



**US Army Corps
of Engineers®**

ENGINEERING AND CONSTRUCTION BULLETIN

No. 2016-16

Issuing Office: CECW-CE

Issued: 26 May 16

Expires: 26 May 18

SUBJECT: Updated USACE Mega Projects Guidance

CATEGORY: Directive and Policy

1. **References:**

a. Engineering and Construction Bulletin (ECB) 2014-14, USACE Mega Project or Program Management: Additional Program, Project, Engineering and Construction Management Controls, 04 June 2014

b. Engineer Regulation (ER) 5-1-11, U.S. Army Corps of Engineers Business Process, Revised 12 January 2007

c. ER 1110-2-1302, Civil Works Cost Engineering, 15 September 2008

d. ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999

e. ER 1110-2-1156, Safety of Dams – Policy and Procedures, 31 March 2014

f. ECB 2015-18, Technical Lead for E&C Deliverables, 19 October 2015

g. ER 1105-2-100, Planning Guidance Notebook, 22 April 2000

h. ER 1110-3-1300, Military Programs Cost Engineering, 26 August 1999

i. ER 690-1-1213, Civilian Personnel – Administrative Reemployment Rights for Certain USACE Employees, 31 July 2013

j. ER 415-1-13, Design and Construction Evaluation (DCE), 29 February 1996

k. ER 1110-1-12, Engineering and Design: Quality Management, 30 September 2006

l. ECB 2014-8, HQUSACE Led Design and Construction Evaluations, FY12 & 13, Plan for FY14, 30 April 2014

m. Memorandum, CECW-CE, 02 April 2013, Subject: Quality Imperatives for Engineering and Construction Products and Services

n. Project Management Business Process (PMBP) Manual, Version 1.0, May 2009

2. **Purpose.** This ECB provides updated guidance on management controls for projects or programs designated by HQUSACE Civil Works and Military Programs' Directors as "Mega Projects" or "Mega Programs" and replaces ECB 2014-14 previously issued on 04 June 2014. The revisions laid out below improve integrated accountability and follow-through at all levels

within USACE from the District's field office through the Major Subordinate Command's (MSC) Senior Project Executive (SPE), as well as the Directors of Civil Works (DCW) and Military Programs (DMP).

3. **Applicability.** The primary lessons learned from four years of Mega Projects implementation are that both the Civil Works and Military Programs benefit from the additional management efforts and focus that Mega Project Tenets provide; and that incremental improvements in management foster project success. This ECB supports the USACE Business Process as defined in ER 5-1-11.

4. **Mega Project/Program Designation.**

a. The Mega Projects and Programs list is updated annually by the DCW and DMP. The most recent update to this list is found in Enclosure 1. Enclosure 2 lists the typical attributes of a Mega Project and is the basis for selection; however these attributes are not firm requirements for Mega Project or Program designation – selection is at the DCW/DMP's discretion. Projects may also be added or removed from the list at any time at the DCW/DMP's discretion, and changes will be announced by memorandum from the cognizant Director.

b. To ensure consistency in the application and improvement of required management controls across both the Civil Works and Military Programs Directorates, the HQUSACE Engineering and Construction Division (CECW-CE) is responsible for leading the Mega Project initiative and will partner with other HQUSACE elements as outlined in this document.

5. **Required Management Controls.** Enclosure 3 lists the required management controls or "tenets" for Mega Projects. MSCs are required to implement these management controls for projects and programs listed in Enclosure 1. The requirement for HQ review of the PMP/PgMP and compliance with all other Mega Project requirements are effective at the following project milestones unless specifically designated by the respective Director:

a. For Civil Works Projects – When the first construction contract is advertised. All subsequent activities, including ongoing planning, design, and construction activities are covered at that time.

b. For Military Programs Projects - When the first design directive is received, or when advance planning funds are received (whichever is earlier).

6. **Quarterly Updates.** Enclosure 4 is the template for required Quarterly Updates. This template applies during all phases in the life cycle of a Mega Project. PDTs must use the template to update project information on a quarterly basis, and utilize it as the briefing format for all In Progress Reviews (IPR) requested by or delivered to the DCW, DMP, or MSC's SPE. While the content of Quarterly Updates and IPRs shall be specific to the Mega Project or Program, the slide deck must include the following standard information at a minimum:

ECB No. 2016-16

Subject Updated USACE Mega Projects Guidance

- a. A graphical depiction of the project baseline, including current status and estimates of cost and dates for completion as depicted in attached template.
- b. Financial data indicating the status of funds obligated, expended and anticipated increases in cost. Program specific data elements and processes (e.g. the Military Programs Current Working Estimate (CWE) “Rainbow Sheet,” or Civil Works J-Sheets) should be referenced and used for these reports.
- c. Project specific metrics (tabular and graphical) analysis and trends. The SPE shall establish appropriate project metrics where there are not standard USACE metrics for a given focus area. Metrics should be quantified and traceable to a USACE database (e.g. P2, RMS, etc.).
- d. Analyses of trends for cost and schedule performance, and quality, including corrective actions.
- e. A listing of program, project and technical decisions recently made or upcoming that have significant impact on program or project delivery.
- f. A summary level update report on any outstanding issues identified by Mega Design and Construction Evaluation(s) (Mega DCE) and DCEs performed by MSCs.
- g. A narrative or graphical depiction of at least the top five risks to program or project delivery, including planned or executed mitigation strategies.
- h. If the report is for a Mega Program (covering multiple Mega Projects), the above listed items should be rolled up at the program level.

7. Mega Project Design and Construction Evaluations (Mega DCE). Mega DCEs will be scheduled by HQUSACE, Engineering & Construction Division, Construction Branch, through coordination with other HQUSACE offices and with the MSC’s Business Technical Division. The Mega DCE team is normally led by the HQUSACE Senior Construction Manager who is supported by various USACE subject matter experts, including, but not limited to, Program and Project Management, Contracting, Safety, etc. MSC-led evaluations of Mega Projects should be similarly coordinated, with an opportunity for HQ personnel to attend. Mega DCEs will include, but are not limited to the guidance provided in references paragraph 1, (j.) through (n.). The project listing at Enclosure 1 indicates the Director(s) selection of Mega DCEs for the current and upcoming fiscal years.

8. Update. All new requirements will be included in the next appropriate policy document update.

ECB No. 2016-16

Subject Updated USACE Mega Projects Guidance

9. **Points of Contact.** HQUSACE points of contact for this ECB are Mr. James Moore, CECW-CE (570) 615-6321 and Mr. Kenny Simmons, CECW-CE (202) 761-7234.

//S//
MARK L. MAZZANTI
Chief, Programs Integration Division
Directorate of Civil Works

//S//
DAVID J. LEACH, P.E.
Acting Chief, Programs Integration Division
Directorate of Military Programs

//S//
JAMES C. DALTON, P.E.
Chief, Engineering and Construction
Directorate of Civil Works

Encls.

- Enclosure 1 – USACE Mega Projects List
- Enclosure 2 – Typical Attributes of a Mega Project
- Enclosure 3 – Required Management Controls
- Enclosure 4 – Mandatory Quarterly Update Template

USACE Mega Projects List as of 26 May 2016

Military Programs				
MSC	Project Name	Senior Project Executive (SPE)	Project Phase	HQUSACE Led Mega DCE Schedule
LRD	Shallow Land Disposal Area (SLDA)	Mr. Dale	Construction	Planned 2016
NAD	Rhine Ordnance Barracks Medical Center	Mr. Leach	Design, Construction	Planned 2016
NAD	Joint Operations Center – US CYBERCOM	Mr. Leach	Construction	Completed 2015 Follow up in 2017
NAD	USMA Cadet Barracks	Mr. Leach	Procurement	Completed 2015 Follow up in 2017
NAD	Data Center at East Campus Fort Meade (HPCC 2)	Mr. Leach	Construction	Completed 2015 Follow up in 2017
NAD	Missile Defense – Poland	Mr. Leach	Construction	Planned 2016
NAD	U.S. Army Public Health Command	Mr. Leach	Construction	Planned 2017
NWD	STRATCOM	Dr. Hearn	Construction	Completed 2013, 2015 Follow up in 2017
NWD	National Geospatial-Intelligence Agency (NGA) N2W	Dr. Hearn	Planning, Design	TBD
NWD	Denver VA Replacement Medical Center	Dr. Hearn	Construction	Planned 2017
POD	Camp Humphreys (YRP & LPP) ¹	Mr. Ban	Planning, Design, Construction	TBD
SPD	Ft. Irwin Medical Center	Ms. Peterson	Construction	Completed 2015 Follow up in 2017
SWD	Ft. Bliss Hospital	Mr. Perez	Construction	Completed 2014 Follow up in 2016
Various	Department of Veterans Affairs (DVA) Major Construction Program ²	Various	Planning, Design, Construction	TBD

¹ Designated as a Mega Program.

² Designated as a Mega Program. All component projects will implement this ECB in full, including submission of individual Mega Project Quarterly Updates. The HQUSACE DVA Program Management Office (PMO) may issue additional guidance as necessary for Mega Project Quarterly Updates.

Civil Works				
MSC	Project Name	Senior Project Executive (SPE)	Project Phase	HQUSACE Led Mega DCE Schedule
LRD	Olmsted Locks & Dam	Mr. Dale	Design Construction	Completed 2012 & 2015. Follow up in 2017
LRD	East Branch Dam Safety Modifications ³	Mr. Durrett	Procurement	Completed 2015 Follow up in 2016
LRD	Bluestone Dam Safety Modifications ³	Mr. Durrett	Planning Design	MSC Completed 2015 Follow up in 2016
LRD	Center Hill Dam Safety Modifications ³	Mr. Durrett	RCC Construction	Cutoff Wall Completed 2013 & 2015. Planned RCC DCE in 2017
LRD	Monongahela River Locks & Dams 2, 3 & 4 ³	Mr. Dale	Design Construction	Planned 2016
MVD	Hurricane Storm Damage Risk Reduction System (HSDRRS) ⁴	Mr. Holden	Planning Design Procurement Construction	Completed 2014 Follow up in 2016
NAD	Hurricane Sandy Restoration Program ⁴	Mr. Leach	Planning Design Construction	Completed 2014 Follow up in 2016
SAD	South Florida Ecosystem Restoration (SFER)	Mr. Lee	Planning Design Procurement Construction	Planned 2017
SAD	Herbert Hoover Dike ³	Mr. Lee	Planning Design Construction	Completed 2013 & 2016 Follow up in 2018
SAD	Savannah Harbor Expansion Project (SHEP)	Dr. McCallister	Construction	Planned 2017
SPD	Isabella Dam ³	Ms. Peterson	Design Construction	Completed 2012, 2013 & 2015 Follow up in 2017
SPD	JFP-Folsom ³	Ms. Peterson	Design Construction	Completed 2012, 2013 & 2015 Follow up in 2017
SWD	Buffalo Bayou (Addicks & Barker) Dam Safety Modifications ³	Mr. Mazzanti	Construction	Planned 2017

³ Dam Safety Modification Projects are designated as a Mega Program. All projects listed herein will implement this ECB in full, including submission of individual Mega Project Quarterly Updates. The Risk Management Center (RMC) may issue additional guidance as necessary for Mega Project Quarterly Updates.

⁴ Designated as a Mega Program. HSDRRS Program Quarterly Updates will include a specific Quarterly Update for the Permanent Canal Closures & Pumps (PCCP) project.

Typical Attributes of a Mega Project

- 1. Cost and Duration.** The cost of the project or program is one of the most significant attributes of a Mega Project. Large dollar value projects and programs (in excess of \$200M) generally represent more risk in achieving project objectives. Performance periods (in excess of 2 years) for Mega Projects are generally longer, indicating more performance risk. While these guidelines are flexible, and can be applied to smaller/shorter projects, the additional costs of implementing Mega Project Management Controls is significant, and often unaffordable for small/short duration projects.
- 2. Uniqueness.** One of a kind projects or programs involving unique and highly complex systems, processes, and technical challenges may be characteristic of Mega Projects. Project unique challenges and complexities may present an overarching risk that requires the application of Mega Project tenets.
- 3. Acquisition Strategy and Delivery Method.** The contract type, solicitation, evaluation, and compensation methods allocate risk between the contracting parties. The spectrum ranges from simple, design-bid-build, firm-fixed-price (FFP) construction contracts to best value or qualifications-based design, design-build, and operations and maintenance contracts. Acquisitions with higher complexity and pricing flexibility are characteristic of Mega Projects.
- 4. National Significance.** Projects or programs of national or international significance may be characteristic Mega Projects. Examples are projects constructed under the Dam Safety Modification Program.
- 5. Critical Nature of Completion Date and/or Funding Constraints.** Projects or programs with completion dates established in law or treaty; tight or incremental funding requirements; and/or other requirements which dictate close control and projection of ultimate cost and completion, may be characteristic of Mega Projects. An example is the new National Geospatial-Intelligence Agency N2W Campus.
- 6. Coordination of Multiple Prime Contractors.** Projects or programs that require USACE coordination of multiple prime construction contractors conducting significant construction operations concurrently on a project site may be characteristic of Mega Projects.
- 7. Coordination of Multiple Design Agents and Stakeholders.** Projects or programs requiring the coordination of multiple design agents, multiple USACE Districts and Centers, or multiple Federal agencies, may be characteristic of Mega Projects.
- 8. Overlapping or Dependent Project Phases.** Projects where authorization, funds, or physical constraints determine the pace of execution may be characteristic of Mega Projects. The Olmsted Lock and Dam is an example of this type of Mega Project.

Mega Project and Program Management Controls

The tenets of Mega Project management are intended to be flexible and scalable to accommodate the type, size, and focus of projects and programs. Multiple Mega Projects, being accomplished under the same program can be aggregated and managed collectively. Detailed discussion of each tenet shall be included in an enhanced Project Management Plan (PMP) or Program Management Plan (PgMP) as outlined below.

1. Establish a Disciplined and Focused Supplemental Governance Structure

a. A three-tiered governance structure will be established for Mega Projects in order to achieve needed accountability, visibility, understanding, and timely decision-making to assure effective communication and issue resolution at appropriate levels. The Construction Industry Institute (CII) defines project culture as “the degree to which (1) project leadership is defined, effective, and accountable; (2) communication within the team and with stakeholders is open and effective; and (3) the team fosters trust, honesty, and shared values.”

(1) The senior level is the Senior Executive Board (SEB) composed of senior leaders from all stakeholders. The typical members are the MSC’s (SPE) staff; project sponsors and DoD commands; and corporate level officers from the Designer of Record (DOR) and Construction Contractor. HQUSACE Senior Leaders, National Program Manager, and Engineering and Construction senior engineers must be included as advisors to the SEB, involved in all critical activities addressed by the SEB, and invited to all SEB meetings. The SEB shall be chaired by the SPE. The Enhanced PMP will describe the extent to which HQ leadership will be involved in the regular review and oversight of a Mega Project. The PMP will also outline how parity will be achieved between stakeholder agencies (for example: who will represent USACE in the event that the using agency is represented by a 2 or 3 star representative). The PMP will also describe how the Mega Projects reporting and briefing processes will synch with other project and program level approaches such as SERG and SAG in Military Programs; Civil Works Review Board and Change Control Board; DMRs, and CMRs.

(2) The mid-level Executive Leadership Team (ELT) is composed of the USACE District senior leaders (i.e. Corporate Board); project sponsors and proponents; and the DOR and Construction Contractor’s regional representative. This team is responsible and accountable to make decisions and apply resources to solve problems that rise above the typical day-to-day management of the project. The ELT shall be chaired by the District Commander or the Deputy District Engineer for Programs and Project Management (DPM).

(3) The working-level Project Leadership Teams (PLT) are the working level teams assigned to each major phase of the project. This is the level where the typical day-to-day management of engineering and/or construction efforts are performed and includes the Project Manager and Technical Lead.

b. This three-tiered governance structure for Mega Projects will be incorporated in PgMPs and PMPs, and recognized and supported by the entire vertical team for the Mega Project. The governance structure may be adjusted to accommodate differences in programs, command structures and funding between Civil Works, Military, and International and Interagency Services (IIS) Programs, etc. Additional elements may be added where other stakeholder and USACE elements are involved. These other elements may include Centers of Expertise or Standardization (CX or COS), the Institute for Water Resources (IWR), the Risk Management

Center (RMC), the Huntsville Center (HNC), and other Design and Production Centers. Normally the program and project managers of a Mega Program or Project will report to the executing District DPM. While the Senior Project Executive is ultimately responsible for the structure and grade level of the organization, care should be exercised to prevent short-circuiting or denigration of the traditional functional, command, and administrative processes in the executing District and MSC.

2. Facilitated Partnering. Professionally facilitated and formal partnering will be an integral element of this Mega Project governance process. Facilitators will be independent professionals, not employees of USACE, a Contractor, or the stakeholder(s). This requirement is not limited solely to USACE's relationships with Architect-Engineers and Construction Contractors – it also includes facilitated partnering among internal USACE elements. A facilitated partnering meeting with PDT members is strongly encouraged when the PDT is initially formed and whenever there are significant changes in PDT composition and/or project phases. The following elements of partnering are vital and will be developed and documented for all Mega Projects:

a. A Facilitator Report, summarizing the workshop activities, goals, issues, and action plans with responsible parties identified.

b. A hierarchical Dispute Resolution Matrix, depicting (by name and title) the lead stakeholder representative at each level, and the amount of time allowed for resolution at that level. It may be necessary to create separate dispute resolution matrices for internal and external disputes, technical or fiscal/time issues, etc.

c. A Project Charter, summarizing the common goals and objectives of the stakeholders.

d. Professionally facilitated follow-up workshops will be periodically scheduled to indoctrinate new members, update issues lists, etc.

3. Evaluations. Mega Project Design & Construction Evaluations (Mega DCE) are an essential element in the Quality and Project Management aspects of Mega Projects and will be led by HQUSACE. The cognizant Regional Integration Team (RIT) or Programs Integration Division (PID) representative, and the MSC, will participate in Mega DCEs and assist in the arrangements for the visits, gathering and reviewing data, and development of reports, etc. In the event an MSC sponsors and performs their own DCE on a Mega Project or Program, HQUSACE representatives will be invited to participate in that MSC-led evaluation.

a. Mega DCE execution will be organized by the HQUSACE Engineering & Construction Division, Construction Branch along with support from various USACE offices and teams. The Mega DCE team will be multi-disciplined and will evaluate project management, procurement, engineering and construction processes for compliance with USACE policy and its effectiveness in achieving desired project outcomes. The team will meet with the Mega Project's PDT (primarily by conference call), to obtain a 360 degree perspective of the project prior to establishing focus areas of the visit. A Mega DCE site visit may be executed during the design development and production efforts; as well as during the construction phase.

b. Mega DCEs are scalable and may be tailored to focus on specific areas of concern to the HQUSACE senior leadership. Mega DCEs will be scheduled for each active Mega Project through coordination with the respective MSC's Business Technical Division. The HQUSACE

Chief of Construction will issue a Commissioning Memo to the Mega DCE Team Leader, establishing the parameters and focus areas that will be evaluated by the team. This Commissioning Memo will include a request for the Team to meet with stakeholders, DORs, and Construction Contractors in addition to the District PLT.

c. Some visits may be combined into program level reviews and/or conducted virtually, depending on level of project activity and subject to travel funding availability. These HQ-led Mega DCEs are intended to provide regional and HQUSACE senior staff with a second perspective for critical project decisions, and ensure that USACE products and services are technically excellent, on schedule, and within budget. Mega DCEs should be scheduled in advance of critical project milestones, such as:

- (1) Six months in advance of any design or construction contract award;
- (2) Bi-annually after award of any major construction contract, until substantial completion is achieved, and
- (3) During the formative stages of any request for significant funding or schedule increase.

d. Upon completion of a Mega DCE, the Mega DCE Team (Team) provides an out brief to PDT, including representation from USACE at each of the tiered governance levels. The out brief will include a current summary of findings, and a schedule for completing any follow-up work and issuing the final report. The following activities typically take place after the completion of a Mega DCE:

- (1) The Team will coordinate with the district and MSC on remaining items to be discussed before issuance of the written Mega DCE report. Drafts of the report will be shared with the district's Mega Project PDT before issuance.
- (2) The written Mega DCE report will be completed within 25 workdays after site departure and submitted to the HQUSACE Chief of Construction for approval signature and distribution. Due to these time constraints following a site visit, it is essential that MSC and District personnel provide timely and complete information when requested, and Team members draft assigned sections of the report.
- (3) The report is signed and distributed upon signature by the HQ Chief of Construction, to the following personnel: the MSC's Military Integration Division Chief or Civil Works Programs Chief, as appropriate; the MSC's Business Technical Division Chief; the HQUSACE Military Programs Consolidated Regional Integration Team (CRIT) Deputy or Civil Works RIT Deputy as appropriate; the HQUSACE Military Programs or Civil Works Programs Integration Division Chiefs, as appropriate, and the HQUSACE Chief of Engineering and Construction (E&C).

e. Following the Mega DCE report distribution to these senior leaders, a summary level cover memo is sent from the HQUSACE Chief of E&C, SES, to the MSC's SPE, SES. This memo formally alerts the SPE that the report has been provided to that SES's senior leaders for their action. This memo will also request a written response from the MSC SPE, SES within 20 workdays that identifies the path for resolution of outstanding items identified in the Mega DCE Report. The MSC will provide a separate briefing and update on the results of a Mega DCE to

the cognizant PID representative, CRIT/RIT Deputy, and CECW-CE within 60 calendar days of receipt of the memo, and track completion of all open actions in the Quarterly Updates and IPRs.

4. **Senior Project Executive (SPE) Accountability.** This leader is accountable to the DCW or DMP for project or program success. The SPE will provide guidance and mentoring to the Mega Project PDT. The PDT will be structured within the executing District and MSC's Command structure and is accountable to the SPE. The SPE will establish a schedule for receiving formal IPRs from the Mega Project PDT. These IPRs serve as both information and decision making sessions between the SPE and other members of the vertical team (including HQUSACE elements) in advance of submitting required Quarterly Updates to HQUSACE as described in the Quarterly Update tenet below.

5. **Quarterly Updates and In Progress Reviews (IPR)**

a. The SPE will ensure that a written Mega Project Quarterly Update is provided to the HQUSACE Engineering and Construction Division (CECW-CE), and appropriate PID or RIT/CRIT; that includes as a minimum, those items previously identified in paragraph 4. (a.) thru (h.) of this ECB, and formatted in accordance with the template at Enclosure 4. The SPE may add to this minimum format for Quarterly Updates.

b. The HQUSACE Chief of Construction and the appropriate Civil Works (CW) or Military Programs (MP) RIT/CRIT Deputy, and appropriate PID representative will review the Quarterly Update and give verbal input to the appropriate Director within 15 work days of receipt. Any follow up actions by HQs will be at the discretion of the Director.

c. The appropriate Director will decide if an IPR will be held and the manner by which it will be held: as an independent project IPR; a programmatic IPR; as part of a DMR; etc.

d. When a Mega Project IPR is held for the Director, it will be attended by the Chief of Construction, the appropriate CW or MP RIT/CRIT Deputy, and the appropriate PID representative.

e. The reporting and coordination process outlined above (CECW-CE, RIT/CRIT, and PID) also applies to "legacy" briefings which the Directors request or require on a recurrent basis (HSDRRS, Olmsted, SHEP, etc). All briefings will be provided to and coordinated with CECW-CE at least one week in advance of these "legacy" briefings for any listed Mega Projects or Programs.

6. **Enhanced Project Management Plans (PMP)**

a. The PMPs for Mega Projects must address implementation of all Mega Project tenets listed herein, and will include organizational charts and the credentials for candidates to fill the Project Manager, Technical Lead / Lead Engineer, Scheduler and Project Controls positions (see paragraphs 7, 9, 10, and 12 below). Special emphasis will be placed on well-reasoned and thorough Quality Management Plans, Change Management Plans, Risk Management Plans, and Staffing Plans. A formal Risk Register and Cost and Schedule Risk Analysis (compliant with ER 1110-2-1302 all Mega Projects and Programs) must be provided and maintained throughout the life of a Mega Project. PMPs must be reviewed annually by the original signatories or their successors and revised as appropriate for relevance and soundness of the plan going forward.

This is particularly important for longer term projects where several rotations of command or leadership are likely to occur.

b. The PMP will be developed by the MSC's Mega Project's vertical team, and provided to the respective PID representative for HQUSACE coordination and formal input, prior to approval by the SPE. The respective HQ PID representative will solicit and coordinate review of these plans with E&C and the RIT or CRIT as appropriate. The HQ PID representative will provide coordinated set of comments back to the MSC. The comments shall be addressed or incorporated in the PMP/PgMP prior to approval and signature by the MSC's SPE on the PMP acceptance sheet.

7. Enhanced Project Delivery Team (PDT). The executing District's Senior Leaders will assign a multi-disciplined PDT early in the project planning phase to be responsible and accountable for the project until completion. The PDT will be approved by the MSC's SPE after they have established and validated minimum team member competencies, organizational structure, size, etc. Selection of team members will be based on competencies established by the SPE and may require resourcing the PDT from outside the District or MSC. Non-technical competencies will be recognized as equally important to technical competencies. The identity, roles, and responsibilities of a Technical Lead / Lead Engineer (see ER 1110-2-1150, ER 1110-2-1156, and ECB 2015-18) will be described in the PMP irrespective of program (MP, CW, Host Nation, IIS, etc.). Team building and partnering exercises will be initiated early and often in the project life cycle and these efforts will be documented in the annual updates to the PMP.

8. Use of Lessons Learned. Best practices will be used to inform the development of future Mega Project PMPs in particular, and to inform revisions to the USACE Project Management Business Process (PMBP). Mega Project PDTs will populate the Enterprise Lessons Learned (eLL) system (or an acceptable substitute system) on a regular and recurring basis. In addition to reviewing formal Lessons Learned databases, Mega Project PDTs are encouraged to regularly communicate with other PDTs that previously delivered, or are currently executing similar Mega Projects.

9. Integrated Master Schedule (IMS), Cost Estimates, Risk Analyses, and Earned Value. USACE Mega Project PDTs must prepare and maintain an Integrated Master Schedule (IMS), Risk Registers, Cost and Schedule Risk Assessments (CSRA), and Earned Value Models throughout the life of the project. The executing District or project must have trained and experienced personnel assigned to formulate and update these necessary tools. These personnel must be on staff at the early stage of the project life cycle to prepare and status the IMS.

a. The IMS will include planning, programming, procurement, design and construction phase activities and will be updated with actual dates and remaining durations at least monthly. The latest monthly update for the IMS and EVMS models, along with the latest Risk Register will be provided as part of each Quarterly Update. As project phases become more certain (e.g., contracts awarded, milestones missed/met, baselines adjusted, etc.), the IMS will provide a hierarchical "rolling window" focusing on details that are important and understandable within the three-tiered governance structure. The IMS will inform the entire team about activities that are on and near the critical path each month.

b. Reference ER 1105-2-100, ER 1110-2-1302 and ER 1110-3-1300 for basic cost and schedule estimate requirements. Mega Project cost estimates and schedules will be integrated at

either the project or program level, utilizing Earned Value Management System (EVMS) principles.

c. Cost and Schedule Risk Analyses will be performed for the project or program utilizing CSRA techniques as outlined in ER 1110-2-1302.

10. Project Controls Team and Project Specific Metrics

a. Each Mega Project PDT will establish a specific project controls team at the project or program level. This team will be staffed with experienced personnel responsible for managing project and integrated program schedules, project and program budgets, and document and communication controls. The team composition will change over time and will include staff with specialized expertise in project control functions including CSRA. At least one member of this team will be a Government employee that is experienced in CSRA, cost estimating, and network scheduling.

b. The SPE will set metrics for monitoring and evaluating performance of all phases of the Mega Project, and will ensure timely and accurate reporting by the Project Controls team. Cost and schedule metrics should employ Earned Value Management principles and technical metrics will follow existing program requirements. All project specific metrics, control bands, and R-Y-G stoplight ratings will be fully explained within the Quarterly Updates. Existing District, Region, and HQUSACE management and monitoring elements (RMB, RIT, PID, etc.) will retain their administrative and reporting responsibilities, but will participate in and be guided by the governance structure outlined in the Mega Project PgMP or PMP.

11. Enhanced Recruitment and Staffing of PDT Members

a. A Mega Project may adversely impact any District's manpower and personnel management when the project office is initially stood up and when it shuts down. Standard Human Resources (HR) processes are not designed for standing up and closing down a large office in a timely and orderly fashion, so additional planning and incentives may be required to ensure that the best and brightest PDT members from across the Command are recruited, selected, assigned, retained and/or returned to their home station.

b. These processes should be similar to those used to deploy staff for contingency operations on long term Temporary Duty (TDY) or Temporary Change of Station (TCS), with return rights to their home Districts. Participation and communication across the Command, including MSC and HQUSACE leaders, may be required to ensure that sufficient incentives are in place to attract and retain these individuals for the life of a Mega Project. A Staffing Plan will be provided as part of the enhanced PMP (see Paragraph 6 above) and demonstrate that the District has the required skill sets and available personnel to execute the work. If the District and MSC Commander anticipate the need to provide additional incentives (return rights, bonuses, special rates, etc.) to recruit PDT members, the procedures outlined in ER 690-1-1213 should be followed.

12. Competent Project Managers and PDT Members. The Project and/or Program Managers assigned to Mega Projects must have professional skills and certifications that demonstrate mastery of the tenets and management techniques described above. These skills can be demonstrated by certification as a Project Management Professional (PMP) by the Project Management Institute (PMI), certified Level II pursuant to the USACE Program and Project

Management Career Development Plan and/or personally appointed by the SPE. In addition to certification, the individual must have sufficient technical experience in the appropriate engineering and/or construction functions anticipated for the assigned Mega Project. These minimum qualification levels will be demonstrated by certification, licensure, and experience as listed in the PMP and determined by the SPE. Functional chiefs and key staff members on the project should likewise be identified and certified in accordance with existing regulations, the SPE's requirements and the PMP.

Mega Project Quarterly Update / IPR Template

Microsoft PowerPoint template cover page shown below. An editable version of this file is attached to this ECB.

