# 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 completedBasis 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 |