III. DESIGN-BUILD CONTRACT MANAGEMENT

Z1010 Administration

I. Payment Procedures

A. General:

1. Schedule of Values: A statement furnished by Design-Build Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Design-Build Contractor's Applications for Payment.
2. Coordination: Coordinate preparation of the Schedule of Values with preparation of Design-Build Contractor's Construction Schedule.
   a. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
      i. Application for Payment forms with Continuation Sheets.
      ii. Submittals Schedule.
      iii. Design-Build Contractor's Construction Schedule.
   b. Submit the Schedule of Values to Owner's Representative at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
   c. Sub-schedules: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
3. Format and Content: Use the Design-Builder's Project Manual table of contents, arranged in accordance with CSI "Masterformat," as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section. Provide separate Schedule of Values for the building proposed in the Request for Proposal. Provide a summary schedule that includes the overall Contract Sum and all portions of the Contract Sum being requested for each application.
   a. Identification: Include the following Project identification on the Schedule of Values:
      i. Project name and location.
      ii. Owner's contract number.
      iii. Design-Build Contractor's name and address.
      iv. Date of submittal.
   b. Submit draft of Schedule of Values in form acceptable to the Owner.
   c. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
      i. Related Specification Section or Division.

ii. Description of the Work.

iii. Name of architects and engineers.

iv. Name of subcontractor.

v. Name of manufacturer or fabricator.

vi. Name of supplier.

vii. Change Orders (numbers) that affect value.

viii. Dollar value.

1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

d. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.

i. Provide separate labor and materials breakdown for LEED items, including, but not limited to, recycled items.

ii. Design Phase: Coordinate breakdown with submittal requirements. and subsequent elements indicating submittal requirements for all design phases.

iii. Construction Phase: Coordinate with the Design-Build Specifications table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum.

e. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

f. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

i. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

g. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

h. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

i. Temporary facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values.

i. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when fully executed Change Orders result in a change in the Contract Sum.

B. Applications for Payment:

1. Each Application for Payment shall be consistent with previous applications and payments as certified by Owner's Representative and paid for by Owner.

   a. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

2. Payment Application Times: Progress payments shall be submitted to Owner's Representative by the first day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month. Payment shall be made within time period as stipulated in the terms and conditions of the Contract.

3. Payment Application Forms: Use Washington State Form A19-2AE2 "Invoice Voucher," with associated continuation sheets.

4. Application Preparation: Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Design-Build Contractor. Owner's Representative will return incomplete applications without action.

   a. Entries shall match data on the Schedule of Values and Design-Build Contractor's Construction Schedule. Use updated schedules if revisions were made.

   b. Include amounts of Change Orders issued before last day of construction period covered by application.

5. Transmittal: Submit 4 signed original copies of each Application for Payment to Owner's Representative. One copy shall include waivers of lien and similar attachments if required.

   a. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

6. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

   a. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

   b. When an application shows completion of an item, submit final or full waivers.

   c. Owner reserves the right to designate which entities involved in the Work must submit waivers.

   d. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

   e. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

   f. When an application shows completion of an item, submit final or full waivers.

   g. Owner reserves the right to designate which entities involved in the Work must submit waivers.

   h. Submit final Application for Payment with (or pre-ceded by) final waivers from every entity involved with performance of the Work (and covered by the application) and who is lawfully entitled to a lien.

i. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

7. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

   a. List of subcontractors.

   b. Schedule of Values.

   c. Design-Build Contractor's Construction Schedule (Design-Build Technical Proposal Schedule if not final).

   d. Products list.

   e. Submittals Schedule (preliminary if not final).

   f. Initial progress report.

   g. Data needed to acquire Owner's insurance.

   h. Approved Intents to Pay Prevailing Wages for all tiers of contractors and subcontractors performing work on site.

   i. Apprenticeship Participation Form and Plan to meet the 15% requirement.

8. Subsequent Applications for Payment: Administrative actions and submittals that must precede or coincide with payment applications subsequent to first Application for Payment include the following:

   a. Copies of building permits as occurring and scheduled.

   b. List of Design-Build Contractor's staff assignments including after site mobilization.

   c. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.

   d. Updated list of subcontractors.

   e. Approved Intents to Pay Prevailing Wages for all tiers of contractors and subcontractors performing work on site that have not been submitted before.

   f. Apprenticeship Participation Form.

9. Application for Payment at Substantial Completion: After the issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

   a. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

   b. Include status and schedule of documentation of submittal of all final LEED requirements.

   c. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

10. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

    a. Evidence of completion of Project closeout requirements.

b. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.

c. Updated final statement, accounting for final changes to the Contract Sum.

d. Evidence that claims have been settled.

e. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

f. Final, liquidated damages settlement statement.

g. Final list of all tiers of subcontractors and approved Affidavits of Wages Paid forms.

II. Project Coordination

A. Coordination: Coordinate construction operations included in different Sections of the Design-Build Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation. Utilize 3-D / BIM technology to enhance coordination between design disciplines and construction trades and to reduce or eliminate conflicts.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Design-Build Drawings and Specifications.
2. Preparation of Design-Build Contractor's Construction Schedule.
3. Preparation of the Schedule of Values.
4. Installation and removal of temporary facilities and controls.
5. Procurement of Permits.
6. Delivery and processing of submittals.
7. Progress meetings.
8. Pre-installation conferences.
9. Project closeout activities.

10. Startup and adjustment of systems.

C. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components; or if coordination is required for installation of products and materials fabricated by separate entities; and for Ceiling Management as indicated in "1000 – Project Summary."

1. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1000 mm).

2. Number of Copies: Submit one copy of each submittal; provide additional copies to the Design-Build design consultants and subcontractors as required.

a. Submit one copy where Coordination Drawings are required for operation and maintenance manuals. Owner's Representative will retain 1 copy. General Design-Build Contractor shall provide additional copies for the number of required copies of operation and maintenance manuals.

D. Key Personnel Names during Design and Construction Phases: In addition to names and titles declared in the Request for Proposal Submittal, submit, within 15 days of starting construction operations, a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers, e-mail addresses and facsimile numbers. Provide names, addresses, e-mail addresses, telephone and facsimile numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

2. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

a. Include special personnel required for coordination of operations with other contractors.

b. Identify the Qualified and Practiced Project LEED Coordinator(s) and have them at the appropriate project progress meetings.

E. Project Meetings:

1. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

a. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner's Representative of scheduled meeting dates and times.

b. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees; distribute copies to other parties as requested by the owner's representative.

c. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner's Representative, within three days of the meeting. Items and agreements achieved in the Meeting minutes need not be recorded in any other correspondence.

2. Post-award Design Conference: Schedule a post-award design conference prior to commencement of design and construction documents phase of the Work, at a time

convenient to Owner's Representatives, but no later than 15 days after execution of the Agreement.

a. Attendees: Authorized representatives of Owner; Design-Build Contractor, Architect, Engineers, major subcontractors; suppliers; and other concerned parties as agreed upon by the Owner and Design-Builder shall attend. All participants at the conference shall be familiar with Project and finally accepted proposal, and authorized to conclude matters relating to the Work.

b. Agenda: Discuss items of significance that could affect design, including the following:

   i. Design commentary on Request for Proposal and winning proposal documents.

   ii. Design phase schedule.

   iii. Tentative construction schedule.

   iv. Phasing.

   v. Critical work sequencing and long-lead items.

   vi. Designation of key personnel and their duties.

   vii. Communication procedures and points of contact.

   viii. Procedures for processing Applications for Payment during design phases.

   ix. Submittal procedures.

   x. LEED requirement and interim submittals by the Design-Build team to demonstrate how they are meeting requirement throughout design and construction.

   xi. Preparation of Design and Construction Documents and Permit submittals.

   xii. Owner's occupancy requirements.

   xiii. Security.

c. Minutes: Record and distribute meeting minutes.

3. Preconstruction Conference: Schedule preconstruction conferences before starting construction for major permitted portions of the Work, at a time convenient to Owner and Owner's Representatives. Hold the conference at Project site or another location convenient to Owner and Contractor. Conduct the meeting to review responsibilities and personnel assignments.

   a. Attendees: Authorized representatives of Owner, Design-Build Contractor and its superintendent; architects, engineers, major subcontractors; suppliers; and other concerned parties as agreed upon by the Owner and Design-Build Contractor shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

   b. Agenda: Discuss items of significance that could affect progress, including the following:

i. Construction schedule.

ii. Phasing.

iii. Critical work sequencing and long-lead items, including owner furnished detention furniture.

iv. Designation of key personnel, their duties and authorities.

v. Communication procedures and points of contact.

vi. Procedures for processing field decisions (field reports), Change Order Proposals, Construction Change Directives, Proposal, Field Authorizations, and Change Orders.

   1) All forms to be Washington State DES forms, except as approved by the Department.

vii. Procedures for testing and inspecting.

viii. Procedures for processing Applications for Payment during construction phase.

ix. Submittal procedures.

x. LEED requirements.

xi. Preparation of Record Documents.

xii. Use of the premises and existing building

xiii. Work restrictions and coordination with owner requirements.

xiv. Owner's occupancy requirements.

xv. Responsibility for temporary facilities and controls.

xvi. Construction waste management and recycling.

xvii. Parking availability and security procedures related to parking.

xviii. Office, work, and storage areas.

xix. Equipment deliveries and priorities.

xx. First aid.

xxi. Security: refer to requirements indicated in RFP documents.

xxii. Progress cleaning.

xxiii. Working hours.

xxiv. Site-specific safety plan.

xxv. Permits.

xxvi. Discussion of regular meeting days and time, and site visit schedule.

c. Minutes: Record and distribute meeting minutes.

4. Pre-installation Conferences: Conduct a pre-installation conference, with mock-ups as applicable, at Project site before each construction activity that requires coordination with other construction.

   a. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner's Representative of scheduled meeting dates.

   b. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.

   c. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

   d. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

   e. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

   f. Inform Owner if any discussion of coordination items at the pre-installation meeting is in conflict with the Design-Build Contract Documents. It is assumed, without this notice that the Work, after discussion of the items at the meeting, will be in accordance with the Design-Build Contract Documents.

   g. Conduct conferences, at minimum, for all proprietary and prescriptive Work described in the Request for Proposal.

5. Progress Meetings: Conduct progress meetings on the same time and day of the week at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

   a. Attendees: In addition to representatives of Owner, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

      i. Conduct weekly subcontractor and general contractor meetings outside of weekly meetings.

      ii. Conduct coordination meetings with Owner, and Subcontractors that are deemed necessary separately from progress meetings, unless agreed upon in advance by all regular attendees.

   b. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

      i. Design-Build Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Design-Build Contractor's Construction Schedule.

Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period. Schedule review should include critical path updates as well as a regular three-week look ahead short term schedule.

ii. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Requests for Information (RFIs) or Clarification Requests (CR's), whichever is per the Design-Builder's usual practice.
16) Status of proposal requests, Field Authorizations, Design-Builder's Supplemental Instructions, and Construction Change Directives.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests, and dates of review for pay requests/pay application.
21) Owner issues and community issues.

c. Minutes: Record and distribute to Owner and Owner's Representatives the meeting minutes within three days.

i. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

F. Reports:

1. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   a. List of subcontractors at Project site.
   b. List of separate contractors at Project site.
   c. Approximate count of personnel at Project site.
   d. Equipment at Project site.
   e. Material deliveries.
   f. High and low temperatures and general weather conditions.
   g. Accidents.
   h. Meetings and significant decisions.
   i. Unusual events (refer to special reports).
   j. Stoppages, delays, shortages, and losses.
   k. Meter readings and similar recordings.
   l. Emergency procedures.
   m. Orders and requests of authorities having jurisdiction.
   n. Change Orders received and implemented.
   o. Construction Change Directives received and implemented.
   p. Services connected and disconnected.
   q. Equipment or system tests and startups.
   r. Partial Completions and occupancies.
   s. Substantial Completions authorized.
2. Material Location Reports: At biweekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
3. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Design-Build Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Design-Build Contract Documents.

G. Special Reports:
1. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
2. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit
   a. Special report. List chain of events, persons participating, response by Design-Build Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

III. Design-Build Design and Construction Schedule:

A. Design-Build Contractor's Construction Schedule, General

1. Reference Design-Build Contract, Article 25 “Project Planning and Control,” for additional requirements.
2. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
3. Time Frame: Extend schedule from date established for the Notice of Award to date of Final Completion.
   a. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
4. Activities: Treat each building or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   a. Activity Duration: Define activities so no activity is longer than 30 days.
   b. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   c. Submittal Review Time: As indicated in the Design-Build Contract. Include review and resubmittal times indicated “Construction Submittals” elsewhere in this Element in schedule. Coordinate submittal review times in Design-Build Contractor's Construction Schedule with Submittals Schedule.
   d. Startup and Testing Time: Include not less than 30 days for startup, commissioning and testing. Include this period prior to substantial completion.
   e. Substantial Completion: Allow time prior to Substantial Completion for Owner’s administrative procedures necessary for certification of Substantial Completion.
5. Constraints: Include constraints and work restrictions indicated in the RFP documents and the Design-Build Contract Documents, and as follows in schedule, and show how the sequence of the Work is affected.
   a. Phasing: Arrange list of activities on schedule by phase.
   b. Include a separate activity for each contract or sub-contract.
   c. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
   d. Work Restrictions: Show the effect of the following items on the schedule if applicable:
      i. Coordination with existing construction.
      ii. Limitations of continued occupancies.
      iii. Uninterruptible services.

iv. Use of premises restrictions, including security restrictions, including, but not limited to, facility lockdown procedures.

v. Radio Frequency restrictions and coordination with those of the facility.

vi. Provisions for future construction.

vii. Seasonal variations.

viii. Environmental control.

e. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

i. Design submittals.

ii. Subcontract awards.

iii. Submittals.

iv. Purchases.

v. Mockups, including mockups for long-lead items.

vi. Fabrication.

vii. Owner furnished detention equipment.

viii. Sample testing.

ix. Deliveries.

x. Installation.

xi. Tests, inspections and commissioning, including oversight tests and inspections of a Department-approved Registered Communications Distribution Designer (RCDD).

xii. Adjusting.

xiii. Curing.

xiv. Startup and placement into final use and operation.

f. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

i. Structural completion.

ii. Permanent space enclosure.

iii. Completion of mechanical installation.

iv. Completion of electrical installation.

g. Substantial Completion.

h. Milestones: Include milestones indicated in the Design-Build Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Prior Occupancy of designated portions of the Work, Substantial Completion, and Final Completion.

6. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

7. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules that is mutually agreeable to Design-Builder and Owner.

B. Design-Build Contractor's Construction Schedule (CPM Schedule):

1. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

a. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with background in construction practices and broad knowledge of construction methods, and the capability of producing CPM reports and diagrams within 24 hours of Owner's Representative's request.

b. In-House Option: Owner may waive the requirement to retain a consultant if Design-Build Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.

c. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

2. General: Prepare network diagrams using AON (activity-on-node) format.

3. CPM Schedule: Prepare Design-Build Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.

a. CPM: Critical path method: a method of planning and scheduling a construction project where activities are arranged based on activity relationships. The Critical Path is the longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

b. Ensure that the CPM schedule graphically clearly delineates the Critical Path by the individual responsible for the CPM

c. Provide an overall CPM Schedule correlating all Work in a single schedule. Provide detailed sub-schedules for each major activity or portion of the work.

i. Coordinate all schedules with the schedule of values.

d. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Commencement of construction activities at the site.

e. Failure to include any work item required for performance of this Contract shall not excuse Design-Build Contractor from completing all work within time-frame established for completion, regardless of Owner's review of the schedule.

f. Conduct educational workshops or similar methods to assure key Project personnel, including subcontractors' personnel, are trained and informed in proper methods of providing data and using CPM schedule information.

g. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

h. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.

i. Float: The measure of leeway in starting and completing an activity.

i. Float time is not for the exclusive use or benefit of either Owner or Design-Build Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

ii. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

iii. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date. Provide 30 days minimum total float in project schedule.

4. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Prepare a skeleton network to identify probable critical paths.

a. Level 1 Schedule: A CPM schedule containing bulleted construction trade/task items with critical links.

b. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

i. Preparation of design submittals.

ii. Preparation of final construction documents and permit submittals.

iii. Obtaining of permits.

iv. Preparation and processing of submittals.

v. Mobilization and demobilization.

vi. Purchase of materials.

vii. Delivery.

viii. Fabrication.

ix. Utility interruptions.

x. Installation.

xi. Work by Owner that may affect or be affected by Design-Build Contractor's activities.

xii. Testing and commissioning.

c. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

d. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

e. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

i. Sub-networks on separate sheets are permissible for activities clearly off the critical path.

5. Design-Build Contractor's Construction Schedule Updating: Update schedule to reflect actual construction progress and activities at monthly intervals. Issue schedule one week before each regularly scheduled progress meeting.

a. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

b. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

c. As the Work progresses, indicate Actual Completion percentage for each activity.

d. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

i. Identification of activities that have changed.

ii. Changes in early and late start dates.

iii. Changes in early and late finish dates.

iv. Changes in activity durations in workdays.

v. Changes in the critical path.

vi. Changes in total float or slack time.

vii. Changes in the Contract Time.

6. Distribution: Distribute copies of approved schedule to Owner, separate contractors, testing and inspecting agencies, and other parties identified by Design-Build Contractor with a need-to-know schedule responsibility.

a. Post copies in Project meeting rooms and temporary field offices.

b. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

C. Submittals:

1. Submittals Schedule: Submit three copies of submittals schedule; maintain schedule throughout construction in the form of a log accessible to Owner's Representative, and other consultants or entities of the Owner as designated by the Owner's Representative.

   a. Arrange the following information in a tabular format:

      i. Scheduled date(s) for design submittals to Owner.

      ii. Scheduled date(s) for review and permit document submittals to authorities having jurisdiction.

      iii. Scheduled date for first submittal.

      iv. Specification Section number and title from Design-Build Contractor's project specifications.

      v. Submittal category (action or informational).

      vi. Name of consultant.

      vii. Name of subcontractor.

      viii. Description of the Work covered.

      ix. Scheduled date for Owner's Representative's final release or approval.

   b. Indicate on Submittals Schedule whether submittal is an Action submittal or an Informational submittal.

2. Design-Build Contractor's Construction Schedule Submittals: Submit four opaque copies of initial schedule, large enough to show entire schedule for entire construction period. Show logic ties for activities.

   a. Submit two electronic copies of Design-Build Contractor's Construction Schedule, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label. Submit with functions open.

3. Material Location Reports: Submit two copies at biweekly intervals.

4. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

5. Special Reports: Submit two copies at time of unusual event.

D. Coordination:

1. Coordinate preparation and processing of schedules and reports with performance of design and construction activities and with scheduling and reporting of separate contractors.

2. Coordinate Design-Build Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

   a. Secure time commitments for performing critical elements of the Work from parties involved.

b. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

3. Preparation of Submittals Schedule: Submit a schedule of submittals, including design submittals, arranged in chronological order by dates required by overall construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

a. Coordinate Submittals Schedule with list of consultant contracts, subcontracts, the Schedule of Values, and Design-Build Contractor's Construction Schedule.

b. Initial Submittal Schedule: Include submittals required during the design phase, and for the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

c. Final Submittal: Submit concurrently with the first complete submittal of Design-Build Contractor's Construction Schedule.

IV. Post Award Design Submittals General

A. Project Design Submittals required are as indicated below. The submittal milestones are characterized by the percentage completion of all design services.

1. Design Submittals required are as follows:

Project Phase	*Portion of Work*	*% Complete*
Design-Build Technical Submittal in accord with the Request for Proposal (RFP)		
Forty Percent CD Completion	Building and Site	40% Design
Sixty-Five Percent CD Completion	Building and Site	65% Design
One Hundred Percent CD Completion	Building and Site	100% Design
One Hundred Percent CD Completion – Final	Building and Site	100% Design

B. Interim Submittals and Permit Submittals - Post Award:

1. The Design-Build Contractor may elect to “fast track” elements of the Work to facilitate permitting and construction of the project.

a. A project element may be extracted from the entirety of the project at the Design-Builder’s discretion.

b. Portion of the Work that the Design-Build Contractor has separated from the Work as a whole for the purposes of permitting, or scheduling or other reasons must be submitted as interim submittals for the Owner’s records.

c. Required 40%, 65%, and 100% submittals to the Owner for review must include all portions of the Work, including all Partial Permit and fast track elements, coordinated in a single document set. Submittals for these phases that include fast-tracked elements as separate sets of documents are not acceptable.

i. Submit Partial Permit and fast track documents separately as they occur.

2. Back-checks: Correction and resubmittal of 40% and 65% Design submittals, based on submittal review comments from the Owner, is not required; incorporate comments in subsequent submittal. However, Design-Build team shall respond to such review comments in writing within 30 days of receipt. Incorporation of review comments on the 100% construction documents submittal, and resubmittal with comments incorporated shall be made.

3. Review conferences: Convene a review conference to discuss the progress of the project and the design presented after review by the Owner of the 40 and 65 Percent Submittals. Topics should include:

   a. Performance and LEED, locking systems, special systems, etc.

   b. Design-Builder's proposed construction sequencing.

   c. Design-Builder's proposed order of proposed separate "permit packages," if any.

   d. Value engineering proposals, if any.

   e. MEP systems.

4. Design Phase submittals:

   a. Forty and Sixty-five Percent CD Completions:

      i. Three sets of all drawings, bond copies, loose bound.

      ii. Three copies of printed materials and specifications, three-hole punched and bound with screws.

      iii. One electronic copy of drawing and specifications.

   b. One Hundred Percent CD Completion:

      i. Three sets of all drawings on bond paper, bound, signed and sealed.

      ii. Three copies of specifications, three-hole punched, bound in binders with screwed sleeve holders.

      iii. One electronic copy of 100% drawings and specifications.

5. Time Constraints: Provide document submittal dates and review periods within project scheduling that supports the overall project completion and providing sufficient time for owner to review documents.

V. Design Submittal: Design-Build Technical Proposal

A. Reference Section 1 "Request for Proposals" for Proposal design submission requirements.

VI. Design Submittal: 40 Percent Construction Documents

A. 40 Percent Construction Documents is the initial design submittal after the Award of Contract. 40 Percent Construction Documents shall be a development of the Design-Builder's Proposal, and shall define fully the scope for the project within the agreed construction sum. 40 Percent Construction Documents shall illustrate the relationships of all programmatic

requirements within a given building. Submittal shall include forms, sized and appearance of the component structures of the Project by the use of plans, sections elevations, layout of major equipment and systems, and typical details; include specifications for major materials and systems.

1. Include value engineering proposal list with dollar value saving to the Owner.
2. Include quality assurance review.

B. 40 Percent Construction Documents – Site / Civil

1. Site plan: development of Master plan concept. Identify:
   a. Limits of the Work.
   b. Building setbacks and separations.
   c. Roof Plans/Footprints of building.
   d. Grading and preliminary earthwork calculations.
   e. Drainage, addressing conveyance, treatment and disposal.
   f. Water distribution and fire protection.
   g. Sanitary sewer collection and conveyance.
   h. Vehicular and Pedestrian Access and Circulation.
   i. Preliminary pavement design.
   j. Parking Requirements.
   k. Fire Department Access and Circulation.
   l. Utility corridors and spatial distribution.
   m. Include utility corridors for major lines, grouped together.
   n. Site ADA Requirements
   o. Landscape areas (existing and new).
   p. Expansion and Phasing options (as applicable).
2. Identify existing utility locations.
3. Zoning Information.
4. Coordinated new utility service locations (i.e., utility transformers, exterior generators, etc.).
5. 40 Percent Construction Documents Site/Civil Design Narrative: Update and revision to the Design-Build Technical Proposal narrative, finally describing:
   a. Codes, standards and local Zoning amendments
   b. Overall site features
   c. Grading
   d. Drainage (storm water runoff, retention, detention)
   e. Utilities connections and service

f. Vehicular circulation and parking areas, including roadwork in State Highway right-of-way, if any.

g. Pedestrian circulation: secure and non-secure

h. Coordinate site lighting with electrical.

i. Landscaping, including irrigation.

j. Construction access and TESC.

C. 40 Percent Construction Documents - Architectural

1. Floor Plans for the Building. Update Design-Build Technical Proposal plans to include design revisions required per review comments and constructability. Include development of the following:

   a. Add dimensions.

   b. Indicate major equipment.

   c. Indicate any specialty equipment.

   d. Indicate wall types.

   e. Indicate full height wall locations.

2. Develop the following:

   a. Elevations.

   b. Reflected ceiling plans; include types of ceiling construction and security enclosures.

   c. Wall, floor and ceiling treatments.

   d. Roof plans, indicating slopes.

   e. Room finish schedule.

   f. Wall sections.

   g. Minimum one building section

3. Outline specifications.

4. Code analysis: Update Design-Build Technical Proposal analysis.

5. Colors and Materials: Create design schemes for colors and materials.

   a. Provide color boards and samples, and present to the Owner for review and approval.

6. Update Architectural Design Narrative; include revisions to the narrative based on design review comments, and on requirements necessitated by development of the design.

   a. Confirm comparison with RFP Document

      i. Compare program square footage vs. Design-Build Technical Proposal square footage; note deviations.

   b. Include catalog cut-sheets for all materials and equipment selections.

D. 40 Percent Construction Documents – Structural

1. Update Design-Build Technical Proposal Structural Design Narrative.

2. Framing plans with preliminary member sizes for main members.
3. Preliminary foundation plans.
4. Special framing for architectural features and large open areas.
5. Outline specifications.

E. 40 Percent Construction Documents – Mechanical

1. Update Design-Build Technical Proposal Mechanical Design Narrative. Include:
   a. Design Loads, new and remodeled:
      i. Mechanical
      ii. Plumbing
   b. Include catalog cut-sheets for materials and equipment selections.
2. Preliminary HVAC drawings, indicating all equipment locations. Include equipment sizes and model numbers, and required chase and plenum clearances.
3. Preliminary Plumbing drawings, indicating all equipment locations. Include equipment sizes and model numbers, and required chase and plenum clearances.
4. Life cycle cost analysis, as described in Section 1010.
5. Outline specifications.

F. 40 Percent Construction Documents – Electrical

1. Update Design-Build Technical Proposal Electrical Design Narrative.
   a. Include catalog cut-sheets for materials and equipment selections.
2. Preliminary Site electrical plan
3. Preliminary Site lighting plan
4. Preliminary power plans.
   a. Include electrical room, serving the building and site, including equipment layout.
5. Preliminary lighting plans.
   a. Calculations based on light fixture layout.
6. Outline specifications.

G. 40 Percent Construction Documents – Special Systems and Telecommunications

1. Update of Design-Build Technical Proposal Special Systems Design Narrative.
   a. Include update of materials and equipment selections.
2. Preliminary Site special systems drawings.
3. Preliminary special systems drawings.
   a. Equipment layouts for all control rooms and equipment rooms.
4. Telecommunications shall adhere to design submittals described within the TDIS standards.
5. Outline specifications.

H. 40 Percent Construction Documents – Energy Performance and Leadership in Environmental Design (LEED) Program Submittal

1. Energy Performance Verification: Submit the approved DES Energy Program Work Plan and Initial Energy Life Cycle Cost Analysis (ELCCA) Report deliverables, consistent with completion of the schematic and design development phase activities in accordance with the ELCCA Guidelines for Public Agencies in Washington State, Nov 2005, revised April 2013 and supporting whole building energy modeling results for LEED EAc1 of proposed and baseline building in accordance with ASHRAE 90.1 2007, showing overall percentage improvement and building energy use index (EUI) results as compared with baseline building.

2. LEED Credit Review: Update Design-Build Technical Proposal LEED Program Submittal. Include proposed revisions based on the design as further developed in the 40 Percent design for all disciplines. Provide a brief summary of revisions to the Site/Civil, Landscaping, Architectural, Mechanical Electrical and Special Systems design, if any, that are required resultant to the further development of the Project's design.

3. LEED Measurement and Verification (M&V) Plan: Submit a Draft M&V plan consistent with LEED EAc5.

I. 40 Percent Construction Documents – Life Cycle Cost Analysis Submittal

Provide analysis according to the model to be defined by the Office of Financial Management in February 2014.

VII. Design Submittal: 65 Percent Construction Documents

A. 65 Percent Construction Documents is the further refinement of the 40 percent submittal, addressing all items listed above for the 40 percent submittal and incorporating DES CD review comments and DES ELCCA review comments from the 40 percent submittal.

VIII. Design Submittal: 100 Percent Construction Documents

A. 100 Percent Construction Documents are the final, comprehensive in-progress design submittals, incorporating Owner's review comments from the 65 percent submittal, for which the final requirements for construction of the Project shall be set forth in detail. 100 Percent Construction Documents is when the project is completed and ready for submittal to reviewing agencies and various reviewing departments of the State; as well as submittal to the Owner for general review, for review for LEED certification pathway review, and for compliance with T.I.S. requirements.

1. Permit/Final Construction Documents.

   a. Sealed and signed set of Civil, Architectural, Structural, Mechanical, Electrical and Special Systems drawings.

   b. Sealed and signed Project Manual (specifications).

   c. Calculations, partial drawing sets and other supporting documents as required for permit submittal, and submittal to separate reviewing agencies and departments.

   d. Final submittal to Owner for LEED certification pathway review.

   e. Final submittal to Owner for compliance with TDIS standards requirements.

i. Before construction begins, the Owner's RCDD reviewer shall have reviewed and approved the construction drawings and specifications relating to specialty low-voltage systems, including but not limited to, security, fire alarm, CATV, HVAC-EMCS, intercom, paging, and telecommunications voice and data infrastructures.

2. 100 Percent Construction Documents – Life Cycle Cost Analysis Submittal

   Provide analysis according to the model to be defined by the Office of Financial Management in February 2014.

3. Pursuant to review comments by the Owner and the Owner's consultants, revise and resubmit the 100% documents as 100% - Final Documents with comments incorporated.

IX. Construction Submittals

A. Submittals during construction, General: Submittals are required during construction for portions of the Work as follows:

1. Action submittals requiring review by the Owner:

   a. Submittals for products, systems and equipment that deviate from those indicated in the final, approved Design-Build construction documents.

   b. Submittals for Work indicated by proprietary or prescriptive means in the "Quality of Materials and Systems" portions of the Phase I RFP.

2. Information submittals:

   a. Submittals for all products, systems and equipment in accordance with the approved construction documents, reviewed and approved by the Design-Build Contractor and Design-Build Architect or Engineer of record.

      i. Submittals are to demonstrate a flow-of-work for the project, and to confirm products, systems and equipment being used in the project are in accord with approved Design-Build Contract Documents; and will not be reviewed and returned.

   b. Other Information submittals: as indicated in Element Z1010 paragraph "Information Submittals."

B. Submittal Procedures:

1. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

   a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

   b. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

      i. Owner's Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

2. Submittals Schedule: Comply with requirements in Element Z1010 sub-element "Project Coordination."

3. Review procedures: The Design-Build Contractor shall review all submittals, and the Design-Build Architects and Engineers of record shall review submittals for products, systems, test results and equipment, prior to forwarding to the Owner.
4. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
    a. Initial Review – Action Submittals: Allow 15 days for initial review and processing of each submittal. Allow additional time if coordination with subsequent submittals is required and for complex submittals or for several submittals submitted within a short time frame. Provide a "Priority List" when submitting several submittals in a short time frame.
    b. Intermediate Review – Action Submittals: If intermediate submittal is necessary, process it in same manner as initial submittal.
    c. Resubmittal Review – Action Submittals: Allow 15 days for review of each resubmittal.
    d. Sequential Review: Where sequential review of submittals by either the Owner or other parties is indicated, allow 21 days for initial review of each submittal.
5. Identification: Place a permanent label or title block on each submittal for identification.
    a. Indicate name of firm or entity that prepared each submittal on label or title block.
    b. Provide a space approximately 6 by 8 inches on label or beside title block to record Design-Build Contractor's review and approval markings and action taken by Owner's Representative.
    c. Include the following information on label for processing and recording action taken:
        i. Project name.
        ii. Owner's contract number.
        iii. Date.
        iv. Name and address of Owner's Representative.
        v. Name and address of Design-Build Contractor.
        vi. Name and address of subcontractor.
        vii. Name and address of supplier.
        viii. Name of manufacturer.
        ix. Submittal number or other unique identifier, including revision identifier.
            1) Submittal number shall use Specification Section number from Design-Builder's Project Specifications followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

x. Number and title of appropriate Specification Section or portion of the Work.

xi. Drawing number and detail references, as appropriate.

xii. Location(s) where product is to be installed, as appropriate.

xiii. Other necessary identification.

6. Deviations: Highlight or encircle, or otherwise specifically identify deviations from the approved, Design-Build Contract Documents on submittals. Submit an Exception Request for Owner's approval.

7. Additional Copies: Unless additional copies are required for final submittal, and unless Owner's Representative observes noncompliance with provisions in the Design-Build Contract Documents, initial submittal may serve as final submittal.

   a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Owner's Representative.

   b. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned for Design-Build Contractor's inclusion in manuals.

8. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Owner's Representative will return submittals received from sources other than the Design-Build Contractor.

   a. Transmittal Form: Use CSI Form 12.1A or similar form:

      i. Project name.

      ii. Owner's contract number

      iii. Date.

      iv. Destination (To:).

      v. Source (From:).

      vi. Names of subcontractor, manufacturer, and supplier.

      vii. Category and type of submittal.

      viii. Submittal purpose and description.

      ix. Specification Section number and title.

      x. Drawing number and detail references, as appropriate.

      xi. Transmittal number, numbered consecutively.

      xii. Submittal and transmittal distribution record.

      xiii. Remarks.

      xiv. Signature of transmitter.

9. On an attached separate sheet, prepared on Design-Build Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner's Representative on previous submittals, and deviations from requirements in the Design-Build Contract Documents, including minor variations and limitations. Include same label information as related submittal.
10. Resubmittals – Action Submittals: Make resubmittals in same form and number of copies as initial submittal.
    a. Note date and content of previous submittal.
    b. Note date and content of revision in label or title block and clearly indicate extent of revision.
    c. Resubmit submittals until they are marked "Reviewed" or "Reviewed as Noted."
11. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
12. Use for Construction: Use only final submittals with mark indicating "Reviewed" or "Reviewed as Noted" by Design-Build Architect or Engineer of record, and additionally by Owner's Representative for Action submittals as indicated in paragraph "1010.04.A" above.

C. Action Submittals:

1. Prepare and submit Action Submittals required by the RFP, by individual Design-Build Specification Sections, and by distinct portions of the Work indicated on the Design-Build Contract Documents.
    a. Submit electronic submittals directly to Design-Builder provided and maintained extranet specifically established for Project.
2. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
    a. Submit Product Data before or concurrent with Samples.
    b. Number of Copies: Submit four copies of Product Data, unless otherwise indicated. Owner's Representative will return two copies. Mark up and retain one returned copy as a Project Record Document.
3. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.
    a. Preparation: Fully illustrate requirements in the Design-Build Construction Drawings and Specifications.
    b. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
    c. Number of Copies: Submit four opaque (bond) copies of each submittal. Owner's Representative will return one copy. If required, provide additional copies with operation and maintenance manuals at time of project closeout.
4. Samples: Submit Samples for confirmation review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

a. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

5. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A, or similar document. Include the following information in tabular form:

   a. Name, address, and telephone number of entity performing subcontract or supplying products.

   b. Number and title of related Specification Section(s) covered by subcontract.

   c. Drawing number and detail references, as appropriate, covered by subcontract.

   d. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Owner's Representative will return two copies.

      i. Mark up and retain one returned copy as a Project Record Document.

6. LEED Submittals: Submit three copies of LEED submittals, identical to and in addition to those made by the Design-Build Contractor directly to the United States Green Building Council.

7. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements with LEED submittal, which will be the limit of the Owner's Representative's review.

D. Informational Submittals:

1. General:

   a. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Owner's Representative will not return copies.

   b. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

   c. Test and Inspection Reports: Comply with requirements specified in Design-Builder's Specification Division 1 Section "Quality Requirements."

2. Design-Build Contractor's Construction Schedule.

3. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Owner's Representatives and owners, and other information specified.

4. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Design-Build Contract Documents. Maintain of file on site. Include record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

5. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Design-Build Contract Documents and, where required, is authorized by manufacturer for this specific Project.
6. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Design-Build Contract Documents. Include evidence of manufacturing experience where required.
7. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Design-Build Contract Documents.
8. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Design-Build Contract Documents.
9. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Design-Build Contract Documents.
10. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Design-Build Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
    a. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
11. Schedule of Tests and Inspections.
12. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Design-Build Contract Documents.
13. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
14. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Design-Build Contract Documents.
15. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with all requirements indicated elsewhere in this document.
16. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
17. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a

product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

a. Preparation of substrates.

b. Required substrate tolerances.

c. Sequence of installation or erection.

d. Required installation tolerances.

e. Required adjustments.

f. Recommendations for cleaning and protection.

18. Manufacturer's Field Reports: Prepare written information documenting factory authorized service representative's tests and inspections. Include the following, as applicable:

    a. Name, address, and telephone number of factory-authorized service representative making report.

    b. Statement on condition of substrates and their acceptability for installation of product.

    c. Statement that products at Project site comply with requirements.

    d. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

    e. Results of operational and other tests and a statement of whether observed performance complies with requirements.

    f. Statement whether conditions, products, and installation will affect warranty.

    g. Other required items indicated in individual Specification Sections.

19. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

20. Waste Management Plan: Prepare and submit Waste Management Plan, and periodic and final reports as indicated in this document.

21. Construction Photographs and CD-Rs:

    a. Digital Images: Submit a complete set of digital image electronic files as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

        i. Provide digital images, produced by a digital camera with minimum sensor size of 8.0 megapixels, and at an image resolution of not less than 1600 x 1200 pixels.

        ii. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

            1) Date and Time: Include date and time in filename for each image.

            2) Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Owner's Representative.

b. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding CD-ROM. Include name of Project and date of CD-ROM on each page.

c. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

   i. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

   ii. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

d. Photographs, General: Take digital photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

   i. Maintain key plan with each set of construction photographs that identifies each photographic location.

e. Preconstruction Photographs: Before commencement of excavation, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points; confer with Owner's representative on vantage points to be used.

   i. Take a minimum of ten photographs to show existing conditions adjacent to Project site before starting the Work.

f. Periodic Construction Photographs: Time digital photos taken each month to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

   i. Exterior: Take four exterior digital photographs weekly until exterior work on the building is complete.

   ii. Interior: Take an additional five interior digital photographs weekly, minimum.

g. Final Completion Construction Photographs: Take digital photographs after date of Prior Occupancy and Substantial Completion for individual portions of the Work for submission with Project Record Documents. Owner's Representative will direct photographer for desired vantage points.

h. Additional Photographs: Owner's Representative or authorized Consultants to the Owner may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.

   i. Three days' notice will be given, where feasible.

   ii. In emergency situations, take additional photographs within 24 hours of request.

iii. Circumstances that could require additional photographs include, but are not limited to, the following:

1) Special events planned at Project site.

2) Immediate follow-up when on-site events result in construction damage or losses.

3) Prior Occupancy Completion of a major phase or component of the Work.

4) Extra record photographs at time of final acceptance.

5) Owner's request for special publicity photographs.

22. Shop Drawings for all other products and systems not covered under Action Submittals above: Prepare project-specific information, drawn accurately to scale.

a. Preparation: Fully illustrate requirements in the Design-Build Construction Drawings and Specifications.

b. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.

E. Delegated Design: Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Design-Build Contractor by the Design-Build Drawings and Specifications, provide products and systems complying with specific performance and design criteria indicated.

F. Design-Build Contractor's Review

1. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Design-Build drawings and specifications. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner’s Representative.

2. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Design-Build Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Design-Build Contract Documents.

G. Owner’s Representative's Action

1. General: Owner’s Representative will not review submittals that do not bear Design-Build Contractor's approval stamp and will return them without action.

2. Action Submittals: Owner’s Representative will review each submittal, make marks to indicate corrections or modifications required, and return it. Owner’s Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

3. Informational Submittals: Owner’s Representative will generally not review and return submittals, but may return them for further action by the Design-Build Contractor if , in the opinion of the Owner’s Representative it does not comply with requirements.

4. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

5. Submittals not required by the RFP or Design-Build Contract Documents will not be reviewed and may be discarded.
6. The Design-Builder schedule shall include sufficient time for Owner's review of submittals.

Z1020 Quality Requirements

I. Quality Assurance and Control

A. General:

1. The Design-Build Contractor shall include in the Design-Build Construction Documents and Specifications specific quality-assurance and quality-control requirements for individual construction activities usually associated with such activities, required by codes and jurisdictions having authority, and as indicated in Elements of the Request For Proposal documents. Requirements may also cover production of standard products.
2. Tests, inspections, and related actions do not limit Design-Build Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Design-Build Construction Drawings and Specification requirements.
3. Requirements for Design-Build Contractor to provide quality-assurance and quality control services required by Owner or authorities having jurisdiction are not limited by provisions of this Element.
4. The Design-Build Contractor shall have a dedicated, well-practiced and proven QA/QC Coordinator dedicated to this project – with the necessary staff required to assure proper installation of each building system and monitoring workmanship as necessary to assure installations conform to levels of quality mandated by the industry if not otherwise indicated by the Construction Documents.

B. Definitions:

1. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
2. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Owner's Representative.
3. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to demonstrate aesthetic effects and qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
4. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
5. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
6. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

7. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
8. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
9. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
10. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

C. Conflicting Requirements:

1. General: If compliance with two or more standards is indicated and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
2. Minimum Quantity or Quality Levels: The quantity or quality level required or indicated shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.

D. Submittals:

1. Qualification Data: For testing to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
2. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   a. Specification Section number and title.
   b. Description of test and inspection.
   c. Identification of applicable standards.
   d. Identification of test and inspection methods.
   e. Number of tests and inspections required.
   f. Time schedule or time span for tests and inspections.
   g. Entity responsible for performing tests and inspections.
   h. Requirements for obtaining samples.
   i. Unique characteristics of each quality-control service.
3. Reports: Prepare and submit certified written reports that include the following:
   a. Date of issue.
   b. Project title and number.
   c. Name, address, and telephone number of testing agency.
   d. Dates and locations of samples and tests or inspections.
   e. Names of individuals making tests and inspections.

f. Description of the Work and test and inspection method.

g. Identification of product and Specification Section.

h. Complete test or inspection data.

i. Test and inspection results and an interpretation of test results.

j. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

k. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

l. Name and signature of laboratory inspector.

m. Recommendations on retesting and re-inspecting.

4. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

E. Quality Assurance:

1. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

2. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

3. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

4. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product(s) that are similar to those indicated for this Project in material, design, and extent.

5. Specialists: Certain portions of the Phase I Request for Proposal, and sections of the Design-Build Specifications may require, or usual construction methods may require, that specific construction activities be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

   a. Requirement for specialists shall not supersede building codes and regulations governing the Work.

6. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting required, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

a. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

b. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

7. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

8. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

a. Design-Build Contractor responsibilities include the following:

i. Provide test specimens representative of proposed products and construction.

ii. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

iii. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

iv. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.

v. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

vi. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project, except as allowed in this element.

b. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Owner’s Representative, with copy to Design-Build Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Design-Build Contract Documents.

9. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

a. Build mockups in location and of size indicated or, if not indicated, as directed by Owner’s Representative.

b. Notify Owner’s Representative seven days in advance of dates and times when mockups will be constructed.

c. Demonstrate the proposed range of aesthetic effects and workmanship.

d. Obtain Owner’s Representative's approval of mockups not incorporated into the work.

i. Allow seven days for initial review and each re-review of each mockup.

e. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

f. Demolish and remove mockups when directed, unless otherwise indicated.

10. Laboratory Mockups (Bench Test Mockups): Comply with requirements of preconstruction testing and those specified in individual Elements of the Request for Proposal Documents, and the Design-Build specifications.

F. Quality Control:

1. Tests and inspections not explicitly assigned to Owner are Design-Build Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified in Request for Proposal documents, Design-Build Construction Drawings and Specifications, and those required by authorities having jurisdiction. Perform quality control services required of Design-Build Contractor by authorities having jurisdiction, whether specified or not. Engage a qualified testing agency to perform these quality control services.

a. Notify testing agencies at least 36 hours in advance of time when Work that requires testing or inspecting will be performed.

b. Where quality-control services are indicated as Design-Build Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

c. Testing and inspecting requested by Design-Build Contractor and not required by the codes, jurisdictions having authority or the Request for Proposal documents are Design-Build Contractor's responsibility.

d. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

2. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Design-Builder's Specification Division 1 Section "Submittal Procedures."

3. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Design-Build Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Design-Build Contract Documents.

4. Testing Agency Responsibilities: Cooperate with Owner's Representative and Design-Build Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

a. Notify Owner's Representative and Design-Build Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

b. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

c. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

d. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Design-Build Contractor.

e. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

f. Do not perform any duties of Design-Build Contractor.

5. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

a. Access to the Work.

b. Incidental labor and facilities necessary to facilitate tests and inspections.

c. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

d. Facilities for storage and field curing of test samples.

e. Delivery of samples to testing agencies.

f. Preliminary design mix proposed for use for material mixes that require control by testing agency.

g. Security and protection for samples and for testing and inspecting equipment at Project site.

6. Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

a. Schedule times for tests, inspections, obtaining samples, and similar activities.

7. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Design-Build Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.

a. Distribution: Distribute schedule to Owner's Representative, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

G. Special Tests and Inspections:

1. Special Tests and Inspections: Conducted by a qualified special inspector as required by authorities having jurisdiction, as indicated the Request for Proposal, in individual Design-Build Specification Sections, and as follows:

a. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

b. Notifying Owner's Representative and Design-Build Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

c. Submitting a certified written report of each test, inspection, and similar quality control service to Owner's Representative with copy to Design-Build Contractor and to authorities having jurisdiction.

d. Submitting a final report of special tests and inspections at Substantial Completion. This includes a list of unresolved deficiencies.

e. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Design-Build Contract Documents.

f. Retesting and re-inspecting corrected work.

H. Test and Inspection Log:

1. Prepare a record of tests and inspections. Include the following:

a. Date test or inspection was conducted.

b. Description of the Work tested or inspected.

c. Date test or inspection results were transmitted to Owner's Representative.

d. Identification of testing agency or special inspector conducting test or inspection.

2. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Owner's Representative's reference during normal working hours.

I. Repair and Protection:

1. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

a. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

b. Comply with the Contract Document requirements for Design-Builder's Specification Division 1 Section "Cutting and Patching."

2. Protect construction exposed by or for quality-control service activities.

3. Repair and protection are Design-Build Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

J. Commissioning of MEP Systems

1. The Design-Build Contractor shall provide an independent third party Commissioning Authority (CxA) that will perform Fundamental and Enhanced Commissioning (Cx) services in accordance with LEED and WSEC requirements.

a. Coordinate and support all related start up, pre-functional and functional testing activities including regular Cx meetings, incorporate Cx activities into the CPM schedule, and review the Cx plan, field reports, and issues log.

b. Provide a designated point of contact to facilitate support and resolution of Cx issues identified.

c. Track unresolved issues to resolution.

2. Review and approve the final Cx report.

3. Assist the CxA in timely LEED and WSEC closeout documentation.

Z1030 Temporary Facilities

I. Temporary Facilities

A. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

B. Operation, Termination, and Removal:

1. Maintenance: Maintain facilities in good operating condition until removal.
   a. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion or Prior Occupancy in the case of the portions of the Work for which the Owner will take early occupancy.
3. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   a. Materials and facilities that constitute temporary facilities are property of Design-Build Contractor. Owner reserves the right to take possession of Project identification signs.
   b. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   c. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Element Z1040 “Project Closeout.”

II. Temporary Utilities

A. Use Charges:

1. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's Representatives, testing agencies, and authorities having jurisdiction.

2. Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations.

3. Water Service: Water from existing water system is available to the site. Meter and pay water service use charges for water used by all entities for duration of construction. Provide connections and extensions of services as required for construction operations.

4. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Provide connections and extensions of services as required for construction operations.

   a. Install electric power service overhead, unless otherwise indicated.

   b. Coordinate with the local electric utility and State to provide connection to existing electrical service located along the westerly secure perimeter fence lines of the existing facility, to the main power lines on the south side of the facility.

   c. Temporary electric service must be below grade in ductbanks if occurring in areas accessible to offenders; overhead allowed only in areas of the site controlled by the Design-Build Contractor and inaccessible to offenders.

5. Voice/Data Service: Provide and pay for voice and data services, capable of telephone, fax, and high speed data at a minimum rate of one T-1 circuit.

   a. Provide computer and e-mail accounts for use by general Design-Build Contractor during construction. In addition, provide separate computer connection and e-mail accounts for use by Owner and Owner’s Representative during construction. Refer to .03D below for related requirements.

B. Quality Assurance:

1. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

2. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Project Conditions: Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

D. Temporary Utility Installation:

1. General: Install temporary service or connect to existing service.

a. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

2. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

   a. Connect temporary sewers to existing sewer line as indicated in civil plans.

3. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

   a. Remove temporary water service lines if not incorporated into the final design solution.

4. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

   a. Toilets: Use of Owner's existing toilet facilities will not be permitted.

5. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

6. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

   a. Electric Power Service: Use of Owner's existing electric power service will not be permitted.

7. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

   a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

   b. Install lighting for Project identification sign.

8. Telephone Service: Provide temporary analog telephone service in common-use facilities for use by all construction personnel and Owner’s Representative. Install a minimum of one telephone line for each field office.

   a. Provide additional telephone lines for the following:

      i. Provide a dedicated telephone line for each facsimile machine in each field office.

      ii. Provide three telephone lines for Owner's use.

   a. At each telephone, post a list of important telephone numbers.

      i. Police and fire departments.

      ii. Ambulance service.

iii. Numbers for contacts at the DES, Owner, and local jurisdiction.

iv. Design-Build Contractor's home office.

v. Architect's office.

vi. Engineers' offices.

vii. Owner's office.

viii. Principal subcontractors' field and home offices.

ix. All site phone lines.

a. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

9. Electronic Telecommunications Network: Provide temporary electronic telecommunications network, including electronic mail, in common-use facilities.

a. Provide Ethernet network connectivity with one data port to each PC workstation in all field offices.

b. The Design-Build Contractor shall provide an e-mail account for the duration of the project, commencing from the time job site offices are established to post final completion.

III. Construction Facilities

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading. Provide units of similar appearance and finish from single manufacturer.

B. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.

a. All project correspondence shall be located in this area.

2. Conference room of sufficient size to accommodate meetings of 20 individuals, minimum. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4’ x6’ tack board.

3. Drinking water and private toilet.

4. Coffee machine and supplies.

5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).

6. Lighting fixtures capable of maintaining average illumination of 20fc (215 lx) at desk height.)

C. Provide construction workers with portable toilet facilities on site.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

E. Equipment:

1. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

2. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

a. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

b. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Support Facilities Installation:

1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.

2. Maintain support facilities until Final Completion. Remove before Substantial Completion, except as indicated under “Field Offices General” of this article. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

IV. Construction Aids

A. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

B. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

C. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

V. Temporary Site Access and Parking

A. Materials:

1. Pavement: Comply with Washington State Department of Transportation standards for Hot-Mix Asphalt Paving.

2. Temporary Roads and Paved Areas: Construct and maintain temporary paved roads and paved areas adequate for construction operations. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust, and as requested by the Owner.

3. Recondition base after temporary use, including removing contaminated material, re-grading, proof rolling, compacting, and testing.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.
3. Parking: Temporary parking areas for construction personnel to be responsibility of Design-Builder to not impact adjacent operations.

VI. Temporary Barriers and Enclosures

A. Materials:

1. Chain-Link Fencing: Minimum 2-inch, 0.148" thick, galvanized steel, chain-link fabric fencing; minimum height as indicated on the RFP Diagrams high with galvanized steel pipe posts; minimum 2-3/8" OD line posts and 2-7/8" OD corner and pull posts, with galvanized barbed-wire top strand.
2. Portable Chain-Link Fencing: Minimum 2", 9-gage, galvanized steel, chain-link fabric fencing; minimum 6' high with galvanized steel pipe posts; minimum 2-3/8" OD line posts and 2-7/8" OD corner and pull posts, with 1-5/8" OD top and bottom rails. Provide concrete bases for supporting posts.

B. Security and Protection Facilities Installation:

1. Site Enclosure Fence:
   a. Extent of Fence: Install fencing around portions of the site determined by Design-Build Contractor to be sufficient to accommodate construction operations and maintain a secure environment for construction activities.
   b. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
2. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
3. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
4. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
   a. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

C. Keys: Design-Build Contractor is required to provide to SPSCC security department a key to all locks for temporary enclosures and lock-ups.

VII. Temporary Controls

A. Support Facilities Installation:

1. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   a. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   b. Remove snow and ice as required to minimize accumulations.

B. Security and Protection Facilities Installation:

1. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
2. Pest Control:
   a. Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion.
   b. Obtain extended warranty for Owner.
   c. Perform control operations lawfully, using environmentally safe materials.
   d. Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests.
   e. Prepare a report.

VIII. Construction Waste Management:

A. Definitions:

1. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
2. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
3. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
4. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
5. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
6. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

B. Performance Goals:

1. General: Develop waste management plan in accord with LEED Program that results in end-of-Project reduction in construction waste.
2. Salvage/Recycle Goals: Owner's goal is for the project to salvage and recycle as much nonhazardous demolition and construction waste as possible. It is not the intention of this RFP to reuse salvaged or recycled materials unless expressly indicated in the RFP project requirements. All salvaged and recycled materials become the responsibility of the Design-Builder.

C. Submittals:

1. Waste Management Plan: Include initial plan with LEED Program submittal at the time of the RFP. Submit (three) 3 copies of updated plan within 14 days of date established for commencement of the Construction Phase of Work.
2. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include separate reports for demolition and construction waste. Include the following information:
   a. Material category.
   b. Generation point of waste.
   c. Total quantities of the following:
      i. Total waste;
      ii. Quantity of waste salvaged and quantity recycled, estimated and actual;
      iii. Total quantity of waste recovered (salvaged plus recycled), both by weight and as a percentage of total waste.
      iv. Indicate quantities in tons.

D. Plan Implementation:

1. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
2. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
3. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   a. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
4. Conduct waste management operations to ensure minimum interference with roads, streets and other adjacent occupied and used facilities.
   a. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, etc.

E. Recycling Demolition and Construction Waste, General:

1. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall belong to the Design-Build Contractor.
2. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

F. Disposal of Waste:

1. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   a. Do not allow waste materials that are to be disposed of accumulate on-site.
   b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
2. Burning: Do not burn waste materials.
3. Disposal: Transport waste materials off Owner's property and legally dispose of them. Do not bury waste or surplus materials on Owner's property.

IX. Protection and Restoration of Property

A. The Contractor shall protect private or public property on or in the vicinity of the work site. The Contractor shall ensure that it is not removed, damaged, destroyed, or prevented from being used. Property includes land, utilities, trees, landscaping, improvements legally on the right of way, markers, monuments, buildings, structures, pipe, conduit, sewer or water lines, signs and other property of all description whether shown on the plans or not.

B. Pursuant to Chapter 19.122 of the Revised Code of Washington (RCW), the Contractor shall call a locator service for location of utilities. Utilities shall be protected from damage resulting from the work. All costs required to protect public and private utilities shall be provided at the Contractor's expense.

C. If the Contractor damages, destroys, or interferes with the use of such property, the Contractor shall restore it to the original condition. The Contractor shall also halt any interference with the property's use. If the Contractor refuses or does not respond immediately, the Contracting Agency may have such property restored by other means and subtract the cost from money that will be or is due the Contractor.

D. If the work requires removing or relocating a utility, the contract will assign the task to the Contractor or the utility owner. When assigned to the utility owner, and the work is not complete before the Contractor begins work, the Contractor shall immediately notify the Engineer in writing.

Z1040 Project Closeout

I. Cleaning

A. General: Provide cleaning throughout construction period and final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

1. Except where cleaning agents or methods are a specific requirement by manufacturers of products incorporated into the Work, use only cleaning products approved by the State.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

C. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project:

1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
4. Remove tools, construction equipment, machinery, and surplus material from Project site.
5. Remove snow and ice to provide safe access to building.
6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
8. Sweep concrete floors broom clean in unoccupied spaces.
9. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
10. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
11. Remove labels that are not permanent.
12. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    a. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

13. Wipe surfaces of mechanical and electrical equipment, vertical conveying equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
14. Replace parts subject to unusual operating conditions.
15. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    a. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
16. Clean ducts, blowers, and coils if units were operated without filters during construction.
17. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
18. Leave Project clean and ready for occupancy.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

II. Completion Inspections

A. Preliminary Procedures for Substantial Completion:

1. Prepare a list of incomplete items (punch list).
2. Advise Owner of pending insurance changeover requirements.
3. Submit to Owner specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs and photographic negatives, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems, including all security and fire alarm systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups not incorporated into the Work, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.

12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
15. Any restoration work must be performed prior to project closeout.

B. Inspection: Submit a written request for inspection for Substantial Completion. Upon completion of requirements listed above in Preliminary Procedures, Owner's Representative will either proceed with inspection or notify Design-Build Contractor of unfulfilled requirements. Owner's Representative will prepare the Certificate of Substantial Completion after inspection or will notify Design-Build Contractor of noncompliant items, either on Design-Build Contractor's list or additional items identified by Owner's Representative, which must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the incomplete or incorrect Work identified in previous on-site observation as required for substantial completion is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

C. Preliminary Procedures for Final Completion: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Design-Builder's Specification Division 1 Section "Payment Procedures."
2. Submit certified copy of the list of incomplete items (punch list) from Substantial Completion observations, endorsed and dated by Owner's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

D. Inspection: Submit a written request for final inspection for acceptance. Upon completion of all requirements listed above in Preliminary Procedures, Owner's Representative will proceed with inspection or notify Design-Build Contractor of unfulfilled requirements. Owner's Representative will prepare a final Certificate for Payment after inspection or will notify Design-Build Contractor of non-compliant items.

1. Re-inspection: Request re-inspection when the incomplete or incorrect Work identified in previous report is completed or corrected.

E. List of Incomplete Items (Punch List) Preparation: Submit three copies of list. List all incomplete or incorrect items. Include name and identification of each affected space and

area including, if necessary, areas disturbed by Design-Build Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first, and proceeding from lowest floor to highest floor to allow a linear route of inspection.
   a. Repeat for each individual building.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, (with compass directions), floors, equipment, and building systems.
3. Include the value of the items and the reason why the work is incomplete or incorrect.
4. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Owners contract number.
   d. Name of Owner's Representative.
   e. Name of Design-Build Contractor.
   f. Page number.

III. Closeout Submittals: Maintenance Manuals

A. Initial Submittal: Submit 1 draft copy of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Owner's Representative will return original copy of draft and mark whether general scope and content of manual are acceptable.
   1. Exception: Submit Mechanical, Electrical, and Special Systems Operation and Maintenance Manuals 30 days prior to the Commissioning Kick-off Meeting as defined in Design-Builder's Specification Division 1 Section "Commissioning".

B. Final Submittal: Submit one hard copy together with a CD-ROM copy of each manual in final form at least 14 days before confirmation for final completion directly to Owner.

C. Coordination: Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

D. Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.
   5. List of Warranties.

E. List of Systems and Subsystems: List systems by Specification section number. Include references to operation and maintenance manuals that contain information about each system.

F. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

G. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

H. List of Warranties: List of all warranties within O&M manuals by section number from the Design-Build specifications.

I. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Design-Build Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

J. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

K. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect/Engineer.
7. Cross-reference to related systems in other operation and maintenance manuals.

L. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Design-Build Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

M. Manual Components: Organize into sets of manageable size. Arrange contents by specification division and section. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Design-Build Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.

5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

N. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

O. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name, and arranged to match the manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

P. Product Information. Including the following as applicable.

1. Product name and model number. Include equipment tag or other identification of the equipment.

2. Manufacturer’s name

3. Material and chemical composition

4. Color, pattern, texture

5. Reordering information, and special instructions

Q. Manufacturers' Maintenance Documentation and Procedures: Manufacturers maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

R. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

S. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

T. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

U. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

V. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

W. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

X. Operation and Maintenance Manuals: Assemble two (2) complete sets of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system. In addition to the hard copy sets, we require an electronic copy as well.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

Y. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each

product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Design-Build Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

Z. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.

2. Comply with requirements of newly prepared Record Drawings in Design-Builder's Specification Division 1 Section "Project Record Documents."

AA. Energy Performance, assurance, monitoring, and verification documents and closeout requirements:

1. Submit two reviewed and approved (2) Final Commissioning Reports prepared by the Commissioning Authority (CxA) in electronic format and coordinate a Lessons Learned roundtable meeting with CxA, Design-Build Contractor, Owner's Representative, Owners designated operating personnel.

2. Submit two (2) Final Measurement and Verification (M&V) Plan documents in electronic format in accordance with LEED which includes M&V goals and objectives, updated energy end use description of utility, tenant and sub-metered points / values, metering descriptions, frequency and duration of metered values, management of metered data, automated reporting, post one (1) year calibration methodologies as specified by IPMVP, dashboard tracking tools and annual M&V reporting requirements (first year and subsequent annual reports), benchmarking and measurement metrics.

IV. Closeout Submittals: Project Record Documents

A. General:

1. Record Drawings: Submit to Owner's Representative copies of Record Drawings as follows:

a. Final Submittal: Submit two bound paper sets of Record CAD Drawings, one unbound mylar set of same, plus one CD-R copy of Record CAD Drawing files; annotate all contract modifications. Provide in acceptable electronic format to State.

2. Record Specifications: Submit two (2) copies of Project Manual in electronic format. Include Specifications and addenda. Annotate all contract modifications.

3. Record Prints: Maintain one set of blue-line or black-line white prints of the Contract Drawings and Shop Drawings.

a. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether

individual or entity is Installer, Subcontractor, or similar entity, to prepare the marked-up Record Prints.

i. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

ii. Accurately record information in an understandable drawing technique.

iii. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

iv. Owner's Representative may check for completeness of record documents at any time as condition of acceptance of Pay Application.

b. Content: Types of items requiring marking include, but are not limited to, the following:

i. Dimensional changes to Drawings.

ii. Revisions to details shown on Drawings.

iii. Depths of foundations below first floor. Locations and depths of underground utilities.

iv. Revisions to routing of piping and conduits.

v. Revisions to electrical circuitry.

vi. Actual equipment locations.

vii. Duct size and routing.

viii. Locations of concealed internal utilities.

ix. Any modifications to the Design-Build Contract Documents.

x. Field records for variable and concealed conditions.

xi. Record information on the Work that is shown only schematically.

c. Mark the Design-Build Drawings, Specifications and Shop Drawings completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

d. Mark record sets in a clear, legible manner, using red ink (no pencils); use other colors to distinguish between variations in separate categories of the work. Use 'whiteout' to erase errors.

e. Mark important additional information that was either shown schematically or omitted from original Drawings.

f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

4. Record CAD Drawings: Immediately before inspection for Substantial Completion, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

a. Format: DWG AutoCAD current version operating in Microsoft Windows operating system.

b. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.

5. Newly Prepared Record Drawings: Where Owner's Representative determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation, prepare additional drawings

a. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.

b. Consult Owner's Representative for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

c. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

i. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

ii. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.

iii. Identification: As follows:

1) Project name.

2) Date.

3) Owner's contract number.

4) Designation "PROJECT RECORD DRAWINGS."

5) Name of Architect and Engineers of Record.

6) Name of Design-Build Contractor.

B. Record Design-Build Specifications: Preparation: Mark Design-Build Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

5. Note related Change Orders and Record Drawings where applicable.

C. Miscellaneous Record Submittals: Assemble miscellaneous records required by Request for Proposal Elements other Design-Build Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

D. Recording And Maintenance:

1. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur.

2. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Design-Build Contract Documents used for construction. Do not use Project Record Documents for construction purposes.

E. Warranties:

1. Submit properly executed warranties to Owner before Final Completion.

2. Partial Occupancy: The Owner will not assume partial occupancy of any of the Work.

3. Organize warranty documents into an orderly sequence based on the table of contents of the Design-Build Project Manual and submit to Owner in 3-ring binders. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

a. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Design-Build Contractor.

4. Provide additional copies of each warranty to include in operation and maintenance manuals.

5. Roof warranty shall be at minimum twenty (20) years.

6. It's the owner's preference to carry extended warranty durations over standard for exterior envelope and other key systems in the building.

V. Training

A. Instruction Program:

1. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:

a. Motorized doors, including overhead coiling doors and automatic entrance doors.

b. Equipment, high density file storage equipment, projection screens, loading dock equipment, food-service equipment, and the like.

c. Fire-protection systems, including fire alarm and fire-extinguishing systems.

d. Intrusion detection systems.

e. Conveying systems, including wheelchair lifts.

f. Heat generation, including boilers, pumps, heating water distribution, and steam distribution piping.

g. Refrigeration systems, including chillers, cooling towers, condensers, pumps, and distribution piping.

h. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.

i. HVAC instrumentation and controls.

j. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies, and motor controls.

k. Packaged engine generators, including transfer switches.

l. Lighting equipment and controls.

m. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.

n. Motorized doors, including overhead coiling doors and automatic entrance doors.

o. Equipment, high density file storage equipment, projection screens, loading dock equipment, food-service equipment, and the like.

p. Fire-protection systems, including fire alarm and fire-extinguishing systems.

q. Intrusion detection systems.

r. Conveying systems, including wheelchair lifts.

s. Heat generation, including boilers, pumps, heating water distribution, and steam distribution piping.

t. Refrigeration systems, including chillers, cooling towers, condensers, pumps, and distribution piping.

u. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.

v. HVAC instrumentation and controls.

w. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies, and motor controls.

x. Packaged engine generators, including transfer switches.

y. Lighting equipment and controls.

z. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.

2. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

   a. Basis of System Design, Operational Requirements, and Criteria: Include the following:

      i. System, subsystem, and equipment descriptions.

      ii. Performance and design criteria if Contractor is delegated design responsibility.

      iii. Operating standards.

iv. Regulatory requirements.
v. Equipment function.
vi. Operating characteristics.
vii. Limiting conditions.
viii. Performance curves.

b. Documentation: Review the following items in detail:
   i. Emergency manuals.
   ii. Operations manuals.
   iii. Maintenance manuals.
   iv. Project Record Documents.
   v. Identification systems.
   vi. Warranties and bonds.
   vii. Maintenance service agreements and similar continuing commitments.

c. Emergencies: Include the following, as applicable:
   i. Instructions on meaning of warnings, trouble indications, and error messages.
   ii. Instructions on stopping.
   iii. Shutdown instructions for each type of emergency.
   iv. Operating instructions for conditions outside of normal operating limits.
   v. Sequences for electric or electronic systems.
   vi. Special operating instructions and procedures.

d. Operations: Include the following, as applicable:
   i. Startup procedures.
   ii. Equipment or system break-in procedures.
   iii. Routine and normal operating instructions.
   iv. Regulation and control procedures.
   v. Control sequences.
   vi. Safety procedures.
   vii. Instructions on stopping.
   viii. Normal shutdown instructions.
   ix. Operating procedures for emergencies.
   x. Operating procedures for system, subsystem, or equipment failure.
   xi. Seasonal and weekend operating instructions.
   xii. Required sequences for electric or electronic systems.
   xiii. Special operating instructions and procedures.

e. Adjustments: Include the following:
   i. Alignments.
   ii. Checking adjustments.
   iii. Noise and vibration adjustments.
   iv. Economy and efficiency adjustments.

f. Troubleshooting: Include the following:
   i. Diagnostic instructions.
   ii. Test and inspection procedures.

g. Maintenance: Include the following:
   i. Inspection procedures.
   ii. Types of cleaning agents to be used and methods of cleaning.
   iii. List of cleaning agents and methods of cleaning detrimental to product.
   iv. Procedures for routine cleaning
   v. Procedures for preventive maintenance.
   vi. Procedures for routine maintenance.
   vii. Instruction on use of special tools.

h. Repairs: Include the following:
   i. Diagnosis instructions.
   ii. Repair instructions.
   iii. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   iv. Instructions for identifying parts and components.
   v. Review of spare parts needed for operation and maintenance.

B. Preparation:
   1. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
   2. Set up instructional equipment at instruction location.

C. Instruction:
   1. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
   2. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
      a. Design-Builder will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
      b. Owner will furnish an instructor to describe Owner's operational philosophy.

c. Owner will furnish Contractor with names and positions of participants.

3. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

   a. Schedule training with Owner with at least seven days' advance notice.

4. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

5. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

D. Electronic Demonstration and Training Videos

1. General: Engage a qualified commercial photographer to record and provide electronic demonstration and training videos. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

   a. At beginning of each training module, record each chart containing learning objective and lesson outline.

2. Electronic Format: Provide high-quality electronic video available to owner on flash drive or downloaded to owner FTP site.

3. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

4. Narration: Describe scenes on videotape by either audio narration by microphone while videotape is recorded or by dubbing audio narration off-site after videotape is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.

5. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.