

90% Design Package Deliverables

Purpose

The **Project Engineer** works with the Project Team to ensure that the deliverable meets the expectations documented in this checklist, documenting all exceptions.

The **Project Manager** ensures that the Project Engineer has completed this checklist and saves it in the project files.

Project Name	Enter Project Name
Project Number	Enter Project Number
Project Manager	Enter Project Manager
Project Engineer	Enter Project Engineer
Summary of Quality Control	<ul style="list-style-type: none"> • Civil Design/ <<Checker Name>> • Mechanical Design/ <<Checker Name>> • Structural Design/ <<Checker Name>> • Electrical Design/ <<Checker Name>> • <<Other Discipline>>/ <<Checker Name>> • <<Other Discipline>>/ <<Checker Name>>

Describe exceptions from the standard Design Package below

Deliverables Expected at 90% Design

90% Design Deliverables	Description
<p>General Drawing</p> <p>Comments:</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Title Sheet, Drawing Index, Location and Vicinity Map complete. <input type="checkbox"/> General Symbols, Legends and Abbreviations complete. <input type="checkbox"/> Design Data and Criteria complete. <input type="checkbox"/> Final Basis of Design Plan Sheet—(inserted in the plan set after as-built drawings are completed Not part of the bid set) <input type="checkbox"/> 90% drawings contain asset numbers.
<p>Civil/Site Work Drawings</p> <p>Comments:</p>	<p>Site, Pipeline and Utility Plans</p> <ul style="list-style-type: none"> <input type="checkbox"/> Site Plan with final location of structures, roadways and major site elements (fencing, gates, etc). <p>Pipeline Alignment and Utility Profiles</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plans and Profiles of pipelines with final alignments (horizontal and vertical). <input type="checkbox"/> All major structures located by stationing and elevation via stationing offset or Northing/Easting or other survey method. <input type="checkbox"/> Easement limits identified and included on drawings. <input type="checkbox"/> Specify hydraulic grade line (HGL) or design notes for Drainage and Wastewater (DWW) infrastructure. <input type="checkbox"/> Details of manholes, pavement and trench sections, and other civil details. <input type="checkbox"/> Construction sequencing details that affect design close to completion. <input type="checkbox"/> Include contractor staging, storage, access and offsite corridors (traffic plans).
<p>Architectural Drawings</p> <p>Comments:</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Architectural plans, sections and elevations that depict the final exterior architectural theme, materials of construction and floor plan of structures.

90% Design Deliverables	Description
<p>Landscape Drawings</p> <p>Comments:</p>	<p><input type="checkbox"/> Landscaping plan, plant schedule and details</p>
<p>Structural Drawings</p> <p>Comments:</p>	<p><input type="checkbox"/> Structural plans, sections and details coordinated with other design disciplines. Foundation plans, floor plans and roof plans to include structural member sizes and reinforcement detailing complete.</p>
<p>Mechanical Drawings</p> <p>Comments:</p>	<p>Major Equipment and Piping Layout–Plans, Sections and Details</p> <p><input type="checkbox"/> Mechanical plans, sections and details with final location of major equipment, piping and appurtenances. All piping layouts essentially complete.</p> <p>HVAC/Plumbing Plans and Sections</p> <p><input type="checkbox"/> HVAC/Plumbing plans and sections complete.</p> <p>HVAC Schedules and Schematics</p> <p><input type="checkbox"/> Equipment schedules and system schematics adequately complete to review system configuration and design intent.</p>
<p>Electrical Drawings</p> <p>Comments:</p>	<p>One-line Diagrams</p> <p><input type="checkbox"/> Final electrical one-line diagrams, control room layouts and panel layouts.</p> <p>Site Electrical-Plan</p> <p><input type="checkbox"/> Power plans, control diagrams and schedules complete and coordinated with process/ mechanical design.</p> <p>Lighting Plans and Reflective Ceiling Plans</p> <p><input type="checkbox"/> Final lighting plan and reflective ceiling plan coordinated with other disciplines.</p>

90% Design Deliverables	Description
<p>Instrumentation and Control Drawings</p> <p>Comments:</p>	<p>Process and Instrumentation Diagrams (P&ID)</p> <p><input type="checkbox"/> Final P&IDs developed to greater detail and including revisions from previous comments and coordinated with final operational control strategies.</p>
<p>Project Manual</p> <p>Comments:</p>	<p><input type="checkbox"/> Final version of Project Manual incorporating comments from the 60% submittal review and reflecting full coordination with drawings.</p> <p><input type="checkbox"/> Final list of construction constraints (i.e. community commitments, specific permit or regulatory requirements), measurement and payment, and proposed bid form.</p> <p><input type="checkbox"/> Special Inspections required, if any</p> <p><input type="checkbox"/> Commissioning Requirements</p> <p><input type="checkbox"/> Equipment list that includes equipment number, equipment size, equipment power requirements, and basic controls and operating strategies for all equipment on the project.</p> <p><input type="checkbox"/> Submittal Control Document completed and reviewed by Construction Engineering Supervisor and Resident Engineer.</p>
<p>Other Submittal Items</p> <p>Comments:</p>	<p><input type="checkbox"/> Final Geotechnical Interpretive Report (GIR) and Geotechnical Data Report (GDR) incorporating all information obtained to date.</p> <p><input type="checkbox"/> Class 1 Capital Cost Estimates: Follow Cost Estimating Guidelines</p> <p><input type="checkbox"/> O&M Cost Estimates developed by the O&M Representative</p> <p><input type="checkbox"/> 60% Plan Review transmittal sheet with reviewers comments addressed</p>

90% Design Deliverables	Description
<p>Other Submittal Items</p> <p>Comments:</p>	<ul style="list-style-type: none"> <input type="checkbox"/> 90% Design Constructability Review <input type="checkbox"/> FOM Lead responsible for Asset O&M Readiness Checklist for 90% Design/Pre-Construction Complete Not a requirement for this checklist <input type="checkbox"/> Project permits with conditions and schedule for obtaining permits <input type="checkbox"/> Easements with conditions as required by project <input type="checkbox"/> Owner-supplied and installed items and lead time requirements <input type="checkbox"/> Construction Stormwater and Erosion Control Plan <input type="checkbox"/> Commissioning Activities for 90% Design Complete <input type="checkbox"/> Basis of Estimate completed <input type="checkbox"/> Technical QC Review Form completed <p>Basis of Design*, Basis of Estimate*, Cost Estimate*, 90% Design Package Deliverable (this document), Basis of Design Plan Sheet and Technical QC Review Form* filed in the P:\drive project folder</p>

*Items shown with an asterisk are tracked as part of performance monitoring for the CIP Design Section. SPU Project Engineers must report to their supervisors on the status of these items at each major design milestone.