

# Rebuild Cooling Tower, Building 7 Women's Eastern Reception, Diagnostic, and Correctional Center, Vandalia, MO

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OWNER: STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR

DEPARTMENT OF  
CORRECTIONS

PROJECT  
MANAGEMENT: OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES MANAGEMENT,  
DESIGN AND CONSTRUCTION

SHEET LIST:  
G-001: COVER SHEET

MECHANICAL SHEETS  
M100: SITE PLAN  
DM101: MECHANICAL DEMO PLAN  
M101: MECHANICAL NEW WORK PLAN  
M102: MECHANICAL SCHEDULES  
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STRUCTURAL SHEETS  
S100: GENERAL NOTES  
S200: PLATFORM PLAN AND DETAILS

DESIGNER: Case Engineering INC.

PROJECT NUMBER: C2303-01

SITE NUMBER: 7016  
FACILITY NUMBER: 9327016019

SHEET NUMBER:

**G-001**

1 OF 12 SHEETS  
AUGUST 25, 2023



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OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
CORRECTIONS

REBUILD COOLING TOWER,  
BUILDING 7

WOMEN'S EASTERN  
RECEPTION, DIAGNOSTIC,  
AND CORRECTIONAL CENTER  
VANDALIA, MO

PROJECT # C2303-01  
SITE # 7016  
FACILITY # 9327016019

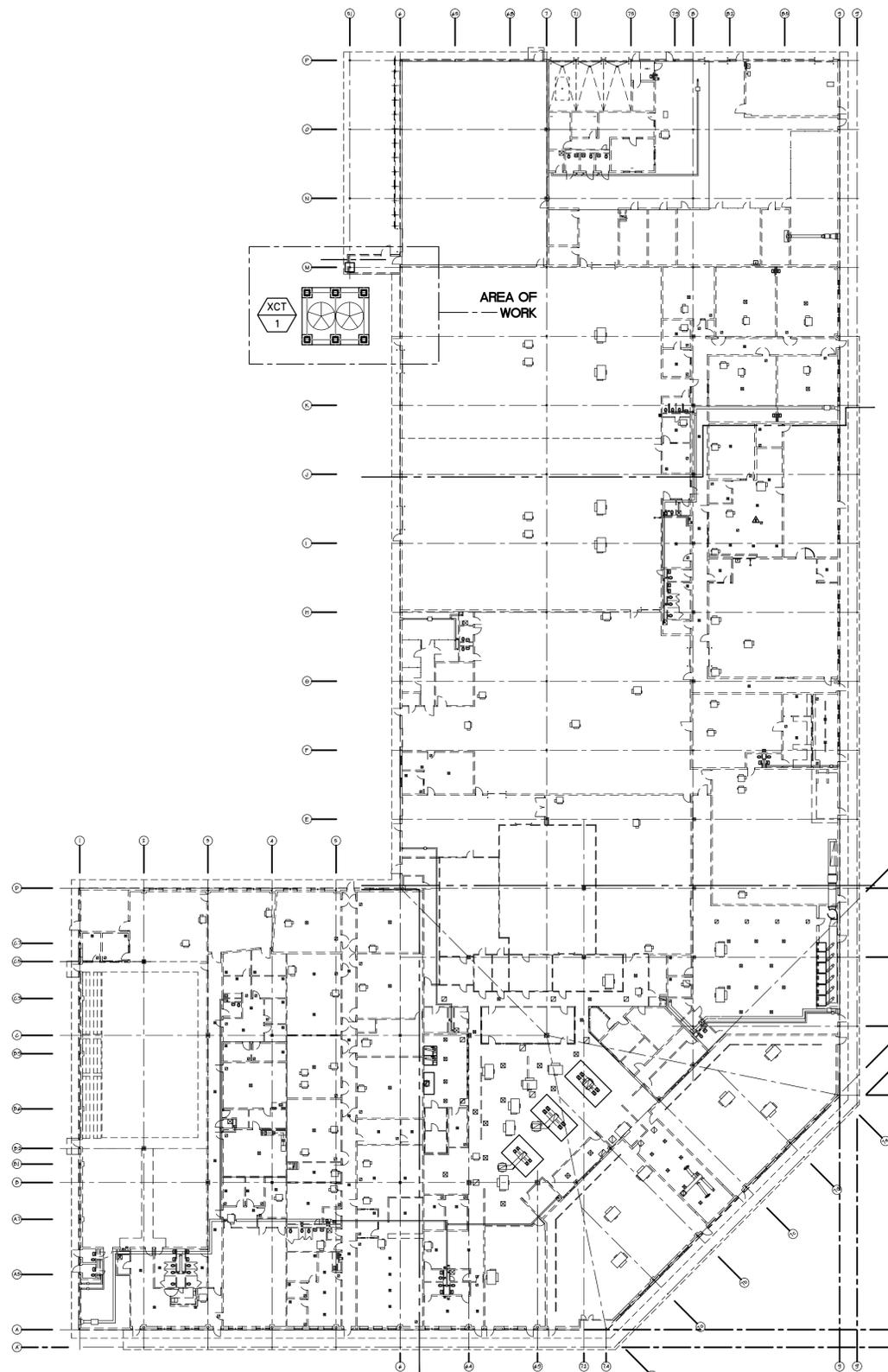
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SHEET TITLE: **SITE PLAN**

SHEET NUMBER: **M100**

| MECHANICAL SYMBOLS LEGEND |  |
|---------------------------|--|
| PIPING                    |  |
|                           | CONDENSER WATER SUPPLY                                 |
|                           | CONDENSER WATER RETURN                                 |
|                           | DOMESTIC COLD WATER                                    |
|                           | EXISTING PIPING TO REMAIN                              |
|                           | EXISTING PIPING TO BE REMOVED                          |
|                           | HOT WATER SUPPLY (HWS)                                 |
|                           | HOT WATER RETURN (HWR)                                 |
|                           | NATURAL GAS PIPING (G)                                 |
|                           | FLOW MARKER  |
|                           | DIRECTION OF PITCH (DOWN)                              |
|                           | PIPE TURN DOWN   |
|                           | TEE TURN DOWN  |
|                           | PIPE TURN UP   |
|                           | TEE TURN UP  |
|                           | GATE VALVE   |
|                           | GLOBE VALVE  |
|                           | BALL VALVE   |
|                           | BUTTERFLY VALVE  |
|                           | 3-PIECE BALL VALVE                                     |
|                           | CHECK VALVE  |
|                           | TRIPLE DUTY VALVE                                      |
|                           | CIRCUIT SETTER   |
|                           | UNION  |
|                           | FLANGED CONNECTION                                     |
|                           | FLEXIBLE CONNECTION                                    |
|                           | PIPE CAP   |
|                           | CAM LOCK FITTING                                       |
|                           | THERMAL WELL   |
|                           | PRESSURE GAUGE (WITH GAUGE VALVE)                      |
|                           | THERMOMETER  |
|                           | MODULATING CONTROL VALVE                               |
|                           | PRESSURE REDUCING VALVE                                |
|                           | STRAINER WITH DRAIN VALVE                              |
|                           | ECCENTRIC REDUCER/INCREASER                            |
|                           | CONCENTRIC REDUCER/INCREASER                           |
|                           | Y-STRAINER   |
|                           | Y-STRAINER WITH BLOWDOWN VALVE                         |
|                           | STEAM TRAP   |
|                           | LOCK SHIELD VALVE                                      |
|                           | FLOAT VALVE  |
|                           | VACUUM BREAKER   |
|                           | AUTOMATIC AIR VENT                                     |
|                           | PET'S PLUG   |
|                           | FLEXIBLE PIPE CONNECTION                               |
|                           | FLOW METER   |
|                           | PRESSURE GAUGE (WITH GAUGE VALVE AND PIGTAIL)          |
|                           | F&T STEAM TRAP   |
|                           | INVERTED BUCKET STEAM TRAP                             |
|                           | PIPE GUIDE   |
|                           | PIPE ANCHOR  |
|                           | PIPE EXPANSION JOINT                                   |
|                           | BASKET STRAINER  |
| CONTROL VALVES            |  |
|                           | MOTOR OPERATED ACTUATOR                                |
|                           | PNEUMATICALLY OPERATED ACTUATOR (CYLINDER/PISTON TYPE) |
|                           | PNEUMATICALLY OPERATED ACTUATOR (DIAPHRAM TYPE)        |
|                           | CONTROL ACTUATOR WITH MANUAL HAND WHEEL                |
|                           | PRESSURE REGULATING VALVES                             |
|                           | BACK PRESSURE REGULATOR (SELF CONTAINED)               |
|                           | BACK PRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP     |
|                           | PRESSURE REGULATOR (SELF CONTAINED)                    |
|                           | PRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP          |
| PRESSURE RELIEF DEVICES   |  |
|                           | PRESSURE RELIEF VALVE                                  |
|                           | PRESSURE RELIEF RUPTURE DISK                           |
|                           | VACUUM RELIEF RUPTURE DISK                             |

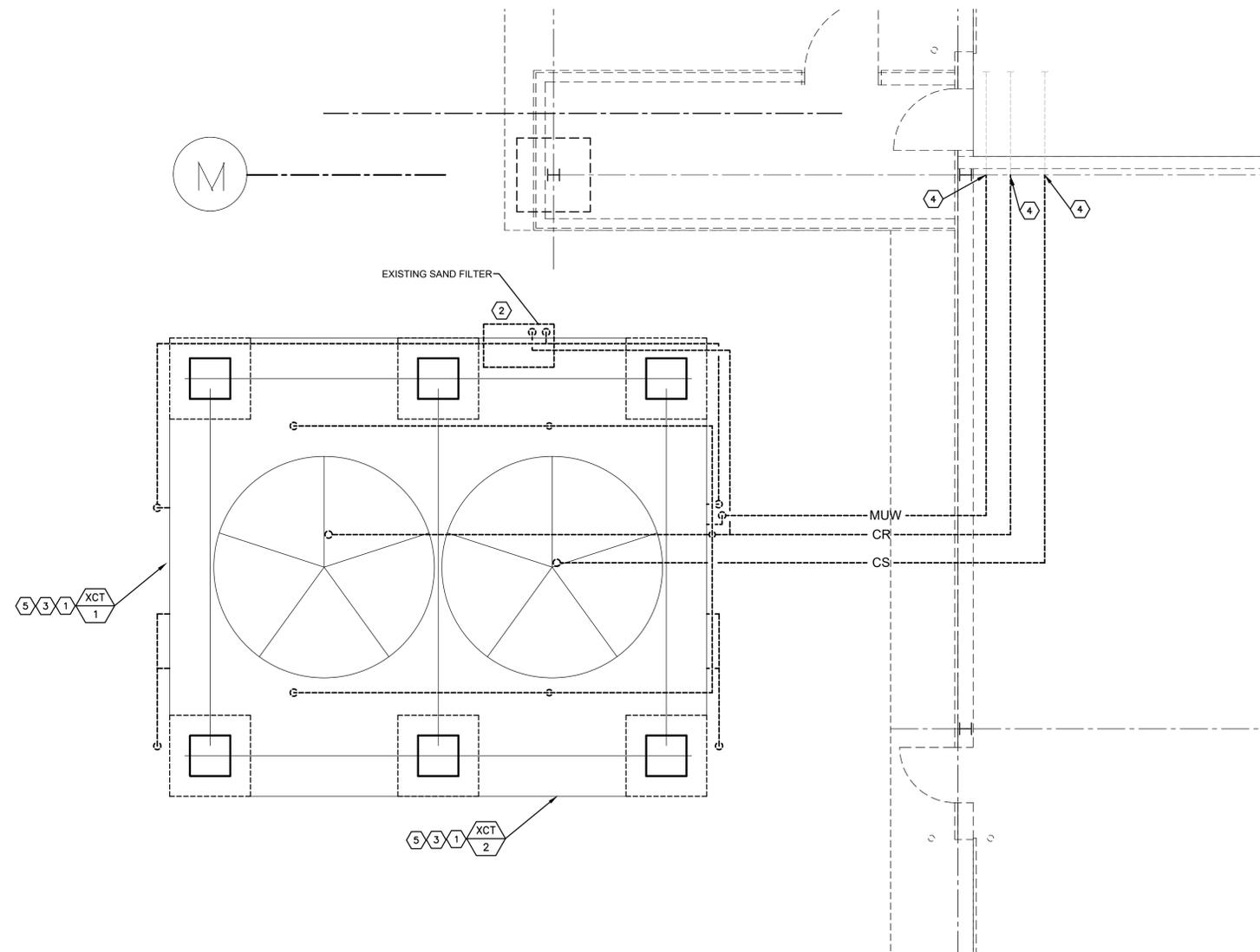
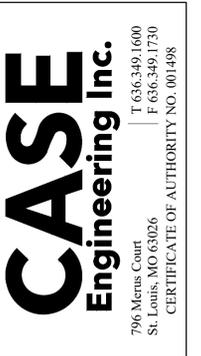


1 SITE PLAN  
SCALE: 1/32" = 1'-0" N

**NOTE:**  
REFER TO ENLARGED PLANS FOR  
MORE DETAIL.

**MECHANICAL ABBREVIATIONS**

|        |                                     |
|--------|-------------------------------------|
| AFF    | ABOVE FINISHED FLOOR                |
| AHJ    | AUTHORITY HAVING JURISDICTION       |
| A.I.P. | ABANDON IN PLACE                    |
| ALT    | ALTERNATE                           |
| AS     | AIR SEPARATOR                       |
| ATC    | AUTOMATIC TEMPERATURE CONTROL VALVE |
| ATR    | ALL THREAD ROD                      |
| AV     | MANUAL AIR VENT                     |
| BFF    | BELOW FINISHED FLOOR                |
| BMS    | BUILDING MANAGEMENT SYSTEM          |
| BOD    | BOTTOM OF DUCT                      |
| BOE    | BOTTOM OF EQUIPMENT                 |
| BOP    | BOTTOM OF PIPE                      |
| DDC    | DIRECT DIGITAL CONTROL              |
| DISC   | DISCONNECT                          |
| DN     | DOWN                                |
| DPS    | DIFFERENTIAL PRESSURE SWITCH        |
| (E)    | EXISTING                            |
| EC     | ELECTRICAL WORK CONTRACTOR          |
| EMS    | ENERGY MANAGEMENT SYSTEM            |
| EQPT   | EQUIPMENT                           |
| ET     | EXPANSION TANK                      |
| FC     | FAIL CLOSED                         |
| FO     | FAIL OPEN                           |
| FV     | FIELD VERIFY                        |
| GC     | GENERAL WORK CONTRACTOR             |
| HW/CP  | HOT WATER CIRC. PUMP                |
| HX     | HEAT EXCHANGER                      |
| IOM    | INSTALLATION & OPERATION MANUAL     |
| ID     | INSIDE DIAMETER                     |
| LLSV   | LIQUID LINE SOLENOID VALVE          |
| LV     | LOUVER                              |
| MAX    | MAXIMUM                             |
| MC     | MECHANICAL WORK CONTRACTOR          |
| MCA    | MINIMUM CIRCUIT AMPERES             |
| MCC    | MOTOR CONTROL CENTER                |
| MD     | MANUAL DAMPER                       |
| MIN    | MINIMUM                             |
| MH     | MOUNTING HEIGHT                     |
| MOC/P  | MAXIMUM OVER CURRENT PROTECTION     |
| MTD    | MOUNTED                             |
| MW     | MAKE UP WATER                       |
| NC     | NORMALLY CLOSED                     |
| NC     | NORMALLY CLOSED                     |
| NIC    | NOT IN CONTRACT                     |
| NO     | NORMALLY OPEN                       |
| OD     | OUTSIDE DIAMETER                    |
| PC     | PLUMBING WORK CONTRACTOR            |
| PCF    | POUNDS/CUBIC FOOT                   |
| PPH    | POUND PER HOUR                      |
| PSG    | PUMP SUCTION GUIDE                  |
| RTD    | RESISTANCE TEMPERATURE DETECTOR     |
| TEMP   | TEMPORARY                           |
| TOD    | TOP OF DUCT                         |
| TOP    | TOP OF PIPE                         |
| TYP    | TYPICAL                             |
| UN     | UNLESS OTHERWISE NOTED              |
| UNV    | UNIVERSAL                           |
| UTR    | UP THROUGH ROOF                     |
| VAV    | VARIABLE AIR VOLUME                 |
| VFD    | VARIABLE FREQUENCY DRIVE            |
| VSD    | VARIABLE SPEED DRIVE                |
| W/     | WITH                                |



MECHANICAL KEYED NOTES

- ① REMOVE MEDIA FILL IN EXISTING COOLING TOWER
- ② REMOVE EXISTING SAND FILTER AND FILTER PIPING SERVING COOLING TOWERS.
- ③ REMOVE EXISTING FAN ASSEMBLY, FAN MOTOR, DRIVE SHAFT ASSEMBLY, GEAR BOXES AND ASSOCIATED SUPPORTS. REMOVE EXISTING VIBRATION CUTOFF SWITCHES, COOLING TOWER THERMOSTATS, AND ELECTRIC FLOAT SWITCHES.
- ④ DEMO PIPING TO THIS LOCATION TO INSTALL NEW PIPING UNDER NEW WORK.
- ⑤ COOLING TOWER SHALL BE REMOVED FROM STRUCTURAL STEEL DURING STRUCTURAL WORK.

① DEMO PLAN  
SCALE: 1/4" = 1'-0"

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SHEET TITLE: **DEMO PLAN**

SHEET NUMBER: **DM101**



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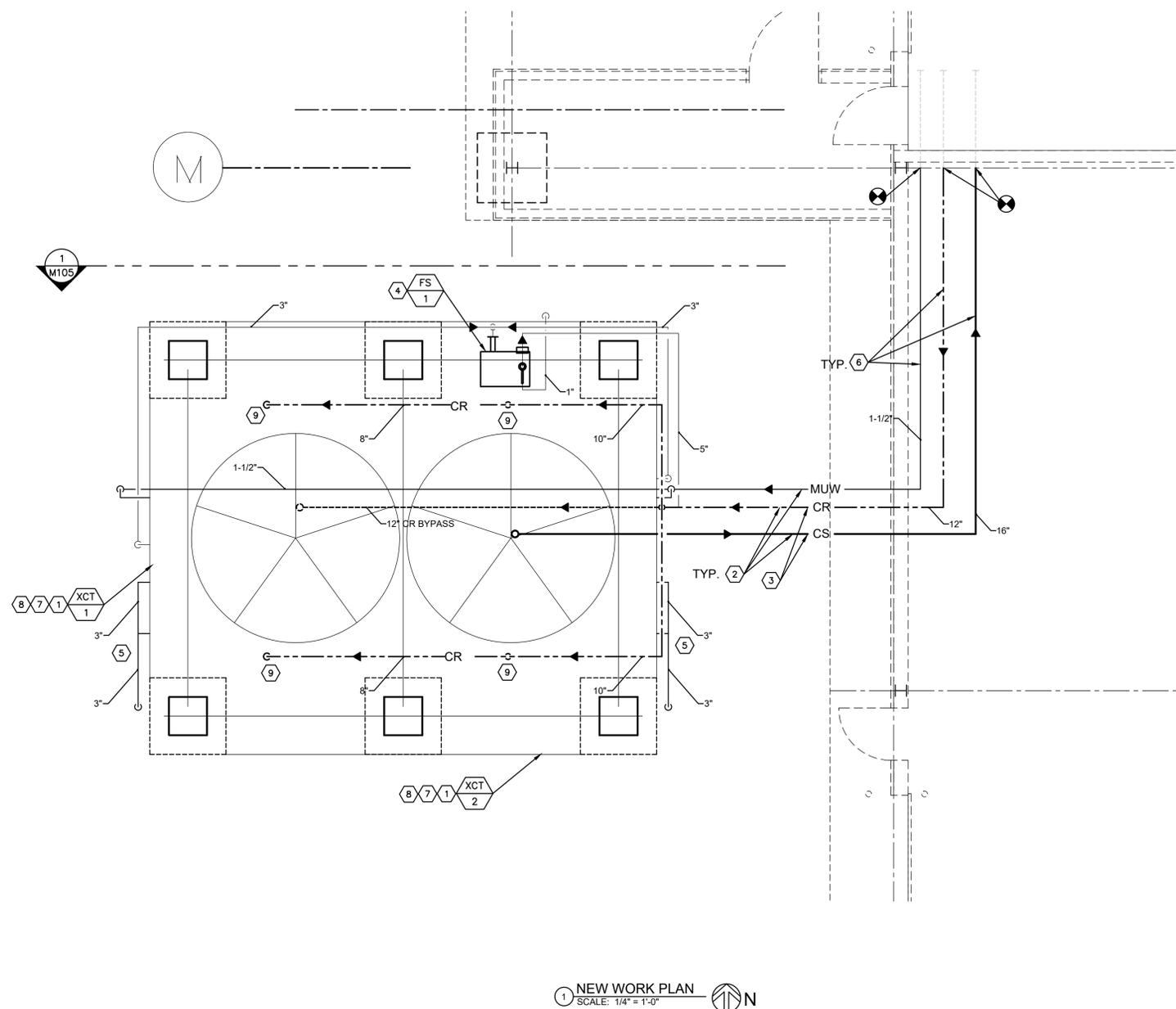
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SHEET TITLE: **MECHANICAL  
NEW WORK  
PLAN**

SHEET NUMBER: **M101**

**MECHANICAL KEYED NOTES**

- 1 REINSTALL COOLING TOWER AFTER STRUCTURAL WORK HAS BEEN COMPLETED. COOLING TOWER SHALL BE POSITIVELY ATTACHED TO STRUCTURAL SUPPORTS.
- 2 PROVIDE NEW INSULATION AND JACKETING ON ALL EXTERIOR PIPING. SEE PIPE INSULATION SCHEDULE.
- 3 PROVIDE DRAIN PORTS AND VALVES AT LOWEST POINT OF NEW CONDENSING WATER PIPING.
- 4 PROVIDE NEW FILTER SKID PACKAGE WITH INTEGRAL PUMP. PROVIDE NEW PIPING AS SHOWN FROM FILTER INLET TO COOLING TOWER FILTER CONNECTIONS. ROUTE PIPING FROM FILTER OUTLET TO CONDENSING WATER RETURN LINE AS SHOWN. PROVIDE SHUTOFF VALVES ON INLET AND OUTLET PIPING. ROUTE 1" FILTER PURGE LINE FROM PURGE OUTLET TO YARD DRAIN.
- 5 PROVIDE 3" PVC OVERFLOW LINE AND SLOPE TO YARD DRAIN. PROVIDE 2" DRAIN LINE WITH BALL VALVE AND CONNECT TO OVERFLOW LINE.
- 6 SUPPORT PIPING ACCORDING TO DETAILS ON M105.
- 7 PROVIDE NEW COOLING TOWER FILL. CONFIRM WITH MANUFACTURER NEW FILL COMPATIBILITY WITH EXISTING TOWER. SEE SCHEDULES FOR MORE DETAILS.
- 8 PROVIDE NEW FAN ASSEMBLY, FAN MOTOR, DRIVE SHAFT ASSEMBLY, GEAR BOXES AND ASSOCIATED SUPPORTS. ALL WIRING TO BE INSTALLED BY E.C. PROVIDE VIBRATION CUTOFF SWITCHES, COOLING TOWER THERMOSTATS, AND ELECTRIC FLOAT SWITCHES.
- 9 PROVIDE BALANCING VALVES AND TEST PLUGS AT CONNECTION TO COOLING TOWER.



1 NEW WORK PLAN  
SCALE: 1/4" = 1'-0" N



| PIPING SCHEDULE                            |                   |   |  |           |  |                         |           |
|--|-------------------|---|--|-----------|--|-------------------------|-----------|
| PIPING SYSTEM                              | PIPING            |   | INSULATION   |           |  |                         |           |
|  | PIPE SIZE         | MATERIAL  | TYPE   | THICKNESS | THERMAL CONDUCTIVITY (BTU/HR/FT <sup>2</sup> /IN/°F) | MIN & MAX SERVICE TEMP. | REMARKS   |
| COOLING WATER PIPING<br>FILTER SKID PIPING | ALL               | PP-R, SDR-9 PIPING, ASTM F2389<br>RECOMMENDED MNFR: AQUATHERM | CELLULAR FOAM: ASTM C534, TYPE I<br>FOR TUBULAR MATERIALS AND TYPE II<br>FOR SHEET MATERIALS.                      | 1"        | 0.28 @ 75F   | 0 TO 150                | 5,6       |
| MAKEUP WATER                               | ALL               | HARD COPPER WATER TUBE, DRAWN<br>TEMPER: ASTM B 88, TYPE L.   | MINERAL-FIBER: TYPE 1, 850F MATERIALS,<br>COMPLY WITH ASTM C 547, TYPE 1, GRADE A,<br>WITH FACTORY APPLIED JACKET. | 1"        | 0.28 @ 75F   | -40 TO 220              | 1,2,3,4,7 |
| DRAIN PIPE                                 | 3/4" TO<br>1-1/2" | ASTM D-2665<br>SCHEDULE 40 PVC                                | CELLULAR FOAM: ASTM C534, TYPE I<br>FOR TUBULAR MATERIALS AND TYPE II<br>FOR SHEET MATERIALS.                      | 1/2"      | 0.28 @ 75F   | -40 TO 220              | 2,3,5     |

1. MINERAL-FIBER INSULATION MANUFACTURERS: JOHN MANVILLE; MICRO-LOK, KNAUF INSULATION; 1000 PIPE INSULATION, AND OWENS CORNING; FIBERGLAS PIPE INSULATION.  
2. NOT EXPOSED PIPING: WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C 1136, TYPE1.  
3. EXPOSED PIPING: ALUMINUM JACKET 0.024 INCHES THICK COMPLY WITH ASTM B 209, ALLOY 3003, 3005, 3105 OR 5005, TEMPER H-14.  
4. PROVIDE DIELECTRIC UNION AT UNION OF COPPER AND STEEL.  
5. CELLULAR FOAM INSULATION MANUFACTURERS: AEROFLEX USA INC, AEROCCEL, ARMACELL LLC; AP ARMAFLEX, AND RBX CORPORATION; INSUL-SHEET 1800 AND INSUL-TUBE 180.  
6. PROVIDE JACKETING OF EITHER 30 MILS THICK PVC OR ALUMINUM-PRE-PAINTED WHITE, 0.020 INCH THICK.  
7. PROVIDE DIELECTRIC UNION AT UNION OF COPPER AND STEEL.

PROVIDE ALL PIPING WITH PIPE LABELS AND FLOW MARKERS

| FILTER SKID SCHEDULE |              |              |               |     |            |           |             |                |         |     |                  |                             |         |
|----------------------|--------------|--------------|---------------|-----|------------|-----------|-------------|----------------|---------|-----|------------------|-----------------------------|---------|
| MARK                 | MANUFACTURER | MODEL        | SERVES        | GPM | PUMP MOTOR | LINE SIZE | PURGE CONN. | STORAGE VOLUME | VOLT/PH | FLA | OPERATING WEIGHT | FILTER EFFICIENCY (MICRONS) | REMARKS |
| FS-1                 | PUROFLUX     | PF-64-030-AP | COOLING TOWER | 220 | 7.5HP      | 3"        | 1"          | 8 GAL          | 480/3   | 9.8 | 643 LBS.         | 45 MICRONS                  | --      |

1. CENTRIFUGAL TYPE SEPARATOR-FILTER WITH PUMP.  
2. E.C. SHALL PROVIDE NEW DISCONNECT FOR FILTER SKID, WIRED TO COOLING TOWER.

| ALTERNATE FILTER SKID SCHEDULE |              |          |               |     |            |           |             |                |         |     |                  |                             |         |
|--------------------------------|--------------|----------|---------------|-----|------------|-----------|-------------|----------------|---------|-----|------------------|-----------------------------|---------|
| MARK                           | MANUFACTURER | MODEL    | SERVES        | GPM | PUMP MOTOR | LINE SIZE | PURGE CONN. | STORAGE VOLUME | VOLT/PH | FLA | OPERATING WEIGHT | FILTER EFFICIENCY (MICRONS) | REMARKS |
| FS-1                           | EASYWATER    | SS-185-S | COOLING TOWER | 185 | 7.5HP      | 3"        | 1"          | 500 GAL        | 480/3   | 9.8 | 643 LBS.         | 0.5 MICRONS                 | --      |

1. UPON CLIENT'S REQUEST, M.C. SHALL PROVIDE ALTERNATE BID WITH SUB-MICRON TYPE FILTER SKID, ACCORDING TO THIS SCHEDULE.  
2. E.C. SHALL PROVIDE NEW DISCONNECT FOR FILTER SKID, WIRED TO COOLING TOWER.

| COOLING TOWER SCHEDULE |             |          |      |           |      |         |         |      |                   |               |          |          |          |              |           |
|------------------------|-------------|----------|------|-----------|------|---------|---------|------|-------------------|---------------|----------|----------|----------|--------------|-----------|
| MFG:                   | AREA SERVED | MODEL    | GPM  | DB F      | WB F | NOMINAL | FAN CFM | HP   | INLET/OUTLET (IN) | OVERFLOW (IN) | MUW (IN) | MCA/MOCP | V/PH/HZ  | WEIGHT (LBS) | REMARKS   |
| BALTIMORE AIRCOIL      | CHILLERS    | EXISTING | 1800 | 95.0/85.0 | 78.0 | 720     | 172,340 | 40.0 | 10"/12"           | 3"            | 1-1/2"   | -/100    | 460/3/60 | 6,708        | 1,2,3,4,5 |
| BALTIMORE AIRCOIL      | CHILLERS    | EXISTING | 1800 | 95.0/85.0 | 78.0 | 720     | 172,340 | 40.0 | 10"/12"           | 3"            | 1-1/2"   | -/100    | 460/3/60 | 6,708        | 1,2,3,4,5 |

1. PROVIDE NEW 11' FAN ASSEMBLY AND 40HP MOTOR, COMPATIBLE WITH BAC TOWER.  
2. PROVIDE BAC COOLING TOWER FILL REPLACEMENT, SIZED FOR 720 TONS.  
3. EXTEND AND CONNECT NEW PIPING TO EXISTING COOLING TOWER PIPING CONNECTIONS.  
4. PROVIDE NEW LW AND BASIN TEMPERATURE SENSORS, FLOW CONTROL SENSORS, AND FLOAT SWITCHES.  
5. E.C. SHALL EXTEND AND CONNECT NEW WIRING FROM TOWER TO EXISTING PANEL AND VFD PER ELECTRICAL DRAWINGS.

**CASE**  
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CERTIFICATE OF AUTHORITY NO. 001-498

OFFICE OF ADMINISTRATION  
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SHEET TITLE: **MECHANICAL  
SCHEDULES**

SHEET NUMBER: **M102**



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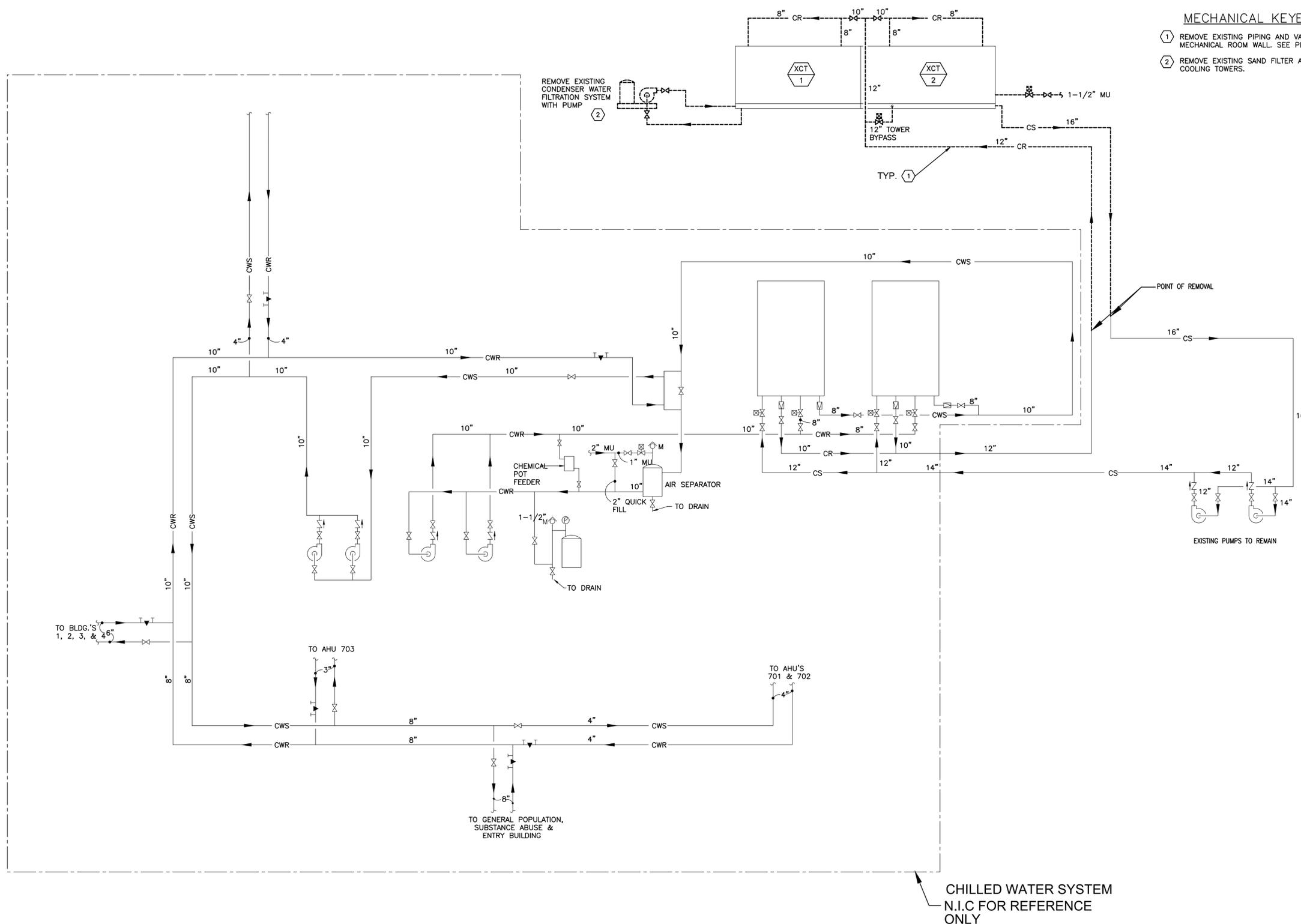
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SHEET TITLE: **MECHANICAL  
DEMO  
SCHEMATICS**

SHEET NUMBER: **DM104**

MECHANICAL KEYED NOTES

- ① REMOVE EXISTING PIPING AND VALVES FROM COOLING TOWER TO MECHANICAL ROOM WALL. SEE PLAN VIEW FOR LOCATION.
- ② REMOVE EXISTING SAND FILTER AND FILTER PIPING SERVING COOLING TOWERS.



COOLING SYSTEM FLOW DEMO PLAN  
NO SCALE



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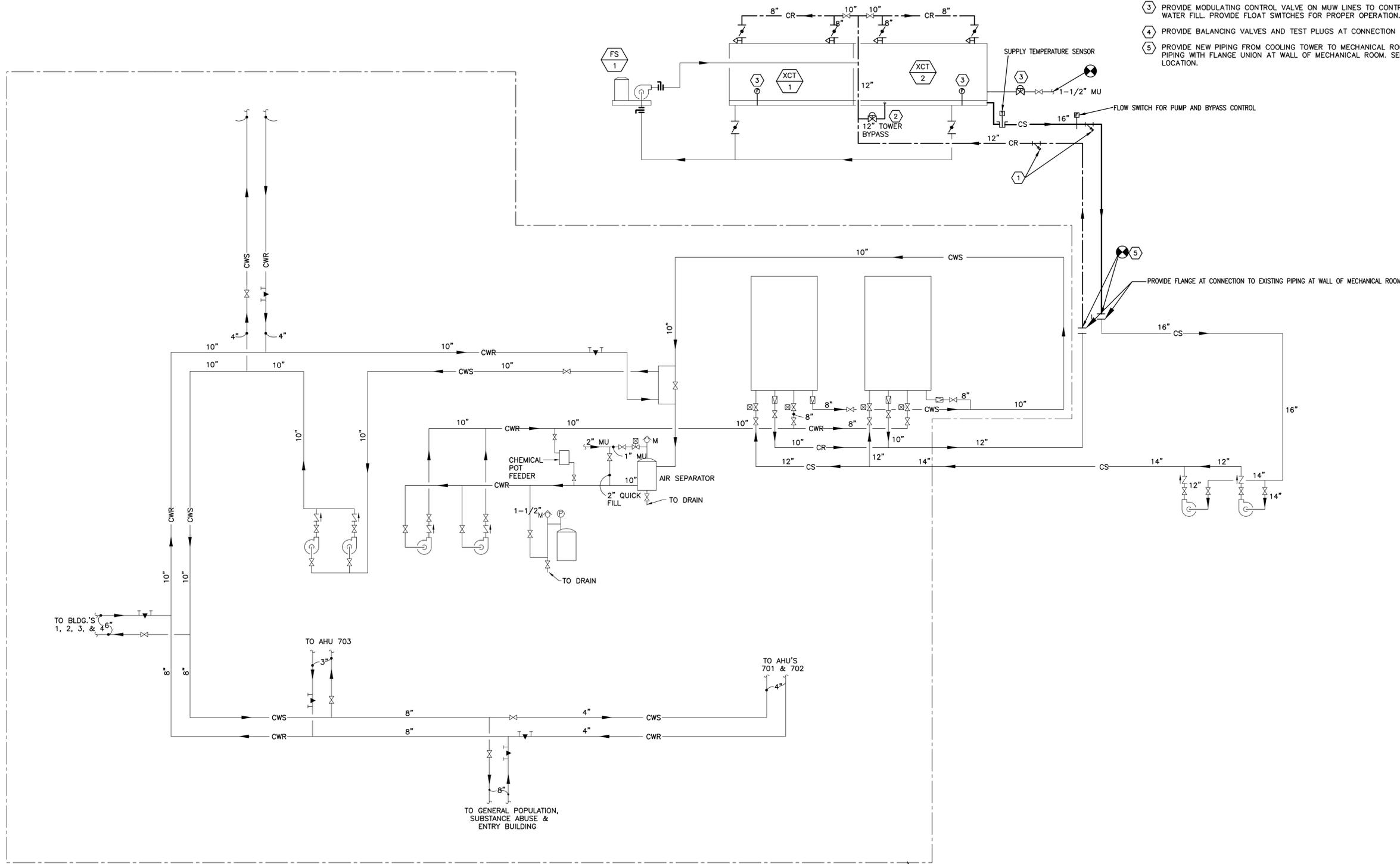
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SHEET TITLE: **MECHANICAL  
NEW WORK  
SCHEMATIC**

SHEET NUMBER: **M104**

**MECHANICAL KEYED NOTES**

- 1 PROVIDE DRAIN PORTS AND VALVES AT LOWEST POINT OF NEW CONDENSING WATER PIPING.
- 2 PROVIDE MODULATING CONTROL VALVE ON CWR BYPASS LINE TO CONTROL COOLING TOWER BYPASS. PROVIDE FLOW SWITCHES AND TEMPERATURE SENSORS IN CS PIPE FOR PROPER OPERATION.
- 3 PROVIDE MODULATING CONTROL VALVE ON MUW LINES TO CONTROL COOLING TOWER WATER FILL. PROVIDE FLOAT SWITCHES FOR PROPER OPERATION.
- 4 PROVIDE BALANCING VALVES AND TEST PLUGS AT CONNECTION TO COOLING TOWER.
- 5 PROVIDE NEW PIPING FROM COOLING TOWER TO MECHANICAL ROOM. CONNECT NEW PIPING WITH FLANGE UNION AT WALL OF MECHANICAL ROOM. SEE PLAN VIEW FOR LOCATION.



**COOLING SYSTEM NEW FLOW PLAN**  
NO SCALE



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AND CORRECTIONAL CENTER  
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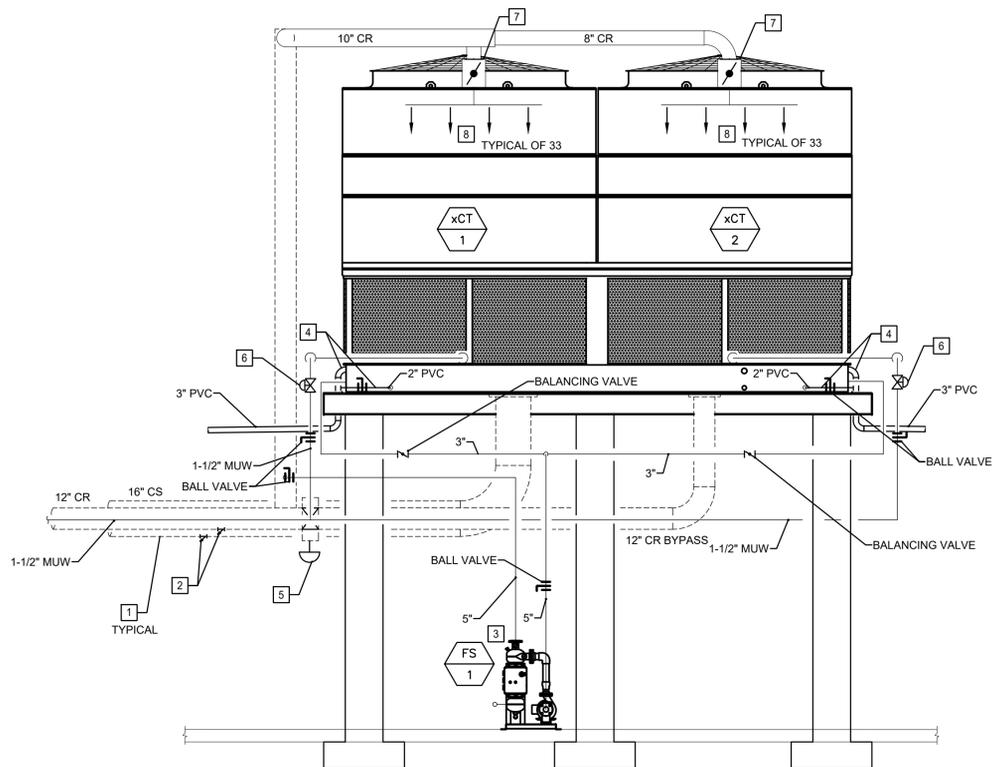
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SITE # 7016  
FACILITY # 9327016019

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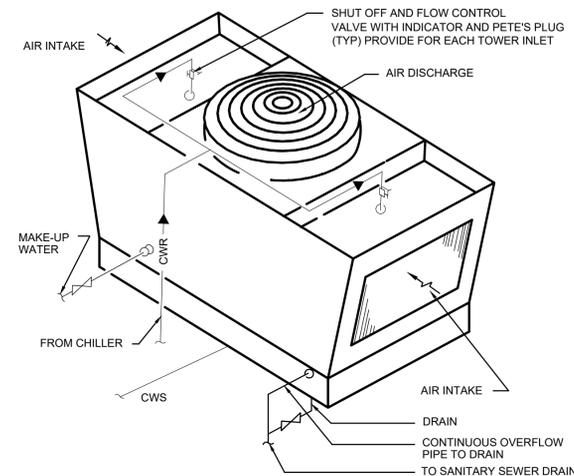
SHEET TITLE: **MECHANICAL  
DETAILS**

SHEET NUMBER: **M105**

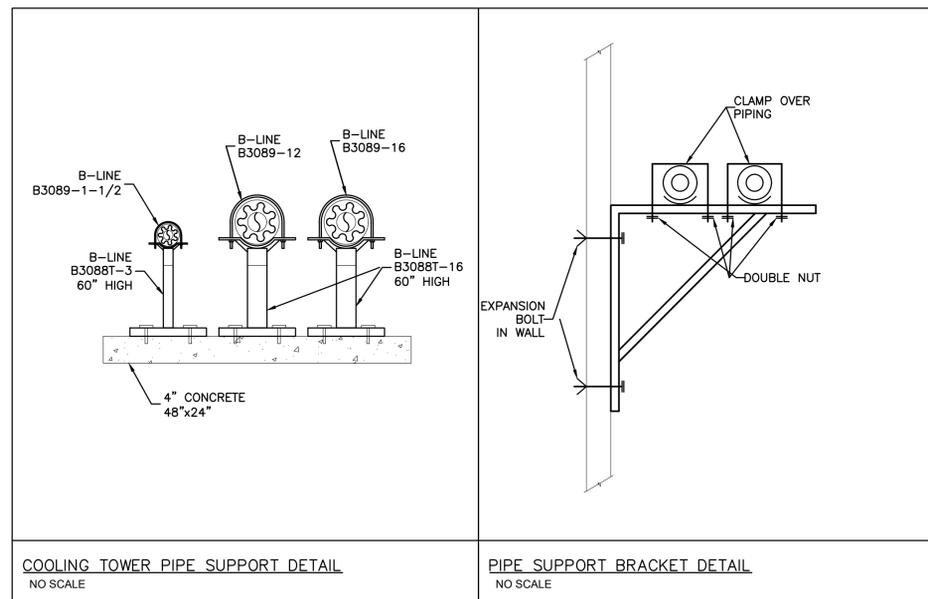


**1** COOLING TOWER EXTERIOR ELEVATION  
M105 NO SCALE

- KEYED NOTES (THIS SHEET ONLY)**
- 1** PROVIDE NEW INSULATION AND JACKETING ON ALL EXTERIOR PIPING. SEE PIPE INSULATION SCHEDULE.
  - 2** PROVIDE DRAIN PORTS AND VALVES AT LOWEST POINT OF NEW CONDENSING WATER PIPING.
  - 3** PROVIDE NEW FILTER SKID PACKAGE WITH INTEGRAL PUMP. PROVIDE NEW PIPING AND BALANCING VALVES AS SHOWN FROM FILTER INLET TO COOLING TOWER FILTER CONNECTIONS. PROVIDE PIPING FROM FILTER OUTLET TO CONDENSING WATER RETURN LINE AS SHOWN. PROVIDE SHUTOFF VALVES ON INLET AND OUTLET PIPING. ROUTE 1" FILTER PURGE LINE FROM PURGE OUTLET TO YARD DRAIN.
  - 4** PROVIDE 3" PVC OVERFLOW LINE AND SLOPE TO YARD DRAIN. PROVIDE 2" DRAIN LINE WITH BALL VALVE AND CONNECT TO OVERFLOW LINE.
  - 5** PROVIDE MODULATING CONTROL VALVE ON CWR BYPASS LINE TO CONTROL COOLING TOWER BYPASS. PROVIDE FLOW SWITCHES AND TEMPERATURE SENSORS FOR PROPER OPERATION.
  - 6** PROVIDE MODULATING CONTROL VALVE ON MUW LINES TO CONTROL COOLING TOWER WATER FILL. PROVIDE FLOAT SWITCHES FOR PROPER OPERATION.
  - 7** PROVIDE BALANCING VALVES AND TEST PLUGS AT CONNECTION TO COOLING TOWER.
  - 8** PROVIDE NEW SPRAY NOZZLES AND ASSOCIATED PIPING SERVING COOLING TOWER. NOZZLES SHALL BE INSTALLED 12" O.C. FOR EACH TOWER.



**2** TYPICAL PIPING CONNECTIONS  
TO COOLING TOWER ISOMETRIC  
M105 NO SCALE



COOLING TOWER PIPE SUPPORT DETAIL  
NO SCALE

PIPE SUPPORT BRACKET DETAIL  
NO SCALE

**GENERAL MECHANICAL NOTES**

1. **GENERAL**
  - A. THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS, AND ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL BE PART OF THESE SPECIFICATIONS.
  - B. THE WORD "PROVIDE" AS USED HEREIN MEANS TO FURNISH AND INSTALL COMPLETE.
  - C. THE TERM "CONTRACTOR" AS USED HEREIN MEANS ANY CONTRACTOR OR SUBCONTRACTOR CONTRACTED TO PERFORM WORK INCLUDED IN AND DEFINED BY THIS SECTION.
  - D. MECHANICAL WORK SHALL BE PROVIDED IN STRICT COMPLIANCE WITH THE 2014 NATIONAL ELECTRICAL CODE (NEC), AND ALL APPLICABLE LOCAL ORDINANCES, STATE LAWS AND FEDERAL LAWS.
2. **PRIOR TO BIDDING:**
  - A. THOROUGHLY REVIEW THE BID INSTRUCTIONS INCLUDING ALL CIVIL, STRUCTURAL, AND MEP CONSTRUCTION DOCUMENTS. OBTAIN AND THOROUGHLY EXAMINE THE MANUFACTURERS'S WRITTEN INSTALLATION INSTRUCTIONS, DETAILS, AND REQUIREMENTS FOR THE SCHEDULED AND SPECIFIED EQUIPMENT AND MATERIALS, FOR AMBIGUOUS, CONTRADICTION, OR CONFLICTING ITEMS WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL REQUEST CLARIFICATION IN A WRITTEN "REQUEST FOR INFORMATION" (RFI), AT LEAST FIVE (5) WORKING DAYS PRIOR TO BID DATE. RFI NOT CLARIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ENGINEER IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK.
  - B. EXISTING CONDITIONS. THE CONTRACT DOCUMENTS ARE BASED ON INFORMATION PROVIDED TO CASE ENGINEERING AT THE TIME OF DESIGN. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO: EXISTING HVAC SYSTEM LOCATIONS, EXISTING DUCT AND PIPING LAYOUTS, CLEARANCES, ETC. REPORT IN WRITING ANY DISCREPANCIES TO THE ARCHITECT (ENGINEER) AT LEAST FIVE (5) BUSINESS DAYS PRIOR TO BID. DISCREPANCIES NOT CLARIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ARCHITECT (ENGINEER) IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK.
  - C. IF THE CONTRACTOR BELIEVES THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE ENGINEER IN WRITING.
  - D. NO ALLOWANCES WILL BE MADE DUE TO CONTRACTOR'S UNFAMILIARITY WITH THE CONSTRUCTION DOCUMENTS OR FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.
  - E. VISIT THE JOB SITE AND THOROUGHLY INVESTIGATE CONDITIONS. THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.
  - F. REFER TO APPLICABLE CODES CITED IN CONSTRUCTION DOCUMENTS, EXAMINE GOVERNING STATE AND LOCAL CODES, AND LOCAL REGULATIONS AND ORDINANCES, AND PROVIDE ALL EQUIPMENT AND INSTALLATION IN STRICT ACCORDANCE WITH SAME.
  - G. REFER TO CONSTRUCTION DOCUMENTS FOR SCHEDULED AND SPECIFIED MATERIALS AND EQUIPMENT. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND DETAILS.
  - H. ALL WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE FACILITIES CONSTRUCTION CRITERIA AND SPECIFICATIONS. THIS CONTRACTOR SHALL EXAMINE THE OWNER'S CRITERIA, AND THEY SHALL BE PART OF THESE SPECIFICATIONS. NO ALLOWANCES WILL BE MADE DUE TO CONTRACTOR'S UNFAMILIARITY WITH THESE DOCUMENTS.
3. **BIDDING**
  - A. SUBMISSION OF A BID ACKNOWLEDGES THAT THE CONTRACTOR HAS REVIEWED THE BID INSTRUCTIONS, EXAMINED ALL CONSTRUCTION DOCUMENTS, AND AGREES TO ALL ITEMS AND CONDITIONS WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR'S BID SHALL INCLUDE ALL MECHANICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING MECHANICAL WORK RELATED TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS.
4. **PERMITS**
  - A. SECURE AND PAY FOR ALL PERMITS, LICENSES, AND INSPECTIONS REQUIRED BY THE AHJ FOR THIS WORK.
5. **SUBSTITUTIONS**
  - A. MANUFACTURERS' EQUIPMENT AND MATERIALS SCHEDULED, NOTED, AND SPECIFIED IN THE CONSTRUCTION DOCUMENTS ARE THE DESIGN STANDARD. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT OR ENGINEER. IN BIDDING, DO NOT ASSUME ACCEPTANCE OF SUBSTITUTIONS. CONTRACTOR MUST STATE IN SUBSTITUTION REQUEST: "PROPOSED SUBSTITUTIONS ARE EQUAL OR OF HIGHER QUALITY, EFFICIENCY AND DEPENDABILITY COMPARED TO THE SPECIFIED EQUIPMENT AND MATERIAL. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ADDITIONAL ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS." IF DEEMED NECESSARY BY THE ARCHITECT OR ENGINEER, SUBSTITUTIONS WHICH ARE NOT APPROVED OR NOT EQUAL TO DESIGN STANDARD SHALL BE REMOVED AND THE SCHEDULED, NOTED, AND SPECIFIED EQUIPMENT AND MATERIALS SHALL BE INSTALLED AT CONTRACTOR'S EXPENSE. SUBMITTING CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ADDITIONAL ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS.
6. **SCHEDULING**
  - A. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION, AS SCHEDULED BY THE GC. PROVIDE COMPLETE INFORMATION AND FULL COOPERATION WITH OTHER CONTRACTORS AND TRADES, AS REQUIRED FOR THE TIMELY COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
  - B. PROVIDE ALL TESTS AND INSPECTIONS REQUIRED BY AHJ.
  - C. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.
7. **SCOPE**
  - A. PROVIDE PERMIT(S), INSPECTIONS, FINAL CERTIFICATE(S) OF INSPECTION BY AHJ, PERMIT AND INSPECTION FEES, AND ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR A COMPLETE AND FULLY OPERATING HVAC SYSTEM.
  - B. INSTALL ALL WORK AND EQUIPMENT RIGID, DEAD LEVEL, PLUMB, AND TRUE-TO-LINE. UNLESS NOTED OTHERWISE, SUPPORT AND MOUNTING OF EQUIPMENT, DUCT, PIPING, ETC. ARE THIS CONTRACTOR'S MEANS AND METHODS. THE CONTRACTOR SHALL UNDERSTAND THE SPECIFIED AND SCHEDULED EQUIPMENT AND MATERIALS AND MEANS AND METHODS OF INSTALLATION. THIS CONTRACTOR SHALL PROVIDE ALL ACCESSORIES REQUIRED FOR PROPER SUPPORT WHETHER SHOWN ON THE DRAWINGS OR NOT. IF SUPPORTS ARE REQUIRED, CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ARCHITECT FOR APPROVAL.
  - C. PROVIDE ACCESSORY MOUNTING HARDWARE INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, STRUT SYSTEMS, ALL THREAD RODS, AND BRACES, AS REQUIRED TO MOUNT EQUIPMENT. PROVIDE STEEL SHAPES AND FRAMES TO SUPPORT EQUIPMENT WHERE NEEDED. ALL SYSTEMS SHALL BE SUPPORTED INDEPENDENT OF AND ISOLATED FROM EQUIPMENT VIBRATION.
  - D. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' PRINTED INSTALLATION AND MAINTENANCE LITERATURE. COMPONENTS REQUIRING PERIODIC MAINTENANCE OR ADJUSTMENTS SHALL BE INSTALLED AS TO PERMIT ACCESS WITHOUT DAMAGE TO STRUCTURE, FINISHES, OR OTHER EQUIPMENT.
  - E. CONTRACTOR SHALL PROVIDE DAILY CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH GENERATED BY THIS WORK.
  - F. AS-BUILT DRAWINGS: DURING CONSTRUCTION, AS WORK PROCEEDS, MAINTAIN AS-BUILT MARK-UPS OF ACTUAL INSTALLATION. AT CONSTRUCTION COMPLETION AND PRIOR TO TURNOVER TO OWNER, PROVIDE FINAL MARK-UPS IN PDF FORMAT TO ARCHITECT AND ENGINEER.
  - G. PROVIDE FINAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, AS NOTED.
  - H. DO NOT ROUTE ANY PIPING OR DUCTWORK ABOVE ELECTRICAL PANELS.
  - I. UNLESS NOTED OTHERWISE, ALL DUCT AND PIPE SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALLS, BEAMS, OR COLUMNS. PIPE SHALL BE RUN AS DIRECT AS POSSIBLE - AVOID UNNECESSARY OFFSETS AND MAXIMIZE HEADROOM.
  - J. PRIOR TO ORDERING EQUIPMENT, THIS CONTRACTOR SHALL PROVIDE FINAL COORDINATION OF ELECTRICAL POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
  - K. CONTRACTOR SHALL MAINTAIN ACTIVITIES WITHIN AREA APPROVED BY OWNER OR GC. CONTRACTOR'S ACTIVITIES SHALL NOT INTERFERE WITH THE OWNER'S OPERATIONS, EXCEPT AS APPROVED.
  - L. EXCEPT THOSE COORDINATED AND APPROVED BY THE G.C., CONTINUITY OF ALL BUILDING SERVICES AND UTILITIES SERVING BUILDING FACILITIES SHALL BE MAINTAINED UNINTERRUPTED AT NO ADDITIONAL COST. PROVIDE ALL NECESSARY CROSS CONNECTIONS AND TEMPORARY CONNECTIONS REQUIRED TO PERFORM THE CONSTRUCTION, AS DETERMINED BY THE G.C., AND NEEDED TO MAINTAIN CONTINUITY OF THE BUILDING SERVICE(S). THIS CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY AND ALL CONNECTIONS, AND/OR REARRANGEMENT OF EXISTING EQUIPMENT, PIPING, ETC., SHALL ASSURE FULL RESUMPTION OF SERVICE(S) AT THE G.C.'S DESIGNATED TIME.
8. **CODE REQUIREMENTS**
  - A. ALL WORK SHALL COMPLY WITH THE CONSTRUCTION DOCUMENTS OR, AS DIRECTED BY THE ARCHITECT (ENGINEER), AND SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF THE AHJ, WHETHER SO SHOWN OR NOT. CONTRACTOR SHALL BE FAMILIAR WITH PROVISIONS OF ALL APPLICABLE CODES AND SHALL INSURE THE WORK COMPLIES WITH ALL LOCAL, STATE AND FEDERAL CODES, TRADE STANDARDS AND MANUFACTURER'S RECOMMENDATIONS. IF CONTRACTOR BELIEVES THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE G.C. IN WRITING. DO NOT INSTALL WORK NOT COMPLYING WITH CODE REQUIREMENTS. IN CASE OF CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY. AS A MINIMUM STANDARD, CONTRACTOR SHALL SATISFY CODE REQUIREMENTS. ALL MODIFICATIONS REQUIRED BY AHJ SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. BEFORE COMMENCING WORK NOT SHOWN IN DOCUMENTS BUT REQUIRED TO ACHIEVE FULL COMPLIANCE WITH CODES, CONTRACTOR SHALL NOTIFY ARCHITECT (ENGINEER).
9. **CUTTING & PATCHING**
  - A. CORE-DRILL OR SAW-CUT EXISTING FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR EQUIPMENT, PIPE, OR DUCTWORK. PRIOR TO CUTTING, PERFORM NON-DESTRUCTIVE TESTING TO VERIFY LOCATION OF STRUCTURAL COMPONENTS. NOTIFY ARCHITECT (ENGINEER) OF ANY DISCREPANCIES. PATCH SURROUNDING AREAS FLUSH WITH ADJACENT SURFACE AND READY TO RECEIVE FINISH. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING. ALL ROOF WORK SHALL MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING. COORDINATE REQUIRED OPENINGS AND PENETRATIONS WITH THE GC AND OTHER TRADES. (OPENINGS IN FOUNDATIONS, FLOORS, WALLS, CEILINGS, AND ROOF SHALL BE BUILT INTO THE STRUCTURE WITH SLEEVES, CURBS, ETC.)
10. **FIRE STOPPING**
  - A. PROVIDE FIRE STOPPING FOR PENETRATIONS OF DUCT, PIPING, AND OTHER MECHANICAL EQUIPMENT THROUGH FIRE-RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES), AND VERTICAL SERVICE SHAFT WALLS AND PARTITIONS. FIRESTOP SYSTEM INSTALLATION MUST MEET REQUIREMENTS OF ASTM E 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF CONSTRUCTION BEING PENETRATED. INSTALL IN STRICT ACCORDANCE WITH UL FIRE RESISTANCE DIRECTORY, AHJ, AND MANUFACTURER'S SPECIFIED REQUIREMENTS. ONLY TESTED FIRESTOP SYSTEMS BY "3M", "HILTI", OR EQUAL SHALL BE USED. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATINGS.
11. **MATERIALS AND WORKMANSHIP**
  - A. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE NEW U.N.O., FREE OF DEFECTS, AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND DETAILS, AND INDEPENDENTLY TESTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY - UNDERWRITERS LABORATORIES (UL) OR INTERTEK (ETL). ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY U.N.O.
  - B. ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND AN

SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. ALL MATERIALS INSTALLED IN PLENUM SPACES SHALL BE LISTED AND LABELED FOR SUCH APPLICATION.

- C. ALL WORK SHALL BE SUPERVISED BY THE INSTALLING CONTRACTOR'S COMPETENT AND SKILLED FOREMAN. ALL WORK SHALL BE PERFORMED BY COMPETENT AND SKILLED WORKERS, WITH ALL TRADE AND MANUFACTURER REQUIRED TRAINING, AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE BEST QUALITY STANDARDS OF THE TRADE AND IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND STANDARDS, INCLUDING APPLICABLE OSHA REGULATIONS. PROPERLY PROTECT WORK DURING CONSTRUCTION. AT CONSTRUCTION COMPLETION, THOROUGHLY CLEAN WORK AND REMOVE ALL DEBRIS FROM THE PREMISES.

**12. PROTECTION OF WORK AND PROPERTY**

- A. PROTECT ALL WORK FROM DAMAGE AND PROTECT THE OWNER'S PROPERTY FROM DIRT, DAMAGE, OR LOSS ARISING FROM CONTRACTOR WORK.
- B. COMPLY WITH OSHA REQUIREMENTS AND TAKE ALL NECESSARY PRECAUTIONS FOR EMPLOYEE SAFETY.
- C. PROTECT ALL OPEN PIPING, DUCT, AND EQUIPMENT, EXISTING AND NEW FROM CONSTRUCTION DIRT AND DUST. COVER, CAP, OR PLUG OPEN ENDS OF PIPING AND DUCT. KEEP EQUIPMENT CLOSED OR COVER AND SEAL EQUIPMENT OPENINGS. ANY MECHANICAL SYSTEMS, NEW AND/OR EXISTING OPERATED DURING CONSTRUCTION SHALL BE PROTECTED BY COVERING EACH RETURN AIR DUCT OPENING WITH MERV 8 FILTERS AND INSTALLING MERV 8 FILTER(S) IN EQUIPMENT FILTER RACK. PRIOR TO TESTING AND BALANCING, REMOVE FILTERS FROM FILTER RACKS AND INSTALL NEW MERV 8 FILTERS.
- D. AT COMPLETION OF WORK, PRIOR TO EQUIPMENT START-UP, REMOVE COVERS, CAPS, OR PLUGS ON DUCT AND PIPING.

**13. DAMAGE BY LEAKS**

- A. THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL DAMAGES TO THE PROPERTY (GROUNDS, WALKS, ROADS, BUILDING COMPONENTS, FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS, HVAC SYSTEMS, AND THEIR EQUIPMENT AND CONTENT) CAUSED BY LEAKS IN THE SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED AS PART OF THIS WORK. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.

**14. DRAWINGS AND SPECIFICATIONS**

- A. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW GENERAL LOCATIONS OF DUCTS, PIPES, AND EQUIPMENT AND THE METHODS OF CONNECTING AND CONTROL. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONDITIONS AND THE WORK OF OTHER TRADES PERMIT. THE DRAWINGS ARE NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL OR ALL OFFSETS, TRANSITIONS, OR FITTINGS REQUIRED FOR A COMPLETE SYSTEM NOR IS IT IMPLIED THAT ALL CONFLICTS BETWEEN BUILDING ELEMENTS AND/OR OTHER TRADES ARE INDICATED. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATION OF DOORS, WINDOWS, LIGHTS, ETC.
- B. THE DRAWINGS AND SPECIFICATIONS ARE MUTUALLY COMPLEMENTARY, AND ANY WORK REQUIRED BY ONE BUT NOT BY THE OTHER SHALL BE REQUIRED BY BOTH.
- C. PRIOR TO INSTALLING EQUIPMENT, DUCT, OR PIPE COORDINATE PROPOSED LOCATIONS WITH EACH TRADE/DISCIPLINE AND GC. EXAMINE EACH DISCIPLINE'S DRAWINGS FOR CONSTRUCTION DETAILS, CEILING HEIGHTS, REQUIRED CLEARANCES, AND SPACE CONSTRAINTS. PROVIDE SYSTEMS INSTALLATION BASED ON THIS EXAMINATION AND COORDINATION. IMMEDIATELY REPORT INSTALLATION CONFLICTS IN WRITING TO THE GC. RESOLVE ALL CONFLICTS WITH GC AND OTHER TRADES PRIOR TO PROCEEDING. INSTALLING CONTRACTOR IS FULLY RESPONSIBLE FOR CORRECT INTERPRETATION AND APPLICATION OF ALL SIZES AND DIMENSIONS.
- D. SIGNIFICANT DEVIATIONS OR CHANGES FROM THE DRAWINGS, WHICH ARE REQUIRED TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS MUST BE REVIEWED AND APPROVED BY THE ARCHITECT (ENGINEER) BEFORE PROCEEDING. IF THE CONTRACTOR BELIEVES CHANGES TO THE CONTRACT DRAWINGS ARE NECESSARY, SHOP DRAWINGS WITH WRITTEN DESCRIPTIONS OF THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE ARCHITECT (ENGINEER) FOR APPROVAL.
- E. ALL PIPE, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED WATERPROOF. PROVIDE ALL FLASHING FOR PIPE AND DUCTWORK PENETRATING BUILDING ENVELOPE. PROVIDE DUCT AND/OR PIPE SLEEVES AT WALL PENETRATIONS. SEAL ANNULAR SPACE WEATHER TIGHT.

**15. CONTROLS**

- A. PROVIDE COMPLETE EQUIPMENT CONTROLS, INCLUSIVE OF ALL COMPONENTS, VOLTAGES, PROGRAMMING, WIRING ETC. FOR COMPLETE AND OPERATIONAL SYSTEMS. ENGAGE THE C&C GROUP FOR CONTROL PACKAGE AND PROGRAMMING.

**16. CHEMICAL TREATMENT**

- A. CHEMICAL TREATMENT SHALL BE SOLE SOURCED BY WALTER LOUIS FLUID TECHNOLOGIES.
- B. CLEAN AND FLUSH SYSTEM AFTER INSTALLATION IS COMPLETE. CLEANING CHEMICALS SHALL BE A BLEND OF INORGANIC PHOSPHATE, CORROSION INHIBITOR, DISPERSANT, AND OIL EMULSIFIER APPROVED FOR DISPOSAL IN SANITARY SEWER SYSTEM. OBTAIN CLEANING AND FLUSHING PROCEDURES AND CHEMICALS FROM OWNER'S WATER TREATMENT SERVICES COMPANY (WALTER LOUIS FLUID TECHNOLOGIES). COORDINATE WATER TREATMENT COMPANY INSPECTION OF PIPING PRIOR TO AND AFTER CHEMICAL CLEANING. CLEAN ALL WATER SYSTEM STRAINERS AFTER CLEANING AND FLUSHING OPERATIONS.
- C. FOLLOWING CLEANING AND FLUSHING, THE SYSTEM SHALL BE INSPECTED BY THE WATER TREATMENT COMPANY FOR CLEANLINESS AND THE INITIAL DOSAGE OF PROTECTIVE TREATMENT SHALL BE APPLIED. THE FINAL PROTECTIVE TREATMENT CHEMICALS ARE NOT A PART OF THIS CONTRACT AND SHALL BE PROVIDED BY THE OWNER.



OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
CORRECTIONS

REBUILD COOLING TOWER,  
BUILDING 7

WOMEN'S EASTERN  
RECEPTION, DIAGNOSTIC,  
AND CORRECTIONAL CENTER  
VANDALIA, MO

PROJECT # C2303-01  
SITE # 7016  
FACILITY # 9327016019

REVISION: \_\_\_\_\_  
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SHEET TITLE: **MECHANICAL  
GENERAL NOTES**

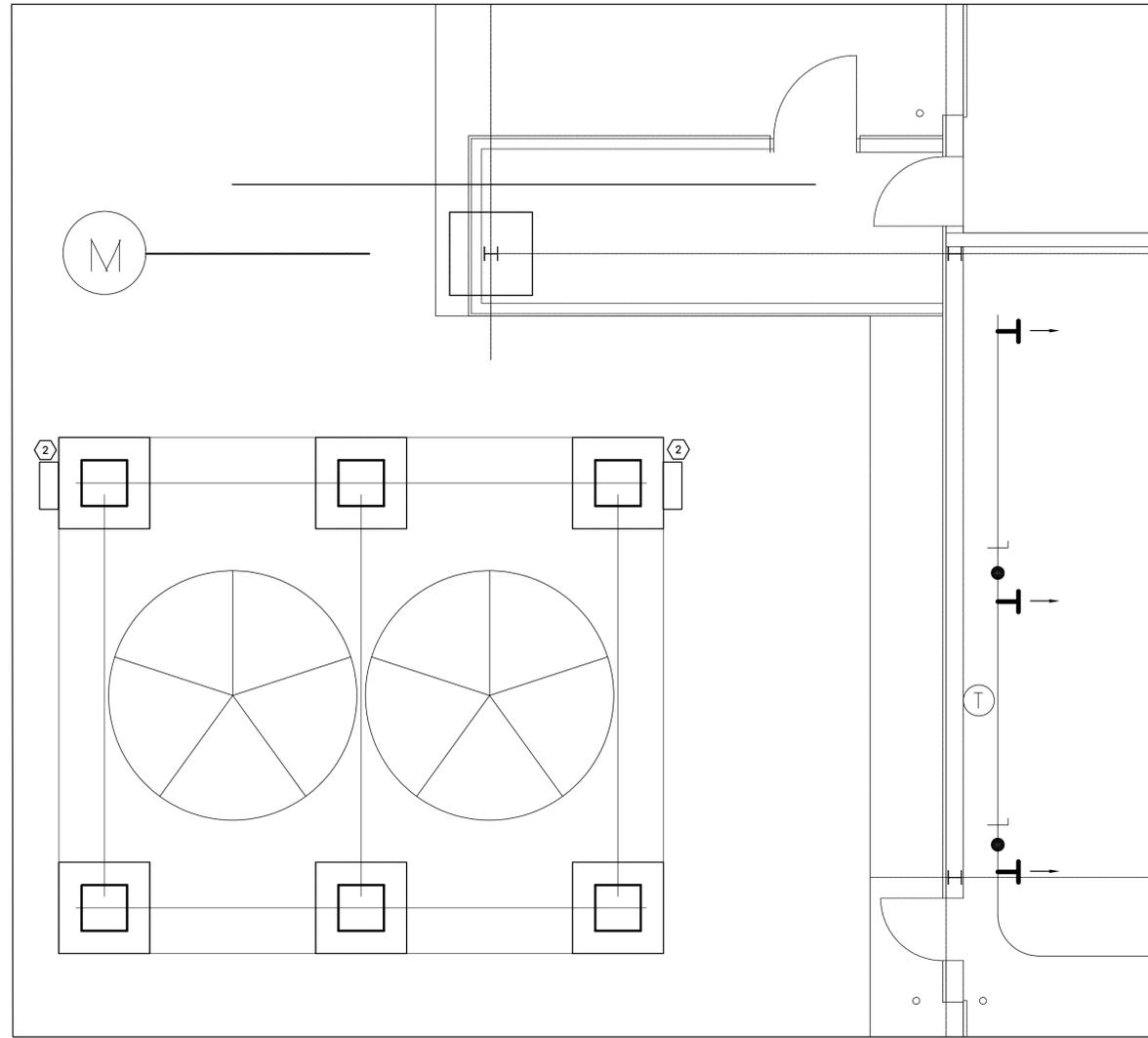
SHEET NUMBER: **M106**

**ELECTRICAL SCOPE OF WORK OVERVIEW:**

THE SCOPE OF WORK LIST BELOW IS INTENDED TO PROVIDE ONLY A BRIEF OVERVIEW OF THE ELECTRICAL SCOPE OF WORK. IT IS NOT INTENDED TO BE AN ALL-INCLUSIVE DEFINITION OF THE ELECTRICAL WORK TO BE PERFORMED. THE COMPLETE SCOPE OF ELECTRICAL WORK TO BE PERFORMED SHALL BE BASED UPON THE DRAWINGS.

PRIOR TO THE SUBMISSION OF A BID PROPOSAL, THE EC SHALL VISIT THE SITE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS, AND SHALL COORDINATE ALL REQUIRED ELECTRICAL WORK WITH THE OWNER, GENERAL CONTRACTOR AND MECHANICAL CONTRACTOR.

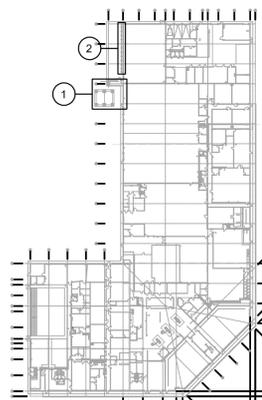
1. EC TO DISCONNECT POWER SUPPLY TO THE EXISTING (2)40hp FAN MOTORS WHILE WORK ON TOWER IS PERFORMED AND RECONNECT POWER SUPPLY TO NEW MOTOR UPON COMPLETION OF INSTALLATION.
  - A. EC TO REUSE EXISTING CONDUIT & FEEDERS TO RECONNECT NEW MOTOR. EC TO PROVIDE NEW MATCHING FEEDERS AS REQUIRED FOR A COMPLETE CONNECTION. NEW FEEDER CONDUCTORS SHALL BE THE SAME MATERIAL AS THE EXISTING TO WHICH BEING CONNECTED.
  - B. EXISTING MOTOR DISCONNECTS TO BE TEMPORARILY REMOVED, SALVAGED, AND RE-INSTALLED BY EC FOR SERVICE TO NEW MOTOR. ALL ELECTRICAL WORK FOR CODE COMPLIANCE AND VERIFY ALL CONNECTIONS TO ENSURE PROPER WORKING ORDER FOR FAN MOTOR OPERATIONS.
2. EC TO REMOVE EXISTING BASIN HEATER CONTROL PANELS AND INSTALL NEW CONTROL PANELS PROVIDED BY EC WITH MATCHING CHARACTERISTICS.
  - A. EC TO PROVIDE NEW MATCHING FEEDERS AS REQUIRED FOR A COMPLETE CONNECTION TO NEW CONTROL PANEL. NEW FEEDER CONDUCTORS SHALL BE THE SAME MATERIAL AS THE EXISTING TO WHICH BEING CONNECTED.
3. EC TO REMOVE EXISTING (2)FLOW CONTROL SENSORS AND REPLACE WITH NEW OF MATCHING CHARACTERISTICS.
  - A. EC TO INSTALL AND CONNECT NEW FLOW CONTROL SENSORS PER MANUFACTURER SPECIFICATIONS.
  - B. EC TO PROVIDE NEW CONTROL WIRING AS REQUIRED FOR A COMPLETE CONNECTION TO NEW CONTROL PANEL. NEW CONTROL WIRING CONDUCTORS SHALL BE THE SAME MATERIAL AND CHARACTERISTICS AS THE EXISTING WIRING TO WHICH BEING CONNECTED.
4. EC TO REMOVE EXISTING (2)LWCO/TEMPERATURE SENSORS AND REPLACE WITH NEW OF MATCHING CHARACTERISTICS.
  - A. EC TO INSTALL AND CONNECT NEW TEMPERATURE SENSORS PER MANUFACTURER SPECIFICATIONS.
  - B. EC TO PROVIDE NEW CONTROL WIRING AS REQUIRED FOR A COMPLETE CONNECTION TO NEW CONTROL PANEL. NEW CONTROL WIRING CONDUCTORS SHALL BE THE SAME MATERIAL AND CHARACTERISTICS AS THE EXISTING WIRING TO WHICH BEING CONNECTED.
5. EC TO REMOVE EXISTING (2)BASIN TEMPERATURE SENSORS AND REPLACE WITH NEW OF MATCHING CHARACTERISTICS.
  - A. EC TO INSTALL AND CONNECT NEW TEMPERATURE SENSORS PER MANUFACTURER SPECIFICATIONS.
  - B. EC TO PROVIDE NEW CONTROL WIRING AS REQUIRED FOR A COMPLETE CONNECTION TO NEW CONTROL PANEL. NEW CONTROL WIRING CONDUCTORS SHALL BE THE SAME MATERIAL AND CHARACTERISTICS AS THE EXISTING WIRING TO WHICH BEING CONNECTED.
6. EC TO REPLACE SEALTITE CONDUIT CONNECTION ON MIXING VALVE. EXISTING WIRING SHALL BE TEMPORARILY DISCONNECTED AND THEN RECONNECTED AND TESTED FOR PROPER EQUIPMENT FUNCTION
7. EC TO REMOVE EXISTING 10x10 JIC BOX AND REPLACE WITH NEW BOX OF SAME SIZE AND CHARACTERISTICS.
  - A. EC TO PROVIDE NEW MATCHING WIRING AS REQUIRED FOR A COMPLETE CONNECTION TO NEW CONTROL PANEL. NEW WIRING CONDUCTORS SHALL BE THE SAME MATERIAL AND CHARACTERISTICS AS THE EXISTING WIRING TO WHICH BEING CONNECTED.
8. EC TO REPLACE AND WIRE (2)VIBRATION CUT-OFF SWITCHES OF MATCHING CHARACTERISTICS.
  - A. EC TO REMOVE EXISTING (2)CUT-OFF SWITCHES AND PROVIDE NEW PER MANUFACTURER SPECIFICATIONS.
  - B. EC TO PROVIDE NEW CONDUIT AND WIRING FOR CONNECTION OF NEW CUT-OFF SWITCHES TO EXISTING FAN VFD. EC TO FIELD VERIFY ALL LOCATIONS.
9. EC TO PROVIDE START-UP ASSISTANCE AS REQUIRED.
10. EC TO COORDINATE ALL ELECTRICAL WORK WITH THE OWNER'S REPRESENTATIVE AND THE MECHANICAL CONTRACTOR.
11. ALL CONTROLS SHALL BE SOURCED AND COORDINATED THROUGH THE FACILITY'S BAS CONTRACTOR. A LIST OF THE CURRENT AND ANY NEW CONTROLS POINTS SHALL BE IDENTIFIED.



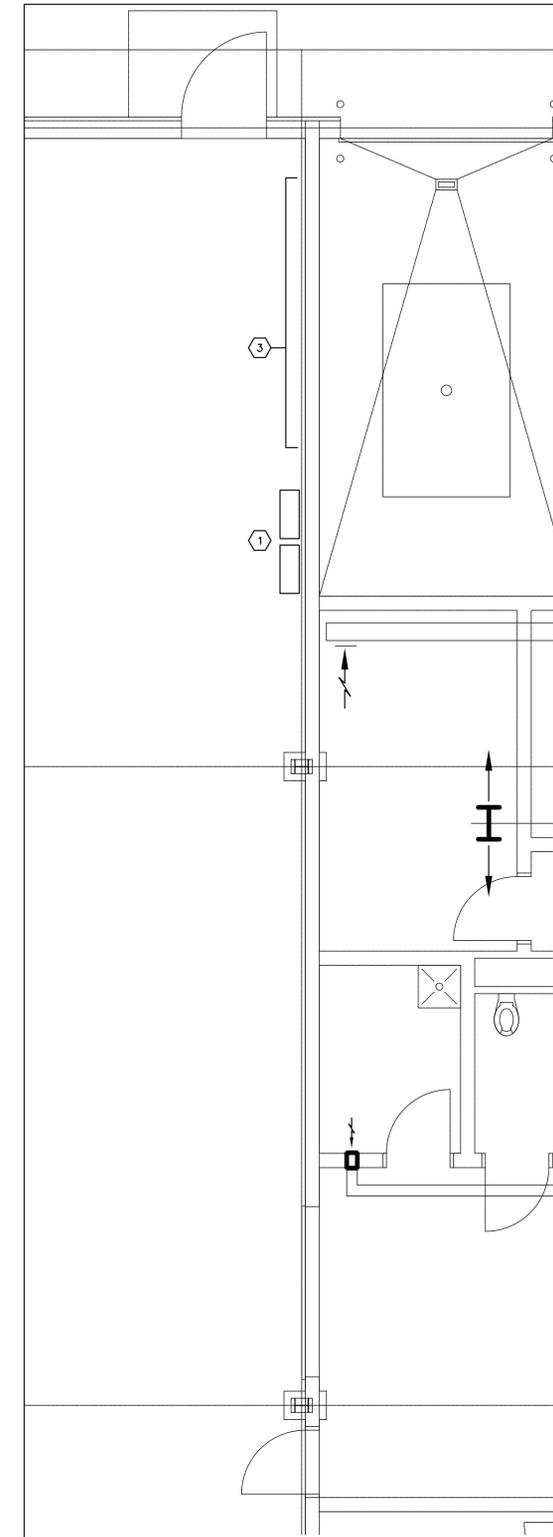
**1 ELECTRICAL POWER PLAN**  
SCALE: 1/4" = 1'-0"

**KEYED NOTES**

- 1 EXISTING COOLING TOWER FAN MOTOR VFDs TO REMAIN FOR SERVICE TO NEW FAN MOTOR. VERIFY EXACT LOCATION IN FIELD.
- 2 EXISTING COOLING TOWER FAN MOTOR DISCONNECT SWITCHES. VERIFY EXACT LOCATION IN FIELD. SEE ELECTRICAL SCOPE OF WORK FOR ADDITIONAL INFORMATION.
- 3 LOCATION OF EXISTING COOLING TOWER DISTRIBUTION PANELS AND CONTROL SYSTEMS. VERIFY EXACT LOCATIONS IN FIELD. SEE ELECTRICAL SCOPE OF WORK FOR ADDITIONAL INFORMATION.



**3 BUILDING KEY PLAN**  
SCALE: 1/128" = 1'-0"



**2 ELECTRICAL ROOM PLAN**  
SCALE: 1/4" = 1'-0"



**CASE**  
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CERTIFICATE OF AUTHORITY NO. 001498

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
CORRECTIONS

REBUILD COOLING TOWER,  
BUILDING 7

WOMEN'S EASTERN  
RECEPTION, DIAGNOSTIC,  
AND CORRECTIONAL CENTER  
VANDALIA, MO

PROJECT # C2303-01  
SITE # 7016  
FACILITY # 9327016019

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
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REVISION: \_\_\_\_\_  
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ISSUE DATE: 08/31/2023

CAD DWG FILE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_

SHEET TITLE: **ELECTRICAL  
POWER  
PLAN**

SHEET NUMBER: **E100**

**STRUCTURAL ABBREVIATIONS**

|         |                           |        |  |
|---------|---------------------------|--------|--|
| #       | POUND(S), NUMBER          | INT    | INTERIOR                                     |
| &       | AND                       | ISF    | INSIDE FACE                                  |
| (E)     | EXISTING                  | J/BRG  | JOIST BEARING                                |
| @       | AT                        | JG     | JOIST GIRDER                                 |
| AB      | ANCHOR BOLT (S)           | JG/BRG | JOIST GIRDER BEARING                         |
| ADDL    | ADDITIONAL                | JST    | JOIST  |
| ALT     | ALTERNATE                 | JT     | JOINT  |
| ARCH    | ARCHITECT(URAL)           | kip    | 1,000 POUNDS                                 |
| B/FTG   | BOTTOM OF FOOTING         | ksi    | kiPS PER SQUARE INCH                         |
| BLDG    | BUILDING                  | LB     | POUND  |
| BLKG    | BLOCKING                  | LLH    | LONG LEG HORIZONTAL                          |
| BM      | BEAM                      | LLV    | LONG LEG VERTICAL                            |
| BMD     | BOTTOM OF METAL DECK      | MAX    | MAXIMUM                                      |
| BN      | BOUNDARY NAIL             | MECH   | MECHANICAL                                   |
| BOT     | BOTTOM                    | MEZZ   | MEZZANINE                                    |
| BP      | BASE PLATE                | MFR    | MANUFACTURER                                 |
| BRG     | BEARING                   | MIN    | MINIMUM                                      |
| BS      | BOUNDARY SCREW            | MISC   | MISCELLANEOUS                                |
| BTWN    | BETWEEN                   | MTL    | METAL  |
| CANT    | CANTILEVER(ED)            | NS     | NEAR SIDE                                    |
| CFS     | COLD-FORMED STEEL         | NTS    | NOT TO SCALE                                 |
| CIP     | CAST-IN-PLACE             | oc     | ON CENTER                                    |
| CJ      | CONTROL OR CONST JOINT    | OH     | OPPOSITE HAND                                |
| CL      | CENTER LINE               | OPNG   | OPENING                                      |
| CLR     | CLEAR                     | OSF    | OUTSIDE FACE                                 |
| CMU     | CONCRETE MASONRY UNIT     | PAF    | POWER-ACTUATED FASTENER                      |
| COL     | COLUMN                    | PARA   | PARAPET                                      |
| CONC    | CONCRETE                  | PEMB   | PRE-ENGINEERED METAL BUILDING (MANUFACTURER) |
| CONN    | CONNECTION                | PIL    | PILASTER                                     |
| CONST   | CONSTRUCTION              | PL     | PLATE  |
| CONT    | CONTINUOUS                | PLBG   | PLUMBING                                     |
| CTR     | CENTER                    | PLYWD  | PLYWOOD                                      |
| DBA     | DEAD BAR ANCHOR           | psf    | POUNDS PER SQUARE FOOT                       |
| DBL     | DOUBLE                    | psi    | POUNDS PER SQUARE INCH                       |
| DC      | DEMAND CRITICAL (WELD)    | PTDF   | PRESSURE TREATED DOUGLAS FIR                 |
| deg     | DEGREE                    | PTDFL  | PRESSURE TREATED DOUGLAS FIR LARCH           |
| DET     | DETAIL(S)                 | PTSPF  | PRESSURE TREATED SPRUCE PINE FIR             |
| DF      | DOUGLAS FIR               | PTSYP  | PRESSURE TREATED SOUTHERN YELLOW PINE        |
| DFL     | DOUGLAS FIR LARCH         | QT     | QUANTITY                                     |
| dia     | DIAMETER                  | REINF  | REINFORCED, REINFORCING                      |
| DIM     | DIMENSION                 | REQD   | REQUIRED                                     |
| DWG     | DRAWING                   | RTU    | ROOF TOP UNIT                                |
| DWL     | DOWEL                     | SCHED  | SCHEDULE                                     |
| EA      | EACH                      | SD     | SNOW DRIFT                                   |
| EE      | EACH END                  | SHTG   | SHEATHING                                    |
| EF      | EACH FACE                 | SIM    | SIMILAR                                      |
| EL      | ELEVATION                 | SL     | SNOW LOAD                                    |
| ELEV    | ELEVATOR                  | SPF    | SPRUCE PINE FIR                              |
| EMB     | EMBEDMENT                 | STD    | STANDARD                                     |
| EN      | EDGE NAIL                 | STL    | STEEL  |
| EOJ     | END OF JOIST              | STRUC  | STRUCTURAL                                   |
| EOS     | EDGE OF SLAB              | SYP    | SOUTHERN YELLOW PINE                         |
| EQ      | EQUAL                     | T&B    | TOP AND BOTTOM                               |
| ETC     | ET CETERA                 | T&G    | TONGUE AND GROOVE                            |
| EW      | EACH WAY                  | T/BRG  | TRUSS BEARING                                |
| EXP     | EXPANSION                 | T/CONC | TOP OF CONCRETE                              |
| EXT     | EXTERIOR                  | T/FTG  | TOP OF FOOTING                               |
| FDN     | FOUNDATION                | T/PAN  | TOP OF PANEL                                 |
| FF      | FINISH FLOOR              | T/PARA | TOP OF PARAPET                               |
| FIN FLR | FINISH FLOOR              | T/PIL  | TOP OF PILASTER                              |
| FLR     | FLOOR                     | T/S    | TOP OF SLAB                                  |
| FRMG    | FRAMING                   | T/STL  | TOP OF STEEL                                 |
| FRT     | FIRE-RETARDENT TREATED    | TYP    | TYPICAL                                      |
| FS      | FAR SIDE                  | UNO    | UNLESS NOTED OTHERWISE                       |
| FTG     | FOOTING                   | USGS   | US GEOLOGICAL SURVEY                         |
| FV      | FIELD VERIFY              | VAR    | VARIES                                       |
| ga      | GAUGE                     | VERT   | VERTICAL                                     |
| GALV    | GALVANIZE(D)              | w/     | WITH   |
| GLB     | GLULAM BEAM               | WHS    | WELDED HEADED STUD(S)                        |
| HDR     | HEADER                    | WP     | WORK POINT                                   |
| HGR     | HANGER                    | WWR    | WELDED WIRE REINFORCEMENT                    |
| HK      | HOOK                      |        |  |
| HORIZ   | HORIZONTAL                |        |  |
| HSS     | HOLLOW STRUCTURAL SECTION |        |  |

**SHOP DRAWING AND SUBMITTAL NOTES**

- SHOP DRAWINGS AND/OR SUBMITTALS SHALL BE FURNISHED FOR ALL STRUCTURAL COMPONENTS. UNLESS OTHERWISE NOTED, THESE SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION IN ACCORDANCE WITH THESE CONTRACT DRAWINGS AND PROJECT SPECIFICATIONS (IF APPLICABLE). CONTRACTOR SHALL ALLOW A MINIMUM OF 2 WEEKS FROM RECEIPT OF SHOP DRAWINGS FOR CASE ENGINEERING INC. TO PROVIDE RESPONSE.
- PRIOR TO SUBMITTAL TO THE ENGINEER, THE CONTRACTOR AND ARCHITECT SHALL HAVE REVIEWED THE SHOP DRAWINGS AND MADE ANY CORRECTIONS REQUIRED. THE CONTRACTOR AND ARCHITECT SHALL STAMP THE DRAWINGS, INDICATING THE SUBMITTAL HAS BEEN REVIEWED.
- STRUCTURAL DRAWINGS ARE THE SOLE PROPERTY OF CASE ENGINEERING. REPRODUCTION OF STRUCTURAL DRAWINGS FOR USE IN SHOP DRAWING SUBMITTALS IS NOT ACCEPTABLE WITHOUT OUR WRITTEN AGREEMENT.

**BUILDING CODES AND STANDARDS USED FOR DESIGN**

|                     |  |  |
|---------------------|--|--|
| 1.                  | INTERNATIONAL BUILDING CODE 2015 EDITION |  |
|                     | ASCE 7-10                                |  |
|                     | OCCUPANCY CATEGORY: III                  |  |
| <b>DESIGN LOADS</b> |  |  |
| 1.                  | DESIGN LOADS                             |  |
|                     | MECH EQUIPMENT DEAD LOAD:                | 65,500 LBS                                     |
| 2.                  | SNOW LOAD DESIGN CRITERIA                |  |
|                     | SNOW LOAD IMPORTANCE FACTOR, I:          | 1.1  |
|                     | GROUND SNOW LOAD, Pg:                    | 20 psf   |
|                     | FLAT ROOF SNOW LOAD, Pf:                 | 20 psf   |
|                     | THERMAL FACTOR, Ct:                      | 1.2  |
|                     | EXPOSURE FACTOR, Ce:                     | 1.0  |
|                     | MINIMUM FROST DEPTH:                     | 2'-6"  |
| 3.                  | WIND LOAD DESIGN CRITERIA                |  |
|                     | ULTIMATE WIND SPEED:                     | 120 MPH (3 SEC GUST)                           |
|                     | WIND EXPOSURE CATEGORY:                  | C  |
| 4.                  | SEISMIC LOAD DESIGN CRITERIA             |  |
|                     | REDUNDANCY FACTOR, ρ                     | 1.0  |
|                     | SEISMIC IMPORTANCE FACTOR, I:            | 1.25   |
|                     | SITE CLASS:                              | D (ASSUMED)                                    |
|                     | SPECTRAL RESPONSE ACCELERATIONS:         | Ss=0.183g, S1=0.099g<br>Sds=0.195g, Sd1=0.159g |
|                     | SEISMIC DESIGN CATEGORY:                 | C  |
|                     | ANALYSIS PROCEDURE USED:                 | EQUIVALENT LATERAL FORCE                       |

**GENERAL STRUCTURAL NOTES**

- THIS DRAWING SET IS TO BE VIEWED AS A WHOLE AND COORDINATED WITH MECHANICAL AND OTHER DISCIPLINES. ALL WORK PERTAINING TO A SPECIFIC CONTRACTOR MAY OR MAY NOT BE SHOWN ON SPECIFIC DRAWING SECTIONS. IT IS EACH SUBCONTRACTOR'S RESPONSIBILITY TO PREPARE HIS BID FROM A COMPLETE SET OF PLANS.
- THE CONTRACTOR SHALL FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE DRAWINGS. DIMENSIONS NOT SHOWN ON PLAN TO BE COORDINATED WITH ARCHITECTURAL PLANS.
- ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY AT ANY SIMILAR SITUATION ELSEWHERE ON THE JOB, EXCEPT WHERE A DIFFERENT DETAIL OR SECTION IS SHOWN.
- THE STRUCTURE SHALL BE ADEQUATELY BRACED AND SHORED DURING ERECTION AGAINST WIND AND ERECTION LOADS. STRUCTURAL MEMBERS ARE DESIGNED FOR "IN-PLACE" LOADS ONLY.
- THE GENERAL CONTRACTOR SHALL VERIFY ALL OPENING SIZES, PAD SIZES, AND LOCATIONS WITH THE RESPECTIVE CONTRACTORS.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND ACTUAL FIELD CONDITIONS.
- ALL ELEVATIONS GIVEN ARE REFERENCED TO FINISHED FLOOR ELEVATIONS AT 0'-0", UNLESS SHOWN AS USGS ELEVATIONS.
- WHERE GENERAL NOTES OR TYPICAL DETAILS CONTRADICT INFORMATION PROVIDED IN BUILDING SECTIONS, THE BUILDING SECTIONS TAKE PRECEDENCE.
- ALL HOLES THROUGH CONSTRUCTION SHALL BE CORE DRILLED OR SAWCUT.
- WHERE INFORMATION PROVIDED IN THESE STRUCTURAL DRAWINGS CONTRADICTS INFORMATION PROVIDED IN PROJECT SPECIFICATIONS, THE SPECIFICATIONS SHALL TAKE PRECEDENCE.
- FOR ARCHITECTURAL, MEP, & STRUCTURAL COORDINATION: MODELED ELEMENTS SHOWN ON STRUCTURAL DRAWINGS ARE NOT THE FINAL CONFIGURATION. ALL COORDINATION SHALL BE PERFORMED BETWEEN THE VARIOUS TRADES AND THE SUPPLIERS OF THESE ELEMENTS FOR THE STRUCTURE, NOT WITH THE STRUCTURAL MODEL.
- THIS DRAWING SET IS TO BE VIEWED AS A WHOLE. ALL TYPICAL DETAILS AND GENERAL NOTES SHOWN IN THESE DRAWINGS ARE APPLICABLE TO THE PROJECT EVEN IF THEY ARE NOT SHOWN ON PLANS OR SECTIONS.
- DESIRED ALTERATIONS TO ANY DETAIL, MEMBER SIZE, MEMBER TYPE, OR ANY OTHER STRUCTURAL COMPONENT SHOWN ON THE DRAWINGS, SHALL BE SUBMITTED AS A REQUEST IN WRITING TO CASE ENGINEERING. CASE ENGINEERING WILL NOT BE RESPONSIBLE FOR CHANGES TO THE DESIGN OR DETAILS MADE DURING SHOP DRAWINGS DEVELOPMENT, DURING CONSTRUCTION, OR AT ANY OTHER TIME WITHOUT WRITTEN CONSENT.

**POST-INSTALLED ANCHOR NOTES**

- POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED ON THESE DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING, AT A MINIMUM, THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE BUILDING CODE.
- TYPICAL POST-INSTALLED ANCHORS IN CONCRETE SHALL COMPLY WITH THE LATEST OF THEIR RESPECTIVE ICC EVALUATION REPORTS.
  - WHEN INSTALLING ANCHORS IN CONCRETE CONTRACTOR SHALL LOCATE EXISTING REINFORCING STEEL, CONDUITS, ETC. PRIOR TO DRILLING FOR ANCHORS. CONTRACTOR SHALL USE CARE AND CAUTION TO PREVENT DAMAGE TO EXISTING REINFORCING BARS.
  - CONTRACTOR SHALL PROVIDE 1" MINIMUM CLEARANCE BETWEEN EDGES OF ANY HOLES FOR POST-INSTALLED ANCHORS AND EXISTING REINFORCING STEEL.
  - CONTRACTOR SHALL USE A HOLLOW DRILL BIT AND VACUUM SYSTEM WHEN DRILLING INTO CEMENTITIOUS MATERIALS.

**DEFERRED SUBMITTALS**

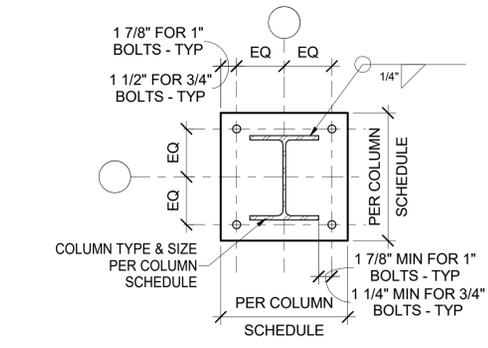
- THE FOLLOWING DESIGN ELEMENTS MUST BE SIGNED & SEALED BY A PROFESSIONAL ENGINEER (PE/SE) REGISTERED IN THE STATE WHERE THIS PROJECT IS LOCATED, AND SUBMITTED TO THE ARCHITECT AND ENGINEER OF RECORD. DESIGNED DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND RECORD.
- STRUCTURAL STEEL CONNECTION CALCULATIONS AND SHOP FABRICATION DRAWINGS FOR CONNECTIONS.

**EXISTING CONSTRUCTION NOTES**

- ALL DIMENSIONS AND ELEVATIONS TO EXISTING CONSTRUCTION ARE FOR REFERENCE ONLY. FIELD VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO PREPARING SHOP DRAWINGS, FABRICATING MEMBERS (STRUCTURAL ITEMS), AND INSTALLATION.
- ALL HOLES THROUGH EXISTING CONSTRUCTION SHALL BE CORE-DRILLED OR SAWCUT. DO NOT CUT ANY REINFORCING STEEL WHILE DRILLING INTO EXISTING CONCRETE. DO NOT TORCH CUT.
- PRIOR TO SUBMITTING ANY SHOP DRAWINGS, DIMENSIONS BETWEEN NEW CONSTRUCTION AND EXISTING CONSTRUCTION SHALL BE SURVEYED BY THE GC AND PROVIDED TO THE SHOP DRAWING DETAILERS.
- NOTIFY STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND STRUCTURAL DRAWINGS.
- FOR ALL EXISTING CONSTRUCTION: DUE TO LIMITED OBSERVATION, OR NOT BEING ABLE TO VISIT THE EXISTING BUILDING DURING THE PREPARATION OF THESE DOCUMENTS, CASE ENGINEERING HAS ASSUMED THE EXISTING STRUCTURE IS IN LIKE-NEW CONDITION WITH NO CORROSION, DETERIORATION, OR DAMAGE, AND WAS CONSTRUCTED PER ANY ORIGINAL CONSTRUCTION DOCUMENTS PROVIDED (IF ANY EXIST). CONTRACTOR SHALL VERIFY THESE ASSUMPTIONS TO THE BEST OF THEIR ABILITY AND NOTIFY THE ENGINEER OF ANY CONCERNS, ISSUES, OR DISCREPANCIES.
- CONTRACTOR TO VERIFY TOP OF ROOF SLOPE IS AT LEAST 1/4 INCH PER FOOT AFTER PLACEMENT OF ANY NEW LOADS APPLIED TO ROOF OR HUNG FROM ROOF FRAMING. LOADS FROM NEW OR REPLACED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO, ROOF TOP MECHANICAL UNITS (RTU'S) AND ASSOCIATED DUCTWORK, HUNG HOODS, MAKE-UP AIR UNITS, CONDENSERS, COMPRESSORS, EXHAUST FANS, HUNG TRANSFORMERS, ROOFTOP GENERATOR(S), RE-ROOF MATERIALS, NEW CEILINGS, HUNG SIGNAGE, HUNG SPRINKLER PIPING, ETC. ALSO VERIFY THAT ALL ROOF DRAINS AND ANY WALL SCUPPERS ARE CLEAR AND FREE-DRAINING. REPORT RESULTS IN WRITING TO ARCHITECT AND STRUCTURAL ENGINEER AS SOON AS PRACTICAL DURING THE CONSTRUCTION PROCESS.

**STRUCTURAL STEEL NOTES**

- FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS IS TO BE IN ACCORDANCE WITH "AISC CODE OF STANDARD PRACTICE", LATEST EDITION.
- STEEL FABRICATOR SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM AND BE DESIGNATED AN AISC-CERTIFIED PLANT, CATEGORY STD.
- IT IS THE RESPONSIBILITY OF THE STEEL FABRICATOR TO DESIGN THE CONNECTIONS. CONNECTIONS ARE TO BE IN ACCORDANCE WITH CURRENT AISC STANDARDS AND APPLICABLE GOVERNMENT CODES. ALL CONNECTIONS SHALL BE BOLTED OR WELDED AND SHALL DEVELOP 60% OF THE ALLOWABLE UNIFORM LOAD TABULATED IN THE AISC "MANUAL OF STEEL CONSTRUCTION" FOR ALLOWABLE STRESS DESIGN, 10k (ASD), OR SHEAR REACTION SHOWN ON THE DRAWINGS, WHICHEVER IS GREATER. PROVIDE MINIMUM NUMBER OF ASTM F3125 GRADE A325 OR A490 BOLTS AS SHOWN IN THE "STRUCTURAL STEEL BOLTED CONNECTIONS" TABLE.
- ANCHOR RODS TO BE ASTM F1554, GRADE 36 FULLY-THREADED RODS WITH PLATE WASHERS AND NUTS ON THE BOTTOM UNLESS NOTED OTHERWISE.
- BOLT HOLES SHALL BE 1/16" OVERSIZE UNLESS OTHERWISE NOTED ON THE DRAWINGS. FIELD BURNING OF BOLT HOLES SHALL NOT BE PERMITTED.
- WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN CONFORMANCE WITH AWS D1.1, USING E70 SERIES ELECTRODES, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- ALL STEEL SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123.
- FABRICATE ALL BEAMS WITH THE MILL CAMBER UP.
- CONNECTION NOTATION IS AS FOLLOWS. LOADS SHOWN ON PLAN/DETAILS ARE ALLOWABLE (ASD):
  - SHEAR = V OR {}
- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS AND GRADES:
  - WIDE FLANGE = A992, fy = 50ksi
  - ANGLES, CHANNELS, PLATES, BARS, AND RODS = A36, fy = 36ksi
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.



**A TYP BASE PLATE DETAIL**  
S100 N.T.S.

STATE OF MISSOURI  
MICHAEL PARSON,  
GOVERNOR



8/31/23

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Engineering Inc.  
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CERTIFICATE OF AUTHORITY NO. 001498

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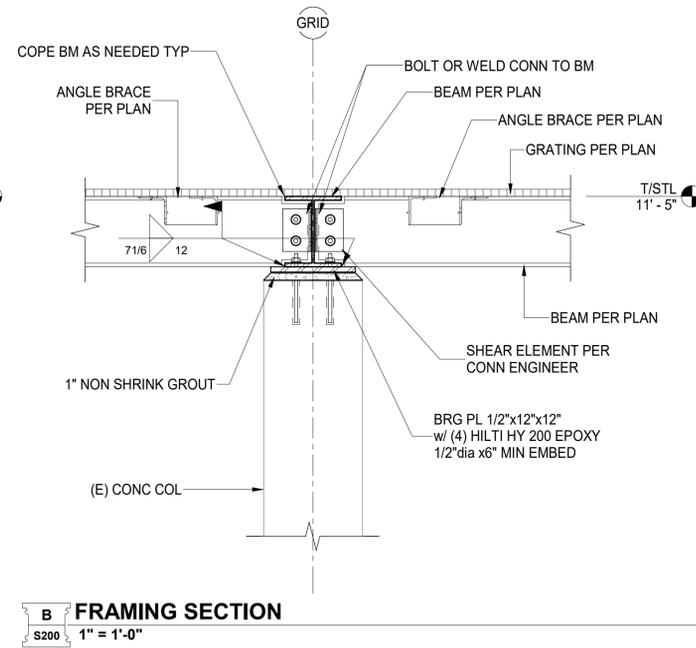
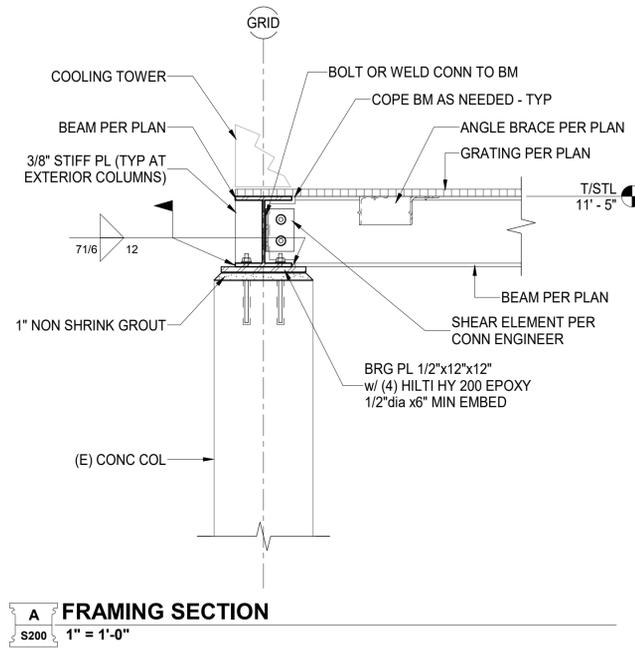
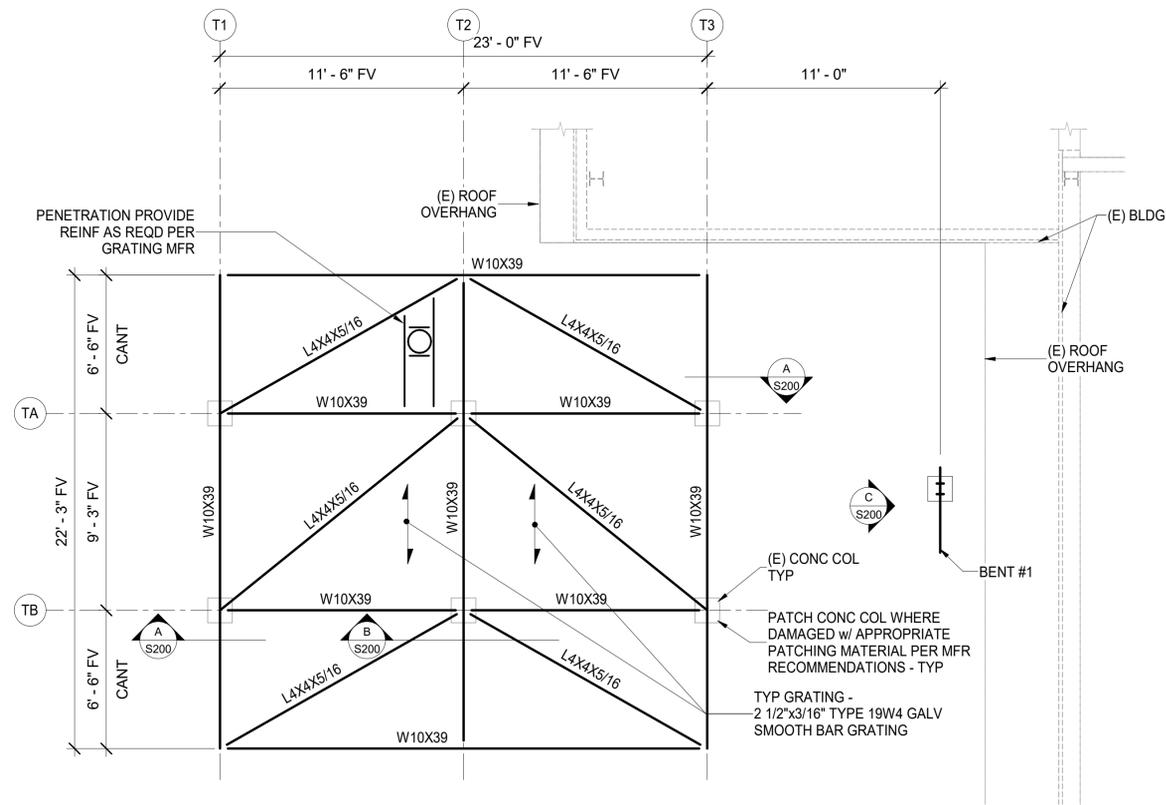
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SITE # 7016  
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ISSUE DATE: 08/31/2023

CAD DWG FILE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_ CN  
CHECKED BY: \_\_\_\_\_ KK  
DESIGNED BY: \_\_\_\_\_

SHEET TITLE: GENERAL NOTES

SHEET NUMBER S100

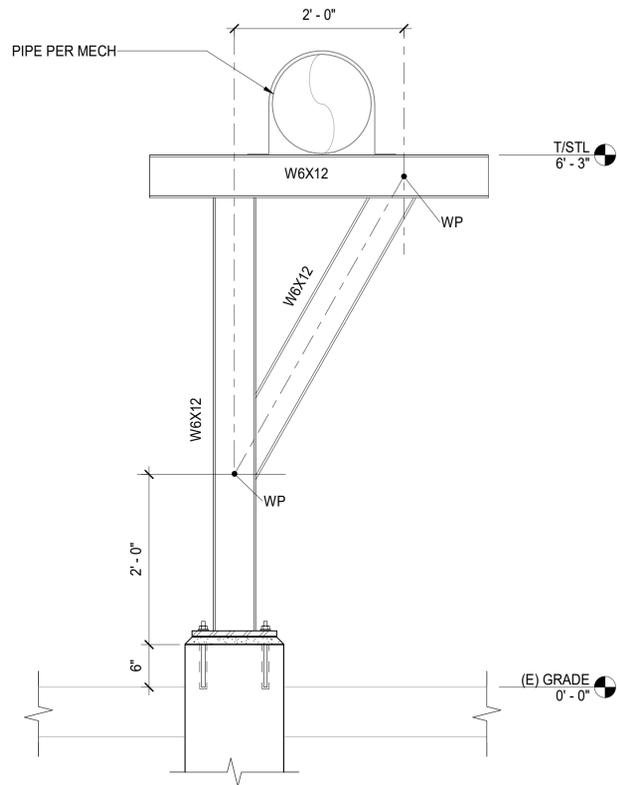


**TOWER FRAMING PLAN**

**PLAN NOTES**

- SEE SHEET S100 FOR GENERAL NOTES AND TYPICAL DETAILS.
- GALVANIZE ALL STEEL AND ANCHOR BOLTS.
- TOUCH UP WELDS WITH GALVANIZED PAINT.
- ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 0'-0"
  - T/STL = TOP OF STEEL ELEVATION = PER PLAN

SCALE: 1/4" = 1'-0"



**C FRAMING SECTION**  
S200 1" = 1'-0"

STATE OF MISSOURI  
MICHAEL PARSON,  
GOVERNOR



8/31/23

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RECEPTION, DIAGNOSTIC,  
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PROJECT # C2303-01  
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CAD DWG FILE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_ CN  
CHECKED BY: \_\_\_\_\_ KK  
DESIGNED BY: \_\_\_\_\_

SHEET TITLE: PLATFORM PLAN  
AND DETAILS

SHEET NUMBER S200