ADDENDUM No. 02 Date: September 25, 2019

TO CONTRACT DOCUMENTS ENTITLED:

CP190411 General Site - Primary Care Clinic North – Bid Package 2 – Building & Site Paving
at
7115 East St. Charles Road
Columbia, MO 65202

Advertisement Date: September 5, 2018

Prepared for: The Curators of the University of Missouri

Consultants:
ARCHITECT
Simon Oswald Architecture
2801 Woodard Drive, Suite 103
Columbia, MO 65202
573-443-1407

CIVIL ENGINEER
Engineering Surveys & Services
1113 Fay Street
Columbia, MO 65201
573-449-2646

STRUCTURAL ENGINEER
KH Engineering Group
15377 West 95th Street
Lenexa, KS 66219
913-825-9381

MEP ENGINEER
McClure Engineering
1000 Clark Avenue
St. Louis, MO 63102
314-645-6232

Drawings and Specifications for the above referenced project and the work covered thereby are herein modified as follows, and except as set forth herein, otherwise remain unchanged and in full force and effect:

GENERAL:

1) Bids will be received until 1:30 p.m., C.T., October 3, 2019 at the General Services Building, Room L100 (Front Reception Desk) as outlined in the Advertisement For Bids.

2) For reference only, the Bid Package 1 documents have been posted on the University’s website. These documents are provided for reference only to clarify the scope of work on Bid Package 1 and are not in contract.

PROJECT MANUAL: VOLUME 1:

1) Section 1.A Bid for Lump Sum Contract:
   a) REVISE Paragraph 4.a Project Completion to reflect September 30, 2020 as substantial completion.
   b) REVISE Paragraph 4.c Project Completion to reflect September 30, 2020 as substantial completion.
   c) REPLACE section in its entirety.

2) Section 1.E Special Conditions:
   a) REVISE Section 2.a. to update the second sentence to read: “Contractor shall perform all work in the designated areas by September 30, 2020.” All other information in the section remains unchanged.

PROJECT MANUAL: VOLUME 2:

1) 05 4523 Medical Equipment Support Systems:
   a) REVISE paragraph 1.1.B.1. to eliminate items listed in sections b,c,d, and e as they are not required for the project as they are provided by the University’s equipment vendor. Addendum No. 1 erroneously eliminated the entire specification. For clarification, the entire revised specification is provided in this Addendum No. 1.
   b) REPLACE section in its entirety.

2) 07 5419 Polyvinyl-chloride (PVC) Roofing:
   a) REVISE Item 2.3.A.1 to add “d. Carlisle FleeceBACK PVC FRS Membrane.”
   b) REVISE Item 2.3.A.1 to add “e. SOPREMA Sentinel P150 HFB.”
3) **07 7100 Roofing Specialties:**
   a) **REVISE** Paragraph 2.2.A.6 to read Basis-of-Design Product: Subject to compliance with requirements, provide BILCO Company (The); Custom STAIR ACCESS or comparable product by one of the following:
      **REVISE** paragraph 2.2.B to read Custom Type and Size: Single-leaf lid, 3'-0" x 14'-0".

4) **08 4113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS:**
   a) **REVISE** Item 3.7. to read “Group 1A (Door V1002A)”

5) **09 5133.13 PERFORATED SUSPENDED WOOD CEILINGS:**
   a) **REVISE** Item 2.1.b to add “3. Geometrix.”

6) **10 2800 Toilet Accessories:**
   a) **DELETE** Item 2.3.C to eliminate Specimen Pass-Through Box (SPT-2) as that size does not apply to this project. All Specimen Pass-Through Boxes on the project will be SPT-1.

7) **10 5129 Solid Phenolic Lockers:**
   a) **REVISE** Item 2.2.A to add “7. Summit Lockers.”

8) **20 1082 Description of Work Testing, Adjusting and Balancing:**
   a) **Added** the following:
      B. Test, adjust and balance the following mechanical systems which are shown in the construction documents.
      1. Supply air systems, all pressure ranges, including variable volume and constant volume systems.
      2. Return air systems.
      3. Exhaust air systems.
      4. Hydronic systems.
      5. Steam distribution systems.
      6. Cooling towers.
      7. Verify temperature control system operation.
      8. Plumbing water systems (i.e., recirculation pumps, booster pumps).

9) **23 7002 Ductless Split System:**
   a) **Added** York as an acceptable manufacturer.
      E. Units shall be manufactured by Daikin, Mitsubishi, Trane, **York**, or LG.

10) **23 7301 Rooftop Units:**
   a) **Added** York as an acceptable manufacturer.
      U. The units shall be Trane Climate Changer, AAON RM/RN, McQuay MPS, Addison TRS, **York** or approved equal.

11) **28 3000 Electronic Detection and Alarm:**
   a) **Panelboard clarification:**
      1. Provide branch breakers for SPDs in panels indicated on E606 to receive SPDs.
      2. Panels LPP1 and LPP4 to be 54 circuit panels to provide space for additional branch breaker.
   b) **REPLACE** section in its entirety.

**DRAWINGS:**

1) **C2.01: CIVIL COVER SHEET**
   a) **ADD** General Note 6. to read as follows: “The cast iron frame and grate for Curb Inlet 16 (CI16) shall be adjusted to match the slope of the adjacent drive. Non shrink grout and/or other masonry materials shall be used to maintain watertight conditions between the frame and concrete structure.”
2) **S102: ENTRY CANOPY PLANS & DETAILS**
   a) **REVISE** Details 5, 8 and 10 to coordinate edge details of canopy with architectural.
   b) **REPLACE** sheet in its entirety.

3) **A503: ENLARGED PLANS & INTERIOR ELEVATIONS – LAB**
   a) **REVISE** Enlarged Plan 01 to add keyed note 19 to indicate the Specimen Pass-Thru cabinet in the wall between Toilet 1003 and Lab 1004.

4) **A504: ENLARGED PLANS & INTERIOR ELEVATIONS – PHARMACY**
   a) **REVISE** Interior Elevations 02 to clarify the size of lockers as, 15” wide, 6’-0” tall and 15” deep.

5) **A506: ENLARGED PLANS & INTERIOR ELEVATIONS – RRS AND GENERAL**
   a) **REVISE** Interior Elevations 19 & 20 to clarify the size of lockers as, 15” wide, 6’-0” tall and 15” deep.

6) **A612: CANOPY SECTIONS & DETAILS**
   a) **REVISE** Details 10, 02, 04, 05, 06, and 07, coordinate edge details of canopy with structural.
   b) **REPLACE** sheet in its entirety.

7) **E603: LUMINAIRE SCHEDULE AND LIGHTING DETAILS**
   a) **REVISE** product codes for site lighting fixtures S01A, S01B, S01C, and S02
   b) **ADDED** occupancy sensors/BAS Relay wiring detail
   c) **REPLACE** sheet in its entirety.

8) **E607: LIGHTING CONTROL MATRIX**
   a) **REVISE** exterior lighting control.
   b) **REPLACE** sheet in its entirety.

**ATTACHMENTS:**
1) Section 1.A Bid for Lump Sum Contract: Replace section in its entirety. Six (6) 8 ½ x 11 sheets.
2) 05 4523 Medical Equipment Support Systems: Replace section in its entirety. Seven (7) 8 ½ x 11 sheets.
3) 28 3000 Electronic Detection and Alarm: Replace section in its entirety. Six (6) 8 ½ x 11 sheets.
4) S102: Replace sheet in its entirety.
5) A612: Replace sheet in its entirety.
6) E603: Replace sheet in its entirety.
7) E607: Replace sheet in its entirety.

End of Addendum #02
SECTION 1.A

BID FOR LUMP SUM CONTRACT

Date: ____________________________

BID OF
(hereinafter called "Bidder") a corporation* organized and existing under laws of the State of ____________, a partnership* consisting of ____________________________, an individual* trading as ____________________________, a joint venture* consisting of ____________________________.

*Insert Corporation(s), partnership or individual, as applicable.

TO: Curators of the University of Missouri
    c/o Associate Vice Chancellor – Facilities
    Room L100, General Services Building
    Columbia, MO 65211

1. Bidder, in compliance with invitation for bids for construction work in accordance with Drawings and Specifications prepared by Simon Oswald Associates, Inc., entitled General Site - Primary Care Clinic North – Bid Package 2 – Building & Site Paving project number CP190411, dated September 5, 2019 having examined Contract Documents and site of proposed work, and being familiar with all conditions pertaining to construction of proposed project, including availability of materials and labor, hereby proposes to furnish all labor, materials and supplies to construct project in accordance with Contract Documents, within time set forth herein at prices stated below. Prices shall cover all expenses, including taxes not covered by the University of Missouri’s tax exemption status, incurred in performing work required under Contract documents, of which this Bid is a part.

Bidder acknowledges receipt of following addenda:

Addendum No. ____________________________ Dated ______________
Addendum No. ____________________________ Dated ______________
Addendum No. ____________________________ Dated ______________
Addendum No. ____________________________ Dated ______________

2. In following Bid(s), amount(s) shall be written in both words and figures. In case of discrepancy between words and figures, words shall govern.

3. BID PRICING
   a. Base Bid:
      The Bidder agrees to furnish all labor, materials, tools, and equipment required to develop the site and construct the 27,800 square foot medical office building; all as indicated on the Drawings and described in these Specifications for sum of:

      ____________________________________________ DOLLARS ($ ____________________).
b. Additive Alternate Bids:
Above Base Bid may be changed in accordance with following Alternate Bids as Owner may elect. Alternates are as described in Section 1.H of Project Manual. Alternates are written in a priority order, but Owner is not required to accept or reject in order listed. This is a one (1) contract project, therefore, Alternates shall be studied by each Bidder to determine effect on Bids of Contractor and each Subcontractor and/or Material supplier.

(1) Additive Alternate No. 1: Construction of Physical Therapy Suite and 30 parking spaces at southwest side of parking lot.

The Bidder agrees to furnish all labor, materials, tools and equipment required for construction of rooms Open Therapy 1008, Toilet 1008A, PT Storage 1008B, Private Therapy 1008C, Private Therapy 1008D, Semi 1008E, Semi 1008F and Office 1008G. Additionally, the Bidder agrees to furnish all labor, materials, tools and equipment required for construction of 30 asphalt parking spaces at the southwest side of the parking lot all as indicated on the Drawings and described in these Specifications for sum of:

__________________________________________DOLLARS ($__________).

(2) Additive Alternate No. 2: Construction of 8 Exam Rooms (1057 through 1063) and Corridors C1017 & C1018 at Northeast side of building.

The Bidder agrees to furnish all labor, materials, tools and equipment required for construction of rooms Peds Exam 1057 through OB Exam 1064, Corridors C1017 and C1018 all as indicated on the Drawings and described in these Specifications for sum of:

__________________________________________DOLLARS ($__________).

(3) Additive Alternate No. 3: Construction of 8 Exam Rooms (1040 through 1047) and Corridors C1012 & C1013 at northwest side of building. Construction of 28 parking spaces at west and north side of parking lot. Installation of Sound Masking System per specification 27 5119.

The Bidder agrees to furnish all labor, materials, tools and equipment required for construction of rooms Exam 1040 through Exam 1047, Corridors C1012 and C1013. Additionally, the Bidder agrees to furnish all labor, materials, tools and equipment required for full installation of a Sound Masking System as indicated in the Drawings and described in Specification Section 27 5119. Additionally, the Bidder agrees to furnish all labor, materials, tools and equipment required for the construction of 28 asphalt parking spaces at the west and north sides of the parking lot as indicated on the Drawings and described in these Specifications for sum of:

__________________________________________DOLLARS ($__________).

(4) Additive Alternate No. 4: Concrete Paving and concrete mow strip.

The Bidder agrees to furnish all labor, materials, tools and equipment required to provide Concrete Paving in lieu of Asphalt Paving and to provide a concrete mow strip as indicated on the Drawings and described in these Specifications for sum of:

__________________________________________DOLLARS ($__________).
4. PROJECT COMPLETION


b. Commencement - Contractor agrees to commence work on this project after the "Notice to Proceed" is issued by the Owner. "Notice to Proceed" will be issued within seven (7) calendar days after Owner receives properly prepared and executed Contract documents listed in paragraph 4.a. above.

c. Special scheduling requirements: Work of this contract must be substantially complete and accepted by the Owner on or before September 30, 2020. Refer to Special Conditions.

5. SUBCONTRACTOR LIST:

Bidder hereby certifies that the following subcontractors will be used in performance of Work:

NOTE: Failure to list subcontractors for each category of work identified on this form or listing more than one subcontractor for any category of work without designating the portion of work performed by each shall be grounds for rejection of bid. List name, city, and state of designated subcontractor, for each category of work listed in Bid For Lump Sum Contract. If work within a category will be performed by more than one subcontractor, Bidder shall provide name, city, and state of each subcontractor and specify exact portion of work to be performed by each. If acceptance/non-acceptance of Alternates will affect designation of a subcontractor, Bidder shall provide information, for each affected category, with this bid form. If Bidder intends to perform any designated subcontract work by using Bidder's own employees, then Bidder shall list their own name, city, and state. The bidder may petition the Owner to change a listed subcontractor only within 48 hours of the bid opening. See Information For Bidders Section 16 List of Subcontractors for requirements.

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<th>Work to be performed</th>
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<td>Masonry</td>
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6. SUPPLIER DIVERSITY PARTICIPATION GOALS

a. The Contractor shall have as a goal, subcontracting with Minority Business Enterprise (MBE) of ten percent (10%), with Service Disabled Veteran Owned Business (SDVE) of three percent (3%); and with Women Business Enterprise (WBE), Disadvantage Business Enterprise (DBE), and/or Veteran Owned Business of ten percent (10%) of awarded contract price for work to be performed.

b. Requests for waiver of this goal shall be submitted on the attached Application For Waiver form. A determination by the Director of Facilities Planning & Development, UM, that a good faith effort has not been made by Contractor to achieve above stated goal may result in rejection of bid.

c. The Undersigned proposes to perform work with following Supplier Diversity participation level:

   MBE PERCENTAGE PARTICIPATION: _____________________ percent (____ %)
   SDVE PERCENTAGE PARTICIPATION: _____________________ percent (___ %)
   WBE, DBE, and/or VETERAN PERCENTAGE PARTICIPATION:__________percent (____ %)

    d. A Supplier Diversity Compliance Evaluation form shall be submitted with this bid for each diverse subcontractor to be used on this project.

7. BIDDER’S ACKNOWLEDGMENTS

a. Bidder declares that he has had an opportunity to examine the site of the work and he has examined Contract Documents therefore; that he has carefully prepared his bid upon the basis thereof; that he has carefully examined and checked bid, materials, equipment and labor required thereunder, cost thereof, and his figures therefore. Bidder hereby states that amount, or amounts, set forth in bid is, or are, correct and that no mistake or error has occurred in bid or in Bidder’s computations upon which this bid is based. Bidder agrees that he will make no claim for reformation, modifications, revisions or correction of bid after scheduled closing time for receipt of bids.

b. Bidder agrees that bid shall not be withdrawn for a period of ninety (90) days after scheduled closing time for receipt of bids.

c. Bidder understands that Owner reserves right to reject any or all bids and to waive any informalities in bidding.

d. Accompanying the bid is a bid bond, or a certified check, or an irrevocable letter of credit, or a cashier’s check payable without condition to "The Curators of the University of Missouri" which is an amount at least equal to five percent (5%) of amount of largest possible total bid herein submitted, including consideration of Alternates.

e. Accompanying the bid is a Bidder’s Statement of Qualifications. Failure of Bidder to submit the Bidder’s Statement of Qualifications with the bid may cause the bid to be rejected. Owner does not maintain Bidder’s Statements of Qualifications on file.

f. It is understood and agreed that bid security of two (2) lowest and responsive Bidders will be retained until Contract has been executed and an acceptable Performance Bond and Payment Bond has been furnished. It is understood and agreed that if the bid is accepted and the undersigned fails to execute the Contract and furnish acceptable Performance/Payment Bond as required by Contract Documents, accompanying bid security
will be realized upon or retained by Owner. Otherwise, the bid security will be returned to the undersigned.

8. **BIDDER'S CERTIFICATE**

Bidder hereby certifies:

a. His bid is genuine and is not made in interest of or on behalf of any undisclosed person, firm or corporation, and is not submitted in conformity with any agreement or rules of any group, association or corporation.

b. He has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid.

c. He has not solicited or induced any person, firm or corporation to refrain from bidding.

d. He has not sought by collusion or otherwise to obtain for himself any advantage over any other Bidder or over Owner.

e. He will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin in connection with performance of work.

f. By virtue of policy of the Board of Curators, and by virtue of statutory authority, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, mined or grown within the State of Missouri. By virtue of policy of the Board of Curators, preference will also be given to all Missouri firms, corporations, or individuals, all as more fully set forth in "Information For Bidders.

9. **BIDDER'S SIGNATURE**

Note: All signatures shall be original; not copies, photocopies, stamped, etc.

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<th>Authorized Signature</th>
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<td>Company Name</td>
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<td>E-Mail Address</td>
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<td>Circle one: Individual Partnership Corporation Joint Venture</td>
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If a corporation, incorporated under the laws of the State of__________
Licensed to do business in the State of Missouri?  _____yes  _____no

(Each Bidder shall complete bid form by manually signing on the proper signature line above and supplying required information called for in connection with the signature. Information is necessary for proper preparation of the Contract, Performance Bond and Payment Bond. Each Bidder shall supply information called for in accompanying "Bidder's Statement of Qualifications.")

END OF SECTION
SECTION 05 4523 - MEDICAL EQUIPMENT SUPPORT SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Summary:
   1. Performance specifications for engineered design-build support systems using cold-formed adjustable metal framing and hot-rolled steel section supports.

B. Scope:
   1. All ceiling mounted equipment including
      a. Radiographic Equipment Ceiling Channel Grid.
   2. Provide and install equipment support systems as located on the reflected ceiling plans as indicated.
   3. Ceiling Channel Grids shall be a universal grid or per manufacturer’s drawing -type consisting of 12 Gage 1-5/8” cold-formed channel rails flush with the finished ceiling and extending wall to wall unless otherwise noted on the reflected ceiling plans and shall be perpendicular to the path of travel of the equipment.
   4. Ceiling Direct Mounting Channel Systems shall be single channels consisting of 12 Gage 1-5/8” cold-formed channel rails flush with the finished ceiling and extending wall to wall unless otherwise noted on the reflected ceiling plans and shall be parallel to the path of travel of the equipment. Take-Up rails finish painted white with trolleys shall be provided and installed with these systems.

1.2 RELATED SECTIONS

A. Section 05 1200 “Structural Steel”
B. Section 05 4000 “Cold-Formed Metal Framing”
C. Section 05 5000 “Metal Fabrications”

1.3 REFERENCES

A. All design shall be in accordance with:
   1. The governing local and state building code including IBC 2009.

B. Material Standards:
   1. ASTM A36 – Carbon Structural Steel.
   2. ASTM A53 – Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   3. ASTM A325 – Structural Bolts, Steel, Heat Treated 120/105 ksi Minimum Tensile
4. ASTM A500 – Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in rounds and Shapes.
5. ASTM A501 – Hot-rolled Welded and Seamless Carbon Steel Structural Tubing.
6. ASTM A572 – High-Strength Low- Allow Columbium-Vanadium Structural Steel.
8. ASTM A653 – Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
9. ASTM A992 – Steel for Structural Shapes
10. A1011/A1011M-03a Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

C. Connection Standards:
1. RCSC (Research Council on Structural Connections) – Specification for Structural Joints Using ASTM A325 or A490 Bolts.
2. AWS D1.1 Structural Welding Code

1.4 DEFINITIONS

A. Qualified Person: Someone "... who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, work, or the project" (defined by OSHA 29 CFR 1926.32 (m)).

B. Design-Build: Method where design and construction are a single source of responsibility for one entity.

C. Turnkey: Fast-track supply and installation in a condition ready for immediate use, occupation, or operation.

1.5 SUBMITTALS

A. Shop Drawings: Successful Design-Build Medical Equipment Support Contractor shall submit shop drawings showing the complete system including plans, sections, and details of the system. Center point / Iso-centers of all equipment shall be located off of finished wall lines. Plans shall show all manufactured parts by catalog numbers, all fabricated parts, and all fasteners and hardware.

B. Calculations: Structural calculations for all member and connections shall be submitted. The Medical support system shall lend itself to a rational structural analysis with section properties of framing members demonstrated by calculations. Structural calculations and drawings shall be furnished with a stamp by a licensed engineer in the state where the installation is to occur complying with all applicable codes and regulatory requirements. Calculations must include design for deflection and rotational requirements, as applicable, and not just stress.

1.6 QUALITY ASSURANCE

A. Design-Build Medical Equipment Support Contractor Quality Assurance:

1. Material and installation shall be provided by qualified and competent persons from a Design-Build Medical Equipment Support Contractor with at least ten (10) years experienced in the professional engineering, design, manufacture and installation of adjustable metal framing supports. The Design-Build Medical Equipment Support
Contractor shall demonstrate (10) years experience of turnkey projects of similar scope and size and shall maintain a continuing quality assurance program for both its material and installation crews.

2. Design-Build Medical Equipment Support Contractor shall provide the single source responsibility and liability for all engineering, design, materials and workmanship, and shall provide as single limited warranty for all aspects of the project: engineering, fabrication, material quality, and installation. Installing contractor must be a trained representative of the cold formed metal framing system manufacturer.

3. Design-Build Medical Equipment Support Contractor shall be responsible for complete coordination with the equipment suppliers to verify all loading and installation requirements and shall be responsible for directly contacting these companies for the latest design requirements.

4. Design-Build Medical Equipment Support Contractor shall employ a qualified and competent structural engineer to directly supervise all design and construction phases.

5. Acceptable Design-Build Medical Equipment Support Contractors:
   a. Unistrut Service Company of Ohio.

6. Design-Build Medical Equipment Support Contractor shall meet the following compliance requirements by having the following in place:
   b. Established Industrial Safety and Fall Protection Program.
   c. Minimum 10 hour Occupational Safety & Health Administration (OSHA) Training Certification.
   d. Worker's Compensation Insurance.
   e. "Installer Training" for any hybrid or adhesive anchoring systems, if applicable (Hilti)

B. Component Quality Assurance:

1. Manufacturers Brochure: Brochure shall show materials, strengths, finishes and sizes. Sufficient engineering information shall be provided to permit stress calculations. Materials listed should conform to the appropriate specifications from ASTM, AISI, AISC, and / or AWS.

2. Material Quality Assurance: Submit certification that products comply with specified requirements and are suitable for intended application.

C. Installation Quality Assurance:

1. Submit list of a minimum of 5 completed projects of similar size and complexity to this Work. Include for each project:
   a. Project name and location.
   b. Name of owner.
   c. Name of contractor.
   d. Name of architect.
   e. Name of manufacturer.
   f. Number and type of supports.
   g. Date of completion.

2. Pre-Installation Meeting: Convene a pre-installation meeting a minimum of 2 (two) weeks before start of installation of support systems. Require attendance of parties directly affecting work of this section, including General Contractor or Owner representative, Mechanical, Plumbing and Electrical Contractor, Equipment representative and support system Design-Build Medical Equipment Support Contractor. Review the following:
a. Shop Drawings.
b. Sequencing.
c. Existing Interferences.
d. Mechanical, Plumbing, and Electrical installation coordination.
e. Time restrictions.
f. Access to areas.
g. Finished Ceiling Elevations.
h. Reflected Ceiling Plan light fixture locations.
i. Final equipment center-point / iso-center locations.

1.7 LIABILITY AND WARRANTY

A. Warranty: A one (1) year limited warranty on all engineering, design, materials, installation, and system performance shall be provided in writing to the Owner from the date of Owner sign-off at project completion.

1.8 DESIGN CRITERIA

A. Any designs indicated in the contract documents are for concept only and should not be taken as final designs nor shall be used for material take-off nor used for estimating purposes in any way.

B. Final designs including all final designs, materials and all installation labor shall be the exclusive and sole responsibility of the Design-Build Medical Equipment Support Contractor and all costs shall be included in their proposal at bid time.

C. The building structural members, elevations, and room layout shall be fully coordinated for the design of all supports. Equipment loads must be adequately supported from the building structural members and distributed accordingly. Floor to floor distances, finished ceiling elevations, room locations, and building support structure elevations must all be coordinated for appropriate design of support systems for proper understanding of required hanger lengths, bracing requirements, attachment design, etc.

D. Loads to be used shall be per each equipment manufacturer’s specification.

E. An overall system minimum factor of safety of three (3) shall be used for strength design.

F. Minimum rotational requirements, unless otherwise stated in the equipment manufacturer’s specifications, shall be as follows:

1. For all light and gas/service column/booms: Maximum rotation on the equipment mounting plate shall be no greater than 0.20 degrees per 12”.
2. For all Unistrut Ceiling Channel Grids and Ceiling Channel Systems: Maximum deflection on the system shall be no greater than 0.0625” for any one location of worst case loading on the system.

G. All systems shall be adequately braced in all four directions for lateral loading. If no lateral loading is specified by the equipment manufacturer’s specifications, 1/10th of the static downward loading shall be applied in the horizontal axis. Movement shall not exceed the total for that allowed on the system at the worst case loading condition.

H. For ceiling channel, rails shall be designed for no more than 1/720th of the span maximum deflection in either plane when maximum loading conditions are applied due to equipment operation.

I. Ceiling channel shall be installed horizontal in plane and parallel to each other within 1/32nd of
an inch.

J. Anchorage to the existing structure shall be as designed by the structural engineer of the system.

1. Mechanical anchors into concrete shall be designed with a minimum factor of safety of 6 and shall be either expansion bolts, epoxy anchors, or through bolts with backing plate.
2. Anchorages into existing concrete shall not penetrate existing reinforcing bars.
3. Anchorages into new post-tension concrete shall require concrete inserts designed, located, and supplied by the Design-Build Medical Equipment Support Contractor (installed by Concrete Contractor).
4. Connections to structural steel shall be clamp-on fittings or field welding.
5. Drilling through truss bottom chords shall not be allowed.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Coordinate deliveries and storage of all materials with General Contractor or Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. All cold-formed channel and fittings shall be manufactured by:

1. Unistrut Corporation or approved equal. No alternatives are approved unless written authorization from Owner is obtained.
2. Hilti MI/MQ Support and Installation Systems are an approved equal

2.2 MATERIALS

A. Channel: All cold-formed channel members shall be fabricated from structural grade steel conforming to one of the following ASTM specifications: A1011 SS GR 33 or A653 GR 33. Channel shall be 1-5/8” framing system 12 Gage. Minimum yield strength shall be 33 ksi.

B. Fittings: All cold-formed fittings shall be fabricated from steel conforming to one of the following ASTM specifications: A575, A576, A36, or A653. Minimum fitting thickness shall be ¼” with physical requirements per A1011. Minimum yield strength shall be 33 ksi.

C. Channel Nuts: All channel nuts shall be fabricated from steel conforming to ASTM specification A1011 SS GR 33.

D. Bolts and Fasteners: All bolts and fasteners used in connections shall be minimum SAE Grade 5, EG finish. Threaded Rod Grade B7.

E. Hot Rolled Structural Steel: ASTM A36 minimum.

2.3 FINISHES

A. All cold-formed channel and/or fitting members shall be finished in accordance with one of the following standards:

1. Perma-Green II (GR): Rust inhibitive acrylic enamel paint finish applied by electro-
deposition, after cleaning and phosphating, and thoroughly baked. Color per Federal Standard 595a color number 14109 (dark limit V-). Finish paint shall withstand minimum 400 hours salt spray (scribed), and 600 hours salt spray (unscribed), when tested in accordance with ASTM B117. Or approved equal paint finish.

3. Pre-Galvanized (PG): Zinc coated by hot-dipped process prior to roll forming. The zinc weight shall be G90 conforming to ASTM A653.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine building drawings and areas and conditions in which systems are to be installed. Notify Architect of areas or conditions not acceptable for support of system. Do not begin installation until unacceptable areas or conditions have been corrected.

B. Design all supports to work around mechanical ductwork, electrical lighting fixtures, and plumbing where possible. All efforts shall be fully coordinated prior to final design.

3.2 INSTALLATION

A. For ceiling channel, rails shall be on centers at 2'-2" center to center as required by equipment manufacturer and allow continuous attachment along any point on the rail. System shall be true, plumb, and level to the tolerances specified.

B. Framing shall be adjusted as required in the field to avoid interferences.

C. Hammer drilling times shall be coordinated in existing facilities with the Owner.

D. All bolted connections into cold-formed channel members with channel nuts shall be tightened to a minimum:

1. 50 ft-lbs for ½" bolts.
2. 100 ft-lbs for 5/8" bolts.
3. 125 ft-lbs for ¾" bolts.

E. All bolted connections for structural steel joints shall be per ASIC Specifications for Structural Joints Using ASTM A325 or A490 Bolts.

F. Gas/Service Column/Boom mounting plates supplied by the equipment supplier as noted in the equipment specifications shall be installed by the system support Design-Build Medical Equipment Support Contractor unless otherwise specified.

G. Supply and install all required threaded rod, hex nuts, flat washers, lock washers for exam and surgical lights and gas/service column/booms unless otherwise specified.

H. Install wall mold on Ceiling Channel Grids and Ceiling Direct Mounting Channel Systems in rooms to receive lay-in ceiling tile where applicable.

I. Shear off tek screws on the inside of the ceiling channel for equipment mounting block installation.

J. Supply and install white snap-in closure strips into the open ceiling channel as required after the equipment has been installed unless installation labor is agreed to otherwise at the time of contract agreement.
3.3 CLEANUP

A. Upon completion of this section of work, remove all protective wraps and debris. Repair any damage due to installation of this section of work.

3.4 PROTECTION

A. During installation, it shall be the responsibility of the Design-Build Medical Equipment Support Contractor to protect this work from damage.

B. Upon completion of this scope of work, it shall become the responsibility of the general contractor or Owner to protect this work from damage during the remainder of construction on the project and until substantial completion.

C. Any modifications to the installed system shall be performed only and exclusively by the Design-Build Medical Equipment Support Contractor responsible for the system. Modifications made by any other party transfers liability and integrity of the system to that party making the modifications.

END OF SECTION 05 4523
A. Description of Work

1. Install a complete and operational addressable fire alarm system as indicated by drawings, schedules, and riser diagrams.

2. The equipment supplier must be the local factory authorized representative and must also be factory authorized, trained and certified to perform warranty service for the equipment being supplied.

3. Firm shall be regularly engaged in manufacture of fire alarm systems of types, sizes, and electrical characteristics required, and whose products have been in satisfactory use in similar service for not less than 5 years.

4. Firm with at least 5 years of successful experience on projects with fire alarm systems work similar to that required for this project providing local factory authorized service and spare parts inventory.

5. For a period of one year from date of Owner's first beneficial use, the system shall be under service contract, as authorized by the manufacturer. During that period, replacement components and labor shall be readily available during standard business hours. After the one-year guarantee period, the supplier warrants that he is capable of providing service on a 24 hour, 7-day a week basis for at least five (5) additional years.

6. The Contractor and (equipment supplier) shall perform conductor testing in accordance with NFPA 72, table 7-2.2, Items 11a-d, prior to installation of devices. Test results shall be submitted to the Engineer.

7. Provide shop drawings showing manufacturer’s technical product data, including specifications and installation instruction, for each type of fire alarm system equipment. Project specific point-to-point drawings, wiring diagrams, fire alarm matrix, device addresses and voltage drop and battery calculations shall be provided. Partial submittal packages may be returned without being reviewed.

8. Sealed fire alarm drawings required for permit application are the responsibility of the Contractor and fire alarm system supplier.

9. The Contractor shall provide as-built drawings with final project specific point-to-point wiring diagrams, device addresses and battery calculations. The contractor shall provide all as-builts showing manufacturer’s technical product data, including specifications and installation instruction, for each type of fire alarm system equipment. Refer to specification section 26 00 38 for all other as-built requirements.

B. Acceptable Manufacturers

1. Subject to compliance with requirements, provide fire alarm components from one of the following system:
C. Fire Alarm Control Panel

1. The Fire Alarm System will be microprocessor based, non-coded, and utilize analog/addressable devices. It will be electronically supervised, common signaling, individual device indicating, with remote central station monitoring. The system shall operate from manual fire alarm stations, smoke detectors, thermal detectors, duct detectors, water flow, and tamper switches.

2. The panel shall include an 80 character LCD display that can be viewed without opening the front cover of the control panel.

3. The panel shall be expandable to 318 addressable devices per loop (159 detectors/159 modules).

4. The system shall transmit alarm signals to a remote central station in full compliance with NFPA 72. The batteries will be able to operate the system under maximum normal load condition for not less than 24 consecutive hours followed by five (5) minutes of alarm.

5. Provide a low voltage, 24 volt DC fire alarm control panel including all circuitry, power supplies, batteries, programming and cabinet space necessary to perform required functions, and to service as test and trouble signal points.

6. All input/output cards shall be modular, plug-in type devices.

7. Equipment control panel for number of initiating addresses as required plus 20% spare capacity.

8. The control panel shall include the following additional features:

   Walk test feature for single person testing of the system. This feature includes special audible indication and zone trouble indication.

   Temporal code 3 selectable for each indicating circuit.

   Alarm verification, programmable per device.

   Totally field programmable with multiple password protection.

   All initiation and indication circuits shall be power limited for use with limited energy cables.

   Addressable monitor modules may be field programmed for normal water flow or supervisory operation.

   Any output control/relay module circuit may be mapped to any input device in non-volatile program memory.

   Display program function allows system field program information to be easily displayed using front panel controls.

   Disable capability for each device shall be provided from the control panel.
A 650-event history log stored in non-volatile memory with storage of alarm verification activities.

RS-485 serial port shall be provided for high-speed 4-wire annunciation of the system.

9. Contractor to provide dedicated 20A, 120VAC power connection to fire alarm control panel. The circuit breaker for this dedicated circuit to be labeled “Fire Alarm System Power”.

10. Fire alarm control panel to be furnished with amplifiers and digital voice command center audio components, including voice handset for a full emergency voice evacuation fire alarm system.

11. Contractor to provide a data connection for system communication back to the Hospital Desigo Command Center through a Desigo Client.

D. Fire Alarm Communicator:

1. Provide dual path commercial fire alarm communicator with cellular and IP communication capabilities (Honeywell #IPGSM-4G Starlink Sole Path or equal). The Contractor shall provide cable, connectors and installation of two data cables from the data rack. The communicator will transmit each event as digital information over the data or cellular network. The contractor shall test the signal of the cellular antenna and provide additional antennae as required to produce a reliable cellular signal.

E. Remote Annunciator

1. Remote annunciator panel shall include an 80-character backlit LCD display to mirror the fire alarm control panel display and piezo sounder to notify of system trouble.

2. Remote annunciator to be provided with key lock switch and control keypad for system acknowledge, audible signal silence and system reset functions.

3. Flush or surface mounting of remote annunciator panel to be coordinated prior to installation.

F. Initiating Devices


2. Photoelectric Detectors: Intelligent analog photoelectric smoke detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density. Sensitivity of the detector shall have an adjustable nominal sensitivity range per UL. It shall be possible to perform a calibrated sensitivity and performance test on the detector without generating smoke. The test method shall test all detectors. The detector shall have a UL operating range of 0-4000 ft. per minute. Provide a detector at control panel and each annunciator.
and remote power supply. Provide standard bases model. Provide a detector at control panel and each annunciator and remote power supply.

3. **Duct Detector:** Ionization duct smoke detector with sampling tube and protective housing. Provide remote test switches where noted. Contractor to provide all load relays necessary for fan shut-down.

4. **Thermal Detector:** Fixed temperature low profile type device with maximum protrusion of 2.1 inches and twist lock installation. Temperature rating to be 135 degrees or 190 degrees (H version). In elevator equipment rooms and shafts, heat detectors shall be located within two feet of each sprinkler head.

5. **Relay Modules:** Addressable relay modules with LED indicator light.

6. **Control Modules:** Addressable control modules with LED indicator light.

7. **Monitor Modules:** Addressable monitor modules with LED indicator light.

8. **Door Holders:** Flush wall mount electromagnetic door holder controlled by fire alarm system. Provide extension rods or box extensions as necessary. Door Holders shall be 24V. Provide power supplies as necessary. Label power supplies “Door Holder Power Supply”. Door Holders provided by Door Hardware Supplier.

9. **Beam Detector:** Intelligent beam smoke detector with multi mounting kit, surface mount kit and remote test switches where noted.

10. **Carbon Monoxide Detector:** 4-wire carbon monoxide detector monitored by fire alarm system with local alarm sounder and trouble relay. Mount per manufacturer’s instructions.

11. All initiating devices shall be identified with a black-on-clear (1/4” text minimum) printed adhesive label affixed to the device. This label shall include the device address.

### G. Signal Devices

1. **Audible/Visual and Visual Signal Devices**

   **Wall Mounted Selectable Candela Audible/Visual Signals:** Horn shall have 84 dB output at 10 feet on the high setting. Strobes shall have 15, 15/75, 30, 75, 110, and 115 candela output.

   **Wall Mounted Selectable Candela Visual Signals:** Strobe shall have 15, 15/75, 30, 75, 110 and 115 candela output.

   **Ceiling Mounted Selectable Candela Audible/Visual Signals:** Horn shall have 84 dB output at 10 feet on the high setting. Strobes shall be multi-candela units with 15, 15/75, 30, 75, 110, and 115 candela outputs.

   **Ceiling Mounted Selectable Candela Visual Signals:** Strobes shall be multi-candela units with 15, 15/75, 30, 75, 110, and 115 candela outputs.

   **Wall Mounted Speaker:** Speaker shall have 83 dBA output at 10 feet at 1W setting. Speaker voltage to be 25V or 70V.
General Site - Primary Care Clinic North
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MU Project #CP190411

1. **Wall Mounted Speaker/Strobe:** Speaker shall have 83 dBA output at 10 feet at 1W setting. Strobes shall be multi-candela units with 15, 15/75, 30, 75, 110, and 115 candela outputs. Speaker voltage to be 25V or 70V.

2. **Ceiling Mounted Speaker:** Speaker shall have 83 dBA output at 10 feet at 1W setting. Speaker voltage to be 25V or 70V.

3. **Ceiling mounted Speaker/Strobe:** Speaker shall have 83 dBA output at 10 feet at 1W setting. Strobes shall be multi-candela units with 15, 15/75, 30, 75, 110, and 115 candela outputs. Speaker voltage to be 25V or 70V.

2. Signals shall meet the requirements of the Americans With Disabilities Act.

3. The visual section shall be polarized Xenon strobe in various candela ratings. The visual candela rating shall be as indicated on the drawings.

4. Audible signals and/or audible sections of combination signals shall be electronic multi-tone units and shall not require vibrating solenoids or contacts. The audible section shall provide for a high/medium/low setting providing different dB levels meeting the requirements of the particular room or space. Tone selection shall be continuous tones or the temporal pattern based on the ANSI S3.41 Standard shall be field selectable. Set audible signals to temporal pattern for this project and volume at high. Adjust volume for small rooms as required.

5. Visual and audible devices shall be synchronized.

6. The signals shall operate on 24 VDC polarized and meet UL 1971, UL464 and ADA. The signal shall be able to test circuit supervision without disconnecting wires.

7. There shall be FIRE lettering clearly visible from both sides. Red or white device color to be coordinated with Architect.

8. Provide remote power supplies as necessary. Provide dedicated 20A, 120V circuit to each remote power supply.

9. Provide amplifiers for speakers as necessary with 20% spare capacity. Provide dedicated 20A, 120V circuit to the amplifier cabinet.

10. Provide a minimum of 2 speaker zones.

**H. System Wiring**

1. All wiring will be as required by the Equipment Supplier. Wire color-coding and the color shall remain the same throughout the system. In general, all initiating devices such as manual stations, thermal detectors, ionization detectors and all modules will be installed across a common #18AWG twisted shielded pair. The signal circuits, door release circuits, fan shut down, etc., shall require #14AWG.

2. No conduit or raceway system will include Class I or non-power limited fire protection signaling circuits with Class II or power limited fire protection signaling circuits in accordance with N.E.C. Article 725 or 760.

3. All conduit and wiring to flow switches, tamper switches, etc., shall be furnished and installed as part of this work.
4. Test results shall be submitted to Engineer.

5. Wiring may be run as concealed open-type plenum rated cable. Exposed or inaccessible wiring shall be installed in conduit. Where possible wiring/conduit shall be concealed. Provide sleeves in all walls which cable runs pass through. Refer to 26 05 29 for fire sealing of penetrations through fire rated walls. Provide access panels as necessary for cable routing. Support devices are to be attached to existing permanent structure.

I. **Sequence of Operations**

1. Fire alarm system to evacuate entire building in the event of an alarm.

2. The following will occur upon activation of any alarm initiating device (smoke detector, heat detector, manual pull station and water flow monitor module):
   a. Activate remote station connection modules. Three distinct outputs must be provided: 1) Alarm, 2) Supervisory, 3) Trouble.
   b. Sound audible signals and flash visual signals.
   c. Display status information on the fire alarm control panel and each remote annunciator LCD screen.
   d. Activate addressable control modules to shut down air handling units, close fire/smoke dampers and release all smoke doors.
   e. Upon elevator lobby, elevator equipment room or elevator shaft detection, primary or alternate recall module contacts will close to activate elevator recall. Upon equipment room or shaft detection, an additional control module contact will close for a signal to the elevator cab.
   f. Upon activation of elevator hoist way or elevator equipment room heat detectors the elevator power shunt trip fusible switch shall be caused to trip open.

3. The following to occur upon activation of a trouble signal (open circuit, ground fault, low battery, loss of AC power, etc.):
   a. Annunciate zone at fire alarm control panel and remote annunciator.

4. Duct detector detection to shut-down all air handling units and send supervisory signal to the fire alarm control panel and remote annunciator.

5. Tamper switch state change to send supervisory signal to fire alarm control panel and remote annunciator.

6. Exterior horn/strobe at fire department connection to only activate on water flow.

7. Signal Silence control button to deactivate audible notification devices.

8. System Reset control button to deactivate visual notification devices and return status of fire alarm system to normal state.

END OF SECTION
28 00 00
## LIGHTING CONTROL MATRIX

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<th>ROOM NUMBER</th>
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CONTROL DEVICE QUANTITIES SHOULD BE SELECTED FROM THE ELECTRICAL DRAWINGS, NOT THIS SPREADSHEET.