

## 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.

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

<b>Describe exceptions from the standard Design Package below</b>

**Deliverables Expected at 90% Design**

90% Design Deliverables	Description
<p><b>General Drawing</b></p> <p><b>Comments:</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Title Sheet, Drawing Index, Location and Vicinity Map complete.</li> <li><input type="checkbox"/> General Symbols, Legends and Abbreviations complete.</li> <li><input type="checkbox"/> Design Data and Criteria complete.</li> <li><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)</li> <li><input type="checkbox"/> Final drawings contain asset numbers.</li> </ul>
<p><b>Civil/Site Work Drawings</b></p> <p><b>Comments:</b></p>	<p><b>Site, Pipeline and Utility Plans</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Site Plan with final location of structures, roadways and major site elements (fencing, gates, etc).</li> </ul> <p><b>Pipeline Alignment and Utility Profiles</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Plans and Profiles of pipelines with final alignments (horizontal and vertical).</li> <li><input type="checkbox"/> All major structures located by stationing and elevation via stationing offset or Northing/Easting or other survey method.</li> <li><input type="checkbox"/> Easement limits identified and included on drawings.</li> <li><input type="checkbox"/> Specify hydraulic grade line (HGL) or design notes for Drainage and Wastewater (DWW) infrastructure.</li> <li><input type="checkbox"/> Details of manholes, pavement and trench sections, and other civil details.</li> <li><input type="checkbox"/> Construction sequencing details that affect design close to completion.</li> <li><input type="checkbox"/> Include contractor staging, storage, access and offsite corridors (traffic plans).</li> </ul>
<p><b>Architectural Drawings</b></p> <p><b>Comments:</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Architectural plans, sections and elevations that depict the final exterior architectural theme, materials of construction and floor plan of structures.</li> </ul>
<p><b>Landscape Drawings</b></p> <p><b>Comments:</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Landscaping plan, plant schedule and details</li> </ul>

90% Design Deliverables	Description
<p><b>Structural Drawings</b></p> <p><b>Comments:</b></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><b>Mechanical Drawings</b></p> <p><b>Comments:</b></p>	<p><b>Major Equipment and Piping Layout–Plans, Sections and Details</b></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><b>HVAC/Plumbing Plans and Sections</b></p> <p><input type="checkbox"/> HVAC/Plumbing plans and sections complete.</p> <p><b>HVAC Schedules and Schematics</b></p> <p><input type="checkbox"/> Equipment schedules and system schematics adequately complete to review system configuration and design intent.</p>
<p><b>Electrical Drawings</b></p> <p><b>Comments:</b></p>	<p><b>One-line Diagrams</b></p> <p><input type="checkbox"/> Final electrical one-line diagrams, control room layouts and panel layouts.</p> <p><b>Site Electrical-Plan</b></p> <p><input type="checkbox"/> Power plans, control diagrams and schedules complete and coordinated with process/ mechanical design.</p> <p><b>Lighting Plans and Reflective Ceiling Plans</b></p> <p><input type="checkbox"/> Final lighting plan and reflective ceiling plan coordinated with other disciplines.</p>
<p><b>Instrumentation and Control Drawings</b></p> <p><b>Comments:</b></p>	<p><b>Process and Instrumentation Diagrams (P&amp;ID)</b></p> <p><input type="checkbox"/> Final P&amp;IDs developed to greater detail and including revisions from previous comments and coordinated with final operational control strategies.</p>

90% Design Deliverables	Description
<p><b>Project Manual</b></p> <p><b>Comments:</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Final version of Project Manual incorporating comments from the 60% submittal review and reflecting full coordination with drawings.</li> <li><input type="checkbox"/> Final list of construction constraints (i.e. community commitments, specific permit or regulatory requirements), measurement and payment, and proposed bid form.</li> <li><input type="checkbox"/> Special Inspections required, if any</li> <li><input type="checkbox"/> Commissioning Requirements</li> <li><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.</li> <li><input type="checkbox"/> Submittal Control Document completed and reviewed by Construction Engineering Supervisor and Resident Engineer.</li> </ul>
<p><b>Other Submittal Items</b></p> <p><b>Comments:</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Final Geotechnical Interpretive Report (GIR) and Geotechnical Data Report (GDR) incorporating all information obtained to date.</li> <li><input type="checkbox"/> Class 1 Capital Cost Estimates: Follow <a href="#">Cost Estimating Guidelines</a></li> <li><input type="checkbox"/> O&amp;M Cost Estimates developed by the O&amp;M Representative</li> <li><input type="checkbox"/> 60% Plan Review transmittal sheet with reviewers comments addressed</li> <li><input type="checkbox"/> 90% Design Constructability Review</li> <li><input type="checkbox"/> FOM Lead responsible for <a href="#">Asset O&amp;M Readiness Checklist</a> for 90% Design/Pre-Construction Complete Not a requirement for this checklist</li> <li><input type="checkbox"/> Project permits with conditions and schedule for obtaining permits</li> <li><input type="checkbox"/> Easements with conditions as required by project</li> <li><input type="checkbox"/> Owner-supplied and installed items and lead time requirements</li> <li><input type="checkbox"/> Construction Stormwater Control Plan</li> <li><input type="checkbox"/> <a href="#">Commissioning Activities</a> for 90% Design Complete</li> </ul> <p>Class 3 Capital Cost Estimates: Follow <a href="#">Cost Estimating Guidelines</a></p>

---

	<p>Basis of Estimate completed</p> <p>Technical QC Review Form completed</p> <p>Basis of Design(incudes seal/stamp of responsible Professional Engineers), 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>
--	---

---