ADDENDUM #1
DATE: 10.09.2019

TO CONTRACT DOCUMENTS ENTITLED:

PROJECT MANUAL FOR: CP190671 CRITICAL CARE ADDITION – NEW CATH LAB
CP180491 CRITICAL CARE ADDITION – INTERVENTIONAL RADIOLOGY EXPANSION

ADVERTISEMENT DATE: 09.18.2019

PREPARED FOR: The Curators of the University of Missouri

CONSULTANTS:
CP190671
bcDESIGNGROUP
100 E Park Street, Suite 202
Olathe, KS 66061
913.232.2123 x802

CP180491
The Clark Enersen Partners
2020 Baltimore Ave, Suite 300
Kansas City, MO 64108
816.474.8237

Drawings and Specifications for the above noted 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:

DIVISION 1:

1. Section 1.A Bid for Lump Sum Contract
   a. REVISE TO address to the following:
      Curators of the University of Missouri
      Campus Facilities, Planning Design & Construction
      Room L100 (Front Desk)
      General Services Building
      University of Missouri, Columbia, Missouri 65211

2. Section 1.E Special Conditions
   a. REMOVE the following Section 2 Special Scheduling Requirements, Part n in its entirety.
      n. Third Party Inspections language coming from Owner.
   b. REVISE Section 12 Permits to the following:
      12. Permits
      Permits and inspection for work on UM property are required.

           a. The owners Representative shall secure University Authority Having Jurisdiction building permits required for the project and shall provide a list of required inspection to the Contractor.
i. The Contractor shall coordinate and provide reasonable scheduling and access to the Work for the Owner's Inspection.

ii. Re-inspection of work as a result of either failed inspection or work not ready as scheduled may be at the Contractor's expense.

b. The Contractor shall comply with applicable codes and standards as listed in the Contract Documents, General Conditions, and the Healthcare Construction Guidelines.

c. All permits, including, but not limited to Infection Control, Hot Work, Fire Alarm, Energized Work and HVAC interruption shall be coordinated and scheduled with the Owner's Representative or designee prior to commencement of the work.

d. Permits for Boilers, Water Heaters and Pressure Vessels require an installation permit from the State of Missouri. Before commencement of Boilers, Water Heaters or Pressure Vessels the Contractor must obtain an installation permit from the State of Missouri, Division of Fire Safety, Boiler and Pressure Unit as required by 11 CSR 40-2.010 through 11 CSR 40-2.065. The permit applications are available at http://www.dfs.dps.mo.gov/programs/bpv/

c. **REVISE** Section 13 Specialties, Part a.(3).d to become paragraph (4) as shown below.

   (4) Owner purchased Fluoroscopy and CT Imaging equipment will require special coordination to ensure proper location of all rough in requirements. Coordination with the manufacture during construction will be required to determine acceptance of the room rough ins.

d. **REVISE** Section 17 Modification to Information for Bidders: Bidders Statement of Qualifications, Part (1) to the following:

   (1) Reference: Information for Bidders, Article 8.4

   Insert new Article 8.4 to read as follows:

   In addition to the Bidder’s Statement of Qualifications, the Bidder must also submit evidence and meet the following qualifications:

e. **REMOVE** the following Section 22 Quality Assurance Log, Part b in its entirety.

   b. The contractor shall designate a competent person, separate from the superintendent or Project Manager, to act as the contractor’s QA coordinator. The QA coordinator is responsible for planning, scheduling, coordinating, conducting and verifying all commissioning activities required by the Quality Assurance Log and ensuring all building systems are complete, operable and ready for use by the Owner. At a minimum, building ventilation systems, chilled/hot water generation systems, hydronic distribution systems, power distribution systems and fire detection and alarm systems, as applicable.

f. **REVISE** Section 26 Project Management/Communication Requirements, Part a to the following:

   a. The Contractor shall be represented at the site by a full-time, competent Superintendent with no other assigned duties or responsibilities from the beginning of the work until its final acceptance, unless otherwise permitted
by the Owner’s Representative. The Superintendent for the Contractor for the general building work shall exercise general supervision over all subcontractors of any tier engaged on the work with decision-making authority of the Contractor.

CP190671 SPECIFICATION:

1. In Section 06 4023 Interior Architectural Woodwork, Part 2.1.C.2.a.1 REVISE to the following:
   a. Provide Extira™ Treated Exterior Composite as manufactured by Jeld-wen at all wet area countertops and backsplashes. Use only adhesives recommended by the manufacturer. Water based adhesives are not recommended.
2. In Section 10 5113 Metal Lockers, Part 2.1.A ADD the following manufacturer(s):
   a. Lockers MFG
3. ADD Physicist’s Report after Section 13 4900 Radiation Protection
4. REPLACE Section 20 1080 Testing, Adjusting, and Balancing in its entirety.

CP190671 DRAWINGS:

1. On drawing 6/A100 Site Usage Plan, fence location to remain as drawn. Install a gate at the sidewalk that leads to the hospital. No parking will be permitted on any walks.
2. Drawing E204:
   a. ADDED keyed note number 7 with emergency lighting inverter product code
3. Drawing E304:
   a. REVISED keyed note number 17 to provide 1 data cable at the Aiphone intercom station
   b. REVISED keyed note number 18 to revise location of laser outlet from foot end of the patient table to the boom
   c. ADDED keyed note 23 to provide dual voltage isolated power panel for 120 volt loads as well as 208 volt laser outlet
   d. ADDED remote line isolation monitors to Cath lab
   e. REVISED “ISO1” size to provide 208 volt load for laser
   f. REMOVED circuiting from “B1” and “B2” light booms to “ISO2”. These loads are served from Steris TPCU lighting controller
   g. ADDED circuiting to “C4” equipment boom for the laser outlet
   h. ADDED circuiting for Leviton box
   i. ADDED disconnect for Siemens equipment
4. Drawing E500:
   a. REVISED feeder sizes for “ISO1” and “ISO2”

CP180491 DRAWINGS:

1. Sheet G0.02 – Infection Control Barrier Plan
   a. Revise extents of First and Second Floor infection control barriers.
2. Sheet A1.11 – Second Floor Plan
   a. Relocate wall between Fluoroscopy Procedure Room C2053G and CT Procedure Room C2053H. Relocate Lead-Lined Sliding door.
3. Sheet A1.20 - Second Floor Reflected Ceiling Plan
   a. Revise Ceilings in Fluoroscopy Procedure Room C2053G and CT Procedure Room C2053H per new wall and sliding door location.
4. Sheet A6.21 – Interior Elevations
   a. Revise CT Procedure Rm – West to show new sliding door location and ceiling pocket.
5. Sheet A6.40 – Door Schedule, Door Types, Frame Type, Casework Details  
   a. Revise Hollow Metal Frame Types HMF-2 and HMF-3  
   b. Provide notch in Lead-Lined Sliding Door.  
6. Sheet S2.01 – Framing Plan & Details  
   a. Reference Second Floor Framing Plan on attached sheet S2.01 for modified sliding door location, additional Unistrut framing and modified Unistrut spacings & elevations.  
7. Sheet FP1.01  
   a. Revise Sprinkler layout in Fluoroscopy Procedure Room C2053G and CT Procedure Room C2053H per revised wall location.  
8. Sheet M1.02 – Second Floor HVAC Plan  
   a. Revised ductwork layout in Fluoroscopy Procedure Room C2053G to coordinate with updated Siemens drawings.  
9. Sheet M4.02 – Mechanical Schedules  
   a. Updated Laboratory Gas Equipment Schedule to include WAGD  
   b. Changed MA-1 to MSA-1 in the Master Alarm Schedule  
10. P1.02 – Second Floor Plumbing Plan  
    a. Added WAGD piping to the Procedure Rooms  
    b. Changed MA-1 to MSA-1  
11. E2.01 – Second Floor Power & Auxiliary Systems Plan  
    a. Relocated power for sliding door motor  
12. E2.02 – Procedure Rooms Power & Auxiliary Systems Plan  
    a. Revised plans, notes, and symbols list to correctly correspond with finalized Siemens equipment drawings.  
13. E3.01 – Electrical One Line Diagram  
    a. Revised electrical one line diagram to include UPS per finalized Siemens equipment drawings.  

SUBSTITUTION REQUESTS:  
1. The following substitution requests are APPROVED EQUALS.  
   a. Lockers MFG Knock Down Series  

CLARIFICATIONS, QUESTIONS, ANSWERS:  
1. CP190671 Critical Care Addition - New Cath Lab  
   a. The contact for project CP190671 is Elizabeth Turner, 913.232.2123 x803.  
   b. Bidder Questions:  
      i. **Q1:** I have a question on the floor patching/Leveler, The bid form has a unit price for patching and leveling- Base bid quantity 170 cu ft. We don't usually price this in cubic feet so can we get this changed to a square foot price? What do they expect the average thickness for this to be? I didn't find any other information concerning the floor prep in the spec sections for flooring. Can you give us a idea of what you are expecting to be included in the base bid?  
         **A1:** The quantity will remain in cubic feet as this is a volume measurement which takes thickness into its quantity. In some areas, the floors are uneven, and the thickness of the leveler will vary. Also, as noted in Section 1.A, the leveler is defined in Section(s) 09 6513, 09 6516, and 09 6519.16.  

2. CP180491 Critical Care Addition – Interventional Radiology  
   a. Corridor outside of project area – half of the corridor must remain open.
b. Work to occur on the first floor under the project must be scheduled with the users. Work to occur over a weekend. Space must be made ready to for use during working hours.

c. Duct routing above procedure rooms must be heavily coordinated.

d. Pneumatic tube system – provided by a third-party installer. Route of tube system to be coordinated with the owner and third-party installer during construction.

ATTACHMENTS:

1. CP190671 Physicist’s Report
2. CP190671 Section 20 10 80 TESTING, ADJUSTING AND BALANCING
3. CP190671 Drawing Sheets E204, E304, and E500.
4. CP180491 Drawing Sheets G0.02, A1.11, A1.20, A6.21, A6.40, S2.01, FP1.01, M1.02, M4.02, P1.02, E2.01, E2.02, E3.01

ISSUED BY: Kurt M. Broeckelmann
bc DESIGN GROUP

END OF ADDENDUM #1
09/19/19

Katlyn Howard  
University of Missouri Health Care  
1 Hospital Drive  
Columbia, MO 65212

Dear Katlyn,

This report specifies the radiation protection requirements of the Cardiac Cath Lab located in University Hospital.

The calculations applied in this report were made in accordance with the recommendations of the National Council on Radiation Protection (NCRP) Report Number 147.

Specifications for each barrier are enclosed. Also enclosed are the recommendations concerning structural details and notes. Any changes to the drawing including the location of equipment, position of wall barriers, change of occupancy or use of adjacent areas, etc., will necessitate recalculation of the shielding specifications.

Following installation of the x-ray equipment and before use with patients, the room should be surveyed to assure compliance with NCRP recommendation.

If you require additional information, please do not hesitate to contact me at 573-884-0546.

Sincerely,

[Signature]

William Caubet, M.S., D.A.B.R.  
Medical Physicist
Structural Details of Protective Barriers

1. Lead barriers shall be mounted in such a manner that they will not sag or cold flow because of their own weight. They shall be protected against mechanical damage. It is recommended that lead of 1/32 inch or less thickness be bonded to panels of some rigid supporting material.

2. Surfaces of lead sheets at joints in the barrier should be in contact with a lap of at least ½ inch or twice the thickness of the sheets, whichever is greatest.

3. Welded or burned lead seams are permissible, provided the lead equivalent of the seams is not less than the minimum requirement of the barrier.

4. Joints between different kinds of protective materials shall be so designed that the overall protection of the barrier is not impaired.

5. Joints at the floor and ceiling shall be so designed that the overall protection is not impaired.

6. Windows, window frames, doors and door frames shall have the same lead equivalent as that required of the adjacent wall. Where thick concrete walls are tapered into openings, as is frequently done with observation windows, it may be necessary to add lead protective flanges around the window frame to compensate for the reduced thickness of concrete. A door baffle or threshold may be required for installations operating above 125 kVp, if the discontinuity can be struck by the useful beam. Special attention should be given to providing overlap of the shielding of the door frame and the shielding of the door.

7. Holes in protective barriers shall be covered so that overall attenuation is not impaired.

8. Louvers and holes in barriers for pipes, conduits, service boxes and air ducts may require baffles to insure that the overall protection afforded by the barrier is not impaired. It is advisable to locate such holes outside of the range of the useful beam.
Notes:

1. The minimum height recommended by the NCRP is 7 feet 0 inches from the floor to the ceiling for all lead lined wall partitions. When the ceiling has a shielding requirement, the wall specification should extend from the floor to the ceiling.
2. The doorframe should be carefully installed with overlapping pieces of lead so that no gaps are created.
3. The control booth should be lead lined to 1/16 inch of lead, and the window should have lead glass equivalent to 1/16 inch of lead.
4. All connections in the wall (i.e., electrical outlets, plumbing, etc.) should have lead in the back of the cutouts in the wall overlapping the lead lined wall so that holes are not created. All corners should be sealed such that gaps are not created in the corner of the room.
5. The general contractor or architect should specify the type and manufacturer of lead lining used in the x-ray room.
6. When a shielded door does not exist, the edge of the observation window should be at least 18 inches from the edge of the control partition.
7. Shielding specifications are the minimum required thickness; lead sheets of greater thickness may be substituted. Lead sheets less than 1/32 inch are usually more expensive than thicker sheets.
= 1/16" lead

= 1/32" lead
Shielding Design – Assumptions

Facility: UHMC Cardiac Cath Lab CP190671

Room: CP190671

Workload: 25 patients/week

Controlled Areas: MPD=0.1 mGy/wk

Noncontrolled Areas: MPD=0.02 mGy/wk
SHIELDING SPECIFICATIONS

Facility: UMHC
Room: Cardiac Cath CP190671

Barrier: Wall A Corridor
Secondary Barrier
3.7 meters from source
Partial occupancy
T = 0.2

Non-Controlled Area
Existing shielding: 2 x 5/8” gypsum

Barrier: Wall B Corridor
Secondary Barrier
4.3 meters from source
Partial occupancy
T = 0.2

Non-Controlled Area
Existing shielding: 2 x 5/8” gypsum

Additional Requirement

1/16” Lead wall and door

1/32” Lead

Refer to attached floor plan
SHIELDING SPECIFICATIONS

Facility: UMHC
Room: Cardiac Cath CP190671

Barrier: Wall C Control Booth
Secondary Barrier
6.1 meters from source
Full occupancy
T = 1

Controlled Area
Existing shielding: 2 x 5/8" gypsum

Barrier: Wall D Mechanical Room
Secondary Barrier
4.0 meters from source
Partial occupancy
T = 0.05

Non-Controlled Area
Existing shielding: 2 x 5/8" gypsum

Additional Requirement

1/16" Lead wall/glass and door

1/32" Lead

Refer to attached floor plan
SHIELDING SPECIFICATIONS

Facility: UMHC

Room: Cardiac Cath CP190671

Barrier: Floor
Secondary Barrier
4.1 meters from source
Full occupancy
T = 1

Non-Controlled Area
Existing shielding: 3.5” concrete

Barrier: Ceiling
Secondary Barrier
2.7 meters from source
Partial occupancy
T = 0.05

Non-Controlled Area
Existing shielding: 3.5” concrete

Refer to attached floor plan
20 10 80 TESTING, ADJUSTING AND BALANCING

20 10 81 GENERAL

A. Drawings and general provisions of Contract, including General and Special Conditions apply to this section.

B. This scope of services specifies the requirements and procedures for mechanical systems testing, adjusting, and balancing. Requirements include measurement and establishment of the fluid quantities of the mechanical systems as required to meet design specifications, and recording and reporting the results. The test and balance work will be performed by the Owner’s personnel. It is the Contractor’s responsibility to assist as outlined below.

C. 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).

20 10 82 CONTRACTORS RESPONSIBILITIES

A. The contractor’s responsibilities are as follows:
1. Notify the Owner’s Representative fourteen (14) days prior to the schedule date for balancing the system.
2. Schedule a two (2) week allowance for the testing and balancing firm to complete the testing and balancing work when scheduling completion of all work required of the Contractor by the contract documents.
3. Cooperate with the testing and balancing firm and shall make all necessary preparations for the TAB efforts.
4. Complete the following work prior to requesting the TAB effort.
   a. Clean and flush all piping systems.
   b. Leak test and make tight all piping systems.
   c. Fill all piping systems with clean water.
   d. Clean and seal all ductwork systems.
   e. Service and tag all equipment.
   f. Set and align all motors and drives.
   g. Start up and prove all equipment and systems.
   h. Make preliminary settings on all control devices and have all systems operational.
   i. Operate all systems successfully for twenty-four (24) hours minimum.
5. Lubricate all motors and bearings.
6. Check fan belt tension.
7. Check fan rotation.
8. Patch insulation, ductwork and housing, using materials identical to those removed.
9. Seal ducts and piping, and test for and repair leaks.
10. Seal insulation to re-establish integrity of the vapor barrier.
11. Attend a coordination meeting prior to the balancing of the system and a
    coordination meeting following the balancing of the system.
12. Provide a complete set of as-built drawings prior to the TAB effort.
13. Provide craftsmen of the proper trade to work with the TAB firm to make
    adjustments and installation changes as required.
14. Change out fan sheaves when and if required by the TAB firm.
15. Dedicate the resources to accommodate all changes identified by the
    test and balance firm in a timely manner.
16. If a significant rebalance (Owner’s determination) of the HVAC system is
    required due to the Contractor’s failure to properly install and check out
    the HVAC system, the cost of rebalancing the system shall be borne by
    the Contractor.

20 10 83  PRE-BALANCING CONFERENCE

A. Prior to beginning of the testing, adjusting and balancing procedures, a
   conference with the Owner’s representative, Engineer and the Test and Balance
   Agency’s representative will be held. The objective of the conference is final
   coordination and verification of system operation and readiness for testing,
   adjusting and balancing.

20 10 84  SEQUENCING AND SCHEDULING OF SERVICES

A. Test, adjust and balance the air conditioning systems during summer season and
   heating systems during winter season. This includes at least a period of
   operation at outside conditions within 5 deg. F wet bulb temperature of maximum
   summer design condition, and within 10 deg. F dry bulb temperature of minimum
   winter design conditions. Take final temperature readings during seasonal
   operation.

20 10 85  WORK INCLUDED

A. Testing and adjusting each air handling unit and return/relief fan to achieve the
   design airflow rates as scheduled.
B. Testing and adjusting each new or modified VAV box to achieve design minimum
   and maximum airflow, water flows, and heating capacity as scheduled.
C. Testing and adjusting each existing-to-remain VAV box serving the cath lab suite
   and immediately adjacent areas. Tests shall include pre-reads of each box at
   max and min airflow setpoints prior to any renovation work taking place. At the
   completion of the work, existing boxes shall be tested and balanced to ensure
   initial airflow are maintained.
D. Testing and adjusting each terminal unit water flow rate and/or airflow rate to
   achieve design flows and capacities.
E. Testing and adjusting each new exhaust branch connection to achieve design
   airflow rate as scheduled.
F. Testing and adjusting each air device to achieve design airflow rate as indicated
   on the plans.
G. Testing and adjusting the systems to maintain pressure relationships as required
   per ASHRAE 170. Note this will require repeated balancing of all system to
   obtain the pressure relationships.
1. Cath Lab: positive to all adjacent spaces (+0.01 in. wc)
2. Clean Supply: positive to adjacent spaces
3. Soiled Utility: negative to adjacent spaces

H. Test and survey of all applicable central air handling units (AHU-4, AHU-5, AHU-6 & AHU-7) at the time of balancing to document operating conditions. This testing shall include, but shall not be limited to:

1. pressure profile across all components/sections of the AHU
2. VFD speed command and Hz for all fans (supply and return)
3. Duct static pressures in supply and return mains at both the entrance to the shaft (in 8th floor mechanical room) and at the shaft connections at the 4th floor
4. Chilled water and heating water coil flows and control valve positions

I. Test and survey of central exhaust fans (EF-15A & EF-15B) at the time of balancing to document operating conditions. This testing shall include, but shall not be limited to:

1. Total static pressure at exhaust fans
2. Total exhaust system airflow
3. Fan speed (rpm) for each fan
<table>
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<tr>
<th>Description</th>
<th>Marking</th>
<th>Location</th>
<th>Gas Type</th>
<th>Trim/Finish</th>
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<tr>
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<td>MV</td>
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**Rough-in Description**

- See architectural interior elevations for exact locations.
- Coordinate with ceiling type per architecture.
- Waste Anesthesia valves shall be dual gauge port, cast bronze, ball.
- Panel shall contain audible and visible alarms.
- Alarm buzz in excess of 90 decibels.
- Valves shall be dual gauge port, cast bronze, ball.
- Valve box shall be 18 gauge sheet steel construction.
- Include silence/enter button and test/shift button.
- Recesed wall master zone alarm.
- Valve box assembly shall be supplied with decorative frame painted white.
- Microprocessor controlled and design to comply with NFPA 99.

**Function**

- Gas disposal

**Conditions**

- Operating med vac
- Oxygen
- Med air
- WAGD
- Powerex
- Amico
- M10100707
- Model PX
- IMPACT series 74
- Model VBU
- ManUFACTURER or EQUIVALENT

**Manufacturer**

- Chemetron
- Powerex
- Amico
- Loadstar
- Impact 74
- Global Mfg
- Pressurex
- Mee Precision
- Model PX
- CHEMETRON
- IMPACT series 74
- Painted white

**Location History**

- Expansion
- Interventional Radiology
- Teaching Hospital

**Address**

- Columbia, MO
- Fort Collins, Colorado
- Fairway, Kansas
- Lincoln, Nebraska

**Contact Information**

- 816 474.8237 Fax 816 474.8233
- Kansas City, MO 64108-1914
- 2020 Baltimore Avenue, Suite 300

**Website**

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