PART 1 - GENERAL

1.1 PROJECT DESCRIPTION

A. The Work of the Contract Documents can be summarized as follows:
   1. Existing ~2,152sf makerspace & classroom in Discovery Hall to be converted into one, large collaborative workspace. The scope of work includes but is not limited to interior demo, wall and ceiling framing, upgraded finishes, and reconfiguration of existing lighting, power, and ventilation systems.

1.2 GENERAL INFORMATION

A. Title of Contract Documents:
   1. University of Washington
      UW Bothell Discovery Hall 150/152 Renovation
      Project Number: 207478

B. Owner and A/E Defined:
   1. Owner:
      University of Washington
      Project Delivery Group
      Seattle, Washington 98195-2205
      Project Manager: Harry Fuller
      E-mail: hfuller1@uw.edu
      Phone: 206.419.8108
      Fax: N/A

      Owner’s Representative: The Owner shall designate, in writing, the Owner’s Representative for this Project during construction.

   2. A/E:
      Magellan Architects
      8383 158th Ave NE, Suite 280
      Redmond, WA 98052
      Representative: Clover Schuler
      E-mail: clover@magellanarchitects.com
      Phone: 425.941.9494
      Fax: N/A

   3. The Owner, the A/E, and various consultants hereinafter or otherwise listed shall be given access to the Work insofar as their interests are concerned.

C. A/E’s Sub-Consultants: The sub-consultants under contract with the A/E in preparation of the Contract Documents are:
   1. MEP:
      GLUMAC
      1601 Fifth Avenue, Suite 2210
      Seattle, WA 98101
Representative: Dana Troy  
E-mail: dtroy@glumac.com  
Phone: 206.262.8362  
Fax: N/A

D. Owner's Consultants: The consultants under contract with the Owner in preparation of the Contract Documents are:
1. Hazardous Materials:  
AECOM  
1111 Third Avenue Suite 1600  
Seattle, WA 98101

Representative: Aaron Heath  
E-mail: aaron.heath@aecom.com  
Phone: 360.350.2361  
Fax: N/A

1.3 SPECIAL CONDITIONS
A. Description of special conditions of the Work:
1. All deliveries to be at the Discovery Hall loading dock.
2. UW does not provide contractor parking. Coordinate with UW construction manager for permit at the expense of the contractor.
4. Coordinate with UW construction manager for access to adjacent spaces.
5. If a shutdown is required, shutdowns submitted to construction manager at least 21 days in advance of construction activities.
6. Contractor responsible for trash.

1.4 PROJECT NOTES
- These project notes are generic in nature. Verify with UW Bothell Facilities all construction requirements and construction administration responsibilities.
- Plumbing, electrical, mechanical & life safety shall be performed under the contract. All work shall be to code. Any information on these drawings are for reference and schematic design only.
- Verify building standards with UW Bothell Facilities when working in suites with non-building standards elements. Verify preferred detailing of these elements with UW Bothell Facilities.
- Verify all rules, general conditions and specialized building requirements with the UW Bothell Facilities.
- Where no building standards exist for materials called out as "building standard" on the plans, the contractor shall so advise the architect within ten (10) days of the contractor's receipt of the plans so that the architect may make alternative selections.
- Contractor shall verify all requirements of exact size and quantity of equipment furnished by the tenant, including requirements for mechanical and electrical services, and is responsible for all rough-in connections. Each subcontractor is responsible for any damage to adjacent work and shall repair said damage at their own expense.
• Fire/emergency systems include, but are not limited to, sprinkler modifications, fire extinguisher placement, audible alarms, smoke and heat detectors strobes, and exit sign placement.

• Contractor to provide all fire/emergency systems as required by all applicable codes. Fire/emergency systems include but not limited to sprinkler modifications, fire extinguishers, audible alarms, strobes, sprinklers, smoke and heat detectors, and exit signs.

• Any material used in construction shall meet current flame code regulations.

• All electrical, plumbing and mechanical material installations shall comply with the building shell standard specifications.

• The general contractor shall lay out the work in conformity with the requirements of contract documents and will be held responsible for proper establishment and maintenance of all lines and dimensions. Before doing any work, the general contractor shall verify all measurements and conditions at the site and notify the architect of any discrepancies.

• The contractors shall use dimensions only. Do not scale plans.

• Materials: all manufactured articles, materials and equipment shall be applied as recommended by manufacturers. All like materials used shall be of the same manufacturer and quality unless otherwise specified. All material, equipment and fixtures shall be code worthy with all proper jurisdiction approvals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

A. Regulated materials requiring special handling or abatement or protection during construction include hazardous materials and dangerous wastes. The Owner has investigated the Project Site and determined that the following regulated materials could be encountered during construction and may be impacted by the Work:
   1. Silica containing materials.

B. Related Sections: This Section and the following related Construction Documents were prepared by the Owner's environmental consultant:
   1. Section 02 80 00 “Facility Remediation”
   2. Appendix C - Environmental Assessment Report and or the Regulated Materials Survey Report

C. Owner's Environmental Consultant: The Owner's environmental consultant and the AHERA-certified designer for this Project is:
   Firm Name: AECOM Technical Services, Inc.
   Project Designer: Nicole Gladu
   Certification number: 180871
   Expiration date: 3/12/2022

D. Survey: The Owner has included in Appendix C of the Specifications a Regulated Materials “Good Faith” Survey report of the Project site area to be impacted by the Work. The Contractor shall ensure that a copy of this report is provided to all bidders and Subcontractors. A copy of this Survey must be retained and available for review on the Project site at all times throughout the duration of the Project.

1.2 GENERAL REQUIREMENTS

A. Laws, Regulations, Codes and Ordinances: The Contractor shall comply with all applicable laws, regulations, codes, and ordinances concerning the impact, removal, handling, storage, disposal, monitoring and employee protection against exposure or environmental protection against pollution, related to regulated materials requiring special handling or abatement or protection during construction.

B. Supervisory Authority: The Contractor is solely and completely responsible related to the Contractor’s supervisory authority over Subcontractors and personnel performing work of this Section.

C. Asbestos Awareness Training: The Contractor shall provide asbestos awareness training for its onsite employees and the onsite employees of the Contractor's Subcontractors (of any tier), in accordance with WAC 296-62-07722(6).

D. Access Restrictions: Access to various construction work areas by the general public, Subcontractors, and other individuals is restricted during certain hazardous materials work sequences, as specified in the Contract Documents. The Contractor shall coordinate the Work to facilitate access by Subcontractors while enforcing work area restrictions, and shall minimize disruption to building occupants and services.

E. HAZWOPER Training: The Contractor shall provide the appropriate level of HAZWOPER training for its onsite employees and the onsite employees of the Subcontractors (of any Tier)
when working on a federal or state-listed contaminated site in accordance with WAC 296-843-100.

F. Working Hours: No hazardous materials work shall occur when building users have access to work areas. All hazardous materials work shall be scheduled to occur in accordance with schedule requirements outlined elsewhere in the Contract Documents, and when work areas have been vacated by building users.

G. Emergency Contacts: Designated qualified representatives of the Contractor and specific hazardous materials Subcontractors are to be available on a 24-hour emergency basis for the duration of the Work. Contact information shall be provided to the Owner’s Representative for inclusion in the Project emergency contact list.

H. Submittals: Contractor shall review the scope of work requirements outlined in the Contract Documents and shall submit, and require all Subcontractors performing the work of handling or disposing of any regulated materials to submit, pertinent information required by the Contract Documents.

I. Regulated, Hazardous, and Dangerous Waste Disposal:
   1. The Owner's Environmental Consultant will conduct all testing required to designate the waste streams. The Contractor shall not remove any suspect wastes from the site until the test data has been reviewed by the UW EHS, Environmental Programs and they have made a determination on the waste designation.
   2. Transportation and disposal of all hazardous materials and dangerous wastes will be managed by, and the costs will be borne by, the Owner through the Owner's Environmental Programs Office. The Contractor shall be responsible for packaging and staging hazardous materials and dangerous wastes onsite, and for scheduling pickup through the Owner's Representative.
   3. Transportation and disposal of PCB-containing ballasts (2 parts per million or greater) and TSCA-Regulated PCB Waste (50 parts per million or greater) will be managed by, and the costs will be borne by, the Owner through the Owner’s UW EH&S Environmental Programs. The Contractor shall be responsible for packaging (in Owner-provided containers) and staging TSCA-Regulated wastes onsite, and for scheduling drop-off of containers and pick up through the Owner’s Representative.
   4. All other regulated waste materials (including asbestos-containing materials) must be disposed of by the Contractor at an Owner audited and approved disposal facility. Approved facilities can be viewed online at http://www.ehs.washington.edu/epowaste/disposalfaclist.pdf.
      a. Lead-containing materials and materials with lead-containing coatings, which are not designated as hazardous or dangerous waste, must be handled and disposed of as a regulated waste and cannot be recycled.
      1) Exception for metal items which contain lead: Metal items which contain lead (e.g., lead flashings, vent caps, lead painted metal) may be recycled at a scrap facility which is permitted to accept and process such materials.
      2) Building materials coated with lead-containing paints (including concrete) shall not be recycled.
      3) Brick and mortar waste streams that do not designate as a dangerous or hazardous waste may be recycled at a facility which is permitted to accept and process such materials.

J. Regulated Materials - Waste Manifests: Prior to Final Completion, the Contractor shall submit to the Owner copies of all transportation and disposal manifests, including signed landfill
receipts and chain-of-custody, for all regulated wastes disposed of by the Contractor during the course of the Project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor’s selection for products for use in the Work, and administrative procedures for handling requests for substitutions made before and after receipt of bid.

B. Owner’s forms referenced in this Section include (see Appendix A):
   1. Substitution Request Form

1.2 DEFINITIONS

A. Definitions used in this Section are not intended to negate the meaning of other terms used in the Contract Documents.
   1. “Products” are items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the Project or taken from previously purchased stock.
   2. “Named Products” are products identified by use of the manufacturer’s name for a product, including such items as a make or model designation, as recorded in the most recent published product literature as of the date of the Contract Documents.
   3. “Materials” are products that must be cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
   4. “Equipment” is a product with operational parts, whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

1.3 QUALITY ASSURANCE

A. Source Limitations: Provide products of same kind, to fullest extent possible, from a single source.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use (on the Project) the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Nameplates: Except for labels required by Authorities Having Jurisdiction (AHJ), do not attach or imprint manufacturer’s or producer’s nameplates, trademarks or operating data on surfaces exposed to view in occupied spaces or on the building exterior.
   1. Labels: Locate required product labels and stamps on a concealed surface, or where required by AHJ for observation after installation, on an accessible surface that is not conspicuous.

1.4 PRODUCT SELECTION

A. General Product Requirements: Unless otherwise indicated, provide products that comply with the Contract Documents and that are undamaged and unused at the time of installation.
   1. Provide products complete with all accessories, trim, finish, safety guards and other devices and with details needed for a complete installation for the intended use and effect.
   2. Where available, provide standard products of a type and manufacturer used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations. Procedures governing product selection include the following:
1. Performance Specifications: Performance specifications may be one of the following:
   a. One or more named reference(s) with no accompanying conditioning language such as “or approved equal” or “no substitutions”; or
   b. No named reference is specified, and requirements are specified by means of any of the following:
      1) Descriptive requirements
      2) Design requirements
      3) Performance requirements
      4) Regulatory requirements and/or industry standards
2. References to equipment, material, articles or patented processes by trade name, manufacturer, make or catalog number, are presumed to set a standard of quality so as to encourage competition. The term “equal” is presumed and need not be repeated in the Specifications. Where Specifications set a standard of quality, provide product options complying with or exceeding the provisions of the Contract Documents, and which are recommended by a manufacturer for the applications indicated. No Substitution Request is required. However, Owner may request, and Contractor shall provide, documentation of the manufacturer's recommendations for a particular product application.
3. Closed Proprietary Specifications: Products by one or more manufacturers are specified, and the specification section includes the term “no substitution(s),” “no other(s),” or “no exceptions.” No other product options will be accepted. Provide products and work as specified.
4. Open Proprietary Specifications: Products by one or more manufacturers are specified, and the specification section includes the term “or approved equal,” or “other acceptable.” Submit the Substitution Request Form for other products to Owner under the provisions of this Section.
5. Visual Matching: Where matching an established sample is required, the Owner’s decision will be final on whether a proposed product matches satisfactorily.
   a. Where there is no product available within the specified product category which matches satisfactorily and also complies with other specified requirements, the contractor shall comply with the provisions of the Contract Documents concerning substitutions for the selection of a matching product in another product category.
6. Visual Selection: Where specified product requirements include the phrase “...as selected from the manufacturer’s standard colors, patterns, textures...” or similar phrases, select a product and manufacturer that complies with other specified requirements. Owner will select the color, patterns and texture from the product line selected.

1.5 PRODUCT SUBSTITUTION

A. General:
   1. No substitution request will be considered unless submitted in accordance with the requirements of this Section.
   2. If a bidder or Contractor desires approval of some material or product other than that specified by the Contract Documents, it must submit a written request for approval of the proposed substitute item to the Owner in accordance with the following requirements:
      a. All requests must be made on the Owner’s Substitution Request Form
      b. After receipt of bid, substitution requests shall be prepared, transmitted, and processed in accordance with Section 01 33 00 “Submittal Procedures.”
   3. Final decision as to whether an item is an equal or acceptable substitution rests solely with the Owner.

B. Substitution Requests: Every substitution request must state whether the item offered is equal or superior to the specified product. The substitute material or product must be accompanied by its reference in the Contract Documents and complete catalog, technical and other information. If applicable, include samples showing comparison of physical and other pertinent characteristics as required to establish equivalence of acceptability for the proposed
application. Where specific test results are required by the Contract Documents, the comparison data for the proposed item shall be based upon the same test methods as those specified, or they shall be correlated to clearly demonstrate comparability. The same warranty of the Work described for the specified product is required for the substitution.

C. During Bid Period:
   1. Submit Substitution Request Form prior to the date identified in Section 00 21 00 “Instructions to Bidders.”
   2. Bidders will be notified by addendum of products accepted in addition to those specified. NO OTHER FORM OF APPROVAL, INCLUDING VERBAL OR IMPLIED, IS ACCEPTABLE AS AN INDICATOR OF ACCEPTED SUBSTITUTION REQUESTS.

D. After Receipt of Bid: Contractor shall indicate one or more reasons why a product substitution is required with a Substitution Request Form. Owner will notify Contractor in writing of decision to accept or reject the Substitution Request. Substitution Requests will not be considered except for the following reasons, which must be substantiated by the Contractor:
   1. Unavailability: Specified item has been discontinued or is unavailable in time to meet Construction Schedule through no fault of the Contractor or Subcontractor.
   2. Unsuitability: Subsequent information discloses the specified item as unsuitable, inappropriate, or unable to perform properly or fit the designated space.
   3. Regulatory Requirements: A substitution is required to comply with code interpretations by AHJ or insurance regulations.
   4. Warranty: A manufacturer or fabricator declares the specified item to be unsuitable for the use intended or refuses to certify or warrant the performance of the specified item for the Project.
   5. Owner’s Benefit: In the judgment of Contractor, acceptance of the proposed substitution is clearly in Owner’s best interest because of cost, quality, or other consideration.

E. Coordination: In making a Substitution Request, the Contractor certifies that it will coordinate all Subcontractor work required by the substitution and waives all claims for additional costs and/or time which subsequently become apparent as a consequence of the substitution.

F. Re-design: At the Owner’s sole discretion, the Contractor shall bear all Owner costs related to the substitution, including costs of A/E’s services for investigation, evaluation and re-design, if necessary.

G. Owner will not consider:
   1. Substitutions, if they are indicated or implied on Shop Drawings or other Project data submittals;
   2. Substitutions which, if accepted, will require substantial revisions of Contract Documents; or
   3. Substitution Request Forms which do not provide adequate or clearly defined information for complete and timely appraisal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the administrative and procedural requirements for executing a change in the Work as herein specified and further described in Part 7 of the General Conditions.

B. Owner’s forms references in this Section include (see Appendix A):
   1. Change Order Proposal;
   2. Change Order Transmittal;
   3. COP General Contractor Breakdown Summary;
   4. COP Subcontractor Breakdown Summary;
   5. COP Cost Breakdown;
   6. COP Wage Rates; and
   7. COP Equipment Rates.

1.2 PRELIMINARY REQUIREMENTS:

A. Prior to submitting the Contractor’s first Change Order Request (COR), or responding to the first Change Order Proposal (COP), the Contractor shall submit a breakdown of journeyman and apprentice, where applicable, wage rates using the Owner’s COP Wage Rates form. The breakdown shall show:
   1. Basic wage rate (based on L&I Intent to Pay Prevailing Wages or union agreement);
   2. Fringe Package (based on L&I Intent to Pay Prevailing Wages or union agreement);
   3. FUI (Federal Unemployment Insurance);
   4. FICA (Federal Insurance Compensation Act);
   5. Medicare;
   6. SUI (State Unemployment Compensation Act);
   7. WC (Workers Compensation).

B. Contractor shall submit verification of the above rates, if requested by Owner’s Representative.

C. Prior to submitting Contractor’s first COR or responding to Owner’s first COP that involves equipment owned by the Contractor, the Contractor shall submit a list of all equipment anticipated to be used on the Project. Contractor shall provide the hourly rate based on the Equipment Watch Rental Rate Blue Book and as modified by the current AGC/WSDOT Agreement or other sources as referenced in the General Conditions. The Contractor shall use the Owner’s COP Equipment Rates form to compute the equipment rate.

1.3 CHANGE ORDER PROCEDURES

A. Owner Change Order Proposal (COP): Changes may be initiated by Owner through a Publics Work Change Order Proposal form submitted to the Contractor. Such a request is for information and pricing only and is not an instruction to execute changes or to stop work in progress, unless issued as a Field Order.
   1. The COP will include:
      a. A detailed description of changes, products, and location of modification in Project and a statement as to whether overtime work is authorized; and
      b. Supplementary or revised Drawings or Specifications.
   2. An updated Construction Progress Schedule may be requested if the COP impacts the existing Construction Progress Schedule.
B. Contractor Change Order Request (COR): The Contractor shall initiate changes by submitting written correspondence, in letter format, signed and dated to the Owner's Representative requesting a Change Order Proposal. The letter shall include:
   1. Description of proposed changes;
   2. Reason for making changes;
   3. A specific period of time during which requested price will be considered valid;
   4. Actions required by Owner;
   5. Effect on Contract Sum and Contract Time;
   6. Documentation consistent with the requirements of Part 7.02 and/or 7.03 of the General Conditions supporting any change in Contract Sum or Contract Time, as appropriate;
   7. Statement of why proposed change is not covered in Contract Documents; and
   8. Date the Work is to be completed.

C. Field Order: In situations where time is of the essence or an emergency condition exists, the Owner's Representative may directly order a change to the Work by a written Field Order signed by Owner's Representative. Field Orders will only be issued on an agreed upon not-to-exceed cost basis, either lump sum or time and materials.

D. Change Order Pricing:
   1. The cost of the change shall be marked-up in accordance with General Conditions and Modifications to the General Conditions. NO ADDITIONAL MARK-UPS SHALL BE ALLOWED.
   2. Contractor shall provide all backup pricing documentation for a change on the following forms (THese FORMS SHALL ALSO BE THE ONLY ACCEPTABLE DOCUMENTATION FOR ALL SUBCONTRACTORS.):
      a. COP General Contractor Breakdown Summary
      b. COP Subcontractor Breakdown Summary
      c. COP Cost Breakdown
   3. Owner's Representative may require Contractor to provide certified payroll.
   4. Provide all other supporting documentation as required to substantiate the requested costs such as invoices for rental equipment and freight cost. Total cost and time shall be brought forward to the COP form and signed and dated by Contractor.

E. Change Order Authorization:
   1. A/E recommendation of COP acceptance to Owner is indicated by A/E's signature.
   2. Upon signature and execution by Owner, the Change Order Proposal becomes a Change Order altering the Contract Sum and/or Contract Time, as indicated.
   3. Contractor may only request payment for changes in the Work against an approved Change Order.
   4. If Owner disapproves the Change Order Proposal, the reason for disapproval will be stated. A request for a revised proposal or cancellation of the proposal will be shown and returned to the Contractor.

F. Correlation with Contractor's Submittals:
   1. Application of Payment forms shall record each Change Order as a separate item of work (see Section 01 29 76, “Progress Payment Procedures”).
   2. Revise Construction Progress Schedule to reflect changes in Contract Time.
   3. Upon completion of Change Order work, record pertinent modifications in the Project Record documents.

G. Distribution:
   1. Upon authorization of a Change Order, Owner will transmit one (1) signed copy to Contractor.
PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the administrative and procedural requirements for Contractor progress payment and release of retainage as herein specified and further described in Part 6 of the General Conditions.

B. Owner’s forms referenced in this Section include (see Appendix A):
   1. Application and Certificate for Payment on Contract (Application for Payment)
   2. Construction Invoice Voucher
   3. Retainage Invoice Voucher
   4. Monthly Subcontractors List and Certifications
   5. Certificate of Payment of Labor and Materials

1.2 PREREQUISITES FOR FIRST APPLICATION FOR PAYMENT

A. Progress Schedule: Submit and receive approval of the “preliminary” Progress Schedule.

B. Prevailing Wage Forms: Submit Statement of Intent to Pay Prevailing Wages form, approved by the Department of Labor and Industries, prior to commencing the Work (see Part 5.04B of the General Conditions). The Owner will not make payment on an Application for Payment until the Contractor has filed with the Owner an approved copy of the form for the Contractor and every Subcontractor of every tier that performed work during the payment period and are included in an Application for Payment. The form shall list every classification of laborer, worker, or mechanic employed by the Contractor and its Subcontractors. THERE ARE NO EXCEPTIONS TO THIS REQUIREMENT.
   1. The website address link to the prevailing wage forms is included in Appendix A.
   2. The website address link to the “Washington State Prevailing Wage Rates for Public Works Contracts” is included in Appendix B.

C. Schedule of Values: Before submitting the first Application for Payment, submit and receive approval of the Schedule of Values allocating the detail of the Contract Award Amount, in a breakdown acceptable to the Owner, which shall be documented on the Application for Payment. The approved Schedule of Values will be used by the Owner as the basis for progress payments. PAYMENT FOR WORK WILL ONLY BE MADE FOR, AND IN ACCORDANCE WITH, THOSE ITEMS INCLUDED IN THE APPROVED SCHEDULE OF VALUES.
   1. Format: On 8-1/2” x 11” paper
   2. Content: Include as a minimum the following:
      a. Individual Items of Work.
      b. Major cost items, which are not directly a cost of actual work-in-place, shall be shown as separate items in the Schedule of Values, and shall include the following items:
         1) General Conditions, mobilization, and distinct temporary facilities shall not exceed 3% of the Contract Award Amount.
         2) Section 01 77 00 “Closeout Procedures” shall not be less than 4% of the Contract Award Amount.
         3) Preparation and submittal to Owner of Construction Baseline Schedule and Submittal Schedule shall not be less than 1/4% of the Contract Award Amount.
4) Preparation of monthly Progress Schedule updates shall not be less than 1/4% of the Contract Award Amount, with the value of each update apportioned equally.

c. For items on which progress payments will be requested for materials or equipment purchased/fabricated/delivered, but not yet installed, show "initial value" for payment request and "value added" for subsequent stage(s) of completion on that unit of work.

d. For each line item of installed value exceeding 10% of Contract Award Amount, show breakdown by major products or operations under each item.

e. Breakdown major work efforts by floor or phases or systems as appropriate for ease of review and confirmation of Work completed.

f. Breakdown mechanical and electrical systems or phases with material and labor as separate items.

3. Round figures to nearest dollar amount.

4. Make sum of total scheduled costs equal to the Contract Award Amount. Do not include State of Washington sales tax.

5. Coordinate items of the Schedule of Values so that there is a corresponding item in the Progress Schedule.

6. Revise as requested by Owner.

D. Subcontractors List: Submit a list of all Subcontractors and major material suppliers consistent with Part 5.20B of the General Conditions.

E. Retainage: Submit instructions for the disposition of retainage funds.

1. In accordance with Part 6.04B of the General Conditions and Chapter 60.28 RCW, the Owner shall reserve a Contract retainage in an amount not-to-exceed 5% of the moneys earned by the Contractor as a trust fund for the protection and payment of:

   a. The claims of any person arising under the Contract Documents;

   b. The State of Washington with respect to taxes imposed pursuant to Titles 50, 51, and 82 RCW which may be due from the Contractor, and;

   c. The Owner for claims it may have against the Contractor.

2. Contractor's written instructions should be addressed to the University of Washington, UW Facilities, Project Delivery Group, Accounting Department, Box 352205, Seattle, Washington 98195 - 2205.

3. At the option of the Contractor, the moneys reserved by the Owner shall be:

   a. Retained in a fund by the Owner; or

   b. Bonded by the Contractor (if approved by Owner) for all of the Contract retainage in a form acceptable to the Owner; or

   c. Deposited by the Owner in an Owner's interest bearing account in a bank, mutual savings bank, or savings and loan association; or

   d. Placed in escrow with a bank or trust company by the Owner.

   1) Escrow Agent: If the retained funds are to be placed in escrow, Contractor will select the escrow agent, subject to approval by the Owner. The selected agent must be a bank or trust company in the State of Washington.

   2) Escrow Agreement: Pursuant to electing the escrow option, an escrow agreement shall be executed by Contractor, Owner, and bank. A completed and signed escrow agreement in a form acceptable to the Owner must be on file with the Owner for payment before the Contractor's first Application for Payment is processed.

   3) Escrow Payments: As each progress estimate is presented for payment, Contractor shall make a voucher request for the retained funds that are to be placed in escrow. Such requests should be prepared on the Owner's Retainage Invoice Voucher form and submitted with the related Application for Payment. Upon receiving a retainage invoice, the Owner will issue a check payable to the
Contractor and the bank jointly. Such checks will be mailed to the bank and the
Contractor will receive copies of check transmittal letters.

4) Escrow Investments: The bank shall invest the retained funds in bonds and
other securities selected by the Contractor from the following list approved by
the Owner:
   a) Bills, certificates, notes or bonds of the United States;
   b) Other obligations of the United States or its agencies;
   c) Obligations of any corporation wholly owned by the government of the
      United States;
   d) Indebtedness of the Federal National Mortgage Association;
   e) Time deposits in commercial banks, mutual savings banks, and savings
      and loan associations in the State of Washington;
   f) Deposits in savings accounts in commercial banks, mutual savings banks,
      and savings and loan associations in the State of Washington.

5) The investments selected must mature on or prior to the date set for
Substantial Completion, including extensions thereof or no later than forty five
(45) days following the Final Acceptance of the Work. Interest on such
investments shall be paid to the Contractor by the escrow agent as it accrues.

6) Escrow Costs and Fees: All escrow costs and fees shall be paid by the
Contractor, in accordance with the escrow agreement.

1.3 DRAFT APPLICATION FOR PAYMENT

A. Submit a draft Application for Payment for Owner’s review and comment. The cutoff date shall
be five (5) days prior to actual application or as otherwise agreed. Include projected costs to
the end of the month in the pay request. Provide the following documents (draft documents
may be marked by hand):
      a. Mechanical and electrical Subcontractor’s draft monthly payment requests shall be
         submitted, for review and comment, prior to the A/E’s and Owner’s review of the
         Contractor’s draft monthly Application for Payment.
      b. List Change Orders approved prior to the submission date individually (last on the
         form). Use Owner’s Change Order designation and description (similar to an original
         component item of work). DO NOT BILL FOR CHANGE ORDER PROPOSALS
         UNTIL AN APPROVED CHANGE ORDER HAS BEEN RECEIVED FROM THE
         OWNER INCORPORATING THE PROPOSAL.
   3. Stored Materials: The Contractor is solely responsible for the stored materials. Requests
      for payment on materials stored shall be for materials properly stored on the Project site.
      In addition to the requirements of the General Conditions, payment for materials stored
      off-site shall be at the sole option of the Owner and comply with conditions stipulated by
      the Owner. These conditions may include, but are not limited to:
      a. Provide supplier invoice
      b. Provide insurance or a bond to cover the total loss of material and time impact to
         Project
   5. Monthly Safety Report

B. The A/E and/or Owner and the Contractor shall review the Project Record for completeness
   and accuracy.

1.4 APPLICATION FOR PAYMENT

A. The Contractor shall submit an electronic copy of the Application for Payment to the Owner
after responding to the Owner’s comments to the draft application.
B. The Contractor is cautioned to carefully check all extensions, totals, and required information for accuracy before submittal.

C. Applications are to be signed by a responsible officer of the Contractor.

D. The Application for Payment shall include the following Owner forms and documents:
   1. Application and Certificate for Payment on Contract
   2. Construction Invoice Voucher (for the total amount due)
   3. Retainage Invoice Voucher (for the retainage amount)
   4. Monthly Subcontractors List and Certifications
   5. Invoices for materials stored off-site

E. Contractor, subcontractor, or employer shall file a copy of its certified payroll records directly with the Department of Labor and Industries online system at least once per month.

F. When the Owner’s Representative and A/E find the Application for Payment properly completed and correct, they will sign and transmit all copies of the Application for Payment to the Owner’s accounting office for processing.

G. If the A/E or Owner’s Representative find the Application for Payment improperly or incorrectly executed, an annotated copy will be returned for a new submittal.

H. Only minor corrections are allowed on the original, with approval of Owner.

1.5 PRIOR TO FINAL APPLICATION FOR PAYMENT

A. The final Application for Payment request will be accepted for processing only after providing satisfactory completion of the following:
   1. Application and Certificate for Payment on Contract
   2. Construction Invoice Voucher (for the total amount due)
   3. Retainage Invoice Voucher (for the retainage amount)
   4. Monthly Subcontractors List and Certifications
   5. Invoices for materials stored off-site
   6. Final Completion procedures per Section 01 77 00 “Closeout Procedures”
   7. Final Schedule of Values “Contract Sum”
   8. Monthly Safety Report

1.6 RELEASE OF RETAINAGE

A. Pursuant to the completion of Work performed in accordance with the Public Works Contract and Final Acceptance by the Owner, the following requirements must be satisfied prior to the release of retained Contract funds.
   1. “Notice of Completion of Public Works Contract (REV 31 0020)”: This Department of Revenue form will be completed by the Owner, establishing the date of Final Acceptance. A copy of the notice will be e-mailed to the Department of Revenue, the Employment Security Department, the Department of Labor and Industries, and a copy will be transmitted to the Contractor.
   2. “Certificate of Payment of State Excise Taxes by Public Works Contractor (REV 31 0028)”: Following receipt of the Owner’s Notice of Completion of Public Works Contract form and after determining that all taxes, interest and penalties due from Contractor have been paid, the Department of Revenue will issue this certificate to Owner, thereby notifying the Owner that it has no objection to the release of retainage to the Contractor.
   3. “Certificate of Payment of Contributions, Penalties and Interest on Public Work Contract (EMS 8449 760)”: Upon receiving a copy of the Owner’s Notice of Completion of Public
Works Contract form from the Department of Revenue and determining that the
Contractor is in compliance with the provisions of the Employment Security Act, the
Employment Security Department will issue this certificate to Owner, thereby notifying the
Owner that it has no objection to the release of retainage to the Contractor.

4. Upon receiving a copy of the Owner’s Notice of Completion of Public Works Contract
form and determining that the Contractor is in compliance with the provisions of Chapter
51 RCW for payment of industrial insurance premiums, the Department of Labor and
Industries will issue a certificate for the Owner, thereby notifying the Owner that it has no
objection to the release of retainage to the Contractor.

5. “Affidavit of Wages Paid on Public Works Contract” (F700-007-000): An Affidavit of
Wages Paid, for the Contractor, each Subcontractor, and each sub-tier Subcontractor,
approved by the Industrial Statistician of the Department of Labor and Industries, must be
submitted by the Contractor to the Owner. Contractors and Subcontractors may file the
Affidavit of Wages Paid either on-line at the website link provided in Appendix A or by
completing the forms manually.

6. “Certificate of Payment of Labor and Materials”: This Owner’s form shall be completed by
the Contractor and returned to the Owner. If the only exception to full payment to all
Subcontractors is retainage owed to Subcontractors, the appropriate box on the form
should be checked.

7. Invoice Voucher: If the retained funds are on deposit in Owner accounts, the Contractor
shall prepare a Retainage Invoice Voucher for the total amount retained and submit to
the Owner for payment. If these funds have been placed in escrow at the direction of
Contractor, no further invoice is required.

B. Retainage will be paid by the Owner to the Contractor sixty (60) days following the published
date of Final Acceptance, contingent upon the Contractor’s compliance with provisions of
public works statutes and as stated above. If there are either unpaid taxes or unsatisfied
claims of lien against the retained percentage, disbursement of retainage funds will be made
in accordance with State of Washington law.

C. Address all transmittal of retainage documents to the Owner’s Representative at: University of
Washington, UW Facilities, Project Delivery Group, Box 352205, Seattle, Washington, 98195 -
2205.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for project management and coordination during construction, in addition to the requirements specified elsewhere in the Contract Documents.

B. Owner’s forms referenced in this Section include (see Appendix A):
   1. Request for Information (RFI)
   2. Non-Conformance Report (NCR)

C. The Owner intends to utilize an internet-based construction management system (CMS) for communications and documents controls with the Contractor and A/E on this Project (see Section 01 35 00 “Electronic Controls”).

1.2 GENERAL COMMUNICATION

A. The Owner shall designate, in writing, the Owner’s Representative for this Project.

B. All verbal communications between Owner, A/E, and Contractor shall be for clarification and collaboration purposes and are not binding unless issued in writing through the Owner’s Representative.

C. Contractor communications by and with A/E’s consultants shall be through the A/E, and A/E’s communications by and with the Contractor’s Subcontractors shall be through the Contractor.

D. In case of an emergency:
   1. Contact the Owner’s Representative; and
   2. Follow emergency procedures in accordance with Section 01 35 23 “Owner Safety Requirements.”

1.3 CORRESPONDENCE

A. Address all correspondence to Owner’s Representative.

B. All correspondence to and from Contractor will be routed through the Owner’s Representative.

1.4 CONTRACTOR REQUEST FOR INFORMATION

A. When field conditions or Contract Documents require clarification or verification by the A/E or A/E’s consultants, a written RFI is to be submitted per the following:
   1. Identify the nature and location of each requested clarification and/or verification using the RFI form. Provide as a minimum the following information:
      a. Project name and number
      b. Date
      c. Date response required by
      d. RFI number
      e. Subject
      f. Initiator of the question
      g. Indication of costs, if known
      h. Location on site
      i. Contract Drawing reference
j. Contract Specification section and paragraph reference
k. Descriptive text

2. Number each RFI sequentially beginning with #001. Submit only one question per RFI. Also, RFI’s shall be categorized as ARCH, MECH, ELEC, etc.

1.5 CLARIFICATIONS

A. Clarifications may be discussed with A/E, or A/E’s consultants, with concurrence of Owner. Following the discussion, the Contractor shall document on an RFI form any agreed upon modification which does not require a Change Order. The A/E may provide supplemental information to clarify the Contract Documents. RFIs and A/E supplemental information (ASI) which modify or change the Work will be authorized only by Change Order.

1.6 NON-CONFORMANCE REPORT

A. Non-Conforming Work: Work found defective, or in any way not in accordance with the requirements of the Contract Documents, is defined as non-conforming Work.

B. Procedure: If, after an oral discussion or written notification, the Contractor fails to correct Work that is found defective or not in accordance with the Contract Documents, the Owner will issue a Non-Conformance Report (NCR). Upon receipt of an NCR, the Contractor shall take immediate action to resolve the Work to the Owner's satisfaction, or remove and replace with conforming Work at Contractor's expense and with no increase in Contract Time. Corrective actions for non-conforming Work shall be discussed at construction progress meetings and be completed no later than prior to Final Completion.

1. Where non-conforming Work requires re-design by the A/E, such re-design costs shall be borne by the Contractor.

1.7 COORDINATION

A. General Coordination:

1. The Contractor shall be in charge of this Contract and the Project, as well as directing and scheduling of all Work. Final responsibility for performance, interface, and completion of the Project shall be the Contractor's.

a. Anticipate interrelationship of all Subcontractors and their relationship with the total Work.

b. Resolve differences or disputes between Subcontractors and materials suppliers concerning coordination, interference, or extent of the Work. Contractor's decisions, if consistent with Contract Document requirements, shall be final.

2. Cooperation with other contractors during the term of this Project may be required within the building or other adjacent locations to the construction limits of this Project. The Contractor is to cooperate with the Owner in coordination of all work to prevent impact to this or other Owner sponsored construction projects.

3. Cooperation with building occupants may be required when scheduling construction activities that create excessive noise or structure-borne vibration. The Contractor is to cooperate with the Owner in coordination of all work to minimize these impacts to the Owner's operations (see Section 01 50 00 “Temporary Facilities and Controls”).

B. Special Coordination:

1. The Contractor is responsible for receiving, unloading, storage and handling of Owner Furnished Contractor Installed (OFCI) items from the time of receipt through Substantial Completion.

a. The Contractor is responsible for protecting OFCI and Owner Existing Contractor Installed (OECI) items from damage, such as: damage from exposure to the elements; or from damage to a warranty due to Contractor’s improper installation
and testing. The costs to repair or replace items damaged while in the Contractor's possession shall be borne by the Contractor.

1) The Contractor shall consult with the Owner to determine the warranty requirements of OFCI and OECI items.

C. Mechanical and Electrical Coordination:
   1. Resolve all tight or restricted conditions involving work of various sections in advance of installation.
   2. Coordinate the Work of all sections to ensure that all fixtures, devices, switches, outlets, ducts, pipes, and similar items can be installed as shown.

D. Job Site Field Measurements and Templates:
   1. Obtain field measurements required for accurate fabrication and installation of work included in the Contract Documents. Exact measurements are the Contractor's responsibility.
   2. Furnish or obtain templates, patterns, and setting instructions as required for installation of all work. Verify in field.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for meetings during construction in addition to requirements specified elsewhere in the Contract Documents.

B. Contractor and Subcontractor representatives attending meetings must be qualified and authorized to act on behalf of their firms.

C. The Owner will utilize an internet-based construction management system (CMS) for communications and documents controls with the Contractor and A/E on this Project (see Section 01 35 00 “Electronic Communications”).
   1. Meeting minutes, Contractor construction activity data and work plans, A/E field reports and other such communications shall be distributed electronically by e-mail.

D. Related Sections:
   1. Section 01 32 16 “Construction Progress Schedule"

1.2 PRECONSTRUCTION MEETING

A. The Owner will schedule a preconstruction meeting to be held prior to the Contractor mobilizing and beginning any Work. This meeting will review Contract administration requirements and mobilization procedures.

B. Meeting location: To be determined

C. Participants shall include:
   1. Contractor’s Project Manager, Superintendent, CQC Representative, Safety and Health Officer, and for projects with LEED requirements, LEED Coordinator;
   2. Owner’s Representative, Project Manager, and for projects with LEED requirements, the Owner’s Sustainability Manager;
   3. A/E and the A/E’s sub-consultants, as appropriate;
   4. Owner’s consultants, as appropriate; and
   5. Others, including the Contractor’s major Subcontractors as appropriate.

D. Owner’s Representative will: Administer the meeting

E. A/E will: Record and distribute copies of the minutes within seven (7) days of the meeting to all meeting participants.

F. Agenda:
   1. The Work including, but not limited to:
      a. Schedule and phasing requirements
      b. Contractor’s use of premises
      c. Special conditions and coordination
   2. Communications including, but not limited to:
      a. Chain and persons authorized to direct changes
      b. Requests for Information (RFI), field decisions, and clarifications
      c. Non-Conformance Reports
      d. Hazard communication
      e. Project meetings
   3. Contractor’s “Site Specific Safety Plan"
4. Administrative and procedural requirements including, but not limited to:
   a. Contract modification
   b. Progress payment
   c. Submittals - including Contractor’s Progress Schedule
   d. Electronic communications
5. Project LEED requirements and documentation, if any
6. Testing and inspection
7. Contractor quality control
8. Temporary facilities and controls including, but not limited to:
   a. Deliveries and storage
   b. Temporary utilities and enclosures
   c. Security procedures
   d. Noise and vibration control
   e. Cutting, patching, and field engineering
   f. Utility shutdowns
   g. Contractor parking
   h. Housekeeping and waste management
   i. Infection control - for medical facilities projects
9. Closeout procedures - including Project Record requirements
10. Other information as appropriate

G. Contractor shall conduct a like meeting, covering the same body of information, with each Subcontractor’s project manager and foreman supervising the Work prior to the performance of any work on-site by that Subcontractor.

1. Provide Owner copies of meeting minutes prepared by the Contractor with each Subcontractor, when requested by Owner.

1.3 CONSTRUCTION PROGRESS MEETINGS

A. Progress meetings shall occur weekly until Substantial Completion has been achieved.

B. Meeting location: To be determined

C. Participants shall include:
   1. Contractor’s Project Manager, Superintendent, CQC Representative, and Safety and Health Officer as appropriate;
   2. Owner’s Representative and Project Manager;
   3. A/E and the A/E’s sub-consultants, as appropriate; and
   4. Others, including the Owner’s consultants, as appropriate.

D. Owner’s Representative will: Administer the meeting

E. Contractor shall: Provide schedules, logs and other construction activity data to support the issues discussed at the meeting.

F. A/E will: Record and distribute copies of the minutes prior to the next progress meeting to all meeting participants and provide copies at each meeting.

G. Agenda:
   1. Review and approve the minutes of the previous meeting noting exceptions, if any
   2. Review the progress of the Work since the previous meeting
   3. Review the Short Interval Schedule and work plans for progress during the period
      a. Identify pending meetings
      b. Discuss safety activities and job hazards analysis
4. Discuss field observations, problems, and conflicts
   a. Identify problems impeding the construction Progress Schedule
5. Review Quality Control
   a. Non-Conformance Reports - discuss corrective Work actions
   b. Infection control – for medical center projects
6. Review the Submittal Schedule and RFI's - present methods to expedite as required
7. Review off-site fabrication and delivery schedules
8. Review proposed changes in the Work and substitution requests for:
   a. Timely processing
   b. Effect on the Progress Schedule and Substantial Completion
   c. Effect on any other contracts of the Project
9. Review any other business

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation meetings shall be held prior to the Contractor or Subcontractors beginning work on each definable feature of the Work identified in the Contract Documents to require a pre-installation meeting and/or as required by the Owner's Representative. Notify Owner's Representative at least ten (10) working days in advance of each pre-installation meeting.

1. At the Owner's discretion, the Owner may conduct this meeting as part of the Construction Progress Meeting.

B. Meeting examples include, but not by way of limitation:
   1. Site clearing and excavation
   2. Demolition and regulated materials remediation
   3. Site utilities
   4. Landscaping and site restoration
   5. Concrete
   6. Masonry
   7. Structural steel
   8. Exterior cladding systems
   9. Water and damp proofing and roofing
   10. Doors, including frames and hardware
   11. Millwork
   12. Finishes
   13. Equipment, including elevators
   14. Mechanical and Electrical systems, such as high voltage, fire alarm, and communications
   15. Specialty items

C. Meeting location: To be determined

D. Participants shall include:
   1. Contractor's Superintendent, CQC Representative, and Safety and Health Officer as appropriate;
   2. Subcontractor's project manager or foreman supervising the Work, as appropriate;
   3. Owner's Representative;
   4. A/E and the A/E sub-consultants, as appropriate;
   5. Owner's consultants as appropriate; and
   6. Others as appropriate.

E. Agenda:
   1. Review of the pre-installation CQC Work Plan and Contract requirements
   2. Materials - available and ready for use
   3. Submittals
   4. Persons responsible for performing the work
5. Tests - required tests, criteria for performance, who samples and how often
6. Safety procedures and requirements
7. Substrate - criteria for substrate
8. Other items as appropriate

F. Contractor shall: Administer the meeting, and record and distribute copies of the minutes within seven (7) days of each meeting to all meeting participants.

1.5 CHANGE ORDER MEETINGS

A. Change order meetings shall be held to review and resolve any Change Order Proposals, change order requests, or other change order issues pertaining to Contract Modification. Meetings shall be held monthly until all Change Order Proposals are resolved.
   1. At the Owner’s discretion, the Owner may conduct this meeting as part of the Construction Progress Meeting.

B. Meeting Location: To be determined

C. Participants shall include:
   1. Contractor’s Project Manager, or cost engineer as appropriate;
   2. Owner’s Representative;
   3. A/E and the A/E’s sub-consultants, as appropriate;
   4. Others, including the Owner’s consultants as appropriate.

D. Owner’s Representative will: Administer the meeting

E. Agenda: Review Change Order Proposals for scope and estimated costs, and negotiate Change Order Proposal prices.

1.6 DRAFT APPLICATION FOR PAYMENT REVIEW MEETINGS

A. Draft Application for Payment review meetings shall occur monthly.
   1. At the Owner’s discretion, the Owner may conduct this meeting as part of the Construction Progress Meeting.

B. Meeting location: To be determined

C. Participants shall include:
   1. Contractor’s Project Manager;
   2. Owner’s Representative;
   3. A/E and A/E’s sub-consultants, as appropriate; and
   4. Owner’s consultants as appropriate.

D. Owner’s Representative will: Administer the meeting

E. Contractor shall: Present the draft monthly Application for Payment together with the required back up information for review and comment by the Owner and A/E.

F. Agenda - Discussion will pertain to items such as:
   1. Percentage of work complete
   2. Off-site storage
   3. Bill of quantities
   4. Percentage of subcontract payment allocations
   5. Apprentice Utilization and Journey Level Report
1.7 SPECIAL MEETINGS

A. Special meetings may be called at the discretion of the Owner or Contractor for the purpose of coordinating specific information or resolving special issues related to the Project.

B. Contractor shall record and distribute minutes within three (3) days of the meeting to all meeting participants.

1.8 COMMISSIONING MEETINGS DURING CONSTRUCTION

A. Commissioning meetings shall occur weekly during the start-up and commissioning phase of the Work.
   1. At the Owner’s discretion, the Owner may conduct this meeting as part of the Construction Progress Meeting.

B. Meeting location: To be determined

C. Participants shall include:
   1. Contractor's Test Engineer, and Superintendent as appropriate;
   2. Subcontractor representative(s) as appropriate;
   3. Owner's Representative;
   4. Owner’s Commissioning Authority; and
   5. A/E and the A/E’s sub-consultants, as appropriate.

D. Commissioning Authority will: Administer the meeting

E. Contractor shall: Record and distribute copies of the minutes prior to the next meeting to all participants and provide copies at each meeting.

F. Agenda - Discussion will pertain to items such as:
   1. Coordination of Work of applicable trades, such as balancing, electrical, controls, communications wiring connectivity;
   2. Scheduling of systems shutdown and switch over;
   3. Start-up and functional performance tests acceptance criteria; and

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements, in addition to those defined in the General Conditions, for Baseline Progress Schedule preparation, monthly Progress Schedule updates, change in Contract Time analysis, submittal schedules, and short interval schedules.

B. Related Sections:
   1. 01 26 00, “Contract Modification Procedures”
   2. 01 29 76, “Progress Payment Procedures”
   3. 01 50 00, “Temporary Facilities and Controls”
   4. 01 77 00, “Closeout Procedures”

C. Owner’s forms included by reference for this Section include (see Appendix A):
   1. Short Interval Schedule

D. Total Float is defined as the amount of time between the earliest start date and the latest start date, or between the earliest finish date and the latest finish date of an activity on the Progress Schedule. Float is not for the exclusive use of either the Contractor or the Owner unless otherwise identified in the Contract Documents.
   1. Extensions of time for Contract performance will be granted only to the extent that equitable time adjustments to the affected activity or activities exceed the total float time along the affected paths of the current Progress Schedule at the time a Field Order, or Change Order, was issued for the change.

E. All Progress Schedule submittals, including monthly Progress Schedule updates, will be reviewed jointly by the Owner’s Representative and the Contractor. Such review of the Contractor’s schedules shall not constitute an approval or acceptance of the Contractor’s construction means, methods, or sequencing, or its ability to complete the Work in a timely manner.

F. As used in this Section, “Progress Schedule” refers collectively to “Baseline Progress Schedule” and “monthly Progress Schedule updates.”

1.2 PROGRESS SCHEDULE

A. Within fourteen (14) calendar days after Notice-to-Proceed, the Contractor shall prepare and submit to the Owner, for review and comment, three (3) copies of a preliminary Progress Schedule utilizing a Critical Path Method (CPM) logic based on the Contract Documents. The Owner will review the preliminary schedule for conformance with the Contract Documents and provide comments within fourteen (14) calendar days of receipt from the Contractor. The Contractor shall respond to all comments and provide the Owner a Baseline Progress Schedule within fourteen (14) calendar days of receipt of the Owner’s comments.

B. Once the Baseline Progress Schedule is submitted to the Owner, the Progress Schedule shall be formally established as the baseline file within the Contractor’s scheduling software. This baseline file shall not be modified without the Owner’s written approval.
   1. The amount specified in Section 01 29 76 shall be withheld from the Contractor's monthly Application for Payment if the Baseline Progress Schedule and Submittal Schedule, referenced in 1.5 of this Section, are past due and such amount may, at the Owner’s sole judgment and discretion, be reduced from the Contract Sum by unilateral Change Order (see Section 01 29 76, "Progress Payment Procedures").
C. The Baseline Progress Schedule shall be the basis that the Contractor shall use to: plan, organize, and execute the Work; record and report actual performance and progress through updates, and; show how the Contractor plans to complete all remaining Work. The Baseline Progress Schedule and monthly Progress Schedule updates shall be the basis for consideration and analysis of requests for time extensions as specified below. The schedule shall be in the form of an activity based precedence diagram.

D. The Baseline Progress Schedule and monthly Progress Schedule updates shall be constructed to show the order in which the Contractor proposes to carry out the Work, and to indicate the restrictions of access to and availability of the work area, and availability and use of manpower, materials, equipment, and all activities of trade contractors, equipment vendors, and suppliers. The Progress Schedule shall incorporate contractually specified limitations and restrictions, and contractually specified milestones. Construction activities shall match or be correlated with the pay items in the approved Schedule of Values. The Progress Schedule shall be prepared in sufficient detail with the assignment and coding of all activities by the Contractor and Subcontractors in consideration of, but not limited to, the following Work activities:

1. Access and availability to the Project Site, including road closures;
2. Identification of interfaces and dependencies with preceding, concurrent, and succeeding contractors, if applicable;
3. The type of work to be performed and labor trades involved;
4. All procurement, manufacturing, fabrication (both on-site and off-site), and delivery activities for all major materials and equipment;
5. Shutdowns of existing Owner’s equipment and utility services;
6. Required delivery dates of OFCI equipment and materials;
7. Testing, air balancing, and commissioning activities, including submission and approval of test results;
8. Approvals by regulatory agencies or other third parties, including obtaining an Occupancy Permit;
9. Coordination for Owner’s occupancy including Owner’s cleaning, OFOI equipment and furnishings installations;
10. Planning for phased occupancy by the Owner, with intermediate completion dates;
11. Contractor’s preliminary cleaning and final cleaning operations;
12. Contractor’s Final Punch List Report, Owner’s Final Inspection (Punch List), Contractor’s corrections, and Owner’s re-inspection;
13. Substantial Completion and Final Completion activities and milestones, and Final Acceptance.

E. The activities defined in the Progress Schedule shall represent the planned durations in anticipation of normal man-power and equipment utilization in durations of whole working days. No activity durations shall exceed twenty two (22) working days. If approved by the Owner, longer durations may be allowed for non-construction activities such as procurement, delivery, or submittal activities. All durations shall be determined based upon resource planning under contractually defined on-site work conditions. In calculating activity durations, normal inclement weather shall be considered. The Contractor shall schedule the Work to minimize the effect of adverse weather. The Contractor shall also protect the work site from the effects of adverse weather or take other necessary measures such that the Work can be completed within the time established in the Contract Documents and include these provisions in the schedule as appropriate.

F. Schedule activity identification codes shall not be alphanumeric unless approved by Owner.

1. Activity Description: Provide adequate information to readily identify each activity up to 48 characters in the general descriptive format: action, item, location (such as Install Steel Studs 3rd Floor).
2. The Critical Path shall be clearly indicated on all diagrams submitted. An activity is critical when it is part of the longest duration pathway(s) through the CPM network or when total float is less than or equal to zero.

3. Clearly identify activities that are planned to use overtime, double shifts, work on weekdays or holidays.

4. Include a listing of activities with open ends and out-of-sequence progress.

G. Certification: When requested by Owner, submit certification that each Subcontractor and major equipment supplier has participated in, reviewed, and concurs with the Progress Schedule as it relates to their Work.

1.3 MONTHLY PROGRESS SCHEDULE UPDATES

A. The Contractor is required to prepare and submit monthly Progress Schedule updates and to participate in monthly schedule update meetings with the Owner as described below.

1. Timely submission of updates is of significant and crucial importance to the management of this Project. Lack of, or late receipt of, updates diminishes their value to the Owner. If a monthly Progress Schedule update is not submitted to and reviewed with the Owner prior to the Contractor submitting its monthly Application for Payment, the monthly Schedule of Values amount for Progress Schedule updates may, at the Owner’s sole judgment and discretion, be reduced from the Contract Sum by unilateral Change Order (see Section 01 29 76, “Progress Payment Procedures”).

B. The Contractor shall prepare a monthly Progress Schedule update to reflect work progress achieved since the previous update. Historical performance data and/or records shall not be changed without the approval of the Owner.

C. The Contractor shall use and maintain a fixed end date when generating the required reports and diagrams for the Owner as specified by this Section. The fixed end date shall be the Substantial Completion date. The fixed end date will be adjusted in subsequent updates only to reflect approved time extensions incorporated by Change Order.

D. The Project shall be rescheduled each reporting period with:

1. An updated data date.
2. Actual start/finish dates.
3. Percent complete.
4. Remaining durations (for each activity) in the “status” or “current” file.

E. Show changes occurring since the previous schedule submission, such as:

1. Any major changes in scope.
2. Activities modified since previous submission including, but not limited to, logic changes.
3. Revised projections for progress and completion, as applicable.
4. Any other identifiable changes.

F. The Contractor shall account for all rain days, for major events, and similar excusable non-compensable delays, during which little or no work is progressed and that are acknowledged by the Owner, in the period within which the events occur.

G. The Construction Progress Meeting shall be held prior to Owner’s review and comment of the Contractors draft Application for Payment, unless otherwise approved by Owner.

1. The Contractor shall provide copies of two tabular reports:
   a. A total float report clearly indicating the current critical path through Substantial Completion.
   b. A report of activities sorted by early start dates commencing with the previous monthly progress update and including all updated activities during the previous
month. Actual progress of the previous month will be recorded and incorporated into the update.

2. The Contractor shall provide copies of a narrative report to include:
   a. A description of the Work that has progressed.
   b. An explanation of the Work that had been scheduled to be performed in the previous period but was not performed, and why it was not performed.
   c. Anticipated delay and impact on the schedule.
   d. Corrective action recommended and its effect.
   e. A discussion of the Work scheduled for the upcoming period noting any issues or events that could impact this Work.
   f. If the Contractor intends to make a logic or original activity duration change(s), the report shall include such changes.

3. The Contractor and Owner shall review these reports and discuss any differences or issues raised.

1.4 CHANGE IN CONTRACT TIME ANALYSIS

   A. It is the Owner’s desire and intent to resolve all issues affecting the Substantial Completion date in a timely, efficient, and effective manner. To achieve this goal, the Owner and Contractor shall participate in an analysis of all delays and advances of the schedule.

   B. Assessment of impacts due to changes or other events must be performed on the most recent update of the Progress Schedule. Further impacts due to changes or other events shall be assessed utilizing the Progress Schedule update that represents the data date closest to, and just prior to, the date of the impacting event.

   C. The logic and planning elements of the Progress Schedule are the Contractor’s responsibility.
   1. No Contract Time shall be modified unless directed by an approved Change Order.

   D. Submission of a valid monthly Progress Schedule update and the completion of a delay analysis impacting the critical path are conditions precedent to the review and approval of any request for an extension in the Contract Time. Failure to complete monthly Progress Schedule updates and to participate in the analysis will defer consideration of any time extensions by the Owner until the Work is completed and all as-built progress can be analyzed by the Owner. Further, the Owner will assess liquidated damages, if any, regardless of the status of any requests for time extensions pending, until any such requests are resolved.

1.5 SUBMITTAL SCHEDULE

   A. General: Within ten (10) calendar days following Owner’s receipt of the Baseline Progress Schedule, the Contractor shall prepare and submit to the Owner a complete schedule of work-related submittals based on the Progress Schedule, as required by the Contract Documents ("Submittal Schedule"). Correlate Submittal Schedule with the listing of principal Subcontractors.

   B. Form: Prepare Submittal Schedule in chronological sequence of submittals. Show category of submittal, name of Subcontractor, generic description of work covered, related Specification Section numbers, activity or event code on the Progress Schedule baseline file, scheduled date for first submission, and blank columns for actual date of submittal, re-submittal, and final release or acceptance by the A/E. The Submittal Schedule shall be prepared in sufficient detail and in consideration of, but not limited to, the following:
   1. Preparation and submission of shop drawings, layout drawings, product data, material samples, and mock-ups.

   C. Update the Submittal Schedule monthly and submit to Owner.
1.6 SHORT INTERVAL SCHEDULE

A. Short Interval Schedule: Prepare and update weekly a four (4) week Short Interval Schedule. Show previous week of actual progress (planned vs. actual performance). Forecast three (3) weeks of start and completion dates for each activity, task, or event in comparison to the Contractor’s Construction Progress Schedule.

1. Activities in the Short Interval Schedule shall relate directly to activities in the Progress Schedule.

B. Format for the Short Interval Schedule should be similar to the Owner’s form. The Contractor may submit an alternative format that must first be approved by the Owner. The format shall include comment annotation as necessary.

C. Copies of the Short Interval Schedule shall be provided at the Construction Progress Meetings and will be used as the basis for discussion of progress and planned work at the meetings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies general administrative and procedural requirements for submittals required by the Contract Documents.

1.2 SUBMITTAL PROCEDURES

A. The Owner intends to utilize an internet-based construction management system (CMS) for submittals (see Section 01 35 00 “Electronic Communications”).

1. The electronic submittal process is not intended to be used for color samples, color charts, or material samples.

B. Coordination: Contractor shall review submittals for completeness, accuracy, and compliance with the Contract Documents, and shall coordinate the transmittal of submittals to ensure there is no delay in the construction Progress Schedule. Submittal sequencing should coincide with the Contractor’s Submittal Schedule.

1. Allow fourteen (14) calendar days turnaround for each submittal, from time of receipt by the Owner. For complex submittals or submittals requiring coordination with subsequent submittals, plan additional turnaround time.

a. Provide a “Priority List” when submitting several submittals within a short time.

2. A/E reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

3. Submittals received from sources other than Contractor will be returned without action.

C. Submittal Preparation: Contractor shall place a label on each submittal for processing. Include the following information on the label:

1. Date
2. Owner’s Project name
3. Name of Contractor and submittal number
4. Name of the entity that prepared the submittal
5. Specification reference number
6. For Shop Drawing submittals, Contractor’s certification that the submittal has been coordinated and reviewed for compliance with the requirements of the Contract Documents, and is approved for A/E’s action

D. Submittal Transmittal: Contractor shall include a transmittal with each submittal package.

1. Address no more than one topic, or related topics, on a single transmittal (i.e., mechanical items shall not be submitted with electrical items; miscellaneous specialties shall not be grouped; shoring shall be submitted separate from foundations).

2. Record relevant information including, but not limited to: the requested review return date (in order to maintain the construction Progress Schedule) and for Shop Drawings, variations from the requirements of the Contract Documents.

3. Provide the minimum number of each required submittal as noted in the Contract Documents and/or as follows:

a. Shop Drawings: one (1) PDF
b. Product data: one (1) PDF
c. Samples: five (5) samples
d. Mock-ups: As required by the Contract Documents
e. Reference the Contract Documents for additional submittal requirements

4. Material and Color Samples: Submit samples of actual materials and colors.
a. Where variation in color, pattern, texture or other characteristics are inherent in the material, submit no less than four (4) variations of each sample to show approximate limits of the variations.

E. Portable Document Format (PDF) Requirements:
1. All documents are to be created as PDF files from the original source files, unless approved otherwise in writing by Owner.
2. The CAD printer shall be Autodesk DWG to PDF.pc3 print configuration.
   a. Layer information shall not be included.
3. All documents are to be created with a resolution of not less than 300 dpi.
4. All fonts are to be embedded in the PDF.
5. When compression is used, the algorithm must be LZW, CITT Group 4, or PackBits.
6. The PDF document size must be the same as the original document size if the document were printed (e.g., a 24”x36” print should have a PDF sheet size of 24x36).
7. Each document must be submitted as a single file.
   a. A single O&M product reference is one file.
   b. A single drawing is one file.
   c. A document larger than 11”x17” is defined as single document and is one file.

F. A/E’s Action: Except for submittals provided for the Owner’s information, the A/E will: review each submittal, mark each submittal with a uniform self-explanatory action stamp indicating action taken, and return promptly. Typically action stamps indicate:
1. Accepted without exception;
2. Subject to noted corrections;
3. Returned for re-submittal after correction; and
4. Rejected as non-compliant with the Contract Documents.

G. Compliance with Contract Documents requirements is the Contractor’s responsibility.
1. A/E’s approval of submittals does not relieve the Contractor from responsibility for a proper installation, compliance with applicable codes, or coordination of the Work.
2. All submittals required by the Contract Documents will be reviewed by the Owner for CAD drafting compliance, PDF compliance, and to determine completeness of the documents provided.

1.3 SHOP DRAWINGS

A. General: Shop Drawing submittals are defined in the General Conditions and include, but are not limited to, product data, samples and mock-ups, and layout drawings.
   1. Do not reproduce Contract Documents as Shop Drawings.
   2. For CAD Shop Drawing submittals, see 01 77 00 “Closeout Procedures.”

B. Product Data: Product data includes manufacturer’s printed installation instructions, catalog cuts, standard color charts, rough-in diagrams and templates, standard wiring diagrams, and performance curves.
   1. Submittal of standard product data is acceptable only when specific reference to the requirements of the Contract Documents is included. Submit specially prepared manufacture’s product data when standard product data is insufficient.
   2. Mark each product data submittal and show the following information:
      a. Compliance with specified product requirements, including LEED requirements
      b. Compliance with any specified industry standards and testing agency standards, with testing agency labels and seals
      c. Manufacturer’s printed recommendations
      d. Applicable choices and options
      e. Notation of coordination requirements
      f. Notation of dimensions established by field measurement, as appropriate
C. Samples and Mock-ups: Samples include, but are not limited to, actual colors, materials and products to be provided. Mock-ups include field installations and partial assemblies of components.
   1. Prepare samples to facilitate review. Provide the following information:
      a. Generic description of the sample
      b. Source of the sample
      c. Confirmation of availability and delivery time
   2. Where samples are for selection of appearance characteristics from a range of standard choices, submit a full set of choices for the material or products.
   3. Maintain sets of approved samples and mock-ups at the Project site for quality comparisons throughout the course of construction.

D. Layout Drawings: Drawings include, but are not limited to, fabrication and installation drawings, layouts, schematics, diagrams, schedules, patterns, and templates.
   1. Submit drawings drawn to accurate scale. Indicate, at a minimum, the following information:
      a. Dimensions
      b. Identification of products and materials included
      c. Compliance with product installation requirements and/or industry standards
      d. Notation of coordination requirements
      e. Notation of dimensions established by field measurement

E. Coordinated Shop Drawings:
   1. Contractor shall coordinate the Work and require the Subcontractors to prepare and submit CAD (Computer Aided Drafting) composite coordinated Shop Drawings at a scale not less than 1/4” = 1’-0”. The coordinated Shop Drawings shall clearly show: how the Work is to be installed in relation to the work of the other Subcontractors including, but not limited to, the structural and the suspended ceiling Subcontractors; all systems routings, sizes and components; space for disassembly and/or removal of major equipment requiring maintenance; access to products and equipment that require periodic maintenance including, but not limited to, cable trays, pull boxes, valves, dampers, switches, motors, filters, control components; and that maintenance access is adequate and in accordance with the requirements of Authorities Having Jurisdiction. The requirements of this Section E shall apply to all mechanical and electrical rooms and tunnels.
      a. Contractor, working through the Contractor’s mechanical Subcontractor, shall: coordinate the mechanical systems and equipment in relationship with other Subcontractor systems and equipment and the building components; and determine if the scheduling sequence and coordination of installations and movement and positioning of large equipment into the building are important to the efficient flow of the Work. The mechanical Subcontractor will at a minimum prepare drawings indicating the following:
         1) Planned piping layout showing valve locations and valve-stem movement
         2) Clearances for installing and maintaining insulation
         3) Access doors
         4) Equipment and accessory service connections and support details
         5) Fire-rated wall and floor penetrations
         6) Accessories such as sizes and location of concrete pads and bases
         7) Penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations
         8) All equipment requiring maintenance access from ladders six feet or more in height, or from scaffolding
      b. Contractor, working through the Contractor’s HVAC Subcontractor, shall prepare drawings indicating the location, size, and elevation of supply and exhaust systems ductwork and diffusers; fire and smoke dampers; ventilation equipment including
terminal boxes, fans, and motors with VFD’s; seismic bracing; and access doors in ceilings. Coordinate equipment and dampers to avoid maintenance access conflicts with built-in work below (e.g., millwork and equipment).

c. Contractor working through the Contractor’s plumbing and piping Subcontractor shall prepare drawings indicating location, size, and elevation of piping, valves, controllers and headers, cleanouts, guides and rollers, expansion joints, seismic bracing, access doors in ceilings, and fixtures and equipment. Avoid routing plumbing through electrical and data/communications rooms.

d. Contractor, working through the Contractor’s sprinkler Subcontractor, shall prepare drawings indicating location, size, and elevation of the complete sprinkler system including supply and cross mains routing, valves, seismic bracing, and standpipes. Coordinate location of sprinkler heads on the ceiling layout plans.

e. Contractor working through the Contractor’s electrical Subcontractor and fire alarm Subcontractors, shall prepare drawings indicating the location, size, and elevation of primary distribution conduit runs, sleeves, pull boxes, junction boxes, CATV boxes, cable tray, seismic bracing, electrical equipment and panels(with working clearances), and fixtures including sound system speakers and terminal cabinets.

f. Electrical panels have been purposely located and have priority for indicated locations. Mechanical and plumbing installations provide shall provide all required offsets to ensure that electrical panels are installed in the indicated locations.

2. Contractor shall arrange meetings with its Subcontractors to resolve any apparent conflicts on the coordinated Shop Drawings.

3. For Owner’s information, submit a composite CAD Shop Drawing, showing the work of each participant Subcontractor at the conclusion of coordination of each logical component of the Work.

   a. CAD backgrounds will be provided by the Owner, as reasonably required by Contractor.

F. Ceiling Layout Drawings: Contractor shall submit for Owner’s review detailed reflected ceiling layout drawings at a scale not less than 1/8" = 1'-0" showing gypsum wallboard soffits and headers with heights, and locations of access doors, roof openings, HVAC diffusers, sprinkler heads, fire alarm devices, lights, and other ceiling mounted appurtenances.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for electronic communications and document control between the Owner, A/E and Contractor in supporting the Work of the Contract Documents.

B. The Owner will provide the Contractor and its Subcontractors access to the Owner’s internet-based integrated construction management system (CMS) which shall be used for communications and document control.
   1. Not all Project documents are tracked in the CMS. For most documents not in the system, the Owner provides electronic forms created with other industry standard software.
   2. Owner’s forms are included in Appendix A of these Specifications.

1.2 ADMINISTRATIVE REQUIREMENTS

A. System Access: The Owner will provide the required access codes necessary for the Contractor’s access to the Owner’s CMS website. The Owner will host the software and administer authority levels and classifications to users to control security access. Access levels will be provided to match only the level necessary to maintain and process electronic documents specified in this Section.
   1. Owner shall not be responsible for temporary or intermittent outages.

B. System Users: The Contractor shall provide a list of all parties from the Contractor’s and Subcontractors’ staffs and others that will be given access to the system. The Owner will provide the Contractor with access for a maximum of four (4) users, unless otherwise requested by the Contractor and approved by the Owner. The Contractor may, at its sole discretion, elect to enter all required data into the system including input from Subcontractors or may require the Subcontractors to enter their own data, but in either case the Contractor will be responsible for the accuracy of the data entered.

C. System Training: The Owner will provide initial training in the use of the CMS website at no cost to the Contractor commensurate with requirements for document control specified in this Section.
   1. The Owner will provide a training seminar for up to four (4) representatives from the Contractor’s organization at no cost to the Contractor. A training location and dates for the training will be provided after the award of the Contract. Training is anticipated to begin within two weeks of Contract execution.
   2. Additional training requested by the Contractor shall be subject to approval by the Owner.

D. Documents Requiring Signatures: All documents requiring signatures for approval shall be processed with the CMS to expedite preliminary concurrence of information only. Receipt of a “hard copy” signature on forms is required prior to implementing action or work as the conditions may require.

E. Equipment and Software Requirements: A computer with high speed internet access will be required in the Contractor’s home office and field office and in the offices of each of its Subcontractors using the CMS. Each computer must utilize Internet Explorer 8 or above and must be equipped to handle current versions of Microsoft Excel and Word documents, as well as pdf and tif files.
F. Information Input: The responsibility of the Owner, A/E, and Contractor to enter information and data into the Owner’s internet-based CMS shall correlate with the responsibilities of the same parties as specified in all other sections within these Contract Documents. Responsibilities include, but are not limited to:

1. The Owner will input Project and cost information from the Contract Award and maintain emergency contact lists, reports, logs, and enter all change documents.
2. The A/E will enter the Contract Documents and design clarifications with attached drawings and details, after Owner’s approval, and field reports.
3. The Contractor will enter all meeting minutes, submittals, utility shutdown requests, Requests for Information and other reports and documents required by the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies minimum requirements for safety on the construction site including:
   1. Contractor responsibility (regarding safety)
   2. Contractor safety program and plan submittals
   3. Contractor safety requirements
   4. Contractor safety reporting
   5. Construction “fire safety” requirements
   6. Chemical hazard communication
   7. Chemicals of interest reporting
   8. SARS-CoV-2/COVID-19 exposure control, mitigation, and response plan
   9. Note: Refer to the UW Project Delivery Group (PDG) website for information on current regulatory/agency guidelines and University requirements (https://facilities.uw.edu/unit/project-delivery).

B. Owner’s forms referenced in this Section include (see Appendix A):
   1. Chemicals of Interest – Contractor Declaration and Reporting Form
   2. Monthly Safety Report

C. For additional provisions related to safety precautions, refer to the General Conditions.

1.2 CONTRACTOR RESPONSIBILITY

A. The Contractor is solely and completely responsible for compliance with all applicable laws, codes and regulations regarding safety (whether noted in this Section or not) and for creating and maintaining a safe working environment, including safety of all persons and property on the jobsite (whether the requirements of this Section address a particular situation or not).

B. The Contractor shall maintain the jobsite and perform the Work in a manner which meets or exceeds statutory and regulatory requirements for the provision of a safe place to work and which minimizes safety risks to personnel of the Contractor, Subcontractors, Owner, general public or other parties. This obligation shall apply continuously and not be limited to normal working hours.
   1. The Contractor shall ensure that all Contractor and Subcontractor personnel are provided sufficient training, and shall take such actions as are necessary to maintain a safe environment on the construction site. Such training and actions shall include, but not be limited to, ensuring that such employees are familiar with governing construction safety requirements and the requirements for compliance with applicable regulations.
   2. The Contractor shall monitor the jobsite to ensure that employees do not create unsafe conditions for others, and to comply with the provisions of the Site Specific Safety Plan.
   3. The Contractor shall establish and communicate clear expectations to its employees and Subcontractors of any tier (and their employees) of their obligation to notify the Contractor and any at risk party of any potential health or safety hazard affecting themselves or others.
   4. The Contractor shall conduct on-site safety meetings weekly, or other frequency as appropriate, that shall be mandatory for all employees.

C. The Contractor shall designate a full-time on-site competent individual to be the “Safety and Health Officer” who is qualified and authorized to supervise and enforce compliance with the Contractor’s Site Specific Safety Plan during the performance of the Work. The Contractor is responsible to ensure that all necessary monitoring equipment, protective clothing, and other supplies and equipment are available to implement the Plan.
1. The Contractor shall require each Subcontractor to provide a fulltime on-site safety manager (competent individual) for the duration of work at the Project site. If the man-load is below fifty (50) field workers, the Subcontractor may designate its Superintendent as the safety manager. If the man-load is fifty (50) or above field workers on-site, the Subcontractor shall provide and designate a dedicated competent individual as safety manager whose sole responsibility is Project safety including, but not limited to: review pre-task plans, critical lift plans, rigging and installation means and methods, fall protection, trenching excavations, electrical safety, Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act of 1973 (WISHA) regulations compliance, and second tier Subcontractor safety monitoring and compliance.

D. Safety Violations: In the event of WISHA violations by the Contractor or any of its suppliers or Subcontractors of any tier for unsafe practices involving imminent danger to personnel of the Owner, Contractor, Subcontractors, or others, the Contractor shall immediately correct the hazardous situation which caused the violation prior to any work continuing in the affected area. If such violations exist and corrective actions have not been taken by the Contractor, the Owner may order the Contractor to stop work (to be followed up in writing the same day), until satisfactory corrective action has been taken per Article 3.04 of the General Conditions.

1.3 CONTRACTOR SAFETY PROGRAM AND PLAN SUBMITTALS

A. Company Safety Program: The Contractor shall submit a copy of its Company Safety Program to the Owner. The Company Safety Program shall contain, at a minimum, the following elements:
   1. Organizational Structure: Include names of individuals who will perform safety duties, titles, work assignments, authority and reporting relationships.
   2. Training Program: Who, how, and when training is provided; method of employee training concerning safety rules and procedures; and training in use of protective equipment.
   3. Protective Equipment: List of personal protective equipment to be provided to employees.
   4. Accident Prevention and Loss Control Plan: Work site inspection and hazard correction procedures; disciplinary procedures for safety infractions; and accident response (investigation and reporting procedures).

B. Site Specific Safety Plan: The Contractor and each of the Contractor's Subcontractors shall review the Contract Documents, and the Contractor shall develop and submit a copy of a "Site Specific Safety Plan" to the Owner. The Site Specific Safety Plan shall be tailored to the unique issues of the Project and the specific types of hazards likely to be encountered throughout all phases of the Work, be in compliance with WISHA and all other regulatory requirements, and contain, at a minimum, the following elements:
   1. Application of Company Safety Program: The Site Specific Safety Plan shall address how the elements listed in this Section 1.3A will be specifically applied and modified in addressing the unique issues related to the Project.
   2. Specific Hazards: The Site Specific Safety Plan shall address, as applicable, the following, and other specific hazards for the Project:
      a. Odor notification
      b. Excavation and rescue plans
      c. Pedestrian safety (including on Husky Game and/or other special event days)
      d. Overhead hazards and flying objects
      e. Hot works
      f. Hazardous materials and chemical exposure
      g. Methane abatement
      h. Safety issues related to Owner’s “Prior Occupancy”
      i. Working over water
      j. Rigging - aerial lifts and forklifts
1.4 CONTRACTOR SAFETY REQUIREMENTS

A. Safety Training: Contractor shall provide construction site orientation for all employees (including Subcontractor employees) to become familiar with the Site Specific Safety Plan prior to commencing work. Contractor shall, on a weekly basis, perform safety training on hazards specific to the phase of work for all employees. These meetings shall be mandatory for all construction employees.
   1. Subjects should include site specific safety issues and procedures and discussion of corrections resulting from any violation in safety procedures. A log of subjects covered and a copy of the attendance records of each meeting shall be submitted to the Owner's Representative on the day the meeting occurs.

B. Respiratory Equipment: Any personnel performing work requiring the use of respiratory protective equipment shall be fully trained in the use of such equipment. Contractor must have a respiratory protection program and ensure that all workers wearing respirators have medical clearance and fit testing, as appropriate, for the type of respirators used.

C. Personal Protective Equipment: Contractor shall ensure all construction personnel are equipped with and utilize personal protective equipment in accordance with Labor and Industries standards. As a minimum requirement, all personnel working on the construction site shall be required to use approved hardhats, safety glasses, appropriate gloves, and substantially constructed work boots. In addition, high-visibility safety apparel shall be worn in accordance with the American National Standards Institute and the International Safety Equipment Association (ANSI/ISEA) standard 107-2004.

D. First Aid: The Contractor shall maintain at the Contractor's field office, or other well known place at the Project site, all materials (e.g., a first aid kit) necessary for giving first aid to the injured, and shall establish, publish, and make known to all employees procedures for ensuring immediate removal to a hospital or a doctor's care, persons (including personnel) who may have been injured on the construction site. Construction personnel shall not work on the construction site before the Contractor has established, and made known, procedures for removal of injured persons to a hospital or a doctor's care. If the Contractor and/or any Subcontractors work crew consist of five or more employees, the Contractor shall ensure that at least one of such employees has a valid and effective first aid card.

E. Safety Walkthrough: In addition to WISHA requirements, the Contractor shall conduct a safety walkthrough of the Project with the Owner's Representative a minimum of once a month during the course of construction. If a safety manager is required for any Subcontractor, the safety manager shall also attend the safety walkthrough. The Contractor shall:
   1. Document and maintain a written record of the hazards and unsafe practices noted during the walk-through and provide copies to the Owner as requested;
   2. Ensure that corrective action is promptly taken to eliminate the items recorded; and
   3. Maintain copies of all inspections performed by other competent individuals on the construction site during the course of construction.
F. Job Hazards Analysis: The Contractor shall plan daily work, considering procedures with the potential for personnel injury and implement appropriate practices to avoid injuries with focus on engineering controls, personal protective equipment needs, and mitigation for exposure to cuts and lacerations. At each construction progress meeting, the Contractor shall present its plan for addressing hazards likely to be encountered in the next week.

1. The Contractor shall develop and implement a program requiring task planning at the foreman level, including at the Subcontractor’s foreman level.

1.5 CONTRACTOR SAFETY REPORTING

A. Reporting Injuries and Incidents: Contractor shall immediately notify the Owner’s Representative of any injury or incident to persons, including personnel, on the construction site. Contractor shall conduct an immediate investigation with an emphasis on preventative actions and lessons learned. The Contractor and its Subcontractor shall document the investigation and submit a hard copy of the report on OSHA Form 301 “Injury and Illness Report,” or equivalent, to the Owner within 24 hours of the incident. The Contractor shall report on a monthly basis the total number of hours worked on-site by the Contractor’s employees and Subcontractors, and the total number of recordable incidents and lost time accidents. Contractor shall submit copies of the Project First Aid Log to the Owner’s Representative on a monthly basis.

B. Reporting Potentially Serious Hazards: Contractor shall immediately notify the Owner’s Representative of any potentially serious hazard to persons, including personnel, on the construction site. Contractor and its Subcontractor shall conduct an immediate investigation and submit a report to the Owner’s Representative within 24 hours of becoming aware of the potentially serious hazard. The report shall describe the potentially serious hazard, the results of the Contractor’s investigation, and any steps the Contractor has taken to prevent an injury or incident from occurring based on the potentially serious hazard.

C. Emergency Procedures:

1. For emergencies requiring an ambulance, fire department, or police assistance, the Contractor shall call emergency services (fire and police at 911).

2. Should the Contractor find it necessary to call for non-emergency police assistance or protection in the exercise of the Contractor’s responsibilities on the Seattle Campus, the Contractor shall call the University Police Department at 206-543-9331.

D. With its monthly Application for Payment, the Contractor shall submit the Monthly Safety Report on the form in Appendix A.

1.6 CONSTRUCTION FIRE SAFETY REQUIREMENTS

A. Fire Safety During Construction and Demolition: The Contractor shall conform to Chapter 1, “Fire Safety During Construction and Demolition,” of the International Fire Code, as locally amended, and any additional provisions as outlined herein for precautions against fire, flammable and combustible liquids, flammable gases, explosive materials, fire protection, fire reporting, fire fighting access, means of egress, standpipes, fire sprinklers, and roofing operations.

1. The Contractor shall provide adequate separation between Owner-occupied buildings and construction trailers and sheds.

B. Hot Work Procedures:

1. Contractor shall establish a system for documentation and control of "hot work" activities which include the use of portable gas, grinding, or arc welding equipment and conduct operations in a manner that is fire-safe for the work area and adjacent areas. Hot work permits are to be posted at the jobsite in an accessible and conspicuous location.
Maintain the premise clear of rubbish, debris, or other materials constituting a potential fire hazard. The local fire code is incorporated herein by reference; adhere to all applicable provisions as determined by the local fire department. Contractor and Subcontractors shall obtain from the local Fire Department engineering inspection section a permit for all hot work activities prior to performing this Work.

a. Whenever practical, the Contractor shall perform cutting and welding operations off-site.

2. Maintain copies of all hot work related permits for Owner’s review upon request, including, but not limited to:
   a. Cutting and welding;
   b. Roofing / hot-tar kettle; and
   c. Storage of flammable materials (e.g., propane, butane) and/or compressed gases.

3. Prior to conducting hot work activities, the Contractor shall ensure all of the following fire safety precautions have been taken:
   a. Cutting and/or welding equipment must be thoroughly inspected and found to be in good repair, free of damage or defects.
   b. A multi-purpose dry chemical, portable fire extinguisher must be located so that it is immediately available to the area of work and is fully charged and ready for use.
   c. At least one fire alarm pull station or means of contacting the fire department (i.e., site telephone) must be immediately available and accessible to person(s) conducting the cutting/welding operation.
   d. Floor areas under and at least 35 feet around the cutting/welding operation must be swept clean of combustible and flammable materials.
   e. All construction equipment fueling activities and fuel storage must be located at least 35 feet away from cutting/welding operations.
   f. Fire resistant shields (e.g., fire retardant plywood, flameproof tarpaulin, metal, etc.), must cover combustible floors.
   g. Combustible materials and finished surfaces, equipment, electrical cables, and personnel must be provided with protection to prevent damage or injury from molten metal, falling sparks, and welding arcs.
   h. Spark / slag catchers (e.g., fire retardant plywood, flameproof tarpaulin, metal, etc.) must be suspended below any elevated cutting/welding operation.
   i. All floor and wall openings must be covered to prevent sparks/slag from traveling to other unprotected area.
   j. Containers in or on which cutting/welding will take place must be purged of flammable vapors.

C. Fire Systems Shutdowns, Impairments, and Fire Watch

1. When it is necessary to shut down existing fire alarm systems or suppression systems for switch-over purposes, or any other reason that leaves the building unprotected, the Contractor shall provide a continuous Owner-approved “fire watch” in accordance AHJs and the following (unless the Contractor provides an Owner-approved temporary equivalent system or the Contractor is specifically excepted by the Owner):
   a. Person(s) assigned to a fire watch must be trained in the use of the portable fire extinguisher.
   b. Fire watch personnel must have an immediate means of providing notification to the fire department (e.g., cellular phone, land-line phone, two-way radio to a continuously staffed position) and the University Police.
   c. Continuous rounds to cover all areas of the building where the fire protection system is out-of-service are required every 15 minutes.
      1) Exception for Building Code type “B occupancy” buildings: During the hours a B occupancy building is occupied, building occupants performing their duties, including construction personnel, may act as a fire watch in lieu of a designated fire watch, when approved in writing by Owner.
         a) A fire watch is required at all times in unoccupied areas.
b) Other building code occupancy types may be allowed this exception when approved in writing by the Owner.

d. A log of rounds shall be maintained to include the name of the person performing the fire watch, the hours worked (including start and stop times), and comprehensive notes.

2. Fourteen (14) calendar days written notification shall be provided to the Owner’s Representative requesting approval for fire protection system shutdown or functional impairment; receipt of written approval from the Owner’s Representative is required before any system shutdown or functional impairment.
   a. In occupied buildings, include a plan indicating a method to notify all occupants.
   b. Notify the local fire department. In Seattle, the number to report out-of-service systems and equipment is 206-233-7219.

3. The Contractor shall work in cooperation with the Owner to identify fire alarm initiating devices in and adjacent to the Project site that may activate from construction activities (i.e., work that creates dust, smoke, steam, heat, etc.) and develop a plan to temporarily cover, remove, or disable through programming these devices to eliminate the potential for false alarms.
   a. The Owner may authorize in writing some devices to be disabled for the duration of the Work or for a particular activity without requiring a continuous “fire watch” for one shift or several days depending on circumstance.
   b. ONLY OWNER PERSONNEL SHALL DEACTIVATE OR DISABLE EXISTING FIRE DETECTION AND SUPPRESSION SYSTEMS, unless the Contractor is specifically authorized in writing by the Owner to do so.

D. Fire Alarm/Suppression Systems False Activation or Discharge: Most existing Owner buildings have active fire detection and suppression systems. If proper procedures as outlined in the Contract Documents and this Section 1.6C are not followed to ensure the unnecessary activation or deactivation of these systems, the Owner may at its sole discretion impose an emergency response charge of $350 per occurrence to the Contractor and require a fire watch at the Contractor’s cost. The Contract Sum will be amended for such amount by Change Order.

E. Fire Extinguishers Required for Construction: Provide multipurpose dry chemical portable fire extinguishers for the Work in accordance with the International Fire Code Chapter 14, as locally amended, and as required by WISHA and other applicable regulations. Existing building fire extinguishers or new fire extinguishers specified by the Contract Documents for the Project do not alleviate Contractor’s responsibility to provide temporary fire extinguishers for the Work.

F. Standpipes Required for Construction: In new multi-story construction (four or more stories in height) a Class I standpipe shall be provided in accordance with Chapter 14 of the International Fire Code, as locally amended, for use during construction. Fire Department connections at bottom of standpipe shall be clearly marked and accessible at all times for fire department personnel and equipment. This requirement shall be reviewed and approved by the Owner’s Representative.

G. Existing Fire Separations: Existing fire separations, including floor-to-floor separations, shall not be impaired by construction activities.

H. Occupant Egress in Existing Buildings: The Contractor shall not block active exits, exit hallways, exit corridors and the exit access to a public way:
   1. Exits are to remain free of construction materials, equipment, and rubbish at all times, unless approved by Owner.
I. Emergency Access: Outdoor storage and staging operations and construction fencing shall not impede egress, restrict or narrow fire fighting access (including roads or lanes), or present a fire exposure to existing buildings.
   1. Access to emergency services including, but not limited to, fire hydrants, fire department connections, fire command centers, fire alarm panels, valves and similar equipment and systems for emergency vehicles and emergency response personnel must be kept free and unobstructed at all times, unless specifically approved by the Owner.
   2. Temporary obstruction of emergency access may be allowed for special cases (e.g., crane installations and hoisting) on a short-term basis. A written plan must be submitted to the Owner for approval at least two weeks prior to the scheduled date of obstruction.

1.7 CHEMICAL HAZARD COMMUNICATION

A. General: The Owner and the Contractor are responsible under the Washington Administrative Code 296-800-170 through 296-800-18020 (Employer Chemical Hazard Communication) to provide a safe and healthy environment for their employees.

B. Responsibilities:
   1. The Owner maintains a centralized collection of all Material Safety Data Sheets (MSDS) for Owner materials. These MSDS are available to the Contractor if an unknown chemical is discovered in the work area; a worker is concerned about exposure; and the Contractor suspects the material originates with the Owner.
      a. The Contractor shall coordinate with the Owner’s Representative to receive this information.
   2. The Contractor shall establish a Chemical Hazard Communication Program (WAC 296-155-180) which includes multiemployer workplaces (WAC 296-800-17007), and provide hazard communication information and training to its employees and the employees of the Contractor’s Subcontractors (of any tier).
      a. The information shall include: signage demarcating regulated areas and entrances; signage indicating the location of the Contractor’s binder containing all MSDS used for Construction; and prominently posted lists identifying all hazardous chemicals present in the workplace.
      b. In addition to MSDS training which is regulated by the Employer Chemical Hazard Communication standard, training shall include those MSDS that are available for any Owner’s chemical product present at the jobsite.
   3. The Contractor shall provide the Owner chemical hazard information (MSDS) for all chemical products the Contractor and the Contractor’s Subcontractor’s (of any tier) bring onto the jobsite for Owner’s information prior to application including, but not limited to, all paints, glues, mastics, epoxies and cleaning products.
      a. At the jobsite, the Contractor shall establish and maintain a binder(s) of all hazardous chemicals MSDS used for Construction and indicate where utilized.
         1) The MSDS shall be bound in a slant-D, 3-ring, view binder with clear vinyl overlay inserts on the front cover and spine. The binder shall have heavy duty nylon reinforced hinges.
         2) The binder shall have a cover slip sheet and a spine sheet typed with “MSDS used for Construction,” University Project name, University Project number, University Facility number, A/E name, and Contractor name.
         3) The MSDS shall be organized by specification division and section with tabbed dividers between the sections or, when presented in a logical format by Contractor and approved by Owner, between categories.

1.8 CHEMICALS OF INTEREST REPORTING

A. Prior to work being performed by the Contractor and/or the Contractor’s Subcontractors (of any tier), the Contractor shall submit to Owner a completed “Contractor Declaration and
Reporting Form for Department of Homeland Security – Chemicals of Interest for chemicals listed in 6 CFR (Code of Federal Regulations) Appendix A to Part 27 that will be used on the jobsite. Individual declarations shall be provided by the Contractor and the Contractor’s Subcontractors (see Appendix A of the Specifications for a copy of the form).

1.9 SARS-COV-2/COVID 19

   A. All construction operations must comply with the most current COVID-19 related rules and guidance from the Governor’s Office. All activities must also comply with all related and applicable requirements issued by the Washington State Department of Labor and Industries and Public Health Agencies having jurisdiction.

1.9

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. The Section further describes basic Contract definitions, specification format and content explanations, and industry standards in the Contract Documents.

1.2 DEFINITIONS

A. Accepted: The term "accepted" is used in conjunction with the A/E’s duties and responsibilities as stated in the conditions of the Contract.

B. Concealed: Spaces out-of-sight such as above ceilings, below floors, between double walls, furred-in areas, pipe and duct shafts, and similar spaces.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the A/E, requested by the A/E, and similar phrases.

D. Exposed: Open to view. For example, pipe installed in a walkway tunnel or pipe installed in a room and not covered by other construction.

E. Furnish: Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar subsequent requirements.

F. Indicated: The term “indicated” refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference.

G. Install: Operations at Project site to place in position for service or use including unloading, unpacking, assembly, erection, placing, anchoring, applying, working-to-dimension, finishing, curing, protection, cleaning, and similar requirements.

H. Installer: An installer is the contractor or another entity engaged by the Contractor, either as an employee, Subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers shall be experienced in the operations they are engaged to perform.

I. Project site: Is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built. Certain construction activities may extend beyond the Project site.

J. Provide: Furnish and install, complete and ready for intended use.

K. Regulations: The term “regulations” includes laws, codes, ordinances, statutes, and lawful orders issued by authorities having jurisdiction (AHJ), as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

L. Trades: Using terms such as carpentry does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as
carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into divisions and sections based on the Construction Specification Institute’s (CSI) MasterFormat.

1. Title: The Specifications are divided into division and section for the convenience of writing and using. The titles of these are not intended to imply a particular meaning or to fully describe the work of each division, subdivision, or section and are not an integral part of the text which specifies the requirements.

2. Three Part Section: Each section of Specifications has been subdivided into three parts for uniformity and convenience (Part 1 – GENERAL, Part 2 - PRODUCTS, and Part 3 - EXECUTION). These do not imply a particular meaning and are not an integral part of the text which specifies requirements. Where text for one of the parts is lacking due to project requirements, the part title is included followed by the words “Not Used.”

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B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. The conventions are explained as follows:

1. Abbreviated language: Abbreviated words and meanings used in the Contract Documents shall be interpreted as appropriate. Words implied, but not stated, shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicate.

2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarify to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

   a. The words ‘shall be’ are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: All construction shall be in accordance with industry standards. Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the industry standards in effect as of the Bid date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two (2) or more standards are specified and where the standards may establish, different or conflicting requirements for minimum...
quantities or quality levels, the Contractor shall promptly report to the A/E, in writing, requesting a decision before proceeding with the Work.

1. Minimum quantity or Quality Levels: The quantity or quality level shown or specified 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, to comply with these requirements. Indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound within the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Acronyms or abbreviations, as referenced in Contract Documents are defined to mean the recognized name of the trade association. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as of the date of the Contract Documents. Refer to the latest edition of the “Encyclopedia of Associations” published by Thomson Gale for a listing of associations and general standards abbreviations.

F. Federal Government Agencies: Names and titles of federal government standard - or Specification -producing agencies are often abbreviated. Acronyms or abbreviations referenced in the Contract Documents may indicate names of standard - or Specification-producing agencies of the federal government. Names are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. General Requirements: Comply with the quality control provisions specified in the Contract Documents and perform quality control testing and inspection, and the surveillance of the Work for quality, unless specifically designated to be performed by Owner.

B. Owner’s forms referenced in this Section include (see Appendix A):
   1. Contractor Quality Control Daily Report

C. Contractor Quality Control (CQC) shall consist of plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction, and operations that comply with the requirements of the Contract Documents. CQC shall cover construction operations keyed to the Progress Schedule including, but not limited to, fabrication on-site and off-site, and field and factory tested construction mock-ups.

D. Owner’s special inspection and Testing Agency services are specified in Section 01 45 23 "Testing and Inspecting Services" which may be required to ensure the Work is in accordance with the Contract Documents, except where those tests are specifically indicated to be performed by the Contractor in the Contract Documents. These services do not relieve the Contractor of responsibility for compliance with Contract Documents requirements.

1.2 CQC MEETINGS

A. General Work Plan Meeting: Contractor shall meet with Owner’s Representative and A/E to discuss CQC procedures for the Project. Items for discussion shall include, but not be limited to:
   1. Identification of the Contractor’s CQC Representative;
   2. Interrelationship of Contractor, AE and Owner’s Representative;
   3. CQC administrative procedures and pre-installation work plans;
   4. Submittals and persons responsible for Shop Drawing review;
   5. Forms for recording the CQC program;
   6. Testing, inspections and approvals records;
   7. On-site and off-site fabrication and installation procedures; and
   8. Field constructed mock-ups.

B. Pre-installation CQC Work Plan Meetings: Develop a “CQC Work Plan” for each definable feature of the Work. Complete the work plan and submit to Owner with each notification requesting a pre-installation meeting. The work plan shall serve as the basis for discussion and review of the Contract Documents requirements. The work plan will assist to assure that materials and equipment delivered and assembled for construction conform to Contract requirements, and that control testing and CQC procedures are documented.
   1. When requested by the Owner, the Contractor shall revise a CQC Work Plan and provide the Owner a final CQC work plan with changes addressing comments or clarifications from the A/E and/or Owner’s special inspection services or Commissioning Authority.

1.3 CONTRACTOR QUALITY CONTROL REQUIREMENTS

A. Contractor’s Quality Control Organization: Staff the CQC organization, as required, to perform the activities outlined in this Section and elsewhere in the Contract Documents.
   1. Identify a dedicated full-time “CQC Representative” who shall be on the Project site at all times during progress of the Work, and as appropriate for all work subsequent to
Substantial Completion. The CQC Representative shall have complete authority to take those actions necessary to ensure compliance with the Contract Documents.

2. Identify persons responsible for review and approval of Shop Drawings and other submittals required by the Contract Documents.

B. Qualifications of CQC Representative: The Contractor shall propose and Owner shall approve, in writing, the Contractor’s CQC Representative. The CQC Representative must have construction management experience including prior experience with projects of similar construction, size, and complexity.

1. During progress of the Work, the Owner will monitor and evaluate the performance of the CQC Representative based on the conformance of the Work with the Contract Documents and an assessment of the accuracy, timeliness and completeness of the daily QC Report. If the CQC Representative fails to perform to the sole satisfaction of the Owner, the Contractor shall propose a replacement CQC Representative for the Owner’s approval.

C. Daily Quality Control Reports: CQC Representative shall maintain daily Quality Control (QC) Reports. The QC Reports shall be factual records containing numerical data of the Work and quality control activities and observations, including examination of work areas to verify the substrate upon which new work is to be placed. Submit QC Reports on Owner’s form, or another Owner approved form, by the next workday following the day of the report.

1. CQC Representative shall verify and sign all reports. Verification shall contain the statement that all supplies and materials incorporated in the Work are in compliance with the Contract Documents.

D. Control of On-Site and Off-Site Construction: Contractor’s Quality Control procedures shall include the following phases of control and management for each definable feature of the Work:

1. Pre-installation Meeting: A pre-installation meeting shall be held prior to beginning work on each definable feature of the Work specified in the Contract Documents (see Section 01 31 19 “Project Meetings”).

2. In-Progress Inspection Phase: In-progress quality control testing and inspection, and surveillance of the Work for quality shall be performed continuously to verify that quality standards are maintained throughout the Work. Adjustment to quality control procedures and CQC work plans may be required, based upon the results of the inspections and testing.

a. The Contractor shall:
   1) Discuss quality control procedures at construction progress meetings;
   2) Report the results of the inspections and any changes to quality control procedures in the daily QC Report; and
   3) Revise CQC work plans for Owner’s records, if changes are required.

3. Above-Ceiling Final Inspections: The Contractor shall provide to the Owner a minimum two (2) week notice prior to ceiling installations for the A/E to conduct above-ceiling final inspections.

a. The Contractor shall perform corrective work and provide reasonable time for the A/E to validate the work complete prior to covering from sight.

4. Contractor’s Final Punch List Report: The CQC Representative shall thoroughly inspect all aspects of the construction (including the Subcontractor’s Work) and produce a final punch list report of work requiring correction and/or incomplete work that shall be issued to the Subcontractors with instructions to complete prior to requesting the Owner’s final inspections. The Contractor’s written request for Owner’s final inspection shall certify that all features of the Work are installed and have been reviewed by the Contractor to determine compliance with the Contract Documents.
a. The Contractor’s final punch list report shall be prepared by the Contractor utilizing the Owner’s internet-based construction management system (CMS), in a format acceptable to the Owner.
   1) The report shall include a comprehensive Project room number list and additional entry listings for site work, building enclosure, roofs, and other items not designated with a room number to document the entire Project.
   2) The Owner’s final inspections items will be added to the Contractors final punch list report by the A/E.
   3) The Owner will manage the consolidated listing of all open inspection items until all items are signed-off by the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Minimum temporary facilities and controls requirements are specified in this Section. Nothing in this Section is intended to limit the types and amounts of necessary temporary facilities required to perform the Work, and no omission from this Section will be recognized as an indication that a necessary temporary facility is not required for successful completion of the Project, and compliance with the requirements of the Contract Documents and all applicable codes.

B. Included in this Section are the following headings:
   1. Product Delivery, Storage and Handling
   2. Project Site - Work Area
   3. Protection of Existing Utilities
   4. Shutdowns of Existing Equipment and Utility Services
   5. Temporary Support Facilities
   6. Temporary Enclosures and Miscellaneous Construction
   7. Noise and Vibration Control
   8. Construction Parking and Staging
   9. Construction Traffic

C. Owner's forms referenced in this Section include (see Appendix A):
   1. UW or HMC Utility Shutdown Request form, as appropriate.

D. Behavior:
   1. The Owner will not tolerate inappropriate behavior by any worker on a jobsite toward a student, staff, patient, visitor, neighbor or employee.
   2. The Contractor shall not allow obscene, offensive or otherwise inappropriate material to be displayed at the Project site, or at remote construction staging and parking areas, including job offices and trailers. If such material is displayed, it shall be immediately removed by the Contractor and/or when requested by the Owner’s Representative.
   3. Gratuities to Owner's employees by a Contractor are not allowed per Washington Administrative Code, Chapter 42.52 RCW.

E. Conservation: The Contractor shall install and operate temporary facilities and perform construction activities in a manner which reasonably will be conservative and avoids waste of energy and materials, including water.

F. Pest Control: The Contractor shall rid the Project site of rodents, birds, insects, and other pests which may have entered buildings under construction as a result of the work.

G. Pollution Control: The Contractor shall perform the Work so as to prevent water, soil, and air pollution.
   1. The Contractor shall not discharge volatile, harmful, or dangerous materials into the Owner's sanitary sewer and storm water drainage systems.
      a. Non-storm water discharge into the Owner's storm water system is prohibited, including the following types of discharge, unless the stated conditions are met:
         1) Discharges of potable water for, but not limited to, water line flushing, hyper-chlorinated water line flushing, fire hydrant system flushing, and hydrostatic test water must be de-chlorinated to a concentration of 0.1 parts per million or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the storm water system.
      b. Street sweeping must be performed prior to washing the street at construction sites.
c. All discharges to the sanitary sewer require Owner’s prior approval.

2. The Contractor shall not cause or allow visible emissions of fugitive dust from the construction site, unless reasonable precautions are employed to minimize the emissions. Reasonable precautions include, but are not limited to, the following:
   a. During high winds, the use of control equipment and/or enclosures, the reduction of construction vehicle speeds, and the curtailment of all dust creating construction procedures shall be implemented.
   b. When demolition, excavation, and construction activities generate dust, the construction site shall be sprinkled with water or chemical stabilizers to minimize dispersion.
   c. Truck under-carriages shall be brushed to minimize the transporting of dirt off construction sites.
   d. Truckloads shall be covered, wetted, or allowed adequate freeboard to prevent the escape of dust-bearing materials.

H. Silica Dust Control: The Contractor shall use best engineering and work practice controls to reduce exposure to silica dust at or below the Washington State Permissible Exposure Limit defined in the latest regulations from the Washington State Department of Labor and Industries (L&I), Puget Sound Clean Air Agency (PSCAA) and any other applicable federal, state, and local government regulations.
1. The Contractor shall assume that silica is present in all concrete, mortar, terrazzo flooring, plaster, sheetrock, fireproofing and other related building products.
2. The Contractor shall implement controls to contain and clean-up silica dust generated by cutting and demolition work and shall provide worker and equipment decontamination provisions. At no time is silica dust from the construction permitted beyond the “work area.”
   a. The Contractor shall conduct air sampling for respirable crystalline silica in accordance with the National Institute for Occupational Safety and Health (NIOSH) method 7500.

1.2 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle specified products in accordance with the manufacturer’s recommendations and use means and methods that will prevent damage, including, but not limited to, moisture damage of materials, deterioration, and loss or theft.
   1. Store materials and products off the ground and protect from weather.

B. Furnish products in the manufacturer’s original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

C. Include a waste reduction provision in purchasing agreements requiring that materials and equipment be delivered in packaging made of recyclable material, that the amount of packaging be minimized, and that packaging be taken back for reuse or recycling.
   1. The Contractor shall require the same provisions in its Subcontractor’s purchasing agreements.

D. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are dry and mold free, undamaged, and properly protected.

E. Store products at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.
F. Store heavy products away from the Project structure in a manner that will not endanger the supporting construction.

G. Protect building products subject to damage, under cover in a clean and weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer’s instructions.

H. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
   1. Ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

1.3 PROJECT SITE - WORK AREA

A. Confine operations, equipment, and storage to the designated work area.
   1. Maintain the Project site, including adjacent areas and properties, in a clean and orderly manner free from accumulations of combustible materials and construction waste, including rubbish and debris resulting from construction operations. Clean indoor work areas daily of construction waste, dirt, and dust. Do not store construction materials and equipment in Owner-occupied areas unless approved by the Owner. Immediately clean up any spilled material and/or fugitive construction spoils or debris from adjacent properties and vehicle travel ways. Keep streets, fire lanes, and walks clean and free from obstructions.
   2. Mechanical rooms shall not be used for construction storage, unless approved by Owner.
   3. All masonry cutting is to be done outdoors. Cut stations for all other work shall be located outdoors or within well ventilated dustproof enclosures or other approved containment.

B. Security:
   1. General:
      a. Protect work and stored products from theft and vandalism and protect premises from entry by unauthorized persons. At the end of workday, close temporary enclosures and lock exterior doors and/or gate. Secure all openings at any time the Project site is left unoccupied.
      b. Owner’s Keys: Owner’s Representative will issue keys, as required, for the Contractor to perform the Work. Prior to Substantial Completion, the Contractor will return all issued keys. Contractor’s responsibility shall include, but not be limited to, the following:
         1) Arrange for the issuance of access keys on a daily basis, or as mutually agreed with Owner.
            a) Owner’s costs associated with re-keying a system, including an entire tunnel system, due to lost keys shall be the responsibility of the Contractor.
         2) Lock all access doors when not attended and at the end of each shift.
         3) Provide security barriers, acceptable to Owner, at all utility openings which are created by the removal of gratings and/or the opening of utility tunnels or shafts.
         4) Coordinate Work to minimize need for access to restricted areas.
      c. Many buildings and spaces on Campus are high security areas, such as building mechanical and electrical equipment rooms, certain lab spaces, and computer facilities. Contractor shall use due care to maintain an equivalent level of security of Owner’s property, where appropriate, and as it normally exists (i.e., secure areas when not actively working). Normally locked or closed doors shall not be propped open.
d. Contractor is advised to lock its gang boxes and secure them to the construction. Owner will not reimburse Contractor for any lost or stolen tools, material or equipment.

2. Tunnel System: Owner maintains rigid controls for persons entering the Owner’s tunnel systems. All tunnel doors and certain utility access gratings are equipped with special security locks. The remaining utility access gratings are secured by tack welding.

3. Criminal Background Checks: All construction personnel working in medical centers shall be subject to criminal background checks in accordance with Washington Administrative Code, RCW 43.43.830, et seq.
   a. On the first day of work, each worker shall fill out a Washington State Patrol Request for Criminal History Information form and a Request for Criminal History Record form and submit them to the Contractor’s superintendent who shall submit the collected forms to the Owner’s Representative.
   b. The Owner will request the background check from the Washington State Patrol.
   c. A worker may be conditionally employed on the Project pending results of the criminal background inquiry.
   d. Any worker who does not pass the criminal background check will not be permitted to work on the Project and the Contractor shall immediately remove, or cause the worker to be removed, from the Project.
   e. .

C. Construction Waste: Remove construction collected materials from the Project site at a frequency acceptable to the Owner and dispose of in a lawful manner. Do not burn waste material, stockpile waste material, or bury waste material on Owner’s property. Do not use Owner’s waste containers for construction waste of any kind, unless approved by Owner. Dispose of all refuse and waste material, including excess earth from excavation, off of Owner’s property.
   1. See Section 01 74 00 “Construction Waste Management” and, when specified, Section 01 11 01 “Summary of Work – Regulated Materials” for additional requirements.

D. Odor Control:
   1. General: Adjacent Owner areas and/or neighboring buildings may be occupied during construction. The use of solvents and materials producing noxious fumes or any product or equipment that adversely impacts air quality shall be subject to the approval of Owner. Isolate odor-causing work away from building air intakes, private properties and pedestrian traffic areas. Where solvents are used within enclosed structures, vent to outside areas.
   2. Emissions Control Plan: The Contractor shall submit a written procedure for control of emissions prior to any use.
      a. The plan shall at a minimum consist of the following items:
         1) Products to be used/Material Safety Data Sheets
         2) Location of Work
         3) Application
         4) Ventilation plan
         5) Hours of operation
         6) Materials handling/storage
      b. Considerations shall include, but are not limited to:
         1) Concrete curing
         2) Roofing and waterproofing
         3) Welding
         4) Exterior painting
         5) Adhesive and/or stripping or paint removal
         6) Asbestos abatement
         7) Soil remediation
3. Equipment and trucks producing fumes shall not be parked or located in the vicinity of building air intakes, entrances, and operable windows, unless approved by the Owner.
   a. Trucks that are idling for more than a few minutes shall shut off their engines. If trucks are queued and idling, there must be at least 20 feet between each truck or the exhaust shall be piped to have a 20-foot separation between each exhaust.
   b. All diesel-powered construction equipment shall utilize ultra-low sulfur diesel fuel.
   c. All diesel-powered construction equipment and trucks must be: 2007 model year or later (for vehicles); or Tier II heavy duty (for stationary engines); or equipped with 3-CARB verified oxidation catalyst-based particulate emissions control devices, operating at 600 degrees F or above.

E. Smoking: The University of Washington Bothell have restricted smoking policies. The Contractor shall not permit its employees or the employees of its Subcontractors of any tier to smoke on the Owner's property, except in the areas indicated below:
   1. Smoking is permitted on University of Washington campuses where shown on maps: [http://www.ehs.washington.edu/psosmoking/index.shtm](http://www.ehs.washington.edu/psosmoking/index.shtm)
   2. If the Project site includes a fenced construction area, the Contractor shall establish an outside area, within the fenced area, where its employees and the employees of its Subcontractors may smoke, provided that the area is in compliance with the requirements of Chapter 70.160 RCW. The Contractor shall communicate the location of the permitted smoking area to its employees and Subcontractors, and shall require Subcontractors (of any tier) to communicate the location of the smoking area to its employees.

1.4 PROTECTION OF EXISTING UTILITIES

A. The existing concealed utilities shown on the Drawings are not necessarily exact with respect to location or completeness. Therefore, the Contractor shall take the following steps:
   1. Notify Owner in writing, with a minimum two (2) week notice for each occasion, of the intent to work near existing known underground utility services or structures or when a new excavation operation is about to begin. Submit procedure for approval to assure safe and continuous operation of the services.
   2. Proceed with sufficient caution to preclude damaging any known utilities (i.e., hand digging or probing). In the event unidentified utilities are encountered, notify Owner’s Representative immediately.
   3. In the event utilities are damaged during construction, temporary services and/or repairs must be made immediately to maintain continuity of services.
      a. Utilities installed by the Contractor, and damaged by the Contractor, shall be repaired at the Contractor's sole expense.

1.5 SHUTDOWNS OF EXISTING EQUIPMENT AND UTILITY SERVICES

A. It is generally critical that all building systems remain operational within occupied buildings, except for brief shutdowns that might be required to integrate or connect new Work. Similarly, continuity of equipment and utility services to adjacent buildings and Owner’s site infrastructure shall also be reasonably maintained at all times.

B. Equipment or utility shutdowns required to facilitate the Work shall be accomplished in accordance with the following requirements:
   1. Submit a schedule of equipment and utility shutdowns (see Section 01 32 16 “Construction Progress Schedule”).
   2. Submit a Utility Shutdown Request form to schedule all equipment and utility shutdowns not less than fourteen (14) days prior to the proposed date. Include, as a minimum, the following information:
      a. Equipment or utility services affected
b. Reason shutdown is required

c. Work to be accomplished during the shutdown

d. Proposed date and time

e. Duration of the shutdown

f. Proposed method of providing back-up service during shut down

3. The actual time and date of all shutdowns will be subject to approval of Owner. Shutdowns normally will be scheduled for nights, weekends, school vacations or other low intensity use periods.

4. The duration of all shutdowns shall be held to a reasonable minimum as determined by Owner.

5. Materials and equipment required for the Work to be accomplished during shutdown shall be complete and available on the job for review by Owner three days prior to the shutdown, if requested. If Contractor is not adequately prepared, the shutdown will be canceled and rescheduled.

6. ONLY OWNER’S PERSONNEL WILL SHUT DOWN AND RESTART OWNER’S EQUIPMENT AND UTILITIES. Owner will inspect the installation prior to restarting and will not restart if an unsafe condition exists. In the event Contractor’s Work is not completed during the time scheduled for the shutdown, Owner may elect to restart the equipment or utility service. In that event, additional shutdown requirements shall be rescheduled in accordance with the preceding requirements. Restarting shall not be construed as acceptance of the Work as complete.

7. Include in the bid all costs associated with equipment and utility shutdowns. Owner will make no extra payment for overtime work, schedule changes or failure to complete utility connections within authorized shutdown periods.

C. For building electrical shutdowns involving de-energization of equipment on the campus high-voltage distribution system, including main breakers for a given building, the following enhancements to the requirements listed above apply. The Owner’s Representative will determine which shutdowns proposed by the Contractor require such enhancement.

1. A minimum of 6 weeks before the proposed shutdown, the Contractor shall submit a Proposed Shutdown Plan to the Owner’s Representative. This Shutdown Plan shall include the following information:

   a. A description of Contractor tasks and safety measures (such as lock-out/tag-out), necessary to install or otherwise create the project improvements. Include specific names of devices to be switched and a complete list of equipment to be de-energized.

   b. Inspections by the engineer of record, the high voltage shop, and/or the authority having jurisdiction, as applicable. Indicate what inspections are requested and where in the sequence of work they occur.

   c. Proposed dates(s) and time(s) with duration(s) of the shutdown. Alternate dates may be proposed but the earliest of the proposed dates shall be no sooner than 6 weeks from the date of submittal of the Shutdown Plan.

   d. A draft “UTILITY SHUTDOWN REQUEST” on the standard form in Appendix A.

2. At the Owner’s request, participate in a meeting with the Owner’s Representative and the University’s High Voltage Shop to explain and discuss the Proposed Shutdown Plan. This meeting shall occur at the time of plan submittal or within 2 business days of plan submittal. Insofar as the Shutdown Plan would necessitate tasks to be performed by the High Voltage Shop, the University’s high voltage electricians will use the information as an aid in formulating their approach to the actual switching, and in determining the level of effort and feasibility of the schedule and shutdown in general.

3. At the Owner’s request, check/verify that plans by the University’s zone electricians and others to mitigate building impacts are coordinated with, and safely support, the proposed construction activities.
4. If the Proposed Shutdown Plan is approved or approved with conditions, proceed as follows in paragraph 5. If rejected, work with the Owner’s Representative to reschedule the shutdown.

5. A minimum of 2 weeks before the proposed shutdown, review status with the Owner’s Representative and submit the final UTILITY SHUTDOWN REQUEST. If deemed necessary by the Owner’s Representative, also submit a final Shutdown Plan. These documents shall include, at a minimum, the following information:
   a. The final proposed date, time and duration of the shutdown.
   b. Responses to any conditions imposed on the shutdown by the University’s review and approval process.
   c. Any Contractor-proposed changes to the original (draft) plan.

1.6 TEMPORARY SUPPORT FACILITIES

A. Temporary support facilities include: construction power and lighting and heating and water, toilet and hand washing facilities, mobile communications, cranes and hoists, field offices, and field office communications; and similar miscellaneous facilities (i.e., storage sheds, first aid facilities, clean-up facilities, fire protection, waste disposal) as may be reasonably required for proficient performance of the Work and accommodation of personnel at the Project site, including Owner’s and A/E’s personnel. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities. Placement of all temporary support facilities shall be subject to review and approval by the Owner's Representative.
   1. Do not block Owner's access to adjoining buildings and occupied spaces through the use of temporary support facilities.
   2. Keep temporary support facilities clean and neat in appearance and do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload temporary facilities or permit them to interfere with progress.
   3. Erection and dismantling of cranes shall occur only on weekends, unless otherwise approved in writing by the Owner.

B. Remove all temporary support facilities including, but not limited to, power and water infrastructure, hoist foundations, and communications cabling and pathway, unless indicated otherwise in the Contract Documents. Restore the Project site to original or new conditions, patching and filling as required to match adjacent surfaces.

C. All connections to Owner utilities must be made in accordance with 1.5 of this Section, "Shutdowns of Existing Equipment and Utility Services."
   1. Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of the permanent service.

D. Electrical Power and Service: Contractor shall pay for, provide, and install all necessary Owner-approved temporary equipment required for use of the Owner’s electrical power for minor renovations and/or alterations construction work within the Project site of an Owner-occupied facility. Temporary equipment shall be installed and maintained in accordance with all applicable safety regulations and the Owner’s requirements.
   1. Electrical power for the operation of small tools and equipment required for work outside of the Project site will be provided by the Owner as reasonably available from approved existing sources.

E. Lighting: Provide and maintain LED (light-emitting diode) type construction lighting to provide adequate general illumination of the work area and trade task lighting. Shield construction lighting from adjacent residential areas.
F. Heating and Ventilation: Provide temporary heat as required to protect materials and equipment from dampness, cold, and mold growth. Method of heating is subject to approval of Owner’s Representative. Fuel fired “salamander type” heaters are not permitted, unless approved by Owner.
1. Owner’s HVAC system shall not be utilized for construction in the UW Medical Center. Supply and return air grills shall be completely sealed-off within the Project site.
2. New building HVAC systems shall not be operated or used for construction until such time the Contractor has submitted the Contractor’s final punch list report, unless otherwise approved by Owner.
3. Renovations of Owner’s facilities may utilize existing ducted ventilation supply diffusers but shall not utilize exhaust systems, including return-air grills or fans. Un-ducted plenums over a construction work area must have all ceiling tiles in place, unless otherwise indicated in the Contract Documents or approved by the Owner.
   a. If Owner’s HVAC system is utilized for construction, the Contractor shall:
      1) Protect the HVAC system from construction dust contamination and provide cleaning of the components exposed to contamination prior to Owner’s occupancy.
      2) Install filter media having a minimum efficiency reporting value of 8 (MERV 8) according to the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 52.2-1999 at each supply and return-air grill used during construction.
      3) Replace Owner’s filtration on any return air fan system with a minimum 85% filtration media (as determined by ASHRAE 52.1-1992) prior to Substantial Completion.

G. Water: For construction purposes, will be furnished by Owner.
1. Contractor shall pay all costs of temporary piping, including pressure reducing station, double backflow preventer, removal of piping and restoration of Owner’s utilities at the completion of the Work. Piping of temporary water service shall not exceed the capacity of the Owner’s system and shall be limited to 1-1/2” pipe size.
2. Contractor shall provide drinking water from a proven safe source for all those connected with the Work.
   a. The Owner’s “potable” water drinking facilities may be used, if available and approved by Owner.

H. Toilet and Hand Washing Facilities:
1. The Owner’s toilet facilities may be used provided they remain in a clean condition, as approved by Owner.
2. Contractor shall provide alcohol hand sanitizers or hand gel dispensers for workers in medical centers, if restrooms and/or similar hand washing facilities are not available within the Project site.
3. 

I. Elevators: Use of Owner’s elevators is subject to approval of the Owner, unless indicated for construction use in the Contract Documents.
1. Use requires temporary protection and, if indicated in the Contract Documents, restricted hours of use apply.

J. Mobile Communications: The Contractor shall provide cellular phones with e-mail capability for its key on-site personnel.
1.7 TEMPORARY ENClosures AND MISCELLANEOUS CONSTRUCTION

A. Temporary enclosures include, but not by way of limitation, fire-rated barriers, dustproof enclosures, and site fences to protect the Work and to provide for public protection as required by law and ordinance.

1. Provide one-hour fire-rated barriers of gypsum sheetrock and metal studs with taped joints where shown on the Drawings or when removing and/or compromising existing fire safety partitions indicated on the Drawings, such as corridor walls and/or occupancy separations, to completely isolate the construction area from other occupied building areas. Remove and repair finishes to match existing at completion of Work.
   a. Fire Safety during construction, alteration, or demolition must be provided as indicated by the current edition of the International Fire Code with local amendments and applicable rules. Combustible materials are not permitted to be used as barriers.

2. Provide dustproof enclosures within occupied buildings to enclose the entire work area and completely isolate it from surrounding areas, unless otherwise approved by Owner.
   a. At a minimum, construct dustproof enclosures on metal studs from one layer of: 5/8 inch gypsum sheetrock; 1/4 inch fire retardant low VOC (volatile organic compounds) shiny surface materials (such as melamine); 6-mil fire retardant plastic sheathing; or 4-mil fire retardant polypropylene. Tape all joints smoke tight and continuously seal all connection points to existing construction utilizing painters tape for existing surfaces to be retained, melamine tape for melamine enclosures, and duct tape for existing surfaces not to be retained. Enclosures must extend above ceilings to the structure above except when the entire work area ceiling is completely sealed from the above ceiling space, in which case, the seal may occur at the ceiling. If the Contractor employs a combination of temporary enclosures and existing construction to enclose the work area, the Contractor shall seal any penetrations found in the existing construction, including supply and exhaust HVAC duct grills that shall be blocked off and sealed shut.
      a. All existing finishes damaged by construction are to be repaired to their original condition and ceiling tiles damaged by the Contractor are to be replaced with equivalent undamaged tiles at completion of the Work.
      b. An Owner-approved portable mini-enclosure shall be utilized outside the containment area for ceiling work: that will be completed within one shift; with limited dust disturbance/creation; with little anticipated noise; and with no "hot work."
         1) Portable mini-enclosures shall be constructed of 6-mil fire-retardant plastic sheathing with zipper openings. Completely seal all joints and connection points with smooth vinyl tape. All ceiling tiles removed by Contractor must be placed back into position before the mini-enclosure is removed.

3. Fire barrier and/or dustproof enclosure doors are to be installed in rigid frames and be self-closing and fitted with a gasket or other material to restrict closing noise and inhibit airflow, except for plastic sheathing enclosures which shall have zipper wall doors for personnel access. The door and its frame shall be painted in medical centers.
   a. All interior Project site entrances and exits shall have dust containment walk-off mats (sticky mats) present at all times. Provide 24” x 36” minimum size with layers to be peeled off when fully loaded. Secure mats to floor and install snug to enclosure entrances.
      1) Mats must be clean, intact and maintained on a constant basis. Avoid locating adhesive walk-off mats in public walking areas and patient transport areas in medical centers.

4. All elevator openings within the work area of occupied buildings, except working construction elevators, shall be sealed airtight from the work area.

5. Site Fences: Provide temporary six (6) foot high chain link fence panels with top rail fastened to tubular metal posts set in heavy concrete bases to prevent ready relocation, unless otherwise indicated, to enclose exterior areas of the Project site and off-site lay-down and Contractor parking areas provided by the Owner. Panels are to be anchored
together to prevent entry between panels. Provide gates or equal to facilitate access to fire hydrants, pumper connections and standpipes. No barbwire is permitted.

B. Provide miscellaneous construction to protect the Work. Furnish, install, and maintain for the duration of construction all required tarpaulins, barricades, security barriers, canopies, warning signs, steps, bridges, platforms and other temporary construction necessary for the safe and proper completion of the Work. Maintain the temporary construction in compliance with all pertinent safety and other regulations. Temporary barricades that obstruct exit paths from occupied areas shall not be installed unless approved by Owner.
   1. Egress Signage: Provide and install temporary exit signs, as needed, to insure a clear direction or emergency exit travel in occupied areas adjacent to the construction project. Review the temporary exiting routes and signage design and location with Owner’s Representative.
   2. Other Signage: Provide informational signs, warning signs, and any other sign required by AHJ for the Project.

1.8 NOISE AND VIBRATION CONTROL

A. Construction shall not exceed the maximum permissible sound levels defined by the local AHJ and shall meet the special conditions of the Project.

B. Exterior Construction Noise: Maintain the sound pressure level of exterior construction noise from exceeding decibels with a frequency rating function A (60 dBA) inside adjacent facilities with windows closed between the hours of 8:00 a.m. and 5:00 p.m. weekdays.
   1. If required, the Contractor shall meet this criterion by erecting barriers between work equipment and adjacent facilities.

C. Limited Hours of Use With-in Buildings: Noise-producing equipment exceeding 60 DB(A) and/or vibration-producing equipment is subject to approval of Owner and in general will be allowed only before 7 a.m. and after 6 p.m. except within medical centers where use will be allowed from 8 a.m. - 7 p.m., unless otherwise approved by the Owner.
   1. When possible, combine noisy and vibration-producing operations into one time period.
   2. Specific scheduling is required for Work within the UWMC, HMC and the UW Health Sciences Center. Contractor shall provide its work schedule to Owner for approval no later than three (3) weeks prior to commencing any noisy and/or vibration-producing work.

D. Noise and Vibration Control Plan: Contractor shall submit a written procedure to minimize construction vibration and noise prior to performing physical impacts to, or demolitions of, existing structural components.

E. Machinery & Equipment: Equipment shall be as quiet as feasible for the work being performed. Electric-driven or hydraulically drawn is preferred to gas, diesel, or pneumatic powered machinery. If noise levels on any gear cannot meet the criteria of this Section, either that gear will not be allowed on the job or use times will have to be scheduled subject to approval of the Owner. Conformance to this requirement shall be included in the Contract price and no compensation will be allowed for special equipment or overtime that may be required.
   1. Construction personnel shall limit the extent of unnecessary equipment idling.

F. Outdoor Vehicle and Internal Combustion Engine Noise: In addition to the requirements applicable to exterior construction noise in this Section, the sound pressure level of each piece of equipment shall not be greater than 85 dBA when measured at the property line of adjacent real property of another person, and when measured at a distance of 50 feet from the emission source under noisiest operating conditions.
1. Rubber-tired equipment shall be used whenever possible instead of equipment with metal tracks.

2. When required, mufflers for stationary engines shall be “hospital-area” quality of silencing.
   a. Contractor is to routinely verify equipment mufflers and/or noise barriers are intact and operational.

G. Air Compressors: Equip air compressors with silencing packages--electric-driven preferred.

H. Arc Welders: No arc welders are to be connected to Owner’s utilities, unless approved by the Owner. Provide separate gas generators for arc welders.

I. Jack Hammers and Rotary Hammer Drills: May be used where no other alternative is available, if permitted by the Owner. The use of core-drilling and saw cutting equipment, or electric driven drills is preferred. Time of use is subject to approval by Owner.

1.9 CONSTRUCTION PARKING AND STAGING:

A. Parking permits are required for all vehicles parking on campus. Parking without a valid parking permit will result in citation and possible impound of vehicle.
   1. Parking on or near University of Washington campuses is congested. To minimize disruptions to campus operations and the impact on the adjacent neighborhoods, Contractor shall limit the number of vehicle trips to the Project site and encourage carpooling. In addition, the Contractor shall advise construction workers not to park on city streets and in neighboring residential areas.
      a. Parking on the University of Washington Bothell campus, outside a fenced Project site, is not available or permitted for Contractor and Subcontractor vehicles on the dates of graduation, convocation, and on Husky football game days.
      b. This information shall be posted at the Project site along with bus pass/ticket information.
   2. The Contractor is responsible for advising all parties on the Project of their designated parking area and ensuring that all workers park there. If parking needs change for any reason, Contractor shall advise the Owner’s Representative so, to the extent possible, necessary accommodations can be made.
   3. A designated parking area, outside the Project site, is for workers’ personal vehicles only and not for the storage of construction equipment or materials.

B. The Contractor shall limit construction parking to area(s) indicated in the Contract Documents.
   1. Daily construction parking is available for purchase at the surface parking lots.
   2. Parking permits for construction parking within a staging lay-down area or within a temporary parking area with site fencing will be issued at no cost to the Contractor. Specific responsibilities include:
      a. Contractor shall provide Owner's Representative with the projected number of permits required two weeks prior to the month required.
      b. Owner's Representative will provide to Contractor the requested number of monthly parking permits no later than the 25th day of the preceding month prior to the month for which permits are to be used.

1.10 CONSTRUCTION TRAFFIC

A. The Contractor and the Contractor’s Subcontractors and suppliers shall minimize negative traffic impacts on city streets for construction. Scheduled truck traffic shall avoid the peak hours of 7:00 – 9:00 AM and 3:00 – 6:00 PM, Monday through Friday.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the administrative and procedural requirements for field engineering, in addition to requirements specified elsewhere in the Contract Documents, requiring the Contractor to employ a registered “Structural Engineer” and/or “Land Surveyor.”

B. Related Sections:
   1. Section 01 73 29 “Cutting and Patching”

1.2 QUALITY ASSURANCE

A. Contractor shall employ a registered Structural Engineer (Contractor’s Structural Engineer) experienced in construction techniques and sequences, and temporary structural support systems, who is licensed in the State of Washington.

B. The Contractor shall employ a registered Land Surveyor (Contractor’s Surveyor) who is registered in the State of Washington, and acceptable to Owner, to perform survey work of this Section.

C. Submit the name, address, and telephone numbers of the Contractor’s Structural Engineer and Land Surveyor for Owner’s records, prior to their performance of Work.

1.3 CONTRACTOR’S STRUCTURAL ENGINEER

A. The Contractor’s Structural Engineer shall advise the Contractor as to the safety and adequacy of all temporary structural provisions necessary for cranes and hoisting, erection and/or alteration of the building structure and shall assume the responsibilities and duties as it relates to means and methods for these items (e.g., erection sequence, temporary bracing, cutting).
   1. Temporary bracing shall be coordinated with other trades to permit continuous operation of construction.
   2. Should it be necessary to modify the structural design to accommodate construction means and methods, the Structural Engineer shall advise the Contractor who shall immediately notify the A/E and await his/her direction.
   3. Proposed changes or modifications to the structural design shall be submitted to the A/E for approval prior to the Contractor incorporating changes or modifications into the Work.

1.4 OWNER’S PROPERTY SURVEY

A. Owner’s property survey for the Project is included in the Contract Documents.

B. The Owner will provide the services of a public land surveyor to locate the property corners noted on the Contract Documents and establish benchmarks for use by the Contractor.

1.5 PROJECT SURVEY REQUIREMENTS

A. Before proceeding with layout of actual work, the Contractor, working through the Contractor’s Surveyor, shall verify the layout information shown on Contract Documents and the Owner’s property survey.
B. As work proceeds, the Contractor shall check every major element for line, level and plumb, and shall require the Contractor's Surveyor to maintain a complete and accurate record book log of control of such checks and upon request shall make this log of control available for the Owner's and A/E's reference.
   1. Record deviations from required lines and levels and promptly advise the Owner's Representative upon detection of any discrepancies including, but not limited to, conflicts, errors, inconsistencies, or deviations that exceed the Contract specified or indicated or industry recognized tolerances.
   2. If discrepancies are found, no work shall be done until the Owner's Representative has been so notified and has provided the Contractor with written direction and/or drawings which correct and clarify the discrepancy.
   3. All work which is determined to be incorrectly located will be rejected by the Owner. Any additional corrective work caused by discrepancies that should reasonably have been known to the Contractor and were not called to the attention of the Owner's Representative, shall be borne at the Contractor's expense.

C. Protect Owner's benchmarks and survey control points prior to starting site work and preserve during construction. Do not change or relocate benchmarks or control points without Owner's written approval. Promptly report lost or destroyed benchmarks or control points.

1.6 PROJECT RECORD SURVEY

A. Contractor working through the Contractor's Surveyor shall perform the following:
   1. Upon completion of new foundation walls, prepare and submit a certified survey showing that dimensions, elevations, angles, and location of the building are in accordance with the Contract Documents.
   2. Upon completion of the below grade site work, certify that the Project Record site survey represents the actual dimensions, elevations, lines, grades, and levels, including invert elevations, constructed in the field for all below grade installations and existing services located during the Work referenced to Owner's benchmarks. This shall include the locations of all below grade site improvements including, but not be limited to, civil, electrical and mechanical services, utility tunnels, duct banks and vaults, and irrigation system.
   3. The above documentation shall be submitted to the Owner under provisions of Section 01 77 00 for CAD As-built Shop Drawings.

1.7 PROJECT LAYOUT REQUIREMENTS

A. The Contractor shall be responsible for laying out the Work utilizing recognized engineering survey practices. Establish elevations, grades, lines and levels for:
   1. Site improvements, including pavements, walks and retaining walls, stakes for grading, fill and topsoil placement, utility locations including slopes and invert elevations, and irrigation system.
   2. Grid and axis of building structures.
   3. Building foundations, column locations, ground floor elevations, elevations and levelness for floors and roofs.
   4. Other elevations, grades, lines and levels, as needed to properly locate each element of the Project.

B. Calculate and measure required dimensions as shown within recognized tolerances. Do not scale drawings to determine dimensions.

C. Advise entities performing work of marked elevations, grades, lines and levels, provided for their use.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the administrative and procedural requirements for cutting and patching and general alterations of the Project including, but not limited to, preparations, products, transitions and adjustments, and repairs and disposal.

B. Related Sections:
   1. 01 11 01 “Summary of Work – Regulated Materials”
   2. 01 35 23 “Owner’s Safety Requirements”
   3. 01 71 23 “Field Engineering”

1.2 CONTRACTOR RESPONSIBILITY

A. The Contractor shall bear all cost of correcting damaged or destroyed work, indicated to remain on the Contract Documents, which is caused from failure to comply with the requirements of the Contract Documents or failure to exercise reasonable care by the Contractor and/or the Subcontractors’ work.

1.3 SUBMITTALS

A. Notice:
   1. Submit written request two (2) weeks in advance of cutting or alteration which affects:
      a. Structural integrity of any element of the Project;
      b. Integrity of weather-exposed or moisture-resistant elements;
      c. Efficiency, maintenance, or safety of any operational element;
      d. Visual qualities of sight exposed elements; and
      e. Work of Owner or separate contractor.
   2. Include in request:
      a. Project name
      b. Location and description of affected work
      c. Description of proposed work
      d. Reason for cutting or alteration
      e. Alternatives to cutting and patching
      f. Effect on work of Owner or separate contractor
      g. Written permission to affect separate contractor
      h. Date and time work will be executed, including duration of work
      i. Utility Shutdown Request form, as appropriate
   3. Owner will respond in writing to the submitted request.

B. Visual Matching: When indicated to “match existing,” submit products and/or finishes to match existing adjacent finishes for Owner’s review and approval or, for patching new work, use the specified materials and finishes in the Contract Documents.

PART 2 - PRODUCTS

2.1 PATCHING AND EXTENDING WORK

A. The Contractor shall provide products specified in the Contract Documents and/or match existing products with an alternate product of the most suitable grade for the intended purpose.
B. The Contractor shall determine the type and quality of existing products and finishes by inspection and/or testing, where necessary.
   1. Remove samples of existing installed work for testing only when approved by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to commencing work:
   1. The Contractor shall inspect existing conditions to ascertain elements subject to damage or movement and to determine the need for temporary bracing during cutting and patching work; and
   2. Verify that materials to be worked-on or removed have been evaluated in the Owner's Regulated Materials “Good Faith” Survey report.

B. Beginning of cutting or patching means acceptance of existing conditions.

C. After cutting and/or removing existing work:
   1. The Contractor shall inspect conditions affecting performance of new work and notify Owner of any unforeseen physical conditions; and
   2. Verify that demolition is complete and areas are ready for installation of new work.

3.2 PREPARATION

A. Move, or remove, items as necessary for access to cutting and patching work.

B. For Owner occupied facilities, prepare a noise and vibration control plan in accordance with Section 01 50 00 “Temporary Facilities and Controls.”

C. Schedule shut-downs and obtain permits required for performance of the Work.

D. Provide temporary supports to ensure structural integrity of the Work.

E. Provide temporary enclosures, shielding devices and/or other methods to protect the following from damage:
   1. Existing conditions that are to remain
   2. Owner occupied areas
   3. Owner’s building systems, including HVAC systems

F. Establish “hot-works” fire safety precautions required for performance of the Work.

3.3 PERFORMANCE

A. Execute cutting and patching work in a manner to:
   1. Avoid damage to other work;
   2. Provide proper surfaces for installation of new work; and
   3. Provide a neat transition from existing finishes to new work.
      a. Fit new work to existing pipes, sleeves, ducts, conduit and other penetrations through surface

B. For all new work made to existing work under warranty, employ original installer or fabricator to perform cutting and patching unless otherwise approved by the Owner.
C. For additional cutting and patching requirements in medical centers, see Section 01 35 33 “Infection Control.”

D. Prepare surfaces to provide for the specified installation of new work and finishes.
   1. Remove and replace or repair unsuitable substrate materials (e.g., rotted wood, water damaged materials, corroded metals and deteriorated concrete) for new applications.

E. Restore existing building systems that are impacted by cutting and patching work to original operating conditions.

F. For penetrations cut in existing fire-rated separations, completely seal new work with fire-stopping materials to full thickness of the penetrated element.
   1. Replace existing fire-stopping materials when disturbed by new work.

G. Unless otherwise indicated in the Contract Documents, cut concrete and masonry materials using a diamond saw in accurately located straight lines. Pneumatic tools are not allowed without Owner’s prior approval.
   1. Concrete walls: Core drill pipe penetrations. Saw both sides of wall and break out remainder. Minimize overcuts.
   2. Concrete floors: Provide temporary support of elevated floor areas requiring removal and saw-cut. Core-drill pipe penetrations.
   3. Masonry walls: Saw-cut along mortar joints. Remove all mortar adhering to edges. Overcuts are not allowed.
   4. Wood and/or metal frames walls: Cut wall finish materials in straight uniform lines and remove wall framing as required.

H. Remove debris and abandoned items from the work area, including from concealed spaces. 

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This section includes administrative and procedural requirements for construction waste management activities.

B. Related Sections:
   1. 01 50 00 “Temporary Facilities and Controls”

1.2 GOALS AND PROCEDURES

A. The Owner has established waste management goals for this Project with the minimum requirement of diverting 50% of non-hazardous and non-regulated construction and demolition waste, including recycled or donated materials, by weight in tons, from landfill disposal and/or incinerator.
   1. For materials which contain lead or have lead-containing coatings, see Section 01 11 01 “Summary of Work – Regulated Materials.”

B. Waste classified as hazardous materials or dangerous waste will be disposed of by the Owner (see Section 01 11 01 “Summary of Work – Regulated Materials,” if applicable).
   1. If the Contractor suspects that an unidentified hazardous or dangerous material may exist in the Project area, the Contractor shall inform the Owner of this possibility. Owner will investigate and test the material to determine the extent and nature of the material and to decide on appropriate procedures.

1.3 CONTRACTOR RESPONSIBILITY

A. To the maximum extent possible, the Contractor shall separate recyclable materials from construction, demolition, and land clearing waste to be disposed of as garbage.

B. The Contractor shall designate an on-site construction “waste management coordinator” responsible for instructing the Contractor’s workers and Subcontractors in the requirements of the construction waste management plan and for overseeing and documenting results.
   1. When on-site dumpsters and recycling bins are required by the Contract Documents, the waste management coordinator shall conduct regular visual inspections of dumpsters and recycling bins to ensure materials are being separated properly and to remove contaminants.

1.4 DEFINITIONS

A. Construction, Demolition, and Land Clearing (CDL) Waste: Includes all non-hazardous solid wastes including material that is recycled, reused, salvaged, and/or disposed of as garbage.

B. Salvage: Recovery of materials for reuse.

C. Reuse: Making use of a material without altering its form for reuse on-site or reuse on other projects off-site (e.g., grinding of concrete for use as sub-base material and chipping of land clearing debris for use as mulch).

D. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for use in the manufacture of a new product.
E. Source-Separated CDL Recycling: The process of providing on-site separation of recyclable materials into separate containers as they are generated. The separated materials are hauled directly to a recycling facility or a transfer station.

F. Co-mingled CDL Recycling: The collection of mixed recyclable materials in one on-site container. The container is taken to a material recovery facility where materials are separated for recycling.

G. Material Recovery Facility (MRF): A facility used to sort and recover CDL waste materials for recycling.

H. Transfer Station: A facility where waste is moved from collection vehicles to larger trucks for longer distance transport to a landfill, source-separated recycling facilities, or MRF.

I. Approved Recycling Facility: A facility that can legally accept CDL waste materials for the purpose of recycling into a new product where the method of recording and calculating the recycling rate is regulated by local or state government.

1.5 PERFORMANCE REQUIREMENTS

A. General: Divert CDL waste from landfills by one, or by a combination, of the following activities:
   1. Salvage
   2. Reuse
   3. Source-separated CDL recycling
   4. Co-mingled CDL recycling

B. CDL waste materials to be salvaged, reused, or recycled include, but are not limited to, the following:
   1. Acoustical ceiling tiles
   2. Asphalt
   3. Asphalt shingles
   4. Brick
   5. Cardboard
   6. Carpet and pad
   7. Concrete
   8. Drywall
   9. Insulation
   10. Metals
   11. Paint
   12. Porcelain
   13. Wood
   14. Plastic film such as sheeting, shrink wrap, and packaging
   15. Window glass
   16. Field office waste such as paper, aluminum cans, glass, plastic, and office cardboard

1.6 CONSTRUCTION WASTE MANAGEMENT (CWM) PLAN

A. Prior to performing any on-site work, the Contractor shall develop and submit a CWM plan for Owner’s review and comment. The CWM plan shall include a reuse and salvage plan, identification of waste types by quantity and weight in tons, methods of disposal, and handling and transportation procedures. Include separate sections in plan for construction demolition, land clearing debris and construction waste.

B. The reuse and salvage plan shall include:
1. A list of items being reused in place or elsewhere on the Project;
2. A list of items for reuse off-site through salvage, resale or donation; and
3. A plan for protecting, dismantling, handling, storing and transporting the reused items.

C. The Contractor shall organize the CWM plan to include the following information:
1. Types and estimated quantities, by weight in tons, of CDL waste expected to be generated during demolition and construction.
2. Proposed methods for CDL waste salvage or reuse during demolition including, but not limited to, one or more of the following:
   a. Contracting with a deconstruction specialist to salvage materials
   b. Selective salvage as part of the demolition Subcontractor’s work
   c. Reuse of materials on-site, or sale or donation to a third party for reuse
3. For this Project, there is no on-site space available for source-separated CDL recycling and waste collection. The Contractor shall contract with a recycling hauler, who accepts commingled construction and demolition debris, for hauling to an approved MRF.
4. Name of recycling facility or MRF receiving the CDL wastes.
5. On-site Handling Plan: Proposed locations for collecting CDL waste and/or separating recyclable waste into containers including, but not limited to, types and sizes of containers, and frequency of removal.
6. CWM Communication Procedures: Describe how the CWM plan will be communicated to the Contractor’s workers and the Contractor’s Subcontractor’s workers (of any tier).

1.7 CONSTRUCTION WASTE MANAGEMENT (CWM) REPORT

A. CWM Report: The Contractor shall submit a cumulative CWM report on an Owner-approved form as a requirement of Final Completion with the following attachments:
1. A record of the type and quantity, by weight in tons, of each material salvaged, reused, recycled or disposed of
   a. Dirt and land debris must be documented separately
2. Total quantity of waste recycled as a percentage of total waste
3. Disposal Receipts: Copy of receipts issued by a disposal facility for CDL waste that is disposed in a landfill
4. Recycling Receipts: Copy of receipts issued by an approved recycling facility
   a. For co-mingled materials, include weight tickets from the recycling hauler or MRF and verification of the recycling rate for co-mingled loads at the facility.
5. Salvaged Materials Documentation: Types and quantities, by weight, for materials salvaged for reuse on-site, or sold or donated to a third party

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT MEETING

A. The Contractor shall schedule and administer a construction waste management meeting prior to construction activities and shall record and distribute copies of meeting minutes to all attendees (The Contractor may conduct this meeting as part of the first pre-installation meeting).
1. Attendees:
   a. Owner’s Representative
   b. A/E
   c. Contractor’s superintendent and waste management coordinator
   d. Major Subcontractors
   e. Business and Industry Resource Venture representation, as appropriate
2. Agenda Items: Review methods and procedures related to waste management including, but not limited to the following:
   a. Review and discuss CWM plan, including identification of and responsibilities of the Contractor's waste management coordinator
   b. Review requirements for documenting quantities of each type of waste and its disposition.
   c. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays
   d. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   e. Review waste management requirements for each trade.

3.2 SOURCE-SEPARATED CDL RECYCLING

   A. Provide containers for separating CDL waste that is to be recycled, clearly labeled with a list of acceptable and unacceptable materials.

   B. For managing on-site stockpiled recyclable materials until removed, stockpile without intermixing with other materials, place and shape to drain surface water, and cover to prevent windblown dust.
      1. Stockpile materials away from demolition areas. Do not store within drip line of existing trees.

3.3 CO-MINGLED CDL RECYCLING

   A. Do not put CDL waste that will be disposed of in a landfill into a co-mingled CDL waste recycling container.

3.4 LANDFILL AND/OR INCINERATOR WASTE

   A. Provide containers for CDL waste that is to be disposed of in a landfill or by incineration, clearly labeled as such.

3.5 REMOVAL OF CONSTRUCTION WASTE MATERIALS

   A. Transport CDL waste materials off Owner’s property and legally dispose of them.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies minimum administrative and procedural requirements for mechanical and electrical systems functional performance testing required by the Contract Documents.

B. Related Sections:
   1. 01 91 00 “General Commissioning Requirements”

1.2 SERVICES

A. Test Engineer - provided by Contractor.

B. Commissioning Authority - provided by Owner.

C. Electrical Testing Contractor (ETC) - provided by Electrical Subcontractor (working through the Contractor’s Test Engineer).

1.3 REQUIREMENTS FOR TEST ENGINEER

A. The Contractor shall provide the services of a “Test Engineer” experienced in commissioning including the troubleshooting of equipment and systems. The Test Engineer shall be qualified to develop and write, coordinate and schedule, and manage and document mechanical systems functional performance tests (FPT). The Test Engineer shall also coordinate the work of the ETC and assemble the required electrical commissioning documentation.
   1. Qualified personnel experienced in the technical aspects of each system to be commissioned shall be provided, if necessary, to augment the expertise of the Test Engineer.

1.4 TEST ENGINEER DUTIES

A. The Test Engineer shall prepare and submit all FPT and commissioning documentation required by the Contract Documents for the actual equipment and systems installed, including but not limited to, start-up plans, installation verification audit reports, start-up and FPT deficiency report forms, test equipment identification lists, FPT procedures, FPT data forms, and one-line system and riser diagrams.
   1. Maintain separate mechanical and electrical (M&E) systems “Commissioning Binders,” indexed and tabbed according to the equipment or systems requiring commissioning, to compile the start-up and FPT documentation. Blank start-up forms, approved by the Commissioning Authority, shall populate the initial binders and be replaced with completed forms that shall be submitted in final M&E systems Commissioning Binders, as a requirement of Final Completion. The binders shall be on-site during the work (see Section 01 91 00 for the Commissioning Binders documentation requirements).
   2. Prior to testing, the Test Engineer shall have applicable Subcontractor’s and manufacturer’s representatives review the test and commissioning documentation to identify personnel safety issues, equipment protection issues, and to validate relevance to the actual equipment provided.

B. Prepare and submit a “Commissioning Plan” for Owner’s review and comment before developing the FPT procedures and prior to any equipment or systems testing and/or start-up required by the Contract Documents.
C. Develop a commissioning schedule for all FPT and commissioning activities required by the Contract Documents and integrate into the construction Progress Schedule. Identify:
   1. Commissioning Plan preparation, submittal, and review;
   2. Each required functional performance test;
   3. Sequence of testing, including commissioning activity start-up prerequisites, point-to-point testing, and balancing activities; and
   4. Submission and approval of test results.

D. Develop and write FPT procedures for all equipment tests, and systems and cross-systems tests required by the Contract Documents. Test procedures shall be in accordance with equipment manufacturer's recommendations, where applicable. Test procedures shall fully describe the equipment or system configuration and steps required for each test. The procedures shall be appropriately documented so that another party can repeat the identical test.
   1. Maintain a set of drawings for recording the sign-off of each component of the plumbing and piping system pressure testing, heating, ventilation, and air conditioning (HVAC) system duct work pressure testing, and the completed flushing/cleaning and treatment activities.

E. Coordinate the participation of each Subcontractor, including the ETC, specific to their start-up and testing responsibilities. Inform each Subcontractor as to what their test and expected results will be prior to commissioning.

F. Observe the progress of the work to assure that all installations requiring commissioning are being made in accordance with the Contract Documents. Prepare and submit installation verification audit reports prior to the start-up of equipment or systems for which a formal start-up is specified in the Contract Documents.

G. Coordinate all cross-systems testing such as HVAC, environmental controls, fire alarm, emergency power, life safety, elevators, and chiller controls.

H. Manage and observe the start-up testing and all final tests of equipment and systems required by the commissioning plan and document test results.

I. Report any deficiency in equipment or systems and either enforce compliance with the Contract Documents or provide Owner with technical expertise to recommend modifications to the equipment or systems to correct the deficiency. Oversee and direct the correction of deficiencies found during commissioning.

J. Coordinate the required Commissioning Authority, A/E or other Owner-witness participant for all test/approval procedures, after verifying that pretests have been satisfactorily conducted and final tests are ready to be performed.
   1. Notify the Owner's Representative in writing of the date, time, location, and anticipated duration of start-up and test activities, with a minimum of five (5) working days advance notice.
   2. Obtain the signature of the designated witness on all data forms. If the witness is unavailable at the scheduled time and location of the activity, so note, and proceed per schedule without the witness.

K. Compare operation and maintenance information provided by the various Subcontractors and vendors with the Project Record documents and report any discrepancies to the Owner's Representative.
L. Oversee and provide Owner with operating instruction and training for the mechanical and electrical equipment and systems specified in the Contract Documents, with coordination by the M&E Subcontractors.

M. Provide as-built information to update the commissioning basis-of-design criteria.

1.5 TEST FAILURES

A. In the event that a functional test fails, the Contractor shall determine the cause of failure, rectify the failure as soon as possible, and then retest. If more than two (2) functional tests of the same system are required, all costs for additional testing shall be borne by the Contractor, at the Owner's sole discretion.

1.6 CANCELLATIONS

A. The Test Engineer shall give at least 48 hours advance notice to the Owner's Representative of cancellation of any scheduled test.
   1. Any costs incurred by Owner due to insufficient advance notice of cancellations shall be borne by the Contractor, at the Owner's sole discretion.

1.7 WARRANTY TESTS

A. In the event a product fails during the warranty period, the Contractor shall determine the cause of failure, rectify the failure as soon as possible, and then retest. All warranty testing shall be borne by the Contractor.

1.8 TEST ENGINEER QUALIFICATIONS

A. The Contractor shall propose a Test Engineer, who is competent in the Project's M&E systems design and intent, for the Owner to evaluate and approve or reject in writing, based upon the following criteria which shall be documented in the Test Engineer resume.
   1. The Test Engineer shall have extensive experience in start-up and troubleshooting of HVAC, hot water heating, chilled water, steam, plumbing, electrical, emergency power, fire alarm, lighting controls, life safety systems and other systems of similar complexity to those contained in the Contract Documents that are required to be commissioned.
   2. The Test Engineer shall:
      a. Be familiar with the Project's control operating system(s);
      b. Be capable of troubleshooting control code and recommending necessary modifications;
      c. Be knowledgeable in testing and balancing of both air and hydronic systems;
      d. Have an excellent working knowledge of complex fire alarm, environmental and electric power control systems;
      e. Have excellent communication and writing skills, be highly organized, and be able to work well with the Project's Subcontractors; and
      f. Have a Bachelor's degree in mechanical engineering, PE certifications, and related field experience.
   1) However, in lieu of a Bachelor's degree and PE certifications, other technical training with extensive practical field experience may be considered.

B. Test Engineer Resume - The Contractor shall submit the Test Engineer's resume, including the following documentation:
   1. Present or most recent employment:
      a. Company name and address
      b. Present title and job description
      c. Dates of employment

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2. Other relevant work experience:
   a. Company name and address
   b. Job title and description
   c. Dates of employment
3. For a minimum of three (3) similar projects, description of commissioning experience and roles performed in commissioning activities that demonstrate working knowledge of complex systems.
4. Samples of a commissioning plan, a start-up plan, and a FPT with data forms written by the Test Engineer.
5. References from a minimum of three (3) project owners and/or commissioning authorities.
6. Description of education, certifications, and other technical training or field experience.

1.9 COMMISSIONING AUTHORITY

A. The Owner will provide a “Commissioning Authority,” or appoint an Owner-designated witness, to act as the commissioning authority.
   1. The Commissioning Authority will provide no labor or equipment in the commissioning process.

B. The duties of the Commissioning Authority are to:
   1. Provide commissioning basis-of-design criteria, for Contractor’s information;
   2. Ascertain that the Project commissioning processes and information provided is in accordance with the requirements of the Contract Documents;
   3. Review the Contractor's Commissioning Plan, start-up plans, installation verification audit reports, start-up and FPT deficiency report forms, and FPT data forms;
   4. Review the Contractor's equipment, systems and cross-systems FPT procedures;
   5. Witness, verify, and approve satisfactory completion of equipment, systems and cross-systems FPT, based upon the Contract Documents requirements;
   6. Review for accuracy, comment on, and approve specified close-out documentation;
   7. Recommend Substantial Completion when commissioning and training has been successfully completed; and
   8. Provide final commissioning reports to the Owner.

C. The Commissioning Authority will communicate as follows:
   1. The Commissioning Authority will formally communicate with the Contractor via approved project channels. It is expected, however, that informal communication and coordination will be conducted directly with the Test Engineer. As the Owner's commissioning representative, it is expected that the Commissioning Authority will communicate directly with A/E, as may be appropriate.
   2. The Commissioning Authority will keep the Owner's Representative advised regarding commissioning activities and progress, equipment and systems performance, and any problems and solutions thereto.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for Contract closeout including, but not limited to:
   1. Project Record
   2. Operation and Maintenance Manuals
   3. Warranties and Bonds Manual
   4. Operating Instructions and Training
   5. Cleaning
   6. Owner’s Final Inspection
   7. Substantial Completion
   8. Final Completion, and
   9. Final Acceptance

B. For additional specific construction Work, closeout requirements are described in Divisions 02 thru 49 of the Specifications.

1.2 PROJECT RECORD

A. General: Project Record documents include the Contractor’s as-built Drawings, as-built Specifications, and as-built Shop Drawings required by the Contract Documents. Project Record documents must be protected from deterioration and stored in a secure fire-resistant location.

B. As-built Drawings: Maintain black line prints of the bid set Contract Drawings and approved Shop Drawings. Mark the drawings to show new information that was not shown on the bid set Drawings, and on the approved Shop Drawings, including the actual installation where the installation varies substantively from the work as originally shown. Mark drawings to show conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
   1. Organize as-built Drawings in manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on the cover of each set.
   2. Mark with reproducible pencil and distinguish between variations in separate categories of the Work. Text size is to be 1/8” minimum. Good basic drafting practice must be applied.
   3. Show bid addenda items, Change Orders, and Request for Information (RFI) responses by their number, and date the revisions with a “cloud” around the revision.
   4. Keep accurate measurements of below-grade site work, including permanent shoring, in accordance with Section 01 71 23 “Field Engineering.”
   5. Show mechanical dampers, valves, reheat boxes, cleanouts, and other equipment and items that require maintenance.
   6. Show location of construction-concealed mechanical, electrical and plumbing (MEP) riser installations including, but not limited to, piping, ductwork, and conduits referenced to visible and accessible features.
   7. Show field changes of dimensions and details.
   8. X-out conditions not constructed and appropriately annotate “not constructed” to convey the actual as constructed condition.

C. As-built Specifications: Maintain one (1) copy of the bid set Contract Specifications showing all addenda, substitutions, Change Orders, and RFIs. Give particular attention to the selection of options, changes in product data, and information on elements engineered by the Contractor.
and note related as-built Drawing information, as appropriate. Clear, legible documentation must be applied.

D. As-built Shop Drawings: The Contractor shall comply with the following CAD (Computer-Aided Drafting), BIM (Building Information Modeling) and PDF (Portable Document Format) standards and requirements when preparing as-built record Shop Drawings required by the Contract Documents.

1. SUBMITTAL CONTENT
   A. Transmission
      1. Drawing package to be submitted using Owners’ construction management system (CMS).

   B. Included Drawings
      1. Submittal must include one Master Sheet Index on a single sheet that lists all drawing files submitted for all disciplines, including the sheet containing the Master Sheet Index. Only if the Master Sheet Index cannot fit on a single sheet may it be split over multiple sheet.
         a. For each file listed on the Master Sheet Index there must be one matching .DWG and one .PDF.
         b. Each drawing file provided in the submittal must be listed on the Master Sheet Index.
      2. If the Master Sheet Index is an OLE object, the index must also be submitted as an Excel .XLS or Text (.txt, .csv, etc.) file.

2. SHEET TITLEBLOCKS
   Sheets must contain a title block on the right or bottom side of the sheet. Title blocks must include labels and the following information:
   a. Date
   b. UW Project Name
   c. UW Project Number
   d. UW Facility Number (FACNUM)
      1. Every title block must include all FACNUMs affected by the project.
   e. Sheet Name
   f. Sheet Number
   g. Consultant Company Name
   h. Jurisdiction Seal where required by jurisdiction.
      1. Example: Within the City of Seattle

3. BIM STANDARDS
   A. Format
      1. BIM models must be submitted in Revit .RVT format.
   B. Packaging for Submission
      1. Models must be detached from central
      2. All worksets must be relinquished
      3. On final export dialog box, UNCHECK the box saying “Export views of sheets and links as external references.”
      4. Use eTransmit to package model and related files.
   C. File Names
1. Revit model file names must start with the UW CPD Project Number

4. CAD STANDARDS
   A. Format
      1. CAD files must be submitted in AutoCAD .dwg format.
   B. File Organization
      1. Each CAD drawing file must represent a single printed sheet.
   C. File Names
      1. Drawing and PDF file names must be titled <Sheet Number> <Sheet Name>.
         a. Examples: A-101 1ST FLOOR PLAN.dwg; A-101 1ST FLOOR PLAN.pdf
   D. Image and .PDF References
      1. Unreferenced and Unloaded images must be detached from the drawing.
         a. No Unreferenced or Unloaded images or PDF underlays should appear in the Xref Manager
   E. External References (XREFs)
      1. External drawing references are not allowed.
      2. External references used during the project must be bound using the ‘Bind’ option (instead of the ‘Insert’ option) before submitting.

5. PDF STANDARDS
   A. Single Sheet .PDF
      1. Each .PDF file must represent a single sheet and must not contain multiple pages.
   B. File Names
      1. .PDF file names must match the corresponding .DWG file names except for the file extension.
   C. File Creation
      1. .PDF files are to be created by printing from the native CAD/BIM format by printing to PDF. Scanning is not permissible.
   D. Layer Content
      1. .PDF files must not contain layers.
   E. Image Resolution (if applicable).
      1. All documents must be created with a resolution of no less than 300 dpi.
   F. Fonts
      1. All fonts must be embedded in the .PDF.
   G. Compression
      1. When compression is used, the algorithm must be LZW, CITT Group 4, or PackBits.
   H. Page Size
      1. The .PDF page size must be the same as the original page size if the page were printed.
         a. Example: ANSI D sized sheet must have a .PDF sheet size of 22 x 34.

1. CAD Compliance Submittal Review Requirements: CAD Shop Drawings shall be electronically submitted for Owner’s CAD compliance review and approval prior to submitting as-built record Shop Drawings. The Contractor may request a compliance review at any time during the work prior to Substantial Completion.

2. Project Record submittal: Provide all record as-built Shop Drawings required by the Contract Documents in CAD, BIM and PDF format (per the requirements of Section 01 33 00 “Submittal Procedures”).
a. CAD files shall be submitted in latest release of AutoCAD .dwg format.
   1) Custom menus or arx applications are not allowed if they create a requirement for the drawing to be used. No menus, custom user interface files or arx applications are to be submitted.
   2) Each CAD drawing shall represent a single printed sheet where the file name conspicuously identifies the sheet number (e.g. sheet A2.1 CAD file name might be A2-1.dwg).
   3) For all disciplines in a submittal, the CAD drawings shall be in a single folder. All supporting files (font files, line types, plot configurations, plot style tables, etc.) are to be in a subfolder.

1.3 OPERATIONS AND MAINTENANCE (O&M) MANUALS

A. Separate manuals shall be provided by the Mechanical and Electrical (M&E) Subcontractors titled MECHANICAL or ELECTRICAL and an additional manual provided by the General Contractor titled ARCHITECTURAL for all other information. The preliminary manuals shall be labeled “Preliminary” and comply with all requirements.

B. The O&M Manuals shall contain all the information needed to operate, maintain and repair all systems, equipment, and product finishes provided in the Project. They shall be presented and arranged logically for efficient use by Owner's operation personnel. As a minimum, the information provided shall include, but not be limited to, the following: (see Architectural, Mechanical and Electrical Divisions for additional requirements)
   1. Product description including, but not limited to, manufacturer, product name or equipment make and model number (and other nameplate data), size and dimensions, color, Material Safety Data Sheets (and related product information), and other pertinent information
   2. Supplier's name, address, e-mail address, phone, and reference order numbers
   3. Product finishes maintenance and cleaning instructions
   4. Performance and calibration data for specific product provided (extraneous catalog data must be eliminated)
   5. Descriptions and diagrams of system assembly and configuration (including components and interrelations)
   6. Manufacturer’s recommended equipment operating and maintenance instructions, including routine lubrication and servicing data, start-up and shutdown procedures, and any seasonal or emergency procedures
   7. Manufacturer’s checklists and methods for troubleshooting
   8. Complete parts list with parts numbers indicating common replacement parts and anticipated useful life
   9. Copies of: digitally signed warranties; any certificates from respective manufacturers, suppliers, and Subcontractors; permits and/or licenses, and; equipment maintenance and service contracts.

C. The O&M Manuals shall contain the following information for specified items, when the item is specified elsewhere in the Contract Documents:
   1. As-built door hardware schedule and submittal documentation
   2. Elevator systems documentation
      a. Wiring/equipment locations diagrams
   3. Refrigeration controls schematics/sequence of operation documentation
   4. Motors data and variable frequency drives (VFDs) documentation
      a. Final settings programmed into the VFDs
   5. Fan and pump curves documentation
   6. HVAC filters schedule
   7. Environmental controls systems (ECS) documentation including hardware and software manuals
8. Electrical--Short Circuit Coordination and Arc Flash Study Report
9. Pull calculations documentation for MV wire, cable, and terminations
10. Electrical transformer factory test reports documentation

D. Drawings included in the manual shall not exceed 11” x 17.”

E. Hard copy manuals shall be bound in a slant-D, 3-ring, view binder with a clear overlay insert on the front cover and spine.
1. Provide a cover slip sheet and a spine sheet typed with ARCHITECTURAL, MECHANICAL, and (or) ELECTRICAL OPERATIONS AND MAINTENANCE MANUAL, University Project name, University Project number, University Facility number, A/E name, and Contractor name. Label manuals consecutively (ex., Mechanical 1 of 3).
2. Each manual shall have a typed index and tabbed dividers between specification divisions and sections or, when presented in a logical format by Contractor and approved by Owner, between systems/equipment categories.
3. Contents of the manual shall be printed on 8-1/2” x 11” acid free, recycled copy paper.

F. ARCHITECTURAL, MECHANICAL, and ELECTRICAL manuals may be combined into one manual, with approval of Owner.

1.4 WARRANTIES AND BONDS MANUAL

A. Assemble executed warranties and bonds, and any certificates from the respective manufacturers, suppliers, and Subcontractors. Provide preliminary review copies of all warranties and bonds and a final manual with the original documents, titled “Warranties and Bonds Manual.” Manuals shall be assembled in the same format as the O&M Manuals and include a table of contents in complete and orderly sequence.

1.5 OPERATING INSTRUCTIONS AND TRAINING

A. The Contractor shall provide on-site instruction and training for Owner's personnel in all aspects of the philosophy, operation and maintenance of equipment and systems. Instruction and training shall be provided by a qualified trainer from the Contractor or Subcontractor who supplied and installed the equipment and systems and/or a manufacturer's training representative who is familiar with all aspects of the design, operation, maintenance, and troubleshooting of the specified equipment and systems. Training shall be conducted in a classroom setting with appropriate schematics, handouts, and audio/visual aids. All training shall also be digitally recorded in video, cataloged, and provided to Owner in a DVD/container labeled with session identification and date. Attendance shall be recorded. For work requiring commissioning, see Section 01 91 00 “General Commissioning Requirements” for further training session agenda requirements.
1. Prepare and submit a training plan for Owner's information and coordination. For each training session, the training plan shall include the following:
   a. Dates, start and finish times, and locations
   b. Outline of the information to be presented
   c. Names and qualifications of the presenters
   d. List of texts and other materials required to support training

1.6 CLEANING

A. Contractor clean up during construction is specified in the Contract Documents.
1. If Contractor fails to clean as specified in the Contract Documents, and after reasonable notification from Owner, Owner may do so and the cost thereof shall be charged to the Contractor.
2. For work in medical centers, reference housekeeping in Section 01 35 33 “Infection Control.”
3. Contractor shall employ continuous housekeeping cleaning during construction to minimize interior construction dust and particulates during the Work.

B. Preliminary Cleaning: Perform the following preliminary cleaning operations as a prerequisite for Owner’s Final Inspection. The following are examples, without limitation, of minimum cleaning requirements:
   1. Remove labels that are not permanent.
   2. Remove temporary protective coatings and wrappings from all products.
   3. Remove glazing compounds and other vision obscuring substances from transparent and reflective materials provided by the Contractor including, but not limited to, mirrors, glass in doors and interior construction, glass canopies and skylights, and windows inside and out.
   4. Clean all exposed building interior surfaces, including cabinet interiors, and new exterior surfaces to be free of foreign substances including, but not limited to, stains and films.
   5. Leave floors broom-clean. Vacuum carpeted surfaces and clean consistent with manufacturer’s recommendations for installation.
   6. Remove and clean all construction debris and refuse from:
      a. Roofs, mechanical and electrical rooms, tunnels and equipment vaults
      b. Limited access spaces, including above ceiling areas and shafts
      c. Physically inaccessible components of the Work including wall and chase cavities, gutters and downspouts, floor drains and other drainage systems
   7. Wipe surfaces of M&E equipment, including elevator equipment and similar Architectural equipment. Remove excess lubrication and other substances.
   8. Clean the Project site of construction waste, rubbish, and litter. Sweep paved areas broom clean and remove stains, spills, and other foreign deposits.

C. Final Cleaning: Prior to Substantial Completion, employ experienced workers or professional cleaners for final cleaning of the Work. Clean to a condition expected of a normal commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.
   1. Leave entire Project clean and ready for occupancy. All new interior, including cabinet interiors, and exterior building surfaces, fixtures and equipment shall be turned over to the Owner in a new condition, free of all damage, dust, dirt, spots, stains, encrustations, and other blemishes.
   2. Clean transparent materials including mirrors, glass in doors and interior construction, glass canopies and skylights, and windows inside and out.
   3. Clean plumbing fixtures to a sanitary condition.
   4. Clean light fixtures and lamps.
   5. Owner will wax and apply sealers to vinyl composition tile and sheet vinyl floors.
   6. Apply floor finishes.

D. Compliance: The Contractor shall:
   1. Use non-toxic Green Seal Certified cleaning products, or products with low-volatile organic compounds (VOC), and cleaning paper with a post-consumer recycled content;
   2. Employ equipment with high efficiency particulate filtration and sweep compound to keep dust down; and
   3. Comply with current regulations and standards of authorities having jurisdiction and the safety standards for cleaning specified in the manufacturer’s instructions.

1.7 OWNER’S FINAL INSPECTION

A. Prior to Final Inspection: The Contractor shall satisfactorily complete the following actions prior to the Owner’s final inspection of the Project.
1. Submit written notice that the Project is ready for final inspection. Include a copy of the Contractor’s final punch list report (see Section 01 45 00 “Contractor Quality Control”) and list all incomplete work items that have been reviewed with the Owner, and which the Owner has agreed are not necessary prior to Substantial Completion.
   a. Include: a written plan/schedule outlining all actions necessary to achieve Substantial Completion, without requiring extra ordinary participation by Owner and A/E.
2. Complete preliminary cleaning operations.
3. Submit a list of all equipment and systems requiring instruction and training with a proposed schedule of times and locations for the instruction, for Owner’s review and comment.
4. Replace all ventilation systems air filters specified for construction with final filters.
5. Complete start up and functional performance testing of all systems required by the Contract Documents and AHJ including, but not limited to: electrical testing; environmental control systems point-to-point testing; emergency eyewash and safety shower testing; fume hood face velocity testing; and HVAC air balancing (if included in the scope of the Work).
6. Submit one (1) hard copy each of the current air balancing report and the M&E Commissioning Binders labeled “Preliminary,” listing all deficiencies, for Owner’s review and comment.
7. Submit the final audio/visual equipment documentation including, but not limited to, manufacturer/model information and an itemized summary list with equipment serial numbers in PDF format, on Owner’s CMS.

B. Owner’s Final Inspection: Upon satisfactory completion of the actions in 1.7A, Owner will determine if the Project is complete and ready for final inspection and, at Owner’s sole discretion, commence final inspection, or provide a written deficiency list of items to the Contractor of work that must be completed to the satisfaction of the Owner prior to the Owner’s final inspection. Final inspection is performed by the A/E and Owner’s representatives.
   1. After the Owner has issued the final inspection list of corrective work items, the Contractor shall make the required corrections and/or identify items that the Contractor feels are not required by the Contract Documents, and resolve these items with the Owner.

C. Re-inspection: Contractor shall request, in writing, re-inspection after completing the Owner’s final inspection list of corrective work items and providing the Owner the final inspection report noted with a signed-off approval for each of the corrected items. Those items whose completion is delayed due to circumstances acceptable to the Owner will be exceptions. The Owner’s Representative will back check the items or have the A/E perform a re-inspection.
   1. If the A/E is required to perform more than one re-inspection, the costs for additional inspections may be borne by the Contractor, at the Owner’s sole discretion.

1.8 SUBSTANTIAL COMPLETION

A. Substantial Completion: Substantial Completion (for either the entire Work or portions thereof) shall be achieved when all Work, other than incidental corrective and incidental punch list work, is complete including, but not limited to, the following actions:
   1. Complete final cleaning operations.
   2. Submit the “Preliminary” Operations and Maintenance Manual for Owner’s review and comment in one (1) hard copy and in PDF format, on Owner’s CMS.
   3. Submit all sign-offs, releases, jurisdictional settlements, judgments, and other records from AHJ allowing the Owner’s full and unrestricted use and benefit of the facilities including, but not limited to, a temporary or permanent certificate of occupancy permit,
operating permits and/or licenses for the use of building equipment such as elevators, boilers, paint booths, etc. and similar necessary certificates and releases.

a. Provide a list of any outstanding work required by AHJ.

4. Submit the current Project Record as-built Drawings and Specifications identified “Preliminary” Project Record (marked with the date of submission) in PDF format, on Owner’s CMS.

5. Submit the Project Record as-built Shop Drawings required by the Contract Documents in accordance with this Section 1.2D, on Owner’s CMS.

6. Remove all construction tools and temporary facilities not required for Final Completion work from the Project site including, but not limited to, storage sheds, samples and mock-ups, Project identification signage, site fences, crane and hoist base foundation construction, temporary enclosures, and construction electrical power and service.

7. Complete Owner’s personnel operating instructions and training and submit training DVD’s.

8. Deliver specified maintenance equipment and tools to Owner, with itemized summary list.

9. Complete final change-over of locks, transmit new keys to Owner, and return Owner’s loaned construction keys.

a. Submit one (1) hard copy each of the current environmental control systems point-to-point testing documentation and (when specified as work of the Contractor) the current Testing, Adjusting and Balancing (TAB) report (marked with the date of submission).

10. Submit all controls systems software files required by the Contract Documents including, but not limited to, lighting and environmental controls.

B. Substantial Completion: Upon a satisfactory completion of the actions in 1.8A above and the General Conditions requirements for Substantial Completion, the Owner will prepare a letter of Substantial Completion and forward to Contractor. The letter will identify the date of Substantial Completion and include the final punch list report and the commissioning deficiencies list, listing all remaining incomplete work. Contract warranties will begin as of the date of Substantial Completion, as specified in Section 01 78 36 “Warranties,” or as otherwise indicated in the Contract Documents.

1. Substantial Completion and the start of warranties for incomplete items will be established in writing by the Owner when the item is determined complete.

1.9 FINAL COMPLETION

A. Prior to Final Completion shall be achieved when the Work is fully and finally complete, to the Owner’s satisfaction in accordance with the Contract Documents including, but not limited to, the following:

1. All Work, including incidental corrective or punch list work, and air balancing and commissioning work (if included in the scope of the Work) is complete and correct to the satisfaction of the Owner.

2. All remaining temporary facilities are removed from the Project site and the site (including landscape) is restored to original conditions or Contract Documents requirements.

3. All final permits, originally issued as temporary permits, have been submitted.

4. The final marked-up Project Record as-built Drawings and Specifications identified Final Project Record (marked with the date of submission) have been submitted using Owner’s construction management system (CMS).

5. The complete Operations and Maintenance Manual and Warranties and Bonds Manuals have been submitted in PDF format, on Owner’s CMS, and a hard copy of the Warranties and Bonds Manual with original documents has been submitted.

6. The Contractor’s final 3-ring binder of all MSDS used for construction, marked with the date of submission, has been submitted in PDF format, on Owner’s CMS.

7. The Contractor’s final cumulative Construction Waste Management Report (marked with the date of submission) has been submitted in PDF format, on Owner’s CMS.
8. All Change Orders are approved and signed by both parties.
9. A draft of the Final Application for Payment has been submitted to Owner for review and approval.
10. The final Schedule of Values and the Building Componentization Report in hard and electronic copies (see Section 01 29 76 “Progress Payment Procedures”) have been submitted.
11. The final air balancing report and the final M&E Commissioning Binders (marked with the date of submission) have been submitted in PDF format, on Owner’s CMS.
   a. For Projects with a Test Engineer, the as-built information updating the A/E commissioning basis-of-design has been submitted with the Commissioning Binders.
12. The “Regulated Materials – Waste Manifests” (marked with date of submission) have been submitted in PDF format, on Owner’s CMS.

B. Final Completion: Upon satisfactory completion of the requirements in 1.9A above to achieve Final Completion, the Owner will approve and process the final Application for Payment and establish the date of Final Completion thereon.

1.10 FINAL ACCEPTANCE

A. Final Application for Payment has been approved by Owner and payment made to the Contractor.

B. The Owner will establish the date of Final Acceptance and issue the letter of Final Acceptance after the Contractor has completed the requirements of the Contract Documents.
   1. The Contractor shall follow the requirements outlined in the General Conditions and Section 01 29 76 “Progress Payment Procedures” for release of retainage.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer’s standard warranties on products and special warranties.  
1. Refer to the following General Conditions for terms of the Contractor’s warranty of Work:  
a. Part 5.16 “Correction of Non-conforming Work”  
b. Part 5.21 “Warranty of Construction”  
1) If there is any discrepancy in the Contract Documents regarding the warranty period or its date of commencement, the specified passage granting the Owner the longest warranty period ending on the latest date shall govern.  
2. General closeout requirements are included in Section 01 77 00 “Closeout Procedures.”  
3. Specific requirements for warranties for the Work and products and installation that are specified to be warranted are included in the individual sections of the Specifications.  
4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer’s disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors that are required to countersign special warranties with the Contractor.

1.2 DEFINITIONS

A. “Standard Product Warranties” are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. “Special Warranties” are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.3 WARRANTY REQUIREMENTS

A. General: Upon determination that Work covered by a warranty has failed, correct or replace the Work to an acceptable condition complying with requirements of Contract Documents.

B. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

C. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected or replaced and retested and/or re-commissioned reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

D. Costs: The Contractor is responsible for the cost of correcting or replacing including the cost for retesting and/or re-commissioning defective Work, regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
E. Owner’s Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

2. Right to Refuse Work: The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS

A. Submit written warranties to the Owner’s Representative. Provide a draft for Owner’s review and comment prior to final execution. Warranties shall identify:

1. Scope description of what is covered (indicate labor and/or materials requirements);
2. The Specification reference stating the warranty;
3. The date of the warranty’s start and finish (indicate the specified warranty duration);
4. Service and maintenance contracts, when specified in the Contract Documents;
5. Supplier’s name, address, e-mail address, and telephone number;
6. Proper procedure in case of failure; and
7. Instances which might affect validity of warranty.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a Subcontractor, supplier, or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.

1. Refer to individual sections of the Specifications for specific content requirements, and particular requirements for submittal of special warranties.

C. Include warranties in the Operations and Maintenance Manual (see Section 01 77 00 “Closeout Procedures”).

D. Review and acceptance, by the A/E or Owner’s Representative, of submitted warranties does not relieve the Contractor of the warranty requirements of the Contract Documents.

E. The Owner may generate and keep electronic copies of original executed warranties, certifications, and other similar commitments and such copies shall be considered as originals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Comply with the commissioning provisions specified in this Section and elsewhere in the Contract Documents.

B. General:
   1. Unless noted otherwise, functional performance tests (FPT) apply to all equipment and systems identified to be tested in the Contract Documents.
   2. Submittals shall be in accordance with Section 01 33 00 “Submittal Procedures” and for CAD (Computer Aided Drafting) Record Drawings, in accordance with Section 01 77 00 “Closeout Procedures.”
   3. The duties of the Contractor’s “Test Engineer” and Owner’s “Commissioning Authority” are described in Section 01 75 00 “Test Engineer Services.”
   4. The Contractor shall ensure that the Commissioning Authority, or other Owner-designated witness, is provided safe access to witness the performance of the equipment or systems being commissioned and is reasonably furnished ladders, scaffolding, and staging, if required, for witnessing.

1.2 COMMISSIONING DOCUMENTATION

A. Commissioning Plan: The Contractor shall prepare and submit a “Commissioning Plan” that identifies how commissioning activities will be integrated into the construction Progress Schedule and how commissioning responsibilities are distributed. Include, as a minimum, the following:
   1. An organizational chart showing lines of communication and authority of the Test Engineer relative to key Contractor positions and to key Subcontractors
   2. Who will be responsible for producing the various procedures, reports, Owner notifications, and forms required by the Contract Documents
   3. list of all control systems software required by the Contract Documents
   4. The commissioning schedule
   5. Commissioning forms and other documentation
   6. Description of start-up and test procedures
   7. list of Subcontractors who will participate in each of the tests
   8. The instrumentation required for each test and who will provide the instrumentation
   9. Operational description for each test (This shall include, for example, the commissioning basis-of-design criteria provided by the commissioning authority, code requirements, the specifics of the equipment to be provided, sequences of operation, operating priorities, and other necessary information.)
   10. One-line system and riser diagrams

B. Mechanical and Electrical Commissioning Binders (M&E): The M&E “Commissioning Binders” shall include the submittals, test equipment, commissioning procedures, installation verification audits, and FPT procedures documentation described in this Section.

1.3 SUBMITTALS

A. Start-up plans: Submit start-up plans, with start-up test procedures and documentation forms, for the equipment and systems for which a start-up is specified in the Contract Documents. Start-up plans shall include the following:
   1. Start-up schedule
   2. Names of firms/individuals required to participate
   3. Detailed start-up procedures
4. Start-up forms
5. Operations and maintenance product data

B. Start-up installation verification audit report: Submit installation verification audit reports prior to start-up of equipment and systems for which a start-up is specified in the Contract Documents. Identify:
1. Equipment and/or systems, to be started-up;
2. Prestart-up tests performed, including manufacturer’s factory tests;
3. Deficiencies noted;
4. Corrective action taken; and
5. Dates and initials of persons making the entries.

C. Start-up deficiency report form: Submit start-up deficiency report forms within five (5) days following the start-up of each equipment or system to report any deficiencies discovered in conjunction with start-up. Identify:
1. Equipment and/or systems started-up;
2. Location and identification of the deficient equipment and/or materials;
3. Date of observation and initials of observer;
4. Deficiencies noted;
5. Corrective action taken; and
6. Date of correction and initials of the person making the correction.

D. Test equipment identification list: Submit a list of all test equipment used in commissioning, sorted according to intended use. Provide an updated list, if any equipment is added to the commissioning, while testing is in progress. The list shall include the following information:
1. Manufacturer
2. Model number
3. Serial number
4. Date of most recent calibration
5. Range
6. Accuracy
7. Resolution
8. Intended use

E. Testing, Adjusting and Balancing (TAB) progress reports: Submit weekly TAB progress reports after TAB activities have begun. Identify the following:
1. Systems or subsystems for which preliminary balancing is complete
2. Systems or subsystems for which final balancing is complete
3. Status of deficiencies and balancing problems encountered, including corrective actions taken
4. Updated schedule of remaining TAB activities

F. FPT procedure documentation: Submit FPT procedure documentation for FPT specified in the Contract Documents. The documentation shall include the following:
1. FPT procedure description
2. Procedures that are based upon the actual equipment and/or systems configuration
3. The value for all set points and inputs, positions of adjustable devices, valves, dampers and switches
4. The acceptable test range for each FPT
5. Updated one-line system and riser diagrams
6. An alphanumeric designator for each procedure
7. Reference to the applicable Specifications section upon which the procedure is based

G. FPT data forms: Submit FPT data forms to document the equipment or systems FPT specified in the Contract Documents.
1. Identify each FPT data form by a unique designator, consisting of an applicable FPT procedure designator followed by a dash and digit suffix to distinguish multiple repetitions of the same procedure.

2. The FPT data form shall identify:
   a. Who needs to be in attendance for the tests, including but not limited to, Subcontractors, Commissioning Authority or other Owner-designated witness, regulatory agencies, and others as appropriate; and
   b. The sequence of the tests to be performed.

3. Include space to record the following:
   a. Description of the procedure
   b. Whether the form is for a retest of a failed procedure
   c. Identification and location of the equipment being tested
   d. Identification of instrumentation used, by type and serial number
   e. Observed conditions at each step of the procedure
   f. Acceptable results, as specified
   g. Date of the test
   h. Names of technicians performing the procedure
   i. Name and signature of the Contractor’s Test Engineer
   j. Name and signature of the Commissioning Authority or Owner-designated witness
      1) Signature of witness shall only indicate concurrence with reported result and observations. Acceptance of the results will be reported separately by the Commissioning Authority after review of the FPT data forms.

H. FPT deficiency report forms: Submit FPT deficiency report forms at the end of each day for all tests in which acceptable results were not achieved during the day. When corrections have been completed, update the FPT deficiency report form. FPT deficiency report forms shall record the following:
   1. Associated FPT data form number and description
   2. Equipment identification and location
   3. Date of test
   4. Name of person reporting the deficiency
   5. Description of the observations associated with the failure of the test
   6. Cause of the failure, if apparent at the time of the test
   7. Date and description of corrective action taken
   8. Name and signature of person taking corrective action
   9. Schedule for retest

I. One-line system and riser diagrams: Submit one-line system and riser diagrams with the Commissioning Plan, updated one-line system and riser diagrams with the FPT procedure documentation, and as-built one-line system and riser diagrams with the final M&E Commissioning Binders. One-line system and riser diagrams shall be submitted for the following, when included in the work of the Contract Documents:
   1. Owner-provided one-line system and riser diagrams in CAD format for Contractor’s use:
      a. Hot water heating
      b. Domestic water
      c. Steam and condensate
      d. Chilled water
      e. Condenser water
      f. Supply air
      g. Return air
      h. Exhaust air
      i. Electrical normal and emergency power
   2. Subcontractor-provided one-line system and riser diagrams CAD Shop Drawings, for Contractor’s use:
      a. Environmental control systems (ECS)
b. Fire alarm/smoke evacuation/life safety graphics and riser diagrams  
c. Lighting control system diagrams  
d. Electrical distribution equipment and spot or network substations schematic diagrams

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. Provide industry standard test equipment required for performing the tests specified in the Contract Documents.

B. Instrumentation shall meet the following standards:
   1. Be of sufficient quality and accuracy to test and measure system performance within the tolerances required to determine adequate performance
   2. Be calibrated on the manufacturer’s recommended intervals with calibration tags permanently affixed to the instrument being used
   3. Be maintained in good repair and operational condition throughout the duration of use on this Project
   4. Be recalibrated/repaired if dropped or damaged in any way since last calibrated

C. For all temperature measurements, including air, liquids, and surfaces of pipes and components, use appropriate probes that meet the following requirements:
   1. Range: Minimum +14°F to 248°F
   2. Type: Thermometer, digital electronic
   3. Minimum accuracy: +/- 0.5°F
   4. Calibration Interval: Per manufacturer instruction, not to exceed every twelve (12) months.

D. For hydronic systems pressure and differential pressure measurement instruments, the test equipment shall meet the following requirements:
   1. Range: 0 to 30 psi (1 pound per square inch), 0 to 60 psi, and 0 to 200 psi
   2. Type: Calibrated test gauges, 3 inch, or electronic digital device (TSI Performance Measurement Tools or similar) meeting accuracy and calibration interval requirements.
   3. Minimum accuracy: 2% with a gauged scale; 3% with an electronic reading
   4. Calibration interval: Per manufacturer’s recommendation, not to exceed every twelve (12) months.
   5. Note: Use lowest range instrument or scale

E. For air pressure measurement instruments, the test equipment shall meet the following requirements:
   1. Range: 0 to 1 inch WC (water column), 0 to 4 inch WC, 0 to 10 inch WC
   2. Type: Use properly leveled and zeroed manometer, magnehelic or electronic instrument meeting accuracy requirements
   3. Minimum accuracy for electronic devices: 2% with a magnehelic reading; 3% with a electronic reading
   4. Calibration interval for electronic devices: Per manufacturer’s recommendation, not to exceed every twelve (12) months
   5. Note: Use lowest range instrument or scale

F. Refer to electrical inspection, calibration, and testing requirements for instrumentation related to electrical systems and equipment.
PART 3 - EXECUTION

3.1 COMMISSIONING PROCEDURE

A. Sequence of testing: Commissioning shall proceed from lower to higher levels of complexity. For each system, testing at the lower level shall be completed prior to starting the next higher level of tests. In general, the order of testing, from lowest to highest is as follows:
   1. Static tests (e.g., duct leakage tests)
   2. Motors, actuators, sensors, and other system components requiring start-up and FPT
   3. Point-to-point (PTP) testing
   4. Balancing
   5. System functional performance tests
   6. Cross-systems functional performance tests

B. Retesting: Repeat, at no additional cost to the Owner, the complete functional test procedure for each test in which acceptable results are not achieved. Repeat tests until acceptable results are achieved. Fill out a new FPT data form for each retest.

C. Correction of deficiencies:
   1. Correct FPT deficiencies promptly and schedule retest.
      a. Corrections during FPT are generally prohibited to avoid consuming the time of personnel waiting for the test, but not involved in making the correction. Exceptions will be allowed if the cause of the failure is obvious and corrective action can be completed in less than five (5) minutes. If corrections are made under this exception, the failure shall be noted on the FPT data form. A new FPT data form, marked "retest", shall be submitted after the correction has been made. The entire FPT procedure shall be repeated.

3.2 INSTALLATION VERIFICATION AUDIT

A. Conduct an installation verification audit before equipment or system start-up begins. The audit shall include, but not be limited to, a check of the following equipment or systems:
   1. Piping specialties, including balance, control, and isolation valves
   2. Ductwork specialty items, including turning devices; balance, fire, smoke and control dampers; and access doors
   3. Control sensors by type and locations
   4. Piping, valves, starters, gauges, thermometers, and other components of the Work specified for formal start-up in the Contract Documents
   5. Accessibility to equipment in 1-4 above
   6. Verification of final programmed variable frequency drives (VFD) settings

B. If any part of the Work is found to be incomplete, inaccessible, incorrect, or non-functional, the Contractor shall make note of deficiencies, and correct deficiencies before system start-up work proceeds.

C. Coordinate with the electrical testing contractor (ETC) for the audit of electrical systems required by the Contract Documents.

3.3 TESTING, ADJUSTING, AND BALANCING (TAB)

A. Complete all PTP testing prior to start of TAB.

B. Coordinate and perform air and hydronic balancing. Advise the TAB firm when systems are complete and ready for balancing. Start TAB as early as possible following system start-ups.
and component FPT, in order to be essentially complete prior to system FPT. Coordinate TAB activities with other construction schedule activities.

C. Verify completion of PTP testing and the accuracy of the TAB work prior to commencing any FPT activities which may be adversely affected by incomplete PTP testing and improper balancing.

3.4 FUNCTIONAL PERFORMANCE TEST PROCEDURES

A. FPT procedures must confirm the performance of systems to the extent required by the Contract Documents.
   1. Emphasis shall be placed on testing procedures which will conclusively determine actual system performance and compliance with the design.

B. FPT procedures shall demonstrate the actual performance of specified safety shut-offs in a real or closely simulated condition of failure. Failure conditions shall include adequate oil pressure, proof-of-flow, non-freezing conditions, maximum head pressure, and other conditions common to the equipment.

C. Systems may include safety devices and components that control a variety of equipment operating as a system. Interlocks may be hard-wired or installed via software. FPT procedures shall demonstrate these interlocks.

3.5 ECS SOFTWARE REVIEW

A. Review ECS software and required ECS cross-systems software routines prior to the installation of control devices. The review shall include:
   1. Obtaining ECS program documentation
   2. Review of the programming approach
   3. Interface with other systems, including but not limited to:
      a. Lighting
      b. Fire alarm
      c. Security
      d. Clock
      e. Emergency generator monitoring
      f. Sump pumps
      g. Distributed and mechanical utility metering

B. Discrepancies in programming approaches shall be resolved with the Owner to provide the most appropriate, simple, and straightforward approach to software routines.

3.6 COMMISSIONING MEETINGS

A. The Contractor shall participate in the following meetings with the Commissioning Authority. Other Subcontractors may, at Owner’s sole discretion, be required to attend as necessary.
   1. Pre-commissioning kick-off meeting
   2. Commissioning meetings described in Section 01 31 19 “Project Meetings”
   3. ECS software review, and design intent clarification meeting
   4. Preliminary O&M Manual review meeting

3.7 EQUIPMENT OPERATING INSTRUCTIONS AND TRAINING AGENDA

A. Each training session shall include an agenda addressing the following:
   1. Introduction of presenters
2. Using the O&M information:
   a. What is the equipment
   b. Basic operating procedures (including start-up/shut-down)
   c. Preventative maintenance procedures
   d. Troubleshooting procedures
3. What does it do, or serve
4. Any special features
5. Safety precautions
6. Maintaining warranties, guarantees, and warranty periods
7. Instruction on how to use proprietary instrumentation or operating equipment
8. Recommended spares
9. Review of start-up reports and FPT results
10. Jobsite walk-through

END OF SECTION