# 90% Design Package Deliverables

Purpose

The **Project Engineer** works with the Project Team to ensures 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.

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| **Project Name** | Enter Project Name |
| **Project Number** | Enter Project Number |
| **Project Manager** | Enter Project Manager |
| **Project Engineer** | Enter Project Engineer |
| **Summary of Quality Control** | * Civil Design/<<Checker Name>> * Mechanical Design/<<Checker Name>> * Structural Design/<<Checker Name>> * Electrical Design/<<Checker Name>> * <<Other Discipline>>/<<Checker Name>> * <<Other Discipline>>/<<Checker Name>> |

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| **Describe exceptions from the standard Design Package below** |
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Deliverables Expected at 90% Design

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| **90% Design Deliverables** | **Description** |
| **General Drawing**  **Comments:** | Title Sheet, Drawing Index, Location and Vicinity Map complete.  General Symbols, Legends and Abbreviations complete.  Design Data and Criteria complete.  Final Basis of Design Plan Sheet—(inserted in the plan set after as-built drawings are completed Not part of the bid set)  Final drawings contain asset numbers. |
| **Civil/Site Work Drawings**  **Comments:** | **Site, Pipeline and Utility Plans**  Site Plan with final location of structures, roadways and major site elements (fencing, gates, etc).  **Pipeline Alignment and Utility Profiles**  Plans and Profiles of pipelines with final alignments (horizontal and vertical).  All major structures located by stationing and elevation via stationing offset or Northing/Easting or other survey method.  Easement limits identified and included on drawings.  Specify hydraulic grade line (HGL) or design notes for Drainage and Wastewater (DWW) infrastructure.  Details of manholes, pavement and trench sections, and other civil details.  Construction sequencing details that affect design close to completion.  Include contractor staging, storage, access and offsite corridors (traffic plans). |
| **Architectural Drawings**  **Comments:** | Architectural plans, sections and elevations that depict the final exterior architectural theme, materials of construction and floor plan of structures. |
| **Landscape Drawings**  **Comments:** | Landscaping plan, plant schedule and details |

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| **90% Design Deliverables** | **Description** |
| **Structural Drawings**  **Comments:** | 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. |
| **Mechanical Drawings**  **Comments:** | **Major Equipment and Piping Layout–Plans, Sections and Details**  Mechanical plans, sections and details with final location of major equipment, piping and appurtenances. All piping layouts essentially complete.  **HVAC/Plumbing Plans and Sections**  HVAC/Plumbing plans and sections complete.  **HVAC Schedules and Schematics**  Equipment schedules and system schematics adequately complete to review system configuration and design intent. |
| **Electrical Drawings**  **Comments:** | **One-line Diagrams**  Final electrical one-line diagrams, control room layouts and panel layouts.  **Site Electrical-Plan**  Power plans, control diagrams and schedules complete and coordinated with process/ mechanical design.  **Lighting Plans and Reflective Ceiling Plans**  Final lighting plan and reflective ceiling plan coordinated with other disciplines. |
| **Instrumentation and**  **Control Drawings**  **Comments:** | **Process and Instrumentation Diagrams (P&ID)**  Final P&IDs developed to greater detail and including revisions from previous comments and coordinated with final operational control strategies. |

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| **90% Design Deliverables** | **Description** |
| **Project Manual**  **Comments:** | Final version of Project Manual incorporating comments from the 60% submittal review and reflecting full coordination with drawings.  Final list of construction constraints (i.e. community commitments, specific permit or regulatory requirements), measurement and payment, and proposed bid form.  Special Inspections required, if any  Commissioning Requirements  Equipment list that includes equipment number, equipment size, equipment power requirements, and basic controls and operating strategies for all equipment on the project.  Submittal Control Document completed and reviewed by Construction Engineering Supervisor and Resident Engineer. |
| **Other Submittal Items**  **Comments:** | Final Geotechnical Interpretive Report (GIR) and Geotechnical Data Report (GDR) incorporating all information obtained to date.  Class 1 Capital Cost Estimates: Follow [Cost Estimating Guidelines](http://spuforms/cgi-bin/GetTerm.pl?GetTerm=CEG&WL=C)  O&M Cost Estimates developed by the O&M Representative  60% Plan Review transmittal sheet with reviewers comments addressed  90% Design Constructability Review  FOM Lead responsible for [Asset O&M Readiness Checklist](http://spu-sharepoint/StageGate/Shared%20Documents/Asset_Readiness_CkList.docx) for 90% Design/Pre-Construction Complete Not a requirement for this checklist  Project permits with conditions and schedule for obtaining permits  Easements with conditions as required by project  Owner-supplied and installed items and lead time requirements  Construction Stormwater Control Plan  [Commissioning Activities](http://spuforms/cgi-bin/GetTerm.pl?GetTerm=Commissioning+Guidelines&WL=Chttp://spuforms/cgi-bin/GetTerm.pl?GetTerm=Commissioning+Guidelines&WL=C) for 90% Design Complete  Class 3 Capital Cost Estimates: Follow [Cost Estimating Guidelines](http://spuforms/cgi-bin/GetTerm.pl?GetTerm=CEG&WL=C)  Basis of Estimate completed  Technical QC Review Form completed  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 |