

# WATER AGENCIES' STANDARDS

## Design Guidelines for Water and Sewer Facilities

### SECTION 3.2 DESIGN PROJECT PROGRESS SUBMITTALS

#### 3.2.1 PURPOSE

The purpose of this section is to provide guidelines for design project submittals from design consultants performing work for the Agency.

#### 3.2.2 STANDARD TERMS AND DEFINITIONS

Wherever technical terms or pronouns occur in these guidelines or in related documents, the intent and meaning shall be interpreted as described in Standard Terms and Definitions.

#### 3.2.3 GUIDELINES

It is the responsibility of the user of these documents to make reference to and/or utilize industry standards not otherwise directly referenced within this document. The Engineer of Work may not deviate from the criteria presented in this section without prior written approval of the Agency's Engineer.

#### 3.2.4 PROJECT SUBMITTALS

Agency capital projects that require design consultants are subject to a project submittal process based on project specific criteria per Agency of jurisdiction.

- A. Deliverables from the design consultant will be reviewed by the Agency and others during the design development periods. The deliverables during design, termed "Progress Submittals", should be scheduled for submittal in accordance with this guideline. Documents in Progress Submittals should also be listed on the Document Status Listing Form generated by the Agency.

The number of submittal packages and media required will be as specified in the Request for Proposal (RFP). Preparation of project plans and technical specifications shall be as follows:

1. Drafting Standards: Set up of project plans regarding preparation of plans, sheet organization and drafting guidelines shall be in accordance with Section 1.1.
  2. Electronic Drawings: Electronic Drawings shall be prepared and submitted in accordance with Sections 1.2 or 1.3.
  3. Technical Specifications: Technical Specifications shall be prepared in accordance with Section 3.5.
- B. If the level of detail in the 30, 60, and 90 percent (%) submittals as described in the Scope of Work for the design consultant, the requirements in the Scope of Work shall have precedence over what is described here. The minimum level of detail on drawings in the 30, 60 and 90 percent (%) submittals given below should be adhered to unless the scope of work provides specific requirements for project submittals.

Additional submittals may also be required by the Agency if needed for a project (i.e. basis of design, pre-design report, computer analysis, etc.)

1. Thirty Percent (30%) Submittals:

The lists of drawings and specifications for each discipline are complete.

a. Process and hydraulic design:

- Hydraulics: Hydraulic analysis required for design (e.g., pipeline hydraulics, pump selection, etc.) is complete and calculations are checked. Hydraulic profile is complete.
- Process: Where water or wastewater process design applies (e.g., chemical dosage, specialty equipment selection, etc.) all process calculations are completed and checked. Preliminary specialty equipment review (e.g. chemical feed pumps, etc.) is complete.

b. Civil:

- Existing utilities are plotted; existing facility horizontal controls and elevations are confirmed with current survey.
- All unit water or sewer treatment process structures as required in design are located.
- Preliminary drawings include overall site layout, large diameter pipe, yard piping and major grading elements.
- Preliminary plan and profile sheets are prepared (as applicable for pipeline design).
- Demolition plans as applicable are prepared.

c. Structural/Architectural:

- Layout for structural design is established.
- The main structural system and detailed design approach for each structural component is established.
- Layout plan drawings and principal sections are started.
- Architectural concepts defined.
- Preliminary architectural plans and sections and or renderings are prepared.

d. Mechanical:

- Area Drawings
  - Preliminary layout of major equipment completed.
  - All major equipment and piping elevations, pipe sizes, work clearances, equipment spacing, access, code requirements are shown.
  - Preliminary equipment schedule is started.
  - Preliminary piping schedule is started.
- System Flow Diagrams are complete.
- Specifications for major equipment are started.

e. Electrical:

- Preliminary single line diagrams of major distribution system and motor control centers are prepared.
- Preliminary electrical equipment elevations are prepared.
- Partial equipment control schematic diagrams are prepared.
- Preliminary electrical plans showing locations of switch gear, conduit runs and main motor control centers are prepared.
- Preliminary wire and conduit schedule is complete.
- Preliminary lighting panel schedules are complete.

f. Instrumentation:

Process and Instrumentation Devices (P&IDs) should be developed to a degree which depicts:

- General instrumentation and control philosophy.
- Type of instrumentation.
- All primary and secondary control devices (elements, transmitters).
- All instrumentation (primary, secondary, panel and computers) shown but not tagged.
- Process area designation, drawing and equipment numbering system finalized.

Preliminary Process Control Strategies should be complete but not tagged.

Instrumentation and Control (I&C) Specifications for I&C devices should be started.

No specification submittal or cost estimate will be required at this time.

2. Sixty Percent (60%) Submittals:

The lists of drawings and specifications for each discipline are complete.

a. Civil:

- All facilities are shown and located.
- Grading plans and demolition plans are substantially complete.
- Plan and profile sheets are substantially complete.
- Design calculations are complete.
- Traffic Control is partially complete
- Erosion Control (SWPPP) is partially complete.

b. Landscaping:

- Planting and irrigation plans are substantially complete.

c. Architectural:

- Floor, roof, and reflected ceiling plans are complete.
- Elevations, and sections are essentially complete
- Door, window, and finish schedules are partially complete.
- Architectural detailing is partially complete.

d. Structural:

- Foundation plans are essentially complete.
- Other plans and sections are partially complete.
- Design calculations are complete.
- Structural detailing is partially complete.

e. Mechanical:

- Mechanical plans and sections are essentially complete.
- Mechanical details are partially complete.
- Equipment and valves are included in equipment schedules. Piping schedules are complete.
- Specifications for the major equipment items are essentially complete. Additional specifications in progress.
- Design calculations are complete.

- f. Electrical:
  - Power block diagrams, single line diagrams, and motor control diagrams are partially complete.
  - Power and control plans are partially complete.
  - Panel, light fixtures and cable/conduit schedules are complete.
  - Duct bank and pull box details are partially complete.
  - Lighting and receptacle plans are partially complete.
  - Specifications for major equipment items have been drafted. Additional specifications in progress.
  - Design calculations are complete.
  - Control schematic (ladder) diagrams are partially complete.
- g. Instrumentation:
  - P&IDs are essentially complete and tag and loop numbers are shown.
  - Process Control Strategies are essentially complete and tag and loop numbers are included in descriptions.
  - I & C details are partially complete.
  - Specifications for analog and digital devices been started.

3. Ninety Percent (90%) Submittals:

All drawings and details in all disciplines should be complete. All specifications should be essentially complete. Design calculations in all disciplines shall be essentially complete and checked in accordance with the Agency of jurisdiction QA/QC Program Guidelines. No square brackets or Notes to Specifier should remain in the specification text.

Comments from previous Agency reviews must be incorporated before subsequent reviews begin. For example, both the comments from the 30 and 60 percent (%) overview reviews by the Agency staff and the comments from the operability and maintainability review conducted by the Agency must be incorporated by the design consultant before the 90 percent Progress Submittal is made. All comments must be addressed before camera-ready drawings and specifications are submitted. The design consultant must provide time on the design schedule for addressing all comments. Yellow/Redline check sets must be kept for documentation of QA/QC compliance.

4. One Hundred Percent (100%) Submittal:

Submittal requirements will be as described in the RFP. Plans and specifications should be complete and approved by the agency and ready for competitive bidding.

Table 1  
Schedule for Progress Submittals and Other Reviews

Design Degree of Completion	Progress Submittal to Agency	Review Technique by Design Consultant <sup>(a)</sup>	Evaluation Technique by Others
Kick-off	Updated schedule	Task time allocation	---
Continuous	---	Calculations	---
30%	Design drawings and specifications in progress	Overview, detailed, and coordination types of Initial Design Study drawings and memoranda, in progress design drawings and specifications	Preliminary Value Engineering Study; Operations and Maintenance Review; Verify calculation assumptions in conformance with agency of jurisdiction planning criteria.
60% and 90%	Design drawings, specifications in progress, and design calculations	Overview, detailed, and coordination types of in-progress design drawings, specifications and design calculations	Value Engineering <sup>(b)</sup> Study; Operations and Maintenance Review; Bidability and Constructability :Review
100%	Final design drawings, specifications and design calculations	Detailed and coordination types of final design drawings, specifications and design calculations	---

### 3.2.5 REVIEW OF PROGRESS SUBMITTALS

The minimum time needed for the review of the design consultant's progress submittals shall be per the Agency's requirements. It is important to note that design progress is not required to stop during such reviews. Most work by the design consultant can continue without the risk of significant rework due to comments if it follows all QA/QC procedures and other quality control activities required by these Program Guidelines. The Agency review will be general in nature to verify adherence to the Pre-design Reports and for incorporation of decisions from Value Engineering. Review by the Agency will cover broader topics involving clarity, constructability, accuracy, coordination, and contract packaging. Such reviews, therefore, will not relieve the design consultant of full responsibility for its work in accordance with its agreement with the Agency and industry standard practices.

Design review workshops will be held in the Agency offices to discuss comments on each submittal, and will be attended by the design consultant Project Manager and selected members of the design team, the Agency Program Manager, the Agency Construction Manager, and other representatives of the Agency if necessary.

The design consultant's project manager must prepare and transmit draft minutes of each formal review session to all attendees for comments no later than five (5) calendar days following each review session. As a minimum, the minutes will include major items discussed and decisions reached, items needing further development, and items needing clarification before a decision can be reached. All action items will be documented along with the dates and responsible parties. Attendees' comments received within ten (10) days of issuing the draft minutes will be addressed and the minutes will be issued as final. All workshop attendees shall receive a copy of the final minutes.

### 3.2.6 DOCUMENT STATUS LISTING

The Document Status Listing should include a separate line for each document or drawing to be produced. Progress will be reported each month, if applicable. Some documents will be issued several times during development. Each issuance will be noted in the Issue Date Column, i.e., "30 percent review." The Document Status Listing should be issued each month and date noted at the bottom of the sheet number under "Issue Date." Each item changed or revised shall be circled for ease of identification.

The Document Status Listing should be submitted to the Agency Project Manager monthly with the consultant's invoice.

### 3.2.7 REFERENCE

- A. Should the reader have any suggestions or questions concerning the material in this section, contact one of the member agencies listed.
- B. The publications listed below form a part of this section to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said publications unless otherwise called for. The following list of publications, as directly referenced within the body of this document, has been provided for the user's convenience. It is the responsibility of the user of these documents to make reference to and/or utilize industry standards not otherwise directly referenced within this document.
  - 1. Water Agencies' Standards (WAS):
    - a. Design Guidelines
      - 1. Section 1.1, Drafting Guidelines
      - 2. Section 1.2, AutoCAD Guidelines
      - 3. Section 1.3, MicroStation Guidelines
      - 4. Section 3.5, Technical Specifications

END OF SECTION