Supervisor, Project Manager, FHWA Representative and the DEC Management).

Attachment 5.3.4.1 – Design Issue Notice

10302080-00228R

Wisconsin Dept of ransportation

DESIGN ISSUE NOTICE
No. 00053

141 NWBar.;tow
P.O. Box 798
Waukesha, Wl 53187

Phone: 414-750-3259

DATE: 9/15/09
Tr College Ave. Bridge Parapet Condui1
PROJECT: l030-20-80
CoUege Ave lnterchan e
TO: Milwaukee Transportation Partn
Attn; Larry M Pfe·
141 NW Barstow St.
P0Box798
Waukesha, WI 53187
Phonc: 262-548-8745 Fax: 262-548-5662

POTENTIAL CHANGES:
QUANTITY NO
PLAN NO

STARTED: 9/15/09
COMPLETED:
REQUIRED: 9/22/09

ISSUE DESCRIPTION:{D¢scrip on of design is.s:ue in detail below)

For your consideration is another high-priority DIN.

The College Ave. Bridge detail plan sheet #521 shows two 2-Inch Signal Conduits in the south parapet wall; however, the Traffic Signal Interconnect plan sheets #207 & 208 indicate that the signal interconnect cables cross the bridge at the north parapet wall.
Please address this apparent discrepancy.

Notice Issued By: Wisconsin Dept of Transportation **Date:** 9/15/2009

Signed: Jay R Obenberger

BASIS OF PAYMENT: (Determined by WisDOT)

☒ No additional compensation (Incidental to Design ID #

☐ Compensation (ID# and/or WO#)

Estimate of Cost $0.00

DESIGNER RESPONSE TO COMPENSATION DETERMINATION:
Please check one of two boxes, provide comments if desired, sign form and return to WisDOT Project Manager within 3 business days.

☑ I agree with Basis of Payment ☐ I disagree with Basis of Payment

Designer Company Name: MTP

Designer Representative: Larry M. Pfeil

Date: qjz_z../o-r

Title: .52· .:91&:; /!V€2!f?e.

cc: WisDOT PCMC Document Control
WisDOT Design Project 'lamger

Printed 09115/09 13:35:39

Page 1 of1

Report F_bn1_01_designnotice

DIN 0053

[redacted]

Attachment 5.3.4.2- Design Issue Notice Log

Wisconsin Dept of Transportation

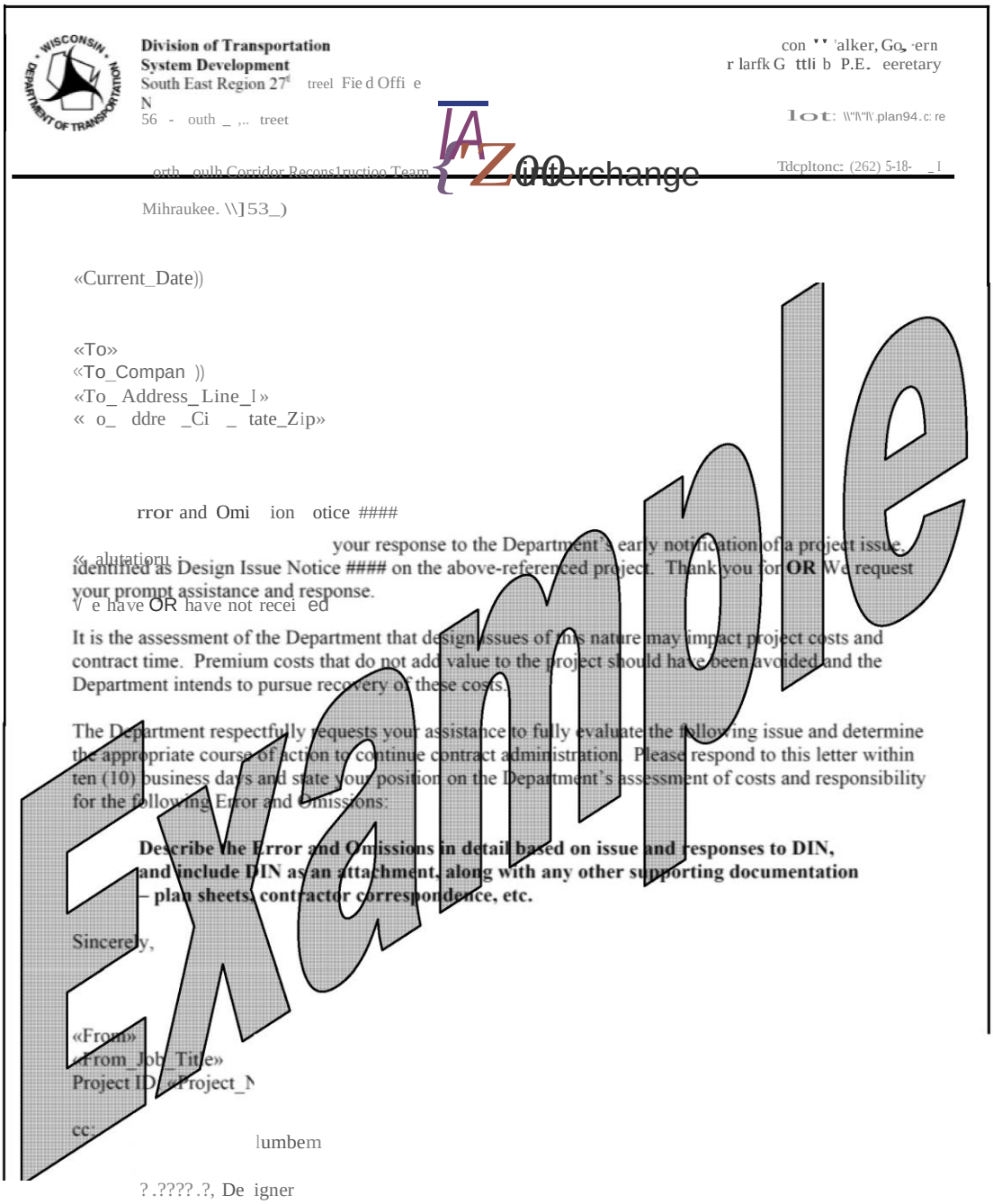
Project No.: 1030-20..&0
College Av In rchango

Design Issue Notice Log

Number	To	From	Title	Issue	Status	Date	Responded	Req'd	DIN Compensation Determination: Prelim DOT	DIN Compensation Determination: Designer Reply	DIN Compensation Determination: Final DOT	Nonc. Letter	Reference
00001	MTP	WISDOT	Sheet Pile Design Consideration-CRI	DIN000 BR0005	CLO	10/5/09		10/12/09	No	Disagree	Yes	No	
00002	MTP	WISDOT	Bars Dimension Verification (RFI#3)	0000 1!11.0001	ClO	3/17/09	3/20/09	3/24/09	No	Disagree	No	No	
00003	TP	OOT	Te"l' liB Spa ga	00	ClO	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	o	
0000.		OOT	o18	0000	a.o	at ,	1.,'1ol:l	4/.l«l9	No	Disagree	Yes	No	
00005	TP	OOT	A "ff UDL's	El.0010 0000	ClO	109	4,11 ()	3/09	No	Disagree	Yes	No	
00006	MTP	WISDOT	Temp Ltg for Continuity of Fwy Lt	0000 ELOOU	a.o		4,115()	4.'1 3/09	No	Disagree	Yes	No	
00007	MTP	WISDOT	Clarify PB's in Median at College	ELOOU DI OO	Ct.O	\I	.IJ1SI:l	4'1 3/09	No	Disagree	Yes	No	
00008	MTP	WISDOT	Power Feed for Overhead Sign	D0000 BD007		'8	.IJ!lt)	4'1 3/09	No	Disagree	Yes	No	
00009	MTP	WISDOT	Municipal Pull Box Size (RFI#23)	ELOOIJ DIN000	D	103	.IJ22,;)9	4/15/09	No	Disagree	Yes	No	
00010	MT	OOT		00	CLO	4/10/09	4/16/09	4/17/09	No	Agree	No	No	
00011	MTP	OOT			CLO	4/10/09							
00012	MT	OOT	n	OO	CLO	4/15/09	4/21/09	4/22/09	No	Disagree	Yes	No	
00013	TP	DOT	Grading Site 20th Street	DIN000 RD0003	CLO	4/15/09	4/15/09	4/22/09	No	Agree	No	No	
0001.C	MTP	VISOOT	Corps of Engineers Permit-College	DIN000 GN000	CLO	4/21/09	4/28/09	4/28/09	No	Agree	No	No	
00015	MTP	WISDOT	Rebar&Pier Bearnseats Elev B-40-815	DIN000	CLO	4/27/09	4/29/09	5/4/09	No	Disagree	No	No	
00016	MTP	WISDOT	Concrete Barrier Walls (RFI#37)	DIN000	CLO	5/5/09	5/6/09	5/12/09	No	Agree	No	No	
00017	MTP	WISDOT	CRI Concept Ramp TAA	DIN000	CLO	5/5/09	5/12/09	5/12/09	Yes	Agree	Yes	No	
00018	MTP	WISDOT	Tangent Pile Casting Dry Method	DIN000	CLO	5/7/09	5/11/09	5/14/09	No	Agree	No	No	
00019	MTP	WISDOT	Pile Conflict B-40-815	DIN000	CLO	5/7/09	5/13/09	5/14/09	Yes	Agree	Yes	No	
00020	MTP	WISDOT	Rebar Inquiries B-40-815 & B-40-811	DIN000	CLO	5/8/09	5/12/09	5/15/09	No	Disagree	Yes	No	
00021	MTP	WISDOT	B-40-811 Deck Placement	DIN000	CLO	5/11/09	5/15/09	5/18/09	No	Agree	No	No	
00022	MTP	WISDOT	Median Pier Conflict Rebar B-40-815	DIN000	CLO	5/13/09	5/15/09	5/20/09	No	Disagree	No	No	
00023	MTP	WISDOT	CIP Filr Wal Substitutn w/SH-CRI	DIN000	CLO	5115109	MQIJ9				yes	No	
00024	MTP	WISDOT	Abandoning Culvert Pipe	DIN000	CLO	5115.\'l!l	&'18()	&22.			No	No	
00025	MTP	WISDOT	College Ave Median Ltg-Temporary	DIN000 EL0024	CLO	5119.	MQ	&26			yes	No	
00026	MTP	WISDOT	Rebar Discrepancy B-40-816	DIN000	CLO	5/19/09	6/1/09	5/26/09	No	Agree	No	No	
00027	MTP	WISDOT	College Lighting-Median Edgerton	DIN000	CLO	5 109	6/24/09	5/27/09	No	Disagree	Yes	No	
00028	MTP	WISDOT	Sound Barrier Wall Beam Posts	DIN000		5lZTKI9	5/29/09	6/3/09	No	Disagree	Yes	No	
00029	MTP	WISDOT	Airport Spur Ramp TAC Plan Conflict	DIN000	Ct.O	5128.1:19	i\'8/09	6/4/09	No	Agree	No	No	
00030	MTP	WISDOT	NE infield btwn E-N&E-S Ramps@Arprt	D0000	D	5/281;)9	6121:)9	6/4/09	No	Agree	No	No	
00031	MTP	WISDOT	College Ave Park & Ride Ponds	D0000	Ct.O	a.•1	613/09	6/8/09	No	Agree	No	No	
00032	MTP	WISDOT	Bolted Conn-Sound Barrier Wall Beam	D0000	ClO	&'1	at 3/09	6/8/09	No	Disagree	Yes	No	
00033	MTP	WISDOT	DIN Omitted		Ct.O	7/8/09							
00034	MTP	WISDOT	Cross Culverts@Airport TAA&TA	D0000	O	6'5103	i\' ()	81 ()9	No	Agree	No	No	
									No	Agree	No	No	
000	TP			00		6111.1:19	6.t15l:l9	6'1 :Q9	No	Disagree	Yes	No	
0003	MTP			0000	D	6111.1:19	61MI9	6'1 :Q9	No	Agree	No	No	
00038	TP		Hydrants	0000	ClO	6115,(19	fl.'I	6'22.	No	Disagree	Yes	No	

Printed 05/18/10 10:48:04 Page 1 of 2 Report r_notice_01_din_titles

Attachment 5.3.4.3 – Notice of E&O Assessment Letter



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« alutation» ,

your response to the Department's early notification of a project issue, identified as Design Issue Notice #### on the above-referenced project. Thank you for **OR** We request your prompt assistance and response.
V e have OR have not recei ed

It is the assessment of the Department that design issues of this nature may impact project costs and contract time. Premium costs that do not add value to the project should have been avoided and the Department intends to pursue recovery of these costs.

The Department respectfully requests your assistance to fully evaluate the following issue and determine the appropriate course of action to continue contract administration. Please respond to this letter within ten (10) business days and state your position on the Department's assessment of costs and responsibility for the following Error and Omissions:

Describe the Error and Omissions in detail based on issue and responses to DIN, and include DIN as an attachment, along with any other supporting documentation – plan sheets, contractor correspondence, etc.

Sincerely,

«From»
«From_Job_Title»
Project ID: «Project_N

cc: lumbem

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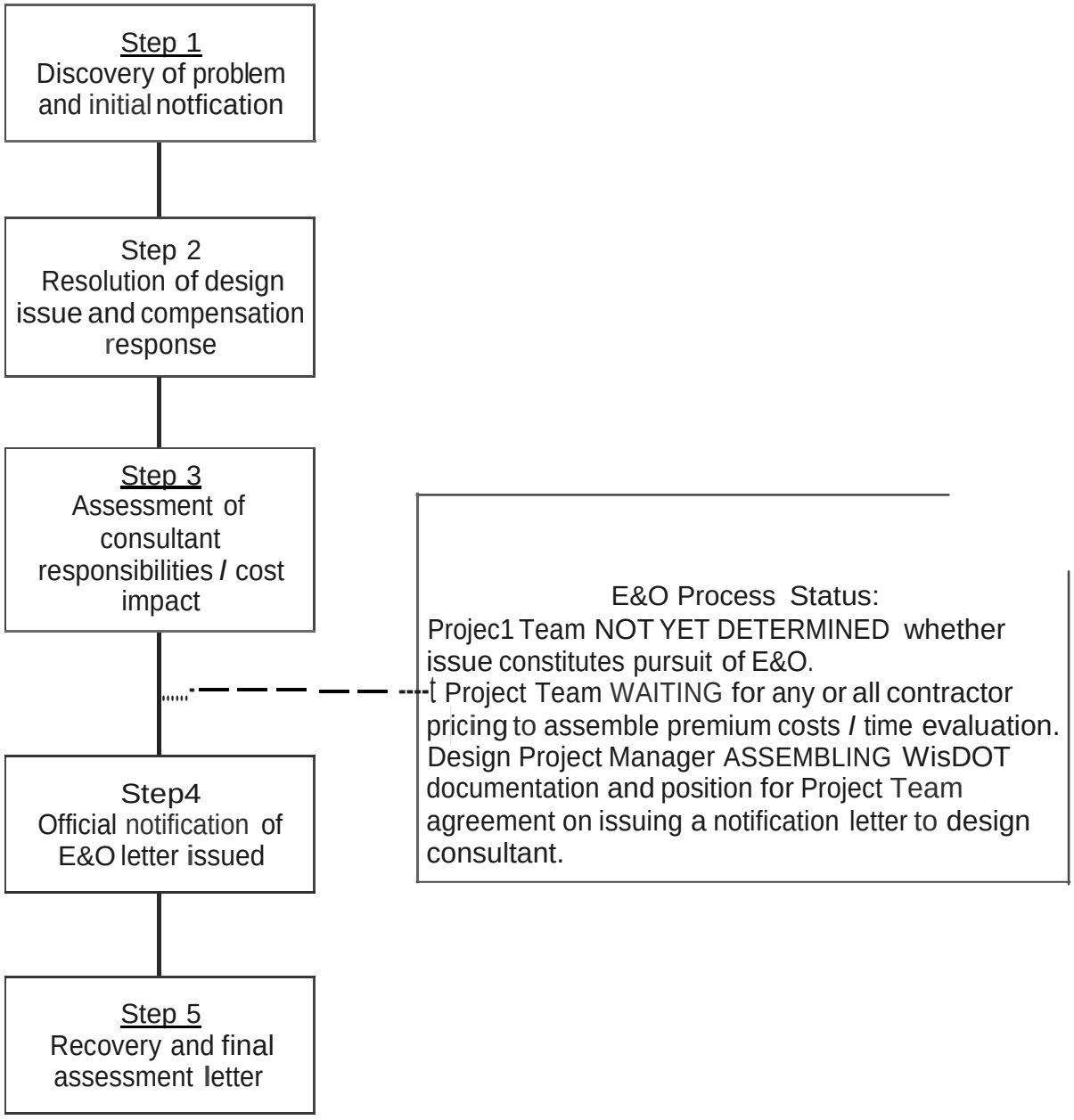
??????.? V i DOT Project anager
???????? WisDOT Program cbedul ing
????????, FH
V i DOT PC Document Control

Example

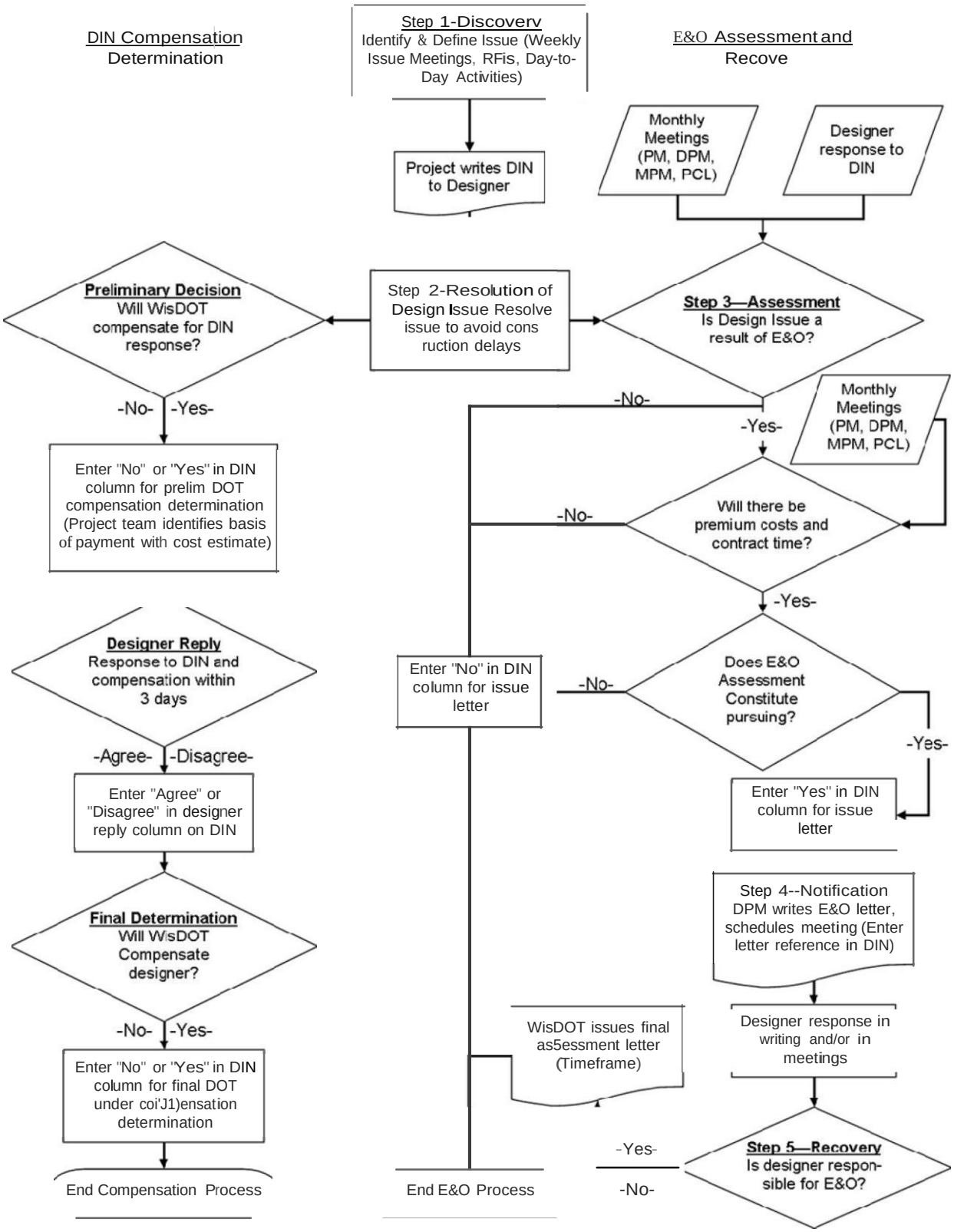
Plan Ahead, Drive Safely, Move Forward.

NORTH – SOUTH CORRIDOR RECONSTRUCTION TEAM
5675 South 27th Street, Milwaukee, Wisconsin 53221
(262) 548-872 J • Internet: www.plau94.or!!

Attachment 5.3.4.4- Design Issue Notice and Error and Omissions Procedures



Attachment 5.3.4.5- Design Issue Notice and Potential Errors and Omissions Process



6.0 Cost Estimate Budget and Schedule

6.1 Baseline Schedule with Major Milestones

The Zoo Interchange Reconstruction project is scheduled to be complete by the end of 2018. In order to meet this schedule, the Zoo Interchange Team has entered and continues to update milestones into a Primavera P6 schedule. These milestones include the areas of Design, Real Estate, Structures, Utilities, Agreements and Construction. This schedule is updated on a weekly basis to ensure accuracy and to incorporate more details as they are developed. A sample copy of the schedule can be found in **Appendix C**.

6.2 Total Program Cost Estimate

The total cost of the Zoo Interchange Reconstruction Project is budgeted at $1.717 billion, in year-of-expenditure dollars. WisDOT and FHWA conducted a cost estimate review for the Project's preferred alternative in June 2011. The cost estimate review verified the budget is appropriate considering the Project's financial risks. Financial plans are submitted on an annual basis.

For a breakout of estimated design, utilities, real estate and construction costs, see **Figure 15**. Escalation in the price of commodities such as steel and petroleum products was accounted for and researched in the estimates by using adjusted higher unit costs. Inflation is specific to the national economy as a whole and is set at 2-4-4-4 percent for state fiscal years 2015-2016-2017-2018. The joint WisDOT/Consultant Program Controls Team tracks the Zoo's cost estimate and issues monthly updates.

6.3 Cost Estimating Procedure

A cost estimating chapter is included in the SE Freeways Design Manual. The purpose of the cost estimating chapter is to:

- Provide a procedure for the development of complete cost estimates that include all anticipated project costs so that appropriate project funding can be programmed.
- Provide a procedure for the development of consistent cost estimates with guidance on the estimate format and content for all members of the Department and Consultant design staff to follow.
- Provide guidance on the required cost component output in a format that is easily used for budgeting and programming purposes as well as for input into design reports.
- Provide guidance on a flexible estimating approach that will allow the development of future estimates for portions of a project segment that may be separated into bid packages.

Cost estimates have been and will continue to be updated quarterly. One month before the quarterly cost estimates are due; task managers are notified that they should begin the cost estimating process. The design as of that date is used for the updated cost estimate. The construction cost estimate is assembled by each major construction item, and then rolled up to each construction contract. All of the construction contracts are then rolled up to obtain the project's construction cost. The construction contracts are entered onto a spreadsheet with their corresponding construction dates to calculate delivery and inflation costs. This same logic applies to the other three functional areas of budgeting and cost control (design, real estate, and utilities & railroad). Task managers may be called in to help address questions about their respective cost estimate(s).

After a quarterly cost estimate is finalized, it is filed with all applicable and relevant backup data. A cost report summary is created starting in preliminary design. The report details the cost estimate by construction contract. The quarterly cost estimate report is completed by the design consultant and is distributed to the WisDOT Zoo Interchange Team for review and comment by the WisDOT Zoo Interchange Design and Program Services supervisors. It is distributed to other WisDOT staff and senior management as needed.

6.4 Cost Estimate Review Identified Risks

In June of 2011, a team from the FHWA performed a Cost Review of the Zoo Interchange Project and identified and assigned a cost to the risks that were faced on the project at that time. The following is a list of those risks that were generated and the possible mitigation.

Risk	Description	Mitigation	Update
ATC and WE Energies Relocations.	Probable cost threat $18 million. Project delay may be incurred if the American Transmission Corridor (ATC) or WE Energies work is delayed. Cannot do the towers and conduit package until the substation is finished. All work needs to be completed by Dec 2014. There is not enough funding in FY 12/13 to complete the work therefore the design and construction will need to be phased.	Through audit agreements, start ATC substation design ASAP and modify the agreement as necessary to begin phased construction work. Possibly construct foundations prior to complete tower relocation. More will be known after the feasibility studies by ATC and WE are completed. However, it appears that any potential delays can be managed based on the information that is known to date.	
Increased excavation costs.	Probable cost threat $2 million. Excavation below subgrade is not separately accounted for in the estimate and is only included in the program development contingency.	Complete soil borings and geotechnical reports.	
Right of Way Acquisition is more costly than expected.	Probable cost threat $14.9 million due to the functional replacement requirement when relocating Milwaukee County and Wisconsin State Fair Park facilities. This includes the relocation of the DPW salt dome and the relocation of the Parks Department Greenhouses. While not currently included, there is also a slight risk of relocating the Zoo Maintenance Facility and the DPW Maintenance Facility and the risk of replacing lost parking at the County Zoo and State Fair Park with structured parking (Zoo: $10 million @ 50% prob) and (State Fair Park: $5 million @ 50%). There is also the need to replace the park and ride lots at the Watertown Plank Road Interchange.	Early coordination and understanding of potential impacts along with OGC involvement in the negotiations and work with SER staff in finding temporary or permanent park and ride location. Permanent Park and Ride lot to be located north of Watertown Plank Road and west of the relocated Swan Boulevard.	

Risk	Description	Mitigation	Update
Complete replacement of the existing UPRR tunnel under Highway 100/ Bluemound Road.	Probable cost/schedule threat $1 million/0.6 months. UPRR may argue existing structure does not meet current lateral offset standards or track to track centerline offset.	Leave tunnel as is and extend at its current width. The argument is that the design standards are not enforceable by Title 23. Need to work with the Office of Commissioner of Railroads.	
Higher real estate cost due to development.	Probable cost threat $800 thousand. UWM plan to develop Innovation Park is impacted by loop ramps at the WPR interchange.	Work with UWM on the redesign of their site including potential collaboration on stormwater infiltration basins and access and grading requirements.	
Temporary structure cost.	Probable cost threat $250 thousand. $40 million is included for temporary structures in the current estimate as an allowance.	Refine the needs for temporary structures through the development of the corridor implementation plan and preliminary design.	
In-line storage or non-standard storm water treatment requirements due to lack of pond options.	Probable cost threat $25 million if in -line or mechanical means necessary for stormwater quantity and quality requirements. Estimate currently has $42 million in construction for drainage but does not include in-line storage.	Complete comprehensive drainage study (end of July 2011). Continue partnering. Examine and improve ways of storm water management. Allow first flush to go into the treatment facility. Higher flush can go directly to the stream since it is mainly rainwater.	
Biennium funding insufficient to meet as-planned schedule.	Probable cost/schedule threat $14.4 million/14.4 months. If sufficient project funding cannot be obtained during FY 12/13, FY 14/15 and FY 16/17 as planned, then completion may be delayed until FY18/19. This delay would mean an increased inflation risk, additional administrative costs and mobilization costs and additional cost for temporary roadways and other construction.	Monitor construction costs during design and design "to" or "under" the budget. Work with OPBF during budget discussion to ensure that decision makers are aware the budget requirements and risks.	

6.5 Cost Control

6.5.1 Purpose

The intent of the cost control and management process is to provide a cost containment strategy and to provide an accurate assessment of program costs to allow for proactive and effective decision-making, thus validating that the program is completed at or below the baseline budget of $1,717,780,000. The goal is that the Zoo Team, in conjunction with FHWA guidelines, will clearly track, manage and report program costs compared to the baseline budget, provide analysis based on earned values and actual expenditures, and make recommendations to not only mitigate cost increases, but to also achieve cost savings where possible. The Program Services Team has developed a Cost Control and Reporting System able to efficiently incorporate data from other systems, such as the WisDOT Field Manager system, the Encumbrance Accounts Payable System (EAPS), the Financial Integrated Improvement Programming System (FIIPS) and others as necessary. See **Attachment 6.5.1.1 – Example Multi-Project Budgeted, Committed, and Actual Costs Report (MPR)**

Of paramount importance is facilitating consistency in data collection and reporting across all contracts, with all PCLs, and between all consultants, including the communications between the PCLs and the DECs. The Zoo Interchange Construction Group (ZCG) Cost Control tools and procedures will accomplish this consistency.

Attachment 6.5.1.1 – Example Multi-Project Budgeted, Committed, and Actual Costs Report (MPR)

Multi-Project Budgeted, Committed, and Actual Costs Report
ZOO IC

Note: ($) reflect Contracts or Payments in Excess of the Budget

Code	Description	BUDGET Original Amount	BUDGET Approved	BUDGET Projected	COMMITTED Original Amount	COMMITTED Approved	COMMITTED Projected	Actuals Paid to Date	App Budget vs Proj Budget	App Budget vs App Commit	App Budget vs Paid to Date	App Commit vs Paid to Date
DESIGN FINANCIAL PLAN GROUP												
10000053	**TSS Lab Testing Tech**						**Project Status: OPN**					**DOT Task Lead: William S Mohr**
1-I/E		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2-O/E		$350,000.00	$200,000.00	$200,000.00	$49,999.93	$49,999.93	$49,999.93	$11,240.00	$0.00	$150,000.07	$188,760.00	$38,759.93
3-Non-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5-CCO - Project Reserve		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6-CCO - General		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7-RE Litigation		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8-Program Reserve		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOT COSTED-NOT COSTED		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Totals:	$350,000.00	$200,000.00	$200,000.00	$49,999.93	$49,999.93	$49,999.93	$11,240.00	$0.00	$150,000.07	$188,760.00	$38,759.93
10000524	**SEWRPC Traffic Forecasting, JV**						**Project Status: OPN**					**DOT Task Lead: Christopher J. Hager**
1-I/E		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2-O/E		$75,000.00	$75,000.00	$75,000.00	$72,316.00	$72,316.00	$72,316.00	$0.00	$0.00	$2,684.00	$75,000.00	$72,316.00
3-Non-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5-CCO - Project Reserve		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6-CCO - General		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7-RE Litigation		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8-Program Reserve		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOT COSTED-NOT COSTED		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Totals:	$75,000.00	$75,000.00	$75,000.00	$72,316.00	$72,316.00	$72,316.00	$0.00	$0.00	$2,684.00	$75,000.00	$72,316.00
10603300	**(CLO) ZOO IC, DATA COLLECTION**						**Project Status: CLO**					
000000896-02-AECOM USA INC		$0.00	$495,067.86	$495,067.86	$413,230.10	$495,067.86	$495,067.86	$495,067.86	$0.00	$0.00	$0.00	$0.00
000001137-00-WOOLPERT INC		$0.00	$23,771.42	$23,771.42	$23,771.42	$23,771.42	$23,771.42	$23,771.42	$0.00	$0.00	$0.00	$0.00
000006868-00-GRAEF-USA INC		$0.00	$15,123.83	$15,123.83	$15,585.70	$15,123.83	$15,123.83	$15,123.83	$0.00	$0.00	$0.00	$0.00
000009864-00-KAPUR & ASSOCIA		$0.00	$1,591,588.88	$1,591,588.88	$1,609,870.78	$1,591,588.88	$1,591,588.88	$1,591,588.88	$0.00	$0.00	$0.00	$0.00
000014782-00-TRANSMART TECH		$0.00	$14,636.50	$14,636.50	$15,461.69	$14,636.50	$14,636.50	$14,636.50	$0.00	$0.00	$0.00	$0.00
000015502-00-DAAR ENGINEERIN		$0.00	$8,843.53	$8,843.53	$15,405.89	$8,843.53	$8,843.53	$8,843.53	$0.00	$0.00	$0.00	$0.00
000017278-04-UW SYSTEM BOAR		$0.00	$0.00	$0.00	$716.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
000019826-00-HDR ENGINEERINC		$0.00	$2,999.04	$2,999.04	$2,999.04	$2,999.04	$2,999.04	$2,999.04	$0.00	$0.00	$0.00	$0.00
000021016-00-CH2M HILL INC		$0.00	$4,390.96	$4,390.96	$4,395.05	$4,390.96	$4,390.96	$4,390.96	$0.00	$0.00	$0.00	$0.00
000022308-00-URS CORP		$0.00	$238,617.46	$238,617.46	$135,290.82	$238,617.46	$238,617.46	$238,617.46	$0.00	$0.00	$0.00	$0.00
1-I/E		$272.31	$1,046,537.06	$1,046,537.06	$1,046,537.06	$1,046,537.06	$1,046,537.06	$1,046,537.06	$0.00	$0.00	$0.00	$0.00
2-O/E		$3,452,072.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3-Non-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4-LET		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5-CCO - Project Reserve		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6-CCO - General		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7-RE Litigation		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

6.5.2 Responsibility

The Zoo Team assists in the development, implementation and utilization of cost management and tracking tools to achieve timely and accurate analysis of cost data. This data is used in preparation of project status reports (refer to Section 7 – Program Reporting and Tracking) to facilitate effective decision-making by WisDOT management, and accurate and timely reporting to FHWA. The Cost Control system facilitates proactive analysis of program risks. The financial plan includes funding for contingencies. These contingencies are evaluated based upon the assessment of risk for each particular contract, and adjustments recommended to appropriately address the specific level of risk assigned to each contract.

6.6 Financial Plan

WisDOT has prepared a financial plan, as required by FHWA as the Zoo Interchange Reconstruction is considered a “major project” subject to the provisions of the "Moving Ahead for Progress in the 21st Century" (MAP-21) (Pub.L. 112-141, 126 Stat. 405). The requirements for the annual financial plan are contained in section 1904(a) of SAFETEA-LU. This provision amends 23 U.S.C. 106(h), as follows:

"(h) MAJOR PROJECTS-

"(3) FINANCIAL PLAN-A financial plan shall-"(A) be based on detailed estimates of the cost to complete the project; and "(B) provide for the annual submission of updates to the Secretary that are based on reasonable assumptions, as determined by the Secretary, of future increases in the cost to complete the project...."

Significant elements of the financial plan include (1) cost estimate (current cost of the project and the remaining cost-to-complete); (2) implementation plan (schedule for completing the project); (3) financing and revenue (funding sources and amounts); (4) cash flow (annual schedule of cash needs versus available cash); and (5) cost containment strategies. Financial plans are updated annually. The Initial Financial Plan was submitted and approved on October 1, 2012.The first update to the Financial Plan was submitted and approved on October 1, 2013.

Financial plans must be reviewed and accepted by the FHWA Division Office after review and concurrence by the FHWA Office of Innovative Program Delivery at FHWA Headquarters. The financial plan committee will work closely with both FHWA offices. FHWA Division Office and Headquarters’ participation in the development of the financial plan will minimize the review time of the plan prior to FHWA acceptance. WisDOT anticipates submitting the next financial plan to FHWA in August of 2014. FHWA would be expected to accept the plan within 30 days after submittal.

Figure 18: Cost Estimate Summary

FED GROUP:	Inflated to Year-of-Expenditure
Design	$120,000,000
Real Estate	$130,000,000
Utilities/ Railroad	$135,000,000
Construction	$1,332,780,000
Total	**$1,717,780,000**

7.0 Program Reporting & Tracking (Executive & Monthly Report)

7.1 Purpose

The intent of the reporting process is to concisely summarize overall Zoo Interchange Project developments to date, highlighting major areas of concern, and associated actions required in conjunction with analysis of the schedule and budget performance. The goal is to develop timely issuance of information flow for management and policy decisions, while fostering individual ownership and accountability. Reporting focuses on exceptions and project completion forecasts to maintain proper perspective, to be concise, and to facilitate informed management and policy decisions.

The overall program, including individual projects, is addressed in the process. Key items of cost, schedule, quality assurance, safety, DBE participation, traffic management, interface and coordination, and public/media relations, are reported as appropriate.

Information is presented in narrative, tabular and graphic formats, with the goal to provide current information and status from a project perspective. Maximum use of graphics and tabular formats is implemented to enhance presentation and focus on key components of information.

7.2 Responsibilities

The Program and Policy Analyst, Advanced (PPA, Adv), on the Program Services team prepares and distributes monthly reports based on information from the Zoo Interchange Project Team members, PCLs and others selected for input. Prior to distribution, the PPA, Adv reviews the format and content of reports to verify consistency in format, quality of data and uniformity of information.

7.3 Procedures

7.3.1 Preparation Process

7.3.1.1 Data Sources

The monthly report is developed based on the existing hierarchy of data and reports, in addition to meeting records, special studies and direction provided by various Program and Project participants. Progressive, periodic input is required to maintain timely collation and distribution of reports. The technical data is compiled from the contract level upwards, incorporating information from the Field Information Tracking System that includes the following sources:

- Item Postings
- Inspector's Diary Report
- Inspector's Daily Reports (IDRs)
- Project Leaders Diary
- Materials Field Inspections – from The Materials Tracking System (MTS)

Current software used by WisDOT's project engineers to manage and monitor construction, such as FieldManager, FieldBook and FieldPad, are installed locally on the project engineering staff's computers. The project engineering staff (PCL or an office engineer) uploads the data to WisDOT's mainframe systems on at least a bi-weekly basis. Once the data is uploaded, it is available to Program staff through the Project Tracking application.

7.4 Timing

Consistency and timely distribution are the benchmarks of all reports. Establishment of a data cutoff date, typically two weeks prior to the Oversight Committee Meeting, facilitates distribution of the monthly report for the preceding month within 10 calendar days thereafter. Should other timing be required to better correlate with payment schedules or funding cycle adjustments, revisions are implemented to the production timing. The other interim reports noted above will have a much shorter turnaround time before distribution, because both content and distribution are abbreviated.

The Program Management Report is distributed monthly after review by the CMT and approval by the ZICFOC.

For projects greater than $20 million, Construction Project Cost & Schedule Reports are distributed monthly, as soon as possible after updated project schedules and cost information is available, and after review by the CPM and PCL.

7.5 Distribution

Copies of the monthly reports will be distributed to senior management, CPMs and other Zoo Interchange Project members as desired, FHWA, and stakeholders yet to be determined. Distribution is in hard copy or electronically as a PDF.

Interim reports, including the Cost & Schedule Reports, have a more limited distribution to management and controls staff, including the Supervisors and CMT, who continually evaluate the information. Electronic distribution of these reports is made routinely on projects greater than $20 million.

7.6 Content

7.6.1 Executive Summary

The WisDOT team provides an Executive Summary on a monthly basis. This includes a section focusing on overall progress, achievements, issues, concerns and actions with the intent of providing a global status synopsis of active projects in all phases. Based upon the current program status, projections are made to further enhance the overall view and enable any decisions on policy issues, time or cost to be made intelligently and quickly. Reference is made to detailed information contained in individual project reports when appropriate.

7.6.2 Monthly Report

Reports for each construction project and individual contracts are developed. Construction project data sheets are developed to include:

- Achievements, issues actions and concerns
- A schedule snapshot to graphically depict and forecast progress
- A tabulated summary to track costs and monitor budget
- A schedule summary tabulated to focus on time elapsed, controlling/critical activities, milestones and forecasts

A narrative is prepared by each Project Manager, incorporating the reporting elements and combining input from various specialists and disciplines. The content required for essential reporting elements is listed topically later in this section.

Summary tables are provided to show the status of submittals, RFIs, and contract changes on an exception rather than detailed basis.

Schedule Management and Monitoring

Ongoing analysis of the schedule(s) is encapsulated in the monthly Cost & Schedule Reports for a construction project, and the monthly Program Progress Report. Primary reporting tools include:

- Planned Progress vs. Actual Progress
- Milestone Date achievements and forecasts
- Scheduled Progress vs. Cost Progress
- Critical Path Analysis
- Schedule Issues including delays or potential exposure to milestone and final completion dates, and Action Items

The Project Cost & Schedule Reports will be prepared by the ZCG. After review by the CPM and PCL, the report will be distributed. Distribution will include the project team, the Construction Supervisor, the CMT, and additional parties as appropriate.

Construction Project Cost Monitoring and Reporting

Based on established procedures, the input of bid data and progress information from the field, the monthly cost analysis and status report tables will include:

- Actual Cost vs. Planned Cost vs. Percent Complete
- Projected Cost at Completion compared against approved Budget
- Baseline Budget vs. Current Expenditures and Commitments
- Cash Flow/Cost Projections and Trend Analysis
- Change Modification Costs vs. Contingency Budget
- Pending Change Modifications and other Contingency Costs vs. Budget
- Actual vs. Planned Professional Services Costs (Engineering and Design)
- Cost Management Issues and Action Items
- Summary of CMT findings and recommendations to the ZOC
- Utility Costs
- If over $100K, itemize unique reporting

Attachment 7.7.1- Construction Project (>$20 million) Status Report- Sample Only

zoo interchange

February 2014 | Zoo Interchange Project Monthly Report

WATERTOWN PLANK ROAD INTERC HANGE

CONSTRUCTION PROJECT DETAiL

PROJECT ID
1060-JJ-12

WisDOT Construction PMI	Kurt Flierl	Prime Contractor	Zenith Tec!h

CONSTRUCTIO UPDATE

Esmblistled Srng;e 1B traffic control an WatertO'MI Plank Rd amd USIH 45. Utility relocations oontim!le to pace stagji ng on WatertO'MI Plank Rd.. Grading/ excava00:n at frle pond i n frle SE Il:l1!irnnt a!ld storm seweirfgrading im frle NE uadra:nt canlirnue. Pedestrian Bridge nortll s!a-r lower arnd sollfh pier construction corrtimres. Conlractor is om schedu

TASKS COMPLE IED

Close end Detour Watertovm Pilarnk Road belll.een tmr10vation Dl'iive a!ld Discovery Pa:rkway

Close USH 4!5 NB exit Ra:mp arnd SB USH 45 Emlrnrnre R.amp.

Close SB USIH 45 Exi access to BB Wcrertowrn P nk Rd.

Begin emo.vals arnd grading on Wafertrntm Plank Road

Contirnue NB USH 45 embarLunent oornS truction

Begin Excalvalion, footing, a!ld se -lll.J MSE pooels

TASKS TO BE COMPLETED

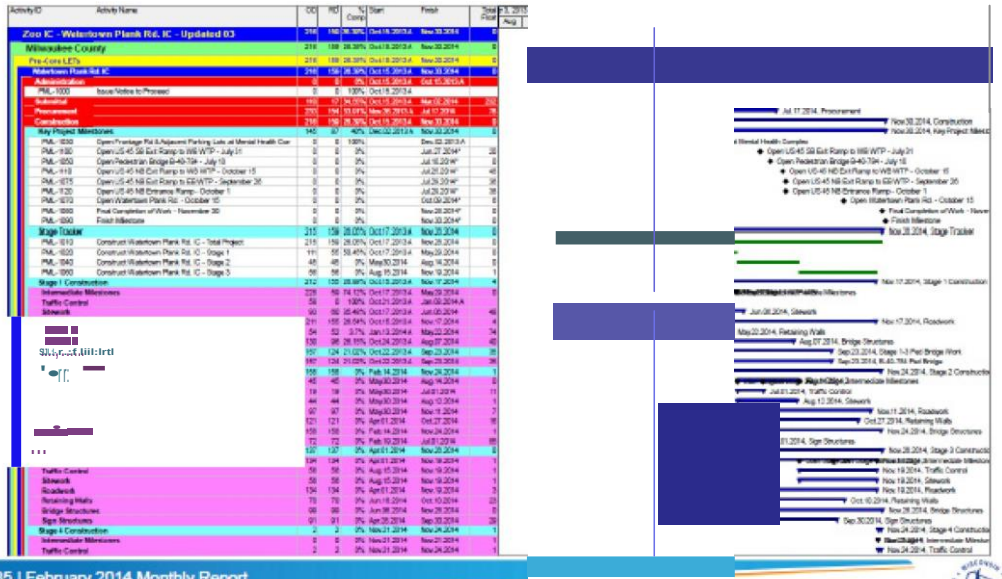
Conlirnue grading IN0'rk at Watertmr. Pia k Road

Continue NB USH 45 en ba:nlunent oomS truction

Canlirnue worik on SE wall parnels

tff *Amount = U6,796,09tl*

OONSTRUCTION SCHEDULE



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8.0 Internal and Stakeholder Communications

8.1 Weekly Leadership Meetings

The weekly leadership meetings provide a forum for the WisDOT and Forward 45 Zoo Interchange managers to discuss project progress, issues, and items needing attention. The meeting is also used to strategize on critical design elements and public outreach. Meeting summaries are used to track action items and agendas for the Issues/Risk and Oversight Committee meetings are created at this weekly meeting.

8.2 Weekly Technical Meetings (Roadway, Structures, Traffic, Financial, Utilities)

For different functional areas of the Zoo Interchange design, weekly meetings occur to ensure proper coordination and collaboration on the project. WisDOT and Forward 45 project designers, and the appropriate Central Office liaison meet weekly to discuss progress, technical topics, and resolve design issues.

8.3 Weekly Public Involvement Lead Meeting

The weekly PI Lead meeting ensures proper coordination and collaboration on the project between design, TMP and construction. WisDOT and Forward 45 project staff discuss strategy, materials and coordinate attendance at meetings.

8.4 Weekly Program Meeting

The weekly program meeting is attended by WisDOT and Forward 45 managers, task leads, and SE Region ad-hocs. The meeting serves as a touch base for the Region personnel involved with the project. Agendas, meeting summaries, and an issues tracker are used to help facilitate the meeting. The host facilitator is always a WisDOT Zoo Interchange Supervisor.

8.5 Monthly Issue/Risk Management

During the monthly Issue/Risk Management meeting, the monthly report is reviewed along with the project's top risks. Action plans and strategy are discussed to minimize risks and settle issues. This meeting is an extension of the weekly leadership meeting but with additional attendees including: the Region Director, Region Deputy Director, and the FHWA Major Project Coordinator. Agendas for the Oversight Committee meeting are confirmed at this meeting.

8.6 Project Coordination Meetings

These monthly meetings include discussion topics which require coordination with external participating stakeholder agencies.

- American Transmission Company
- City of Milwaukee
- Milwaukee County
- MMSD
- SEWRPC (approximately quarterly meetings)
- City of Wauwatosa
- WE Energies
- City of West Allis
- Others as needed

8.7 Monthly FHWA Coordination Meetings

It is important for the WisDOT Zoo Interchange team to work in close coordination with FHWA so that major project federal requirements for the Zoo Interchange Project are met. These meeting will take place either at the WisDOT office in Waukesha or at FHWA's Madison office. The meetings can include FHWA's Division Administrator (optional), and Major Project's Coordinator (required). Zoo Interchange team attendees will include the design chief, supervisors, and Forward 45 project managers.

8.8 Elected Officials

Elected officials whose constituents live close to the Zoo Interchange will be briefed on a semi-annual basis with a formal project update presentation. The goal of this meeting is to keep politicians in the loop of project happenings, and furthermore, for the Zoo Interchange Team to learn of any project issues brought forward to elected officials from their constituents.

8.9 Key Stakeholders

Community representatives who promote economic well-being, environmental responsibility, and quality of life in the project area will be briefed on a semi-annual basis. The goal of this meeting is to keep these important stakeholders in the loop with project happenings, and furthermore, for the Zoo Interchange Team to learn of any project issues brought forward to them from their colleagues or group members.

8.10 Traffic Operations Advisory Committee (TOAC) and Executive Steering Committee

The Zoo Interchange Traffic Operations Advisory Committee (TOAC) provides input and technical guidance in the development of Integrated Corridor Management (ICM) and Traffic Management Plan (TMP) strategies for the Zoo Interchange. The committee consists of representatives from SE Freeways, Bureau of Traffic Operations, TOC, FHWA, SE Region Traffic Operations, SEWRPC and the project team. The Executive Steering Committee is composed of WisDOT SE Region management level staff, which provides the final go/no go on the ICM and TMP strategies.

The TOAC explores ways to increase mobility and safety within the project area. They are responsible for choosing strategies while keeping implementation costs within the ICM and TMP budgets. The TOAC role during TMP plan development is to evaluate work zone strategies suggested by the TMP team, choose which ones to implement and pass their recommendations on to the Executive Steering Committee for final approval. The TOAC role during ICM plan development is to evaluate the effectiveness of the system suggested by the ICM team, choose what to implement and pass their recommendations on to the Executive Steering Committee for final approval.

The Executive Steering Committee decides which ICM and mitigation strategies to implement, and finalizes each selected strategies' scope, budget, and implementation agency. The Executive Steering Committee only provides oversight while the TOAC is the decision-making body on which ICM and TMP strategies to pursue and implement as part of the Zoo Interchange project.

The advisory committee's goals are to choose proven strategies that work, are practical, and benefit the public as a whole through increased safety and mobility during construction.

8.11 Bi-weekly Executive Briefing

This bi-weekly meeting is for WisDOT and Forward 45 Project Managers to provide WisDOT Regional Management a regular briefing of critical project issues and milestones. The meeting is also used to strategize on critical project elements and public outreach. Meeting summaries are used to track action items.

Zoo Program Meetings

Type	Frequency	Chair	Attendees	Comments
Pre-Construction	Once	CPM or PCL	Contractors, PCLs, PM, DEC Utilities, etc.	Re: C&MM Chapter 2, Section 2.11
Construction; Individual Projects/Contracts	Weekly	CPM/PCL	PM, PCL, Contractors	Re: Each Contract Special Provisions Contractor Coordination Section
Zoo Interchange Project Oversight Committee	Bi-Weekly	Secretary	ZOC Members (see 3.1.1. Org. Chart)	Special attendees are required; Monthly reports/progress to be dis cussed when report is available.
Change Management Team	Bi-Weekly	WisDOT Supervisors/Major Project Manager	Technical Advisor, Major Project Liaison, FHWA, Zoo Team Chief and Supervisors	PMs and special presenters are required. Meetings held Tuesday afternoons.
Cost	Bi-Weekly	Financial Management Supervisor	Cost Control Engineer, Cost Control Specialists	Update status; Identify issues and trends; Provide info for CMT
Schedule (Project Groupings > 20 Million)	Bi-Weekly	Project Manager, PCL	ZCG PMs, PCMC, CM Supervisor	Assess status of controlling/critical item progress.
Construction Status; All Projects	Monthly	ZCG Chief	FHWA, Supervisors, PMs, Cost & Schedule Staff	Use current Monthly Report as reference.
Administration	Monthly or as Needed	Program Construction Management Office Leader	Program Document Control Specialist, Project Documentation Control Technicians	Review process and efficiency; recommend procedure modifications
Partnering	At Project Inception	WisDOT Major Project Manager/Project Manager	Facilitator @ initial, ZCG Meeting, FHWA, PCLs, Contractors, etc.	Quarterly Update Sessions
Interface/Coordination	Monthly	Project Manager	Utilities Coordinator, other PMs or Rep, Contractactors or 3rd parties as needed	Occur before monthly report is developed; Establish meetings with 3rd party entities.
Zoo Interchange Program Meetings	Weekly	Supervisors	FHWA, DEC, PCLs, PMs, PCMC other parties as needed	This meeting takes place every Thursday.
Zoo Interchance Construction Management Meeting	Monthly	ZCG Chief	ZCG Supervisors, Major Project Manager	Discuss program and staffing issues. Meetings held 3rd Monday of each month.
Zoo Interchange Zoo Team Functional Team Meeting	Monthly	Zoo Chief	ZCG Members	Discuss issues and their relation to the program team. Meetings held 3rd Wednesday of each month.
Zoo Interchange Leadership Meetings	Weekly	Zoo Design and Construction Chiefs	DECs, Major Project liaison, Zoo Team Chief and Supervisors, Major Project Managers	Discuss Design and Construction issues with team leadership. Meeting held Monday mornings.
Design/Construction Plans and Specs Coordination	Bi-Weekly	Design PM	Design PMs, Construction PMs, Design/Construction Management, Key Consultant PMs	Proactively address staging, plan, and specification items in the upcoming plan sets.

Zoo Program Meetings

Type	Frequency	Chair	Attendees	Comments
Project/Project Management				
Risk & Issues	Monthly	Zoo Team, Construction, Regions, BOS, BTO, BPD, BTS BRH	Zoo Team, Construction, Region, BOS, BTO, BPD, BTS BRH	
Roadway				
Roadway Design & Drainage	Weekly	Zoo Team, Construction, BTO, BPD	Zoo Team, Construction, BTO, BPD	
Structures				
Weekly Structures Coordination	Weekly	Zoo Team, BOS, BTS	Zoo Team, BOS, BTS	
Monthly Meeting	Once a Month	Construction, Region, BOS, BTS	Construction, Region, BOS, BTS	
Traffic and TMP				
Bi-Weekly TMP	Bi-Weekly	Zoo Team, Construction, Region, BTO	Zoo Team, Construction, Region, BTO	
Monthly TOAC Meeting	Every 6-8 Weeks	Zoo Team, Construction, Region, BTO	Zoo Team, Construction, Region, BTO	
Utility Coordination Meeting	Weekly	Zoo Traffic Coordination Team	Utilities, Construction, Traffic	
Utilities				
West Allis/Wauwatosa Utility DSN	Once a Month	Zoo Team, BTS	Zoo Team, BTS	
City of Milwaukee Utility Coordination	Once a Month	Zoo Team, BTS	Zoo Team, BTS	
Milwaukee County Utility Coordination	TBD	Zoo Team, BTS	Zoo Team, BTS	
ATC/WE Energies	Monthly	Zoo Team, BTS	Zoo Team, BTS	
Bi-Weekly Comm/FTMS/STOC	Bi-Weekly	Zoo Team, BTS	Zoo Team, BTS	
Real Estate				
Monthly RE/UTL Check-In	Monthly	Zoo Team, Region, BTS	Zoo Team, Region, BTS	
Weekly RE Issues	Weekly	Zoo Team, Region	Zoo Team, Region	
Weekly Utility Issue/Risk	Weekly	Zoo Team, Region	Zoo Team, Region	
Financial				
Monthly BSHP/OPBF/SEF Mtg	Monthly	Zoo Team, Region	Zoo Team, Region	
Monthly RE/Utilities Budget	Monthly	Zoo Team, Region	Zoo Team, Region	
Federal Financial Plan Meeting	As Needed	Zoo Team, Region	Zoo Team, Region	
Program and Financial Controls	Bi-Weekly	Zoo Team	Zoo Team	
Quarterly Cost Estimate Review	Quarterly	Zoo Team	Zoo Team	
CSS				
Quarterly	Included in Structures meeting	Zoo Team, Region, BOS, BPD	Zoo Team, Region, BOS, BPD	

9.0 Project Management Controls

9.1 Risk Management Plan

The basic structure for managing risk has been carried forward from department experience on the Marquette Interchange and I-94 North-South projects. Manifestation of major risk items surfaces at a minimum in the monthly report. However, the risk management process is used on a weekly basis:

- The leadership meeting whereby project supervisors and technical services bring forth issues relating to scope, cost, and schedule. Risk issues brought forth here are discussed at the issues/risk management meeting, if deemed necessary.
- The Financial Team Meeting whereby the liaison to the project managers discusses issues raised at the leadership meeting. Availability of future funding, biennial budget constraints, and current year allocation present a number of potential risk items given strictly mandated funding levels and expectations.
- The Issue/Risk Management Team whereby risk items are brought forward, assessed, tracked, and solutions are made.
- The Change Management Meeting whereby changes to the contract and payment amounts are discussed.
- The weekly programming meeting whereby all team members receive critical path based schedule delivery schedule information detailing critical items, upcoming activities, and remaining float.
- Oversight Committee meetings, whereby department management discusses overall program risk, is held monthly and feedback is obtained by the WisDOT Secretary's Office, Division Administrators, Office Directors, and FHWA.

At each stage in this process, the Department takes proactive action in mitigating risk. Issues requiring further discussion outside of small group discussion are elevated. Usage of document control and accompanying issue management ensures that all issues are logged, tracked, and that solutions are found by a given date.

9.2 Scope Management Plan

The project team recognizes that the easiest way to manage project scope is to get the correct scope in the design and construction contracts upfront. Upfront accurate scoping will be accomplished by following a reasonable contracting schedule, having the appropriate scope/contract reviews by WisDOT and consultant external experts, and by documenting scope related communication.

Furthermore, monthly scoping meetings between the WisDOT and Forward 45 will occur to keep open dialogue regarding ongoing and potential out-of-scope work.

9.3 Scheduling Software

Schedule control rests with the Zoo Interchange Team with the assistance from the program controls team. A baseline schedule is developed with input from the Forward 45 managers, project technical leaders, the WisDOT Major Projects Supervisors, WisDOT Technical Services Supervisors, and FHWA.

The Zoo Interchange Team updates the detailed Critical Path Method schedules on a monthly basis. The schedule is based off of design activities shown in the FDM. Standard durations for activities such as “Real Estate Acquisition” are established. The schedules are then tailored to better match the specific constraints for the Zoo Interchange Reconstruction project. On a month-to-month interval, the schedulers obtain schedule adherence “buy-in” from both the project managers and the respective ad-hoc team members (real estate, utilities, environmental, etc.).

Each interchange or major roadway section (“leg”) has its own respective Primavera P6 schedule. These are integrated into an overall “program” schedule. A 3-month look-ahead schedule is currently generated as part of the design phase, and distributed on a biweekly basis. This is reviewed by project managers twice a month and by overall project team members on a monthly basis. Schedule related information in the monthly report is drawn from the Primavera P6 schedule. These 3-month look-ahead schedules will be continued throughout the preliminary and final engineering phases of the project.

9.4 Cost Tracking Software

Cost control is the responsibility of the WisDOT Zoo Interchange Team. Department and consultant project managers and technical leaders work hand-in-hand with the program controls team, WisDOT leadership and FHWA to maintain a baseline budget from which the need for IDs and biennial budget allocations are derived.

Primavera Contract Manager is the operative software tool for managing the budget. Baseline budgets and ensuing revisions are reflected within Contract Manager. Reports are generated from Contract Manager that help project managers better manage their projects. These show baseline budgets, encumbered dollars, and actual spent to date dollars. Metrics within the software allow for cost trackers to forecast “Estimate at Completion” for projects. Should extra funds be needed via amendments, Contract Manager also allows for easier management of program contingency monies.

Pending budget changes are documented by the cost tracker and are discussed as needed. Coordination occurs at a regularly-scheduled Financial Team Meeting. At this point, monies may be shifted within Contract Manager and the statewide Financial Integrated Improvement Programming System (FIIPS).

9.5 FHWA Cost and Schedule Control

See FHWA Approval Actions in Chapter 3. FHWA reviews monthly progress reports as part of their cost and schedule control procedure.

9.6 New and Innovative Contracting Strategies

The Zoo Interchange Team in coordination with FHWA remains open to innovative contracting strategies. Wisconsin law requires the team to use a design-bid-build delivery model for project lets.

9.7 Value Engineering, Roadside Safety Audits, and Constructability Reviews

WisDOT performs value engineering (VE) analyses or studies on all federal-aid funded National Highway System improvements with an estimated total project cost of $25 million dollars or more. The VE studies provide recommendations that include potential design improvements, cost savings, incorporation of new materials and construction techniques, and improvement of standards and policies.

Alfred Benesch and Company performed a VE analysis for the Zoo Interchange in December 2008. A final report with recommendations from the VE Study was completed in spring 2009. WisDOT conducted an additional VE study in June 2012 using HDR as the VE consultant. This VE study reviewed the Reduced Impact Alternative and made recommendations for specific areas identified in the Risk Workshop held in March of 2012. The final VE report was received in October 2012. VE recommendations included in the design of the Zoo Interchange project include: utilizing LED lighting, adding adaptive traffic control to numerous locations along adjacent arterial roadways, relocating Honey Creek and utilizing cut/cover for the new box culvert, and reconstructing the Union Pacific Rail Road crossings by utilizing a permanent offset alignment over IH-94 and a temporary shoo-fly over US-45.

Opus conducted a roadside safety audit in 2009, concurrently with the first VE study, and submitted a report in spring 2009. WisDOT utilized Opus again in the fall of 2011 to perform the project's second roadside safety audit; reviewing the Reduced Impact Alternative. In addition, VMS was hired to facilitate a Risk Workshop held in March 2012.

The Department has also engaged National Constructors Group (NCG) to provide input on construction estimates, schedule, construction packaging, and methods (e.g., accelerated bridge construction workshop in December 2008) as an additional form of "in-house" value engineering. NCG's input has resulted in beneficial changes to the proposed construction schedule.

The value engineering, safety audits, risk workshop and NCG's work helps control costs by providing insight into potential construction methods and packaging in the most competitive manner, and by developing a construction schedule that optimizes constructability and minimizes contractor-to-contractor interface, thereby reducing the potential for contractor claims. VE studies, risk analysis', risk workshops and utilization of experts in the construction field provide the Department with information to enable a more accurate Plans, Specifications and Estimate package for the project. In turn, this information also allows the Department to construct more realistic financial and construction staging plans.

9.8 Constructability Reviews

9.8.1 Purpose

Constructability reviews identify and recommend design changes that clarify the project information and promote improved construction efficiency for more competitive bidding, and provide schedule and safety enhancements during construction. Constructability reviews also help the design team refine the design documents to improve the construction cost efficiency of the design relative to market conditions, contractor operations, and/or risk. The objective is not a plan check or code compliance review. The procedures should not be construed as providing a warranty of documents free from defects. The additional constructability reviews are beneficial considering the limited time for plan review built into the plan development schedule.

9.8.2 Responsibility

The PCMC team is responsible for assembling and directing the review team with expertise in construction and design specialties as appropriate; distributing available design documents to the team; scheduling necessary meetings; compiling and submitting review comments and recommendations to the ZDG for consideration and implementation; and coordinating with the ZDG as directed by Zoo Team on implementation or review recommendations. The PCMC Change Management Control Specialist serves as coordinator of the team's review efforts. The DEC reviews and comments on the recommended changes and modifies the plans and Special Provisions where necessary.

The Zoo Team supports the Constructability Review, participates where their expertise is needed and verifies that the DEC revises the plans where necessary.

9.8.3 Procedures

9.8.3.1 General

1. The PCMC Change management Control Specialist consults with WisDOT to define the task objectives, review team composition and level of effort and timeframe for completion of the constructability review.
2. Constructability team members approach the task from the perspective of addressing the specific objectives as defined by WisDOT and the Zoo Team. Review team members' perspectives are to reflect those of contractors or suppliers relative to the review task objectives, (i.e., identifying contract document changes that increase contractor productivity and reduce construction costs, advance schedules, among related review task objectives.

3. The Project Managers do not act as a reviewer, because of undue familiarity with the project.

9.8.3.2 Timing

1. Constructability reviews are performed after the midpoint of the design development phase, or when there is sufficient information to comment on the contract documents. Constructability reviews are performed in advance of contract bidding and with sufficient time to permit recommendations to be incorporated prior to bidding.
2. Constructability reviews are to be completed at the 30% and 60% plan completion milestones. The timeframe may vary from several days to two weeks in duration. Reviews are to be scheduled to allow the DEC sufficient time to incorporate any necessary changes into the final documents.

9.8.3.3 Level of Effort

1. The level of effort will vary depending on the specific review task objectives.
2. An ideal team size of three (3) to ten (10) reviewers is used, depending on the scope of the review effort and objectives.

9.8.3.4 Team Members

1. The best review team members are experienced contractors, suppliers of cost-sensitive materials (i.e., steel fabricators), and/or engineers with expertise in design specialties that focus on high-cost or risk-sensitive design elements. The team includes Zoo Team DPM and CPM, the PCMC Team, and PCL personnel.

2. Disciplines or specialties represented are determined by the type of project, and reflect how the drawings are divided. Experience in foundations, structural erection, earthwork and electrical disciplines may be required, plus any specialists for areas such as security, ITS, etc.

3. It is preferable that the reviewers do not have substantial prior knowledge of the project, and can therefore question what is actually in the documents rather than what they understand is to be included.

9.8.3.5 Orientation Meeting

At the time drawings are distributed, the PCMC Change Management Control Specialist and the DEC representative will schedule an orientation meeting to brief the reviewers on design status, areas of concern and the constructability review task objectives.

9.8.3.6 Review Process

1. The review process begins with the receipt of documents and includes an orientation meeting.
2. Reviewers mark their assigned drawings and specifications and enter their comments on the **Constructability Comment Form - Attachment 9.8.3.6.1**. This form contains columns for drawing or reference number, comment and the DEC response.
3. At the completion of the review meetings, the review team leader compiles the comment/ recommendation forms and forwards these to the ZDG and the DEC, either in a group meeting and/or by submitting comments.

9.8.3.7 Debriefing Meeting

A debriefing meeting could be facilitated by the PCMC Team, the DEC and the reviewers to present the comments and recommendations, should there be issues that necessitate more engaged discussion. A debriefing meeting may be completed if further discussions are necessary.

Each reviewer will report the most significant concerns found, in a professional manner.

The PCMC Change Management Control Specialist or review coordinator prepares minutes of the meeting.

9.8.3.8 Deliverables

Copies of the comment sheets and minutes of the meeting summarizing the main concerns are transmitted to the Zoo Team by the PCMC Team within one business day of the completion of the Constructability Review Team Meeting.

9.8.3.9 Follow-Up

The DEC responds to the constructability comments and delivers copies to the Zoo Team Project Managers and the PCMC Team.

Project Managers confirm comments from DEC have been incorporated into the project plans.

Attachment 9.8.3.6.1 – Constructability Comment Form

CONSTRUCTABILITY COMMENT FORM

Project Locations:			Project No.:
Comments By:	Dept.:	Phone:	Date:

F= Fatal Flaw; Must be revised
S= Serious Problem; Needs to be addressed
IV= Note to Designer; Not serious but could result in a better product in the future

(a) Comment Code
A= Agree Completely; will revise (no written Response required
P= Agree Partially; will revise to some degree (see written response)
D= Disagree; will not revise (see written response)

(b) Response Code

Item No.	Component (P=Plans, S=Specs or E=Estimate	Sheet No. or Article No.	Sheet Type or Article Name	Review Comments	Reviewer	(a)	(b)

PROJECT MANAGEMENT CONTROLS

9.9 Real Estate

The Zoo Interchange Team and the WisDOT SE Freeways Real Estate Group have coordinated throughout the study phase and into design to quantify estimated real estate needs and elements (land area acreages, relocations, severance damages, “cost-to-cure”, and other cost elements). This coordination will continue, with Department and Forward 45 staff mutually reviewing design updates and developing acquisition prices following WisDOT cost estimating procedures comparing estimated real estate acquisition costs to actual expenditures, and monitoring these costs against the managed and updated real estate cost budget. The Bureau of Technical Services reviews and approves WisDOT appraisals and approves relocation plans and reimbursement claims. The monthly progress report includes a real estate cost estimate and an update on actual costs-to-date.

9.10 Utility Relocation and Railroad Coordination

The Zoo Interchange Team and the WisDOT SE Region/Central Office Utilities and Railroads Sections have collaborated to work directly with abutting and intersecting utility companies, including American Transmission Company (ATC), WE Energies, and other utility entities, and intersecting railroads, Union Pacific Railroad (UPRR) and Canadian Pacific Railroad (CPRR). Initial relocation estimates have been developed with utility and railroad company assistance. Department and Forward 45 staff will mutually review design updates and will continue to coordinate with appropriate utility interests and the railroads to update estimates, and ultimately document and manage actual utility relocation costs and railroad cost estimates against the current utility relocation and railroad cost budgets. The monthly progress report includes utility relocation and railroad coordination cost estimates and an update on actual costs-to-date.

9.11 Construction Contract Administration

9.11.1 REQUEST FOR INFORMATION (RFI)

9.11.1.1 Purpose

To make sure questions and comments on specific Request(s) for Information (RFI) pertaining to the plans, specifications and special provisions, asked by the contractor, are addressed. Responses to these questions are provided as a courtesy to contractors and shall not be construed to be a Request for a Change Modification according to WisDOT Standard Specifications.

9.11.1.2 Responsibilities

The Contractor notifies the CPM, PCL and Project Construction Controls Leader (PCCL) concurrently of a Request for Information, using a suitable Request for Information (RFI) form. The PCL reviews and processes the RFI and coordinates with the Project Manager. If the DEC must be retained to provide or assist with the answer, the PCCL will immediately forward any RFIs requiring designer review to the DEC through a Design Issue Notice (DIN) in accordance with Section 5.3.

The Zoo Interchange Project Team is capable of handling either electronic or hard copy submissions.

The Construction Project Manager reviews the RFI and coordinates with the Construction Supervisor and FHWA when appropriate.

The PCCL collects all pertinent information on the RFI and prepares the draft response to the RFI for the PCL's approval.

9.11.1.3 Procedures

Immediately after identifying a need for information on the plans and specifications, the contractor shall submit an RFI (**Attachment 9.11.1.3.1 – Incoming Request for Information**) to the PCL. All contractor-initiated RFI's will be sequentially numbered by the contractor. The RFI will be recorded and tracked by the Project Construction Management Administrator in the Contract Manager Request for Information Log **Attachment 9.11.1.3.2 – Request for Information Log**.

Joint meetings may be held to review and respond to RFIs.

Responses to RFIs by the Zoo Interchange Project Team do not relieve the contractors from their responsibility to construct the projects according to the plans and specifications, and shall not be construed as a change in the scope of work. All RFI responses shall include the following:

"This RFI response is intended for clarification only and the department does not anticipate any cost of schedule impacts to your contract. If this is not the case, please forward your official notification in accordance with Section 104.3 of the WisDOT Standard Specifications."

The words "cost" and or "schedule" may be removed if the response does indeed imply a change to these items. However, should any change to the contract be required due to an RFI response, a separate Work Authorization Form (WAF) will be sent to direct this change per Section 9.15.2. **Attachment 9.11.1.3.3 – Request for Information Response to Contractor**.

Reference the attached RFI flow chart process (**Attachment 9.11.1.3.4 – Request for Information Process**) for detailed information on the various steps in the process.

Attachment 9.11.1.3.1- Incoming Request for Information

Hoffman Construction Company

REQUEST FOR INFORMATION
No. HCC-000032

123 CTH A
Black River Falls, WI 54615

Phone: (715)284-2512
Fax: (414)766-9515

DATE: 4/20/09

TITLE: CB-DMS-40-010 Power Feed Discrepancy

STARTED: 4/20/09

PROJECT: 1030-20-75/77/80
NS Freeway – STH 119, Grange, College

COMPLETED:

REQUIRED: 4/27/09

TO: **Kerry Jones, P.E.**
WisDOT
1001 W. St. Paul Ave.
Milwaukee, WI 53233

REQUEST:

Habermehl Electric Questions:

References: FTMS Plans, Page 98
Project Specifications, Page 25 of 321

Upon review of the Plans and Specifications I have discovered a discrepancy that I believe requires the review of the Engineer. Plan page 98 calls for CB-DMS-40-010 to be powered from HL-40-CS, a lighting Controller Cabinet. This cabinet provides 240/480 volt power, but the CB requires 120 volts of power. I can find no instructions in the plans which address this power supply discrepancy. There is a note with the lighting cabinet that reads "In lighting distribution cabinet HL-40-CS connect power conductors for DMS-40-0010 and RM-40-108 to separate 120/240V circuits." This does not make any sense as the service is a 480V service and there would be no need for a special ITS cabinet base and 480V to 120V step down transformer at RM-40-108 if there was already 120 volt power coming from HL-40-CS.

Based on this information I have offer the following comments/question(s):

1. What are the voltage requirements for the DMS-40-010 sign?
2. If the voltage requirements are different than the 240/480 provided by HL-40-CS, then where is the power to be provided from?
3. While answers to the first two questions are investigated and developed, I propose the following temporary solution to meet the interim completion date of 21 May, 2009 for this work. Habermehl Electric will take the power from the existing DMS cabinet when it is demoed and run it from EXPB452/2 (where it currently passes through) to EXPB452-3 and then to the pole mounted DMS cabinet on the sign bridge. This will temporarily power the CB and DMS Sign Bridge and will be complete as soon as the State Provided CB is provided and installed. The power source will be left in place from across the Interstate for the time being. This will allow construction to progress naturally and allow HL-40-CS to be installed to power RM-40-108 which can then permanently power DMS-40-010 with the plan identified #10 AWG Lighting Wires.

If this temporary solution is accepted and allowed to satisfy the Interim Completion Requirements for the DMS sign, then there is no cost to temporarily power the DMS sign. The contract will be adjusted accordingly to account for the different changes to bid items to permanently power the DMS sign from RM-40-108 and not HL-40-CS.

Requested By: Hoffman Construction Company **Date:** 4/20/09

Signed: _____
Shawn Hoffman

ANSWER:

Answered By: _____ t.: _____

Signed: _____
Kerry Jones, P.E.

Cc: WisDOT PCMC Document Control
WisDOT Design Project Manager

Printed 5/29/2009 8:58:49 AM P e1of1 Report F_bn1_01_designnotice

Attachment 9.11.1.3.2- Request for Information Log

Wisconsin Dept of Transportation — **College Ave Interchange**

Request for Information Log

Job No: 1030-20-80
Proj ct No: 1030 20-80

Type	To	From	Number	Issue	Title	Potential Impacts: Status	Schedule	Design	Cost	Dated	Responded	Req'd
RFI	WISDOT	HOFFMAN	00001		RFI #001 Field Splice #2 Relocation	CLO				2/27/2009	3/9/2009	3/6/2009
From PDM bridge questioning the location of field splice #2 be moved 1'-6" to the east. Reference structure B-40-815 and B-40-817 Please review and approve PDMs request to move field splice 2 over 1'-6" to the east. By doing so, PDM would like to eliminate the shop splice at the top and bottom flange at the girder at the East abutment, making the bottom flange 1" thick. Please see attached. This request is at no additional cost to the state or the contractor.						The proposed relocation of FS2, moving it 1'6" to the east, and eliminating the shop splice to the top and bottom flanges on the girders at the east abutment will be acceptable. In addition, increasing the bottom flange thickness from the plan 3/4" to the proposed 1" is acceptable, however, as a result of the increased thickness, it will be the contractor's responsibility to adjust the east abutment beam seat elevations accordingly. This will be done at no additional costs to the department.						
RFI	WISDOT	HOFFMAN	00002		RFI #002 CSL Tube Material	CLO				3/6/2009	3/10/2009	3/13/200
Can the Cross Sonic Logging (CSL) tubes for the tangent piles be made with foreighn material? The foreign material would still meet the ASTM specification as listed in the project documents.						Substitution of a foreign steel product that will be permanently incorporated into the work will not be allowed since the value of the product is greater than one-tenth of one percent of the contract value. This is in accordance with the "Buy America" Federal-Aid Provision as part of this project contract documents. This RFI response is intended for clarification only and the Department does not anticipate any cost or schedule impacts to your contract. If this is not the case, please forward your official notification in accordance with Section 104 of the WisDOT Standard Specifications.						
RFI	WISDOT	HOFFMAN	00003		RFI #003 Verify Rebar Dim's (DIN#2)	CLO				3/16/2009		4/1/200
There are some discrepencies in rebar lengths for the following bars. Please verify that these are the correct lengths: SEE ATTACHED						SEE ATTACHED RFI RESPONSE						
RFI	WISDOT	HOFFMAN	00004		RFI #004 Fence Post Cap Proposal	CLO				3/19/2009	3/19/2009	3/26/200
The post caps called out in the proposal for this project are 3 1/2" x 3 1/2" pyramidal cap. No more information was given. At the Marquette Interchange the 16th street bridge fencing is similar to this project, and it has pressed steel caps for the post caps. A picture is attached. Is a similar type of cap acceptable for this project?						This cap as shown in the attached picture is acceptable for the proposed work. The cap is a McNichols square post end cap. The product can be found at this website: http://www.mcnichols.com/products/requestquote/handrailcomponents/squar						
RFI	WISDOT	HOFFMAN	00005		RFI #005 Box Culvert Wall Thickness	OPN				3/23/2009		3/30/200
Edward Kraemer And Sons RFI 5 Platt Construction, RFI 1 stated that they would like to increase the wall thickness of the box culverts to the following: C-40-55 from 11-inches to 12-inches C-40-57 from 9-1/2 inches to 10-inches This change is requested to better suite their forming system. Will this change be acceptable? Dan Urbanek Edward Kraemer And Sons March 23, 2009												
RFI	WISDOT	HOFFMAN	00006		RFI #006 Elimination of Test Panel	OPN				3/25/2009		4/1/2009
Edward Kraemer And Sons RFI #006 The 27th Street project eliminated the Tangent Pile Test Panel for the project. Will the department waive the Test Panel on this project as well, since the same drilling contractor is performing the work on both projects? Dan Urbanek Edward Kraemer And Sons March 25, 2009												
RFI	WISDOT	HOFFMAN	00007		RFI #007 B-40-815 Pier Rebar Detail	OPN				3/26/2009		4/2/2009
Edward Kraemer And Sons RFI #007 B-40-815 (Airport Spur) bridge has pier rebar details that differ greatly from those of the College Ave and Grand Ave bridges. The detail at B-40-815 requires full height dowels from footing into the cap without any splices. Is the department willing to re-detail the rebar in these piers to be consistant with the other bridges? Or can the contractor add a splice in the pier in order to pre-tie the pier section ahead of time. Without the splices in the piers, the full height rebar cage would need to be tied and supported prior to pouring the footing. This presents a safety issue with full height #11 rebar in the middle of the freeway. Dan Urbanek Edward Kraemer And Sons March 26, 2009												
RFI	WISDOT	HOFFMAN	00008		RFI #008 This Number was Skipped	CLO				9/28/2009		10/5/200

Page: 1 of 12 — Report R_REQUEST_01

Attachment 9.11.1.3.3- Request for Information Response to Contractor

Wisconsin Constructors LLC

REQUEST FOR INFORMATION

o. 00 Rl

DATE: 9/10/2012
TITLE: Tree Substitution
PROJECT: 1030-20-78
STH 119 ARPT SPUR ML

STARTED: 9/10/2012
COMPLETED: 9/17/2012
REQUIRED: 9/17/2012

TO: Attn: Stephanie A Skowronski
Wisconsin Dept of Transportation
141 NW Barstow Street
P.O. Box 798
Waukesha, WI 53187
Phone: 262-521-5457

REQUEST:

On 9/5/2012 Badger was informed that the American Yellowwood and the Black Gum were not going to meet the desired specification size by the time the planting season would end. The Yellowwood is a spring dig item only, so now it is impossible to receive them. We only found one nursery that carried the Black Gum, because it doesn't grow well in our region. For these reasons we are hoping to find substitutes. For the American Yellowwood, we would like to use the State Street Myiabe Maple or Triumph Elm. For the Black Gum, we would like to substitute the Fall Fiesta Sugar Maple, or Norwegian Sunset Maple.

Requested By: Wisconsin Constructors LLC **Date:** 9/10/2012

Signed: Nic Mianecki

ANSWER:

The contractor may substitute the Yellowwood with the Triumph Elm.

The Fall Fiesta Maple may be substituted for the Black Gum.

Please note that there is a reduction in two Fall Fiesta Maple/Black Gum due to WAF 0041 (Thrie Beam Transitions and MGS Guardrail Terminal EAT to replace the six crash cushions permanent).

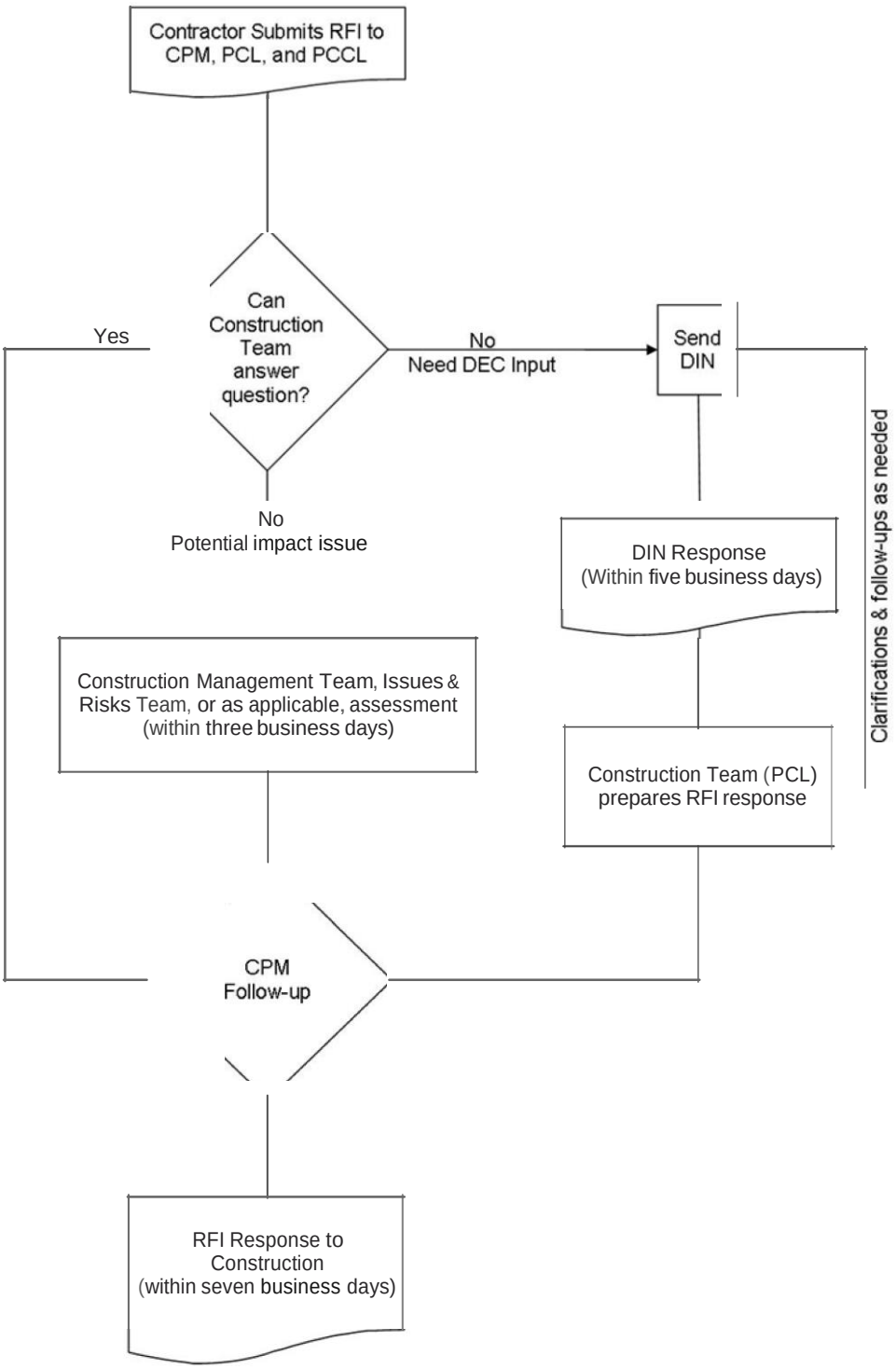
This RFI response is intended for clarification only and the Department does not anticipate any schedule impacts to your contract. If this is not the case, please forward your official notification in accordance with Section 104.3 of the WisDOT Standard Specifications.

Answered By: Wisconsin Dept of Transportation **Date:** 9/17/2012

Signed: Stephanie A Skowronski

rm f_rfi_05a

Attachment 9.11.1.3.4- Request for Information Process Flow Chart



9.11.2 Real- Time Claims Management

9.11.2.1 Purpose

The Zoo Interchange Project Team "Real-Time" Claims Management Process focuses on the prevention, management, and mitigation of claims. The process is characterized by prompt decision-making to resolve issues at the contract modification stage before they move to the claims process. The process also provides contemporaneous analysis of issues so that, in the event they cannot be resolved through schedule mitigation or the change process, the Zoo Interchange Project Team is prepared to expedite the claims process or initiate the DRB process, as an alternative to standard dispute resolution procedures.

9.11.2.2 Procedures

The Zoo Interchange Project Team's procedures to minimize and mitigate the impacts of claims during the construction phase are grouped into four basic categories as follows: (1) avoidance, (2) mitigation, (3) evaluation, and (4) resolution. Claims avoidance is accomplished through the following:

- Reviewing contract documents for ambiguities and constructability issues.
- Participating in the ongoing partnering process.
- Reviewing baseline schedules and schedule updates for potential critical work delays and coordination issues, and recommending mitigation strategies.
- Establishing and maintaining issue files for claims review and resolution.
- Detailed recordkeeping, including daily reports, inspection reports, meeting minutes, and photographs.
- Monitoring and management of requests for information and requests for contract change orders.
- Establishing Claims Review Teams to analyze issues that cannot be resolved through a contract change order or that are submitted as claims.

Timely reviews verify that the Zoo Interchange Project Team identifies potential claim issues as early as possible, so that it has the best possible opportunity for mitigation. CPMs conduct internal project management issue meetings and meet with contractors as necessary to understand their positions. Zoo Interchange Project Team creates a strong working relationship with contractors by having its PMs attend project management issues meetings and expecting the same from contractor's project superintendents. The Zoo Interchange Project Team addresses claim notices timely and works with contractors to develop mitigation alternatives. The PM solicits advice from the DRB, in its advisory role, if necessary. Efforts focus on selecting the most cost-effective mitigation alternatives for WisDOT and the contractors.

When project personnel identify a potential claim issue, the PM decides whether it is necessary to have the Claims Review Team evaluate the issue formally, or whether the issue should simply be monitored. In either case, documentation and controls personnel compile documents related to the potential claim into issue files, so that the Zoo Interchange Project Team is prepared in the event the issue becomes a claim.

When a contractor submits formal notice of a claim, the PM convenes the Claims Review Team immediately. The PM and Claims Review Team evaluate claim submittals from the contractor, and the PM decides whether the contractor is entitled to additional time or money, consulting with the CMT when required. The evaluation process will result in a timely decision on the claim from the PM.

The steps for resolving claims at the project level are as follows:

Step 1. PM receives notice of a claim from a contractor. Contractor has 14 calendar days to submit claim.

Step 2. Initial Review Phase: The Zoo Interchange Project Team has 28 days to review materials and request additional information. The Claims Review Team reviews contractor claim submittal, compiles issue files, performs cost and schedule analysis, and develops a concise recommendation report for the PM's decision.

Step 3. Decision Phase: Notify the contractor in writing that it has begun the decision phase. Once review period ends, PM has 28 calendar days to issue a written decision to contractor.

Step 4. Appeal Phase: If contractor accepts PM's decision, claim is resolved. A contract modification is issued if compensation or time extensions are included in the decision. If contractor does not accept PM's decision, they must appeal to the DRB within 28 calendar days. On projects without a DRB, the Standard Specifications Claims Process shall be followed.

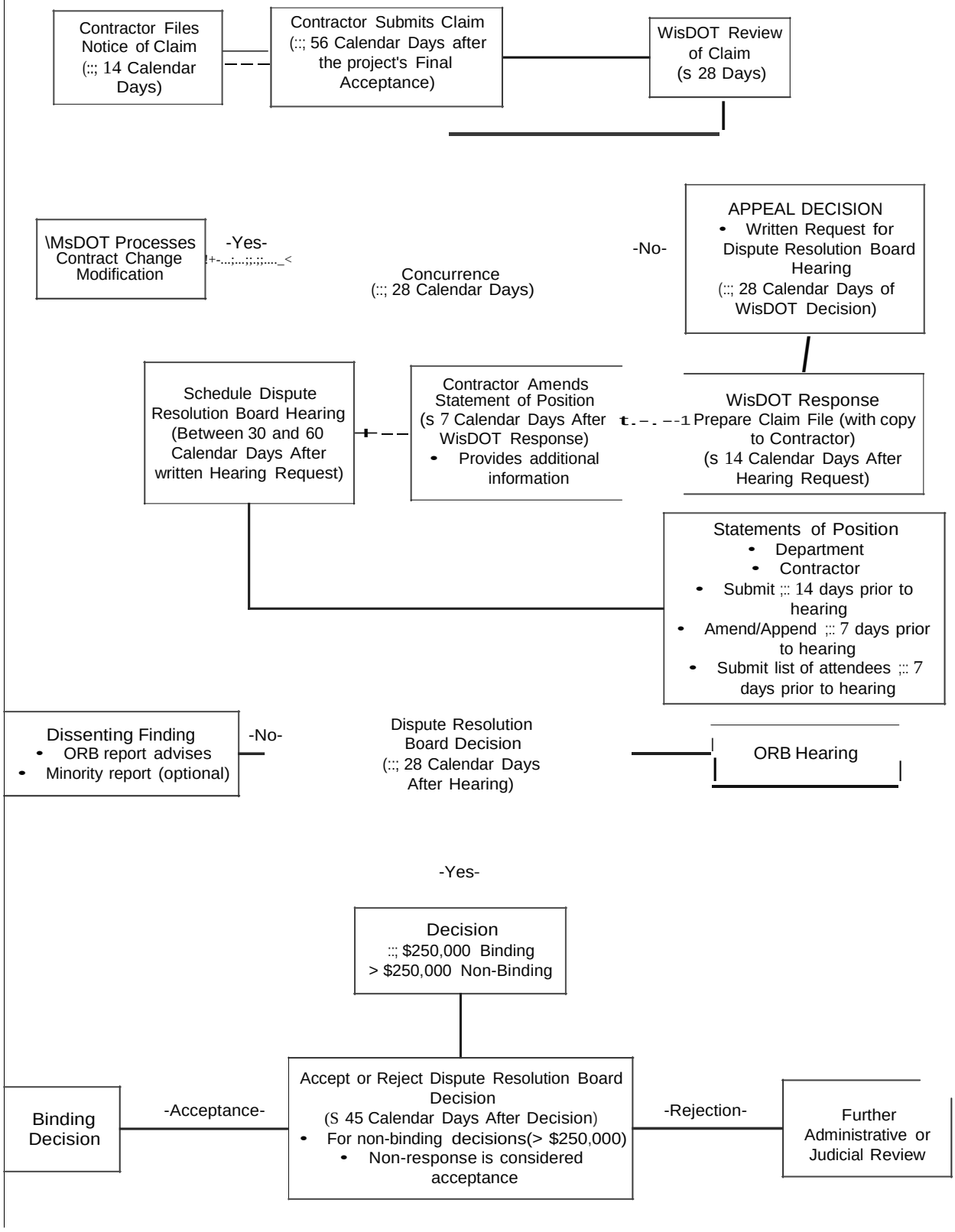
The PM's written decision includes the following:

1. A concise description of the claim.
2. The contractual basis for the decision.
3. Other facts in support of the decision.
4. Circumstances of the claim and reasons for the decision.
5. Time extensions or relief from liquidated damages that are part of the decision.
6. Compensation that is a part of the decision.

If the claim is not resolved at the PM level, then the DRB process begins. **Attachment 9.11.2.2.1 –Claims Management Process**, provides a flowchart showing the steps of the real-time claims management process and the progression to the DRB process.

The above Real-Time Claims Management Process is a guide and not a specification. Refer to the WisDOT Standard Specifications 105.13, Claims Process for Unresolved Changes and Special Provisions for the particular claims procedures for each project, which is the governing document.

Attachment 9.11.2.2.1 – Claims Management Process



9.11.3 Partnering

9.11.3.1 Purpose

The purpose of Partnering is to bring all the Zoo Interchange Project stakeholders together to get to know each other, and develop a team approach to the program that is founded on open communications, trust, and fairness. Partnering allows the program to benefit from the combination of experience and expertise of each of the team members. It also provides an opportunity for the stakeholders to agree on a way of approaching the challenges associated with the many tasks required to make the program successful, and to gain buy-in with the processes and procedures of the program.

On the Zoo Interchange Projects, formal partnering will be required when an individual construction project is greater than $40 million. For projects less than this amount, it is expected that the stakeholders will communicate appropriately on items with significant risks or interfaces.

9.11.3.2 Responsibility

Contractors participate in the Partnering process by actively supporting the process and validating that each level, down to especially the foreman and below, understands their role.

The Contractor and Construction Team agree on a facilitator. The facilitator participates by actively supporting the partnering process throughout the life of the construction project.

The Program Construction Management Supervisor participates in the process and recommends activities to strengthen the process.

CPMs and PCLs participate in the process and make sure that each inspector is an active supporter.

The DEC of record participates in the Partnering process and validates that each staff member and design subcontractor understands their role and the importance of timely and accurate responses to RFIs and submittal reviews.

FHWA participates in the Partnering process to ensure that all stakeholders understand FHWA's role in the project.

Utilities, subcontractors, adjoining contractors, suppliers, regulatory agencies, State Patrol, Sheriff's Department, County Maintenance, Cities, Towns and key stakeholders to participate in the Partnering process, and must understand their role in keeping the project on schedule and under budget.

9.11.3.3 Procedures

Details of the actual partnering process vary with the facilitator, but should focus on these four stages of partnering:

1. Controlled – to reduce conflict
2. Cooperative – to develop trust
3. Collaborative – to build a team
4. Creative – to maximize opportunities

The Partnering Kick-Off session should be held at the commencement of the project, preferably within 30 days of Notice to Proceed. The residual partnering activities will be determined at this time.

9.11.3.4 Potential Benefits

- Reduce risk of claims and litigation
- Improve working relationships
- Reduce contract modifications and paperwork
- Improve jobsite safety
- Win/win solutions to problems
- Increase flexibility
- Help contain costs
- Complete Program on or ahead of schedule
- Resolve problems quickly
- Maintain quality
- Reduce stress

9.11.4 Dispute Resolution Board

9.11.4.1 Purpose

On individual construction projects greater than $50 million, a Dispute Resolution Board (DRB) is used to resolve claims that cannot be resolved through the Real-Time Claims Management Process in a manner that complies with the contract, is impartial, and still expedites the standard claims process. The DRB resolves claims by issuing recommendations, which may be binding or non-binding, depending on the claim amount.

9.11.4.2 Responsibilities

The DRB reviews claims and issues findings and recommendations when hearings are initiated. The DRB also acts as an advisory panel upon request.

The CPM organizes project personnel into a Claims Review Team (See 9.11.2) for fulfillment of the department's role in the DRB hearings.

The CMT and ZOC may advise the Project Manager on the department's position on claims.

The Secretary of the Department of Transportation reviews all final DRB decisions.

9.11.4.3 Procedures

The Zoo Interchange Project is using a modified approach to the WisDOT Standard Specification for the resolution of claims. This approach reduces the number of administrative steps in the appeal process and interjects the use of the DRB sooner to expedite the resolution of claims. The DRB is selected promptly after contract execution and is available for any contract claim escalation. The department and the contractor share the costs of the DRB equally.

A. DRB Selection

- DRB is comprised of three members.
  - One is selected by the contractor, approved by the department.
  - One is selected by the department, approved by the contractor.
  - One is selected by the other two members. This third member is the chairperson. The contractor and the department may mutually place restrictions on the chair selection.
- All enter into a three-party agreement.
- Costs and expenses are shared equally by the contractor and department.

B. The steps of the DRB process are detailed as follows:

Step 1. If a contractor does not accept a CPM's decision, it must request a DRB hearing within 28 calendar days. The department may also request the initiation of the DRB for an unresolved contractor dispute.

Step 2. The Department must respond with a claim file, issued to the contractor within 14 calendar days.

The claim file may include all documents and evidence previously submitted during the department initial review and decision phases and any additional contemporaneous information. No additional analysis is permitted. The file includes:

- Contractor's notices and statements
- Engineer's written statements
- Engineer's decisions
- Supplemental information from the contractor, submitted during the department claim review
- Project photos
- Meeting minutes, correspondence, and the other contemporaneous documents related to the claim
- Complete set of plans and specifications
- Applicable shop drawings and submittals
- The department's decision
- Contractor's request for a DRB hearing

Step 3. The contractor has 7 calendar days from the department response to provide additional information and return the claim file to the department.

Step 4. The Department provides the completed claim filed to the DRB.

Step 5. Schedule Hearing. The DRB hearings are conducted not less than 30 calendar days and not more than 60 calendar days from receipt of written request for a DRB hearing.

Step 6. Pre-Hearing Submissions. Department and Contractor submit position statements to DRB and other party at least 14 calendar days prior to the Hearing. Each statement details the nature of the claim, its factual and legal basis, and remedies sought. The department's response also includes its basis for defense and any counterclaims.

Amendments and appendages may be submitted up to 7 calendar days prior to the Hearing.

Step 7. Attendees. Each party must submit to the DRB members and the other party a list of the persons who will attend the Hearing.

Step 8. Conduct Hearing.

- The contractor and the department are represented.
- The DRB will establish which party will present first.
- The Department and the contractor will be allowed successive rebuttals until all aspects are fully covered.
- The DRB may request further clarification and data and ask questions.
- Cross examination is not allowed.
- Presentations shall relate to issues of entitlement, not quantum.
- Attorneys and/or legal counsel may not participate at the hearing.
- The hearing may be recorded by a court reporter. However, the record prepared by the DRB is the official hearing record.

For claims by the Subcontractor, the Prime Contractor assists in presenting any claim by a subcontractor. The Contractor provides a representative who is knowledgeable in the facts of any subcontractor claim.

Step 9. Findings. The DRB issues a decision within 28 calendar days of the Hearings.

- All DRB deliberations are private and confidential.
- All findings and recommendations are based on the terms of the contract documents, principles of law, statutes and regulations, facts and circumstances of the claim, and information from the parties to the claim.
- Final findings and recommendations are due within 28 days of the date of the hearing.
- Any decision with compensation of $250,000 or less is binding on the parties to the extent permitted by Wisconsin law.
- If the DRB is unable to reach unanimity in its findings and recommendations, the DRB will so advise the parties in its report. A dissenting member of the DRB may file a minority report with the final findings and recommendations.

Step 10. For decisions exceeding $250,000, the department and contractor must accept or reject, in writing, the DRB decision within 45 calendar days of the DRB's decision. Any decision with compensation over $250,000 is a recommendation to the department and the contractor.

C. Advisory Dispute Review Board

- As a standing board, the DRB may be used in an advisory role at the discretion of the department
- During the DRB's scheduled site visits, this method can offer expedited third party review of pending claim issues. The DRB may give advice and recommendations, either during or promptly after the site visit

The above DRB process is a guide and not a specification. Refer to the Special Provisions for the DRB procedures on each respective project for the governing document.

9.12 Estimated Project Cost

As stated earlier, the Estimated Costs shown above set the baseline budget for the Program. These budgets are monitored closely through every phase of the Program, starting with the Environmental Assessment, EIS process, and continuing through final design, construction and post-construction (closeout). The various monthly and bi-weekly cost reports provided to Zoo Team (further detail on such reports follows below) and the annual update to the Program Financial Plan, will continuously inform all Program participants on the status of the budget compared to earned progress, committed costs, and actual expenditures.

Completion of key phases of the work provides opportunities for monitoring the budget. Throughout design, the Engineer's Estimate is refined as design proceeds to completion with the emphasis on designing to budget. At construction bid, the contractors bid amount will be compared to the Engineer's Estimate. Any substantial deviation is evaluated in detail. After this evaluation is complete, WisDOT can review other program contracts to align with the budget. This will entail various options such as value-engineering the design or construction methods to reduce costs, and/or promote reduced pricing either by modified construction practices or increased competition among potential bidders; or in some circumstances, reducing the contract contingency budget to balance increased bid cost. This evaluation process focuses on Program quality while maintaining Zoo Interchange Program Budget totals.

9.12.1 Coding

Effective coding of program data is essential to achieve program and cost control.

The Financial Management Supervisor reviews existing Program coding structures and develops consistent construction coding structure for the necessary reporting tools through construction, while verifying the data can be organized and reported to meet many Program needs, ranging from tracking actual costs to funding sources and earned cost projections to specific line items in contractors bids. The coding system is a key tool in promoting and maintaining consistency in all Program contracts and among all Program participants and consultants. The coding allows for Program reporting at the various management levels and supports the efficient and timely production of the bi-weekly and monthly management reports.

9.12.2 Cost Monitoring and Reporting

Methodical monitoring and reporting procedures, instituted across all Program contracts and consultants, are essential to achieve effective Program cost control. Each contractual line item cost as provided in the contractor's bid will be input into the various cost control and reporting tools as the contractor's budget baseline. Any adjustment to a line item will be tracked in a cost report that includes all items affected, the estimated cost impact (plus or minus), the contract modification number in which the adjustment will be made, the date approved or rejected, the date the databases were updated, a description of the adjustment and a description of the status of the adjustment and any appropriate comments.

Zoo Team and/or the PCMC Team enters budget data into Contract Manager. As the contract proceeds, they will also enter the appropriate information regarding potential changes in work as soon as identified, especially those items or issues that have the potential to impact project costs. Each contract line item is tracked from contract bid to closeout, with all changes in work documented through a Trend Analysis process. The Zoo Team is aware of all potential and approved changes in work through the project status meetings and bi-weekly/monthly project status reports.

The PCMC Team assists the Zoo Team in developing and maintaining rigorous reports to track and manage all project issues, utilizing the Program WBS, it reports data effectively across the various management levels, provides alerts and tracks action assignments in each of its modules so that the PCMC Team and Zoo Team know the real-time status of all critical issues and actions. The WisDOT standard construction management systems, supplemented with various Excel spreadsheets developed specifically for managing budgets and costs on the Zoo Interchange Program, contains the data and reports to Zoo Team management the bi-weekly and monthly project status reports to include the following information from a cost control perspective.

9.12.3 Actual Cost vs. Planned Cost vs. Percent Complete

The actual costs are monitored and reported against the planned costs as derived by analysis of the contractor's bid and their progress as reported in their schedule updates, project correspondence and discussions held in the weekly project meetings. Additionally, these costs are compared against the percent complete estimates and earned value analysis conducted by the Program Construction Management Supervisor and Financial Management Supervisor. Inconsistencies in these comparisons are included in the monthly Project Status Report and other communications with Zoo Team, along with recommendations for resolution of all identified issues.

9.12.4 Projected Program Cost at Completion

Projecting the cost at completion is important in that it reassures stakeholders that the Program is progressing on budget, and that associated risks can and have been properly mitigated. The foundation for evaluating the cost at completion is the Build-out-Budget. This incorporates estimates for future projects spanning various functional areas of work such as Right-of-Way, Preliminary Engineering, Environmental, Final Design, and Utilities. Within these areas, monies for contingencies are estimated. Beginning with these functional areas and corresponding estimates, the estimates are then inflated to the scheduled year of expenditure. This may change over time, thereby affecting the Cost at Completion since the time value of money can significantly change the estimate.

9.12.5 Actual Cost vs. Funding Source

The funding source(s) for the entire budget are pre-determined for the current biennium, and the next biennium as it nears. (The State appropriates funds on a biennial basis and cannot obligate dollars beyond that biennium.) As the work proceeds, actual costs are organized to allow a comparison to the baseline budget and the funding source for that particular contract and or bid item. Any issues regarding the allocated funding utilization are reported to Zoo Team in the Project Status Reports.

9.12.6 Cash Flow vs. Funding Source

Similar to actual costs, the projected cash flow is evaluated as a project proceeds in regards to the available funding from the appropriate funding sources. Cash Flow analyses will be tied to project schedule updates. As schedules are accelerated or delayed, the cash flow is forecast and evaluated, and the impacts to the available funding are identified and reported.

9.12.7 Cash Flow/Cost Projections & Trend Analysis

As changes in work result in contract modifications and impacts to the project costs, a trend analysis is conducted. A trend analysis is completed for every contract modification clearly showing the cost impact to the project and resulting forecasted cost to complete. As part of that trend analysis, the cash flow resulting from the cost projections is evaluated and again compared to the overall fund availability.

9.12.8 Contract Modification Costs vs. Contingency Budget & Trend Analysis

Any contract modification resulting in a cost adjustment to a project is monitored from the identification of such adjustment through its approval or rejection. The estimated cost impact is included in the project's projected cost at completion. The emphasis is on identifying all such changes in work that result in a cost impact as early as possible, so that mitigating techniques are utilized to minimize or eliminate any cost increases to the contract. The contractor and the CEC are to notify the Project Construction Controls Leader (PCCL) of any proposed changes to the contract resulting in cost changes, by the end of the day in which the issue was first identified. The CEC is required to put an estimated cost to the proposed change, and advises the PCCL to document the estimated cost which will be refined as the issue is researched and options developed. After the modification is finalized, the PCMC Team and the Program Cost Control Specialist evaluate each contract modification and determine the overall impact of such change to the contract contingency. As project costs increase, the project team, advised by the PCMC Team, continues to evaluate options to mitigate the cost increases in an effort to minimize utilization of project contingencies, if possible.

9.12.9 Pending Contract Modifications and Other Contingency Costs vs. Budget

Tracking pending contract modifications as soon as they are identified and having the PCL and PCCA quantify the cost impact of such possible changes, allows for early analysis of contingency utilization and comparisons to the baseline budget. As pending changes are identified, the PCL, the contractor and the PM work together to identify changes in work execution to possibly mitigate the cost impact and contingency usage. The PCL prepares an independent estimate of the work, and that serves as the basis to evaluate and finalize an acceptable cost within the contract. Contract Manager, along with Excel spreadsheets are utilized to track, monitor and communicate Pending Contract Modifications and their potential project impacts to Zoo Team management on a real-time basis.

9.12.10 Unit Price-Bid vs. Engineers Estimate & Project Cost Impact

Upon certification of a winning contractor bid, the bid is evaluated against the engineer's estimate and established baseline budget. An analysis is done to determine the project cost impact and recommendations are prepared by the PCMC Team for review with Zoo Team. Coordination is utilized to avoid duplication of Designer of Record efforts. Bids are reviewed by FHWA prior to concurrence in award of contract.

9.12.11 Actual vs. Planned Professional Services Costs

In addition to monitoring construction costs, WisDOT utilizes Contract Manager to monitor the costs of all professional consultants associated with the project, including technical advisor's costs and the project construction teams assigned to the project. The costs are monitored against the budget for each consultant and any discrepancies identified will be reported to the Zoo Team.

9.12.12 Cost Management Issues and Action Items

The PCMC Team provides a discussion of the pertinent issues and action items recommended to resolve outstanding issues along with any report pertaining to project cost status that shows variations from planned expenditures and baseline budgets and/or funding.

Narratives, tables, and/or graphs accompany the updated cost reports, detailing the current cost status, Zoo Team reasons for cost deviations, impacts of cost overruns, and efforts to mitigate cost overruns. The following information is provided:

- Reasons for each line item deviation from the approved budget, impacts resulting from the deviations, and initiatives being analyzed or implemented in order to recover any cost overruns.
- Transfer of costs to and from contingency line items, and reasons supporting the transfers.

- Speculative cost changes that potentially may develop in the future, a quantified dollar range for each potential cost change, and the current status of the speculative change. Also, a comparison analysis to the available contingency amounts is included, showing if reasonable and sufficient amounts of contingency remain to keep the project within the latest approved budget.
- Federal obligations and disbursements for the project, compared to planned obligations and disbursements.

9.13 Input Bids and Monthly Information

Upon bid award, WisDOT's Bureau of State Highway Programs enters the awarded contract information into the WisDOT Contract Cost Database, which then flows into the FieldManager and FieldBook and is provided to the PCL. This data is then transferred into Contract Manager by the Program Cost Control Specialist. As the contract progresses, the CEC enters the daily diary entries into FieldManager. Utilizing Contract Manager, the PCCL tracks contractor correspondence, meeting minutes, transmittals, the submittal process requests for information with the DEC, and project issues and/or actions. The PCCA monitors the various Contract Manager reports for delays, potential cost issues, and verifies that both the contractors and the PCL are processing the work flow in a timely, comprehensive and accurate manner. Contract Manager also interfaces with Primavera P6, allowing the cost and schedule data to be analyzed jointly to assess contractor burn rates, cash flow resulting from various schedule analyses, schedule production rates, and the various earned analyses conducted.

9.14 Coordinate Cost Data With WisDOT

The goal is for the data to be transferred electronically between all systems to reduce the possibility of error in entering data multiple times. The project data will always be entered manually from WisDOT systems into Contract Manager, in an effort to understand the charges and verify the accuracy of the data.

The cost data is essential to processing of payments and the WisDOT accounting system and to the Financial Management Supervisor for trend, cash flow, and cost at completion analysis. All data sharing will happen weekly. The Program Cost Control Specialist works with Zoo Team to verify that no interruption of service and data occurs throughout the life of the program.

9.15 Change Control

9.15.1 Purpose

With a fixed budget and schedule established it is essential that changes are:

- Identified early.
- Quickly assessed.
- Thoroughly evaluated.
- Promptly resolved.
- Efficiently mitigated to preserve cost and schedule objectives.

9.15.2 Responsibility

The PCL is responsible for checking all elements of contract modifications and completing the WisDOT SE Region Mega-Project Contract Modification Justification (CMJ) form. Modifications shall cover all work not otherwise provided for in the contract, including quantity line item overruns and underruns.

Refer to **Attachment 9.15.2.1 – Contract Modification Justification** for the format and required information. For Contract Modifications involving overruns and underruns for non-Pay Plan Quantities (PPQ) items, it can be noted that on page 2 of the CMJ, Questions 3 through 7 can contain an overall summary statement for all line items contained in the modification requiring adjustment, rather than a detailed explanation of each specific item as required for Questions 1, 2 and 8. Contract Modification Thresholds apply.

For changes that increase quantities of items designated as Pay Plan Quantity (through "**P**" notation in the schedule of items), each change of scope shall be a new item to the contract. The new item may be either a PPQ item or a measured item, as best dictated by the particular circumstances of the change and the ease of measurement of the item. This requirement shall not be construed to be an opportunity for the contractor to request new unit prices for the item(s).

For changes that decrease quantities of Pay Plan Quantity items, a new item will not be created. Instead, the existing item should be adjusted via Contract Modification. Include a summary sheet in the Item Record Account (IRA) and applicable sections of each CMJ that include changes to that item.

Upon approval of a CMJ, a Work Authorization Form (WAF) may be completed to direct and start the work. The Project Teams use a Work Authorization Form to initiate the work and identify the initial cost estimate threshold. Refer to **Attachment 9.15.2.2 – Work Authorization** for the format and required information. In instances where it is not feasible or possible to have an approved CMJ prior to authorizing the work with an issuance of a WAF (e.g. Force Account work, emergencies, etc.) it is acceptable to send the WAF prior to having an approved CMJ. However, every effort shall be made to have the CMJ in-process and approved as quickly as possible. In such instances, the appropriate parties shall be kept apprised of the nature of the required change.

Please refer to **Attachment 9.15.2.3 – Contract Modification Justification Thresholds for Prior Approval**, which defines cost-based approval responsibility limits.

When obtaining signatures on Contract Modification Justifications, it is necessary to procure all required signatures in order of increasing signature threshold, as follows:

1. Preparer of the CMJ
2. PCL
3. Construction Project Manager
4. Construction Project Supervisor (as required)
5. Zoo Construction Chief (as required)
6. FHWA Representative (after all required department signatures)

When obtaining signatures on the Contract Modification, procure all required signatures in the following order:

1. Preparer of the Contract Modification (Signs in the “Prepared By” field)
2. Contractor (Signs in the “Prime Contractor” field)
3. PCL (Signs in the “Recommended By” field)
4. Construction Project Manager (Signs in the “Authorized By” field)
5. Construction Project Supervisor, as required (Signs in an additional “Authorized By” field at the bottom of the signature block)
6. Zoo Construction Chief, as required (Signs in an additional “Authorized By” field at the bottom of the signature block)

FHWA reviews issues and advises as appropriate. Prior FHWA approval is required on any CMJ for changes to the contract affecting scope or exceeding $250,000 and on change orders due to non-performance of QMP and non-conforming materials. However, for projects subject to Federal Oversight, all CMJs will be signed by FHWA prior to processing the change in a Contract Modification. All Contract changes require FHWA approval prior to execution for Federal Aid participation. This approval is comprised of FHWA’s signature on the CMJ; no FHWA signatures need to be obtained on the Contract Modification document.

Zoo Team manages and documents the process.

The Program Cost Control Specialist supports the effort as necessary and provides advice when requested.

DEC provides input as issues arise and renders technical assistance.

PCLs communicate issues to the PCCLs and PMs, as they arise on respective projects.

PCLs prepare required information such as sketches, justification, consequences and alternative analysis for each modification, to the PCCL and Project Manager, who discuss with the Change Management Team when appropriate.

Project Managers (PMs), based upon the Contract Modification Thresholds, consolidate any modifications and report to the CMT.

Zoo Team Cost and Schedule Specialists compile pertinent data and support the CMT with development of necessary documentation.

The CMT reviews each modification scope, justification, schedule impact and cost effect for any costs exceeding $100,000, and participates as necessary in discussions with FHWA on modifications that require FHWA prior approval. Adjudicating modifications expeditiously and recommending for ZOC review and approval is the responsibility of the CMT. The CMT reviews all modifications and develops feedback for PMs and the Project Construction Controls Administrator/Leaders to implement continual improvement within the process. This allows for all modifications to be consistently developed and processed.

The CMT Report summarizes pending and approved issues. Refer to **Attachment 9.15.2.4 – Change Management Log**.

The ZOC reviews recommendations received from the CMT and approves policies and modifications in excess of $1,000,000. Major modifications concerning scope change, third parties, all projects, and/or revision of policies require approval, and direction in some instances, from the ZOC.

Attachment 9.15.2.1 -Contract Modification Justification

CO. ITRACI' . ODIFICATIO.- Jl:STIFICATIO.- Issue - o:

Project ID:	FedMi! ID:	County: Milwaukee	Highway:
Name of Road:		Contract Mod No.:	Prop. Date:
Contractor:			

Is this project subje ct to Federal Oversight .

Clitt&o.r:r Code.	ltm Code	Qu utity +/-	Unit	Item Desuiption	CIL	Coutr tt or .'\ rudPrke	IDcru:st :Deuust)
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Project {ana ger
Construction Supervisor
Construction Chief

ch""8"-' oco>ll'ac timsrequinJ the approva l of/he Construclio>l Supen>isor

uire.d iif subject to Feder:ll. o, ersight and! if ol.er $250,000 or a signifiCil!lt chdnge in scope,'intent
All executed contract modifie3tions equire FHrA appro,-al on record for Fede:ral Aid Patti - 3tion.

Rev- 011181'13

Referenced form \\dotwalfile2p\w1094zoo\Zoo Forms\CMJ_Contract_Modification_Justification-ZOO_Template.docx

Attachment 9.15.2.1 -Contract Modification Justification (Continued)

Page_ of_

ONTRACT MODIFICATION JUSTIFICATI Q_ - Issue N 0 :

1. Proposed Change Involves (include Line Item Identifiers):

2. Change Justification (or Explanation of Variation):
Reason Code: Choose a Reason Code

3. Consequences of non-response to Contract Modification:

4. Alternatives considered to accomplish Contract Modification:

5. Justification of prices:

6. Schedule Impact: List affected activities and advise of criticality:

7. Interface Impact with other contracts or entities:

8. Impact on DBE Participation: Name of the DBE firm(s) and amount of change (-/+).

Referenced form \\dotwalfile2p\w1094zoo\Zoo Forms\CMJ_Contract_Modification_Justification-ZOO_Template.docx

Attachment 9.15.2.2 Work Authorization Form

Wisconsin Department of Transportation

ZOO interchange

Work Authorization Form

Project ID: 1060-33-78

Project ame: Zoo Interchange- 76th St. Bridge O er194 (Kearne St. to O 'Conno St.) Mih aukee Co.

\ CP Tracking -: '\ AF-

O R.FI'": -----1-.::---
or
• Field Issue

Date: 3/18/2014

To: \Valsh Construction Co. II, LLC. From: Wisconsin Department of Transportation (WisDOT)

Description of\ ork to be performed:

Walsh Construction Company is to proceed on the following basis:

☐ **Negotiated Price** (Please provide a proposal in accordance with State of Wisconsin. (2013) *Standard Specification for Highway and Structure Construction.*)

☐ **Force Account** Proceed with the work as described above immediately under the provisions of the (State of Wisconsin. (2013) *Standard Specification for Highway and Structure Construction.* Section 109.4.5) In addition, provide 48hr notification to WisDOT inspectors in the field prior to beginning the work.)

☐ **Utilize Existing Contract Bid** Item(s) (Proceed with the work immediate! utilizing the following existing contract bid items as a method for payment)

☐ **No Cost** (Please perform the "ork at no cost to the DEPARTMENT)

*It· nticipated that the work as described above will not affect the critical path o.fthe construction schedule. If" alsh Construction Co.IT.LLC. · otherwise. please provide proper notification in accordance with Section 104.3 ofthe"isDOT Standard Specifications.

Brian Perz
1; isi)OT

Mike Bums 1; 1sDOT (signature required for work exceeding S25,000)

Attachment 9.15.2.3 – Contract Modification Justification (CMJ) and Thresholds for Prior Approval

AMOUNT	Signature Required	
	WisDOT	**FHWA**
All Amounts (absolute value)	Construction Project Manager	Coordinator (Non-structure)**
≥$100K	Project Construction Supervisor*	Coordinator (Non-Structure)**
≥$500K	Zoo Construction Chief	Coordinator (Non-Structure)
≥$1.0M	Zoo Construction Chief (with input from CMT & ZOC)	Oversight Manager

NOTES:

*: In addition, changes involving non-conforming materials (any amount) and all changes to contract time require prior approval from Project Construction Supervisor.

**: Time Extension and Scope Changes need prior approval from FHWA Coordinator. All CMJs of executed contract modifications require FHWA approval for Federal Aid participation, if subject to Federal Oversight.

Attachment 9.15.2.4- Zoo Interchange Project Change Management Log

Wisconsin Dept of Transportation

Project No.: 1030 20 75

interchange

WB STH 119 Overpass & Ramps

Contnd Modi	Tih	SUIIIM	DaM	R-on Ctung. eocs.		E er R<IM	Contnr;IIOI PI"opoall			
000	LINE ITEM					($10,149.72)	$0.00	$0.00	$0.00	
000	LINE ITEM					($6,210.00)	$0.00	($3,633.30)	($3,633.30)	
	UNOERRIJN TOOATIO	OPN	OIQM)g			($)	$0.00	$3,956.84	$1,739.86	
	OVERRUN TO DATE	OPN	OIQ			$123.t3G.14	$0.00			
001	CRI 002 C..U) W11	JII>P	1)1/	PC	BR0001	$8,230.44	$17,180.44	$12,580.44	$12,580.44	
OCI2	8-8 tS: CIIIrOIIICIMix O.Vn	/4PP	05/	RO		$174,897.19	$209,478.93	$209,478.93	$209,478.93	0005
OCI2	T•ITIP pvl mri.na	/4PP	05/	SE	TROOOZ	$174,897.19	$209,478.93	$209,478.93	$209,478.93	0005
006	Plan Revision #1 B-40-815 Revised	APP	06/09/09		BR0001	$180.00	$0.00	$479.71	$479.71	
003	SN 1030-ID-80 for Con.-11-lod	NA	011121f09							M0023
001	Plan R....tlion f5 • Akpad Parton	/4PP		PC	G \6	$8:J!II.;Iy		$12,5!0.44	$12.5111.44	0007
008	Plan Revision #6	APP	08/19/09	PC						
008	Plan Revision #8	APP	08/19/09	fC	GNIOIIV3	1\......1114.1197.10	S2QIM78.93	$2011.47893	$209.478.D3	000S
009	See 1030-20-80 for Contract Mod #9									
010	See 1030-20-80 for Contract Mod #10					$0.00	Moo	SbbO	iDbO	M0024
					GNOOO	$5,175.00	$5,175.00	$5,175.00	$5,175.00	M0022
011	See 1030-20-77 for Contract Mod #11			PC	GNOOO	$53.182 10	$53.1112.10	$53.182.10	$53;UIZ.10	M0022
						$58,357.10	$58,357.10	$58,357.10	$58,357.10	
		NA	011121f09							M0025
						$0..00	$0.00	SODO	$0.00	
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		NA	011121f09							M0028
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0W	SIMI 1030-ID-80 lor Con.-ICI 1-lod	NA	011121f09							!.10029
						50:00	Moo	IObO	iDbO	

Contract Modification Reason Codes: CR-Cost Reducton MI-Miscellaneous PC-Plan Change PI-Plan Inadequacy RO-Request by Others SE-Safety Enhancement SS-Change/Credit Std and Specs

Attachment 9.15.2.4- Zoo Interchange Project Change Management Log (Continued)

Wisconsin Dept of Transportation

Project No.: 1030-21)-75
W8 STH 119 Overoass & Ramps

ll zoo interchange

Change Management Log (by CM#)

Conerad Mod •	na.	St.t1111	D••	R-onCMng!e CocM	11-	Englnttr ROM	Conh1or Pl"opo	JqgoUIllitO AJR	RI•I v•IM	Change Mgmt #
048	See 1030-20-80 for Contract Mod #46	NA	IX3J121'10							M0070
						$D.00	$0.00	$0.00	$0.00	
047	P-nwr lld oopoo EDO)!JI lnch	N>P	OlflS'I0	PC	GN002.2	18,110.40	$0.00	$6,110.40	$6,110.40	M0063
047	A4UIltml 10 PYIT"I'ill.!aiU'!a24' "P"	N'P	0112&'10	PC	GN0021	$1,026.00	$0.00	$1,026.00	$1,026.00	M0062
						$7,136.40	$0.00	$7,136.40	$7,136.40	
048	.... R<.dl'<>< 1h•a:llll 3. Grodin	H'P	07128'00	PC	ev.00Cll2	$3,988.48	$11,2[illegible]	$5,214.00	$5,214.00	M0018
048	Staging Conflict at 20th Street	N'P	10111'09	PC	EW0003	$35,000.00	$127,998.31	$35,106.24	$35,106.24	M0040
048	Additional Mulching	APP	0211Q'10	PC	EW0002	$1,641.72	$0.00	$1,641.72	$1,641.72	M0065
						$40,830.20	$139,249.87	$41,962.02	$41,962.02	
049	Equalizing Mod #6: Mega RAin	APP	IX3J121'10	PC	GN0019	$0.00	$0.00	$0.00	$11,100.00	M0066
						$0.00	$0.00	$0.00	$11,100.00	
050	SN I<J30.2D-IIO lor Corlt'cl //	NA	03.13 0/10							M0071
						$0.00	$0.00	$0.00	$0.00	
unassigned	Geotextile Fabric Type R "P"	OPN	11/13/09		GN0013	($1,639.62)	$0.00	$0.00	$0.00	
1	;_m.tlf u .. : 1 /:/: V::t////					7	$0.00	$0.00	$0.00	1.!0073
						>	Sl.68178	52.183.18	$0.00	1.1)013
liMUVnlld	Aocldilnl 0.1111'-" 81					($5,867.79)	!3,683.78	SZ.1B178	S0.00	
						$239,803.37	$44.4,1193.54	$1107,264.1!1	$254,068.12	

SUMMARY OF PROJECT COSTS

Original Contract Amount:	$5,054,208.71
Approved Contract Mods:	$254,068.72
Revised Contract Amount:	$5,308,277.43
*Pending Changes Amount:	($13,833.75)
Anticipated Contract Amount:	$5,294,443.68

CONTRACT ANALYSIS OF CHANGES

96.73% Complete based on a Paid to Date of $5,134,875.96
100.00% Complete based on Time Elapsed of 240 days

5.03% Changes (Original Contract vs. Revised Contract)
4.75% Changes (Original Contract vs. Anticipated Contract)

*Pending Changes include all negotiated amounts (AJR) and any Engineer ROMs that have not been negotiated. If the Engineer ROM has not been calculated, the Contractor Proposal is used.

Contract Modification Reason Codes: CR-Cost Reduction MI-Miscellaneous PC-Plan Change PI-Plan Inadequacy RO-Request by Others SE-Safety Enhancement SS-Change/Credit Std and Specs

9.15.3 Procedures

The general process for Contract Modifications is outlined as:

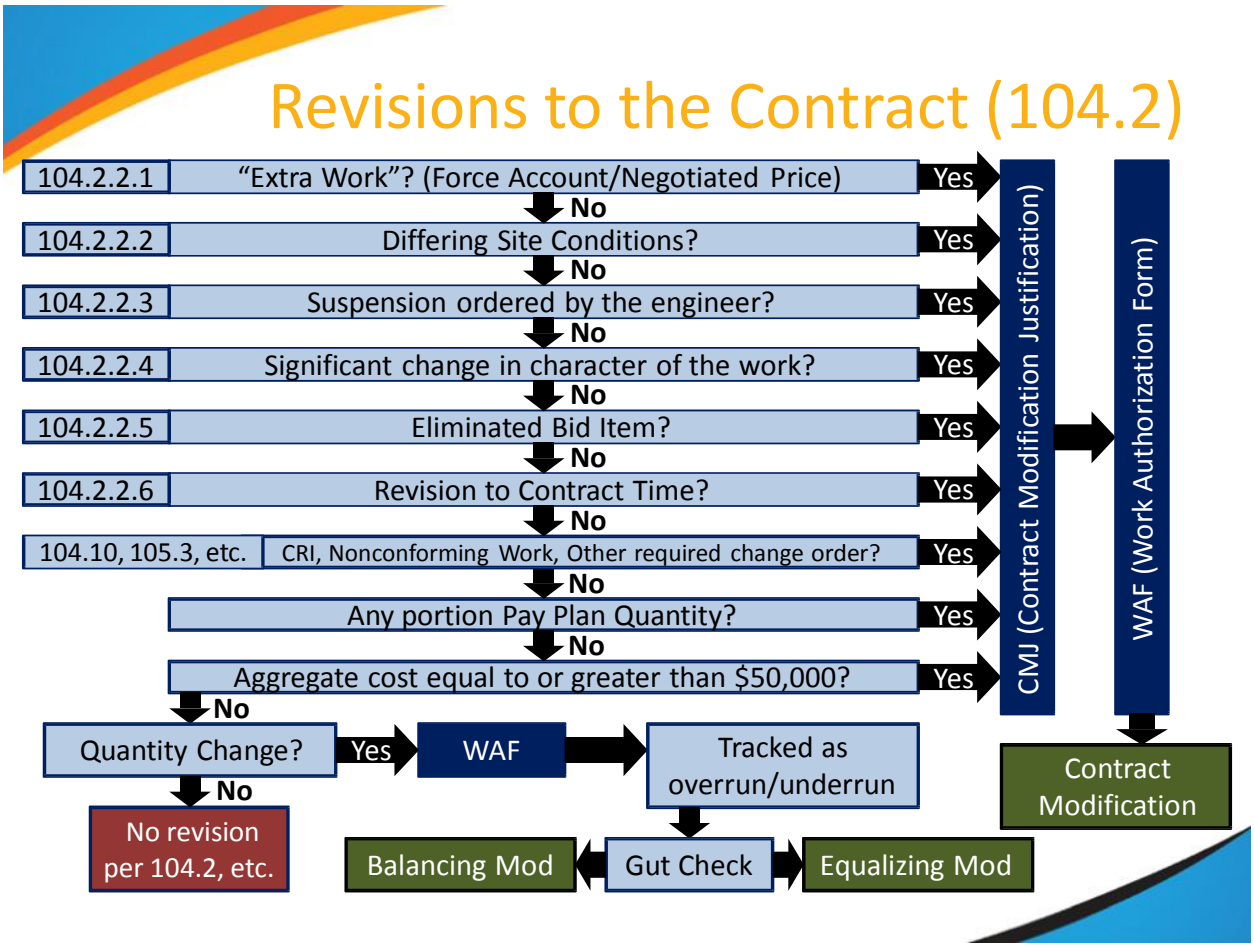
- Identification
- Initiation
- Notification
- Assessment
- Acceptance
- Approval
- Action

9.15.4 Identification of a Contract Modification

There are several methods that are used when identifying modifications. Any change is listed as a pending item in the early stage of the process so that the criticality is properly addressed, and that a tracking record is established within the CMT Report. This report serves as the vehicle to monitor progress on modifications and pursue closure on listed items.

The contract shall be modified in accordance with Section 104.2 of the Standard Specifications. In addition, any change involving Pay Plan Quantity Items, or a net change of $50,000 or more shall be accomplished through the Contract Modification Process. See **Attachment 9.15.3.1 – Revisions to the Contract (104.2)** for a breakdown of this process.

Attachment 9.15.3.1 – Revisions to the Contract (104.2)



For changes to measured bid items, wherein the total scope of the change is less than $50,000, it is permissible to track as overruns/underruns. A WAF shall be sent regardless.

9.15.5 Initiation of a Contract Modification

Initiation of a modification comes from several sources depending on the need and nature of a change. Zoo Team initiates modifications relating to policy changes on administrative, quality or policy issues. Zoo Team pursues changes related to the immediate project dynamics. Designers may request a modification because of design enhancements, scope revisions or as a result of the RFI process. Contractors may request changes for technical, quality, cost or schedule reasons. External agencies or third parties may wish to request modifications due to policy, technical or time issues. All these requests are coordinated by Zoo Team staff within their respective areas of responsibility.

9.15.6 Notification

Early identification of items/issues with cost or time implications is essential to maintaining budget integrity. The respective contract documents clearly delineate the process for any contractor to follow. For modifications issued by any of the other sources noted above, a simple pending change request form, signed by the originator, is developed that outlines the following:

- Item to be changed
- Reason for Modification
- Justification
- Design, cost and schedule implications
- Criticality of modification

With this basic information available, the process moves forward, with any requests for supplemental information requested of the particular initiator by the CMT or the PM.

9.15.7 Assessment

For each project, the responsible PCL makes the initial assessment that includes an independent cost estimate, while confirming the justification and impact, also known as Rough Order of Magnitude (ROM). The PCL coordinates with the Construction PM. Even Modifications enacted within the Construction Project Manager's financial responsibility are fully documented and reported to the CMT by the Project Manager. The CMT assesses any modifications from an overall project and/or program perspective to maintain integrity of established budget targets. These assessments serve multiple purposes, which follow:

- Maintain an accurate record of modifications incurred to date.
- Balancing of the overall budget reflecting changes on individual projects.
- Develop a continuous improvement process reflecting lessons learned as feedback to Project Managers, PCLs, PCCA, and DEC.

The intent of the CMT effort is not to second guess or redo decisions, but to maintain the "big picture" view of modifications and support the implementation of modifications approved at the project levels.

Detailed assessment on scope, technical quality, cost and schedule issues performed by the Zoo Team staff inclusive of DEC, is directed by the responsible Project Manager. Because items like RFIs tend to generate modifications, having Zoo Team staff available to provide input is essential.

As modification evaluations proceed, the PCMC Team provides support and advice, as requested, on cost and schedule items, and makes recommendations to the appropriate Project Manager.

9.15.8 Acceptance

At the lowest level, modifications are accepted and implemented by the PCLs with approval of the Construction PM. Up to the predetermined financial limits developed by Zoo Team, Contract Modification Justifications can be approved, but the CMT is apprised of the associated details so the overall impact can be constantly evaluated. For changes with financial impact above the Construction Project Manager approval level, the CMT is kept informed from identification onwards. Modifications with impacts on critical path activities are brought forward to the CMT in the initiation stage. Prior approval is required from FHWA according to the thresholds shown in **Attachment 9.15.2.3** above.

9.15.9 Approvals

The CMT has the authority to approve modifications within the established financial threshold, and a running summary of such approvals is presented to the ZOC. For modifications agreed to at lower levels, the CMT is apprised of the modifications implemented. The ZOC possesses the ultimate approval authority in the following instances, in accordance with the responsibilities listed in **Attachment 9.15.2.3** above. This applies to major modifications within the aforementioned responsibilities of scope change, items affecting all or adjoining projects, policy issues and items where third parties are involved.

If the amount of the final agreed cost for a change (as contained in the Contract Modification) is not the same as the estimated cost in the approved CMJ:

1. For major changes, defined as any change wherein the original CMJ-approved amount changes by $25,000 AND 25% or more, or is a significant change to the scope or character of the work, the CMJ shall be rewritten to include justification of the new amount, and new original signatures shall be obtained. The previous version of the CMJ shall be retained in the issue file.
2. For minor changes, the CMJ is able to be red-lined to match the amount in the Contract Modification. All changes in unit price, quantity, subtotal, and/or final total shall be red-lined with date and initials of the person making the adjustment.

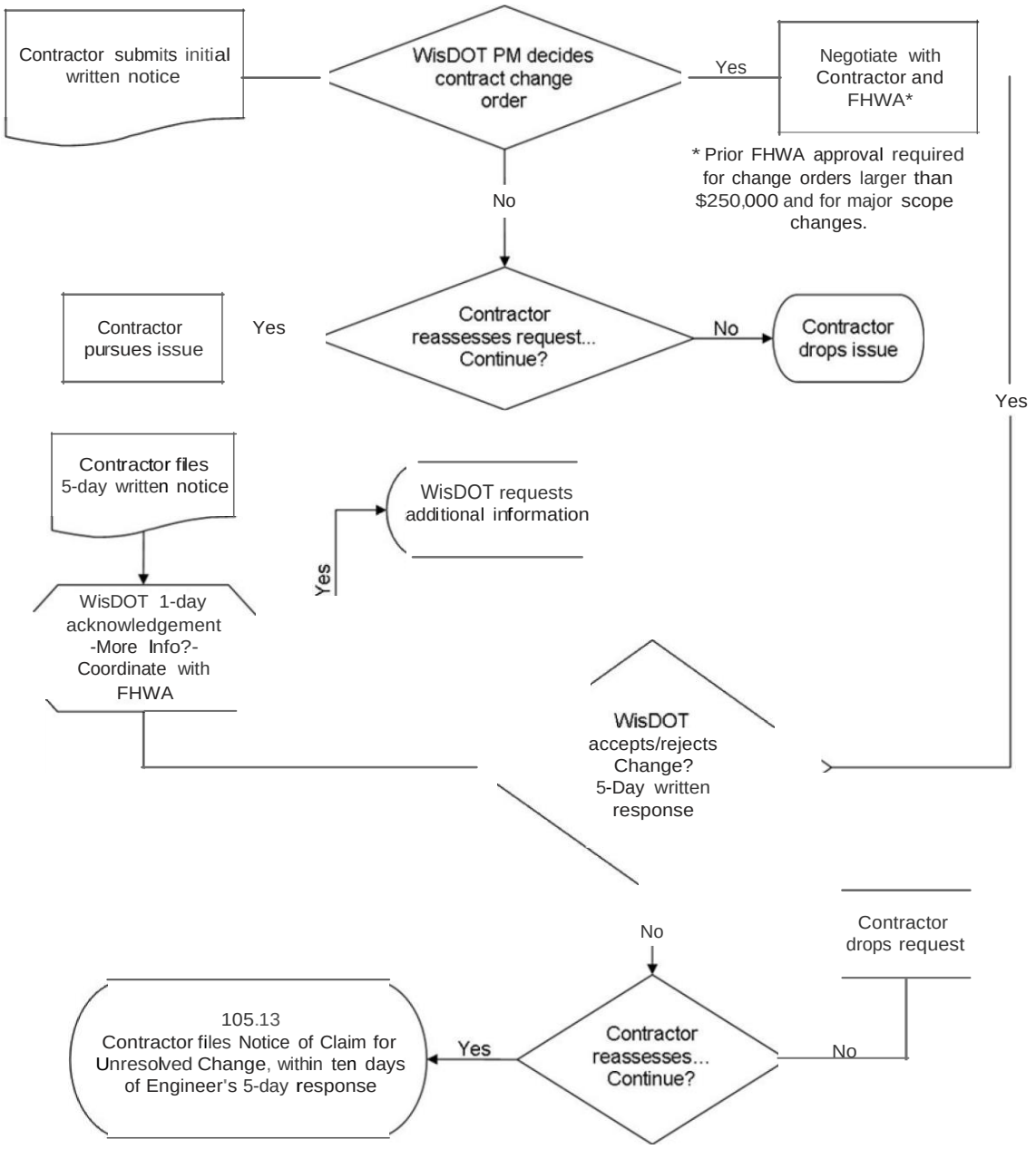
For changes involving non-participating categories, it is a best practice to obtain the signature of the applicable Municipality/Utility on the contract modification. The designated representative's signature shall be obtained prior to WisDOT Project Manager signature. It is not a requirement to get the Municipality/Utility's signature, but please make every effort to obtain it. Changes to non-participating items and categories shall be stand-alone contract modifications. Send the Municipality/Utility representative an electronic copy of the executed contract modification.

9.15.10 Action

When a modification is agreed at a lower level in the financial threshold, concurrence and approval is gained from the next order in the hierarchy as required before any approval and/ or direction to proceed is granted. In most cases, the Project Manager is responsible for approval determinations when an item with sensitive time issues is encountered. In instances where other contracts or third party entities are affected by a modification, the CMT approval is sought to ascertain that any residual impacts are manageable. As mentioned in Section 9.15.2 Responsibility, there may be instances where it is not feasible or possible to have an approved Contract Modification Justification prior to authorizing work. However, every effort shall be made to have the Contract Modification Justification in process and approved as quickly as possible. In such instances, the appropriate parties shall be kept apprised of the nature of the required change.

As modifications are implemented, the WisDOT procedures outlined in the C&MM and Construction Project Manager's Users Guides are followed to validate that any documentation is comprehensively assembled and that modifications stand on their own merit. In instances where an urgent modification in excess of established threshold is necessary, special CMT meetings and ZOC sessions are arranged to meet the time parameters cited in the contract documents. Prompt approval reduces the incidence of claims on urgent work items if the contractor is able to proceed. For modifications classified as resulting from design Errors or Omissions, individual assessments are necessary for each case where work is redone. The Managing Construction Change process outlined above is summarized in a graphic format in **Attachment 9.15.10.1 – 104.3 Contractor Notification of Potential Contract Change.**

Attachment 9.15.10.1 – 104.3 Contractor Notification of Potential Contract Change



*Note:

≤ $250,000 FHWA Prior Approval Not Required

> $250,000 FHWA Prior Approval Required

Major Scope Change Requires FHWA Approval

9.16 Cost Reduction Incentives (CRI)

Section 104.10 of the Standard Specifications clearly delineates the process for contractors and the Zoo Team to follow CRIs. There are similarities to the Change Control process outlined in Section 9.17 above.

Because of the tight schedule and the robust 75-year service life requirements, assessment of Cost Reduction Incentives is required from other perspectives and specialists within Zoo Team and DECs. The CRI review and/or approval will not allow any schedule delay. Any incentives implemented are reported to the CMT to keep the overall financial picture maintained. The respective Contractors are responsible for submitting Cost Reduction Incentives, and are required to perform any initial evaluations on the merits of each. These incentives are checked by the PCL, validated by the Project Construction Management Administrator and recommended by the Project Manager. It is anticipated that based on early partnering discussions, any incentives raised will serve function, quality, schedule, and not adversely impact the individual project or overall program. Specific workshops will be conducted in the early project stages, as required by the Special Provisions, to identify and assess the merit of any Cost Reduction Incentives.

9.17 Cash Flows

The Zoo Team will perform cash flow analysis, using Excel and Primavera, concurrently with schedule updates, and incorporate current payment information and contract modifications approved to date.

Because the contractor schedules are not cost loaded, at the outset of any project, planned cash curves are generated. The data from the contractor's bid are applied to the schedule to establish the planned cash flow.

Project costs are summarized and combined to develop a planned cash flow curve across the entire Program. Administrative, management and design costs are added to the overall program cash flow curve to establish a tracking mechanism with the entire budget considered. Regular input from Zoo Team cost staff is required to achieve this. Actual program costs are then tracked against the Program cash flow curve, and the results of that analysis are used in updating the Program Financial Management Plan, which is submitted to FHWA.

With the payment process firmly established in the WisDOT procedures, and the frequency described in the respective contract documents, real-time cost information is readily accessible from WisDOT's accounting systems. Information on expenditures is available in the FOS system. Information on contract modifications, purchase orders and other commitments is available in the EAPS system and the Detailed Cost Report (DCR). Taking this current data and utilizing it for forecasting and trending purposes is part of the regular analysis to maintain a forward-looking perspective on costs, and an integral information tool to guide a proactive management decision-making process.

One element in assessing cash flows relates to earned value performance, which is further discussed in Section 6 – Schedule Control. It is through the combination of scheduling and cost management that accurate projections are made to maintain the overall budget integrity.

9.18 Balancing / Equalizing Contract Modification

WisDOT recognizes that in order to deliver the Zoo Interchange Project within budget, all project budgets must be managed in real time. Importance was placed on developing and reporting accurate and reliable cost-at-complete estimates for each project. As part of the Change Management Process, the Department has developed a process to execute contract modifications to revise current authorized item quantities based on field conditions before the end of the project. This process will encumber the value and track the reason for the change in real time. This process will mitigate future disagreements between contractor and inspector over quantity changes at the end of the project, as well as receive approval of FHWA for the reasons of the change stated in the CMJ and Contract Modification.

9.18.1 Definitions

- Balancing Modification – CCO executed during the project to increase/decrease current authorized quantities to match current final projected quantities.
- Equalizing Modification – CCO executed at the end of the project to increase/ decrease current authorized quantities to match final pay quantities.

9.18.2 Process

1. Maintain an accurate record of original and new authorized line item quantities.
2. Track actual and pending changes to quantities of the original and new authorized line item.
3. Identify items with actual quantities greater than 25% of authorized quantity, or total pending amounts greater than $100,000 over authorized amount, for inclusion into Balancing Modifications.
4. During the course of a project, execute a CMJ to explain the reasoning for a Balancing Modification to increase/decrease current authorized quantities to match current final projected quantities.
5. During the course of a project, execute a Balancing Modification to increase/decrease current authorized quantities to match current final projected quantities. Balancing of items shall be performed by category.
6. Upon completion of the project, or when the line item is final, execute a CMJ to explain the reason for an Equalizing Modification to increase/decrease the current authorized quantities to match the final pay quantities.
7. Upon completion of the project, or when the line item is final, execute an Equalizing Modification to increase/decrease current authorized quantities to match final pay quantities. Equalization of items shall be performed by category.

8. For items not used, in addition to the balancing/equalizing mod being written to being the authorized quantity to zero, a zero-entry posting in Field Manager for each affected category is required. State in the Remarks area that the item was not used. Alternately, a note written under Item Documentation in Field Manager stating, "Item not used for Categories X, Y, Z, etc." is acceptable.

9.19 Schedule Control

For the Zoo Interchange Project, with its projects of various size and complexity, Critical Path Method schedules will be required by contractors on critical projects as requested by the CPM, and on any project with a construction cost greater than $10 million. For these construction projects, no special reviews, meetings or reports will be required.

On construction projects greater than $40 million, the entire suite of software, reviews, baseline schedules, workshops, production reports and cost and schedule reports, will be required.

9.19.1 Zoo Master Schedule

9.19.1.1 Purpose

Zoo Team's master schedules include:

1. Master Program Schedule – created during design, the schedule for the entire program
2. Design Project Schedules - preliminary construction schedules developed by the design team for contracts greater than $40 million
3. Contractor Schedules – detailed construction schedules developed by the contractor will be required for contracts greater than $10 million

The Master Program Schedule (MPS) is the top-level control schedule used for management, monitoring, and forecasting on the Zoo Interchange Project. The MPS is a Critical Path Method schedule, based on the overall project plan, periodically updated to reflect the progress of all contracts. The PCMC Team, the Program Cost Control Specialist and the Program Schedule Controls Engineer, use the MPS to:

- Monitor, evaluate, and report on the overall progress of the project, including forecasts for completion and milestones.
- Forecast schedule impacts associated with contract modifications, and accurately evaluate and make recommendations to the Zoo Team and the CMT regarding revisions to the work, delays, or unforeseen conditions.
- Develop, evaluate, and recommend alternatives for mitigating delays.

- Manage project phasing and interfaces to minimize conflicts between adjacent contractors and maximize traffic flow through the project.
- Accurately track progress of the work and anticipate where additional coordination and adjustments to contracts must be made to optimize performance.
- Integrate project cash flow curves, providing an estimated cash flow for the overall project to relate schedule and cost controls.

The Design Project Schedules are Zoo Team's schedules for the individual contracts, developed during design, for the purpose of planning traffic phasing and construction staging.

The Contractor Schedules are developed by the contractor for major projects greater than $10 million, as required by the Special Provisions. Zoo Team reviews and accepts the Contractor Schedules so that the Contractor and the Department have an agreed-upon baseline against which to evaluate progress. Zoo Team also reviews and accepts updates of the Contractor Schedules to agree upon reported progress.

The Design Team will incorporate scheduling thresholds and standards specified in this document into the appropriate Specifications sections and project Special Provisions.

- Contractor Critical Path Method (CPM) Schedule for Projects > $10 M
- Scheduling Workshops for Projects > $40 M
- Weekly Production Data for Projects > $100 M
- Rolling Three Week Look-Ahead for All Projects

9.19.1.2 Responsibility

The DEC initiates the development of the Design Project Schedules for projects greater than $40 million. The Program Schedule Controls Engineer works with the DEC during the transition from design to construction, especially with regard to evaluating differences between the contractor's planned approach to a project and the approach contemplated during design. The CMT determines what design schedule information should be made available to bidders before a letting.

The Zoo Team reviews the Contractor Schedules during development and over the course of each project. They review and accept/reject Contractor Schedules with the concurrence of the Project Manager. The Zoo Team incorporates its analysis of the Contractor Schedules into reporting to the CMT and the ZOC.

9.19.1.3 Procedures

<u>Development</u>

Zoo Team's master schedules are developed using Primavera P6. The DEC provides its Design Project Schedule to Zoo Construction Team before the advertisement of each contract. The DEC and the Zoo Team collaborate to complete any schedule information that is made available to bidders.

The logic of the MPS is documented through the development of a construction staging matrix, logic diagrams, and narrative that convey the interdependence of the various milestones on the major contracts. The MPS contains the project codes and milestones to be used in the development of the Contractors Schedules. The MPS reflects the contract requirements, including the following:

- Logic diagram for the overall project and for each contract by stage
- Start and finish milestones for each stage of the work
- Relationships and constraints to model inter-relationships between stages and between adjacent contracts
- Constrained milestones to model contract Liquidated Damages (LDs) and work restrictions
- Summary-level activities to model the work of each stage
- WBS to organize the components of the project
- Cost Accounts for the development of summary program-level cash flow projections

WBS and Activity Coding

The specified scheduling software, Primavera P6, allows for numerous methods of organizing Critical Path Method activities. In order to provide consistency to the schedules on all contracts, a standardized WBS and a standard activity code dictionary was developed, these tools are being provided to the contractors in the MPS. The contractors use the MPS as a template from which to develop their schedules. The following table outlines the WBS structure that is used:

PRELIMINARY WBS LEVELS
Level I. Zoo Interchange Project
Level II. PROJECT - Contracts
Level III. PROJECT COMPONENTS - Administration, Submittals, Procurement, Traffic Management (Staging), Construction
Level IV. PROJECT SUBCOMPONENTS - Breakdown of all major components of the contracts (i.e., individual submittals: materials, shop drawings, working drawings, etc.; Traffic Management & Construction: Stage 1A, Stage 1B, etc.)
Level V. ACTIVITIES - Tasks and milestones in the Critical Path Method schedule

A preliminary listing of standard activity codes will be provided to the contractors at the Pre-Bid Meeting or prior to the Pre-Construction Meeting. The Program Construction Controls Engineer continues to collaborate on the development of the final codes based on the need to provide schedule layouts for separate types of work. Contractor input is also considered, and contractors may propose code values as necessary for their particular contracts.

Provision of the MPS and Project Schedules to the Contractors

The MPS and Project Schedules are tools provided to the contractors for use in their scheduling efforts. The most recent MPS update is provided to the successful bidder for each major contract within one week of contract award. If requested before or after the letting of a particular contract, Zoo Team also provides its Project Schedule to the contractor. The Project Schedule reflects one possible method of fulfilling the contract requirements, and provides the contractor with the detail used by Zoo Team to develop the milestone dates in the MPS. However, the contractors are responsible for developing their own plan and schedule to achieve those milestone dates. The contractors' approaches may be consistent with the Project Schedules, or they may differ, provided that the required completion date and intermediate milestone dates are maintained.

Pre-Bid Meeting

The MPS and Project Schedule may be provided to bidders at the pre-bid meeting. Additional documents or files such as schedule templates, example look-ahead reports, CPM schedule development standards, Designer supplied construction schedules, and electronic schedule files may also be included.

A Contractor's Statement of Understanding sign-off sheet may be prepared for the distribution of these documents. This statement of understanding will be signed by each bidder receiving the schedule documents. See **Attachment 9.19.1.3.1 – Contractor's Statement of Understanding**.

The statement of understanding will highlight that the schedule documents provided are for informational purposes only. The contractors are responsible for developing their own plan and schedule to achieve the project goals. The contractor's approaches may be consistent with the documents provided, or they may differ, provided that the required completion date and intermediate milestone dates are maintained.

Attachment 9.19.1.3.1 -Contractor's Statement of Understanding

CONTRACTOR'S STATEMENT OF UNDERSTANDING

Project 1.0. _____-___-___

Re: Contractors Acceptance of Preliminary Zoo Interchange Project Scheduling Documents

I appreciate the willingness of the State of Wisconsin Department of Transportation (the "Department") to share preliminary information with the contracting industry. I also recognize the information provided in the Preliminary Zoo Interchange Project Scheduling Documents is subject to change, and said changes may entail both minor and major changes between these preliminary documents and the contractor's final schedule. I also understand that the Department does not represent that the project must or can be built as shown on the Preliminary Zoo Interchange Project Scheduling Documents.

In summary, I am accepting these Preliminary Zoo Interchange Project Scheduling Documents with the understanding that I am also accepting the risks associated with studying and assessing preliminary documents. I recognize that these Preliminary Zoo Interchange Project Scheduling Documents are provided by the Department "for information only". I agree that any bid or quote I may provide for any future work referenced in these Preliminary Zoo Interchange Project Scheduling Documents must be based solely on final bid package documents, which are not yet available. Furthermore, I agree that I am solely responsible for recognizing and understanding the impacts of any changes that may occur between these Preliminary Zoo Interchange Project Scheduling Documents and the final bid package documents.

I agree to accept the Preliminary Zoo Interchange Project Scheduling Documents based on the terms and conditions of the Contractor's Statement of Understanding outlined above.

_____ _____

Signature Date

_____

Printed Name

_____

Title

_____

Company

9.19.2 Contractor Critical Path Method Schedules (projects > $10 mil)

9.19.2.1 Purpose

Contractor Critical Path Method Schedules are used for:

- Contract progress measurement
- Determination of milestone achievements related to each stage of the contract
- Contract modification and delay impact assessments
- Determination of entitlement and magnitude of time extensions

9.19.2.2 Responsibility

Individual prime contractors are responsible for developing the schedules, diagrams, and narratives for the following submittals. The Zoo Team is responsible for reviewing the submittals and making recommendations to the PM on acceptance or revision. The PM is responsible for acceptance or rejection of submittals.

9.19.2.3 Procedures

1. Initial Work Plan (IWP)

The IWP and Baseline Critical Path Method Schedule are developed according to the requirements outlined in the Special Provisions for Prosecution and Progress. The contractors use the MPS as a template to develop their submittals. The IWP submittal includes a detailed plan of the administrative and construction activities to be performed within the first 90 days of the project. The IWP submittal includes summary activities for the balance of the project. The control team uses the IWP to monitor and update the progress of the work until the Baseline Critical Path Method Progress Schedule is accepted.

2. Baseline Critical Path Method Schedule

The Baseline Critical Path Method Progress Schedule submittal includes a detailed plan of activities to be performed during the entire contract duration, including all administrative and construction activities required to complete the work as described in the contract documents. Schedules for specific portions of the work are extracted from the Baseline Critical Path Method Schedule by filtering and sorting the schedule by the codes provided in the MPS. Within ten (10) business days of receiving the Baseline Critical Path Method Schedule, the Zoo Team (through the PM) provides comments and schedules a meeting for the contractor to present his Baseline Critical Path Method Schedule and answer questions raised in the review.

3. Critical Path Method Schedule Updates

Critical Path Method Schedule Updates are submitted by contractors on a monthly basis in accordance with the contract documents. Each update includes actual start dates, completion percentages, remaining durations for activities started but not completed, and actual finish dates for completed activities. That information provides an as-built record of the project. The final Critical Path Method Schedule Update is an as-built schedule.

The updates may also include additional activities as necessary to depict changes in scope from contract modifications and logic revisions as necessary to reflect changes in the contractor's plan. The Zoo Team (through the PM) accepts Critical Path Method Schedule Updates or provides comments within one week of receipt. This quick turn-around maximizes the relevance of the currently accepted schedule.

The proper updating and timely review of the contractors' Critical Path Method Schedules allows for the best possible determination of the current critical path for each milestone and contract, and for the overall program. Proper updating allows for contemporaneous forecasting of schedule changes and the development of mitigation alternatives.

4. Critical Path Method Schedule Revisions

Critical Path Method Schedule Revisions may be either submitted by the contractor for acceptance, or they may be required by Zoo Team. The Zoo Team assesses performance metrics and recommends action to the PM in either case.

5. Documentation Required for Time Extension Request

In the event that a contractor submits a request for a contract modification that includes a request for an extension of the contract completion date or an intermediate milestone date, the contractor is required to base its time extension request on the most recently accepted Critical Path Method Schedule Update.

To request a time extension to an intermediate milestone date or the contract completion date associated with a scope change, contractors are required to provide a narrative detailing the activities affected and a proposed fragment of activities to be added or revised in the Critical Path Method Schedule. The Zoo Team reviews the submission and determines whether it adequately models the scope of the change. When the change affects the critical path of the contract, or the critical path to an intermediate milestone, the PM determines whether a time extension is justified.

Contractors may also request a time extension associated with issues other than scope changes. In those cases, the PM meets with the contractor and PM to discuss alternatives, and contributes to the negotiation of a contract modification, if one is justified. The Zoo Team reviews the costs associated with time extensions, and makes recommendations on schedule modifications and costs to avoid proceeding to the claims process.

9.19.3 Scheduling Workshops for Projects > $40 MIL

9.19.3.1 Purpose

Two scheduling workshops are conducted between award and Notice To Proceed (NTP) for each contract. Those workshops are:

1. Initial Work Plan (IWP) Workshop
2. Critical Path Method Scheduling Workshop

The respective workshops precede the contractors' submittal of the IWP and Baseline Critical Path Method Schedule. The goals of the workshops are to develop a consensus on how Critical Path Method scheduling tools are to be applied by Zoo Team, the consultants, and the contractors, and to verify that all parties understand the use of the Critical Path Method tools provided.

9.19.3.1 Responsibility

The Zoo Team conducts the workshops. Attendees include, at a minimum:

- Project Manager
- Project Construction Leader
- Project Construction Management Administrator
- Contractor's Project Manager
- Program Schedule Controls Engineer
- Contractor's Scheduler

Additional personnel are included as necessary for each project.

9.19.3.3 Procedures

Attachment 9.19.3.3.1 – Schedule of Workshops and Submittals, outlines the schedule of workshops and their relation to contractor scheduling submittals. The IWP Workshop is conducted approximately three weeks after the contract let date. At the IWP Workshop, the PM presents the MPS to the contractor, providing an overview of:

- Major contracts in the Zoo Interchange Project
- Construction stages and traffic phasing for the individual contract
- Interfaces with adjacent contracts
- Application of Critical Path Method scheduling to the project, including best practices, expected attributes, and contents of submittals
- Activity coding in the MPS, and how it is to be applied to organize the contractor's schedule

The contractor provides a presentation of his planned approach, with appropriate handouts. The contractor's plan, and the methods for modeling the plan in the contractor's Critical Path Method schedule, is discussed.

The contractor submits his IWP within ten (10) business days after the IWP Workshop [which is ten (10) business days before the Critical Path Method Workshop]. **Attachment 9.19.3.3.2 – Reviewing and Analyzing the Preliminary or Initial Schedule**, contains a checklist for the review of Critical Path Method schedules. During the review of the IWP, the Program Schedule Controls Engineer introduces the Zoo Team to methods for reviewing and assessing Critical Path Method schedules. The Zoo Team then develops recommendations for any necessary revisions to the IWP. The contractor receives written comments on its IWP within five (5) business days after submittal. This quick turn-around allows the contractor to review the comments prior to the Critical Path Method Workshop.

The Critical Path Method Workshop is conducted approximately seven weeks after the contract let date. At the Critical Path Method Workshop, Zoo Team and the contractor review comments on the IWP with the contractor, and review the application of Critical Path Method scheduling to the project, focusing on any areas of concern identified during review of the IWP.

- The contractor presents his IWP at the Critical Path Method Workshop, addressing at a minimum:
- Comments on the MPS, including any proposed conceptual revisions (associated with a CRI proposal, for example)
- A description of activities to be performed in the first 90 days after NTP
- A description of their intended mobilization and resources to be applied in the first 90 days after NTP
- A summary overview of the contractor's plan for achieving the required milestones for the entire contract
- An overview of resources to be applied during the entire contract
- Responses to review comments

This and any subsequent discussions lead to finalization of the IWP and development of the Baseline Critical Path Method Progress Schedule.

9.19.4 Rolling Three-Week Look-Ahead Schedule (all projects)

9.19.4.1 Purpose

Rolling three-week look-ahead schedules are used to manage the project on a weekly basis. They are used to highlight important information in the Critical Path Method Schedule, and include additional details of the work that may not be modeled by an activity in the Critical Path Method Schedule. They also provide an as-built schedule of work performed on a weekly basis, which can be compared to the as-built schedule provided in the Critical Path Method Schedule. Specific items addressed include upcoming lane and ramp closures, current work activities, critical submittals/reviews, critical procurements, and potential delays and problems.

9.19.4.2 Responsibility

The contractors are responsible for preparing the three-week look-ahead schedules. The Zoo Team is responsible for reviewing the schedules and making recommendations on acceptance or revision, with input from PCL as necessary. The PM is responsible for the acceptance or rejection of the schedules.

9.19.4.3 Procedures

The contractors prepare rolling three-week look-ahead schedules, based on a spreadsheet template provided by the Zoo Team. The three-week look-aheads are reviewed at the weekly progress review meetings. The rolling three-week look-aheads include actual progress on activities from the past week, and a projection of work for the next two weeks, including scheduled lane and ramp closures and critical RFIs, submittals and reviews. **Attachment 9.19.4.3.1 – Sample Rolling Three-Week Look-Ahead Schedule** shows a sample format for these schedules.

9.19.5 Weekly Production Data (projects >$100 mil)

9.19.5.1 Purpose

Weekly production data for certain activities is tabulated in order to project progress through linear scheduling techniques, verifying the projections of the Critical Path Method Schedule. The data are also used to assess productivity issues, enhance forecasting and evaluate potential contract modifications that may affect productivity.

9.19.5.2 Responsibility

The contractors are responsible for submitting the data on a weekly basis. The Zoo Team reviews the data and prepares production projections based on the data, with input from PCLs as necessary. If the forecast progress of an activity, based on the production data, differs significantly from the forecast based on the Critical Path Method Schedule, the Zoo Team may make recommendations on revisions to the Critical Path Method Schedule to reflect current production rates.

PMs and the CMT are informed of discrepancies between the production data and the Critical Path Method Schedule as necessary. Reports are also provided to the ZOC and other management, as necessary. The Zoo Team makes recommendations on the acceptance or rejection of Critical Path Method Schedules to the PM, based on conformance with actual production rates. The Zoo Team also meets with contractors to validate that the activity durations used in the Critical Path Method Schedule are consistent with the production rates.

9.19.5.3 Procedures

Progress data are submitted by the contractor, using a spreadsheet template provided by the Zoo Team. The data includes actual daily production for the past week, and will be estimated production for the coming week for the specified items. The data are reviewed at the weekly progress review meeting. Information gathered is used by the Zoo Team to review submittals, including schedule updates.

Data required from the Contractor should be limited to activities that are significant to the overall progress of the project and are production or resource driven. If the Department maintains dated production data records as part of its normal inspection process, that data should be used in lieu of having the Contractor duplicate the work effort. Data and reports can be provided to the Contractor for verification, as necessary.

9.19.6 Monitoring, Control and Reporting (projects > $100 mil)

9.19.6.1 Purpose

Schedule controls are monitored to assess progress and identify potential delays as early as possible, in order to mitigate impacts. Reporting is by exception, focusing on areas of concern, and directed to appropriate personnel for action.

9.19.6.2 Responsibility

The Zoo Team provides reviews of weekly and monthly submittals and provides bi-weekly and monthly progress reports to PMs and others, as discussed in Section 8 of this document. Reports will include the following sections:

1. Cost
2. Schedule
3. Earned Value Management
4. Production

In addition, reports will include a comparison of overall progress to the baseline schedule, and a report on any major variances at selected points of project completion. For example, the report would incorporate a Section 5 Progress Review at 25%, 50%, 75% and 100% completion.

The Zoo Team meets with contractors to correct schedule slippages. The Zoo Team develops recommendations to PMs, based on analysis and forecasts, to address the cost and schedule implications of time extensions, contract modifications, delays, acceleration, and productivity issues.

9.19.6.3 Procedures

The process for monitoring, controlling, and reporting on project progress identifies schedule issues as early as possible, and resolves issues at the lowest possible level in the project management organization.

Progress Review Meetings

Weekly Progress Review Meetings are conducted to review the progress and future work based on the rolling three-week look-aheads and production data. Those items are reviewed at the meeting by the PMs and PCLs. The data, compiled progressively, on a weekly basis, maintains a real-time view of progress.

Monthly Progress Review Meetings/ Critical Path Method Schedule Updates and Revisions – On a monthly basis, the Zoo Team consolidates its review of the past month's progress, and changes to the Critical Path Method Schedule to validate that the current Critical Path Method Schedule accurately reflects the completion plan.

Critical Path Analysis

The Zoo Team closely monitors the progress of activities that control the current forecast completion date, and assesses impacts to intermediate milestones and contract completion dates. The Zoo Team reports on shifts in the critical path of the project, or to an intermediate milestone.

Production Rate Monitoring

The Zoo Team uses the actual production data for key items of work to forecast completion of critical elements of the work and confirm the Critical Path Method Schedule projections. Relevant data and graphics, detailing current and forecast production rates, are included in monthly reports, highlighting activities for which production rates are lower than planned or for which problems are forecast.

The project inspectors record actual production for items of work in the Inspector Daily Field Reports. Production is summarized by the ZCG and reported to the CMT and Supervisors in the Project Cost & Schedule Reports. Items for which production will be reported include major or critical work items likely to impact the overall schedule of a project stage or required intermediate milestone. Sample items include:

- 72" Sewer Tunnel – lin. ft. per week
- Retaining Walls
  - Secant Shafts – ea. per week
  - Facing Panels – sq. ft. per week
- Bridge Construction
  - Foundation Pile – ea. per week
  - Foundation/Substructure Concrete – cu. yd. per week
  - Girders Erected – ea. per week
  - Deck Formwork – sq. ft. per week

- Roadway Excavation – cu. yd. per week
  - Roadway Structural Section
  - Grading Plane/Subgrade Prep – sq. yd. per week
  - Base Material Placement – ton per week
  - Base Material Subgrade Prep – sq. yd. per week
  - Asphalt Pavement – ton per week

In accordance with the Special Provisions contractors may be required to supply production data to augment or verify the data available from inspection staff. Data is reported to management on an exception basis when the work category is in an active stage.

For projects greater than $40 million, particular attention is paid to items of work for which production is "controlling" or "driving" the current stage of a project. Inspectors note the status of those items and any impacts to production on those items in their Inspectors Daily Reports.

Inspectors indicate the controlling work activity by its Critical Path Method Schedule Activity ID and description, and state whether the contractor made progress on the activity using a checkbox. If no progress was made or the work proceeded slower than planned, inspectors indicate the reason. A sample format is provided below:

Controlling Work Activity_____ CPM SCHEDULE ID:_____

Progress: No Progress □ Slower-than-Planned □ As-Planned □ Better-than-Planned □

Notes/Reason for lack of progress:

The controlling work activity should be determined based on the longest path in the current accepted Critical Path Method Schedule Progress Update. Anticipated average daily production rates can be determined from the schedule or production data submittals. Progress reporting should allow for normal variations in production associated with equipment set-up or relocation.

Reports by the CPM/PCL, and Cost and Schedule reports are used to collate data and to present timely information for distribution. This will only be required on projects greater than $100 million. Information from RFI and Contract Modification (CM) logs is used in conjunction with the Pending Change Report. Status information from designers and WisDOT Central Office are utilized as necessary to provide supplemental information on activities performed by those organizations that may impact project cost or schedule. Utilizing the contractor's accepted Critical Path Method Schedule, pending Contract Modifications and projected overruns, the controls staff prepares look-ahead reports forecasting expenditures in the immediate month ahead and long-term. The forecasts are included in both the Project Cost & Schedule Reports and the Program Management Report.

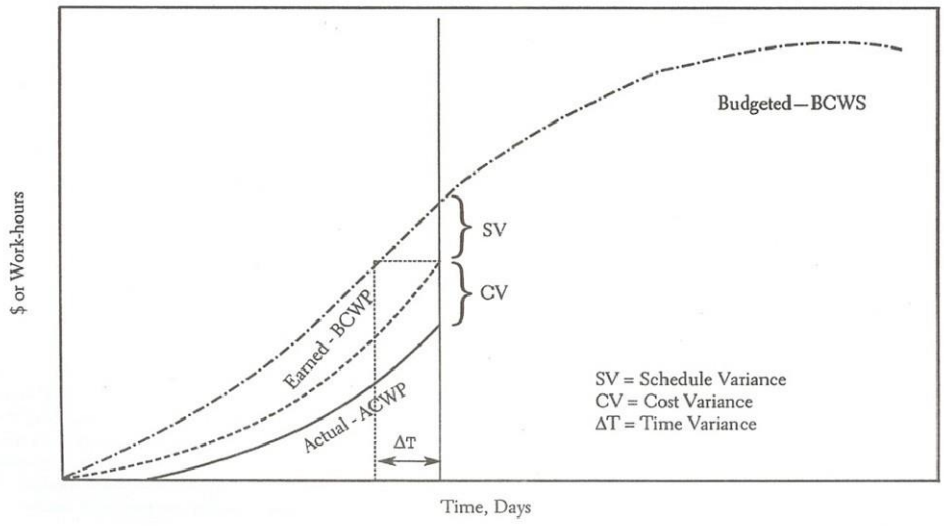
Earned Value Analysis

The Zoo Team uses earned value analysis to integrate cost and schedule progress reporting. Non-integrated cost and schedule reporting compares actual expenditures to planned expenditures, but does not take schedule slippage into account. Therefore, if the project is behind schedule, the actual expenditures are naturally less than the planned expenditures, and the comparison provides a misleading status as to whether or not the project is within budget. Earned value reporting takes the schedule slippage into account when comparing actual vs. planned expenditures, and provides an early and more accurate indication of whether or not the project will be completed within budget.

The Zoo Team uses earned value analysis techniques to relate costs to schedule and forecasts final costs for comparison to budget projections. Initial cash-flow curves are submitted by the contractors and used to forecast costs at completion. The forecast is periodically compared to actual costs from payment applications, and the forecast costs at completion are updated. The data developed from the payment applications includes the following:

Data Item	Description
Budgeted Cost of Work Scheduled (BCWS)	Planned cost-to-date based on budgeted costs and planned progress
Budgeted Cost of Work Performed (BCWP)	Planned cost-to-date based on budgeted costs and actual progress
Actual Cost of Work Performed (ACWP)	Actual cost-to-date based on cost/payment controls system
Schedule Variance (SV)	BCWP – BCWS
Cost Variance (CV)	BCWP – ACWP

The associations between these data and a typical project cost curve are depicted in the graphic below:



Earned Value Analysis Concept

These data are used to develop the following metrics, which are used as budget and schedule controls:

		Control Points	
Metric	**Description**	**% Complete**	**Limit**
Schedule Performance Index (SPI)	BCWP/BCWS	P < 25% 25% ≤ P < 50% P ≥ 50%	0.90 0.95 0.98
Cost Performance Index (CPI)	BCWP/ACWP	P < 25% 25% ≤ P < 50% P ≥ 50%	0.90 0.95 0.98

The SPI represents the ratio of the quantity of work that was performed to the quantity that was scheduled to be performed. Thus, it is interpreted as follows:

SPI < 1.0 Less work completed than planned

SPI > 1.0 More work completed than planned

The CPI represents the ratio of budgeted costs to actual costs for work performed to date. Thus, it is interpreted as follows:

CPI < 1.0 Budget is inadequate based on current forecast

CPI > 1.0 Budget is adequate based on current forecast

The cash flow curves are approximate. Thus, the CPI and SPI values are approximations. During the early portion of each contract, when a small quantity of work has been completed, the variances can be large, and the control points are set at 0.9. As more work is completed, more data goes into the SPI and CPI calculations, and the control points are set higher.

Forecasting, Coordination, and Recovery

The Zoo Team tracks issues identified in the weekly and monthly progress review meetings, and uses the forecasting techniques outlined to identify potential issues. The forecasts are used to coordinate and negotiate with adjacent contractors, utilities, and other third parties to mitigate interference associated with delays. The tools are also used to develop workaround and recovery alternatives to recover schedule slippage and minimize cost impacts.

Project progress and forecasts are reported to PMs and the CMT, outlining the status of cost and schedule controls, current forecasts on intermediate milestones and contract completion dates, project issues, and recommendations for resolution.

A preliminary listing of standard activity codes will be provided to the contractors. The Program Construction Controls Engineer continues to collaborate on the development of the final codes based on the need to provide schedule layouts for separate types of work. Contractor input is also considered, and contractors may propose code values as necessary for their particular contracts.

Attachment 9.19.3.3.1 - Schedule of Workshops and Submittals

General Schedule	Event Descriptions
Week 0	Contract Let
Week 1	Contractor receives latest MPS
Week 2	
Week 3	IWP Workshop (review of MPS; contractor's plan; procedures for IWP)
Week 4	
Week 5	IWP Submittal
Week 6	Contractor receives written review comments on IWP
Week 7	Critical Path Method Schedule Workshop (review of IWP; procedures for Baseline Critical Path Method Schedule)
Week 8	
Week 9	
Week 10	Baseline Critical Path Method Schedule Submittal Anticipated NTP
Week 11	
Week 12	Contractor receives written comments on Baseline Critical Path Method Schedule
Week 13	Baseline Critical Path Method Schedule Review Meeting
Week 14	Contractor receives acceptance or additional comments on Baseline Critical Path Method Schedule
Week 15	
Week 16	Revised Baseline Critical Path Method Schedule Submittal (if necessary)

Attachment 9.19.3.3.2 – Reviewing and Analyzing the Preliminary or Initial Schedule

GENERAL REQUIREMENTS

Item	Description	Yes	No
1	Make electronic copy of schedule files and recalculate w/o changing data date. Compare to original schedule to verify no changes occurred.		
2	Qualifications of Scheduler have been submitted and comply with the specs?		
3	Standard Activity Code Dictionary has been defined and submitted?		
4	Was Precedence Diagram format used?		
5	Schedule calculations set to Retain Logic, not Progress Override (software setting)?		
6	% Complete separated from Remaining Duration (software setting)?		
7	Organized by Early Start; activity flow from left to right?		
8	Critical Path is clearly depicted?		
9	Are Critical Activities defined as being less than 1 day (software setting)?		
10	If Preliminary Schedule was used, do activities at end of 90-day period mesh w/ Initial Schedule?		

REVIEW

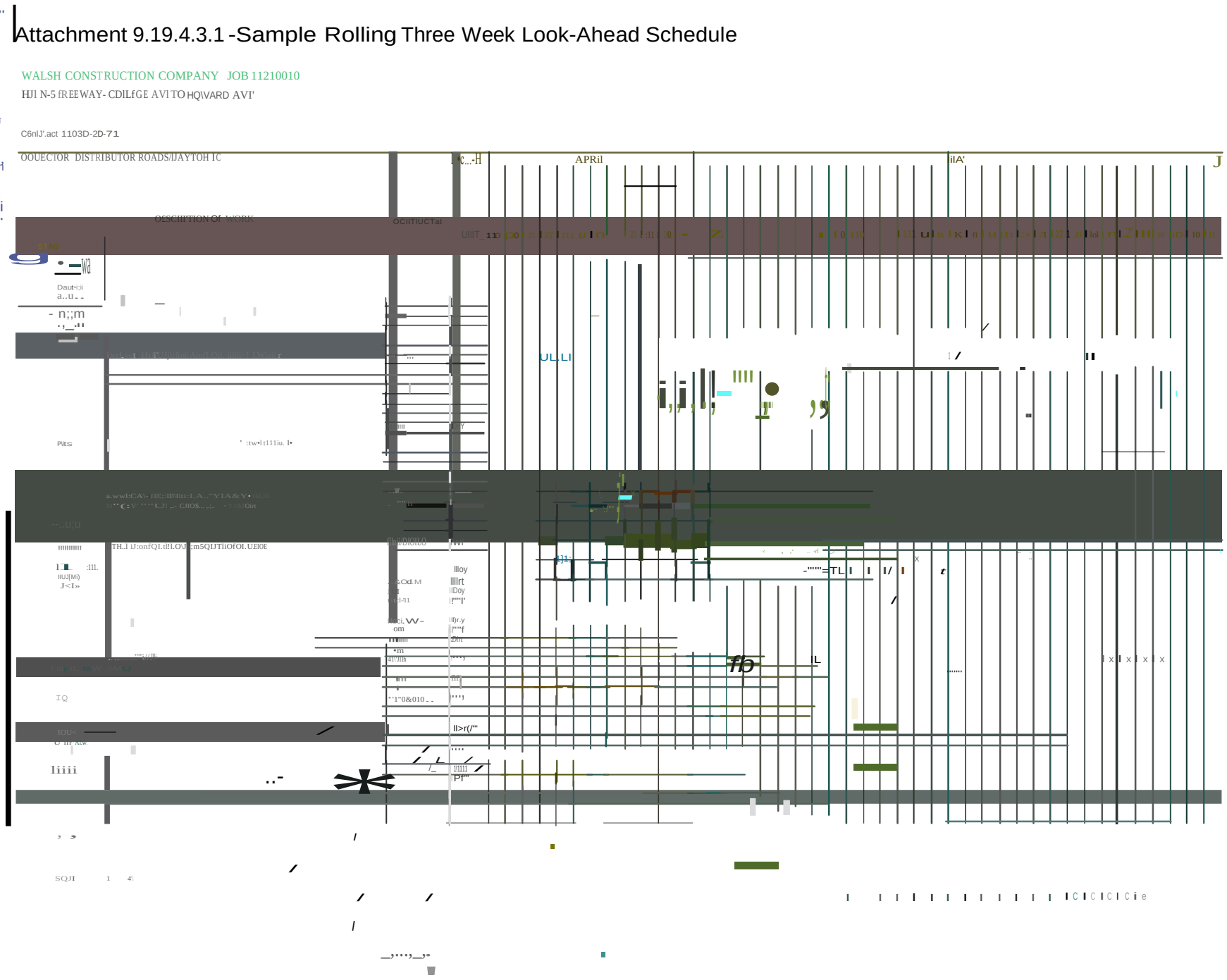
Item	Description	Yes	No
1	Is the schedule complete?		
	a. Reflects contractual scope of work?		
	b. Activity descriptions are clear?		
2	Are required activity codes entered? (i.e., Work Category, Area, Responsibility, etc.)		
3	Are activity categories and durations reasonable?		
	a. Construction activities no longer than 20 workdays (or as allowed by contract)?		
	b. Are all construction activity categories represented?		
	c. Owner responsibility activity durations in accordance with contract?		
	d. Are all owner activity categories represented?		
	e. Are the activities assigned as owner responsibility correctly assigned?		
	f. Procurement activities shown for each specification section?		
	g. Are all procurement activity categories represented?		
4	Are activity relationships complete?		
	a. Only the first and last schedule activities are open-ended?		
	b. All necessary logical relationships included?		
	c. No redundant relationships exist?		
5	Are activity relationships valid?		
	a. Relationships reflect logical work sequence?		
6	Is the project calendar complete?		
	a. Calendars for contractor activities defined?		
	b. Calendars for owner activities comply with contract definitions?		
	c. Calendars for activities not reliant on workdays are defined?		
7	Is the schedule duration within the contract time?		
	a. Schedule completion on or before Contract Completion Date?		

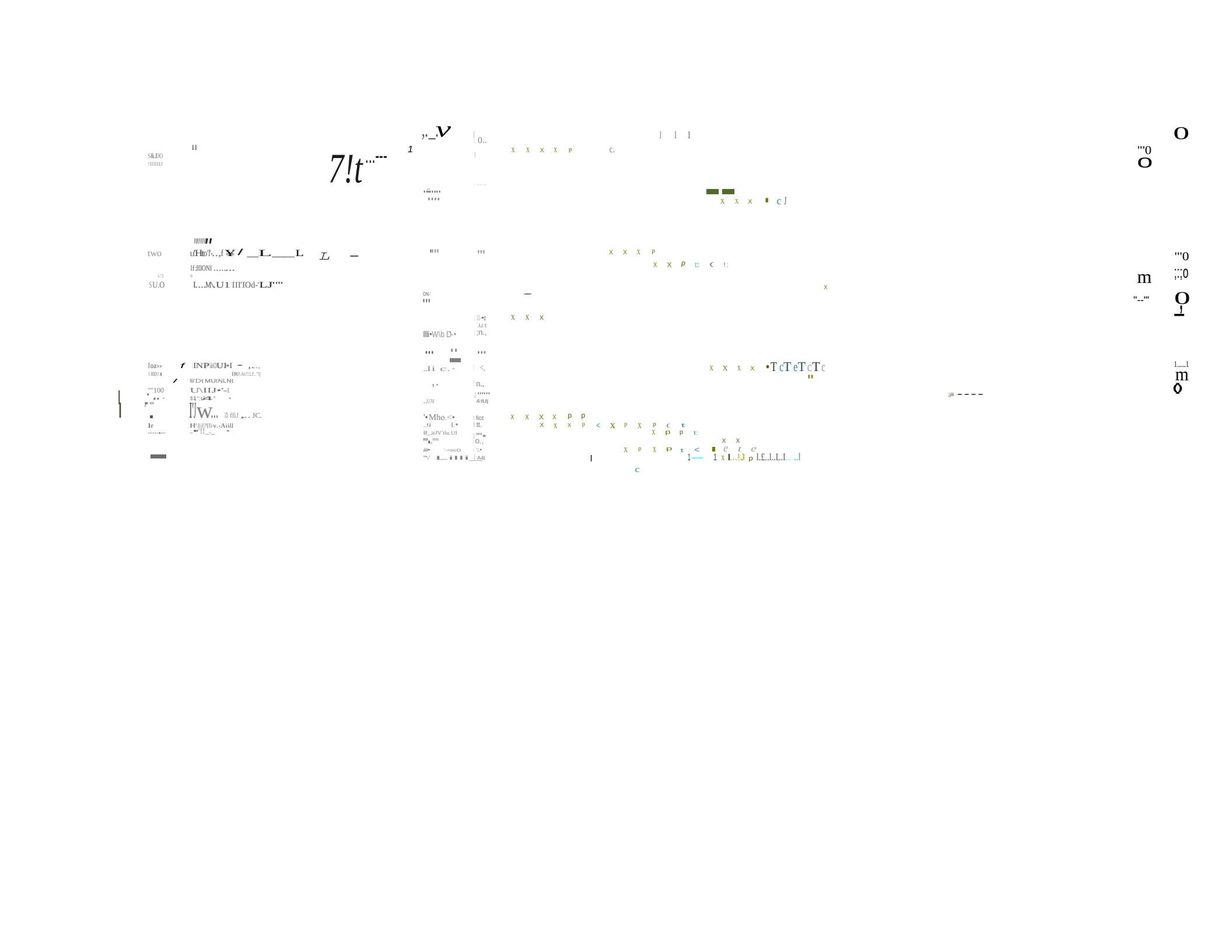
	b. Negative float not shown on the Critical Path?		
8	Are contractual milestones correct and met?		
	a. "Contract Award" milestone is constrained to award date?		
	b. "Start Project" milestone is constrained to Notice-to-Proceed date.		
	c. "End Project" milestone is constrained to Contract Completion Date?		
	d. Interim milestones are being met and are not constrained?		

ANALYSIS

Item	Description	Yes	No
1	Has the contractor NOT used float suppression techniques?		
	a. Are the activities on the path of a significant nature?		
	b. Would these activities normally control project completion?		
	c. Has the contractor used float suppression techniques?		
	d. Do assigned resources support activity durations?		
	e. Any date or other constraints applied other than specified?		
2	If there are multiple critical paths, then		
	a. Are the multiple Critical Paths reasonable given the scope of the project?		
	b. Are the activities in the Critical Path reasonable (not excessive to create additional critical paths?		
3	If activities are near critical, then		
	a. Is the number of critical and near critical activities within the contract limit?		
	c. No date or other constraints are applied other than specified.		
4	How does the work flow?		
	a. Does the workflow from start to end of schedule in a logical manner?		
	b. Are there no apparent discontinuities in the work?		
5	Can activities be reasonably performed concurrently, given access and safety consideration?		
	a. Will the concurrent activities interfere with each other?		
	b. Will concurrency cause any safety hazards?		
6	Is there a reasonable amount of work based on available resources?		
	a. Will too many people be in one area at any given time (causing inefficiencies)?		
7	Do the Procurement Activities support the construction activities?		
8	Have seasonal weather conditions been properly considered?		
	a. Have anticipated weather delays been factored into activity durations?		

Attachment 9.19.4.3.1 -Sample Rolling Three Week Look-Ahead Schedule

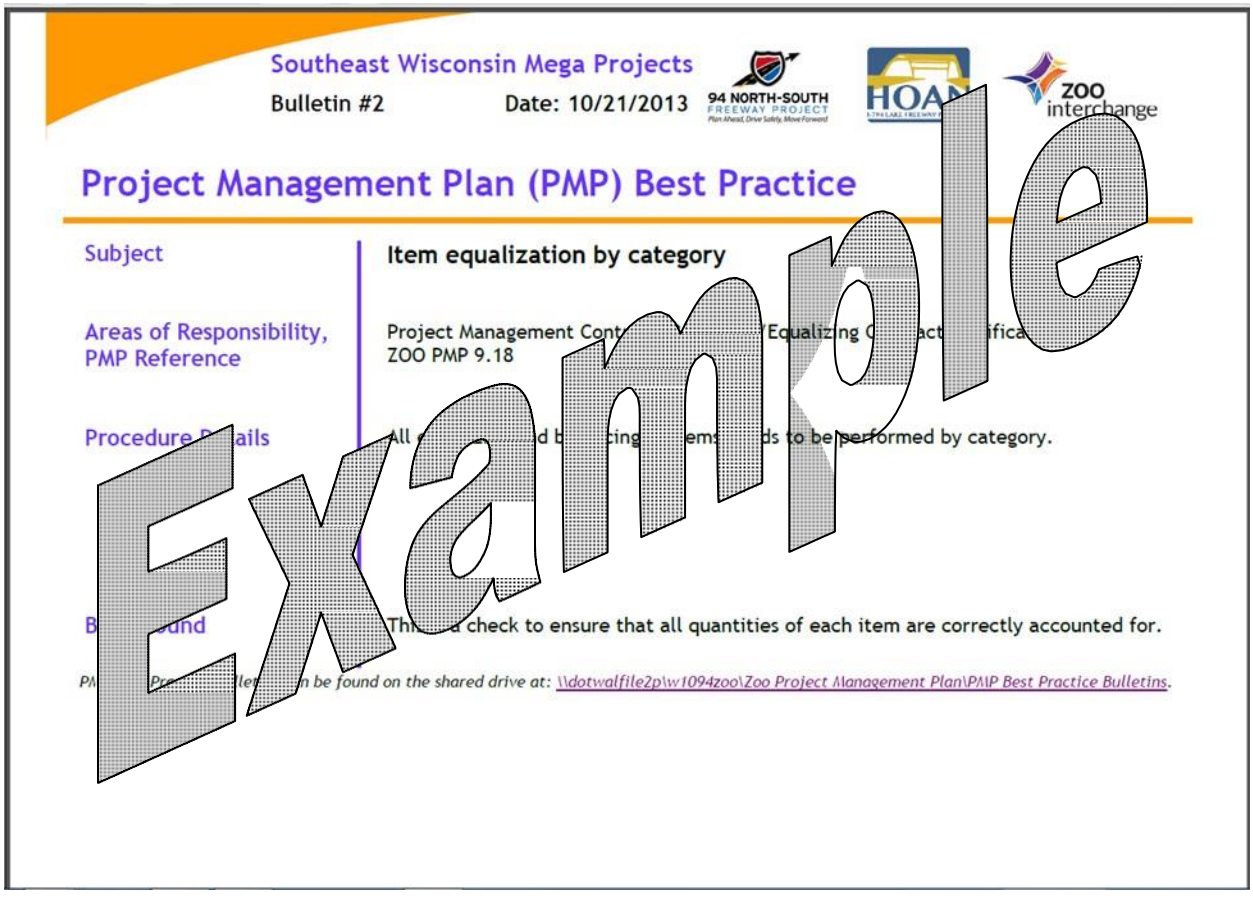




9.20 Creation and Maintenance of the Project Management Plan

In an effort to maintain consistency within Southeast Freeways Construction, PMP – Best Practice Bulletins will be sent out to the Project Team as new information becomes available, as the project's management system evolves, and to remind the construction team of requirements included in PMP. While the Zoo Interchange Project Management Plan will be referenced in the bulletins, the information contained within will apply to all of SE Freeways construction. An example of a PMP Best Practice Bulletin is shown in **Attachment 9.20 – Project Management Plan Best Practice Bulletin Example**. It will be the requirement of each person receiving the PMP Best Practice Bulletin to understand the contents and discuss any questions with their supervisor.

Attachment 9.20 – Project Management Plan Best Practice Bulletin Example



10.0 Design Quality Assurance / Quality Control

10.1 WisDOT

WisDOT recognizes that quality assurance (QA) plays a large part in successful project delivery. Before a set of plans is approved, it will go through a rigorous review process. Each Ad Hoc group in the SE-Region will review the key components of the plan for constructability, bid ability, cost effectiveness, and ease of maintenance. At the end of the review period, a formal meeting is held so comments can be presented to the design team along with other Ad Hoc groups. Review comments are shared openly with the entire group so that issues can be resolved globally. These formal reviews occur at the 30 percent, 60 percent (preliminary engineering phase), and 90 percent (draft PS&E) stages of the project, and as needed.

There are a number of checklists and date logs that will identify and record when and what items have been reviewed. In addition to the reviews that are performed at the Region level, Central Office staff will review the plan for statewide consistency along with those items mentioned above. Below are some of the key components of the plan that are reviewed for Quality Assurance.

- Traffic Control
- Staging
- Detour Routes
- Bridges
- Roadway
- Erosion Control
- Quantities
- Unit Prices
- Retaining Walls
- Lighting
- Signing/Sign Bridges
- Pavement Marking
- Drainage
- Anticipated Construction Schedule
- ITS/ FTMS

10.2 FHWA

FHWA is accountable to the American public to provide a high quality transportation system. To ensure quality, the FHWA Division Office participates in weekly Zoo Interchange Reconstruction progress meetings where many design decisions are made. FHWA also participates in the more traditional review areas such as the 30% and 60% reviews of the plans. In addition, FHWA must approve any deviation from design criteria and modification of access to interstate highways. Lastly, the FHWA ensures a quality product through the required financial plan for Major-projects. FHWA must be active in continuous financial stewardship including matching of scope, schedule, and cost changes with financial resources.

10.3 Project Quality Plan (PQP)

The purpose of the PQP is to ensure the delivery of a quality and safe project to the traveling public with minimized costs associated with rework or safety flaws. This requires a unified and solid commitment from the Zoo Interchange team to follow the PQP. The Design Engineering Consultant, Forward 45, developed a PQP (**Chapter 22: Appendix A**) and updates it semi-annually.

The PQP describes the overall approach to quality on the Zoo Interchange Corridor Freeway Reconstruction project, as well as the quality related activities that will take place on the project. The PQP is comprised of three main elements:

- Continuous quality
- Quality control
- Quality audit

10.4 Continuous Quality

Quality will be “built into” the project through the establishment of, and strict adherence to, industry-wide and project specific policies, standards, guidelines, and systems. Continuous quality establishes the framework for the approach to quality on the project; i.e. the rules by which the delivery of the project will be governed.

This PQP has been developed to avoid nonconformance by preventing the application of erroneous assumptions, calculations, or directions. This combination of resource data, project planning, and reviews provides a continuous process for prevention of nonconformance. This PQP is a living document that should be amended as needed (e.g., when new work is added to the project or other changes occur).

In basic terms, continuous quality is characterized by designers and checkers working together in the development of deliverable products; day-by-day, task-by-task, and line-by-line.

As defined in the PQP, continuous quality for this project focuses on the checking function. The checking function is not to be confused with the reviewing function. Technical reviewers are to focus on “big picture” issues, including constructability. The details of checking are to have been conducted, adjudicated, and documented as part of the continuous quality function before the review process is convened.

10.5 Quality Control

In basic terms, quality control is characterized by designers, task leaders, and technical reviewers working together to produce a good, workable product which contains as few a number of errors and omissions as is practicable and is within the “standard of care” within the industry for similar projects.

As defined in the PQP, quality control for this project focuses on the review function. The review function is not to be confused with the checking function. Technical reviewers are to focus on “big-picture” issues, including constructability. The details of checking are to have been conducted, adjudicated, and documented as part of the continuous quality function before the review process is convened.

10.6 Review Elements

Several major reviews will be conducted for this project. These include:

- Status Reviews
- Management Reviews
- Technical Reviews
- Constructability Reviews
- Field Reviews
- Milestone Reviews
- Semi-Annual Quality Team Meeting
- Quality Issue Analysis

Table 6 outlines the frequency and schedule for these reviews.

All of these various reviews constitute a budgeted, planned, and formal process of examination and inspection of project work products and deliverables. It is imperative that each consultant team staff member recognizes and understands that none of these formal quality process reviews are intended to be a substitute for building quality into the project in their ongoing performance of work.

Table 6: Preliminary Engineering Review Elements—Frequency and Schedule

Review Element	Frequency	Parties Involved	Planned Review Date
Continuous Quality	Continuous	Entire consultant team	Continuous/ongoing
Status Review	Bi-Monthly	Forward 45 board	Monthly Forward 45 board meetings
Management Review	Semi-annually	Senior management staff from CH2M HILL, HNTB, and Kapur	TBD
Technical Review	*Before* each preliminary Plan submittal	Quality manager, task leaders, designers, technical reviewers	See Project Quality Log
Constructability Review	*Concurrent with* WisDOT's preliminary plan review (or sooner)	Quality manager, task leaders, designers, NCG	See Project Quality Log
Field Review	*Concurrent with* WisDOT's preliminary plan review (or sooner)	Task leaders, designers, technical reviewers, others as needed	See Project Quality Log
Milestone Review	*After* each Preliminary Plan submittal	Project manager, deputy project manager, quality manager	See Project Quality Log
Semi-Annual Quality Team Meeting	Semi-annually	WisDOT and Forward 45 project management and quality management staff	TBD
Quality Issue Analysis	As requested by WisDOT and/or Forward 45 leadership	Quality manager and others TBD	TBD

10.7 DEC Forward 45 Quality Audits

Quality audits will have three phases: planning, conducting the audit, and conducting the post audit. Audits will be conducted to verify that project quality management activities comply with PQP procedures. The quality manager will be responsible for managing the project audit program, scheduling and processing the audit summary reports, and nonconformance and corrective action reports.

See the Project Quality Plan in Appendix A.

11.0 Construction Quality Assurance / Quality Control

11.1 General

11.1.1Purpose

The Construction & Materials Manual (CMM) defines specific procedures and certifications for quality control, documentation and verification of materials and placement methods. This guideline is intended to enhance monitoring efforts, working together with the Project Managers and all Zoo Interchange Project staff, with attention focused on warranty and design life requirements of the applicable contracts.

The 75-year design life exceeds normal WisDOT specification requirements, and the Zoo Interchange Project staff plans to follow the standardized QMP, QC and QA audit processes to achieve this goal. There is no need to establish new technical procedures to monitor quality, because the existing processes are sufficiently robust. Decisions affecting quality are assessed with respect to time and cost parameters, and case-by-case evaluations involve every member of Zoo Interchange Project staff so that direction is formulated considering, and not compromising, program goals.

11.1.2 Responsibilities

The Project Construction Management Team that is responsible for monitoring compliance with the Standard Specifications for Highway and Structure Construction and the Construction & Materials Manual procedures is comprised of several fulltime dedicated WisDOT staff with varying degrees of experience and responsibilities. The day-to-day frontline responsibility will be borne by the PCL. This individual will be assisted by the Zoo Project Construction Team. The CPMs will monitor and support their efforts and take action when necessary. The CPMs, along with the Project Construction Management Team Supervisor, will assist and supervise the project level team to verify consistency throughout the program.

The PCL is responsible for validating that appropriate materials are incorporated into the work, and that corrective action required to correct deficiencies is taken. The Project Leader must verify and document this for the final project records. The Zoo Project Construction Team will regularly meet to discuss and agree upon action items for contractor's work to successfully manage project delivery with safety, timeliness and quality.

The Project Construction Management Team Supervisor and CPMs will perform periodic audits on-site to verify compliance with the Quality Management Plans in accordance with the requirements set forth in the QMP Guide/Procedure Manual provided by the Bureau of Highway Construction for each project. The contractors' quality control, Zoo Interchange Project staff's quality verification, and independent assurance are elements of the QMP. Additionally, during the design phase, the Project Quality Plan developed by the Design Engineering Consultant (DEC) is followed to monitor design quality control through the use of a Quality Audit System, which follows a 12-step process. They report on a monthly basis to

the Program Director summarizing the quality issues for each project, including potential problems with recommendations, and note specific project deficiencies and recommended actions. As stated above, this exception reporting is produced for general distribution under the direction of the Project Construction Management Team Supervisor.

11.2 QA/QC During Pre-Construction

The WisDOT Construction & Materials Manual, Chapter 2-11, defines Pre-Construction Conference notification procedures, agenda, attendees and meeting record.

The Program IAP Specialist reviews each contract in advance of the pre-construction conference and identifies specific quality control, monitoring and verification issues. These issues are communicated to the Project Manager in advance of preparing and distributing the agenda for the meeting discussion.

11.3 QA/QC During Construction

The PCL is directly responsible for monitoring and verifying the contractor's QC Program, materials test results, materials certification and construction procedures. Ultimately, the individual CPMs are responsible for the quality assurance of the materials utilized on their projects. CPMs will schedule further meetings with appropriate team engineers as necessary to ensure unity and success of the Contractors' approach among team members.

The Project Construction Materials Engineer responsible for oversight of the Project Construction Team's materials quality assurance activities. The Program IAP Specialist is responsible for independent verification of the sampling and testing procedures for quality control of materials used on the Zoo Interchange Project.

WisDOT is contracting for independent quality assurance at the suppliers' facilities for items such as structural steel, precast concrete, etc.

FHWA periodically conducts audits or random field inspections noting compliance with quality monitoring and documentation procedures. The field inspections also observe construction methods to identify potential issues affecting facility design life and warranty objectives.

The Program Construction Management Leader also reviews Cost Reduction Incentives and related contract changes with respect to quality adherence issues.

11.3.1 QA/QC Structural Supports for Highway Signs, Luminaries and Traffic Signals

Background:

High Mast Luminaries, Sign Supports and Traffic Signals in Wisconsin and across the country have performed poorly. Experts have attributed cracking of the structures to fatigue and loading due to truck-induced gusts, natural wind and aeroelastic phenomena, i.e., vortex shedding and galloping. Research has focused on improving performance through revised loading considerations during design, thus the 2001 AASHTO Standard Specifications for

Structural Supports for Highway Signs, Luminaries and Traffic Supports is a revision of the 1994 Standards. More recent research, through NCHRP, will lead to even more conservative design parameters.

The fabrication deficiencies are being addressed through increased quality control efforts by fabricators, and independent quality assurance by WisDOT and its consultants. Foundation support for such signs and signals historically have been okay.

11.3.2 QA/QC Procedures

As an aid to improve the erection quality control, WisDOT will make available at the Milwaukee Office facility, a copy of "Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaries and Traffic Signals" published by the FHWA Bridge Technology Group, and also available through their website http://www.fhwa.dot.gov/bridge/signinspection.cfm.

The following Construction & Materials Manual provisions remain applicable: 1) CMM Chapter 5 Structures: Section 5-20 Steel Bridges, 2) CMM Chapter 5: Section 5-55 Shop Fabrication,3) CMM Chapter 6 Miscellaneous Construction: Section 6-55 Electrical Construction, and 4) CMM Chapter 8: Materials Testing, Sampling, Acceptance: Section 8-45 Materials Testing and Acceptance-General.

These Guidelines cover both installation and inspection, and maintenance and repair; therefore, this PMP deletes sections not applicable and makes minor revisions to match Wisconsin procedures.

1) Section 7. Erection: Installation of Bolts and Fasteners, refers to RCSC, which is the American Institute of Steel Construction (AISC) Research Council for Structural Connections.

2) Section 7. Erection: Anchor Rod Joints, refers to a grout pad between the base plate and the concrete footer. Elimination of grouting is the most recent National Council for Highway Research Projects (NCRHP) recommendation.

The following sections do not apply:

7.0	Management of Inventory, and 7.1 through 7.4
8.1.4.	Interim Inspection
8.1.5	Damage Inspection
9.0	Inspection Frequency
10.0	Inspection Priorities and Planning
11.2	Tools and Equipment – All references to Tools and Equipment for minor repairs are deleted because that is the contractor's responsibility.
11.3	Traffic Control (TC) deleted - follow MUTCD and contract plan requirements. All TC to be furnished and maintained by the contractor.

14.0	Element Condition Rating. The intent of the Wisconsin Specifications is for all elements of High Mast Luminaries, Sign Supports and Traffic Signals to have a Condition Rating 0 at the time of contract acceptance; therefore, this section is not necessary.
14.1	PONTIS Element Definitions and Ratings are not applicable, and the condition ratings must be good (new).
15.	Inspection Report deleted - follow CMM guidelines.
16.	Maintenance and Repair Appendix
A	Example Element Ratings
Appendix B	Example Inspection Report Forms
Appendix D	Ultrasonic Anchor Inspection Procedure

11.4 Program Coordination

11.4.1 Purpose

On large programs, management of interface and coordination activities is essential because of the potential impact to Cost and Schedule. This plan delineates an approach to manage the coordination effort between prime contractors and with all third party entities. Successful management of interfaces removes potential delays and minimizes scope modifications, with a beneficial effect on overall Program control.

Too often individual projects and contracts only focus on the immediate scope of work and fail to recognize the impact of their progress on others or how other projects impact their project/contract. The CMM and Specifications thoroughly address responsibilities of involved entities on a single contract basis, but management of interface and coordination activities across the entire program is required to keep the “big picture” visible so that any individual contract changes or modifications are not only assessed on the particular project, but with respect to the Program in total and in consideration of the constraints of all third party entities.

With numerous utilities and third party entities involved in the Zoo Interchange Program addressing the timing of all participants’ needs and activities is of paramount importance if the overall cost and schedule objectives are to be achieved.

11.4.2 Responsibilities

The ZDG delineates physical contract limits and describes the scope of work for all elements of the respective contracts that require interaction or coordination with others. Results of Subsurface Utility Excavations (SUE) performed need to be further validated and reconfirmed during the course of construction.

The ZCG CPMs must be cognizant of these interface items and verify that they are fully understood by the respective contractors, starting in the Pre-Construction Meeting. Existing documents, such as the CMM and specifications, establish primary coordination responsibility with the individual Project Managers. Depending on the various agreements and cost recording requirements, appropriate records are kept for utility-related work, and the CPM is responsible to verify that this is progressively addressed.

Individual Contractors address these issues when creating the Initial Work Plan and Critical Path Method Progress Schedule, and adhere to the responsibilities outlined in 107.22 of the Standard Specifications. Also, CMM Chapter 1 General Provisions: Section 65 Contract Records, refers to Contractors' responsibilities in this regard.

The Program Schedule Controls Engineer ascertains that the contractors' planning efforts are sufficiently detailed, comprehensive and amply robust to accommodate the needs of "others". Specific Interface schedule sorts or filters are created to combine data from all contracts to enable tracking progress on interface items and, more importantly, forecast where adjustments are required in one or more contracts to meet the overall schedule needs. Program Construction Management Supervisor and Construction Project Managers lead the review of the status of interface items and assist in forecasting where changes are necessary for the interest of the Program.

The individual third party entities must participate in discussions and be capable of taking special actions as necessary to keep all aspects of the Zoo Interchange Program on track. General duties and expectations are outlined in the CMM.

11.4.3 Procedures

SE Freeways has committed to institute an enhanced plan delivery process from the 60% phase to PS&E. This process will facilitate greater and timelier infusion of SEF Mega construction team and industry feedback into the plan development process. The process will also integrate the revolutionary 3D design technology into traditional design review processes to leverage its benefits. Please see **Attachment 11.4.3.1 – 60% to Draft PS&E Plan Delivery Process** below. The traditional plan delivery process is in blue dots and text while the additional SE Freeways Mega construction team process meetings / milestones are in red dots and text.

Attachment 11.4.3.1 – 60% to Draft PS&E Plan Delivery Process

This process will provide for the following:

- 60% plan and Draft PS&E 3D Model snapshot delivery dates
- Scheduled 60% plan release and meeting with industry for large lets
- A Pre-Draft PS&E review meeting with in-house SEF construction/design staff
- 60% Draft and Draft PS&E Comment Resolution meetings to finalize plan revisions

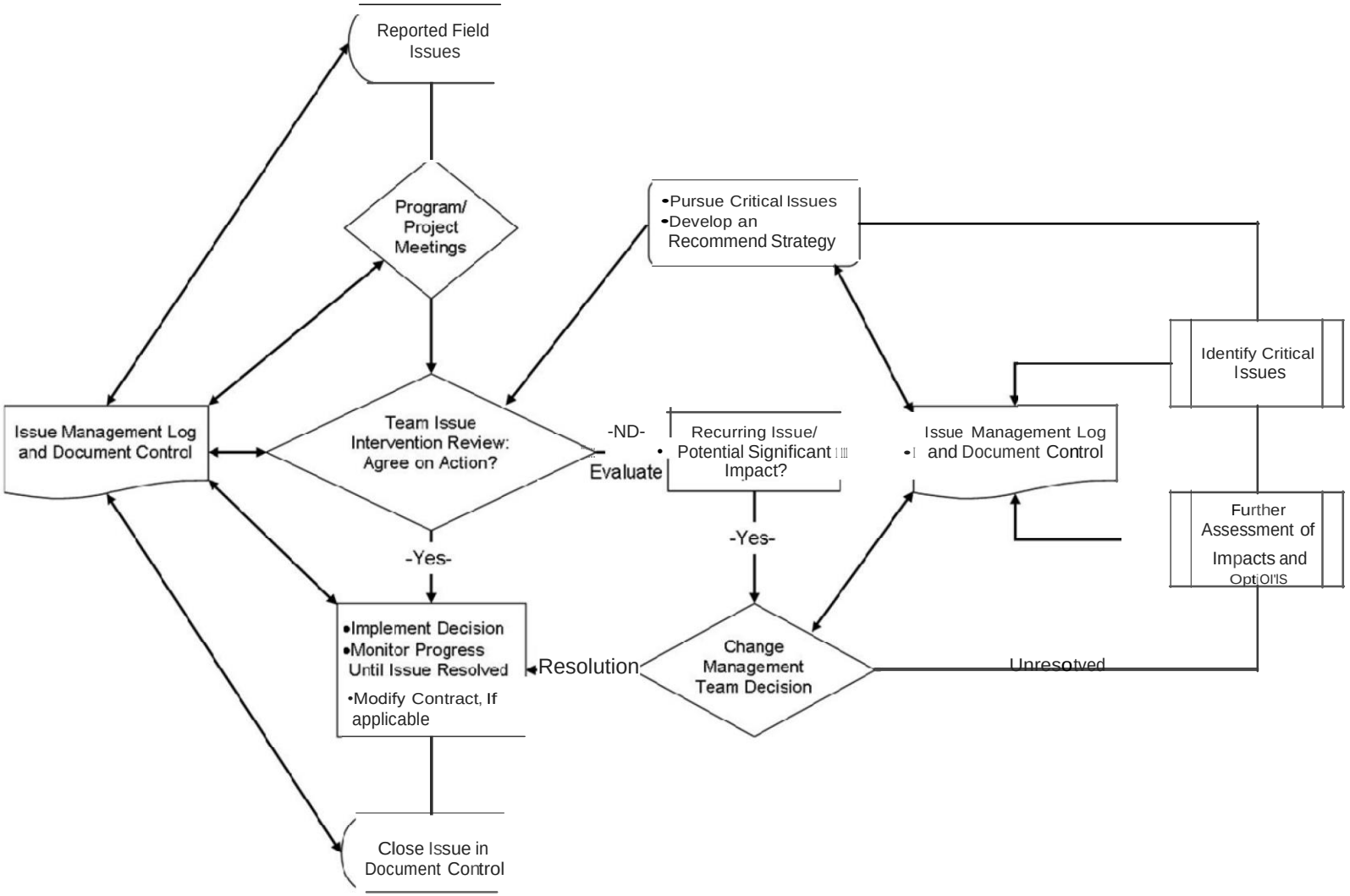
The SE Freeways team agreed to establish the following team building meetings: the Annual SEF Team building meeting and the Quarterly SEF Leaders meeting. Attendees for the annual meeting would be members of SE Freeways 2 Design, SE Freeways 1 Construction, and the projectized Regional Utilities, Real Estate and technical support areas. Key consultant support staff, bureau and FHWA liaisons would also be invited. Quarterly meetings would be for a select group of project managers and decision makers.

The SEF design/construction teams will explore additional interactive meetings within the revised plan delivery process to address the following topics: earthwork balancing, staining and landscaping, adjacent regional project integration, staging areas, staging options, access choices, etc. Technical advisor support may be incorporated.

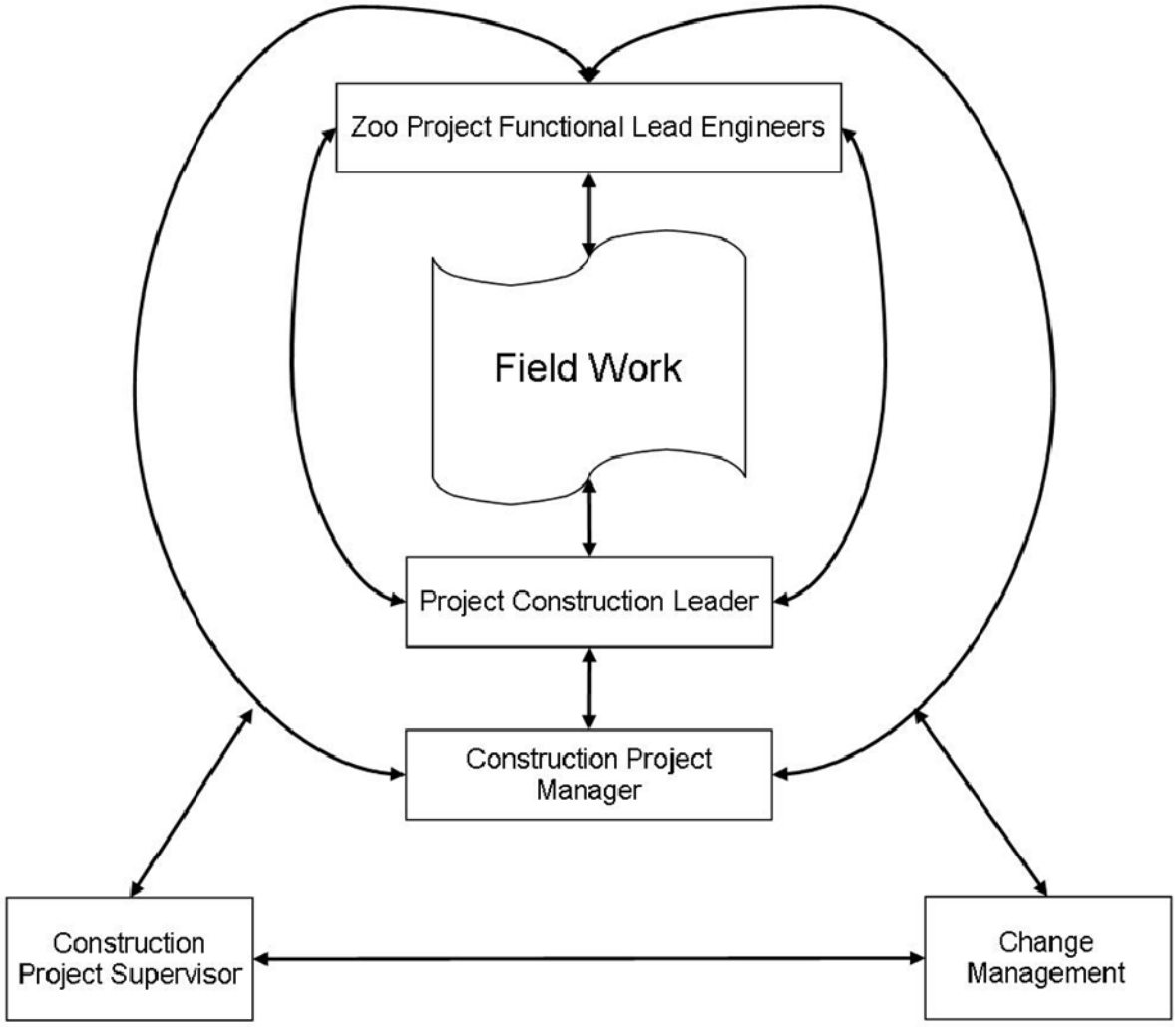
Management of interface and coordination activities is performed concurrently with Program and Project meetings such as Construction Progress, Utility, Program project Manager and Traffic Control meetings. The meeting notes for each meeting will outline actions required, due dates and contact parties for each item. These items will be tracked and followed-up on during proceeding meetings and interactions. Refer to the **Attachment 11.4.3.2 – Interface Management Process**, for the associated information flow.

Elevation of issues for resolution actively involves the ZCG at various levels, the designer of record as required, and FHWA throughout. Depending on the complexity of the issue, various FHWA levels participate, including the Oversight Manager and Division Administrator. When input from third parties, such as utilities and property owners, is necessary to bring issues to closure, the Project Managers and/or the Program Real Estate Director will meet with such entities and/or invite them to formal meetings with ZCG to achieve a timely resolution in accordance with the Master Schedule objectives.

Attachment 11.4.3.2 – Interface Management Process



Attachment 11.4.3.3 Construction Coordination



11.5 QA/QC During Closeout

Final Materials Documentation will be reviewed and accepted by the Zoo Interchange IAP Oversight Specialist prior to tentative final estimate approval. This verification will be made on the DT1310 form - "District Certification of Materials Used on Highway Project" with exceptions from standards noted, and includes the IAP Oversight Specialist's signature.

During Project Closeout, prior to the Project Manager finalizing and issuing the punch list, the FHWA conducts a walk-through and coordinates with the CPM and the PCL to confirm that quality deficiencies and potential maintenance items are included in the punch list.

12.0 Environmental Monitoring

The final NEPA decision document and other agreements can define required mitigation for the major project. In addition, environmental permits may be obtained during the design of the project, which will specify additional requirements to be adhered to during construction. The Project Management Plan should set up the general requirements to ensure that all environmental commitments are included in the design and construction of the project, and that a proactive approach will be used for overseeing and inspecting environmental work during construction to help guard against cost overruns and schedule delays. In addition, many Records of Decision require environmental compliance after a facility is open to traffic on an ongoing basis (e.g. stormwater management or wetlands performance).

12.1 Design

The Zoo Interchange Team will focus on coordinating closely with the Wisconsin DNR and following steps outlined in the Wisconsin Facilities Development Manual (FDM) to meet environmental commitments. Consultant contract scoping shall be reviewed by WisDOT environmental monitoring staff to ensure compliance to FDM requirements for environmental permitting. The WisDOT environmental monitoring staff will be comprised of a SE Freeways employee and a region Ad Hoc during preliminary and final design.

Roles and responsibilities of the WisDOT Zoo Interchange Team's environmental monitoring staff during design to see that commitments in the FEIS are met:

- Attend weekly Zoo Interchange program meeting to keep appraised of design schedule and permitting status.
- Meet monthly with the WDNR Zoo Interchange liaison.
- Attend quarterly DNR region coordination meetings on behalf of the Zoo Interchange Team.
- Manage and meet schedules for environmental document submittals.
- Participate in public information meetings regarding environmental matters.
- Ensure that project design packages and consultant work is coordinated properly with the Environmental Services Technical Support Group with matters concerning air/ noise, erosion/storm water, hazmats, and wetlands.
- Participate in plan review meetings and comment on environmental items.

12.2 Construction

This guideline supplements the WisDOT Construction & Materials Manual and Specifications, and defines additional construction management procedures required to facilitate compliance with Environmental Permits, Regulations, Procedures, environmental commitments, and mitigation measures for the Zoo Interchange Project. The contracts to the individual firms include these requirements.

The Zoo Interchange Project Safety and Health Manual specifies procedures and requirements to protect workers from hazardous materials encountered during construction, such as lead, silica, asbestos, dust, and others. The Contractor's designated Safety Coordinator is responsible for monitoring and reporting compliance. The PCL is responsible for confirming that the reports are complete and that the Safety Coordinators are monitoring the job site and enforcing the Safety Program requirements.

Prior to the start of construction on each contract, each Construction Project Manager and the PCL reviews the Zoo Interchange Project Environmental Assessment, EIS and the Permits issued to determine what environmental issues, commitments, and mitigation measures and construction procedures constraints are identified and required for the respective construction contract limits.

It is the primary responsibility of the Contractor, Construction Project Manager, Construction Engineer and the ZCG as a whole to maintain environmental compliance as governed by the Project permits, agreements, and documents. It is the responsibility of the ZCG to achieve this through proactive observation and communication. Situations may occur that necessitate resolution; the ZCG, Construction Engineer(s) and Contractor(s) are collaboratively responsible for addressing and resolving the issues proactively in accordance with established procedures and regulations.

The ZCG maintains oversight and direct coordination responsibility with the respective State and Federal environmental permitting and regulatory agencies.

The PCL monitors compliance as part of the Inspector's Daily Report, and confirms compliance to the ZCG. The ZCG performs unscheduled field observation visits to monitor compliance.

Consistent with the WisDOT/WDNR Cooperative Agreement, the Project Managers closely coordinate with WDNR staff to alert them to upcoming construction activities that present potential environmental concerns. In this manner, proactive coordination is implemented, and the WDNR staff time and resources are more effectively utilized. The Project Manager coordinates weekly with the Public Information Officer to notify the Public Information Officer of scheduled construction activities near locations of concern (sensitive receptors, sites of environmental commitments, and/or sites of third-party agreements) to allow the Public Information Office to contact the respective media, local officials and institution management to proactively inform them and avoid adverse reactions to an unanticipated or unexpected event.

12.3 Hazardous Materials

The Project Managers and PCLs utilize construction schedules and environmental assessment documents and reports regarding hazardous substances to proactively plan responses and coordination should construction operations encounter or expose hazardous substances. At the preconstruction meeting, the locations of potential concern regarding hazardous substances, and scheduled advance notification of work in those locations, is required of the contractor and the PCL.

The PCL notifies the Project Manager, at the weekly coordination meeting, of planned excavation or demolition scheduled for the following week at locations where the Environmental Assessment indicated potential presence of hazardous substances. The Project Managers notify the District 2 Hazardous Substances Coordinator of the planned demolition or excavation, and request an on-site field coordination prior to the work to facilitate coordination and response from the Bureau of Environment for the safe and efficient removal of the substances.

Procedures and responsibilities for response when Hazardous Materials are encountered during construction (demolition or excavation) are set forth in the Construction & Materials Manual in Chapter 2.13.1.7. Potential contaminated materials may contain trace amounts of industrial wastes, including fly ash, petroleum, chemical solvents, and lead from paints. Some materials and substances encountered may emit abnormal odors and not be hazardous substances. The PCL carefully monitors hazardous materials, maintaining close coordination with the Project Manager to avoid false presence calls to the District Hazardous Substance Coordinator.

The PCL determines the quantity of materials removed by obtaining load tickets from the remediation contractor. The PCL then adjusts quantities to reflect the excavation or fill quantity changes, and the resulting cost revisions to the contract. The PCL notifies the Project Manager of the quantities removed, based on the load tickets, to monitor the remediation costs.

12.4 Noise

A portion of the Zoo Interchange Project is within a residential corridor, where sensitive noise receptors abut the right-of-way. Specific noise levels and activities are specified between the nighttime hours of 9:00 p.m. and 7:00 am for individual communities; exceptions are required for the City of Milwaukee. Design Project Managers coordinate with each City for any limitations. The PCL is responsible for monitoring the contractor's work schedule, proposed construction operations and noise levels for conformity with the applicable noise mitigation constraints. Conformity is determined by comparing noise measurements at residential property lines as required in the Special Provisions.

12.5 Dust

Each contractor is required to comply with dust control measures mandated by the WisDOT Specifications. The proximity of residential and commercial land use warrants more focused dust control measures.

The PCL shall monitor dust and debris in the areas immediately adjacent to the construction work zone and material entry/exit points. The PCL requires that the contractor reduce dust emissions through watering and other measures acceptable to the WisDOT and WDNR. The PCL notifies the Project Manager of conditions adjacent to the work site, so that the Project Manager can inform the contractor responsible to address the problem through more effective sweeping in the area.

12.6 Air Quality

The project site is in a non-attainment area for the federal one-hour ozone standard; as such, construction activities can have a major impact beyond the project limits.

The Zoo Interchange Program requires that:

1. Diesel-fueled equipment must use roadway grade, low sulfur diesel fuel, and not the red-dyed diesel fuels marked for off-road use. Compliance with the most recent federal regulations is also a requirement.
2. Contractors designate staging zones for trucks waiting to load and unload where truckers queue.
3. Contractors are encouraged to minimize truck and equipment idling, and shut down equipment and trucks when idle time is more than 15 minutes.
4. Stationary diesel-powered equipment is situated away from abutting properties and the general public.

The PCL monitors the contractors' compliance with these requirements and advises the Project Manager of con-compliance issues. The Project Manager resolves the problem with the Contractor.

12.7 Erosion Control Implementation Plan (ECIP)

The PCL is responsible for inspecting, monitoring and documenting the contractor's compliance with the Erosion Control Implementation Plan for the job site. The PCL is responsible for monitoring the installed erosion control devices and requiring the contractor to replace damaged, destroyed or non-functioning erosion control devices.

Weekly Erosion Control Inspections are the responsibility of the construction engineer(s) as assigned. Additional inspections are to be conducted within 24 hours after each 1/2" rainfall, and especially after major storm events to check the functionality of previously installed erosion control features and the need for additional devices. Refer to **Attachment 12.7.1 – Description of Erosion Control Site Inspection Report,** and **Attachment 12.7.2 – Erosion Control Diary / Inspection Form.** Also refer to **Attachment 12.7.3 – WisDOT Erosion Control Order**, which directs the contractor to mobilize and implement erosion control items or face a minimum of $300 per day deductions in payment. These documents can be accessed through the Wisconsin Department of Transportation Extranet website, C&MM, Procedure 2-10-50.

The Project Manager requests an early on-site coordination meeting with the WDNR to confirm that the contractor is complying with the plan.

It is recommended for multi-year contracts that the PCL invite the WDNR to the project prior to the winter carry-over season and at the end of the project to ensure compliance and good stewardship.

12.8 Vibration

Adjacent to the Zoo Interchange Project right-of-way are buildings and facilities, where the consequences of vibration from construction activities may result in property damage. In accordance with the contract requirements, the PCL is responsible for monitoring the Contractor's work schedule, proposed construction operations and equipment vibration, and notifies the contractor when he is violating specifications. It is the Contractor's responsibility to modify equipment, construction methods or duration to mitigate potential damage.

12.9 Archeology

Archeological assessments were performed as part of the Zoo Interchange Project Environmental Assessment and EIS. Nevertheless, given the location and history of the project site, subsurface construction may uncover potential artifacts.

The Contractor is responsible for notifying the PCL if any archeological resources are uncovered unexpectedly during excavation. The PCL is responsible for directing the contractor to avoid disturbing the site, contacting the Project Manager who, in turn, coordinates with the Bureau of Environment.

Buildings are adjacent to the construction work zone, and require documented crack and damage inspection prior to construction, followed by a similar inspection after construction. The pre-construction inspection is to be performed by WisDOT or its designated agent, and the post-construction survey is to be conducted by the Contractor, with the information provided to the PCL and Project Manager.

Attachment 12.7.1 -Description of Erosion Control Site Inspection Report

Description of Erosion Control Site Inspection Report

The form my be printed and used in tho field for notes and/or as on electronic record of erosion control inspections. Contractor follow-up is mandated in Trans 401.10 and is a required part of this inspection report. If the contractor fails to accomplish the required corrective actions enforcement as required in Trans 401.11 will result.

PAGE 1

General Information

- Provide date of inspection, inspector(s). general construction project information. project staff. and contractors involved including appropriate phone numbers.

Best Management Practices Evaluation

Include specific comments regarding erosion and sediment control BMPs throughout the project.
Are tl'le BMPs implemented and installed corTectly?
Are they adequately installed for site conditions?
Are they functioning properly?

For each applicable BMP, li detailed information not only regarding specific failures efficiencies, but also successes and improvements. It is usually helpful to reference location.

- Mark appropriate box.

If corrective actions are needed, indicate what should be done to rernedy deficiencies in the "Required Corrective Actions" column.

- When the contractor has taken corrective action, record the date it was implemented and/or accepted {sat sfactory installation).

PAGE :2

Best Management Practices Evaluation (continued)

- Utilize "Other" and "General Comments" sections as needed.

Mobilizations

- Note whether the corrective actions will require a mobilization (substantial replacements/additions, heavy equipment, extensive labor force, etc.) by checking "yes." If a mobilization is not required (i.e., normal, small-scale maintenance) check "no."
- If a mobilization is required, check which type is required. Note that a $300/day fine is associated with non-response to either mobilization after the grace period indicated on the form has passed.

Signature Lines

- SIQ • te. rd the time at which this form was stbmi1ted to the contractor. Also record the type of con a t { · ct. fax. e-mail, phone call, etc.).
- For r ne maintenance, the contractor is required to respond within 24 hours of eceiving notification. When the equired corrective actions have been completed, the contractor should sign and date (induding time) the form and submit it to the project engineer (or other responsible person).

The corrective actions taken by the contractor must be properly instaUed and accepted by the project engineer {or other responsible person). This acceptance is indicated by the project engineer's signature on the final line.

12.6.1 Erosion Control Diary BLANK FORM.docx *Rev.* 7118/2002

Attachment 12.7.2 -Erosion Control Diary /Inspection Form

EROSION CONTRO DIARY /INSPECTION FORM

Inspection Date: PROJECT I.D

Project Eng.Jnspector: ROADWAY

Field Office Phone #: DESCRIPTION

Prime Contractor: COUNTY

EC Sub Contractor:

Reason for Inspection: Weekly Rain Stage Other (circle one) Weather:

Estimated percent of project open and not landscaped:

Modifications Required:	YES	NO	Not Applicable	Modifications Required:	YES	NO	Not Applicable
Silt Fence	☐	☐	☐	Mulch	☐	☐	☐
Ditch Checks	☐	☐	☐	Silt Screen	☐	☐	☐
Erosion Mat	☐	☐	☐	Turbidity Barrier	☐	☐	☐
Riprap	☐	☐	☐	Temp. Diversion Channel	☐	☐	☐
Inlet Protection	☐	☐	☐	Temp. Settling Basin	☐	☐	☐
Temporary Seeding	☐	☐	☐	Grading Practices	☐	☐	☐
Permanent Seeding	☐	☐	☐	ECIP	☐	☐	☐
Sod	☐	☐	☐	Other	☐	☐	☐
Project Schedule	☐	☐	☐	Other	☐	☐	☐

Note: Any boxes checked "YES" must have comments and recommendations. Describe them below.

Comments/Recommendations concerning the effectiveness of, and any reasonable corrections needed to maintain or increase the effectiveness of, in-place erosion control and storm water management measures are described below by the individual erosion control item or other general erosion control measures. (Trans 401.10)

EROSION CONTROL ITEM	COMMENTS *1* RECOMMENDATIONS

O See Additional Sheets or Optional Erosion Control Diary – Page 2 for additional comments (Attached)

COMMUNICATION NOTES:

To Whom	Type of Communication (circle one)	Comments
	Direct E-mail Phone Fax Written Order Diary	
	Direct E-mail Phone Fax WrltlenOrder Diary	

Rel' 718/2002

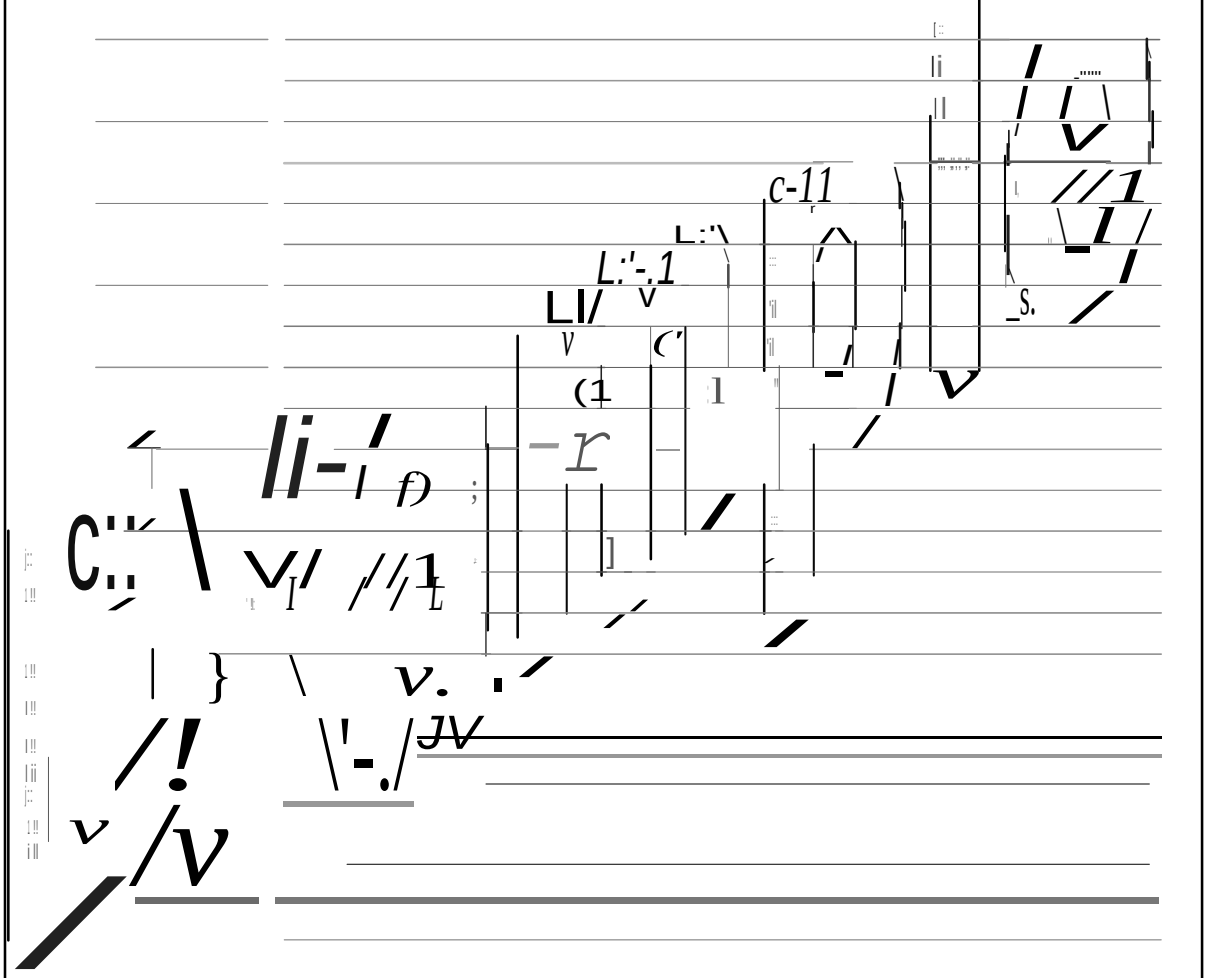
Attachment 12.7.2- Erosion Control Diary /Inspection Form (Continued)

Optional Page 2 - EROSION CONTROL DIARY

Inspection Date: _____

Additional Comments / Descriptions for Specific Erosion Control Practices

EROSION CONTROL ITEM	COMMENTS / RECOMMENDATIONS FOR SPECIFIC EROSION CONTROL PRACTICES



Rev. 7/18/2002

Attachment 12.7.3 – WisDOT Erosion Control Order

Wisconsin Department of Transportation
Erosion Control Order

2-15-02

Project ID _____
Roadway _____
Description _____
County _____

Order Issue Oate & Time _____

Project Engineer _____ Phone # _____ Prime Contractor _____ Phone # _____
Project Manager Phone # _____ EC Sub _____ Phone # _____

The above contractor is hereby required to provide sufficient personnel, equipment, supplies and incidentals to install erosion control items on the above job site. If the contractor fails to mobilize within the time period stated below, a monetary deduction, as specified in the Standard Specifications and Special Provisions, per calendar day will be made from money due under the contract, for each calendar day of delay beyond such time period, except when such a time period is extended by the engineer for delays which are not the fault of and are beyond the control of the contractor.

☐ **Erosion Control Order** - The contractor or responsible person shall implement, or cause to be implemented, the necessary **corrective** action within TWENTY-FOUR hours of receipt of this written order or as directed by the project engineer (_____hours) as described in TRANS 401.10.3. No mobilization payment is associated with this order.

☐ **Erosion Control Mobilization** - In accordance with Standard Specifications 628.3.7, the contractor's forces shall be mobilized within SEVENTY-TWO HOURS of receipt of this written order or as directed by the project engineer (_____hours). A minimum $300 per day deduction will apply unless modified by the contract special provisions. The contractor will be paid for a Mobilization, Erosion Control.

☐ **Emergency Erosion Control Mobilization** - In accordance with Standard Specifications 628.3.8, the contractor's forces shall be mobilized within EIGHT HOURS of receipt of this written order or as directed by the project engineer (_____hours). A minimum $300 per day deduction will apply unless modified by the contract special provisions. The contractor will be paid for a Mobilization, Emergency Erosion Control.

Attach description of the corrective action required or describe below.

_____

_____

_____

_____

Submitted by Project Engineer Date Time

Received by Prime Contractor Date Time

☐ *This written erosion control order documents the effective date and time of any verbal erosion control directive, as listed at the top of this form.*

Corrective action taken (to be filled in by the contractor) attach additional sheets if necessary.

_____

_____

_____

_____

_____

Completed By Prime Contractor Date Time

Approved by Project Engineer Date Time

13.0 Right-of-Way

13.1 Base Mapping

Much of the preparatory work for base mapping was completed during the data gathering and/or corridor study phases of the project. The remaining efforts related to base mapping includes:

- Obtaining copies of last deeds and any documents referenced therein for all properties within the vicinity of the project
- Obtaining title commitments for affected parcels in the project areas including ownership
- Access easements or agreements, utility easements, and other documents of record
- Sending letters identifying encroachments to the subject property owners requesting removal of potential encroachments
- Updating base mapping with information obtained above.

13.2 Right-of-Way Plat

The Zoo Interchange Team will prepare a traditional Right-of-Way plat (not a transportation project plat) during the preliminary engineering phase of the project. Forward 45 will prepare the plats and work closely with WisDOT SE Region Ad Hocs to prioritize plat delivery in line with the projects' delivery schedules.

13.3 Preliminary Work

Involvement of the Zoo Interchange Real Estate Team has already been initiated (see above), with coordination to estimate and validate real estate acquisition costs following the Real Estate Statewide cost estimating guidelines and completed as part of the preparation of the Draft EIS. This included approximate budgets for acquisition, labor costs, relocation, demolition, incidentals, and contingencies. Potential risks and estimated cost of litigation were also estimated. The team attended all Public Information meetings, met or offered to meet with most/all of the potential relocation parcel owners/occupants throughout the study phase, and presented proposed designs and their impact to real estate along the corridor.

Once design reaches 30 percent, the Real Estate Team will continue to refine their estimates for real estate following the Real Estate Statewide cost estimating guidelines. On occasion, real estate will suggest design changes to reduce the impacts on the real estate to be acquired, which may reduce costs to the project. As early as possible in the project development process, it is critically important to identify impacts that will result in the relocation of any occupants/tenants in affected properties.

When the design reaches 60 percent, the Real Estate Team reviews plats and plans for accuracy and omissions. It is important that the design team has prepared an encroachment report for the entire project limits.

It is also important to note that WisDOT measurables for Real Estate require Right of Way Clear by final PS&E. In order to attain that standard, the Right of Way plat must be provided to Real Estate one year and 7 months before final PS&E if there are strip acquisitions or residential relocations. However, the Right of Way plat must be provided to Real Estate two years and 7 months before final PS&E, if there are business relocations.

When the preliminary Right of Way plat is delivered to Real Estate, Real Estate will begin the appraisal contracting process. An Appraisal Problem Analysis (APA) is done. Real Estate evaluates each parcel to determine the complexity of the appraisal problem. This helps define the scope of work so that the appraisers can determine the level of effort required to deliver each appraisal. The APA also identifies specific items that need to be considered and not overlooked by the appraiser. When the Right of Way plat is finalized and the DSR is approved, Real Estate will approve a Relocation Order. A Project Cost Analysis (PCA) will be executed in order to encumber funds needed to acquire the real estate needed to construct the project.

13.4 Appraisal and Acquisition

After the appraisal contract is approved, an appraisal kick-off meeting is scheduled with the appraiser, Real Estate staff, the project manager, and the Right of Way plat staff to share project information and address the appraiser's questions. The appraiser submits the completed appraisal reports to WisDOT for review and approval by the WisDOT review appraiser.

The day the offer is presented/mailed to the property owner by the designated Real Estate negotiator is the date negotiations were initiated. The owner can accept the offer or attempt to negotiate for a different amount. If the owner is not satisfied with the offer they are encouraged to obtain an appraisal by a qualified appraiser of their choosing.

The owner has 60 days, as provided by statute, to obtain an independent appraisal and return it to WisDOT for consideration of the value opinion and for reimbursement of the appraisal cost. If the negotiator is presented with information that merits a change in the offering price, they will submit an administrative revision outlining the reason for any final changes. If WisDOT and the owner reach an agreement, the negotiator will request a payment check from Central Office and will acquire the property by Deed. The Real Estate Team is responsible for preparing all documents, aside from the check, for the closing process.

Should an agreement not be reached, the negotiator will issue a jurisdictional offer to the owner. The owner has 20 days to accept or reject the jurisdictional offer. After the 20 days, WisDOT will proceed to acquire the property via an Award of Damages. Properties acquired by Award of Damages may be litigated in the Courts. The owners have two years to file an appeal for greater compensation if the property is acquired by Award of Damages. They have six months to appeal for greater compensation if acquired by Deed.

After all needed property is acquired for the project, the Certificate of Right-of-Way is executed as part of the project Letting process.

14.0 Safety and Security

14.1 Policy

The WisDOT Zoo Interchange Project Management Plan maximizes the focus and attention on safety and health for the construction engineers, contractors, the traveling public and official visitors to the construction site.

Safety and health priority is one of WisDOT's primary goals for the Zoo Interchange Project. As such, to be in concert with WisDOT, the contractors and subcontractors must be committed to a zero accident goal for all operations. Safety takes precedence over schedule and cost in the process of executing the program construction requirements.

14.2 Responsibility

Safety and health is the responsibility of each contractor and every employee on the job site, regardless of level.

Contractors are directly responsible for providing a safe working environment, protecting the work zone and traffic, and taking the necessary corrective actions to address identified safety concerns. According to the State of Wisconsin Standard Specifications 107.1, Contractors shall "(2) Comply with all applicable federal, state and local health official rules and regulations governing safety, health, and sanitation. Provide all necessary safeguards, safety devices, and protective equipment. Take all other actions that are reasonably necessary to protect the life and health of employees on the project and the safety of the public."

The WisDOT Risk Manager is responsible for the development, implementation and program management of all OCIP programs and OCIP staff personnel.

The WisDOT OCIP Project Manager shall report to the WisDOT Risk Manager, and is responsible for the day-to-day operations and activities of the OCIP programs.

The Owner Controlled Insurance Program (OCIP) Program Manager is responsible for overall management of the OCIP, including enrollments, drug testing, monitoring, evaluating and coordinating contractor and subcontractor safety, health and environmental compliance.

The OCIP Safety Director is responsible for the execution of the safety, substance abuse and loss control programs on the project.

WisDOT's Regional Safety Engineer is responsible for monitoring, evaluating and coordinating safety compliance for WisDOT staff, the PCLs, their field inspectors, Program Construction Management Consultants, Design Engineers, and other official visitors to the project site.

PCLs are responsible for their compliance with all rules, regulations of the safety program and the safety training of their construction oversight staff, both at the construction site and their offices. All engineers, technicians, construction workers and visitors to the construction site shall comply with WisDOT's Zoo Interchange Project Safety Manual, Safety and Health Program regarding project safety rules and personal protective equipment.

14.3 Procedures

14.3.1 Safety During Pre-Construction

14.3.1.1 Pre-Construction Activities

WisDOT's Zoo Interchange Project Safety Team, which includes the WisDOT Risk Manager, WisDOT OCIP Project Manager, WisDOT Regional Safety Engineer, OCIP Insurance Program Administrator, OCIP Safety Director, Insurance Loss Control Consultant, Contractor's Safety Coordinator, WisDOT's CPM, the Zoo Interchange Project Design Engineer(s), and others as may be appropriate, will hold a pre-construction safety meeting to communicate issues related to the contractors' and subcontractors' safety programs and the OCIP Program.

All contractors and subcontractors shall submit a site-specific Safety Program for OCIP and WisDOT review and approval prior to mobilization on the project. The critical and initial contact for all matters related to safety is the OCIP Safety Director. (See **Attachment 14.3.1.1.1 – Critical Contract Safety Situations.)**

The pre-construction safety meeting also provides the opportunity to initiate safety planning as a productive tool.

14.3.1.2 WisDOT Requirements

WisDOT's Zoo Interchange Project Safety Manual, Safety and Health Program, and WisDOT's Construction & Materials Manual, Chapter 1.5 requirements, are used as a minimum criterion for safety. OSHA CFR 1926 and 1910, along with Wisconsin Department of Commerce, Wisconsin Department of Natural Resources, and Wisconsin Department of Agriculture, Trade and Consumer Protection, regulatory requirements also apply.

WisDOT, in conformance with the Zoo Interchange Project Safety Manual, prohibits construction site visits by anyone other than persons who are enrolled in the OCIP, and have completed orientation and passed drug screenings. The contractors' and subcontractors' employees and management, the PCLs and inspection staff, WisDOT and FHWA staff and their designated technical advisors, and public safety and emergency response personnel shall be enrolled. All others are excluded from the construction site, except when escorted as official visitors, wearing the required personal protective equipment and having completed a brief orientation by the OCIP Safety Director or designated representative.

14.3.1.3 Weekly Meetings

The OCIP Safety Director will conduct weekly safety meetings, and all contractor/ subcontractor safety personnel who will be working on-site that week are required to attend. Contractor work plans for the week, safety issues, accident/injury-free performance, and weekly work schedules will be discussed. Meeting minutes and attendance will be kept and shared.

14.3.1.4 Contractor Training

Contractors are responsible for training their employees. The contractor(s) and subcontractor(s) are obligated to provide Safety Coordinator(s) with credentials as specified in the Zoo Interchange Project Safety Manual. The WisDOT Risk Manager, WisDOT Regional Safety Engineer, WisDOT OCIP Program Manager, and the OCIP Safety Director shall review and approve the contractor's Safety Personnel, and their specific employee safety training programs.

14.3.1.5 Project Construction Leader(s)

Contractors are required to provide and confirm that their field inspectors and engineers have completed the requisite safety training for the anticipated conditions of their construction site. The PCLs provide documentation attesting to the safety training of their staff to the OCIP Safety Director through the WisDOT Regional Safety Engineer.

The Project Construction Engineer/Leader monitors his staff and sub-consultants, both on-site and in the construction field office, for compliance with the safety procedures, wearing of only approved personal protective equipment, and meeting the requirements of the Zoo Interchange Project Safety Manual.

Each WisDOT Project Construction Engineer/Leader shall designate one person to attend the weekly Safety Meetings in order to act as a conduit regarding safety issues, and to distribute information to project staff.

14.3.1.6 Accident Reports

Accident Reports are prepared and submitted to the OCIP Safety Director, WisDOT Regional Safety Engineer and the WisDOT OCIP Program Manager within 24 hours from the occurrence of an accident, incident, or near miss.

The report of all such occurrences shall be made in accordance with the OCIP Insurance and/or OCIP Claims Manual. The contractor's Safety Coordinator is responsible to assure full compliance with this objective.

14.3.1.7 Accident Investigation

The OCIP Insurance Carrier is primarily responsible for the investigation of all accidents/ incidents that occur within the project footprint. However, the Contractor Safety Coordinator, WisDOT Regional Safety Engineer and the OCIP Safety Director are required to review all accidents/incidents/near misses to evaluate corrective measures to prevent future occurrences. See **Attachment 14.3.1.7.1 – Accident Investigation Checklist.**

14.3.1.8 Incident Management

Incidents, whether related to, affected by, or adjacent to construction work zones in the Zoo Interchange Project, require an effective and efficient communication protocol and coordinated response. The WisDOT Zoo Interchange Project Traffic Engineer will develop an Incident Crisis Communication Plan, and an annual Work Zone Incident Management Plan. These plans will be distributed to all affected and participating entities, including PCLs and contractors' superintendents.

This call list will identify the initial flow of communication between agencies, and response from Contractors and PCLs to WisDOT, the WisDOT Regional Safety Engineer, the WisDOT OCIP Project Manager, Public Safety Agencies, and the State Traffic Operations Center (STOC).

The Crisis Management Plan has a list of key project and WisDOT management personnel to contact in case of emergencies. The Plan is periodically revised to accommodate changes in contact telephone numbers and operational management changes. The WisDOT Traffic Engineer distributes the Crisis Management Plan updates to all affected and participating entities, including PCLs and contractor's project superintendents.

14.4 Safety Documentation

The WisDOT Zoo Interchange WisDOT Regional Safety Engineer will coordinate with the Program Document Control Specialist to verify that all project-related, safety-related documentation is located in Document Control. WisDOT Risk Management will maintain records and documentation dealing with OCIP issues and claims.

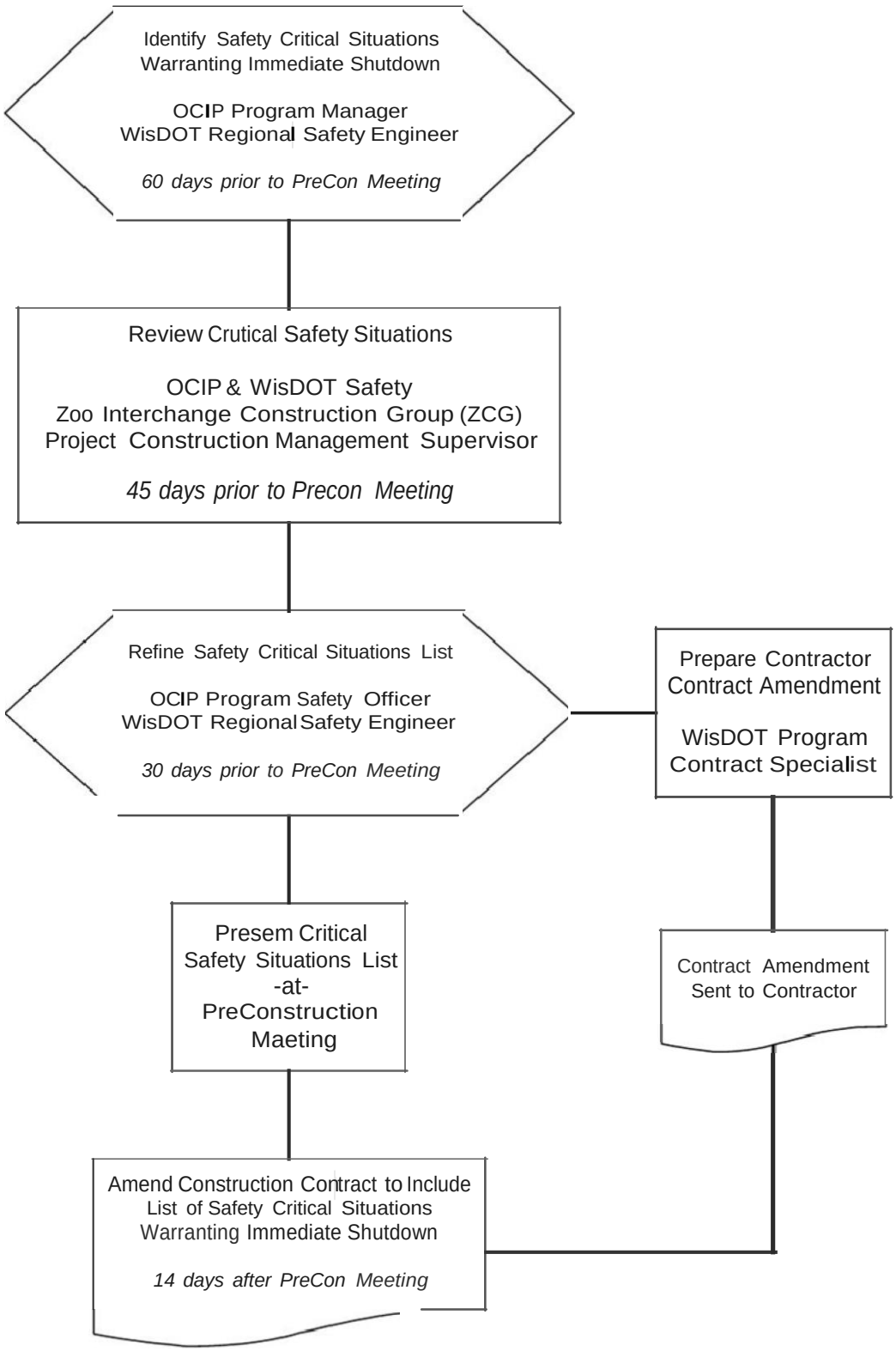
14.5 Process for Contractor's Assistance

In the event there is an incident where it is necessary or advantageous to have the contractor perform repairs or restoration due to an incident caused by and the responsibility of an outside party, the following steps need to be taken to assure contractor payment and project reimbursement takes place.

- Document the request by law enforcement or county maintenance agency as necessary.
- Direct the contractor(s) to aid the law enforcement/maintenance agency as necessary.
- Document the work being done by our contractor(s). It will usually be done as time and material work, but could be agreed unit price work as well, or a combination of the two.
- Have the contractor submit a bill with their supporting documentation to the engineer.
- Compare WisDOT documentation with the contractor's for reasonableness.
- Obtain a copy of the accident report.

- Prepare a Contract Modification for the total contractor's bill. Use the following format for the title of the Contract Modification:
  - Accident Restoration **accident report number** - **date of incident**
    (e.g., Accident Restoration 91827365 20100430)
    The Contract Modification should be created as a Lump Sum Payment. Include copies of the contractor's bill and all documentation, as well as the accident report with the justification form.
- Pay the contractor under this Contract Modification.
- Submit copies of the contractor's documentation, accident report and a cover letter to the WisDOT Regional Safety Engineer. The cover letter should include the following summary:
  - Time and place of the incident
  - Accident Report Number
  - Responding/requesting agency
  - Contractors responding to the assistance request
  - Overview of work performed
  - Total cost paid to the contractor (per the Contract Modification)
  - Program and contract that any recouped funds should be returned to
- The WisDOT Regional Safety Engineer will forward the information to Risk Management / Damage Claims to start the subrogation process against the individual who damaged the property. Once damages are recouped, the funds will return to the specific ID you identified as long as that ID remains open. If the ID is closed, the funds will be deposited into the General Fund.

Attachment 14.3.1.1.1 - Critical Contract Safety Situations



Attachment 14.3.1.7.1 -Accident Investigation Checklist

INVESTIGATION CHECKLIST

Wisconsin Department of Transportation
DT2044 2003

This checklist is to be used as a guideline only, to assist you in gathering potential evidence and documentation that may be requested in the defense of a claim against a negligent state employee. Each claim is unique and may require additional information not listed on this checklist. Information gathering should begin as soon as you determine that a significant event may result in the filing of a claim.

IMPORTANT: Information gathered using this checklist may be considered confidential attorney-client communication. Risk Management should be contacted before releasing any information.

ITEM	DESCRIPTION
Accident Report	Available ☐ Yes ☐ No
Witness Statements	Available ☐ Yes ☐ No
Photos/Videos	Photos of accident location and/or roadway or other contributory factors leading up to the accident scene
Measurements/Boundaries	Measurements of stopping distances, sign placements, right of ways, construction boundaries, etc.
Log/Diary Entries	Log/diary entries containing information related significant project events
Contracts	Contractual information describing the responsibilities of the parties involved
Contractor Information	Name, address and telephone numbers of prime contractors and subcontractors
Specifications	If construction related claim, specifications of contract
Inspection Reports	Reports of any inspections performed by DOT or other agencies
Maps/Drawings	Maps and/or drawings of accident scenes, construction sites, private land, intersections, etc.
Plan Sheets	Plan sheets from construction plans, showing the area of the claim
Weather Reports/Records	Weather reports and/or weather service records of the incident dates and dates prior to the incident, if necessary
E-mail Records	Any relevant e-mail records that document evidence of event in alleged claim
Maintenance Records	Records of maintenance of roadway, DOT equipment, construction maintenance, etc.
Public Meeting Records	Attendance and discussion records of public meetings to discuss construction projects
Newspaper Articles	Newspaper articles describing problem intersections/roads, construction, flooding or other events related to claims
Press Releases	Press releases related to DOT activities that may or have resulted in claims
Telephone Logs	Telephone logs of contacts with claimants or individuals requesting information about DOT/contractor activities
Purchase Orders	Purchase order records for items related to DOT activities

15.0 Traffic Management

15.1 Purpose

Safety and mobility throughout the Zoo Interchange construction is a high priority. Coordination with the Statewide Traffic Operations Center and the Bureau of Traffic Operations will be important to achieving this goal. In order to maintain safe and efficient traffic movement through the interchange work zone, a TMP plan must be created and implemented during design. The plan will put the tools in place for the construction team to successfully deliver a safe and mobile work zone for the traveling public and construction workers.

15.2 Traffic Management Plan (TMP)

The Zoo Interchange Project will use the WisDOT guidelines in the Facilities Development Manual Chapter 11-50 (FDM 11-50) for a Type 4 project to develop a TMP, which is considered a living document that is compliant with the Work Zone Safety and Mobility Rule. Many of the strategies developed and discussed facilitate planning, managing, operating and evaluating work zone safety and mobility. The guidelines define a framework for integrating TMP and traffic operations policies into the project development process, and they encourage consideration of the TMP at an early stage in project development.

The Zoo Interchange Project is a Type 4 TMP because it is considered a “significant” project that will create Interstate lane closures for more than three days. For significant projects, a TMP includes a traffic control plan (TCP) and transportation operations, incident management, coordination with special events, and public involvement components. The TMP includes work zone impact management strategies to address traffic impacts during construction.

Strategies will be defined during two rounds of task force meetings. The TMP stakeholder task forces will identify work zone management needs and recommend strategies to address them. The Zoo Interchange TMP Advisory Group evaluates the recommendations and chooses which strategies to implement with consideration to the TMP budget.

15.3 TMP Execution

Three areas of execution are critical to the success of the Zoo Interchange’s TMP:

1. The TMP project team must maximize the traffic operational and safety benefits that will result from the chosen TMP strategies for incident management and freeway operations, local street traffic operations, transit, and public information. The TMP implementation team and local agencies must deliver the strategies effectively.
2. The construction project managers, construction engineers, and TMP team must effectively deliver the traffic control plan in the field and ensure pavement markings, signs, and traffic control devices are installed and maintained safely and according to plan. They must modify the plan in the field as necessary.

3. The TMP team and the entire Zoo Interchange project team recognize that overall project satisfaction will be tied directly to the effectiveness of the public information program. Motorists are willing to change their driving behavior and routes as long as they are informed ahead of time of work zone activities. It is absolutely critical that the public and our stakeholders know early how traffic will be impacted due to construction-related activities.

15.4 Traffic Control Design Through Construction

During design, the Design Project Manager and the Program Traffic Engineer are responsible for designing and specifying the traffic control measures and devices, construction sequence, and traffic protection and maintenance plan during construction for the work proposed for the Zoo Interchange Reconstruction. Traffic control plans will provide for a minimum of two lanes of traffic in each cardinal direction through the construction period. Each project contractor is responsible for erection, maintenance, and removal of traffic control devices during each stage or phase of construction in accordance with the WisDOT Construction Plans and Specifications. The Construction Project Manager (CPM)/ Project Construction Leader (PCL) should receive plans/changes from contractor. The plans should be forwarded to the Program Traffic Engineer and construction traffic control functional lead, who are then responsible for review of plans, informing the PCL and CPM,
for coordination and approval.

Any significant changes to construction staging requires an amendment to the Traffic Management Plan. The program traffic engineer is responsible for reviewing and approving any proposed changes to the traffic management plan. The review process includes coordination with the WisDOT Statewide Traffic Operations Control Center and lead emergency response agencies. The FHWA reviews the traffic control plans and provides input at the design stage, and also for major changes during construction with recommendations from the project manager. The Program Traffic Engineer is responsible for coordinating and approving all traffic management plan changes prior to implementation.

The project manager or construction traffic control functional lead is responsible for coordinating and providing oversight to traffic control plan implementation, maintenance, and changes through the completion of construction for each assigned contract. The contractor is responsible for submitting requests and obtaining prior written authorization for traffic control plan changes, modifications or stage advancement.

15.5 Traffic Operations Management

15.5.1 General

15.5.1.1 Purpose

To the greatest extent possible, safe and obstruction-free freeway movements should be accommodated throughout the Zoo Interchange Project construction.

WisDOT has adopted the latest edition, addendums, and supplements of FHWA's Manual on Uniform Traffic Control Devices (MUTCD). In addition, WisDOT has added a Supplement to modify the standards for use in Wisconsin. This section of the Project Management Plan defines additional construction management procedures to promote consistent safe traffic control and coordinated construction work zone changes. This is especially important in locations with multiple construction activities.

15.5.1.2 Scope

This section applies to all changes in traffic control from existing conditions in the Zoo Interchange Project through the completion of construction.

Traffic management changes include closing or reducing lane width, shifting traffic from existing or established traffic patterns, reducing traffic speed from posted legal limits, closing or reducing the width of shoulders, changing vertical or horizontal clearance, reducing or temporarily restricting legal load limits, entrance and exit ramp closures or openings, temporary or permanent changes to traffic signs and pavement markings, temporary or permanent changes to traffic signals, lighting modifications, removals or relocation of guardrails or concrete barriers, and impacts to or changes affecting the State Traffic Operation Center's FTMS System.

15.5.1.3 Responsibilities

With review and approval of WisDOT's Zoo Interchange Project design group, several WisDOT and consultant designers are responsible for designing and specifying the traffic control measures and devices, construction sequence and traffic protection and maintenance plan during construction. Traffic control plans provide for a minimum of two lanes of freeway traffic in each cardinal direction through the construction period.

Each Zoo Interchange Project contractor is responsible for erection, maintenance and removal of traffic control devices during each stage or phase of construction in accordance with the WisDOT Construction Plans and Specifications. Changes in traffic staging for advancement of construction require prior written approval and coordination with WisDOT.

The Zoo Interchange Project Incident / Crisis Communication Plan will be developed to define the communication chain, agencies involved and contacts for coordinated public safety services response and situation management. The TMP team is responsible for coordinating implementation and refinements to the Incident / Crisis Communication Plan throughout the program.

The Construction Program Traffic Engineer and Program Traffic Engineer are responsible for coordinating and providing oversight to traffic control plan implementation, maintenance, and changes through the completion of construction for each assigned contract. The contractor is responsible for submitting requests and obtaining prior written authorization for traffic control plan changes, modifications or stage advancement.

The PCL and the CPM will review all initial requests by the Contractor to modify the traffic control plan for the projects that they oversee. If the CPM determines that the change request is inconsistent with or changes the intent of the TMP from which it was derived, then the CPM shall concurrently review the request with the Construction Program Traffic Engineer and the Program Traffic Engineer. If, after the review request, it is determined to proceed with the change, the CPM and CPL shall implement the change with the contractor. The Program Traffic Engineer is responsible for revising and amending the TMP to accommodate the revised Traffic Control Plan change request.

15.5.1.4 Traffic Closures Outside Special Provisions

The CPL shall notify the CPM and the Construction Program Traffic Engineer (Stephanie Skowronski) when the contractor is requesting a lane or ramp closure that is outside of normal or specified time periods. The CPM and the Construction Program Traffic Engineer need to review and approve/deny the lane or ramp closure request after consultation with the Traffic Control Functional Lead.

If not in attendance at the weekly traffic meeting, the CPM or designee needs to follow up with the Regional Work Zone Engineer (Bill Wondrachek) via cell phone (414-313-2276) either before approving or immediately thereafter to explain the following:

- The rationale behind the need for closure.
- An assessment of the impacts or alternatives considered in lieu of the closure.
- Consider any feedback the Regional Work Zone Engineer may have.
- State that the Project Manager and team take responsibility for the impacts of the closure and the need for proper notification and communication.

There should be enough review time to allow the lane closures to be entered into the Lane Closure System (LCS) in time for the standard notification process. Those timeframes are:

- Ramp Closures 3 business days
- System Ramp Closures 7 calendar days
- Lane Closures 3 business days
- Full Freeway Closures 14 calendar days
- Construction Stage Changes 14 calendar days
- Detours 14 calendar days

Significant long term system ramp closures shall be entered into LCS 10 calendar days in advance of the scheduled closure.

The CPM is responsible for approving lane or ramp closures. If the Regional Work Zone Engineer does not approve, please elevate to Supervisor.

The CPM shall review and approve/deny all contractor requested changes to the traffic schedule after it has been approved for the upcoming week.

16.0 Project Communications (Media and Public Information)

16.1 WisDOT Office of Public Affairs

The Department's Office of Public Affairs (OPA) is primarily responsible for public outreach and coordination. OPA is also responsible for coordination and outreach to the congressional delegation. OPA acts as the liaison to the Secretary's office and provides outreach to state and congressional elected officials on public affairs issues such as appropriate talking points for sensitive issues. In addition to these efforts, OPA reviews materials developed by the SE Region and provides feedback on editing and format.

16.2 Public Involvement/Information

A carefully planned and executed communications plan ensures that citizens and stakeholders affected by the Zoo Interchange Reconstruction project are informed about the project and have a voice in the decision-making process. The team's public involvement contact person leads implementation of the communication plan in interactions with the public. Public involvement and communications activities for the project have accomplished, and in subsequent phases will continue to accomplish, the following primary objectives:

- Help ensure accuracy, continuity, and continuous flow of information between the project team and the public.
- Coordinate and amplify the communication and public involvement efforts of the community-sensitive design and traffic mitigation tasks.
- Ensure that all stakeholders are included in information dissemination.
- Monitor public sentiment regarding the project to identify key issues and concerns that might otherwise be overlooked.

The preliminary and final design phases represent a shift from the public involvement needed to support the alternatives development and environmental document process. A public information campaign will become necessary based on the goals and objectives noted above. Since preliminary and final design has begun. Instead, communication techniques will have a three-part approach:

- Targeted communications to address issues of concern held by smaller, specific audiences.
- Mass communications that focus on maintaining the project's visibility and project support, both locally and throughout the state.
- Coordination with elected officials and key stakeholders to keep them apprised of project benchmarks.

16.3 Public Relations and Media

16.3.1 Purpose

To establish the policy and procedures for identifying, facilitating, and documenting community relations activities on the Project during construction. The purpose is also to supplement the public involvement/information included in the Zoo Team Final Design Management Plan.

16.3.2 Responsibilities

WisDOT: Has primary responsibility for community relations during Project construction, and documents all activities in this area, including residential mitigation as required. Attends and leads Public meetings and coordinates with Project Managers, and PCLs and contractors on public involvement issues. Responsible for approval of public information and news releases. Is the sole point of contact through which public information flows.

PI Consultant and Team: Helps represent and support WisDOT in community relation activities, and monitors contractors' activities for proper coordination.

16.3.3 Procedures

16.3.3.1 General

PI Consultant, coordinating with the Project Managers and PCLs, supports WisDOT by following up on PIO direction in initiating and accomplishing community relations. Zoo Interchange Project - PIO coordinates response to community complaints, invitations and inquiries as described below.

16.3.3.1.1 Public Meetings

Public meetings are initiated by WisDOT after consultation with the Project Managers and PCLs and PI Consultant, either in response to a request or for dissemination of information.

16.3.3.1.2 Contact with the Public

When direct contact is made with community members affected by the Project, the PCLs advise the PM in the form of a verbal reference or a memorandum that PCL personnel should exercise extreme care when talking about the project and project issues with the public; seemingly innocent comments may lead to unintended consequences. Appropriate contacts, requests for information, or questions of a detailed nature should be coordinated with PMs and/or the PIO to avoid speculation or inaccuracies.

16.3.3.1.3 Media

It is mandatory that all project personnel refrain from making any statement to anyone in the media unless explicitly directed to make statements by WisDOT. All media requests received by project personnel must be referred to the Zoo Interchange Project- PIO. All Project personnel should handle media in a courteous manner.

Contractors should provide a verbal report of any discussion with the media to the PM for coordination with the Zoo Interchange Project- PIO.

If contractors are aware of media personnel within the project area that are not escorted by either the Zoo Interchange Project- PIO or a WisDOT employee, the contractor should inform the media personnel that for their safety, they are only allowed on the site while escorted by the Zoo Interchange Project- PIO. The contractor should then provide the media personnel with the phone number of the Zoo Interchange Project- PIO and also immediately notify the Zoo Interchange Project - PIO or PM.

During an emergency, the response to media by project personnel is: "All information will be made available through the Zoo Team Public Information Officer as it becomes available." All media and legislative contacts should be reported daily (by 3:00 PM) to the SE Regional Communications Manager for inclusion into the DTSD daily report.

16.3.3.1.4 Public Information

Public information is the responsibility of the Zoo Interchange Project - PIO. In support of this, PI Consultant Team works directly with WisDOT to develop goals, strategies, timetables and tactics for disseminating public information. Coordination should take place with the regional communications team and OPA as appropriate to support departmental goals and strategies.

16.3.3.1.5 Problems or Complaints

As lead coordinator for construction-related community complaints and inquiries, the Zoo Interchange Project - PIO identifies actual and potential problem areas and recommends action to avoid or mitigate conflicts. When a problem arises, the PCL evaluates the situation, identify a response, notify the PM and have the contractor take mitigating action. PCLs, working through PMs, respond as promptly as possible to community relations concerns. The Zoo Interchange Project - PIO gives proper attention to satisfy any legitimate complaint by the public.

Any public complaints received by WisDOT will be forwarded directly to the responsible contractor either verbally or via email as soon as possible. WisDOT will identify the complaint, the nature of the complaint and, if appropriate, recommend an action to be taken. Care is taken by all parties not to increase the scope or cost of the respective contract by directing responses to complaints that are outside the terms of the contracts.

16.3.3.1.6 Special Events

It is anticipated that PI Consultant learns of special events through WisDOT. When contacted directly by the community, PI Consultant informs WisDOT, and both coordinate with the contractors and other entities involved to resolve any conflict that may arise as a result of construction activities.

16.3.3.1.7 Emergency Response

The Zoo Interchange Project -PIO works with community members to minimize anticipated impacts that may unduly affect the community and to disseminate safety information.

During emergencies, the Zoo Interchange Project – PIO coordinates with PMs and contractors' personnel, as needed, to implement and expedite emergency procedures in the community and to maintain smooth relations with community members during this period.

16.3.3.1.8 Tours/Site Visitation

Policies regarding site visit requests are developed by PI Consultant in conjunction with OCIP policies. Any involvement in tours or site visits outside of normal Project business is coordinated with WisDOT. Any site visits or tours are also coordinated with the contractors to minimize any effects on construction.

16.4 Documentation

PIO requires the PI Consultant to document community relation activities in the following manner:

- Maintain an updated schedule of community outreach events.
- Develop and maintain a list of essential community contacts that include each contact's name, address, telephone number, email address and community affiliation.
- Maintain a database of those requesting information about the project, including newsletters, Get Around Guides, and project updates.
- Include proper documentation/ logging information regarding complaints.
- Utilize Document Control to track issues to ensure timely and accurate responses.

17.0 Civil Rights Program

Policy statement

The Wisconsin Department of Transportation actively implements all federal, state, local and departmental Affirmative Action and Equal Opportunity laws, executive orders, regulations, rules, directives, policies and plans. This commitment extends to all aspects of WisDOT personnel management policies and practices.

The Department further provides for the fair and equitable treatment of all employees and fair and equitable service to the public, in accordance with federal and state laws and other applicable provisions. The AA/EEO policy of the Department of Transportation is based on support of the goals and principles of AA/EEO. The Department will actively pursue available means to make women, ethnic minorities and persons with disabilities part of its on-going culture, and to eradicate discriminatory practices.

Equal opportunity in employment

The Department is committed to providing equal employment opportunity for all persons in all terms, conditions, and privileges of employment, including but not limited to: position description development, examination, salary and wages, reclassification, leave accounting and temporary assignment, disciplinary action, restoration, reinstatement, recruitment, selection, transfer, promotion, training, compensation, benefits, layoff, termination, retention, certification, testing and other terms and conditions of employment.

The Department does not discriminate in employment on the basis of race, creed, religion, sex, color, sexual orientation, national origin or ancestry, age, disability, marital status, arrest and conviction record, political affiliation, or membership in the national guard, state defense force or any other reserve component of the military forces of the United States or this state.

Equal opportunity in service delivery

The Department is committed to providing equal opportunity in all service delivery and prohibiting discrimination based upon protected group status. Equal opportunity in service delivery means: equal access to program services; equal benefits from program services; and equal treatment within program services.

DBE and Minority Involvement

The Department has sponsored a committee made up of a broad cross section of the community and design and construction industries to develop programs designed to prepare DBE and minority-owned companies for roles in the construction of the Zoo Interchange project, and 2) prepare minority and female workforces and individuals for roles in the design and construction of the Zoo Interchange project.

The committee will provide guidance to the Department in setting the goal for DBE participation in the final design contract. The Department will accept and administer the recommended DBE participation goal. Consultants contracted for the final design phase are responsible for achieving this goal.

The Department has already instituted work groups focusing on education (DBE Steering and DBE Advisory Committees). As preliminary engineering progresses, these groups will collaborate with the Department to 1) assist in "Capacity Building" for DBE contractors and 2) provide expanded outreach and training for the minority and female workforce. Goals for the construction contracts will be influenced by the success of these programs. A new community / industry-based OC will monitor the programs and goal setting process.

18.0 Closeout Plan

18.1 Planning and Scheduling

18.1.1 Purpose

Advance planning is necessary to provide comprehensive documentation in a timeframe to enable efficient closeout of contracts. Considering the volume of the work, progressive and phased consolidation of closeout documentation is required in conjunction with the individual project durations.

With this process, final inspections are conducted as sections, contracts and projects are completed. With the planned traffic staging, partial final inspections are required, but these do not necessarily mandate partial acceptance of the particular portion of the work.

18.1.2 Responsibilities

The C&MM, Standard Specifications, and SE Region Project Management Guides define responsibilities of all project participants and these shall be maintained. The Project Managers are assisted through the delegation of specific tasks to the PCLs, who are responsible for individual contracts or segments of projects.

The WisDOT Finals Group focuses on the Finals audits and advises the Project Manager of any deficiencies noted or corrections required. Project Manager concurrence with this approach will be included in the decision process.

The PCMC Team, as part of the Zoo Interchange Project, develops milestones for periodic consolidation of documentation and monitoring progress against these milestones. WisDOT has identified 17 steps to be covered in the official closeout process (refer to **Attachment 18.1.2.1 – Finals Closeout Summary** and **Attachment 18.1.2.2 – Finals Tracking Summary**), beginning with Project Completion Date, and supplies the optimum timeframe for the steps to be accomplished in. On a semimonthly basis, PCMC's Office Leader monitors these steps within each project as it closes out, updating the Closeout punchlist in Contract Manager (refer to **Attachment 18.1.2.3 - Finals Closeout Punchlist**), and communicating with appropriate personnel to ensure the closeout is proceeding on schedule.

18.1.3 Procedures

Based on the Master Schedule and the individual project phases, durations are established for interim and final completion of project closeout documentation.

As construction of various payment items are completed, these can be individually closed-out and final documentation progressively compiled. Where stages of roadways are completed, all the relevant documentation can be consolidated as each phase is finished and catalogued accordingly. This procedure is best established by mimicking the Critical Path Method Schedule, which contains the timing of phases, item completions and winter shutdowns. Allocating progressive closeout preparation activities for projects is then implemented. Initiation of this progressive focus on closeout enables the project management team to identify any appropriate closeout documents required from the contractors and to develop target dates for submission of items. Review of these efforts by the WisDOT Finals Group on a periodic basis identifies any shortcomings and addresses required actions well before the final closeout of individual projects.

18.2 Final Inspections

18.2.1 Purpose

Final Inspections are conducted as sections, contracts and projects are completed. With the planned traffic staging, partial final inspections are required, but these do not mandate partial acceptance of the particular portion of the work.

18.2.2 Responsibilities

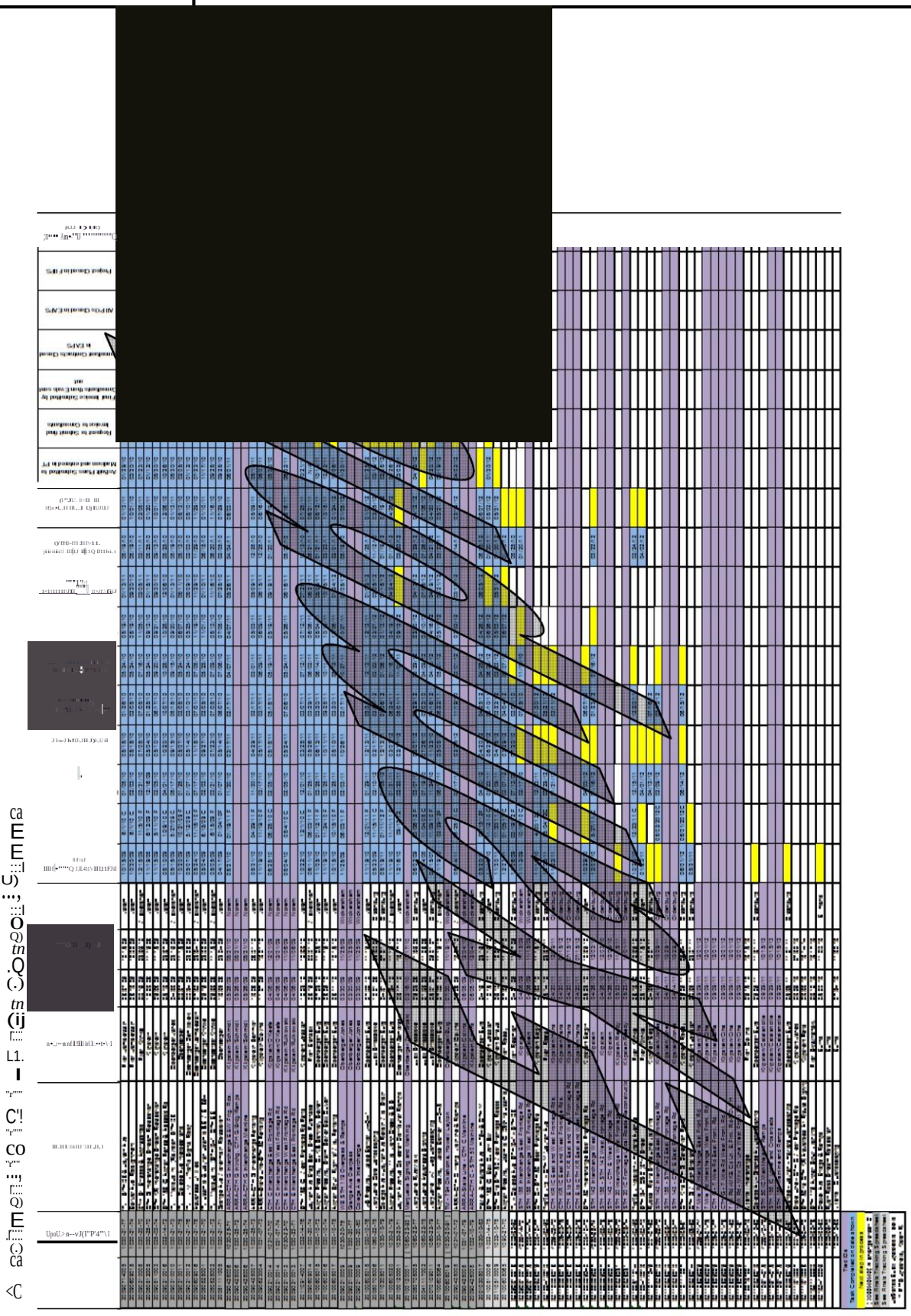
The Standard Specifications and C&MM clearly spell out contractor and WisDOT duties. The following is tailored to the large scope of the Zoo Interchange Project.

The Construction Project Managers are ultimately responsible for overseeing final inspections. Delegation is provided to the PCLs to conduct inspections on contracts or portions of a project and manage the preparation of required documentation. Field staff participates in and supports the inspection process.

Other parties are invited to participate in the final inspections, including FHWA and WisDOT Highway Operations Sections; therefore, the Construction Project Manager, with the assistance of the PCL, is tasked to arrange attendance by third party entities and handle any related actions.

18.2.3 Procedures

C&MM, Standard Specifications and other WisDOT procedures comprehensively address the final inspection process from a technical and financial perspective.



Attachment 18.1.2.2- Finals Tracking Summary

Project ID	Project	PM	Substantial Complete Date	Box on Shelf (all Materials)	Box on Shelf (Materials only)	Days Late	Open Pay Items? (Y)	Last FFS update	Current Retainage	Main Review (see Key)	Main Review Notes (see Key)	Materials Review (see Key)	Materials Review Notes (see Key)	Where is Field Manager file now?
1030-20-71	Layton Avenue Collector/Distributor Ramps	Obenberger/Zembroski	12/17/10	03/30/11	03/30/11	133		08/07/12	$ 150 000.00	Complete	10/1/12 deadline	Complete		Karen
[1060-26-93] >>>	Marquette Signing and Marking					30		04/26/12	$ -					
1060-22-77 >>>	Marquette Riverwalk	Luck/Straseske	06/02/09	03/01/12	03/01/12	1033		04/26/12	$ -	Complete		Complete		Karen
1060-22-75 >>>	Marquette Advanced Signing	Luck/Straseske	02/27/09	03/30/12	03/30/12	1157		04/26/12	$ -	Complete		Complete		Karen
1060-22-79 >>>	Marquette N-W Leg Landscaping	Luck/Straseske	10/22/10	03/30/12	03/30/12	555		04/26/12	$ -	Complete		Complete		Karen
1030-10-77	Airport Freeway, Noise Barrier N-40-45	Obenberger/Burg	11/17/10	06/17/11	06/17/11	242	Y	04/25/12	$ -	Complete		Complete		Karen
[1030-20-91]	TM - 794 Oklahoma Howell/ Layton	Obenberger/Burg	10/24/11	04/06/12	04/26/12	195		07/10/12	$ -	Complete	Contractor issues	Complete		Karen
1031-07-72, 79; 1032-10-79	ARRA-CTH C Int. Mainline, IL-STH 50 Mainline	Klipstein/Mutzger	11/15/10	01/17/11	01/17/11	93		05/04/12	$ -	Complete		Complete		Karen
1030-10-83	Howell & Howard Avenue, IH 794 & CTH Y	Obenberger/Burg	05/19/11	04/20/12	04/20/12	367		07/10/12	$ -	Complete		Complete		Karen
1032-14-75	STH 158 IC, Box Culvert Ext	Klipstein/Ledzian	11/10/10	01/23/11	01/23/11	104		08/07/12	$ -	Complete	Tentative Finals	Complete	Tentative Finals	Karen
1032-10-78	CTH C to STH 50 West Frontage Roads	Klipstein/Stroud	10/07/11	12/09/11	12/09/11	93		07/10/12	$ -	Complete	Tentative Finals	Complete	Tentative Finals	Karen
1030-27-70 >>>	Airport Freeway, Loomis IC, 35th to Loomis	Flier/ Reedy	01/06/12	02/07/12	02/07/12	62		04/25/12	$ 29 279.17	Complete	Tentative to contractor	Complete		Karen
1030-20-60; 2060-10-60	TM - College Ave, STH 241 - STH 38	Flier/Redman	11/07/09	03/01/12	03/01/12	875		07/16/12	$ 17 248.57	Complete		Complete		Paul
1032-14-70/74	STH 158 Interchange E/W Frontage Rds	Klipstein/Frazier	10/28/08	01/10/11	01/10/11	470		07/10/12	$ 5 000.00	Complete		HL#1, 11/30	Richard 10/12	Paul
1032-10-77	CTH C - STH 50 East Frontage Rd	Klipstein/Marzucco	11/15/10	12/23/11	12/23/11	433	Y	07/10/12	$ 15 345.77	Complete		HL#2 3/1		Paul
1030-20-93; 2240-14-80; 2240-16-70	TM - CTH Y (Layton Avenue)	Flier/Reedy	07/22/10	03/20/12	03/20/12	848		07/16/12	$ 20 000.00	Complete		HL#1 5/13		Paul
1035-03-(70.75 77.78)	CTH KR Frontage Roads	Klipstein/B. Hans	11/23/11	01/31/12	01/31/12	88	Y	07/16/12	$ 10 000.00	Complete	Plantings complete	HL#1 3/14		Paul
1032-10-70	STH 50 Interchange East Frontage Rd	Klipstein/Marzucco	10/28/10	04/03/12	04/03/12	552	Y	07/16/12	$ 84 113.54	Complete	See below	HL#1 6/22		Paul
1030-22-74, 78; 1030-23-78	STH 142 Int. WFR, 158-142 WFR, 142-E WFR	Klipstein/Jones	12/03/10	01/16/12	01/16/12	[illegible]	Y	07/16/12	$ 5,000.00	Complete	Mann Bros. problems/punchlist	HL#1 2/28	end of summer	Paul
1033-02-(70.74)	STH 20 WFR, 20 IC & Local Reconstruction	Klipstein/Reedy	11/14/11	[illegible]	Dox Needed	108	Y	[illegible]/14/12	$ 55 807.82	HL on [illegible]	Mann Bros. problems	----		Karen
1030-20-82	Traffic Mitigation - Howard Avenue	Flier/Krinke	[illegible]	12/15/11	12/15/11	435		07/16/12	$ [illegible]	HL#1 12/20		HL#1 1/3		Paul
1030-20-73; 2265-10-70; 2265-14-70	STH 241 CSD (27th Street)	Flier/ Krinke	11/16/10	[illegible]	04/01/12	[illegible]		03/20/12	$ [illegible]	HL on 10/1	See below	HL#1 6/7		Field
1031-07-66	Russel Rd to State Line Mainline	Klipstein/Marzucco	08/30/11	04/13/12	04/13/12	228	Y	04/02/12	$ 5 000.00	HL on 7/31		HL #1 6/15		Paul
1030-22-(70.77); 1030-23-77	STH 142 EFR, 158-142 EFR, 142-E EFR	Klipstein/Jones	10/17/11	02/09/12	02/09/12	145		07/16/12	$ 14 283.83	HL#1 2/13		HL#1 4/2	end of summer	Paul
1030-25-61	CTH K to CTH G, Detention Pond	Klipstein/Reedy	08/22/11	05/15/12	05/15/12	268	Y	07/16/12	$ -	Complete		----		Paul
1030-25-66 >>>	CTH G Weigh Station	Klipstein/ Ledzian	05/31/11	10/15/12	10/15/12	533		07/12/11	$ -	----		----		Field
1035-01-(71.75 77.78.80.81)	7 Mile Road Interchange and FR projects	Klipstein/Cha	late 2012					07/24/12	$ -	----		----		Field
1030-20-72	Mitchell Interchange	Flier/Collins	late 2012					07/16/12	$ 2,030 816.39	----		----		Field
1030-10-66	College Ave - Grange Ave Landscaping	Flier/[illegible]	12/12/11	01/14/14	01/14/14	781	Y	04/23/12	$ -	----	proving through 2013	----	proving through 2013	Field
1032-14-(71.72); 1032-10-72	STH 158, STH 50 Interchange projects	Klipstein/ Catalanotte	late 2013					08/02/12	$ -	----		----		Field
1030-10-61	Grange Layton Howard Landscaping	Flier/Bauknecht	10/01/11	01/15/14	01/15/14	867	Y	04/23/12	$ -	----	proving through 2013	----	proving through 2013	Field
1031-07-76	State Line - CTH C West Frontage Rd	Klipstein/Jones	9/19/2012	10/19/12	10/12/12			07/31/12	$ -					
1035-04-70	STH 59 to STH KR Advanced/Alt Route Signing	Klipstein/TBD						02/21/12	$ -					
1030-20-78	STH 119 Airport Spur Mainline	Flier/Skowronski						02/15/12	$ -					
1030-20-83	Drexel Ave. Bridge and Ramps	Burns/B. Hans												
1030-28-73	Ryan Road Stream Relocation	Burns/B. Hans												
1030-10-62	Mitchell C Landscaping	Burns/B. Hans	7/24/2012	11/20/12										

Notes/Key:

delinquent finals list

[change ordered ID] - applied to ID listed above it

1030-20-71--Still waiting for the acceptance letter based on noise barrier test results end of August
1032-10-77-- Marzucco came in still need to finalize some issues
1032-10-70--Need more info still address Hit List-July 31.

1032-10-77--Has not been addressed with Marzucco need to address soon
1030-20-93--Half issues resolved met with Deb Serman/Reedy handed over to Sam Sonnenberg
1033-02-73-- P. Burg will check on dates for materials box date to turn blue
1030-20-92 Missing documentation almost a year box is on shelf.
1030-20-60--Contract MODs needed

Project

1030-22-{77}; 103-23-77 – Jones ... shortly ... all his project fixes on shelf
103()..20-72 – current retainage went from $1,730,336.83 to $1,100 ... then to 51,969,290.28
103()..25-81 – Transed ... finals on June 14, 2012

CLOSEOUT PLAN

199

Attachment 18.1.2.3- Finals Closeout Punchlist

Wisconsin Dept of Transportation

STH 158, WFR DETENTION POND

Punch List: CLOSEOUT

Jeffrey D Bohen

Job No: 1032-14-76

Project No: 1032-14-76

Closeout 1032-14-76

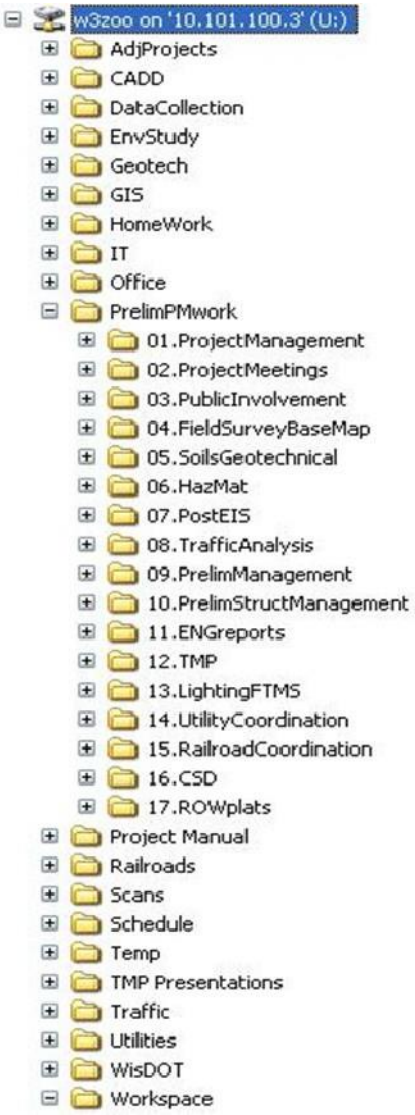
Item	Status	Ball In Court	Description	Opened	Required	Closed
0()100	CLO	WISOOT..viAK	Project Completion Entered in Field Manager/Project Tracking	11/05/10	10/22/10	10/22/10
0()200	CLO	WISOOT-MAK	Conditional/Final Acceptance to Reesman's Excavating & Grading, Inc	10/22/10	10/23/10	12/01/10
00000	CLO	WISDOT-MAK	Finals Project Records Turned Over to WisDOT	10/22/10	10/23/10	12/01/10
OCJ400	CLO			11105/10	121'31/10	03125/11
00500	CLO	RASMITH-JN	Finals Accepted by WisDOT Region Reviewer (District Review)	12/01/10	121'3111 0	03107111
00600	NEW	WISDOT-MAK	Hit List Complete, Send Field Manager File	00!07!11	04!06/11	
00700	NEW	WISDOT-KXR	Tentative Final Estimate and Packet sent to Reesman's Excavating & Grading, Inc.			
00800	NEW	WISDOT-KXR	Tentative Final Returned by Reesman's Excavating & Grading, Inc.			
00900	CLO	WISDOT-MAP	Payroll Clear Date Entered in Project Tracking	10/22/10	121'31/10	12113;110
01000	NEW	WISDOT-KXR	Final Sent to Reesman's Excavating & Grading, Inc. (with retainage release value)			
01100	NEW	PCMC-GBC-ILB	AsBuilt Plans Submitted to Madison and Entered into Project Tracking			
01200	NEW	WISDOT-MAK	Request for Consultant to Submit Final Invoice			
01300	NEW	WISDOT-SM	Final Invoice Submitted by Consultant			
01400	NEW	WISDOT-SM	Consultant Contracts Closed In EM'S	10!22/10		
01500	NEW	WISDOT-PMO	All POs Closed in EAPS	10!22!10		
01600	NEW	WISDOT-PMC	P'rojectClosed In IiPS			
01700	NEW	WISDOT-TPG	GQI - Coostruction Qmllity .-,di!X Completed byWisDOT	10!22/10		

19.0 Project Documentation

19.1 Document Control

19.1.1 Design Documentation

WisDOT keeps all original and official documents at the Waukesha SE Region Office. The Zoo Interchange Team maintains and files its own working data, documents, and records. All email is filed electronically in a Zoo Interchange Team shared Microsoft Outlook™ folder. All hard copy materials are filed in the Zoo Interchange Reconstruction teamwork area in the Waukesha SE-Region Office. All electronic supporting data and drawings are filed in the project design folder within WisDOT's SE Region computer share drive. An electronic file naming convention similar to that provided by Forward 45 is being used. Hard copy materials are referenced by task or subject matter. The file structure used on the project is as follows:



19.1.2 Construction Documentation

19.1.2.1 Purpose

This guideline establishes Zoo Interchange Project systematic uniform procedures for filing and distributing all incoming and outgoing documents, communications and submissions for the Zoo Interchange construction projects.

19.1.2.2 Scope

This guideline applies to projects greater than $20 million, and applies to all incoming and outgoing printed documents, emails, telephone conversation records, hard copy and electronic submittals, documents and communications on projects.

19.1.2.3 Responsibilities

The Program Document Control and Project Document Control team are responsible for organizing program and project documentation, forwarding documents to the appropriate parties and verifying the most current documentation is readily available. These parties are responsible for maintaining the WisDOT file codes and the Document Control Log.

Document Control will coordinate and provide WisDOT's SE Region with document files for departmental storage at the end of the project.

The entire Zoo Interchange Project Team, including the department's staff, FHWA, the design consultants, the ZCG, WisDOT's technical and advisory consultant, and contractors are responsible for forwarding documentation to the Project Construction Controls Leaders/ Technicians assigned to the respective Project Managers.

19.1.2.4 Incoming Documents

The following procedures are used for all documents submitted directly or by copy to WisDOT, the Department's Zoo Interchange Project Team members and technical advisors, PCLs, and DEC inclusive.

Incoming/outgoing documents are entered into Contract Manager, with a corresponding Document Control number and file code assigned. This task is completed by the Project Construction Controls Technician or the Program Document Control Specialist. Entering documents into Contract Manager includes coding the document with the respective contract ID and file subject section. Paper documents are scanned and entered electronically; digital files (emails, etc.) are digitally entered. Paper documents are also stored in protected secure file cabinets.

Incoming/outgoing documents that are non-project-related are logged into Contract Manager by the Program Document Control Specialist.

Non-project-related documents are filed in chronological order within each file code by the Program Document Control Specialist or appropriate Project Construction Controls Technician.

Recorded incoming/outgoing documents are forwarded to the appropriate CPM for review and/or additional distribution to their team. This takes place on the day of receipt.

The Program Document Control Specialist or appropriate Project Construction Controls Technician distributes copies of the recorded and reviewed documents to the personnel indicated on the document. This takes place on the day of receipt.

19.1.2.5 Outgoing Documents

The following procedures are used for all documents outgoing from the Zoo Interchange Project staff and technical advisors, Construction Supervisors, PCLs and the DEC.

Outgoing documents have a Document Control number and file code completed by the Project Construction Controls Technician and verified by the Program Document Control Specialist. A copy of all outgoing documents is entered into Contract Manager by the respective Project Construction Controls Technician. Program or non-project specific documents are entered into Contract Manager by the Program Document Control Specialist.

Outgoing project-related documents (i.e., memorandums, letters, submittals, RFIs, etc.) in digital formats will be digitally entered into Contract Manager.

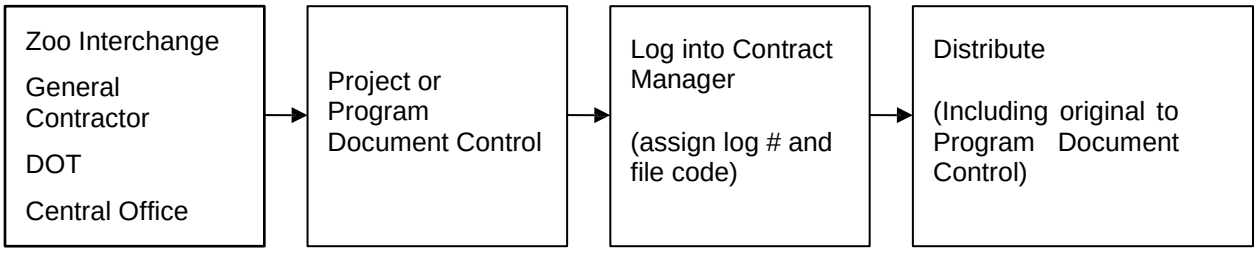
Outgoing project-related documents (i.e., memoranda, letters, submittals, RFIs, etc.) that are not created in digital format will be scanned into a digital file format by the Project Construction Controls Technician.

Recorded outgoing documents are forwarded to the appropriate CPM or engineer for review and signature; the PM's respective Project Construction Controls Leader forwards the outgoing document to the Project Construction Controls Technician.

The Project Construction Controls Technicians distribute copies of the recorded and reviewed documents to the personnel indicated on the document. The Project Construction Controls Technician distributes copies to the Zoo Interchange Project Team members, contractors and other non-WisDOT staff as appropriate.

The Project Construction Controls Technician makes a copy of each outgoing document and its transmittal, and files in accordance with the Zoo Interchange Project Construction File Codes. The Program Document Control Specialist also verifies that the proper code is used, and the documents are logged into Document Control Software, the Document Control Log and Files.

Document Control System Incoming and Outgoing Document Flow Chart:



19.1.2.6 Submittals and Drawings

19.1.2.6.1 Submittals to Project Construction Leaders

Submittals from contractors and other parties to Project Construction are sent to the Project Construction Controls Technician for logging into Contract Manager. The CEC Submittal Coordinator ensures that all other appropriate parties are sent a copy of the submittal to review.

19.1.2.6.2 Submittals to WisDOT

Submittals from contractors, construction engineering consultants and other parties are received and processed by the Project Construction Controls Technicians who log the submittal. The original submittal is filed in the Document Control Center. Drawings, plans and bound documents are also filed in the Document Control Center.

19.1.2.7 Retrieving Documents on File

Project Construction Controls Technicians use Contract Manager to help locate a document if the exact file code is not known. Project Construction Controls Technicians provide the requested record, either in an email with a PDF file attachment, or a printed hard copy. If the original document is a bound document or plans, then the original document will be provided and returned to Document Control for filing after use.

19.1.2.8 Zoo Interchange Project Construction File Codes

Attachment 19.1.8.1 – Project File/Status Codes, contains the Zoo Interchange Project File Codes, which are used for all WisDOT Zoo Interchange Project incoming and outgoing documents. These codes apply to all hardcopies of documents, and electronic documents kept in the Document Control Center.

The File Codes format is an alphanumeric sequence with the WisDOT Project ID Number followed by a file tracking code.

19.1.2.9 Document Control Log

Contract Manager will generate the Document Control Log. This log assigns a unique number, in chronological order, to each document and tracks several attributes for each document. These attribute fields are customized to the program, and can include fields such as Date Received, Type, To, From, Item, Number, Status, Description, Log No., Logged By, etc. This log enables searches for documents based on any combination of the attributes as desired by the Zoo Interchange Project within the capabilities of Contract Manager.

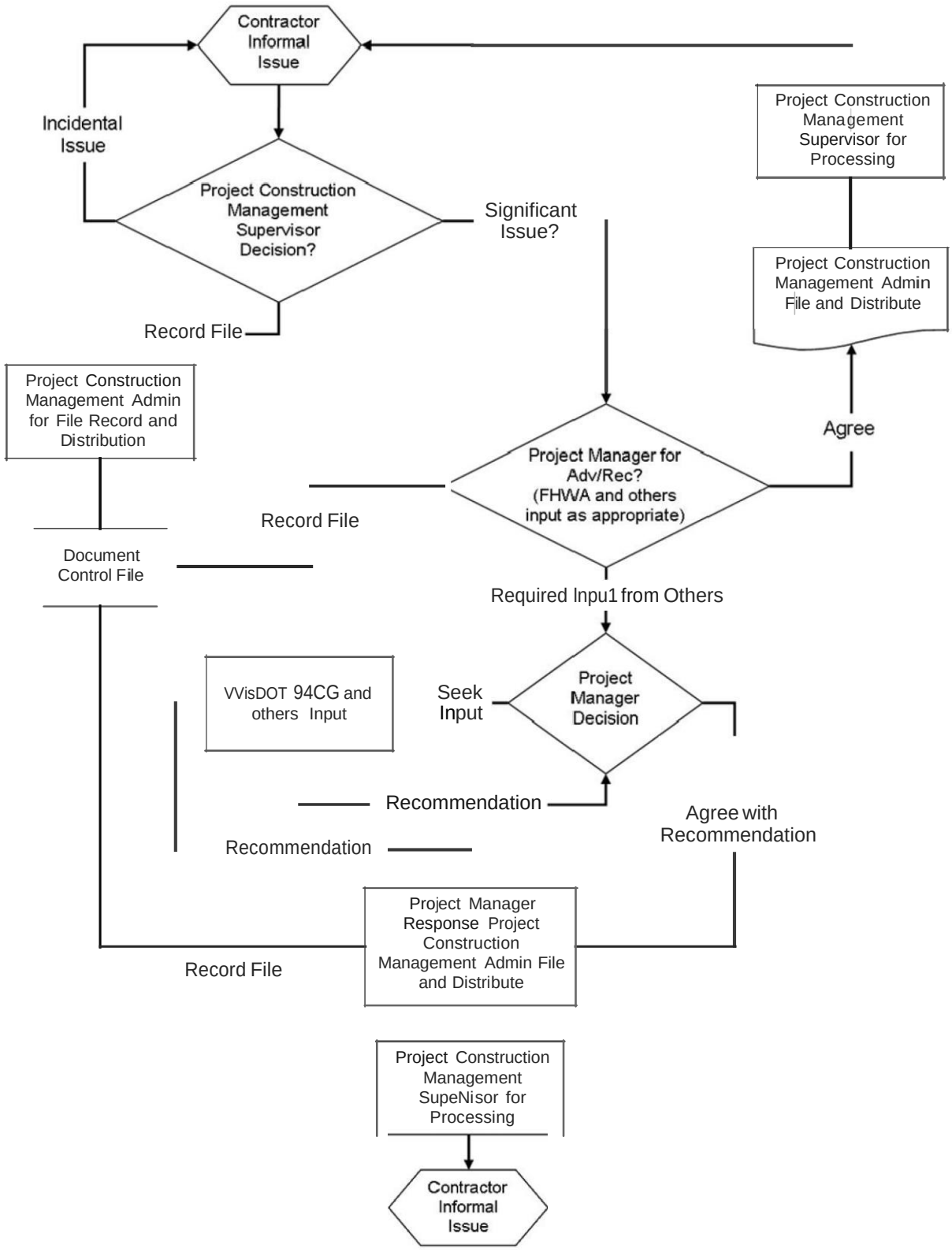
19.1.2.10 Other Communication with Contractors

In particular instances, less formal communication is initiated by contractors and transmitted through site verbal discussions, telephone conversation, or via email. These types of informal communications are conducted directly between the contractor and PCL or Project Management staff. To verify consistency with the information, recording, distribution and retrieval processes described in earlier parts of this section, the following flow chart is applicable to such events (see **Attachment 20.1.2.10.1 – Contractor Initiated Communication Process**). This chart allows for classification of issues, applicable elevation for input and direction, document recording and controlled responses.

Attachment 19.1.2.8.1 – Project File / Status Codes

File Code	Description
ABC	Approved Budget Change
BUG	Budget
CDA	Contract Documentation/Administration
CHG	Change Management
COR	Correspondence Received/Sent
CRI	Cost Reduction Incentives
CSD	Community Sensitive Design
DBE	Disadvantaged Business Enterprise
DES	Design
DIN	Design Issue Notices
DRA	Drainage
ENV	Environmental
FIN	Financial
INS	Insurance
ISS	Issues
MTG	Meeting Agenda/Notes
MTL	Materials
PAY	Pay Estimates/Requests
PIX	Picture/Video/Media
PPR	Project Public Relations
PSE	Plans, Specifications & Estimates
PUN	Punchlists
QUA	Quality
RFI	Request for Information
ROW	Right of Way/Real Estate
RR	Railroad
SAF	Safety
SCH	Schedules
SMA	State/Municipal Agreements
STR	Structures
SUB	Submittals/Shop Drawings
TRA	Traffic
UTL	Utilities

Attachment 19.1.2.10.1- Contractor Initiated Communication Process



19.2 Meetings

19.2.1 Purpose

With the number of meetings anticipated for the entire program, processes for planning, holding and documenting project meetings must be established. The intent is that meetings only be conducted when necessary and that they be kept as brief as possible to minimize demands on attendees and enable prompt distribution of notes/records.

19.2.2 Responsibilities

The designated Chairperson for individual meetings is responsible to arrange, conduct, document and distribute the respective meeting records. Refer to the Procedures and Forms/ Examples sections below for further detail. The Program Construction Management Consultant Office Leader establishes formats for agenda and meeting records from Contract Manager, plus review meeting notes or records weekly.

19.2.3 Procedure

A. Meeting Types

1. An initial listing of design project meetings (See **Attachment 19.2.3.1 – Design Project Meeting Table**) identifies recurring meetings, frequency, chairperson and attendees for design.

2. An initial listing of construction project meetings (See **Attachment 19.2.3.2 – Construction Project Meeting Table**) identifies recurring meetings, frequency, chairperson and attendees for construction. This table will be reviewed and revised as the program progresses.

B. Meeting Schedules

The PCMC Office Leader develops and publishes a monthly meeting schedule identifying dates, times and locations for each meeting. As much as possible, recurring meetings will be scheduled to meet at the same time and locations at the specified frequency. The monthly meeting schedule requires advance planning and input from all program participants to minimize duplication and conflicts.

Any changes to the schedule must be made in advance so that all participants are suitably notified of changes.

Scheduling meetings using applicable software simplifies the process of arrangements and also will be customized to reflect the availability of meeting venues discussed in Section F below.

C. Meeting Agenda

All meetings will have an agenda. **Attachment 19.2.3.3 – Meeting Agenda**, provides a basic meeting outline that is distributed at least three days prior to a meeting or earlier, depending upon the frequency.

D. Meeting Record

The Chairperson or designated recorder is responsible for the preparation of the notes or record documenting the discussions held. This record is sensibly concise, summarizing the discussion topics and adding detail only when required or appropriate to the subsequent actions required. (See **Attachment 19.2.3.4 – Meeting Note Format**)

Corrections to the meeting notes or record are made at the subsequent meeting, or if the meeting frequency is relatively low, they are implemented via written comment and subsequent reissue prior to the next meeting. Each meeting record will contain the following note:

"If written comments or corrections to these minutes are not received by the undersigned prior to the completion of the next meeting, the notes, as published, will be considered to accurately reflect the meeting."

E. Action Item Follow-Up

Because the purpose of meetings is to raise issues and bring them to resolution, subsequent action assignments are made. These must be followed up on as part of old business at each meeting to verify closure of each and that every item is achieved in a timely fashion. Prior to the next meeting, it is the Chairperson's responsibility to manage follow-up on any actions previously identified to gain closure on identified items/issues. (See **Attachment 19.2.3.5 – Meeting Attendance Roster**)

F. Meeting Venues

With a project of the magnitude of the Zoo Interchange Project, early organization of potential meeting locations is important. Determinations will be made if the weekly project meetings are held in the WisDOT SE Region Office in Waukesha or at the Zoo Interchange Field Office in West Allis.

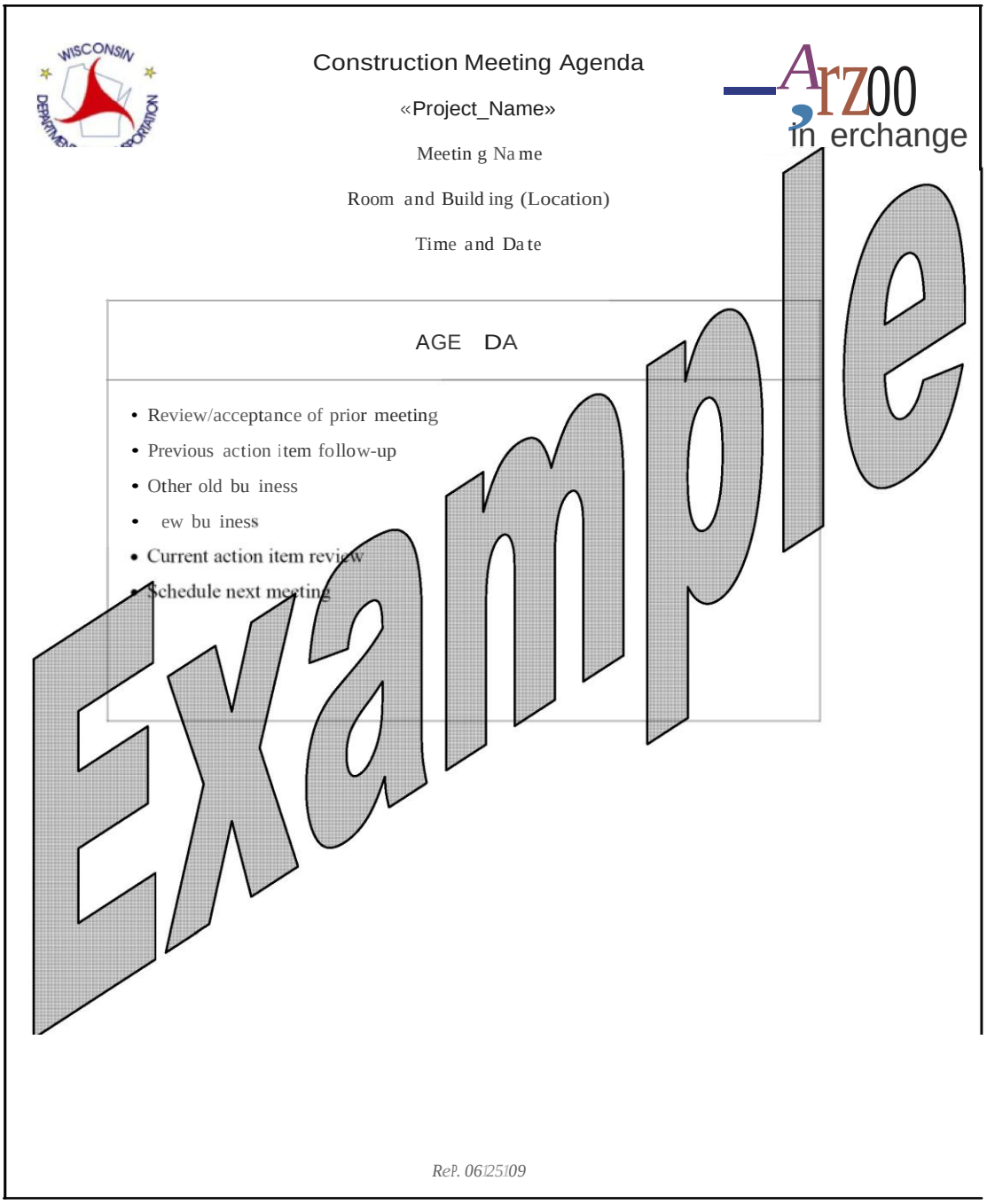
Attachment 19.2.3.1 - Design Project Meeting Table

Type	Frequency	Chair	Attendees	Comments
Project/Project Management				
Risk & Issues	Monthly	Zoo Team, Construction, Regions, BOS, BTO, BPD, BTS BRH	Zoo Team, Construction, Region, BOS, BTO, BPD, BTS BRH	
Roadway				
Roadway Design & Drainage	Weekly	Zoo Team, Construction, BTO, BPD	Zoo Team, Construction, BTO, BPD	
Structures				
Weekly Structures Coordination	Weekly	Zoo Team, BOS, BTS	Zoo Team, BOS, BTS	
Monthly Meeting	Once a Month	Construction Region BOS BTS	Construction Region BOS BTS	
Traffic and TMP				
Bi-Weekly TMP	Bi-Weekly	Zoo Team, Construction, Region, BTO	Zoo Team, Construction, Region, BTO	
Monthly TOAC Meeting	Every 6-8 Weeks	Zoo Team, Construction, Region, BTO	Zoo Team, Construction, Region, BTO	
Utilities				
West Allis/Wauwatosa Utility DSN	Once a Month	Zoo Team, BTS	Zoo Team, BTS	
City of Milwaukee Utility Coordination	Once a Month	Zoo Team, BTS	Zoo Team, BTS	
Milwaukee County Utility Coordination	TBD	Zoo Team, BTS	Zoo Team, BTS	
ATC/WE Energies	Monthly	Zoo Team, BTS	Zoo Team, BTS	
Bi-Weekly Comm/FTMS/STOC	Bi-Weekly	Zoo Team, BTS	Zoo Team, BTS	
Real Estate				
Monthly RE/UTL Check-In	Monthly	Zoo Team, Region, BTS	Zoo Team, Region, BTS	
Weekly RE Issues	Weekly	Zoo Team, Region	Zoo Team, Region	
Weekly Utility Issue/Risk	Weekly	Zoo Team, Region	Zoo Team, Region	
Financial				
Monthly BSHP/OPBF/SEF Mtg	Monthly	Zoo Team, Region	Zoo Team, Region	
Monthly RE/Utilities Budget	Monthly	Zoo Team, Region	Zoo Team, Region	
Federal Financial Plan Meeting	As Needed	Zoo Team, Region	Zoo Team, Region	
Program and Financial Controls	Bi-Weekly	Zoo Team	Zoo Team	
Quarterly Cost Estimate Review	Quarterly	Zoo Team	Zoo Team	
CSS				
Quarterly	Included in Structures meeting	Zoo Team, Region, BOS, BPD	Zoo Team, Region, BOS, BPD	

Attachment 19.2.3.2- Construction Project Meeting Table

Type	Frequency	Chair	Attendees	Comments
Pre-Con.struction	Once	CPM orPCL	Contractors, PCLs, PM, DEC Utilities, etc.	Re:C&MM Chapte r2, Sectio n. 2.11
Co11structi on;Individual Projects/Contracts	Weekly	CPM/PCL	PM, PC!., Contractors	Re:Eacn Contract Special Provisions Contractor Coordination Section
Zoo Inter :hange Oversight Committee	Bi-Weekly	Secretary	ZOC Members (see 3.1.1. Org. Ckart)	Special attendees are required;Monthly reports/progress to be discussed when report is available.
Change Man.agementTeam	Bi-Weekly	WisDDT Supervisors/Major Project Manager	Technical Advisor, Major Project Liaison, FHWA, Zoo Team Chief and Supervisors	PMs and special prese ntersare required. Meeti ngs held Tuesday afternoons.
Cost	Bi-Weekly	Financial Management Supervisor	Cost Control Engineer, Cost Contro l Specialists	Update status;Identi fy issues and trends; Provide i11fo for CMT
Schedule (Preject Groupings:> 20 Million)	Bi-Weekly	Project Manager, PCL	ZCG PMs, PCMC, CM Supervisor	Assess statu s of contro lling/critkal item progress.
Cor structi on Status; All Projects	Mo11thly	ZCG Chief	FHWA, Supervisors, PMs, Cost & Schedule Staff	Use current Mo11thly Report as reference.
Administrati on	Mon.thly or as Needed	Program Cor structi on ManaQementDffice Leader	Program Document Control Specialist, Project Documentation Control Technicians	Revie w process and efficiency; recommer1d proce dure modifications
Partneri nQ	At Project Inception	WisDOT Major Project ManaQer/Project Manager	Facilitator@ initial, ZCG Meeti ng, FHWA, PCl.s, Contractors, etc.	Quarter ly Update Sessions
Interface/Coordi nation	Mon.th.ly	Project Manager	Utilities Coordinator, other PMs or Rep, Contractactors or 3rd parties as needed	Occur before monthly report is developed; Establish. meetings with. 3rd party enti ties.
Zoo Interchange Program Meetings	Weekly	Supervisors	FHWA, DEC, PCLs, PMs, PCMC other parties as neede d	This meeting tak es place every Tkursdav.
Zoo Intercham:e Construction Manage ment Meeting	Mon.th.ly	ZCG Chief	ZCG Supervisors, Major Project Manager	Discuss progra m and staffing issues. Meeti11gs held 3rd Monday of each month.
Zoo Interchange Zoo Team Functi onal Team Meeti ng	Mo11thly	Zoo Chief	ZCG Members	Discuss issues and the ir relati on to the program team.etings held 3rd Wednesday of each month.
Zoo Interchange Leadership Meetings	Weekly	Zoo Desi gn and Constructior1 Chiefs	DECs, Major Project liaison, Zoo Team Chief and Supervisors, Major Project Managers	Discuss Design and Constructi on issues with tearr leadership. eting held Monday mornings.

Attachment 19.2.3.3- Meeting Agenda



Construction Meeting Agenda

«Project_Name»

Meeting Name

Room and Building (Location)

Time and Date

AGENDA

- Review/acceptance of prior meeting
- Previous action item follow-up
- Other old business
- New business
- Current action item review
- Schedule next meeting

Example

Rev. 06/25/09

Attachment 19.2.3.4- Meeting Note Format

Wisconsin Dept of Transportation

MEETING NOTES
No. 00060

Wisconsin Dept. of Transportation
141 N W Barstow Street
Waukesha, WI 53187-0798

PROJECT: PROGRAM-I94 North-South Corridor Program **DATE and TIME:** 5/4/2010 at 10:00am
LOCATION: Milwaukee Office **SUBJECT:** Financial Team Meeting

INITIALS	ATTENDEE NAME	COMPANY NAME
BJB	Brian J. Boecker	Mortenson Infrastructure Inc
CCU	Casey C. Unrath	PCMC-Gilbane Building Company
DCK	Dan C. Krueger	URS Corporation
HJH	Hans J. Higdon	Wisconsin Dept of Transportation
JMR	James M Rinzel	Wisconsin Dept of Transportation
JJD	Jeffrey J. Dohlby	PCMC-URS Corporation
JDS	Joshua D. Stenz	PCMC-Gilbane Building Company
NK	Nahid Keltner	Mortenson Infrastructure Inc
NS	Nathaniel W. Schumaker	Wisconsin Dept of Transportation
NAS	Norbert A Simonis	Wisconsin Dept of Transportation
PMO	Patty Oemig	Wisconsin Dept. of Transportation
PCJ	Peter Jacobsen	URS Corporation
RDR	Richard D. Raupp	Wisconsin Dept of Transportation
TRF	Thomas R. Fallon	PCMC-Gilbane Building Company
UMD	Urmila M. Dhole	URS Corporation

ITEM	DATE	DESCRIPTION	STATUS	DUE	BALL IN COURT
00.0.00000		GENERAL DISCUSSION			
00.G.00001	3/9/10	TOPIC: Team Building ITEM: Norb S. would like to organize an I-94 North-South Project visit with the Financial Team. COMPLETE: Norb S. and Tom F. to provide dates for field trip. May 10, 2010 with alternate rain day June 7, 2010. UPDATE (5/3/10): Norb S. would like to move the field trip to June 7th so he can attend. ACTION: Hans H. will work out an itinerary and speak with PM's. ACTION: Hans H. will need to find a new rain date.	OP	5/11110	Wl. 00 -HJH
00.G.00004	4/27/10	TOPIC: WisDOT Financial Team - Responsibility Matrix Transition ITEM: Patty O. has accepted a new position within WisDOT and will be transitioning from her role with the 94 N-S Corridor Project. Nate S. and Jim R. will be taking over her responsibilities. Currently tracking for a 6 month transition period. ACTION: Patty O. will be training Nate S. and Jim R. on her responsibilities. ACTION: Norb S. review with Tom F. the updates required to the Program's Responsibility Matrix.	p	5/11/10	WISDOT-NAS

Attachment 19.2.3.5 – Meeting Attendance Roster

Meeting Attendance Roster

Zoo Interchange Reconstruction Project

Meeting/Project/Contract Name and Number

Location

Date& Time

Name	Organization	Phone		Attendance

20.0 Utilities

20.1 Utilities Overview

The process of identifying and assessing utilities begins with identifying existing utilities and notifying respective owners of proposed highway improvements by mail via the Trans 220 process - Form DT 1077. Initial Utility Coordination Meetings were held in 2011 with the utility companies, municipalities, and Milwaukee County. WisDOT and Forward 45 project managers and utility coordinators presented the conceptual design, proposed schedule, and discussed potential impacts to utility facilities.

Following the initial Utility Coordination Meetings, WisDOT and Forward 45 utility coordinators remain in close contact with each utility, identifying key locations of potential conflict with the proposed highway improvements. WisDOT and Forward 45 utility coordinators obtain and review project plats and permit information to determine whether utilities are compensable or non-compensable and if a permanent or temporary release of land rights is required from the utility.

WisDOT and Forward 45 utility coordinators develop initial compensable utility cost estimates as part of the DEIS. Additional cost estimates are developed at the 30 percent and 60 percent design stages.

During the initial development of the Zoo Interchange DEIS, an early coordination effort was conducted with the American Transmission Company (ATC) and WE Energies to focus on numerous complex facilities that each utility has within the project corridor (notably the West Leg and South Leg). The culmination of this initial coordination was the completion of a feasibility study and cost estimate for potential relocation of distribution and transmission facilities within the project corridor. The early planning with ATC also involved the study of replacing existing underground facilities with improvements at the 96th Street Substation located in the NE Quadrant of the Zoo Interchange.

The current status of utility coordination includes WisDOT entering into lump sum agreements with US Energies and ATC to complete relocations of their facilities impacted by the west and south leg construction of the Zoo Interchange by February 2015.

20.2 TRANS 220 Process

The Project Plan Transmittal - Form DT1078- is provided to each utility company with facilities in the project limits for their use in identifying possible utility conflicts and making a determination as to how they propose to resolve any conflicts and to prepare their relocation plan and cost estimate (if compensable). WisDOT's designers will inform the utility of any changes to the plans after the Project Plan Transmittal that may impact the existing or proposed utility facilities.

20.3 Utility Work Plans, Permits, and Payment

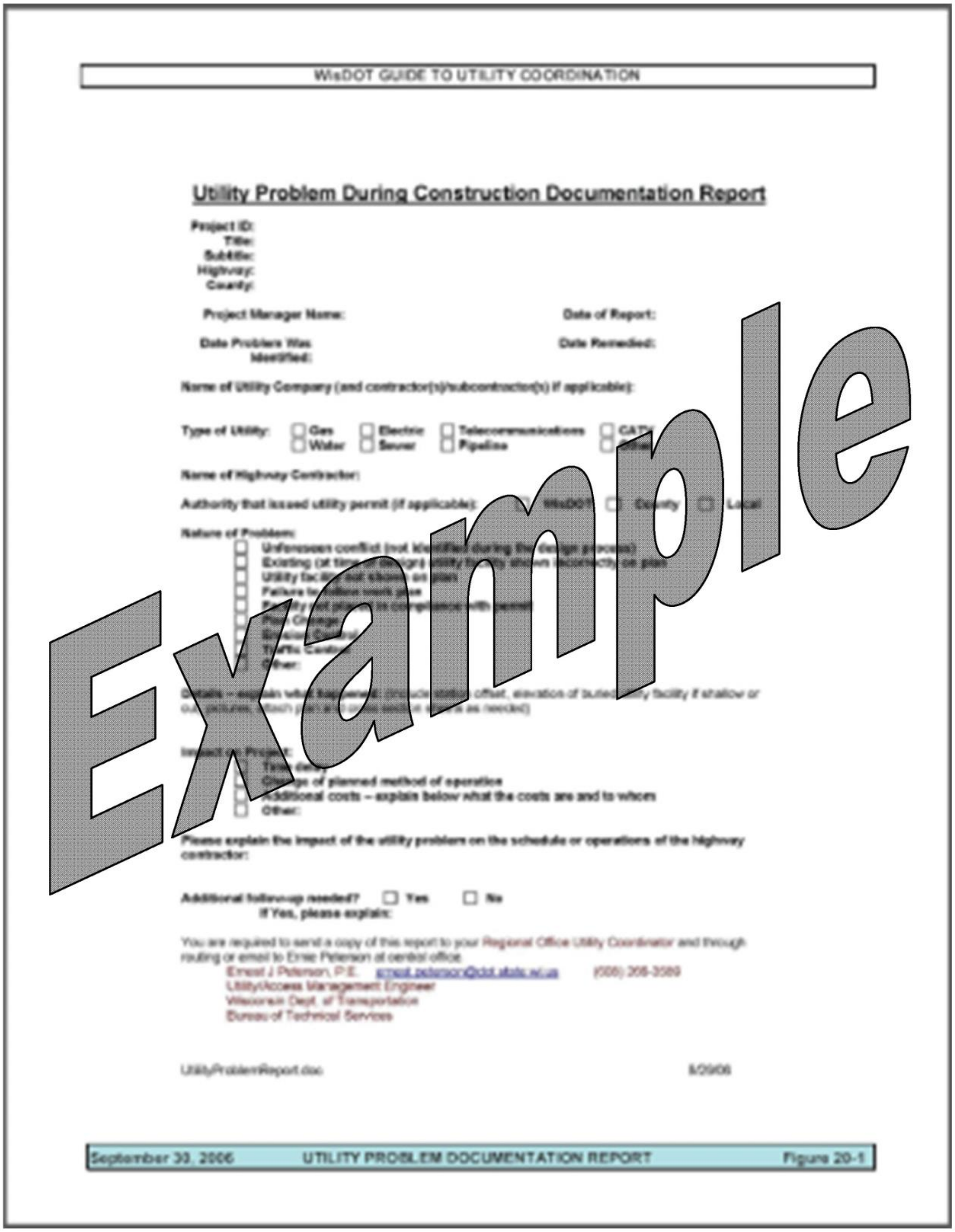
As utility work plans, cost estimates, and schedule are received, they are reviewed by the WisDOT and Forward 45 utility coordinators and WisDOT designers for compatibility with the design and construction schedule. If consensus is reached, the work plan is approved and any compensable agreements executed and conveyance of land rights obtained. The WisDOT utility coordinators then send work plan approval letters and start work notices to the respective utility owners when the right-of-way is acquired at each respective location. WisDOT and Forward 45 utility coordinators, WisDOT projects managers, and WisDOT's environmental unit review utility permits with WisDOT's utility permit coordinators approving the permit.

Field reviews are performed by WisDOT's utility permit coordinators prior to, during, and after the utility relocation work is completed to ensure that relocation work is done in accordance with the approved work plan and WisDOT standards. Prior utility permit approvals includes checking (with ZOO IC construction team as necessary) for utility/WisDOT constructability constraints. During utility relocations, the utility permit coordinators check for timely schedule completion at the approved locations. Any change of design will be reported on the Utility Problem During Construction Documentation Report **(Attachment 20.3.1)**. The utility will be notified and provided with the Utility Problem During Construction Documentation Report – Utility Company Version **(Attachment 20.3.2)**. The Utility Problem During Construction Documentation Report – Utility Company Version form provides the utility company an opportunity to respond. These forms have been adopted from the WisDOT Guide to Utility Coordination, Chapter 20, "Conflicts during construction", Figure 20-1 and 20-2. During WisDOT construction, the utility permit coordinator will resolve conflicts found during utility relocation and/or because of the utility relocation. The utility permit coordinator will also support the construction team on the resolution of the conflicts that were not reported on the special provisions. It is the WisDOT construction leader's responsibility to work out the conflicts not reported on the special provisions with the utility (see Guide to Utility Coordination, Chapter 20, "Conflicts during construction-General"). The Utility Problem During Construction Documentation Report and the Utility Problem During Construction Documentation Report – Utility Company Version, will be used to report the utility conflicts found during WisDOT construction.

Utility Coordination meetings are held on a weekly basis to ensure communication lines remain open between the utility permit coordinators, the utility vendors and the construction teams.

Utility invoices are reviewed and recommended for payment by WisDOT's utility coordinators and the Central Office Utilities Unit.

Attachment 20.3.1 – Utility Problem During Construction Documentation Report



WisDOT GUIDE TO UTILITY COORDINATION

Utility Problem During Construction Documentation Report

Project ID:
Title:
Subtitle:
Highway:
County:

Project Manager Name: Date of Report:

Date Problem Was Identified: Date Remedied:

Name of Utility Company (and contractor(s)/subcontractor(s) if applicable):

Type of Utility: ☐ Gas ☐ Water ☐ Electric ☐ Sewer ☐ Telecommunications ☐ Pipeline ☐ CATV

Name of Highway Contractor:

Authority that issued utility permit (if applicable): ☐ WisDOT ☐ County ☐ Local

Nature of Problem:

☐ Unforeseen conflict (not identified during the design process)
☐ Existing (at time of design) utility facility shown incorrectly on plan
☐ Utility facility not shown on plan
☐ Failure to follow work plan
☐ Facility not placed in compliance with permit
☐ Plan Change
☐ Erosion Control
☐ Traffic Control
☐ Other:

Details – explain what happened (include station offset, elevation of buried utility facility if shallow or outside plans, attach plan and cross section sheets as needed)

Impact on Project:

☐ Time delay
☐ Change of planned method of operation
☐ Additional costs – explain below what the costs are and to whom
☐ Other:

Please explain the impact of the utility problem on the schedule or operations of the highway contractor:

Additional follow-up needed? ☐ Yes ☐ No
If Yes, please explain:

You are required to send a copy of this report to your Regional Office Utility Coordinator and through routing or email to Ernie Peterson at central office.

Ernest J Peterson, P.E. ernest.peterson@dot.state.wi.us (608) 266-3589
Utility/Access Management Engineer
Wisconsin Dept. of Transportation
Bureau of Technical Services

UtilityProblemReport.doc 8/29/06

September 30, 2006 UTILITY PROBLEM DOCUMENTATION REPORT Figure 20-1

Attachment 20.3.2- Utility Problem During Construction Documentation Report-Utility Company Version

WisDOT GUIDE TO UTILITY COORDINATION

Uti ity Probl em Duri ng Construction Documentation Report
Util ity Company Version

Project ID:

Title:
Subtitlo:

High vay:
County:

WisOOT Project Manager arne (ttkno nt: Date of Report:

Date Utility Company otified: **Date Remedied:**

ame of Highway Contractori Su contractor:

Nature of Problem:

- ☐ Unforeseen conflict (not identified during the design process)
- ☐ Existing (at time of design) utility facility shown incorrectly on plan
- ☐ Utility facility not shown on plan
- ☐ Facility not placed in compliance with permit
- ☐ Plan Change
- ☐ Erosion Control
- ☐ Traffic Control
- ☐ Operator Error
- ☐ Facility location marked incorrectly
- ☐ Other

Details – explain what happened:
(Include location, elevation of buried utility facility if shallow or cut, pictures attac pia ar cr - section sheets as needed, anything that might help explain the situation.)

Additional follow-up needed? rcncck onct O Y s 0 o
If Y pi a e xplain:

Subm tted by:

Utility Company:
Typ of uti lily: (Cilce ITC)

D Ga D Electric D CATV D Tel communications
D Wa r D Sever D Pipeline O Other

S ndacopyof thi formto:R g01 U. yC· rdraor.ad . c•ty. al

20.4 Work Zone Traffic Control

The use of the Work Zone Traffic Control form **(Attachment 20.4.1)** assists with general project awareness and documentation of revisions to Zoo Interchange traffic control work zones by utility permit holders on very short notice. When the utility coordinator is informed of a request, they are to contact the Traffic Operations Manager (Stephanie Skowronski/Tim Vick) to assess the traffic impacts. If the request will have an adverse impact on traffic or stakeholders, the utility coordinator will contact the Construction Supervisor and/or the Utilities Supervisor (Jason Roselle and/or Terry Kittson) for acceptance or denial of the change. The Work Zone Traffic Control form will need to be executed quickly and sent back to the permit holder to document the terms of extension or modification.

Attachment 20.4.1 – Work Zone Traffic Control Form

W RK Z tiE TRAFFIC C IITR L REVISIOU RE UEST
[.ACTIVE UTILITY CONSTRUCTION PERMIT

1. Existing Permit Number :
2. Revision Number :
3. Permit Hoider (utility facility owner) Name.Address, Phone and Email:
4. Permit :Hoider Work Order
5. Revised Work Start Date and Time :
6. Revised Work Finish Date and Time :

Changes to Location (specify):

Revised Work Zone Impacts (check all that apply):

a. ☐ Full road closure: long-term (four days or longer)
b. ☐ Full road closure: short-term
c. ☐ Multiple lane closure
d. ☐ Peak hour closure
e. ☐ Off - Peak hour closure
f. ☐ Other. Describe:

9. Narrative of Work Zone Revisions (Location, Direction, Duration, Key Stakeholders):

10. Sketch of Proposed Work Zone Changes (if applicable):

Notes:

- If the work described is not completed by the "Work Finish Date and Time" specified, this approval is null and void.
- Any issued WORK ZONE TRAFFIC CONTROL REVISION REQUEST for ACTIVE UTILITY CONSTRUCTION PERMIT is revocable.
- Traffic Control work must be carried out in accordance with WMUTCD and the original permit, as revised by this document.
- All other parts of the original permit remain in full effect.

Status of Request:

☐ Approved
☐ Conditionally Approved
☐ Denied

Remarks:

Wisconsin Department of Transportation

By	Title	Signature	Date	Time
Maria I. Rojas-Monroy	Construction Utility Coordinator			
Terry Kittson	Utility Supervisor			
Jason Roselle, PE	Construction Supervisor			

21.0 Executive Leadership Endorsement

The Zoo Interchange Reconstruction Project Management Plan was developed jointly by the Wisconsin Department of Transportation and the Federal Highway Administration.

It represents an overall plan that both entities agree to adopt and accept as a general description of internal management procedures for the final design and construction phases of the Zoo Interchange Reconstruction project.

Federal Highway Administration Accepts the Project Management Plan

Federal Highway Administration Accepts the Project Management Plan

Tracey Blankenship Date 11/5/12

Tracey Blankenship, FHWA – Wisconsin Division Major Projects/Field Ops Manager

Wisconsin Department of Transportation Approves the Project Management Plan

Date 10/8/12

Dewayne Johnson, WisDOT SE Region Director

22.0 Appendices

- **Appendix A: Forward 45 Quality Plan**
- **Appendix B: WisDOT Major Project's Guidelines**
- **Appendix C: Baseline Schedule with Major Milestones**

Appendix A: Forward 45 Quality Plan

Project Quality Plan

Zoo Interchange Freeway and Adjacent Arterials Reconstruction

Preliminary and Final Design

Project I.D. 1060-33-07, 1060-33-08, 1060-33-09

FORWARD 45
A JOINT VENTURE OF KAPUR, CH2M HILL AND HNTB

WISCONSIN DEPARTMENT OF TRANSPORTATION

Contents

Tables

Figures

Appendices

Note: The appendices listed here represent documents residing under the PQP folder found on the project server. These documents may contain multiple attachments (other documents, spreadsheets, PDFs, etc.). The intent of this approach is to address the dynamic nature of additions/deletions/edits to this material by moving to a virtual environment.

1. GENERAL

1.1. PROJECT SCOPE

The Zoo Interchange project limits are I-94 between 124th Street and 70th Street and US 45 between Burleigh Street and Lincoln Avenue, including the adjacent arterials at HWY 100 between I-94 and Watertown Plank Road; Watertown Plank Road between HWY 100 and 87th Street; and 84th Street between I-94 and Wisconsin Avenue.

General design considerations will be the following:

- All exits on the right; through traffic stays left.
- Full 10- to 12-foot shoulders (minimum) on all system ramps and freeways.
- Widen approaches to the interchange to allow for proper access to system ramps.
- The system interchange would have four levels rather than three, making it about 45 to 50 feet higher than it is today.
- Add lanes to the appropriate system ramps and freeway through movements where needed.
- Add lanes to the adjacent arterials where needed. The footprint of the Zoo Interchange core will remain mostly the same as existing.

In summary format, project activities include the following:

- Public involvement and agency coordination programs.
- Post-EIS agency coordination, permitting activities, and impact mitigation design.
- Conduct continued utility coordination.
- Railroad coordination.
- Field surveying and base mapping.
- Provide for Facilities Transportation Management Systems/Intelligent Transportation
- Systems (FTMS/ ITS) components analysis.
- Prepare engineering reports.
- Conduct value-engineering evaluations.
- Prepare the required Transportation Management Plan, including design of off-system mitigation elements.
- Incorporate Community Sensitive Solution concepts into plans for proposed improvements.
- Prepare right-of-way plats for the roadway improvements.
- Conduct hazardous materials investigations.

- Program Controls, including:
  - Schedule
  - Budget
  - Document control
- Conduct geotechnical investigations.
- Complete Preliminary Engineering.
  - DSR check
  - Drainage Design and Stormwater Management plans
  - Traffic analysis
  - 30% and 60% roadway plans
  - Preliminary plans for all structures
  - Plats
- Complete Final Engineering.
  - Final drainage design
  - Final roadway design
  - Final structure design
  - Final electrical design (lighting, signals, ITS)
  - Draft and final PS&Es

1.2. DELIVERABLE PRODUCTS

A comprehensive list of deliverables required includes the following:

- Record of Decision
- Phase II hazardous materials reports
- Utility Impacts Report
- Public involvement newsletters, branding, model, Web site, computer visualization models and project literature
- Subsurface Investigation Reports
- Conceptual Implementation Plan
- Functional and Preliminary Roadway Plans
- Right of way plats, legal descriptions, and Encroachment Report
- Transportation Management Plan Report (Phase 1)
- Interstate Justification Report
- ICMS Requirements and Procurement Tech Memo
- Community Sensitive Solutions Technical Memo
- Hydrological Analysis Technical Memo
- Programming Report

- Drainage Report
- Design Study Report
- Exceptions to Standards Report
- Monthly Program Controls Report
- Guide Sign Report
- Railroad Functional and Preliminary Plans
- Project Quality Plan
- Field Survey Base Mapping
- Preliminary Cost Estimates
- Roadway Draft and Final Plans, Specifications and Estimates
- Structural Preliminary Plans and Structure Reports
- Structural Final Plans, Specifications and Estimates
- FTMS/ITS Preliminary and Final Engineering Plan
- Integrated Concept Management System Operations Plan
- Lighting Design Memo
- Traffic Signal Design Memo

The activities and products provided elsewhere as deliverables will be executed and delivered in accordance with requirements set forth in the following documents:

- WisDOT Facilities Development Manual
- WisDOT Bridge Manual
- WisDOT Geotechnical Bulletin
- WisDOT Standard Specifications for Highway and Structure Construction
- WisDOT Guide to Utility Coordination
- Wisconsin Administrative Code Chapter Trans 220, Utility Facilities Relocation
- Wisconsin Administrative Code Chapter Trans 75, Bikeways and Sidewalks in Highway Projects
- Wisconsin Administrative Code Chapter NR 401, Non-attainment Areas
- Wisconsin Administrative Code Chapter NR 405, Prevention of Significant Deterioration
- Wisconsin Administrative Code Chapter NR 411.04, Exemptions from indirect source permit requirements
- WisDOT IT standards for GIS Database table and field naming standards
- Federal Geographic Data Committee guidelines for GIS metadata to be delivered with GIS data
- FHWA Technical Advisory T 6640.8A

- FHWA's position paper Secondary and Cumulative Impact Assessment in the Highway Development Process (April 1992)
- The Council on Environmental Quality's Considering Cumulative Effects under the National Environmental Policy Act (January 1997)
- NCHRP Report 466
- Pertinent Council on Environmental Quality guidance
- Executive Order 12898 on Environmental Justice
- Title VI of the 1964 Civil Rights Act
- Section 106 process, per 36 CFR 800.2
- FHWA Docket No. 98-3409 as published in the Federal Register on February 11, 1998
- FHWA Work Zone Public Information and Outreach Strategies Guide (November 2005)
- WisDOT Guidelines for Developing Work Zone Transportation Management Plans
- FHWA Workzone Rule 23 CFR 630
- Design Engineering Services Contract between the Wisconsin Department of Transportation and Forward 45, LLC for Project I.D. 1060-33-07/08/09
  - Boilerplate
  - Standard provisions
  - Special provisions
  - Task descriptions
- Project Management Plan – Design
- Forward 45 Project Notebook
- Southeast Freeways Design Manual
- This Project Quality Plan (PQP)

1.3. DEFINITIONS

Following are definitions used within this plan:

- **Project Quality Plan (PQP)** – This plan, prepared by the Quality Manager and approved by the Project Management Team, that establishes the Continuous or "Built In" Quality, Quality Control and Quality Audit activities, processes and procedures that are considered the minimum necessary to meet project needs and client expectations.
- **Continuous Quality** – An overall program that establishes project-specific policies, standards, guidelines, and systems aimed at producing an acceptable level of quality in the team's products

- **Quality Control** – Project-specific activities that apply the policies, standards, guidelines, and systems developed in the Continuous Quality program to maintain an acceptable level of quality in the team's products, through the application of sound project management principles and practices.
- **Project Management Team** – A team comprised of the WisDOT Mega Project Managers and the Forward 45 Project Management Team.
- **Zoo Project Team** – All staff including WisDOT and consultant employees actively engaged, involved and committed to the Zoo interchange project.

2. QUALITY PROCESS – GENERAL

2.1. CONTINUOUS OR "BUILT IN" QUALITY

Quality will be "built into" the project through the establishment of, and strict adherence to, project specific policies, standards, guidelines, and systems; and by having Project Management, Task Leaders, Designers and functional Leaders, along the entire Zoo Project Team involved early and often throughout the facilities development process, rather than just engaged to review deliverables.

2.1.1. Roles and Responsibilities

General

Each individual on the Zoo project Team is responsible for his/her own work. Further, Task Leads as well as the Project Management Team are responsible for the work produced by individual staff (skill sets, training, equipment, communication, etc.) under their management. Review of the work, regardless of who may perform the review, will not in any way relieve the originator of the work, or his/her firm, of the responsibility to produce products that meet agreed upon requirements.

Project Manager

The Project Manager (PM) is responsible for overall project execution, including client interface and satisfaction, coordinating all project work, conducting and monitoring risk assessments, approving the PQP, maintaining the project schedule and budget, and assuring that the appropriate reviews have been budgeted, planned and completed. The PM may be assisted by a Deputy PM(s), and the Quality Manager.

Quality Manager

The Quality Manager is responsible for developing and implementing the PQP, developing and managing the quality process, auditing quality-related activities, facilitating the quality process, and coordinating the review elements.

Task Leaders

Task Leaders are responsible for the quality and delivery of specific project deliverables. For PS&E deliverables, the Task Leaders will be the Roadway Discipline Leaders, and shall be responsible for all coordination within their segments and between adjacent segments. Task Leaders will complete the Quality Process log for their tasks and deliverables and will develop a Quality Review Schedule plan for all of their deliverable work elements.

Lead CAD Technician

The Lead CAD Technician is responsible for plan preparation. This includes working closely with the Task Leaders in setting up and maintaining CAD standards, and files in accordance with the established CAD project instructions, and coordination of CAD files among all users.

Designers/Function Leads

Designers/ Function Leads are responsible for accurate completion of specific work products, including:

- Geometric design
- Drainage design
- Traffic analysis
- Right-of-way engineering
- Utility coordination
- Roadway plan preparation
- Structural design
- Structure plan preparation
- Soils and Subsurface Investigations and Reports
- Hazardous Materials Assessments
- Public involvement documents
- Monthly report and schedule updates

The Quality Process Log lists the Designers/ Function Leads responsible for each deliverable product listed in Section 1.2. See Appendix A for the Quality Process Logs.

Checkers

The Checker will not be the same person as the preparer.

Checkers are responsible for providing an independent, detailed (i.e., “line by line”) check of all hand or computer generated design calculations, alternative layouts, plans, special provisions, construction cost estimates, and reports. Checkers are to document these activities by entering their initials and date on all design calculations and checklists used in the preparation of all deliverable products, as well as on a draft copy of the deliverable product checked by them.

Reviewers

Reviewers will not re-do the work but will proactively identify potential errors, omissions, inconsistencies or conflicts, and ask questions or raise concerns about items or design features that may present problems during construction. Reviewers are not expected to find answers to all questions asked, nor are they expected to resolve all issues.

Comments may not note or correct errors in the strictest sense; rather, Reviewer comments may present a “better” alternative (in the opinion of the Reviewer). Such comments should not necessarily be discouraged (indeed, these may form the basis for “lessons learned” and improvements for the next similar deliverable). However, Reviewers should bear in mind that the intent of the review process is to produce a quality, workable product that conforms to the requirements of acceptable practice as

established by the referenced standards, contract, and which contains as few errors and omissions as is practicable and within the industry "standard of care" for similar projects.

Reviewers are expected to bring an objective viewpoint to their assignments by not having had an active role on the project element, or at least not the specific item of work they are reviewing. The selection of Reviewers is subject to the approval of the Task Leader, Project Manager and Quality Manager.

All Zoo Team Staff

Each team member is responsible for producing quality work that conforms to the standards of the industry and referenced standards, and for helping ensure that fellow team members produce quality work.

The Zoo Interchange Preliminary Design Teams are shown in the organizational charts below.

FIGURE 1: WisDOT Zoo Interchange Team Organization

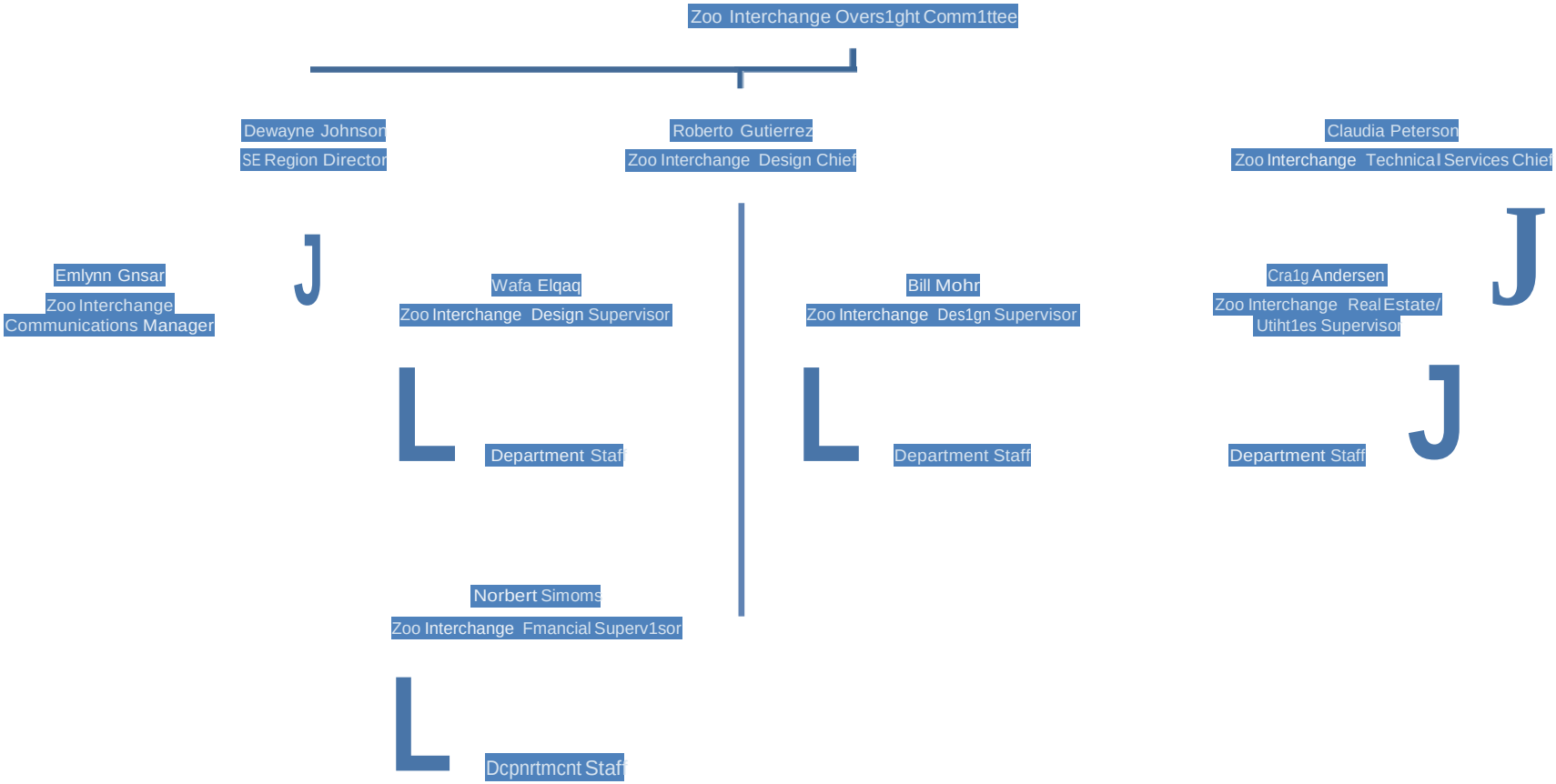
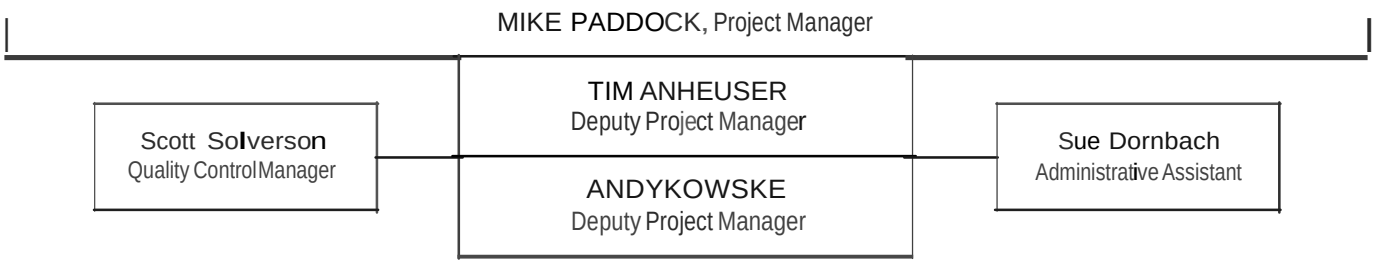


FIGURE 2: Forward 45 Zoo Interchange Team Organization



Public Involvement and CSD	Forecast Travel Demand/ Traffic Mitigation/ TMP	Utilities/ Surveying/ Plats	Traffic Signals/ Lighting/ ITS/FTMS	Drainage	Roadway	Structures	Geotech	Project Controls
Beth Foy	Marty Hawley	Kevin Cornnell	Maria Donnelly	Prasad Narayan	Tom Pettit	Pat Cashin	John Siwula	Paul Barthel
• Helen Dixon - Nancy Hernandez - Martha Love • Micaela Morin • Griff Dixon CSS • Barriento Design & Consulting • Tom Kindschi	• Maria Donnelly ·Alicia Dougherty • Joe Ulatowski	SURVEY • Kapur& Wolpert PLAT - Kurt Kruger • Gary Splinter • Steve Seiitz • Brian Dodge • Brandon Maas	- Dennis Fleischfresser • Kian Chai	• Bryan Adams • Jason Feucht • Paul Jenswold • Andy Bork	·Bill Stoeck ·Aaron Bubb • Eyad Ghani • Steve Maierle ·Tim Flynn ·Mike Ernst • Pam Paczocha • Silvana Pobric • Chris Largy • Juile Plicka • Tom Spielles ·Gil Ilopez • Dan Prokop • Tony Baciak ·Neal Styka • Kevin Keast • Chris Johnson • Dave Scharlau • Donna Burtch • Jack Sweany • Olga Pearson • Bradford Meyer	·Mark Maday - Karl Schmid • Jay Carter • Randy Thomas • Josh Odenwald • Chris Kadera • Heather Anders • Brian Sides • Matt Schroeder • Ed McCright - Eric Stone • Beth Jelinek	• Kevin Brusso • Chuck Winter • Sara Padaralh • Dan Pelczar • David Jaromin - Hilde Knai • Jonathan Hotstream SOIL BORINGS •Gestra HAZMAT • Trish Hermann	• Teri Koepp - Bill Gannon

2.1.2. Design Documentation

Each project segment shall set up and maintain current at all times three-ring notebooks/binders with hard copies and electronic files of the following materials:

- Geometric design calculations
- Drainage design calculations
- Traffic analysis
- Right-of-way engineering decisions
- Utility coordination
- Quality documentation files

The Task Leader is responsible for maintaining these files.

2.1.2.1. Checklists and Checking Process

All staff is responsible for adherence to good practices of work documentation, ongoing review and consultation, and documentation of decisions to support continuous quality of deliverables.

2.1.2.1.1. Checklists

Design and plan preparation checklists will be used to document the thoroughness of the production and review efforts and to reduce rework on each work element. The following checklists shall be used and included as part of the Quality Documentation for each project segment, unless the Task Lead, Project Manager and Quality Manager have agreed otherwise.

- Appendix G – Geometric Design Checklist
- Appendix H – Drainage Design Checklist
- Appendix I – Preliminary Roadway Plan Checklist
- Appendix J – Final Roadway Plan Checklist
- Appendix K – Traffic Quality Control Checklist
- Appendix L – Preliminary Structure Plan Checklist
- Appendix M – Final Structure Plan Checklist
- Appendix N – Right-of-Way Plat Checklist
- Appendix O – Utility Coordination Checklist
- Appendix P – Geotechnical Preliminary Engineering Checklist

2.1.2.2. Checking and Reviewing Procedures

The Designer/Function Leads for each functional area and the supporting staff working under his/her direct supervision will “build quality into” the item(s) of work for which they are responsible through the utilization of the tools described herein and through the performance of normal self-checking.

Designers/Function Leads are responsible for the implementation of the checking procedures described in this PQP to document the detailed checking of all work prepared under their direction.

See Appendix E for the Hand Calculation Checking Procedure and Appendix F for the Computer Generated Calculation Checking Procedure.

2.1.2.2.1. Calculations and Checklists

A Checker, as defined in Section 2.1.1, is not involved with the specific work being checked, and shall check and initial each page of the following items for accuracy and completeness:

- Calculations
- Design checklists

2.1.2.2.2. Non-PS&E Documents

The following work products shall be checked by a Checker, as defined in Section 2.1.1, before the item is released for distribution:

- Design Technical Memoranda
- Design Study Report
- Phase II Hazardous Materials Report
- Programming Report
- Storm Water/Pond and Drainage Reports
- Traffic Management Plan
- Community Sensitive Solutions Report
- Exception to Standards Report
- 404 Permit
- Geotechnical Reports
- Plats
- Capital Cost Estimates
- Formal correspondence (letters to utilities, local governments, state agencies, FHWA, etc.)
- Utility correspondence (Release of Rights letters, 1078 cover letters, Utility Workplan Approval letters, Start Notices, Agreement Transmittal Notices)
- Public outreach displays, flyers, newsletters, information packages and displays

Checkers are to document these activities by entering their initials and date on all design calculations and checklists used in the preparation of all deliverable products, as well as on a draft copy of the deliverable product checked by them.

2.1.2.2.3. Quality Tracking Documents

The Quality Process Log identifies the Designers/Function leads, Checkers and Reviewers for each work element. Each Task Lead will be required to complete this log for each project I.D. and submit it to the Quality Manager, prior to submitting any plan set to WisDOT.

2.1.3. Internal Quality Reviews

Internal Quality reviews are to focus on proactively identifying and eliminating any potential plan errors and omissions that would have the likelihood of resulting in additional cost to the project if a construction change order would have to be issued. This will involve the following:

- Completeness and consistency of plans and confirming that requested revisions from previous reviews have been appropriately addressed
- Identifying errors, omissions, conflicts, ambiguities, inaccuracies, inconsistencies and deficiencies in the construction documents, and identifying cross-discipline inconsistencies or conflicts.
- Identifying construction requirements that are impractical, unnecessarily costly, or difficult to build (considering such items as contractor access, site constraints and relationship to other project work).
- Confirming and documenting the required consistency between the three dimensional geometric elements created in the roadway design software and the corresponding information shown on the plans.
- Specialty technical reviews may be required to address aspects of specialized construction such as tunneling, unique structures and any similar specialized project features for appropriate use in the project, design calculations, accuracy of special provisions and correctness of plans.

The Task Leader will develop a Quality Review Schedule/Plan, using the template shown in Appendix Q, for all of their deliverable work elements, which at a minimum will establish:

Quality review work item (see list in section 2.1.2 for example items)

- List of proposed reviewers, and any changes to that list.
- Proposed scheduled dates of reviews to be conducted, allowing adequate time for completion and incorporation of review comments, meeting the requirements of Table 1 in Section 2.1.4.
- Actual dates of reviews conducted, and comments incorporated into product before release.

The Quality Manager will use this to monitor review status for the various project deliverables that make up the project, and insure their completion. In general, the default assumption is that all of the reviews identified in Section 2.1.4. will be required for any given I.D.

Time Charging for Quality-Related Activities for Consultants

Quality-related activities undertaken by the Task Leaders, Designers, Planners, Checkers and Reviewers are generally considered to be part of the specific task being worked on and time worked should be charged in accordance with individual firm contracts and procedures.

2.1.4. Reviews

Several major reviews will be conducted for this project. These include:

- Management Reviews
- Technical Reviews
- Biddability Reviews
- Cross-Discipline Coordination Reviews
- Constructability Reviews
- Design/Plan Consistency Reviews
- Field Reviews
- Specialty Reviews

Table 1 at the end of this subsection summarizes the frequency and schedule for these reviews

All of these various reviews constitute a budgeted, planned, and formal process of examination and inspection of project work products and deliverables. It is imperative that all Zoo Project Team Staff recognize and understand that none of these formal quality process reviews are intended to be a substitute for building quality into the project in their ongoing performance of work.

Management Reviews

- Purpose: Review of overall project status.
- By whom: Project Management Team.
- When: Quarterly.

Technical Reviews

- Purpose: Focus on completeness, consistency, uncovering errors and omissions, and confirming that requested revisions from previous reviews have been completely addressed.
- By whom: Reviewers, Task Leaders, Designers/Function Leads and Quality Manager.
- When: Prior to each project deliverable.

Biddability Reviews

- Purpose: Identify errors, omissions, conflicts, ambiguities, inaccuracies, and deficiencies in and among the construction documents. Ensure that all comments have been adequately addressed and incorporated as agreed, and that there is agreement of pay item quantities in the plans, computation book, and the appropriate estimating input forms.
- By whom: Reviewers, Task Leaders, Designers/ Function Leads and Quality Manager.
- When: Prior to final PS&E submittal.

Cross-Discipline Coordination Reviews

- Purpose: Review of combined work elements to identify and resolve any conflicts that may exist among the various functional elements of the plan.
- By whom: Design organization. Ideally this review will be performed by a Discipline Coordination Review Team consisting of an objective Lead Reviewer (i.e., someone not involved in this project) who brings significant experience in design/ construction liaison issues on similar projects, and the discipline task leaders (e.g. roadway, structures, drainage, etc.) involved in the development and design of the specific deliverable.
- When: Concurrent with WisDOT Draft PS&E review.

Constructability Reviews

- Purpose: Identify construction requirements that are impractical, unnecessarily costly, or difficult to build. Constructability Reviews consider such items as contractor access, site constraints and relationship to other project work.
- By whom: Design organization. For certain specialized aspects of the project National Constructors Group, Inc. (NCG), along with select WisDOT and consultant staff, will perform supplemental constructability reviews.
- When: Concurrent with, or prior to, WisDOT preliminary plan review and Draft PS&E review.

Design/Plan Consistency Reviews

- Purpose: Confirm and document the required consistency between the three-dimensional geometric elements created in the roadway design software and the corresponding information shown on the plans.
- By whom: Design organization. This review is to be conducted by an engineer not involved in the design work on the contract being reviewed.
- When: Prior to Draft PS&E submittal.

Field Reviews

- Purpose: Project site visits to verify compatibility of the design with the field conditions to be encountered during construction. A minimum of one Field Review will be conducted for each of the interchange and non-interchange segments included in the project.
- By whom: Reviewers, Task Leaders, Designers/ Function Leads and Quality Manager.
- When: Concurrent with (sooner than is preferred) WisDOT preliminary plan review and Draft PS&E review.

Specialty Reviews

- Purpose: Review technical aspects of specialized construction such as tunneling, unique structures and any similar specialized project features for appropriate use in the project, design calculations, accuracy of special provisions and correctness of plans.
- By whom: Reviewers, Task Leaders, Designers/Function Leads, Quality Manager, and Project Management Team.
- When: Prior to Draft PS&E submittal.

TABLE 1: Reviews – Frequency and Parties Involved (Preliminary Engineering)

Review Element	Frequency	Parties Involved
Continuous or "Built In" Quality	Continuous	Entire Zoo Project Team
Management Review	Quarterly	Project Management Team
Technical Review	*Before* each Preliminary Plan submittal	QM, Task Leaders, Designers, Technical Reviewers
Constructability Review	*Concurrent with* WisDOT's Preliminary Plan Review (or sooner)	QM, Task Leaders, Designers, NCG
Field Review	*Concurrent with* WisDOT's Preliminary Plan Reviews (or sooner)	Task Leaders, Designers, Reviewers, others as needed

TABLE 2: Reviews – Frequency and Parties Involved (Final Engineering)

Review Element	Frequency	Parties Involved
Continuous or "Built In" Quality	Continuous	Entire Zoo Project Team
Management Review	Quarterly	Project Management Team
Design/Plan Consistency Review	*Before* the Draft PS&E submittal	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Technical Review	*Before* the Draft PS&E submittal	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Constructability Review	*Concurrent with* WisDOT's Draft PS&E Review (or sooner)	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Discipline Coordination Review	*Concurrent with* WisDOT's Draft PS&E Review (or sooner)	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Field Review	*Concurrent with* WisDOT's Draft PS&E Review (or sooner)	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Biddability Review	*Before* each Final PS&E submittal	QM, Task Leaders, Designers/Function leads, Technical Reviewers
Specialty Review	*Concurrent with* Design Team Technical Review	Reviewers, Task Leaders, Designers/Function leads, Quality Manager, Project Management Team

2.1.5. Documentation of Quality Reviews

All reviewers are to document their review comments two ways; by using the Review Comment Form, and by providing markups directly on the work product(s) (i.e., plans, specifications, and estimates) they are reviewing.

See Appendix C for the Review Comment Form and Appendix D for Instructions for Completing Review Comment Form. Completed Review Comment Forms and marked up work products are to be returned directly to the Designer/Function Lead. A copy of the Review Comment Form is to be provided to the Task Leader, and the Quality Manager.

Review Comment Form – Preliminary Engineering

All reviewers are to use the electronic version of this form to record their review comments. The completed form shall be provided to the Designer. A copy of the Review Comment Form is to be provided to the Task Leader, and the Quality Manager.

Designers are to use the electronic version of this form to record their responses to the review comments. Responses are to be categorized by type as indicated on the form (i.e., Agree (A), Requires Further Study (RFS), Partially Agree (P), and Disagree (D)).

Issues categorized as RFS should be addressed as the project moves from preliminary engineering into final engineering and shall be resolved before the project is submitted for Draft PS&E.

Issues categorized as P or D should be adjudicated by the Designer with the Reviewer(s) immediately. The resultant agreed upon disposition of the comment should be entered on the form. The form is to be signed by the Designer and Reviewer.

Review Comment Form – Final Engineering

All reviewers are to use the electronic version of this form to record their review comments. Completed Review Comment Forms and marked up work products are to be returned directly to the Designer. A copy of the Review Comment Form is to be provided to the Task Leader, and the Quality Manager.

Designers are to use the electronic version of this form to record their responses to the review comments. Responses are to be categorized by type as indicated on the form (i.e., Agree (A), Partially Agree (P), Disagree (D)).

Issues categorized as P or D should be adjudicated by the Designer with the Reviewer(s) immediately. The resultant agreed upon disposition of the comment should be entered on the form. The form is to be signed by the Designer and Reviewer.

Markups

Technical Reviews are to be conducted by marking up hard copies of the deliverable products in accordance with the following standardized color coded, checking procedure.

- Red – Addition or revision
- Green – Deletion
- Blue – Note to Designer for consideration

Ball point pens or Sharpies (Extra Fine Point) are preferred over colored pencils so that comments are legible if/when copied.

Reviewers are to initial and date every sheet of every plan, specification, and estimate for which they have review responsibility.

2.1.6. Stamping and Sealing of Documents

Policy

No final document for this project shall be considered complete and released for bidding purposes until its contents have been reviewed and approved by the Person in Responsible Charge. For this project, unless otherwise noted, the Designer is the Person in Responsible Charge. This person is responsible and accountable for the adequacy, suitability, and quality of the professional work contained in the document. The designer shall, therefore, be a Professional Engineer registered in the State of Wisconsin.

The responsible persons are the only persons permitted to place a stamp or certification on the plans. Stamping in absentia or certification without review shall not occur.

Stamping of Plans

For this project, the plans may bear the stamp of more than one registered professional, where more than one firm has been responsible for the work shown or contained.

Plan sheets provided by WisDOT do not need to be stamped.

2.2. QUALITY CONTROL

Sections 3 and 4 of this PQP include specific discussion of the Quality Control processes and steps for preliminary engineering and final engineering.

2.2.1. Quality Control Documentation Requirements

Every project will, unless a specific exception is granted by both the Project Manager and the Quality Manager, be required to provide the following to the Quality Manager prior to submitting any plan set to WisDOT.

- Copies of completed design checklists.
- Copies of completed Review Comment Forms.
- Evidence of all calculations having been checked
- Evidence of an appropriate independent plan check and having been conducted. The Checker shall check and initial each page of the plans for accuracy and completeness.
- Evidence of interdisciplinary review of all plan sheets.
- Evidence that Special Provisions have been checked for completeness and compatibility with plan sheets. The first sheet of the Special Provisions shall be initialed and dated by the Checker.

- Evidence of the cost estimate and TRANSPORT model having been checked.
- Evidence of a Plans-in-Hand Field review having been conducted and changes incorporated into the deliverable.

2.3. QUALITY AUDIT

2.3.1. Quality Process Log Maintenance & Availability

The Task Leader is responsible for maintaining the Quality Process Log in conformance with the PQP Section 2.1.2.2.3.

2.3.2. Filing of Quality-Related Documentation

Electronic Files

All quality-related electronic files will be maintained in the Quality folder on the WisDOT W:\ Drive.

Paper Files

All quality-related paper files will be maintained in the PQP volumes of the project notebooks at the project office.

2.3.3. Quality-Related Documentation Requirements

Quality-related documentation (including, but not limited to, Quality Certification Forms, Quality Process Logs, Review Comment Forms, checklists, markups, etc.) will be retained in the project files until the end of the contract. The quality-related documentation will then be archived.

2.4. SCHEDULE IMPACTS

The implementation of the quality process as described in this Plan will require all team members to, both at the outset of their work and on a continuing basis throughout the execution and completion of the work, ensure that adequate time is included in the design schedules to incorporate the various quality review processes without adversely affecting the final PS&E schedules for the program as they have been developed.

The following typical schedule shall be used by the Task Leaders when developing their project specific Review Schedule/Plan per Section 2.1.3, for planning the time necessary to implement the formal review process at the major milestones of the project:

- Four (4) weeks prior to formal submittals (preliminary engineering 60% and final engineering Draft PS&E): Design Team completes all internal reviews applicable to the project.
- During the (4) four weeks between the internal design team review completion and formal submittal, review comments are addressed and the submittal is completed.

- Formal submittal for concurrent review by the WisDOT SE Freeways team, WisDOT Ad Hocs, Project Management Team, City of Milwaukee, West Allis, Wauwatosa, and Milwaukee County (as applicable) and WDNR. Submittal to include the completed Quality Certification Form (Appendix B).
- Plan Review Meeting four (4) to six (6) weeks after receipt of formal submittal.
- Final PS&E Submittal four (4) to six (6) weeks after Plan Review Meeting.

3. QUALITY CONTROL: PRELIMINARY ENGINEERING

The Quality Control process for Preliminary Engineering has been identified as a 16-step process and is described below. Items indicated as being "Internal" are within the design team and do not involve WisDOT Ad Hocs.

Step 1 – Design and Plan Preparation Activities

- Includes design, plan preparation, and associated continuous quality activities.
- Involves Task Leader, Designer(s), for each functional area, and Checker(s) for each functional area.

Step 2 – Functional Plan Internal Technical Review

Functional Plan Technical Review involves Task Leader, Designer(s) for each functional area, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 3 – Functional Plan Internal Technical Review Meeting

- Meeting held after the Functional Plan Internal Technical Review to discuss comments with potential cross-functional impacts.
- Involves Task Leader, Designer(s) for each functional area, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 4 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from Technical Reviewer(s) for each functional area.
- Includes revisions to design, plans, estimate, and associated continuous quality activities.
- Involves Task Leader, Designer(s) for each functional area, Technical Reviewer(s) for each functional area and Quality Manager.

Step 5 – Submit Functional Plan

- Submit Quality Certification Form to Quality Manager.
- After receiving notice of acceptance from Quality Manager, submit deliverable to WisDOT and FHWA.

Step 6 – Functional Plan Review – WisDOT and FHWA

Involves WisDOT Southeast Region Reviewers and FHWA Reviewers.

NOTE: If Functional Plan Internal Technical Review was not completed before submittal, that review shall be performed concurrent with the WisDOT review. This is to be cleared with the Quality Manager prior to the WisDOT review by providing substantiation for the causes of this happening.

Step 7 – Functional Plan Review Meeting

- Meeting held after WisDOT/FHWA Functional Plan Review to discuss comments.
- Involves Task Leader, Designer(s) for each functional area, WisDOT Southeast Region Reviewers, FHWA Reviewers, and Quality Manager.

Step 8 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from concurrent reviews.
- Includes revisions to design, plans, estimate, and associated continuous quality activities.
- Involves Task Leader, Designer(s) for each functional area, Technical Reviewer(s) for each functional area, WisDOT Southeast Region Reviewers, FHWA Reviewers, and Quality Manager.

Step 9 – Design and Plan Preparation Activities

- Includes design, plan preparation, and associated continuous quality activities.
- Involves Task Leader, Designers/Function Leads for each functional area, and Checker(s) for each functional area.

Step 10 – 60% Internal Technical Review

60%Technical Review involves Task Leader, Designers/Function Leads for each functional area, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 11 – 60% Internal Plan Review Meeting

- Meeting held after the 60% Internal Technical Review to discuss comments with potential cross-functional impacts.
- Involves Task Leader, Designers/Function Leads for each functional area, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 12 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from Technical Reviewer(s) for each functional area.
- Includes revisions to design, plans, estimate, and associated continuous quality activities.
- Involves Task Leader, Designers/Function Leads for each functional area, Technical Reviewer(s) for each functional area and Quality Manager.

Step 13 – Submit 60% Plan

- Submit Quality Certification Form to Quality Manager.
- After receiving notice of acceptance from Quality Manager, submit deliverable to WisDOT and FHWA.

Step 14 – 60% WisDOT and FHWA Plan Review

Involves WisDOT Southeast Region Reviewers and FHWA Reviewers.

NOTE: If 60% Technical Review – Internal, was not completed before submittal, that review shall be performed concurrent with the WisDOT review. This is to be cleared with the Quality Manager prior to the review by providing substantiation for this happening.

Step 15 – 60% Plan Review Meeting

- Meeting held after WisDOT/FHWA 60% Plan Review to discuss comments.
- Involves Task Leader, Designers/Function Leads for each functional area, WisDOT Southeast Region Reviewers, FHWA Reviewers, and Quality Manager.

Step 16 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from concurrent reviews (Internal and External).
- Includes revisions to design, plans, estimate, and associated continuous quality activities.
- Submit final revised product to WisDOT.
- Involves Task Leader, Designers/Function Leads for each functional area, Technical Reviewer(s) for each functional area, Constructability Reviewer, WisDOT Southeast Region Reviewers, FHWA Reviewers, and Quality Manager.

4. QUALITY CONTROL: FINAL ENGINEERING

The Quality Control process for Final Engineering has been identified as a 12-step process and is described below. Items indicated as being "Internal" are within the design team and do not involve WisDOT.

Step 1 – Design and Plan Preparation Activities

- Includes design, plan preparation, and continuous quality activities.
- Involves Task Leader, Designers/Function Leads for each functional area, and Checker(s) for each functional area.

Step 2 – Design/Plan (D/P) Consistency Review and Draft PS&E Technical Review

- D/P Consistency Review involves Task Leader, D/P Consistency Reviewer, and Quality Manager.
- Draft PS&E Technical Review involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 3 – Internal Draft PS&E Plan Review Meeting

- Post-D/P Consistency Review/First Technical Review meeting to discuss comments with potential cross-functional impacts.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, D/P Consistency Reviewer, Technical Reviewer(s) for each functional area, and Quality Manager.

Step 4 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from Technical Reviewer(s) for each functional area and the D/P Consistency Reviewer.
- Includes revisions to design, plans and specifications, preparation of estimate, and continuous quality activities.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Technical Reviewer(s) for each functional area, and the D/P Consistency Reviewer.

Step 5 – Submit Draft PS&E

- Submit Quality Certification Form to Quality Manager.
- After receiving notice of acceptance from Quality Manager, submit deliverable to WisDOT and FHWA.

Step 6 – WisDOT and FHWA Draft PS&E Review

Involves WisDOT Southeast Region Reviewers and FHWA Reviewers.

NOTE: If Draft PS&E Review was not completed before submittal, that review shall be performed concurrent with the WisDOT review. This is to be cleared with the Quality Manager prior to the review by providing substantiation for the causes of this happening.

Step 7 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from concurrent reviews.
- Includes revisions to design, plans, specifications, estimates preparation, and continuous quality activities.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Technical Reviewer(s) for each functional area, Constructability Reviewer, Discipline Coordination Reviewer, WisDOT Southeast Region Reviewers, FHWA Reviewers, and Quality Manager.

Step 8 – Biddability Review

- Includes Biddability Review and subsequent revisions to plans, specifications, and estimates.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Biddability Reviewer, and Quality Manager.

Step 9 – Adjudicate Comments and Revise Product

- Includes adjudication of comments from Biddability Review.
- Includes revisions to design, plans, specifications, estimates preparation, and continuous quality activities.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Technical Reviewer(s) for each functional area, Biddability Reviewer, and Quality Manager.

Step 10 – Prepare for Final PS&E Submittal

- Submit Quality Certification Form to Quality Manager.
- After receiving notice of acceptance from Quality Manager, submit deliverable to WisDOT and FHWA.
- Submit to WisDOT Central Office for Final PS&E Review.
- Involves Task Leader, Designer(s) for each functional area, Checker(s) for each functional area, Biddability Reviewer, and Quality Manager.

Step 11 – Final PS&E Review

- Includes concurrent reviews by WisDOT Central Office.
- Involves WisDOT Central Office Plan Examiner and WisDOT Bridge Section Reviewers.

Step 12 – Revise Product and Submit Final PS&E

- Includes revisions to design, plans, specifications, estimates preparation, and continuous quality activities.
- Submittal to WisDOT Central Office for Final PS&E.
- Involves Task Leader, Designer(s) for each functional area, and Checker(s) for each functional area.

Project Quality Plan

Zoo Interchange Freeway and Adjacent Arterials Reconstruction

APPENDICES A – R

QUALITY PROCESS LOG

Deliverable Products	Sheet Nos. (PRE_xxx)		No. of Sheets	Designer	Checker	Reviewer
			1			
			1			
			1			
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			1			
TOTALS			**29**			

QUALITY CERTIFICATION FORM

To: _____, Wisconsin DOT Project Manager

Copy: Scott Solverson, Zoo Interchange Team Quality Manager

From: _____ **Date:** _____

DOT Project: Zoo Interchange Freeway and Adjacent Arterials Reconstruction

I.D.: _____

County: _____

Description: _____

Limits: _____

Submitted for: **Functional** _____ **60%** _____ **Draft PS&E** _____
Final PS&E _____ **Quarterly** _____

Component(s): **Plans** _____ **Specs** _____ **Estimates** _____

Discipline(s) *(i.e. bridges, retaining walls, drainage, roadway, MOT, signing and marking, etc.):*

_____

Quality Certification:

This is to certify that the deliverable product referenced above has been developed under my direct supervision and has been checked and reviewed in accordance with the provisions of the **Project Quality Plan (PQP)**. Specifically:

- The work product has been *checked* in accordance with PQP requirements prior to submittal;
- Work products have been *reviewed* in accordance with PQP requirements prior to submittal for client review; and
- Internal quality review comments have been *addressed* and *reconciled* in the work product as documented on the Review Comment Form.

Documentation of continuous quality efforts (i.e. completed checklists initialed and dated by the Designer(s) and Checker(s) shall be attached to this form).

In my professional opinion, this product complies with the requirements of the contract, applicable WisDOT and federal requirements, and is ready for submittal to WisDOT.

Responsible Professional (print name)	Signature	Date

❑ *If box is checked, see attached sheet(s) with additional comments.*

REVIEW COMMENT FORM

Date: October 3, 2012

Reviewer/Representing:

Project:	**Project I.D.**	**Submittal**

Task Leader:	
Designer:	
Quality Manager:	

Designer's Response Codes:

A = Agree Completely; will revise (no written response required)
RFS = Requires Further Study in next design phase (no written response required)
P = Agree Partially; will revise to some degree (see written response)
D = Disagree; will not revise (see written response)

REVIEWER			**DESIGNER**		
Issue No.	**Location** **(Sheet #/type, road name and/or station)**	**Review Comments**	**Response Code**	**Response**	**Markup Complete Date**

REVIEWER			**DESIGNER**		
Issue No.	**Location** **(Sheet #/type, road name and/or station)**	**Review Comments**	**Response Code**	**Response**	**Markup Complete Date**

REVIEWER			**DESIGNER**		
Issue No.	**Location** **(Sheet #/type, road name and/or station)**	**Review Comments**	**Response Code**	**Response**	**Markup Complete Date**

REVIEW COMMENT FORM INSTRUCTIONS

IMPORTANT NOTE: This form is intended to provide a consistent format for the documentation of Reviewer comments, Designer responses to comments, and ultimate reconciliation of comments.

Reviewers may choose to mark comments on the plans, special provisions, and estimates, but all comments must also be included on this form to ensure that they will be captured and addressed.

Designer responsibilities:

1. Save to your project folder the Review Comment Form template as a project-specific file renamed as "Review Comment Form_{*insert ID and/or plan name*}_(name).docx".
2. Fill in the following blocks:
   - ☐ In the Project block, the ID number, project name, project limits and county
   - ☐ Submittal (Preliminary, 60%, Draft PS&E or Final PS&E)
   - ☐ Task Leader (person's name and email address)
   - ☐ Designer (person's name and email address)
3. Email the following Quality Documentation Package items to the Quality Manager:
   - ☐ Completed Appendix B, Quality Process Log
   - ☐ Completed Appendix D, Quality Certification Form
   - ☐ Completed checklists appropriate to the submittal
   - ☐ List of independent reviewers to conduct review
   - ☐ Link to or copy of reviewable item to be reviewed
   - ☐ Review schedule and response date

Corridor Management Team Quality Manager responsibilities:

1. Review the Quality Documentation Package as submitted and advise Designer and Task Leader of its acceptability. *NOTE: If this information is not submitted or is incomplete or unacceptable, the submittal may be returned to the designer for additional work before distribution to reviewers.*
2. Forward Review Comment Form, link to or coy of reviewable item, and schedule for review to reviewers.

Reviewer responsibilities:

3. Rename the project specific Review Comment Form by replacing (name) in the file name with your name.
4. Complete the form as follows:
   - ☐ Fill in Reviewer Name/Organization block
   - ☐ Complete the first three (Reviewer) columns as follows:
     - ❑ First column (Issue No.) – Number each comment
     - ❑ Second column (Location) – Enter the location of the feature you are commenting on by identifying the sheet number or sheet type, Special Provision reference, the road name if applicable, and/or the plan station.
     - ❑ Third column (Reviewer Comments) – Add the review comment. Use of short hand, normal abbreviations, bullet items, etc., is acceptable. Can combine multiple sheet or page numbers on one row if comment pertains to more than one sheet or page.
   - ☐ **Fill in the date when the review is completed** in the block at upper left part of form.
5. Email the completed form directly to the Designer identified on the form. Copy the Task Leader and Quality Manager.
6. Attend the Plan Review Meeting; bring printout of Review Comment Form (mandatory) and markups (optional).

Designer responsibilities:

1. Read each Review Comment Form.
2. Complete the form as follows:
   - ☐ Complete the last three columns (Designer) for all comments as follows:
     - ❑ Fourth column (Code) – Add Response Code “A”, “RFS”, “P”, or “D” to denote response to comment (code definitions are listed on Page 1 of form).
     - ❑ Fifth column (Response) – Add response. Use of short hand, normal abbreviations, bullet items, etc., is acceptable.
     - ❑ Sixth column (Markup Complete Date) – Fill in the date the markup is completed, or “N/A” as appropriate.
3. Contact reviewer by phone, email or in person to reconcile all comments noted with a “P” or “D”. Note the reconciliation in the “Response” column.
4. Contact the Task Leader and Quality Manager immediately to address any comments that cannot be reconciled with the reviewer, Task Leader and Quality Manager.
5. Once all comments have been reconciled, email the completed Review Comment Form back to reviewer requesting their final sign-off.

Reviewer responsibilities:

1. Review the designer responses on the Review Comment Form.
2. If there are any responses that require additional discussion with the designer, contact them to reconcile.

Task Leader responsibilities:

1. Read final version of each designer's Review Comment Form.
2. Compile each project's Review Comment Form into a single master document. **Maintain this in the project file as the official record for quality audit purposes.**
3. Email the final version of the master document to the Quality Manager.

HAND CALCULATION CHECKING PROCEDURES

General

Calculations shall be performed on computation sheets. All heading information shall be completely filled out. Specific consideration shall be given to the following:

- Correct conceptual design and the use of sound engineering judgment
- Logical solutions
- Thorough documentation
  - Standard calculations
  - Cross references
- Correct and justifiable assumptions
- Sketch representations of members and systems
- Current references
- Applicable theory
- Math correctness

Presentation

The calculations shall contain the following, as applicable:

- Title sheet
- Index, arranged by group or component (i.e., slab, geometric data, vertical data)
- Calculation sheets, each containing the project name, job number and sheet number
- Criteria and references
- Appendix containing pertinent:
  - Reference calculations by others
  - Standard calculations
  - Reference information such as catalog cuts, AASHTO tables, etc.
  - Books and pamphlets identified by title, author, date and page number

Standard Checking Procedure

- **Completion:** The Designer shall perform the calculations in black pencil on calculation paper in a neat, legible and organized manner. He/she is to initial and date the title block, and deliver the calculations to the Checker.
- **Checking:** The Checker shall, with a **red** pen/pencil, 1) place a check next to an agreed to number, or 2) mark through an incorrect number, placing the corrected number above or to the side. The Checker shall initial and date the check sheet title block and return it to the Designer. If the corrections are numerous and the calculations are then not understandable, the sheet(s) should be redone and the process repeated.
- **Concurrence:** The Designer will backcheck the calculations and indicates agreement by placing a **blue** pen/pencil check mark by each of the accepted Checker comments.

Alternative Checking Procedures – INDEPENDENT CALCULATION

- **Completion:** The Designer shall perform the calculations in black pencil on calculation paper in a neat, legible and organized manner. They shall initial and date the title block, and deliver the calculations to the Checker.
- **Checking:** The Checker will perform an independent set of calculations on the element being designed. This method may be by any means viable, but should be done from the plan sheets that have been developed. In the event that drawings are not complete, or not required, then the calculations shall be done from a reasonable reference point (i.e. a sketch by the Designer, details from a catalog, etc.).
- **Concurrence:** No matter the outcome of the Checker's work, the Designer's original calculations shall hold. In the event that it is determined that the Checker has a more appropriate result, then the Designer is to go back and make the necessary modifications to the original work. If the original work is not salvageable, then new computations shall be completed.

Quantities and Cost Estimate Checking Procedures

- Quantity computations shall be subject to the same checking procedures as the hand and computer calculations, as applicable. All quantities shall be compiled on appropriate computation sheets in a well-organized manner and kept in a project notebook.
- Cost estimates shall be produced on computer spreadsheets or on computation sheets. The Checker will check the estimates against the contract documents for accuracy and completeness using the same checking procedure required for calculations. The Task Leader shall also review the unit prices and the project cost.

COMPUTER-GENERATED CALCULATION CHECKING PROCEDURES

Due to the use of in-house and proprietary software, more careful and diligent attention is required to assure the reliability and accuracy of the computer programs and the appropriate use of the programs and their generated output.

The issues surrounding the reliance on computer programs and their output are numerous and continue to evolve with the rapid changes in technology. Not all of these issues can be thoroughly covered in this document, but those deemed to be most critical will be addressed. Knowing the areas where the use of computers, computer programs and computer-generated data can affect the design process will alert the project team to the need to develop and implement quality control procedures. Some of these areas are listed below:

- Importing data from outside sources; such as, existing topographic and baseline data files
- Creating horizontal and vertical geometry files
- Utilizing design calculation programs and/or analysis programs
- Interfacing software programs with printers/plotters
- Coordinating software programs used for design and/or in-house calculations with those of subconsultants and WisDOT
- Interfacing software programs for the transfer of data electronically between Forward 45 member firms and subconsultants, and between Forward 45 and WisDOT
- Providing reliable and secure electronic deliverables

The greatest benefit from computers is achieved when data and analytical methods are planned and executed on a project-wide basis rather than as a series of disjointed tasks. Written procedures provide guidance to team members for operations with established criteria for linking and sharing of hardware/software and assignment of responsibilities. When the computer does the design and the current status of design is held in digital files, procedures for protecting these files is vitally important. Back-up of project files must be done on a daily basis to minimize loss if the active file is damaged or corrupted. All project team members need to be made aware of the policies and procedures governing creation and modification of design files. One individual should be assigned the responsibility of maintaining the integrity of these files.

The development of in-house computer programs, including spreadsheets and MathCAD templates, for facilitating calculations and analysis should only be done with the authorization of the Project Manager. One individual, preferably the developer, should be assigned the responsibility of maintaining the functionality and integrity of the program, spreadsheet or template.

Program Verification

An experienced individual, in the discipline for which the program is developed, shall verify all computer programs used for design and analysis. The verifier shall not be the developer of the program. With the use of external (3rd Party) software, verification will be by means deemed appropriate by the task leads,

as computational verification may be impossible. For the development of “new” work (either new packages or templates or extensions of existing ones), input data from a previously solved problem that produced a correct solution shall be used to verify the correctness of the new application . The program documentation shall be reviewed and any clarifications needed shall be written into the margins of the documentation. The Checker must be knowledgeable about the program's capabilities and limitations as well as the technical subject to which the program is applied. The Designer confirms the output and function of the program by one of the following procedures on a case-by-case basis:

- Performing a computer run of data from a previous solution which has been thoroughly checked. Note: The data used may need to come from the calculations rather than the drawings in order to minimize errors due to rounding.
- Perform hand calculations to verify the output.
- Multiple function computer spreadsheets must be verified for each formula change.
- A record copy of the sample run and the check set shall be stored in the Computer Program Check File.

Input and Output Checking

At a minimum, the designer or checker (preference towards both) shall be properly trained in the use of all programs and/or templates used for the design.

Checking of program input, output and function shall be accomplished by one of the following procedures on a case-by-case basis:

- The program was appropriate and properly utilized.
- All input was checked, correct, accurate and in the format required by the program.
- The output meets the test of reasonableness, and the expected results were produced based on a sufficient number of spot checks.

The Designer and the Checker shall initial and date the check set and the documentation as having been checked.

The Designer and the Checker shall initial and date hard copy input and output sheets.

Maintenance

Programs with macro-driven calculations and/or analysis processes, databases and spreadsheets supporting design which have been developed in-house must be maintained and revised only by the developer or an individual assigned that responsibility.

GEOMETRIC DESIGN CHECKLIST

Highway Name: _____

Limits: _____

Client: _____

DOT Project I.D.: _____ **Forward 45 Project No.** _____

Item	Design Initials	QA Check Initials	Notes
*Design speed			
*Lane width			
*Shoulder width			
*Bridge width			
*Grades			
*Horizontal alignment			
*Vertical alignment			
*Horizontal clearance			
*Vertical clearance			
*Stopping sight distance			
*Superelevation			
*Pavement cross slope			
Coordinate horizontal/vertical alignments			
Clear zones			
Vision triangles			
Turning radius			
Design exceptions documented			

Note: The details relating to these items are found in the project design binder

* Controlling criteria

DRAINAGE REVIEW CHECKLIST

The following items must be submitted for 60% review of the project's drainage system:

☐ 100- or 200-scale exhibit showing roadways, drainage structures and IDs, ditch flow directions, contours, drainage areas, Tc paths.

Ditches

☐ Drainage area, Tc, CN/Rational c
☐ Design peak flow rate
☐ Design calculations including flow depth, velocity, ditch depth

Culverts

☐ Drainage area, Tc, CN/Rational c
☐ Design peak flow rate
☐ Allowable headwater elevation (identify controlling subgrade elevation and ROW elevation)
☐ Culvert size, slope, Hw/D

Storm Sewer

☐ Plan sheets
☐ Drainage areas, Tc, CN/Rational c
☐ Inlet spacing calcs/inlet capacities
☐ Trunk design calculations

Stormwater Management

☐ BMP locations
☐ Drainage area clearly identifying mainline drainage area and offsite drainage area
☐ Hydrology
☐ BMP sizing calculations

PRELIMINARY ROADWAY PLAN CHECKLIST

Highway Name: _____

Limits: _____

Client: _____

DOT Project I.D.: _____ **Forward 45 Project No.** _____

Engineer: _____
(red) (date)

Technician: _____
(green) (date)

Project Manager: _____
(blue) (date)

Title Sheet (FDM 15-1-10)

- ☐ Location map with structures, stationing, and begin STA X & Y for construction project
- ☐ Traffic information
- ☐ Updated legend
- ☐ Correct signature block for project type
- ☐ Title and I.D. information
- ☐ Project length
- ☐ Horizontal datum note
- ☐ Vertical datum note
- ☐ Project I.D. info in the left margin

Typical Sections (FDM 15-1-15)

- ☐ Review of current standards
- ☐ Existing sections – keep as simple and generic as possible
- ☐ Finished sections
- ☐ Pavement and side finish calloffs per actual DOT bid items in specs
- ☐ Title and station limits
- ☐ Conformance with approved Pavement Type Selection Report
- ☐ Slope calloffs

Major Construction Details (FDM 15-1-20)

- ☐ Project Overview
- ☐ Preliminary Traffic Control/Staging Plan
- ☐ Alignment Plan

Plan/Profile Sheets (FDM 15-1-35)

- ☐ All existing topo screened and in proper layer and proper symbols used
- ☐ All existing utilities, continuity of facilities, and "caution" symbols for combustible fluids
  - ❑ gas; main, laterals, valves
  - ❑ water; main, laterals, hydrants, valves, stops, MH's
  - ❑ telephone; main, MH's, pedestals, poles
  - ❑ electric; main, MH's, pedestals, poles (power vs lighting), transformers
  - ❑ cable TV; main, pedestals
  - ❑ fiber optic
  - ❑ storm sewer; main, sump laterals, MH's, inlets, pipe sizes
  - ❑ sanitary sewer; mains, MH's, laterals
  - ❑ force main; main, MH's
  - ❑ oil pipeline; main, pipe size
  - ❑ railroad; signals, controller
  - ❑ traffic signal; bases, cable, pull boxes, controller
- ☐ Edges of new pavement, and outside edge of shoulder (do not show paved shoulder lines)
- ☐ Dimensions (Including sideroads)
  - ❑ Travel lane width
  - ❑ Total shoulder width
- ☐ Existing R/W and proposed R/W (show both), PL's, TLE's and PLE's
- ☐ Slope intercepts
- ☐ Culverts in plan and profile with size in profile (show existing in profile view only if to remain)
- ☐ Road names in plan view and profile view
- ☐ Wetlands and other environmentally sensitive areas
- ☐ Property owners – last name or business name only; include house number if urban project; hatch any buildings to be relocated and add note for removal
- ☐ North arrow, title block
- ☐ Existing and finished profile lines – check finished vs. current design in CAiCE
- ☐ Finished profile grade slopes (0.5% min.), elevations and vertical curve data including "K"
- ☐ Minimal horizontal curve data and superelevation table
- ☐ Structure data in plan view, show structures in profile view
- ☐ Stationing including reference line designation for mainline and side roads
- ☐ Ditch flow arrows in plan

- ☐ Existing pavement surface type at match points
- ☐ Proposed driveway calloff with pipe info; remove access note for drives to be eliminated
- ☐ Drainage checked against cross sections
- ☐ Overall constructability
- ☐ Overall drainage concepts
- ☐ If there is a separate storm sewer plan show pipes and structures only. If only a drainage table, then show structure numbers and pipe sizes.

Cross Sections (FDM 15-1-45)

- ☐ Existing, subgrade, and finished surfaces shown
- ☐ TLE's, PLE's, and ultimate R/W
- ☐ Utilities
- ☐ Matchlines
- ☐ Annotate subgrade elevations and offsets at PGL('s) and all subgrade breakpoints to the hundredth of a foot
- ☐ Extra section at driveways (if not at an even station) with slope to even 0.5% - MAX desirable = 8%, 10% MAX, show culvert and size.
- ☐ Extra section at cross culverts (if not at an even station interval) with pipe size
- ☐ Extra section at bridge ends

FINAL ROADWAY PLAN CHECKLIST

Highway Name: _____

Limits: _____

Client: _____

DOT Project I.D.: _____ **Forward 45 Project No.** _____

Engineer: _____
(red) (date)

Technician: _____
(green) (date)

Project Manager: _____
(blue) (date)

Title Sheet (FDM 15-1-10)

- ☐ Location map with structures, stationing, and begin STA X & Y for construction project
- ☐ Traffic information
- ☐ Updated legend
- ☐ Correct signature block for project type
- ☐ Title and I.D. information
- ☐ Project length
- ☐ Horizontal datum note
- ☐ Vertical datum note
- ☐ Project I.D. info in the left margin

Typical Sections (FDM 15-1-15)

- ☐ Review of current standards
- ☐ Existing sections – keep as simple and generic as possible
- ☐ Finished sections
- ☐ Pavement and side finish calloffs per actual DOT bid items in specs
- ☐ Title and station limits
- ☐ Conformance with approved Pavement Type Selection Report
- ☐ Slope calloffs

Major Construction Details (FDM 15-1-20)

- ☐ Project Overview
- ☐ Matchline Diagram
- ☐ Unique/Special Construction Details
- ☐ Traffic Control Plan/Staging
- ☐ Intersection Details
- ☐ Erosion Control Plans
- ☐ Storm Sewer Plans
- ☐ Signing Plans
- ☐ Pavement Marking Plans
- ☐ Fencing Plans
- ☐ Lighting Plans
- ☐ Traffic Signal Plans
- ☐ Alignment Diagram
- ☐ Right-of-Way Plats

Plan/Profile Sheets (FDM 15-1-35)

- ☐ All existing topo screened and in proper layer and proper symbols used
- ☐ All existing utilities, continuity of facilities, and "caution" symbols for combustible fluids
  - ❑ gas; main, laterals, valves – CAUTION SYMBOLS
  - ❑ water; main, laterals, hydrants, valves, stops, MH's
  - ❑ telephone; main, MH's, pedestals, poles
  - ❑ electric; main, MH's, pedestals, poles (power vs lighting), transformers
  - ❑ cable TV; main, pedestals
  - ❑ fiber optic
  - ❑ storm sewer; main, sump laterals, MH's, inlets, pipe sizes
  - ❑ sanitary sewer; mains, MH's, laterals
  - ❑ force main; main, MH's
  - ❑ oil pipeline; main, pipe size - CAUTION SYMBOLS
  - ❑ railroad; signals, controller
  - ❑ traffic signal; bases, cable, pull boxes, controller
- ☐ Edges of new pavement, and outside edge of shoulder (do not show paved shoulder lines)
- ☐ Dimensions (including sideroads)
  - ❑ Travel lane width
  - ❑ Total shoulder width
  - ❑ Radii dimensions to flange (only if no separate intersection pavement details)
- ☐ Existing R/W and proposed R/W (show both), PL's, TLE's and PLE's
- ☐ Slope intercepts

- ☐ Culverts in plan and profile with size in profile (show existing in profile view only if to remain)
- ☐ Road names in plan view and profile view
- ☐ Wetlands and other environmentally sensitive areas
- ☐ Property owners – last name or business name only; include house number if urban project; hatch any buildings to be relocated and add note for removal
- ☐ North arrow, title block
- ☐ Existing and finished profile lines – check finished vs. current design in CAiCE
- ☐ Finished profile grade slopes (0.5% min.), elevations and vertical curve data including "K"
- ☐ Non typical ditch profiles (0.5% min, desirable min 1%) – *only if specifically requested*
- ☐ Marsh or rock in profile
- ☐ Minimal horizontal curve data and superelevation table
- ☐ Structure data in plan view, show structures in profile view
- ☐ Intersection angles (only if no separate intersection pavement details)
- ☐ Stationing including reference line designation for mainline and side roads
- ☐ Ditch flow arrows in plan
- ☐ Existing pavement surface type at match points
- ☐ Proposed driveway calloff with pipe info; remove access note for drives to be eliminated
- ☐ Drainage checked against cross sections
- ☐ Overall constructability
- ☐ Overall drainage concepts
- ☐ If there is a separate storm sewer plan show pipes and structures only. If only a drainage table, then show structure numbers and pipe sizes.
- ☐ Benchmarks (if plan to be used for TRANS 220, utilities need for relocations)

Cross Sections (FDM 15-1-45)

- ☐ Existing, subgrade, and finished surfaces shown
- ☐ Marsh, rock or EBS surface on sections with appropriate calloff and hatching
- ☐ TLE's, PLE's, and ultimate R/W
- ☐ Utilities
- ☐ Matchlines
- ☐ Annotate subgrade elevations and offsets at PGL('s) and all subgrade breakpoints to the hundredth of a foot
- ☐ Extra section at driveways (if not at an even station) with slope to even 0.5% - MAX desirable = 8%, 10% MAX, show culvert and size.
- ☐ Extra section at cross culverts (if not at an even station interval) with pipe size
- ☐ Extra section at bridge ends
- □ Intersection location notes

TRAFFIC QUALITY CONTROL CHECKLIST

Incoming Data

Traffic Count Data Requirements

Task	Assignee Initials	QC Checker Initials	Notes
Counts within Last Three Years			
Counts valid to Existing Condition			
Peak Hour Data by 15 Minute Bins			
Average Peak, K100, K30?			
Truck Classification			
1 Non-Peak Bin Before & After 'Peak'			
Rural Roads may have no true AM Peak			
Counts Conducted Tues, Wed or Thurs			
Closed System Counts Balance +/- 5%			
Open System Counts Balance +/- 10%			
Check Return Movements across Peaks			
Check Directionality Split (<70/30)			
Check Main/Side Street Split (>50/50)			
Demand vs. Volume			
Specific Format of Counts (PDF, Excel, Petra, etc)			

Travel Time Data Requirements

Task	Assignee Initials	QC Checker Initials	Notes
Best Practices Guidance			
Conducted during 'Peak'			
Conducted Tues-Thurs			
Multiple Runs			
Designates Intermediate Points			
Identifies Control Delay			

Traffic Signal Data Requirements

Task	Assignee Initials	QC Checker Initials	Notes
User Guide to Operate/Modify/Interpret			
Best Practices Guidance			
Min and Max Gaps			
Clearance Interval			
Detector Locations			
Intersection Geometry			
Pedestrian Timings			

Microsimulation Data Requirements

Task	Assignee Initials	QC Checker Initials	Notes
User Guide to Operate/Modify/Interpret			
Best Practices Guidance			
Base and Future Model Inputs			
Base and Future Outputs			
Calibration Report			

Operations

Traffic Microsimulation Model Input Checks

Task	Assignee Initials	QC Checker Initials	Notes
Appropriate Roadway Network			
Confirm “Committed”			
Confirm “Planned”			
Confirm “Alternative”			
Appropriate Transit Stops			
Source/Sinks Defined			
Verify Connectivity			
Correct Traffic Growth Value(s)			
Appropriate Signal Timings			
Appropriate Clearance Interval			
Time Period(s)			
Define Analysis Standard (HCM, FDM, TIA Guide)			
Software Version			

Traffic Microsimulation Output Checks

Task	Assignee Initials	QC Checker Initials	Notes
LOS comparisons			
Consistent Queues			
Multiple ‘Seeds’			
No Zero Volumes			
Unserved Demand			
Decreased Volume from Base			
MOE’s (HCS, Paramics, etc)			
Format for Air/Noise Analysis			
QC Review Prior to Delivery			

Traffic Signal Timing Sheets Output Checks

Task	Assignee Initials	QC Checker Initials	Notes
PE Stamp			
Clearance Interval			
Preemption Rules			
Flashing Yellow/Red Rules			
Phasing Diagram			
Pedestrian Timing			
QC Review Prior to Delivery			

Spreadsheet Checks

Task	Assignee Initials	QC Checker Initials	Notes
Avoid Linking Spreadsheet Files			
Define Equation Parameters as Cells			
Provide Summary Sheet			
Use Sum and Ave to Avoid Omissions			
Remember Passwords to VB Scripts			
Conditional Formatting is Good			
QC Data with Separate Worksheets			

Deliverables

Map and Exhibit Checks

Task	Assignee Initials	QC Checker Initials	Notes
Legend			
Date			
Title			
Include Scenario Description			
Scale			
North Arrow			
Label Streets			
Hide Centroid Connectors			
Logos (if appropriate)			
Verify Correct Data Labeling			
Verify Correct Link Displays			
Avoid Overlaps			
Use PDF's for additional data			
Consistent View Extents			
Meaningful Filename			
QC Review Prior to Delivery			

Documentation Checks

Task	Assignee Initials	QC Checker Initials	Notes
Utilize HNTB formats			
Table of Contents (>7 Pages)			
Include Executive Summary			
State Assumptions			
Reference sources of data, assumptions, plans, etc.			
Define Purpose of Study			
Define Methodology			
Summarize/Reference Prior Action			

Task	Assignee Initials	QC Checker Initials	Notes
State Data Source(s)			
State Data Issues			
Figure Numbering			
Use Footnotes			
Quality Check Numbers in Table			
State Source of Analysis			
State Findings			
Make Recommendations (if App)			
Provide Summary			
QC Review Prior to Delivery			
Include Meeting Minutes			

PRELIMINARY STRUCTURE PLAN CHECKLIST

Bridge: _____

Project: _____

	B.M. Req'd.*	CADD Cells	Draw	Check	Back
Plan View (place in upper left-hand corner Scale 1"-10')					
Span Lengths					
Note indicating superstructure type and number of spans (place under Title)					
Dimensions Along Reference Line (or along tangent to curve)					
Show R/W lines and temporary easements if applicable					
Stations at Piers and Abutments & End of Deck					
Station at Intersection with Reference Line of Roadway Underneath if Grade Separation Structure					
Direction of Station Increase					
Contours of Exist Ground Line (Stream Crossing Only)					
Outline of Slope of New Fill					
Extent of Slope Paving or Riprap					
Direction of Stream Flow and Name					
Highway Number, Traffic Lanes and Direction					
Horizontal Clearance Dimensions, Pavement, Shoulder, Sidewalk and Structure Roadway Widths					
Median Width					
Skew Angles and Angles of Intersection with Other Highways, Streets or Railroads					
Horizontal Curve Data if Within Limits of Structure (including PC, PT and PI)					
Location of Point of Critical Vertical Clearance					
Floor Drains (type, approximate spacing, and if downspouts are to be used)					
Existing Structure and Number, Buildings, Underground Utilities, Pole Lines, and any other secondary structures					
Existing & Proposed utilities, both underground & overhead. Note if existing to be removed or remain. Add caution symbol to gas & high voltage electrical					
Beam Guard Rail Location					
North Arrow					
Structure Number					
Excavation Protection for Railroads					
Temporary Shoring requirements					
Deck Lighting					
Underdeck lighting					

	B.M. Req'd.*	CADD Cells	Draw	Check	Back
Location of utilities on structure, if any					
Name Plate Location					
Bearings of Reference Lines					
Locations of surface drains on approach pavement					
Elevation View (Place Below Plan View)					
Existing Ground line or Streambed					
Cross-section (Show Back Slopes at Abutments)					
Top of Berm Elev., Rate of Back Slope					
Type and extent of slope paving or riprap					
Min. Depth of Footing					
Bottom of Footing Elevation					
Type of Piling					
Depth of Footings (Piers)					
Seal					
Location and Amount of Minimum Vertical Clearance					
Streambed, Normal and High Water Elevations (Stream Crossings)					
Underground Utilities (Give Elevation)					
Fixed and Expansion Bearings					
Expansion Devices					
Vertical Scale					
Cross Section (Half Section if Symmetrical)					
Slab Thickness					
Curb Height and Width					
Type of Railing					
Horizontal Dimensions Tied to Ref. Line					
Girder Spacing and Estimated Depth					
Direction and amount of crown or cross slopes (super-elevation)					
Point referred to on profile grade lines					
Pier with size and number of columns shown (show aesthetic treatment if app.). For solid, hammerhead or other pier, approximate size to scale.					
If length of concrete pier cap between outer pier columns exceeds approximately 60 feet, provide an opening in the cross girder for temperature changes and concrete shrinkage, or design the pier cap for temperature and shrinkage to eliminate the opening.					
Dimension Minimum Depth of Bottom of Footings Below Ditch or Ground Line or if Railroad Crossing Below Top of Rail					
Utilities on Superstructure					
Lighting					
Construction Staging if required					
Subsurface Exploration sheet					
Logs with blow counts (5 ft intervals or significant changes), unconfined compression strengths and water level indicator symbol					

	B.M. Req'd.*	CADD Cells	Draw	Check	Back
Bridge Plan View showing boring locations & R/L					
Elevation View with footing elevations called out, existing ground @ center of bridge and logs superimposed. Show estimated pile length					
Note indicating who drilled borings and date of drilling					
Miscellaneous					
Profile Grade Line on Structure					
Vertical Curve Data					
Substructure Elevations					
Profile Grade Line of Highway Beneath structure / Top of RR Tracks					
Horizontal Curve Data					
Channel change section if applicable. Approximate stream bed elevation at low point.					
Design Data					
Foundation Data					
Bridge Rating					
Hydraulic Data					
Traffic Data					
Estimate of Quantities Table					
Benchmark Data (if available during prelim)					
General Notes See BR Man 6.3(2)A(a) & (b)					
Bridge Removal Notes					
Construction staging notes and potential construction sequence if complicated.					
Approach slab widths with pavement depth & types (if available during preliminary design)					
Forward 45 contact, name, #, address					
Bridge office contact name and phone number					
Include any unique aesthetic details if known at time of preliminary design					
Review Bridge Manual for Other Requirements					

FINAL STRUCTURE PLAN CHECKLIST

Bridge: _____

Project: _____

	Draw	Check	Back
Abutment/Wingwalls			
1. Layout Plan			
Barrell Dimensions			
Wingwall Dimensions			
Dimension Bearing Pads, Shoes, Construction Joints			
Skew Angle			
Keyways			
Girder Spacing & Angles			
If Maskwall Used, Check to See if Adequate Room for Bearings			
Centerline of Bridge			
Centerline of Bearing			
Station of Centerline Bearing & Baseline			
2. Layout Elevation			
Backwall Dimensions			
Elevations - Pads			
Elevations - Bottom of Footing			
Elevations - Top of Backwall			
Reinforcement in Barrell & Backwall			
Keyways			
Berm			
Rustications - Construction Joints			
Utilities			
Section Cuts			
3. Layout Footing Plan			
Baseline, Ref. Tangent, Stations & Angles			
Dimension from Baseline to Corners			
Pile Locations			
Reinforcement in Footing			
Pipe Underdrain			
North Arrow			
4. Abutment Section			
Dimensions			
Piles			
Reinforcement			
Pipe Underdrain			
5. Wingwall Elevation			
Dimensions			
Elevations			
Reinforcement			
Rustications & Construction Joints			
Berm & Slope			
Rail Post Spacing			

	Draw	Check	Back
6. Wingwall Section			
Dimensions			
Reinforcement			
7. Bill of Reinforcement			
8. Bending Diagrams			
9. Anchor Bolt Setting Plan			
10. Waterstop Detail - Sticky			
11. Vert. Const. Jt. - Sticky			
12. Pile Splice Detail - Sticky			
13. Temporary Hold Down Device (for Multiple Span Steel Grider Bridges)			
14. Excavation & Backfill Limits (N/A for Sill Abutments)			
Notes			
15. Sloped Pad Detail (Prestressed Girder Bridges)			
Detail Sheets			
1. Expansion Joint Details (Std. Sheet)			
Check Against Current State Std.			
Add Table; Fill in Title Block			
2. Bearing Details (Std. Sheet)			
Check Against Current State Std.			
Add Table; Fill in Title Block			
3. Railing Details (Std. Sheet)			
Check Against Current State Std.			
Fill in Title Block			
Framing Sheets (Steel Beam or Plate Girder Bridges)			
4. Framing Plan			
Layout Beams, Int. Diaphragms, End Diaphragms			
Field Splices			
Beam Spacing			
Diaphragm Spacing			
Angle Between Beams & Centerline of Bearing			
Baseline, Reference Tangents, Stations			
Lateral Bracing			
North Arrow			
5. Girder Elevation			
Dimension Span Lengths, Field Splices, Total Length			
Intermediate Stiffener Spacing			
Shear Connector Spacing			
Top & Bottom Flange Plate Size; Web Plate			
Bearing Stiffeners			
Locations of Flange Stresses			
Shoe Types			
6. Field Splice Detail			
7. Shear Connector Detail			
8. Intermediate Stiffener Detail			
9. Bearing Stiffener Detail			
10. Intermediate Diaphragm Detail			
11. End Diaphragm Detail - Plan & Elevation			
12. Tension Flange Connection Detail			
13. Shear Connector Detail			
14. Flange Weld Detail & Table			

	Draw	Check	Back
Notes			
15. Flange Transition Detail			
16. Lateral Bracing Detail			
17. Show on Slab Sheets			
18. Table of Dead Load Deflections			
19. Dead Load Deflection Diagram			
Notes			
20. Camber & Blocking Diagram			
21. Table of Top of Erected Steel Elevations			
Notes			
22. Haunch Detail			
Notes			
Girder Sheets (Prestressed Girder Bridge)			
23. Side View of Girder			
Stirrup Spacing @ Girder Ends			
Longitudinal Reinforcement @ Girder Ends			
24. Top View of Girder			
Show End of Girder Only			
Show Typical Reinforcement @ End of Girder			
25. Maximum Stirrup Spacing Detail			
26. Section Through Girder			
Dimensions of Girder			
Reinforcement			
27. Strand Pattern Detail			
28. Section @ Abutment			
Dimensions & Reinforcement			
29. Section @ Pier Diaphragm			
Dimensions & Reinforcement			
30. Elevation of Diaphragm			
31. Section @ Diaphragm			
32. Plan View of Diaphragm			
33. Section Showing Threaded Rods & Diaphragm			
34. Location of Draped Strands Detail			
35. Camber Diagram			
36. Slab Forming Diagram			
37. Section @ Exterior Girder			
38. Pilaster Detail & Piers			
39. Bearing Detail @ Abutments & Piers			
Notes for Girder Data			
General Notes			
40. Expansion Bearing Detail			

	Overpassing Rdwy.	Underpassing Rdwy.
Geometry		
Stationing		
Bearings		
Rdwy./Struct. Widths		
Medians		
Intersecting Stations		
Cross-Slopes		
P.G.L.		
Ditches (Exist. & Future)		
Traffic Data		
Typical Section of Bridge		
Vertical Clearance		
No Slope < 0.3%		
P.G.L. Elev. @ c/l Brg. Substructure Units		
Beam Guard		
Utilities		

RIGHT-OF-WAY PLAT CHECKLIST

Project Title: _____ **Job ID:** _____

Review: Plats

Plat ID: _____ **Plat Type:** _____

FF45 PM: _____ **Submittal:** _____

Checked By: _____ **Comments Resolved By:** _____

Date: _____ **Date:** _____

Checked	Items
	Stage 1: "Base Plat" All existing info (topog, section lines, 40's, existing alignment, existing R/W, towns, CSM's, subdivisions, last deed of record, etc.) is identified and drawn.
	Stage 2: "Relocation Plan" primary use of this stage would be if there are buildings being acquired. PROPERTIES AFFECTED would need property lines, parcel numbers, proposed R/W lines and buildings shaded.
	Stage 3: "Preliminary Plat" For estimating total costs by R/W. Should include property lines, proposed R/W lines, slope intercepts, schedule of interests, distances to buildings, signs and utilities identified, cross hatching, NO major dimensioning and labeling of R/W lines.
	Final: Ready for "Relocation Order" passage, final adjustments done, acreages checked, bearings and distances, station and outs, coordinates, descriptions.
GENERAL ALL SHEETS	
	G1 – Check project number on all plat sheets.
	G2 – North Arrow.
	G3 – Check all sheets for a sheet number.
	G4 – Check for correct county and route shown on each sheet.
	G5 – Graphic scale shown on detail layout sheets, title sheet, or not to scale.
	G6 – Label 40's or government lots (check with plat book) (oriented toward north.)
	G7 – Check for revision number is a resubmittal.
	G8 – Check that reference base files are in "survey feet" working units.
TITLE SHEETS	
	T1 – Total sheets shown.
	T2 – Beginning and ending of relocation order shown with equations and section ties.
	T3 – Check total net length of centerline.
	T4 – Label all county, state, and federal highways, rail lines, water courses.
	T5 – Label all town roads intersection project Limits.
	T6 – Label and show latest corporate limits of all cities and villages.

Checked	Items
	T7 – Township and range designated.
	T8 – Label town names.
	T9 – Type of monuments shown.
	T10 – Coordinate system plat is based on.
	T11 – Plat signed by district rep. and R.L.S. if designed by a consultant.
SCHEDULE OF LANDS and INTERESTS REQ'D	
	S1 – Parcel numbers, (optional – leave every 5th number empty for additions.)
	S2 – Sheet numbers checked against detail sheets
	S3 – Owners' names checked against title searches and against detail sheets.
	S4 – Interest req'd checked against detail sheets (i.e. Fee, PLE, A.R.)
	S5 – Total area checked against tax roll.
	S6 – New R/W req'd checked against InRoads
	S7 – Existing R/W checked against property description.
	S8 – Total/Total remaining checked for math errors.
	S9 – TLE/PLE/RDE acreages checked.
	S10 – Utility and R.R. parcels identified. (Operations I.D. if compensable)
	S11 – Check landlocked areas on detail sheets against remaining on schedule.
	S12 – Check RLO # for each Parcel (2)……
LAYOUT SHEET	
	L1 – Sections, lines, township lines, range lines, and property lines.
	L2 – Highway, public roads, railroads, lakes, rivers, ponds, streams.
	L3 – Corporate limits.
	L4 – Section numbers.
	L5 – Town names across layout and along town border.
	L6 – Label all highways and public roads.
	L7 – North arrow.
	L8 – Parcel numbers checked against detail and Interest Schedule
	L9 – Property lines and property hooks checked
DETAIL SHEETS	
	All appropriate base files are shown (alignment, utilities, topo, lighting, ITS, SS, etc.)
	D1 – Existing R/W of highway and sideroads shown width labeled.
	D2 – Section lines, 40 lines and property lines shown
	D3 – Existing property lines labeled with PL. when linetype is not PL style
	D4 – Label existing buildings, wells, signs, and other select topog.
	D5 – Label corporate limits and subdivisions; show lots of block numbers.
	D6 – Check that CSM's show lot numbers with volume and page
	D7 – Pertinent government bodies labeled (towns, cities, villages).
	D8 – North arrow on each sheet.

Checked	Items
	D9 – Mainline, side roads, and waterways labeled and bold.
	D10 – Check intersection equations at side roads.
	D11 – Horizontal Alignment, Tied to previous DOT proj.
	D12 – Tangent Bearings.
	D13 – Alignment Curve Notes, PC's Pt's and PI
	D14 – Match Lines between sheets shown.
	D15 – Check duplicate information from one sheet to the next
	D16 – Show existing easements with proper dimensions.
	D17 – Access control, existing and proposed.
	D18 – Show other access restrictions (Utility easements)
	D19 – Note indicating how existing R/W and Access control was established. (Previous project no.)
	D20 – Check that slope intercept is labeled for **purpose** and within new R/W, and **match X – sections**
	D21 – Parcel numbers are bold and owners' names shown.
	D22 – Hatching is different on adjacent parcels and parcels directly across roadways.
	D23 – Distance from new R/W line to buildings within 100ft. (nearest foot)
	D24 – Compensable utility poles, pedestals (shown in solid) and Easements.
	D25 – Check that existing property monuments are shown and type noted.
	D26 – Coordinates shown on the beginning and ending of the relocation order, section corners, and P.I.'s
	D27 – Tie to section or ¼ cor., at least 2 per sheet (oriented toward north).
	D28 – Traverse closure for each sheet.
	D29 – Verify buildings and utilities added or deleted since aerials were flown.
	D30 – Station and outs of new R/W line, TI, PLE limits etc.
	D31 – Buildings to be acquired are darkened or heavily outlined.
	D32 – Vacated or to be vacated roads and alleys noted.
	D33 – Bearings, distance and curve data along new R/W line.
	D34 – Coordinates of all new R/W points.
	D35 – Encroachments shown with distance to centerline/reference line.
	D36 – When property encompasses more than one 40, show remaining acreages of 40's affected by the project.
	D37 – Landlocked and severed parcel acreages shown.
	D38 – Horizontal Alignment matches InRoads alignment
	D39 – Check that all structures, retaining walls, pipe endwalls, etc. are within the right of way
	D40 – Check CSM Doc #'s or V-P
	D41 – Check that all structures, retaining walls, pipe endwalls, etc. are within the right of way.
	D42 – Check if new lighting, signal or ITS cable work is within right of way
	Verify the plat was QC'd internally by the RIW manager. Review QC documents.

NOTES:

UTILITY COORDINATION CHECKLIST

Highway: _____

Date: _____

Project Title/Subtitle: _____

County _____ **Design Project I.D.:** _____

Note: All Utility Coordination shall be done in accordance with the Facilities Development Manual and the "WisDOT Guide to Utility Coordination" unless otherwise noted.

	TASK	PDS	UTIL. UNIT	CONS.	DATE DUE	DATE COMP.
1	Provide Concept Definition Report (CDR) and copies of any subsequent revisions.					
2	Provide Utility Coordination Task List as it pertains to the specific project.					
3	Provide list of known utilities in the project area.					
4	Verify according to Trans 220.04(1) the list created in #3. *FDM 18-10-10*					
5	Participate in project scoping meeting.					
6	Send Form DT1077 Project Notification with cover letter and exhibits to utilities with a potential for facilities in the project area. *TRANS 220.04; FDM 18-10-10*					
7	Invite utilities to Operation Planning Meeting. *FDM 18-10-10*					
8	Maintain TRANS 220 Log, Form DT1079. *FDM 18-1-15*					
9	Obtain system maps from the utilities. If handled by consultant, provide copies to the district utility coordinator on projects with new right of way. *FDM 18-10-10* Compare the system maps with the highway plan information to confirm that all utility facilities are shown properly. *TRANS 220.05(1)*					
10	Field locate utility facilities in project area. *FDM 18-10-15* _____ Remove manhole covers. Determine flow line elevations and pipe sizes. _____ Expose existing utility facilities and obtain elevations (pothole) at the following locations: _____ NOTE: This will have to be coordinated with the facility owners.					

	TASK	PDS	UTIL. UNIT	CONS.	DATE DUE	DATE COMP.
11	Provide 30% plan to district utility coordinator for review prior to 30% Plan Review Meeting.					
12	Show existing utility facilities on plat, plans and cross-sections [i.e., plot the horizontal locations of all buried and above ground utility facilities on mainline and side road cross sections for the district utility coordinator and the utilities].					
13	Invite utilities to all Public Information Meetings.					
14	Provide a full size draft plat to the district utility coordinator for review after all existing information, including compensable and non-compensable utility facilities and easements, has been added.					
15	Provide a full size final plat to the district utility coordinator for review, including compensable and non-compensable utilities, prior to plat approval.					
16	Provide a copy of the DSR to district utility coordinator					
17	Provide 60% plan and profile and cross-sections to district utility coordinator for review prior to 60% Plan Review Meeting.					
18	Monthly: Send copies of all correspondence with utilities, and utility-related documents/logs to the district utility coordinator.					
19	Identify potential utility conflicts. If done by consultant, provide copy to district utility coordinator. *FDM 18-10-20*					
20	Hold utility coordination meeting before DT1078 packages are mailed to utility companies.					
21	**NO PLAT:** Send Form DT1078 Project Plan Transmittal with plans and related exhibits. Include cover letter, conflict list, and utility work sheet. *TRANS 220.05; FDM 18-10-30*					
22	**PLAT:** Send Form DT1078 Project Plan Transmittal with plat, plans and related exhibits. Include cover letter, conflict list, and utility work sheet, notice of reimbursable work, and release of rights. *FDM 18-10-30 and 18-15-15*					
23	Provide to the district utility coordinator ___ sets of___ size plans. _size plats, and_ size cross-sections which are all complete enough for use by utility companies in evaluating potential conflicts and developing a relocation design. Depending on utility preference, these can be in paper or electronic format (.dgn files).					
24	Draft & record releases of rights (conveyance/ quitclaim/ temporary release of easement).					
25	Provide revised plan sheets with changes from previous plans indicated, as required. *TRANS 220.05(12); FDM 18-10-45*					
26	Provide information of hazardous material sites to utilities and district utility coordinator. With this information clearly state what hazardous material has been found, where it has been located, other potential sites, who will be responsible for the removal, handling of the removal, storage of material that has been removed, & the cost associated with any and all dealing of the hazardous materialon this WisDOT highway project.					

	TASK	PDS	UTIL UNIT	CONS.	DATE DUE	DATE COMP.
27	Provide information of environmentalconditions, as it is associated with this project, to utilities and district utility coordinator. This includes wetlands, bedrock, historical and archaeological sites, endangered species, underground storage tanks, etc.					
28	Provide monthly updates to the district utility coordinator regarding progress on any land acquisition necessary, as it is associated with this project. Include with updates the status of any information on site clearance of parcels or razing contracts.					
29	Hold a utility coordination meeting after the 1078 packages have been mailed to involved utility companies, but before work plans are due back. *i ANS 220.05(04); FDM 18-10-35 and 18-20-5*					
30	Review Utility work plans as they are received. Recommend corrective action if necessary.*FDM 18-10-35*					
31	Review Utility estimates for reimbursement as they are received. Negotiate reimbursable work utility agreements. (Return receipt mail may be used if necessary) *FDM 18-15-20 and 18-20-1*					
32	Send notice to utilities of having received their work plan, cost estimate,Release of Rights, Waiver letiter, etc. An email notice is acceptable. (CC:the District Utlity Unit.)					
33	Identify and resolve (or recommend resolution for) any conflicts among the various utility work plans. *TRANS 220.05(4)*					
34	Send utility cost estimates and agreements to CentralOffice for approval.					
35	Approve utility work plans.(CC: the District Utility Unit.) *FDM 18-10-35; TRANS 220.05(7)*					
36	Send Work Plan Approval and Start Work Notices to utility companies. *TRANS 220.05(7)*					
37	Provide 90% plan and profile and cross-sections to district utility coordinator for review prior to 90% Plan Review Meeting.					
38	Review DT1553 utility permits for compatibility with highway project design.Recommend corrective action if necessary.					
39	Approve DT1553 utility permits.					
40	Conduct field meetings with all utilities.					
41	Write the utility section of the highway contract special provisions,based upon work plans provided by the utility owners and/or the district utility coordinator. Use when appropriate:"These plans show utility facilities existing at the time of the original survey in of Facilit es installed after this are addressed in the specials."					
42	Review the utility section of the highway contract special provisions.					
43	Update utility contacts for General Notes sheet on final plan based upon contact information provided by utilities from work plans.					

	TASK	PDS	UTIL. UNIT	CONS.	DATE DUE	DATE COMP.
44	Prepare Form DT1080 Utility Status Report (USR) as part of the PS&E submittal package.*FDM 18-10-40*					
45	Provide RfW staking for utilities as needed. R/W staking is needed only in the areas where utility facilities will be placed, not the entire project Estimate this will be needed _____ times.					
46	Send a final, reduced size plan set and copy of the utility portion of the highway contract special provisions to each utility with facilities in the project area just prior to or soon after the final PS&E submittal to the district. *FDM 18-10-45*					
47	Hold a utility coordination meeting after all work plans have been approved but before utility relocations begin. *Chapter TRANS 220.05(04); FDM 18-10-35 and 18-10-45*					
48	Follow-up on status of utility relocations between PS&E submittal and the preconstruction meeting.					
49	Conduct Pre-Bid Utility Meeting for potential bidders to discuss utility relocations and utility coordination during construction.					
50	Attend the Pre-construction meeting and answer any questions reQardinQ the utility coordination efforts.					
51	Process utility agreement Contract Change Orders.					
52	Process utility Second Moves.					
53	Process utility billings.					

GEOTECHNICAL PRELIMINARY ENGINEERING CHECKLISTS

The following checklists cover the major information and recommendations that should be addressed in project geotechnical reports.

Site investigation information will be common to all geotechnical reports for any type of geotechnical feature. Additional sections covering the basic information and recommendations that should be presented in the geotechnical report for specific geotechnical features, such as centerline cuts and embankments, embankments over soft ground, landslides, retaining structures, structure foundations and material sites are also included.

Certain checklist items are of vital importance to have been included in the geotechnical report. These checklist items have been marked with an asterisk (*). A negative response to any of these asterisked items is cause to contact the geotechnical engineer for clarification of this omission.

As a matter of procedure, all HNTB geotechnical reports will be reviewed and have at least two signatures on the report, one of the preparer and one of the reviewer. Additionally, at least one signature on the report will require that of a person that is a licensed professional engineer in the state of which the project is located and the geotechnical recommendations were provided for.

Prepared by:	_____	**Date:**	_____
Checked by:	_____	**Date:**	_____
Backchecked by:	_____	**Date:**	_____

SITE INVESTIGATION

The most important step in the geotechnical design process is to conduct an adequate site investigation. Presentation of the subsurface information in the geotechnical report and on the plans deserves careful attention.

	Y	N	N/A
Geotechnical Report Text (Introduction)			
1. Is the general location of the investigation described and/or a vicinity map included?			
2. Is scope and purpose of the investigation summarized?			
3. Is site description of site (topography, existing developments, etc.)?			
4. Is description given of geologic setting?			
5. Are the field explorations and laboratory tests on which the report is based listed?			
6. Is the general description of subsurface soil, rock, and groundwater conditions given?			
7. Is the following information included with the geotechnical report (typically included in the report appendices):*			
a. Exploration (boring, CPT, test pit, or other) logs?			
b. Field test data?			
c. Laboratory test data?			
d. Photographs (if pertinent)?			
Plan and Subsurface Profile			
1. Is a plan and subsurface profile of the investigation site provided?*			
2. Are the field explorations located on the plan view?			
3. Does the conducted site investigation meet minimum criteria?*			
4. Are the explorations plotted and correctly numbered on the profile at their true elevation and location?			
5. Does the subsurface profile contain a word description and/or graphic depiction of soil and rock types?			
6. Are groundwater levels and date measured shown on the subsurface profile?			
Subsurface Profile or Field Boring Logs			
7. Are sample types and depths recorded?			
8. Are SPT blow count, percent core recovery, and RQD values shown?*			
9. If cone penetration tests were made, are plots of cone resistance and friction ratio shown with depth?			
Laboratory Test Data			
10. Were lab soil classification tests such as natural moisture content, gradation, Atterberg limits, performed on selected representative samples to verify or modify field visual soil identification?*			
11. Are laboratory test results such as shear strength, consolidation, etc., included and/or summarized?*			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project***.

CUTS AND EMBANKMENTS

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the project geotechnical report?

	Y	N	N/A
Are station-to-station descriptions included for:			
1. Existing surface and subsurface drainage?			
2. Evidence of springs and excessively wet areas?			
3. Slides, slumps, and faults noted along the alignment?			
Are station-to-station recommendations included for the following?			
General Soil Cut or Fill			
4. Specific surface/subsurface drainage recommendations?			
5. Excavation limits of unsuitable materials?			
6. Erosion protection measures for back slopes, side slopes, and ditches, including riprap recommendations or special slope treatment?*			
Soil Cuts			
7. Recommended cut slope design?*			
8. Are clay cut slopes designed for minimum F.S. = 1.30 or 1.50?			
9. Special usage of excavated soils?			
10. Estimated shrink-swell factors for excavated materials?			
11. If answer to #3 is yes, are recommendations provided for design treatment?			
Soil Fills			
12. Recommended fill slope design?			
13. Will fill slope design provide minimum F.S. = 1.30 or 1.50?			
Rock Slopes			
14. Are recommended slope designs and blasting specifications provided?*			
15. Is the need for special rock slope stabilization measures, e.g., rockfall catch ditch, wire mesh slope protection, shotcrete, rock bolts, addressed?*			
16. Has the use of "template" designs been avoided (such as designing all rock slopes on 0.25:1 rather than designing based on orientation of major rock jointing)?			
17. Have effects of blast induced vibrations on adjacent structures been evaluated?*			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project***.

EMBANKMENTS OVER SOFT GROUND

Where embankments must be built over soft ground (such as soft clays, organic silts, or peat), stability and settlement of the fill should be carefully evaluated. In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the project geotechnical report?

	Y	N	N/A
Embankment Stability			
1. Has the stability of the embankment been evaluated for minimum F.S. = 1.25 for side slope and 1.30 for end slope of bridge approach embankments?*			
2. Has the shear strength of the foundation soil been determined from lab testing and/or field vane shear or cone penetrometer tests?*			
3. If the proposed embankment does not provide minimum factors of safety given above, are recommendations given or feasible treatment alternates, which will increase factor of safety to minimum acceptable (such as change alignment, lower grade, use stabilizing counterberms, excavate and replace weak subsoil, lightweight fill, staged construction, geotextile fabric reinforcement, etc.)?*			
4. Are cost comparisons of treatment alternates given and a specific alternate recommended?*			
Settlement of Subsoil			
5. Have consolidation properties of fine-grained soils been determined from laboratory consolidation tests?			
6. Have settlement amount and time been estimated?*			
7. For bridge approach embankments, are recommendations made to let the settlement occur before the bridge abutment is constructed (waiting period, surcharge, or wick drains)?			
8. If geotechnical instrumentation is proposed to monitor fill stability and settlement, are detailed recommendations provided on the number, type, and specific locations of the proposed instruments?			
Construction Considerations			
9. If excavation and replacement of unsuitable shallow surface deposits (peat, muck, topsoil) is recommended, are vertical and lateral limits of recommended excavation provided?			
10. Where a surcharge treatment is recommended, are plan and cross-section of surcharge treatment provided in geotechnical report for benefit of the roadway designer?			
11. Are instructions or specifications provided concerning instrumentation, fill placement rates and estimated delay times for the contractor?			
12. Are recommendations provided for disposal of surcharge material after the settlement period is complete?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project***.

ROADWAY PAVEMENTS

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the geotechnical roadway report?

	Y	N	N/A
Are descriptions included for:			
1. Existing grades and proposed roadway grades/subgrades?			
2. Existing pavement materials and thicknesses in borings?			
3. Existing surface and subsurface drainage?			
4. Evidence of springs and excessively wet areas?			
Are recommendations included for the following?			
Pavement Design Parameters (provide values as needed for specific client)			
5. Design Group Index?*			
6. Army Corps of Engineers Frost Index?*			
7. California Bearing Ratio?*			
8. Soil Support Group Index?*			
9. Resilient Modulus?*			
10. Modulus of Subgrade Reaction?*			
Construction Considerations			
11. Excavation Below Subgrade (EBS) limits of unsuitable materials?*			
12. Use of Select Subgrade Materials below the pavement section?			
13. Specific surface/subsurface drainage recommendations?			
14. Special usage of excavated soils?			
15. Estimated shrink-swell factors for excavated materials?			
16. If answer to #4 is yes, are recommendations provided for design treatment?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project***.

STORM WATER PONDS

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the geotechnical pond report?

	Y	N	N/A
Are descriptions included for:			
1. Existing grades and proposed pond grades?			
2. Proposed design high water level?			
3. Proposed normal water level (wet pond)?			
4. Existing surface and subsurface drainage?			
5. Evidence of springs and excessively wet areas?			
Are recommendations included for the following?			
Pond Design Parameters			
6. Need for pond liner or not?*			
7. Soil permeability from tests or correlations with standard lab tests?			
Construction Considerations			
8. Is soil excavated from pond suitable for use a soil liner material?*			
9. Is dewatering required for liner construction?			
10. Backfill compaction requirements (e.g., percent compaction and water content etc.) for soil liner?			
11. Specific surface/subsurface drainage recommendations?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project***.

RETAINING STRUCTURES

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the retaining wall geotechnical report?

		Y	N	N/A
1.	Description of the wall types, geometry and layout?			
2.	Description of external loadings?			
3.	Description of site constraints (environmental, right-of-way, utilities, aesthetic, traffic, construction, etc.)?			
4.	Recommended soil strength parameters and groundwater elevations for use in computing wall design lateral earth pressures and factor of safety for overturning, sliding, and external slope stability?*			
5.	Is it proposed to bid alternate wall designs?			
6.	Are acceptable reasons given for the choice and/or exclusion of certain wall types?*			
7.	Is an analysis of the wall stability included with minimum acceptable factors of safety against overturning (F.S. ≥ 2.0), sliding (F.S. ≥ 1.5), bearing capacity (F.S. ≥ 2.0, 2.5 or 3.0), and global slope stability (F.S. ≥ 1.3 or 1.5)?*			
8.	If wall will be placed on compressible foundation soils, is estimated total, differential and time rate of settlement given?			
9.	Will wall types selected for compressible foundation soils allow differential movement without distress?			
10.	Are wall drainage details, including materials and compaction, provided?			
11.	Need and methods for pre-construction survey, documentation, observation and monitoring of adjacent ground and/or facilities?			
Construction Considerations				
12.	Are excavation requirements covered including safe slopes for open excavations or need for sheeting or shoring?			
13.	Fluctuation of groundwater table?			
14.	Earthwork and wall backfill requirements/recommendations?			
	a. Discussion on the suitability of the in-situ soils as foundation and/or backfill materials?			
	b. Discussion on the need and recommended foundation soil improvements (compaction, over excavation, removals, preloading, settlement period, etc.)?			
	c. Removal of existing structures/facilities (e.g. slope paving)?			
	d. Discussion on rock rippability?			
	e. Discussion on temporary cut/support conditions?			
	f. Dewatering requirements?			
	g. Minimum toe cover (embedment depth)?			
	h. Recommended minimum berm width?			
	i. Backfill and retained materials requirements or recommendations (lightweight materials, density, gradation, strength, compressibility, corrosion etc.)?			
	j. Backfill compaction requirements (e.g., percent compaction and water content etc.)?			

	Y	N	N/A
Additional information for specific wall types:			
Cantilever and Crib Walls			
15. Allowable soil bearing capacity at the wall base elevation for spread footings?			
16. Pile data table (pile type, size, diameter, and wall thickness for pipe piles; design load, nominal resistance, cut-off elevation, design and specified tip elevation, etc.) for pile footings?			
Gravity Walls (Concrete Gravity Wall, Rock Gravity Wall, Gabion Basket Wall)			
17. Geometry of the blocks?			
18. Allowable soil bearing capacity at the wall base elevation for spread footings?			
19. Pile data table (pile type, diameter, and wall thickness for pipe piles; design load, nominal resistance, cut-off elevation, design and specified tip elevation, etc.) for pile footings?			
Sheet Pile Wall			
20. Recommendation for minimum pile embedment depth (or pile tip elevations) based on geotechnical requirements (e.g., socketing into competent material and/or global stability requirements, etc.)?			
21. Describe special provision issues (e.g., groundwater, difficult driving conditions, etc)?			
22. Basal stability?			
Solder Pile Walls with Lagging			
23. Method of pile installation (e.g., driven or cast-in-drilled hole)?			
24. Recommendation for minimum pile embedment depth (or pile tip elevations) based on geotechnical requirements (e.g., socketing into competent material and/or global stability requirements, etc.)?			
25. Recommendation for lagging embedment below finish grade?			
26. Describe special provision issues (e.g., groundwater, caving, difficult drilling/driving, potential effects of driving induced vibration/noise on adjacent facilities and/or occupants etc.)?			
Tangent/Secant Soldier Pile Wall			
27. Recommendation for minimum pile embedment depth (or pile tip elevations) based on geotechnical requirements (e.g., socketing into competent material and/or global stability requirements, etc.)?			
28. Describe special provision issues (e.g., groundwater, caving, difficult drilling due to hardness or extreme variations from very soft to very hard and oversized material etc.)?			
Slurry Diaphragm Wall			
29. Type of slurry wall (e.g., conventional reinforced concrete, soldier pile, tremie concrete etc.)?			
30. Recommendation for minimum wall embedment depth based on geotechnical requirements (e.g., socketing into competent soils and/ or global stability requirements, etc.)?			
31. Describe special provision issues (e.g., groundwater, difficult trenching and trench			

	Y	N	N/A
stability etc.)?			
32. Soil gradation and hydraulic conductivity?			
Soil-Cement Mix Wall			
33. Required soil-cement mix element percent coverage?			
34. Required soil-cement mix depths; presentation of the decision process for required depth during design; and establish possible refusal criteria (depth), which is equipment dependent, during construction?			
35. Layout of soil-cement mix area?			
36. Soil-cement mix element compressive strength (need to use statistical criteria, e.g., average of “x” psi and no more than “y” % tests with less than “z” psi)?			
37. Soil particle gradation for each soil layer (contractor needs this information for cement mix design)?			
38. Special details and design notes, e.g., minimum horse power of augering/mixing equipment, required water/cement ratio, etc.?			
39. Special provisions for material and construction (e.g., requirement for the contractor’s submittal of equipment and cement mix design for review and approval)?			
40. Difficult drilling/mixing conditions?			
41. Performance specifications requirements, e.g., coring equipment, minimum % recovery, minimum Rock Quality Designation (RQD), number and distribution of core specimens for compressive strength test; possible in-situ testing procedure, etc.?			
Anchored Walls (Structural or Ground Anchors) (see “Ground Anchors and Anchored Systems”, FHWA IF -99-015)			
42. Anchor walls are the following included in the geotechnical report?*			
a. Design soil parameters (ϕ, c, γ)?			
b. Ultimate anchor capacity (anchors)?			
c. Corrosion protection requirements?			
43. Method of soldier/anchor pile installation (e.g., driving or cast-in drilled hole)?			
44. Recommendation for minimum pile embedment depth based on geotechnical considerations (e.g., based on global stability requirements or embedment into competent material etc.)?			
45. Provide theoretical or, if known, actual failure plane based on Slope Indicator (SI) reading?			
46. Recommendation for lagging embedment below finish grade (2 feet or more)?			
47. Characterization of the soil conditions immediately behind the wall, and the corresponding bearing capacity (based on allowable passive or lateral soil bearing capacity, as applicable)?			
48. Unbonded zone length based on theoretical or actual failure plane?			
49. Special provision issues (e.g., groundwater, caving, difficult drilling, cement sacks for grouting when recommended, need for instrumentation or monitoring etc.)?			
Soil Nail Walls (see “Manual for Design & Construction Monitoring of Soil Nail Walls”)			
50. For soil nail walls are the following included in the geotechnical report?*			
a. Design soil parameters (ϕ, c, γ)?			

	Y	N	N/A
b. Minimum bore size (soil nails)?			
c. Design pullout resistance (soil nails)?			
51. Corrosion protection requirements?			
52. Wall Face Batter?			
53. Diameter of grouted hole?			
54. Inclination angle of nails?			
55. Soil/rock density and strength parameters?			
56. Maximum and minimum horizontal and vertical soil nail spacing?			
57. Vertical distance from top of wall to top most row of soil nail assembly?			
58. Minimum and maximum horizontal distances from the beginning/ end of the wall and first/last soil nail?			
59. Maximum vertical distances from the bottom of wall to bottom of soil nail assembly?			
60. Soil nail profile lines?			
61. ASTM designation of bars, grade and bar sizes?			
62. Design ultimate bond strength, in kilopascal (kPa)/(psi)?			
63. Design nail head punching shear capacity, assumed or as provided?			
64. Schedule of nail lengths?			
65. Locations of the test soil nails for both proof and verification testing?			
66. Special provision issues (e.g., ground water, caving, drilling difficulty and sloughing of excavated face)?			
67. Describe construction considerations including monitoring recommendations?			
68. SNAIL run outputs?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

SPREAD FOOTINGS

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the project foundation report?

	Y	N	N/A
1. Are spread footing recommended for foundation support?*			
2. If not, are reasons for not using them discussed?			
If spread footing supports are recommended, are conclusions and recommendations given for the following:			
3. Is recommended bottom of footing elevation and reason for recommendation (e.g., based on frost depth, estimated scour depth, or depth to competent bearing material) given?*			
4. Is recommended allowable soil or rock bearing pressure given?			
5. Is estimated footing settlement and relative time given?*			
6. Where spread footings are recommended to support abutments placed in the bridge end fill, are special gradation and compaction requirements provided for select end fill and backwall drainage material?*			
Construction Considerations			
7. Have the materials been adequately described on which the footing is to be placed so the project inspector can verify that material is as expected?			
8. Have excavation requirements been included for safe slopes in open excavations, need for sheeting or shoring, etc.?			
9. Has fluctuation of the groundwater table been addressed?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

DRIVEN PILES

In addition to the basic information listed in the Site Investigation checklist, if pile support is recommended or given as an alternative, conclusions/recommendations should be provided in the project geotechnical report for the following:

		Y	N	N/A
1.	Is the recommended pile type given (displacement, non-displacement, steel pipe, concrete, H-pile, etc.) with valid reasons given for choice and/or exclusion?*			
2.	Do you consider the recommended pile type(s) to be the most suitable and economical?			
3.	Are estimated pile lengths and estimated tip elevations given for the recommended allowable pile design loads?*			
4.	Do you consider the recommended design loads to be reasonable?			
5.	Has pile group settlement been estimated (only of practical significance for friction pile groups ending in cohesive soil)?			
6.	If a specified or minimum pile tip elevation is recommended, is a clear reason given for the required tip elevation, such as underlying soft layers, scour, downdrag, piles uneconomically long, etc.?			
7.	Has design analysis (wave equation analysis) verified that the recommended pile section can be driven to the estimated or specified tip elevation without damage (especially applicable where dense gravel-cobble-boulder layers or other obstructions have to be penetrated)?*			
8.	Where scour piles are required, have pile design and driving criteria been established based on mobilizing the full pile design capacity below the scour zone?			
9.	Where lateral load capacity of large diameter piles is an important design consideration, are p-y curves (load vs. deflection) or soil parameters given in the geotechnical report to allow the structural engineer to evaluate lateral load capacity of all piles?			
10.	For pile supported bridge abutments over soft ground:*			
	a. Has abutment downdrag load been estimated and solutions such as bitumen coating been considered in design? Not generally required if surcharging of the fill is being performed.			
	b. Is bridge approach slab recommended to moderate differential settlement between bridge ends and fill?			
	c. If the majority of subsoil settlement will not occur prior to abutment construction (by surcharging), has estimate been made of abutment rotation that can occur due to lateral squeeze of subsoil?			
	d. Does the geotechnical report specifically alert the structural designer to the estimated horizontal abutment movement?			
11.	If bridge project is large, has pile load test program been recommended?			
12.	For major structure in high seismic risk area, has assessment been made of liquefaction potential of foundation soil during design earthquake (only loose saturated sands and silts are susceptible to liquefaction)? (see GEC No.3, FHWA SA-97-076)			
Construction Considerations				

	Y	N	N/A
13. Pile driving details such as: boulders or obstructions which may be encountered during driving; need for preaugering, jetting, spudding; need for pile tip reinforcement; driving shoes, etc.?			
14. Excavation requirements: safe slope for open excavations; need for sheeting or shoring; fluctuation of groundwater table?			
15. Have effects of pile driving operation on adjacent structures been evaluated such as protection against damage caused by footing excavation or pile driving vibrations?			
16. Is preconstruction condition survey to be made of adjacent structures to prevent unwarranted damage claims?			
17. Have other methods of pile driving control been considered such as dynamic testing or wave equation analysis?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

DRILLED SHAFTS

In addition to the basic information listed in the Site Investigation checklist, if drilled shaft support is recommended or given as an alternative, are conclusion/recommendations provided in the project foundation report for the following:

		Y	N	N/A
1.	Are recommended shaft diameter(s) and length(s) for allowable design loads based on an analysis using soil parameters for side friction and end bearing?*			
2.	Settlement estimated for recommended design loads?*			
3.	Where lateral load capacity of shaft is an important design consideration, are p-y (load vs. deflection) curves or soils data provided in geotechnical report that will allow structural engineer to evaluate lateral load capacity of shaft?*			
4.	Is Osterberg cell load test or static load test (to plunging failure) recommended?			
Construction Considerations				
5.	Have construction methods been evaluated, i.e., can less expensive dry method or slurry method be used or will casing be required?			
6.	If casing will be required, can casing be pulled as shaft is concreted (this will result in significant cost savings on very large diameter shafts)?			
7.	If artesian water was encountered in explorations, have design provisions been included to handle it (such as by requiring casing and a tremie seal)?			
8.	Will boulders be encountered? (If boulders will be encountered, then the use of shafts will require use of oscillating casing and high torque drill rigs or should be seriously questioned due to construction installation difficulties and resultant higher cost that boulders can cause.)			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

IMPROVEMENT TECHNIQUES

In addition to the basic information listed in the Site Investigation checklist, if ground improvement techniques are recommended or given as an alternative, are conclusion/recommendations provided in the project foundation report for the following:

		Y	N	N/A
1.	For wick drains, do recommendations include the coefficient of consolidation for horizontal drainage, c_h, and the length and spacing of wick drains?			
2.	For lightweight fill, do recommendations include the material properties (ϕ, c, γ), permeability, compressibility, and drainage requirements?			
3.	For vibro-compaction, do the recommendations include required degree of densification (e.g., relative density, SPT blow count, etc.), settlement limitations, and quality control?			
4.	For dynamic compaction, do the recommendations include required degree of densification (e.g., relative density, SPT blow count, etc.), settlement limitations, and quality control?			
5.	For stone columns, do the recommendations include spacing and dimensions of columns, bearing capacity, settlement characteristics, and permeability (seismic applications)?			
6.	For grouting, do the recommendations include the grouting method (permeation, compaction, etc.), material improvement criteria, settlement limitations, and quality control?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

MATERIAL SITES

In addition to the basic information listed in the Site Investigation checklist, is the following information provided in the project Material Site Report.

		Y	N	N/A
1.	Material site location, including description of existing or proposed access routes and bridge load limits, if any?			
2.	Have soil samples representative of materials encountered during pit investigation been submitted and tested?*			
3.	Are laboratory quality test results included in the report?*			
4.	For aggregate sources, do the lab quality test results (such as LA. abrasion, sodium sulfate, degradation, absorption, reactive aggregate, etc.) indicate if specification materials can be obtained from the deposit using normal processing methods?			
5.	If the lab quality test results indicate that specification material cannot be obtained from the pit materials as they exist naturally, has the source been rejected or are detailed recommendations provided for processing or controlling production so as to provide a satisfactory product?			
6.	For soil borrow sources, have possible difficulties been noted, such as above optimum moisture content for clay-silt soils, waste due to high PI, boulders, etc.?*			
7.	Where high moisture content clay-silt soils must be used, are recommendations provided on the need for aeration to allow the materials to dry out sufficiently to meet compaction requirements?*			
8.	Are estimated shrink-swell factors provided?			
9.	Do the proven material site quantities satisfy the estimated project quantity needs?*			
10.	Where materials will be excavated from below the water table, have seasonal fluctuations of the water table been determined?			
11.	Are special permit requirements been covered?			
12.	Have pit reclamation requirements been covered adequately?			
13.	Has a material site sketch (plan and profile) been provided for inclusion that contains:			
	a. Material site number?			
	b. North arrow and legal subdivision?			
	c. Test hole or test pit logs, locations, numbers and date?			
	d. Water table elevation and date?			
	e. Depth of unsuitable overburden, which will have to be stripped?			
	f. Suggested overburden disposal area?			
	g. Proposed mining area and previously mined areas?			
	h. Existing stockpile locations?			
	i. Existing or suggested access road?			
	j. Bridge load limits?			
	k. Reclamation details?			
14.	Are recommended special provisions provided?			

**** A response other than (yes) or (N/A) for any of these checklist questions is cause to contact the appropriate geotechnical engineer for a clarification and/or to discuss the project.***

QUALITY CONTROL REVIEW SCHEDULE/PLAN TEMPLATE

Project Name / ID Number	Click here to enter text.
Task Leader	Click here to enter text.

Date of Project Opened	Click here to enter text.
Date of Final Deliverable	Click here to enter text.

This form is used to summarize and track the review schedule for projects involving PS&E Documents, Reports, or other Technical Deliverables. It is to be initiated by the Task Leader, and periodically updated as reviews are completed, and signed by the Task Leader, quality managers and project manager prior to submitting the final deliverable to the Client. Corresponding QC Review Documentation Forms are to be attached to this form. Appropriate QC Review Items include, but are not limited to, Specifications, Construction cost estimates, Report sections, Models, Survey documents, Geotechnical documents, as appropriate to the project.

		QC Review	
QC Review Item	**Reviewer(s)**	**Scheduled for**	**Completed on**
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Initial Meeting to Establish Plan

Task Leader: ______________________
(signature/date)

Quality Manager: ______________________
(signature/date)

Project Manager: ______________________
(signature/date)

Completion of Process

Task Leader: ______________________
(signature/date)

Quality Manager: ______________________
(signature/date)

Project Manager: ______________________
(signature/date)

INTERDISCIPLINARY REVIEW CHECKLISTS

Project Title:_____ **Job #:**_____ **ID:**_____

Interdisciplinary Review: **Drainage**

Design Co.: _____

FF45 PM: _____

Checked By: _____ **Comments Resolved By:** _____

Date: _____ **Date:** _____

- ☐ Verify the drainage design was QC'd internally by drainage group. Review QC documents.
- ☐ Verify plans match contracted scope of work.
- ☐ Verify that a drainage binder has been compiled and is complete.
- ☐ Review copy of drainage design criteria.
- ☐ Check that reference base files are in "survey feet" working units.
- ☐ Verify ditch design complete.
- ☐ Verify each culvert pipe has a calc sheet, compare size to existing pipe.
- ☐ Spot check pipe sizes and slopes, structure types, grates and covers.
- ☐ Check if end wall locations match cross sections and are within the clear zone.
- ☐ Verify slope intercepts match end wall locations.
- ☐ Check that low points drain, & culvert crossings flow per topography.
- ☐ Verify drainage layout works with construction staging.
- ☐ Check for special erosion control areas, i.e., wetlands.
- ☐ Check for flat pavement areas at sags, crests and SE transitions.
- ☐ Review completion of detention pond capacity calculations.
- ☐ Review detention pond contours and details vs. cross sections.
- ☐ Any unique items requiring Construction details.
- ☐ Any unique items requiring Specifications.
- ☐ Check commitments in Environmental Document.
- ☐ Check that local flood elevations were considered with regard to storm sewer design.
- ☐ Check that local flood elevations were considered with regard to protection of the roadway.

Use comment Review Form to document list of comments and resolutions.

Interdisciplinary Review: **Right of Way Plat**

Plat ID:		**Plat Type:**	
FF45 PM:		**Submittal:**	
Checked By:		**Comments Resolved By:**	
Date:		**Date:**	

- ☐ Verify the plat was QC'd internally by the R/W manager. Review QC documents.
- ☐ All appropriate base files are shown (alignment, utilities, topo, lighting, ITS, SS, etc.).
- ☐ Check that reference base files are in "survey feet" working units.
- ☐ Check that drawing scale is appropriate and sheet data is legible.
- ☐ Horizontal Alignment matches InRoads alignment.
- ☐ Check that slope intercepts are current and match the cross sections.
- ☐ Check that slope intercepts are within Fee, PLE or TLE areas.
- ☐ Check that all structures, retaining walls, pipe endwalls, etc. are within the right of way.
- ☐ Check if new lighting, signal or ITS cable work is within right of way.
- ☐ Review access control with discussions with property owners.
- ☐ Review parcel numbers to verify all that are impacted are listed.

Use comment Review Form to document list of comments and resolutions.

Interdisciplinary Review: **Structures**

Structure Type:		**Structure No:**	
Feature Over:		**Feature Under:**	
Design Co.:			
FF45 PM:			
Checked By:		**Comments Resolved By:**	
Date:		**Date:**	

- ☐ Verify the structure was QC'd internally by structure group. Review QC documents.
- ☐ All appropriate base files are shown (alignment, utilities, topo, lighting, ITS, SS, etc.).
- ☐ Existing utilities shown; conflicts identified/resolved.
- ☐ Check that structure base files are in "survey feet" working units.
- ☐ Horizontal alignment matches InRoads alignment.
- ☐ Vertical alignment matches InRoads profile.
- ☐ Review benchmark data.
- ☐ Typical Section matches roadway typical.
- ☐ Check structure interface locations (structure to structure, structure to roadway).
- ☐ Location of construction staging joint, temp barrier needs, etc.
- ☐ Check if clear zone width is violated or reduced CZ at structure.
- ☐ Review barrier & parapet types/heights/transitions/end treatments.
- ☐ Display contours at abutments to verify maximum slopes.
- ☐ Check grading at end of retaining wall to verify wall is long enough.
- ☐ Check erosion control areas.
- ☐ Check sign sizes on sign structures.
- ☐ Check quantity table for overlapping/missing roadway items.
- ☐ Check Traffic Data table.
- ☐ Does structure have lighting?
- ☐ Verify vertical under clearance calcs.
- ☐ Verify barrier/parapet types and heights.
- ☐ If excavation or backfill limits are shown, do they match roadway plans.
- ☐ Verify expansion material at approach slab.
- ☐ Verify list of quantities for overlap or missing items from roadway items.
- ☐ Review specs for standard and unique items.

Use comment Review Form to document list of comments and resolutions.

Interdisciplinary Review: **Traffic Signals**

Mainline:		**Crossroad:**	
Design Co.:			
FF45 PM:			
Checked By:		**Comments Resolved By:**	
Date:		**Date:**	

- ☐ Verify the signal design was QC'd internally by signal design group. Review QC documents.
- ☐ Check that reference base files are in "survey feet" working units.
- ☐ Verify that all work is within right of way.
- ☐ Check if control cabinet is outside the clear zone.
- ☐ Compare turn lane designations to marking plan.
- ☐ Check signal head layout and locations with lane configurations.
- ☐ Verify locations of cross walks and stop lines.
- ☐ Review for utility conflicts; buried and overhead, is coordination complete?
- ☐ Has signal layout been coordinated with lighting?
- ☐ Are monitube bases in conflict with intersection sight design?
- ☐ Check if specifying and proprietary items and need for Public Interest Finding.

Use comment Review Form to document list of comments and resolutions.

Appendix B: WisDOT Major Project's Guidelines

Appendix B: WisDOT Mega Projects Guidelines

MEGA PROJECT GUIDELINES

Mega Project Team Executive Summary

In early 2011 the DTSD Management Team identified 8 initiatives for its 2011 work plan. One of these initiatives was to communicate process, organizational structure, best practices, appropriate level of effort, and to promote consistency in the management and oversight of the department's Mega projects, as well as other projects or programs that warrant additional communication and oversight.

The team consisted of Dewayne Johnson (Lead), Joe Olson and John Vesperman of SW Region; Brett Wallace, Bob Gutierrez, Ryan Luck, and David Nguyen of SE Region; Colleen Harris and Brian Roper of NE Region; Scot Becker of BOS, Brian Bliesner of BTO and SE Region; Don Greuel and William McNary of BPD; Joe Nestler of DTIM – BHSP; Paul Hammer and Jay Schad of OPBF; and Tracey Blankenship of FHWA. The Team also utilized Gary Whited of the CMSC, Mike Duckett, and Paul Silvestri as additional resources. Mari Smith, Lindsay Necci, Patty Oemig, and Kris Schuller provided support and guidance to the team in documenting efforts.

The team began meeting in the spring of 2011 and developed the following goal statement as the team's charge.

Goal Statement: Define WisDOT Mega Project scope; develop organizational structure framework, multi-level management systems, and best management practices so that the Department's Mega Projects are carried out effectively and efficiently.

The team's efforts began based on practices established for the Marquette Interchange project, the Department's first mega project, the Facilities Development process, Federal Highway Association guidance, policy, and regulations; as well as mega project efforts on USH 41 in the NE Region, I-94 N-S and Zoo Interchange in SE Region, and I-39/90 in SW Region.

Since Mega project delivery and management practices constantly evolve, adapt and change to meet current needs, there is no single solution that can be implemented in the exact same fashion to yield the exact same results. As such, right sizing has been a focus as a method to share best practices and gain consistency, as well as to address concerns raised within the Governor's Waste, Fraud, and Abuse efforts.

The team has developed the following guidance to aide in Mega project delivery:

- Defined the process that determines which projects meet the Mega Project designation, as well as guidance to determine which projects might require a higher level of oversight and review. Examples of these types of projects include the I-794 / Hoan Bridge project, the USH 18/151 Verona Road project, and the WIS 441 / Tri County Freeway project.
- Guidance on organization set-up and project tools has been identified.
- Organization Structure guidance, with roles and responsibilities have been developed.
- Clarification has been provided on the Secretary's Oversight Committee team and typical agenda.
- A new Oversight Committee Executive Summary report has been developed.
- Guidance on streamlined monthly Project reports has been provided, along with sample project reports.

- Examples of a project accountability matrix and conflict resolution tools have been provided.
- The team has documented various best practices. Specific best practice guidance has been refined for:
    - Program Controls
    - Design Primavera Scheduling
    - Enhanced Public Involvement (PI) and Outreach
    - Guidance on the use and scope of National construction, contractor, and owner's representatives contracts
    - Appropriate levels of independent and/or enhanced construction and design reviews by external consultants
    - The appropriate use of emergency response mitigation contracts
    - Appropriate levels of consultant corridor management assistance
    - Guidance on Risk Management tools and efforts
    - Guidance on Community Sensitive Design
    - Guidance on the use and potential project components for an Owner's Controlled Insurance Program (OCIP).
    - Guidance on business and labor practices

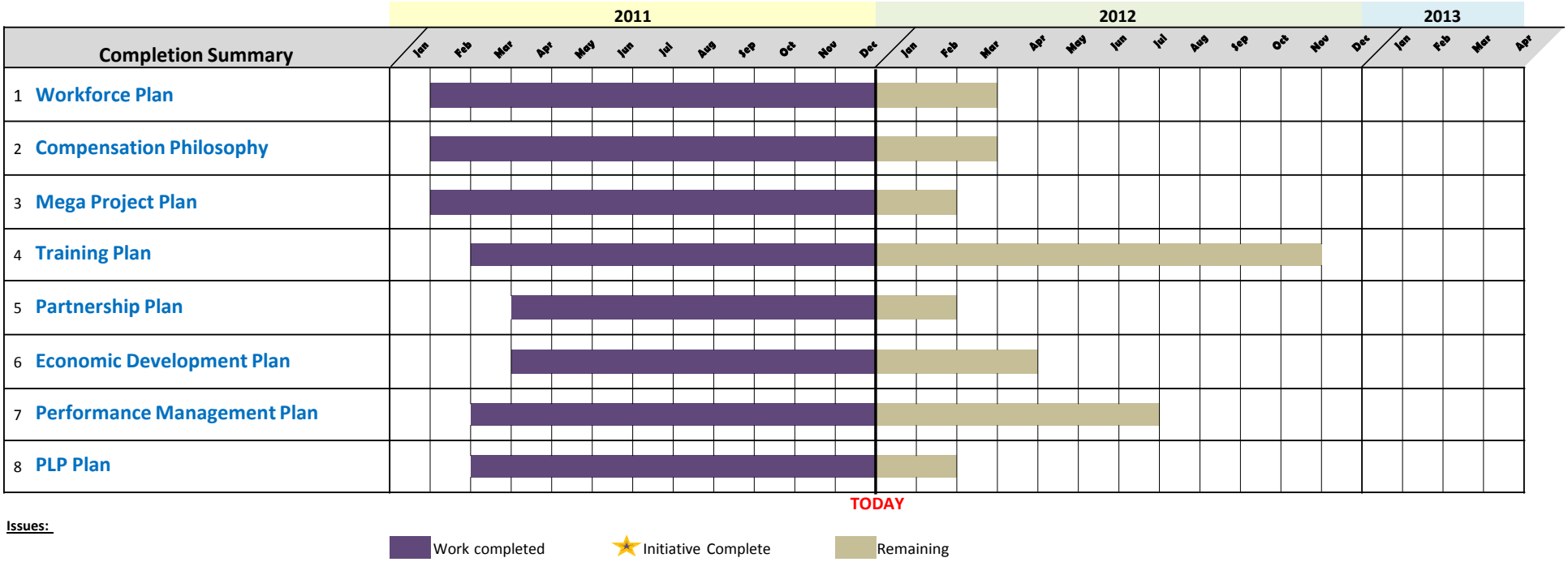
The team recommends that the team's efforts be incorporated in the Facilities Development Manual (FDM), Construction and Materials Manual, and the DTIM Program Management Manual, where appropriate.

This team's efforts are intended to help efficiently allocate resources, encourage continuous improvement, and to provide the tools needed to allow the department to adapt to a dynamically changing environment.

2011 DTSD Initiative Summary

Goal: Completion of 2011 DTSD Initiatives

Team Leads: Will Dorsey, Dewayne Johnson, Beth Cannestra, Don Gutkowski, Joe Olson, Rebecca Burkel, Rose Phetteplace



Issues:

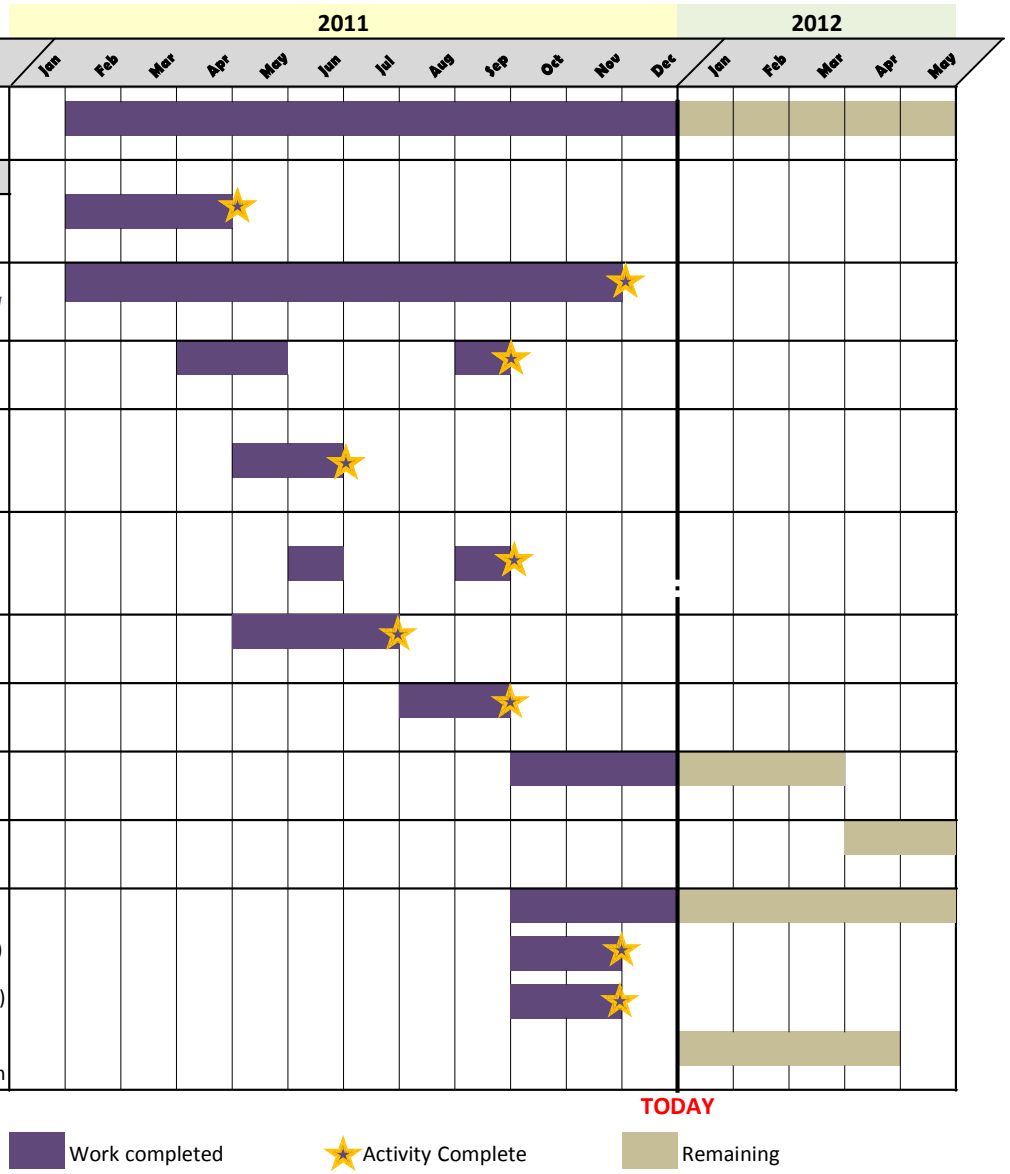
Report date 10/4/11

2011 DTSD Initiative: Workforce Plan

Goal: Create workforce plan to meet short term and long term DTSD Business needs demographics

Team: Will Dorsey (Lead), Deb Ahrens, Rebecca Burkel, John Corbin, Terri Detert, Rose Phetteplace, Tammy Haack, Carrie Ratty, Ken Wickham, Kim Smith, Mari Smith

Workforce Plan	
Workforce Plan Completion Summary	
Activities	
1	Identify 57.145 FTE DTSD positions to be eliminated as part of 2011-2013 Biennial Budget
2	Develop work plan to fill 50 CE positions. **Goal to fill by 12/31/11 -** ***37 filled 9/23 (30 internal, 7 external). 50 additional CE approved September - 12 filled by 9/23/11 (8 internal, 4 external). 64 filled by 12/9/11 (38 external, 26 Internal + 54 more in progress)***
3	Establish priority for CE recruitments to prioritize BHRS work effort - ***Completed May 2011 & updated September 2011***
4	Develop DTSD report/matrix to track activities & progress assoc with filling CE positions & subsequent backfills & priority non-eng postions-Implemented June 2011, report generated weekly
5	Develop staffing plan including allocation levels by location, staffing priorities by class/level, and criteria to evaluate position requests-Completed & approved July 2011; ***Revised Sept 2011 to increase recruitment efforts with new 5% goal vacancy rate***
6	Develop optimal organization charts for each region/bureau based on interim allocation levels
7	Functional area review proposed "optimal" org charts for consistency, risks, and opportunities
8	Functional areas investigate and evaluate emerging needs and areas for potential resouce realignment.
9	DTSD Mgt Team review/validated functional area priorities and establish final allocation levels for each location
10	Final Workforce Plan Compilation including:
	a. Analyze current workforce demographics (BHRS)
	b.Project potential future attrition by classification/level/function/AA (BHRS)
	c.Develop recruitment, retention and employee development plans to support preferred future organizational vision



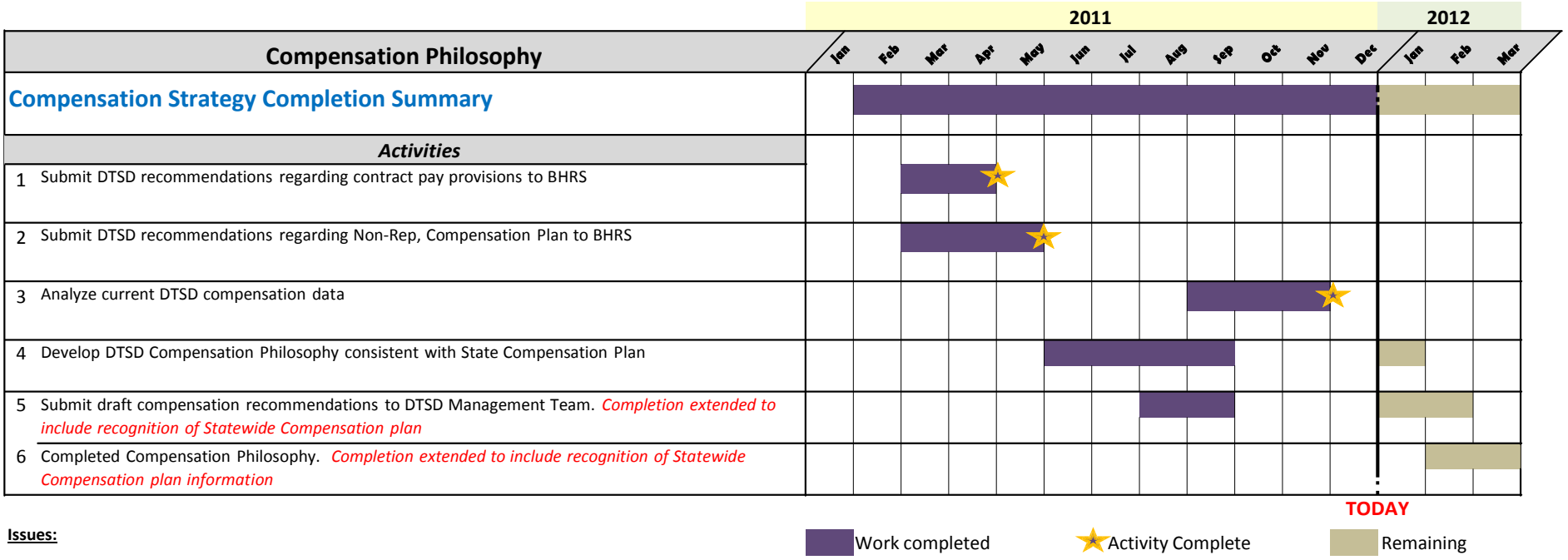
Issues:

Report date 10/4/11

2011 DTSD Initiative: Compensation Strategy

Goal: Develop a DTSD Compensation strategy that supports division Business Objectives

Team: Will Dorsey (Lead), Deb Ahrens, Rebecca Burkel, Beth Cannestra, Barb Paltz, Claudia Peterson, Carrie Ratty, Ken Wickham, Mari Smith



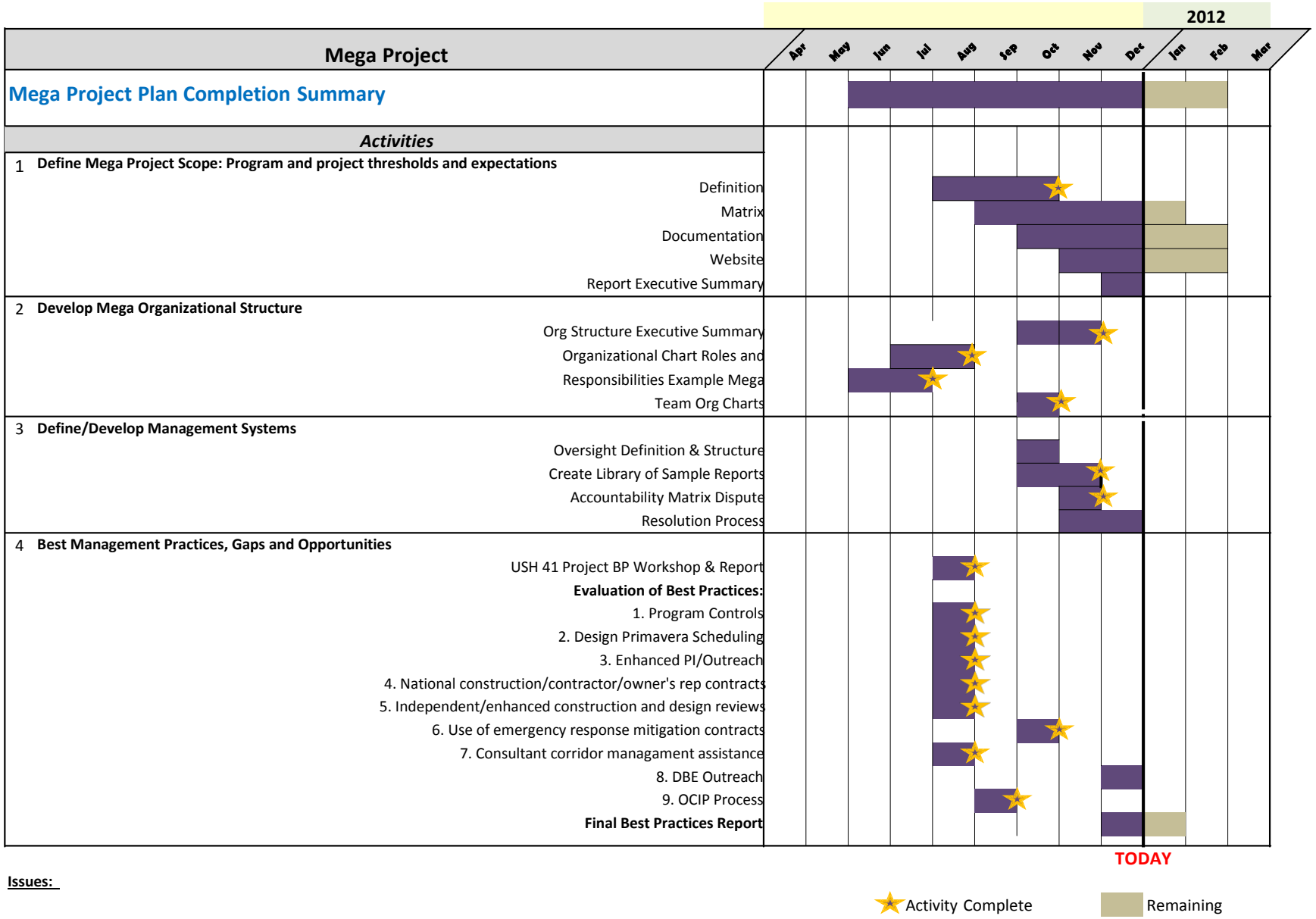
Issues:

Report date 10/4/11

2011 DTSD Initiative: Mega Project Plan

Goal: Define WisDOT Mega Project scope; develop organizational structure framework, multi-level management systems, and best management practices so that the Department's Mega Projects are carried out effectively and efficiently. **Team:**

Dewayne Johnson(Lead), Joe Olson, Brett Wallace, Bob Gutierrez, Ryan Luck, John Vesperman, Joe Nestler, Scot Becker, Tracey McKenney, Paul Hammer/Jay Schad, Brian Bliesner, Bill McNary, Mike Ducket, David Nguyen, Don Greuel, Mari Smith



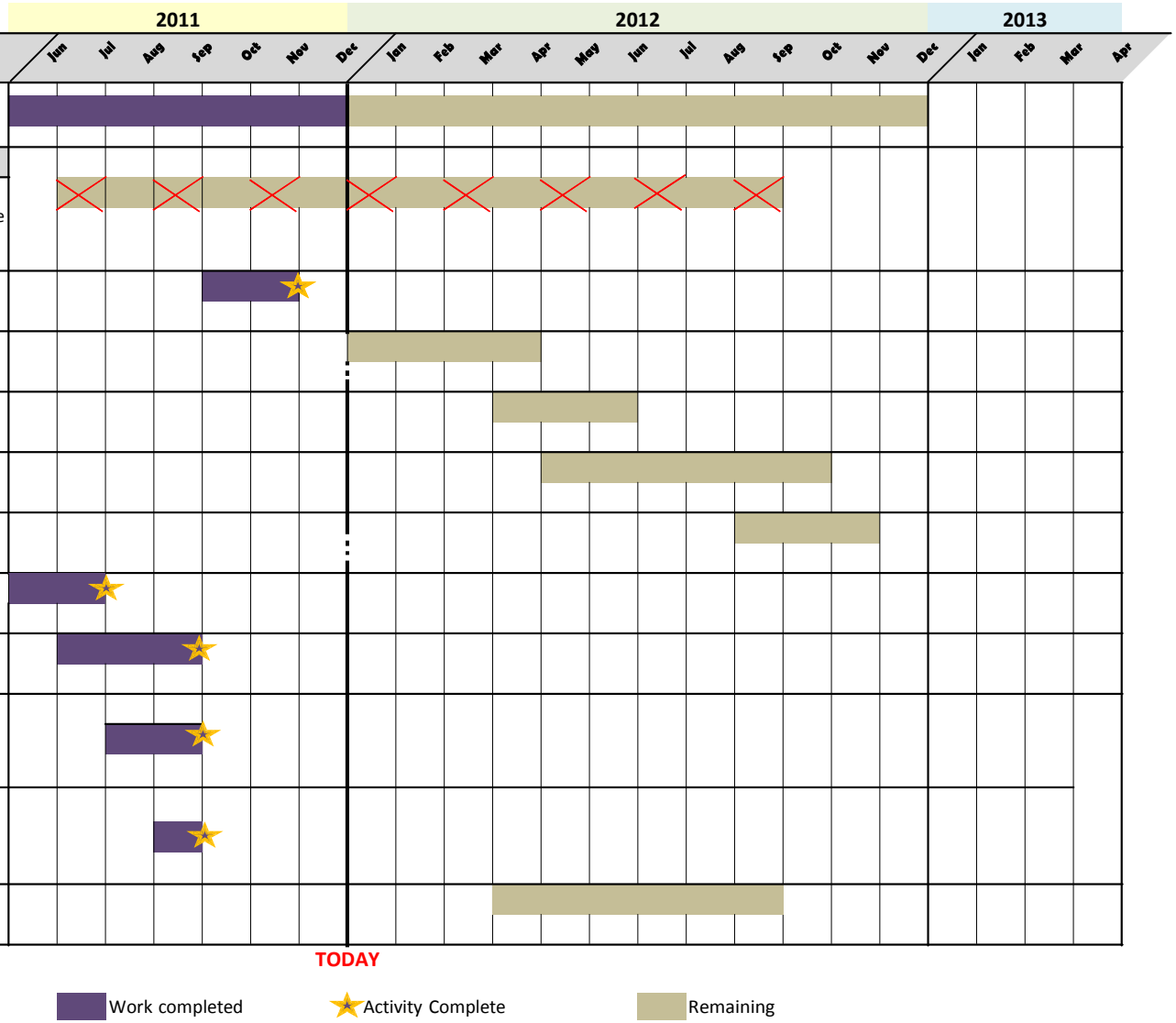
Issues:

2011 DTSD Initiative: Training

Goal: Develop a technical training program that will meet the needs of our ever-changing workforce.

Team: Beth Cannestra (Lead), John Corbin, Don Gutkowski, Sandy Hoff, Mari Smith

Training Plan	
Training Plan Completion Summary	
Activities	
1	Utilizing UWM, develop a needs assessment process, based on skills and knowledge necessary to perform the duties of various job classifications (12 months to complete tool) **Work has been stalled while waiting for a program director at UWM to be hired** CANCELLED
2	Assess UWM ability to meet department needs and investigate alternate training options/resources
3	Contract with UW-EPD to create a Competency Model to assess training needs of deparment Engineers (and Specialists)
4	Assess current DOT Engineering classification staff's training needs
4	Review current courses for ability to meet needs (6 months following completion of tool)
5	Identify external training partners that can help meet our needs i.e. NHI, UW, contractors (6 months following completion of tool)
6	Develop FY2012 Technical Training curriculum and budget
7	Develop a mechanism for assigning PDH's or CEU's (complete within 3 months of initiation of project)
8	Discuss and provide means for providing an assessment of, and training our consultant and contractor partners (complete within 3 months of initiation of project). Courses available & posted at https://trust.dot.state.wi.us/extntgtwy/dtidadmin/training/extranet/index.htm
9	Analyze region preparedness in short-term planning efforts of new staff. Miscellaneous materials posted for shared reference in **\\mad00fph\n4public\Admin\Initiatives\Training\New Hire Materials Folder**
10	Evaluate and implement training documentation system



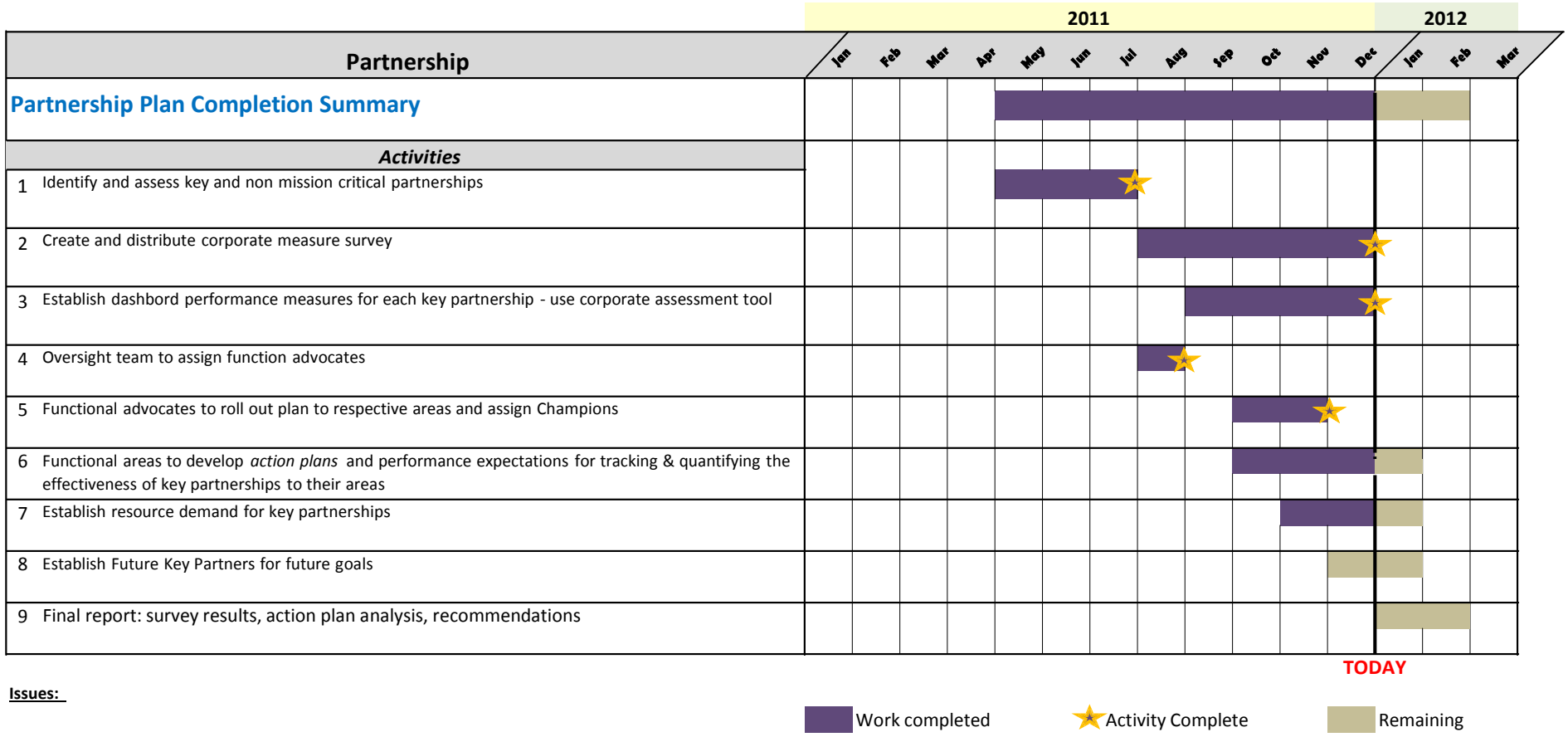
Issues: New contract with UW-EPD shortens total project length by 3 or more months.

Report date 10/4/11

2011 DTSD Initiative: Partnership Plan

Goal: Assess, develop and enhance key partnerships that efficiently and effectively meet DTSD's business needs and performance management goals.

Team: Don Gutkowski (Lead), Dave Vieth, Rory Rhinesmith, Aggo Akyea, Brett Wallace, Mari Smith, Functional Area Champions



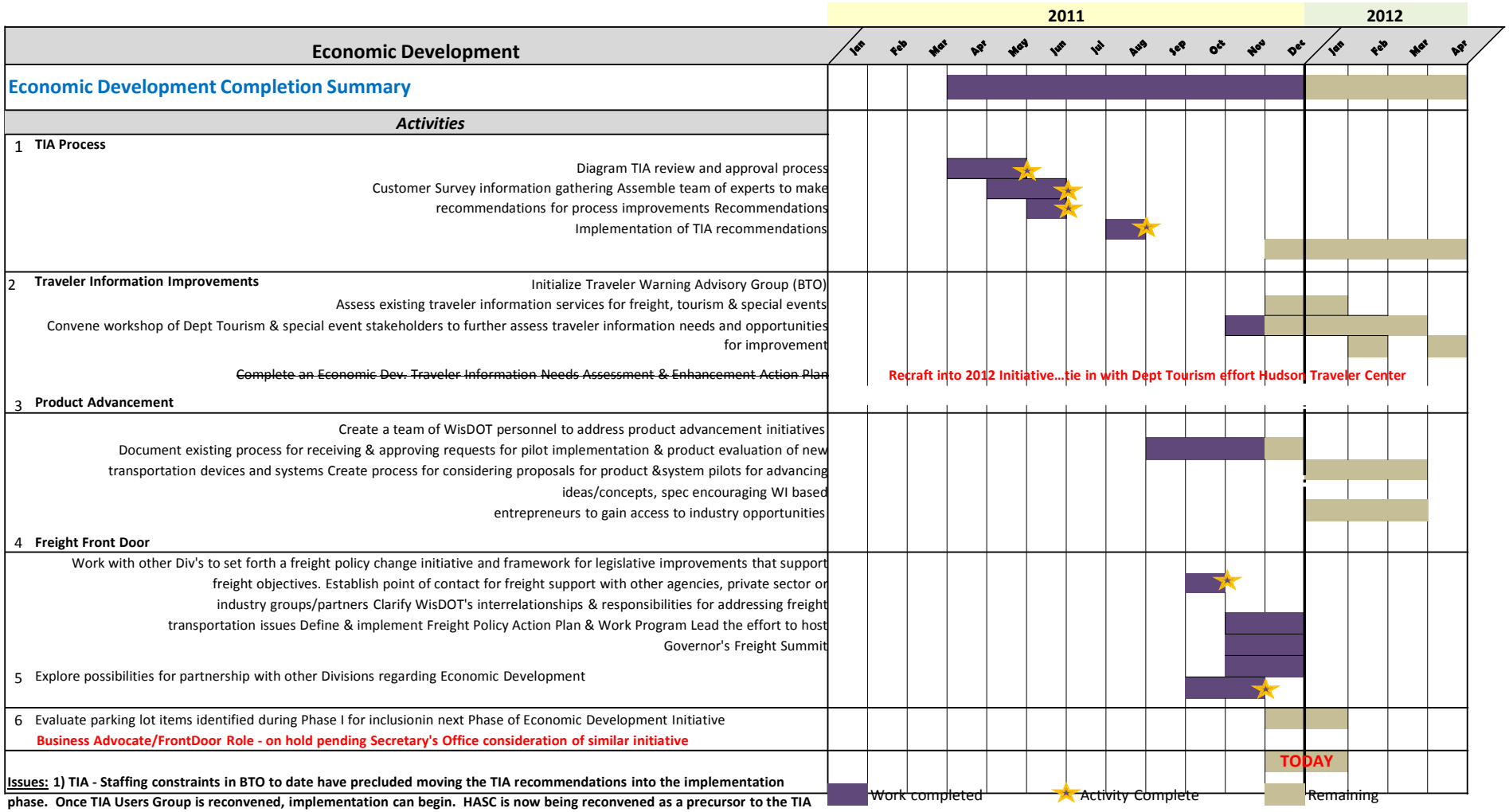
Issues:

Report date 10/4/11

2011 DTSD Initiative: Economic Development

Goal: Find innovative ways to enhance economic development opportunities while maintaining safety and mobility on the transportation system.

Team: Joe Olson (Lead), Dave Vieth, John Corbin, Rebecca Burkel, Brett Wallace, Sandy Beaupre, Mari Smith



Issues: 1) TIA - Staffing constraints in BTO to date have precluded moving the TIA recommendations into the implementation phase. Once TIA Users Group is reconvened, implementation can begin. HASC is now being reconvened as a precursor to the TIA Users Group.

2) Traveler Information - Advisory Group identified and workshop agendas have been developed in draft form for February and April sessions. Consideration currently being given to piloting items in a Major project such as I-39/90 so there is more ready access to funding sources. Freight Summit feedback has provided information on opportunities to improve Traveler Information, e.g., Weather/Traffic Incident information for Freight industry.

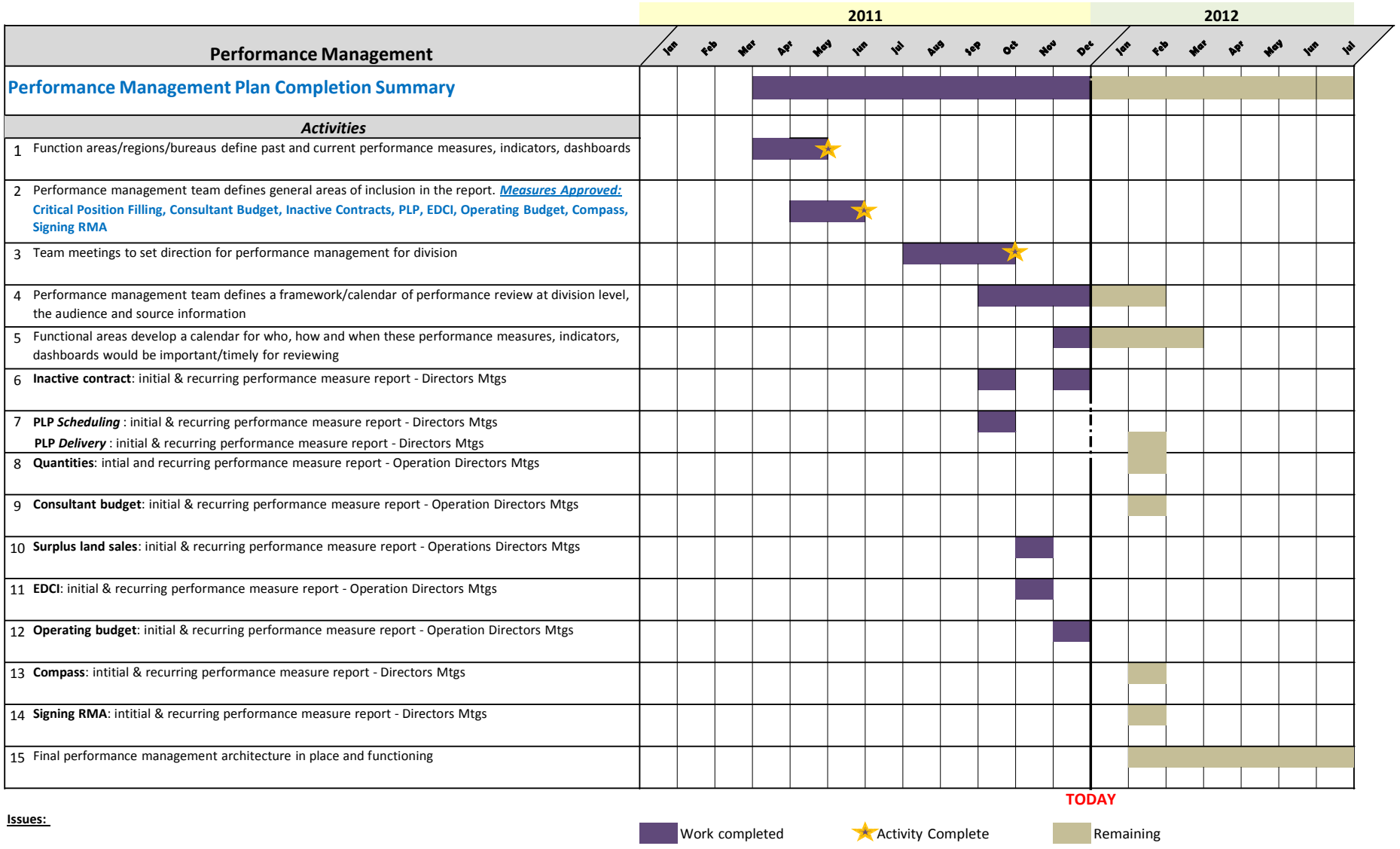
3) Product Advancement - BTS is taking the lead in assembling a small group to address product advancement initiatives.

4) Freight Front Door - Early efforts directed towards creation of Freight Summit. Information compiled from Freight Summit is guiding the Freight Policy Action Plan and Work Program.

Report date 10/4/11

2011 DTSD Initiative: Performance Management Plan

Goal: Develop a comprehensive performance management system for DTSD. **Team:** Rebecca Burkel (Lead), Jerry Mentzel, Rose Phetteplace, Beth Cannestra, Bill McNary, Scot Becker, Don Miller **Functional Areas:** ***PDS*** -Al Rommel, Don Greuel, David Nguyen; ***TSS*** -Jennifer Queram, Ray Kumapayi, Steve Krebs; ***Ops*** -Gary Brunner, Deb Stensland, Tom Goodwyn, Brian Bliesner; ***Planning-*** Sheri Schmit, Tom Beekman **Region/Bureau Contacts**: NW-Tom Beekman; NC-Bob Wagner; NE-Collen Harris; SE-David Nguyen; SW-John Vesperman; BTS-Steve Krebs; BHM-Mark Woltman; BTO-Brian Bliesner; BPD-Bill McNary; BOS-Bill Dreher



Issues:

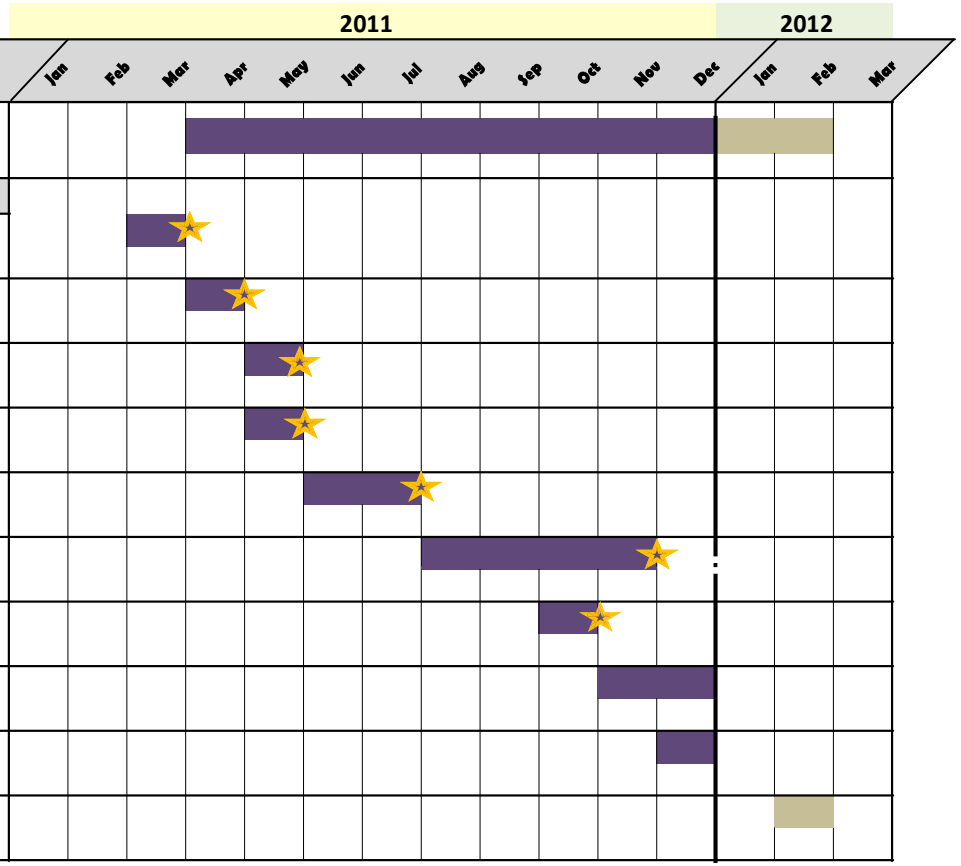
Report date 10/4/11

2011 DTSD Initiative: Project Letting Plan (PLP)

Goal: Develop a performance management system and oversight process for the PLP process that ensures program cost and schedule stability of the PLP and completes the statutory required 65% plans on the shelf effort by July 1, 2014.

Team: Rose Phetteplace (Lead), Jerry Mentzel, Beth Cannestra, Joe Nestler, Bill McNary, Bill Dreher, Sheri Schmit, Julie Seston, Mari Smith

Project Letting Plan	
Project Letting Plan Completion Summary	
Activities	
1	Submit draft work plan template to DTSD Administrator and assemble work group
2	Establish recommendation for organizational oversight structure (the who)
3	Establish recommendation on what key initial information will be monitored by each layer or element of the oversight structure based on what is currently available (the what)
4	Establish draft recommendations on what initial reporting tools and procedures each group/forum will use in the short term based on what is currently available (the how)
5	Roll out initial reports and procedures using currently available info and tools
6	Work with Planning & PD Functional areas to deliver assignment
7	2nd iteration roll out at DTSD Directors'meeting on PLP/Advanceable scheduling reports
8	Planning chiefs begin PLP discussions on a regular basis during monthly chief meetings
9	Planning/PDS Chief sub-committee discuss family of 3 related delivery measures: PLP/Advanceable/Stability
10	PDS and Planning report out to senior management on initial reports for all 3 family of delivery measures.



Issues:

Report date 10/4/11

Wisconsin Department of Transportation Mega Project Management

Mega Project Management

The purpose of Mega Project Management DTSD Division Initiative is to provide guidance and consistency concerning roles and responsibilities and management of Federal Major Projects on the Wisconsin Highway System.

The Department's vision is to strengthen the project team's ability to forecast challenges and proactively manage Federal Major Projects, so that decision-makers have the ability to recognize the need for (and then act upon) meaningful and timely changes through the use of Mega Project Management Best Practices, tools and resources. Guidance from this initiative will be utilized on Mega Projects and other High Profile Projects.

What is a Mega Project?

Federal law (SAFETEA-LU) establishes additional oversight and reporting requirements for Federal Major Projects, thus the Department intends to utilize defined Mega Management tools and resources for all projects that fit the Federal Major Project definition or are defined as Federal Majors by FHWA. All Federal Major Projects will be considered a Mega Project for management reporting and control purposes and should not be confused with legislative sub-program Southeast Wisconsin Freeway Mega project as described in the Program Management Manual. The definition of a Federal Major or Mega Project is defined as follows:

- A project that is "a recipient of Federal financial assistance with an estimated total cost of $500 million or more".
  Examples:
  I-94 North South from Mitchell Interchange to Illinois state line
  Zoo Interchange
  US 41 in Brown and Winnebago counties
  I-39/90 from US Highway 12 to the Illinois state line

- A project with an estimated total cost below $500 million can also be designated by FHWA as a Federal Major Project if FHWA determines the project will require a substantial portion of the transportation agency's program resources; has a high level of public or congressional interest; is unusually complex; has extraordinary implications for the national transportation system; or is likely to exceed $500 million in total cost."

What is a High Profile Project?

Projects that are NOT a Federal Major or Mega Project but that management has decided needs additional oversight and reporting are High Profile Projects. State Major Highway Projects enumerated by the legislature's Transportation Projects Commission may be considered a High Profile Project. Typically, projects over $100 million in total cost and/or that have significant public, outside agency and legislative issues and interest may also be considered a High Profile Project. Department management may choose to utilize some Mega Management reporting and controls on High Profile Projects. Other smaller, tightly schedule and sensitive projects may also require additional oversight and management.

Examples:

US 10/441
Hoan Bridge
Verona Road
Lake Delton Dam Replacement
ARRA Program

See "Wisconsin Department of Transportation Guidance Matrix for Project Organization, Tools, Management, and Reporting."

How will the use of Mega Management reporting and controls be made regarding future major highway projects?

DTSD management should discuss whether the Mega Management approach should be implemented for projects along an existing four-lane corridor, such as the Interstate system, during the environmental study process. FHWA will look at the total cost estimate for the project limits as defined in the Record of Decision or final environmental document to determine whether the project costs exceed $500 million and qualifies as a Federal Major project. These Federal Major projects would use Mega Management reporting and controls. Verification of Federal Major Project designation should be finalized through consultation between the Region Director with senior management from DTSD, DTIM and OPBF with final concurrence from the Secretary.

A project that is known to fit the Mega project definition should begin to use the federal and department Mega guidelines and requirements and should be defined a Mega project. For example, a project in the early NEPA stages of a project that fits the Mega definition would complete required steps during the NEPA process. This would include a Cost Estimate Review and a Draft Project Management Plan.

The Regional Director should consult with senior management from DTSD, DTIM, and OPBF in order to discuss and seek concurrence from the Secretary on utilizing Mega Management and control tools for High Profile Projects. The Regional Director will also coordinate the Department's subsequent discussion with FHWA. State Major Highway Projects enumerated by the legislature's Transportation Projects Commission should consider use of some or all Mega Management reporting and controls at the time of enumeration.

How will a Megaproject designation be made regarding future reconstruction projects on the Southeast Wisconsin freeway system?

The 2011-13 biennial budget, 2011 Wisconsin Act 32, created legislative sub-program Southeast Wisconsin Freeway Megaproject "for any project on southeast Wisconsin freeway having a total cost in excess of $500 million." (s.84.0145(1)(c), Wis. Stats.) Currently, two projects have been enumerated as Megaprojects; the I-94 North-South corridor and the Zoo Interchange. Future freeway reconstruction Megaprojects must be enumerated in Wisconsin law before construction may begin on a project. However, unlike for Major Highway projects, Wisconsin law does not prescribe a specific process to be followed for enumerating Southeast Wisconsin Freeway Megaprojects.

Any southeast Wisconsin freeway work **not** defined as a "Mega project" is now done under the Backbone Rehabilitation or Major Projects Program. See the Progam Management Manual for more information.
Reference: FHWA Innovative Program Delivery

Staffing Roles and Responsibilities Guidelines for Mega Project Management

In the report section dealing with "Mega Project Definition" the "Key Program Process Decision Making Matrix" identified three types of projects: Standard, High Profile, and Mega.

High Profile and Mega projects will typically have more complexity to them and as such may have increased project team staffing needs, project management needs, and project deliverables.

The purpose of the *Wisconsin Department of Transportation Guidance Matrix for Project Organization, Tools, Management and Reporting* is to provide guidance in developing the project team and project management plan. Using these tools and past examples will facilitate prompt decision making and an efficient use of resources.

While each project and their resourcing needs are different, Department Mega Projects have typically been:

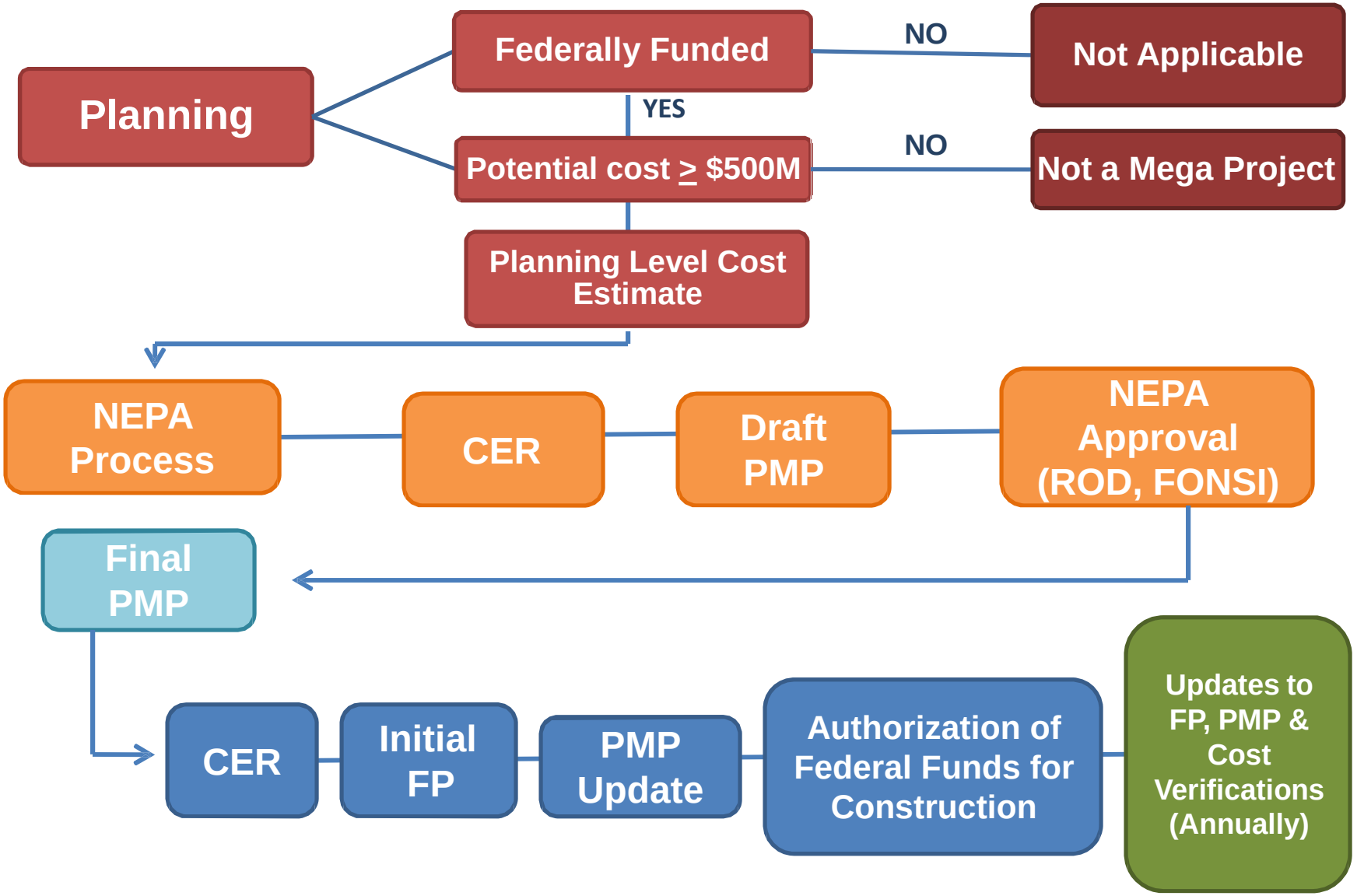
- Extremely complex urban programs where there is significant third party involvement and the project involves significant utility conflicts, right-of-way, public involvement, traffic management, complex design and construction requirements, and long term funding issues, and continual monitoring and analysis of these items is required.
- Title VI issues involving Environmental Justice, Limited English Proficiency and the Americans with Disabilities Act are common and require much community level outreach and feedback.
- Large lineal urban and rural major projects, where third party involvement is not considered as critical to successful program delivery, and the work consists mostly of traditional highway-type construction.

The project's functional structure should clearly define the roles and responsibilities between the Region, Bureau and third party's interaction, as well as contributions and decision making processes for design and construction.

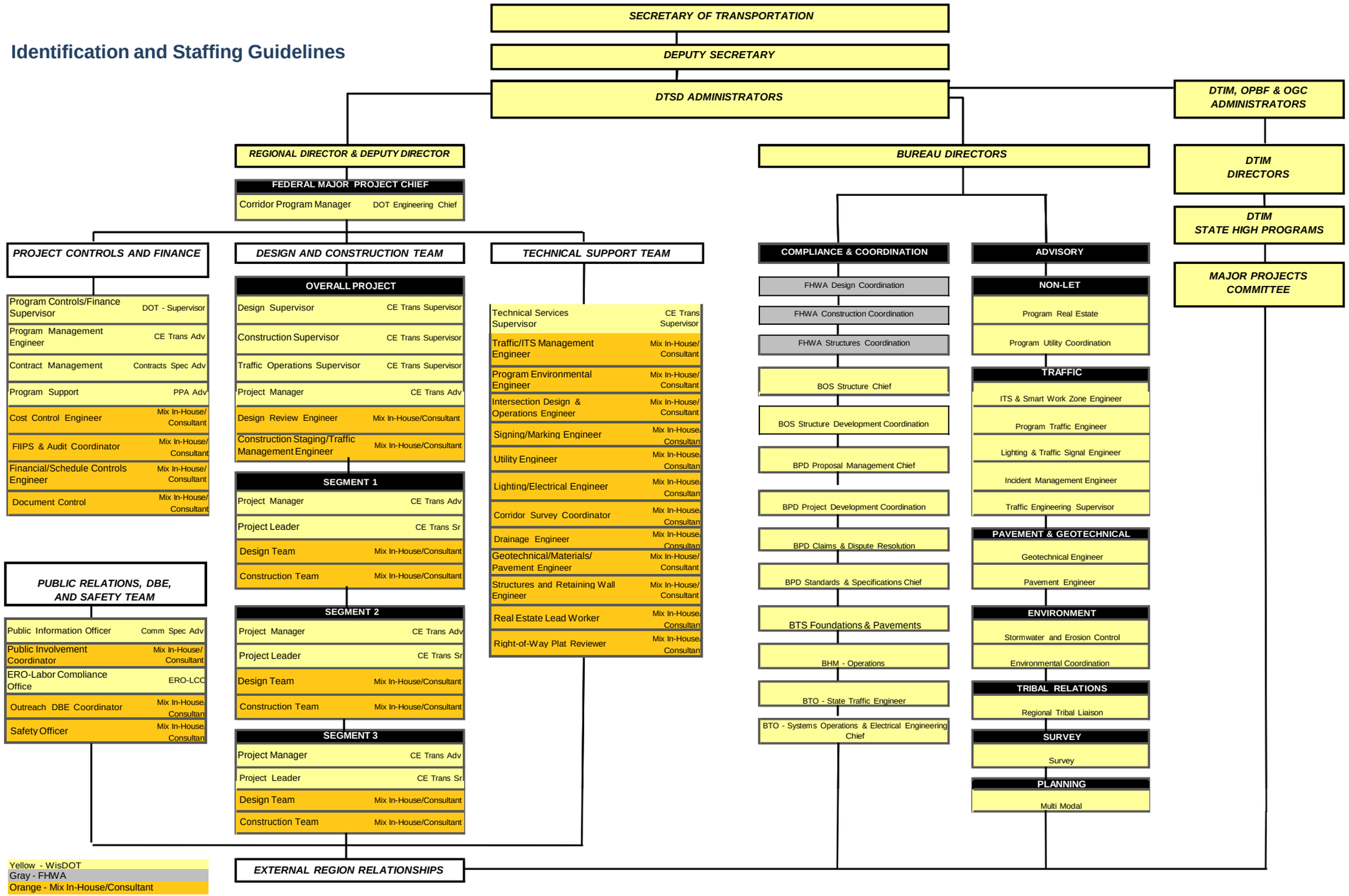
The WisDOT *Mega Projects Function Identification and Staffing Guidelines* and *Generic Roles and Responsibilities for Mega Project Management* are guidelines to develop an organization chart for a mega project and can be modified to meet each project's specific need. When Bureau and Regional staff have both bureau/region project and mega project responsibilities, it should be clearly identified (likely for staffing of the non-complex projects) and noted that mega project issues take priority. It may be appropriate to detail the function rather than the personnel as the first step of the guideline. The job description would be developed from the function organization chart. Personnel may perform more than one function, abandoning in some cases, a standard one-to-one personnel-to-function ratio. A job description may combine several functional roles and responsibilities. It is also important to note that staffing needs may change over time as a project progresses.

See sample organization chart here:
I-94 North South Org Chart
I-794 Hoan Org Chart
US-41 Org Chart

WisDOT / FHWA Mega Process



Identification and Staffing Guidelines



Notes 1) This organizational structure depicts a generic structure at a starting point for any future Mega Projects.
2) The size and number of boxes (staff) required for each funtional area will be based upon the character (rural, urban, etc.) of that particular project.
3) See other project team function and organization charts for reference.

Wisconsin Department of Transportation Guidance Matrix for Project Organization, Tools, Management, and Reporting

This matrix lists key management resources and strategies that are critical to the success of any project while highlighting how those items differ between standard or typical improvement projects, higher profile projects and Mega projects. This matrix is intended to guide the Department's decision-making process as it considers the best approach to manage a growing number of significant and high profile projects.

Kev Program Processes	Design	Construction	Financial	Doc Controls	Change Mgmt	Definition	Project Types* Standard	High Profile (typically $100-$500M)	Mega (> $500M)
Balancing Contract Modifications		x				Used to account for the overrun/underrun of quantities during a multi-year project. Allows for financial adjustments midway through a contract on quantities that are expected to either overrun or underrun by the completion of the project.	No	Possible	Yes
Benchmark Performance Indicators		x	x			Comparison to linear project percent complete based on both time and cost. Allows project managers to approximate whether the project is ahead or behind schedule.	Possible	Yes	Yes
Change Mangagement	x	x			x	Define and adopt strategies, structures, procedures and technologies to deal with changes and determine how they impact the project's scope, schedule and cost.	Standard	Intermediate	High
Construction Planning and Submittal Workshops		x				Preconstruction workshops (after contract award) between the prime contractor, major subcontractors, and department staff to discuss critical aspects and areas of the project.	No	Possible	Yes
Contracted Project Expertise	x	x	x	x		Mega Projects may need to supplement the department's (owner's) expertise by hiring additional outside guidance. Typical hourly rates and travel expenses may be elevated beyond typical consultant contracts.	No	Possible	Likely
Cost Estimate Workshop	x					The development of a build out budget cost in year of expenditure values for a project or program. Includes risk & uncertainty identification. Conducted during NEPA phase and just prior to construction during final design.	Yes (Mjaor Projects)	Yes	Yes
Design Liaison Contract	x	x				Contract with the design consultant to answer plan questions during construction and to provide design through construction continuity.	No	Possible	Yes
Disadvantaged Business & Worker Programs	x	x				Mentoring programs to assist DBE firms through the certification and bidding process as well as educational opportunities for minority and female workers for entry-level work required for construction projects.	Standard	Intermediate	High
Dispute Review Board		x				Established after execution of the contract to render decisions on unresolved claims quickly and impartially during construction of the projection. Typically 3 persons: 1 WisDOT, 1 Contractor, 1 more appointed by first 2.	No	Possible	Yes
Dispute Resolution Process	x	x			x	A process used to resolve claims that cannot be resolved through the Real-Time Claims Management Process in a manner that complies with the contract, is impartial, and still expedites the standard claims process.	Standard FDM and Specification process	Possible	Yes
Document Controls	x	x	x	x		A framework or system to provide collection, storage, and distribution of information for timely and effective decision-making.	Standard	Intermediate	High
Documenting Decisions	x	x		x		Database to record and track decisions made on a project in order to provide for consistency in decision making throughout the project.	No	Possible	Yes
Earned Value Analysis (EVA)		x				Project control technique for measuring progress and performance. Schedule Performance Index (SPI) and Cost Performance Index (CPI) are tracked to assess project performance.	N/A or at 25%, 50%, 75% 90% completion	Monthly	Monthly
Escrow Bid Documents	x					Require the lowest responsible bidder to submit the documents they used to determine the costs shown in their bid into escrow. These remain sealed unless the bidder and the department mutually agree to release the documents to aide in dispute and claim resolution.	No	Possible	Yes
Federal Financial Plan			x			A comprehensive document that reflects the project's cost estimate and revenue structure and provides a reasonable assurance that there will be sufficient financial resources available to implement and complete the project as planned. Required to be updated annually.	No	Simplified Plan	Detailed Plan Approved by FHWA
Issues, Risk & Complexity	x	x				Issues, risks and/or complex projects may require additional resources to mitigate future potential consequences/impacts.	Low	Medium	High
IT Innovation	x	x				Innovative IT proposals are sometimes considered on a project. Often policy, procedure, specifications, administrative rule, and statutory consideration are involved. Decision making can involve areas outside the Department. IT innovations shall be vetted through the Division IT executive committee (ITEC).	Standard	Standard	Standard
Owner Controlled Insurance Program (OCIP)	x	x				An insurance policy held by WisDOT during construction, which is typically designed to cover virtually all liability and loss arising from the construction project unless specifically excluded. Includes safety management and oversight.	Contact Risk Manager	Contact Risk Manager	Contact Risk Manager
Partnering	x	x					No	Possible	Yes
Pay Plan Quantity	x					Designate items of work in the contract as Pay Plan Quantity (PPQ) that are not measured in the field for payment, but rather paid as identified in the contract. Recommended to be used on quantities that can be estimated accurately, are not expected to vary and are measured linearly or by area.	Possible	Possible	Yes
Peer Review Committee	x	x			x	The evaluation of work by others to ensure that technical processes being applied or developed meet the agency's needs, meet the standards of professional practice, and/or meet federal, state or local planning requirements. Potential for a decision making board to aide in policy and change managment decisions as well as schedule changes across state fiscal years.	Standard	Elevated	High
Program Controls	x	x	x			Documentation, tracking and reporting related to the overall program's schedule, quality, scope, material, and cost issues. Program Controls are generally in-house or a part of prime consultant's contract. Plan reviews should be completed by an independent entity.	Standard	Intermediate	High
Program Design Manual	x			x		The plan developed defining design roles, responsiblities, relationships and decision making processes required to complete the project/program.	No	Possible	Yes
Program Management	x	x	x	x	x	Person or persons responsible for monitoring and oversight of project controls, document controls, financial controls, schedule controls and contract management.	Region	Region + possible extra	Extra dedicated staff
Program/Project Management Plan	x	x	x			FHWA required plan which documents the procedures and processes that manage the scope, costs, schedules, quality, and applicable federal requirements as well as the role of the agency leadership and management team in the delivery of the project. This plan details program design, construction as well as financial management.	No	Possible	Yes
Project Controls	x	x	x	x		Documentation, tracking and reporting related to specific project's schedule, quality, scope, material, and cost issues. Project Controls are generally in-house or a part of a prime consultant's contract. Plan reviews should be completed by an independent entity.	Standard	Intermediate	High
Project Field Office	x	x				A project office need is dictated by the project's size, number of staff involved daily, potential for OCIP, and conference/meeting room space.	Standard Field Office	May have elevated need	WisDOT facility with IT and office furninshings
Projecting Cost to Complete		x	x			Revised project cost to complete estimates taking into account budgeted cost of work performed, budgeted cost of work scheduled, over/underrun quantities, design fees, public outreach, approved contract modifications, and anticipated contract modifications.	Quarterly	Monthly	Monthly
Project Innovation	x	x				Innovative design, construction, and other function proposals are sometimes considered on a project. Often policy, procedure, specifications, administrative rule, and statutory consideration are involved. Consideration and decision making can involve areas outside the Department and follow a process and procedure.	Standard	Standard	Standard
Public Outreach	x	x				The use of multiple and varied strategies to communicate project information to stakeholders, including businesses general public, and local officials, to obtain feedback and to provide information.	Standard	Elevated	High
Quality Assurance	x	x		x		Steps taken to validate quality control, documentation and verification of materials and placement methods.	Region	Region + possible extra	Extra dedicated staff
Reports	x	x	x			1. TPC (All Projects Financed within the Majors Program) 2. Executive Summary 3. Detailed Monthly Report with Appendeces	1. February & August 2. No 3. No	1. February & August 2. Monthly 3. Possible	1. February & August 2. Monthly 3. Monthly
Reserve Budgets	x	x	x		x	Project reserve (contingency) budget to cover costs for unanticipated project costs, changed field conditions, design modifications, and required scope changes.	Standard	Yes	Yes
Scheduling	x	x	x	x		A planning framework for tracking program delivery. Mega projects should require contractor to utilize Critical Path 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.	PMP	PMP or Critical Path Software (Primavera P6)	Critical Path Software (Primavera P6)
Staffing	x	x	x	x		Project or program resource load increases beyond Region staff capacity and additional dedicated staff are needed.	Region and Bureaus	Possible extra	Extra dedicated staff
Track Overrun/Underrun Quantities		x	x	x		Track and record overrun/underrun quantities for use in cost-to-complete estimating. Identifies areas of concern to discuss with contractor.	Possible	Yes	Yes
Traffic Mitigation Plan		x				A plan developed with input from business stakeholders, agencies, institutions and first responders to maximize the safe and efficient movement of traffic through construction zones. Developed as part of TMP.	Standard	Elevated	High
Website	x	x				A project's web presence is dictated by its size. Smaller projects are profiled on the WisDOT website; mega projects typically have significant websites. Projects with websites utilize the 511 web system as a platform.	DOT Plans & Projects	511	511

* Project Types:

Standard: Routine improvement projects that follow normal staffing and management procedures. Individual project characteristic(s) may be unique and at times justify additional resources, management tools and reporting.

High Profile: Projects that are high cost, unusually complex or have a high level of public or congressional interest. Individual project characteristics may justify additional specialized staff and management positions, as well as additional processes and reporting tools to be used. Examples of these types of projects could be significant urban freeway rehabilitation or high cost bridges.

Mega: Projects that meet the federal major project definition. These are typically a small number of the state's highest profile and highest risk projects. A Mega project requires a larger investment of Department staff time, resources and reporting tools to ensure effective management and control of the project.

WISCONSIN DEPARTMENT OF TRANSPORTATION
MEGA PROJECT DELIVERY MANUAL AND GUIDELINES

GENERIC ROLES AND RESPONSIBILITIES FOR MEGA PROJECT MANAGEMENT

Table of Contents

STAFFING ROLES & RESPONSIBILITIES

Project Controls and Finance Management Team

Team Members	Purpose & Responsibilities
Program Controls/Finance Supervisor	Supervise all activities and staff related to the delivery of Program Control and Financial Management of the project. Coordinate with DTIM and OPBF counterparts
Program Management Engineer	Reports to the Program Controls/Finance Supervisor and is responsible for monitoring and oversight of the project controls staff including document controls, financial controls, schedule controls, FIIPS staff and contract management.
Contract Management	Oversee and process all contract materials for delivery of the design and construction of the project.
Cost Control Engineer	Implement and manage cost containment strategies by tracking, managing and reporting program costs to ensure the project components are delivered within the established metrics and thresholds. Provide contract let and non-let expertise and quality control to all cost components of the project.
FIIPS & Audit Coordinator	Manage the department's financial data for each project I.D. associated with the project.

Team Members	Purpose & Responsibilities
Financial/Schedule Controls Engineer	Monitor project cost, project progress, forecasting change and other impacts, developing mitigation strategies, and providing recommendations for optimizing cost savings and performance across the project corridor. Will be responsible for establishing and implementing a corridor wide change management process. Responsibilities also include coordinating cost sharing with the local units of government. Reports to the Change Management Team as required.
Document Control	Manage all documents related to the delivery of the project throughout design and construction. Responsible for issue and risk management tracking.

Public Relations, DBE, and Safety Team

Team Members	Purpose & Responsibilities
Public Information Officer (PIO)	Responsible for all Public Relations on the project and manage how these activities interface with the other region programmed projects. Also is the liaison between the project and WisDOT management.
Public Information Coordinator (PIC)	Responsible for all public information and news releases pertaining to the Mega Project and reports to the Department's Public Information Officer (PIO). Responsibilities include developing strategies, timetables and methods for disseminating information to the public both during design and construction of the corridor. Includes developing and maintaining a project website and social media outlets for real time project information. This position also coordinates with consultants, project managers, project supervisors, and other members of the Mega Project team for detailed information. The PIC handles all public relations and is the sole point of contact through which public information flows.
ERO – Labor Compliance Office	Responsible for tracking labor participation levels for each construction contract as reported by the contractors, and entering the information in the Civil Rights labor Compliance and Tracking Payment System.
Outreach DBE Coordinator	Responsible to provide internal and external DBE coordination with communities and interest groups. Also responsible for tracking, compiling and reporting on DBE goal compliance.

Team Members	Purpose & Responsibilities
Safety Officer	Responsible for monitoring, evaluating and coordinating safety compliance for WisDOT staff, WisDOT's technical and advisor consultants, Project Leaders and their field inspectors, Program Controls Teams, design engineers and official visitors to the project site. Project Leaders are responsible for the safety training and safety of their construction oversight staff, both at the construction site and their offices. All engineers, technicians, construction workers and visitor to the construction site must comply with the Project Safety manual and Safety and Health Program regarding project safety rules and personal protective equipment. This position will also assist the Department in implementing the Owner Controlled Insurance Program (OSIP) when utilized. The Safety Officer monitors the corridor to ensure that contractors provide a safe working environment, separate the work zone from traffic, and take necessary corrective actions to address identified safety concerns.

Design and Construction Team

Overall Project

Team Members	Purpose & Responsibilities
Design Supervisor	Oversees design activities for the overall project. Provides expertise and direction to multiple design project managers.
Construction Supervisor	Oversees the construction activities for the overall project. Provides expertise and direction to multiple segment project managers.
Traffic Operations Supervisor	Oversees all design and construction traffic management related activities.
Project Manager	Manages all aspects of delivery related to design and construction of the entire project. Coordinates the delivery of all segments of the project.
BOS Liaison	Provides expertise related to all structure deliverables. Ensures accountability of the Bureau of Structures (BOS) design deliverables and policy coordination with BOS development section. .
BPD Liaison	This position is the overall liaison between the Mega Project Teams and DTSD Statewide Bureaus, the Federal Highway Administration and other state agencies. As a member of the DTSD's Bureau of Project Development, this position is responsible for ensuring that all Mega projects meet project development design and construction standards. This work involves independently analyzing /evaluating /supporting the various engineering activities involved in the many phases of Mega projects, from development of completed plans, specifications and estimates to the final completion of the construction projects.

Design Review Engineer	Will develop standard roadway and structure details, design methods and contract specifications for corridor wide use. Preparation of a Mega Project Manual for distribution to all corridor designers is required. This role will also review all draft plans and PS&E submittals for consistency and constructability. It is anticipated that the roadway and structure plans will be reviewed at the 30% / 60% /90% stages. DTSD Mega Project Teams throughout the State will communicate and coordinate on Mega Project Manual development, seeking consistentcy between projects.
Team Members	**Purpose & Responsibilities**
Construction Staging/Traffic Management Engineer	Development and/or verification of a corridor wide construction staging and scheduling plan. Responsible to jointly work with the Department in refining and coordinating a corridor wide Transportation Management Plan (TMP) that ties all the proposed construction contracts together. This position also includes coordination with other regions, DTSD Bureaus, local units of government, and local agencies to coordinate feasible mitigation routes and mitigation investments to be used during construction. It is anticipated that quarterly updates will be necessary.

Segment 1

Team Members	Purpose & Responsibilities
Project Manager	Manage all design or construction delivery for assigned portions of the project.
Project Leader	Assist the Project Manager in the delivery of design or construction activities.
Design Team	Staffing necessary to deliver design engineering.
Construction Team	Staffing necessary to deliver construction engineering.

Segment 2

Team Members	Purpose & Responsibilities
Project Manager	Manage all design or construction delivery for assigned portions of the project.
Project Leader	Assist the Project Manager in the delivery of design or construction activities.
Design Team	Staffing necessary to deliver design engineering.
Construction Team	Staffing necessary to deliver construction engineering.

Segment 3

Team Members	Purpose & Responsibilities
Project Manager	Manage all design or construction delivery for assigned portions of the project.
Project Leader	Assist the Project Manager in the delivery of design or construction activities.
Design Team	Staffing necessary to deliver design engineering.
Construction Team	Staffing necessary to deliver construction engineering.

Technical Support Team

Team Members	Purpose & Responsibilities
Traffic/ITS Management Engineer (TME)	Coordinates daily with construction staff that is responsible for overseeing the implementation of the traffic control measures and devices, construction sequence and traffic protection and maintenance plan during construction. The TME is responsible for coordinating implementation and refinements to the Crisis / Incident Communication Plan throughout the program. The TME is responsible for coordinating and providing oversight to traffic control plan implementation, maintenance, and changes through the completion of construction for each assigned contract. The TME is responsible for reviewing and approving any proposed changes to the Traffic Control Plan. The review process includes coordination with WisDOT Statewide Traffic Operation Center (STOC) and other lead agencies participating in the Crisis / Incident Communication Plan. The FHWA reviews the traffic control plans and provides input at the design stage, and also for major changes during construction with recommendations from the construction Project Manager. The TME is responsible for coordinating and approving all traffic control changes prior to implementation. The Region is responsible to enter special events that may impact traffic and are of concern when scheduling closures. The TME will coordinate requests appropriately to accommodate those events. The TME coordinates with the regional operations engineer on other Lane Closure scheduling.

Team Members	Purpose & Responsibilities
Program Environmental Engineer (PENV)	Reports to the project managers and is responsible for providing environmental support. Specific duties of the PENV include the following: • Provide recommendations to the Corridor Team for all environmentally related issues. • Attend all preconstruction meetings. • Review of all Erosion Control Implementation Plans (ECIPs). • Review and coordinate all special requests related to environmental issues. • Conduct regular site visits to each active project to verify consistent application of environmental requirements. • Conduct weekly site visits for all environmentally medium or high-risk projects including any wetland mitigation projects, stream relocations or other sensitive projects. The PENV and Project Leader will combine efforts to report, through the Field Manager reporting system. • Perform regular coordination and liaison with BTS, Wisconsin Department of Natural Resources (WDNR), Army Corps of Engineers (ACOE), Environmental Protection Agency (EPA) and local agencies for all environmental program and policy issues. • Perform periodic reviews of each project including Erosion Control Diaries, Erosion Control Work Orders, verification that all materials conform to the Product Acceptability List (PAL) and installations are consistent with Best Management Practices (BMPs). • Participate in interim and final completion inspections of all projects for temporary and permanent erosion control measures.

Team Members	Purpose & Responsibilities
Intersection Design & Operations Engineer	Coordinates daily with design and construction staff that is responsible for delivery and oversight on design plans and construction projects. Responsible for coordination between all design/construction segment teams for consistency of applications.
Signing/Marking Engineer	Technical expert responsible for ensuring corridor wide consistency in signing and marking. Completes plan reviews for signing, marking and traffic control during construction.
Utility and RR Engineer	Technical expert responsible for coordinating with municipal and private utilities along the corridor. Insures that the requirements of TRANS 220 and the WisDOT Utility Coordination Guide are followed. Coordinates with DTIM, Bureau of Transit and Local Roads as well as railroad companies on railroad issues.
Lighting/Electrical Engineer	Technical expert responsible for insuring corridor wide consistency in signing and marking. Completes plan reviews for lighting during construction.
Corridor Survey Coordinator	Responsible for field data collection for the design teams and property surveys related to preparation of the transportation project plats.
Drainage Engineer	Technical expert responsible for insuring corridor wide consistency in all aspects of storm water management. Establishes and monitors standards for drainage design. Provides expertise for storm water issues that arise during design and construction.

Team Members	Purpose & Responsibilities
Geotechnical/Materials/Pavement Engineer	Coordinate and review FHWA mandated independent verification of the sampling and testing for quality control of materials during construction. Also, oversees and reviews procedures for quality control documentation, verifications of materials, and placement methods to ensure that construction methods follow standardized Quality Management Plans (QMP), Quality Control (QC), and Quality Assurances (QA) processes. Provide coordination and review for project level soils reports and pavement reports for the entire corridor
Structures and Retaining Wall Engineer	Technical expert responsible for ensuring corridor wide consistency related to structures and retaining walls. Also responsible for the schedule of deliverable on structure plans for all structures being delivered by consultant team members on BOS.
Real Estate Lead Worker	The Real Estate Lead Worker is responsible for oversight of the right of way acquisition for the corridor. Typically supervises a team of WisDOT or consultant appraisers, negotiators and relocation specialists.
Right-of-Way Plat Reviewer	Provide consistent and thorough reviews on all the Right of Way plats throughout the project.

Compliance & Coordination

Team Members	Purpose & Responsibilities
FHWA Design Coordination	See pages 21-25

Team Members	Purpose & Responsibilities
FHWA Structures Coordination	See pages 21-25

Team Members	Purpose & Responsibilities
FHWA Construction Coordination	See pages 23-25

Bureau of Structures (BOS)

Team Members	Purpose & Responsibilities
BOS Structure Chief	Coordination related to BOS resource expectations in the delivery and review of structure plans. Coordination related to the department expectations involving the most up to date structures expectations and specifications.
BOS Structure Development Coordination	Coordination from BOS through a designated mega team liaison. Coordination is related to resourcing delivery and review of structure deliverables.

Bureau of Project Development (BPD)

Team Members	Purpose & Responsibilities
BPD Proposal Management Chief	Coordination related to delivery of project lettings to ensure compliance with the department PLP goals.

Team Members	Purpose & Responsibilities
BPD Project Development Coordination	Coordination through the designated BPD liaisons to the mega team. Coordination is related to design and construction deliverables, more specifically conformance with Design and Construction specifications and standards.
BPD Claims & Dispute Resolution	Provide the resource to the team in the event a claim and/or dispute cannot be resolved within mega teams/region structure.
BPD Standards & Specification Chief	Provide the resource to the team for design and construction specifications and details to ensure consistency in application throughout the State of Wisconsin. Also the resource for new and upcoming specifications changes.

Bureau of Technical Services (BTS)

Team Members	Purpose & Responsibilities
BTS Foundation & Pavement	Coordination related to BTS resource expectations in the delivery and review of subsurface exploration. Coordination related to pavement types and the most up to date departmental expectations for soil or pavement specifications.

Bureau of Highway Maintenance (BHM)

Team Members	Purpose & Responsibilities
BHM Operations	Provide the resource to the team for discussions related to maintenance operations issues that may occur during design and construction and require a statewide perspective as well as decisions made during design and construction that carry ongoing operational issues following the completion of construction.

Bureau of Traffic Operations (BTO)

Team Members	Purpose & Responsibilities
BTO State Traffic Engineer	Provide the resource to the team for discussions related to traffic operational issues that may occur during design and construction and require a statewide perspective as well as decisions made during design and construction that carry operational issues following the completion of construction.
BTO System Operations & Electrical Engineering Chief	Provide the resource to the team for discussions and decisions related to electrical engineering and/or electronics such as signal and lighting systems. Also related to the statewide Traffic Operations that include discussions and designs related to consistent application statewide for traveler information decisions/STOC.

Advisory

Non-Let

Team Members	Purpose & Responsibilities
Program Real Estate	Provide the resource to the team from the Region and Bureau's Real Estate personnel related to the Real Estate Policy decisions.
Program Utility and Railroad Coordination	Provide the resource to the team from the Region and Bureau's Utility personnel related to utility policy decisions. Provide the resource to the team from DTIM's Bureau of Transit and Local Roads related to railroad program and policy decisions.

Traffic

Team Members	Purpose & Responsibilities
ITS & Smart Work Zone Engineer	Provide the resource to the team from the Region and Bureau's traffic operations personnel related to policy decisions.
Program Traffic Engineer	Provide the resource to the team from the Region and Bureau's traffic engineering/operations personnel related to policy traffic engineering discussions and decisions.
Lighting & Traffic Signal Engineer	Provide the resource to the team from the Region and Bureau's traffic/lighting/electrical engineering personnel related to policy decisions.
Incident Management Engineer	Provide the resource to the team from the Region and Bureau's traffic management personnel related to management of design and construction traffic operations/TMP.
Traffic Engineering Supervisor	Provide the resource to the team from the Region and Bureau's traffic engineering personnel related to the policy decisions.

Pavement & Geotechnical

Team Members	Purpose & Responsibilities
Geotechnical Engineer	Provide the resource to the team from the Region and Bureau's Geotechnical personnel related to technical, resourcing, or policy decisions.
Pavement Engineer	Provide the resource to the team from the Region and Bureau's Pavement personnel related to technical or policy decisions.

Environment

Team Members	Purpose & Responsibilities
Environmental & Erosion Control	Provide the resource to the team from the Region and Bureau's stormwater and Erosion control personnel related to the policy decisions.
Environmental Coordinator	Provide additional resource to the team from the Region and Bureau's Environmental community/personnel related to State and Federal agency coordination and policy decisions.

Tribal Relations

Team Members	Purpose & Responsibilities
Regional Tribal Liaison	Provide the resources to the team from the Region and Bureau's Tribal personnel related to policy decisions.

Survey

Team Members	Purpose & Responsibilities
Survey	Provide the resources to the team from the Region and Bureau's

	Survey personnel related to policy decisions.

Planning

Team Members	Purpose & Responsibilities
Multi-Modal	Provide the resources to the team from the Region and Bureau's planning Multi-Modal personnel related to policy decisions for rail, bike and pedestrian issues.

DTIM DIRECTORS

DTIM State Highway Programs	Provide the resource to the team from the DTIM- State Highway Programs personnel related to any fiscal and program schedule issues that could adversely affect the management of State Highway Programs.

Majors Project Committee	Provide the resources to the team from the Region and statewide Majors Committee representatives regarding policy decisions and change management decisions (Fiscal Budge change) and schedule changes across SFY's.

FHWA Oversight & Stewardship

FHWA's Wisconsin Division provides oversight and stewardship of WisDOT in the development of the Project. By law, the FHWA is responsible for ensuring compliance with federal requirements in the delivery of a federal highway program. This responsibility is achieved through oversight and stewardship.

> *Oversight: the act of ensuring that the federal highway program is delivered consistent with the federal laws, regulations and policies.*

FHWA oversight monitors compliance and verifies that the implementation of federal highway programs is done in accordance with applicable laws, regulations and policies. The FHWA oversight and independent verification activities are similar to the quality assurance portion of quality control / quality assurance program prevalent in many construction and materials programs. In addition to construction, federal oversight includes planning, right-of-way and finance.

> *Stewardship: efficient and effective management of the public funds that have been entrusted to the FHWA.*

Stewardship reflects FHWA's responsibility for the development and implementation of federal highway programs. It involves all FHWA activities in delivering the Federal highway program; leadership, technology deployment, technical assistance, problem solving, program administration and oversight. The FHWA has criteria that identifies project that will require a heightened level of oversight due to the complex project and financial management needed for a successful completion. The Proposal Management Matrix identifies FHWA oversight of individual construction projects. The FHWA will perform the following key activities to ensure its oversight responsibilities:

Federal Interface Management	Coordinate between WisDOT and other federal agencies on controversial issues Provide guidance and assistance in assuring federal requirements are adequately addressed during project development

Financial Management Technical Assistance	○ Assist in developing the Project's initial Financial Plan and annual updates ○ Conduct an independent review of the program baseline cost estimate during the NEPA process and conduct an independent review of the updated estimate just prior to construction during the final design stage ○ Participate in Project meetings ○ Monitor and provide input to cost and schedule control and contract modifications

Program Management Technical Assistance	○ Assist in developing the Project Management Plan (consists of the Design Project Management Plan, Construction Management Plan and others) and the Scope & Budget Document ○ Provide technical assistance and guidance to WisDOT in assuring that contract administration, constructability, cost, bid ability, value engineering, construction, methods and materials, congestion mitigation, community sensitive design and future maintenance are all considered in the development of the project

Design	○ Participate as a 3rd party reviewer on the scope of design contracts and design contract amendment proposals ○ Provide technical assistance and guidance to WisDOT in the development of preliminary and final roadway and bridge plans ○ Provide required project approvals (PS&E, PIFs, TMPs, etc.) in accordance with the Stewardship/Oversight Agreement

Quality Control	○ Coordinate reviews and audits between WisDOT, FHWA and other Federal agencies ○ Conduct construction project inspections and process improvement reviews ○ Assist Project managers in the final inspection of completed contracts

Innovation	Work with WisDOT to provide information on innovative technologies, materials and technical training opportunities

Outreach	Provide technical assistance and guidance to WisDOT in developing a DBE program for the program's construction activities that produces an acceptable level of women and minority-owned business participation in the construction contracts

Civil Rights – approves the annual DBE plan and is the initial contact for coordination with the Office of Federal Contract Compliance Programs, United States Department of Labor, WisDOT Equal Employment Opportunities and FHWA DBE Program Offices.

FHWA Approval Actions

The FHWA Division Administrator is delegated authority and responsibility for all approvals to implement the project, except for approval of system to system modifications of Interstate access and the approval of type, size and location for unusual and unique structures. While the Division Administrator approves the Financial Plan and accepts the Project Management Plan, prior concurrence is required from FHWA Headquarters Innovative Program Delivery Office's Project Delivery Team.

When FHWA deems a project a Federal Major Project, FHWA has additional approval actions that supplement those required for regular FHWA-oversight projects. These additional actions include approving the Financial Plan, Project Management Plan, annual updates to the Financial Plan and Project Management Plan, all consultant design, construction and program management contracts, and any subsequesnt contract amendments. FHWA approval actions are found in the Stewardship/Oversight Agreement between the FHWA Division Office and WisDOT (FDM procedure 5-5-15).

Management Systems for Mega Projects
June 5, 2012

Federal Level Management and Reporting
FHWA has developed guidance and reporting requirements for states managing a Federal Major project.

According to section 1904(a) of SAFETEA-LU, projects receiving federal financial assistance that have an estimated total cost of $500,000,000 or more shall have:

- A Project Management Plan
  - A project management plan shall document the procedures and processes that manage the scope, costs, schedules, quality and applicable federal requirements
- An Annual Financial Plan
  - A financial plan shall be based on detailed estimates of the cost to complete the project and assumptions of future increases in the cost to complete the project

A simplified federal financial plan is required for projects receiving federal financial assistance that have an estimated total cost of $100,000,000 to $500,000,000.

An additional, more detailed federal guidance outline can be found at: http://www.fhwa.dot.gov/ipd/project_delivery/

Department Level Management and Reporting
Projects that meet the definition of a Federal Major Project report on a monthly basis to the Department's Oversight Team. Other High Profile projects that utilize some of the Mega Project reporting and management tools may also report out at the Oversight Meeting.

This Department-level meeting provides an opportunity for all parts of the organization that play a role in Mega and identified High Profile Projects to share information on budget, schedule, work completed and planned, significant issues and risks, public involvement and legislative communication and coordination, and disadvantaged business enterprise and labor initiatives. These meetings provide an opportunity to discuss potential disputes, politic al issues, public concerns and other potentially sensitive issues. This format is a significant tool to effectively, efficiently and consistently manage these projects.

Managing mega and other high profile projects, as defined, means that the modal divisions (DTSD and DTIM), OPFB and FHWA need to work in collaboration from initial project identification through the completion of construction, and the close-out of the project's finances.

A typical agenda and monthly executive level report have been developed to assist the Oversight Team with fulfilling its mission.

The Department's Oversight Team is made up of:

Chairperson:	Secretary
Meeting Facilitator:	Deputy Administrator – Division of Transportation Systems Development
Members:	Deputy Secretary, Executive Assistant, DTSD Administrator, DTSD Deputy Administrators, DTIM Administrator, OPBF Director, FHWA Administrator, Region Directors and Deputy Directors with Mega projects or other significant projects.
Typical Attendees:	Oversight Members, Mega Project Chiefs, Bureau Director DTIM BHSP
Projects Included:	Federal Major or Mega Projects and other high profile projects or programs that warrant a higher level of department level discussion.

Meeting Frequency: The meetings are generally held the first Friday of each month from 9-11a.m. Meetings are held in Madison at Hill Farms, in the Secretary's office.

Typical Agenda & Reports: Executive level reports and meeting materials are generally submitted to the Oversight Team the Friday prior to the meeting. The agenda and handouts are submitted by the Division Administrator's office or their designee (current SE Region Director). See Attachment.

Division Mega and Major Projects Team

A monthly meeting of Region Directors, Bureau Directors, Administrator's Office, Mega and Major Project Development Chiefs, DTIM BSHP and BTLR Directors, and FHWA.

The meeting is typically 90 minutes in length, is held the 4th Wednesday of the Month from 3-4:30 PM.

Meeting Format:

- Hosted and Facilitated by the Bureau of Project Development. Utilize Van Walling and Gary Whited (as necessary) to facilitate meetings
- Utilizes Division Mega, Major, and High Profile Project PMP Schedule focusing typically on a 30 day and 90 day look ahead
- Has a set agenda, meeting minutes, and utilizes an Issue and Risk Management table
- BPD staffs preparation for the meeting, the meeting, and follow-up actions to the meeting. We expect to utilize UW – CMSC for supporting staff
- Ensures responsible parties are identified for action and decisions are made
- Ensures appropriate topics are shared and addressed at Oversight Committee meetings

Meeting Purpose:

- Identify and resolve project issues and risks that have significant impacts on schedule and resourcing
- Identify and resolve schedule issues and priorities
- Identify and resolve resource issues and priorities
- Identify, discuss, and assign high level policy decisions
- For use in building relationships, understanding mutual issues and concerns, trust, and acceptable resolution of issues between bureaus and regions
- Communication Areas
    - Identify, discuss, and share best practices and successful project components between regions, bureaus, and project teams
    - Identify areas for collaboration
    - Share examples of successful issue resolution at the director-to-director level or below
    - Discuss consistent messaging on division Mega / Major project schedules, budgets, quality, and safe product use
    - Technology transfer

Example Issues for Meeting.

- Environmental Document coordination issues
- Significant Policy Issues
- Maintenance considerations
- Resolution of a significant TMP issue on a corridor. Keeping more lanes open vs. use of more extensive mitigation investment.
- Identify, discuss, and assign, consultant solicitation, selection, negotiation, and management issues

Example Issues for Project Team and Lower Level:

- Structure Selection

- TOIP implementation
- Routine Design and geometric issues
- Pavement selection
- Real Estate and Utility issues
- DBE / Labor / Small Business initiatives

Note: At times routine issues can be determined to have significant impact to the division and department and should be elevated to the monthly meeting.

Ground Rules:

1. All seek to meet project and program schedules
2. All seek to adhere to existing policies and standards
3. Assign and empower decisions at the lowest appropriate level
4. Support decisions made at the chief, supervisor, staff, and project team level
5. This is not the forum to make specific project decisions
6. Come prepared and on – time for the meetings. Give advanced notice of absence
7. We are not backing up on already resolved issues
8. Respect one another. There are no bad ideas
9. Mega Guidelines dispute resolution process is utilized

Region, Bureau, and Team Management and Reporting

Extensive planning and organization on an ongoing basis is required to meet the needs for delivering the Mega Project and the Department Oversight Team and to fulfill FHWA requirements.

A team working on a Mega Project will typically have multiple daily or weekly meetings focused on immediate project needs along with issues and risks.

The project team should hold a Change Management and Progress Meeting on a bi-weekly to monthly basis**.** FHWA, DTSD Bureaus, DTIM, and OPBF should be represented at these meetings when and where appropriate. Topics covered at the meeting should cover components required in the Department's Project Management Plan.

The **Project Management Plan** is comprised of the following topics:

1. Project descriptions and scope of work
2. Goals and objectives
3. Project organizational chart, roles and responsibilities
4. Project phases
5. Procurement and contract management
6. Cost budget and schedule
7. Reports – *see list below*
    - I-94 NS Executive Summary
    - I-39 Executive Summary
    - Tri County Executive Summary
    - I-794 Hoan Executive Summary
    - US-18 Verona Road Executive Summary
    - US-41 Executive Summary
    - Zoo Interchange Executive Summary
    - Zoo Interchange Monthly Report
    - US-41 Monthly Report
    - I-94 NS Monthly Report
8. Internal and stakeholder communications
9. Project and program management controls – *see list below*
10. Design quality assurance/quality control
11. Construction quality assurance/quality control
12. Environmental monitoring
13. Right of way

14. Safety and security
15. Traffic management
16. Communications/public information
17. DBE Program
18. Title VI Management and Reporting
19. Closeout plan
20. Project documentation

Reports that the Project Team should utilize include:

A. Executive summary development for Oversight Committee
B. Activities and deliverables
C. Issues/action items
D. Schedule
E. Cost
F. Quality
G. Other status reports, such as DBE/minority participation and contractor safety

Project and Program Management Controls the project team should utilize include:

A. Risk management plan
B. Scope management plan
C. Scheduling software
D. Cost tracking software
E. Project metrics
F. Contracting strategies (new and innovative)
G. Value engineering, value analysis, constructability reviews
H. Contractor outreach meetings
I. Partnering
J. Change order/extra work order procedures
K. Claims management procedure
L. Other programs, such as Owner Controlled Insurance Programs (OCIP)

Many of these tools and practices are defined in more detail in the section on Mega Project Best Practices and on the FHWA website.

DBE and Small Business Responsibilities, Management, and Reporting

The Department has federal and state responsibilities on all of its improvement program projects to fulfill Disadvantaged Business Enterprise (DBE) and Small Business Enterprise responsibilities. The Office of Business Opportunity & Equity Compliance (OBOEC) in DTSD oversees and manages these responsibilities for the Department.

For all types of projects, but particularly High Profile and Mega projects, the staff involved are encouraged to become more aware and participate in DBE and Small Business efforts.

Selected High Profile and Mega projects may have project specific activities that for some or all of these areas.

OBOEC carries out a number of ongoing responsibilities for the department that cover all programs. These include:

Inclusive DBE Goal Setting Technique:

Utilize the industry stakeholders participating in the business committee to seek input on DBE goals that balance supply, demand, and community expectations with project needs. Analysis team and technical subcommittee, use project engineer data to analyze and estimate realistic opportunity for DBE participation. This is done through the Department's Transportation Advisory Committee (TRANS-AC), and the Department's Transportation Consultant Advisory Committee (TRANS-CAC). Individual goal setting is sometimes done on high profile and mega projects.

DBE Firm Pre-Assessment:

The DBE office offers DBE firms the opportunity for 'Early Intervention Assessment' to identify potential problem areas and customize training and resources in advance of contracting opportunity. Participation is not mandatory but recommended.

Encouraging Formalized Partnering Relationships:

This is often done through the TRANS-AC and TRANS-CAC groups but can also be done at the individual mega project level.

- **Mentoring Connections Arrangements**: 6-month informal networking relationship, participation is monitored but no DBE credit granted.
- **Mentor Protégé Agreement**: a formal document outlining the agreement between the mentor (prime contractor) and protégé (a DBE subcontractor) to develop DBE firm capacity. The agreement is submitted to Wisconsin Department of Transportation (WisDOT) for approval for predetermined DBE goal attainment. Usually 3 years in duration.
- **Joint Venture Agreements**: a formal, legally-binding agreement, between firms creating a venture desiring to compete on a single project for its duration. Agreement requires an LLC designation, clarification of responsibility, liability, and staff on the advice/review of legal counsel. DBE credit is assigned based on work performed by DBE certified firm and reaffirmed before project is awarded.

Bullseye Marketing Strategy:

Bullseye Marketing strategies are utilized informally when and as the opportunities are identified.

(1) Mail/email contract information to list of firms pre-advertisement outlining when and where to find opportunity
(2) Mail/email project information, resources once advertised; advise where to find plans
(3) Distribute list of potential primes (plan holders list) to DBE firms for solicitation

Strategies for Supplemental DBE Contracting Opportunities

Contract Unbundling

Design and/or project team breaks projects down to smallest pieces possible identified as "separate project IDs", assesses level of risk (low, medium, high) associated with maintaining small size referred to as "unbundled" to right size the contract package to stimulate business opportunity for both nontraditional and traditional participants in road construction contracting.

Creating Stand-Alone Projects:

a. Contract packages unbundled because the work areas have a significant pool of ready, willing and able firms for competition. These unbundled packages are let separately to stimulate opportunity for smaller, nontraditional businesses to compete as prime contractors. Goal is to create new, small business primes
b. Previously identified contracts: landscaping, fencing, advanced traffic control, security, raze & removal

Creating Mandatory Subcontracts:

Work items in a contract are identified as mandatory subcontract items based on the size of the contract, specialty work areas that WisDOT traditionally utilizes, and a significant pool of firms exist to compete for the work. Goal is to increase WisDOT competition and firm capacity as subcontracting.

Outreach to lateral certifying agencies:

Examine other agencies that certify minority, female, or small businesses for potential WisDOT DBE Firm Certification. Review contractor lists for firms that perform WisDOT work to encourage them to apply for DBE Certification. Conduct certification workshops for interested firms

Project related meetings include structured networking for prime and subcontractors:

This is done at various conferences and at project meetings as, where, and when appropriate (ex. Pre-Bid meetings, or consultant solicitation meetings.

- *Speed Networking:* a timed, facilitated, rotational exercise that allows DBE firms 'face time' with numerous primes in a single setting. DBE firms market themselves while primes clarify subcontracting needs. The goal is to

network, educate, and personalize DBE firms (and program). Anticipated result is a follow-up meeting that leads to a subcontract or partnership.

- *Mosaic Exercise:* facilitated, small group discussion including Prime, DOT, community, DBE and labor stakeholders to brainstorm responses to predetermined questions to generate strategies for inclusion and best practices.

DBE Contracting Update:

- Email newsletter to keep the community informed about upcoming project opportunities
- Maintain tallies of DBE participation and labor participation for review and accountability.

DBE Certification workshops and individual assistance:

Explains certification requirements and process to potential DBE firms and provides referral to DBE resources that can assist or support potential DBE firms with the application submittal.

Expedited DBE certification:

Firms who identify themselves as seeking DBE certification to compete on WisDOT mega projects will be prioritized for certification review. The standard 3-month processing time is cut to 6 weeks and certification staff will confirm that firms are in process if prime inquires.

Civil Rights and Compliance Tracking System (CRCS):

- WisDOT DBE staff hosts contractor training for the Certified Electronic Payroll portion of CRCS. They learn about entering payments to first tier subcontractors and all DBE firms.
- System allows subcontractors to confirm receipt of payments to and from the prime.
- Contractors enter certified electronic payrolls into the system documenting and tracking employees' hours, wages and demographics, giving WisDOT just-in-time labor participation data.

Development & Inclusion of Contract Specifications:

- **DBE condition of award:** WisDOT requires prime contractors to submit their DBE percentage when they submit their bid. When recognized as low bid, the prime contractor has 48 hours to submit their DBE commitment before the contract is awarded.
- **Additional Special Provisions (ASP) 1:** The prime contractor receives a $5.00 payment per hour for every TrANS graduate hired for up to two years from their hiring date and for TrANS graduates who become apprentices for their entire length of their apprenticeship.
- **Contractors must use the Civil Rights and Compliance Tracking System (CRCS)** to submit electronic certified payrolls and payments to first tier and all DBE Subcontractors (ASP 7).

Training Workshops:

- DBE Certification: Inform prospective contractors how to qualify for DBE status.
- WisDOT bidding process: Highway Construction Contract Information Site (HCCI), which helps navigate contractors and DBE firms through the project advertisement and award.
- How to bid & quote as a Subcontractor and/ Prime:
    - Contractor's perspective: describes what they look for when receiving bid or quotes.
    - WisDOT perspective: how to bid DOT projects.
- Civil Rights and Compliance Tracking System (CRCS): Describes/explains to contractors how to enter their payrolls and payments for 1st tier subcontractors and all DBE.
- Trucking guidelines (federal & state): Explains to trucking firms which laws apply for DBE trucking credit.
- DBE bonding workshops: Educates DBE firms in bonding requirements and issues.
- Certified Electronic Payroll Training: Provides instruction on requirements and use of electronic payrolls

The Division continually evaluates the need for and opportunities for providing training.

Title VI Responsibilities Management and Reporting

General Responsibilities

The Wisconsin Department of Transportation (WisDOT) has federal Title VI obligations on mega projects, major projects, and high-profile projects. To assure Title VI compliance throughout the various stages of each individual federally-funded and state-funded project, WisDOT in partnership with the Federal Highway Administration (FHWA) has organized a Title VI Program with service under the following definitions:

Title VI is a touchstone for several Nondiscrimination Authorities. It is not restricted to any specific issue or any particular program. Title VI issues may emerge at any stage of a Project with potentially far-reaching consequences. Title VI assures that no person in the United States shall on the grounds of race, color, disability or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

Limited English Proficiency (LEP) is an issue that falls under National Origin of Title VI. An LEP person is defined as a person who does not speak English as a primary language and has limited ability to read, write or understand English. Failure to provide LEP persons services or meaningful access may constitute national origin discrimination.

The Americans with Disabilities Act (ADA) provides that persons with bona fide disabilities be provided with meaningful access to program services and information, and/or be provided with reasonable accommodations that they may obtain equal benefits and privileges of those who are able.

Environmental Justice provides for continuous monitoring of social, economic, and environmental impacts on minority and low-income communities. It enhances efforts to assure nondiscrimination in federal programs affecting human health and the environment, and promotes meaningful opportunities for access to public information, and for public participation in matters relating to minority and low-income communities and their environment.

Title VI in the Planning Process

Public involvement is required at the Planning Stage to forestall future problems. Public involvement should be performance-oriented and not process-oriented, communication must always be a two-way street. It is very important that public concerns and views are considered in decision-making. All plans must be tailored to fit local conditions and ensure involvement of the transportation disadvantaged. An effective public involvement and participation program may contain the following issues:

- Recognition of specific and prominent community issues and circumstances
- Availability of mechanisms for eliciting and soliciting minority involvement
- Availability of and accessibility to information for all impacted minority and low-income communities
- Multiple mechanisms for involving the public
- Openness and complete accessibility to process
- Coordination with Indian Tribal Governments
- Off-setting impacts across investments

Special, Economic and Environmental Effects (SEE)

This phase continues where project planning ends. Consideration of alternatives and examination of social, economic, and environmental effects preclude that a project analysis team perform an analysis, the degree to which is open and collaborative, based on potential impacts, and influences decisions in the public interest. Factors of SEE include:

- It is not an environmental document
- It may determine that the project will have no significant individual or cumulative SEE impacts
- It can impact decisions on location and design
- Decision documents include CE, FONSI, and the ROD

Title VI and Project Development

The data-gathering process in the Project Development Phase is critical. Were the appropriate number of public hearings conducted? Were they held as open forums? Were there adequate identification of social, economic, and environmental impacts? Was consideration given to increase access to facilities and services, upgrading affected communities or creating positive change in the tax base and property values?

Adverse impact in the Project Development Phase involves diminished access to facilities and services, disruptions of community cohesion, disruptions of people, businesses and farms. There should be at this stage budgeting for equitable mitigation. Examples of mitigation include:

- Restoration of circulation and pedestrian and pedestrian patterns
- Relocation assistance and advisory services, replacement housing and moving payments for displaced families and businesses
- Aesthetic and visual improvements
- Traffic signalization and street lighting improvements
- Employment, training, and contracting opportunities
- Noise barriers and buffer zones
- Landscaping

Title VI and Right-of-Way

Title VI aspects of Right-of-Way involve appraisal reviews, negotiations, and acquisitions. It also involves nondiscrimination in such aspects as relocation assistance and payments and property management. Appraisals provide a basis for payment on estimates of fair market value. Negotiations may be highly sensitive and must take into consideration all fair market conditions. Acquisition of properties through fair negotiations requires agencies to make full amount offers on amounts believed to be just compensation. Coercion is strictly prohibited. Relocation and assistance payments require written agreements and notices including full disclosure of agency policies, provision of agency services, and appropriate notice timelines. Property management involves property leased or rented acquired for highway purposes and careful and judicious selection of management firms and demolition contractors. Common Title Vi issues in Right-of-Way include:

- Use of Fee Appraisers
- Selection of Comparables
- Adjustments to subjects without bias
- Accelerated or advanced condemnation
- Offer of less than approved appraisal amount
- Degree of relocation services provided
- Selection of replacement housing
- Determination of rent amounts
- Maintenance of rental property

Title VI and Construction

Construction and Title VI issues cover the broad spectrum from plan preparation, specifications, and estimates to final inspection and acceptance. The agency advertises for bids and then awards contracts to the lowest bidder. After sub-contract approvals, the work begins and under Title VI, there are multiple issues that involve implementation of the DBE Program, monitoring of work, and the implementation of mitigation measures. Title VI issues in Construction include:

- Safety through construction zones
- Noise and air impacts
- Employment and contracting goals
- Prequalification, bonding, licensing requirements

- Approval of subcontracts
- Approval of plan changes and supplemental agreements
- Suspension or termination of contracts
- Withholding payments of de-certification

Budget Estimation and Management for Mega Projects
May 17, 2012

Financial Management Plans and Estimate Development for Major Projects Program and FHWA

The Departments Mega projects shall be managed as part of the Major Program and Major Projects Peer Review process.

Projects that are defined as federal major / mega projects by FHWA require development and annual updates of a financial management plan.

All Department mega projects will complete the FHWA – approved Risk Assessment for Mega Projects. Projects in the Majors program completed a risk assessment ahead of enumeration for design and construction, as well as just prior to construction during the final design phase. A Major or stand-alone mega (ex. I-94 N-S and Zoo Interchange) project that is defined as a Mega project will complete the FHWA – approved risk assessment.

FHWA requires that a build-out (or not to exceed) budget be developed and that the agency be able to demonstrate that it has the financial ability to build the project to completion.

Estimate development also involves a level of certainty or amount of accepted risk associated with delivering a Mega project to its completion.

In Wisconsin the Department has adopted a policy of using a 70% level of certainty (Monte Carlo level of confidence) in developing cost estimates for Major program and Mega projects.

Project estimates are developed and estimated at the 30% completion point of the project, and at the time of the environmental document submittal. Thereafter, the project estimate is reviewed and updated twice per year (generally February and August), or as requested by the Department's Change Management Team.

Budget Development for Mega and Major Projects

When a new Mega or Major project is approved for environmental study by the Transportation Projects Commission (TPC) or through legislative action, a complete environmental study is carried out.

Prior to starting the environmental process for the planning study the project is put through a scoping process where initial needs, challenges, alternatives, and schedules are developed. This scoping effort forms the beginning of what will become the chosen alternative, which includes a project estimate.

A Major project, Mega or non-Mega Project, does not have approval to proceed to final design, non-let process, and project lettings until it has been enumerated for construction by the Governor and Legislature. This happens after the environmental study has been completed and a selected alternative has been identified. The project estimate is finalized simultaneously with the completion of the environmental document.

Alternative development, refinement, scope refinement, and estimate development are to utilize the typical project development process, recognizing that for Mega and High Priority projects this means providing updates and seeking input from the Division and Department levels. Mega Projects and some High Profile projects will often utilize the Secretary's Oversight Committee as a forum to share information and seek input.

Once a project has been enumerated by the Transportation Projects Commission (TPC) or identified in the Biennial Budget, the Mega Project budget and change management efforts will be monitored and overseen by the Major Projects Peer Review Team. The I-94 N-S project, Zoo Interchange project, Hoan Bridge project, and St. Croix Crossing Project all have budgets established outside of the TPC process. As long as these projects are kept within total project estimates, the Major Projects Peer Review Committee will be utilized as a knowledge sharing forum vs. a decision making forum.

The Change Management process is further defined in the Change Management for Mega Projects section.

Budget Estimation

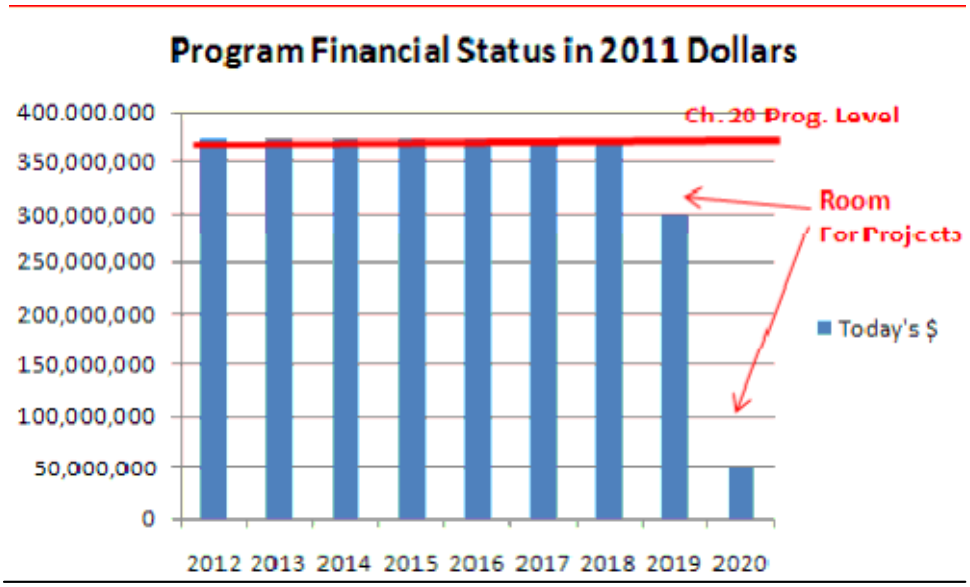
For Federal Major / Mega projects the Department has adopted the longstanding practice used for program development and management utilized for its other programs.

Estimates and costs for all Mega Projects, excluding the I-94 N-S Corridor and the Zoo Interchange are developed, programmed, and managed using current year dollars.

This practice:

- Ensures all current or new mega projects needs and projects are management consistently statewide. Please note that this excludes the SE Region's mega projects already underway (I-94 N-S and Zoo Interchange).
- Facilitates meeting statutory requirements for a financing proposal that demonstrates sufficient funding to start construction of all projects within 6 years.

The figure below demonstrates the likely need to begin new Major Project construction beginning as soon as 2019.



Example 1 (Program Financial Status in 2011 Dollars): Source November 2011 TPC meeting

The Department will continue to use the build-out budget to manage the program for the SE Region's current Mega Projects -- the I-94 N-S Corridor and Zoo Interchange.

All future Mega Projects, including those in Southeastern Wisconsin, will be estimated, programmed, and managed using current year dollar estimating.

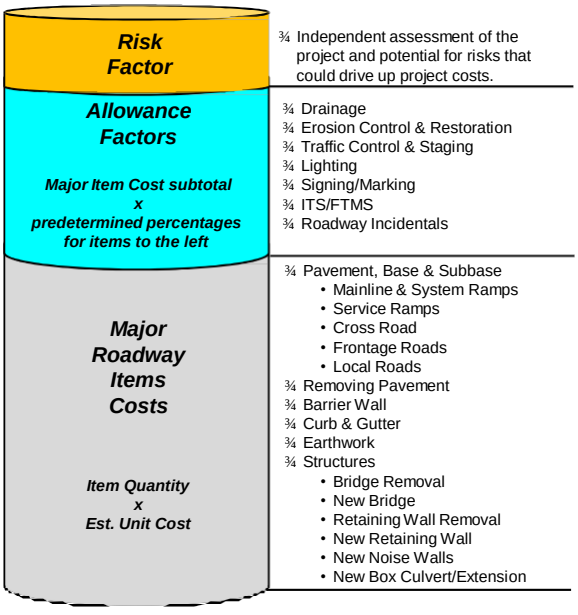
Cost Estimating Tools

It is recognized that project estimates will develop and evolve as a project goes through the environmental phase of the project, and proceeds to final design. It is expected that at the time a Mega Project reaches the completion of the environmental document preferred alternative stage that a final project estimate is in place. If the project is within the Statewide Majors program the estimate will be used as part of the presentation to the TPC. The TPC takes action on enumeration of the project through the construction phase. For projects in the SE Freeway Mega Project appropriation the estimate will be utilized for biennial budget issue paper development.

Projects submitted for TPC action or biennial budget issue paper development are typically at the 30% level of development. Estimates will be developed with a 70% level of certainty.

The department currently has estimating tools used for the Major Projects program. This includes a database, worksheets, establishment of project contingency, and other project allowances established Project teams will utilize cost estimating tools developed and in place for current mega projects and the major projects program. Allowance factors for contingency development are started on a historical basis that then considers specific project issues and risks. A conceptual overview of the cost estimation process is included below;

Cost Estimating Tool – Conceptual Overview



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Example spreadsheets for functional plan and preliminary plan estimates are provided here:

http://roadwaystandards.dot.wi.gov/standards/mega/hidden/dtsd-prelim-estimate-template.xlsx
http://roadwaystandards.dot.wi.gov/standards/mega/hidden/dtsd-zoo-func-estimate-template.xlsx

Budgeting – Community Issues

The input of a Title VI component into the budget process can serve to further validate initiatives of the project with our other government and community partners as well as save much time by getting a head start on solving critical issues. This process should begin with a Title VI investigation stage which is geared towards outreach and the gathering of information from the following:

1. Environmental Justice Reports
2. Public Hearings
3. Surveys

Step One: Should yield data on Title VI issues of the community including Environmental Justice, Americans with Disabilities Act, and Limited English Proficiency (EJ, ADA, LEP) issues.

Step Two: Develop issues and consider public input into the project and also the budgetary impacts of those public issues.

Step Three: Develop critical impact issues.

Step Four: Ascertain non-critical issues that have a positive impact on the Department.

Step Five: Build into the budget those aspects to be mitigated and Step 2 includes documenting in the budget how the outreach activities change the budget management aspects of the project and then develop data report to show projected additions and changes.

Step Six: Communicate/articulate the results of the Title VI 3-Step Process in the 30% review meeting.

Change Management for Mega Projects
May 17, 2012

All Department Mega project budgets shall be managed within the project estimate developed within the section: Budget Estimation and Management for Mega Projects. This process includes development of and adherence to a project contingency.

Department Divisions DTSD and DTIM have a variety of ways to manage change in its improvement projects and programs. These methods vary from project level, business area, region level, division and cross division.

For management purposes the Department has chosen to manage all mega projects as if they were in the Major Projects Program. As such, Project Teams and Regions with Mega Projects will participate in the Major Projects Peer Review Team processes. The DTSD Administrator may assign additional High Profile projects to the committee as well.

Projects that are defined by FHWA as federal major projects or "Mega Projects" can be funded in managed in different programs. Examples include:

- Southeastern Wisconsin Freeway Mega projects such as the Marquette Interchange, I-94 North – South corridor, and the Zoo Interchange.
- Major Program Mega projects such as USH 41 and I-39/90
- High Cost Bridge Program Mega projects. Examples could include multi-state bridge river crossings.

The I-94 N-S project, Zoo Interchange project, I-794 / Hoan Bridge Project, and St. Croix Crossing project all have budgets established outside of the Major Highway Appropriation. As long as these projects are kept within total project estimates, the Major Projects Peer Review Committee will be utilized as a knowledge sharing forum vs. a decision making forum.

Change Management for Mega, Major, and High Profile projects shall utilize the change management process outlined in this section.

Change Management Summary Tables

Project Concept through Environmental Document completion.

Level of Decision	Scope Additions and Deletions
DTIM / DTSD Administrators and Monthly Program Team	Quarterly Updates
Major Projects Peer Review Team	Quarterly Updates
Region	Quarterly Updates

The Major Projects Peer Review Committee shall review all Major projects, future SE Freeway reconstruction appropriation Mega projects, and DTSD Administrator assigned high profile projects.

An initial project scope and estimate is developed at the time of concept definition, when a project is considered for study as part of the Major Highways Program or when a new SE Project Mega Project is identified for the biennial budget process.

At this time a design budget and initial project construction estimate (often on a per mile basis) is developed.

Alternatives for study during the environmental phase shall receive concurrence at the region level and division administrator level. Some projects may require concurrence at the Oversight Committee level as well. If work is anticipated on off corridor routes (ex. Parallel routes or mitigation on off corridor routes), these should be identified when alternatives are defined.

Alternative refinement and the addition of new alternatives shall receive the similar concurrence at the region and division administrator level.

During the development and refinement process, bureaus and other divisions will be involved and coordinated with.

The preferred alternative shall reflect the department's choice and meet all of the NEPA / WEPA requirements.

Post Environmental Document (Enumerated/Approved for Construction)

Design, Utilities, Railroads, and Real Estate through Project Letting

Major Highway Mega Projects, future SE Freeway Appropriated Mega Projects, and DTSD Administrator assigned High Profile Projects	
Major Projects Peer Review Committee*	Scope Changes and cost increases > $ 500k **
Region	Scope Changes and cost increases > $ 500k
Project	Cost increases, excluding scope changes < $500K
*BSHP Director will elevate issues to DTIM and DTSD Administrators on an as-needed basis	
**The investigation of project scope changes that would increase project cost more than $5M must receive Major Peer Review Committee approval prior to proceeding with the investigation or study of the possible change	

For I-94 N-S, Zoo IC, I-794 / Hoan Bridge, and St. Croix Crossing, the % of Project Reserve	
DTIM / DTSD Administrators	Issues from Oversight Team or > Total Estimated Cost.
Major Projects Peer Review Committee	Cost increases and scope additions shared for knowledge transfer and information purposes
Region	50-100% of Project Reserves
Project	< 50% of Project Reserves

Note: The project team shall be sharing updates on the use and status of project reserves at the Region, Major Projects Peer Review Committee, and Oversight Committee.

Examples of scope changes could include:

Major Projects Peer Review Team and/or Administrator's Monthly Program Meeting

- Addition of a new interchange
- Resurfacing a local route (ex. STH or Local Road outside chosen alternative from environmental document)
- Significant and sensitive local project issues.
- Industry trends
- Standards changes
- Estimate revisions

Region Level:

- Issues above
- TOIP improvements outside chosen alternative from environmental document.
- Consideration and Preparation of issues for Major Projects Peer Review Committee and monthly program meeting.
- Development Issues within and/or adjacent to the project.

Post project letting through final project close-out.

The Major Projects Peer Review Committee shall review all Major projects, future SE Freeway Reconstruction Appropriation Mega projects, and DTSD Administrator assigned High Profile Projects.

Level of Decision	% of Annual Project Change Order Budget ***	For I-94 N-S, Zoo IC. I-794 / Hoan Bridge, and St. Croix Crossing, the % of Project Reserve
DTIM / DTSD Administrators and Monthly Program Team	Issues elevated from Major Projects Review Team, DTSD Director's Sub-Team, or assigned from Oversight Team.	Issues elevated from DTSD Director's Sub-group, or assigned from Oversight Team.
DTSD Director Meeting Sub-Group Topic * **	>Annual Project Change Order Budget	> Estimated Total Project Cost
Region	50-100% of Annual Change Order Budget	50-100% of Project Reserves
Project	< 50% of Annual Change Order Budget	<50% of Project Reserves

***** Any CCO > $500k over the project budget shall be reported to the DTIM BHSP Director and Program Chief. This allows an evaluation of potential program impact and TPC cost impact**.** Project Development Chiefs regularly discuss change order issues at the project and program level and may request issues be elevated to DTSD Director's Sub-Group Meeting as discussion items.

****** Subgroup of DTSD Directors: BPD Director, BOS Director, Region Directors and Deputy Directors. Meets after bi-weekly teleconference or at face to face director's meetings

******* The Major Projects Peer Review Committee will establish an annual construction project change order budget for each project (Major Highway Program, future SE Freeway Reconstruction Appropriation Mega projects, and DTSD Administrator assigned High Profile projects).

Examples of Issues:

DTSD Director Level and/or Administrator's Monthly Program Meeting:

- Project overruns that are projected to exceed annual change order budget. The various groups can do a value engineering review of trends.
- Significant TMP or Cost Savings proposal by contractor with incentives and public involvement components. Ex. System Interchange TMP
- Changes to environmental document scope.

Region Level Meeting:

- Same as above
- Significant Issues affecting other business areas
- Preparation of issues for DTSD Director's Sub-group or Administrator's Monthly Program Meeting.

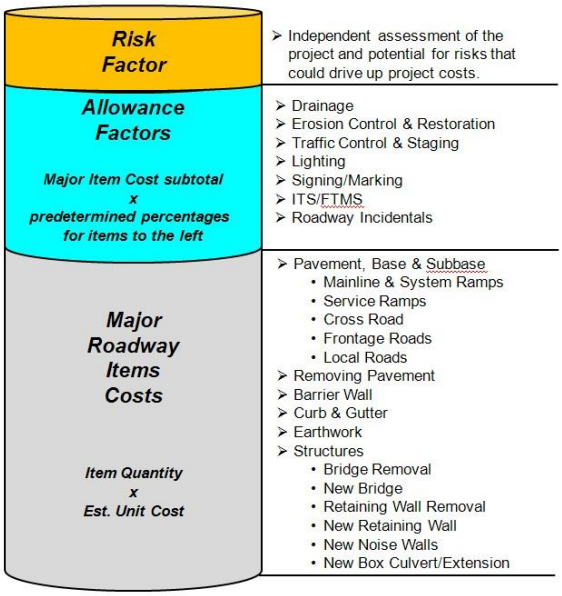
Change Management Prior to Completion of Environmental Document (determination phase)

Mega projects, Major projects, and High Profile projects all follow the Facilities Development Manual (FDM) process as the environmental document phase of the project is carried out. On these types of efforts, the project team will deal with issues that may not regularly be dealt with on a standard project. The FDM and these sets of Mega Project guidelines, particularly the Best Practices section, provide a resource to the project team as they carry out the project. The project team established also provides a great set of resources to check in with. Other Mega project teams can also serve as resources

Project teams will be faced with unique issues that may present challenges to the project scope and estimate. Project teams shall utilize the Project Team's Change Management process, the Region Change Management process, DTSD Director's Sub-Group Meeting, Administrator's Monthly Program Meeting, and when appropriate the Oversight Committee to seek guidance prior to making project commitments.

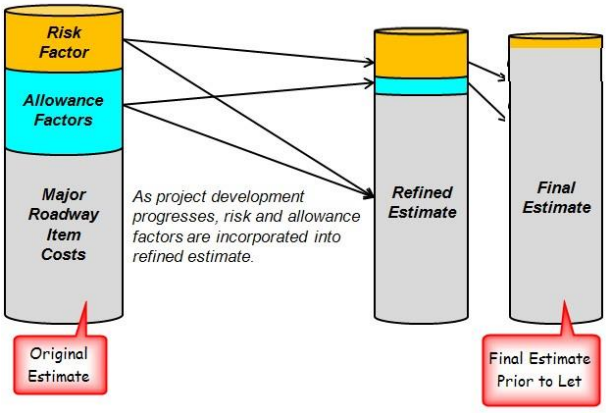
It is expected that each Mega Project and DTSD assigned High Profile projects will have an appropriate amount of risk (contingency) and allowance factors incorporated into the original project cost estimate. The level of the risk and allowance used in the cost estimate will be reviewed by the Departments Major Projects Peer Review Team, as part of a formal cost estimate review. The link to the Major Project Cost Estimating Tool is http://dotnet/consultants/estimates/estimates-major.shtm

Cost Estimating Tool – Conceptual Overview



For non Major Highway Mega Projects such as the Southeast Region's existing Mega Projects, Marquette Interchange - complete, I-94 North – South Corridor, Zoo Interchange, St. Croix Crossing, and I-794 / Hoan Bridge change management budgets or reserves have been established as part of a total build out budget. Change management decisions for these projects will continue to be made from the projects identified and established reserves. However, these projects shall become part of the Major Project Peer Review Team's responsibilities for information sharing and knowledge transfer purposes. Cost estimates for new projects in the Major Highway Program or future SE Freeway Reconstruction appropriation Mega projects, and DTSD Administrator assigned High Profile projects will be reviewed by the Departments Major Projects Peer Review Team,

As a project moves through final design, real estate acquisition, utility and railroad process, and construction, the amount of risk and allowance is expected to be reduced as "unknowns" become "known", and are therefore discretely itemized in a refined estimate.



For all Major Highway Mega Projects, it is expected that typically only a very small amount of "risk", if any would be included in the final estimate prior to let. Please note that inflationary risk would be handled by a Majors Program reserve, and not at an individual project level.

Project contingency levels begin by utilizing historical information and considering specific project risks.

Department-Level Change Management Decisions (design, utilities, railroad, and real estate through project letting)

The process ensures consistent treatment of Mega, Major, and High Profile project change management issues at the Region level. The Major Projects Peer Review Team shall carry out this responsibility Project and program issues that cannot be resolved by the Major Projects Peer Review Team shall first come to the DTIM / DTSD Administrator's monthly program meeting and likely will need discussion and consideration in the Secretary's Office and Oversight Committee.

The Department's Major Projects Peer Review Team is made up of:

Chairperson:	DTIM BHSP Director
Meeting Facilitator:	DTIM BHSP Program Chief and/or Majors Program Manager
Members:	DTSD Region Director Representative(s), and a mix of DTSD Planning and Design Chiefs,
Typical Attendees:	Majors Peer Review Members, Chiefs involved with Mega Projects, and FHWA.
Projects Included:	Any project defined as a Federal Major Project / Mega Project.
Meeting Frequency:	Monthly.
Typical Agenda:	The agenda and meeting materials are submitted to members and attendees the week prior to the meeting. Items covered during the meeting include:

- Establishment and management of Annual Construction Let Change Order Budget for each Major Highway, High Profile Projects assigned by DTSD Administrator, and future SE Freeway Reconstruction appropriation project letting.
- Cost report reviews
- Cost trend reviews
- Cost to complete projections
- Cost saving opportunities
- See Change Management summary tables
- New division and department level issues arising from Mega, Major, and High Profile Projects.

Note: Major Highway Projects with very time-sensitive change management issues that cannot wait for the next monthly meeting will be presented directly to the BSHP for a funding decision.

Department-Level Change Management Decisions (post project letting through final project close-out)

Project Teams and Regions shall utilize the Change Management Summary tables for discussion and resolution of issues.

The Major Highway Peer Review Committee shall be responsible for all projects funded out of the Major Highway Program, High Profile projects assigned by the DTSD Administrator to the committee, and all future SE Freeway Reconstruction Appropriation Mega projects.

An annual and individual project change order budget shall be established for each Department Mega, and assigned High Profile Project. This shall be established by the Departments Major Projects Peer Review Team. It will be based on a part of the total department un-programmed cost budget. The annual un-programmed costs budget and total un-programmed costs (life of project) is expected to fall within the project estimate developed at the time of enumeration. This estimate includes a project contingency.

Historically, un-programmed cost program level budgets have been based on a percentage of the previous year's let amount. Future annual individual Mega project un-programmed cost budgets will need to consider the project contingency estimate, project risk, the fluctuation of let amounts on an annual basis, as well as the multi-year nature of lettings.

Existing biennial budgeted Mega Projects and high profile projects outsides the major highway program have change management budgets or reserves that have been established as part of a total build out budget. These projects include the Marquette Interchange - complete, I-94 North – South Corridor, Zoo Interchange, I-794 / Hoan Bridge, and St. Croix Crossing projects Change management decisions for these projects will continue to be made from the projects identified and established reserves. However, these projects shall become part of the Major Project Peer Review Team's responsibilities for knowledge transfer and information sharing purposes.

Scheduling Project Costs: Major High projects have cost estimates developed prior to enumeration. A cost estimate is calculated in current year dollars, and an inflated build-out cost estimate is also prepared for environmental document requirements.

High Profile projects and SE Freeway Reconstruction Appropriation Mega projects both follow a similar path.

All these projects are managed using current year dollars.

Nearly all estimated project costs will be scheduled in FIIPs. Only a minimal amount of project costs are "un-programmed" – all costs are programmed except for a small un-programmed CCO reserve and possibly an un-programmed reserve for unused contingency late in a project's life (nearing the end of construction lets). This means all other contingency and reserve should be programmed in the year it is estimated to occur (e.g. a $100M let package includes all contingency associated with the let package).

Programming guidance is provided by DTIM BHSP.

Region-Level Change Management Decisions

To ensure consistent treatment of Mega project change management issues at the region level a Change Management Team will be formed.

The Region's Mega Project Change Manage Team is made up of:

Chairpersons: Region Deputy Director and Region Director

Meeting or Topic Facilitator: Mega Project Chief

Members: Region Directors, Mega Project Chief(s), and Region Chiefs

Typical Attendees: Team members. Project personnel or additional expertise, when appropriate.

Projects Included: Any project defined as a Federal Major Project / Mega Project.

Meeting Frequency: Utilize a portion of a regular region senior management meeting or establish a monthly meeting for this topic.

Typical Agenda: The agenda and meeting materials are submitted to members and attendees the Friday prior to the meeting. Items covered during the meeting include;

- Management of Annual Construction Project Change Order budget.
- Cost report reviews
- Cost trend reviews
- Cost to complete projections
- Cost saving opportunities
- **See Change Management Summary Tables**
- New region, division, and department level issues arising from Mega, Major, and High Profile Projects.

Project -Level Change Management Decisions

To ensure consistent treatment of Mega project change management issues at the project level, a Change Management Team will be formed.

Project changes in the construction phase will also follow the communication and involvement process outlined in the Construction and Materials Manual (CMM).

The Project's Mega Project Change Manage Team is made up of:

Chairperson: Region Deputy Director

Meeting or Topic Facilitator: Mega Project Chief

Members: Region Directors, Mega Project Chief(s), Supervisors, FHWA, BPD Liaison, and key project staff.

Typical Attendees: Team members. Additional expertise when appropriate.

Projects Included: Any project defined as a Federal Major Project / Mega Project.

Meeting Frequency: At least monthly.

Typical Agenda: The agenda and meeting materials are submitted to members and attendees the Friday prior to the meeting. Items covered during the meeting include:

- Management of Annual Construction Project Change Order budget.
- Cost report reviews
- Cost trend reviews
- Cost to complete projections
- Cost saving opportunities
- **See Change Management Summary Tables**
- New project, region, division, and department level issues arising from Mega, Major, and High Profile Projects.

Mega Project Management Expectations

Innovation, partnering, dispute resolution, accountability matrix

The Mega Project Management Expectations defines a successful project as being one that has identified and met expectations of the public, FHWA, stake-holders, the travelling public; and the divisions, bureaus, regions, and staff that contribute on a project.

Shared Success within WisDOT

Early, continuous, and inclusive communication, cooperation, partnering, and collaboration inside and outside WisDOT are expected for successful delivery of all projects, including Mega Projects.

The Department's Project Managers, Unit Leaders, Supervisors, Chiefs, and Directors have the responsibility to set the tone and implement these Mega Project Management Expectations.

This section provides tools and steps to deliver a successful project where issues are identified, debated, disputes resolved, and decisions are made ensuring a project is delivered that meets expectations, schedule, budget, and quality.

Often times Mega projects are developed under accelerated project schedules. With these accelerated schedules, there may be a departure from established processes or procedures. An example of this is to have concurrent reviews of key project documents. To ensure that problems do not arise late in the process, it is important that all of those involved are in agreement on how the revised process/procedure will be carried out. This discussion and agreement on the revised process/procedure should occur during the development of the accelerated schedule.

Partnering

Partnering is a crucial early step in managing mega project expectations. Partnering offers a framework for conflict resolution and improved communications. Adopting a partnering approach, all parties agree from the beginning, in a formal structure to focus on creative cooperation and teamwork in order to avoid adversarial confrontation. Working relationships are carefully and deliberately built, based on mutual respect, trust and integrity.

- Partnering can provide the basis for participants to re-orient themselves towards a "win-win" approach to problem solving and can foster synergistic team work
- Partnering represents a proven approach to Mega Project management and project control.

Project Teams can address partnering informally or formally. For Mega Projects formal and facilitated partnering meetings shall be utilized in the design and construction phases of projects.

For a mega project, partnering should include:

I. Normal/Traditional partnering efforts
II. Bi-weekly partnering meetings between WisDOT managers, FHWA, design consultants and contractors.
III. Meeting agenda should include:
    a. Design update from design consultant
        i. Issues and/or problems with design, schedule, budgets, etc.
        ii. Decisions the design team needs from WisDOT, FHWA, contractors or others
        iii. Potential design change orders or disputes
        iv. Issues to be considered for change management log
        v. Any items that can be considered as "value engineering" or "cost reduction" initiatives
    b. Construction update from contractor
        i. Issues and/or problems with construction, schedule, budgets, etc.
        ii. Decisions the contractor needs from WisDOT, FHWA, design team or others
        iii. Potential construction change orders or disputes
        iv. Issues to be considered for change management log
        v. Any items that can be considered as "value engineering" or "cost reduction" initiatives

Innovation

The mega project manager is responsible for ensuring collaboration and communication occurs at the innovation inception between the project team, the region and the statewide bureaus. It is important this communication happens early to raise awareness, provide guidance, get buy-in and potentially change policy and standards. Specifically, IT innovations should be vetted through DTSD's IT executive committee (ITEC), while material and new product innovations should be vetted through the DTSD new products committee.

Accountability

Working in accordance with partnering and dispute resolution processes, the project team and team members are responsible for seeing decisions are made. In simplest terms they are accountable for the successful delivery of the project.

Roles, Responsibility, and Accountability should be part of every project meeting. This ensures proper ownership of project-related tasks, as well as accurate and timely execution of those tasks. The region, bureau, and division staff, leads, project managers, supervisors, and chiefs are critical to ensure roles, responsibilities, accountability, and decision responsibilities are defined and followed up on.

The Department's first Mega Project, the Marquette Interchange, used a series of meetings and developed an accountability matrix to ensure this charge was addressed.

With current workloads associated with the many Department Mega Projects and other High Profile projects, development of an Accountability Matrix may be overly resource intensive. However, the concept has value and should be considered for use in part or whole by Project Chiefs when setting up a Mega Project or a High Profile Project.

An Accountability Matrix should be considered a living document. The appropriate time to begin developing this tool is during the data gathering process. Generally speaking, the project manager would facilitate the discussion and create the matrix in accordance with what was agreed upon by the project stakeholders.

In order to keep the document living and up-to-date, an annual review is recommended, as well as any time there is a significant shift in personnel.

(SAMPLE) *I-94 N/S Corridor – Public Information Outreach Accountability Matrix*

ID	Task	SEF PDS	FHWA	SE Region
1	Overall PI Outreach Effort	A	C	PS
2	Spokesperson	A	C	PS
3	Theme Identity	A	C	PS
4	Market Research	PS	C	A
5	PI Product Development	A	C	PS
6	Sensitive Issues	PS	A	C
7	Open Records Requests	A	C	PS

A = Accountable for **PS** = Participate in/Support **C** = Communicate with

Dispute Resolution

Dispute resolution plays a crucial role in mega project management. A dispute resolution plan is designed to prevent opposing parties from arriving at an impasse. A dispute resolution plan, when properly implemented, helps to establish a common understanding of the process you will use to efficiently and effectively resolve issues. Successful dispute resolution requires a win-win attitude from all parties, common objectives and compromise.

The process of dispute resolution starts at the lowest possible level for each organization and proceeds up through both organizations' hierarchy, until the dispute is resolved.

A dispute is only elevated to the next level when 1) an agreement cannot be reached at the current level within the agreed upon time, or 2) if more than the agreed upon time has passed without a solution, or 3) by request of one of the parties at the current level (after first informing the other party), and with concurrence of those in the next higher level. Elevating a dispute to the next level should not be considered a failure, but rather an attempt to resolve the issue expeditiously and without impacting a project's schedule or budget.

Sample Dispute Resolution Plan WisDOT Disputes

	Design/Surveys/Lab	Subs/Suppliers	
Level	**WisDOT**	**Contractor**	Time to Evaluate
I	Project Manager	Bureau staff	1 day
II	Supervisor	Bureau BPD Liaison or Supervisor	1 week
III	Chief	Bureau Chief(s)	1 week
IV	Region Director, Deputy Director	Bureau Director(s)	2 weeks
V	Deputy Administrator Regions	Deputy Administrator Bureaus	2 weeks

Note: If a dispute cannot be resolved by Deputy Administrators the Division Administrator will make a final decision.

Sample Dispute Resolution Plan for Design

	Design/Surveys/Lab	Subs/Suppliers	
Level	**WisDOT ***	**Consultant**	Time to Evaluate
I	Project Manager	Consultant staff, task leads	1 day
II	Supervisor	Project Manager	1 week
III	Chief	Project Manager	1 week
IV	Region Director, Deputy Director, Bureau Director	Principal	2 weeks
V	Deputy/Division Administrator	Principal	2 weeks

Note: Region Project Managers, Supervisors, and Chiefs shall utilize BPD Liaison and Bureau Counterparts as part of Dispute Resolution Process.

Sample Dispute Resolution Plan for Construction

	Design/Surveys/Lab	Subs/Suppliers	
Level	**WisDOT ***	**Contractor**	Time to Evaluate
I	Project Manager	Foreman/Superintendent	1 day
II	Supervisor	Project Manager	1 week
III	Chief	Area Manager	1 week
IV	Region Director, Deputy Director, Bureau Director	Operations Manager	2 weeks
V	Deputy/Division Administrator	Owner; President	2 weeks

Note: Region Project Managers, Supervisors, and Chiefs shall utilize BPD Liaison and Bureau Counterparts as part of Dispute Resolution Process.

MEGA PROJECT BEST PRACTICES GUIDELINES

Table of Contents

BEST PRACTICES EXECUTIVE SUMMARY

Best Practices Executive Summary

WisDOT management undertook an evaluation of best practices in October 2011 that were in use on Mega Projects and was interested in leveraging this unique knowledge to help optimize the means and methods used for delivery of transportation infrastructure projects and programs and to facilitate knowledge transfer and future efficiency and productivity gains on future Mega Projects and throughout WisDOT as an organization.

The overarching goal of engaging in the deployment of best practices is rooted in a management focus on continuous improvement and refinement of the way in which WisDOT conducts business. The goal of wanting to deliver Mega Projects more efficiently and effectively will undoubtedly influence the mindset, skill-set, and organizational culture of other teams within WisDOT that are delivering more traditional projects and programs. Best practices ensures that, first and foremost, new Mega Projects have a solid foundation of information to start from in order to reduce the learning curve and its associated costs, and secondly that the entire staff of WisDOT can benefit and enhance their individual skills through utilizing information on methods offering the best value for project and program delivery. This guide
can lead to organizational-wide opportunities to improve decision-making capabilities, more efficiently allocate resources, and improve accountability for delivery of complex projects and programs.

These best practices, or those tools and techniques, are not standard operating procedures within WisDOT and have been utilized to effectively deliver both design and construction phases and the unique management and project delivery practices in use on Mega Projects. The guidelines should be treated as the transfer of institutional knowledge from the staff that has operated in the various functional disciplines with Mega Project experience. The specific scope, scale, capital costs, duration, location, and many other factors of each project should ultimately determine the nature of the manner in which the best practices are utilized.

BEST PRACTICES

Best practices are generally-accepted, informally-standardized techniques, methods or processes that have proven themselves over time to accomplish a given task. In general, best practice is considered the process of developing and following a standard and effective means of performing tasks that can be consistently repeated. Often based upon knowledge that becomes common sense, these practices are commonly used where no formal methodology is in place or the existing methodology does not sufficiently address the issue. The idea is that with proper processes, checks, and testing, a desired outcome can be delivered more effectively with fewer problems, unforeseen complications, and reduced uncertainty. In addition, a "best" practice can evolve to become better as improvements are discovered. As such, the best practices contained within this document are not rigid in nature and should be

treated as management processes, tools, and techniques that can be taken and adapted to the needs of other projects and programs within WisDOT.

GLOBAL MEGA PROJECT BEST PRACTICES

Best practices were compiled by the functional discipline from which they emanated. In total, eight global best practices focused on higher order management processes and techniques were identified by the key participants. Another best practice is in development and will be included into this report at a future date. This additional best practice focuses on use of *DBE Outreach.* The table below summarizes the individual best practices and is representative of the functional disciplines for which best practices were discussed and developed. Each best practice includes a simple synopsis of the best practice. The more detailed discussion and material for each individual best practice can be reviewed in the *Project Best Practices* section of this document and in the Mega Project Best Practices Analysis.

SUMMARY OF BEST PRACTICES

Program Controls

Program Controls best practices offer a methodology for managing budget and cost, schedule, issues, and documents for multiple interrelated projects comprising a single Mega Project. Program Controls is a requirement of FHWA in the Project Management Plan (PMP) and Annual Financial Plan for all Mega Projects. The size and complexity of a Mega Project requires additional measures and efforts of coordination and communication beyond traditional project management. This best practice facilitates communication and dissemination of key information and data for decision making and ultimate management of the scope, schedule, and budget.

Design Primavera Scheduling

The Primavera software package is being utilized on Mega Projects to determine and analyze critical paths that aids in clearly defining, communicating, and managing the schedule and necessary time required to complete the independent tasks related to project delivery. The FHWA and SAFETEA-LU require a PMP and an Annual Financial Plan for all Mega Projects. Within the guidance for the PMP are provisions for a project schedule. Due to the enhanced capabilities of Primavera software, this tool is best utilized for the scheduling of the complex design work required for Mega Projects in lieu of traditional WisDOT PMP tools.

Enhanced Public Involvement / Outreach

Mega Project public outreach programs are being utilized as a means to ensure availability of timely, accurate, concise, and useful information to all public stakeholders and entities through a wide range of communication techniques. There are numerous state and federal regulations and laws that influence WisDOT's public involvement program and effectively dictate the need for a focused and directed public involvement/outreach effort. To be effective, the techniques must provide appropriate public input for the relevant project phase, be cost effective, and reach the target audience. The combination of targeted, cost effective, and timely information is imperative to ensuring the relative effectiveness of a public outreach program and is the

basis of the activities currently being employed on transportation infrastructure Mega Projects in the state of Wisconsin.

Technical Expert Contracts (i.e., National Construction, Contractor, Owner's Representatives)

The use of Technical Expert Contracts best practice is predicated on the scope of services procured in past technical services contracts from the Marquette Interchange, I-94 N-S project, and the US-41 project. There is no policy requirement for this Best Practice; however it should be noted that these contracts are typically utilized to facilitate best value practices within the agency. Mega Project Management Plans are required by FHWA and these plans often incorporate unique management structures, quality control processes in design and construction, unique review processes for program budgets, design, constructability and schedules. The scope of services typically includes Unique Special Provision Development, development of a Prequalification Process, Peer Reviews of Design for cost estimates and schedules, Risk Assessments and Risk Management, Constructability Reviews, Construction Program Management Advice, Construction claims management, and introduction of Unique and Accelerated Construction Methods. Each of these specific scope items are about enhancing the performance of management of the project, controlling Mega Project budgets, and ensuring compliance with the planned schedules and milestones of delivery. This is a value based approach that ensures knowledge transfer and the gaining of unique perspective from contractors that offer subject matter experts in project delivery and infrastructure construction.

Independent and/or Enhanced Constructability and Design Reviews

Independent and/or enhanced constructability and design reviews provide periodic feedback and input for the betterment of the project design. The WisDOT and FHWA policy requirement is to provide those mechanisms or measures that will avoid construction change orders which could cost the state additional time and funds, as well as tie up resources unnecessarily. The independent review workshops or periodic reviews by outside experts not associated with the design of the project are being performed on most of the current Mega Projects at established design milestones to add value and to ensure that the projects are meeting all standards, requirements, and relevant criteria present in the Mega Project scope of work.

Consultant Corridor Management Assistance

The basis of the Consultant Corridor Management Assistance best practice is to supplement WisDOT in its efforts to effectively communicate and coordinate the activities required for the Mega Projects to be efficiently and effectively delivered at the best value for the allocated capital. Several elements of scope are involved in this effort and are presented in more detail in the discussion of the best practice. The requirement for the use of Consultant Corridor Management Assistance teams is effectively part of the Mega Project PMP required by FHWA. The use of the Corridor Assistance Management teams ensures that the proper technical expertise is applied and that the availability of resources is addressed. The general policy is to ensure that the work can be completed with the available resources and that it is managed by technical experts with sufficient skills and capabilities. The use of Consultant Corridor Management Assistance teams provides this function while not burdening WisDOT with longer

term legacy overhead costs for a single Mega Project. The overarching goal of Consultant Corridor Management Assistance is to ensure that there are adequate resources available to effectively be able to move forward in the project delivery process while ensuring that the proper level of technical and management expertise is leveraged. Consultant Corridor Management Assistance contracts can also serve as a mechanism to foster development and growth in the organization through opportunities to educate, further enhance, and refine WisDOT staff member skills.

Owner Controlled Insurance Program (OCIP)

The best practice of an Owner Controlled Insurance Program (OCIP) is a plan in which WisDOT secures all appropriate insurance coverage for all contractors working on the project and controls all aspects of safety for the workers and public. Typical OCIPs include Worker's Compensation, General Liability, Excess Liability, and Builder's Risk insurance coverage. In some instances OCIPs may include environmental coverage, Railroad Protective Liability, and Professional Errors/Omissions. The purpose of OCIP's is to capitalize on a method for risk pooling of all required insurance coverage and safety controls. OCIPs used in the proper application present an opportunity to introduce economies of scale into the insuring of work and safety provisions of the project's associated stakeholders. The need for the OCIPs is to centralize all insurance and safety management and controls into a single point and a source where this information can be easily accessed when needed. With increasing complexity and multiple individual projects, as is typically the case on Mega Projects, the economies of scale achieved become more pronounced.

Emergency Response Mitigation Contracts

Emergency response mitigation contracts are primarily used for freeway law enforcement, local law enforcement and fire departments. Freeway law enforcement provides dedicated emergency response in the work zone and helps to clear incidents quickly while controlling work zone speeds. Local law enforcement assists with traffic control on local roads for detour routes and local road speed management. Fire departments plan emergency response based on construction closures. All three agencies participate in project traffic meetings, review roadway closures, and crisis communication planning. This provides a means of communication and coordination with the involved agencies that ensures a clear plan of action. The purpose of using emergency responder contracts is to coordinate dedicated emergency resources available in the Mega Project construction zone and along the adjacent arterial roadway system. The need is to increase system reliability while facilitating quick clearance of a construction zone during an incident. The construction traffic management plan identifies the dedicated emergency response resources that will be utilized in the management of traffic in the construction zone. The identified and participating resources are able to focus on the project area and supply on call services to manage traffic congestion and incidents during construction in a coordinated fashion.

COMMONALITIES OF BEST PRACTICES

The global best practices are those elements that, at the highest level, should be the foundations of project management and delivery. Four common themes were consistently

observed across the eight unique functional areas that were evaluated and explored. Those four themes are summarized as follows:

- **Efficient and Effective Use of Resources:** The efficient and effective use of resources is the cornerstone of being able to manage Mega Project budgets, control schedules, and ensure sufficient performance in delivery. In an era of constrained resources it is becoming increasingly important to maximize the use of all resources and to realize productivity efficiencies and gains. The combination of increased complexity and constrained resources is a challenge that is constantly being evaluated. The logic behind the best practices is to ensure that resources are being used as efficiently and effectively as possible. The streamlining of costs and capabilities in management is imperative to being able to proactively manage large and unique projects and programs. Many of the best practices noted issues associated with a need for flexibility to ensure optimal resource utilization as a result of dynamic changes in contracts and work packages. Realizing that Mega Projects are inherently more complex as a result of the many moving parts and pieces, building in layers of flexibility into the resource plan for delivery is important.
- **Proper Management, Communication, and Dissemination of Key Information:** The management, communication, and dissemination of key information was highlighted in many of the disciplines as a best practice technique that enabled information flow to occur in a more efficient and effective manner. Key to decision-making capabilities is the clear measures for managing, communicating, and distributing information. The technique of centralization of management to a single point of contact provides enhanced clarity of who needs to be engaged for specific situations. The technique of information management and communication with all stakeholders, both internal and external, provides for an environment in which data and information is readily available to facilitate proactive, as opposed to reactive, management. Furthermore, when working on complex Mega Projects it is important to ensure that data is properly tracked, updated, stored, and easily communicated. This best practice is really a general project management best practice, but the uniqueness here is in acknowledging that for each project team there will be unique needs for certain types of information. From this perspective project managers need to be prepared to think of ways to most efficiently track, update, and maintain data for everyday uses either with WisDOT tools or by creating their own unique tools. It is important to remember that data organization and management is a fundamental building block to enabling effective management and delivery.
- **Leveraging Knowledge and Expertise:** The leveraging of knowledge and expertise of both internal and external resources was cited as a means to enhance the management tools and techniques being utilized to deliver Mega Projects. The use of technical experts, key resources, and outside experts provides for independent and objective views on the most efficient means and measures for project delivery. It was noted that the leveraging of knowledge and expertise continues to improve the core skills within WisDOT while enabling the realization of cost savings and schedule control throughout the design and construction of Mega Projects. The introduction of capabilities and techniques from outside the state continues to ensure that WisDOT is progressing forward in refining Mega Project

capabilities while capitalizing on the knowledge of industry experts in the most beneficial manner.

- **Facilitation of Continuous Organizational Improvement**: The development, documentation, and transfer of best practices is important to WisDOT in being able to be a flexible and adaptive organization in relation to the manner in which it is delivering large and complex Mega Projects. The use of best practices across the organization as a means of institutional knowledge transfer engages WisDOT in a process of continuous improvement. The move towards continuous improvement by management within WisDOT is helping to not only make the most efficient use of resources in the organization, but also to enhance the skill-sets and capabilities of the organization as a whole. Continuous organizational improvement requires the documentation and development of acceptable and standardized methodologies for delivering projects and programs and the evolving nature of best practices is one of the most effective measures to ensure that this occurs. The combination of the prior three mentioned best practice themes of efficient and effective use of resources, proper management and communication of key information, and leveraging of industry knowledge and expertise promote continuous improvement. As a result, the realization of the prior themes is continuing to facilitate broad-based organizational change and improvement.

RECOMMENDATIONS

This document is intended to provide institutional knowledge transfer from WisDOT staff and Mega Project team members in relation to challenges that are faced and how the project management tools and techniques can be adapted in response. The documented best practices within this report are conceptual in nature such that they can be reviewed and implemented on other projects of similar complexity. It is recognized that the composition of Mega Project Best Practices is representative of a the experiences of staff within WisDOT and that other best practices for managing and delivering complex projects may arise or exist elsewhere.

True best practices are constantly evolving, adapting, and changing to meet the current needs of project and program delivery. While there is no single solution that can be consistently implemented in the exact same fashion and yield the exact same results, it is this Best Practices guide that offers a starting point for project structuring, staff development, and for Mega Project delivery within WisDOT. This guide will help WisDOT to continuously improve, adapt to a dynamically changing environment, and utilize methods that offer the best value for planning, managing, designing, and constructing transportation infrastructure projects and programs in the state of Wisconsin.

Also see: US 41 Best Practice Analysis Report and ARRA & Mega Best Practice Analysis Report

BEST PRACTICES - INTRODUCTION

INTRODUCTION TO BEST PRACTICES

Best practices are generally-accepted, informally-standardized techniques, methods or processes that have proven themselves over time to accomplish given tasks. Often based upon knowledge that becomes common sense, these practices are commonly used where no specific formal methodology is in place or the existing methodology does not sufficiently address the issue. The idea is that with proper processes, checks, and testing, a desired outcome can be delivered more effectively with fewer problems and unforeseen complications. In addition, a "best" practice can evolve to become better as improvements are discovered. Best practice is considered by some as a business buzzword used to describe the process of developing and following a standard way of doing things that multiple organizations can use.[1]

One could think of best practices in the case of Mega Projects as an evolution in the process of management and delivery. Project teams need adaptive and responsive capabilities to execute and deliver their projects in an efficient manner. The natural iterations and modifications of fine tuning process and management techniques in the case of managing a Mega Project results in a series of solutions that evolve to best fit the case. One could think of this set of higher order functional best practices as a set of solutions being used to maintain quality as an alternative to mandatory legislated standards and can be based on self-assessment or benchmarking.[2] Furthermore, best practice deployment is a feature of accredited management standards such as ISO 9000 and ISO 14001.[3] The lessons learned that evolved into processes, management strategies, and techniques for managing multiple work packages is documented in this report in the form of a set of higher order best practices by needed functions of delivery. It useful to think of best practice management as an adaptive learning process rather than a fixed set of rules or guidelines, therefore this approach to best practice focuses on fostering improvements in quality and promoting continuous learning.[4]

INFLUENCES OF DELIVERY

The manner in which a project or program is delivered largely relates to the structure of the organization and the general scope of work. The scope of work, or series of projects comprising the total Mega Project in this case, tend to dictate the level of staffing required to manage and deliver the workload. Within the staffing requirements there is the immediate need for structure to facilitate communication and coordination that best enables management to effectively guide the overall efforts. In this sense the scope of work performed by the project and the organizational structure needed to deliver the project are the controlling influences of

[1] "Best Practice Definition". BusinessDictionary.com.

[2] Bogan, C.E. and English, M.J., 1994: Benchmarking for best practices: winning through innovative adaptation. McGraw- Hill, New York.

[3] Nash, J. and Ehrenfeld, J., 1997: Codes of environmental management practice: assessing their potential as a tool for change. Annual Review of Energy and the Environment 22, 487-535.

[4] Measham, T.G., Kelly, G.J. and Smith F.P. (2007) Best Management Practice for complex problems: a case study of defining BMP for Dryland Salinity. Geographical Research 45 (3) pp. 262-272.

delivery. As a result, the general projects and structures of other Mega Projects that have been delivered by WisDOT should be taken into consideration when evaluating and implementing Best Practices.

BEST PRACTICE DOCUMENTATION PROCESS

A systematic approach was utilized in order to define the higher order functional best practices of the Mega Project delivery methods. The process focused on eliciting those best practices that are not standard operating procedures and are beyond traditional project and program management processes and procedures. Evaluations were developed using collaboration between key participants (evaluators, users, and stakeholders) to document the WisDOT Mega Project best practices. The process emphasized focus on qualification of those unique features of management and delivery that are being applied to the project beyond the standard practices for delivery within WisDOT and addressed the following categories:

1. Best Practice Scope – A description of the scope of the best practice as currently being used on Mega Projects.
2. Best Practice Policy Requirement – A description of WisDOT and FHWA policy direction and/or guidance which defines the need for the best practice scope.
3. Best Practice Purpose and Need – A description of the purpose and need of the best practice.
4. Best Practice Stakeholders – A description of WisDOT external agency and external non-agency stakeholders that are involved in the implementation of the best practice.
5. Best Practice Organizational Foundation – A description where within WisDOT the ownership of the best practice should reside, as well as any discussion on responsibility for guidance on the future use of the best practice.
6. Best Practice Resourcing – A description of how the best practice is currently resourced (i.e., in-house vs. consultant).
7. Best Practice Benefits – A description of the benefits derived as a result of usage of the best practice.
8. Best Practice Challenges – A discussion of any challenges with ongoing maintenance or implementation of the best practice.
9. Best Practice Risk – A discussion of the risk of not utilizing the best practice for Mega Project management.
10. Best Practice Opportunities– A discussion of the possible opportunities to streamline overall costs while maintaining the value and effectiveness of the best practice.
11. Best Practice Opportunities to Expand – A discussion of the opportunities that exist to expand the best practice into non-Mega Projects and Programs within WisDOT.

The higher order management functions, strategies, and techniques discussed within the best practice discussion included the following key areas (note the context of each evaluation and discussion for each functional area below):

1. Program Controls – The basis of the discussion is to evaluate the appropriate scale of the effort on Mega Projects in relation to the total scope and to consider ideas on how to provide the desired functions at a streamlined cost.
2. Design Primavera Scheduling – The basis of the discussion is to evaluate the use of Primavera as a scheduling tool in comparison to the use of the more traditional PMP tool(s).
3. Enhanced Public Involvement/Outreach – The basis of the discussion is to evaluate the appropriate scale of the effort on Mega Projects in relation to the total scope and to consider ideas on how to provide the desired functions at a streamlined cost.
4. Technical Expert Contracts (i.e., National Construction, Contractor, Owner's Representative) – The basis of discussion provides an evaluation of the value of the use of technical expert contracts and includes considerations for scaling usage on Mega Projects in relation to the total scope.
5. Independent and/or Enhanced Constructability and Design Reviews – The basis of discussion explores the general purpose of the best practice and the corresponding value received from deployment of the best practice.
6. Consultant Corridor Management Assistance – The basis of discussion explores the general purpose of the best practice and the corresponding value received from deployment of the best practice.
7. Owner Controlled Insurance Program (OCIP) – The basis of the discussion is to evaluate the use and applicability of leveraging an Owner Controlled Insurance Program on Mega Projects.
8. Emergency Response Mitigation Contracts – The basis of the discussion is to identify the need and roles and responsibilities of Bureau and Mega Project Teams in the usage of Emergency Response Mitigation Contracts.

The basis of discussion and structure of the documented effort is intended to provide detail relating to how the best practices are utilized and applied within the management and delivery of a Mega Project, as well as how each individual best practice is relevant. Mega Project best practices formulate the basis of an evolving and developing document that can be refined as more Mega Projects in the state are delivered and best practices are further formalized and documented. These guidelines will transfer institutional knowledge, lower the learning curve, reduce management efforts for structuring of project teams, as well as offering cost and time efficiencies for future projects.

1. PROGRAM CONTROLS

1. Program Controls

BEST PRACTICE TITLE: Program Controls for Mega Projects

Basis of Discussion: Evaluate the scope to scalability ratio of the effort on Mega Projects

Best Practice Scope:

Mega Project Program Controls consists of proactive project management and begins managing the Mega Project corridor program in early design. The effort continues through construction, including finals and project closeout. Program Controls performs functions in the following four categories:

- Budget & Cost Management
  - Establish project budgets
  - Track and update estimate updates and project spending
  - Balance and report on project budgets and all financial data
  - Project programming, including project ID structure, FIIPs updating
  - Manage program to committed program levels and coordination of program with OPBF and BSHP
  - Create and manage change management process
- Schedule Management
  - Create detailed project schedules
  - Track and update schedules with updates from coordination meetings and project team members
  - Analyze and report on project schedules, including critical path
- Issue Management
  - Document issues identified by project team members and/or in issue meetings
  - Track and update issues reporting and ball-in-court issues responsibilities
- Project & Document Management
  - Create document management protocol and organization plan
  - Process and management documents and requests
  - Record and distribute meeting minutes
  -

Program controls performs tasks that may exist in all WisDOT projects, but at a level of greater attention and detail, as well as additional tasks that become necessary either by requirement or simply by the size and complexity of Mega Projects. Program Controls provides tools and information to enable project management to make informed decisions. The deliverables of the Program Controls function are often key components and data sources of other best practices used by Mega Projects.

Program Controls teams provide WisDOT management with project information that is current, easily accessible, and displayed in a consistent manner across all projects and function areas to assist with making good decisions on management of project scope, schedule, and cost. It facilitates improved forecasting capabilities, proactive problem resolution, and improved communication, and integrates schedule management, contract management, cost

management, earned value management, and electronic content management to better support management and delivery of mega projects.

Best Practice Policy Requirement:

The FHWA and SAFETEA-LU require a PMP and an Annual Financial Plan for all mega projects (defined as estimated cost of greater than $500 million). Within the guidance for the Project Management Plan are provisions for a Project Controls team that provides the functions listed above. As stated in the guidance:

A project controls functional team will normally help manage the scope, total cost and overall master schedule for the project, in order for the entire project delivery team to meet the stated objectives of the project being completed on time and within budget. The project controls functional team will also produce project reports, including quantifying schedule delays and cost increases, and initiatives being analyzed to recover.

The Program Controls best practice meets this requirement, and helps generate, maintain, and update the required Project Management Plan and the Annual Financial Plan. The following is the definition for program controls (referred to as project management controls) by FHWA:

FHWA refers to PROJECT MANAGEMENT CONTROLS (Scope, Cost, Schedule, Claims, etc.) A project controls functional team will normally help manage the scope, total cost and overall master schedule for the project, in order for the entire project delivery team to meet the stated objectives of the project being completed on time and within budget. The project controls functional team will also produce project reports, including quantifying schedule delays and cost increases, and initiatives being analyzed to recover. This section includes project management controls that should be used on most major projects.

A. Risk Management Plan

B. Scope Management Plan

C. Scheduling Software

D. Cost Tracking Software

Best Practice Purpose and Need:

The purpose of Mega Project Program Controls is to provide managers making program/project decisions with the valuable accurate and current data and information required for making effective management decisions regarding the direction of the program. The programs for Mega Projects can involve hundreds of project IDs involving specific design, real estate, utilities, traffic mitigation, public information, and construction that add up to hundreds of millions of dollars. In addition, the programs span several years yet must come in within a specified budget and timeline accounting for inflation and cost escalation, risks and issues, identified and not yet identified at the beginning. FHWA, WisDOT's partner in financing the Mega Project, requires strict oversight over budget as well as the ensuring of public confidence. Program Controls provides everything in one place, one dashboard; something not provided by any other WisDOT system in place.

The purpose for the Program Controls best practice is to provide dedicated resources, defined processes, and appropriate tools to deal with the size, duration, and complexity of mega projects. By performing the roles and tasks in the four categories specified above, Program Controls can help project management meet the goals of delivering the project on time and on budget. The best practice also fulfills the recommendation in the FHWA guidance referenced above.

In addition to the need of being part of the FHWA guidance, the program controls functions address the needs created by the size, complexity, and duration of a mega project. Budget and cost management meets the needs of helping management keep the project on budget despite being of significant cost and scale (ex: over $1.5 billion dollars in project costs across several years). Program Controls is able to provide reports that answer questions on the project costs. The detailed budget also enables management to actively manage the Mega Project programming and adjust the program to best leverage available funding. The project schedule is necessary because of how many projects, how many years, and the dependencies and critical path of the overall project. By being able to coordinate and manage complex information on multiple individual projects across a total program, project managers are better able to help deliver the Mega Project on time and within budget. Tracking and managing the issues by Program Controls addresses the need to maintain accountability and timely resolution for issues. Providing document controls addresses the need to have the very large volumes of documentation organized so that information can be found when needed.

Best Practice Stakeholders:

There are several stakeholders, both internal and external, for agency and non-agency roles that are affected by Program Controls. The data produced and information reporting capabilities are far reaching. The stakeholders affected or influenced by the best practice of Program Controls include:

1. WisDOT
    a. Mega Project Supervisors and Management
    b. Mega Project team members
    c. WisDOT supporting region team members
    d. WisDOT supporting bureau team members
    e. WisDOT senior management
2. External
    a. Consultant team members
    b. FHWA
    c. Municipalities within the Mega Project
    d. State of Wisconsin
    e. Taxpayers

3. Stakeholders that are involved in the implementation of the best practice
    a. All Mega Project team members, WisDOT, and consultant
    b. WisDOT supporting region and bureau team members
4. Program Controls stakeholders
    a. Mega Project Finance/Program Controls Team—both WisDOT and consultant
    b. The Mega Project Section(s)
    c. Region management
    d. Region ad hocs
    e. Division management
    f. The Bureau of State Highway Programs
    g. The Office of Policy, Budget, and Finance
    h. The Bureau of Project Development
    i. FHWA

Best Practice Organizational Foundation:

Ownership of the Program Controls best practice resides with Mega Project management. Each Mega Project implements the Program Controls best practice, following the FHWA guidance as well as previous WisDOT Mega Project examples.

Best Practice Resourcing:

The resourcing of Project Program Controls is done both using internal WisDOT staff and external consultant resources. There are several organization chart examples from other Mega Projects including a sample functional organization charts below and the following documents that will provide assistance to illustrate the roles and responsibilities for Project and Program Controls.

Organization Charts - Template, Sample, I-94NS, US-41, Hoan Bridge, (I-94NS Resp/Phone)

Roles and Responsibilities Guidelines - Staffing

Accountability Matrix - I-94NS Matrix

Best Practice Benefits:

There are many benefits to engaging in the best practice of project management through Program Controls. First, the best practice satisfies the guidance of the FHWA for the items within program controls scope. Secondly, Program Controls allows for assigning tasks to specialized team members. Due to the Mega Project size, complexity, and duration, these tasks would otherwise be too overwhelming to be done by the traditional PDS project staffing model,

as well as be a potential inefficient use of resources. There are also benefits associated with each of the four core controls functions:

- Budget & Cost Management
  - Allows for managing individual projects and the Mega Project cost total to a set budget
  - Improves tracking and control of project spending and costs
  - Allows for the managing of the budget to a program or appropriation allocation level
- Schedule Management
  - Improves coordination of tasks along the critical path to reduce project delays and event risks that may otherwise induce delays
  - Improves resource allocation for project and supporting teams by providing schedules that can forecast workloads
  - Improves communication between units and team members through the use of the detailed schedule
- Issue Management
  - Improves accountability and tracking of resolution of issues
  - Reduces risk of costs or delays having impact due to issues that the uncertainties that projects may encounter
- Project & Document Management
  - Improves organization and retrieval of project documentation, which in turn improves decision making and consistency on the project
  - Provides the means for better implementation of lessons learned during the project because of improved record keeping

The biggest benefit of Mega Project Program Controls is that it offers a one-stop, all encompassing tool that provides a complete and unified planning, budget, schedule, and records management structure to ensure accurate tracking of issues and risks, costs and schedule, documents/records, and public information. It effectively serves as a dashboard in which information pertaining to the Mega Project direction, historical information, current status, and future trajectory can easily be obtained. The use of Program Controls is a forecasting tool that can incorporate capabilities to identify possible risks and changes across all project coordination functions.

No other system currently used by WisDOT encompasses all of the major points for managing the many complex facets of a total program. Program Controls functions ensure timely responses to FHWA and other requests and audits. It guarantees complete and indexed records management for quick and effective open records requests as well as storage and retrieval. It brings the information/data from a multitude of WisDOT systems into a single and centralized place.

Best Practice Challenges:

The success of the Program Controls best practice depends on all project team members understanding how Program Controls impacts them and how they can best leverage the

information generated as they perform their jobs. This requires some training to help project team members understand in interfacing with Program Controls staff, as well as understanding how Program Controls can help make their jobs easier, more efficient, and productive. This is further by having buy-in and support throughout the management structure from the top down.

One of the challenges faced is making sure this is done early in the project, and reinforced throughout the project, so that Program Controls effectiveness does not slip. There are some detail level challenges that are faced with a best practice with a scope and staff as large as Program Controls, from details such as best software tools and processes to implement, to decisions on size and make-up of controls team staff.

The greatest challenge is in finding the appropriate size and acceptable cost level for an effective and efficient Program Controls effort, as well as the best make-up of staff for the effort (consultant or WisDOT). Considerations of how costly the desired technical staff with the appropriate skill level and support tools required should be made.

Best Practice Risk:

There are many risks in not engaging in the Mega Project Program Controls best practice. First, there is the risk of FHWA not being satisfied with how their guidance for Mega Project management is being followed. Second, there are the risks associated with the costs that will result from the benefits, efficiencies, and cost savings described earlier. As size, scope, complexity, and duration increase, the manner in which projects are managed needs to adapt rather than just scaling up in accordance with traditional practices, and Program Controls is one of these changes that can reduce risks and costs. Without some level of the tasks within the Program Controls best practice scope, it is highly unlikely that traditional methods of project management would deliver a Mega Project on time and on budget as a result of less effective information for decision making and less efficient communication. As a result of potential inefficiencies and lack of data for decision making, it is also very likely it would result in delivery of Mega Projects at an increased cost.

The lack of information and control over the project is also a major threat to overall Mega Project delivery success. There is the risk of losing control of or never truly having control of the relatively large, intricate, and integrated budgets and schedules of the largest public works projects ever undertaken by Wisconsin. There are multiple examples of Mega Projects that have lost control in terms of total budget management due to lack of information and accurate tracking of data.

The impacts can be detrimental with costs far exceeding the original estimates. It should also be noted that FHWA asks for Program Management Plans for projects over $500 million. Program Controls (Program Management) is one of the pillars of those plans. The public has entrusted WisDOT with billions of dollars for highway infrastructure construction. The potential cost cutting savings measures of eliminating the cost of Program Controls is far outweighed by the benefits of receiving timely, prudent, and effective delivery of large-scale Mega Projects on

time and on budget. It should be noted that experience provides value to sound Program Management practices.

Best Practice Opportunities:

There are several approaches that could be examined for improving the cost effectiveness of the Program Controls best practice. The first step is in taking the lessons learned and the project experience and expertise created and leveraging this knowledge gained to deliver future projects. With effective knowledge transfer this may potentially enable the tasks to be accomplished with fewer staff members. A more challenging approach would be to examine all of the tasks and qualifications of staff, as well as looking at consultant versus in-house staff, and better matching skills and costs to the tasks that need to be done. This has potential to further reduce costs and create skill-adapted efficiencies. The most extreme level of this, with the greatest potential for savings, would be a staffing model that allows for hiring in-house staff whose employment is only for the duration of the project. The most challenging approach to increase cost effectiveness in delivery can result in the potential to actually increase Program Controls costs, but may transfer even greater savings to the project overall by looking at even more tasks done by more relatively expensive WisDOT and consultant staff. This may offer the option to look for more ways to consolidate tasks into a specialized Program Controls team where broader departmental savings can be achieved and with broad-based reduction of project uncertainties and risks.

With the multitude of lessons learned and evolution and improvements in software, the labor costs for managing the Mega Project programs should be going down considerably. With the improved reporting capabilities now built into Primavera by WisDOT Mega Project teams and the use of better, more efficient data mining through the use of Business Objects, the cost for Program Controls in the future as a percentage of the program will be less than it has been as a considerable portion of the base investment in development of the knowledge and skills of effective deployment of Program Controls has already been realized. Another cost reduction would be in consolidating multiple, similar task positions into fewer; for example, having project level document control done more at the program level, reducing the number of employees needed for document control and centralizing the function of document management. Other examples include possible administration cost cuts by reducing consultant administrator time charged against the Mega Project from full-time to part-time while filling currently vacant DOT positions to replace more costly consultant staff. The combination of many of the suggestions for the realization of potential efficiencies offers the option to reduce overall costs of the Program Controls best practice.

Best Practice Opportunities to Expand:

The success of the American Recovery and Reinvestment Act (ARRA) program in managing individual projects to a set budget serves as an example of how financial best practices from Mega Projects can expand. Such an expansion must be very carefully researched and implemented, for not all components of the Program Controls best practice will realize benefits from being expanded. By their individual definitions, many of the components of the best practice are tasks currently being done in some fashion, but need to be expanded or

consolidated because of the increased size, complexity, and duration of a Mega Project. Without the increased size to accommodate scale of the Mega Project, many of the components simply would not be needed, and current practices may be the most efficient; however, as the budget example shows from ARRA, there are opportunities to expand some of the concepts. By exploring current project outcomes and measures, there is the opportunity to look for the greatest opportunities where there is a need to improve. This allows for consideration of where the greatest costs are, those steps that could be examined with the goal of exploring whether a Program Controls best practice feature would be helpful, and whether it could be scaled to fit without being too costly to implement.

While the entire improvement program could benefit from expanding this best practice, budget and resource constraints likely make this impractical. Of the four major functions covered within the best practice (Budget/Cost Control, Schedule Control, Issue Management, and Document Control) it is believed that the function with the most benefit from being expanded to cover the entire improvement program is the Budget/Cost Control Function.

Organizationally WisDOT has some experience with this concept, having utilized it in managing delivery of the ARRA program projects. Similarly, this best practice could be expanded to the entire improvement program by requiring each project to submit a monthly project financial report to track project expenditures. Items that could 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 (construction)
5. Reserve balances

It is important to consider that on a statewide basis such a reporting mechanism would create a very considerable amount of data that could be difficult for decision makers to draw any relevant conclusions from. A further refinement would need to be incorporated to construct a Design/Construction Project Management Dashboard report which would provide decision makers with an “at-a-glance” view on the status of projects that are performing outside of pre-established performance levels or boundaries, as well as the status of the overall program. Individual project performance level metrics might include:

1. Cost-to-complete estimates exceeding base budgets by 10%
2. Project reserve budgets falling below 5%

The report would only list projects falling outside of the established performance levels. In addition, it would provide a rollup of the total cost-to-complete estimates for all projects in the program as compared to the total budget amount. The report would provide managers with critical information on projects potentially in trouble, thereby giving the ability to provide assistance or take corrective actions and allow program adjustments to the statewide program throughout the delivery process in a more dynamic and adapted fashion.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

2. PRIMAVERA SCHEDULING TOOL

2. Primavera Scheduling

Best Practice Scope:

Primavera Scheduling software is currently being used by all aspects on the Mega Projects. The goal of the Primavera software package is to determine critical paths that will aid in clearly defining the schedule and the necessary time required to complete the independent tasks related to project delivery. For this reason, Primavera software is best utilized for scheduling of the complex design work required for Mega Projects.

The software identifies the key milestones and critical tasks in the project schedule and helps to integrate them into the master schedule to ensure that all delivery dates are met for each project. The dates and tasks typically integrated include items for real estate, structure, railroad, ITS, lighting, landscaping, and the general delivery of project tasks from 30% to Let dates. The PMP schedule is comprised of a minimum of 13 tasks for any project and up to 35 tasks based on scope specifics. Not all tasks are required in the schedule, as some tasks are informational only and/or are only representative of project attributes or conditions.

Typically, the designated scheduler begins the process by meeting with Project Managers using a template and builds in the details such as the individual tasks, task durations, and task dependencies. The scheduler must tailor the schedule with specific information of interest to the Project Managers. Each task is linked in a manner that creates a pathway that defines the ultimate critical path. The scheduler can then use the analysis of "what if" scenarios in terms of managing the projects and tasks and ensuring that milestone dates align and can be met. To be effective, the scheduler must maintain and provide to all stakeholders a master schedule. The scheduler is required to meet with Project Managers in regular intervals (weekly) to communicate updates, revisions, and/or completion of tasks within the schedule. The master schedule can then be continually updated and refined as the project evolves and proceeds toward completion.

In comparison, the WisDOT PMP application also allows for scheduling of design project key milestones and critical tasks. The PMP application schedule is derived from project scope items identified as contributing to the project. The scope module includes all tasks listed in the Functional Design Manual (FDM). While both Primavera and the PMP web application include key milestones, the PMP application schedule is not critical path based. Primavera meets the FHWA requirements of a master program schedule with critical path criteria. Currently, WisDOT does not have Primavera scheduling expertise to apply to projects. The Primavera scheduling software learning curve is steep. There are many benefits of using Primavera. Mega Projects are more complex and therefore require multiple projects being coordinated to meet the needs of each individual project team, FHWA expectations, and Division program goals. The software supports reporting functions to be customized by discipline to ensure the relevant information is communicated in a consistent fashion.

Primavera allows for designers/managers to focus on important tasks rather than spending many hours on schedule functions. In comparison, the PMP application also allows for scheduling of design project key milestones and critical tasks. The PMP application schedule is

derived from project scope items identified as contributing to the project. The scope module includes all tasks listed in the FDM.

Best Practice Policy Requirement:

The FHWA and SAFETEA-LU require a Project Management Plan and an Annual Financial Plan for all Mega Projects. Within the guidance for the Project Management Plan are provisions for a project schedule. FHWA has strongly advised that a master program schedule be integrated (i.e., the individual contract milestones tied to each other) such that any delays occurring in one activity will be reflected throughout the entire program schedule, with a realistic completion date being reported.

It has been determined that Primavera scheduling tool meets the above FHWA objective as well as the following schedule management objectives:

- Create detailed project schedules
- Track and update schedules with updates from coordination meetings and project team members
- Analyze and report on project schedules, including critical path

These objectives meet the stated requirements to generate, maintain, and update the required PMP and the Annual Financial Plan. It is important to note that WisDOT does not have a policy dictating the type of scheduling software for Mega Projects; however, FHWA guidance from the 2009 FHWA Project Management Plan Guidance on scheduling software is as follows:

> *The Project Management Plan should include the scheduling software to be used for the project. Consideration should be given to requiring the same software package for all schedules to be generated by the project controls functional team, the design consultants, and the contractors, in order to ensure uniformity and compatibility for the overall master schedule. The frequency and the detailed process of reviewing and validating schedules should be also included.*

Best Practice Purpose and Need:

The purpose of Primavera Scheduling tool is to manage a multitude of inter-related projects to meet Mega Project program delivery expectations of the FHWA, the Division, and the public. The need of Primavera Scheduling tool is that the task of scheduling must use the critical path for managing the complex relationship of multiple project tasks. Additionally, Primavera Scheduling tool can work cooperatively with the Primavera Contract Manager, connecting schedule and financial information such as cost loading. MS Project also uses critical path for scheduling, but the concern with MS Project is whether it is robust enough to handle the larger volume of tasks and relationships that epitomize WisDOT Mega Projects. Additionally, MS Project is not capable of cost loading tasks. The WisDOT PMP application does not use critical path methodology for scheduling.

Best Practice Stakeholders:

The following table describes the key Best Practice stakeholders, their roles, required outputs, and expectations, as well as a measure of their influence and classification as it pertains to the project:

Position	Role	Requirements	Expectations	Influence	Participant
Division Administrator	Accountable for improvement program delivery	Program Commitments achieved	Programs delivered on time, within budget and at agreed standard of quality	High	Internal
SWB Operations Director	Consulted for improvement program delivery	Deliver programs within Division policies and guidelines for project management	Programs delivered on time, within budget and at agreed standard of quality	High	Internal
Region Operations Director	Consulted for improvement program delivery	Deliver programs within Division policies and guidelines for project management	Programs delivered on time, within budget and at agreed standard of quality	High	Internal
SWB Directors, managers and supervisors	Consulted for improvement program delivery	Deliver programs within Division policies and guidelines for project management	Programs delivered on time, within budget and at agreed standard of quality	High	Internal
Bureau of Structures	Accountable for structure plan delivery (consultants can have responsibility for delivering structure plans for review)	Project management best practices are applied for efficient project delivery	Projects delivered according to project management plan	High	Internal
Project Management Unit	Consulted for project management policy, procedures, and best practices	Project management best practices are applied for efficient project delivery	Projects delivered according to project management plan	High	Internal
Region Director, managers and supervisors	Consulted for improvement program delivery	Deliver programs as scheduled and budgeted with expected standard of quality	Programs delivered on time, within budget and at agreed standard of quality	High	Internal
Project Manager	Accountable for project delivery	Deliver project scope, schedule, and budget within agreed project management plan	Projects delivered on time, within budget and at agreed standard of quality	High	Internal
Project team members	Responsible for project delivery	Deliver project scope, schedule, and budget within agreed project management plan	Projects delivered on time, within budget and at agreed standard of quality	Medium	Internal
Program Controls	Consulted for project delivery issues, risks and quality	Projects controlled to meet delivery commitments	Projects tracked for on-time, within budget, and at agreed standard of quality	Medium	Internal
FHWA	Informed of program – approval required on Federal Oversight projects	Federal Oversight projects identified and managed to meet requirements	Federal Oversight projects delivered meet requirements	High	External

| Position | Role | Requirements | Expectations | Influence | Participant |

DNR and Army Core of Engineers	Consulted	Environment protection incorporated in improvement project plans	Environmental concerns addressed and appropriate action taken and documented	High	External
Public	Consulted and Informed	The right projects are selected and completed timely and efficiently – lowest cost for expected quality	Projects solve transportation safety and/or efficiency problems	Medium	External

Best Practice Organizational Foundation:

The Division's Project Management office should be the entity responsible for maintaining and supporting the scheduling tool. As owner, this office would be responsible for establishing future guidance with regard to project management policies, procedures, best practices, and ongoing tool support.

Best Practice Resourcing:

WisDOT currently does not have Primavera Scheduling expertise to apply to the projects. This function is currently being provided by outside consultants for utilization in the Mega Projects. The Project Management Unit currently procures a license and management services for the Mega Project team scheduler. The Project Management Unit, along with the BITS, coordinates software upgrades.

Best Practice Benefits:

Primavera Scheduling Tool Benefits:

- All activities are logic tied and due dates are maintained in one source to ensure that everyone is working towards the same goal.
- Centralized control of information and dissemination to a key single point of contact.
- Can be done very early in project development to provide analysis/"what if" scenarios to begin framework for project due date requirements.
- A variety of consistent and custom reports of interest by various design teams and functions can be created from the database.
- The schedule is updated almost daily with current status to maintain alignment and consistency in reporting.
- Logic tied schedule provides critical due dates for various tasks within the project.
- The schedule is created and managed based on advance-able schedules for program flexibility.
- The scheduler tool is interactive and provides analysis and feedback of pertinent items and due dates.
- Creates a structure for accountability and responsibility.
- Creates a true "team" culture.
- Internal and external milestone dates can be achieved and budgets can be better controlled.

- The reporting functions can be customized by discipline to ensure that relevant information is communicated in a consistent fashion.
- Provides level of confidence for managers in reporting consistency and delivery of the projects/program.
- Meetings can be streamlined.
- Helps to define/align budget requirements for delivery.
- The scheduler tool allows for faster development of custom reports vs. WisDOT in-house software.
- Allows for designers to focus on important tasks rather than spending many hours on schedule functions.

WisDOT PMP Application in Comparison:

- Tasks scheduled and completion dates are maintained in one source available to all project team members as well as all WisDOT staff.
- PMP schedules can be built very early in the program level scoping phase. Schedules can be manipulated to recalculate proposed schedule for "what-if' scenarios.
- Schedule reports are available through the application and through report writers. Various reports include schedule information related to the business area based on the report owner's business need.
- All schedule information can be updated by the project manager, project leader, and their delegates. Business area schedule tasks can be updated by the project business area representative and delegates.
- Tasks due dates are readily available for reviewing, updating, and reporting.
- Project schedules can and should be set to meet earliest possible PS&E dates.
- PMP schedules require engineering and business area experts review for accuracy, completeness, and credibility.
- Project team members are responsible for the delivery of their scheduled tasks.
- PMP is built for team work and promotes a team work environment.
- The budget module allows for delivery budget development and management. The delivery estimate calculator provides feedback to the project team on estimate delivery rate.
- Meetings can be efficient and effective.
- "Primavera Scheduler tool allows for faster development of custom reports vs. WisDOT in-house software"?
- Crystal Reports creates reports using PMP information. Reports are customizable and some are parameter driven (reports for business areas and programs).
- PMP schedule is quick and easy to use. Project team members must be held responsible for timely and accurate data.
- PMP application integrates scope, budget, schedule, team and contact information, and project phase development. Project-specific information from other systems is displayed in the PMP – Railroad Crossing Inventory System, Highway Structure Inventory System, and Transportation Utility Management System. No duplication of information when source of information is connected to the PMP application.

Best Practice Challenges:

There may be initial skepticism or resistance due to lack of familiarity with Primavera Schedules. WisDOT does not have in-house expertise in Primavera scheduling and thus requires outside consultants to provide the necessary expertise for WisDOT. As the current version of Primavera employed by WisDOT is not web-based, the WisDOT staff is not able to retrieve, view, and use the schedules as they currently are with PMP. For example, BOS needs to utilize the Primavera schedule to have sufficient resources available to structure plan submittals and review; however, since Primavera is not web-based, the schedule must be placed at a location they can access or sent to them periodically. Training may be necessary for certain WisDOT employees to learn how to read and utilize the Primavera scheduling tool.

Having multiple scheduling platforms is an additional concern when the primary service provided by the product is scheduling. Currently, PMP integrates scoping, budgeting, scheduling, and team and agency contact information. Migrating Primavera (Planner/Scheduler) client user to Primavera's web-based scheduling tool has a cost per license. Each user (reader or writer) requires a license for the web-based version. A web-based Primavera scheduling tool would allow for easier support and administration. However, integration with other systems of record could still present a problem. Integration could be achieved through reporting. The user would not have one-stop location for all project information within one system, rather the user would have to rely on reports to pull all the relevant information together for review. Changes would have to be made in the system of record.

Best Practice Risk:

The risk of not utilizing Primavera or another off-the-shelf critical path method scheduling software is in not meeting FHWA expectations for schedule definition, management, and reporting, and project team members not having critical path and comprehensive schedule tasks identified for proactive schedule management.

Primavera Scheduling software provides a critical path for many design milestones which can be tied together with logic to create a schedule. The current WisDOT PMP scheduling tool does not utilize critical path logic and does not allow multiple milestones to be implemented into the schedule. If Primavera is not utilized, PMP will need to be utilized, which could create issues with meeting Let date deliverables. This can create issues because it can be difficult for a project manager to manage many projects with multiple dynamic milestones within an accelerated schedule throughout all of the entities of the design. Primavera scheduling software is recommended and better suited for Mega Project program scheduling.

Best Practice Opportunities:

There are several ways in which to capitalize on the use of Primavera Scheduling software:

- Opportunity to develop WisDOT expertise staff as cost-saving measure
- Scheduling knowledge is important for successful project management
- WisDOT expertise staff with consultant staff available during program peaks; WisDOT expert staff may be more inexpensive than consultant expert staff

The following is an excerpt from the 2007 Project Management Tool Review Team Final Report:

> The 2007 PMP Tools Review Team recognized the benefits and demands of utilizing the Primavera software. The team recommends the matrices be used when determining which project management tools should be employed and which projects may meet the criteria for using Primavera software.
>
> Primavera Scheduling software is recommended for projects with high risk, accelerated schedules, and many critical path milestones or tasks. Some large non-Mega Projects may fit into these criteria. Large or long corridor projects with extensive real estate acquisition would also be suggested to manage many properties at different stages of real estate acquisition being completed by different entities (consultant, central office, and region). A dollar value threshold is not a good determination of criteria for whether Primavera or PMP should be utilized, as the project could be very simple in nature with not a lot of deliverables yet causing a large dollar value; whereas a smaller compact project with many obstacles could be a very good candidate for Primavera due to deliverables being dependent of each other to keep the project on schedule.

Primavera Scheduling software could be utilized for other programs within DTSD. An example of use could be utilizing it to schedule and organize research projects and inspection throughout the state. Each research project may have similar tasks all happening at different times. This would help organize staff and crews for inspection and other tasks needed to complete the project. Another program which could utilize Primavera could be the proving periods of plantings, signs, and pavement markings on a statewide basis. Aerial flights for photography and survey data request could utilize Primavera to determine appropriate schedules and deliverables needed to meet survey and photography requests from a statewide perspective. The WisDOT proposals section and Bureau of Structures could utilize Primavera to maintain a statewide program schedule for plan reviews to ensure the proper amount of staff are available for reviews to let projects.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

3. ENHANCED PUBLIC INVOLVEMENT/OUTREACH

3. Enhanced Public Involvement/Outreach

Best Practice Scope:

The goal of the Mega Project public outreach program is to ensure availability of timely, accurate, concise, and useful information to all public stakeholders and entities through a wide range of communication techniques. To be effective, a technique must provide appropriate public input for the relevant project phase, be cost effective, and reach the target audience. The combination of effective, targeted, and timely information is imperative to ensuring the relative effectiveness of a public outreach program and is the basis of the activities currently being employed on transportation infrastructure Mega Projects in the state of Wisconsin.

There are really two distinct phases of public involvement necessary during infrastructure development projects. During the environmental and design phases of a large-scale infrastructure project, the particular focus is listening to public feedback, understanding concerns, and incorporating stakeholder input. The preliminary focus is to try to ensure the public that their concerns and needs are being met in an effective fashion with the public money allocated to deliver the project. As the project progresses through preliminary and into final engineering and construction phases, the emphasis shifts to sharing information and responding to questions and concerns of the public related to construction. This provides direct communication with the public of how they will be impacted and for how long. In other words, it communicates the temporary pain endured for the long-term benefits received in exchange.

The best practices are based on lessons learned. The team performing the evaluation focused on the public involvement techniques that are traditionally employed during the construction phase of a project; however, it should be noted that much of the public outreach, public interface meetings, and methods of consensus building are all activities that are traditionally what would be employed during the design phases.

The following table presents the scope of items discussed at the team level for enhanced public involvement/outreach that can be applied at various phases of project delivery:

Media	Technology	Print Pieces	Outreach	Visual/graphics	Meetings	Other
–Paid media: Radio, print ads, TV, digital banner, non-traditional –Free media: Blogs, building relationships, news releases	– Project web sites – Social media – E-blasts – QR codes – Emerging technology	– Newsletters – Brochures – Get around guides – Project briefs – Media inserts – Postcards – Database development for print pieces	– Neighborhood meetings – Outreach specialists – School/education outreach programs – Hotline (including 24/7 access) – Festivals – ethnic, WI State Fair, faith-based – Door to door/literature drops – Business toolkits – Translated pieces into various languages – Multicultural outreach – Meeting calendar	– Physical models – Drive through animations – Renderings	– Project Information – Meetings – Hearings – Advisory committee meetings (Technical, Citizen, CSS) – Elected official briefings	– Public Involvement plans – Project Branding – Market research

Best Practice Policy Requirement:

There are numerous state and federal regulations and laws that influence WisDOT's public involvement program and effectively dictate the need for a focused and directed Public Involvement/Outreach effort. Each of these elements influences the type and manner in which information is disseminated to the public. The overarching theme of each of the regulations and laws is to ensure that the public is adequately informed of the planned improvements. The goal is to ultimately gain buy-in from the public in terms of reassuring them that their public dollars being expended are being utilized effectively while informing them of the benefits they will receive in exchange. The second piece is to ensure that the public stakeholders understand the temporary disruptions that must be endured in order to obtain the planned benefits and public improvements. The following lists summarize the various state and federal laws and regulations:

State Laws:

- Wisconsin Statutes, Title I, Chapter 1.11, regarding environmental policy.
- Wisconsin Statutes, Title XI, Chapter 84, governing the State Trunk Highway System.
- Wisconsin Statutes, Title VIII, Chapter 66, regarding urban and regional planning and coordination.

Federal Laws/Regulations:

- Federal-Aid Policy Guide, Part 771, Environmental Impact and Related Procedures.
- Federal-Aid Policy Guide, Part 712, R/W Acquisition.
- 40 CFR 1500 – 1508 - This regulation requires that all agencies make diligent efforts to involve the public in preparing and implementing their NEPA procedures.
- The Federal-Aid Highway Act of 1962, Section 134, requires a 3-C planning process (Comprehensive, Continuing, and Cooperative) in all urban areas (23 USC 134).
    - The Federal-Aid Highway Act of 1970 is most significant for public involvement in highway planning and design.
- Each state must have procedures, approved by the FHWA, to carry out a public involvement/public hearing program pursuant to Section 23 USC 128. WisDOT procedures are in this chapter.
- Section 4(f) of the Department of Transportation Act of 1966 requires considerations relating to publicly owned parks, recreation, wildlife, or historic areas.
- The National Environmental Policy Act of 1969, Section 102, requires the preparation of environmental impact statements on all major federally aided projects with significant impacts (42 USC 4321, et seq.).
- The Demonstration Cities and Metropolitan Development Act of 1966, Title II, requires area wide reviews of federally aided capital projects in metropolitan areas.
- The Intergovernmental Cooperation Act of 1968.
- Executive Order 12898, Federal Actions to Address Justice in Minority Populations and Low-Income Populations, February 11, 1994.
- The Transportation Equity Act for the 21st Century (TEA-21).

- TEA-21's requirements for public participation are not necessarily project specific. In general, TEA requires that state and metropolitan planning organizations involve the various public stakeholders and entities early and throughout their long-range system planning, programming and transportation decision-making processes.

Best Practice Purpose and Need:

There are several elements defining the purpose and need of the Public Involvement and Outreach efforts deployed on transportation infrastructure Mega Projects in the state of Wisconsin. The most prominent purpose and need is to comply with state and federal regulations in keeping the public stakeholders properly informed and allowing for their input into the development process. The purpose is also to ensure the availability and dissemination of timely, accurate, and understandable information to WisDOT's customers (i.e., public users of the infrastructure) during all phases of a project. The maintaining of good relationships with the end users works towards ensuring the maintenance of public goodwill for WisDOT in both the immediate and longer term future.

The specific need of the program is ensuring that this information is available, accurate and timely. This requires the utilization of resources that are able to articulate and clarify key issues to the public in a concise and effective manner. This requires an understanding of the multiple perspectives of the various public stakeholders and entities involved. Generally speaking there is a need to provide opportunities for meaningful input into a project's planning process in order to establish trust and credibility that WisDOT is a good steward of public monies invested into the public's future. This allows for the public to understand the benefits they receive in return for their public investment and disruptions that arise as a result of major infrastructure construction efforts. At the heart of an effective program is the need to be responsive to constituent issues during all phases.

Best Practice Stakeholders:

There are multiple stakeholders involved in any public involvement and outreach effort. Stakeholders range from residents, businesses, commuters, tourists, multi-modal partners, municipalities, counties, state agencies, and elected officials all the way down to truckers, contractors, and ultimately those tasked with moving goods and people. The external agency stakeholders include the various multi-modal partners, municipalities, counties, state agencies, and elected officials tasked with serving the public's best interest. The external non-agency stakeholders are largely comprised of the end users of the transportation facilities. These stakeholders include residents, businesses, commuters, tourists, truckers, and ultimately the contractors who are tasked with constructing the end product.

It should be noted that a best practice is to establish a database of stakeholders during the environmental phase that can be built upon during subsequent stages. The database should include constituent name, address, and e-mail addresses. A solid database serves as a tool for disseminating project information and builds the foundation for communicating with the public in an efficient and cost-effective manner.

Best Practice Organizational Foundation:

Public involvement best practices are most effective when holistically owned at multiple levels within WisDOT. The main levels of ownership are comprised of the project level, regional director/regional operations director level, and at the administrator/executive offices level. Ownership of the public involvement and outreach efforts at these multiple levels ensures that the greater WisDOT organization is delivering effective public communication and coordination at all levels.

Ownership of public involvement and outreach efforts at the project level provides a mechanism for ensuring responsible day-to-day coordination. It is recommended to continue the use of a project communications manager-advanced (PCM) to serve as the lead of outreach activities. The PCM can recommend and coordinate strategies while making cost-conscious outreach decisions on the individual project level. This provides for the most efficient use of monies invested into public involvement as the PCM is an integrated member of the project team who serves as the point of contact between key stakeholders, media, and elected officials, as well as the WisDOT management team.

Ownership of the public involvement and outreach efforts at the regional level by a Regional Director/Regional Operations Director provides a mechanism for regional oversight and understanding of the public communication effort. The Regional Director effectively oversees the efforts of the PCM activities. This helps to keep regional management informed and to continue to communicate the same messages on a higher level. In addition, management of the public involvement and outreach efforts by the Regional Director provides insight into decision making and review processes.

Finally, at the highest levels of management within WisDOT, ownership of the public involvement and outreach efforts at the administrative and central office level by the appropriate Administrator/Executive Officer ensures that the greater WisDOT message and intent is properly communicated. The administrative level is more functioning as quality assurance that the message being delivered is in alignment with the greater WisDOT mission and vision of the organization. This also provides a mechanism for final decision makers to give authority to move forward with planned outreach strategies and the associated cost commitments involved.

Best Practice Resourcing:

Resourcing of outreach activities is a combination of WisDOT staff and consultant staff. It should be noted that a single PCM on a Mega Project (or multiple Mega Projects) does not provide enough resources to handle demands of the outreach programs as currently defined. There are activities that are not cost-effective or practical for WisDOT staff, for example:

- Media production (radio, digital banner ads, inserts, etc.)
    - Advertising firms have the buying power to provide the most cost-effective media plan and this is their actual business. WisDOT is not traditionally a media company and these types of activities should be outsourced. In addition,

specialized software and in-house media relationships position advertising firms to be the best resource to perform this activity.

- Graphics/visual production
    - WisDOT does not have the in-house capability of creating computer-generated visualizations, virtual drive-throughs, renderings or creating physical models of Mega Projects. Outsourcing these tasks to qualified firms is the best use of funds as it eliminates much of the risk associated with the learning curve and acquisition of needed equipment and materials for production.

Best Practice Benefits, and Challenges:

The benefits and challenges of enhanced outreach programs depend largely upon regional demographics, project complexity, the degree of public concern, the nature of the projected traffic impacts, the size of stakeholder databases (or available information), and media markets. It should be noted that public involvement in the design phases are typically funded from the design pool of funds as a separate item of either corridor management or technical expert contracts. During construction, public involvement costs are typically funded through mitigation contracts.

The recommended best practices for public involvement/outreach on Mega Projects in Wisconsin noted i the following table:

Task	Best Practice
Paid media: Radio live reads and produced spots	Use radio to best saturate target audience. Use only during construction phase of project when impacts are greatest
Paid media: Television ads	Use cable TV opportunities and working with news shows on securing regular updates
Paid media: Print ads	Discontinuing use of paid print ads during construction phase. During input phase, target community-specific papers and multicultural papers
Paid media: Digital banner ads	Use digital banners as a best practice when the demographics suit the technique
Free media: News releases	Suggest discontinuing weekly news releases. Place focus on major traffic impacts and events via traffic alerts. Continue posting closures on web site and social media tools.
Web: Project web sites	Use project web sites within the determined 511 template. Need adequate resources to maintain content and set up initial pages/graphics support.
Web: Social media sites (Facebook, Twitter, YouTube)	Use social media in tandem with WisDOT's "stay connected" site. An upcoming social media peer exchange, hosted by Wisconsin, will help identify other states' best practices
Web: E-blasts	E-blasts are an effective best practice. Consider using Mail Chimp (or other similar products) which allows you to send 12,000 e-mails a month to a list of up to 2,000 subscribers.
Print pieces: Newsletters	Use newsletters during the environmental/planning phases of a project when more discussion of alternatives is needed. Limit printed newsletter usage during construction. Consider translating into other languages according to the demographics of the audience.
Print pieces: Get Around Guides/Rack Cards	Continue usage of Get Around Guides as a best practice. WisDOT still needs to diversify our techniques for customers to obtain information other than via a computer. Make sure to estimate print quantities accurately to limit waste. Consider translating into other languages according to the demographics of the audience.
Print pieces: Project Briefs	Project briefs are a positive best practice. Try to obtain email addresses from homeowners to better distribute information in a timely manner.
Print pieces: Media inserts	Minimize usage of media inserts. If/when they are deemed necessary; concentrate on Inserting into the smaller /medium sized papers is the only cost-effective option.
Outreach: Neighborhood specialists	There may be some aspects of Mega Projects that are met with high public concern/resistance. This approach worked well within population dense areas such as the Marquette IC and Mitchell IC, but not as effective on the Kenosha/Racine segments of I-94 N-S and on US 41. Work to build relationships with community leaders as a best practice.

Task	Best Practice

Outreach: Project hotline	Discontinue hotline usage. Instead, redirect customers to utilize 511 to maximize the investment into that technology. Current hotlines were established prior to 511 initiating.
Outreach: Festivals	Considers booths at festivals as a best practice; however, WisDOT should look at ways to provide self-service booths to minimize staff commitments. Also consider multicultural/ethnic festivals to ensure traditionally under-served populations are receiving project information
Outreach: Door to door	Minimize the use of door to door outreach when possible. If there is a certain neighborhood or area of particular concern, utilize literature drops if appropriate. Try to obtain as many e-mail addresses as possible when doing door to door for future correspondence.
Outreach: Business toolkits	Continue use of business toolkits as a best practice
Outreach : Meeting calendar	Continue use of a meeting calendar as a best practice
Visual /graphics: Physical models	The design and complexity of a Mega Project should drive the need for a physical model or digital renderings. Recommend utilizing technology wherever possible as opposed to creating a physical model
Branding	Adopt branding as a best practice. Helps set the stage for all project communications. Consider utilizing CSS for future branding work. Advertising/marketing firms tend to insist on conducting market research prior to creating a brand identity. Coordinate with other statewide efforts for market research.
Public Involvement Plans	Write a yearly public involvement plan to manage expectations and evaluate effectiveness.
Advisory Committees: (Technical, Citizen/Community, CSS)	Utilize Advisory Committees during the environmental/planning phases of a project, when input is critical into design. During the construction phase, communicate with these stakeholder groups via e-mail if possible.

Best Practice Risk:

The risk of not doing this best practice is multi-faceted. First, it presents the almost certain loss of public goodwill in terms of WisDOT and the infrastructure improvements being derived. Second, there becomes a breakdown in understanding of not only the benefits being derived, but what the cost implications and disruption implications are. Third, it presents WisDOT as an agency that does not care about the public and does whatever it wants. This makes it quite challenging in the grand scheme to gain public support and buy-in for the funding of future projects and to be able to effectively develop infrastructure in the state of Wisconsin that will accommodate the existing and future demand. Instead of planned infrastructure improvements being cast as improvements and benefits to the public, they could potentially be viewed as burdens and unnecessary. The risks to not doing public involvement all stem from a lack of a partnered approach and elimination of efforts to educate the public on why infrastructure improvements should be important to them both as an individual and in terms of broader economic considerations.

Best Practice Opportunities:

There are a few opportunities to streamline public involvement that largely relate to the manner in which media is consumed by the broader public. Consumers of media are largely shifting to mobile platforms and electronic media, and public involvement and outreach efforts and best practices should respond accordingly.

One item that needs more discussion is the web-based map routing tool for Mega Project web sites. While most needs will be met by the new 511 template, there may be certain Mega Projects that involve challenging traffic staging and multiple access changes. More discussion should occur related to this technology and whether it may be a logical expansion of 511 or coordinated through individual Mega Project web sites.

- From Public Relations Society of America: For a growing number of Americans, computers now rank behind smartphones when it comes to accessing the Internet. According to a new study by the Pew Internet & American Life Project, **25 percent of smartphone owners go online with their phones more than they do with a computer.** The research showed that, while many of the individuals who prefer smartphones have other sources of online access at home, **roughly one third of them lack a high-speed home broadband connection**. "For businesses, government agencies and nonprofits who want to engage with certain communities, they will find them in front of a four-inch screen, not in front of a big computer in their den," Pew researcher and report author Aaron Smith said in a *Washington Post* article. The study found that **one-third of all cellphone-owning adults have smartphones**. The groups with the highest levels of smartphone adoption include Blacks and Hispanics, the financially well-off and welleducated, and those under the age of 45. Urban and suburban residents are roughly twice as likely to own a smartphone as those living in rural areas and employment status is also strongly correlated with smartphone ownership. All research leads to smartphones reaching or exceeding 50% of the market by the end of 2011.
- US-41 is piloting a program to allow highly-impacted businesses to advertise free of charge on the project web site. This web page will let customers know that businesses are still open despite the construction. If customers are worried about getting to businesses, this area of the website is one place we can help reassure them.
- Continue evaluating emerging technologies such as Quick Response (QR) codes to use on our project materials. This is a free technology, although consumers have to download an app, which is a process that is not ideally streamlined at current. Mobile barcodes are a response mechanism -- just another way for consumers to choose to engage with us. The QR barcode has become the gateway to information, data exchange and mobile commerce with the Smartphone acting as the primary device for every consumer interaction. From July to December 2011, QR code usage grew by 1,200 percent.

Explore webcasting for public meetings or high-interest topics. A webcast is a media presentation distributed over the Internet using streaming media technology to distribute a singular message to listeners/viewers. A webcast may either be distributed live or on demand in a cost-effective manner. Webcasting is essentially broadcasting over the Internet.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

4. TECHNICAL EXPERT CONTRACTS

4. Technical Expert Contracts

Best Practice Scope:

The scope of this best practice is defined by the scope of services procured in past technical services contracts from previous Mega projects and is focused on providing the best overall value for project delivery. Below are some of the tasks and scope of services that is typically included in the best practice of technical expert contracts.

- Unique Special Provision development (i.e. Dispute Resolution boards, Partnering, Bid Escrow, Pay Plan Quantity, technical specifications, etc.)
    - Allows for delivery of projects in a partnered approach with industry and ensures that projects can be delivered by the construction contractors tasked to build the project in the most efficient manner.
- Prequalification process
    - Ensures that the contractors involved in the project delivery process can meet the required level of quality and have the necessary capabilities.
- Peer Review of Design (Cost Estimates and Schedules)
    - Ensures that the planned costs and projected schedules are sufficient and achievable. In addition, the peer review of design allows for identification of uncertainties and risks and inconsistencies that can be resolved to ensure the Mega Project has sufficient budgets and can control time for planned delivery.
- Risk Assessments
    - Identify both the threats and opportunities that are most in need of management for the project and ensure that costs and schedules are proactively managed and controlled.
- Constructability Reviews
    - Ensure that the designs are able to be constructed as planned and help to optimize designs to the field conditions for construction.
- Construction Program Management Advice
    - Provides additional feedback and guidance from the basis of technical experience on best practices utilized not only in Wisconsin, but also in other states.
- Construction claims
    - Ensures that construction claims are sufficiently reviewed for assurance that the department can control costs and not excessively compensate for issues such as contractor error versus justified claims.
- Unique and accelerated construction methods
    - Are capabilities that can be leveraged from technical experts and their experiences in major infrastructure construction throughout the entire United States. This helps to bring innovation to the department and ensure that the most efficient and effective construction methods are being deployed.

Overall, each of these specific scope items are about enhancing the performance of management of the project, controlling Mega Project budgets, and ensuring compliance with

the planned schedules and milestones of delivery. This is a value based approach that ensures knowledge transfer and the gaining of unique perspective from contractors that offer subject matter experts in project delivery and infrastructure construction.

Best Practice Policy Requirement:

There is no policy requirement for this best practice; however, it should be noted that these contracts are typically utilized to facilitate best value practices within the agency. Mega Project Project Management Plans are required by FHWA. These plans often incorporate unique management structures, quality control (QC) processes in design and construction, unique review processes for program budgets, design, constructability, and schedules. These contracts support a wide range of activities and functional areas incorporated into Mega Project management. These contracts have provided an important and much needed service to WisDOT as in-house staff is either inexperienced in these specific areas or not available to perform these extensive, time sensitive tasks.

In addition, FHWA's "Everyday Counts" initiative is geared towards accelerated schedules and the introduction of innovative means and methods to building projects. In recent years, many of the innovative ideas now commonplace within WisDOT have come from outside of the WisDOT culture and have been introduced into the project from the technical expert contracts. These ideas have added value by streamlining the design and construction delivery while often reducing costs. The opportunity for cost and schedule control, coupled with enhanced performance in delivery and management of Mega Project's offers a good value to WisDOT as a best practice.

Best Practice Purpose and Need:

The purpose of utilizing technical expert contracts on Mega Projects is to provide unique and timely analysis to the Mega Project functions of design and construction. The experts bring a national contractor mentality with innovative feedback and insight from beyond the WisDOT purview. In this capacity, the experts supplement the knowledge level or fill in gaps that exist in the overall WisDOT experience base. Specialized feedback/review from outside WisDOT is especially important given the high complexity of the Mega Projects and the lack of resources within the department to perform this with in-house staff. All of the items identified in the Best Practice Scope section above typically require very timely feedback that usually only an outside expert specialized for the task can provide with considerations to the tasks and level of effort of other WisDOT staff.

While WisDOT has made strides in developing in-house expertise in these areas, the resources and depth of experience is not adequate to wholly rely upon in-house resources. The recent loss of WisDOT experience due to the rash of retirees has only made this more difficult to resource with WisDOT staff. Other resources that are available to WisDOT are through FHWA, AASHTO, and other national contacts. These technical contracts provide an additional way to locate this experience and bring it to the project when additional resources are limited or not applicable.

The very nature of Mega Projects brings very complex, unique, fast-paced challenges in design and construction that are outside the normal experience. These challenges introduce risk to cost and schedule which must be addressed adequately and in the same measure. This places particular emphasis on risk management of delivery from the technical expert perspective, as the technical experts providing this service are used to working on major infrastructure investments around the country and have a wealth of knowledge on how to mitigate threats and maximize opportunities. The nature of the work and level of complexity determines the need for technical experts from outside the department. The benefit of these experts working with WisDOT staff helps expose them to these innovative practices. Through various technical service contracts, these experts indirectly develop the skills and expertise of WisDOT personnel with which they come into contact with. This supplemental on-the-job training can then be leveraged and applied for the benefit of other projects within WisDOT. These contracts enhance the owners' ability to understand, review, and develop the best design and contracts to administer the projects efficiently and with controlled and reduced risk. The overall purpose and need of these contracts is to deliver projects with the best value while leveraging knowledge of subject matter experts with significant experience in developing infrastructure within the United States.

Best Practice Stakeholders:

The stakeholders responsible for implementing this best practice are the Mega Project WisDOT regional team and the WisDOT Bureaus. While these stakeholders are responsible for identifying and defining the need for the level of technical expert contract to supplement the in-house review process, it is clear that other stakeholders benefit. Local contractors and local designers are also involved and learn from the utilization of this best practice. In addition, the Bureau of Project Development and the Bureau of Technical Services translate many of the practices initiated under these contracts into statewide efforts or specifications when applicable. This allows for transfer of knowledge and progression of WisDOT as a whole in terms of its practices and policies for effective and efficient delivery at best value.

Best Practice Organizational Foundation:

The Mega Project WisDOT regional team is the entity wherein the foundation for this best practice should reside. Decisions and considerations for usage of these technical expert contracts should be made by the specific Mega Project management teams. It should be noted that it is not necessarily the decision on whether or not to utilize these contracts, but rather the extent of scope required to provide the needed level of expertise. There is also a role for the Bureau of Project Development to be the clearinghouse for implementation of outputs of this best practice into statewide utilization in other projects or specifications. When individual Mega Projects realize efficiencies in the form of best practices, this knowledge and certain capabilities should be transferred to WisDOT across the organization. This allows for the facilitation of continuous improvement across the entire organization of WisDOT.

Best Practice Resourcing:

This best practice should be consultant resourced in order to continue to extract knowledge and guidance from technical experts outside of the department. The department has made strides in expanding in-house knowledge in Mega Project design, construction, staging, and schedule techniques with the successful completion of the Marquette Interchange and I-94 North-South and US-41 progress to date. However, these gains have been offset with staff loss from regular employee turnover and retirements, as well as the effects of the current national economy. The scope of services provide for knowledge and expertise that either does not exist in-house or is not readily available with current staffing levels. These contracts supplement WisDOT in-house review and owner responsibilities that are consistent with FHWA expectations. In addition, the use of these contracts continues to ensure the delivery of large and complex projects at the best value to the public stakeholders of Wisconsin.

Best Practice Benefits:

The benefits of this best practice are numerous. The most significant benefit is to support WisDOT in-house review of the consultant design and construction plans. The enhanced technical support provides national experience and encourages innovative practices. The reviews help to reduce the various risks associated with Mega Projects while enhancing the potential to take advantage of opportunities. The service contracts also help to ensure constructability within guidelines and requirements while maintaining or improving schedule and providing cost stability or reduction. Efforts to proactively identify, quantify, and manage risks also help to ensure effective and efficient management action. Management of risk and uncertainties also provides for direct focus on major issues and a means for management to understand where to focus their efforts. Controlling of costs and management of program budgets and schedules helps to provide actionable data for decisions to be made. Lastly, an important byproduct are the knowledge, skills, and experience that WisDOT staff are able to develop through exposure to national practices and approaches to Mega Project design, construction, and specifications brought to them by outside experts. Not only do projects realize enhanced value from streamlined costs, controlled schedules, and efficient delivery, but WisDOT staff are able to progress in their careers as a result of knowledge transfer.

Best Practice Challenges:

The challenges that exist with this best practice lie in the proper scoping of the contracts. Each Mega Project is unique in that it has its own challenges and complexities. WisDOT continues to develop and enhance its in-house expertise as more projects of this type are initiated. Technical expert contracts should not provide services that WisDOT has the expertise and capacity to provide internally, or which are available through FHWA, consultation with other states, or AASHTO. Additional challenges may be encountered with finding the appropriate technical expert to address the specific issue at the right time and place. The purpose of the contracts should be clearly understood. The contracts provide WisDOT staff in responsible charge of the project, enhanced and supplemented review capacity for the prime design consultant design and construction plans.

Best Practice Risk:

The risks associated with not employing this best practice are significant, but not always readily apparent. By not employing technical experts to supplement the WisDOT in-house staff in responsible charge of the project, the major risk lies in not reaping the cost stability or reduction benefits in the project. The project design and construction plan may overlook or not consider constructability and schedule enhancements. Risks can become uncontrolled, leading to significant cost and schedule overruns. In addition, management may not be the most focused on what the critical issues of delivery are. WisDOT staff will also miss the opportunity to learn procedures and practices that are not typical in the WisDOT culture and to further enhance and develop their individual skills. Further, the project as a whole could lose the opportunity to effectively reduce risk and/or decrease cost, which may be the difference between a successful, publicly accepted project and an unsuccessful project not embraced by the community or the taxpayer.

Best Practice Opportunities:

The opportunities to reduce the cost of this best practice lies primarily within the proper scoping of the contracts to match the unique challenges or specific complexities of the project which it is intended to serve. Once this is addressed, the project team should assess the current technical experience and capacity of in-house staff that is available to perform the necessary tasks, prior to contracting for the services. Over time it has been noted that certain areas of technical expertise have become a part of the WisDOT in-house staff culture and may be able to be resourced through in-house staff so that it may not need to be contracted for. Continued integration and exposure of WisDOT in-house staff to these technical processes or reviews will enable further potential cost reductions in the future with increased reliance on in-house staff. The bringing of innovative techniques, efficient design and construction methods, and quality techniques in risk management will always help to enforce the best value in delivery concept of this best practice.

The nature of this best practice is to address the technical deficiencies in expertise or resourcing within WisDOT with special technical expertise contracts. The contracts are tailored to answer the specific needs and complex nature of each Mega Project so that it may be reviewed satisfactorily by the owner to ensure cost, schedule, and risk reduction has been maximized. It is anticipated that as WisDOT expertise expands, the use of these contracts may decrease as some concurrent level of resourcing occurs. In terms of individual projects within WisDOT, concepts of risk management and delivery best practices should continue to be utilized. There is the possibility for the use of a statewide on-call type of contract for all projects that could be leveraged to provide enhanced value to the more normal types of projects as opposed to just WisDOT Mega Projects.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

5. INDEPENDENT AND/OR ENHANCED CONSTRUCTABILITY AND DESIGN REVIEWS

5. Independent and/or Enhanced Constructability and Design Reviews

Best Practice Scope:

The goal of providing independent and/or enhanced constructability and design reviews is to provide periodic feedback and input for the betterment of the project design. The independent review workshops or periodic reviews by outside consultants not associated with the design of the project are being performed on most of the current Mega Projects at established design milestones to add value and to ensure that the projects are meeting all standards, requirements, and relevant criteria present in the Mega Project scope of work.

Best Practice Policy Requirement:

The WisDOT and FHWA policy requirement is to provide those mechanisms or measures that will avoid construction change orders, which will cost the state additional time and funds as well as tie up resources unnecessarily. It is the expectation of WisDOT and FHWA that plans are checked and reviewed by persons that are knowledgeable in the subject matter area. The individuals conducting the review may be internal to the organization or outside consultants considered experts in their respective fields. To maintain an objective mindset and a fair level of impartiality, individuals not overly familiar with the design should be utilized.

Best Practice Purpose and Need:

The purpose of the independent and/or enhanced constructability and design reviews is to provide guidance and input on Mega Project design at critical design milestones. The review of plan sets from an independent perspective in relation to the scope of work and all other necessary project requirements provides much needed objective feedback to the project staff. It is expected that the Mega Project staff is conducting their own independent QA/QC reviews on the plans they submit to WisDOT; however, the intent of the independent reviews is to provide an extra layer of quality assurance. Extra efforts should be made in areas in which integration and overlap issues tend to arise. This occurs mostly with individual tasks within the project plan where different individuals are responsible for delivering separate portions of the integrated plan (e.g. bridge deck blisters and the pole that will be attached).

Best Practice Stakeholders:

The stakeholders involved with independent and/or enhanced constructability and design reviews include a wide range of individuals. Certainly WisDOT Management, contractors, project managers, project team members, and outside consultants are all affected both directly and indirectly by the utilization of independent constructability and design reviews. It is also possible to bring in outside agency and/or end user representatives where and when appropriate depending on the particular aspects of the Mega Project and where the project is with relation to its life cycle (i.e., milestone).

Best Practice Organizational Foundation:

The ownership and ultimate implementation of this best practice should reside with the Mega Project Program Management team. Based on scope and scale of the project there may be a

need for varying levels of review. The Mega Project manager should determine which individual projects have the highest degree of complexity and most relation to the critical path. These relatively "higher order" projects should then be the initial starting place for greater scrutiny via the independent and/or enhanced design and constructability reviews. It should be noted that Bureau and Region experts should be utilized to the fullest extent possible to avoid duplication of errors and to ensure conformance with design specifications and engineering best practices for that particular region of the state.

Best Practice Resourcing:

It has been the recent practice of WisDOT management to pursue contracts with outside consultants to perform independent and/or enhanced constructability and design reviews. The use of consultant outside resources helps to supplement WisDOT staff and to ensure that bottlenecks in progression of design are not significant when WisDOT staff is focused on working on other tasks. The most important aspect is that it genuinely introduces an outside perspective from an independent party. It may be possible to formulate a specific "center of excellence" type of QA/QC team within WisDOT to further focus groups of technical experts; however, the most cost effective means appears to be usage of outside consultants due to the potential agency costs that could be incurred in developing this expertise and carrying the associated labor and overhead costs.

Best Practice Benefits:

There are several benefits to performing enhanced and/or independent design and constructability reviews. The main benefit of the independent constructability and design reviews is to uncover problems and rectify them before they reach the critical construction stage and evolve into contractor delays, which incur additional construction costs. In addition, the independent review process allows for outside expertise from someone not working on the project to scrutinize the design and its level of constructability in relation to the intended scope. Another benefit is that decisions driven by the design that may introduce greater risk and complexity can be reviewed and modified to simplify construction and reduce the overall project risk. Another main benefit of the use of this process is that WisDOT now has sufficient in-house knowledge and experience with dealing with Mega Projects to the extent that it can rely on internal agency expertise in the making of program decisions.

Best Practice Challenges:

There are a number of challenges to conducting independent constructability and design reviews. The most obvious challenge is ensuring that WisDOT receives a commensurate level of measurable and tangible benefit for the costs incurred to perform the reviews. Additionally, WisDOT has the burden of verifying that the independent reviewers have the necessary expert WisDOT skill set and knowledge of the construction and design elements with which they are tasked to review. Finally, for the successful implementation and maintenance of a formal periodic review process, WisDOT will need to ensure that it has ongoing access to a wide pool of reviewers. WisDOT will have to establish a program that can provide a number of available

qualified reviewers in a wide range of technical areas to avoid over-working certain individuals or experiencing availability issues.

Best Practice Risk:

There are a few key risks that arise as a result of not performing enhanced and/or independent design and constructability reviews. The first and most prominent risk is that construction costs may increase as a result of lack of review. When projects receive little scrutiny and an independent review of the design there is the possibility that some details can be overlooked or opportunities for efficiencies can go unnoticed. Furthermore, in complex projects it is an opportunity to ensure that the design can be constructed as planned without the introduction of construction techniques that local contractors may not be familiar with, which can result in increased bid costs. The next risk is that the transfer of knowledge from other regions and from technical experts may not be leveraged. This leads to the likelihood that efficiencies may not be realized and that the designs may not be optimized for constructability. The final risk is that safety of staff and others may be compromised due to unintended consequences associated with increased levels of risk in construction that are introduced as a result of the design. There is also the remote possibility that the facility design does not function as intended and ultimately may impose some safety risk on end users of the roadway; however, it should be acknowledged that this risk is very low and is often resolved early in the design process.

Best Practice Opportunities:

WisDOT has the opportunity to leverage sufficient in-house knowledge and experience with dealing with Mega Projects. This allows the agency to look to the future to rely more heavily on its own expertise to make program decisions as opposed to fully relying on national experts. The use of these in-house experts should be pursued whenever possible to perform the periodic constructability and design reviews. With the aid of these experts, check lists can be developed for areas in which WisDOT experiences repeated problems and new best practices can be developed which will help to enhance efficiency and eliminate recurring issues in the future. This can reduce the net costs incurred in the form of consultant fees associated with Mega Projects; however, it should be noted that sufficient internal staff must be available to accommodate the workload and not inhibit progression of design.

In terms of opportunities to expand the best practice, it comes down to an issue of quality assurance/quality control (QA/QC). QA/QC should be expected on every project delivered. The development of checklists for specific review items and areas of consistent concern for both consultants and in-house staff to utilize could be developed for all projects. This helps to reinforce the review process and establish expectations of what the expected level of design scrutiny is. This also provides the opportunity to limit issues and/or enhance project value by optimizing the designs for their constructability and to allow for the leveraging of knowledge transfer.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

6. CONSULTANT CORRIDOR MANAGEMENT ASSISTANCE

6. Consultant Corridor Management Assistance

Best Practice Scope:

There are several elements included in the scope of performing Consultant Corridor Management Assistance. In general, the basis of the Corridor Management Assistance is to supplement WisDOT in its efforts to effectively communicate and coordinate the activities required for the Mega Projects to be efficiently and effectively delivered at the best value for the allocated capital. The overarching goal of Consultant Corridor Management Assistance is to ensure that there are adequate resources available to effectively be able to move forward in the project delivery process while ensuring that the proper level of technical and management expertise is leveraged. Consultant Corridor Management Assistance contracts can also serve as a mechanism to foster development and growth through opportunities to educate and include WisDOT staff and further their individual career development. Included within the typical scope of Consultant Corridor Management Assistance activities are the following tasks:

- **Project Schedule:** Assist in coordinating and verifying the project schedule and tracking of critical path activities. In addition, develop risk response and mitigation strategies and action plans for tasks that are identified as being “at risk”.
- **Project Estimate:** Assist in developing, tracking, and validating individual project bid item quantities and cost estimates, along with the validation of the total program design and construction estimate for the Mega Project. Examples of Mega Projects where this has been done are: I-94 North-South, Zoo Interchange, US-41, and I-39/90.
- **Corridor Consistency Reviews:** Assist WisDOT in reviewing plans and reports prepared by other designers and internal WisDOT teams within the corridor in order to ensure quality and consistency in development and presentation of plans and reports.
- **Corridor Standard Drawings and Standard Specifications:** Assist in developing standard roadway and structure drawings along with specifications for corridor-wide use. This involves efforts for coordination with Central Office, Industry, and establishment/refinement of Standard Specifications.
- **Corridor Construction Scheduling and Financial Planning:** Assist in developing and refining a corridor-wide construction staging and scheduling plan. This task involves reviewing and incorporating work and information provided by the local program and STH 3R programs.
- **Corridor Design Project Management and Support:** Assist with corridor-wide design project management activities.
- **Corridor Risk Management:** Assist in identifying, evaluating, and refining a corridor-wide list of cost and schedule risks. This followed by developing and implementing corridor-wide risk response strategies and action plans to minimize threats and maximize opportunities. This provides a “one stop shop” for consultant design leads in the management of their projects with respect to uncertainty and risk.
- **Corridor Work Zone TMP:** Assist in developing a corridor-wide Work Zone Transportation Management Plan (TMP) for multiple counties. This involves coordination with the Region ETO, RIMC, and RDOs in order to formulate an Incident Communications Plan.

- **Corridor Utility and Real Estate Coordination:** Assist in reviewing utility work plans within the corridor. This task includes working with county design leads across multiple counties to coordinate corridor-wide utility issues utilizing a consistent approach. This also involves assisting in tracking the purchase right-of-way and helping to assign and track the risk of the critical project parcels.
- **Corridor Business and Labor Coordination:** Assist in developing a corridor-wide business and labor strategy.
- **Corridor DNR and Corps of Engineer Coordination:** Assist in facilitating corridor agency coordination meetings and permitting activities.
- **Corridor Inter-government Coordination**: Assist in facilitating corridor-wide inter-government coordination meetings. Meetings are typically held with cities and multiple counties, as well as the State of Illinois, the Illinois State Tollway Authority, and various towns along the corridor.
- **Corridor QA/QC Activities:** Assist in developing and monitoring corridor-wide QA/QC processes and procedures. This includes both the design and construction phases in order to ensure consistent implementation of designs and quality construction in a consistent manner.
- **Construction Coordination and Feedback:** Facilitate feedback to design from construction by reviewing and investigating issues from construction, vetting recommendations with appropriate functional areas, and implementing recommendations through corridor manual updates.
- **Corridor Drainage Coordination:** Develop and maintain a database of "Drainage Areas of Concern". This includes review of projects with construction staff to ensure drainage concerns have been appropriately addressed in the field.
- **Corridor Supporting Documentation:** Develop project briefs, newsletters, annual reports, and maps for WisDOT and key stakeholders in order to allow for effective communication and dissemination of information across all stakeholder groups.

Best Practice Policy Requirement:

The requirement for the use of Consultant Corridor Management Assistance teams is effectively part of the Mega Project Management Plan required by FHWA. The use of the Corridor Assistance Management teams ensures that the proper technical expertise is applied and that the availability of resources is addressed. The general policy is to ensure that the work can be completed with the available resources and that it is managed by technical experts with sufficient skills and capabilities. The use of Consultant Corridor Management Assistance teams provides this function while not burdening WisDOT with longer term legacy overhead costs for a single Mega Project.

> *For example: The I-94 North-South Corridor Project Management Plan approved by WisDOT on 10/23/08 and accepted by FHWA on 11/14/08, outlines the organizational structure for the I-94 North-South Corridor team, which includes a Corridor Management Team. The Corridor Management Team is charged to provide corridor-wide design management support to the SE Freeways Team, including Quality Audits and reviewing plans for consistency with corridor-wide standards.*

Best Practice Purpose and Need:

The purpose of the best practice is to manage effective delivery of transportation infrastructure development within regions of Wisconsin. The need is to mitigate resource constraints and provide technical expertise to meet the required peaks on a level of effort basis of a Mega Project. An illustrative example of this is the I-94 North-South Mega Project. This program was the largest ever undertaken by the department, involving 3 counties, 35 corridor miles, coordination with multiple local governmental agencies and the adjoining state of Illinois, several state and federal agencies, several design firms, and numerous utilities. The level of resources required to staff and manage this entire Mega Project would have had a very high toll on direct overhead for WisDOT. In addition, the acquisition of quality employees takes time. Supplementing through a consultant source speeds the process and ensures technical expertise and availability of the right resources. This is the reason why WisDOT requested assistance to organize, communicate, develop, and manage multiple design teams and stakeholders for the program over a multi-year design and construction duration.

Best Practice Stakeholders:

There are several external agency and non-agency stakeholders involved directly with this particular best practice. These stakeholders either actively participate or are passively impacted by the development and delivery of large infrastructure Mega Projects. The external agency and on-agency stakeholders are as follows:

- All Regional Ad-Hoc Sections
- All DTSD Bureaus
- FHWA
- FAA
- WDNR
- US Army COE
- Local municipalities and counties
- Wisconsin State Patrol
- WI Department of Administration
- Emergency response organizations and agencies
- Neighboring State DOTs
- ISTHA
- Neighboring State Patrols
- All design groups involved in working on the project (WisDOT staff and multiple consulting firms)
- All construction firms building the project
- WisDOT construction staff and Construction Engineering Consultants

Best Practice Organizational Foundation:

The WisDOT ownership of this best practice should reside at the Mega Project manager or program management level for each Mega Project. The Mega Project manager or program management team could determine the need and refine the scope to best manage the entire

Mega Project delivery effectively and efficiently with consideration to resource constraints and needs for supplemental technical guidance and expertise.

Best Practice Resourcing:

The Consultant Corridor Management Assistance teams are consultant resourced in order to fulfill staff needs and requirements to deliver Mega Projects. A direct example is the I-94 North-South program, which contracted with the Milwaukee Transportation Partners (MTP) to act as an extension of the SER staff, co-located in the SER office, working directly under the supervision of the SER Design Mega Manager. With future mentoring and knowledge transfer activities there are possibilities that in-house staff could potentially fill some of the roles that are being done by consultants; however, it should be noted that this would take the WisDOT in-house staff out of the production mode. In addition, this would require the backfilling of other positions vacated by those resources, leading to a possible need for the addition of WisDOT employees. The costs of this best practice are highly variable and are largely dependent on the Mega Project scope, scale, and location. In highly urban areas the needs for various services are much different than the specific needs in more rural areas. For example, in high density urban areas with considerable traffic, more extensive efforts on a Corridor TMP may be expended in comparison to rural areas.

Best Practice Benefits:

There are multiple benefits that are realized from use of Consultant Corridor Management Assistance contracts. They provide an added layer of resource flexibility, lower direct overhead and operating costs over the longer term to WisDOT, specific technical expertise when needed, and support and development for internal WisDOT staff. The following list identifies the major benefits derived from use of these contracts:

- Allows for the assignment of appropriate multi-talented staff to specific services with the flexibility to bring staff in and out as needed to accomplish tasks.
- Authorship and ownership of a Corridor Design Manual provides a consistent design direction to in-house and paid consultant team members.
- Provides a direct and single point of contact for corridor WisDOT management.
- Provides corridor Quality Manager to coordinate administration of Project Quality Plans and allows for the capability to conduct corridor consistency reviews.
- Provides leadership in developing corridor specifications and details to improve consistency along the corridor – these items can also be utilized on other Mega Projects and, in some cases, adopted as statewide standards.
- Enhances communication between Region design management, construction teams, consultant design teams, ad-hocs, and Central Office reviewers and technical staff.
- Handles ongoing changes to funding adjustments and design delivery and construction schedule modifications using sound engineering judgment, good engineering practices and experience (examples: ARRA funding, LET savings, small project breakouts, TIGER grants and repackaging to accommodate local and state priorities).

- Provides effective tracking and monitoring of utility and right-of-way issues – items that are typically on the critical path for project development.
- Allows for the assembly of project estimates comprised of unit pricing and tracked quantities on quarterly basis using database to identify trends in construction pricing.
- Provides tracking and management of Drainage Areas of Concern both during design and construction resulting in reduced claims by property owners along the corridor.
- Advance coordination with FAA eliminates project shutdowns.
- TMP work led by the corridor team minimizes traffic delays during heavy traffic volume periods while providing incident management procedures and alternate routes that can be used during freeway closures.
- Assists the department with outreach and coordination of DBE, local and small contractors by developing a "bulls-eye" marketing approach and using labor and business committees to communicate corridor contracting needs.

Best Practice Challenges:

The major challenge associated with the best practice of utilizing Consultant Corridor Management Assistance contracts is in establishing communication and levels of trust at the outset of the corridor management contract with department and outside consultant staff who are not familiar with the concept.

Best Practice Risk:

There are some risks associated with not adopting the use of Consultant Corridor Management Assistance contracts. Traditional methods, which utilize multiple design teams, typically lead to inconsistent deliverables. The inconsistent quality of deliverables can cause an increase in change order occurrence with associated increases in change order costs. Change orders can create additional traffic delays during construction and the higher likelihood of traffic incidents, which may result in increased user delay cost. The final risk is that designs are not delivered on schedule in terms of meeting critical project milestones. These risks are mitigated through better coordination and strict adherence to standards and project schedules through the guidance of the Consultant Corridor Management effort.

Best Practice Opportunities:

There are a couple of key areas that can be leveraged to obtain more cost effectiveness in the utilization of Consultant Corridor Management Assistance. The first is to utilize the processes and procedures developed on other Mega Projects. This avoids situations where other Mega Projects must "re-invent the wheel". Second, use of experienced corridor staff to minimize the learning curve and building off of established relationships provides for more consistent and effective project and program management efforts. Third, continuing to integrate WisDOT staff and PMs to facilitate in-house management of some tasks helps to increase internal capabilities while also supporting Mega Project needs for delivery.

Overall efforts will need to be evaluated on a Mega Project by Mega Project basis for consideration of total scope, scale, location, duration, and resource constraints internal to WisDOT. Any of the processes, procedures, and approaches listed above can be adapted as

appropriate to the needs of WisDOT department sections, projects, and work groups. The resourcing of this effort is predominantly consultant based at current; however, it should be noted that over time the in- house capabilities can be developed through working with consultant staff and engaging in knowledge transfer activities.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

7. OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

7. Owner Controlled Insurance Program (OCIP)

Best Practice Scope:

The Owner Controlled Insurance Program (OCIP) is a plan in which WisDOT secures all appropriate insurance coverage for all contractors working on the project and controls all aspects of safety for the workers and public. Typical OCIPs include Worker's Compensation, General Liability, Excess Liability, and Builder's Risk insurance coverage. In some instances OCIPs may include environmental coverage, Railroad Protective Liability, Professional Errors/Omission.

Best Practice Policy Requirement:

Generally speaking, OCIPs can be placed on any project of any complexity or value; however, it is the experience of the Department that projects with values exceeding $250,000,000 in construction costs are most likely to produce the best economies of efficiency and scale. Smaller projects tend not to receive significant cost advantage from this approach. Projects of higher complexity that are less than $250,000,000 in construction cost may offer some advantage to using OCIPs; however, usage of OCIPs should be evaluated on a case by case basis. OCIPs in Wisconsin are regulated by DWD in Chapter 102, WI Statutes, and DWD 80.61 Wisconsin Administrative Code. In essence these regulations require that any project administered as an OCIP must cover all work and workers included in that project.

Best Practice Purpose and Need:

The purpose of OCIPs is to capitalize on a method for risk pooling of all required insurance coverage and safety controls. Use of OCIPs in the proper application (typically projects greater than $250,000,000 in construction value, or a Mega Project) present an opportunity to introduce economies of scale into the insuring of work and safety provisions of the project's associated stakeholders. The need for the OCIPs is to centralize all insurance and safety management and controls into a single point and a source where this information can be easily accessed when needed. With increasing complexity and multiple individual projects, as is typically the case on Mega Projects, the economies of scale achieved become more pronounced.

Best Practice Stakeholders:

There are a few stakeholders involved in the usage of OCIPs. Internally, there is the WisDOT oversight team that manages the program through review of recommendations and providing of direction. There is also the internal project team that must manage and deliver the work. Externally stakeholders include the insurance broker that must review proposals to make a determination of feasibility of executing an OCIP. Once the review is completed, the project team and WisDOT oversight can provide direction. Externally, there are also the contractors tasked with completing the work. They must be informed and educated about how they are impacted by the OCIP and how it relates to them performing their work and completing projects. Interaction with contractors performing the work is facilitated by the project team.

Best Practice Organizational Foundation:

Within WisDOT the ownership of the best practice resides within two primary layers. First, there is the project team. The project team must gather the necessary data to evaluate the feasibility of executing an OCIP for any given project. Project managers must be aware of the availability to execute an OCIP and have the capability to gather the necessary information to first, see if it is feasible and second, review if the economies of scale make sense. This places the general ownership on a project basis. Information required to analyze the feasibility of deployment of an OCIP includes the following:

- General description of the project
- Estimated project value
- Estimated capital construction cost
- Construction schedule
- Stages and length of project (including number of miles and project mileposts/boundaries)
- Estimated total man-hours to complete work
- Estimated number of involved contractors (inclusive of the anticipated number of contract lettings)
- Project risk exposures (i.e., structures, bridges, streams, rivers, lakes, utilities, etc.)
- Review for public information about the project. (i.e., checking to see if there is a website that provides general information about the project)
- Preliminary project plans

The second layer of ownership within WisDOT is the OCIP oversight team. The WisDOT oversight team is tasked with reviewing of recommendations and providing direction in terms of decisions regarding usage of OCIPs. The oversight team can provide feedback in terms of the relative scalability and effectiveness of an OCIP based on their prior project experiences.

Best Practice Resourcing:

This best practice is currently resourced in-house utilizing WisDOT staff. The individual project team members making decisions for the usage and execution of OCIPs are in-house. The WisDOT oversight team is also comprised of internal WisDOT staff. The staff members taking ownership for oversight and management of the OCIPs are also internal to the department. While this task is predominantly controlled as an internal function, there is the opportunity to utilize supplemental consultant staff for the overall processing side of the OCIP. Initial determinations and evaluation should be done by internal WisDOT staff. Consultants could supplement in supporting roles to ensure that the OCIP is being properly executed, provides sufficient coverage, and ensures full liability is covered by WisDOT.

Best Practice Benefits:

The benefits of utilizing this best practice are largely dependent on a couple of factors. First, the project must offer enough opportunity for streamlining and centralization of costs, so it must have a relatively significant size in capital construction cost. Second, the project must offer enough complexity in order to ensure that it makes sense for the OCIP to be executed and

centrally owned and managed by WisDOT in lieu of contractors providing and administering their own insurance and safety provisions. Refer to the section covering the opportunities for cost effectiveness below in order to review the general criteria considerations for the use of OCIPs. When these general criteria are met, the following benefits are the result:

- Centralized insurance program with a direct point of contact for all contractors.
- Allows for a single insurance carrier that will respond to all claims with a consistent approach in lieu of potential issues when involving multiple insurance carriers.
- Provides economies of scale when exposures dictate higher than standard liability limits.
- Offers the opportunity to centrally control and manage the claims of the public.
- Provides coverage for all projects and employees constituting a Mega Project.
- Provides benefits of risk pooling that reduces total insurance costs across a series of multiple projects.
- Reduces required paperwork and oversight efforts of project team.
- Ensures consistent application of safety provisions, including policies surrounding a drug free work environment and employee safety between contractors.
- Allows for the enhancement of usage of DBE contractors, thereby by increasing the effectiveness of DBE goals.
- Provides a competitive leveling amongst multiple contractors bidding on projects.

Best Practice Challenges:

There are some challenges to consider when implementing the best practice of utilizing OCIPs. First and foremost, there must be a project with significant scalability and complexity that meets the criteria to make use of an OCIP economically feasible. Second, if the criteria make sense, it must also be reviewed by an insurance broker to determine the feasibility. Obtaining a reasonable and feasible approach can be challenging in that it is not always possible to include all projects into a total OCIP. As a result, there may be the possibility to obtain an OCIP for a majority of the projects, but due to complexities and scope of work on certain individual projects an individual policy may need to be obtained. This requires the technical knowledge to be able to evaluate the true feasibility and what makes the most sense in terms of WisDOT minimizing its liability and ensuring that proper coverage is obtained.

Best Practice Risk:

There are multiple risks of *not* utilizing an OCIP when it is both feasible and meets the general criteria for consideration. The risk of not doing the best practice largely results in the possibility of additional coordination and communication efforts. In addition, there may be further efforts required in the processing and management of individual policies and claims. In a large and complex project this can become more time consuming and end up costing WisDOT in terms of the level of effort required to manage many individual policies as opposed to a centralized management approach that is more inclusive to all projects comprising a single Mega Project. In addition, there is the risk that costs incurred for insurance coverage do not take advantage of potential economies of scale that may have allowed WisDOT to reduce overall coverage costs. In consideration of the provisions for worker safety, there may also be inconsistent applications of policy that may increase potential liability risk to WisDOT across multiple projects. The risk of

having to deal with different insurance carriers can also be daunting when delivering a series of closely interrelated projects. It should be noted that this could perhaps be the single biggest risk of not utilizing an OCIP as there is the increased risk of unfavorable resolution being achieved when multiple insurance carriers are trying to limit their individual exposure.

Best Practice Opportunities:

The use of an OCIP offers cost effectiveness in net coverage costs for a Mega Project, as well as streamlined overhead and management related costs associated with actively managing insurance coverage and safety provisions. In order to determine whether an OCIP should be considered, the following offers a general set of criteria that should be met in order to generate realistic economies of scale:

- Capital construction costs exceed $250,000,000.
- The construction duration fits within a 6 year window.
- The project includes vertical work, water crossings, live traffic in work zones, high speed traffic, and environmental exposures.
- There is a need to control and manage claims of the public in a consistent manner (i.e., more urban areas versus rural areas).
- The safety of workers is of high concern due to complexity or nature of the construction work.
- There is a need for consistency in applying a drug free work place and employee safety between contractors.
- The exposures of a series of projects comprising a Mega Project dictate higher than standard liability limits.
- There are multiple contractors that may result in multiple insurance carriers with conflicting interests.
- There is a desire to enhance DBE goals or increase DBE participation.
- The bidding pool of contractors allows for opportunities in competitive leveling to realize better project bid prices.

These guidelines should be considered to be a general starting point for evaluation as to the feasibility and effectiveness of the usage of an OCIP. This is not to say that these general criteria must all be met or that they are concrete in nature, but rather this list is a guideline that can help project managers establish the general feasibility of pursuing an OCIP. Engaging in a high level review of this criteria listing can help to avoid unnecessary efforts to compile documentation and data for review by an insurance broker when there may not necessarily be economic feasibility.

The logical use of an OCIP must first present the opportunity for a reasonable economy of scale to be achieved such that cost savings can be realized. Such situations for future expansion may be to consider applying the OCIP approach to a series of individual projects on either a corridor or regional basis. Single projects in a region for a planned work period could be covered under a uniform policy and safety provision. Likewise, a series of individual interrelated corridor projects could be bundled into an OCIP if the planned work could all be completed within a six year horizon. Another option may be to consider bundling similar construction projects across

the state into a uniform OCIP; however, this may not offer the most optimal situation as conditions and construction means and methods vary from region to region. Overall, in any situation in which a series of individual projects could be bundled under a single policy for coverage there exists the possibility to reduce total coverage costs and associated oversight and management costs. Considerations for feasibility and true economies of scale and efficiencies should always drive the consideration of the use of an OCIP.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

8. EMERGENCY RESPONSE MITIGATION CONTRACTS

8. Emergency Response Mitigation Contracts

Best Practice Scope:

Maintaining an efficient and flowing transportation network is important in the execution and delivery of a Mega Project. This is accomplished through the use of well defined Transportation Management Plans (TMPs). Within these TMPs, emergency response mitigation contracts are primarily used for freeway law enforcement, local law enforcement and fire departments. Freeway law enforcement provides dedicated emergency response in the work zone and helps to clear incidents quickly while controlling work zone speeds. Local law enforcement assists with traffic control on local roads for detour routes and local road speed management. Fire departments plan emergency response based on construction closures. All three agencies participate in project traffic meetings, review roadway closures, and crisis communication planning. This provides a means of communication and coordination with the involved agencies that ensures a clear plan of action.

Best Practice Policy Requirement:

WisDOT is required by federal regulation and state policy to develop a transportation management plan (TMP) for its freeway reconstruction projects. The following is an excerpt from the *FHWA Work Zone and Safety Mobility Program Website* demonstrating the federal regulation enforcing such practices:

> "The Work Zone Safety and Mobility Rule was published in the Federal Register (69 FR 54562) on September 9, 2004 with an effective date of October 12, 2007. The rule was updated to address the changing times of more traffic, more congestion, more work zones on existing roads carrying traffic, and safety issues."

There are also internal policies within WisDOT guiding the efforts to engage in the use of emergency response mitigation contracts. The WisDOT Facilities Design Manual includes a work zone policy statement in Chapter 11, Section 50 which reads:

> "The Wisconsin Department of Transportation (WisDOT) is committed to promoting safety for the traveling public and workers, minimizing congestion and adverse traffic impacts, and providing for improved public satisfaction during construction, maintenance, utility, and all other activities performed on or near the WisDOT highway network. Compliance with this policy will reduce work zone crashes, travel time, and provide benefits to all stakeholders. All regional offices and statewide bureaus are responsible for implementing the portions of this policy affecting their operations."[5]

A major component of the transportation management plan includes coordination with emergency responders and incident management during construction. These policies precipitate the need for dedicated emergency response resources during Mega Project construction. When considering the scope and scale of Mega Projects, the relative effectiveness in the use of emergency response mitigation contracts becomes more pronounced. With more complex scope and scalability, coordination becomes more important in the management of

[5] WisDOT Facilities Design Manual, Chapter 11, Section 50

traffic within the work zone. Ensuring that emergency response mitigation contracts are utilized as a means of coordinating and managing traffic is a best practice for meeting both Federal and state requirements and policy.

Best Practice Purpose and Need:

The purpose of using emergency responder contracts is to coordinate dedicated emergency resources available in the Mega Project construction zone and along the adjacent arterial roadway system. The need is to increase system reliability while facilitating quick clearance of a construction zone after an incident. The construction traffic management plan identifies the dedicated emergency response resources that will be utilized for the management of traffic in the construction zone. The identified and participating resources are able to focus on the project area and supply on-call services to manage traffic congestion and incidents during construction in a coordinated fashion.

On Mega Projects construction staging required to maintain a functional roadway network and reduce impacts to motorists is becoming increasingly more complicated. Careful consideration goes into staging plans, but there must be a supporting network of responders in order to ensure these staging plans are functioning as intended. Public safety on the transportation network is of considerable importance and proper staging and traffic management is part of ensuring a safe and reliable facility. With an increased focus on ensuring public safety on Mega Projects, additional coordination and planning is required to ensure successful management of the transportation network. Utilizing dedicated emergency response resources is a major part of ensuring this success.

Best Practice Stakeholders:

There are several stakeholders involved in the implementation of the best practice of utilizing emergency response mitigation contracts. Aligning expectations and efforts of all involved stakeholders takes careful coordination and planning. It is recommended to engage in communication and coordination with stakeholders as soon as possible in order to foster relationship building and buy-in to the process. Internal WisDOT stakeholders include the Mega Project team, STOC, contract services, BPD and DSP. External agency stakeholders include the county sheriff, local police departments, and local fire departments.

In the execution of the best practice, there is a distinct hierarchy of resources that must be engaged from within WisDOT. There is the project level that may include WisDOT staff and consultants, the Region level that includes WisDOT staff, and the Bureau level that also includes WisDOT staff. The following summarizes the level in which resources are engaged and the basic function of doing so.

> **Project level:** At the project level, the TMP team resources manage and implement project TMPs. On a Mega Project this may consist of dedicated in-house and consultant resources being primarily responsible for the TMP and its implementation. The TMP team coordinates closely with region system operations and Bureau of Transportation Operations.

Region level: At the region level, WisDOT Region system operations staff review and approve project TMPs. Engaging of WisDOT Region system operations staff provides a link to operations planning and coordination between projects. This unit is used as a technical resource to guide and implement key transportation management strategies.

Bureau level: At the bureau level WisDOT Bureau of Transportation Operations staff review and approve project TMPs. Engaging the Bureau of Transportation Operations provides a link to the STOC, as well as helps to guide statewide policy coordination. This unit is used as a technical resource to guide and implement key transportation management strategies.

When a project is large and covers several regions or geographic locales, the Mega Project team may find it useful to employ a more distributed approach to coordination of external resources. Responsibilities may be divided and managed based on specific locations. In addition, developing and maintaining an updated stakeholder distribution list should be performed. This allows project information to be distributed efficiently and keeps stakeholders informed of project schedules and resources. An example from a WisDOT Mega Project that illustrates this is the I-94 North-South Project where the deployment of emergency response mitigation contracts is divided by geographic area and includes three counties (Milwaukee, Racine, and Kenosha). Milwaukee County is one stakeholder group and Racine/Kenosha Counties are another stakeholder group. A comprehensive stakeholder distribution list for each county is maintained as a tool to facilitate communication and coordination.

Stakeholder involvement is critical to the success of Mega Projects. On Mega Projects stakeholders are involved in several ways. The following presents an outline of areas where stakeholders are engaged, as well as the specific items where they provide input and interact:

1) Project Planning Meetings (Design)
    a) Review of construction staging plans
    b) Planning of transportation mitigation strategies
    c) Defining detour and alternate routes
2) Crisis Communication Planning (Pre-Construction)
    a) Development of a communication plan that engages and includes contractors and the construction engineering team
    b) Establishing of a forum for following the ETO process
    c) Perform a mock incident to test communication paths
3) Traffic Meetings (Construction)
    a) Communicating weekly construction closures
    b) Planning resource needs for upcoming closures
    c) Reviewing emergency access changes
    d) Receiving stakeholder input on project issues

Best Practice Organizational Foundation:

The best practice should reside organizationally within the individual Mega Project teams. The Mega Project team is responsible for managing and implementing an effective Transportation Management Plan (TMP). As a result, the Mega Project team should work closely with both

WisDOT and external agency stakeholders toward accomplishing the common goal of executing an efficient and effective TMP. Ultimately, the Mega Project team is responsible for the success or failure of the project, and maintaining an efficient and well managed flow of traffic is part of delivering a successful project. When the Mega Project team works closely with WisDOT stakeholders to develop, negotiate, and manage emergency response mitigation contracts a positive outcome can be achieved.

Best Practice Resourcing:

The resourcing of this best practice is both in-house and consultant; however, it should be noted that it is primarily in-house WisDOT staff performing the effort. WisDOT is the responsible party tasked with developing and executing emergency response mitigation contracts. Much of the coordination and communication should be performed by WisDOT staff with supplementary administrative support by consultants being utilized on an as-need basis.

An example from the best practice is illustrated by the actions of WisDOT Southeast Region staff. In the Southeast Region, the WisDOT Mega Project team coordinates implementation of emergency response mitigation contracts. One exception is for Mega Projects with State Patrol needs. The DOT Mega Project team coordinates with State Transportation Operations Center (STOC) to begin the process. STOC then develops and executes the contract with input from the Mega Project team. Consultants are utilized to provide administrative support for emergency response mitigation contracts.

Best Practice Benefits:

There are several benefits to utilizing emergency response mitigation contracts. The associated benefits of emergency response mitigation contracts include:

- Promoting a safe work zone for the public, contractors and construction staff
- Enhanced public safety
- Improving system reliability
- Facilitating quick clearance of work zone incidents
- Dedicated emergency response personnel intimately familiar with the project
- Maintaining critical capacity during planned freeway closures
- Faster response to and clearance of work zone incidents
- Minimizes additional impacts on roadways that are not under construction

Best Practice Challenges:

There are multiple challenges that may be encountered when implementing the best practice of emergency response mitigation contracts. There is the challenge of gaining trust of the stakeholders while helping them to understand the benefits of project participation. There is also the challenge of defining the scope of emergency response mitigation contracts and the definition of project related efforts. Finally, there is the internal challenge of managing contracts and completing invoices in a timely manner. Each of these challenges will be discussed in more detail below.

The first challenge of gaining trust of emergency response stakeholders is one of the biggest challenges. This can be accomplished by helping the specific stakeholders understand the benefits of project participation, as well as communicating the benefits and importance of their input and feedback. Attendance and participation of emergency responders is critical to the success of Mega Projects due to the more complex nature. Along with gaining the trust of the various stakeholders is the challenge of defining specific rates for services while maintaining consistency between agencies. The establishing of an equitable rate helps to build trust with WisDOT as a partner in the management of traffic. The application of a uniform rate policy in practice may benefit WisDOT in future emergency response mitigation contracts.

Another challenge in application of the best practice of emergency response mitigation contracts is in defining the scope of emergency response contracts and the associated definition of project related efforts. Typically such contracts are utilized for dedicated freeway law enforcement, local street traffic management (specifically for project detours), traffic closure scheduling meetings, and emergency response planning efforts. This does not include resources encompassed in daily operations such as responding to traffic incidents.

The final challenge is more internal to WisDOT. The challenge mainly revolves around the WisDOT Mega Project team's management of the contracts, as well as completion of invoices in a timely manner. There are many stakeholders in the best practice process and, at times, it may become confusing to track all sources of data and information. The management procedures of the best practice of emergency response mitigation contracts are recommended to be integrated into the consultant services process.

The following is an example process summary for the management procedures developed in 2009 by the I-94 North-South Mega Project team that was found to be effective as a best practice.

Traffic Mitigation Contract Management Process (April 2009)

1. Identify objectives of the contract and meet with the local agency contact to discuss scope and fee.
2. Finalize the scope and fee of the contract. Return to local agency contact to obtain signatures.
3. Receive signed copies back from the local agency. Document the receipt of the signed contract and complete a DT25 and transmittal letter. Submit the signed contracts and other forms to the Major Projects Liaison.
4. Major Project liaison gives the contract to the Project Services Section Chief for signature.
5. The signed contract is forwarded to the Proposal Management Section Chief. This section enters the contract in the purchasing system.
6. The traffic management plan lead receives the signed contract back from the proposal management section. A Notice to Proceed (NTP) transmittal letter and one of the signed contracts are sent to the local agency.
7. Local agency invoices are to be sent to the attention of the Project Construction Technical Supervisor.

8. The traffic management plan lead reviews the invoice and recommends approval of the Project Construction Technical Supervisor.
9. The approved invoice is sent to the Bureau of Business Services, Expenditure Accounting Unit for payment.

Best Practice Risk:

There are several risks associated with not implementing the best practice of utilizing emergency response mitigation contracts on Mega Projects. First, there is the risk of not ensuring proper public safety, accessibility and reliability during construction. There is a need for public users of roadway facilities to experience a system that is safe, accessible, and reliable. Ensuring that public safety is a high priority is part of a WisDOT strategic goal vested in maintaining an effective and efficient transportation infrastructure for the state and its public users. Second, there is a need for emergency responders to be constantly and consistently informed. Note that construction may impact response routes and times in relation to plausible incidents; however, maintaining an approach of consistent and continuous updates ensures that stakeholders are informed and that expectations are in alignment. Third, there is a need for emergency responders to be dedicated to the specific project needs. This means that the associated stakeholders are in agreement to be "on call" to the associated WisDOT Mega Project team. This ensures that the necessary resources required to manage traffic and possible incidents are available when needed. Fourth, there is a need for emergency access coordination between specific jurisdictions. Coordinating across the multiple jurisdictions and locations ensures that the risk of inconsistent implementation and traffic management is mitigated. Fifth, the use of this best practice reduces the risk of the occurrence of reduced system reliability as a result of providing a mechanism to facilitate quick clearance of construction zones during any incidents. Overall, not implementing this best practice poses many risks of project delivery on Mega Projects due to the complex nature and scope of delivering such large-scale projects.

Best Practice Opportunities:

There are a couple of opportunities to enhance the level of cost effectiveness when deploying the best practice of emergency response mitigation contracts. The first opportunity is to reduce cost by standardizing the application of specific strategies based on construction staging, traffic volumes, and other traffic characteristics. This would help to define emergency response costs of Mega Projects up front by having a specific standard, repeatable protocol to follow. This also allows for the establishment of a consistent policy on what should be utilized and is acceptable for specific projects. Secondly, there is the option to work to standardize the rates used for WisDOT mitigation efforts. The rates currently vary based on the jurisdiction of the specific locations and the applicable definition of straight time vs. overtime for these contracts. By establishing a consistent policy in terms of acceptable rates, the application of this best practice will be more predictable in terms of the anticipated costs when utilizing it in the future. Overall, observing these potential opportunities to streamline costs may enable WisDOT to more effectively expend their capital on both Mega Projects and more traditional projects alike.

There are some opportunities to expand the use of emergency response mitigation contracts as a best practice on transportation infrastructure projects within Wisconsin. This best practice is

currently used to some extent on other more traditional projects. The best practice is typically utilized on Freeway/Expressway projects. In some cases, the best practice may benefit arterial related projects with high traffic volumes and significant construction impacts or constraints to the capacity of the facility with respect to traffic volumes and travel times. Standardizing the use of emergency response mitigation contracts through an internal WisDOT policy would leverage the consideration of the best practice and allow for additional benefits to the public during construction, inclusive of enhanced safety and higher overall system reliability. Also, standardizing the procedures for implementation and management could consolidate the best practice efforts across WisDOT while facilitating a documented approach to implementation on non-Mega Projects within the state of Wisconsin.

For more analysis please see the Mega Best Practice Analysis Report and US 41 Best Practice Analysis Report.

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:

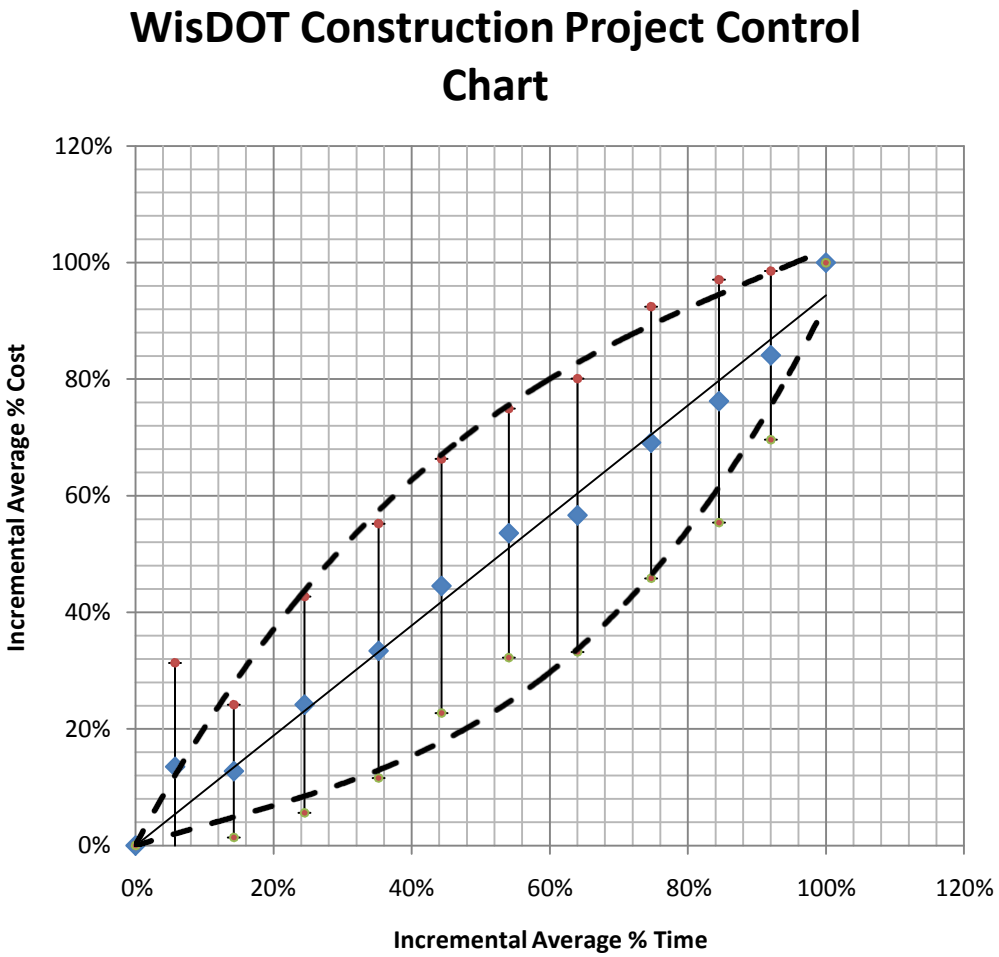
Pre-established benchmarking performance indicators should be generated from historic records (similar projects completed successfully).

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

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

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

Suggested Next Steps for Mega Projects

Current Charge (by Mega Project Team)

1. By January 31, 2012 have Mega Project initiative web site online with final draft documents

2. By January 31, 2012 complete coordination with Dan Yeh / Gary Whited on incorporation of their Mega Project best practice recommendations (Team, Yeh, Whited).

3. By February 28, 2012 finalize action plan to incorporate Mega Project Initiative into FDM, C&M Manual, and DTIM Program Manual (Team, Jerry Zogg, Don Greuel, and Julie Seston). BPD will become owners and have responsibility to maintain Mega Project Guidelines.

4. By March 1, 2012 complete outreach to business area chiefs, division management team, DTIM, and OPBF. Finalize Mega Project initiative documents and web site.

5. Provide Mega Project Update at WisDOT / ACEC Conference (Johnson)

Future Steps

1. With Beth Cannestra and Gary Whited (UW-Madison) develop Mega Project training program to mainstream Mega Project efforts. Training sessions begin in 2013. (Cannestra, Whited)

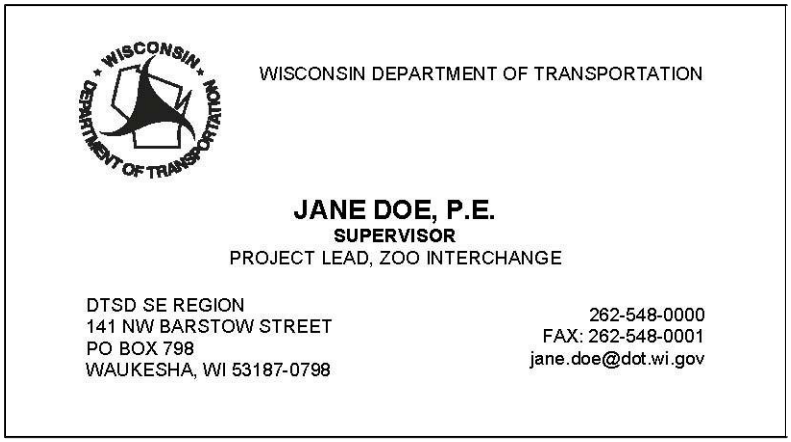
2. Develop Division Level and Bureau Level Program Management and Schedule Reports (Burkel, Johnson, PMP Group, Pusch). First 6 months of 2012

3. Develop Right Size estimates for Mega Project Best Practices for design and construction phases. Complete in 2013. This is defined as a % of total engineering or non-let costs for design, non-let, and construction phases of projects. Intent is to deliver projects at a comparable % cost to other standard level and high profile projects within WisDOT.
    a. Program Controls (PDS Chiefs, TSS Chiefs, OPBF, DTIM BHSP)
    b. Primavera. In addition, develop a standard base level P6 Mega Project Schedule (PMP Group, PDS Chiefs, TSS Chiefs, Performance Management Team)
    c. CSS Design Efforts and Construction funds (BPD, PDS Chiefs, Sys. Ops Chiefs)
    d. Outreach (PDS Chiefs and RCM's)
    e. OCIP Scope (Risk Management, PDS Chiefs). Also have a new revised scope of coverage for OCIP contracts. The scope should address workman's compensation issues.
    f. Emergency Mitigation and Mitigation Contracting (BTO, PDS Chiefs, Sys Ops Chiefs, and DSP)
    g. Business, Labor, DBE Outreach Strategies (Office of Business Opportunity and Equity Compliance, PDS Chiefs, Planning Chiefs)
    h. National Expertise (No future steps). Review Master Contract work orders and communication / collaboration between regions and bureaus.
    i. Independent and/or Enhanced Constructability and Design Reviews (BPD, BOS, BTO, PDS Chiefs)
    j. Consultant Corridor Management Assistance (BPD, BTO, PDS Chiefs)

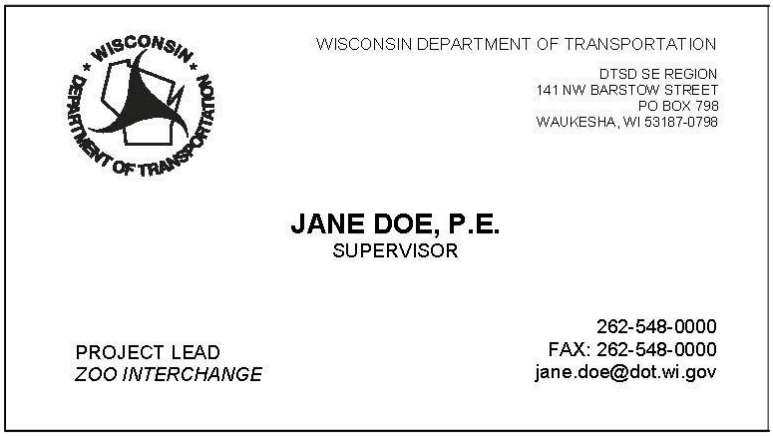
4. Refine consultant scoping and estimating tools for projects and Mega Projects. Refine and develop a consultant and project tracking database for use in defining and estimating scope and project cost. 2012 and 2013. (BPD, DTIM, PMP Team, PDS Chiefs)

5. In 2012, develop a consistent Division Mega Project Corridor Specification and Management Manual. (BPD, BOS, PDS Chiefs, TSS Chiefs, SPO Chiefs).

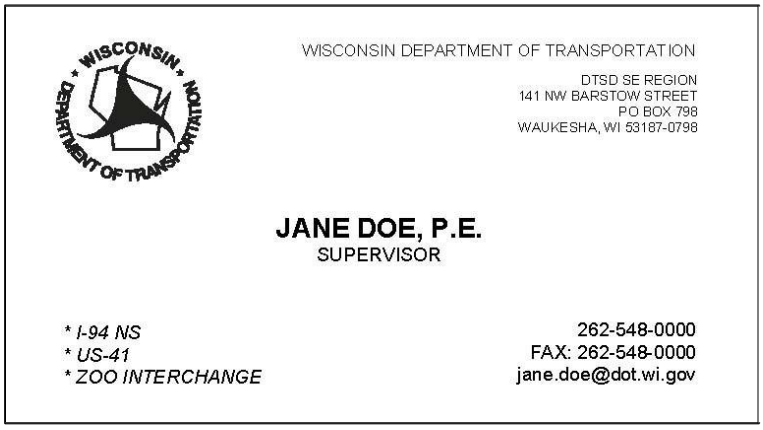
6. In 2012, identify and implement Mega Project best practices appropriate to standard projects (BPD & PDS chiefs)



Option A



Option B



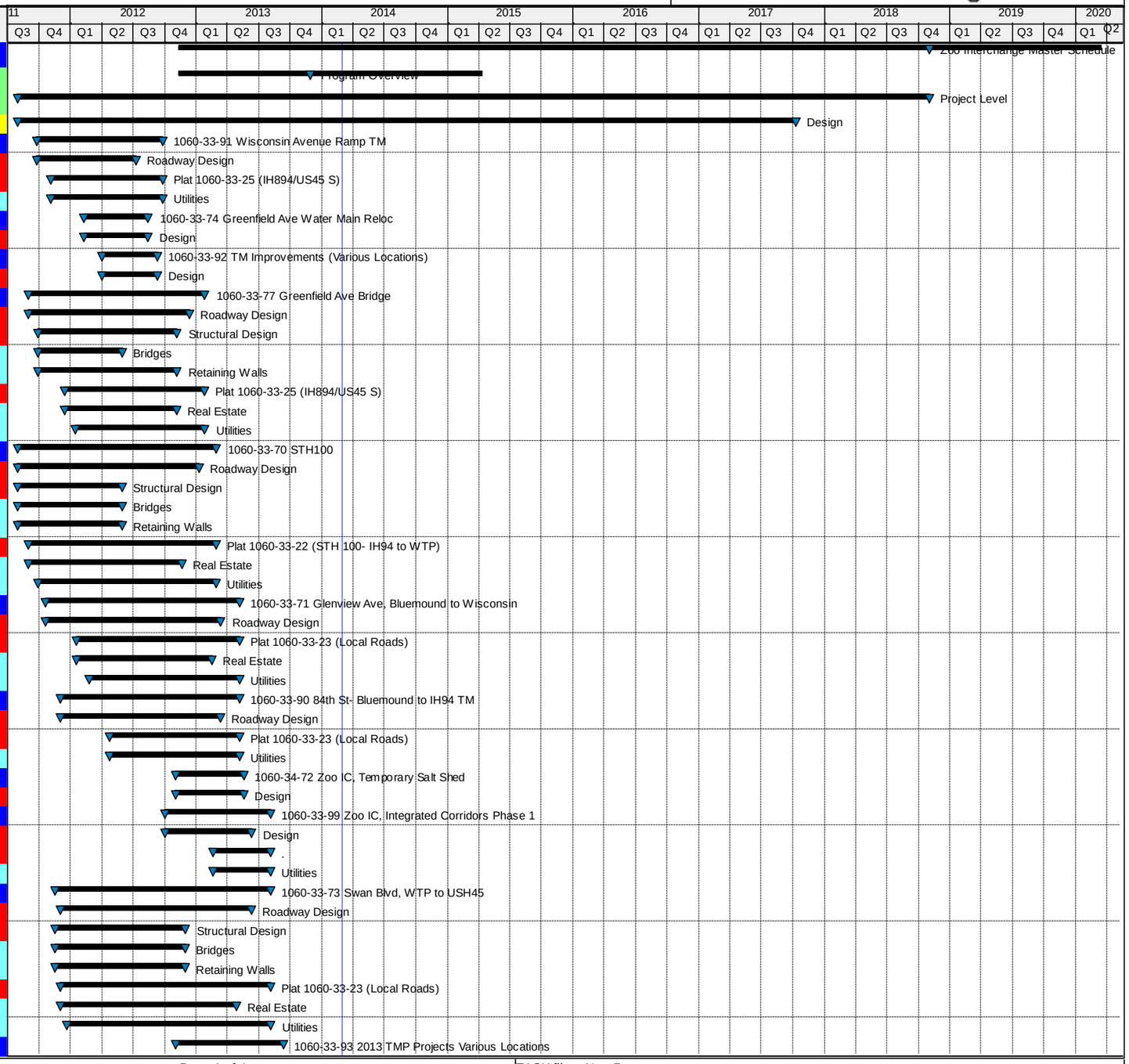
Option C

Appendix C: Baseline Schedule with Major Milestones

Mar.17.2014

Zoo Interchange Master Schedule

Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish
Zoo Interchange Master Schedule	2649	1707	35.56%	Feb.18.2010 A	Oct.31.2018
Program Overview	792	0	100%	Feb.18.2010 A	Nov.27.2013 A
Project Level	2649	1707	35.56%	Aug.01.2011 A	Oct.31.2018
Design	2261	1319	41.66%	Aug.01.2011 A	Oct.08.2017
1060-33-91 Wisconsin Avenue Ramp TM	344	0	100%	Sep.26.2011 A	Sep.26.2012 A
Roadway Design	292	0	100%	Sep.26.2011 A	Jul.10.2012 A
Plat 1060-33-25 (IH894/US45 S)	291	0	100%	Nov.06.2011 A	Sep.26.2012 A
Utilities	291	0	100%	Nov.06.2011 A	Sep.26.2012 A
1060-33-74 Greenfield Ave Water Main Reloc	187	0	100%	Feb.10.2012 A	Aug.14.2012 A
Design	187	0	100%	Feb.10.2012 A	Aug.14.2012 A
1060-33-92 TM Improvements (Various Locations)	164	0	100%	Apr.01.2012 A	Sep.11.2012 A
Design	164	0	100%	Apr.01.2012 A	Sep.11.2012 A
1060-33-77 Greenfield Ave Bridge	755	0	100%	Sep.01.2011 A	Jan.25.2013 A
Roadway Design	443	0	100%	Sep.01.2011 A	Dec.11.2012 A
Structural Design	751	0	100%	Sep.30.2011 A	Nov.05.2012 A
Bridges	245	0	100%	Sep.30.2011 A	Jun.01.2012 A
Retaining Walls	751	0	100%	Sep.30.2011 A	Nov.05.2012 A
Plat 1060-33-25 (IH894/US45 S)	406	0	100%	Dec.15.2011 A	Jan.25.2013 A
Real Estate	328	0	100%	Dec.15.2011 A	Nov.06.2012 A
Utilities	375	0	100%	Jan.15.2012 A	Jan.25.2013 A
1060-33-70 STH100	578	0	100%	Aug.01.2011 A	Mar.01.2013 A
Roadway Design	527	0	100%	Aug.01.2011 A	Jan.08.2013 A
Structural Design	381	0	100%	Aug.01.2011 A	Jun.01.2012 A
Bridges	245	0	100%	Aug.01.2011 A	Jun.01.2012 A
Retaining Walls	381	0	100%	Aug.01.2011 A	Jun.01.2012 A
Plat 1060-33-22 (STH 100- IH94 to WTP)	483	0	100%	Sep.01.2011 A	Mar.01.2013 A
Real Estate	384	0	100%	Sep.01.2011 A	Nov.21.2012 A
Utilities	476	0	100%	Sep.29.2011 A	Mar.01.2013 A
1060-33-71 Glenview Ave, Bluemound to Wisconsin	570	0	100%	Oct.21.2011 A	May.07.2013 A
Roadway Design	509	0	100%	Oct.21.2011 A	Mar.12.2013 A
Plat 1060-33-23 (Local Roads)	480	0	100%	Jan.19.2012 A	May.07.2013 A
Real Estate	394	0	100%	Jan.19.2012 A	Feb.15.2013 A
Utilities	443	0	100%	Feb.25.2012 A	May.07.2013 A
1060-33-90 84th St- Bluemound to IH94 TM	528	0	100%	Dec.02.2011 A	May.07.2013 A
Roadway Design	467	0	100%	Dec.02.2011 A	Mar.12.2013 A
Plat 1060-33-23 (Local Roads)	385	0	100%	Apr.25.2012 A	May.07.2013 A
Utilities	385	0	100%	Apr.25.2012 A	May.07.2013 A
1060-34-72 Zoo IC, Temporary Salt Shed	16	0	100%	Nov.01.2012 A	May.20.2013 A
Design	16	0	100%	Nov.01.2012 A	May.20.2013 A
1060-33-99 Zoo IC, Integrated Corridors Phase 1	285	0	100%	Oct.01.2012 A	Aug.05.2013 A
Design	254	0	100%	Oct.01.2012 A	Jun.11.2013 A
.	133	0	100%	Feb.20.2013 A	Aug.05.2013 A
Utilities	133	0	100%	Feb.20.2013 A	Aug.05.2013 A
1060-33-73 Swan Blvd, WTP to USH45	626	0	100%	Nov.18.2011 A	Aug.04.2013 A
Roadway Design	557	0	100%	Dec.03.2011 A	Jun.11.2013 A
Structural Design	379	0	100%	Nov.18.2011 A	Dec.01.2012 A
Bridges	379	0	100%	Nov.18.2011 A	Dec.01.2012 A
Retaining Walls	379	0	100%	Nov.18.2011 A	Dec.01.2012 A
Plat 1060-33-23 (Local Roads)	611	0	100%	Dec.03.2011 A	Aug.04.2013 A
Real Estate	511	0	100%	Dec.03.2011 A	Apr.26.2013 A
Utilities	597	0	100%	Dec.21.2011 A	Aug.04.2013 A
1060-33-93 2013 TMP Projects Various Locations	286	0	100%	Nov.01.2012 A	Sep.13.2013 A

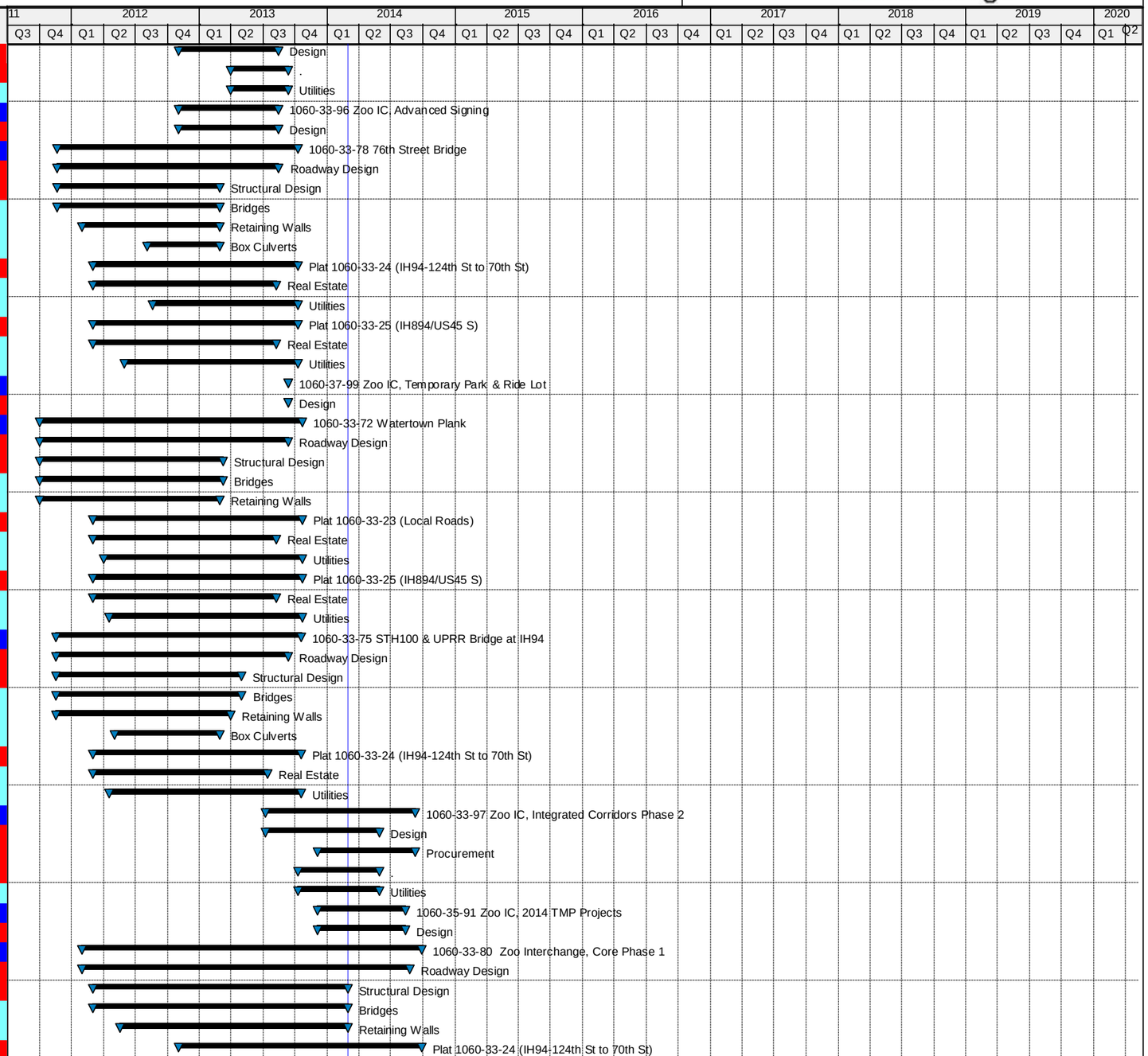


Summary

TASK filter: Non-Program.

Zoo Interchange Master Schedule

Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish
Design	286	0	100%	Nov.01.2012 A	Aug.13.2013 A
.	86	0	100%	Apr.01.2013 A	Sep.13.2013 A
Utilities	86	0	100%	Apr.01.2013 A	Sep.13.2013 A
1060-33-96 Zoo IC, Advanced Signing	286	0	100%	Nov.01.2012 A	Aug.13.2013 A
Design	286	0	100%	Nov.01.2012 A	Aug.13.2013 A
1060-33-78 76th Street Bridge	894	0	100%	Nov.20.2011 A	Oct.11.2013 A
Roadway Design	894	0	100%	Nov.20.2011 A	Aug.13.2013 A
Structural Design	700	0	100%	Nov.20.2011 A	Mar.01.2013 A
Bridges	502	0	100%	Nov.20.2011 A	Mar.01.2013 A
Retaining Walls	625	0	100%	Feb.01.2012 A	Mar.01.2013 A
Box Culverts	217	0	100%	Aug.03.2012 A	Mar.01.2013 A
Plat 1060-33-24 (IH94-124th St to 70th St)	573	0	100%	Mar.02.2012 A	Oct.11.2013 A
Real Estate	528	0	100%	Mar.02.2012 A	Aug.08.2013 A
Utilities	405	0	100%	Aug.18.2012 A	Oct.11.2013 A
Plat 1060-33-25 (IH894/US45 S)	427	0	100%	Mar.02.2012 A	Oct.11.2013 A
Real Estate	382	0	100%	Mar.02.2012 A	Aug.08.2013 A
Utilities	405	0	100%	May.31.2012 A	Oct.11.2013 A
1060-37-99 Zoo IC, Temporary Park & Ride Lot	1	0	100%	Sep.10.2013 A	Sep.10.2013 A
Design	1	0	100%	Sep.10.2013 A	Sep.10.2013 A
1060-33-72 Watertown Plank	756	0	100%	Oct.01.2011 A	Oct.21.2013 A
Roadway Design	711	0	100%	Oct.01.2011 A	Sep.10.2013 A
Structural Design	552	0	100%	Oct.01.2011 A	Mar.11.2013 A
Bridges	552	0	100%	Oct.01.2011 A	Mar.11.2013 A
Retaining Walls	552	0	100%	Oct.01.2011 A	Mar.01.2013 A
Plat 1060-33-23 (Local Roads)	602	0	100%	Mar.02.2012 A	Oct.21.2013 A
Real Estate	537	0	100%	Mar.02.2012 A	Aug.08.2013 A
Utilities	572	0	100%	Apr.02.2012 A	Oct.21.2013 A
Plat 1060-33-25 (IH894/US45 S)	602	0	100%	Mar.02.2012 A	Oct.21.2013 A
Real Estate	537	0	100%	Mar.02.2012 A	Aug.08.2013 A
Utilities	552	0	100%	Apr.18.2012 A	Oct.21.2013 A
1060-33-75 STH100 & UPRR Bridge at IH94	713	0	100%	Nov.18.2011 A	Oct.18.2013 A
Roadway Design	663	0	100%	Nov.18.2011 A	Sep.10.2013 A
Structural Design	519	0	100%	Nov.18.2011 A	May.01.2013 A
Bridges	519	0	100%	Nov.18.2011 A	May.01.2013 A
Retaining Walls	500	0	100%	Nov.18.2011 A	Apr.01.2013 A
Box Culverts	308	0	100%	May.04.2012 A	Mar.01.2013 A
Plat 1060-33-24 (IH94-124th St to 70th St)	607	0	100%	Mar.02.2012 A	Oct.18.2013 A
Real Estate	515	0	100%	Mar.02.2012 A	Jul.15.2013 A
Utilities	563	0	100%	Apr.16.2012 A	Oct.18.2013 A
1060-33-97 Zoo IC, Integrated Corridors Phase 2	482	194	59.86%	Jul.08.2013 A	Sep.09.2014
Design	329	59	82.07%	Jul.08.2013 A	May.29.2014
Procurement	280	194	30.71%	Dec.04.2013 A	Sep.09.2014
.	255	93	63.53%	Oct.11.2013 A	May.31.2014
Utilities	255	93	63.53%	Oct.11.2013 A	May.31.2014
1060-35-91 Zoo IC, 2014 TMP Projects	263	163	35.57%	Dec.03.2013 A	Aug.12.2014
Design	253	163	35.57%	Dec.03.2013 A	Aug.12.2014
1060-33-80 Zoo Interchange, Core Phase 1	1018	213	79.08%	Feb.01.2012 A	Sep.28.2014
Roadway Design	907	180	80.15%	Feb.01.2012 A	Aug.26.2014
Structural Design	865	0	100%	Mar.01.2012 A	Mar.01.2014
Bridges	787	0	100%	Mar.01.2012 A	Mar.01.2014
Retaining Walls	860	0	100%	May.18.2012 A	Mar.01.2014
Plat 1060-33-24 (IH94-124th St to 70th St)	696	213	69.4%	Nov.02.2012 A	Sep.28.2014



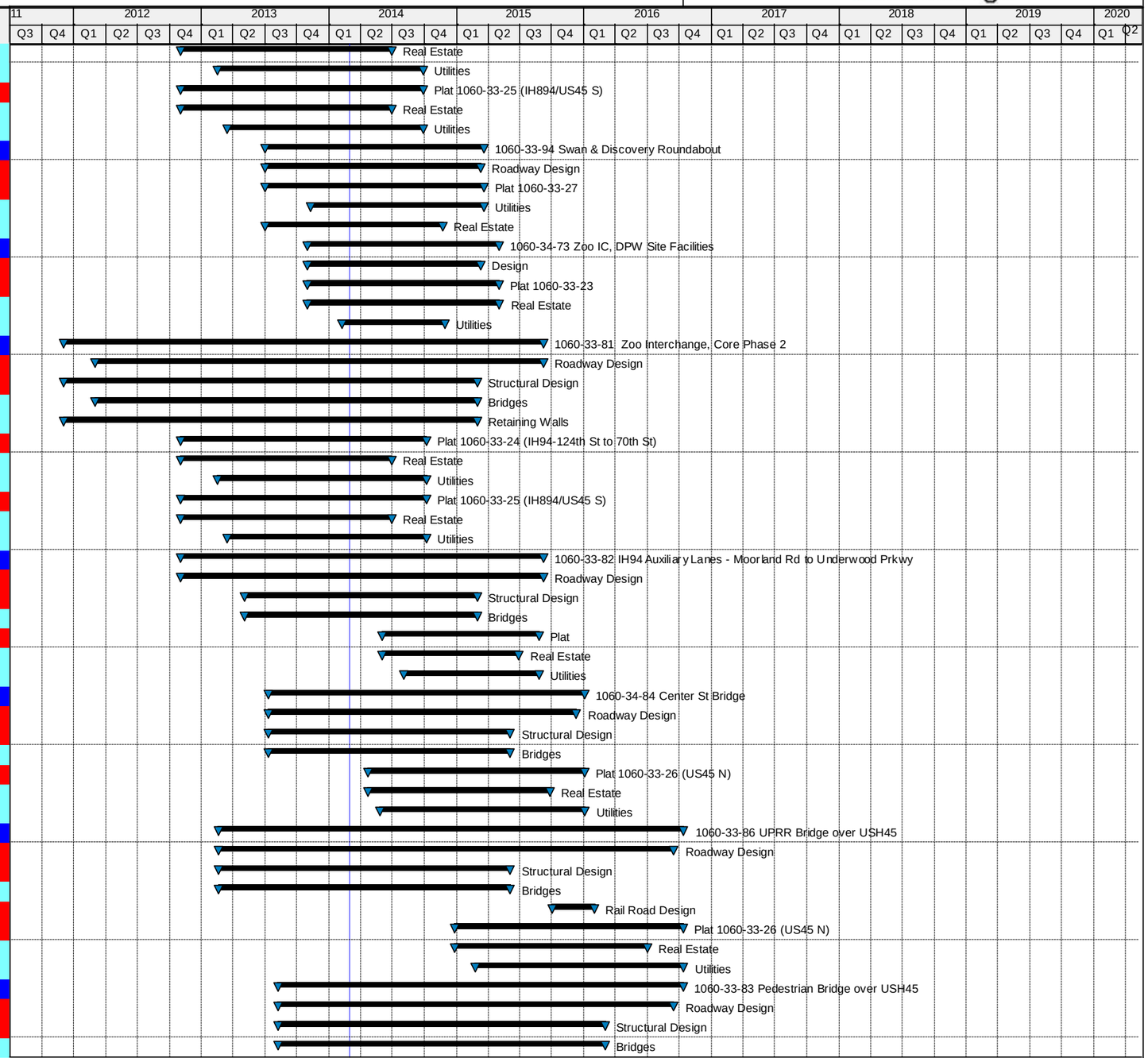
Summary

TASK filter: Non-Program.

Mar.17.2014

Zoo Interchange Master Schedule

Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish
Real Estate	605	60	90.08%	Nov.02.2012 A	Jun.29.2014
Utilities	604	213	64.74%	Feb.16.2013 A	Sep.28.2014
Plat 1060-33-25 (IH894/US45 S)	696	213	69.4%	Nov.02.2012 A	Sep.28.2014
Real Estate	605	60	90.08%	Nov.02.2012 A	Jun.29.2014
Utilities	559	213	61.9%	Mar.17.2013 A	Sep.28.2014
1060-33-94 Swan & Discovery Roundabout	627	387	38.28%	Jul.03.2013 A	Mar.21.2015
Roadway Design	616	358	41.88%	Jul.03.2013 A	Mar.10.2015
Plat 1060-33-27	618	387	37.38%	Jul.03.2013 A	Mar.21.2015
Utilities	499	323	35.27%	Nov.08.2013 A	Mar.21.2015
Real Estate	498	267	46.39%	Jul.03.2013 A	Nov.21.2014
1060-34-73 Zoo IC, DPW Site Facilities	549	429	21.86%	Oct.30.2013 A	May.02.2015
Design	494	342	30.77%	Oct.30.2013 A	Mar.10.2015
Plat 1060-33-23	549	429	21.86%	Oct.31.2013 A	May.02.2015
Real Estate	549	403	26.59%	Oct.31.2013 A	May.02.2015
Utilities	311	276	11.25%	Feb.07.2014 A	Nov.30.2014
1060-33-81 Zoo Interchange, Core Phase 2	1363	558	59.06%	Dec.02.2011 A	Sep.08.2015
Roadway Design	1285	558	56.58%	Mar.03.2012 A	Sep.08.2015
Structural Design	1171	366	68.74%	Dec.02.2011 A	Mar.01.2015
Bridges	1093	366	66.51%	Mar.03.2012 A	Mar.01.2015
Retaining Walls	1171	366	68.74%	Dec.02.2011 A	Mar.01.2015
Plat 1060-33-24 (IH94-124th St to 70th St)	705	222	68.51%	Nov.02.2012 A	Oct.07.2014
Real Estate	605	60	90.08%	Nov.02.2012 A	Jun.29.2014
Utilities	613	222	63.78%	Feb.16.2013 A	Oct.07.2014
Plat 1060-33-25 (IH894/US45 S)	705	222	68.51%	Nov.02.2012 A	Oct.07.2014
Real Estate	605	60	90.08%	Nov.02.2012 A	Jun.29.2014
Utilities	568	222	60.92%	Mar.17.2013 A	Oct.07.2014
1060-33-82 IH94 Auxiliary Lanes - Moorland Rd to U	1042	558	46.45%	Nov.01.2012 A	Sep.08.2015
Roadway Design	1042	558	46.45%	Nov.01.2012 A	Sep.08.2015
Structural Design	667	366	45.13%	May.03.2013 A	Mar.01.2015
Bridges	667	366	45.13%	May.03.2013 A	Mar.01.2015
Plat	452	452	0%	Jun.02.2014	Aug.27.2015
Real Estate	392	392	0%	Jun.02.2014	Jun.28.2015
Utilities	390	390	0%	Aug.03.2014	Aug.27.2015
1060-34-84 Center St Bridge	907	676	25.47%	Jul.12.2013 A	Jan.04.2016
Roadway Design	880	649	26.25%	Jul.12.2013 A	Dec.08.2015
Structural Design	691	460	33.43%	Jul.12.2013 A	Jun.02.2015
Bridges	691	460	33.43%	Jul.12.2013 A	Jun.02.2015
Plat 1060-33-26 (US45 N)	621	621	0%	Apr.24.2014	Jan.04.2016
Real Estate	521	521	0%	Apr.24.2014	Sep.26.2015
Utilities	588	588	0%	May.27.2014	Jan.04.2016
1060-33-86 UPRR Bridge over USH45	1327	956	27.96%	Feb.18.2013 A	Oct.10.2016
Roadway Design	1300	929	28.54%	Feb.18.2013 A	Sep.13.2016
Structural Design	830	459	44.7%	Feb.18.2013 A	Jun.02.2015
Bridges	830	459	44.7%	Feb.18.2013 A	Jun.02.2015
Rail Road Design	123	123	0%	Oct.01.2015	Feb.01.2016
Plat 1060-33-26 (US45 N)	654	654	0%	Dec.27.2014	Oct.10.2016
Real Estate	554	554	0%	Dec.27.2014	Jul.02.2016
Utilities	594	594	0%	Feb.25.2015	Oct.10.2016
1060-33-83 Pedestrian Bridge over USH45	1159	956	17.52%	Aug.09.2013 A	Oct.10.2016
Roadway Design	1132	929	17.93%	Aug.09.2013 A	Sep.13.2016
Structural Design	935	732	21.71%	Aug.09.2013 A	Mar.01.2016
Bridges	935	732	21.71%	Aug.09.2013 A	Mar.01.2016



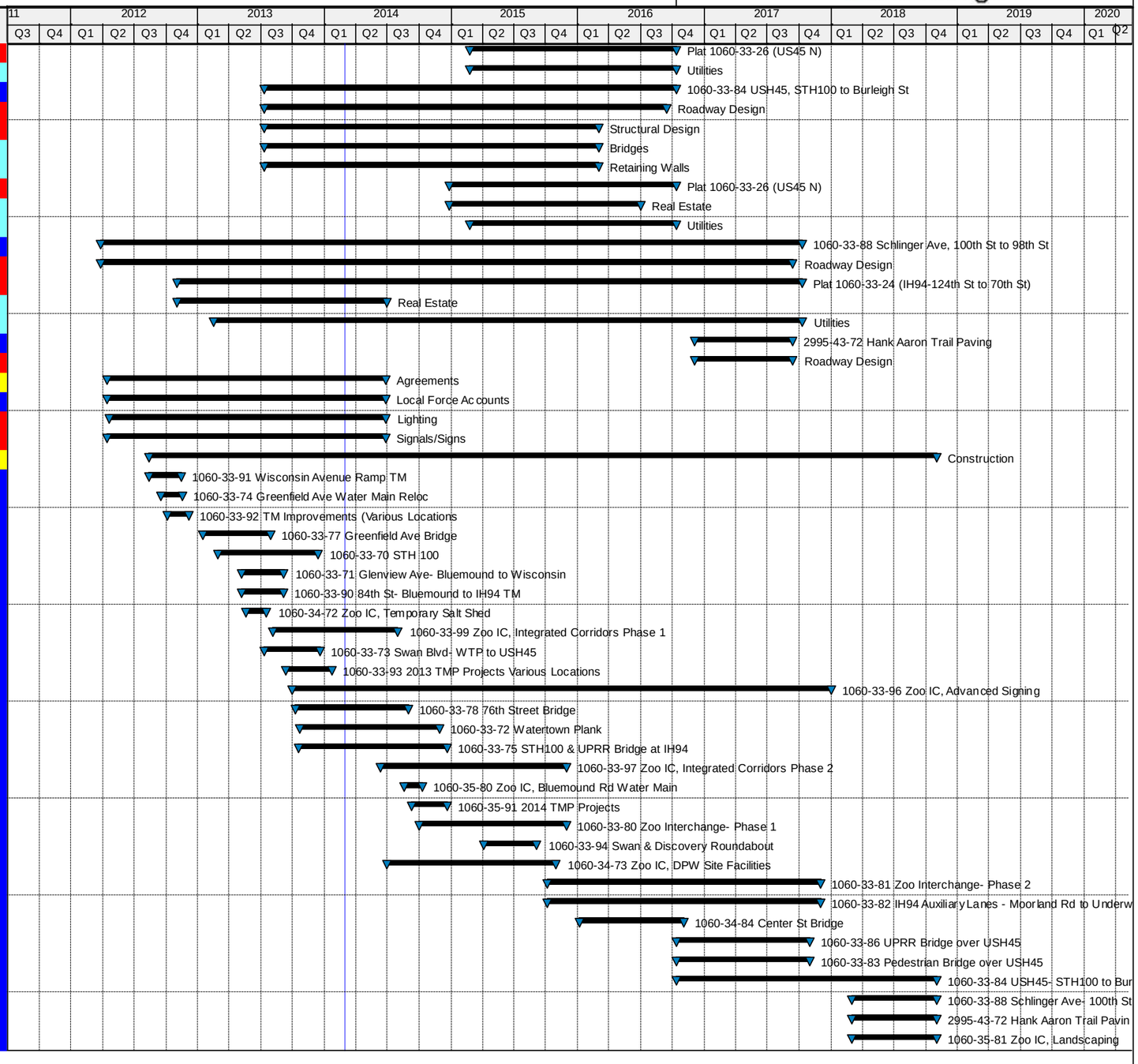
Summary

TASK filter: Non-Program.

Mar.17.2014

Zoo Interchange Master Schedule

Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish
Plat 1060-33-26 (US45 N)	594	594	0%	Feb.25.2015	Oct.10.2016
Utilities	594	594	0%	Feb.25.2015	Oct.10.2016
1060-33-84 USH45, STH100 to Burleigh St	1187	956	19.46%	Jul.12.2013 A	Oct.10.2016
Roadway Design	1160	929	19.91%	Jul.12.2013 A	Sep.13.2016
Structural Design	963	732	23.99%	Jul.12.2013 A	Mar.01.2016
Bridges	963	732	23.99%	Jul.12.2013 A	Mar.01.2016
Retaining Walls	963	732	23.99%	Jul.12.2013 A	Mar.01.2016
Plat 1060-33-26 (US45 N)	654	654	0%	Dec.27.2014	Oct.10.2016
Real Estate	554	554	0%	Dec.27.2014	Jul.02.2016
Utilities	594	594	0%	Feb.25.2015	Oct.10.2016
1060-33-88 Schlinger Ave, 100th St to 98th St	1845	1319	28.51%	Mar.27.2012 A	Oct.08.2017
Roadway Design	1819	1293	28.92%	Mar.27.2012 A	Sep.12.2017
Plat 1060-33-24 (IH94-124th St to 70th St)	1802	1257	30.24%	Nov.02.2012 A	Oct.08.2017
Real Estate	605	60	90.08%	Nov.02.2012 A	Jun.29.2014
Utilities	1710	275	83.92%	Feb.16.2013 A	Oct.08.2017
2995-43-72 Hank Aaron Trail Paving	283	283	0%	Dec.04.2016	Sep.12.2017
Roadway Design	283	283	0%	Dec.04.2016	Sep.12.2017
Agreements	875	120	86.29%	Apr.16.2012 A	Jun.27.2014
Local Force Accounts	875	120	86.29%	Apr.16.2012 A	Jun.27.2014
Lighting	875	120	86.29%	Apr.20.2012 A	Jun.27.2014
Signals/Signs	875	61	93.03%	Apr.16.2012 A	Jun.27.2014
Construction	2249	1707	24.1%	Aug.13.2012 A	Oct.31.2018
1060-33-91 Wisconsin Avenue Ramp TM	79	0	100%	Aug.13.2012 A	Nov.16.2012 A
1060-33-74 Greenfield Ave Water Main Reloc	61	0	100%	Sep.17.2012 A	Nov.16.2012 A
1060-33-92 TM Improvements (Various Locations	390	0	100%	Oct.04.2012 A	Dec.07.2012 A
1060-33-77 Greenfield Ave Bridge	172	0	100%	Jan.16.2013 A	Jul.31.2013 A
1060-33-70 STH 100	290	0	100%	Mar.01.2013 A	Dec.13.2013 A
1060-33-71 Glenview Ave- Bluemound to Wisconsin	111	0	100%	May.07.2013 A	Sep.06.2013 A
1060-33-90 84th St- Bluemound to IH94 TM	111	0	100%	May.07.2013 A	Sep.06.2013 A
1060-34-72 Zoo IC, Temporary Salt Shed	60	0	100%	May.21.2013 A	Jul.19.2013 A
1060-33-99 Zoo IC, Integrated Corridors Phase 1	354	154	56.5%	Aug.05.2013 A	Jul.31.2014
1060-33-73 Swan Blvd- WTP to USH45	138	0	100%	Jul.11.2013 A	Dec.20.2013 A
1060-33-93 2013 TMP Projects Various Locations	110	0	100%	Sep.13.2013 A	Jan.22.2014 A
1060-33-96 Zoo IC, Advanced Signing	1548	1403	9.37%	Oct.01.2013 A	Dec.31.2017
1060-33-78 76th Street Bridge	335	185	44.78%	Oct.11.2013 A	Aug.31.2014
1060-33-72 Watertown Plank	395	276	30.13%	Oct.21.2013 A	Nov.30.2014
1060-33-75 STH100 & UPRR Bridge at IH94	414	295	28.74%	Oct.18.2013 A	Dec.19.2014
1060-33-97 Zoo IC, Integrated Corridors Phase 2	540	540	0%	Jun.10.2014	Dec.01.2015
1060-35-80 Zoo IC, Bluemound Rd Water Main	54	54	0%	Aug.18.2014	Oct.10.2014
1060-35-91 2014 TMP Projects	102	102	0%	Sep.09.2014	Dec.19.2014
1060-33-80 Zoo Interchange- Phase 1	426	426	0%	Oct.01.2014	Nov.30.2015
1060-33-94 Swan & Discovery Roundabout	151	151	0%	Apr.06.2015	Sep.03.2015
1060-34-73 Zoo IC, DPW Site Facilities	337	337	0%	Jul.01.2014	Oct.29.2015
1060-33-81 Zoo Interchange- Phase 2	787	787	0%	Oct.06.2015	Nov.30.2017
1060-33-82 IH94 Auxiliary Lanes - Moorland Rd to U	787	787	0%	Oct.06.2015	Nov.30.2017
1060-34-84 Center St Bridge	302	302	0%	Jan.05.2016	Nov.01.2016
1060-33-86 UPRR Bridge over USH45	386	386	0%	Oct.11.2016	Oct.31.2017
1060-33-83 Pedestrian Bridge over USH45	386	386	0%	Oct.11.2016	Oct.31.2017
1060-33-84 USH45- STH100 to Burleigh St	751	751	0%	Oct.11.2016	Oct.31.2018
1060-33-88 Schlinger Ave- 100th St to 98th St	245	245	0%	Mar.01.2018	Oct.31.2018
2995-43-72 Hank Aaron Trail Paving	245	245	0%	Mar.01.2018	Oct.31.2018
1060-35-81 Zoo IC, Landscaping	245	245	0%	Mar.01.2018	Oct.31.2018



Summary

TASK filter: Non-Program.