

# EXHIBIT I

## DESIGN STANDARDS AND PROCESSES

INTERIM AGREEMENT

BETWEEN

MECKLENBURG COUNTY PUBLIC SCHOOLS

AND

BLAIR CONSTRUCTION, INC.

OCTOBER 2022

CLARKSVILLE ELEMENTARY SCHOOL

ADDITIONS AND RENOVATIONS

CLARKSVILLE, VIRGINIA

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## **1. INTRODUCTION**

### **1.1. General**

These Design Standards and Processes provide guidance and standards for Design-Build architecture and engineering (“A-E”) services that are being provided by the Design-Builder for the Clarksville Elementary School Additions and Renovations project. The Design-Builder shall be responsible for ensuring that the A-E follows the guidance and standards. The Design-Builder shall be liable to Mecklenburg County Public Schools (“Owner”) if the A-E or those providing design services through the A-E fails to follow the guidance and standards, except as otherwise approved by the Owner. Wherever in this Exhibit I there is any requirement imposed on the A-E or any design professional, this shall be interpreted to mean that the Design-Builder shall cause the A-E or design professional to meet such requirement. Nothing in this Exhibit I shall be interpreted to create any privity of contract between the Owner and A-E, to create any warranty by Owner to Design-Builder, express or implied, regarding any of the design services, or to create any responsibility by the Owner or any acts or omissions by the A-E or those providing services through the A-E.

This Exhibit I is intended to assist the Design-Builder’s A-E and Owner and its Owner Representative by setting forth some of the general procedures to be followed for all of the Services to be provided by or through the A-E. This exhibit is not designed to be an exhaustive description of the work on the project, but rather to assist design professionals in understanding some of the details of the general requirements for A-E services for the project and describe the major deliverable submissions for interaction and approval by the Owner. This exhibit is intended to complement and supplement the Agreement, not to replace any of the terms of such documents.

The Owner will identify an Owner’s Representative and an Owner’s Review Committee who would be the key individuals to meet with the Design-Builder and A-E to develop, review and approve the design submissions. The Design-Builder shall coordinate through the Owner’s Representative as described in the Agreement.

### **1.2. Planning and Design Services**

Documents to assist with the planning and design of the Clarksville Elementary School Additions and Renovations project include:

- Detailed Phase Proposal from Blair Construction, Inc. dated October 6, 2022 (Exhibit E)
- Revised Conceptual Design dated October 27, 2022 (Exhibit F)
- Design Standards and Processes (this Exhibit I)

Any deviations from these documents must be approved by the Owner in writing.

Design services include all services by design professionals provided by Design-Builder pursuant to the Agreement and this Exhibit I hereto required to provide the final Construction Drawings and Specifications for the project and for any changes thereto and any construction administration services by design professionals. Design Services may include assisting Owner's Review Committee in the preparation of the Design Development and Construction Documents for the Clarksville Elementary School Additions and Renovations project. References to "complete and accurate" drawings and specifications and such similar language, as used in this document and the Agreement, shall mean those documents will be prepared to a Professional Standard of Care. All design services shall meet the National, State, and Local Building Codes and Regulations and shall meet the Professional Standard of Care ("Standard of Care"), which shall be defined as the standard of performance for all design and construction administration services ("Design Services") under the Agreement and shall be the same professional standard of care and of quality as is ordinarily exercised under similar circumstances by design professionals providing similar services in similar projects in Virginia. The A-E shall devote its resources to the performance of the design services during the term of the Agreement in accordance with the Professional Standard of Care.

The design work shall include all necessary subcontractor and consultant design professionals, including, but not limited to, civil engineer (including all utility analysis, analysis for storm water, sanitary, water service, gas service (if applicable), electrical power, telephone/data/communications), environmental consultant (HAZMAT abatement design), traffic engineer (if applicable), site lighting, architectural, landscaping, mechanical, electrical, plumbing, acoustical, structural, and security design services necessary for a complete and accurate set of final Construction Documents (drawings and specifications).

During design phase reviews, Design-Builder will provide for all printing and electronic copies of drawings and specifications necessary for review of the work product by the Owner's Representative and Review Committee. Electronic

copies shall be made available through an accessible electronic platform. Costs for printing of drawings and specifications shall be paid through a printing allowance included within the Not-to-Exceed Budget included within the Interim Agreement. Design-Builder's A-E will provide for design review and coordination meetings necessary to review project design documents. Meetings will be scheduled with the Owner's Representative to approve the design work product for compliance with this Exhibit I.

### **1.3. Construction Administration**

Construction administration services shall be provided by Design-Builder through its A-E and will only consist of review and approval of any submittals and shop drawings submitted prior to execution of the final Comprehensive Agreement or initiation of actual construction work.

## **2. Project Procedures for A-E**

### **2.1. General Project Procedures**

The Design-Builder and Design-Builder's A-E shall attend a "kick-off" meeting with the Owner's Representative and Review Committee to discuss procedures to be followed for the project and to review the scope of work and the A-E's services to be provided.

The Owner has reviewed the Conceptual Design documents included as Exhibit E and Exhibit F to the Agreement and the Owner shall provide comments and changes to the proposed design and the Design-Builder will incorporate these comments into a Schematic Design (35%) submission in accordance with this Exhibit I and the requirements of the Agreement assuming the comments are considered reasonable.

The A-E, with any subcontractors, engineers, or consultants, will then begin the Schematic Design process. The following procedures are required, along with the specifics outlined elsewhere in this and other Contract Documents. This introductory list is intended to assist the A-E in knowing what is required by highlighting some of the Owner's requirements, but is not intended to be an exhaustive or exclusive list of project procedures. Other requirements and procedures will be provided by Owner or Owner's Representative for the design process and review.

All project documentation involving the A-E, including but not limited to meeting minutes, design review comments, correspondence, invoices, code enforcement comments, RFI's, supplemental instructions, formal sketches, site visit reports, and requests for proposals, must be documented by the A-E with copies provided promptly to the Owner and Owner's Representative.

At each phase of the design process, the A-E shall respond in writing to any Owner comments as soon as possible and address Owner comments in the subsequent design phase documents. Design-Builder shall update the project progress schedule at each phase of the design process.

If requested, the A-E shall record and submit to the Owner for comment and revision (before distribution to all parties), all meeting minutes, including but not limited to Owner's Review Committee meetings, code review meetings with local authorities having jurisdiction, and submittal review meetings. AE shall address all Owner comments before distributing such documents.

Design reviews will take place after submission of each design phase with the Owner's Review Committee.

Any material deviations from the Design Standards and Processes must be provided to the Owner in writing under separate cover.

### **2.1.1. Reproduction, Design Reviews and Value Engineering**

Provide the Owner with at least three (3) sets of all Plans, Specifications, and calculations at each stage of the design which shall include one (1) full-size and two (2) half-size sets of plans. Deliver or ship these documents overnight as directed by the Owner's Representative. The cost of printing and shipping shall be paid out of the printing allowance included in the CCL or GMP. Materials shall also be made available electronically in pdf format and in CAD or Revit (3-D) if requested. The reimbursable costs shall be for reproduction costs only including file management, paper, bindings, and other material supplies, direct labor involved in printing and delivery charges.

Design reviews will take place at submission of each design phase: Schematic Design (35%), Design Development (65%) and Construction Documents (95%) with the Owner. These design reviews will also consider value engineering suggestions. Percentages refer to the percent of total design completion, not a

percent of each individual phase. A brief review will also be completed by the Owner's Representative at 100% design to ensure that all previous comments have been considered and incorporated. A presentation of the design documents shall be made by the Design-Builder prior to distribution of design documents for review at each stage.

The Owner's Representative and Review Committee shall have two (2) weeks to complete their review at each of the design phase submissions. The Design-Builder shall have one (1) week to review comments from the Owner's Representative and Review Committee and must provide a written response to each comment within one (1) week of the submission of review comments to the Owner's Representative. A formal reconciliation meeting shall be held to review each comment and response in an effort to close out each design review comment prior to the design progressing into the next phase. Design-Builder shall issue a "For Construction" set prior to start of construction work.

## **2.2. Procedures for Individual Phases of the Work**

### **2.2.1. Schematic Design (35%) Submission**

During the Schematic Design Phase, the A-E shall refine the design and produce construction documents and specifications that are at approximately 35% of the total design completion level which will enable accurate and efficient construction of the project.

#### **2.2.1.1. General Requirement – Schematic Design (SD) 35% Submission**

During the SD phase, the A-E shall produce 35% complete construction documents that enable the Design-Builder to produce a detailed estimate of cost for construction that is equal to or less than the Contract Cost Limit (CCL) established as part of this Interim Agreement.

The Schematic Design submission shall include, at a minimum, site plan, floor plans, exterior elevations, and narrative describing proposed materials and systems.

### **2.2.2. Design Development (65%) Submission**

During this phase, the A-E shall further refine the design and produce construction documents and specifications that are at approximately 65% of the total design completion level which will enable accurate and efficient construction of the project. The Design-Builder may provide the Owner with

a GMP at this stage of the project with detailed backup information as required in the Design-Build Agreement.

### **2.2.2.1 General Requirement – Design Development (DD) 65% Submission**

During the DD phase, the A-E shall produce 65% complete construction documents that enable the Design-Builder to produce an accurate estimate of cost that can be presented as a Contract Cost Limit (CCL) or Guaranteed Maximum Price (GMP) with detailed backup.

#### **1. Architectural – DD (65%)**

The following elements, by way of illustration and not limitation, shall be included in the drawings prepared during the Design Development phase:

- Perspectives (2 views minimum):
  - Color perspective drawings to illustrate the exterior design
  - Electronic file of the renderings
  - Two renderings (14" X 24" minimum) on foam boards
- Life Safety Plan showing a minimum:
  - Travel distances
  - Occupancy loads showing loads allowable and loads required by program requirement
  - Fire area tabulations
  - Area limitations
  - Fire wall and fire separation locations
  - Egress capacities of stairs and doorways
  - Rated assemblies, including wall, floor and ceiling assemblies
- Architectural Standards: The drawings and supporting materials produced in this phase of the work shall be consistent with a 65% level of design completion and include the elements listed below at the minimum scales shown:
  - 1/8" = 1'0" (minimum) Floor plans and notes
  - 1/8" = 1'0" (minimum) Elevations from all directions
  - 1/8" = 1'0" (minimum) Cross sections and details
  - 3/4" = 1'0" (minimum) Wall sections/details
  - 1/8" = 1'0" (minimum) Roof plan
  - 1/8" = 1'0" (minimum) Structural Framing and Foundation Plans
  - 1/8" = 1'0" (minimum) Structural Details



- 1 ½" = 1'0" (minimum) Architectural Details
- Architectural Drawings: The A-E shall develop CAD plans that are fully scaled. The drawings shall include:
  - Cover Sheet: Including drawing index and area tabulations of all programmed spaces listing square footages.
  - Door, window, and hardware schedules: The A-E shall prepare the preliminary door and window schedule information that will, at a minimum, indicate new doors, windows and frames and labeled door assemblies. Also provide a preliminary hardware schedule.
  - Finish Schedule: The A-E will prepare preliminary finish schedules that include, at a minimum, the following information: finish types for walls, floors and ceilings, special finishes required for specialized areas including the courtrooms and judges' chambers. All finishes included shall be "basis of design" for construction. Final Owner approval of finishes will be required once actual suppliers have been identified.
  - Reference/overall plan(s) at 1/8" minimum scale outlining scope and including room names, occupancy loads, and building and site handicap accessibility features, such as elevators, lifts, ramps, and toilet facilities.
  - Show proposed locations for coordination of MEP items including roof drain piping and lower ceilings due to HVAC, structural or plumbing coordination issues.
  - Equipment and Furnishing Floor Plans: Include programmed room names and preliminary equipment layouts for specialized spaces. Owner approval of these specialized spaces will be required before commencement of the subsequent design phase.
  - Elevations clearly demonstrating the scope of work. At a minimum the elevations will indicate major design features and general types of materials to be used in order to demonstrate design integrity and will show overall vertical dimensions.
  - Sections: The A-E will provide typical building sections and wall sections to illustrate proposed building materials, methods, dimensions, and insulation values.

- Details: The A-E will prepare architectural details which show, at a minimum, preliminary cross sections (1/4" = 1'0" and wall sections (3/4" = 1'0") showing major construction features and material.
- Roof Plan showing major rooftop equipment, roof membrane system, and drainage. Show location of roof drains and vertical piping on all plans so that they may be properly enclosed by architectural detailing.
- Fireproofing coordination with structural. All fireproofing in completed building should be concealed from view. Only properly sized exposed steel painted with fire-rated intumescent paints may be left exposed.
- Architectural Specifications: A-E will provide a draft copy of the fully developed specifications.

## 2. Mechanical Systems – DD (65%) Submission

- **General Requirements**
  - Commissioning process to be integrated with plan reviews and specifications. Owner's commissioning agent (CxA) will provide A-E with commissioning specifications.
  - Provide index for Specifications including all sections that will be a part of the final mechanical system construction documents.
  - Provide heating and cooling block and room loads for entire building.
  - Provide control sequences and strategies for the operation of the building HVAC system.
  - Provide a copy of preliminary natural gas load letter as submitted to the natural gas utility.
  - Provide a formal response to any design review comments from the Owner's Representative or Review Committee made prior to submission of DD (65%) documents.

- **Drawing Requirements**
  - Provide cover sheet with symbols list, notes, and air handling zone designations.
  - Provide separate drawings showing all floor plans with temperature control zones and panel locations.
  - Provide room names on all floor plans.
  - Provide floor plans showing equipment locations, piping, and ductwork. Identify all pieces of equipment, size of piping and ductwork.
  - Provide mechanical room layouts. Show sections of all mechanical rooms and provide finalized sections through any bulkheads. Show approximate locations/tonnage/capacities of mechanical equipment.
  - Provide finalized boiler room plan showing equipment layout.
  - Provide air handling zone air balance diagrams, including supply air to room and exhaust air.
  - Provide coordination of phasing requirements.
  - Begin equipment schedules and detail sheets.

### 3. Electrical Systems – DD (65%) Submission

The design of the electrical system, unless the A-E is otherwise directed, shall include the following elements:

- **General Requirements:**
  - Provide an index for Specifications indicating all sections that will be a part of the final electrical system construction documents.
  - Provide a written description of the proposed new lighting system for each type of space.
  - Provide a written description of the proposed new electrical power distribution system identifying major items of equipment and their proposed locations. Include the electrical service characteristics and generally identify what items are to be fed at what voltage. This description should include the new emergency power system (if required).

- Provide a brief written description of each new proposed special system (fire alarm, security, sound and intercommunications, master clock, auxiliary sound system, telecommunications, lightning protection, etc.). Identify major items of new equipment and their proposed locations.
  - Provide a copy of the foot-candle level calculation for each room. One calculation may be used for any room of the same use group that is the same size.
  - Provide cut sheets of proposed lighting fixtures.
  - Provide the names and addresses of the power company, cable television, and telephone company contacts for the project.
  - Provide a copy of the preliminary electrical load letter as submitted to the electrical utility company.
  - Provide a formal response to any design review comments from the Owner’s Representative or Review Committee made prior to submission of DD (65%) documents.
- **Drawing Requirements:**
    - Provide a cover sheet to include at least the symbols list, abbreviations list, and list of drawings.
    - Provide an updated computer generated photometric site lighting plan indicating the point-by-point maintained foot-candle levels. This plan must correspond with and accompany the lighting layout shown on the electrical site plan.
    - Provide an electrical site plan indicating the following:
      - Proposed site lighting
      - Proposed plan for site temporary electrical power during construction
      - Location of the main electrical equipment room
      - Proposed power company transformer location
      - Generator and fuel tank
      - Property lines
      - All existing utility and lighting poles

- All existing overhead and/or underground electrical utilities (power, telecommunications)
- North arrow.
- Provide an overall floor plan for each level showing a proposed power layout with locations of power receptacles. This plan shall also include:
  - Proposed locations and layouts of all electrical equipment rooms, communications rooms, kitchen and boiler rooms (if applicable) indicating the location and identification of each piece of equipment including the major normal and emergency electrical service and distribution equipment.
  - Indicate the major normal and emergency electrical service and distribution equipment.
  - Include the proposed electrical (primary and secondary), telephone, and cable television service entrance.
  - Indicate all new and existing underground and overhead utility lines (gas and water, etc.) that may affect the electrical work.
  - Include any site lighting and electrical utilities and any applicable electrical site plan details, such as poles base secondary electrical service entrance ductbank, main grounding, etc.
  - Provide room names and numbers on all plans.
  - Show the required power connections to architectural, mechanical, plumbing, and kitchen equipment including disconnects and control devices.
- Provide floor plans for each level indicating the new lighting layout in each space. Where no lighting can be shown at this time due to ongoing design coordination with other disciplines, provide a detailed written description of the final layout and type of lighting fixtures to be used. These plans shall also show:
  - Branch circuit connections to branch panel circuit boards.

- All illuminated exit signs.
- Emergency lighting fixtures and circuits.
- The method of lighting control for each space.
- Lighting fixture type designations.
- Room names and numbers.
- Foot-candle level designations.
- Provide electrical panel schedules including load summary and space capacity.
- Notes referenced on these plans shall be shown on the same plan as the reference.
- Provide floor plans for each level indicating the locations of all applicable systems that may include fire alarm, master program clock, PA system, telecommunications system and CATV system equipment and devices, and building security system equipment and devices including their interconnections. Indicate the location and identification of each item of control and enunciator panels and equipment, and the building security. The plan shall also include the location of the separate enunciator panel for the emergency generator (if required), which should be shown next to the fire alarm enunciator. The plan shall also include the proposed fire alarm and building security zones.
- Provide a detail of the fire alarm graphic enunciator panel faceplate. All notes referenced on these plans shall be shown on the same plan as the reference.
- Provide drawings for the main distribution switchboard, panel board, transformer, and lighting fixture schedules and a power system load tabulation schedule.
- Provide a power riser diagram showing electrical service entrance and distribution equipment, emergency service equipment, grounding system, and their associated interconnections. Label each item of equipment. Also provide an isometric elevation and one-line diagram of the main distribution switchboard.
- Diagram technology distribution and points.

#### 4. Plumbing Systems – DD (65%) Submission

- **General Requirements:**
  - Provide an index for Specifications indicating all sections that will be a part of the final construction documents.
  - Provide completed local department of public works form requirements (if applicable).
  - Provide a copy of the letter as submitted to the utility company(s).
  - Provide a formal response to any design review comments from the Owner’s Representative or Review Committee made prior to submission of DD (65%) documents.
  
- **Drawing Requirements:**
  - Provide a cover sheet to include symbols list, sprinkler service detail, fixture connection schedule with mounting heights. Provide schedule showing overall drainage fixture units. Allow additional space for notes and other details.
  - Provide separate drawings for all floor plans showing the following:
    - Show appropriate locations of new water, sanitary, storm and gas piping mains on overall new work plan. Show locations of all rain leaders on all floor plans and roof level.
    - Identify all handicap fixtures (water closets, lavatories, and water coolers).
    - Coordinate gas meter location (if applicable).
    - Show utility entrances, water heaters, and phasing requirements. Provide notes and details.
    - Provide room names on all floor plans.

#### 5. Sprinkler Systems – DD (65%) Submission

- **General Requirements:**
  - Obtain hydrant information from water authority. Indicate on drawings and specifications that the sprinkler

system is shown for guidance or intent only, and the contractor is required to design the system, obtain permits, obtain Fire Marshal approval, provide, and install the system.

- Designate where sprinkler system is dry pipe and where it is wet pipe.
  - Verify whether adequate street pressure exists for sprinkler system. Provide index for specifications indicating all sections that will be a part of the final sprinkler system construction documents.
  - The Design-Builder is responsible to provide any fire pump or water pressure booster pumps required for the project.
  - Provide a formal response to any design review comments from the Owner's Representative or Review Committee made prior to submission of DD (65%) documents.
- **Drawing Requirements:**
    - Provide overall plan showing proposed zoning of sprinkler system and NFPA hazard classification. Each floor shall be zoned separately. Coordinate zones with fire alarm zones (each sprinkler zone shall be subdivided into multiple fire alarm zones).
    - Coordinate and finalize sprinkler zones for fire protection system. Provide overall plan scaled at 1/8" (minimum) showing approximate locations of sprinkler mains in building, Siamese connection, and the sprinkler service entrance and building exterior hydrant coverage.
    - Shall all main piping routing, service entrance, manifold system, zone valves, inspector test valve locations, phasing requirements and details such as service manifold system, hangers, and branch over details, etc.

## 6. Civil and Structural – DD (65%) Submission

- **General Requirements:**



- Provide structural calculations for work reflected in drawings and specifications.
- Provide a formal response to any design review comments from the Owner’s Representative or Review Committee made prior to submission of DD (65%) documents.

## **7. Cost Estimate – DD (65%) Submission**

Provide cost estimate based upon market feedback for work not self-performed by the Design-Builder.

For cost estimate of work self-performed by the Design-Builder, or performed by the designed MEP design-build subcontractor (if applicable), provide a detailed labor and material type cost estimate consistent with Advancement of Cost Engineering (AACE) practices. Organize by CSI division listing all materials, equipment, and systems necessary to construct the facility.

Once the 65% drawings and other work performed in the Design Development phase are accepted by the Owner (after reconciliation of design review comments and evaluation of the cost estimate), the Design-Builder shall obtain an approval letter for this phase of the work and this letter will incorporate permission to proceed to the Construction Documents phase.

### **2.2.3. Construction Documents (CD) (95%) Submission**

#### **2.2.3.1 Architectural – CD (95%) Submission**

##### **1. General Requirements:**

- The A-E shall prepare the 95% Construction Documents, including plans, drawings, details, and final draft specifications and submit them to the Owner at least one week prior to the 95% review meeting. At the review meeting, the Design-Builder and A-E will present the 95% Construction Document, and will respond to questions and comments on the design. The Design-Builder shall

ensure that sufficient persons, including subcontractors and consultants, attend the review meeting so that responses can be provided.

- Subsequent to the 95% review meeting with Owner, the A-E shall:
  - Incorporate all comments or requirements relating and resulting from the review meeting into the Construction Documents.
  - Respond to all previous comments from Owner or Owner’s Review Committee on the design.
  - Lack of inter-discipline coordination, incompleteness in design of structural or MEP systems, or overall lack of drawing completeness at this phase may result in additional review session(s) which shall be provided at no additional cost to the Owner. Completeness of submitted documents to avoid disruptions of schedule is essential.
  - Submit plans to local authorities of jurisdiction and other agencies having jurisdiction for building permit and approvals.

## **2. Drawing Requirements:**

The A-E shall develop and submit the following documents in the Construction Documents phase:

- Provide “letters of agreement” sheet showing any additional documentation of code meetings subsequent to Construction Documents phase. The A-E shall continue to be responsible for preparing letters to the code official, with copies to the Owner, documenting any agreements on compliance with code requirements.
- Finalized overall Life Safety Plan showing, at a minimum, code data travel distances, occupancy loads, and fire area tabulations.
- The drawings and supporting materials produced in this phase of the project shall include the elements listed below at the minimum scales shown:
  - Cover Sheet: Including drawing index and area tabulations of all programmed spaces.

- Door, window, and hardware schedules: The A-E will prepare the final door and window schedule information that will indicate new doors, windows and frames and labeled door assemblies. Provide hardware schedule on the same sheet.
- Finish Schedule: The A-E will prepare final finish schedules that include the following information: finish types for walls, floors and ceilings, special finishes required for specialized areas including the courtrooms and judges' chambers.
- Equipment and Fixture Schedules outlining all Contractor supplied items.
- Reference/overall plan(s) at 1/8" minimum scale outlining scope and including room names, occupancy loads, and building and site handicap accessibility features, such as elevators, lifts, ramps, and toilet facilities. Plans should be fully coordinated with MEP and Structural Drawings.
- Equipment and Furnishings Plans 1/8" = 1'-0" minimum (showing equipment and furnishings to be provided by Design-Builder. Include programmed room names, final equipment layouts for specialized spaces such as courtrooms and judges' chambers.
- Elevations clearly demonstrating the scope of work including rooms listed in Equipment and Furnishings Plans. The elevations will define major design features, dimensions and materials to be used. 1/8" = 1'-0" minimum.
- Sections: The A-E will provide typical building sections and wall sections to illustrate proposed building materials, methods, dimensions, and insulation values. 1/8" = 1'-0" minimum.
- Details: The A-E will prepare architectural details which show cross sections (1/8" = 1'-0") and wall sections (3/4" = 1'-0") showing major construction features and material.
- Roof Plan showing major rooftop equipment, roof membrane system, and drainage. 1/8" = 1'-0" minimum.
- The Owner's Representative and Review Committee will review the 95% CD submittal. The A-E shall review and respond to all

review comments and incorporate comments into the 100% Construction Documents.

### **3. Mechanical Systems – CD (95%) Submission**

The design of the mechanical system, unless the A-E is otherwise directed, shall include the following elements:

- **General Requirements**
  - Provide complete specifications including index all sections that will be a part of the final contract documents.
  - Answer and respond to all intermediate submission comments.
  
- **Drawing Requirements**
  - Commissioning process to be integrated with plan reviews and specifications.
  - Complete the mechanical cover sheet with symbols list, notes and temperature control zone diagram. Provide code and energy analysis, titles, and complete floor plans.
  - Complete equipment schedules and detail sheets.
  - Provide separate drawings showing all floor plans. Provide floor plans showing equipment locations, piping, and ductwork. Identify all pieces of equipment, size of piping and ductwork. Provide mechanical room layouts. Show sections of all mechanical rooms and provide finalized sections through any bulkheads. Provide finalized boiler room plan.
  - Coordinate floor plans with other disciplines.
  - Provide room names and numbers on all floor plans.
  - Check that all title block information has been completed on each drawing and that each drawing contains a key plan (where applicable).

### **4. Electrical Systems – CD (95%) Submission**

The design of the electrical system, unless the A-E is otherwise directed, shall include the following elements:

- **General Requirements:**
  - Provide a copy of the completed electrical specification including a table of contents listing each electrical specification section to be used for the project.
  - Provide a copy of the final electrical load letter sent to the electrical utility company.
  - Provide copies of the transmittals for information sent to the telephone and cable television companies.
  - Provide the names and addresses of the power company, cable television, and telephone company contacts for this project.
  
- **Drawing Requirements:**
  - Complete the electrical cover sheet. Ensure that all symbols and abbreviations used on this project are included as well as the list of drawings.
  - Complete the electrical site plan including all new and existing utility information and site lighting branch circuit wiring. Add proposed electrical (primary and secondary), telephone, and cable television service entrance. Indicate all new and/or existing underground and overhead utility lines (gas and/or water, etc.) that may affect the electrical work. Add any existing site lighting and electrical utilities that are to be removed. Add any applicable electrical site plan details (pole base secondary electrical service entrance duct back, main grounding, etc.).
  - Provide an updated computer generated photometric site lighting plan indicating the point-by-point maintained foot-candle levels. This plan must correspond with and accompany the lighting layout shown on the electrical site plan.
  - Provide floor plans indicating the new lighting layout in each space. These plans shall also show branch circuit connections to corridor junction boxes, all illuminated exit signs, which lighting fixtures are to be connected to emergency lighting circuits, the method of lighting control for each space, lighting fixture type designations, room

names and numbers, and foot-candle level designations. Room names, numbers, and foot-candle levels may be scheduled on each floor plan. The locations of all lighting branch circuit panelboards shall be shown on these plans. All notes referenced on these plans shall be shown on the same plan as the reference.

- Provide floor plans indicating the power receptacles and CATV outlets and their branch circuit connection to corridor junction boxes. These plans shall also show the required power connections to all architectural, mechanical, plumbing, and kitchen equipment including disconnects and control devices. Show a plan for the Main Communications Room and each electrical/communications equipment room, kitchen and boiler rooms if applicable indicating the location and identification of each piece of equipment. All notes referenced on these plans shall be on the same plan as the reference.
- Complete the lighting plans including all branch circuit wiring and identification of equipment. Identification shall include electrical characteristics for each item of equipment.
- Complete the fire alarm, master program clock, and building security system plans including all interconnection wiring and security zone indications. Indicate the location and identification of each item of control and annunciation equipment, and the building security sub-distribution equipment locations. Provide a detail of the fire alarm graphic annunciator panel faceplate. All notes referenced on these plans shall be shown on the same plan as the reference.
- Provide drawings for the main distribution switchboard, panelboard, transformer, and lighting fixture schedules and a power system load tabulation schedule.
- Complete the sound and intercommunications system, auxiliary sound systems, telecommunications system, CATV system plans including all interconnection wiring,

speaker zone indications, and telecommunications outlet identification numbers.

- Provide a power riser diagram showing all electrical service entrance and distribution equipment, emergency service equipment, grounding system, and their associated interconnections. Label each item of equipment. Also provide an isometric elevation and a one-line diagram of the main distribution switchboard.
- Coordinate floor plans with other disciplines.
- Check that all title block information has been completed on each drawing and that each drawing contains a key plan (where applicable).

## **5. Plumbing Systems – CD (95%) Submission**

The design of the plumbing system, unless the A-E is otherwise directed, shall include the following elements:

- **General Requirements:**
  - Complete all sections of the specifications. Provide an index for specifications indicating all sections that will be a part of the final construction documents.
- **Drawing Requirements:**
  - Complete cover sheet with symbols list, sprinkler service detail, fixture connection schedule with mounting heights. Provide schedule showing overall drainage fixture units. Allow additional space for notes and other details. Add titles.
  - Provide complete riser diagrams for all piping systems, including pipe sizes.
  - Complete floor plans, details, and schedules. Provide floor plans showing all fixtures, utility entrances, water heaters. Provide notes and details.
  - Coordinate floor plans with other disciplines and coordinate phasing requirements.
  - Provide room names on all floor plans.
  - Provide domestic hot water calculations on cover sheet.

- Provide drainage fixture unit schedules on cover sheet showing types of fixtures removed and added for project.
- Check that all title block information has been completed on each drawing and that each drawing contains a key plan (where applicable).

## **6. Sprinkler Systems – CD (95%) Submission**

- **General Requirements:**

- The A-E will provide a Final Performance specification for the sprinkler system.

- **Drawing Requirements:**

- Complete all details.
- Show all main piping routing, service entrance, manifold system, zone valves, inspector test valve locations, phasing requirements and details such as service manifold system, hangers, and branch over details, etc.
- Provide final phasing coordination.
- Provide sections of sprinkler piping located in tight areas, where any question may arise as to the implementation of piping requirements.
- Coordinate floor plans with other disciplines and coordinate phasing requirements.
- Provide room names, NFPA hazard classification, and numbers on all floor plans.
- Check that all title block information has been completed on each drawing and that each drawing contains a key plan (if applicable).

## **7. Civil and Structural – CD (95%) Submission**

- Provide final structural calculations with a table of contents and clear relationships to drawings and specifications.

## **8. Cost Estimate – CD (95%) Submission**



Unless an overall GMP has been accepted by the Owner, provide an updated cost estimate based upon market feedback. Provide a detailed labor and material type cost estimate and organize by CSI division.

#### **2.2.4 A-E Construction Documents (100%)**

- **General (100%) Requirements**
  - The A-E will prepare the 100% Construction Documents, including drawings, details, and specifications and submit them to the Owner at least one week prior to the 100% review meeting. At the review meeting, the Design-Builder and A-E will present the 100% Construction Documents and will respond to questions and comments to the design in writing (can be in the form of meeting minutes). The Design-Builder will ensure that sufficient persons, including subcontractors and consultants, attend the review meeting so that responses can be provided.
  - The A-E will develop and provide the following during the 100% Construction Documents phase:
    - Complete construction Specifications
    - Complete civil, architectural, MEP, sprinkler, and structural drawings
    - Construction documents that comply with all requirements for final local authorities having jurisdiction or other agency submission, if applicable.
    - Provide responses to all previous comments received during design review not previously responded to.
    - Incorporate all comments resulting from building permit applications.
    - Prepare final set of documents for use for construction.
    - Lack of inter-discipline coordination, incompleteness in design of structural or MEP systems, or overall lack of drawing completeness at this phase may result in additional review session(s) beyond the final meeting, which shall be provided at no additional cost to the Owner. Completeness of submitted documents to avoid disruptions of schedule is essential.

- Once all adjustments and corrections are made to the 100% Construction Documents, the A-E will present them to the Owner for approval of the final design.
- Subsequent to the 100% review meeting with Owner, the A-E shall accomplish the following:
  - Incorporate all comments or requirements relating to compliance with the Specifications and resulting from the review meeting into the Construction Documents.
  - If required, send one (1) complete, signed and sealed set of Construction Documents (drawings) and Specifications (or as many as they require) with the required signed design statement by the architect or engineer to local authorities having jurisdiction for their record.

#### **2.2.5 Construction Phase**

The A-E shall expeditiously and so as not to delay the progress of the work, review and take action on shop drawings, samples and other submittals of the Design-Builder for conformance with the design concept of the project and for compliance with information given in the Construction Documents. The Design-Builder shall obtain the approval of the Owner's Representative prior to approving any items that do not conform to the requirements of the approved Construction Documents.

**END**