Rice McNair Hall - PHASE 1.3 & 1.4
EXECUTIVE EDUCATION & STUDENT SERVICES + COMMUNITY COMMONS

ISSUE FOR PERMIT, PRICING, & CONSTRUCTION
NOVEMBER 30, 2018

RICE UNIVERSITY
JANICE AND ROBERT MCNAIR HALL
6100 MAIN STREET
HOUSTON TEXAS 77005

PROJECT NUMBER: 002.8270.000
EAB # EABPRJB9806068
GENERAL NOTES - CONSTRUCTION

1. LOCATE RECEPTACLES AND OUTLETS AS SHOWN IN PLAN. ADD A CENTRAL OUTLET BOX TO EACH WORKSTATION.
2. PROVIDE A LIGHTING SCHEDULE AS SHOWN IN PLAN. ADD A CENTRAL LIGHTING FIXTURE TO EACH WORKSTATION.
3. PROVIDE A BASEBOARD IN THE CASING SHOWN IN PLAN.
4. PROVIDE A WINDOW SILL AS SHOWN IN PLAN.
5. PROVIDE A DOOR SILL AS SHOWN IN PLAN.
6. PROVIDE A GROUNDED GFI RECEPTACLE TO EACH WORKSTATION.
7. PROVIDE A GROUNDED GFI RECEPTACLE TO EACH WORKSTATION.
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9. PROVIDE A GROUNDED GFI RECEPTACLE TO EACH WORKSTATION.
10. PROVIDE A GROUNDED GFI RECEPTACLE TO EACH WORKSTATION.

PLAN & RCP SHEET NOTES

1. PROVIDE A LIGHTING SCHEDULE AS SHOWN IN PLAN.
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COORDINATION DRAWINGS SHALL BE REQUIRED FOR ALL ABOVE-CEILING WORK. COMPOSITE COORDINATION DRAWINGS SHALL BE DRAWN AT A SUITABLE SCALE NOT LESS THAN ¼-INCH EQUALS ONE FOOT, CLEARLY SHOWING HOW THE WORK OF DIVISIONS 21, 22, 23, 25, 26 AND 28 IS TO BE INSTALLED IN RELATION TO THE WORK OF ALL OTHER TRADES. ANY WORK INSTALLED IN CONFLICT WITH THE WORK OF OTHER SUBCONTRACTOR TO MAKE ANY UNAUTHORIZED CHANGES TO THE CONTRACT DRAWINGS. THE CONTRACTOR MAY, HOWEVER, SUBJECT TO ACCEPTANCE OF THE ARCHITECT AND OWNER AS SPECIFIED. THE SHEET METAL DRAWINGS SHALL BE PREPARED IN AN ELECTRONIC FORMAT AND SHALL SERVE AS THE BASE DRAWINGS. THE OTHER SUBCONTRACTORS AND THE GENERAL CONTRACTOR SHALL PROVIDE ACCESS PANELS AT EACH FIRE, SMOKE OR COMBINATION FIRE/SMOKE DETECTOR LOCATION. PROVIDE INSULATED SHEET METAL BLANK OFFS ON ALL UNUSED LOUVER SECTIONS.
**VAV TERMINAL BOX - SEQUENCE OF OPERATIONS**

1. **VAV TERMINAL BOXES**
   a. The VAV terminal box shall be started and stopped by the BAS.
   b. When any occupancy sensor serving the zone has been active in the previous 15 mins. (adjustable), the zone shall be placed in the occupied mode. Where no occupancy sensors serving the zone have been active in the previous 15 minutes, the zone shall be placed in unoccupied mode.
   c. Refer to the table for zone setpoints.
   d. Each flow cross sensor shall be a point on the BAS. The BAS shall accomplish space temperature control by modulating each VAV damper via floating point control between maximum and minimum air flows. Upon a call for less cooling, a terminal in full cooling shall modulate the cold primary air damper towards closed until it is at the maximum heating CFM. Then, upon a call for less cooling, the cold primary air damper shall continue to modulate towards its maximum position while the hot primary air damper shall modulate towards open in inverse proportion to maintain total airflow at maximum heating CFM. Upon a call for more cooling, this sequencing shall be reversed. Refer to terminal unit schedule for maximum and minimum CFMs.

**VAV POINTS LIST**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>COUNT</th>
<th>LABEL</th>
<th>NAME</th>
<th>DEVICE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>1</td>
<td>CFCS</td>
<td>COLD FLOW CROSS SENSOR</td>
<td>FLOW CROSS SENSOR</td>
<td></td>
</tr>
<tr>
<td>AI</td>
<td>1</td>
<td>DAT</td>
<td>DISCHARGE AIR TEMPERATURE (UNITS WITH HEAT ONLY)</td>
<td>AIR TEMPERATURE SENSOR</td>
<td></td>
</tr>
<tr>
<td>AI</td>
<td>1</td>
<td>T</td>
<td>SPACE TEMPERATURE COMBINATION TEMPERATURE / HUMIDITY SENSOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>1</td>
<td>CAD</td>
<td>COLD PRIMARY AIR DAMPER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>1</td>
<td>HDPO</td>
<td>HOT PRIMARY AIR DAMPER</td>
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<td></td>
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</tbody>
</table>

**ZONE SETPOINTS**

<table>
<thead>
<tr>
<th>VAV BOX NUMBER</th>
<th>OCCUPIED COOLING</th>
<th>OCCUPIED HEATING</th>
<th>UNOCCUPIED COOLING</th>
<th>UNOCCUPIED HEATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-01-1</td>
<td>75</td>
<td>80</td>
<td>65</td>
<td>80</td>
</tr>
</tbody>
</table>

**POINTS LIST KEY**

- **AI**: ANALOG INPUT
- **BI**: BINARY INPUT
- **FP**: FLOATING POINT CONTROL
GENERAL NOTES
A. Upon all sensors in one zone indicating unoccupied, VAV dampers in respective VAV terminal box shall initiate temperature setback sequence. See keynote per vacancy sensor for information on respective VAV terminal box.

Mechanical Keynote Legend

M24 VACANCY SENSOR CONTROLS VAV BOX W-01-1.
M25 VACANCY SENSOR CONTROLS VAV BOX W-01-2.
M26 VACANCY SENSOR CONTROLS VAV BOX W-01-3.
M27 VACANCY SENSOR CONTROLS VAV BOX W-01-4.
M28 VACANCY SENSOR CONTROLS VAV BOX W-01-5.
M29 VACANCY SENSOR CONTROLS VAV BOX W-01-6.
M30 VACANCY SENSOR CONTROLS VAV BOX W-01-7.
M31 VACANCY SENSOR CONTROLS VAV BOX W-10-01.
M32 VACANCY SENSOR CONTROLS VAV BOX W-01-9.
M33 VACANCY SENSOR CONTROLS VAV BOX W-01-10.
M34 VACANCY SENSOR CONTROLS VAV BOX W-01-20.
M35 VAV TERMINAL BOX IS NOT CONTROLLED BY VACANCY sensor.
M36 VACANCY SENSOR CONTROLS VAV BOX W-03-21.
M37 VACANCY SENSOR CONTROLS VAV BOX W-01-19.
1. TESTING PREPARATION
   A. CERTIFY THAT HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED, AND STARTED AND ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS.

2. TESTING AND BALANCING
   A. PROVIDE TECHNICIANS, INSTRUMENTATION, AND TOOLS TO PERFORM COMMISSIONING TEST AT THE DIRECTION OF THE CXA.

3. GENERAL TESTING REQUIREMENTS
   A. BOILER TESTING AND ACCEPTANCE PROCEDURES:
   B. CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.

4. HVAC&R SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES
   A. TESTING PREPARATION
   B. CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.

5. DISTRIBUTION SYSTEMS AND OTHER DISTRIBUTION SYSTEMS, INCLUDING HVAC&R UNITARY EQUIPMENT
   A. TESTING, AND TREATING PLAN AND FINAL REPORTS TO THE CXA.

6. HVAC&R CONTRACTOR SHALL PREPARE A PIPE SYSTEM CLEANING, FLUSHING, AND HYDROSTATIC TESTING PLAN.
   B. THE TESTING AND BALANCING CONTRACTOR SHALL USE THE SAME INSTRUMENTS (BY MODEL AND SERIAL NUMBER) THAT WERE USED WHEN TESTING WAS CONDUCTED.

7. HVAC&R CONTRACTOR SHALL INSTRUMENT AND MEASURE LINE AND FLOW CONDITIONS IN THE DUCT SYSTEMS TO EACH CONDITIONED SPACE.
   C. TEST ALL OPERATING MODES, INTERLOCKS, CONTROL RESPONSES, AND RESPONSES TO ABNORMAL OR EMERGENCY CONDITIONS, AND VERIFY THROUGH DISTRIBUTION SYSTEMS TO EACH CONDITIONED SPACE.

8. HVAC&R CONTRACTOR SHALL CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.
   D. THE CXA MAY DIRECT THAT SENSOR VALUES BE ALTERED WITH A SIGNAL GENERATOR WHEN DESIGN OR SIMULATING CONDITIONS AND ALTERING DIRECTED BY THE CXA AND DOCUMENT SIMULATED CONDITIONS AND METHODS OF SIMULATION.

9. HVAC&R CONTRACTOR SHALL CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.
   E. THE CXA WILL NOTIFY TESTING AND BALANCING CONTRACTOR 10 DAYS IN ADVANCE OF THE DATE OF FIELD VERIFICATION.

10. HVAC&R CONTRACTOR SHALL CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.
   F. HVAC&R CONTRACTOR SHALL CERTIFY THAT HVAC&R INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, THAT THEY ARE OPERATING ACCORDING TO THE CONTRACT DOCUMENTS, AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.

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