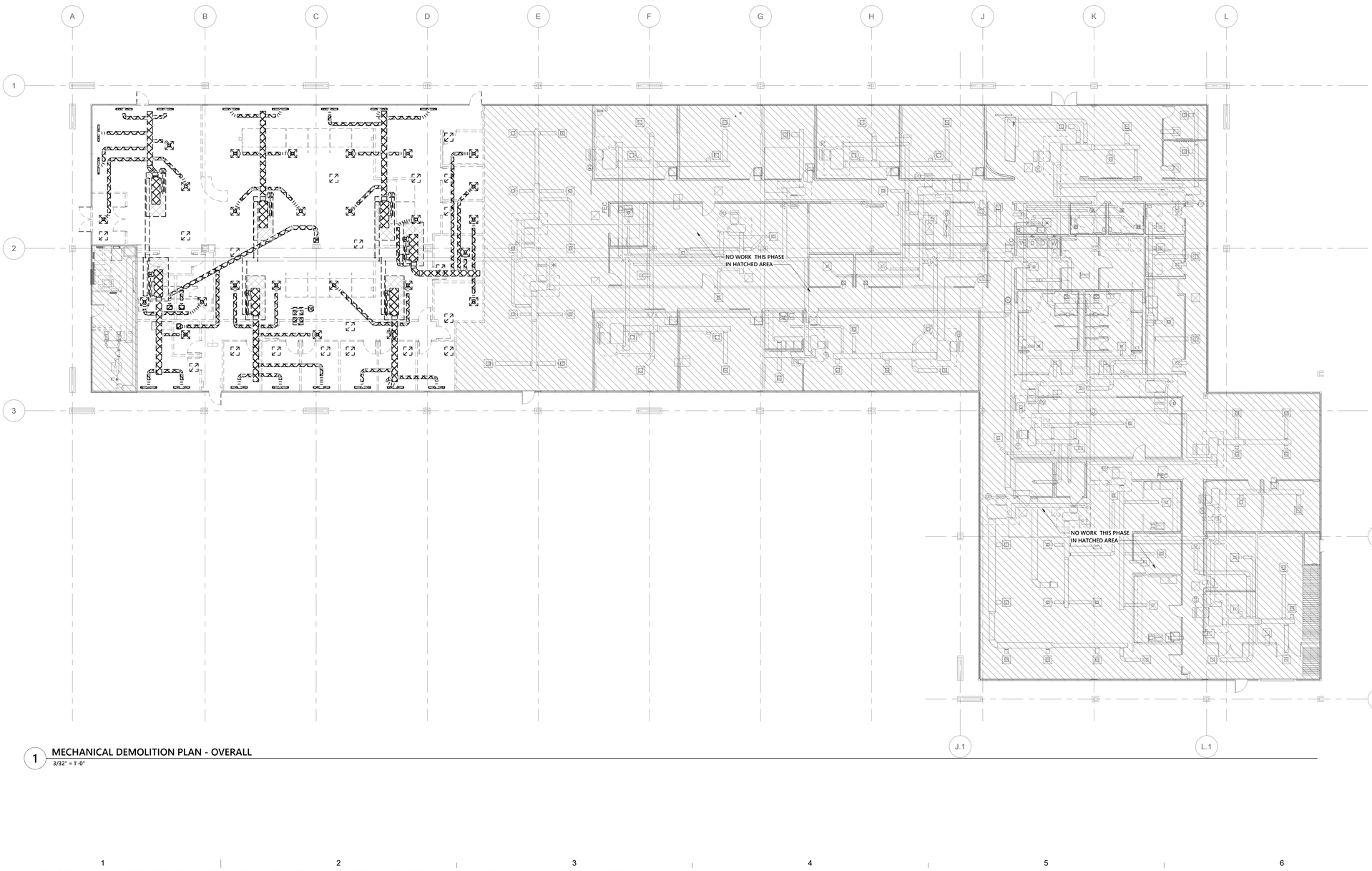
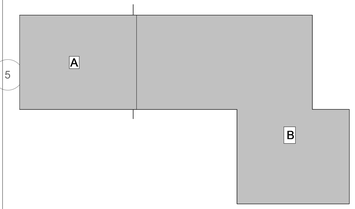
NOTE:
THIS OVERALL PLAN IS FOR REFERENCE ONLY.
REFER TO 1/8 SCALE DRAWINGS FOR DETAILS.




1 MECHANICAL DEMOLITION PLAN - OVERALL
3/32" = 1'-0"

KEYPLAN




Ref North

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NORTH CAROLINA PROFESSIONAL SEAL 038497 ENGINEER BRIAN C. PAULES

06.16.2025

ISSUE FOR
CONSTRUCTION

ISSUE DATE
06.16.2025

REVISIONS

| NO. | REASON | DATE |
|---|---|---|

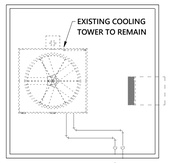
PROJECT TEAM
PRINCIPAL IN CHARGE
Ashley Hall
PROJECT MANAGER
Lynn Guimaraes
DESIGN TEAM
Brian Paules

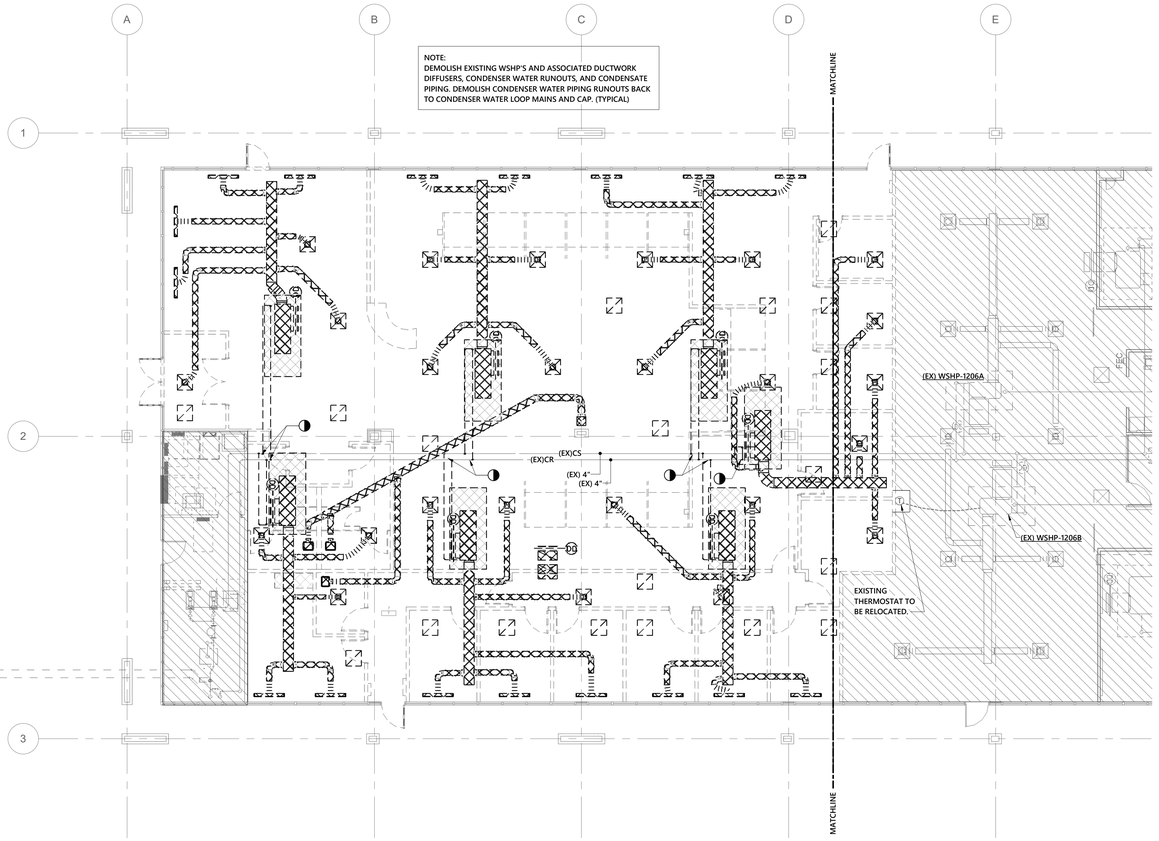
PROJECT NAME
CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO.
1641630004

SHEET TITLE
MECHANICAL DEMOLITION PLAN - OVERALL

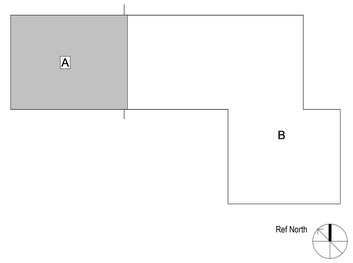
SHEET NUMBER
M001




1 MECHANICAL DEMOLITION PLAN - AREA A
1/8" = 1'-0"

KEYPLAN




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06.16.2025

ISSUE FOR: CONSTRUCTION
ISSUE DATE: 06.16.2025

REVISIONS

| NO. | REASON | DATE |
|---|---|---|

PROJECT TEAM
PRINCIPAL IN CHARGE: Ashley Hall
PROJECT MANAGER: Lynn Guimaraes
DESIGN TEAM: Brian Paules

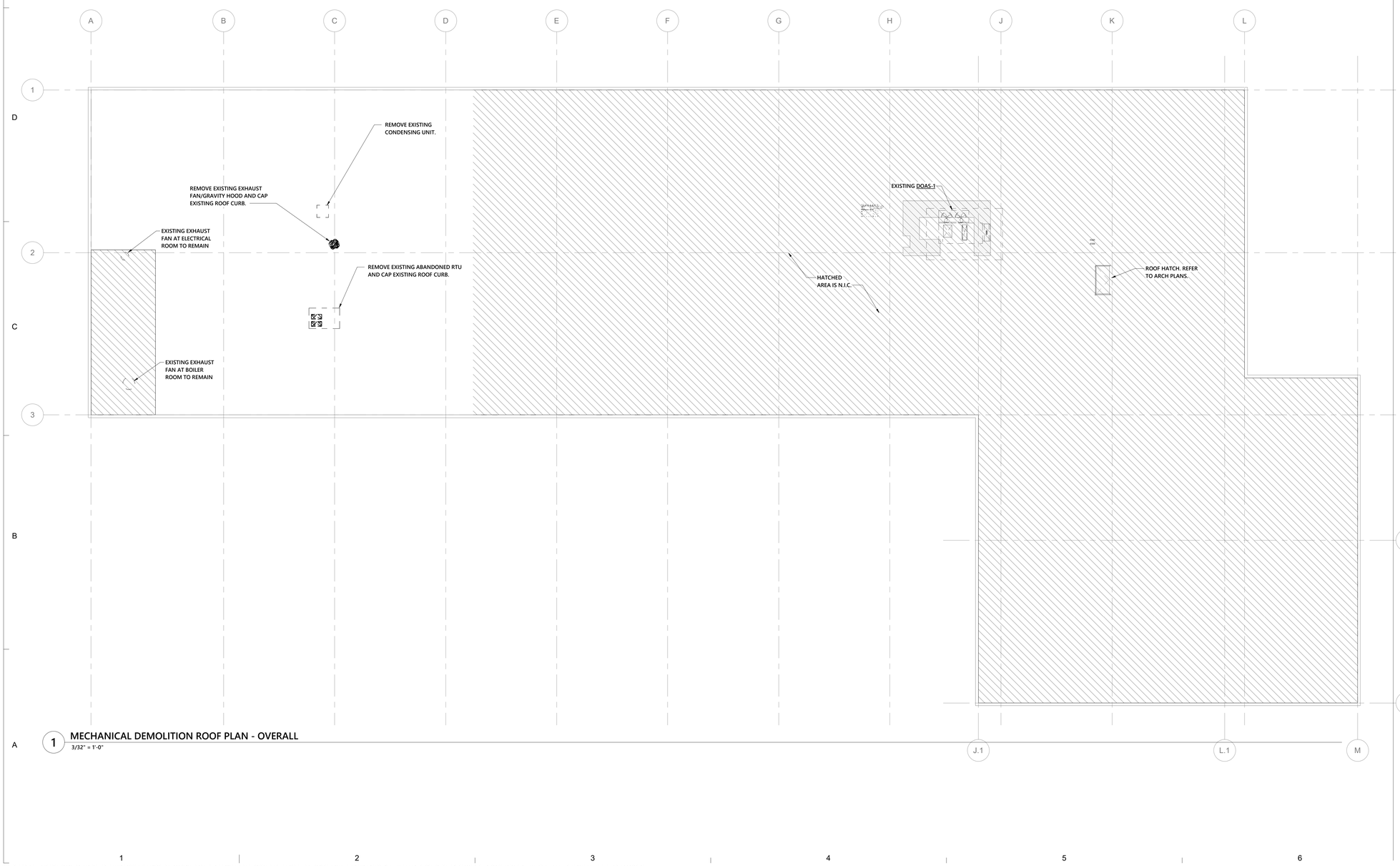
PROJECT NAME: CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO: 1641630004
SHEET TITLE: MECHANICAL DEMOLITION PLAN - AREA A
SHEET NUMBER: M002



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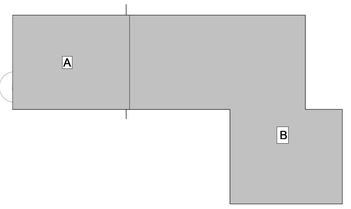
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## 1 MECHANICAL DEMOLITION ROOF PLAN - OVERALL

3/32" = 1'-0"

KEYPLAN




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06.16.2025

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|---|---|---|

**PROJECT TEAM:**
PRINCIPAL IN CHARGE
Ashley Hall
PROJECT MANAGER
Lynn Guimaraes
DESIGN TEAM
Brian Paules

**PROJECT NAME:**
CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

**PROJECT NO:**
1641630004

**SHEET TITLE:**
MECHANICAL DEMOLITION ROOF PLAN - OVERALL

**SHEET NUMBER:**
M004

## HVAC SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| 16x8 | SQUARE DUCT SIZE TAG (WIDTH x HEIGHT) |
| 16"Ø | ROUND DUCT SIZE TAG (DIAMETER) |
| (E) | EXISTING DUCT TAG |
| | DUCT BEING DEMOLISHED |
| S/A | SUPPLY AIR |
| O/A | OUTDOOR AIR |
| R/A | RETURN AIR |
| E/A | EXHAUST AIR |
| L/A | RELIEF AIR |
| | SUPPLY AIR DIFFUSER (4-WAY) |
| | RETURN AIR GRILLE |
| | RETURN AIR GRILLE WITH SOUND BOOT |
| | EXHAUST AIR GRILLE |
| | POINT OF EXISTING TO NEW CONNECTION |
| | POINT OF DISCONNECT TO EXISTING CONNECTION |
| M.C. | MECHANICAL CONTRACTOR |
| E.C. | ELECTRICAL CONTRACTOR |
| P.C. | PLUMBING CONTRACTOR |
| N.I.C. | NOT IN CONTRACT |
| (EX) | EXISTING |
| AFF | ABOVE FINISHED FLOOR |
| DN | DOWN |
| UP | UP |
| Ⓣ | THERMOSTAT/TEMP SENSOR (4'-0" AFF TO TOP) |
| Ⓗ | HUMIDISTAT (4'-0" AFF TO TOP) |
| X / X | SECTION CUT → REFERRING DETAIL NUMBER → REFERRING SHEET NUMBER |

## COMMISSIONING NOTE

THIS PROJECT INCLUDES A THIRD PARTY COMMISSIONING AGENT CONTRACTED BY THE OWNER. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH OWNER'S COMMISSIONING AGENT AND PROVIDE ALL NECESSARY TIME, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT. SEE COMMISSIONING REQUIREMENTS IN THE PROJECT MANUAL FOR FURTHER INFORMATION.

## CABLE TRAY COORDINATION

A MINIMUM OF 12" CLEARANCE ABOVE THE CABLE TRAY AND 36" CLEARANCE TO ACCESS THE TRAY IS REQUIRED AT ALL LOCATIONS. MECHANICAL CONTROLS CABLES SHALL NOT BE INSTALLED IN THE CABLE TRAY, NOR BE SUPPORTED BY THE CABLE TRAY OR THE CABLE TRAY SUPPORTS. DUCTWORK AND MECHANICAL PIPING SHALL NOT OBSTRUCT THE TRAY AND MUST LEAVE THE TRAY ACCESSIBLE THROUGHOUT ITS ROUTING. WATER PIPING SHALL NOT BE LOCATED ABOVE THE CABLE TRAY, IF THIS IS UNAVOIDABLE DUE TO THE CONSTRAINTS OF THE CEILING SPACE, A DRIP PAN WITH INSTALLED DRAINS MUST BE INSTALLED TO PROTECT THE CABLES FROM ACCIDENTAL WATER DAMAGE.

## TESTING, ADJUSTING, AND BALANCING

1. MECHANICAL CONTRACTOR SHALL PROVIDE A PRE-DEMOLITION TEST AND BALANCE REPORT AND CONTROLS DIAGNOSTICS REPORT ON THE EXISTING SYSTEMS INDICATED TO REMAIN: VAV TERMINAL UNITS, AHU-X, EF-X, CH-X, ETC. REPORT SHALL INCLUDE AIR AND WATER FLOWS (STEAM PRESSURE); ENTERING AND LEAVING AIR CONDITIONS; EXTERNAL AND TOTAL STATIC PRESSURES, AND ALL PERFORMANCE AND CONTROLS DEFICIENCIES DISCOVERED. ANY EQUIPMENT OR COMPONENT FOUND TO BE INOPERABLE OR SHORT OF DESIGN CAPACITIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. SUMMATION OF GRILLES IS AN ACCEPTABLE ALTERNATIVE TO DUCT TRAVERSE READINGS. PRE-DEMOLITION TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR. CONTROLS DIAGNOSTICS REPORT SHALL BE COMPLETED BY THE CONTROLS CONTRACTOR. REPORTS SHALL BE SUBMITTED FOR REVIEW DURING SHOP SUBMITTAL PROCESS.
2. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
3. CONDUCT TESTING AND BALANCING IN ACCORDANCE WITH TECHNICAL PORTIONS OF THE AABC "NATIONAL STANDARDS FOR TESTING AND BALANCING HVAC SYSTEMS", LATEST EDITION.
4. INSTRUMENTS USED FOR BALANCING MUST HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS PRIOR TO BALANCING. SUBMIT SERIAL NUMBERS, AND DATES OF CALIBRATION OF ALL INSTRUMENTS TO BE USED PRIOR TO THE START OF WORK.
5. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:
   A. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: MINUS 5 TO PLUS 10 PERCENT.
   B. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
   C. HEATING-WATER FLOW RATE: 0 TO MINUS 10 PERCENT.
   D. COOLING-WATER FLOW RATE: 0 TO MINUS 5 PERCENT.
6. REFER TO SPECIFICATION SECTION 230593 AND CONTRACT DRAWINGS IN THEIR ENTIRETY FOR ADDITIONAL REQUIREMENTS.

## MECHANICAL DEMOLITION NOTES

1. THE MECHANICAL CONTRACTOR SHALL VISIT SITE PRIOR TO BEGINNING WORK TO DETERMINE THE LEVEL OF DEMOLITION REQUIRED AND INCLUDE ALL NECESSARY PRICING IN THEIR BID.
2. IT IS THE MECHANICAL CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL EXISTING DUCTWORK AND PIPING. ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND MECHANICAL PLANS SHOULD BE BROUGHT TO THE ATTENTION OF THE MECHANICAL ENGINEER.
3. EXISTING GRILLES/DIFFUSERS AND RUN OUTS MAY BE REUSED IF SIZED ADEQUATELY TO PROVIDE THE AIR QUANTITIES INDICATED. ANY GRILLES/DIFFUSERS BEING REUSED SHALL BE CLEANED AND VERIFIED TO BE IN GOOD WORKING CONDITION.
4. M.C. SHALL VERIFY ALL EXISTING SUPPLY AND RETURN AIR DUCT TO REMAIN IS INSULATED WITH VAPOR BARRIER INTACT. IF EXISTING DUCT IS NOT INSULATED WITH EITHER DUCT LINER OR WRAP, M.C. SHALL PROVIDE 2" THICK DUCT WRAP WITH VAPOR BARRIER (MIN. R-VALUE OF 5.0).
5. FOR ALL EXISTING HVAC EQUIPMENT AND DUCTWORK NOTED TO REMAIN AND SERVING AREA OF RENOVATION, MECHANICAL CONTRACTOR SHALL INSPECT EQUIPMENT (AND ANY ASSOCIATED CONTROLS, VALVES, DAMPERS, ETC.) TO VERIFY PROPER WORKING ORDER. MECHANICAL CONTRACTOR TO SERVICE AND CLEAN EXISTING HVAC UNITS TO ENSURE DESIGN AIRFLOW AND COOLING/HEATING CAPACITIES ARE OBTAINED. ANY EQUIPMENT FOUND TO BE INOPERABLE OR SHORT OF DESIGN CAPACITIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROJECT COMPLETION. PROVIDE CLEAN FILTERS IN ALL UNITS AT COMPLETION OF PROJECT. DAMAGED DUCTWORK SHALL BE REPAIRED.

## MECHANICAL ACCESSORIES SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| DD | RECTANGULAR DUCT MOUNTED DUCT DETECTOR. FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR. CUTTING OF DUCT, INSTALLATION OF DETECTOR. AND DETERMINATION OF SAMPLING TUBE LENGTH SHALL BE THE MECHANICAL CONTRACTOR. PROVIDE REMOTE INDICATING LIGHT WITH EACH DETECTOR. |

## MECHANICAL PIPING SYSTEMS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| D | PUMPED CONDENSATE |
| CR | CONDENSER WATER RETURN |
| CS | CONDENSER WATER SUPPLY |

## 2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 NCECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- ☐ COMCHECK PROVIDED (2018 NCECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.4 ENHANCED LTG CONTROLS
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

C301 CLIMATE ZONE

3A - MECKLENBURG COUNTY, NORTH CAROLINA

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

| | |
|---|---|
| winter dry bulb | 18° F. |
| summer dry bulb | 91° F. |
| summer wet bulb | 74° F. |

INTERIOR (2018 NCECC SECTION C302.1)

| | |
|---|---|
| winter dry bulb | 72° F. |
| summer dry bulb | 75° F. |

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

| | |
|---|---|
| BUILDING HEATING LOAD | 85,489 BTUH (peak) |
| BUILDING COOLING LOAD | 239,384 BTUH (peak) |
| INSTALLED HEATING CAPACITY | SEE SCHEDULES |
| INSTALLED COOLING CAPACITY | SEE SCHEDULES |

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION - WATER SOURCE HEAT PUMPS

- ■ MINIMUM HVAC EQUIP EFFICIENCY COMPLIANCE - TABLE C403.2.3
- ☐ INCREASED HVAC EQUIP EFFICIENCY COMPLIANCE - 10% OVER TABLE C403.2.3

| EQUIP TYPE | SIZE CATEGORY (BTUH) | SUBCATEGORY | C403.2.3 MINIMUM EFFICIENCY (a) | 10% INCREASED EFF. (a) | DESIGN EFFIC. |
|---|---|---|---|---|---|
| TABLE C403.2.3(1) - UNITARY AIR CONDITIONERS AND CONDENSING UNITS | | | | | |
| AIR COND, AIR COOLED | < 65,000 (<= 5 TONS) | SPLIT SYSTEM & SINGLE PACKAGE | 13.0 SEER | 14.3 SEER | SEE SCHEDULE |

C403.2.4 THRU C403.2.11

- ■ HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

C403.2.12 - AIR SYSTEM DESIGN AND CONTROL

- ■ ALL FANS INSTALLED ON THE PROJECT ARE 5 HP OR LESS AND ARE EXEMPT FROM THESE REQUIREMENTS.
- ☐ FANS ABOVE 5 HP MEET THE CFM LIMITATIONS SHOWN BELOW:

OPTION 1 - FAN SYSTEM MOTOR NAMEPLATE HP - TABLE C403.2.12.1(1)

| ALLOWABLE NAMEPLATE MOTOR HP | CONSTANT VOLUME MINIMUM CFM | VARIABLE VOLUME MINIMUM CFM | DESIGN CFM |
|---|---|---|---|
| 7.5 | 6,818 CFM | 5,000 CFM | SEE SCHEDULE |
| 10 | 9,091 CFM | 6,667 CFM | SEE SCHEDULE |
| 15 | 13,636 CFM | 10,000 CFM | SEE SCHEDULE |
| 20 | 18,182 CFM | 13,333 CFM | SEE SCHEDULE |
| 25 | 22,727 CFM | 16,667 CFM | SEE SCHEDULE |
| 30 | 27,272 CFM | 20,000 CFM | SEE SCHEDULE |
| 40 | 36,364 CFM | 26,667 CFM | SEE SCHEDULE |
| 50 | 45,455 CFM | 33,333 CFM | SEE SCHEDULE |

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS).

- ■ ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
- ☐ NOT APPLICABLE.

C408 - SYSTEM COMMISSIONING

- ■ PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- ☐ PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

## MECHANICAL GENERAL NOTES

SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. THESE GENERAL NOTES ARE INTENDED TO SUPPLEMENT THE SPECIFICATIONS. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. WATER SOURCE HEAT PUMP RETURN DUCTWORK AND TRANSFER DUCTS SHALL BE LINED WITH 1" THICK FIBERGLASS DUCT LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE NORTH CAROLINA INTERNATIONAL MECHANICAL CODE. SEAL MEDIUM PRESSURE SUPPLY DUCTWORK FOR POSITIVE 3" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
5. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
6. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
7. THE C.M. AT RISK SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TESTING AND BALANCING CONTRACTOR TO CONFIRM FILTERS ARE CLEAN, AND FREE OF DEBRIS PRIOR TO BEGINNING WORK. THE MECHANICAL CONTRACTOR SHALL REPLACE ANY DIRTY FILTERS, AS NEEDED. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO HIRE A REGISTERED DESIGN PROFESSIONAL TO COMMISSION THE INSTALLED SYSTEM AND PROVIDE THE OWNER AND CODE REVIEWER A SEALED STATEMENT OF COMMISSIONING (PER 2012B NCECC APPENDIX C1).
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE TYPE 'L' OR 'K' HARD DRAWN COPPER AND SHALL BE INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION WITH A DENSITY OF 1.5 LB. PER CUBIC FOOT. INSULATION SHALL HAVE A FACTORY APPLIED PRESSURIZED VAPOR BARRIER JACKET WITH PRESSURE SENSITIVE ADHESIVE SELF-SEALING LAP. INSULATION AND JACKET SHALL BE RATED FOR INSULATION IN A RETURN AIR PLENUM.
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE, SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM JACKET.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION. NEW ROOF PENETRATIONS MADE THROUGH EXISTING ROOF SYSTEMS SHALL BE VERIFIED WITH THE OWNER'S EXISTING ROOF WARRANTY PRIOR TO INSTALLATION.
16. ALL ROOF CURBS SHALL EXTEND A MINIMUM OF 8" ABOVE ROOF INSULATION OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
17. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE.
18. ALL CONDENSER WATER PIPING 2" AND LESS SHALL BE SCHEDULE 40 BLACK STEEL OR HARD-DRAWN TYPE-L COPPER PIPE AND FITTINGS. ALL CONDENSER WATER PIPING GREATER THAN 2" SHALL BE (WELDED) SCHEDULE 40 BLACK STEEL. PROVIDE BRONZE VALVES AND FITTINGS WITH COPPER PIPING AND CAST IRON VALVES AND FITTINGS WITH SCHEDULE 40 BLACK STEEL.
19. ALL CONDENSER WATER PIPING SHALL PITCH DOWN IN DIRECTION OF FLOW WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND ½" RAIN VALVES AT ALL LOW POINTS.
20. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
21. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
22. ALL ISOLATION VALVES, TERMINAL UNITS, CONTROLS, ETC. REQUIRING ACCESS AND SERVICE SHALL BE INSTALLED WITHIN 18" OF THE CEILING FOR SERVICE ACCESSIBILITY. LOCATIONS SHALL BE INDICATED ON THE CEILING GRID PER THE SPECIFICATIONS.
23. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
24. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS. DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
25. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RESTRAINTS TO RESIST THE EARTHQUAKE EFFECTS ON THE MECHANICAL SYSTEMS. THE REQUIREMENTS FOR THOSE RESTRAINTS ARE FOUND IN THE LOCAL BUILDING CODE AND ASCE 7. THE ANCHORAGE OF THE MECHANICAL SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODE AND ASCE 7.
26. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. PLASTIC PIPE LABELS UTILIZED IN A RETURN AIR PLENUM SHALL BE LISTED/APPROVED FOR USE IN A RETURN AIR PLENUM. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:
    CONDENSER WATER: GREEN BACKGROUND, WHITE LETTERING
    REFRIGERANT PIPING: YELLOW BACKGROUND, BLACK LETTERING
27. ALL MECHANICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED AS A COMPLETE PACKAGE, NOT THOUGH INDIVIDUAL COMPONENTS OR PARTS. PROVIDE REQUIRED 3RD PARTY FIELD UL LISTING SERVICES AS REQUIRED TO COMPLY.

## EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 7 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED.

SEE SPECIFICATIONS FOR COMLETE LISTINGS OF EQUIVALENT MANUFACTURES

NOTE:
ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

## MECHANICAL SHEET INDEX



| SHEET NUMBER | SHEET NAME |
|---|---|
| M001 | MECHANICAL DEMOLITION PLAN - OVERALL |
| M002 | MECHANICAL DEMOLITION PLAN - AREA A |
| M004 | MECHANICAL DEMOLITION ROOF PLAN - OVERALL |
| M100 | MECHANICAL LEGEND AND NOTES |
| M101 | MECHANICAL SCHEDULES |
| M301 | MECHANICAL PLAN - OVERALL |
| M302 | MECHANICAL PLAN - AREA A |
| M402 | MECHANICAL PIPING PLAN - AREA A |
| M501 | MECHANICAL DETAILS |




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NORTH CAROLINA PROFESSIONAL SEAL 038497 ENGINEER BRIAN C. PAULES
06.16.2025

ISSUE FOR: CONSTRUCTION

ISSUE DATE: 06.16.2025

REVISIONS:

| NO. | REASON | DATE |
|---|---|---|

PROJECT TEAM:
PRINCIPAL IN CHARGE: Ashley Hall
PROJECT MANAGER: Lynn Guimaraes
DESIGN TEAM: Brian Paules

PROJECT NAME:
CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO: 1641630004

SHEET TITLE: MECHANICAL LEGEND AND NOTES

SHEET NUMBER: M100

Optima Project # 22-0013 4 OF 9

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## WATER SOURCE HEAT PUMP SCHEDULE

| SYMBOL | NOMINAL (TONS) | SUPPLY AIR CFM | OUTSIDE AIR CFM | ESP | COOLING CAPACITY TC (BTUH) | COOLING CAPACITY SHC (BTUH) | COOLING CAPACITY EER | HEATING CAPACITY BTUH | HEATING CAPACITY COP | REFRIG. | CONDENSER WATER GPM | CONDENSER WATER PD (FT) | CONDENSER WATER RUNOUT | FAN MOTOR HP | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PHASE | ELECTRICAL DATA MCA | ELECTRICAL DATA MOCP | TRANE MODEL NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSHP-1225A | 5 | 2,000 | 95 | 0.40 | 62,650 | 48,640 | 17 | 49,050 | 5.4 | R-454B | 15 | 12.7 | 1 1/4" | 1.00 | 480 V | 3 | 12.0 | 15.0 | EXHK0604 |
| WSHP-1225B | 4 | 1,600 | 95 | 0.40 | 46,380 | 3,740 | 17.5 | 43,150 | 5.8 | R-454B | 12 | 6.9 | 1" | 1.00 | 480 V | 3 | 9.0 | 15.0 | EXHK0484 |
| WSHP-1226 | 0.75 | 300 | 70 | 0.40 | 9,260 | 7,310 | 18.1 | 8,370 | 4.95 | R-454B | 2.3 | 4.3 | 3/4" | 0.33 | 277 V | 1 | 5.0 | 15.0 | EXHK0097 |
| WSHP-1231 | 1.5 | 600 | 85 | 0.40 | 19,920 | 14,590 | 17.5 | 18,210 | 4.53 | R-454B | 4.5 | 2.3 | 1" | 0.50 | 277 V | 1 | 11.0 | 15.0 | EXHK0187 |
| WSHP-1232 | 0.75 | 300 | 70 | 0.40 | 9,260 | 7,310 | 18.1 | 8,370 | 4.95 | R-454B | 2.3 | 4.3 | 3/4" | 0.33 | 277 V | 1 | 5.0 | 15.0 | EXHK0097 |
| WSHP-1235 | 1 | 400 | 65 | 0.40 | 11,970 | 9,670 | 17.1 | 11,620 | 4.88 | R-454B | 3 | 7.1 | 3/4" | 0.33 | 277 V | 1 | 6.0 | 15.0 | EXHK0127 |
| WSHP-1237 | 0.75 | 300 | 70 | 0.40 | 9,260 | 7,310 | 18.1 | 8,370 | 4.95 | R-454B | 2.3 | 4.3 | 3/4" | 0.33 | 277 V | 1 | 5.0 | 15.0 | EXHK0097 |
| WSHP-1238 | 5 | 2,000 | 145 | 0.40 | 62,650 | 48,640 | 17 | 49,050 | 5.4 | R-454B | 15 | 12.7 | 1 1/4" | 1.00 | 480 V | 3 | 12.0 | 15.0 | EXHK0604 |
| WSHP-1239 | 5 | 2,000 | 50 | 0.40 | 62,650 | 48,640 | 17 | 49,050 | 5.4 | R-454B | 15 | 12.7 | 1 1/4" | 1.00 | 480 V | 3 | 12.0 | 15.0 | EXHK0604 |

NOTES:

1. COOLING CAPACITY AND EFFICIENCY BASED ON 80°/67° ENTERING AIR AND 85° F. ENTERING CONDENSER WATER TEMPERATURE. HEATING CAPACITY AND EFFICIENCY BASED ON 50° ENTERING CONDENSER WATER TEMPERATURE.
2. PROVIDE UNITS WITH: VARIABLE SPEED ECM SUPPLY FAN, BACNET MSTP WSHP CONTROLLER (OR EQUAL, BY CONTROLS CONTRACTOR), FILTER, U.L. LABEL, HOSE KIT, SELF BALANCING VALVE, BALL VALVE, AND STRAINER AS INDICATED ON WATER SOURCE HEAT PUMP PIPING DETAIL.
3. ALL WATER SOURCE HEAT PUMPS SHALL BE PROVIDED WITH WITH OPEN PROTOCOL CONTROLLERS.
4. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
5. PROVIDE INDOOR UNIT WITH CONDENSATE PUMP, EQUAL TO LITTLE GIANT VCMA-15ULS, 120V-1PH. SEE PLANS FOR CONDENSATE ROUTING.
6. REFER TO SPECIFICATION SECTION 230993 FOR CONTROLS REQUIREMENTS.

## GRILLE AND DIFFUSER SCHEDULE

| SYMBOL | SERVICE | CFM RANGE | FACE SIZE (*) | NECK SIZE | TYPE | OBD | PRICE |
|---|---|---|---|---|---|---|---|
| A | SUPPLY | (SEE PLANS FOR SIZE AND CFM) | | | DBL. DEFL. | NO | SDGE |
| B | SUPPLY | (SEE PLANS FOR SIZE AND CFM) | | | DBL. DEFL. | NO | 620 |
| C | SUPPLY | 0-125 | 12x12 | 6x6 | LOUVERED | NO | AMD |
| D | SUPPLY | 0-125 | 24x24 | 6x6 | LOUVERED | NO | AMD |
| E | SUPPLY | 130-280 | 24x24 | 9x9 | LOUVERED | NO | AMD |
| F | SUPPLY | 285-500 | 24x24 | 12x12 | LOUVERED | NO | AMD |
| G | SUPPLY | 505-780 | 24x24 | 15x15 | LOUVERED | NO | AMD |
| H | RET/EXH | (SEE PLANS FOR SIZE AND CFM) | | | FIXED BLADE | YES | 630 |
| J | RET/EXH | 0-195 | 12x12 | 8x8 | CUBE CORE | NO | 80 |
| K | RET/EXH | 0-195 | 24x24 | 8x8 | CUBE CORE | NO | 80 |
| L | RET/EXH | 200-300 | 24x24 | 10x10 | CUBE CORE | NO | 80 |
| M | RET/EXH | 305-450 | 24x24 | 12x12 | CUBE CORE | NO | 80 |
| N | RET/EXH | 455-800 | 24x24 | 16x16 | CUBE CORE | NO | 80 |
| P | S/R/E | 805-1500 | 24x24 | 22x20 | CUBE CORE | NO | 80 |
| R | RETURN | 0-1800 | 24x24 | NON-DUCTED | CUBE CORE | NO | 80 |

(*) - FOR DEVICES INSTALLED IN GYP CEILINGS, PROVIDE MINIMUM FACE SIZE FOR SPECIFIED NECK SIZE.

NOTES:

1. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH AN ENAMEL OFF-WHITE FINISH.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED.
3. ALL AIR DISTRIBUTION DEVICES SHALL BE ALL ALUMINUM CONSTRUCTION.
4. ALL DOUBLE DEFLECTION SUPPLY GRILLES SHALL HAVE DAMPER BLADES ADJUSTED TO PROVIDE AIRFLOW PATTERN INDICATED BY FLOW ARROWS ON PLANS. DAMPERS SHALL BE ADJUSTED TO A 30 DEGREE POSITION UNLESS NOTED OTHERWISE ON PLANS.
5. PROVIDE INSULATED PLENUM WITH ROUND NECK CONNECTION ON SLOT TYPE AIR DISTRIBUTION.

## VENTILATION CALCULATIONS (NCMC 2018, SECT 403):

ZONE AIR DISTRIBUTION EFFECTIVENESS AT CONDITIONED ANALYZED (Ez): 0.8

| ROOM NUMBER | ROOM NAME | OCCUPANCY CLASSIFICATION | Rp (CFM/PERSON) | Ra (CFM/SQ.FT.) | OCCUPANT DENSITY PEOPLE/1000 SQ.FT. | EXHAUST AIRFLOW (CFM/SQ.FT.) | Az AREA (SQ.FT.) | Pz CALCULATED OCCUPANCY (PEOPLE) | RpPz CALCULATED PEOPLE O/A (CFM) | RaAz CALCUATED AREA O/A (CFM) | Vbz PEOPLE + AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1001 | RECEPTION | OFFICE SPACE | 5 | 0.06 | 5 | | 763 | 4 | 20 | 46 | 66 | 0 |
| 1002 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 90 | 5 | 25 | 5 | 30 | 0 |
| 1003 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 98 | 5 | 25 | 6 | 31 | 0 |
| 1004 | WELL | OFFICE SPACE | 5 | 0.06 | 5 | | 95 | 1 | 5 | 6 | 11 | 0 |
| 1005 | CHILD RESTROOM | TOILET ROOMS PUBLIC | | | | 70 | 1 | (FIXTURES) | 0 | 0 | 0 | 70 |
| 1006 | CHILD RESTROOM | TOILET ROOMS PUBLIC | | | | 70 | 1 | (FIXTURES) | 0 | 0 | 0 | 70 |
| 1007 | HYGIENE | OFFICE SPACE | 5 | 0.06 | 5 | | 68 | 1 | 5 | 4 | 9 | 0 |
| 1008 | HYGIENE | OFFICE SPACE | 5 | 0.06 | 5 | | 90 | 1 | 5 | 5 | 10 | 0 |
| 1009 | PANTRY | STORAGE ROOMS | | 0.12 | | | 207 | 0 | 0 | 25 | 25 | 0 |
| 1010 | WOMEN'S | TOILET ROOMS PUBLIC | | | | 70 | 4 | (FIXTURES) | 0 | 0 | 0 | 280 |
| 1011 | MEN'S | TOILET ROOMS PUBLIC | | | | 70 | 4 | (FIXTURES) | 0 | 0 | 0 | 280 |
| 1012 | LAUNDRY & SUPPLY | STORAGE ROOMS | | 0.12 | | | 136 | 0 | 0 | 16 | 16 | 0 |
| 1013 | JAN | STORAGE ROOMS | | 0.12 | | | 112 | 0 | 0 | 13 | 13 | 0 |
| 1014 | ELEC | STORAGE ROOMS | | 0.12 | | | 137 | 0 | 0 | 16 | 16 | 0 |
| 1015 | CORRIDOR | CORRIDOR | | 0.06 | | | 277 | 0 | 0 | 17 | 17 | 0 |
| 1016 | CORRIDOR | CORRIDOR | | 0.06 | | | 475 | 0 | 0 | 29 | 29 | 0 |
| 1018 | CORRIDOR | CORRIDOR | | 0.06 | | | 216 | 0 | 0 | 13 | 13 | 0 |
| 1019 | CORRIDOR | CORRIDOR | | 0.06 | | | 261 | 0 | 0 | 16 | 16 | 0 |
| 1100 | STORAGE | STORAGE ROOMS | | 0.12 | | | 195 | 0 | 0 | 23 | 23 | 0 |
| 1101 | STORAGE | STORAGE ROOMS | | 0.12 | | | 384 | 0 | 0 | 46 | 46 | 0 |
| 1102 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 591 | 3 | 15 | 35 | 50 | 0 |
| 1103 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 172 | 9 | 45 | 10 | 55 | 0 |
| 1104 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 167 | 9 | 45 | 10 | 55 | 0 |
| 1105 | STORAGE | STORAGE ROOMS | | 0.12 | | | 153 | 0 | 0 | 18 | 18 | 0 |
| 1106 | STORAGE | STORAGE ROOMS | | 0.12 | | | 373 | 0 | 0 | 45 | 45 | 0 |
| 1107 | MAIL | OFFICE SPACE | 5 | 0.06 | 5 | | 187 | 1 | 5 | 11 | 16 | 0 |
| 1108 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 808 | 5 | 25 | 48 | 73 | 0 |
| 1109 | COPY/PRINT | STORAGE ROOMS | | 0.12 | | | 140 | 0 | 0 | 17 | 17 | 0 |
| 1110 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 115 | 6 | 30 | 7 | 37 | 0 |
| 1111 | STORAGE | STORAGE ROOMS | | 0.12 | | | 170 | 0 | 0 | 20 | 20 | 0 |
| 1112 | AUDIO BOOTH | OFFICE SPACE | 5 | 0.06 | 5 | | 132 | 1 | 5 | 8 | 13 | 0 |
| 1113 | CORRIDOR | CORRIDOR | | 0.06 | | | 290 | 0 | 0 | 17 | 17 | 0 |
| 1114 | COLLAB | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 201 | 11 | 55 | 12 | 67 | 0 |
| 1200 | CORRIDOR | CORRIDOR | | 0.06 | | | 451 | 0 | 0 | 27 | 27 | 0 |
| 1201 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 842 | 5 | 25 | 51 | 76 | 0 |
| 1202 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 90 | 5 | 25 | 5 | 30 | 0 |
| 1203 | COPY/PRINT | STORAGE ROOMS | | 0.12 | | | 87 | 0 | 0 | 10 | 10 | 0 |
| 1204 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 402 | 3 | 15 | 24 | 39 | 0 |
| 1205 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 402 | 3 | 15 | 24 | 39 | 0 |
| 1206 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 871 | 5 | 25 | 52 | 77 | 0 |
| 1207 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 85 | 5 | 25 | 5 | 30 | 0 |
| 1208 | STORAGE | STORAGE ROOMS | | 0.12 | | | 770 | 0 | 0 | 92 | 92 | 0 |
| 1209 | MDF ROOM | STORAGE ROOMS | | 0.12 | | | 266 | 0 | 0 | 32 | 32 | 0 |
| 1210 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 202 | 11 | 55 | 12 | 67 | 0 |
| 1211 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 204 | 11 | 55 | 12 | 67 | 0 |
| 1212 | COPY/PRINT | STORAGE ROOMS | | 0.12 | | | 96 | 0 | 0 | 12 | 12 | 0 |
| 1213 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 364 | 2 | 10 | 22 | 32 | 0 |
| 1214 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 364 | 2 | 10 | 22 | 32 | 0 |
| 1215 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 220 | 11 | 55 | 13 | 68 | 0 |
| 1216 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 364 | 2 | 10 | 22 | 32 | 0 |
| 1217 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 364 | 2 | 10 | 22 | 32 | 0 |
| 1218 | CORRIDOR | CORRIDOR | | 0.06 | | | 479 | 0 | 0 | 29 | 29 | 0 |
| 1221 | COLLAB | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 198 | 10 | 50 | 12 | 62 | 0 |
| 1221 | COLLAB | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 198 | 10 | 50 | 12 | 62 | 0 |
| 1222 | FOCUS | OFFICE SPACE | 5 | 0.06 | 5 | | 85 | 1 | 5 | 5 | 10 | 0 |
| 1223 | FOCUS | OFFICE SPACE | 5 | 0.06 | 5 | | 84 | 1 | 5 | 5 | 10 | 0 |
| 2104 | COLLAB | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 147 | 8 | 40 | 9 | 49 | 0 |
| 1019 | CORRIDOR | CORRIDOR | | 0.06 | | | 814 | 0 | 0 | 49 | 49 | 0 |
| 1029 | CORRIDOR | CORRIDOR | | 0.06 | | | 358 | 0 | 0 | 21 | 21 | 0 |
| 1225 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 1550 | 8 | 40 | 93 | 133 | 0 |
| 1226 | MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 366 | 19 | 95 | 22 | 117 | 0 |
| 1227 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1228 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1229 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1230 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1231 | EXEC OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 180 | 1 | 5 | 11 | 16 | 0 |
| 1232 | EXEC OFFICE/MEET | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 180 | 9 | 45 | 11 | 56 | 0 |
| 1233 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1234 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1235 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1236 | OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 120 | 1 | 5 | 7 | 12 | 0 |
| 1237 | OPEN OFFICE | OFFICE SPACE | 5 | 0.06 | 5 | | 1593 | 8 | 40 | 96 | 136 | 0 |
| 1238 | COLLAB | CONFERENCE ROOMS | 5 | 0.06 | 50 | | 114 | 6 | 30 | 7 | 37 | 0 |
| | | | | | | TOTALS | 20853 | 218 | 1090 | 1445 | 2535 | 700 |
| | | | | | | | | | TOTAL OUTSIDE AIR REQUIRED (Ez=0.8, CFM): | | 3,168 | |
| | | | | | | | | | TOTAL OUTSIDE AIR PROVIDED (CFM): | | 3,400 FROM (EX) DOAS-1 | |
| | | | | | | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM): | 700 |
| | | | | | | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM): | 1,500 EXISTING |


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NORTH CAROLINA PROFESSIONAL SEAL 038497 ENGINEER BRIAN C. PAULES
06.16.2025

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REVISIONS

| NO. | REASON | DATE |
|---|---|---|

PROJECT TEAM
PRINCIPAL IN CHARGE: Ashley Hall
PROJECT MANAGER: Lynn Guimaraes
DESIGN TEAM: Brian Paules

PROJECT NAME: CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO: 1641630004

SHEET TITLE: MECHANICAL SCHEDULES

SHEET NUMBER: M101

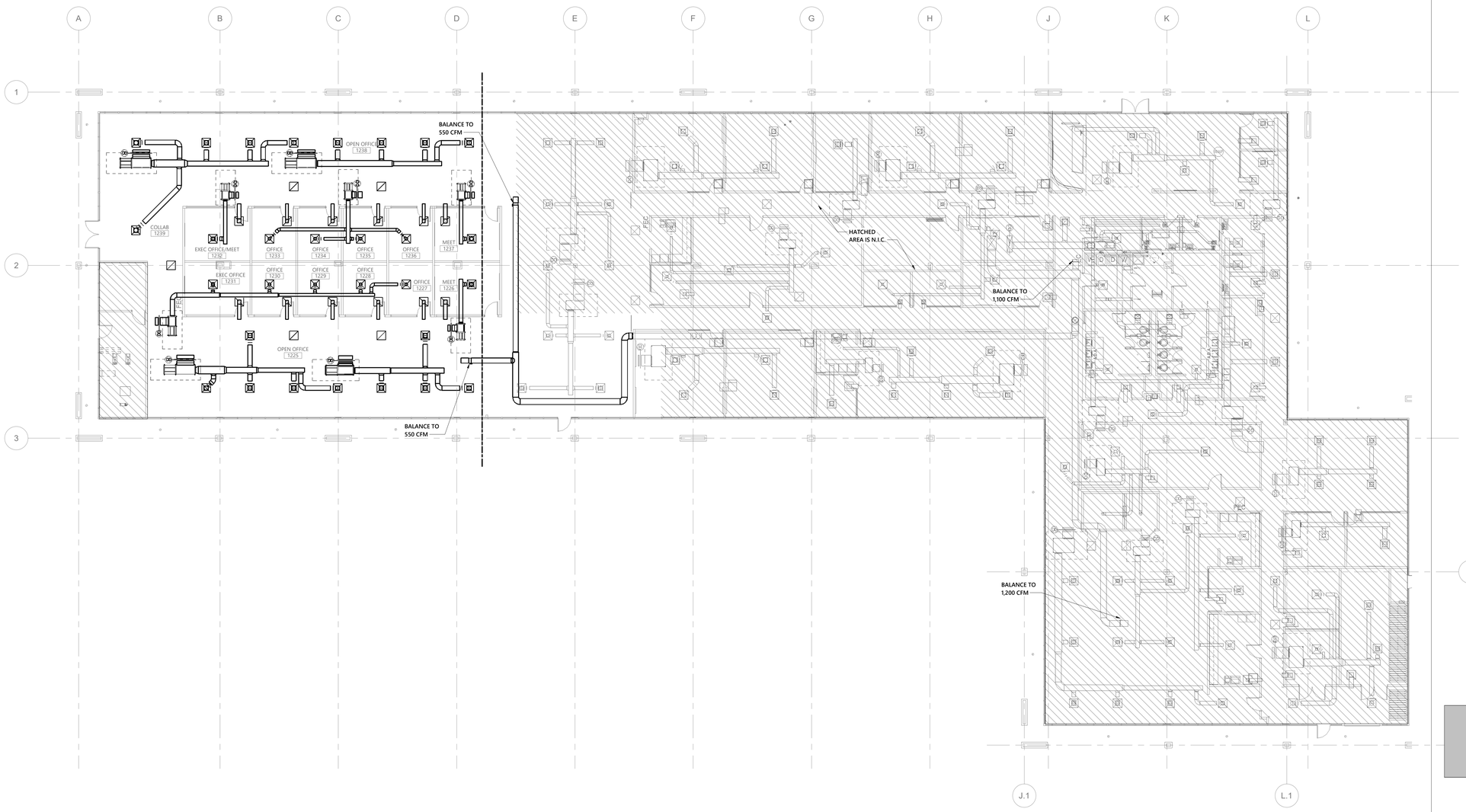
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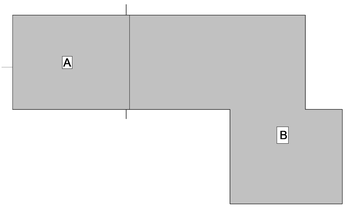
NOTE:

THIS OVERALL PLAN IS FOR REFERENCE ONLY.
REFERE TO 1/8 SCALE PLANS FOR DETAILS.




1 MECHANICAL PLAN - OVERALL
3/32" = 1'-0"

KEYPLAN




Ref North

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NORTH CAROLINA PROFESSIONAL SEAL 038497 ENGINEER BRIAN C. PAULES

06.16.2025

ISSUE FOR: CONSTRUCTION

ISSUE DATE: 06.16.2025

REVISIONS

| NO. | REASON | DATE |
|---|---|---|

PROJECT TEAM

PRINCIPAL IN CHARGE: Ashley Hall

PROJECT MANAGER: Lynn Guimaraes

DESIGN TEAM: Brian Paules

PROJECT NAME: CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO: 1641630004

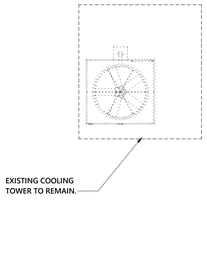
SHEET TITLE: MECHANICAL PLAN - OVERALL

SHEET NUMBER: M301



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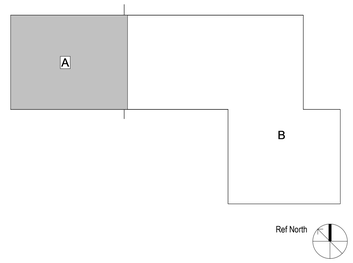






1 MECHANICAL PLAN - AREA A
1/8" = 1'-0"

KEYPLAN




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DESIGN TEAM
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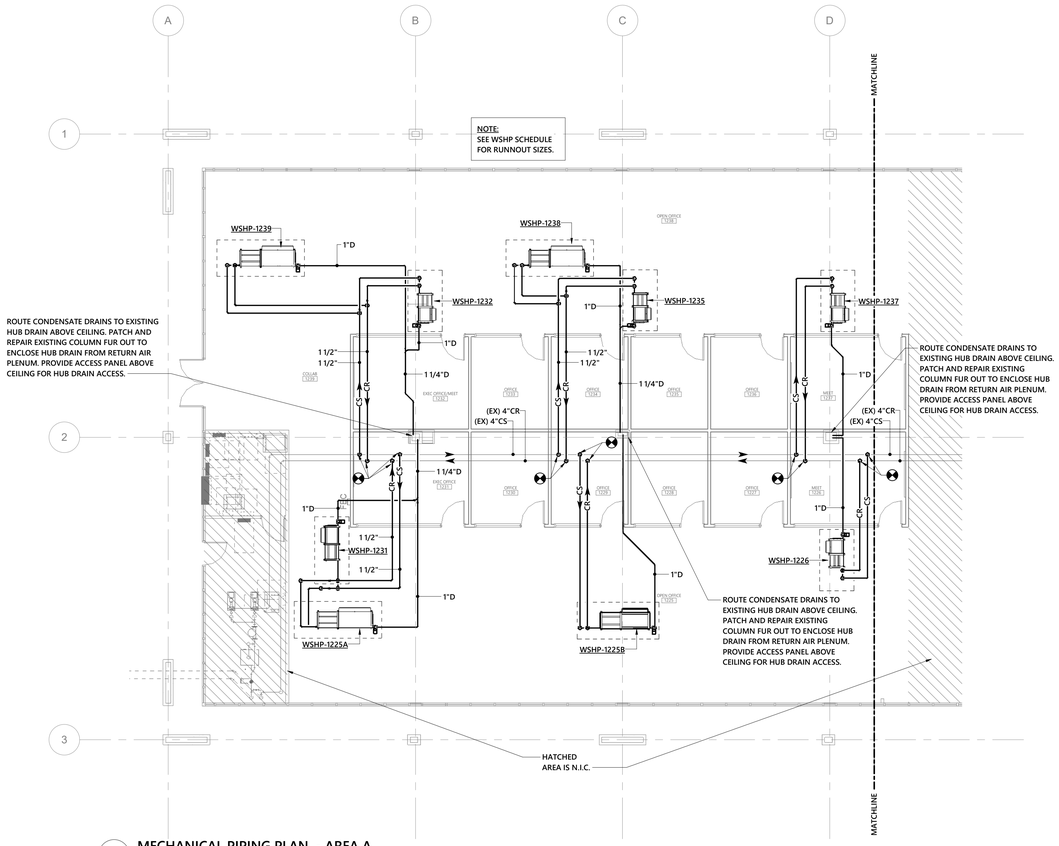
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MECHANICAL PLAN - AREA A

SHEET NUMBER:
M302

Optima Project # 22-0013 7 OF 9

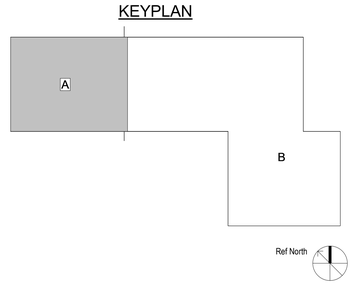
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1 MECHANICAL PIPING PLAN - AREA A
1/8" = 1'-0"

KEYPLAN




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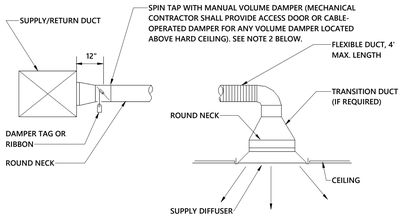
SHEET TITLE
MECHANICAL PIPING PLAN - AREA A

SHEET NUMBER
M402

Optima Project # 22-0013
8 OF 9

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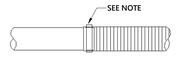
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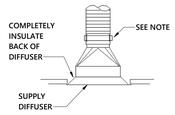

NOTE:

1. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST RUNOUTS.
2. ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORKS) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SEST SERIES AND FULL-LENGTH SHAFT. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.
3. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR DESIRED DAMPER ACCESS STYLE CABLE-OPERATED DAMPER ADJUSTMENT SHALL BE THROUGH AIR TERMINAL. FACE OPERATION (CONCEALED MOUNTING) OR THROUGH CEILING-MOUNTED RECESSED PORTS EQUAL TO MAT RT-CCM.

**3 SPIN TAP TO ROUND NECK DIFFUSER**
NOT TO SCALE



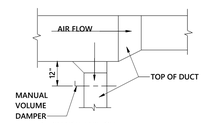

FLEXIBLE DUCT CONNECTION TO METAL DUCT



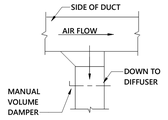

FLEXIBLE CONNECTION TO SUPPLY DIFFUSER

NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH APPROVED STRAP AND SEALANT.

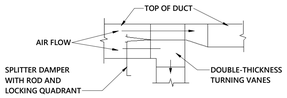
**2 FLEX CONNECTION DETAIL**
NOT TO SCALE




1 BRANCH TAKE-OFF




SINGLE DROP



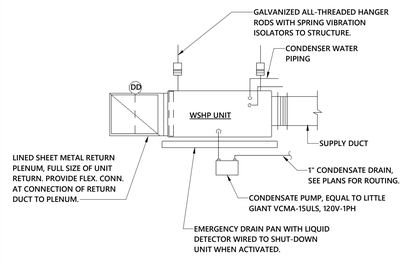

2 BRANCH TAKE-OFF

NOTE:

1. USE BRANCH TAKE-OFF ① WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF ② WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST SINGLE DROP DUCT RUNS.

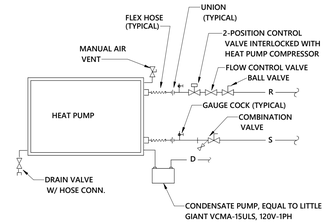
**1 DUCTWORK DETAILS**
NOT TO SCALE

NOTE:
MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF INDOOR UNIT WITH DUCTWORK, PLUMBING, ELECTRICAL, CEILINGS, ETC. TO MAINTAIN FILTER AND MAINTENANCE ACCESS CLEARANCES.




**5 WSHP - HORIZONTAL UNIT**
NOT TO SCALE

NOTE:
PROVIDE TWO-WAY TWO-POSITION CONTROL VALVE INTERLOCKED WITH THE HEAT PUMP COMPRESSOR, VALVE SHALL OPEN WHEN COMPRESSOR IS ACTIVATED FOR HEATING OR COOLING FOR ALL UNITS WITH THE EXCEPTION OF UNITS INDICATED ON THE PLANS, WHERE VALVE SHALL BE OMITTED. CONDENSER WATER SHALL CIRCULATE THRU THESE UNITS CONSTANTLY TO MAINTAIN MINIMUM SYSTEM WATER FLOW.




COMBINATION VALVE SHALL INCLUDE BALL VALVE, STRAINER, BLOWDOWN VALVE AND UNIONS.

**4 WATER SOURCE HEAT PUMP PIPING**
NO SCALE

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DESIGN TEAM
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PROJECT NAME
CMS STUDENT & FAMILY SUPPORT CENTER - BUILDING 6635
6635 EXECUTIVE CR.
CHARLOTTE, NC 28212

PROJECT NO
1641630004

SHEET TITLE
MECHANICAL DETAILS

SHEET NUMBER
M501

Optima Project # 22-0013 9 OF 9

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