

90% Design Package Deliverables

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.

A. Project Information

| | | | |
|-----------------------------------|--------------------------|-----------------------|--|
| Project Name | | Project Number | |
| Project Manager | | | |
| Project Engineer | | | |
| Summary of Quality Control | Civil Design | | |
| | Mechanical Design | | |
| | Structural Design | | |
| | Electrical Design | | |
| | | | |

B. Exceptions

Describe exceptions from the standard Design Package below.

C. 90% Deliverables Checklist*

| Deliverable | Comments |
|--|----------|
| <input type="checkbox"/> 90% Design Package Deliverable Checklist (this document) and all deliverables saved in the P:\drive project folder | |
| <input type="checkbox"/> Technical QC Review Form | |
| <input type="checkbox"/> Design Drawings (see Section D for drawings checklist) | |
| <input type="checkbox"/> Basis of Design Plan Sheet | |
| <input type="checkbox"/> Basis of Design Report | |
| <input type="checkbox"/> Class 1 Capital Cost Estimates. Follow Cost Estimating Guidelines. | |
| <input type="checkbox"/> O&M Cost Estimates developed by the O&M Representative | |
| <input type="checkbox"/> Basis of Estimate | |
| <input type="checkbox"/> Draft Traffic Control Plans (if necessary) | |
| <input type="checkbox"/> <u>Project permits list with conditions, and schedule for obtaining any outstanding permits.</u> | |
| <input type="checkbox"/> Final Geotechnical Interpretive Report (GIR) and Geotechnical Data Report (GDR), as applicable, incorporating all information and comments to date. | |
| <input type="checkbox"/> 60% Plan Review transmittal sheet with reviewer comments addressed | |
| <input type="checkbox"/> Easements (temporary and permanent) with conditions as required by the project, and schedule for obtaining any outstanding easements. | |
| <input type="checkbox"/> Commissioning Activities for 90% Design Complete | |
| <input type="checkbox"/> FOM Lead has completed Asset Data File with Design Engineer for 90% Design | |
| <input type="checkbox"/> <u>90% Design Constructability Review</u> | |
| <input type="checkbox"/> <u>List of owner supplied and/or installed items and lead-time requirements</u> | |

*Items shown in **bold** 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.

D. Design Drawings Checklist

| Discipline | Description |
|--|--|
| <p>General Drawings</p> <p>Comments:</p> | <ul style="list-style-type: none"> <input type="checkbox"/> Title Sheet, Drawing Index, Location and Vicinity Maps <input type="checkbox"/> General symbols, legends, match sheet numbers, stationing, and abbreviations <input type="checkbox"/> Design Data and Criteria complete <input type="checkbox"/> Basis of Design Plan Sheet completed (to be inserted into the record drawing set after construction completion). <input type="checkbox"/> Drawings contain asset numbers as applicable |
| <p>Civil/Site Work Drawings</p> <p>Comments:</p> | <p>Demolition, Site Prep, and CSEC Plans</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Site Plans</u> <ul style="list-style-type: none"> ○ Show demolition and/or abandonment of all structures and utilities etc to be removed using standard callouts and notes. Similarly show structures and utilities that will remain to be protected, salvaged, or removed and replaced as applicable. ○ Indicate important contractor elements such as construction limits. Show any easement limits and provide notes, as applicable. ○ Show onsite CSEC BMPs, including silt fence, site fencing, CB protection, temporary settling tanks for site water, and proposed discharge points for site water, if applicable. <p>Site, Utility and Piping Plans</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Site Plans</u> <ul style="list-style-type: none"> ○ Proposed final location of structures, roadways and major site elements (fencing, gates, etc) are shown ○ All major structure locations and elevation are shown via stationing and offset or Northing/Easting or other survey method ○ Include proposed contractor staging, storage, access, and offsite corridors (traffic routing plans) as applicable <p>Site Grading</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Site Plan</u> <ul style="list-style-type: none"> ○ Show final proposed site grading coordinated with the geotechnical requirements and existing grades. |

| Discipline | Description |
|--|---|
| | <p>Pipeline Alignments and Site Utilities</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Plan and profiles of pipelines</u> ○ Show final pipe alignments along with other utilities and piping corridors (horizontal and vertical) that consider construction sequencing needs. ○ Address utility and pipe conflicts, and provide notes for pipe protection measures. ○ Include details and notes for MHs, pavement and trench sections, and other civil details. ○ Specify and show hydraulic grade lines with design notes for related DWW infrastructure. |
| <p>Architectural Drawings</p> <p>Comments:</p> | <p>Buildings–Plan, Elevations, and Sections</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Architectural Plans, Sections, and Elevations</u> ○ Depict the proposed final exterior architectural theme, materials of construction and floor plan of structures. |
| <p>Landscape Drawings</p> <p>Comments:</p> | <p>Site – Landscaping and Plantings</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Landscaping Plan</u> ○ Show proposed plantings and landscape restoration including plant schedules |
| <p>Structural Drawings</p> <p>Comments:</p> | <p>Foundations – Plans and Sections</p> <ul style="list-style-type: none"> <input type="checkbox"/> Structural notes, design criteria, and inspection plan (meets requirements of SDCI or Building Dept of the appropriate jurisdiction) <input type="checkbox"/> Structural plans, sections, and details. This should be coordinated with other design disciplines. <p>Buildings – Plans, Sections, and Details</p> <ul style="list-style-type: none"> <input type="checkbox"/> Large structural penetrations should be identified and potential conflicts with mechanical and electrical features should be resolved. <input type="checkbox"/> Roof plans should show structural member sizes and details. <p>Below Grade Structures –Plans and Sections</p> <ul style="list-style-type: none"> <input type="checkbox"/> Foundation plans and floor plans should include dimensional information and structural member sizes with reinforcement detailing complete. |

| Discipline | Description |
|---|--|
| <p>Mechanical Drawings</p> <p>Comments:</p> | <p>Major Equipment and Piping Layout</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Mechanical Plans and Sections</u> ○ Show proposed final location of major equipment, piping, and appurtenances. ○ Minor piping partially complete, but adequate corridors have been identified. ○ Location of equipment maintenance features finalized. |
| | <p>HVAC Plans and Sections, Schedules and Schematics</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>HVAC Plans</u> and sections complete. <input type="checkbox"/> <u>HVAC Schedules and Schematics</u> ○ Equipment schedules and system schematics complete to allow review of system configuration and design intent. ○ Conceptual fire protection system design (if required) should be included |
| | <p>Plumbing Plans and Sections</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Plumbing Plans and sections</u> complete. |
| <p>Electrical Drawings</p> <p>Comments:</p> | <p>One-Line Diagrams</p> <ul style="list-style-type: none"> <input type="checkbox"/> Proposed final electrical one-line diagrams, control room layouts, and panel layouts <p>Power Plans, Control Diagrams, and Schedules</p> <ul style="list-style-type: none"> <input type="checkbox"/> Electrical site plan, control diagrams, and schedules complete and coordinated with process/mechanical design. <input type="checkbox"/> Show final location of handholds and equipment racks, including horizontal alignments for locating electrical structures as needed. <p>Lighting Plans and Reflective Ceiling Plans</p> <ul style="list-style-type: none"> <input type="checkbox"/> Proposed final lighting plan and reflective ceiling plan coordinated with other disciplines. |
| <p>Security Drawings</p> <p>Comments:</p> | <p>Security Details</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide final details and notes to allow for review by security SMEs |

| Discipline | Description |
|---|--|
| Instrumentation and Control Drawings Comments: | Process and Instrumentation Diagrams <input type="checkbox"/> Final P&IDs developed to greater detail, including revisions based on previous comments, and coordinated with the final operational control strategy. |
| Project Manual Comments: | Specifications and Project Details <input type="checkbox"/> Draft Project Manual including all technical specifications reflecting full coordination with the drawings <input type="checkbox"/> Final list of construction constraints (e.g. community commitments, specific working hours, easement conditions, specific permit or regulatory requirements), measurement and payment details, and proposed bid form. <input type="checkbox"/> List of special inspections required, if any <input type="checkbox"/> Commissioning details and requirements, including draft commissioning plan <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 <input type="checkbox"/> Submittal Control Document (SCD) for CMD review |