Project Design Procedure

DMP-1

1. Objective:

This procedure provides more detailed steps that are contained in the Design Phase of the Project Management Process. It Provides standard design procedure to be applied projects >$50 (Indirect, GPP and not SLI) designs in the FML department. This process is scalable and can be used for projects < $50k.

2.0 Design Process:

* 1. Once a project is approved for execution for a specific budget year the project will be tracked using Maximo and other PM tools by the DPM and EM. Projects approved during the budget approval process should have a Maximo WO number. For those that do not a WO will be created prior to starting the design.
  2. It is assumed that a Project Scope Document (PSD) was created and approved during the Programming and Budgeting process. Phase I of the design process will reference this document. If there is no PSD the project should not enter the design process until one is created and approved. The programming process SOP provides details on who to fill out this document.
  3. Cost estimation: Design contingencies used at different stages of design will be as follows:
     1. Concept: Contingency 25~50 % depending on size of projects & the level of details worked at.
     2. Thirty-Five % Design: Contingency 15%
     3. Sixty % Design: Contingency 10%
     4. Hundred % Design: Contingency 5%
     5. Final Design: Design Contingency 0%
  4. Project Schedule: DPM prepares the MS Schedule using appropriate template and continues to update the Design portion of the schedule until Design is complete & signed. Also informs CM & CPM/TR to edit the Procurement & the Construction portion of the schedule as the design matures. The CM group will provide input to the construction portion of the schedule during the design milestone reviews.

3.0 Conceptual Design (Phase I):

This phase is started after the project has been approved at the Budget Review Board or has been approved as an insert to the program YR. Inserts must have approved PSD. The DPM will start the conceptual design as follows:

1. Scope validation: The DPM will validate the PSD with the Planning Manager (PLM).
   1. If the PSD is still valid and we have met with the customer within the last 12 months, schedule a project strategy meeting with the DM.
   2. If the PSD needs to be updated or is more than 12 months old, conduct a Customer Meeting to update the PSD.
      1. Include PLM, customer representative/s, ESH&Q and a representative from construction group.
      2. Minutes: DPM will prepare minutes of the meeting. Minutes will be circulated among participants for concurrence. If there are significant changes to the Requirements, Budget, or schedule (i.e. Cost increases 20%) highlight in the meeting minutes and forward to the EM via the DM.
2. Project Schedule: DPM prepares the MS Schedule using appropriate template and continues to update the Design portion of the schedule until Design is complete & signed. Also informs CM & CPM/TR to edit the Procurement & the Construction portion of the schedule as the design matures.
3. Strategy meeting: DPM holds planning meeting with Engineering Manager (EM), Design Manager (DM) and representative from Construction Group.

Items for discussion or decision:

* 1. Engineer & Architect (A/E) vs In-House (I/H): Based on size of project, workload at Facilities, expertise required for the design, and availability of funds for design, a decision to design the project In-house or thru an IDIQ A/E will be made.
  2. Scale design process to align with scope of project: Depending on the complexity of the project and design work already done, required milestones for the design and reviews (35%, 60% & 100%) will be decided. BOD must be approved before going to 60% level even if 35% design stage is omitted.
  3. Submittal Exchange: Submittal Exchange may be used for design. Procedures for use during the design process are under development. All projects during the construction phase will use Submittal Exchange and will be set up per the MS Project schedule.
  4. Design Team: Design team should be identified to assist DPM in required area of expertise. The team members will be responsible for I/H design & for review for A/E design documents. For A/E designed projects, the design team members will specifically review drawings, specifications & cost estimate, in their area of expertise.

Specifications: Division 1 specs are to be prepared by Construction Group. For jobs above $100K normally all applicable sections of Division 1 will be used.

* 1. ES&H engagement: ESH will be included on all formal reviews of design documents.
  2. Schedule: Discuss the draft MS Project Schedule at the Strategy meeting. Modify the schedule as per decisions in the meeting. Discuss any milestone dates that will be needed to support the customer with specific emphasis on SAD constraints.
  3. TR Designation: Typically a separate TR from the DPM will be established. In some instances (size & complexity of project or availability of resources) the DPM will fulfill this requirement. Also discuss need for Commissioning Agent, Submittal Exchange, etc.
  4. Acquisition strategy: Normal strategy for procurement is technically acceptable low bid based on JLab design documents. Any other process for procurement will need consultation with Procurement Department. Options for executing the project using a sole source or BOA subcontractor should be discussed. Use of pre-engineered solutions or use of GSA schedule services should also be considered. Typically, we will use a bid schedule during the procurement process. The Base bid should not exceed 90% of the project budget. The design process and the bid schedule should align with clear documentation to support.
  5. Reliability:
     1. Is this project linked to a critical engineering system? If yes, are there options to increase the reliability of the system?
     2. What is the service life of the system or sub-system? Should we replace vs rehabilitate or rebuild?
     3. Are there single point of failures with this system that should be addressed in conjunction with this project?
     4. Will there be a need for additional critical spares when the project is completed?
  6. Minutes: DPM will prepare minutes of the meeting
  7. Concurrence: Minutes will be circulated among participants for concurrence/comments.

1. I/H or A/E concept design stage
   1. I/H Design: DPM & design team (if instituted) will prepare the following for review & approval.
      1. Sketches or drawings.
      2. Preliminary BOD - (See location reference in Appendix). the preliminary BOD will be approved by Facilities Director (FD), Engineering Manager (EM) of Design Manager (DM) depending of the dollar value of the project,
   2. A/E Design: For designs using anIDIQ A/E, the DPM will prepare Task Order & fee estimate for request for fee proposal from A/E. (See form/file location reference in Appendix).
      1. Purchase Requisition (PR): DPM will send PR along with Task Order & Fee Estimate for Request for Proposal (RFP).
      2. Pre-site visit: A/E team may require a site visit before submitting a proposal.
      3. Review RFP from A/E.
      4. Award Task order
2. Preliminary Design (Phase II)
3. All designs shall meet or exceeding standard codes and follow the Facilities Design Criteria. (See location reference in Appendix).
   1. Preliminary Design: A/E or the I/H design team prepares the following:
      1. Preliminary Design drawings
      2. Budgetary Cost Estimate
      3. Preliminary BOD
   2. Review of the Preliminary Design:
      1. Distribution: Include FD and or EM depending on the size of project, DM & Design Team and User group.
      2. Meeting: Discuss the documents in a meeting with all concerned.
      3. Minutes: DPM will prepare minutes of the meeting
      4. Concurrence: Minutes will be circulated among participants for concurrence/comments.
4. 35% Design
   * 1. Deliverables
        1. Drawings describing major elements of the project
        2. Basis of Design
        3. Cost estimate <20%>
        4. List of specification sections
        5. Design checklist
5. Review & Comments
   * 1. Distribution: DPM distributes the 35% design documents to FD, EM, DM, Design Team members, Subject Matter Experts (SMEs), user, facility owner, life safety expert, and ESH.
     2. Comment adjudication: Comments are normally requested to be sent in 8 days. DPM compiles the comments & sorts them with drawing numbers & specification Section numbers for ease of review in the review meeting.
     3. Comments worksheet file: This is to be sent with the documents to receive comments in a comment format.
     4. Cost Estimate: Compare the cost estimate with the approved budget. For differences greater than 20% discuss with the DM for guidance.
     5. Reliability: Reviewers should address any reliability issues that were discussed during the conceptual planning phase of the project.
     6. Discuss Division I specs requirements with the Construction Group. Highlight design constraints that will need to be included in the spec. SAD, utility services, timing etc. Establish key construction milestones in the MS Schedule.
     7. BOD Review: The DPM will review the BOD and align with the PSD. Deviations will need to be included on the Project Baseline Approval form.
     8. Project Baseline Approval (PBA): Following the completion of the Preliminary Design Phase, the PBA document will be routed for approval to the Facilities Director (FD), Engineering Manager (EM) or Design Manager (DM) depending on cost of the project. It will reference:

(1) Project Scope Document (PSD)   
(2) 35% Basis of Design (BOD)   
(3) 35% Design Meeting Minutes   
(4) Project Schedule   
(5) Cost Estimate

* + 1. Proceed to Next Stage of Design: Sends the following to A/E to proceed with next stage of design.
       - 1. Comments addressed on the 35% design documents.
         2. Approved Basis of Design

1. Final design (Phase III)
2. 60% Design. Note: use of the a i
   1. Deliverables
      1. Approved Project Baseline Approval (PBA) document.
      2. 35% Design Comment sheet: A/E must complete their response column for 35% review comments.
      3. Drawings describing major elements of the project. Drawings need to be aligned with anticipated bid schedule.
      4. Detailed Cost estimate <10%>
      5. Check-list
      6. Complete Specifications including Division 1 Sections: Draft of Division 1 sections is to be supplied to A/E by DPM.
      7. Updated MS Project schedule with key milestones identified.
   2. Review and comments
      1. Comments Worksheet: See location reference of review worksheet in Appendix.
      2. Checks that Division 1 specs have been prepared by the CM group.
      3. Distribution: DPM distributes the 60% design documents to FD, EM, DM, Design Team members, Subject Matter Experts (SMEs), user, facility owner, Planning Manager & ESH&Q.
      4. Comments Worksheet File: This is to be sent with the documents to receive comments in a comment format.
      5. Check-list: DPM reviews the checklist.
      6. Comments adjudication: Comments are normally requested to be sent in 8 days. DPM compiles the comments & sorts them with drawing numbers & specification Section numbers for ease of review in the review meeting.
      7. Review: During review, meeting DPM records the comments adopted. The following will be sent to A/E to proceed with next stage of design.
      8. Edited Division I specs to be incorporated with Technical specs sections.
      9. Approved Basis of Design
3. 100% Design
   1. Deliverables
      1. 60% Design Comment sheet: A/E must complete their response column for 60% review comments.
      2. Drawings describing major elements of the project. Drawings need to be aligned with anticipated bid schedule.
      3. Revised Basis of Design (BOD): Any scope changes or items resulting in significant cost changes must be approved again at appropriate level. Other changes may be approved by DPM.
      4. Detailed Cost estimate <10%>
      5. Check-list
      6. Complete Specifications including Division 1 Sections: Draft of Division 1 sections is to be supplies to A/E by DPM.
      7. Updated MS Project schedule with key milestones identified.
   2. Review and comments
      1. Worksheet: See location reference of review worksheet in Appendix.
      2. Checks that Division 1 specs are incorporated into the technical spec.
      3. Distribution: DPM distributes the 35% design documents to FD, EM, DM, Design Team members, Subject Matter Experts (SMEs), user, facility owner, Planning Manager & ESH&Q.
      4. Comments Worksheet File: This is to be sent with the documents to receive comments in a standard format.
      5. Check-list: DPM reviews the design checklist.
      6. Constructability Review: DMP sends the design documents to CM & TR for constructability review.
      7. Comment adjudication: Comments are normally requested to be sent in 8 days. DPM compiles the comments & sorts them with drawing numbers & specification Section numbers for ease of review in the review meeting.
      8. Review: During review, meeting DPM records the comments adopted. The reviewed & edited BOD will be approved by Facilities Director (FD), Engineering Manager (EM) or Design Manager (DM) depending of the value of the project.
      9. For A/E designs the DPM sends the following to A/E to proceed with next stage of design.
      10. Edited Division I specs to be incorporated with Technical specs sections.
      11. Comments on 100% design documents.
      12. Approved Basis of Design
4. Signatures on Drawings & Specifications: DPM arranges drawings and specifications to be signed by JLab personnel. For designs using an A/E the DPM will acquire signatures from the Engineer of Record. For all projects managed using this process, the following JLab personnel will sign the drawings & specifications:
   1. Drawings:
      1. Design Project Manager
      2. Subject Matter expert
      3. User
      4. ES&H
      5. Fire Protection Manager
      6. Design Manager
      7. Engineering Manager – For Projects with construction estimate above $50,000.00
      8. FM&L Division Manager - For Projects with construction estimate above $200,000
   2. Specifications:
5. Design Project Manager
6. Subject Matter expert/s
7. ES&H
8. Construction Project Manager
9. Design Manager
10. Engineering Manager – For Projects with construction estimate above $50,000.00
11. FM&L Division Manager - For Projects with construction estimate above $200,000

The Facility Manager and or the Engineering Manager may approve deviations necessary to above requirements, for particular projects.

1. Final Project Review:
   1. Signed drawings and specifications from EOR and JLab personnel. Drawings need to be aligned with anticipated bid schedule.
   2. DM, DPM and the design team checks that all comments have been adequately addressed.
   3. CM checks that Division 1 specs are current & incorporate changes during the review process.
   4. DPM checks that constructability review has been completed.
   5. Updated MS Project schedule with key milestones identified.
   6. Documents are sent to the TR and CM by the DM.

Appendix:

* Design Process Map, Manual, Procedures and Forms:M:\facilities\MasterDocuments\Manuals\Design Manual
* A/E Task Order format & Fee Estimates: M:\facilities\IDIQ – ALL
* Facilities Design Criteria (FDC) : M:\facilities\Master Documents\Standards
* Cost Estimating Guidelines: M:\facilities\Master Documents\Manuals\project management process\cost estimating

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| **Change Log** | | | |
| Change No. | Description | Date | Approved By |
| 0 | Original document | 8/31/2020 |  |
| 1 | Revision | 5/2/2021 |  |