

1005 - Tiered Engineering Design Review Process

Effective 9/1/2020

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1. PURPOSE:

1. Develop a tiered project planning/design review process that ensures all stakeholders are appropriately involved and/or have input in the development of the design of a project from conceptual design to Final Acceptance. This process will help ensure robust oversight & rigor is part of all projects design cycle.

2. BACKGROUND:

As a result of an Over-Pressurization event that occurred on Columbia Gas of Massachusetts Low-pressure Natural Gas System in 2018 an OPP team was put together to review the National Transportation Safety Board (NTSB) recommendations that stemmed from the incident. This Tiered Engineering Design Review Process Procedure was developed to enhance and formalize the project/design review process in order to achieve a better overall process and more robust approach.

3. SCOPE:

1. The SEG tiered project/design review lifecycle process will have two (2) distinct levels of review: Conceptual Design (often referred to as 30% Review) and 90% Review/Final Approval. See details of each below:

2. CONCEPTUAL DESIGN (30% REVIEW)

1. The 30% Review will bridge the gap between design conception and detailed design completion, as well as provide all stakeholders an overview of the project, an opportunity to provide feedback and insight. 30% Review, once all comments are incorporate and/or resolved, should be a point in the project where the Scope of the project is defined and known and considered locked. 30% Review should include submittal & review of the following:
 1. Route proposal (base level route study; Environmental considerations; Landowners affected, etc)
 2. Project basis (i.e. Growth feeder; System Improvement; etc.)
 3. Initial Project Details (pipe size; pipe type; station impacts, CP impacts)

2. The Conceptual Design may include a meeting, or meetings, with affiliated stakeholders to discuss the overview of the project design at that stage.

1. Depending on project type, a meeting can be deemed not to be needed by the Project Owner and/or responsible Manager.

2. Additional persons may be invited to the meetings at the discretion of the Project Owner and/or responsible Manager

3. 90% REVIEW/FINAL APPROVAL

1. The 90% Review/Final Approval should provide the full scope of the project design, so that when all comments are incorporated and/or resolved, the project ready to be released for bid and/or Construction (for blanket work). This will be done through detailed design drawings, system modeling, procedures, and calculations. 90% Review should include, but not be limited to, submittal & review of the following:

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| 1. Procedures | 7. Station Design |
| 2. Fitting Types | 8. HDD Design |
| 3. Final Route | 9. Pressure Calculations |
| 4. Permits (SCDOT, DHEC, etc.) | 10. Specifications |
| 5. ROW/Easement acquisition | 11. CP design |
| 6. Hydraulic Modeling | 12. All additional design documents needed ready to issue the project out for Bid/Construction. |

2. The 90% Review/Final Approval may include a meeting with reviewers/stakeholders to discuss the design prior Final Approval.

1. Depending on project type, a meeting can be deemed not to be needed by the Project Owner and/or responsible Manager

2. Additional persons may be invited to the meetings at the discretion of the Project Owner and/or responsible Manager

3. If at this stage major comments are received changing the scope of the project, the project engineer will have the option to cancel any and all review requests and re-submit after the design is changed.

4. When approval from all designated stakeholders is given to the design, final design of the project may be Issued for Bid or Construction.

1. Issuance for Construction does not require an additional submittal.

4. PERSONNEL:

1. The Tiered Project Planning & Design Review Process will affect all groups associated with the design, construction, operation and maintenance of the Natural Gas system across the service territory. This includes, but is not limited to:

1. Project Engineer / Engineering Specialist

2. Project Engineer Measurement Design

3. Engineering Specialist - CP

4. Lead - Fabrication

5. Supervisor – Construction

6. Supervisor – Operations
 7. Supervisor – Measurement Operations
 8. Supervisor – Measurement Design
 9. Supervisor – Project Engineering
 10. Manager – Transmission Integrity
 11. Manager – Engineering & Construction
 12. General Manager – Engineering & Construction
2. These roles shall be responsible for the review, and eventual approval, of a project's design. These roles shall directly, or through appropriate delegation on a per project basis, aide the project owner in addressing any and all project considerations. This may include, but are not limited to:
- | | |
|--|-------------------------|
| 1. Engineering Design | 5. Cathodic Protection |
| 2. Construction and Inspection | 6. Fabrication |
| 3. Facilities Operations & Maintenance | 7. System Integrity |
| 4. Measurement Design & Operation | 8. Environmental Impact |
3. The Tiered Project Planning and Design Review Process will be owned by the engineering group for implement for each project generated, whether internally or externally.

4. 30% Design Review submittal should include, but is not limited to, the following (as applicable):

Pipeline Projects:

1. Area Gas Map
2. Project Details (pipe size, pipe route, stations affected)
3. Conceptual Project sketch (GIS Map with proposed route, pipe size, tie-in locations, affected facilities/stations)
4. Route Study with various options
5. Station Request Form with relevant Information

Station Projects:

1. Conceptual Design Drawings
2. Site Location / Easement Drawing
3. Preliminary Calculations

****NOTE: ALL 30% DESIGN REVIEW DOCUMENTS ATTACHED TO WFM SHOULD BE LABELED IN SUCH A WAY AS TO INDICATE PRELIMINARY DESIGN**

5. 90% Design Review/Final Approval should include, but is not limited to, the following (as applicable):

Pipeline Projects:

1. Construction Drawing (Final route, Fitting Types, Tie-In Points, Pipe Schedule, Conventional Bore Locations, HDD Locations, ROW, Easements, General Notes, CP Items, Purge Locations, Gauge Locations)
2. Conceptual Procedure
3. HDD Design
4. Final Station Design
5. Hydraulic Modeling
6. Required Permits
7. Completed Easement Acquisition
8. Required Calculations
9. Pipeline Flow information

Station Projects:

1. Pipe Sizing
2. % SMYS Calculations
3. Material Selection
4. Pressure Regulation Selection / Sizing
5. Over-Pressure Protection Selection / Sizing
6. Meter Selection / Sizing
7. Filtration Selection / Sizing

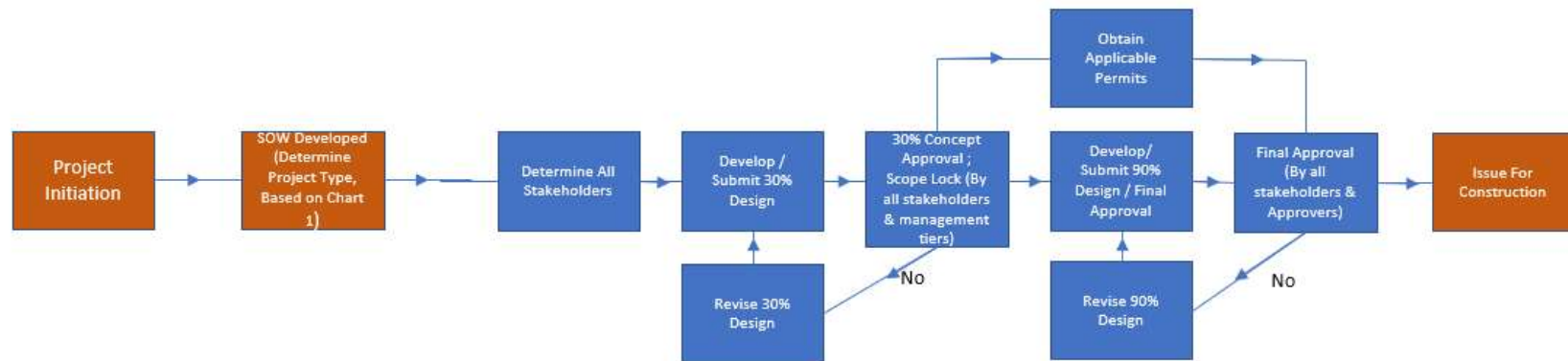
5. PROCEDURE:

As a method of documenting this Tiered Project Planning and Design Review Process, the current work management software, Work Force Management (WFM), shall be used. The responsibilities of the personnel involved with this review process shall include, but are not limited to:

1. Project Owner

1. Shall develop project design from conception to issuance to construction

Tiered Engineering Design Review Flow Path



(UNCONTROLLED IF PRINTED)