1. Condensing unit shall be installed on equipment rails. Refer to Sheet M501 Detail 9.

2. Connect chilled water supply and return to existing piping in west building mechanical room.

3. Contractor shall field fabricate stainless steel drip pan with rolled edges (no exposed cut edges). Drip pan shall be 3 inches tall and extend a minimum 4 inches beyond outline of electrical equipment below where piping is routed above. Install an early warning leak detection system in drip pan. Provide sensor cable located in pan and route control signal back to nearest EMCS panel. Sensor shall run entire length of pan. Connect 1 inch drain line to side of pan. Route to nearest floor drain.

4. Refer to Detail 2 on Sheet M500 for chilled water connection to CRAC unit.

5. Demo and cap existing supply duct in office W3038.

6. Install return air transfer boot according to Detail 8 on Sheet M500.

7. Contractor shall coordinate placement of all roof mounted equipment with existing roof drains. Do not install new equipment over existing roof drains.

8. 1/2-inch lab cold water to serve CRAC unit humidifier. Refer to plumbing drawings for continuation.

9. Route CRAC unit condensate drain line in drain pan to floor drain. Refer to plumbing drawings for location of drain.

10. Route refrigerant piping up through roof to condensing unit. Refer to manufacturer's recommendation on pipe trap requirements.

11. Route piping through roof per Detail 8 on Sheet M501.

12. Support piping on roof per Detail 7 on Sheet M501.
### Fan Filter Unit Schedule

<table>
<thead>
<tr>
<th>Unit Description</th>
<th>Service</th>
<th>Max Pressure (psi)</th>
<th>Min Pressure (psi)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFU 7 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 4 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 3 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 30 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 25 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 24 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 13 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
<tr>
<td>FFU 11 PRICE</td>
<td>BTR-BC-ECM</td>
<td>FAN FILTER UNIT CLEAN ROOM CORE</td>
<td>LAB 48X24 BC</td>
<td>ECM 625 6.9 3.3 115 1</td>
</tr>
</tbody>
</table>

### Control Valve Schedule

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Service</th>
<th>Max Pressure (psi)</th>
<th>Min Pressure (psi)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST 321</td>
<td>1</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 322</td>
<td>2</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 323</td>
<td>3</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 324</td>
<td>4</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 325</td>
<td>5</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 326</td>
<td>6</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
<tr>
<td>TST 327</td>
<td>7</td>
<td>1375</td>
<td>150</td>
<td>0.12</td>
</tr>
</tbody>
</table>

### Duct Mounted Heating Coil Schedule

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Type</th>
<th>Location</th>
<th>Max Width</th>
<th>Min Width</th>
<th>Max Height</th>
<th>Min Height</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST 321</td>
<td>TRANE</td>
<td>C3222</td>
<td></td>
<td></td>
<td>12x9</td>
<td>150</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
<tr>
<td>TST 322</td>
<td>TRANE</td>
<td>C3211</td>
<td></td>
<td></td>
<td>12x9</td>
<td>150</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
<tr>
<td>TST 323</td>
<td>TRANE</td>
<td>C3206</td>
<td></td>
<td></td>
<td>30x18</td>
<td>1560</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
</tbody>
</table>

### Plumbing Schedule

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Type</th>
<th>Location</th>
<th>Max Width</th>
<th>Min Width</th>
<th>Max Height</th>
<th>Min Height</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST 324</td>
<td>TRANE</td>
<td>C3222</td>
<td></td>
<td></td>
<td>12x9</td>
<td>150</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
<tr>
<td>TST 325</td>
<td>TRANE</td>
<td>C3211</td>
<td></td>
<td></td>
<td>12x9</td>
<td>150</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
<tr>
<td>TST 326</td>
<td>TRANE</td>
<td>C3206</td>
<td></td>
<td></td>
<td>30x18</td>
<td>1560</td>
<td>43.50</td>
<td>55</td>
<td>0.17</td>
</tr>
</tbody>
</table>

### Venturi Valve Schedule

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Type</th>
<th>Location</th>
<th>Max Width</th>
<th>Min Width</th>
<th>Max Height</th>
<th>Min Height</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST 321</td>
<td>TRANE</td>
<td>C3212</td>
<td></td>
<td></td>
<td>8&quot;</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>0.3</td>
</tr>
<tr>
<td>TST 322</td>
<td>TRANE</td>
<td>C3221</td>
<td></td>
<td></td>
<td>12x12</td>
<td>1225</td>
<td>600</td>
<td>265</td>
<td>0.3</td>
</tr>
<tr>
<td>TST 323</td>
<td>TRANE</td>
<td>C3210</td>
<td></td>
<td></td>
<td>8&quot;</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>0.3</td>
</tr>
<tr>
<td>TST 324</td>
<td>TRANE</td>
<td>C3211</td>
<td></td>
<td></td>
<td>12x12</td>
<td>2250</td>
<td>1185</td>
<td>2250</td>
<td>0.3</td>
</tr>
</tbody>
</table>

### Air Control Valve Schedule

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Type</th>
<th>Location</th>
<th>Max Width</th>
<th>Min Width</th>
<th>Max Height</th>
<th>Min Height</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST 325</td>
<td>TRANE</td>
<td>C3205</td>
<td></td>
<td></td>
<td>2x12&quot;</td>
<td>2075</td>
<td>149</td>
<td>2335</td>
<td>0.3</td>
</tr>
<tr>
<td>TST 326</td>
<td>TRANE</td>
<td>C3222A</td>
<td></td>
<td></td>
<td>8&quot;</td>
<td>150</td>
<td>150</td>
<td>75</td>
<td>0.3</td>
</tr>
<tr>
<td>TST 327</td>
<td>TRANE</td>
<td>C3212</td>
<td></td>
<td></td>
<td>8&quot;</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>0.3</td>
</tr>
</tbody>
</table>
## Condensing Unit Schedule - Alternate 1

<table>
<thead>
<tr>
<th>ID #</th>
<th>Notes</th>
<th>ID #</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Computer Room Air Conditioner Schedule - Alternate 1

<table>
<thead>
<tr>
<th>ID #</th>
<th>Notes</th>
<th>ID #</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Air Terminal Unit Schedule

<table>
<thead>
<tr>
<th>ID #</th>
<th>Notes</th>
<th>ID #</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Exhaust Air Terminal Unit Schedule

<table>
<thead>
<tr>
<th>ID #</th>
<th>Notes</th>
<th>ID #</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GENERAL NOTES:

1. This manual has been prepared using the latest information available. It is the responsibility of the Engineer to ensure that all relevant data have been included and incorporated into the final set of drawings and specifications. The Engineer shall be responsible for any omissions or errors in the information contained herein.

2. The contractor shall be responsible for all work not specifically excluded by the engineer.

3. The contractor shall submit all necessary drawings and specifications to the engineer for review and approval.

4. The contractor shall be responsible for all costs associated with the work.

5. The contractor shall comply with all applicable laws, codes, and regulations.

6. The contractor shall be responsible for all safety measures to ensure the safety of all persons working on the project.

7. The contractor shall be responsible for all insurance coverage required by law.

SEQUENCES OF OPERATION:

1. The University of Missouri-Columbia utilizes Johnson Controls equipment for their campus energy management control system. The University shall control all functions in the sequence as indicated below.

2. The contractor shall coordinate the locations of building control panels with the University's requirements, etc., to provide a working control system to achieve the sequences of operation below. The contractor will be expected to work out the details of the work of Division 23. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

3. E-Systems sheets for final locations. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

4. EMCS connection to occupancy sensors: Installation of occupancy sensors is work of Division 26, see E-Series sheets for final locations.

5. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

6. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

7. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

8. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

9. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

10. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

11. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

12. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

13. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

14. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

15. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

16. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

17. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

18. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

19. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

20. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

21. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

22. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

23. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

24. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

25. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

26. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

27. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

28. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

29. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

30. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

31. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

32. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

33. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

34. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

35. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

36. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

37. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

38. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

39. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

40. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

41. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

42. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

43. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

44. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

45. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

46. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

47. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

48. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

49. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

50. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

51. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

52. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

53. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

54. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

55. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

56. A control circuit shall be connected to all occupancy sensors as indicated on the plans.

57. A control circuit shall be connected to all occupancy sensors as indicated on the plans.
LABORATORY AIRFLOW CONTROL SYSTEM

PSH500A
ENCLOSED AC POWER SUPPLY

DISCONNECT SWITCH

100 VA
100 VA
100 VA
100 VA
100 VA
100 VA

500 VA POWER SUPPLY DIAGRAM

GENERAL NOTES:
1. ELECTRICAL AND ELECTRONIC EQUIPMENT
   - Location: Permitted
   - Maximum Current: 100A
   - Overcurrent Protection: 100A
   - Service Drop: 250V
   - Service Entrance: 250V
   - Service Panel: 250V

KEYED NOTES:
A. ELECTRICAL AND ELECTRONIC EQUIPMENT
   - Location: Permitted
   - Maximum Current: 100A
   - Overcurrent Protection: 100A
   - Service Drop: 250V
   - Service Entrance: 250V
   - Service Panel: 250V

KEYS TO Diagram:
- RED: ELECTRICAL AND ELECTRONIC EQUIPMENT
- BLACK: POWER SUPPLY
- GREEN: POWER SUPPLY
EP020

CONFERENCE

3CL2

3CL3

3CL12

3CL9

16

17 18 19 20 21 22 23 24 25 26 27 28

22 23 25 28 30 31 33 36 38 41 44 46 47 49 51

5' - 0"

EP003

C3203

(TYP)

CORRIDOR

C3209

(TYP)

WAP

360

CCTV

NEW PANEL

52/54/56

22/24/26

34/36/38

3CL10

PANEL 3CL10

77/79

69/71

66/68

45

EP041

EP043

EP004

3CL8

WAP

WAP

WAP

EP048

EP049

EP025

3CL6

31

40/42

EP004

EP019

REFER TO SHEET E601 DETAIL 1 OVERHEAD SERVICE CARRIER PLUG-IN RACEWAY FOR INSTALLER. CIRCUIT IS SHOWN TO INDICATE SEPARATION OF POWER TO OUTLETS.

EP032 PROVIDE ALL REQUIRED FITTINGS FOR CHANGE IN ELEVATION OF CABLE TRAY FROM EP023 DATA WIRING IN THIS ROOM TO BE EXTENDED TO EQUIPMENT ROOM C3201A. COORDINATE EXISTING CABLE TRAY TO REMAIN.

EP021 EXISTING CABLE TRAY TO REMAIN.

EP002 PROVIDE ALL NECESSARY FITTINGS TO TRANSITION BETWEEN 24" WIDE AND 16" WIDE

56/58

59/61

59/61 60

57/59

59/61

51/53

51/53

EP048 PROVIDE CABLE TRAY LINER AT ALL SECTIONS OF CABLE TRAY THAT ARE EXPOSED.