UPDATE HVAC & CHILLER, TROOP D
CRIME LAB
SPRINGFIELD, MISSOURI

TRUE ENGINEERING
MECHANICAL • ELECTRICAL • PLUMBING

1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OWNER:	STATE OF MISSOURI MIKE KEHOE, GOVERNOR DEPARTMENT OF PUBLIC SAFETY DIVISION OF HIGHWAY PATROL	DESIGNER:	TRUE ENGINEERING GROUP, LLC
		PROJECT NUMBER:	R2517-01
PROJECT MANAGEMENT:	OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION	SITE NUMBER: FACILITY NUMBER:	6022 8136022022

SHEET NUMBER:

G-001

1 OF 27 SHEETS
10/06/2025

1 OVERALL SITE PLAN
NOT TO SCALE

PROTECTION OF EXISTING FACILITIES:

1. CONTRACTOR SHALL PROVIDE, INSTALL, AND REMOVE TEMPORARY FLOOR PROTECTION THROUGHOUT ALL WORK AREAS.

2. TEMPORARY FLOOR PROTECTIONS SHALL BE INSTALLED PRIOR TO COMMENCING WORK INCLUDING DEMOLITION AND SHALL NOT BE REMOVED UNTIL ALL CONSTRUCTION ACTIVITY IS COMPLETED.

3. TEMPORARY FLOOR PROTECTION SHALL BE EQUAL TO RAM BOARD.

4. FLOOR PROTECTION SHALL NOT BE REQUIRED FOR MECHANICAL ROOMS AND EXPOSED CONCRETE FLOORS.

5. CONTRACTOR SHALL PROVIDE MEASURES FOR PROTECTION OF OWNERS POSSESSIONS INCLUDING BUT NOT LIMITED TO FURNITURE, FURNISHINGS, APPLIANCES, AND/OR EQUIPMENT FROM PHYSICAL DAMAGE, DUST, AND DEBRIS. RECOMMENDATION IS TO PROVIDE PLASTIC OVER ALL OWNER EQUIPMENT AND FURNISHINGS.

6. RELOCATE AND REINSTALL ALL OWNER FURNITURE AS REQUIRED FOR INSTALLATION OF NEW EQUIPMENT.

7. PROTECTION DESCRIBED ABOVE SHALL BE PROVIDED BY THE PRIME CONTRACTOR AND APPLY TO ALL SHEETS FOR THE PROJECT UNLESS OTHERWISE NOTED.

ELECTRICAL DEMO NOTES:

1. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL DEMOLISHED ITEMS.

2. THE CONTRACTOR SHALL FIELD VISIT THE SITE TO CONFIRM EXISTING CONDITIONS.

3. REMOVE CONDUIT, CONDUCTORS, SUPPORTS, ETC. BACK TO ELECTRICAL PANEL.

4. CONTRACTOR SHALL REPAIR ALL HOLES CREATED BY REMOVAL OF EXISTING ELECTRICAL EQUIPMENT.

MECHANICAL DEMO NOTES:

1. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL DEMOLISHED ITEMS.

2. THE CONTRACTOR SHALL FIELD VISIT THE SITE TO CONFIRM EXISTING CONDITIONS.

3. REMOVE SUPPORTS, ETC. ASSOCIATED WITH DEMOLISHED ITEMS.

4. CONTRACTOR SHALL REPAIR ALL HOLES CREATED BY REMOVAL OF EXISTING MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING.

DIVISION 26 SPECIFICATIONS:

26 05 00 - COMMON WORK FOR ELECTRICAL

1. ALL ELECTRICAL WORK SHALL BE PERFORMED BY LICENSED ELECTRICAL CONTRACTOR AND SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE 2023 NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

2. ALL PERMIT AND INSPECTION FEES SHALL BE INCLUDED IN BID.

3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED EXISTING CONDITIONS.

4. THE PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED.

5. CONDUIT/CONDUCTOR LAYOUTS ARE DIAGRAMMATIC. FIELD COORDINATE EXACT LOCATIONS AND ROUTINGS WITH STRUCTURE, PIPING, LIGHT FIXTURES, CONDUITS, ETC.

6. COOPERATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK, CONDUIT, ETC. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.

7. MAINTAIN ALL CLEARANCES REQUIRED BY ELECTRICAL EQUIPMENT. COORDINATE WITH MECHANICAL AND PLUMBING CONTRACTOR TO MAINTAIN ALL CLEARANCES REQUIRED FOR EQUIPMENT. DO NOT ROUTE PIPING, DUCTWORK, ETC. ABOVE ELECTRICAL PANELS.

8. REFER TO SPECIFICATION SHEET SECTIONS FOR ADDITIONAL REQUIREMENTS.

DIVISION 23 SPECIFICATIONS:

23 05 00 - COMMON WORK FOR HEATING, VENTILATION, AND AIR CONDITIONING

1. ALL MECHANICAL WORK SHALL BE PERFORMED BY LICENSED MECHANICAL CONTRACTOR AND SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE 2024 INTERNATIONAL MECHANICAL CODE AND ALL APPLICABLE LOCAL CODES AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

2. ALL PERMIT AND INSPECTION FEES SHALL BE INCLUDED IN BID.

3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED EXISTING CONDITIONS.

4. THE PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED.

5. DUCTWORK LAYOUTS ARE DIAGRAMMATIC. FIELD COORDINATE EXACT LOCATIONS AND ROUTINGS WITH STRUCTURE, PIPING, LIGHT FIXTURES, CONDUITS, ETC.

6. COOPERATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK, CONDUIT, ETC. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.

7. MAINTAIN ALL CLEARANCES REQUIRED BY MECHANICAL EQUIPMENT. COORDINATE WITH ELECTRICAL AND PLUMBING CONTRACTOR TO MAINTAIN ALL CLEARANCES REQUIRED FOR EQUIPMENT. DO NOT ROUTE PIPING, DUCTWORK, ETC. ABOVE ELECTRICAL PANELS.

8. REFER TO SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.

DIVISION 22 SPECIFICATIONS:

22 05 00 - COMMON WORK FOR PLUMBING

1. ALL PLUMBING WORK SHALL BE PERFORMED BY LICENSED PLUMBING CONTRACTORS AND SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE 2024 INTERNATIONAL PLUMBING CODE AND THE 2024 INTERNATIONAL FUEL GAS CODE AND ALL APPLICABLE LOCAL CODES AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

2. ALL PERMIT AND INSPECTION FEES SHALL BE INCLUDED IN BID.

3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. NO EXTRAS WILL BE PAID DUE TO UNANTICIPATED EXISTING CONDITIONS.

4. THE PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED.

5. PIPING LAYOUTS ARE DIAGRAMMATIC. FIELD COORDINATE EXACT LOCATIONS AND ROUTINGS WITH STRUCTURE, DUCTWORK, LIGHT FIXTURES, CONDUITS, ETC.

6. COOPERATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID INTERFERENCES AND CONFLICTS. BEFORE ANY PIPING, DUCTWORK, CONDUIT, ETC. IS INSTALLED, IT SHALL BE COORDINATED CAREFULLY BETWEEN ALL TRADES.

7. MAINTAIN ALL CLEARANCES REQUIRED BY PLUMBING EQUIPMENT. COORDINATE WITH ELECTRICAL AND HVAC CONTRACTOR TO MAINTAIN ALL CLEARANCES REQUIRED FOR EQUIPMENT. DO NOT ROUTE PIPING, DUCTWORK, ETC. ABOVE ELECTRICAL PANELS.

8. REFER TO SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.

SHEET INDEX

DIVISION 26 POWER LEGEND

- J — JUNCTION BOX
- DUPLEX, 20-AMP RECEPTACLE
- GF — DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, 20-AMP RECEPTACLE
- WP — DUPLEX WITH WEATHERPROOF ENCLOSURE, 20-AMP RECEPTACLE
- LIGHTING AND POWER PANELBOARD
- DISTRIBUTION POWER PANELBOARD

DIVISION 23 HVAC LEGEND

- MITER ELBOW
- CONDENSING UNIT
- FLEX DUCT
- RECTANGULAR TO ROUND TAKE-OFF WITH DAMPER
- SUPPLY DIFFUSER
- RETURN GRILLE
- EXHAUST GRILLE
- MANUAL BALANCING DAMPER
- CONTROL DAMPER WITH ACTUATOR
- THERMOSTAT
- HVAC EQUIPMENT HATCHING. INDICATES NEW EQUIPMENT TO BE PROVIDED AND INSTALLED REFER TO MECHANICAL SCHEDULE(S).
- SUPPLY ELBOW UP/DOWN
- RETURN ELBOW UP/DOWN
- EXHAUST ELBOW UP/DOWN

DIV 23 MECHANICAL PIPING LEGEND

- CHWS — CHILLED WATER SUPPLY PIPING
- CHWR — CHILLED WATER RETURN PIPING
- D — CONDENSATE DRAIN PIPING
- REFRIGERANT PIPING
- MANUAL SHUT-OFF VALVE
- REDUCER
- PRESSURE REDUCING VALVE
- WYE STRAINER

DIV 22 PLUMBING LEGEND

- D — CONDENSATE DRAIN PIPING
- DOMESTIC COLD WATER PIPING
- MANUAL SHUT-OFF VALVE
- REDUCER

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

GENERAL SCOPE PLAN

SHEET NUMBER:

G-101

2 of 27 SHEETS
10/06/2025

11/20/2025 11:27:02 AM

EXISTING CEILING DEVICES:

THE MEP COORDINATION PLANS ARE A GENERAL ASSESSMENT OF EXISTING DEVICES THAT ARE LOCATED WITHIN THE AREA OF CONSTRUCTION. ALL DEVICES REQUIRING REMOVAL MAY NOY BE SPECIFICALLY NOTED ALONG WITH EXTRA DEVICES THAT ARE NOTED THAT MAY NOT REQUIRE RELOCATION. CONTRACTOR SHALL BE REQUIRED TO REMOVE, RELOCATE, AND REINSTALL ALL VISIBLE DEVICES AS REQUIRED FOR INSTALLATION OF NEW AIR TERMINAL UNITS.

MEP CEILINGS NOTE:

REMOVE AND REINSTALL EXISTING CEILING TILES AND CEILING GRID FOR INSTALLATION OF NEW TERMINAL UNITS. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REINSTALLING ALL LIGHT FIXTURES, FIRE SPRINKLER HEADS, FIRE ALARM DEVICES, SECURITY DEVICES, AND SPEAKERS AS REQUIRED.

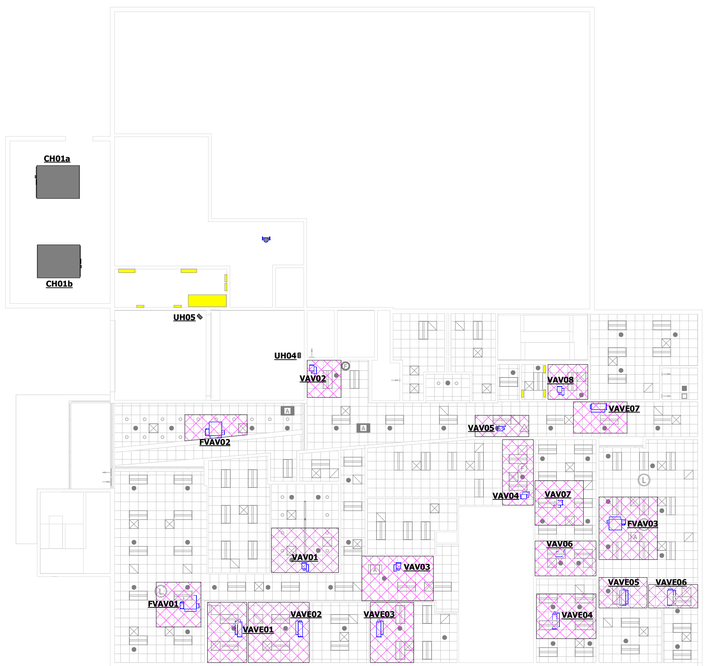
REMOVE AND REINSTALL EXISTING MEP DEVICES IN EXPOSED CEILING AREA FOR INSTALLATION OF NEW TERMINAL UNITS. CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REINSTALLING ALL LIGHT FIXTURES, FIRE SPRINKLER HEADS, FIR ALARM DEVICES, SECURITY DEVICES, AND SPEAKERS AS REQUIRED.

MEP COORDINATION LEGEND

- FIRE SPRINKLER
- OCCUPANCY SENSOR
- SMOKE DETECTOR
- WIRELESS ACCESS POINT
- CEILING SPEAKER
- ROUND OR SQUARE CAN LIGHT
- 2x4 LAY-IN FIXTURE
- LINEAR FIXTURE

2 MEP COORDINATION PLAN - LEVEL 2
1/16" = 1'-0"

3 MEP COORDINATION PLAN - LEVEL 3
1/16" = 1'-0"



1 MEP COORDINATION PLAN - LEVEL 1
1/16" = 1'-0"

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

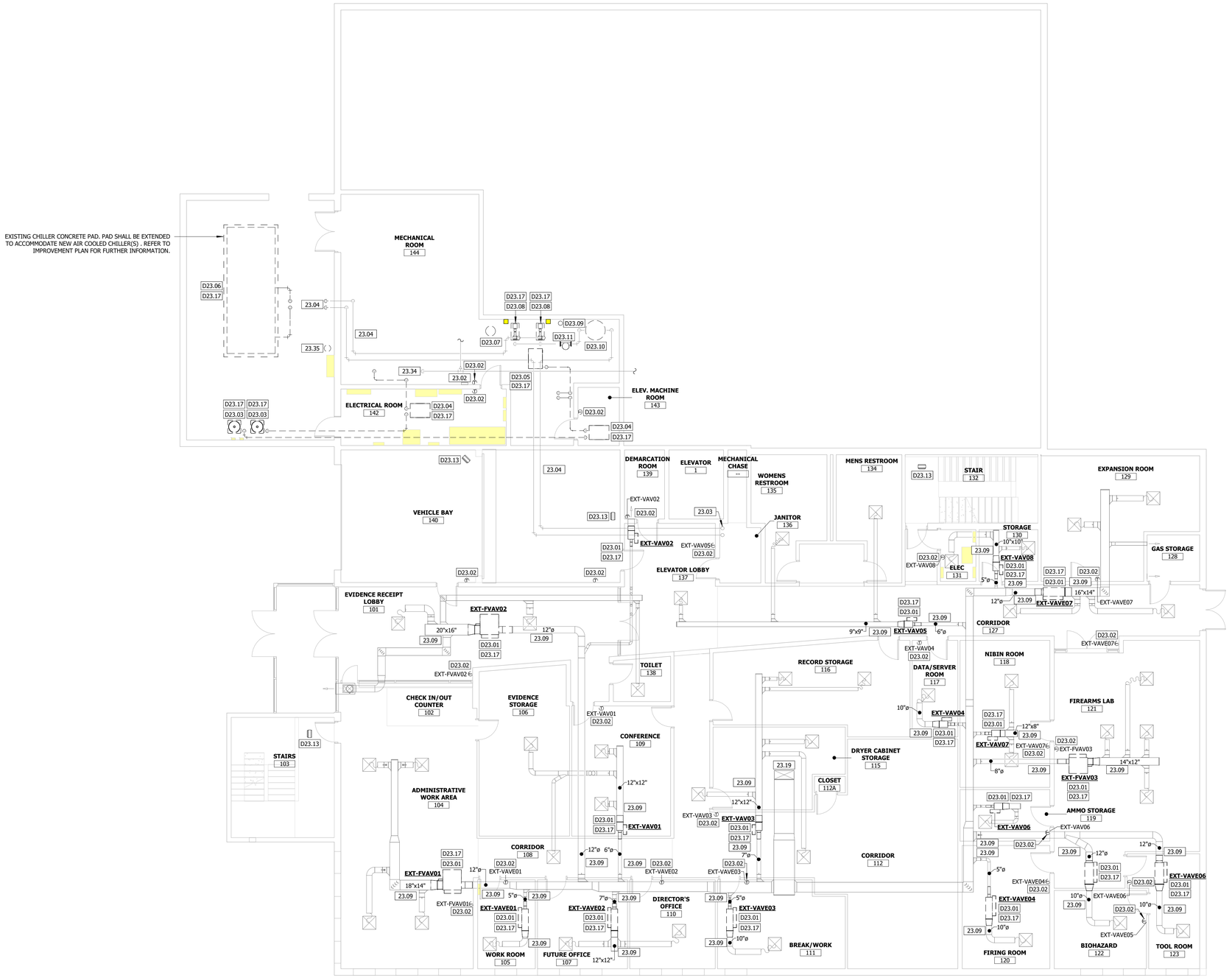
CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:
MEP COORDINATION PLAN

SHEET NUMBER:
MEP-101

3 of 27 SHEETS
10/06/2025

11/20/2025 11:27:04 AM



1 DEMO MECHANICAL PLAN - LEVEL 1
1/8" = 1'-0"

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.02	LOCATION OF EXISTING JOHNSON CONTROLS METASYS BUILDING AUTOMATION PANEL. RUN NEW COMMUNICATIONS TRUNK THROUGHOUT BUILDING AS REQUIRED FOR UPGRADED EQUIPMENT AND CONTROLS.
23.03	EXISTING CHILLED WATER PIPING UP TO SECOND FLOOR SHALL REMAIN.
23.04	EXISTING CHILLED WATER PIPING SHALL REMAIN.
23.09	EXISTING DUCTWORK SHALL REMAIN. SHOWN FOR SYSTEM CLARITY.
23.19	EXISTING 36"X16" SUPPLY DUCT DOWN FROM SECOND FLOOR SHALL REMAIN.
23.34	EXISTING DOMESTIC WATER SERVICE ENTRANCE.
23.35	EXISTING CONTROLS CONDUIT SHALL REMAIN.
D23.01	REMOVE EXISTING TERMINAL UNIT AND ASSOCIATED DUCT CONNECTIONS. EXISTING AIR DISTRIBUTION SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR FURTHER INFORMATION.
D23.02	REMOVE EXISTING THERMOSTAT AND ASSOCIATED LOW VOLTAGE WIRE. EXISTING RACEWAY SHALL REMAIN.
D23.03	REMOVE EXISTING CONDENSING UNIT, ASSOCIATED EQUIPMENT STAND, AND ASSOCIATED REFRIGERANT PIPING SHOWN DASHED.
D23.04	REMOVE EXISTING AIR HANDLER UNIT, ASSOCIATED REFRIGERANT PIPING SHOWN DASHED, AND ASSOCIATED CONDENSATE DRAIN PIPING SHOWN DASHED.
D23.05	REMOVE EXISTING FAN COIL UNIT ASSOCIATED HYDRONIC PIPING, AND CONDENSATE DRAIN PIPING. CAP TAPS AT MAIN CHILLED WATER PIPING.
D23.06	REMOVE EXISTING AIR COOLED CHILLER AND ASSOCIATED CHILLED WATER PIPING CONNECTIONS AND ACCESSORIES. EXISTING CHILLER IS A YORK MODEL YCI0157.
D23.07	REMOVE EXISTING EXPANSION TANK AND ASSOCIATED CONNECTIONS AND ACCESSORIES. EXISTING PIPING SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR ADDITIONAL REQUIREMENTS.
D23.08	REMOVE EXISTING PUMP AND ASSOCIATED SUCTION DIFFUSER, ISOLATION VALVE, AND TRIPLE DUTY VALVE. REFER TO IMPROVEMENT PLAN FOR FURTHER REQUIREMENTS.
D23.09	REMOVE EXISTING CHEMICAL FEEDER AND ASSOCIATED CONNECTIONS AND ACCESSORIES. EXISTING PIPING SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR ADDITIONAL REQUIREMENTS.
D23.10	REMOVE EXISTING BUFFER TANK AND ASSOCIATED CONNECTIONS AND ASSOCIATED ISOLATION VALVES. EXISTING PIPING SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR ADDITIONAL REQUIREMENTS.
D23.11	REMOVE EXISTING AIR SEPARATOR AND ASSOCIATED PIPING ACCESSORIES. REFER TO IMPROVEMENT PLAN FOR FURTHER DIRECTION.
D23.13	REMOVE EXISTING UNIT HEATER. REFER TO IMPROVEMENT PLANS FOR ADDITIONAL REQUIREMENTS.
D23.17	REMOVE EXISTING CONTROLLERS AND ASSOCIATED LOW VOLTAGE WIRING TO EXISTING MECHANICAL EQUIPMENT, SENSORS, AND ZONE SENSORS. EXISTING RACEWAY SHALL REMAIN FOR NEW EQUIPMENT CONNECTIONS INTO BUILDING AUTOMATION SYSTEM.

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI · JACOB ADAM NELSON · NUMBER PE-2009018758 · PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO MECHANICAL PLAN - LEVEL 1

SHEET NUMBER:

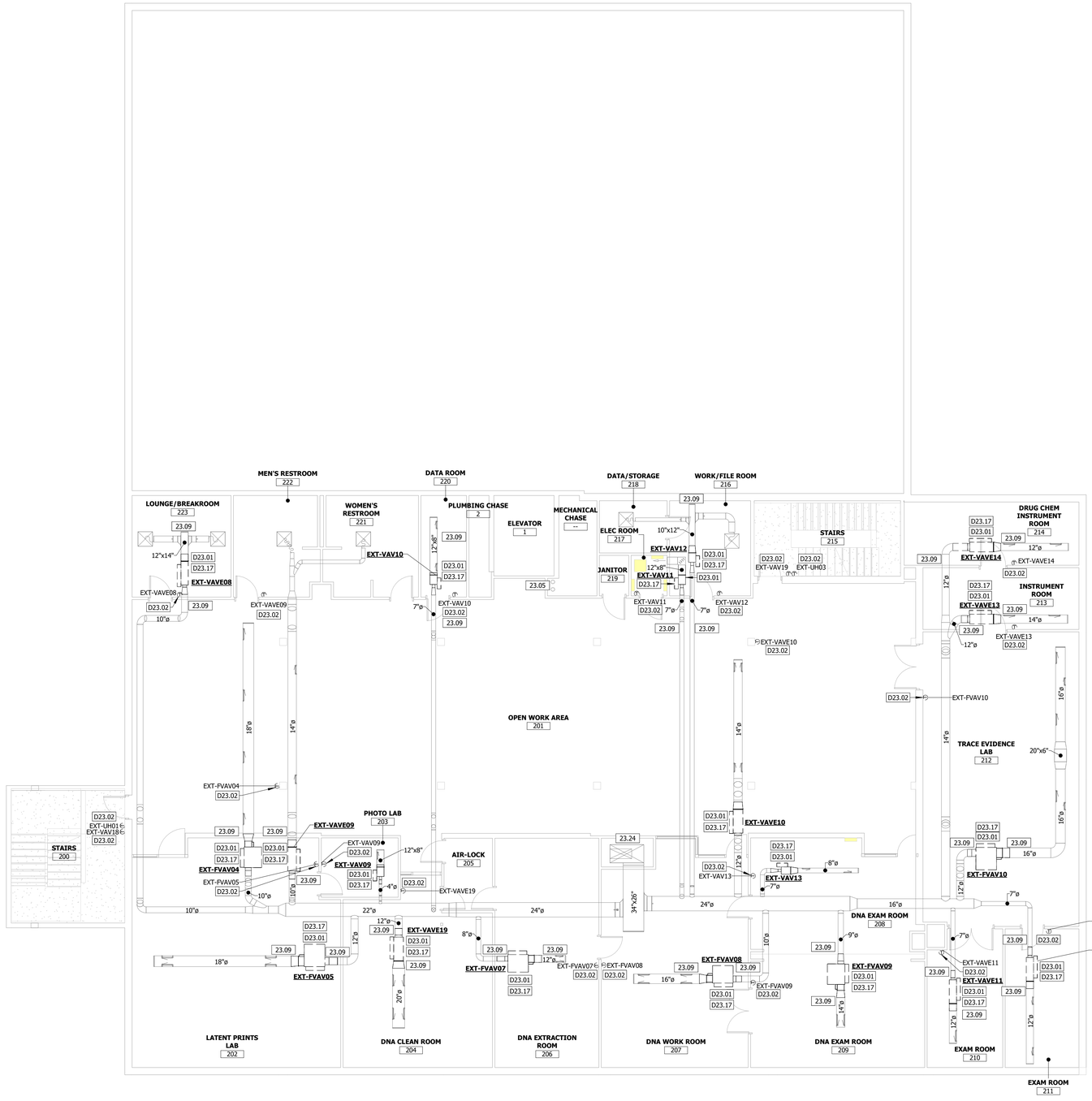
M-001

4 of 27 SHEETS
10/06/2025

11/20/2025 11:27:05 AM

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.05	EXISTING CHILLED WATER PIPING UP TO THIRD FLOOR SHALL REMAIN.
23.09	EXISTING DUCTWORK SHALL REMAIN. SHOWN FOR SYSTEM CLARITY.
23.24	EXISTING 56"X30" SUPPLY DUCT UP AND 36"X16" SUPPLY DUCT DOWN SHALL REMAIN.
D23.01	REMOVE EXISTING TERMINAL UNIT AND ASSOCIATED DUCT CONNECTIONS. EXISTING AIR DISTRIBUTION SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR FURTHER INFORMATION.
D23.02	REMOVE EXISTING THERMOSTAT AND ASSOCIATED LOW VOLTAGE WIRE. EXISTING RACEWAY SHALL REMAIN.
D23.17	REMOVE EXISTING CONTROLLERS AND ASSOCIATED LOW VOLTAGE WIRING TO EXISTING MECHANICAL EQUIPMENT, SENSORS, AND ZONE SENSORS. EXISTING RACEWAY SHALL REMAIN FOR NEW EQUIPMENT CONNECTIONS INTO BUILDING AUTOMATION SYSTEM.



1 DEMO MECHANICAL PLAN - LEVEL 2
1/8" = 1'-0"

11/20/2025 11:27:07 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO MECHANICAL PLAN - LEVEL 2

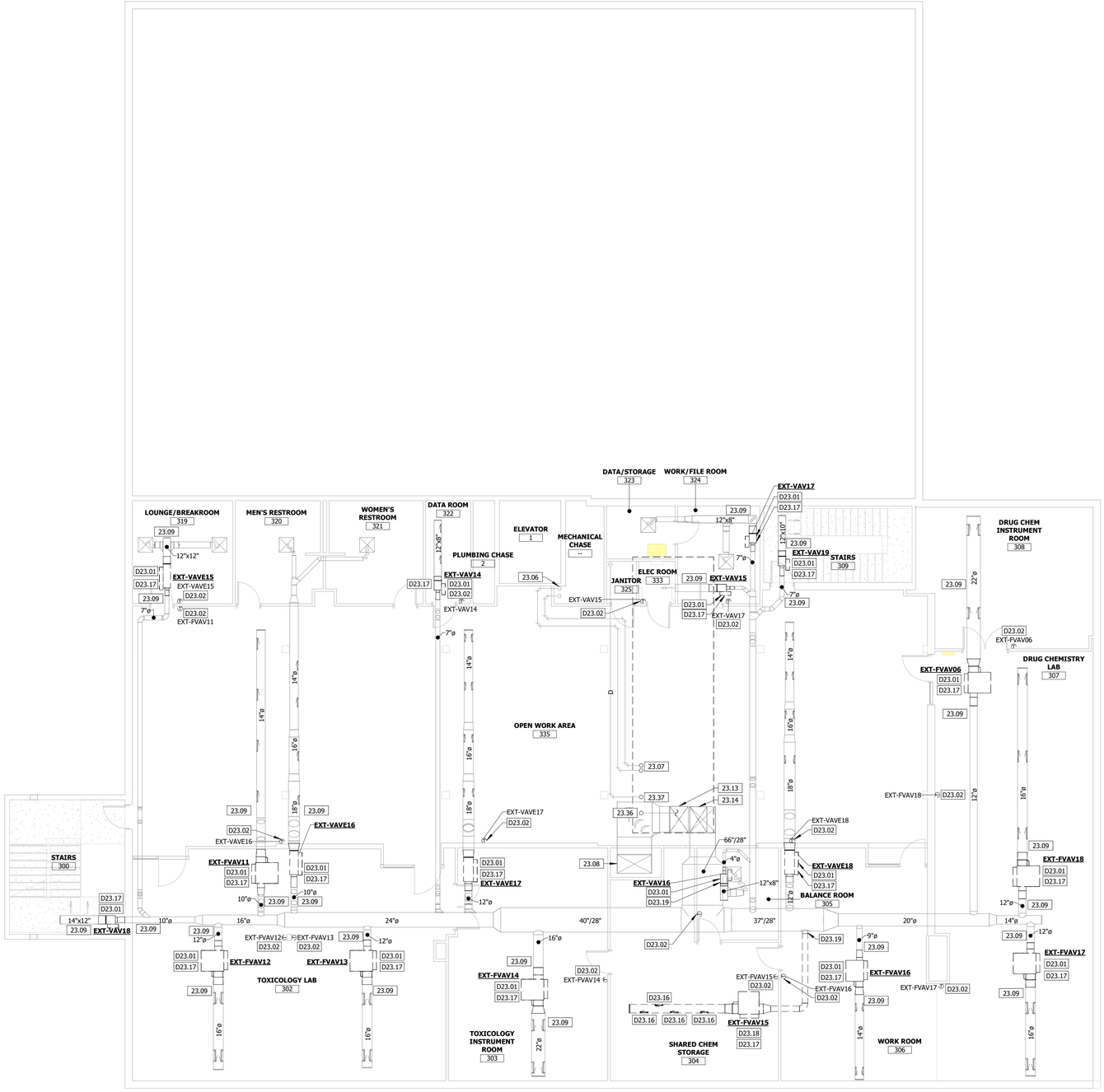
SHEET NUMBER:

M-002

5 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.06	EXISTING CHILLED WATER PIPING DOWN TO SECOND FLOOR SHALL REMAIN.
23.07	EXISTING HYDRONIC PIPING UP TO AIR HANDLING UNIT ON ROOF SHALL REMAIN.
23.08	EXISTING 56"X30" SUPPLY DUCT DOWN TO SECOND FLOOR AND ALL DOWNSTREAM DUCTWORK SHALL REMAIN.
23.09	EXISTING DUCTWORK SHALL REMAIN. SHOWN FOR SYSTEM CLARITY.
23.13	EXISTING 42"X30" SUPPLY DUCT UP TO AIR HANDLING UNIT SHALL REMAIN.
23.14	EXISTING 42"X28" SUPPLY DUCT UP TO AIR HANDLING UNIT SHALL REMAIN.
23.36	EXISTING 0.75" DOMESTIC WATER PIPING TO STEAM GENERATOR SHALL REMAIN.
23.37	EXISTING 2" CONDENSATE DRAIN SHALL REMAIN. REMOVE CONNECTION TO EXISTING UNIT ON ROOF.
D23.01	REMOVE EXISTING TERMINAL UNIT AND ASSOCIATED DUCT CONNECTIONS. EXISTING AIR DISTRIBUTION SHALL REMAIN. REFER TO IMPROVEMENT PLANS FOR FURTHER INFORMATION.
D23.02	REMOVE EXISTING THERMOSTAT AND ASSOCIATED LOW VOLTAGE WIRE. EXISTING RACEWAY SHALL REMAIN.
D23.16	REMOVE EXISTING AIR TERMINAL AND ASSOCIATED DUCTWORK SHOWN DASHED.
D23.17	REMOVE EXISTING CONTROLLERS AND ASSOCIATED LOW VOLTAGE WIRING TO EXISTING MECHANICAL EQUIPMENT, SENSORS, AND ZONE SENSORS. EXISTING RACEWAY SHALL REMAIN FOR NEW EQUIPMENT CONNECTIONS INTO BUILDING AUTOMATION SYSTEM.
D23.18	REMOVE EXISTING TERMINAL UNIT AND ASSOCIATED DUCTWORK SHOWN DASHED.
D23.19	REMOVE EXISTING MEDIUM PRESSURE DUCTWORK SHOWN DASHED. SEAL CONNECTION AT MAIN AND REFER TO IMPROVEMENT PLAN FOR FURTHER CLARIFICATION.



1 DEMO MECHANICAL PLAN - LEVEL 3
1/8" = 1'-0"

11/20/2025 11:27:08 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO MECHANICAL PLAN - LEVEL 3

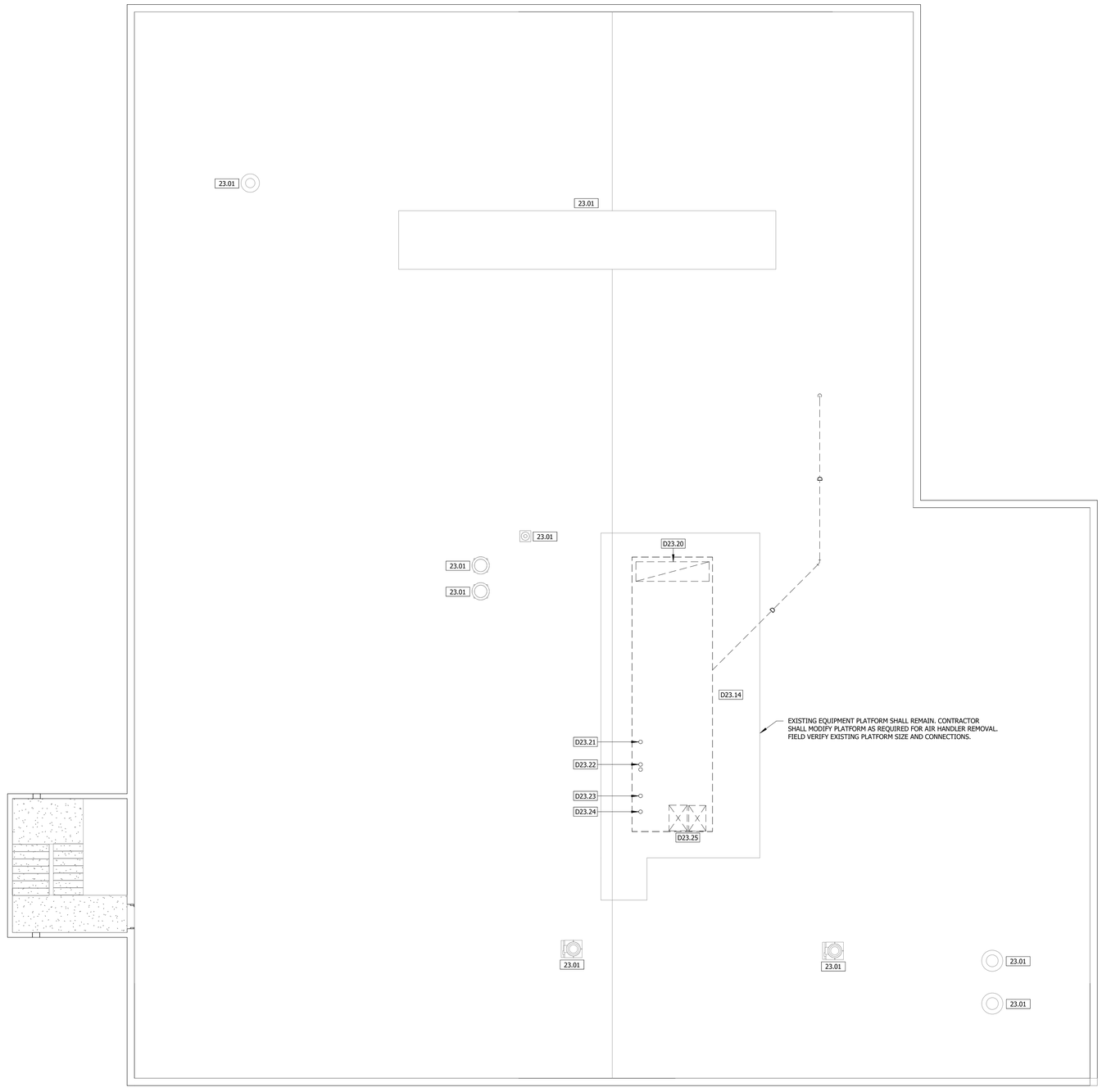
SHEET NUMBER:

M-003

6 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.01	EXISTING MECHANICAL EQUIPMENT SHALL REMAIN.
D23.14	REMOVE EXISTING TEMTROL CUSTOM AIR HANDLER. EXISTING EQUIPMENT STAND SHALL REMAIN. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFY THE EXISTING UNIT SIZE AND WEIGHT PRIOR TO REMOVING FROM ROOF.
D23.20	REMOVE EXISTING 32"X120" RETURN CONNECTION TO EXISTING AIR HANDLING UNIT. EXISTING DUCTWORK DOWN THROUGH ROOF SHALL REMAIN.
D23.21	REMOVE EXISTING 2" CONDENSATE DRAIN PIPING CONNECTION TO AIR HANDLER AND ALL ASSOCIATED DRAIN PIPING SHOWN DASHED ON THE ROOF.
D23.22	REMOVE EXISTING 4" CHILLED WATER SUPPLY AND RETURN PIPING CONNECTIONS TO AIR HANDLER AND ASSOCIATED VALVING AND CONTROL ACCESSORIES. EXISTING PIPING DOWN THROUGH ROOF SHALL REMAIN.
D23.23	REMOVE EXISTING 2" CONDENSATE DRAIN PIPING CONNECTION TO AIR HANDLER. EXISTING PIPING DOWN THROUGH ROOF SHALL REMAIN.
D23.24	REMOVE EXISTING 0.75" DOMESTIC COLD WATER CONNECTION TO STEAM GENERATOR IN AIR HANDLER. EXISTING PIPING DOWN THROUGH ROOF SHALL REMAIN.
D23.25	REMOVE EXISTING 48"X90" SUPPLY CONNECTION TO EXISTING AIR HANDLING UNIT. EXISTING DUCTWORK DOWN THROUGH ROOF SHALL REMAIN.



1 DEMO MECHANICAL ROOF PLAN
1/8" = 1'-0"

11/20/2025 11:27:08 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO MECHANICAL ROOF PLAN

SHEET NUMBER:

M-004

7 of 27 SHEETS
10/06/2025

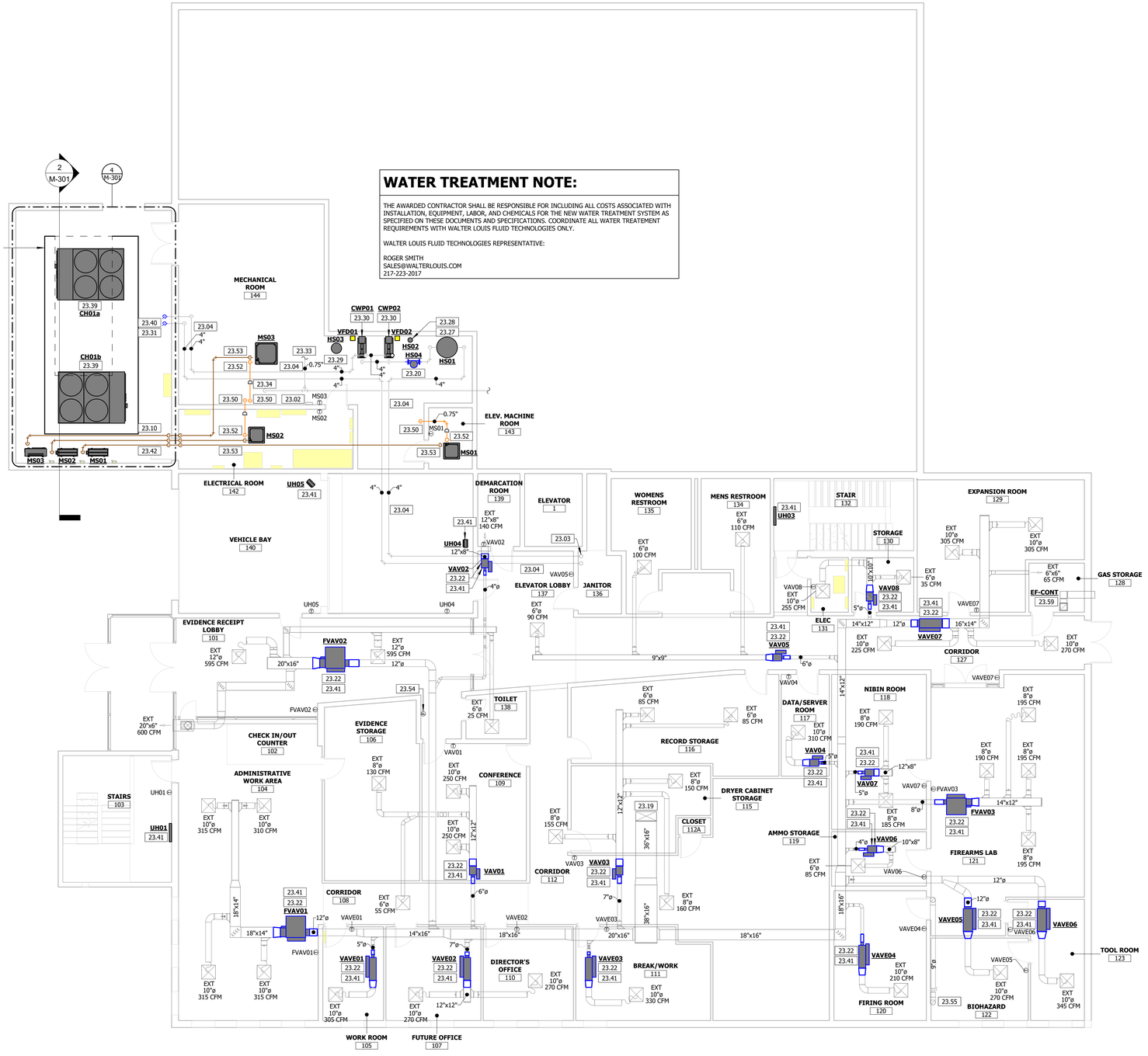
EXTEND EXISTING CONCRETE PAD TO ACCOMMODATE NEW AIR COOLED CHILLERS. REFER TO CHILLER INSTALLATION MANUAL FOR ADEQUATE CLEARANCES AROUND EQUIPMENT. REFER TO DETAIL 3/M301 FOR CONCRETE PAD EXTENSION REQUIREMENTS.

WATER TREATMENT NOTE:

THE AWARDED CONTRACTOR SHALL BE RESPONSIBLE FOR INCLUDING ALL COSTS ASSOCIATED WITH INSTALLATION, EQUIPMENT, LABOR, AND CHEMICALS FOR THE NEW WATER TREATMENT SYSTEM AS SPECIFIED ON THESE DOCUMENTS AND SPECIFICATIONS. COORDINATE ALL WATER TREATEMENT REQUIREMENTS WITH WALTER LOUIS FLUID TECHNOLOGIES ONLY.

WALTER LOUIS FLUID TECHNOLOGIES REPRESENTATIVE:

ROGER SMITH
SALES@WALTERLOUIS.COM
217-223-2017



1 MECHANICAL PLAN - LEVEL 1
1/8" = 1'-0"

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.02	LOCATION OF EXISTING JOHNSON CONTROLS METASYS BUILDING AUTOMATION PANEL. RUN NEW COMMUNICATIONS TRUNK THROUGHOUT BUILDING AS REQUIRED FOR UPGRADED EQUIPMENT AND CONTROLS.
23.03	EXISTING CHILLED WATER PIPING UP TO SECOND FLOOR SHALL REMAIN.
23.04	EXISTING CHILLED WATER PIPING SHALL REMAIN.
23.10	REFRIGERANT LINES UP EXTERIOR WALL ABOVE DOOR. SEAL REFRIGERANT LINE PENETRATIONS THROUGH EXTERIOR WALL WEATHER TIGHT.
23.19	EXISTING 36"X16" SUPPLY DUCT DOWN FROM SECOND FLOOR SHALL REMAIN.
23.20	CONNECT NEW AIR SEPARATOR TO EXISTING 4" CHILLED WATER PIPING. PROVIDE HIGH CAPACITY AIR VENT AND RECONNECT EXISTING MAKE UP WATER CONNECTIONS TO CLOSED LOOP.
23.22	INSTALL NEW TERMINAL UNIT. RECONNECT TO EXISTING UPSTREAM AND DOWNSTREAM DUCTWORK. MODIFY EXISTING DUCTWORK AS REQUIRED FOR NEW INSTALLATION. REBALANCE EXISTING AIR DEVICE TO CFM SHOWN ON DRAWINGS.
23.27	RECONNECT EXISTING PIPING TO NEW CHILLED WATER BUFFER TANK. PROVIDE NEW ISOLATION VALVES, UNIONS, AND AIR VENT.
23.28	RECONNECT EXISTING PIPING TO NEW SHOT FEEDER. PROVIDE NEW ISOLATION VALVES AND UNIONS.
23.29	RECONNECT EXISTING PIPING TO NEW EXPANSION TANK. PROVIDE NEW ISOLATION VALVES, UNIONS, GAUGES, AND AIR VENT.
23.30	INSTALL NEW CHILLED WATER PUMP. RECONNECT TO EXISTING 4" CHILLED WATER PIPING. PROVIDE NEW ISOLATION VALVES, SUCTION DIFFUSER, GAUGES, AND TRIPLE DUTY VALVE.
23.31	CONNECT NEW 4" CHILLED WATER PIPING TO EXISTING 4" CHILLED WATER PIPING. REFER TO DETAIL 1/M301 FOR PIPING CONTINUATION.
23.33	PROVIDE NEW MAKEUP WATER BACKFLOW PREVENTER, PRV VALVE, AND MAKEUP WATER METER TO CLOSED LOOP SYSTEM. EXISTING MAKEUP WATER PIPING AND INSULATION SHALL REMAIN.
23.34	EXISTING DOMESTIC WATER SERVICE ENTRANCE.
23.39	INSTALL NEW CHILLERS ON CONCRETE PAD. MODIFY EXISTING PAD AS REQUIRED FOR NEW EQUIPMENT LOCATIONS.
23.40	FURNISH AND INSTALL HEAT TRACE ON ALL EXTERIOR CHILLED WATER PIPING. COORDINATE WITH ELECTRICAL CONTRACTOR.
23.41	FURNISH AND INSTALL NEW CONTROLLER AND LOW VOLTAGE WIRING FOR NEW TERMINAL UNIT.
23.42	ROUTE ALL REFRIGERANT PIPING ON WALL. OFFSET SHOWN FOR CLARITY.
23.50	TERMINATE 0.75" CONDENSATE DRAIN AT FLOOR DRAIN.
23.52	CONNECT 0.75" CONDENSATE DRAIN TO FAN COIL UNIT.
23.53	REFRIGERANT LINES TO ASSOCIATED FAN COIL UNIT. SIZE PER MANUFACTURERS RECOMMENDATIONS.
23.54	PROVIDE DIFFERENTIAL PRESSURE SENSOR REFERENCING INTERIOR/EXTERIOR. PROVIDE NECESSARY TUBING TO EXTERIOR WALL AND COORDINATE LOCATION WITH ENGINEER AND OWNER. SENSOR SHALL BE UTILIZED TO CONTROL BUILDING PRESSURE. COORDINATE WITH BAS CONTRACTOR.
23.55	REBALANCE EXISTING EXHAUST HOOD. FIELD VERIFY EXHAUST CFM REQUIREMENTS WITH LAB EQUIPMENT ON SITE.
23.59	EXISTING EXHAUST FAN AND ASSOCIATED CONTROLS SHALL REMAIN. PROVIDE NEW BAS CONTROLS FOR INTEGRATION INTO UPGRADED BAS SYSTEM.

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI · JACOB ADAM NELSON · NUMBER PE-2009018758 · PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

MECHANICAL PLAN - LEVEL 1

SHEET NUMBER:

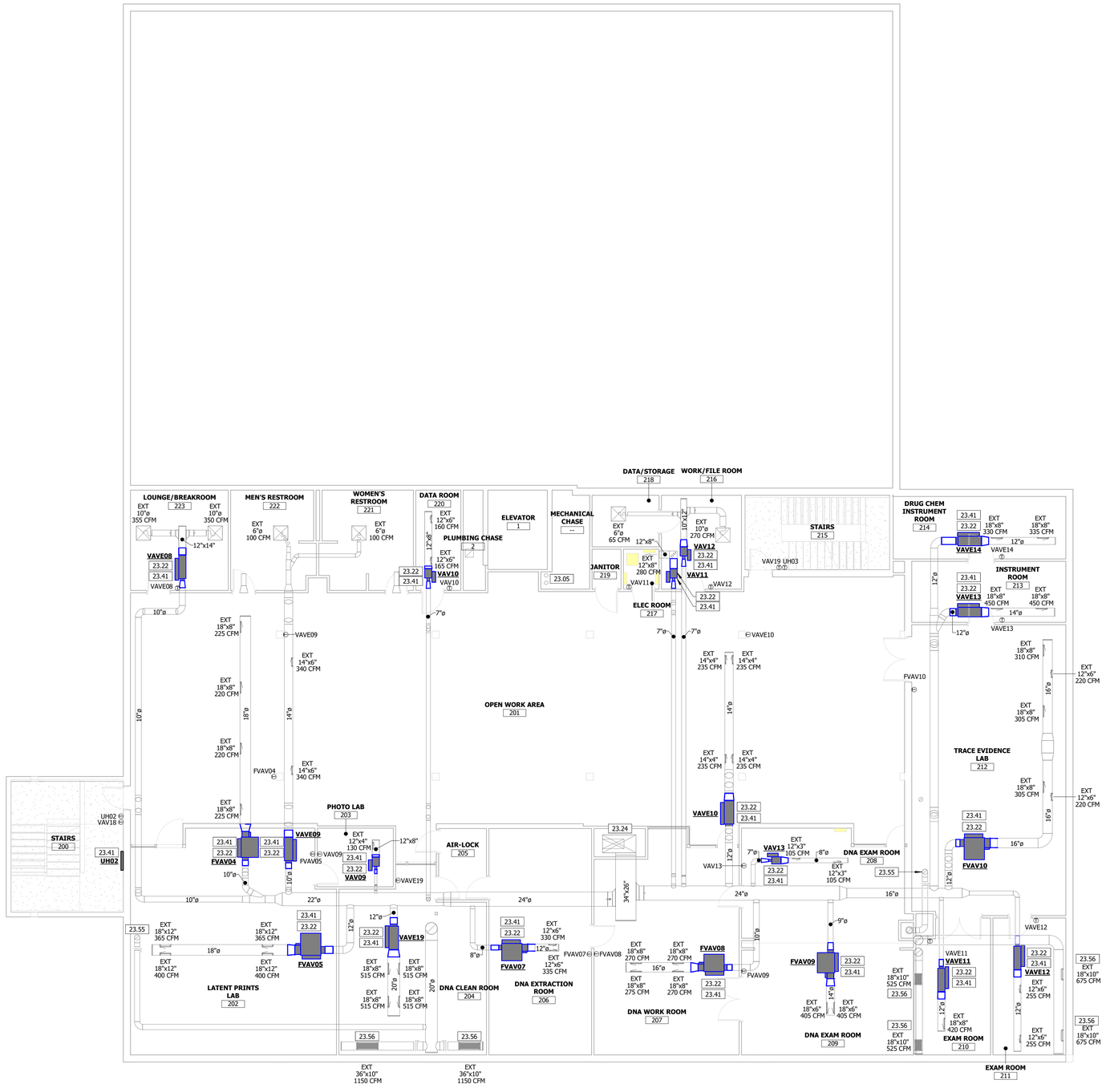
M-101

8 of 27 SHEETS
10/06/2025

11/20/2025 11:27:09 AM

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.05	EXISTING CHILLED WATER PIPING UP TO THIRD FLOOR SHALL REMAIN.
23.22	INSTALL NEW TERMINAL UNIT. RECONNECT TO EXISTING UPSTREAM AND DOWNSTREAM DUCTWORK. MODIFY EXISTING DUCTWORK AS REQUIRED FOR NEW INSTALLATION. REBALANCE EXISTING AIR DEVICE TO CFM SHOWN ON DRAWINGS.
23.24	EXISTING 56"X30" SUPPLY DUCT UP AND 36"X16" SUPPLY DUCT DOWN SHALL REMAIN.
23.41	FURNISH AND INSTALL NEW CONTROLLER AND LOW VOLTAGE WIRING FOR NEW TERMINAL UNIT.
23.55	REBALANCE EXISTING EXHAUST HOOD. FIELD VERIFY EXHAUST CFM REQUIREMENTS WITH LAB EQUIPMENT ON SITE.
23.56	REBALANCE EXISTING EXHAUST AIR TERMINAL TO CFM LISTED ON DRAWINGS.



1 MECHANICAL PLAN - LEVEL 2
1/8" = 1'-0"

11/20/2025 11:27:11 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

MECHANICAL PLAN - LEVEL 2

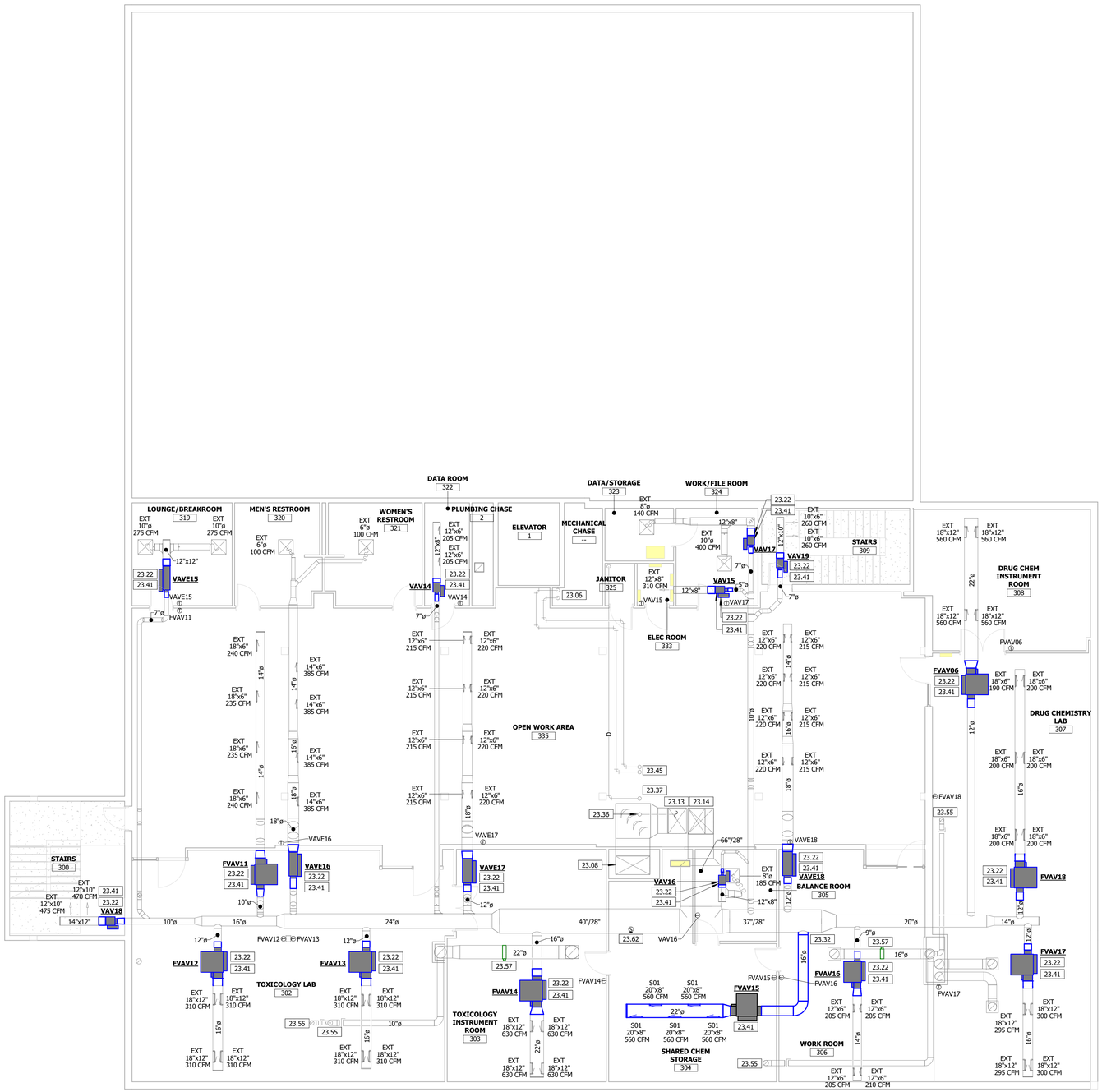
SHEET NUMBER:

M-102

9 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.06	EXISTING CHILLED WATER PIPING DOWN TO SECOND FLOOR SHALL REMAIN.
23.08	EXISTING 56"X30" SUPPLY DUCT DOWN TO SECOND FLOOR AND ALL DOWNSTREAM DUCTWORK SHALL REMAIN.
23.13	EXISTING 42"X30" SUPPLY DUCT UP TO AIR HANDLING UNIT SHALL REMAIN.
23.14	EXISTING 42"X28" SUPPLY DUCT UP TO AIR HANDLING UNIT SHALL REMAIN.
23.22	INSTALL NEW TERMINAL UNIT. RECONNECT TO EXISTING UPSTREAM AND DOWNSTREAM DUCTWORK. MODIFY EXISTING DUCTWORK AS REQUIRED FOR NEW INSTALLATION. REBALANCE EXISTING AIR DEVICE TO CFM SHOWN ON DRAWINGS.
23.32	CONNECT NEW 16" DUCT TO EXISTING TAP. MODIFY TAP AS REQUIRED FOR NEW DUCT SIZE.
23.36	EXISTING 0.75" DOMESTIC WATER PIPING TO STEAM GENERATOR SHALL REMAIN.
23.37	EXISTING 2" CONDENSATE DRAIN SHALL REMAIN. REMOVE CONNECTION TO EXISTING UNIT ON ROOF.
23.41	FURNISH AND INSTALL NEW CONTROLLER AND LOW VOLTAGE WIRING FOR NEW TERMINAL UNIT.
23.45	CONNECT EXISTING 4" CHILLED WATER PIPING TO CHILLED WATER COILS. CHILLED WATER PIPING SHALL BE INSTALLED INSIDE UNIT PIPE CABINET AND CONNECTED PER MANUFACTURERS REQUIREMENTS. FURNISH AND INSTALL COIL ISOLATION VALVES, Y-STRAINER, AND MODULATING 3-WAY VALVE.
23.55	REBALANCE EXISTING EXHAUST HOOD. FIELD VERIFY EXHAUST CFM REQUIREMENTS WITH LAB EQUIPMENT ON SITE.
23.57	FURNISH AND INSTALL NEW AIRFLOW MONITORING STATION IN PLACE OF EXISTING AIRFLOW STATION. INTEGRATE NEW MONITOR INTO BAS SYSTEM.
23.62	FURNISH AND INSTALL NEW HUMIDITY SENSOR IN DUCTWORK FOR STEAM GENERATOR CONTROL. CONFIRM LOCATION WITH BAS CONTRACTOR.



1 MECHANICAL PLAN - LEVEL 3
1/8" = 1'-0"

11/20/2025 11:27:13 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB ADAM NELSON
NUMBER PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

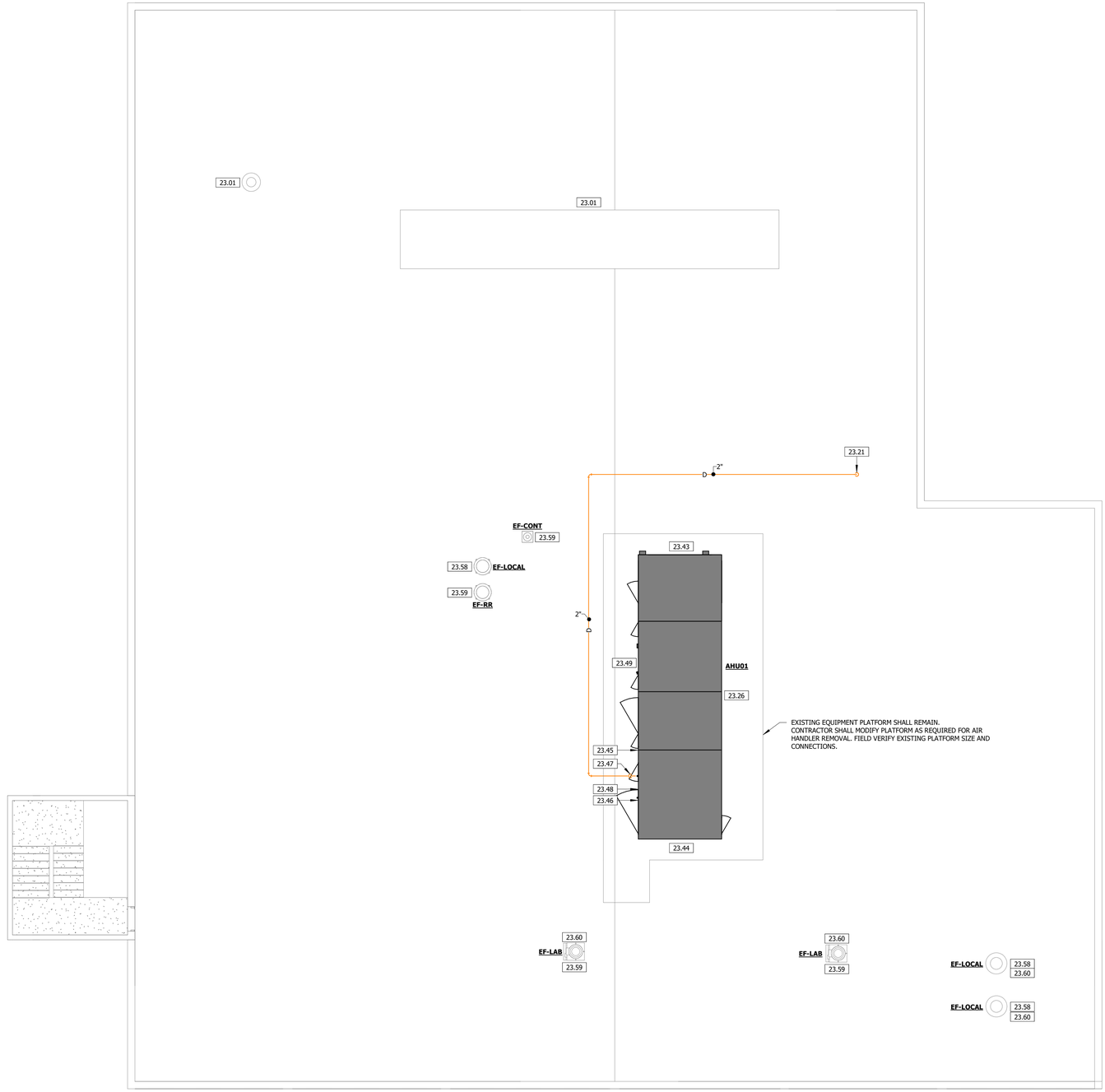
SHEET TITLE:

MECHANICAL PLAN - LEVEL 3

SHEET NUMBER:

M-103

10 of 27 SHEETS
10/06/2025



1 MECHANICAL ROOF PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
23.01	EXISTING MECHANICAL EQUIPMENT SHALL REMAIN.
23.21	TERMINATE 2" CONDENSATE PIPING IN EXISTING ROOF DRAIN.
23.26	INSTALL NEW AIR HANDLING UNIT ON EXISTING EQUIPMENT PLATFORM. FIELD VERIFY EXISTING PLATFORM DIMENSIONS PRIOR TO SETTING NEW EQUIPMENT. MODIFY PLATFORM AS REQUIRED FOR NEW AIR HANDLING UNIT.
23.43	CONNECT EXISTING 120"X32" RETURN DUCT TO NEW AIR HANDLING UNIT. MODIFY EXISTING ROOF PENETRATION AS REQUIRED FOR NEW CONNECTION. FIELD VERIFY EXISTING DUCT SIZE AND LOCATION.
23.44	CONNECT EXISTING 42"X30" AND 42"X28" SUPPLY DUCTS TO NEW AIR HANDLING UNIT. MODIFY EXISTING ROOF PENETRATIONS AS REQUIRED FOR NEW CONNECTION. FIELD VERIFY EXISTING DUCT SIZE AND LOCATION.
23.45	CONNECT EXISTING 4" CHILLED WATER PIPING TO CHILLED WATER COILS. CHILLED WATER PIPING SHALL BE INSTALLED INSIDE UNIT PIPE CABINET AND CONNECTED PER MANUFACTURERS REQUIREMENTS. FURNISH AND INSTALL COIL ISOLATION VALVES, Y-STRAINER, AND MODULATING 3-WAY VALVE.
23.46	CONNECT EXISTING 0.75" DOMESTIC COLD WATER PIPING TO HUMIDIFIER PER MANUFACTURERS REQUIREMENTS. DOMESTIC WATER PIPING SHALL BE INSTALLED INSIDE UNIT PIPE CABINET.
23.47	CONNECT 2" CONDENSATE DRAIN PIPING TO NEW AIR HANDLING UNIT PER MANUFACTURERS REQUIREMENTS.. ROUTE AND TERMINATE CONDENSATE DRAIN IN ROOF DRAIN.
23.48	CONNECT EXISTING 2" CONDENSATE DRAIN TO NEW AIR HANDLING UNIT. EXISTING PIPING DOWN THROUGH ROOF SHALL REMAIN. CONDENSATE DRAIN PIPING SHALL BE INSTALLED IN PIPE CABINET.
23.49	FURNISH AND INSTALL NEW BUILDING AUTOMATION CONTROLS FOR NEW AIR HANDLER. COORDINATE REQUIREMENTS WITH BAS CONTRACTOR.
23.58	EXISTING EXHAUST FAN AND ASSOCIATED LOCAL CONTROLS SHALL REMAIN.
23.59	EXISTING EXHAUST FAN AND ASSOCIATED CONTROLS SHALL REMAIN. PROVIDE NEW BAS CONTROLS FOR INTEGRATION INTO UPGRADED BAS SYSTEM.
23.60	REBALANCE EXISTING EXHAUST FAN.

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

MECHANICAL ROOF PLAN

SHEET NUMBER:

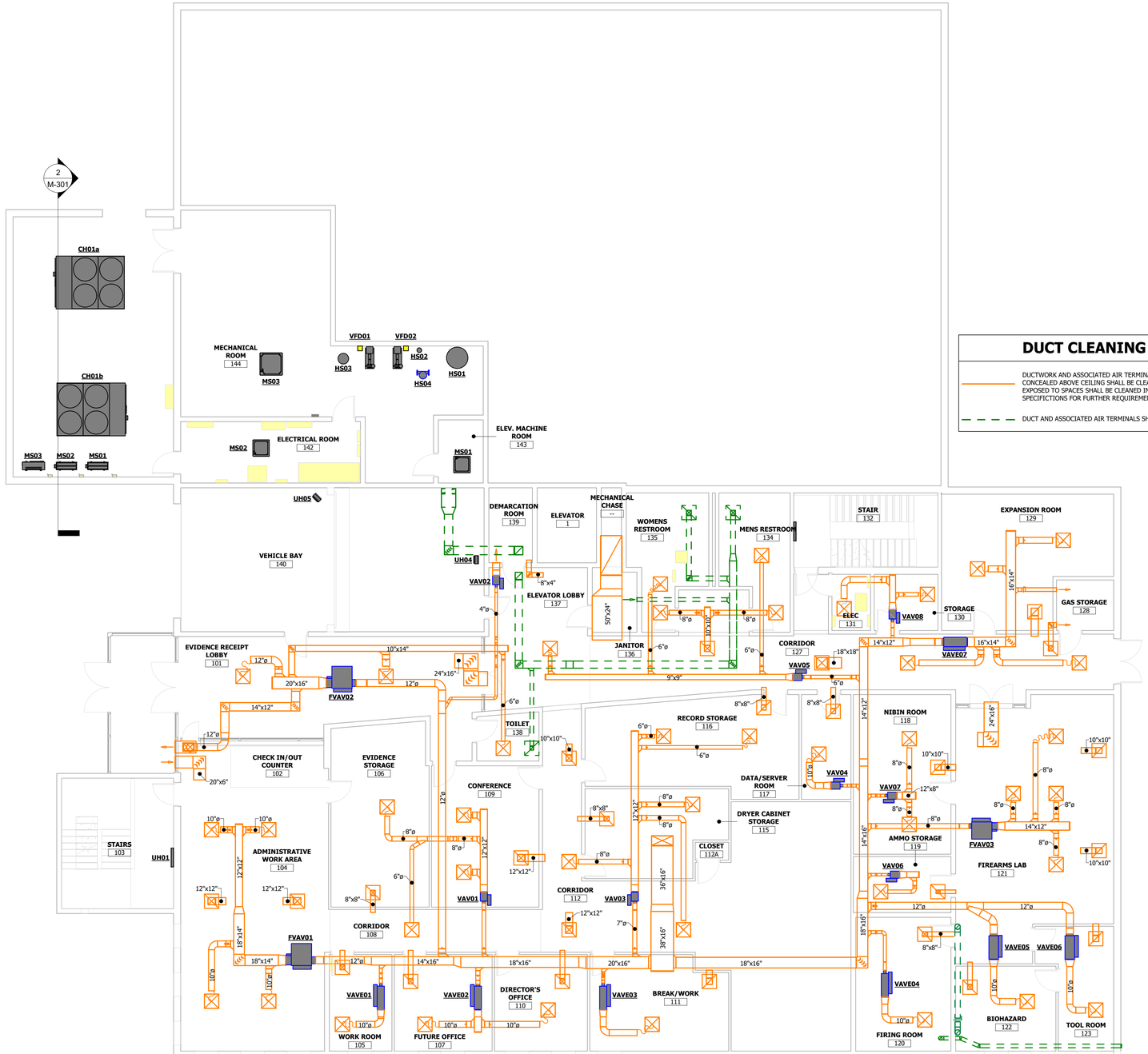
M-104

11 of 27 SHEETS
10/06/2025

11/20/2025 11:27:13 AM

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT



DUCT CLEANING NOTE:

DUCTWORK AND ASSOCIATED AIR TERMINALS SHALL BE CLEANED. DUCT CONCEALED ABOVE CEILING SHALL BE CLEANED ON INTERIOR ONLY. DUCT EXPOSED TO SPACES SHALL BE CLEANED INTERIOR AND EXTERIOR. REFER TO SPECIFICTIONS FOR FURTHER REQUIREMENTS.

DUCT AND ASSOCIATED AIR TERMINALS SHALL NOT BE CLEANED

1 DUCT CLEANING PLAN - LEVEL 1
1/8" = 1'-0"

11/20/2025 11:27:14 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DUCT CLEANING PLAN - LEVEL 1

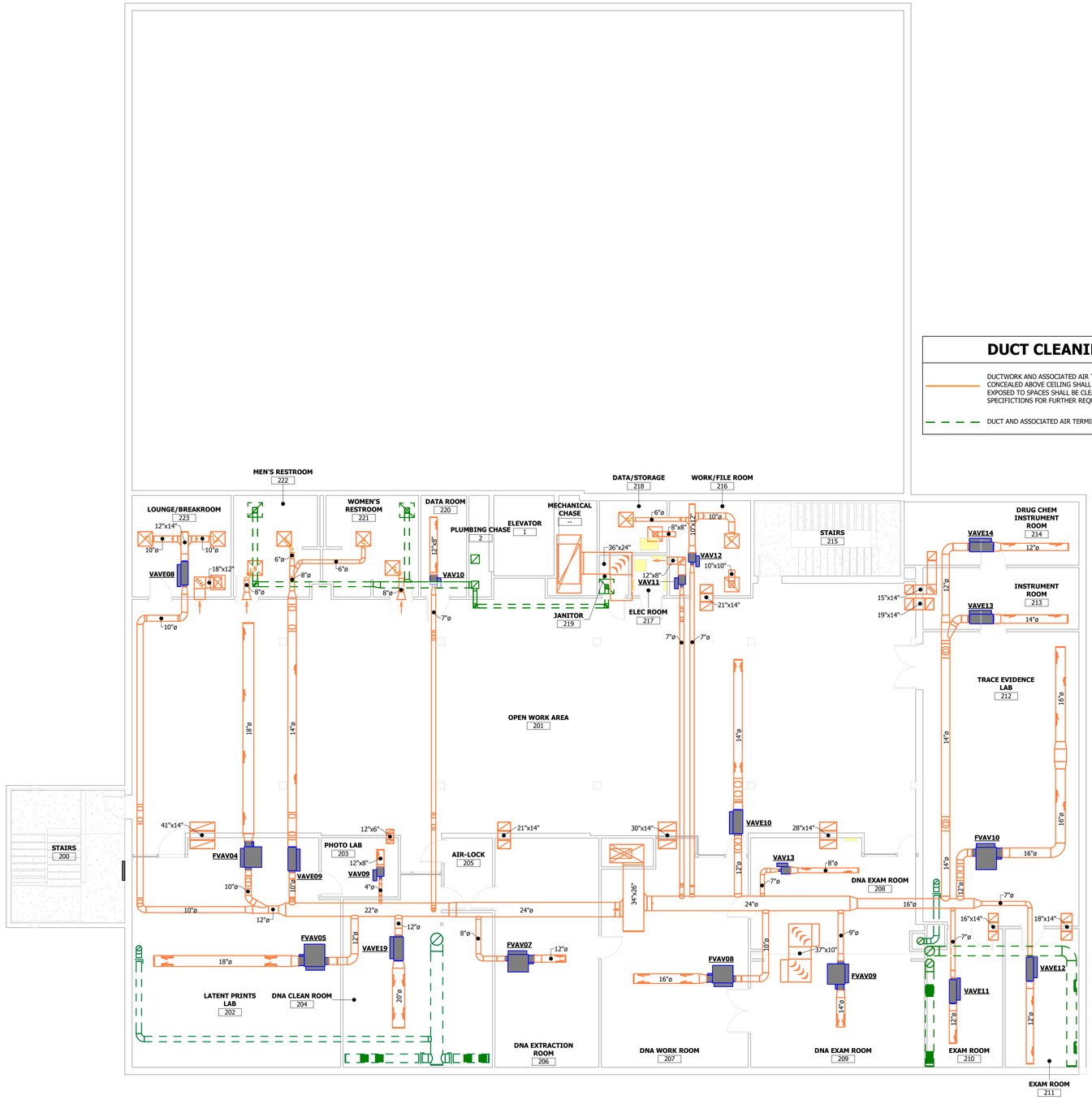
SHEET NUMBER:

M-201

12 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT



DUCT CLEANING NOTE:

DUCTWORK AND ASSOCIATED AIR TERMINALS SHALL BE CLEANED. DUCT CONCEALED ABOVE CEILING SHALL BE CLEANED ON INTERIOR ONLY. DUCT EXPOSED TO SPACES SHALL BE CLEANED INTERIOR AND EXTERIOR. REFER TO SPECIFICTIONS FOR FURTHER REQUIREMENTS.

DUCT AND ASSOCIATED AIR TERMINALS SHALL NOT BE CLEANED

1 DUCT CLEANING PLAN - LEVEL 2
1/8" = 1'-0"

11/20/2025 11:27:15 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DUCT CLEANING PLAN - LEVEL 2

SHEET NUMBER:

M-202

13 of 27 SHEETS
10/06/2025

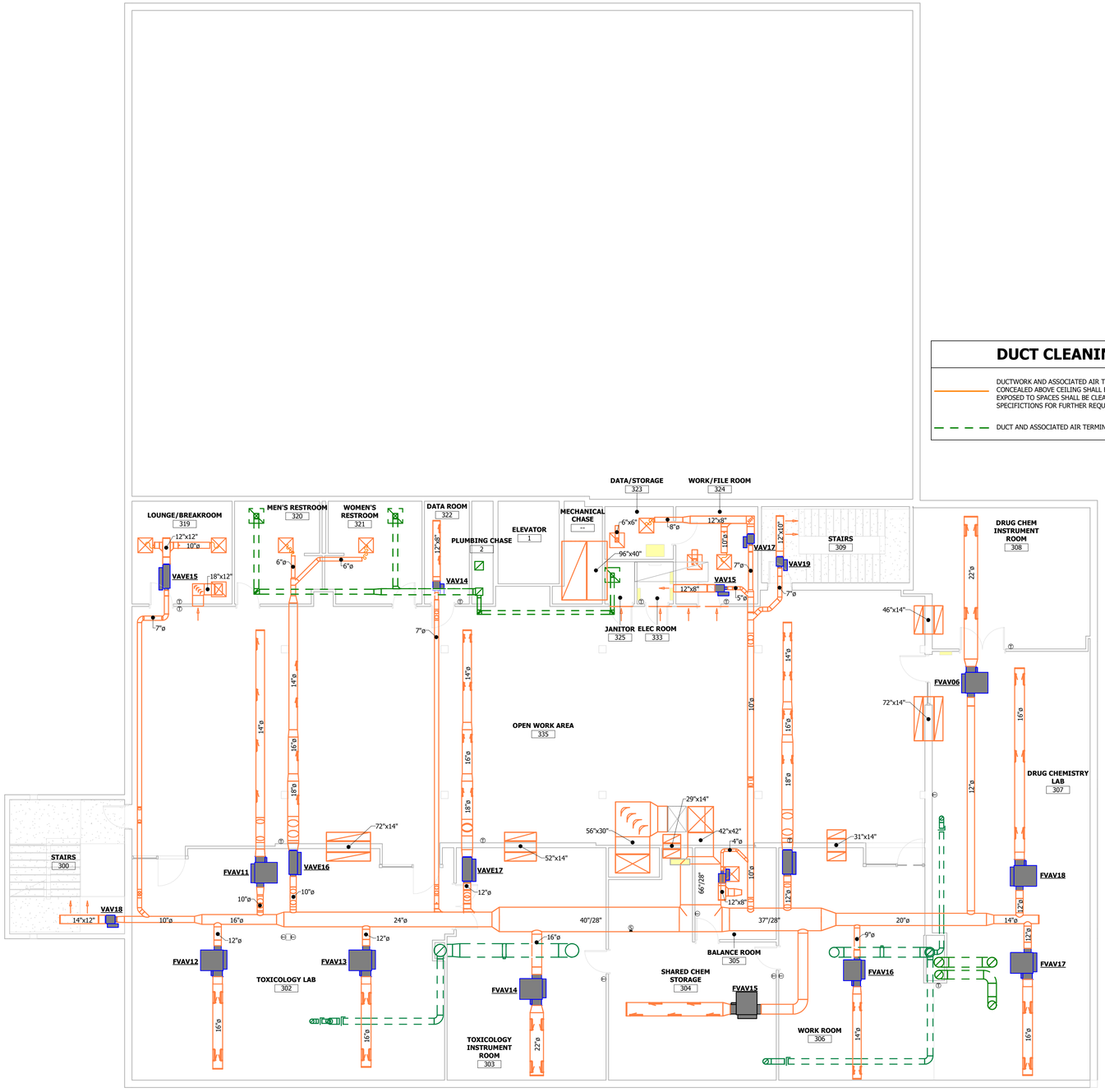
KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT

DUCT CLEANING NOTE:

DUCTWORK AND ASSOCIATED AIR TERMINALS SHALL BE CLEANED. DUCT CONCEALED ABOVE CEILING SHALL BE CLEANED ON INTERIOR ONLY. DUCT EXPOSED TO SPACES SHALL BE CLEANED INTERIOR AND EXTERIOR. REFER TO SPECIFICTIONS FOR FURTHER REQUIREMENTS.

DUCT AND ASSOCIATED AIR TERMINALS SHALL NOT BE CLEANED



1 DUCT CLEANING PLAN - LEVEL 3
1/8" = 1'-0"

11/20/2025 11:27:17 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DUCT CLEANING PLAN - LEVEL 3

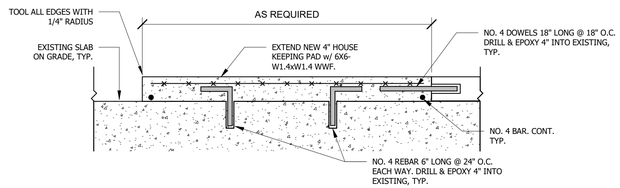
SHEET NUMBER:

M-203

CONCRETE MIX:

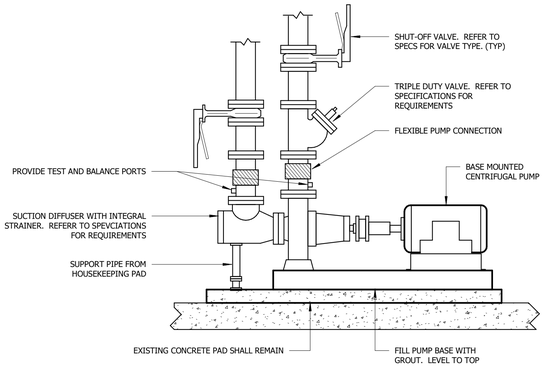
MATERIALS PER CUBIC YARE - R-5.5 ad 3500 PSI

CEMENT	141 LBS
FLY ASH	103 LBS
FINE AGGREGATE	1380 LBS
COARSE AGGREGATE	1750 LBS
WATER	32.0 GAL
TOTAL AIR	5.0 PCT.
AEA	4.9 OZ.
SLUMP	2" TO 4"



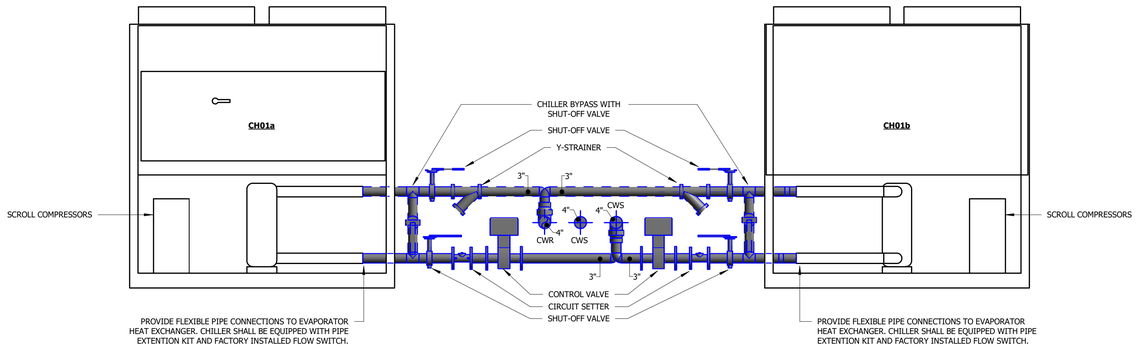
3 CONCRETE HOUSEKEEPING PAD EXTENSION

NOT TO SCALE



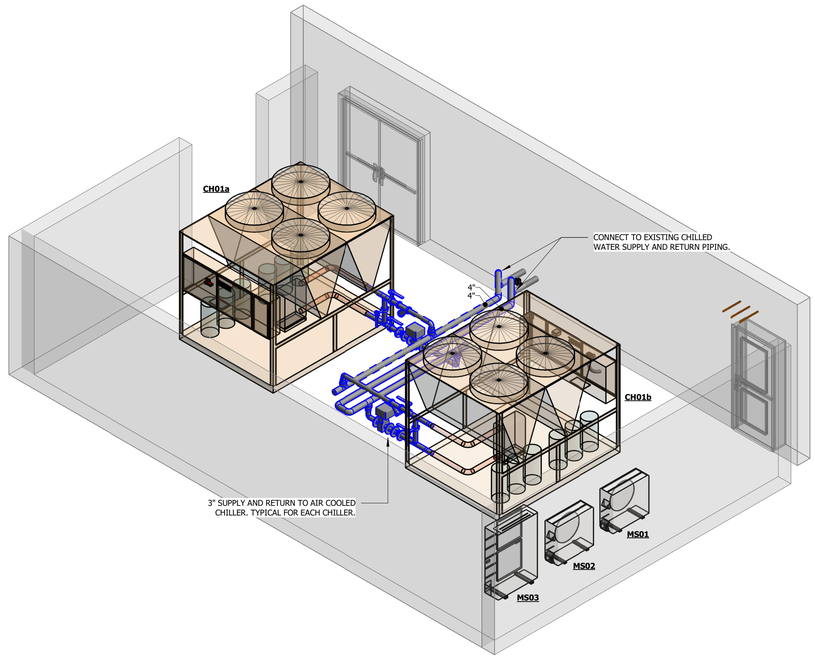
5 BASE MOUNT PUMP DETAIL

NOT TO SCALE

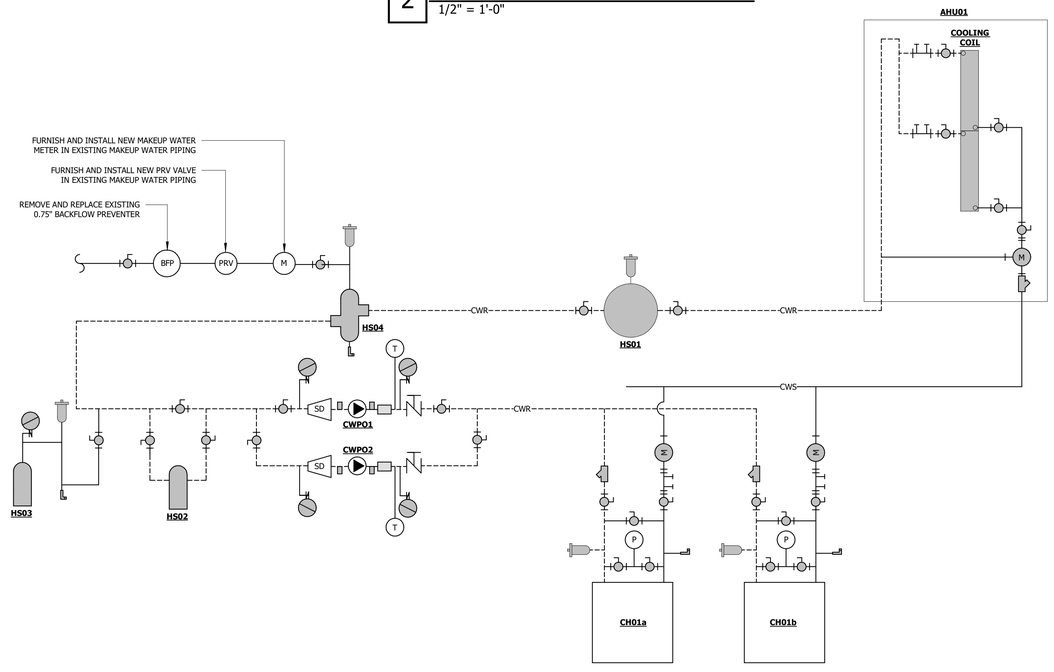


2 CHILLER PIPING SECTION

1/2" = 1'-0"



4 CHILLER PIPING ISOMETRIC



1 CHILLED WATER PIPING DIAGRAM

NOT TO SCALE

PIPING DIAGRAM LEGEND

- FLOW CHECK VALVE
- PUMP
- Y-STRAINER
- TPV TANK PURGE VALVE
- ISOLATION VALVE
- DRAIN PORT W/HOSE CONNECTION
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- FLEXIBLE PIPE CONNECTOR
- TRIPLE DUTY VALVE
- SUCTION DIFFUSER
- DIFFERENTIAL PRESSURE SENSOR
- THERMOMETER WITH THERMOMETER WELL
- DELTA P CONTROL VALVE
- CIRCUIT SETTER
- PRESSURE GAUGE W/NEEDLE VALVE
- HIGH CAPACITY AIR VENT
- TEST AND BALANCE PORT

11/20/2025 11:27:18 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB ADAM NELSON
NUMBER PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

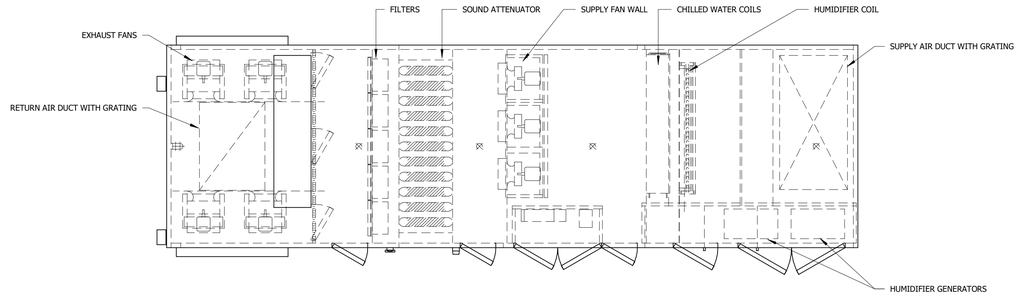
MECHANICAL DETAILS

SHEET NUMBER:

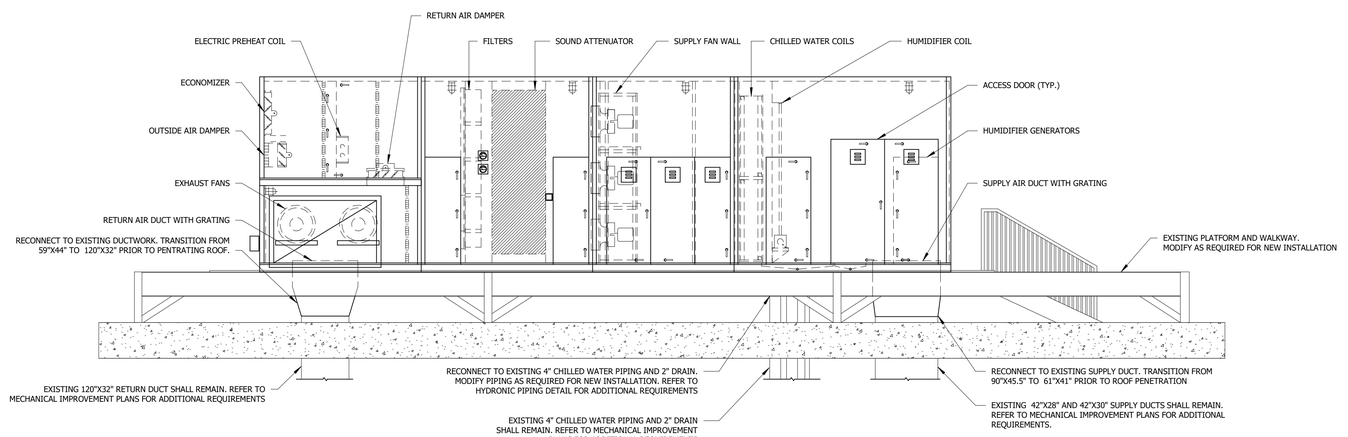
M-301

15 of 27 SHEETS
10/06/2025

PLAN VIEW



ELEVATION VIEW



1 AIR HANDLING UNIT
NOT TO SCALE

11/20/2025 11:27:18 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

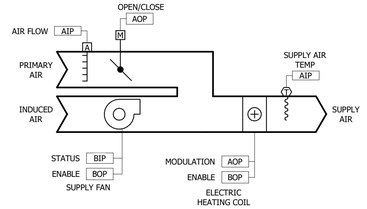
MECHANICAL DETAILS

SHEET NUMBER:

M-302

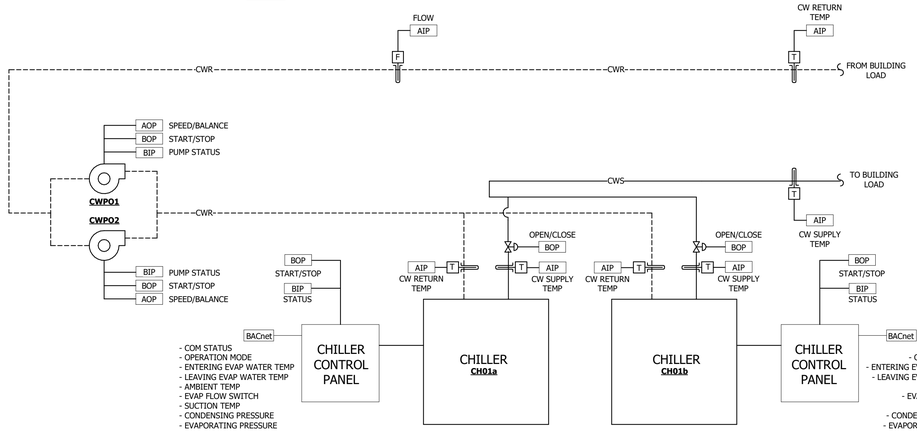
16 of 27 SHEETS
10/06/2025

CONTROLS RESPONSIBILTY MATRIX			
ITEM	**CONTROLS CONTRACTOR**	**MECHANICAL CONTRACTOR**	**ELECTRICAL CONTRACTOR**
GENERAL			
FURNISH CONTROL PANELS	TCC		
INSTALL CONTROL PANELS	TCC		
LINE VOLTAGE TO CONTROL PANELS			EC
LOW VOLTAGE TO CONTROL PANELS			EC
LOW VOLTAGE WIRING FROM CONTROL PANELS TO CONTROLLERS, SENSORS, AND EQUIPMENT	TCC		
FURNISH PIPE WELLS FOR SENSORS	TCC		EC
INSTALL PIPE WELLS FOR SENSORS		MC	
FURNISH CONTROL VALVES	TCC		
INSTALL CONTROL VALVES		MC	
FURNISH DUCT SENSORS	TCC		
INSTALL DUCT SENSORS	TCC		
FURNISH PIPE SENSORS	TCC		
INSTALL PIPE SENSORS	TCC		
FURNISH TEMPERATURE AND PRESSURE GAUGES		MC	
INSTALL TEMPERATURE AND PRESSURE GAUGES		MC	
FURNISH VARIABLE SPEED DRIVES	TCC		
INSTALL VARIABLE SPEED DRIVES	TCC		
PROVIDE LINE AND LOAD WIRING TO VARIABLE SPEED DRIVES			EC
PROVIDE CONTROL WIRING TO VARIABLE SPEED DRIVES	TCC		
PROGRAM AND STARTUP VARIABLE SPEED DRIVES	TCC		
VERIFY AND TEST SEQUENCE OF OPERATIONS	TCC	MC	
EQUIPMENT STARTUP	TCC	MC	
AIR HANDLING UNIT	-	-	-
FURNISH CONTROLLERS FOR EQUIPMENT	TCC		
INSTALL CONTROLLERS FOR EQUIPMENT	TCC		
FURNISH CONTROL DAMPERS		MC	
INSTALL CONTROL DAMPERS		MC	
FURNISH DAMPER ACTUATORS	TCC		
INSTALL DAMPER ACTUATORS	TCC		
WIRE LOW VOLTAGE DAMPER ACTUATORS	TCC		
WIRE LINE VOLTAGE DAMPER ACTUATORS			EC
FURNISH DUCT SMOKE DETECTORS			EC
INSTALL DUCT SMOKE DETECTORS			EC
TERMINAL UNITS			
FURNISH CONTROLLERS FOR EQUIPMENT	TCC		
INSTALL CONTROLLERS FOR EQUIPMENT		MC	
LINE VOLTAGE TO EQUIPMENT			EC
INSTALL DAMPER ACTUATORS	TCC		
WIRE LOW VOLTAGE DAMPER ACTUATORS	TCC		
FURNISH SPACE SENSORS	TCC		
INSTALL ROUGH-IN FOR SPACE SENSORS, CONDUIT, BACK BOX, ETC			EC
AIR COOLED CHILLER	-	-	-
FURNISH CONTROLLERS FOR EQUIPMENT		MC	
INSTALL CONTROLLERS FOR EQUIPMENT		MC	
INTEGRATE CHILLERS INTO BAS SYSTEM	TCC		
LOW VOLTAGE CONDUIT FROM MECHANICAL ROOM TO CHILLERS			EC



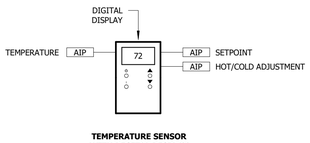
3 BAS - FAN POWERED VAV TERMINAL BOX

NOT TO SCALE



2 BAS - CHILLER WATER SYSTEM

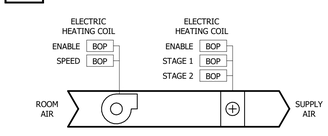
NOT TO SCALE



TEMPERATURE SENSOR WITH DIGITAL DISPLAY
(JCI NSB8)

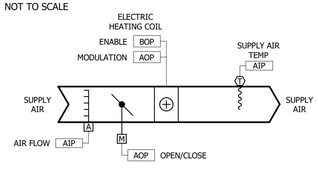
6 BAS - SENSORS

NOT TO SCALE



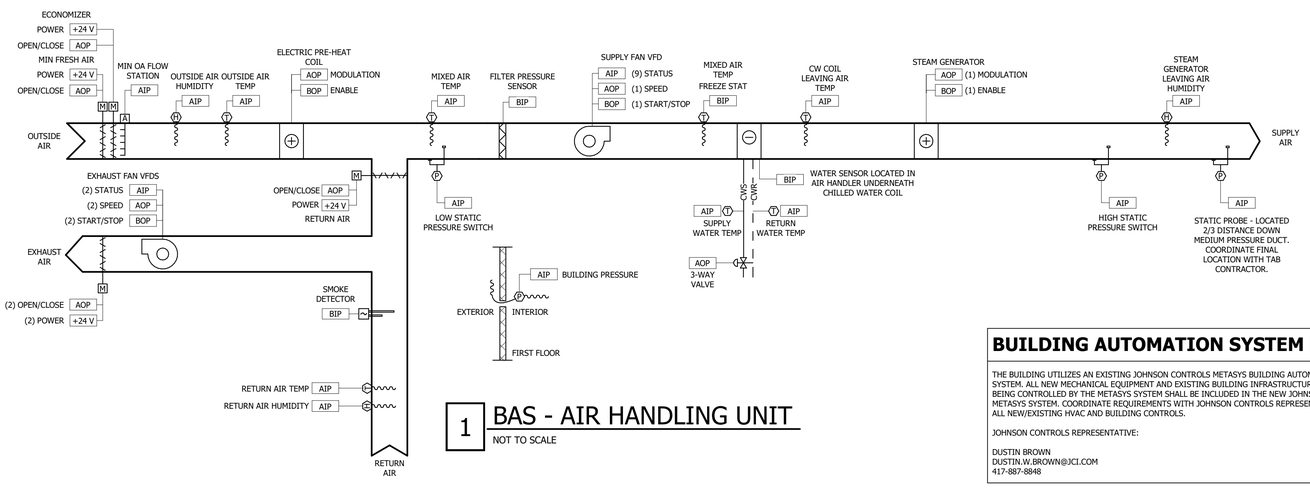
5 BAS - UNIT HEATER

NOT TO SCALE



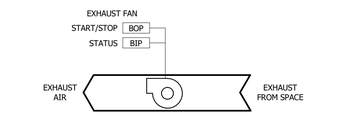
4 BAS - VAV TERMINAL BOX

NOT TO SCALE



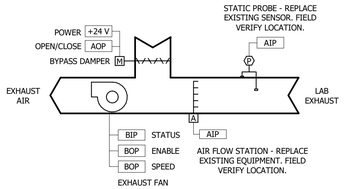
1 BAS - AIR HANDLING UNIT

NOT TO SCALE



8 BAS - EF-RR & EF-CONT

NOT TO SCALE



7 BAS - EF LAB

NOT TO SCALE

BUILDING AUTOMATION SYSTEM NOTE:

THE BUILDING UTILIZES AN EXISTING JOHNSON CONTROLS METASYS BUILDING AUTOMATION SYSTEM. ALL NEW MECHANICAL EQUIPMENT AND EXISTING BUILDING INFRASTRUCTURE CURRENTLY BEING CONTROLLED BY THE METASYS SYSTEM SHALL BE INCLUDED IN THE NEW JOHNSON CONTROLS METASYS SYSTEM. COORDINATE REQUIREMENTS WITH JOHNSON CONTROLS REPRESENTATIVE FOR ALL NEW/EXISTING HVAC AND BUILDING CONTROLS.

JOHNSON CONTROLS REPRESENTATIVE:

DUSTIN BROWN
DUSTIN.W.BROWN@JCI.COM
417-887-8848

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB ADAM NELSON
NUMBER PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

BUILDING AUTOMATION CONTROL DRAWINGS

SHEET NUMBER:

M-303

17 of 27 SHEETS
10/06/2025

11/20/2025 11:27:16 AM

EXHAUST FANS:

A. EF-LAB:
   1. Labratory exhaust fans shall be controlled by the building automation system with a fully programmable controller provided by the bas contractor.
   2. The labratory exhaust fans shall run continously to maintain pressurization requirements in the spaces air is exhausted directly.
   3. The fans shall also be equipped with duct static pressure probes to detect flow to the labratory hoods. As the labratory hoods are enabled and the static pressure probe decreases, the fans shall modulate the internal bypass damper as required to maintain the duct static pressure setpoint.

B. EF-RR:
   1. Main restroom exhaust fan shall be controlled by the building automation system with a fully programmable controller provided by the bas contractor.
   2. The main restroom exhaust fans shall be interlocked with AHU01. When AHU01 is in operation, EF-RR shall be enabled and operate continuosly. If AHU01 is not operating, EF-RR shall be disabled.

C. EF-CONT:
   1. Exhaust fan shall be controlled by the building automation system with a fully programmable controller provided by the bas contractor.
   2. Exhaust fans shall run continuosly. Alarms shall be sent to the building automation system if the fan status is off.

D. EF-LOCAL:
   1. Exhaust fan shall be controlled with local controls and not integrated into the building automation system.

CHILLED WATER SYSTEM:

A. Pump Control:
   1. The chilled water pumps shall be controlled by a fully programmable controller, furnished and installed by the HVAC controls contractor, which shall monitor and control the unit in a stand-alone mode or as directed by the building automation system (BAS)
   2. The chilled water loop shall be controlled by the 3-way control valve in the air handling unit. Minimum flow through the chiller shall determine the minimum flow rate from the pumps.
   3. The chilled water pumps shall operate in duty/standby configuration. The duty pump shall enable upon the call for cooling and shall remain the duty pump for one week (adj). The stand-by pump shall enable if the duty pump has an alarm and is not operable
   4. When the building has a call for cooling and the chilled water valve opens to the air handler coil, the pumps should enable to the chiller minimum flow rate. The pumps shall control the flow rate based on return water temperature from the air handler. As the chilled water temperature rises above 55 degrees F, the pumps should speed up as required to provide more flow to the chillers/air handler.
   5. When the chilled water valve closes to bypass for 10 min continuosly (adj), the pumps shall be disabled.
   6. In the scenario an air handler freeze stat is tripped, the duty chilled water pump shall enable to 25%.

B. Chiller Control:
   1. The air cooled chillers shall be equipped with factory installed controller and sensors and control to the following sequences. The chillers should have BACnet communications for third party integration of equipment to building automation system.
   2. The air cooled chillers shall be controlled based on the flow rate through the system. The chillers will operate in lead/lag configuration. When the lead chiller is selected, the control valve shall be opened to prevent flow restriction upon starting of the chilled water loop. The lag chiller control valve shall be closed until noted below. Lead/lag configuration shall rotate every week (adj).
   3. When the building has a call for cooling and the pumps are enabled, the lead chiller should modulate to maintain a leaving water temperature of 42 degrees (adj).
   4. As the flow rate in the chilled water loop increases above 140 gpm (adj), the lag chiller shall enable, the control valve shall open and the chillers should modulate together to maintain a leaving water temperature of 42 degrees (adj).
   5. As the flow rate in the chilled water loop falls below 130 gpm (adj), the lag chiller shall disable and the control valve shall close.

FVAV TERMINAL UNITS:

A. General:
   1. The unit shall be controlled by a fully programmable controller, furnished and installed by the HVAC controls contractor, which shall monitor and control the unit in a stand-alone mode or as directed by the building automation system (BAS). A duct mounted discharge air temperature sensor shall be furnished and installed for each VAV box for monitoring purposes.

B. Occupancy Control of System:
   1. Unit shall be in occupied mode according to a schedule obtained from Troop D Crime Lab. The occupied hours shall be set and adjustable through the BAS.

C. Occupied Mode:
   1. When the zone temperature is between the occupied heating and cooling setpoints, the primary air damper will be at the minimum CFM and the respective cooling and heating sequences shall operate.

D. Unoccupied Mode:
   1. During unoccupied mode, the operation as noted above shall apply with minimum primary airflows set to zero. The box shall setback cooling temperatures as directed by the owner, and reduce the minimum air requirements at the air handling unit.

F. Cooling Control:
   1. When in the occupied mode, as the zone temperature rises above setpoint, the VAV damper shall modulate open to the cooling cfm setpoint to satisfy zone temperature requirements.The plenum fan shall be off in cooling operation.
   2. When the zone temperature setpoint is satisfied, the VAV damper shall modulate closed to minimum setpoint.

G. Heating Control:
   1. When in the occupied mode, as the zone temperature falls below setpoint, the electric reheat coil shall enable and modulate to maintain a discharge air tempearture of 90 degrees (adj), the VAV damper shall modulate open to the minimum cfm setpoint, and the plenum fan shall enable inducing warm plenum air into the air stream. When the zone temperature setpoint is satisfied, the VAV damper shall modulate closed to minimum setpoint, the plenum fan shall disable, and the electric reheat coil shall disable.

VAV TERMINAL UNITS:

A. General:
   1. The unit shall be controlled by a fully programmable controller, furnished and installed by the HVAC controls contractor, which shall monitor and control the unit in a stand-alone mode or as directed by the building automation system (BAS). A duct mounted discharge air temperature sensor shall be furnished and installed for each VAV box for monitoring purposes.

B. Occupancy Control of System:
   1. Unit shall be in occupied mode according to a schedule obtained from Troop D Crime Lab. The occupied hours shall be set and adjustable through the BAS.

C. Occupied Mode:
   1. When the zone temperature is between the occupied heating and cooling setpoints, the primary air damper will be at the minimum CFM and the respective cooling and heating sequences shall operate.

D. Unoccupied Mode:
   1. During unoccupied mode, the operation as noted above shall apply with minimum primary airflows set to zero. The box shall setback cooling temperatures as directed by the owner, and reduce the minimum air requirements at the air handling unit.

F. Cooling Control:
   1. When in the occupied mode, as the zone temperature rises above setpoint, the VAV damper shall modulate open to the cooling cfm setpoint to satisfy zone temperature requirements.
   2. When the zone temperature setpoint is satisfied, the VAV damper shall modulate closed to minimum setpoint.

G. Heating Control:
   1. When in the occupied mode, as the zone temperature falls below setpoint, the electric reheat coil shall enable and modulate to maintain a discharge air tempearture of 90 degrees (adj) and the VAV damper shall modulate open to the heating cfm setpoint to satisfy the zone temperature setpoints. When the zone temperature setpoint is satisfied, the VAV damper shall modulate closed to minimum setpoint and the electric reheat coil shall disable.

AIR HANDLING UNIT:

A. General:
   1. The unit shall be controlled by a fully programmable controller, furnished and installed by the HVAC controls contractor, which shall monitor and control the unit in a stand-alone mode or as directed by the building automation system (BAS). The controller shall communicate with the new and existing system. At a minimum the input/output points scheduled shall be passed via the communication trunk.

B. Occupancy Control of System:
   1. Unit shall be in occupied mode according to a schedule obtained from Troop D Crime Lab. The occupied hours shall be set and adjustable through the BAS.

C. Occupied Mode:
   1. The air handler shall be in occupied mode at all times. When the AHU is in the occupied mode, the supply and exhaust fans shall run and the cooling, heating, dehumidification, economizer and outside air damper shall control according to their respective sequences. Minimum outdoor air damper position shall be maintained whenever occupied unless the economizer controls are active.

E. Supply Fan Control:
   1. The supply fans shall operate as described in the mode descriptions above. When the unit is in the occupied mode and the zone temperature and humidity setpoints are satisfied, the supply fan will operate at the speed necessary to maintain duct static pressure setpoint. The baseline static pressure setpoint shall be determined by the test and balance engineer when all of the VAV boxes are open to minimum position. Location of the differential pressure sensor shall be located by the Test and Balance Engineer and coordinated with the engineer and BAS contractor. As the heating or cooling demand increase/decrease from the VAV boxes, the supply fan speed shall modulate to maintain the discharge static pressure setpoint (adj.). An alarm shall be generated if the proof-of-run sensor does not acknowledge fan operation within 30 seconds of command.

F. Building Pressurization Control:
   1. The air handling unit shall reference and control to building pressurization. The air handler shall reference a differential pressure sensor located in the building and maintain a positive pressurization of +0.02" wc (adj). The minimum outside air damper shall be open during occupied hours and shall modulate open as required to maintain building pressurization.
   2. If the building pressure sensor rises above +0.02" wc, the exhaust fan plenums shall enable and modulate up to maintain the building pressure setpoint.

G. Economizer Control:
   1. The economizer shall be enabled and allow the modulating outdoor air damper to provide the first source of cooling whenever the outdoor air dry bulb temperature, as calculated from the global outdoor temperature, is below 55 deg F (adj.).
   2. The economizer shall modulate open and maintain a maximum mixed air temperature of 60 deg F (adj.). If the mixed air temperature rises above 60 deg F (adj.), the economizer shall modulate closed. If the economizer is opened, the return air damper shall be closed and the exhaust fans shall be enabled.
   3. When the outdoor air temperature rises above the setpoints, the economizer shall be disabled, and the outdoor air damper shall modulate to minimum position. The economizer shall remain disabled until the outdoor air temperature is below 55 def F (adj.).
   4. At any point during economizer mode does the relative humidity inside the building rise above 60% RH (adj), the economizer shall be disabled.

H. Ventilation Control:
   1. Whenever the unit is in the occupied mode, the outdoor air minimum damper shall be open to the minimum position scheduled unless the economizer controls are active. When the unit is disabled or during unoccupied mode the outside air dampers shall be closed.

I. Electric Pre-Heating Coil Control:
   1. The air handler shall be equipped with an electric preheat coil downstream of the outside air damper.
   2. The electric preheat coil shall modulate up and down to maintain a mixed air temperature of 55 degrees (adj).
      a. If the mixed air temperature falls below 55 degrees (adj), the electric preheat coil shall enable and modulate up to maintain the desired mixed air temperature.
      b. If the mixed air temperature rises above 55 degrees (adj), the electric preheat coil shall be disabled.

J. Humdification Control:
   1. When the return air humidity in the air handler falls below 40% RH (adj), the steam generating humidifer shall enable and modulate to maintain 45% RH in the supply air from the air handler to the space. When the return air humidiy in the air handler rises above 45% RH (adj), the steam generator shall disable.

K. Cooling Control:
   1. When the mixed air temperature from the supply fans rises above 55 degrees (adj.), the chilled water 3-way valve shall open to allow flow to the chilled water coil and modulate open and closed to maintain a discharge air temperature of 53 deg F (adj.).
   2. When the outside air temperature falls below 40 def F (adj.), the chilled water valve shall be closed.

L. Safety Control:
   1. All of the safety devices shall be manual reset. The device that has tripped shall be manually reset (unless otherwise indicated) before restarting the air handling unit.
   2. If a temperature low limit switch (freeze stat) senses a temperature below setpoint the supply fan and exhaust fan shall be shutdown. The cooling coil control valve shall open and the chilled water pump shall be enabled to maintain 25% flow in the chilled water coil. Freeze stat shall be able to be reset from the BAS system.
   3. When the fire alarm is triggered, the supply fan and exhaust fan shall be shutdown.
   4. If the high static pressure switch senses a discharge pressure greater than 3.0" (adj.) the supply fan and exhasut fan shall be shutdown.
   5. If the low static pressure switch senses an inlet pressure that is less than negative 2.0" (adj) the supply fan and exhaust fan shall be shutdown.
   6. If the water sensor in the chilled water pan of the air handler is triggered, the chilled water valve shall be closed and an alarm shall be sent to the BAS system.

M. Shutdown Control:
   1. When the unit is shutdown by either a stop command or system safety the unit shall be set as follows:
      a. Supply fan shall be off.
      b. Exhaust fan shall be off.
      c. Supply fan VFD shall be commanded to 0%.
      d. Exhaust fan VFD shall be commanded to 0%.
      e. Outside air dampers shall be shut.
      f. Chilled water valve shall be closed, unless outside air temperature is below 32 degrees, then the chilled water valve shall be 25% open.

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

BAS SEQUENCE OF OPERATIONS

SHEET NUMBER:

M-304

18 of 27 SHEETS
10/06/2025

11/20/2025 11:27:18 AM

UNIT HEATER SCHEDULE

NOTES:	
1.	TWO STAGE THERMOSTAT (FIELD COORDINATE LOCATION WITH OWNER).
2.	FACTORY INSTALLED ELECTRICAL SERVICE DISCONNECT SWITCH.
3.	PROVIDE CONTROLLER FOR INTEGRATION INTO BAS SYSTEM FOR MONITORING. COORDINATE WITH BAS CONTRACTOR.
4.	SURFACE MOUNTING FRAME.
5.	SUSPEND FROM STRUCTURE PER MQANUFACTURERS REQUIREMENTS.

TYPE MARK	MANUFACTURER	MODEL NUMBER	KW	FLA	MOCP	VOLTAGE	NOTES	EQUIVALENTS
UH01	QMARK	EFQ6008	6.0	28.8	40	208/1	1,2,3,4	BERKO
UH02	QMARK	EFQ60048	6.0	12.5	20	480/1	1,2,3,4	BERKO
UH03	QMARK	EFQ6008	6.0	28.8	40	208/1	1,2,3,4	BERKO
UH04	QMARK	MUH104	10.0	12.0	20	480/3	1,2,3,5	BERKO
UH05	QMARK	MUH104	10.0	12.0	20	480/3	1,2,3,5	BERKO

VRF - MINI-SPLIT SYSTEM SCHEDULE

NOTES:	
1.	PROVIDE REFRIGERANT LINE SET(S) SIZED PER MANUFACTURER'S RECOMMENDATIONS.
2.	PROVIDE ALL REFRIGERATION SYSTEM ACCESSORIES REQUIRED BY MANUFACTURER FOR GIVEN LINE SET ROUTING.
3.	PROVIDE BALL VALVES AT LIQUID AND SUCTION LINE FOR EACH BRANCH.
4.	PROVIDE ACCESSORIES FOR LOW AMBIENT OPERATION.
5.	PROVIDE EQUIPMENT SUPPORT SYSTEM BY BIG FOOT, QUICK-SLING, RECTORSEAL OR APPROVED EQUAL. EQUIPMENT SUPPORT SYSTEM SHALL BE SIZED PER MANUFACTURER'S REQUIREMENTS.

TYPE MARK	MANUFACTURER	MODEL NUMBER		AMBIENT TEMPERATURE		TOTAL MBH	HEATING MBH	VOLTAGE	MCA	MOCP	NOTES	EQUIVALENTS
		OUTDOOR UNIT	INDOOR UNIT	SUMMER DB/WB	WINTER DB/WB							
MS01	LG	KUSXB181A	KNUDB181A	95/74	0/0	18	20	208/1	16	25	1 THRU 5	SEE SPECS
MS02	LG	KUSXB181A	KNUDB181A	95/74	0/0	18	20	208/1	16	25	1 THRU 5	SEE SPECS
MS03	LG	KSUXA421A	KNSCB421A	95/74	0/0	42	48	208/1	32	40	1 THRU 5	SEE SPECS

MECHANICAL PUMP SCHEDULE

NOTES:	
1.	PROVIDE CONTACTOR/RELAY FOR PUMP CONTROL BY BUILDING AUTOMATION SYSTEM. COORDINATE WTIH BAS CONTRACTOR.
2.	BEARINGS ARE TO BE LUBRICATED BY THE CIRCULATING FLUID.
3.	PROVIDE VARIABLE SPEED DRIVE FOR PUMP CONTROL. DRIVE PROVIDED AND INSTALLED BY BAS CONTRACTOR. COORDINATE LINE VOLTAGE CONNECTION WITH ELECTRICAL CONTRACTOR.
4.	SELECTION SHALL BE BASED ON 30% GLYCOL AND WATER MIXTURE.

TYPE MARK	MANUFACTURER	SERIES	INLET SIZE	DISCHARGE SIZE	GPM	PUMP HEAD (FT)	MOTOR HP (Watts)	RPM	CONSTRUCTION	FLUID TYPE	FLUID TEMPERATURE	VOLTAGE	NOTES	EQUIVALENTS
CWP01	BELL & GOSSET	1510-2BD	2.5"	2"	183	75	7.5	1800	SS	CHILLED WATER	40-60	480/3	1 THRU 4	ARMSTRONG
CWP02	BELL & GOSSET	1510-2BD	2.5"	2"	183	75	7.5	1800	SS	CHILLED WATER	40-60	480/3	1 THRU 4	ARMSTRONG

HYDRONIC SPECIALTIES SCHEDULE

TYPE MARK	DESCRIPTION	MANUFACTURER	MODEL NUMBER	ADDITIONAL INFORMATION	EQUIVALENTS
HS01	CHILLED WATER BUFFER TANK	AMERICAN WHEATLEY	AWCBT-300-4	250 GALLON CAPACITY, 125 PSI WORKING PRESSURE, 4" FLANGED CONNECTIONS, CENTER BAFFLE, 1" THICK ELASTOMERIC FOAM INSULATION, BELL & GOSSETT HIGH CAPACITY AIR VENT, WET WEIGHT SHALL NOT EXCEED 3,750 LBS	SEE SPECS
HS02	SHOT FEEDER	AMERICAN WHEATLEY	CFT-005-0	5 GALLON CAPACITY, FILTER FEEDER	SEE SPECS
HS03	EXPANSION TANK	BELL & GOSSET	D40V	PRE-CHARGED DIAPHRAM TYPE, VERTICAL ORIENTATION	SEE SPECS
HS04	AIR/DIRT SEPERATOR	BELL & GOSSET	CRS-4	AIR/DIRT SEPERATOR	SEE SPECS

AIR DEVICE SCHEDULE

NOTES:	
1.	GRILLE/DIFFUSER NECK SHALL BE SAME SIZE AS BRANCH DUCTWORK UNLESS NOTED OTHERWISE ON PLAN.
2.	GRILLE/DIFFUSER SHALL BE FIELD PAINTABLE.

TYPE MARK	SYTEM TYPE	MANUFACTURER	MODEL NUMBER	FRAME	FINISH	DAMPER	MAX NC RATING	EXTERNAL STATIC (WC)	NOTES	EQUIVALENTS
S01	SUPPLY	KRUEGER	SDMGDR	DUCT	PAINT	EXTRACTOR	30	0.1"	1,2	TITUS, PRICE

AIR COOLED CHILLER SCHEDULE

NOTES:	
1.	SINGLE POINT POWER CONNECTION WITH DISCONNECTING MEANS. COORDINATE WITH ELECTRICAL CONTRACTOR.
2.	BACNET CONTROL MODULE FOR INTEGRATION WITH BAS SYSTEM. COORDINATE WITH BAS CONTRACTOR.
3.	(2) VARIABLE SPEED SCROLL COMPRESSORS FOR MODULATING CAPACITY WITH ADDITIONAL HEAD PRESSURE CONTROL.
4.	REFER TO SPECIFICATIONS FOR WARRANTY INFORMATION.
6.	PIPE EXTENSION KIT WITH FACTORY INSTALLED FLOW SWITCH.
7.	CONDENSER COIL HAIL GUARDS.
8.	UNIT SHALL BE SELECTED WITH 30% GLYCOL.

TYPE MARK	MANUFACTURER	MODEL NUMBER	TONNAGE	AMBIENT (F)	HYDRONIC				VOLTAGE	MCA	MOCP	EER	WEIGHT (LBS)	NOTES	EQUIVALENTS
					FLOW (GPM)	PRESSURE DROP (FT)	EWT (F)	LWT (F)							
CH01a	YORK	YLAA0070SJ46XFB	70	95	105.9	7.96	58.0	42.0	480/3	170	175	10.39	4597	1 THRU 8	SEE SPECS
CH01b	YORK	YLAA0070SJ46XFB	70	95	105.9	7.96	58.0	42.0	480/3	170	175	10.39	4597	1 THRU 8	SEE SPECS

VAV TERMINAL UNIT SCHEDULE

NOTES:	
1.	PROVIDE SCRIM REINFORCED FOIL FACED LINER.
2.	PROVIDE AIR VALVE WITH AVERAGING SENSOR.
3.	PROVIDE WITH BOTTOM ACCESS PANELS.
4.	PROVIDE FULL UNIT DISCONNECT SWITCH.
5.	PROVIDE ELECTRIC HEAT WITH SCR CONTROL.
6.	PROVIDE HANGING BRACKETS WITH VIBRATION ISOLATION.
7.	PROVIDE DDC CONTROLS COMPATIBLE WITH BUILDING AUTOMATION SYSTEM.

TYPE MARK	MANUFACTURER	MODEL	MAX DEPTH	AIRFLOW			ELECTRIC HEATER			INLET/OUTLET STATIC (WC)	MAX NC	CONTROL VOLTAGE	NOTES	EQUIVALENTS
				COOLING CFM	HEATING CFM	MIN CFM	CAPACITY (KW)	LAT (F)	VOLTAGE					
VAV01	KRUEGER	LMHS	10"	685	-	125	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV02	KRUEGER	LMHS	10"	140	-	40	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV03	KRUEGER	LMHS	10"	635	-	125	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV04	KRUEGER	LMHS	10"	310	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV05	KRUEGER	LMHS	10"	300	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV06	KRUEGER	LMHS	10"	85	-	40	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV07	KRUEGER	LMHS	10"	375	-	90	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV08	KRUEGER	LMHS	10"	290	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV09	KRUEGER	LMHS	10"	130	-	40	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV10	KRUEGER	LMHS	10"	325	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV11	KRUEGER	LMHS	10"	280	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV12	KRUEGER	LMHS	10"	335	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV13	KRUEGER	LMHS	10"	210	-	40	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV14	KRUEGER	LMHS	10"	410	-	90	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV15	KRUEGER	LMHS	10"	310	-	65	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV16	KRUEGER	LMHS	10"	185	-	40	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV17	KRUEGER	LMHS	10"	540	-	125	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV18	KRUEGER	LMHS	13"	945	-	200	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAV19	KRUEGER	LMHS	10"	520	-	125	-	-	-	1.0"/0.5"	28	120/1	1 THRU 7	TITUS
VAVE01	KRUEGER	LMHS	10"	305	85	85	3	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE02	KRUEGER	LMHS	10"	540	140	140	4	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE03	KRUEGER	LMHS	10"	330	85	85	4	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE04	KRUEGER	LMHS	10"	210	55	55	2.5	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE05	KRUEGER	LMHS	10"	270	85	85	3	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE06	KRUEGER	LMHS	10"	345	85	85	4	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE07	KRUEGER	LMHS	15"	1170	300	300	15	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE08	KRUEGER	LMHS	10"	705	215	215	10	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE09	KRUEGER	LMHS	15"	1140	300	300	11	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE10	KRUEGER	LMHS	15"	945	225	225	11	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE11	KRUEGER	LMHS	10"	420	125	125	6	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE12	KRUEGER	LMHS	15"	510	155	155	8	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE13	KRUEGER	LMHS	10"	900	225	225	11	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE14	KRUEGER	LMHS	10"	665	190	190	8.5	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE15	KRUEGER	LMHS	15"	550	165	165	8	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE16	KRUEGER	LMHS	15"	2145	575	575	24	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE17	KRUEGER	LMHS	15"	1620	425	425	17	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE18	KRUEGER	LMHS	15"	1620	425	425	17	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS
VAVE19	KRUEGER	LMHS	15"	2060	2060	2060	24	95	480/3	1.0"/0.5"	28	277/1	1 THRU 7	TITUS

FAN POWERED VAV TERMINAL UNIT SCHEDULE

NOTES:	
1.	PROVIDE SCRIM REINFORCED FOIL FACED LINER.
2.	PROVIDE AIR VALVE WITH AVERAGING SENSOR.
3.	PROVIDE WITH BOTTOM ACCESS PANELS.
4.	PROVIDE FULL UNIT DISCONNECT SWITCH.
5.	PROVIDE ELECTRIC HEAT WITH SCR CONTROL.
6.	PROVIDE ECM FAN MOTOR.
7.	PROVIDE HANGING BRACKETS WITH VIBRATION ISOLATION.
8.	PROVIDE DDC CONTROLS COMPATIBLE WITH BUILDING AUTOMATION SYSTEM.

TYPE MARK	MANUFACTURER	MODEL	UNIT SIZE	INLET SIZE	AIRFLOW		FAN			ELECTRIC HEATER			INLET/EXTERNASTATIC (WC)	MAX NC	CONTROL VOLTAGE	NOTES	EQUIVALENTS
					COOLING CFM	MIN. PRIMARY CFM	CONFIGURATION	HEATING CFM	VOLTAGE	CAPACITY (KW)	LAT (F)	VOLTAGE					
FVAV01	KRUEGER	KQFP	4	10"	1255	380	PARALLEL	620	277/1	10.5	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV02	KRUEGER	KQFP	7	12"	1815	550	PARALLEL	900	277/1	14	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV03	KRUEGER	KQFP	4	8"	755	230	PARALLEL	390	277/1	9	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV04	KRUEGER	KQFP	4	8"	890	270	PARALLEL	445	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV05	KRUEGER	KQFP	7	12"	1530	460	PARALLEL	765	277/1	17	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV06	KRUEGER	KQFP	7	14"	2240	680	PARALLEL	1110	277/1	17	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV07	KRUEGER	KQFP	4	8"	665	200	PARALLEL	330	277/1	8	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV08	KRUEGER	KQFP	4	10"	1085	330	PARALLEL	540	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV09	KRUEGER	KQFP	4	8"	810	250	PARALLEL	400	277/1	9	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV10	KRUEGER	KQFP	4	10"	1360	410	PARALLEL	680	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV11	KRUEGER	KQFP	4	10"	950	285	PARALLEL	475	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV12	KRUEGER	KQFP	4	10"	1240	380	PARALLEL	610	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV13	KRUEGER	KQFP	4	10"	1240	380	PARALLEL	610	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV14	KRUEGER	KQFP	7	14"	2520	760	PARALLEL	1255	277/1	19	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV15	KRUEGER	KQFP	7	14"	2800	840	PARALLEL	360	277/1	14	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV16	KRUEGER	KQFP	4	8"	825	250	PARALLEL	410	277/1	9	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV17	KRUEGER	KQFP	4	10"	1190	360	PARALLEL	590	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS
FVAV18	KRUEGER	KQFP	4	10"	1190	360	PARALLEL	590	277/1	10	90	480/3	1.0"/0.5"	30	277/1	1 THRU 8	TITUS

AIR HANDLING UNIT SCHEDULE

NOTES:	
1.	SUPPLY FAN WALL WITH (3) ROWS OF (3) SUPPLY FANS. FAN WALL SHALL BE EQUIPPED WITH (2) VFDS'S PROVIDED AND INSTALLED BY THE BAS CONTRACTOR. (1) VFD SHALL BE 100% REDUNDANT AND AUTMATICALLY TRANSFER UPON FAULT.
2.	(2) EXHAUST FAN WALLS WITH (2) ROW OF (2) EXHAUST FAN. EXHAUST FANS SHALL BE EQUIPPED WITH (2) VFDS PROVIDED AND INSTALLED BY THE BAS CONTRACTOR. (1) VFD SHALL BE 100% REDUNDANT AND AUTMATICALLY TRANSFER UPON FAULT.
3.	(2) CHILLED WATER COILS STACKED ON TOP OF EACH OTHER. COILS SHALL HAVE SEPERATE HYDRONIC CONNECTIONS. 3-WAY CONTROL VALVE FURNISHED BY BAS CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
4.	SOUND TRAP SECTION.
5.	MODULATING ELECTRIC PREHEAT COIL FOR PRIMARY OUTSIDE AIR PREHEAT.
6.	MODULATING STEAM GENERATOR FOR HUMIDIFCATION CONTROL. HUMIDIFIER SHALL BE EQUIVALENT TO NEPTRONIC SKE4-NM100M-480-3. GENERATOR SHALL BE FIELD INSTALLED IN THE AIR HANDLER STEAM CABINET SECTION.
7.	2" MERV 8 PRE FILTER SECTION WITH STANDARD FILTER SIZES. (5) 12"X24" AND (20) 24"X24" FILTERS.
8.	MINIMUM OUTSIDE AIR DAMPER TO CONTROL TO PRIMARY CFM. DAMPER ACTUATOR SHALL BE PROVIDED BY BAS CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
9.	0-100% ECONOMIZER DAMPER INTERLOCKED WITH RETURN AIR DAMPERS FOR ECONOMIZER CONTROL. PROVIDE (2) MOTORIZED EXHAUST AIR DAMPERS FOR BUILDING PRESSURE CONTROL. ACTUATORS PROVIDED BY BAS CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
10.	PROVIDE CONTROLS SECTION ON AIR HANDLER FOR BAS CONTROLLER AND FAN VFDS. COORDINATE WITH BAS CONTRACTOR. CONTROLLER PROVIDED AND INSTALLED BY BAS CONTRACTOR.
11.	ALL AIR HANDLER SECTIONS SHALL BE EQUIPPED WITH HINGED ACCESS DOORS.
12.	REFER TO SPECIFICATIONS FOR UNIT CONSTRUCTION, COMPONENT, AND WARRANTY REQUIREMENTS.

TYPE MARK	MANUFACTURER	SUPPLY FAN WALL					EXHAUST FAN WALL				PREHEAT COIL				COOLING COIL						HUMIDIFICATION				WEIGHT (LB)	NOTES	EQUIVALENTS
		SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	EXTERNAL STATIC (WC)	SUPPLY FAN HP	SUPPLY FAN VOLTAGE	EXHAUST CFM	RETURN/EXHAUST FAN ESP	RETURN/EXHAUST FAN HP	EXHAUST FAN VOLTAGE	AIRFLOW (CFM)	EAT/LAT (DB)	CAPACITY (KW)	PREHEAT COIL VOLTAGE	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	ENTERING AIR (DB/WB)	LEAVING AIR (DB/WB)	EWT/LWT (F)	FLOW	MAX COIL PRESSURE DROP (FT)	MANUFACTUER	AIRFLOW (CFM)	STEAM RATE (LB/HR)	HUMIDIFER (KW)	HUMIDIFIER VOLTAGE			
AHU01	TEMTROL	(1) 34000	(1) 8500	(1) 4.75"	(9) 7	(1) 480/3	(2) 17000	(2) 0.5"	(4) 3.5	(2) 480/3	8500	0/60	(1) 178.3	(1) 480/3	1078.7	1367.2	84.1/67.0	53.1/53.1	42/58	183.0	13.4	NEPTRONIC	34000	545.8	(1) 100	(2) 480/3	32167	1 THRU 12	SEE SPECS

11/20/2025 11:27:18 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

MECHANICAL SCHEDULES

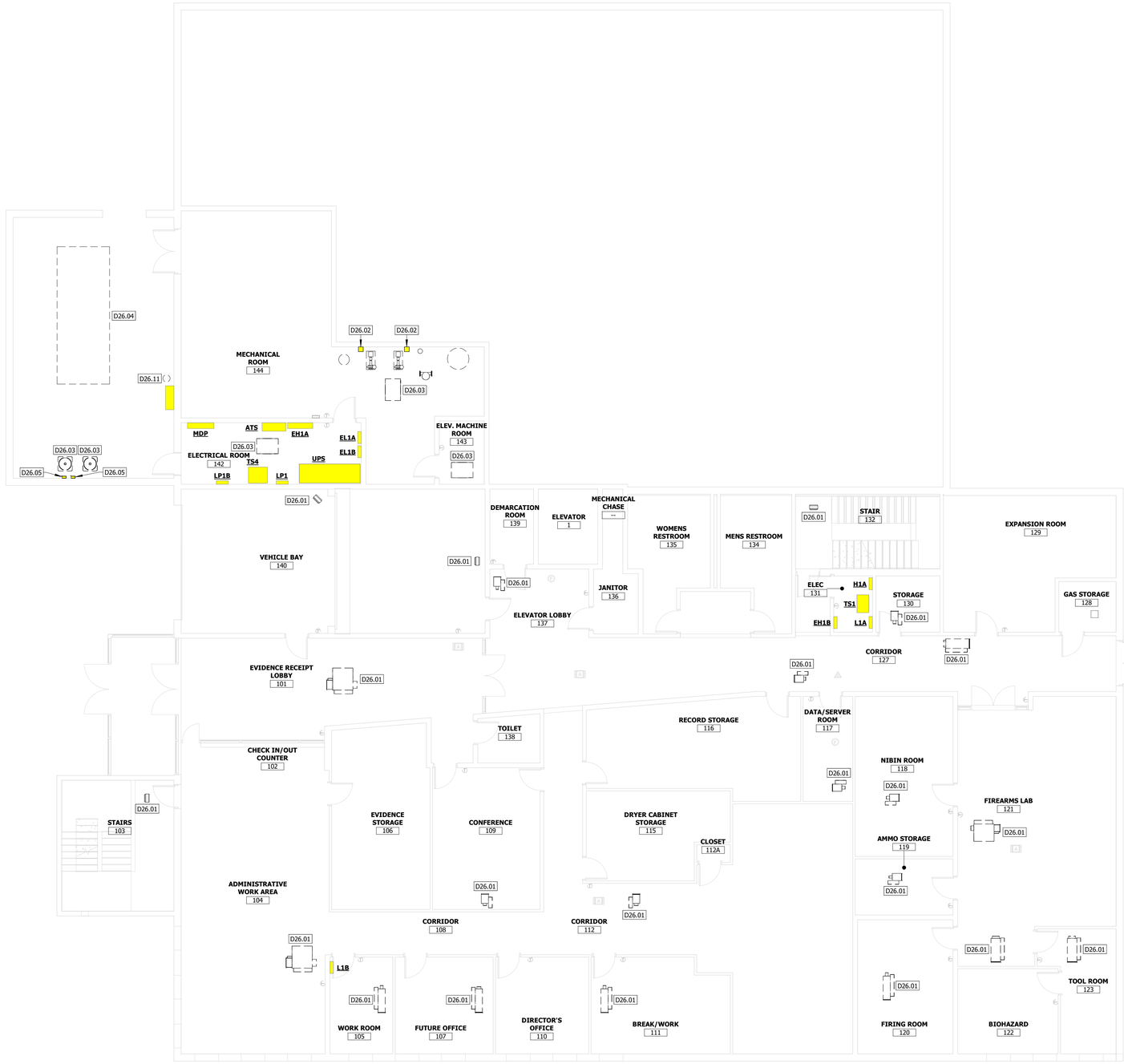
SHEET NUMBER:

M-401

19 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
D26.01	REMOVE EXISTING ELECTRICAL CONNECTION(S) TO MECHANICAL EQUIPMENT. ASSOCIATED CONDUIT AND CONDUCTORS SHALL REMAIN. REFER TO IMPROVEMENT PLAN FOR ADDITIONAL REQUIREMENTS.
D26.02	REMOVE EXISTING ELECTRICAL CONNECTION TO PUMP STARTER AND BASE MOUNTED PUMP. REFER TO IMPROVEMENT PLAN FOR ADDITIONAL REQUIREMENTS. EXISTING CONDUIT AND CONDUCTORS BACK TO ASSOCIATED PANELBOARDS SHALL REMAIN.
D26.03	REMOVE EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT AND ASSOCIATED CONDUIT AND CONDUCTORS BACK TO PANELBOARD.
D26.04	REMOVE EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT AND ASSOCIATED CONDUCTORS BACK TO PANELBOARD. EXISTING UNDERGROUND CONDUIT TO EQUIPMENT SHALL REMAIN AND BE EVALUATED FOR POTENTIAL REUSE. REFER TO IMPROVEMENT PLANS FOR FURTHER REQUIREMENTS.
D26.05	REMOVE EXISTING DISCONNECT AND ASSOCIATED CONDUIT AND CONDUCTORS BACK TO PANELBOARD.
D26.11	CAP EXISTING LOW VOLTAGE CONDUIT UNDERGROUND TO EXISTING MECHANICAL EQUIPMENT.



1 DEMO ELECTRICAL PLAN - LEVEL1
1/8" = 1'-0"

11/20/2025 11:27:19 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB ADAM NELSON
NUMBER PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO ELECTRICAL PLAN - LEVEL 1

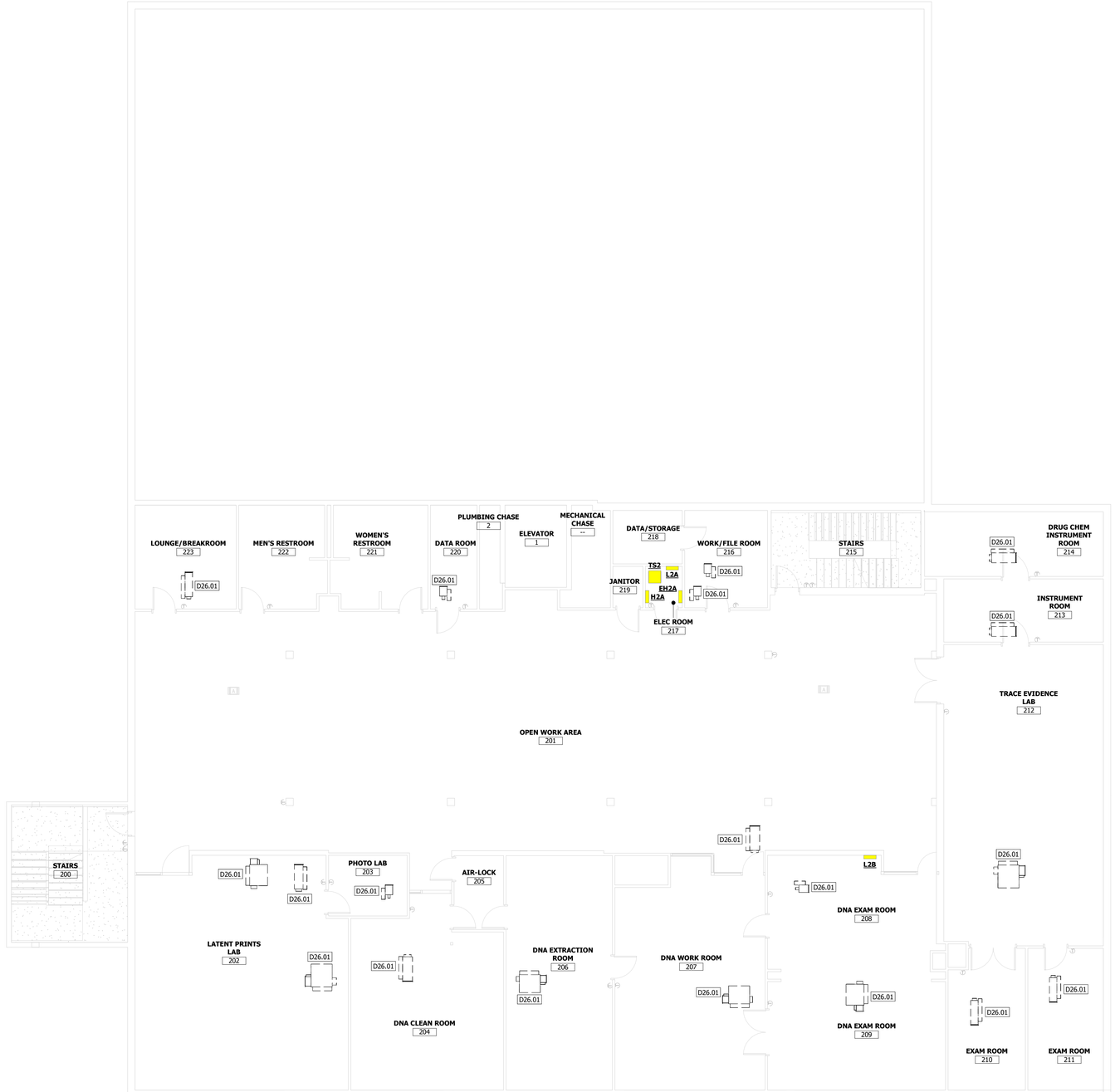
SHEET NUMBER:

E-001

20 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
D26.01	REMOVE EXISTING ELECTRICAL CONNECTION(S) TO MECHANICAL EQUIPMENT. ASSOCIATED CONDUIT AND CONDUCTORS SHALL REMAIN. REFER TO IMPROVEMENT PLAN FOR ADDITIONAL REQUIREMENTS.



1 DEMO ELECTRICAL PLAN - LEVEL 2
1/8" = 1'-0"

11/20/2025 11:27:19 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB ADAM NELSON
NUMBER PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

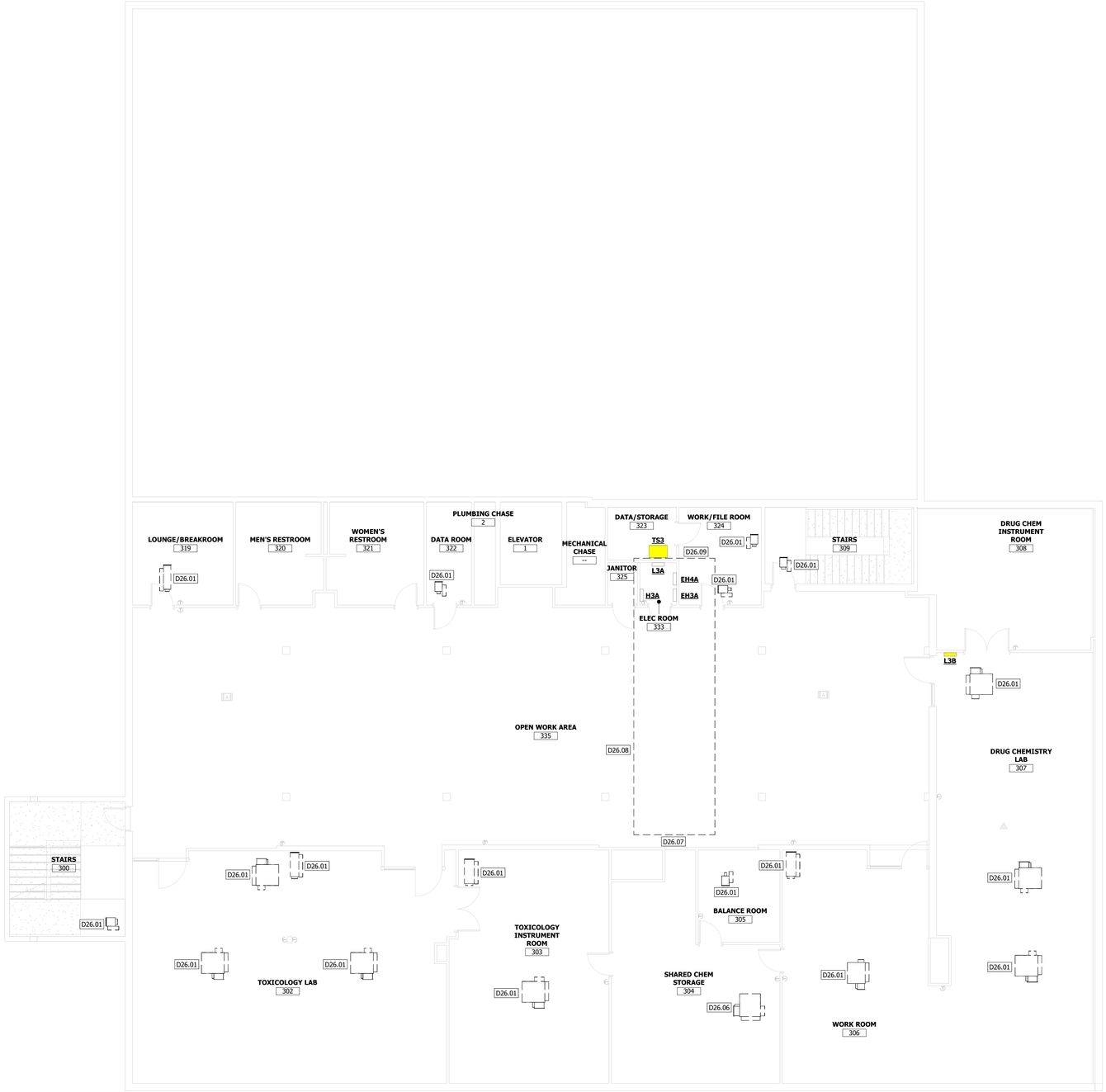
SHEET TITLE:

DEMO ELECTRICAL PLAN - LEVEL 2

SHEET NUMBER:

E-002

21 of 27 SHEETS
10/06/2025



1 DEMO ELECTRICAL PLAN - LEVEL 3
1/8" = 1'-0"

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
D26.01	REMOVE EXISTING ELECTRICAL CONNECTION(S) TO MECHANICAL EQUIPMENT. ASSOCIATED CONDUIT AND CONDUCTORS SHALL REMAIN. REFER TO IMPROVEMENT PLAN FOR ADDITIONAL REQUIREMENTS.
D26.06	REMOVE EXISTING ELECTRICAL CONNECTION TO FAN AND ELECTRIC REHEAT AND ASSOCIATED CONDUIT AND CONDUCTORS BACK TO PANELBOARD.
D26.07	REMOVE EXISTING ELECTRICAL CONNECTION TO STEAM GENERATORS AND ELECTRIC PREHEAT COIL AND ASSOCIATED CONDUITS AND CONDUCTORS BACK TO PANELBOARD "MDP".
D26.08	REMOVE EXISTING ELECTRICAL CONNECTION TO SUPPLY FAN AND ASSOCIATED CONDUITS AND CONDUCTORS BACK TO PANELBOARD "EH4A".
D26.09	REMOVE EXISTING ELECTRICAL CONNECTION TO EXHAUST FAN AND ASSOCIATED CONDUITS AND CONDUCTORS BACK TO PANELBOARD "EH4A".

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

DEMO ELECTRICAL PLAN - LEVEL 3

SHEET NUMBER:

E-003

22 of 27 SHEETS
10/06/2025

11/20/2025 11:27:19 AM

DISCONNECT SCHEDULE

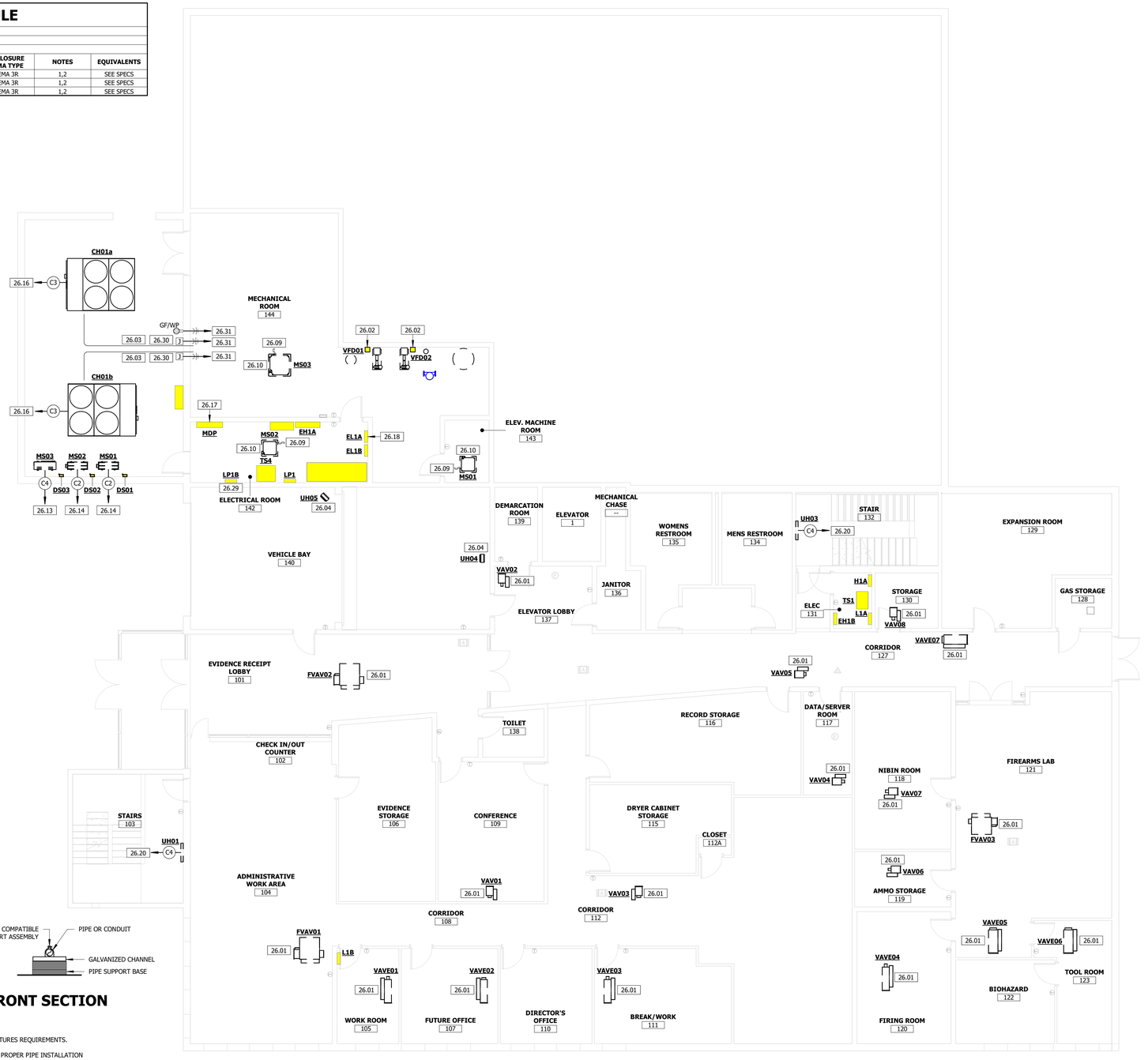
NOTES:									
1.	GROUND LUG KIT.								
2.	DISCONNECT SHALL BE LOCKABLE IN THE OPEN POSITION.								
TYPE MARK	**MANUFACTURER**	**EQUIPMENT SERVED**	**VOLTAGE**	**DUTY**	**AMPS**	**POLES**	**ENCLOSURE NEMA TYPE**	**NOTES**	**EQUIVALENTS**
DS01	SQUARE D	MS01	208	GD	30	2	NEMA 3R	1,2	SEE SPECS
DS02	SQUARE D	MS02	208	GD	30	2	NEMA 3R	1,2	SEE SPECS
DS03	SQUARE D	MS03	208	GD	60	2	NEMA 3R	1,2	SEE SPECS

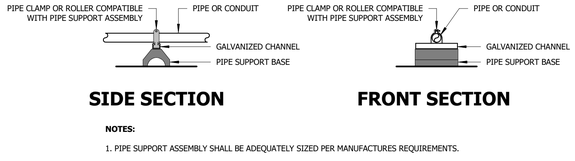
CONDUIT AND CONDUCTORS

KEY VALUE	SIZE AND QUANTITY
C2	(2) #10 AND (1) #10 GROUND IN 0.75" CONDUIT.
C3	(3) 2/0 AND (1) #6 GROUND IN 2" CONDUIT.
C4	(2) #8 AND (1) #10 GROUND IN 0.75" CONDUIT.

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
26.01	RECONNECT EXISTING CONDUCTORS TO NEW TERMINAL UNIT. MODIFY CONDUIT AND CONDUCTORS AS REQUIRED FOR NEW INSTALLATION.
26.02	RECONNECT NEW PUMP TO EXISTING CIRCUIT THROUGH NEW VFDS PROVIDED BY BAS CONTRACTOR.
26.03	PROVIDE 0.75" LOW VOLTAGE CONDUIT FOR NEW MECHANICAL EQUIPMENT CONTROLS. COORDINATE INSTALLATION REQUIREMENTS WITH BAS CONTRACTOR.
26.04	RECONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. MODIFY CONDUIT AND CONDUCTORS AS REQUIRED FOR NEW INSTALLATION.
26.09	PROVIDE 2-POLE 20-AMP SWITCH FOR FAN COIL DISCONNECT. COORDINATE WITH MECHANICAL CONTRACTOR.
26.10	POWER MINI-SPLIT FAN COIL THROUGH ASSOCIATED HEAT PUMP UNIT. COORDINATE WITH MECHANICAL CONTRACTOR.
26.13	CIRCUIT TO EXISTING SPACE IN PANELBOARD "EL1A". PROVIDE NEW 2-POLE, 40-AMP, 10KA, HACR RATED CIRCUIT BREAKER.
26.14	CIRCUIT TO EXISTING SPACE IN PANELBOARD "EL1A". PROVIDE NEW 2-POLE, 25-AMP, 10KA, HACR RATED CIRCUIT BREAKER.
26.16	CIRCUIT TO EXISTING SPACE IN PANELBOARD "MDP". PROVIDE NEW 3-POLE, 175-AMP, 35KA, HACR RATED CIRCUIT BREAKER.
26.17	EXISTING MAIN DISTRIBUTION PANELBOARD "MDP". EXISTING PANELBOARD IS A SQUARE D, I-LINE, 480Y/277, 1200 AMP PANELBOARD.
26.18	EXISTING BRANCH PANELBOARD "EL1A". EXISTING PANELBOARD IS A SQUARE D, NQ, 208Y/120, 400 AMP PANELBOARD.
26.20	CIRCUIT TO EXISTING SPACE IN PANELBOARD "EL1A". PROVIDE NEW 2-POLE, 40 AMP, 10KA CIRCUIT BREAKER.
26.29	EXISTING BRANCH PANELBOARD "LP1B". EXISTING PANEL IS A SQUARE D QO, 120/240-VOLT, 2-PHASE, 100-AMP, PANELBOARD.
26.30	ELECTRICAL CONNECTION TO HEAT TRACE. COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR.
26.31	CIRCUIT TO EXISTING SPACE IN PANELBOARD "LP1B". PROVIDE NEW 20-AMP , SINGLE POLE CIRCUIT BREAKER.





SIDE SECTION **FRONT SECTION**

NOTES:

1. PIPE SUPPORT ASSEMBLY SHALL BE ADEQUATELY SIZED PER MANUFACTURES REQUIREMENTS.
2. PROVIDE ALL NECESSARY PIPE SUPPORT ASSEMBLY ACCESSORIES FOR PROPER PIPE INSTALLATION SUCH AS SLOPING AND ELEVATING TO CLEAR OBSTRUCTIONS.
3. SPACE PIPE SUPPORTS IN ACCORDANCE WITH APPLICABLE CODES INCLUDING IPC, IFGC, IMC, AND NEC.
4. PIPE SUPPORT ASSEMBLY SHALL BE EATON B-LINE SERIES WITH DURA-BLOK SUPPORT BASES OR APPROVED EQUAL. PLASTIC SUPPORTS WILL NOT BE ACCEPTED.

2 EXTERIOR PIPE SUPPORT
NOT TO SCALE

1 ELECTRICAL PLAN - LEVEL 1
1/8" = 1'-0"

11/20/2025 11:27:20 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI · JACOB ADAM NELSON · NUMBER PE-2009018758 · PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

ELECTRICAL PLAN - LEVEL 1

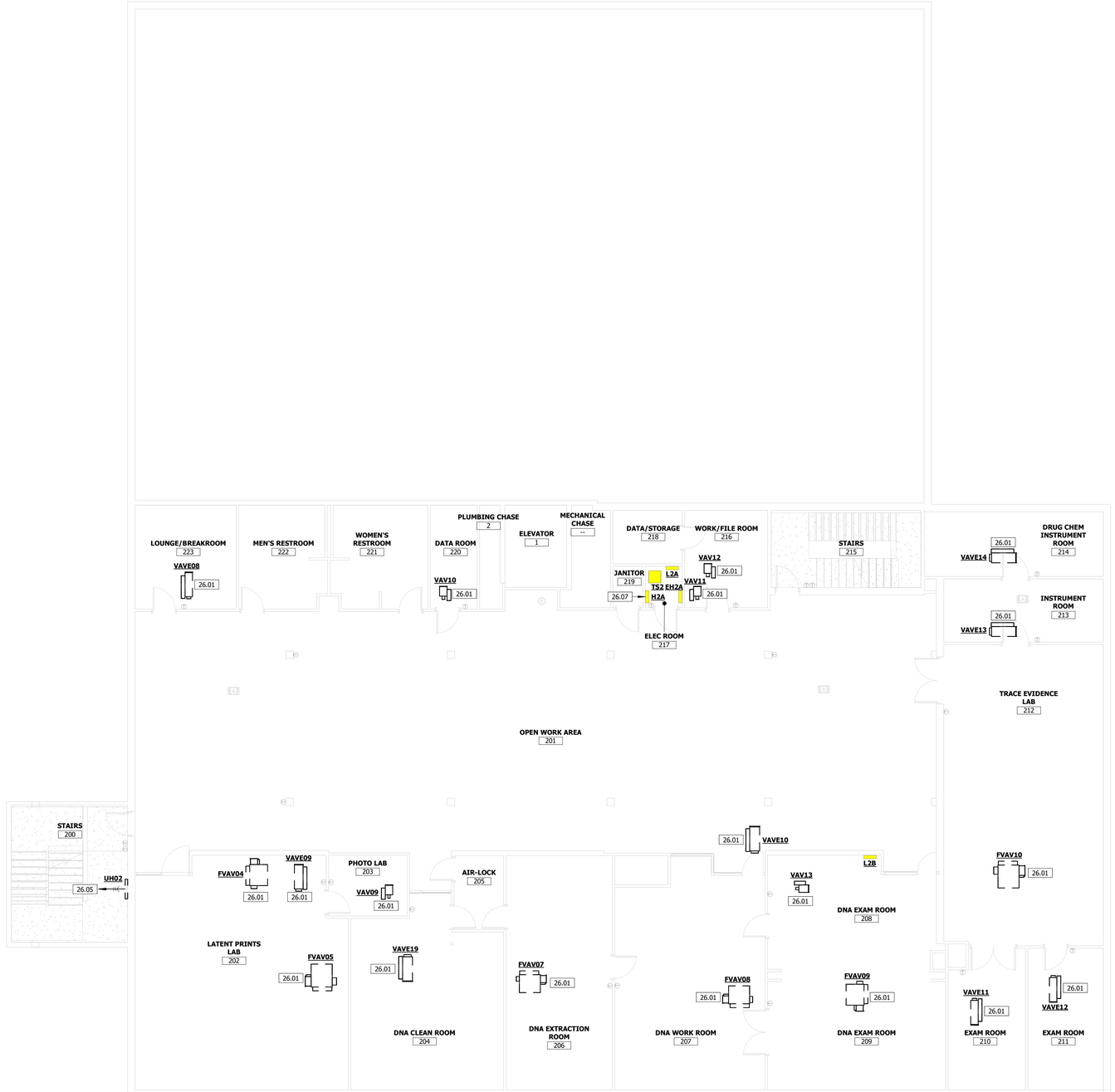
SHEET NUMBER:

E-101

23 of 27 SHEETS
10/06/2025

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
26.01	RECONNECT EXISTING CONDUCTORS TO NEW TERMINAL UNIT. MODIFY CONDUIT AND CONDUCTORS AS REQUIRED FOR NEW INSTALLATION.
26.05	CIRCUIT NEW UNIT HEATER TO EXISTING SPACE IN PANELBOARD "H2A". PROVIDE NEW TWO POLE, 20-AMP, 18KA CIRCUIT BREAKER.
26.07	EXISTING BRANCH PANELBOARD "H2A". EXISTING PANEL IS A SQUARE D NF, 277/480-VOLT, 3-PHASE, 400-AMP PANELBOARD.



1 ELECTRICAL PLAN - LEVEL 2
1/8" = 1'-0"

11/20/2025 11:27:21 AM

STATE OF MISSOURI
MIKE KEHOE, GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

ELECTRICAL PLAN - LEVEL 2

SHEET NUMBER:

E-102

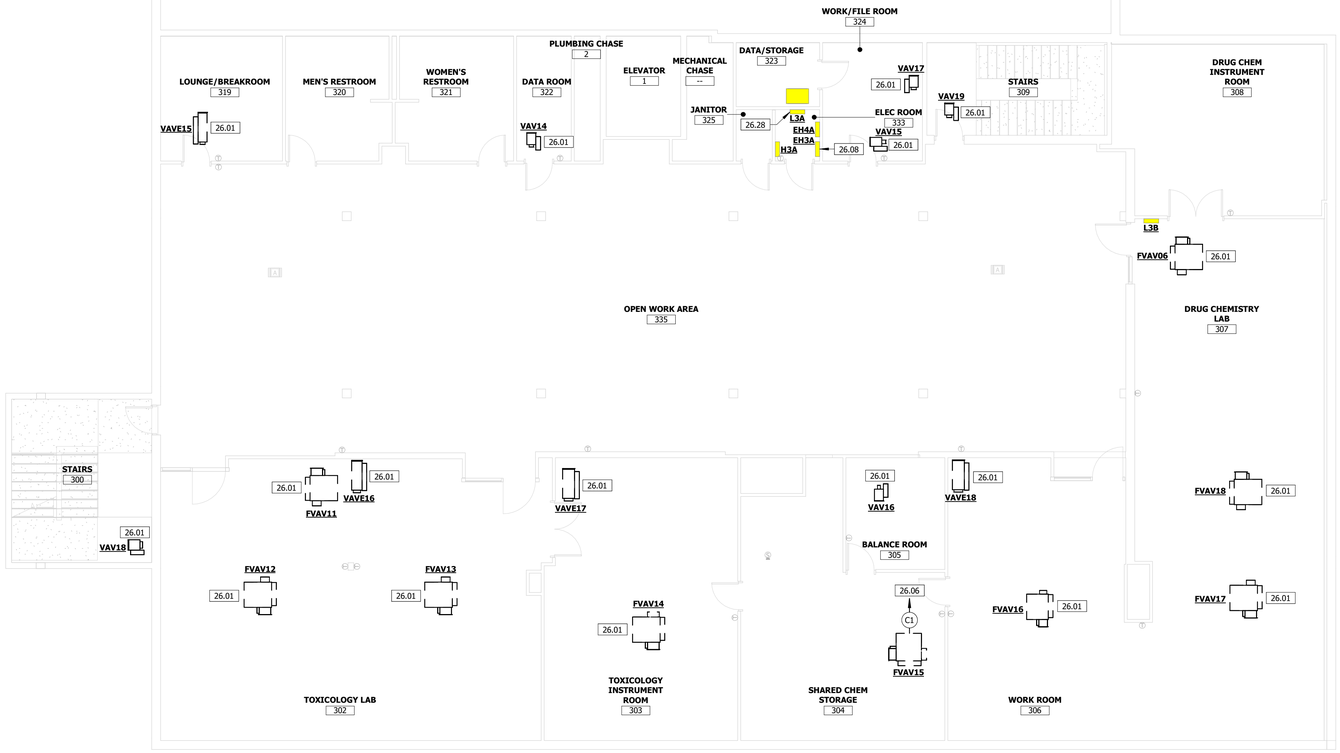
24 of 27 SHEETS
10/06/2025

CONDUIT AND CONDUCTORS

KEY VALUE	SIZE AND QUANTITY
C1	(4) #10 AND (1) #10 GROUND IN 0.5" CONDUIT.

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
26.01	RECONNECT EXISTING CONDUCTORS TO NEW TERMINAL UNIT. MODIFY CONDUIT AND CONDUCTORS AS REQUIRED FOR NEW INSTALLATION.
26.06	CIRCUIT FVAV TO EXISTING SPACE IN PANEL "EH3A". PROVIDE NEW 30 AMP, 3-POLE HACR RATED CIRCUIT BREAKER.
26.08	EXISTING BRANCH PANELBOARD "EH3A". EXISTING PANEL IS A SQUARE D NF, 277/480-VOLT, 3-PHASE, 400-AMP, PANELBOARD.
26.28	EXISTING BRANCH PANELBOARD "L3A". EXISTING PANEL IS A SQUARE D NQ, 120/208-VOLT, 3-PHASE, 225-AMP, PANELBOARD.



1 ELECTRICAL PLAN - LEVEL 3
1/8" = 1'-0"

11/20/2025 11:27:21 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

ELECTRICAL PLAN - LEVEL 3

SHEET NUMBER:

E-103

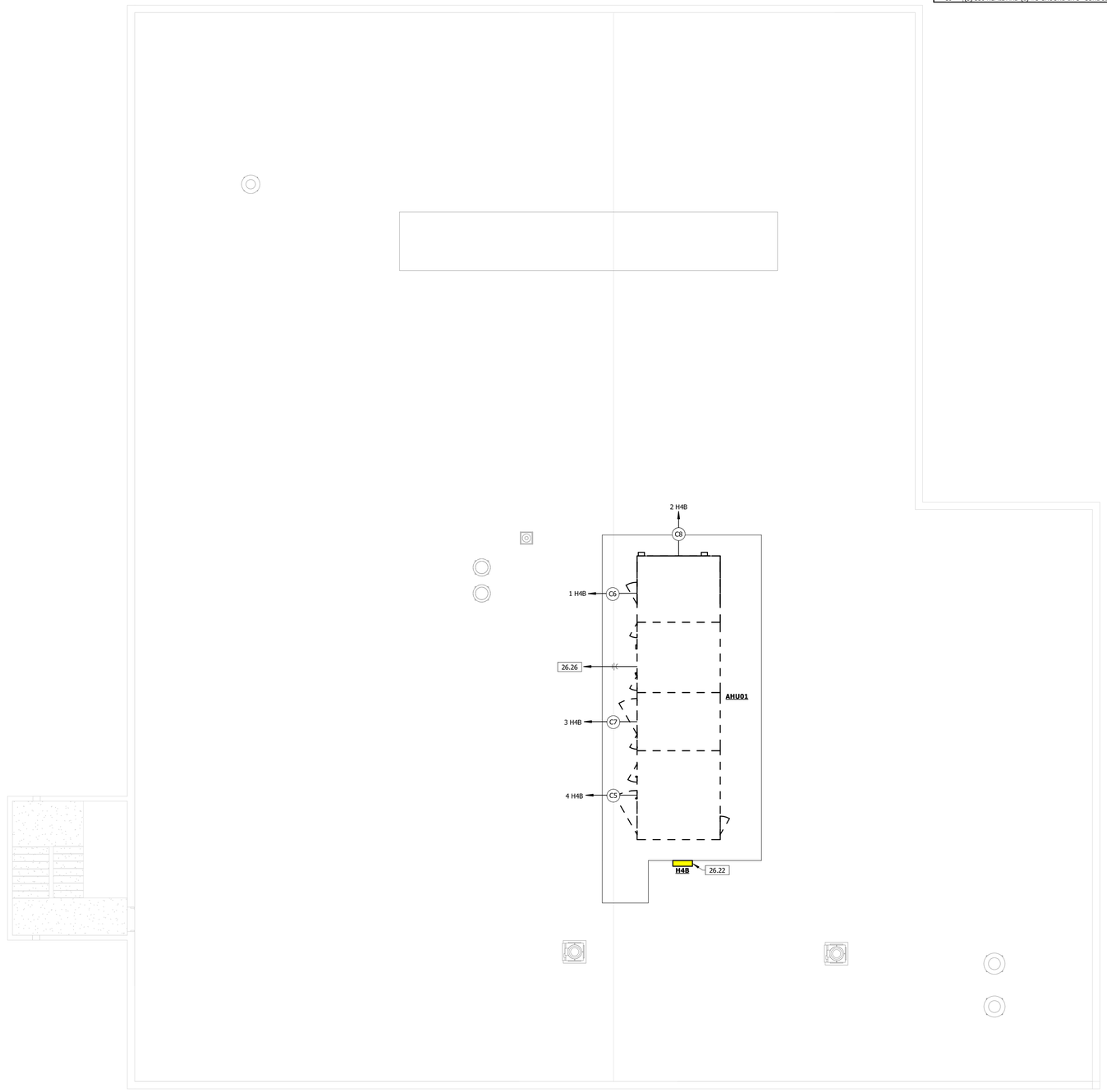
25 of 27 SHEETS
10/06/2025

CONDUIT AND CONDUCTORS

KEY VALUE	SIZE AND QUANTITY
C5	(3) 1/0 AND (1) #6 GROUND IN 2" CONDUIT.
C6	(3) #10 AND (1) #10 GROUND IN 0.75" CONDUIT.
C7	(3) #3 AND (1) #6 GROUND IN 1.25" CONDUIT.
C8	(3) 350 KCMIL AND (1) #3 GROUND IN 3" CONDUIT.

KEYNOTE LEGEND

KEY VALUE	KEYNOTE TEXT
26.22	INSTALL NEW PANELBOARD "H4B" ON UNISTRUT STAND ATTACHED TO EXISTING EQUIPMENT PLATFORM.
26.26	CIRCUIT CONVENIENCE RECEPTACLE TO EXISTING SPACE IN PANELBOARD "L3A". PROVIDE NEW 1-POLE, 20 AMP, 18KA CIRCUIT BREAKER.



1 ELECTRICAL ROOF PLAN
1/8" = 1'-0"

11/20/2025 11:27:22 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025

PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

ELECTRICAL ROOF PLAN

SHEET NUMBER:

E-104

26 of 27 SHEETS
10/06/2025

Distribution Panel: H4B

Location: ROOF
Supply From: MDP
Mounting: SURFACE
Enclosure: NEMA 3R

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 18 KAIC
Mains Type: MLO
Mains Rating: 600 A
Model: I-Line

Panelboard Accessories:
1. EQUIPMENT GROUND BAR, 2. TIN PLATED COPPER BUS BARS, 3. PROVIDE 24" SPARE FUTURE CIRCUIT BREAKER SPACE, 4. SURGE PROTECTION DEVICE

CKT	CIRCUIT DESCRIPTION	TRIP	ACCESSORIES	POLES	A	B	C	NOTES
1	EXHAUST FANS	25 A		3	6007 VA	6007 VA	6007 VA	
2	PREHEAT COIL	300 A		3	62077 VA	62077 VA	62077 VA	
3	SUPPLY FANS	80 A		3	21020 VA	21020 VA	21020 VA	
4	STEAM GENERATOR	150 A		3	33333 VA	33333 VA	33333 VA	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
			Total Load:		122437 VA	122437 VA	122437 VA	
			Total Amps:		442 A	442 A	442 A	

Legend:
1. HACR = HACR RATED, 2. HLO = HAND LOCK-OFF, 3. GFCI = GROUND FAULT CIRCUIT INTERRUPTER, 4. EXISITNG = EXISITNG TO REMAIN

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	367311 VA	100.00%	367311 VA		
				Total Conn. Load:	367311 VA
				Total Est. Demand:	367311 VA
				Total Conn.:	442 A
				Total Est. Demand:	442 A

Notes:

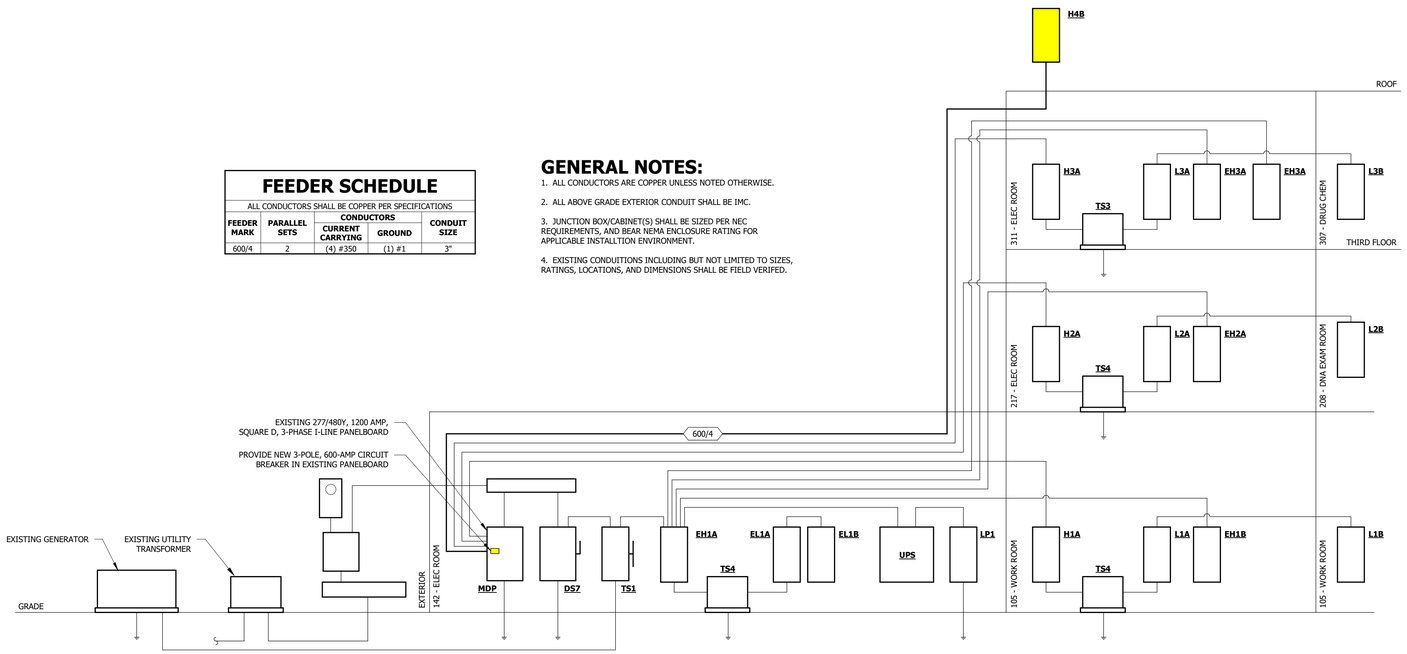
FEEDER SCHEDULE

ALL CONDUCTORS SHALL BE COPPER PER SPECIFICATIONS

FEEDER MARK	PARALLEL SETS	CONDUCTORS		CONDUIT SIZE
		CURRENT CARRYING	GROUND	
600/4	2	(4) #350	(1) #1	3"

GENERAL NOTES:

1. ALL CONDUCTORS ARE COPPER UNLESS NOTED OTHERWISE.
2. ALL ABOVE GRADE EXTERIOR CONDUIT SHALL BE IMC.
3. JUNCTION BOX/CABINET(S) SHALL BE SIZED PER NEC REQUIREMENTS, AND BEAR NEMA ENCLOSURE RATING FOR APPLICABLE INSTALLTION ENVIRONMENT.
4. EXISTING CONDUITIONS INCLUDING BUT NOT LIMITED TO SIZES, RATINGS, LOCATIONS, AND DIMENSIONS SHALL BE FIELD VERIFED.



1 ELECTRICAL RISER
NOT TO SCALE

1/20/2025 11:27:22 AM

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

Engineer of Record
Jacob Adam Nelson PE
PE-2009018758

STATE OF MISSOURI
JACOB
ADAM NELSON
NUMBER
PE-2009018758
PROFESSIONAL ENGINEER

10/06/2025
PROFESSIONAL SEAL

TRUE ENGINEERING
MECHANICAL · ELECTRICAL · PLUMBING
1200 E WOODHURST DR, STE P
SPRINGFIELD, MO 65804
417.708.7025
WWW.TRUE-MEP.COM

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY
DIVISION OF HIGHWAY PATROL

UPDATE HVAC & CHILLER, TROOP D CRIME LAB

425 East Phelps Street
Springfield, MO 65806

PROJECT # R2517-01
SITE # 6022
FACILITY # 8136022022

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 10/06/2025

CAD DWG FILE: R2517-01
DRAWN BY: KP
CHECKED BY: JN
DESIGNED BY: JK

SHEET TITLE:

ELECTRICAL DETAILS AND SCHEDULES

SHEET NUMBER:

E-201

27 of 27 SHEETS
10/06/2025