ADDENDUM NO. 2

To

Specifications and Drawing

For

Grady – Cath Lab 3 / Financial Services Relocation

DALY Project No. 094-10044-000
20 December 2017

For Combined Contract

**NOTICE TO ALL BIDDERS:** The following Specifications and Drawings for the above referenced project are hereby revised as follows:

### MECHANICAL

**DRAWINGS**

<table>
<thead>
<tr>
<th>ITEM NO. M1-1</th>
<th>M101</th>
<th>HVAC SECOND FLOOR PLANS-CATH LAB 1 &amp; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM NO. M1-2</td>
<td>M300</td>
<td>HVAC DETAILS</td>
</tr>
<tr>
<td>ITEM NO. M1-3</td>
<td>M400</td>
<td>HVAC SCHEDULES</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>ITEM NO. M1-4</th>
<th>23 60 00</th>
<th>EQUIPMENT</th>
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### ELECTRICAL

**DRAWINGS**

<table>
<thead>
<tr>
<th>ITEM NO. E1-1</th>
<th>E101</th>
<th>ELECTRICAL SECOND FLOOR PLANS-CATH LAB 1 &amp; 2</th>
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<tr>
<td>ITEM NO. E1-2</td>
<td>E500</td>
<td>ELECTRICAL SCHEDULES</td>
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<tr>
<td>ITEM NO. E1-3</td>
<td>E501</td>
<td>ELECTRICAL SCHEDULES</td>
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</tbody>
</table>

THE BID DUE DATE IS HEREBY CHANGED TO 25 JANUARY 2017 AT 2:00 PM.
KEY NOTES: (THIS PART PLAN ONLY)

1. REBALANCE EXISTING DUCTWORK FOR FULL AIRFLOW FOR SECURITY.
2. REBALANCE EXISTING SUPPLY AIR DUCTWORK FOR ENERGY CONSERVATION.
3. CONFIRM ROOM PRESSURE MONITOR MAINTAIN A MINIMUM OF 0.01" WC POSITIVE PRESSURE DIFFERENTIAL TO THE ADJACENT SPACE.
4. LOCK EXISTING TERMINAL UNIT TO OPERATE AS CONSTANT VOLUME FOR FULL AIRFLOW.
5. REBALANCE EXISTING LOW RETURN AIR GRILLE FOR 425 CFM.
6. REBALANCE EXISTING SUPPLY AIR DIFFUSER FOR 300 CFM.

1. HVAC DUCTWORK SECOND FLOOR PLAN - CATH LAB 1 & 2

1. HVAC PIPING SECOND FLOOR PLAN - CATH LAB 1 & 2

1. HVAC PIPING SECOND DEMOLITION FLOOR PLAN - CATH LAB 1 & 2

1. HVAC SECOND FLOOR PLANS - CATH LAB 1 & 2
NOTES:

1. INSTALL DAMPERS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

2. TAPE INSULATION TO DUCT AT BREAKAWAY CONNECTIONS. BREAKAWAY CONNECTIONS AND RETAINING ANGLES SHALL BE VISIBLE.

3. TYPE B FIRE DAMPER SHOWN. INSTALLATION SIMILAR FOR TYPE A AND TYPE C DAMPERS.

4. INSTALLATION SIMILAR FOR COMBINATION FIRE/SMOKE DAMPERS.

5. SEAL BREAKAWAY CONNECTIONS.

6. LOCATE ACCESS PANEL ON SIDE OF WALL WITH NO CEILING, OR OVER CORRIDOR CEILING, WHERE APPLICABLE.
NOTES:

1. TYPE:

- CV: CONSTANT VOLUME
- CV-R: CONSTANT VOLUME REHEAT
- VV: VARIABLE VOLUME
- VV-R: VARIABLE VOLUME REHEAT

2. CAPACITY BASED ON 55°F EAT FOR VV-R AND CV-R UNITS.

3. HOT WATER BASED ON 180°F EWT AND MAXIMUM 3' WPD.

4. SOUND POWER LEVELS IN dB re 10 pW, UNLESS AS SCHEDULED, SHALL BE WITHIN THE ARI 880-2011

5. PROVIDE CONDENSATE PUMP.

6. SERVICE: 120 V. PROVIDE TERMINAL UNIT WITH INTEGRAL TRANSFORMER AND DISCONNECT.

7.  SERVICE REQUIREMENTS SHALL BE ADJUSTED IN THE FIELD.

8. THE DRAWINGS INDICATE THE DESIGN INTENT TO PROVIDE ACCESS TO HEATING COILS, CONTROL INCLUDING HEATING COIL, FOR ALL UNITS SHALL NOT EXCEED 0.3" WG APD.

9. DIFFERENTIAL STATIC PRESSURE DROP ACROSS COMPLETE ASSEMBLY, TO MEET THE SPECIFIED SOUND POWER LEVELS.

10. DIFFERENTIAL STATIC PRESSURE DROP ACROSS COMPLETE ASSEMBLY, INCLUDING MATRIAL COIL, FOR ALL UNITS SHALL NOT EXCEED 0.5 WD APD.

11. THE DRAWINGS INDICATE THE DEVICES INTENDED TO PROVIDE ACCESS TO HEATING COIL, CONTROL PANEL, AND ACCESS DOOR. IF TERMINAL UNITS PROVIDE ACCESS SURFACES DIFFERENTLY, THE ACCESS REQUIREMENTS SHALL BE ADJUSTED IN THE FIELD.

12. PROVIDE VIBRATION ISOLATION FOR THE CONTROL PANEL AND DISCONNECT.

13. REFER TO THE ELECTRICAL DRAWINGS FOR THE EQUIPMENT ELECTRICAL CHARACTERISTICS.

14. PROVIDE CONDENSATE PUMP.

15. REFER TO THE ELECTRICAL DRAWINGS FOR THE EQUIPMENT ELECTRICAL CHARACTERISTICS.
GENERAL NOTES

1. All electrical devices and raceways to remain. Use existing.
1. Trace and verify existing load, and update panel schedule.

2. All loads are existing, UON.

3. Provide new circuit breakers for all circuits within scope of project.

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**PHASES:**

1 2 3 4 5 6

**MAIN:**

120/208 Wye

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**PANELBOARD “EXISTING 3GNBC” SCHEDULE**

**PANELBOARD “EXISTING 3GNBA” SCHEDULE**

**PANELBOARD “EXISTING 3GCB” SCHEDULE**

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**PHASE TOTALS (kVA):**

<table>
<thead>
<tr>
<th>CKT</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>CKT</th>
<th>A</th>
<th>B</th>
<th>C</th>
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**CALCULATED AMPERES:**

- Rec 3A086, 30 A 1 23 0.0 0.0 24
- Rec 3A055, 3A056, 3A057, 3A058
- New Refr. - Hot Lab 3F024
- New Refr. - Trdmill/Strtchr Bay #2 3F024
- New Rec - Cath Lab Hldg Area 2F005
- New Rec - Control Room 2F011

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**CONNECTED LOAD:**

- Ex. Donor Wall Lights 20 A 1 18
- Ex. Outlet - Cath Lab (Note 1) 20 A 1 16
- Ex. Lights - 2F036 20 A 1 10
- Ex. Lights - 2F008, 2F010, 2F011 20 A 1 8
- Ex. Outlet - 2F007 20 A 1 6
- Ex. Outlet - 2G001 20 A 1 4
- Ex. Outlet - Stress Lab 20 A 1 3
- Ex. Outlet - Cath Lab 20 A 1 2
- Ex. Outlet - Cath Lab - 2F003, 2F004, 2F005, 2F006
- Ex. Outlet - Cath Lab - 2F009
- Ex. Outlet - Cath Lab - 2F005, 2F009, 2F012
- Ex. Outlet - Cath Lab - 2F005, 2F009, 2F012
- Ex. Outlet - Cath Lab - 2A038
- TUBE STATION - Cath Lab - 2A049
- Outlet - Cath Lab - 2A039
- Outlet - 2F010
- OUTLETS - Cath Lab/ Control RM - 2A038
- Door Control - Stress Lab - 2F019
- Outlets - Stress Lab - 2F019
- OUTLETS - Cath Lab/ Control RM - 2A037
- Outlets - Cath Lab - 2A039
- OUTLET - Stress Lab - 2F019
- OUTLET - 2F010
- OUTLET - 2A039
- OUTLET - 2F010
- OUTLET - 2F003

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**CONSULTANTS AND ENGINEERS**

Newcomb & Boyd

Suite 525

303 Peachtree Center Avenue, NE

Atlanta, GA 30308

11/02/17

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**PROJECT:**

100% CONSTRUCTION DOCUMENTS

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**E500**
### PANELBOARD "EXISTING 3D018B" SCHEDULE

<table>
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<th>PHASES</th>
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<td>2</td>
<td>REC 3D022</td>
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<tr>
<td>3</td>
<td>MEDSTATION 3500</td>
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#### CALCULATED AMPERES:

- PHASE A: 10,000 A
- PHASE B: 10,000 A
- PHASE C: 10,000 A

### PANELBOARD "EXISTING 3D019A" SCHEDULE

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<td>MEDSTATION 3500</td>
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#### CALCULATED AMPERES:

- PHASE A: 10,000 A
- PHASE B: 10,000 A
- PHASE C: 10,000 A

### PANELBOARD "EXISTING 3D020B" SCHEDULE

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<th>NO.</th>
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<td>MEDSTATION 3500</td>
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#### CALCULATED AMPERES:

- PHASE A: 10,000 A
- PHASE B: 10,000 A
- PHASE C: 10,000 A

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### MECHANICAL EQUIPMENT CONNECTION SCHEDULE

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<tr>
<th>No.</th>
<th>Description</th>
<th>Phases</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Electrical Panel</td>
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#### LOCATION:

- PHASE A: 10,000 A
- PHASE B: 10,000 A
- PHASE C: 10,000 A

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### LUMINARIA SCHEDULE

<table>
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<tr>
<th>No.</th>
<th>Manufacturer</th>
<th>Type</th>
<th>Watt</th>
<th>Method</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>Metalux</td>
<td>250W</td>
<td>100W</td>
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<tr>
<td>2</td>
<td>Metalux</td>
<td>500W</td>
<td>200W</td>
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<tr>
<td>3</td>
<td>Panasonic</td>
<td>75W</td>
<td>30W</td>
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</tbody>
</table>

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### NOTES:

1. TRACE AND VERIFY EXISTING LOAD, AND UPDATE PANEL SCHEDULE.
2. PROVIDE 4 #4 AND 1 #8 G. ~ 1.25" C.
3. PROVIDE NEW CIRCUIT BREAKERS FOR ALL CIRCUITS WITHIN SCOPE OF PROJECT.
PART 1 GENERAL

1.01 DESCRIPTION
A. General provisions and other HVAC systems are specified in other Sections of Division 23.
B. This Section covers HVAC systems and equipment.
C. Testing, adjusting and balancing is specified in Section 23 0095, Testing, Adjusting and Balancing.
D. This Section includes responsibilities and obligations in support of the performance verification specified in Section 23 0090, HVAC Performance Verification.

1.02 QUALITY ASSURANCE
A. Conform to the following:
B. Pressure/temperature ratings of components and accessories shall meet or exceed design conditions for the system in which they are installed. Refer to Section 23 1000, Piping, Valves and Accessories, and requirements specified herein.

PART 2 PRODUCTS

2.01 COILS
A. Copper tubes, and nonferrous fins with belled collars mechanically bonded to the tubes.
B. Multirow hot water coils: designed for parallel flow of water to air.
C. Supply and return connections shall be on the same end.
D. Performance shall be in accordance with AHRI 410-2001 (with Addendum).
E. Minimum working pressure rating shall be equal to that specified herein for the piping system in which the coil is installed. Coils shall be tested at the rated working pressure plus 50%.

2.02 TERMINAL UNITS:
A. Casings:
   1. Minimum 24 gauge galvanized steel.
   3. Access doors: sealed, flush type for access to internal parts for service or maintenance.
   4. Enclosure: removable type for control components.
   5. Casing leakage rate of less than 3% at 4" wg.
   6. Inlet velocity shall not exceed 2200 fpm.
B. Control Motors:
   1. Factory-installed on units by unit manufacturer.
   2. Coordinated with automatic control system manufacturer; see Section 23 8000, Automatic Temperature Controls.
C. Airflow sensors: averaging multipoint type, with taps for field calibration, minimum ±5% accuracy with 90° elbow at inlet.
D. Volume Regulators:
   1. Factory preset: minimum and maximum air quantity. Air volumes and unit size shall be indicated on the regulator.
2. Gauge taps and calibrated means of adjustment to permit field adjustment of air quantities without unit disassembly.
3. Pressure independent, capable of maintaining constant volume, ±5%, up to 4" wg inlet air pressure.
5. Removable.

E. Depth of units: 20" maximum.

F. Moving parts designed for minimum of 300000 cycles.

G. Heating coils: hot water type, as specified in Paragraph 2.01, Coils.

H. Variable Volume Units:
   1. Complete with:
      a. Air valve assembly.
      b. Variable air volume from maximum of 100% to minimum of approximately 0%.

I. Manufacturer: Carnes, Carrier, Daikin Applied, Titus, or Trane.

2.03 PRECISION AIR CONDITIONING UNITS

A. Ceiling-Mounted Type Units:
   1. Chilled water, factory-assembled, UL listed, ducted horizontal type.
   2. Cabinets: cabinets and chassis shall be constructed of heavy gauge galvanized steel and designed for installation and service access from the room side only.
   4. Filters: pleated type, as specified in Section 23 7000, Air Distribution. Filters shall be removable without shutting down the system.
   5. Humidifier: steam generator type, factory-piped, mounted and wired to the integral control system. Steam generator shall provide dry steam to the bypass air around the evaporator coil. Controls for the humidification system shall include humidity setpoint, automatic water feed, and drain valves.
   6. Reheat: low watt density, finned-tubular electric type, with UL classified safety switches, capable of maintaining room dry bulb conditions when the system is calling for dehumidification.
   7. Controls: microprocessor-based, in a wall-mounted control enclosure containing an LCD custom display providing a continuous display of operating status and alarm conditions. An 8 key membrane keypad for setpoint/program control, unit on-off switch, and fan speed control shall be located below the display.
      a. Controls shall have 2 temperature control setpoints for cooling and heating functions with a minimum 2°F differential between them. Controls shall automatically switch from cooling to heating modes based on return air conditions. The temperature control setpoint range shall be 40°F to 85°F.
      b. Controls shall have 2 humidity control setpoints for humidification and dehumidification functions with a minimum 4% RH differential between them. Controls shall automatically switch from humidifying to dehumidifying based on return air conditions. The humidity control setpoint range shall be 20% RH to 80% RH. Dehumidification shall utilize the low fan speed.
      c. Controls shall be programmable on a daily basis or on a 5 day/2 day program schedule, and shall be capable of accepting 2 programs per day.
      d. Controls shall include the capabilities to calibrate the temperature and humidity sensors and adjust the sensor response delay time from 10 s to 90 s.
e. Controls shall be capable of displaying temperature values in Fahrenheit or Centigrade.

f. The LCD display shall provide indication of on-off, fan speed, operating mode (cooling, heating, humidifying, dehumidifying), and current day, time, temperature and humidity.

g. Controls shall monitor unit operation and activate an audible and visual alarm for the following field adjustable conditions:
   1) High temperature: maximum 90°F.
   2) Low temperature: minimum 35°F.
   3) High humidity: maximum 85% RH.
   4) Low humidity: minimum 15% RH.

h. Controls shall be capable of disabling any alarm if required.

8. Cooling coils: copper tubes and aluminum fins, as specified in Paragraph 2.01, Coils. Drain pan shall be stainless steel.

9. Coils shall have normally closed, 2-way modulating control valves capable of full closure against a 25 100 psig head.

10. Condensate pumps: complete with pump, motor, integral float switch, reservoir, and secondary float switch to shutdown the unit upon a high water level condition.

11. Manufacturer: APC/Network Air/Airflow, Data Aire, Liebert, or Stulz-ATS.

B. Floor-Mounted Type Units:

1. Chilled water, upflow factory-fabricated, floor-mounted type, with field wiring and piping connections made through the bottom of the unit, rated in accordance with ASHRAE 127-2012.

2. Cabinets: frames shall be structural steel members, welded construction. Panels shall be minimum 18 gauge steel, welded and reinforced. Panels on sides shall be hinged or removable. Access to components for servicing shall be through front panel. Panels shall be painted to match computer equipment. Cabinets shall be insulated with minimum 1" thick, 1.5 pcf neoprene-coated fiberglass, meeting NFPA 90A-2015. Interior baffles, control cabinets and other sheet metal parts shall be galvanized steel, or steel treated with rust inhibitor and painted. Drain pans shall be stainless steel.

3. Fans: statically and dynamically balanced, forward-curved type. Multiple fans shall be mounted on a common shaft. Bearings shall be permanently lubricated ball type with minimum L10 life of 100000 hours at the peak operating condition. Fan and housing shall be galvanized steel treated with rust inhibitor and painted.

4. Drives: V-belt type with adjustable pitch pulleys.

5. Motors: two-speed, as specified in Section 23 00 10, HVAC General.

6. Cooling coils: chilled water type, as specified in Paragraph 2.01, Coils. Coil supports shall be stainless steel. Coils shall have a high point air vent. Coil connections shall be sealed at the factory. Piping within the unit shall be insulated.

7. Filters: mounted on tracks and easily removable from the top of the unit. Filters shall be pleated type, as specified in Section 23 70 00, Air Distribution, with 1" prefilters.

8. Electrical components shall be UL recognized. Panel shall include starters, disconnects, high interrupting capacity fused contactors with overload protectors in each phase, a control voltage transformer, and two alarm signal contacts. A complete wiring and schematic diagram shall be provided. Each unit shall be equipped with a single main fused disconnect switches or circuit breaker accessible from the front of the cabinet.

9. Control panel shall be mounted in front of the unit and shall contain pilot lights for dirty filters, loss of air flow, and high temperature, indicators for cooling, heating, and dehumidification, and maintained-contact on-off switch so that upon power restoration after power failure units will automatically restart. Provide adjustable relays to stagger restart of units. Provide
auxiliary contacts for control panel indicators and alarms for connection to the building automation system.

10. Automatic controls: self-contained, low voltage type, factory-installed and calibrated, for temperature,
   a. Temperature control module shall have individually adjustable setpoints. The same control shall control cooling and heating, and shall not allow reheat unless required for dehumidification.
   b. Units shall shut down upon receiving a signal from its respective computer room fire detection system.
   c. Water coils shall have normally closed, 2-way modulating control valves capable of full closure against a 25 100 psig head.
   d. Controls shall include an automatic 2-way balanced type chilled water valve capable of closure against the full chilled water pump shutoff pressure and conforming to the requirements of Section 23 80 00, Automatic Temperature Controls, a remote bulb return air thermostat, and other required controllers and switches. Chilled water valve shall be normally closed and shall close when fan motor is off. The thermostat, on sensing a drop in temperature, shall switch the motor to the low speed. On a further drop, the thermostat shall modulate the chilled water valve.

11. Condensate pumps: complete with pump, motor, integral float switch, reservoir, and secondary float switch to shutdown the unit upon a high water level condition.

12. Manufacturer: APC/Network Air/Airflow, Data Aire, Liebert, or Stulz-ATS.

PART 3 EXECUTION

3.01 TERMINAL UNITS
   A. Install terminal units with manufacturer's recommended upstream duct conditions for operation of velocity sensors and volume controls, and required clearances for control panels, coils, and other components.
   B. Install throw away filters while building is under construction. Upon completion of construction and final clean-up, remove these filters.

3.02 PRECISION AIR CONDITIONING UNITS
   A. Install ducted horizontal precision air conditioning units in accordance with manufacturer's instructions. Install units plumb and level, firmly anchored, and maintain manufacturer's recommended clearances.
   B. Ceiling-mounted units shall be aligned with the ceiling grid.
   C. Install filters to be used while the building is under construction. Replace during construction as filters become loaded. Prior to final inspection, remove these filters and replace with new filters.
   D. Install and connect accessories and electrical devices furnished by the manufacturer.

END OF SECTION