VOLUME 1

REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING

JEFFERSON CITY, MISSOURI

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR
OFFICE OF ADMINISTRATION

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

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors

DESIGNER: KLINGNER & ASSOCIATES, P.C.

PROJECT NUMBER: O2440-01

SITE NUMBER: 1010
ASSET NUMBER: 3101010001

SHEET NUMBER:
G001

SHEET 01 OF 46
JUNE 14, 2024

SHEET NUMBER	SHEET NAME	CURRENT REVISION DATE
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D104	3RD FLOOR DEMOLITION FLOOR PLAN	06/14/24
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M101	BASEMENT HYDRONIC FLOOR PLAN	06/14/24
M102	1ST FLOOR HYDRONIC FLOOR PLAN	06/14/24
M103	2ND FLOOR HYDRONIC FLOOR PLAN	06/14/24
M104	3RD FLOOR HYDRONIC FLOOR PLAN	06/14/24
M105	BASEMENT DUCTWORK FLOOR PLAN	06/14/24
M106	1ST FLOOR DUCTWORK FLOOR PLAN	06/14/24
M107	2ND FLOOR DUCTWORK FLOOR PLAN	06/14/24
M108	3RD FLOOR DUCTWORK FLOOR PLAN	06/14/24
M201	BASEMENT MECHANICAL ROOM ISOMETRIC	06/14/24
M202	BASEMENT MECHANICAL ROOM ISOMETRIC	06/14/24
M203	BASEMENT MECHANICAL ROOM ISOMETRIC	06/14/24
M501	MECHANICAL DETAILS	06/14/24
M502	MECHANICAL DETAILS	06/14/24
M503	MECHANICAL DETAILS	06/14/24
M601	EQUIPMENT SCHEDULES	06/14/24
M602	EQUIPMENT SCHEDULES	06/14/24
M603	EQUIPMENT SCHEDULES	06/14/24
M701	CONTROLS SCHEMATICS	06/14/24
M702	CONTROLS SCHEMATICS	06/14/24
M703	CONTROLS SCHEMATICS	06/14/24
M704	HYDRONIC PIPING SCHEMATIC - CONTROLS	06/14/24
E101	BASEMENT ELECTRICAL FLOOR PLAN	06/14/24
E102	1ST FLOOR ELECTRICAL FLOOR PLAN	06/14/24
E103	2ND FLOOR ELECTRICAL FLOOR PLAN	06/14/24
E104	3RD FLOOR ELECTRICAL FLOOR PLAN	06/14/24
E601	ELECTRICAL DETAILS	06/14/24

GENERAL NOTES:

1) THE CONTRACTOR(S) SHALL FIELD VERIFY EXISTING DIMENSIONS AND CONDITIONS AND TELL THE ENGINEER OF ANY DISCREPANCIES AND INTERFERENCES ENCOUNTERED PRIOR TO STARTING WORK AFFECTED THEREBY.

2) THE CONTRACTOR(S) SHALL COMPLY WITH THE LATEST EDITION OF APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO:
   - THE AMERICANS WITH DISABILITIES ACT (ADAAG)
   - INTERNATIONAL BUILDING CODE (IBC)
   - NATIONAL ELECTRIC CODE (NEC)
   - INTERNATIONAL MECHANICAL CODE (IMC)
   - INTERNATIONAL PLUMBING CODE (IPC)
   - LIFE SAFETY CODE (NFPA 101)
   - ASHRAE STANDARD 90.1 - 2019
   - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
   - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
   - AMERICAN CONCRETE INSTITUTE (ACI)
   - SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION (SMACNA)
   - BOILER AND PRESSURE VESSEL ACT OF THE STATE OF MISSOURI

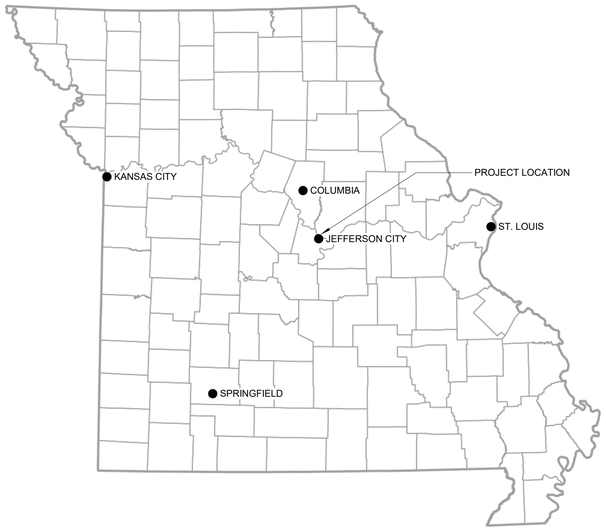
3) THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR OSHA COMPLIANCE AND JOB SITE SAFETY.

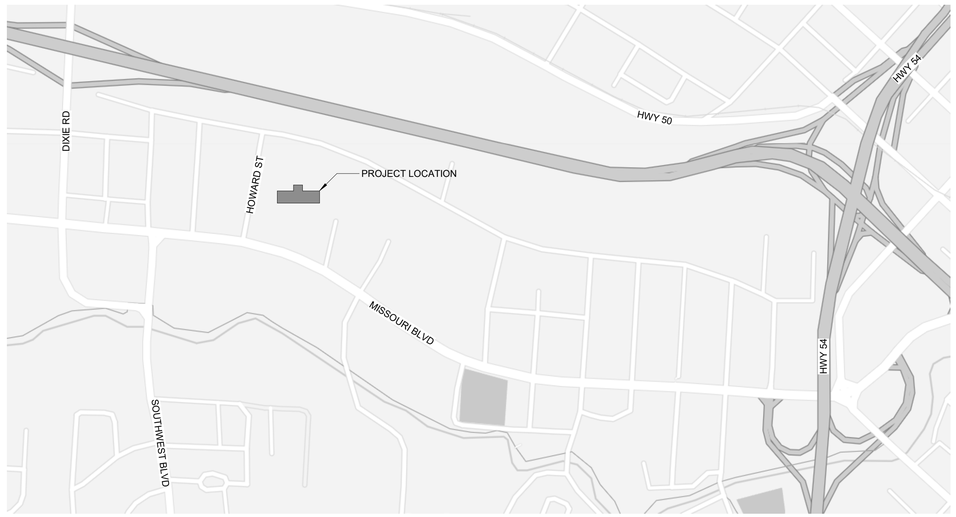
4) CONTRACTOR(S) SHALL VERIFY LOCATIONS OF ALL UTILITIES (TELEPHONE, DATA, GAS, ELECTRIC, SANITARY AND STORM SEWERS, ETC.) AT THE SITE BEFORE STARTING EXCAVATION OR CONSTRUCTION. THESE ITEMS SHALL BE MARKED AND PROTECTED. CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO EXISTING UTILITIES.

5) CONTRACTOR(S) SHALL TAKE PRECAUTIONS NECESSARY TO PROTECT ADJACENT PROPERTY FROM DAMAGE RESULTING FROM CONSTRUCTION OPERATIONS.

6) CONTRACTOR SHALL PROTECT EXISTING FINISHES AND OTHER BUILDING COMPONENTS FROM DAMAGE. ANY SURFACES AND/OR COMPONENTS DAMAGED DURING THE CONSTRUCTION PROJECTS SHALL BE RETURNED TO PRE-PROJECT CONDITIONS AND/OR MADE TO MATCH ADJACENT MATERIALS.

7) EQUIPMENT, DEVICES, APPARATUS, SYSTEMS, AND INSTALLATIONS SHALL BE ENTIRELY SUITABLE AND SAFE FOR EACH INTENDED APPLICATION AND BE IN FULL COMPLIANCE WITH APPLICABLE STANDARDS, REQUIREMENTS, RULES, REGULATIONS, CODES, STATUTES, AND ORDINANCES. NOTHING CONTAINED IN THESE PLANS AND SPECIFICATIONS SHALL BE CONSTRUED TO CONFLICT WITH THESE LAWS, CODES, AND ORDINANCES.





PROJECT LOCATION MAP

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

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CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

INDEX SHEET

SHEET NUMBER:

G002

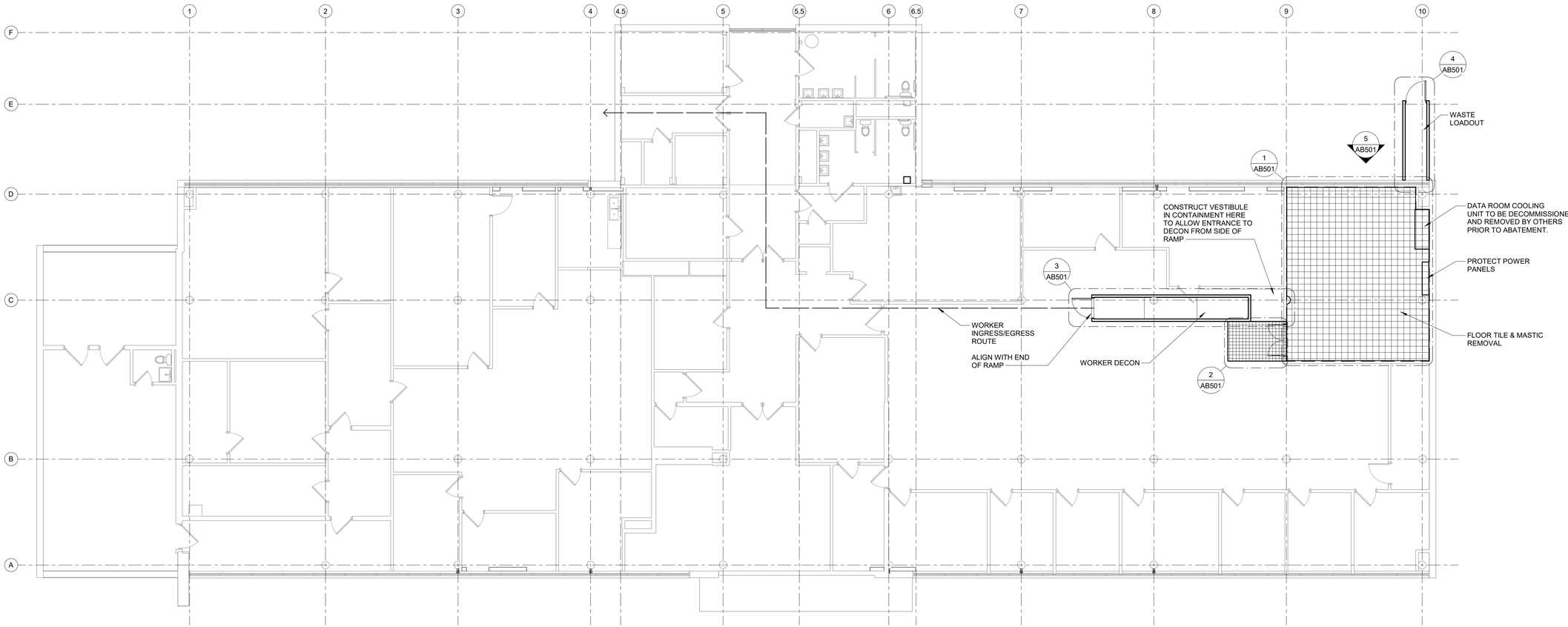
SHEET 02 OF 46
JUNE 14, 2024

SPECIAL DATA CABLE NOTES

1. DATA CABLES #1,#2,#3 & #4 SHALL BE PRESERVED, CLEANED, AND OTHERWISE LEFT UNDISTURBED DURING THE ABATEMENT ACTIVITIES. THEY ARE CLEARLY LABELED.
2. ALL DATA CABLES COMING UP THROUGH THE FLOOR (EXCEPT AS STATED IN NOTE #1 ABOVE) SHALL BE CUT AT THE FLOOR SURFACE AND REMOVED AS ASBESTOS WASTE. THE DATA CABLE CONDUIT OPENING IN THE FLOOR SHALL BE CLEANED WITH HEPA VACUUM AND SPRAYED WITH LOCK-DOWN ENCAPSULANT PRIOR TO THE COMPLETION OF ABATEMENT ACTIVITIES.

GENERAL ABATEMENT NOTES

1. THE CONTRACTOR SHALL MAKE A PERSONAL INSPECTION OF THE SITE AND INCLUDE ALL WORK REQUIRED BY THE DRAWINGS. NOTIFY THE ARCHITECT IN WRITING OF ANY INCONSISTENCIES IN THE DRAWINGS.
2. PRIOR TO COMMENCING ABATEMENT, THE CONTRACTOR SHALL ASCERTAIN FROM THE OWNER WHETHER OR NOT THE OWNER WISHES TO RETAIN ANY ITEMS. ANY SUCH ITEMS SHALL BE REMOVED WITH CARE SO AS TO PREVENT UNNECESSARY DAMAGE.
3. PROTECT OWNER'S PROPERTY AND PERSONS AT ALL TIMES.
4. EXISTING CONSTRUCTION SHALL BE PROTECTED.
5. COORDINATE ANY SYSTEMS SHUTDOWNS WHICH MAY BE REQUIRED WITH THE OWNER.
6. GENERAL CONTRACTOR SHALL PROVIDE & MAINTAIN DUST PROTECTION BETWEEN EXISTING OCCUPIED AREAS AND WORK AREAS.
7. ALL MATERIALS THAT HAVE BEEN ABATED SHALL BE REMOVED AND DISPOSED OF PROPERLY. NO ABATED MATERIALS SHALL BE STOCKPILED ON SITE.
8. ANY ITEMS NOT TO BE RETAINED BY THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
9. ABATEMENT CONTRACTOR SHALL WORK WITH BUILDING OWNER TO SECURE & CONTROL ALL ELECTRICAL AND DATA WIRING.
10. WATER AND SEWER FOR DECONTAMINATION UNIT SHALL BE COORDINATED WITH BUILDING OWNER. IF NONE ARE AVAILABLE, CONTRACTOR SHALL PROVIDE SUCH SERVICES THROUGH THE TEMPORARY ACCESS PANEL USED FOR WASTE LOADOUT.
11. ALL RAISED FLOOR TILES AND SUPPORTS SHALL BE CLEANED, NEATLY PALLETIZED, AND PROTECTED FOR REUSE BY THE OWNER. THE RAMP ACCESS TO THE RAISED FLOOR AREA SHAL BE DISPOSED. TILE, IF PRESENT UNDER THE RAMP, SHALL BE REMOVED AND DISPOSED.
12. ALL FLOOR TILE AND MASTIC BELOW THE RAISED FLOOR AREA SHALL BE PROPERLY ABATED BY REMOVAL. WASTE DISPOSAL REQUIREMENTS ARE NOTED IN THE SPECIFICATIONS. TILE PRESUMABLY EXTENDING BENEATH EXISTING WALLS SHALL BE CLEANLY AND NEATLY CUT AS CLOSE TO THE WALL AS POSSIBLE.
13. ALL CEILING AND WALLS SHALL BE PROTECTED FROM DAMAGE. COMPLETED AREAS OUTSIDE OF CONTAINMENT SHALL BE PROTECTED THROUGHOUT THE INGRESS/EGRESS ROUTE WITH TEMPERARILY ADHERED PLASTIC SHEETING WHICH SHALL BE REMOVED AT THE CONCLUSION OF THE WORK.
14. EXTERIOR WASTE LOADOUT MAY CONSIST OF LOCKABLE ENCLOSED TRAILER WHICH IS CONTROLLED BEFORE, DURING AND AFTER WORKING HOURS.
15. ESTIMATED SQUARE FOOTAGE OF FLOOR TILE AND MASTIC TO BE REMOVED IS 612 SF.
16. ALL RIGID AND FLEXIBLE CONDUIT AS WELL AS ELECTRICAL RECEPTACLES BENEATH THE FLOOR SHALL BE REMOVED AND PROPERLY DISPOSED AS ASBESTOS WASTE.



1 FIRST FLOOR DEMOLITION PLAN - ENVIROMENTAL
1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI BRYAN C. BROSS NUMBER E-30244 6/14/2024 REGISTERED PROFESSIONAL ENGINEER

BRYAN C. BROSS - ENGINEER
MO # PE-030244

ASBESTOS PROJECT DESIGNER
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DRAWING BY: GLJ
CHECKED BY: BCB
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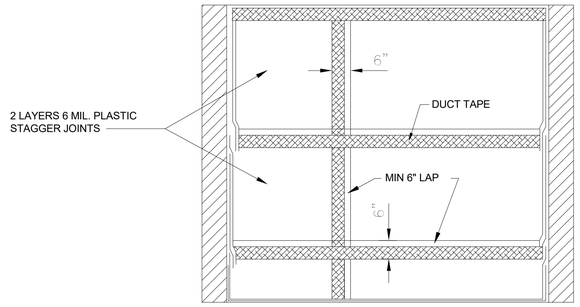
SHEET TITLE:

FIRST FLOOR ASBESTOS ABATEMENT PLAN

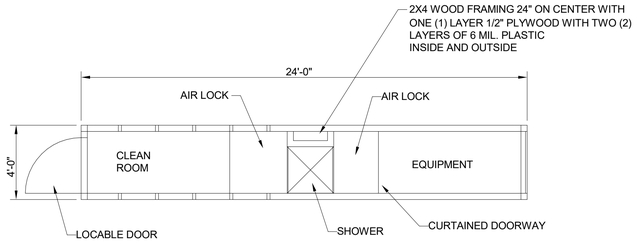
SHEET NUMBER:

AB110

SHEET 03 OF 46
JUNE 14, 2024

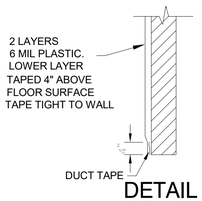


TYPICAL ROOM SECTION

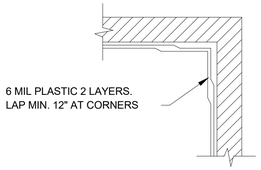


WORKER DECONTAMINATION AND WASTE LOADOUT UNITS SHALL CONFORM TO MDNR ASBESTOS ABATEMENT REGULATIONS FOUND IN CSR 10-6.240(8)(A)(1) E&F AS APPLICABLE

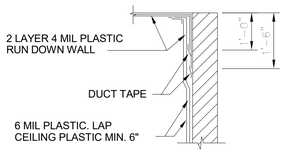
3 5 - STAGE DECONTAMINATION UNIT
NTS



DETAIL
(WALL@FLOOR)

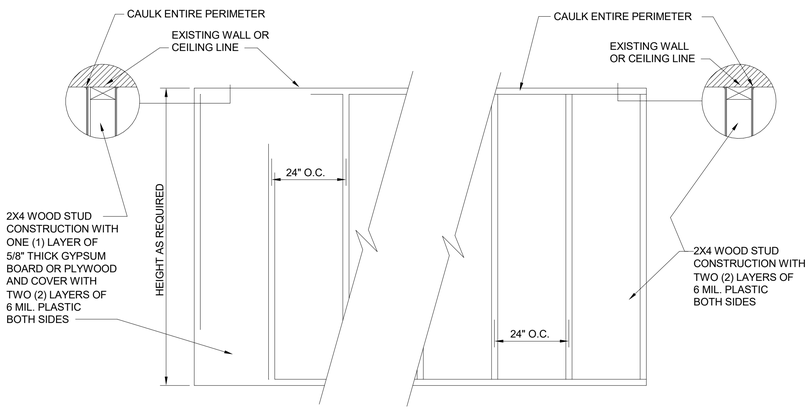


CORNER DETAIL



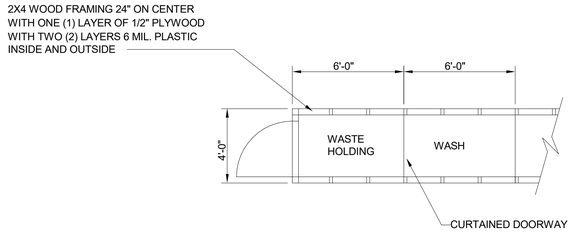
DETAIL
(WALL@CEILING)

1 CRITICAL BARRIERS AND POLYETHYENE CONTAINMENT
NTS



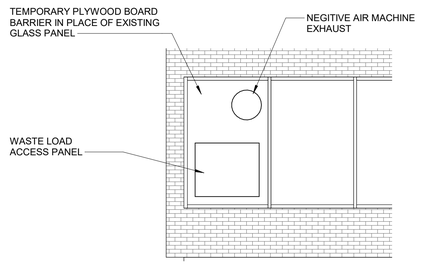
TYPE A TYPE B

2 BARRIER WALL CONSTRUCTION
NTS



WORKER DECONTAMINATION AND WASTE LOADOUT UNITS SHALL CONFORM TO MDNR ASBESTOS ABATEMENT REGULATIONS FOUND IN CSR 10-6.240(8)(A)(1) E&F AS APPLICABLE

4 WASTE LOAD-OUT CONSTRUCTION
NTS



NOTES:

1. REMOVE SEAL AND GLAZING FOR ONE GLASS PANEL.
2. INSTALL TEMPORARY PLYWOOD HARD BARRIER TO PERMIT WASTE LOADOUT AND NEGATIVE AIR MACHINE DISCHARGE.
3. WASTE LOADOUT ACCESS PANEL SHALL BE LOCKABLE FROM THE INSIDE OF THE BUILDING AND UNDER THE CONTROL OF THE CONTRACTOR AT ALL TIMES.
4. REINSTALL GLAZING GLASS PANEL & SEAL AT CONCLUSION OF ABATEMENT.

5 WASTE LOADOUT OF NEGITIVE AIR EXHAUST DETAIL
1/4" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

BRYAN C. BROSS - ENGINEER
MO # PE-030244

ASBESTOS PROJECT DESIGNER
7118011124MOPDR7176

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DRAWING BY: GLJ
CHECKED BY: BCB
DESIGNED BY: BCB

SHEET TITLE:

ASBESTOS ABATEMENT DETAILS

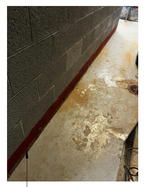
SHEET NUMBER:

AB501

SHEET 04 OF 46
JUNE 14, 2024

GENERAL NOTE:
CLEAN WALL TO MIN. 6 FT ABOVE FLOOR AND PREPARE WALL FOR NEW PAINT.

O — CLEAN WALL BAND AND PREPARE SURFACE FOR NEW PAINT

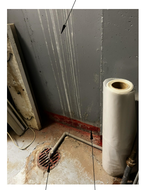


P

Q — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT.

R — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT. — BASE BAND TO BE RED TO MATCH EXISTING

S — CLEAN ENTIRE SURFACE OF WALL AND PREPARE FOR NEW PAINT — REPLACE EXISTING FLOOR DRAIN COVER AND REPAIR FLOOR



T — CLEAN WALL FROM FLOOR TO CEILING AND PREPARE SURFACE FOR NEW PAINT — BASE BAND TO BE RED TO MATCH EXISTING

U — CLEAN WALL FROM ADJACENT WALL TO CABINET, CEILING TO FLOOR AND PREPARE SURFACE FOR NEW PAINT

H — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT.

I — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT

J — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW METERS TO FLOOR.

K

L — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW EQUIPMENT TO FLOOR. CLEAN AND PREPARE FOR NEW PAINT.

M — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW EQUIPMENT TO FLOOR. CLEAN AND PREPARE FOR NEW PAINT. — SCRAPE FLAKING PAINT ON WALL SURFACE TO FLOOR. CLEAN AND PREPARE FOR NEW PAINT.

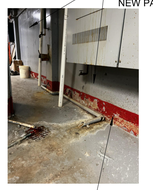
N — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW METERS TO FLOOR.

A — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT.

B — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT.

C — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT. — SCRAPE FLAKING PAINT ON WALL SURFACE. CLEAN AND PREPARE FOR NEW PAINT.

D



E — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW EQUIPMENT TO FLOOR. CLEAN AND PREPARE FOR NEW PAINT.

F — SCRAPE FLAKING PAINT ON WALL SURFACE BELOW METERS TO FLOOR

G — CLEAN WALL AND PREPARE SURFACE FOR NEW PAINT

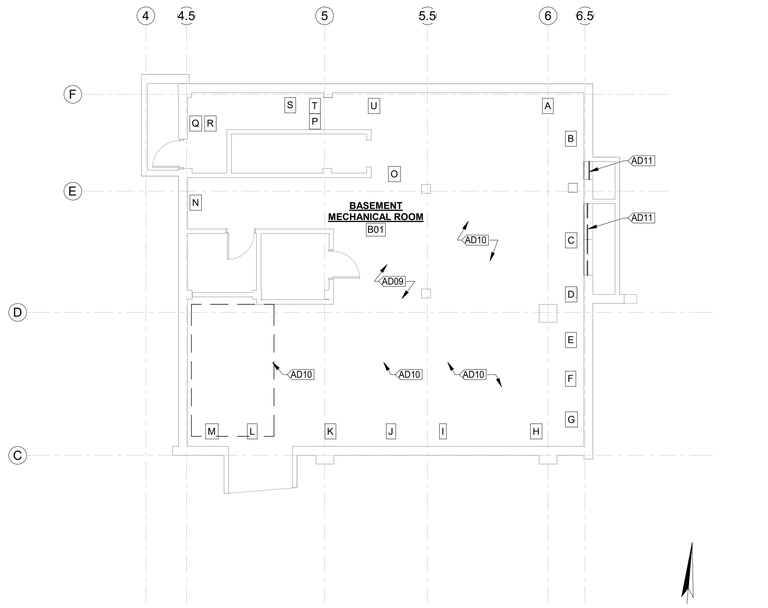
BASEMENT WALL PAINT - DEMO

DEMOLITION PLAN KEYNOTES

ARCHITECTURAL		
AD	09	CLEAN AND PREPARE FLOOR FOR NEW COATING AND WALL FOR NEW PAINT AS INDICATED. SEE WALL LEGEND FOR PAINT REMOVAL AND WALL PREPARATIONS FOR NEW PAINT.
AD	10	REMOVE EXISTING EQUIPMENT PAD AND PREPARE FLOOR FOR NEW COATING.
AD	11	REMOVE EXISITNG WINDOW AND PREPARE OPENING FOR WALL INFILL.

GENERAL DEMOLITION NOTES

1. DEMOLITION WORK INCLUDES NOT ONLY DEMOLITION ITEMS KEYNOTED ON PLANS, BUT ALSO ALL DEMOLITION WORK AS WOULD BE REASONABLY IMPLIED OR EXPECTED IN VIEW OF THE INTENT AND NATURE OF THE RENOVATION WORK SHOWN IN THESE PLANS. IT IS THE CONTRACTORS RESPONSIBILITY TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND RELATE SUCH CONDITIONS TO THE FULL SCOPE OF RENOVATION WORK.
2. PRIOR TO COMMENCING DEMOLITION, THE CONTRACTOR SHALL ASCERTAIN FROM THE OWNER WHETHER OR NOT THE OWNER WISHES TO RETAIN ANY ITEMS. ANY SUCH ITEMS SHALL BE REMOVED WITH CARE SO AS TO PREVENT UNNECESSARY DAMAGE.
3. PROTECT OWNER'S PROPERTY AND PERSONS AT ALL TIMES. THIS INCLUDES ALL ITEMS AND SERVICES NECESSARY TO DEMOLISH OR DISMANTLE AND REMOVE ALL WALLS, EQUIPMENT, PIPING AND APPURTENANCES WHICH WILL INTERFERE WITH NEW CONSTRUCTION. ALL ITEMS TO BE REMOVED SHALL BE COORDINATED WITH NEW CONSTRUCTION.
4. EXISTING CONSTRUCTION SHALL BE PROTECTED.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THE INTEGRITY OF THE FIRE RATED ASSEMBLIES AT ALL EDGES AND PENETRATIONS. EXISTING FIREPROOFING OR FIRE ASSEMBLIES WHICH ARE DAMAGED DURING DEMOLITION SHALL BE REPAIRED TO CONFORM TO FIRE PROTECTION REQUIREMENTS.
6. ANY ITEMS NOT SHOWN TO BE DEMOLISHED THAT ARE DAMAGED DURING THE COURSE OF DEMOLITION OR CONSTRUCTION SHALL BE REPAIRED/REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
7. COORDINATE ANY SYSTEMS SHUTDOWNS WHICH MAY BE REQUIRED WITH THE OWNER.
8. GENERAL CONTRACTOR SHALL PROVIDE AND MAINTAIN DUST PROTECTION BETWEEN EXISTING OCCUPIED AREAS AND WORK AREAS.
9. ALL MATERIALS THAT HAVE BEEN DEMOLISHED SHALL BE REMOVED AND LEGALLY DISPOSED OF PROPERLY. NO DEMOLISHED MATERIALS SHALL BE STOCKPILED ON SITE.



1 BASEMENT DEMOLITION FLOOR PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — H. MICHAEL CARTER — 06/14/24 — NUMBER A-6846 — REGISTERED ARCHITECT — Exp.12/31/24

H. MICHAEL CARTER - ARCHITECT
MO # 006846

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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

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

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # 02440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: KMF
CHECKED BY: HMC
DESIGNED BY: KMF

SHEET TITLE:

BASEMENT DEMOLITION FLOOR PLAN

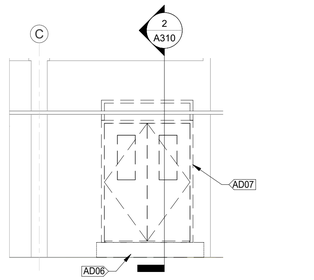
SHEET NUMBER:

AD101

SHEET 05 OF 46
JUNE 14, 2024

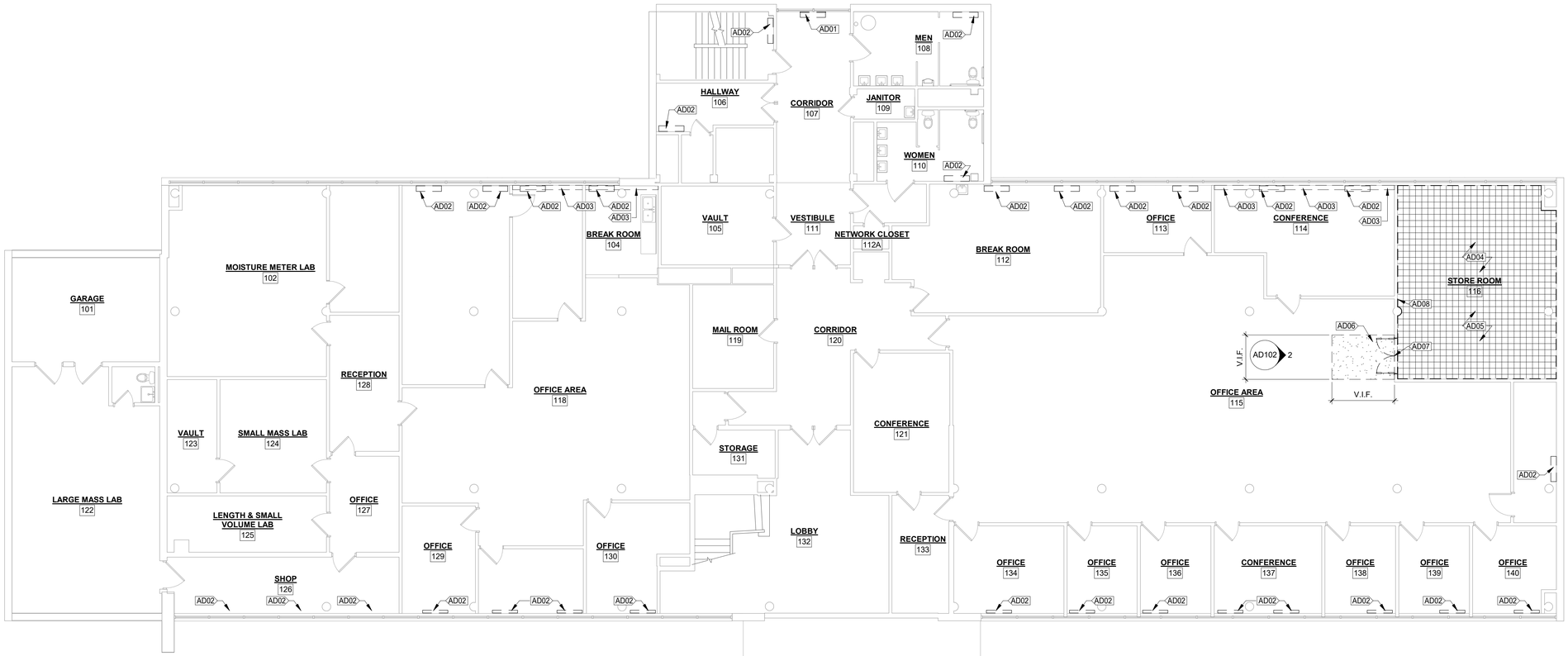
DEMOLITION PLAN KEYNOTES

ARCHITECTURAL		
AD	01	EXISTING FAN COIL UNIT TO BE REMOVED. PREFINISHED TRIM TO ALSO BE REMOVED.
AD	02	EXISTING FAN COIL UNIT TO BE REMOVED.
AD	03	EXISTING TOE CHASE TO BE REMOVED.
AD	04	SEE "ASBESTOS ABATEMENT"(AB) SHEETS FOR PROPER REMOVAL OF ALL ASBESTOS CONTAINING FLOOR TILE AT RAISED FLOOR.
AD	05	SEE "ASBESTOS ABATEMENT"(AB) SHEETS FOR COMPLETE AND PROPER REMOVAL OF EXISTING RAISED FLOOR SUPPORT SYSTEM.
AD	06	REMOVE EXISTING RAMP. SEE "ASBESTOS ABATEMENT" (AB) SHEETS FOR PROPER REMOVAL OF RAMP.
AD	07	REMOVE EXISTING DOORS, SALVAGE FOR REUSE.
AD	08	SEE "ASBESTOS ABATEMENT"(AB) SHEETS FOR PROPER REMOVAL OF EXISTING WALL BASE.



2 STOREROOM DOOR ELEVATION
1/4" = 1'-0"

0 2' 4' 8'
SCALE: 1/4" = 1'-0"



1 1ST FLOOR DEMOLITION FLOOR PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES

1. SEE MEP SHEETS FOR LOCATIONS OF FAN COIL UNITS: SEE "TYPICAL SMALL FAN COIL UNIT - DEMO" ON A/A401.

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SHEET TITLE:

1ST FLOOR DEMOLITION FLOOR PLAN

SHEET NUMBER:

AD102

SHEET 06 OF 46
JUNE 14, 2024

DEMOLITION PLAN KEYNOTES		
ARCHITECTURAL		
AD	01	EXISTING FAN COIL UNIT TO BE REMOVED. PREFINISHED TRIM TO ALSO BE REMOVED.
AD	02	EXISTING FAN COIL UNIT TO BE REMOVED.

1 2ND FLOOR DEMOLITION FLOOR PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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SHEET TITLE:

2ND FLOOR DEMOLITION FLOOR PLAN

SHEET NUMBER:

AD103

SHEET 07 OF 46
JUNE 14, 2024

DEMOLITION PLAN KEYNOTES

ARCHITECTURAL		
AD	01	EXISTING FAN COIL UNIT TO BE REMOVED. PREFINISHED TRIM TO ALSO BE REMOVED.
AD	02	EXISTING FAN COIL UNIT TO BE REMOVED.

1 3RD FLOOR DEMOLITION FLOOR PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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SHEET TITLE:

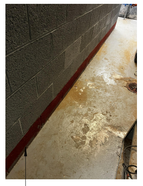
3RD FLOOR DEMOLTION FLOOR PLAN

SHEET NUMBER:

AD104

GENERAL NOTE:
CLEAN WALL TO MIN. 6 FT ABOVE FLOOR. PREPARE WALL INDICATED BELOW FOR NEW PAINT.

O — BASE BAND TO BE RED TO MATCH EXISTING



P

PAINT ENTIRE WALL.

Q

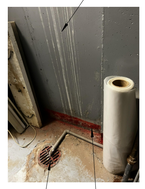
PAINT ENTIRE WALL.

R — BASE BAND TO BE RED TO MATCH EXISTING

THIS WALL TO JUST BE CLEANED.

S — REPLACE EXISTING FLOOR DRAIN COVER AND REPAIR FLOOR

THIS WALL TO JUST BE CLEANED.



T — BASE BAND TO BE RED TO MATCH EXISTING

PAINT WALL BELOW CONDUIT AND FEATHER EDGES.

U

H — PAINT WALL BENEATH EQUIPMENT AND BASE BAND (RED TO MATCH EXISTING).

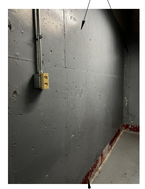
I

PAINT WALL BENEATH EQUIPMENT.

J — PAINT WALL BENEATH EQUIPMENT AND BASE BAND (RED TO MATCH EXISTING).

K

PAINT ENTIRE WALL.



L — PAINT BASE BAND RED TO MATCH EXISTING

PAINT WALL FROM CORNER TO 2 FEET IN.

M — BASE BAND TO BE RED TO MATCH EXISTING

PAINT ENTIRE WALL.

N

A — BASE BAND TO BE RED TO MATCH EXISTING

B

PAINT ENTIRE WALL AND BASE BAND.

C — BASE BAND TO BE RED TO MATCH EXISTING

PAINT ENTIRE WALL AND BASE BAND.

D — BASE BAND TO BE RED TO MATCH EXISTING

PAINT WALL BENEATH EQUIPMENT AND BASE BAND.

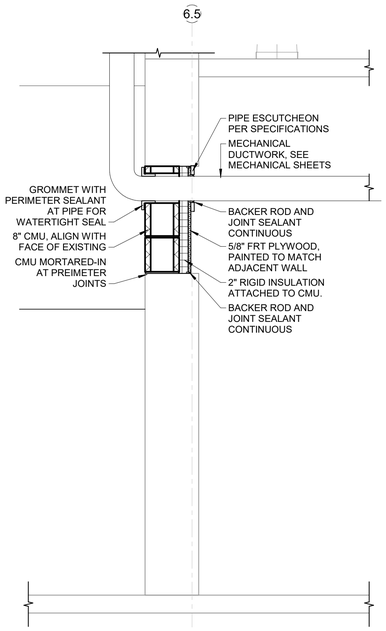
E — BASE BAND TO BE RED TO MATCH EXISTING

F — BASE BAND TO BE RED TO MATCH EXISTING

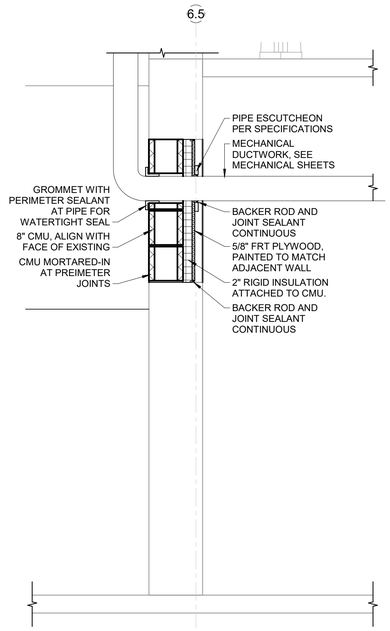
PAINT WALL BENEATH EQUIPMENT AND BASE BAND.

G

BASEMENT WALL LEGEND

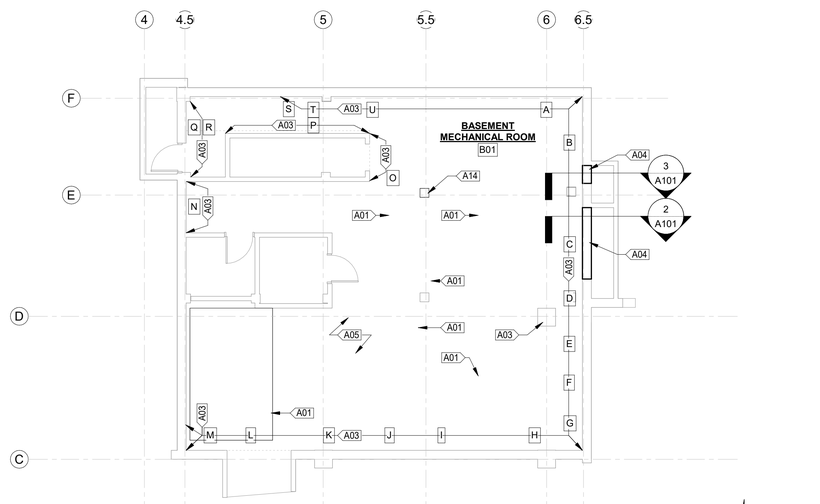


3 WALL SECTION - WALL INFILL
3/4" = 1'-0"



2 WALL SECTION - WALL INFILL
3/4" = 1'-0"

0 1' 2'
SCALE: 3/4" = 1'-0"



1 BASEMENT FLOOR RENOVATION PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

RENOVATION PLAN KEYNOTES

ARCHITECTURAL		
A	01	NEW REINFORCED CONCRETE EQUIPMENT PAD, PAINT SAFETY YELLOW. REFER TO M503, DETAIL 2 AND DETAIL 4.
A	03	PAINT WALL TO EXTENTS SHOWN, PAINT RED BASE TO MATCH EXISTING. REFERENCE BASEMENT WALL LEGEND. SEE SPECIFICATIONS.
A	04	INFILL WALL TO MATCH EXISTING CONSTRUCTION, PROVIDE SLEEVE FOR MECHANICAL DUCT AND SEAL PENETRATIONS.
A	05	REPAIR AND PAINT FLOOR TO MATCH EXISTING. SEE SPECIFICATIONS.
A	14	COLUMN TO BE PAINTED RED.

GENERAL BASEMENT RENOVATION NOTES

1. GENERAL RENOVATION NOTES APPLY TO ALL NEW WORK AND DRAWINGS. IF THERE ARE DISCREPANCIES, CONTRACTOR SHALL NOTIFY THE ARCHITECT PRIOR TO PROCEEDING WITH WORK.
2. ALL DIMENSIONS ORIGINATE AND/OR TERMINATE AT THE FINISH FACE OF EXISTING CONSTRUCTION (GYPSUM BOARD, CMU, BRICK, CONCRETE, OR METAL STUDS, AND THE CENTERLINE GRIDS OF STRUCTURAL COLUMNS.

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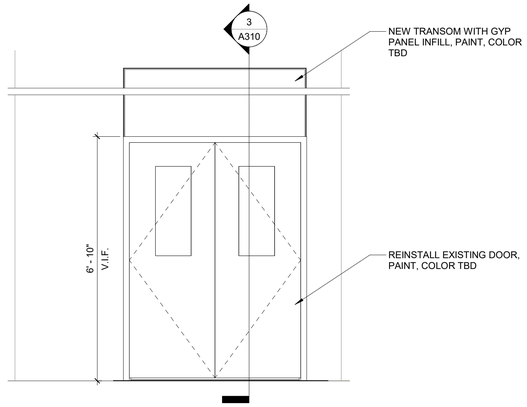
SHEET TITLE:
BASEMENT FLOOR PLAN

SHEET NUMBER:
A101

SHEET 09 OF 46
JUNE 14, 2024

RENOVATION PLAN KEYNOTES

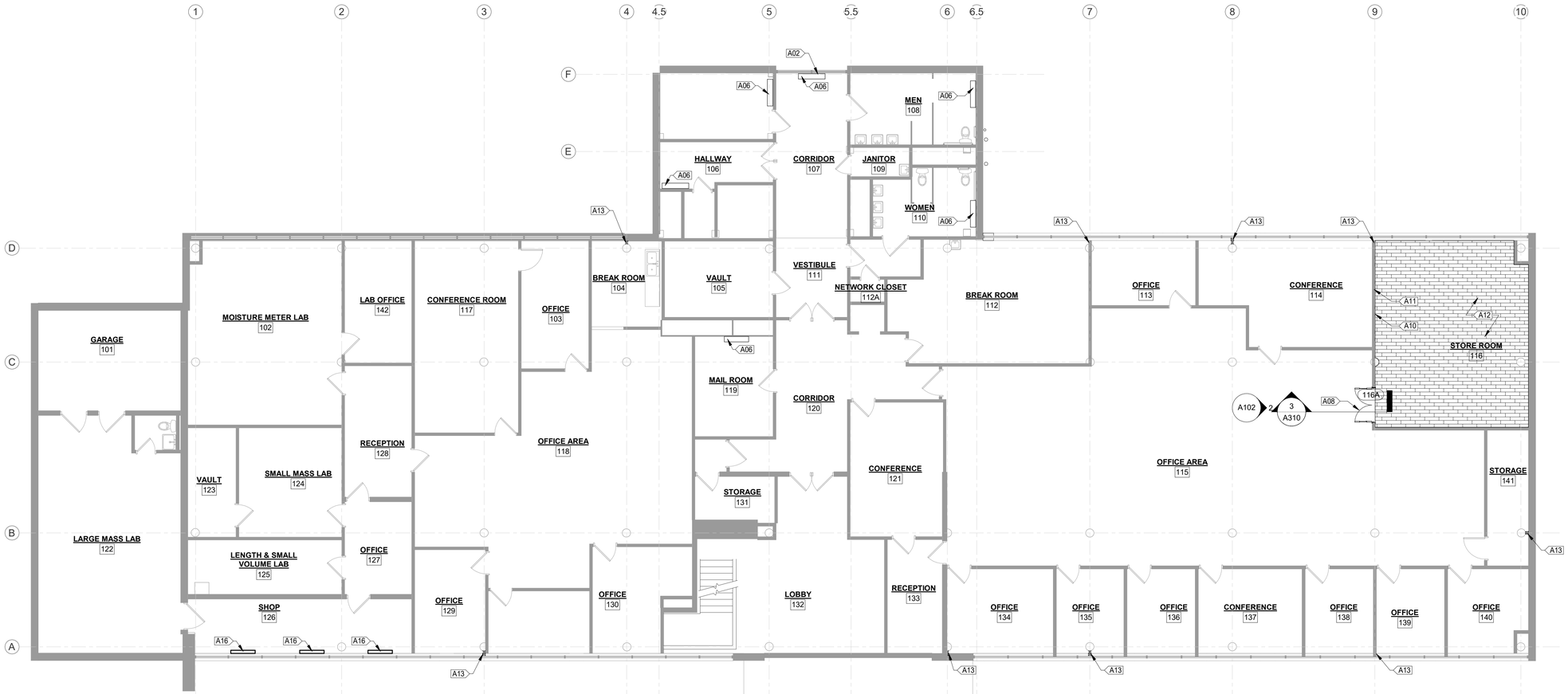
ARCHITECTURAL		
A	02	NEW BREAK METAL SHROUD TO BE ATTACHED TO ADJACENT WALL WITH CLEAT. COLOR TO MATCH ADJACENT STOREFRONT WINDOW.
A	06	NEW FAN COIL UNIT, SEE MECHANICAL DRAWING FOR SIZE.
A	08	REINSTALL EXISTING DOORS WITH NEW TRANSOM.
A	10	INSTALL NEW WALL BASE, SEE SPECIFICATIONS.
A	11	PATCH WALL AND PAINT TO MATCH EXISTING. EXTENTS OF PAINTING SHALL BE FROM WALL EDGE TO WALL EDGE.
A	12	INSTALL NEW FLOORING, SEE SPECIFICATIONS.
A	13	NEW TRIM CLOSURE AT COLUMN, SEE DETAIL ON A401.
A	16	FILL FLOOR PENETRATIONS WHERE FCU REMOVED WITH GROUT AND GRIND SMOOTH AND LEVEL WITH CONCRETE SLAB.



2 DOOR REPLACEMENT
1/2" = 1'-0"

GENERAL PLAN NOTES

1. SEE MEP SHEETS FOR PIPE LOCATIONS TO RECEIVE SHEET METAL ENCLOSURES: SEE "BREAK METAL PIPE ENCLOSURE" ON 3/A01.
2. SEE MEP SHEETS FOR PIPE LOCATIONS TO RECEIVE SHEET METAL ENCLOSURES: SEE "BREAK METAL PIPE ENCLOSURE DETAILS" DETAIL ON 4/A401.



1 1ST FLOOR RENOVATION PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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DRAWING BY: KMF
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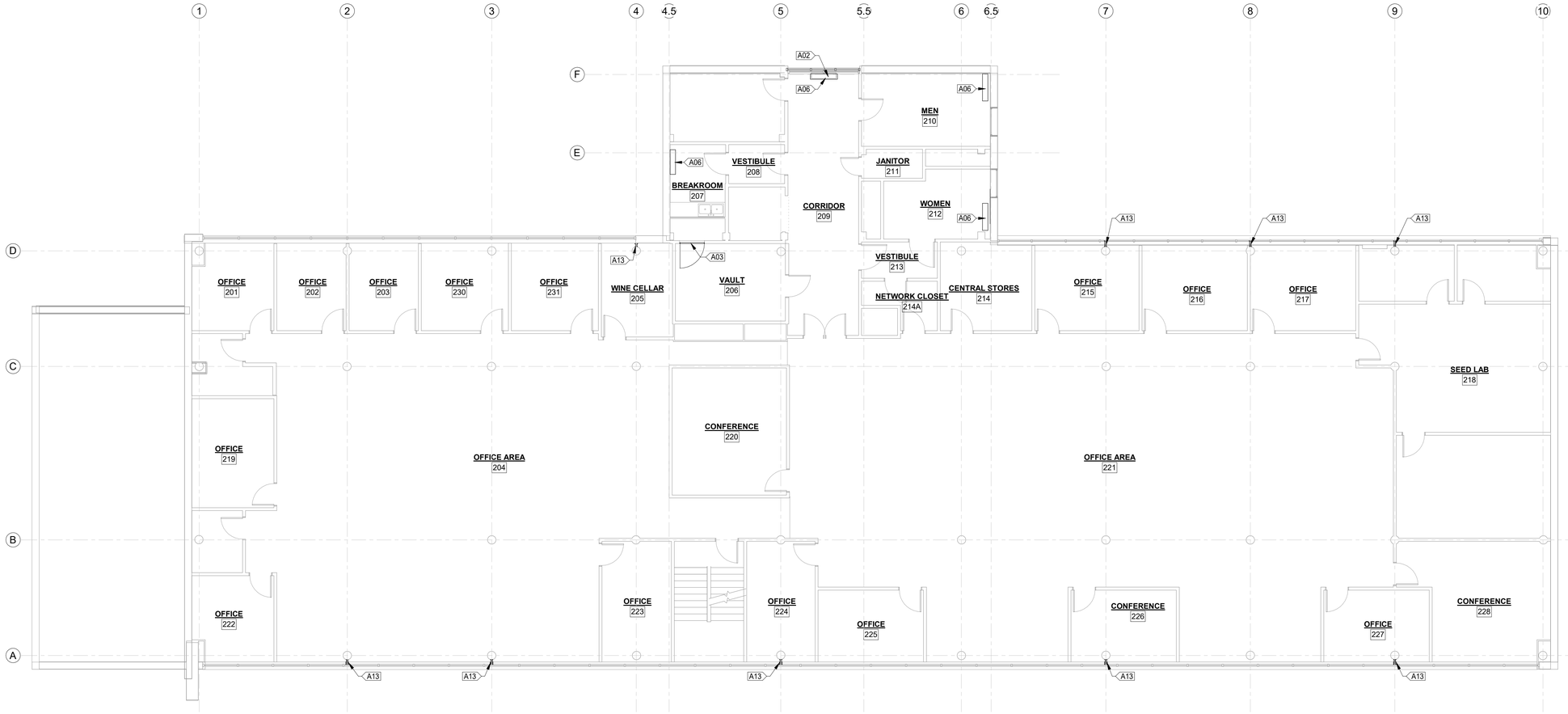
SHEET TITLE:
1ST FLOOR PLAN

SHEET NUMBER:
A102

SHEET 10 OF 46
JUNE 14, 2024

RENOVATION PLAN KEYNOTES 2ND FLOOR PLAN

ARCHITECTURAL		
A	02	NEW BREAK METAL SHROUD TO BE ATTACHED TO ADJACENT WALL WITH CLEAT. COLOR TO MATCH ADJACENT STOREFRONT WINDOW.
A	03	NEW 40" W x 48" H ACCESS PANEL, SEE STRUCTURAL DRAWING FOR SIZE.
A	06	NEW FAN COIL UNIT, SEE MECHANICAL DRAWING FOR SIZE.
A	13	NEW TRIM CLOSURE AT COLUMN, SEE DETAIL ON A401.



1 2ND FLOOR RENOVATION PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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2ND FLOOR PLAN

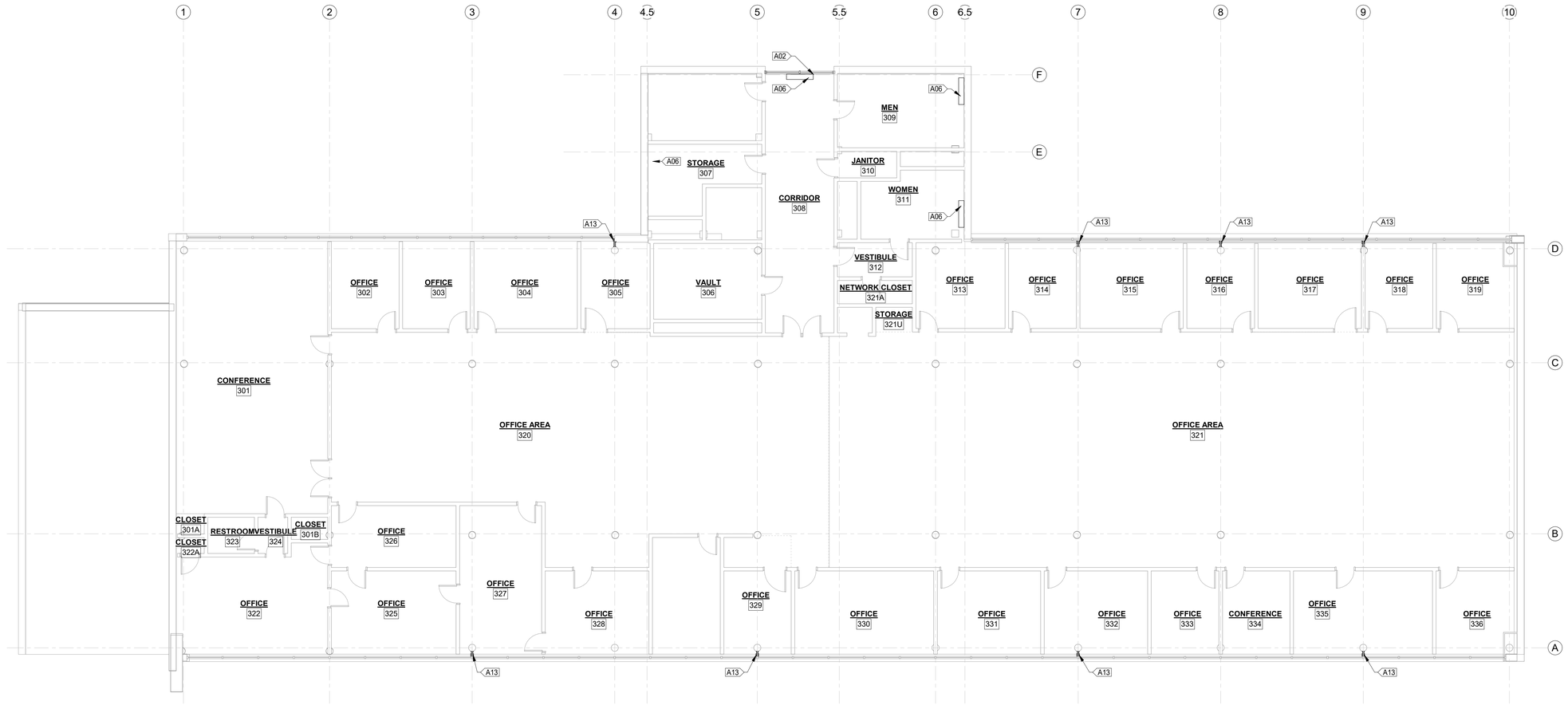
SHEET NUMBER:

A103

JUNE 14, 2024

RENOVATION PLAN KEYNOTES 3RD FLOOR PLAN

ARCHITECTURAL		
A	02	NEW BREAK METAL SHROUD TO BE ATTACHED TO ADJACENT WALL WITH CLEAT. COLOR TO MATCH ADJACENT STOREFRONT WINDOW.
A	06	NEW FAN COIL UNIT, SEE MECHANICAL DRAWING FOR SIZE.
A	13	NEW TRIM CLOSURE AT COLUMN, SEE DETAIL.



1 3RD FLOOR RENOVATION PLAN
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N

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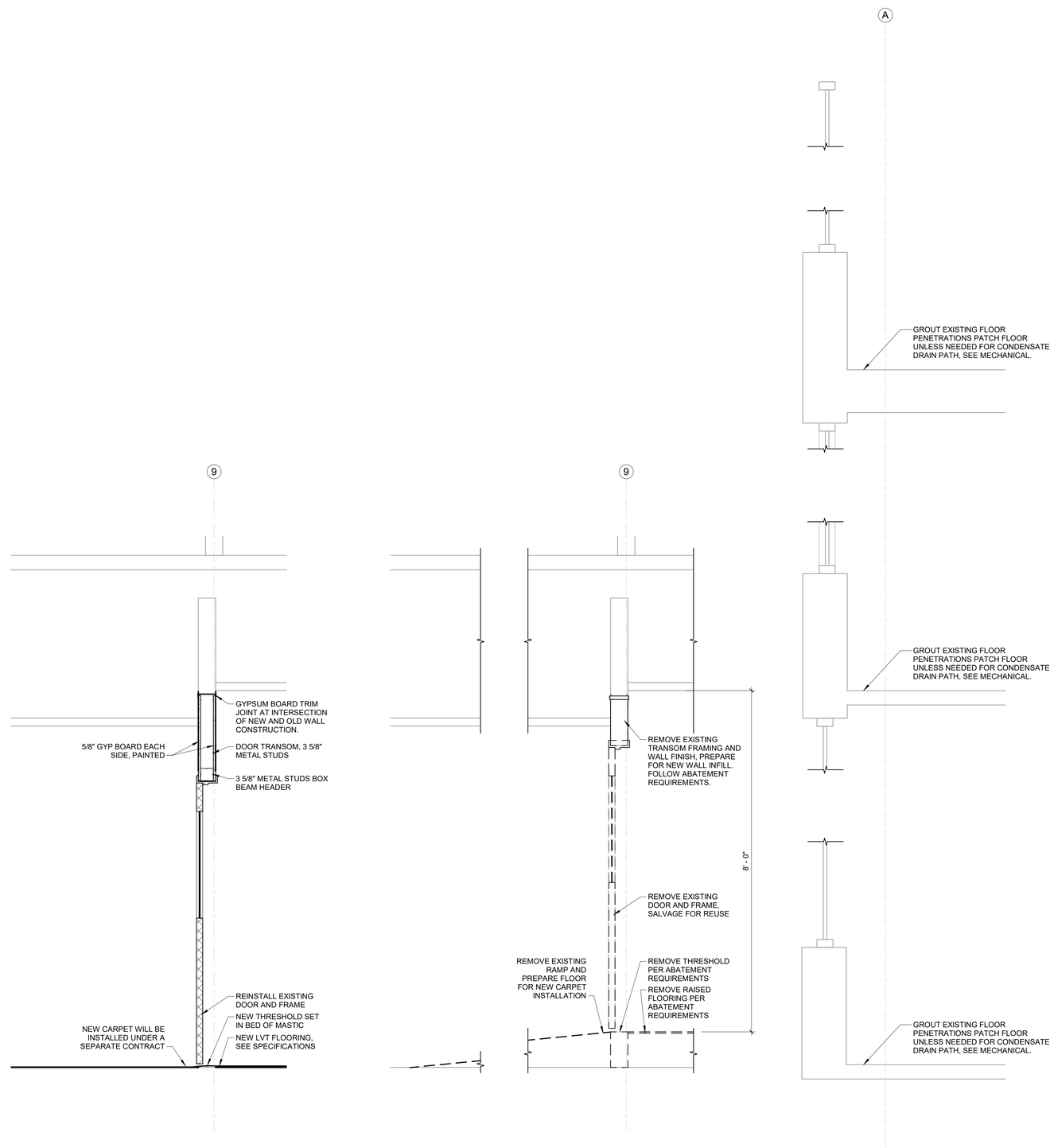

3 DOOR SECTION
3/4" = 1'-0"

2 DOOR SECTION - DOOR DEMO
3/4" = 1'-0"

1 TYPICAL SECTION THRU FAN COIL UNITS
3/4" = 1'-0"

0 1' 2'
SCALE: 3/4" = 1'-0"

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CHECKED BY: HMC
DESIGNED BY: KMF

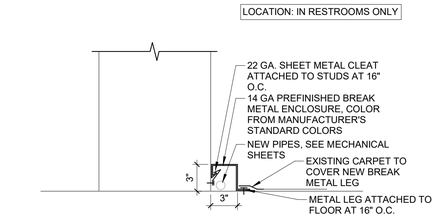
SHEET TITLE:

WALL SECTIONS

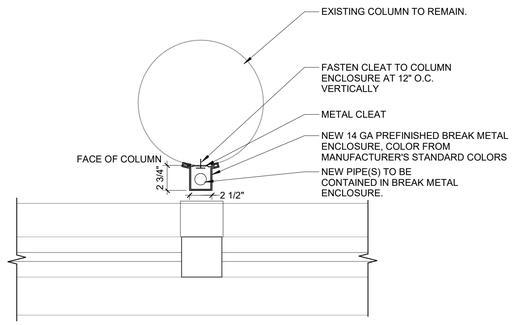
SHEET NUMBER:

A310

SHEET 13 OF 46
JUNE 14, 2024

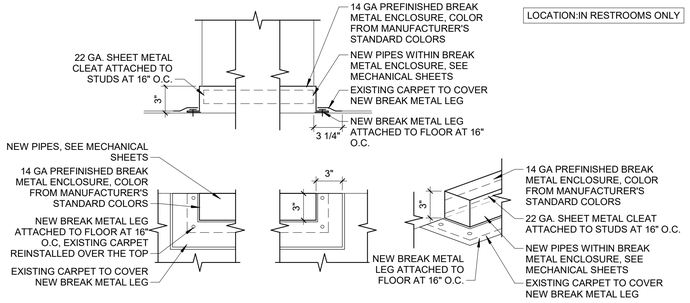


3 BREAK METAL PIPE ENCLOSURE
1 1/2" = 1'-0"

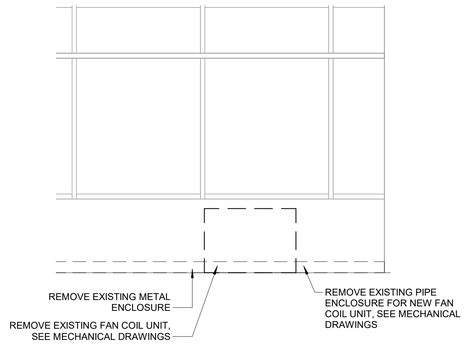


2 COLUMN TRIM ENCLOSURE
1 1/2" = 1'-0"

0 1' 2' 4'
SCALE: 1/2" = 1'-0"



4 BREAK METAL PIPE ENCLOSURE END DETAILS
NTS



1 TYPICAL SMALL FAN COIL UNIT - DEMO
3/8" = 1'-0"

0 2 4
SCALE: 3/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI · H. MICHAEL CARTER · 6/14/24 · NUMBER A-6846 · REGISTERED ARCHITECT · Exp.12/31/24

H. MICHAEL CARTER - ARCHITECT
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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

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

2024 KLINGNER & ASSOCIATES P.C.

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # 02440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: KMF
CHECKED BY: HMC
DESIGNED BY: KMF

SHEET TITLE:

ENLARGED PLANS AND ELEVATIONS

SHEET NUMBER:

A401

SHEET 14 OF 46
JUNE 14, 2024

GENERAL DEMOLITION NOTES:

1. ALL MECHANICAL, ELECTRICAL, AND PLUMBING DEMOLITION WORK IS SHOWN ON COMMON DEMOLITION SHEETS.
2. ALL HYDRONIC BRANCH PIPING SERVICING EXISTING FAN COIL UNITS BELOW THE FIRST FLOOR SHALL BE ABANDONED IN PLACE.

GENERAL HVAC NOTES:

1. ALL RUNOUTS TO DIFFUSERS SHALL HAVE A VOLUME CONTROL DAMPER AT THE CONNECTION TO THE BRANCH OR MAIN DUCT.
2. FLEXIBLE DUCT SHALL BE A MAXIMUM OF FIVE (5) FEET IN LENGTH AND SHALL BE ROUTED TO MINIMIZE LENGTH WITH NO KINKS OR SHARP BENDS.
3. A FLEXIBLE CONNECTION BETWEEN MECHANICAL UNITS AND BOTH THE SUPPLY AND RETURN AIR DUCTWORK IS REQUIRED FOR VIBRATION ISOLATION AND NOISE REDUCTION.

DESIGN CRITERIA

1. BUILDING CODES:
   A. 2021 IEBC

GENERAL STRUCTURAL NOTES

1. The structure is designed to be self-supporting and stable after the building is fully completed. It is solely the contractor's responsibility to determine erection procedure and sequence and ensure the safety of the construction personnel, public, building and its components parts. This includes the addition of whatever temporary or permanent shoring and bracing that may be necessary to brace new construction, adjacent buildings so that the structure is braced for wind, seismic, gravity, construction loads, etc. and that no horizontal or vertical settlement or any damage occurs to the adjacent existing structure. Temporary supports shall be maintained in place until permanents supports and/or shoring & bracing are installed.
2. Construction loads shall not exceed design live loads. The contractor shall be responsible for all design required to support construction equipment used in constructing this project. Shoring & reshoring is the responsibility of the contractor.
3. It is the contractor's responsibility to enforce all applicable safety codes and regulations during all phases of construction.
4. The contractor shall perform all construction for the project in a manner and sequence that are based on accepted industry standards that recognize the interaction of the components that comprise the structure, without causing distress, unanticipated movements or irregular load paths as a result of the construction means and methods employed.
5. All contractors are required to examine the drawings and specifications carefully, visit the site and fully inform themselves as to all existing conditions and limitations, prior to agreeing to perform the work. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the contractor from furnishing any materials or performing any work in accordance with drawings without additional cost to the owner.
6. Contractor shall verify all dimensions and conditions at the job site before commencing work and shall report any discrepancies to the engineer.
7. Omissions or conflicts between various elements of the drawings, notes, details and specifications shall be brought to the attention of the engineer and resolved before proceeding with the work.
8. Details labeled "Typical Details" on drawings apply to situations occurring on the project that are the same or similar to those specifically details. Such details apply whether or not details are referenced at each location. Notify engineer of clarification regarding applicability of "Typical Details".
9. Do not scale drawings.

SPECIAL STRUCTURAL INSPECTIONS AND TESTING

1. Owner will engage a qualified testing and inspecting agency to perform field special structural inspections and testing in accordance with the applicable International Building Code and to submit reports.
2. The Contractor shall provide a minimum of 48 hrs. notification to the Special Inspector prior to needing an inspection. The Contractor shall provide access to the work so the Special Inspections can be completed. The Contractor shall verify all Special Inspections have been completed and discrepancies corrected prior to covering the work.
3. See list of elements below for construction that require special inspection. The contractor and inspector shall refer to the IBC for complete requirements, qualifications, exceptions, and submittals. Refer to 2021 IBC section 1705.
4. Special inspections noted as "Continuous" requires the presence of a qualified inspector in the vicinity of the work being performed for 100% of that work. Special inspections noted as "Periodic" requires part-time observation of the work being performed and observance of the final condition of the work before it is closed from view. Special inspections noted as "N/A" are Not Applicable for this project.
5. Special inspection and testing reports shall be furnished to owner, structural engineer, and contractor. Special Inspector shall inform engineer of record immediately of any items found in non-compliance with construction documents or approved submittals.
6. The special inspector shall submit a final report stating that the structural work was, to the best of the special inspector's knowledge, performed in accordance with the construction documents.
7. Special inspections shall conform to Chapter 17 of the International Building Code, IBC, 2021.
   Special inspections include:
   A. Steel Construction - 1705.2
   B. Concrete Construction - 1705.3
   C. Post Installed Anchors - Product's ICC-ES report.

EXISTING WORK

1. Existing conditions shown or noted on the drawings were obtained from existing drawings dated 2-29-1956 rev. 1 5-9-1956 or were assumed. If conditions other than those shown exist, immediately notify the Engineer before proceeding with the work at that location. If conditions other than those shown exist, alternate methods of construction may need to be used.
2. Existing framing is assumed to be in original condition. If deterioration has occurred notify the Engineer in writing of the findings. For example, some types of deterioration are as follows: broken or cracked concrete, spalled concrete.

POST INSTALLED ANCHORS

1. Submit ICC-ES reports for all post installed anchors.
2. Install all post installed anchors per the product's ICC-ES report and the manufacturer's written instructions.
3. Post installed anchors shall be inspected per the product's ICC-ES report.

STRUCTURAL STEEL

1. Detailing, fabrication and erection shall conform to the AISC Specifications and Standard Code of Practice for the year referenced in the building code noted, except as modified by these notes and the project specifications.
2. Steel shall conform to the following grades unless otherwise noted:
   A. Plate, Angles, M, S and C Shapes – ASTM A572 Grade 50 (Fy=50 ksi)
   B. Welding Electrodes – E70xx
3. Structural steel shall be primed.
4. All welding shall be in accordance with the "Structural Welding Code", AWS D1.1, Latest Edition.
5. Fabricate all beams with the mill camber up.
6. General contractor shall verify all structural beam locations, and opening sizes and locations with mechanical contractor and vendor's drawings for actual mechanical unit purchased.
7. Splicing of structural members where not detailed on the drawings is prohibited without prior approval of the structural engineer.
8. Cuts or burning of holes in the structural steel members in the field will not be permitted, unless specifically approved in each case by the engineer.

HVAC SCHEMATIC DIAGRAM SYMBOLS

- ACTUATED DAMPER
- FILTER
- HVAC COIL
- FAN/PUMP
- CIRCULATOR PUMP
- MANUAL ISOLATION VALVE
- ACTUATED CONTROL VALVE
- BALL VALVE
- WYE STRAINER
- CHECK VALVE
- THERMOMETER
- CIRCUIT SETTER
- CONTROL WIRING
- CHILLED WATER SUPPLY PIPING
- CHILLED WATER RETURN PIPING
- HEATING WATER SUPPLY PIPING
- HEATING WATER RETURN PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- 2-PIPE CHILLED/HEATING WATER SUPPLY
- 2-PIPE CHILLED/HEATING WATER RETURN
- CHILLED WATER FLOW ARROW
- DIGITAL FLOWMETER
- DDC TEMPERATURE SENSOR
- DDC DIFFERENTIAL PRESSURE SENSOR
- TEMPERATURE PROBE
- AIR FLOW SENSOR
- VARIABLE FREQUENCY DRIVE (208 V, VFD)
- PRESSURE GAUGE
- FLOW SWITCH
- AQUASTAT

HVAC SYMBOLS

- 16"x8" — SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
- (E) — EXISTING DUCT TAG
- DUCT BEING DEMOLISHED
- SA — SUPPLY AIR
- OA — OUTSIDE AIR
- RA — RETURN AIR
- EA — EXHAUST AIR
- AIR INLET/OUTLET
- X / 500 — TYPE (SEE SCHEDULE) GRILLES, REGISTERS, AND DIFFUSERS TAG; CFM
- B — MANUAL BALANCING DAMPER TAG
- AHU-8 — MECHANICAL EQUIPMENT
- CARBON MONOXIDE SENSOR (CO)
- (S) REFRIGERANT SENSOR
- (T) THERMOSTAT
- CHILLED WATER SUPPLY
- CHILLED WATER RETURN
- HEATING WATER SUPPLY
- HEATING WATER RETURN
- CONNECT TO EXISTING

ELECTRICAL SCHEMATIC SYMBOLS

- MOTOR STARTER - SCHEMATIC DIAGRAM
- DISCONNECT SWITCH - SCHEMATIC DIAGRAM
- MOTOR - SCHEMATIC DIAGRAM
- VARIABLE FREQUENCY DRIVE - SCHEMATIC DIAGRAM

ELECTRICAL SYMBOLS

- JUNCTION BOX WALL MOUNTED A DISTANCE ABOVE FINISHED FLOOR
- SAFETY DISCONNECT SWITCH (FUSED)
- SAFETY DISCONNECT SWITCH (NON-FUSED)
- VARIABLE FREQUENCY DRIVE
- LOW VOLTAGE POWER CIRCUIT
- LINE VOLTAGE POWER CIRCUIT
- BRANCH CIRCUIT HOME RUN

GENERAL ELECTRICAL NOTES:

1. DRAWINGS ARE SCHEMATIC AND SHOW APPROXIMATE LOCATIONS OF ELECTRICAL EQUIPMENT. EXACT LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR AND VERIFIED IN THE FIELD PRIOR TO ROUGH-IN.
2. INSTALLATIONS WHICH INCLUDE ELECTRICAL FIXTURES, DEVICES, CONDUIT, SWITCHES, PANELS, HANGERS, WIRE, CABLE, STANDARDS, ETC., MUST BE ENTIRELY SUITABLE FOR TEMPERATURES, HUMIDITY, DAMP AREAS, VOLTAGE, FREQUENCY, AND ALL INSTALLATION CONDITIONS ENCOUNTERED.
3. INSTALLATION MUST BE ENTIRELY SAFE IN EVERY RESPECT, AND MUST NOT CREATE ANY CONDITIONS OF ANY KIND WHICH WILL BE HARMFUL TO ANY OCCUPANT OF THE BUILDING. IF CONTRACTOR BELIEVES THAT INSTALLATION WILL NOT BE SAFE FOR ALL PEOPLE, HE/SHE SHALL SO REPORT IN WRITING TO ENGINEER BEFORE ANY EQUIPMENT IS PURCHASED OR WORK IS INSTALLED, GIVING EXACT RECOMMENDATIONS, AND REASONS FOR THEM.
4. GROUNDING: ALL GROUNDING SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC).
5. INSTALLATION OF ELECTRICAL DEVICES SHALL BE COORDINATED WITH OTHER TRADES AS NECESSARY TO PREVENT ANY CONFLICTS DURING CONSTRUCTION.
6. EQUIPMENT GROUNDING CONDUCTORS SHALL BE PULLED WITH ALL BRANCH CIRCUITS. CONDUIT SHALL NOT BE USED AS A GROUND UNO
7. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS, ACCESSORIES, TOOLS, EQUIPMENT, TRANSPORTATION, LABOR, SERVICES AND OPERATIONS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM.
8. MATERIALS MUST BE NEW, IN FIRST CLASS CONDITION.
9. CONDUIT SHALL BE SEPARATELY HUNG AND ANCHORED, FREE TO EXPAND AND CONTRACT QUIETLY, WITHOUT IMPOSING STRAINS ON STRUCTURE, DEVICES, AND EQUIPMENT. CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES.
10. CONTRACTOR SHALL PERFORM EXCAVATION REQUIRED TO INSTALL WORK.
11. COORDINATE CONTROL PANEL, WIRING, AND CONDUIT DEMOLITION AND NEW INSTALLATION WORK WITH CONTROLS VENDOR.

1, ALL EXISTING CONDUCTORS ARE ASSUMED TO BE ADEQUATELY SIZED FOR ALL NEW WORK. IF IT IS DETERMINED THAT ANY EXISTING CONDUCTOR IS NOT SUFFICIENTLY SIZED, NOTIFY THE ENGINEER.

SEAL APPLIES TO STRUCTURAL FRAMING AND DETAILS ONLY

JEREMY T. STEENHOEK — NUMBER PE-2018008710 — STATE OF MISSOURI — PROFESSIONAL ENGINEER

6/14/2024

ABBREVIATIONS

&	AND	LG	LONG
AB	ANCHOR BOLT	LL	LIVE LOAD
ALT	ALTERNATE	LLH	LONG LEG HORIZONTAL
ARCH	ARCHITECT	LLV	LONG LEG VERTICAL
@	AT	LONG	LONGITUDINAL
		LWC	LIGHT WEIGHT CONCRETE
BLDG	BUILDING		
BM	BEAM	MAX	MAXIMUM
BO	BOTTOM OF	MECH	MECHANICAL
BOT	BOTTOM	MIN	MINIMUM
BRG	BEARING		
BRDG	BRIDGING	NO (#)	NUMBER
BTW	BETWEEN	NTS	NOT TO SCALE
BYD	BEYOND		
		OC	ON CENTER
CIP	CAST IN PLACE	OH	OPPOSITE HAND
CJ	CONSTRUCTION JOINT	OPNG	OPENING
CL (℄)	CENTERLINE	OPP	OPPOSITE
CLR	CLEAR		
CMU	CONCRETE MASONRY UNIT	PAR	PARALLEL
COL	COLUMN	PEMB	PRE-ENGINEERED METAL BUILDING
CONC	CONCRETE	PERP	PERPENDICULAR
CTR	CENTER	PL (℄)	PLATE
		PSF	POUNDS PER SQUARE FOOT
DBA	DEFORMED BAR ANCHOR	PT	PRESSURE TREATED
DBL	DOUBLE		
DIA (Ø)	DIAMETER	REINF	REINFORCING
DIAPH	DIAPHRAGM	RO	ROUGH OPENING
DL	DEAD LOAD	RTU	ROOF TOP UNIT
DWLS	DOWELS		
		SCH	SCHEDULE
EA	EACH	SIM	SIMILAR
EF	EACH FACE	SL (℄)	STEEL LINE
ELEV (EL)	ELEVATION	STAGG	STAGGERED
EMBED	EMBEDMENT	STD	STANDARD
EW	EACH WAY	STIFF	STIFFENER
EX	EXISTING		
		TBR	TO BE REMOVED
FB	FIELD BEND	THK	THICK
FDN	FOUNDATION	THRU	THROUGH
FF	FINISHED FLOOR	TO	TOP OF
FLR	FLOOR	TOF	TOP OF FOOTING
FTG	FOOTING	TOS	TOP OF STEEL
FV	FIELD VERIFY	TOW	TOP OF WALL
		TRANS	TRANSVERSE
GA	GAUGE	TYP	TYPICAL
GALV	GALVANIZED		
		UNO	UNLESS OTHERWISE NOTED
HDG	HOT DIP GALVANIZED		
HDR	HEADER	VERT	VERTICAL
HGR	HANGER		
HORIZ	HORIZONTAL	W/	WITH
HS	HEADED STUD	WF	WIDE FLANGE
HSS	HOLLOW STRUCTURAL SECTION	W/O	WITHOUT
HT	HEIGHT	WP	WORKING POINT
		WWF	WELDED WIRE FABRIC
ID	INSIDE DIAMETER	W.R.	WATER REDUCER
JST	JOIST		

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — Matthew Hayes Bridges — NUMBER PE-2021031578 — PROFESSIONAL ENGINEER

6/14/24

MATTHEW H. BRIDGES - ENGINEER
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GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

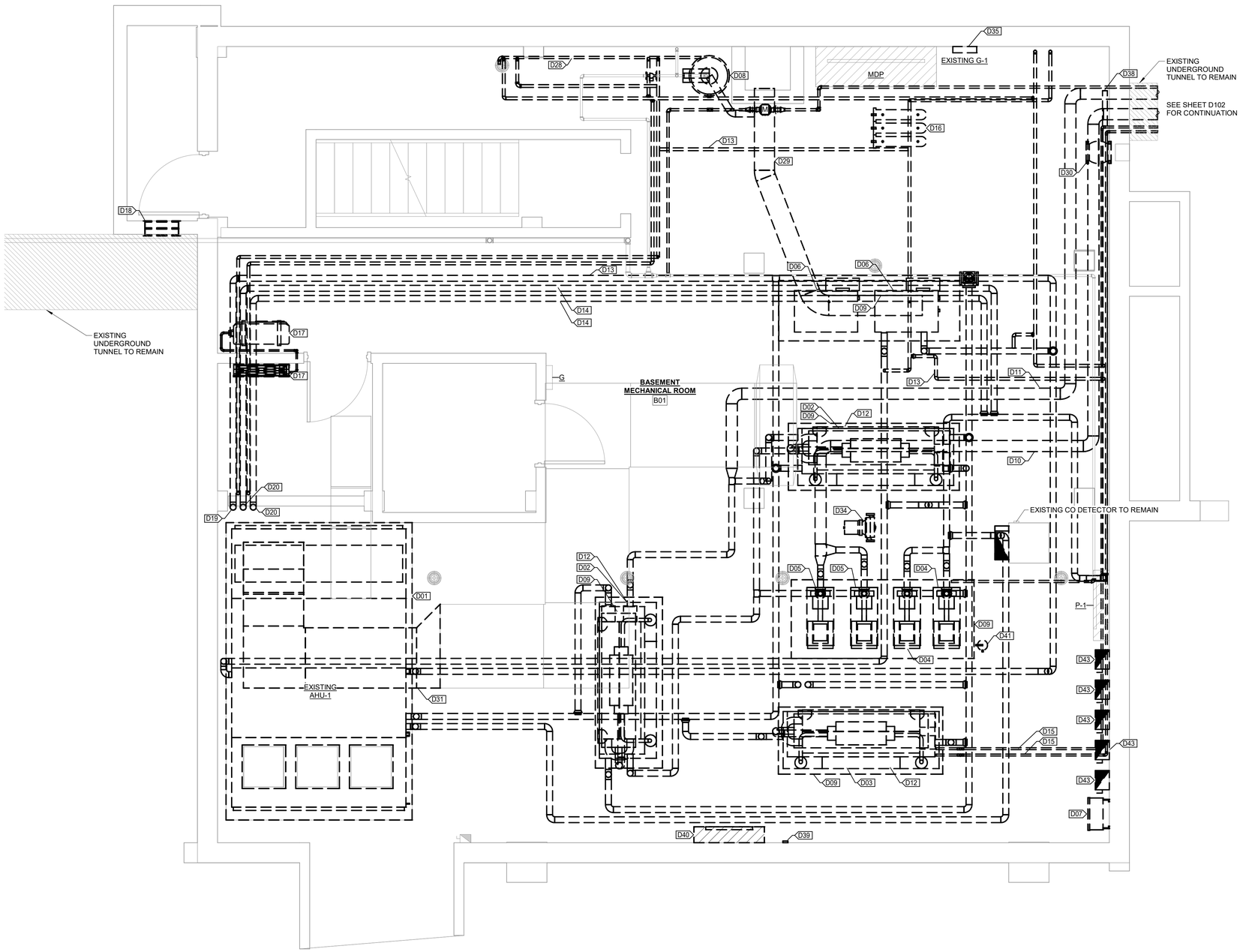
SHEET TITLE:

MEP SYMBOLS LIST

SHEET NUMBER:

MEP001

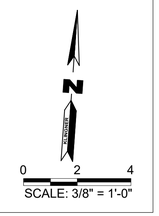
SHEET 15 OF 46
JUNE 14, 2024



1 BASEMENT DEMOLITION FLOOR PLAN
3/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
D01	REMOVE EXISTING AIR HANDLING UNIT. DISCONNECT EXISTING AIR HANDLING UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW AIR HANDLING UNIT. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D02	REMOVE EXISTING WATER-COOLED CHILLER. DISCONNECT EXISTING CHILLER FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D03	REMOVE EXISTING AIR-COOLED CHILLER. DISCONNECT EXISTING CHILLER FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D04	REMOVE EXISTING HYDRONIC PUMPS AND TRIPLE DUTY VALVES. DISCONNECT EXISTING HYDRONIC PUMPS FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D05	REMOVE EXISTING CONDENSER WATER PUMPS AND TRIPLE DUTY VALVES. DISCONNECT EXISTING CONDENSER WATER PUMPS FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D06	REMOVE EXISTING BOILER. DISCONNECT EXISTING BOILER FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D07	REMOVE EXISTING VARIABLE FREQUENCY DRIVE AND RETURN TO OWNER. DISCONNECT EXISTING VARIABLE FREQUENCY DRIVE FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH EXISTING ELECTRICAL FEEDERS FROM VARIABLE FREQUENCY DRIVE TO THE HYDRONIC PUMP. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D08	REMOVE EXISTING DOMESTIC WATER HEATER AND CIRCULATOR PUMP. DISCONNECT EXISTING DOMESTIC WATER HEATER AND CIRCULATOR PUMP FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW WATER HEATER AND CIRCULATOR PUMP.
D09	REMOVE EXISTING CONCRETE EQUIPMENT PAD. REFER TO ARCHITECTURAL PLANS FOR FLOOR PREPARATION AND FINISHING.
D10	DEMOLISH EXISTING CONDENSER WATER SUPPLY PIPING AND PIPING ACCESSORIES.
D11	DEMOLISH EXISTING CONDENSER WATER RETURN PIPING AND PIPING ACCESSORIES.
D12	DISCONNECT EXISTING CHILLED WATER SUPPLY AND RETURN PIPING FROM EXISTING CHILLER.
D13	DEMOLISH EXISTING HYDRONIC SUPPLY PIPING.
D14	DEMOLISH EXISTING HYDRONIC RETURN PIPING.
D15	DEMOLISH EXISTING REFRIGERANT PIPING.
D16	DEMOLISH EXISTING EXPANSION TANKS.
D17	REMOVE EXISTING DUCTLESS SPLIT SYSTEM AND REFRIGERANT PIPING FOR ELEVATOR MECHANICAL ROOM. DISCONNECT EXISTING DUCTLESS SPLIT SYSTEM FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW DUCTLESS SPLIT SYSTEM. CONDENSATE DRAIN PIPE TO REMAIN.
D18	REMOVE EXISTING LOUVER.
D19	DEMOLISH EXISTING HYDRONIC SUPPLY RISER.
D20	DEMOLISH EXISTING HYDRONIC RETURN RISER.
D28	DEMOLISH EXISTING WATER HEATER DRAIN PIPE.
D29	DEMOLISH EXISTING BOILER AND WATER HEATER EXHAUST DUCT UP TO THE MASONRY CHIMNEY. CAP OPENING IN MASONRY CHIMNEY WITH METAL PLATE AND USE SILICONE CAULK TO CREATE A WATERTIGHT SEAL.
D30	REMOVE EXISTING EXHAUST FAN. DISCONNECT EXISTING EXHAUST FAN FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW EXHAUST FAN. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D31	DEMOLISH EXISTING RETURN AIR DUCTWORK AS REQUIRED TO FACILITATE REPLACEMENT AIR HANDLING UNIT.
D34	REMOVE EXISTING HEATING WATER CIRCULATOR PUMP. DISCONNECT EXISTING HEATING WATER CIRCULATOR PUMP FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW HEATING WATER CIRCULATOR PUMP. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D35	REMOVE EXISTING ELECTRICAL PANEL G-1 AND ASSOCIATED UPSTREAM FEEDERS AND 250 AMP BREAKER WITHIN MDP. DOWNSTREAM FEEDERS TO BE PREPARED TO BE RECONNECTED TO REPLACEMENT PANEL IN SAME LOCATION.
D38	DEMOLISH EXISTING COOLING TOWER SYSTEM DRAIN PIPING.
D39	DEMOLISH EXISTING HYDRONIC DIFFERENTIAL PRESSURE SENSOR AND ALL ASSOCIATED PIPING. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D40	DEMOLISH EXISITNG COOLING TOWER CHEMICAL TREATMENT SYSTEM AND ALL ASSOCIATED PIPING. COORDINATE WITH WALTER LOUIS FLUID TECHNOLOGIES. RETURN ALL ITEMS TO OWNER.
D41	DEMOLISH EXISTING CHEMICAL POT FEEDER FOR HYDRONIC HEATING AND COOLING SYSTEM.
D43	DEMOLISH EXISTING DISCONNECT. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL.



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MICHAEL L. PARSON, GOVERNOR

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

BASEMENT DEMOLITION FLOOR PLAN

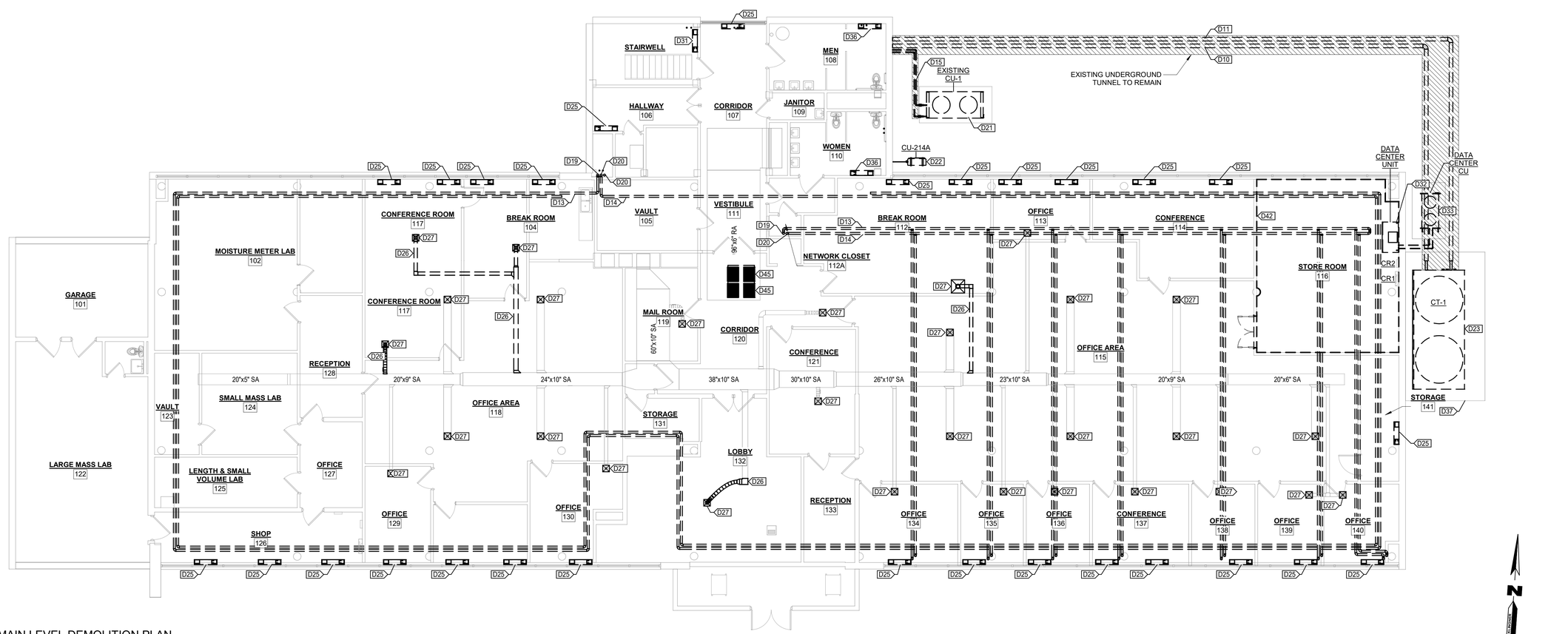
SHEET NUMBER:

D101

GENERAL DEMOLITION NOTES:
1. DEMOLISH EXISTING THERMOSTATS. PREPARE FOR NEW THERMOSTAT TO BE INSTALLED IN SAME LOCATION.

KEYNOTE LEGEND

VALUE	DESCRIPTION
D10	DEMOLISH EXISTING CONDENSER WATER SUPPLY PIPING AND PIPING ACCESSORIES.
D11	DEMOLISH EXISTING CONDENSER WATER RETURN PIPING AND PIPING ACCESSORIES.
D13	DEMOLISH EXISTING HYDRONIC SUPPLY PIPING.
D14	DEMOLISH EXISTING HYDRONIC RETURN PIPING.
D15	DEMOLISH EXISTING REFRIGERANT PIPING.
D19	DEMOLISH EXISTING HYDRONIC SUPPLY RISER.
D20	DEMOLISH EXISTING HYDRONIC RETURN RISER.
D21	REMOVE EXISTING AIR-COOLED CONDENSER. EXISTING CONCRETE EQUIPMENT PAD TO REMAIN.
D22	REMOVE EXISTING DUCTLESS SPLIT CONDENSING UNIT FOR DATA CLOSET AND ASSOCIATED REFRIGERANT PIPING. DISCONNECT EXISTING DUCTLESS SPLIT CONDENSING UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW DUCTLESS SPLIT CONDENSING UNIT.
D23	REMOVE EXISTING COOLING TOWER AND RETURN TO OWNER. DISCONNECT EXISTING COOLING TOWER FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE DEMOLISHED BACK TO ELECTRICAL PANEL. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO CONTROL PANEL.
D25	DEMOLISH EXISTING FAN COIL UNIT, ASSOCIATED BRANCH HYDRONIC PIPING, CONDENSATE DRAIN PIPING, AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING BACK TO SOURCE. GROUT EXISTING FLOOR PIPING PENETRATIONS WHERE REQUIRED. REMOVE EXISTING WIRE MOLD.
D26	DEMOLISH EXISTING SUPPLY AIR DUCT.
D27	DEMOLISH EXISITNG SUPPLY AIR DIFFUSER.
D31	DEMOLISH EXISTING RETURN AIR DUCTWORK AS REQUIRED TO FACILITATE REPLACEMENT AIR HANDLING UNIT.
D32	DEMOLISH EXISTING DATA CENTER UNIT PRIOR TO ABATEMENT. REFER TO ASBESTOS ABATEMENT PLANS FOR DETAILS. DEMOLISH EXISTING FEEDERS BACK TO ELECTRICAL PANEL.
D33	DEMOLISH EXISTING DATA CENTER CONDENSING UNIT AND REFRIGERANT PIPING. DEMOLISH EXISTING FEEDERS BACK TO ELECTRICAL PANEL.
D36	DEMOLISH EXISTING RESTROOM FAN COIL UNIT AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO SOURCE.
D37	DEMOLISH EXISTING FENCING AROUND THE COOLING TOWER. CUT FENCE POSTS FLUSH WITH CONCRETE EQUIPMENT PAD TO REMAIN. GRIND FENCE POSTS TO AVOID SHARP EDGES AND FILL WITH GROUT.
D42	DISCONNECT EXISTING ELECTRICAL RECEPTACLES NOT RECESSED IN THE WALL IN STORE ROOM 116 PRIOR TO ABATEMENT. REFER TO ASBESTOS ABATEMENT PLANS FOR DETAILS. RECEPTACLES RECESSED IN THE WALL TO REMAIN.
D45	DEMOLISH EXISITNG RETURN AIR GRILLE.



1 MAIN LEVEL DEMOLITION PLAN
1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI * Matthew Hayes Bridges * NUMBER PE-2021031578 * PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

1ST FLOOR DEMOLITION FLOOR PLAN

SHEET NUMBER:

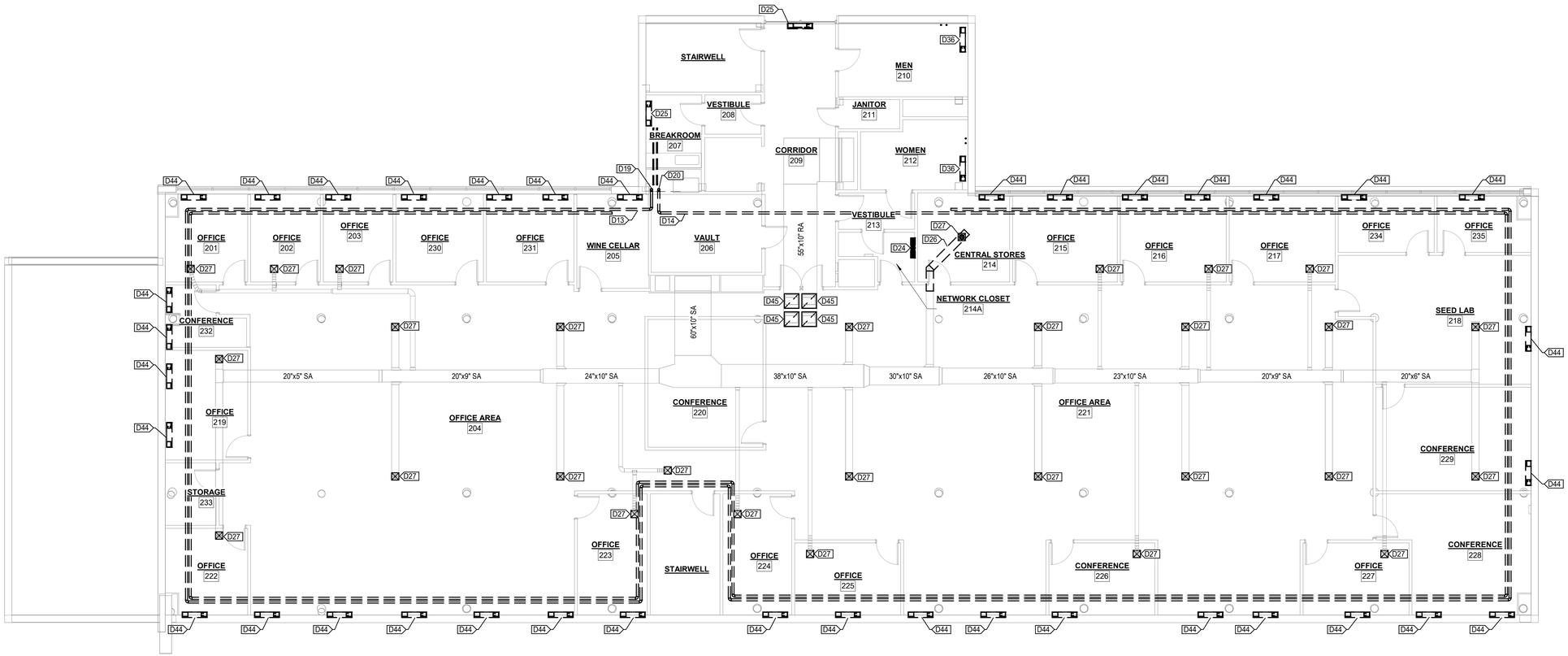
D102

SHEET 17 OF 46
JUNE 14, 2024

GENERAL DEMOLITION NOTES:
1. DEMOLISH EXISTING THERMOSTATS. PREPARE FOR NEW THERMOSTAT TO BE INSTALLED IN SAME LOCATION.

KEYNOTE LEGEND

VALUE	DESCRIPTION
D13	DEMOLISH EXISTING HYDRONIC SUPPLY PIPING.
D14	DEMOLISH EXISTING HYDRONIC RETURN PIPING.
D19	DEMOLISH EXISTING HYDRONIC SUPPLY RISER.
D20	DEMOLISH EXISTING HYDRONIC RETURN RISER.
D24	REMOVE EXISTING DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT FOR DATA CLOSET. DISCONNECT EXISTING DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT. DEMOLISH EXISTING REFRIGERANT PIPING BACK TO CONDENSING UNIT. EXTEND EXISTING CONDENSATE DRAIN PIPE AS REQUIRED TO CONNECT TO NEW DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT.
D25	DEMOLISH EXISTING FAN COIL UNIT, ASSOCIATED BRANCH HYDRONIC PIPING, CONDENSATE DRAIN PIPING, AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING BACK TO SOURCE. GROUT EXISTING FLOOR PIPING PENETRATIONS WHERE REQUIRED. REMOVE EXISTING WIRE MOLD.
D26	DEMOLISH EXISTING SUPPLY AIR DUCT.
D27	DEMOLISH EXISITNG SUPPLY AIR DIFFUSER.
D36	DEMOLISH EXISTING RESTROOM FAN COIL UNIT AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO SOURCE.
D44	DEMOLISH EXISTING FAN COIL UNIT, ASSOCIATED BRANCH HYDRONIC PIPING, CONDENSATE DRAIN PIPING, AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. DEMOLISHED EXISTING ELECTRICAL FEEDERS BACK TO SOURCE. DEMOLISH CONTROL WIRING BACK TO SOURCE. GROUT EXISTING FLOOR PIPING PENETRATIONS WHERE REQUIRED.
D45	DEMOLISH EXISITNG RETURN AIR GRILLE.



1 SECOND LEVEL DEMOLITION PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

2ND FLOOR DEMOLITION FLOOR PLAN

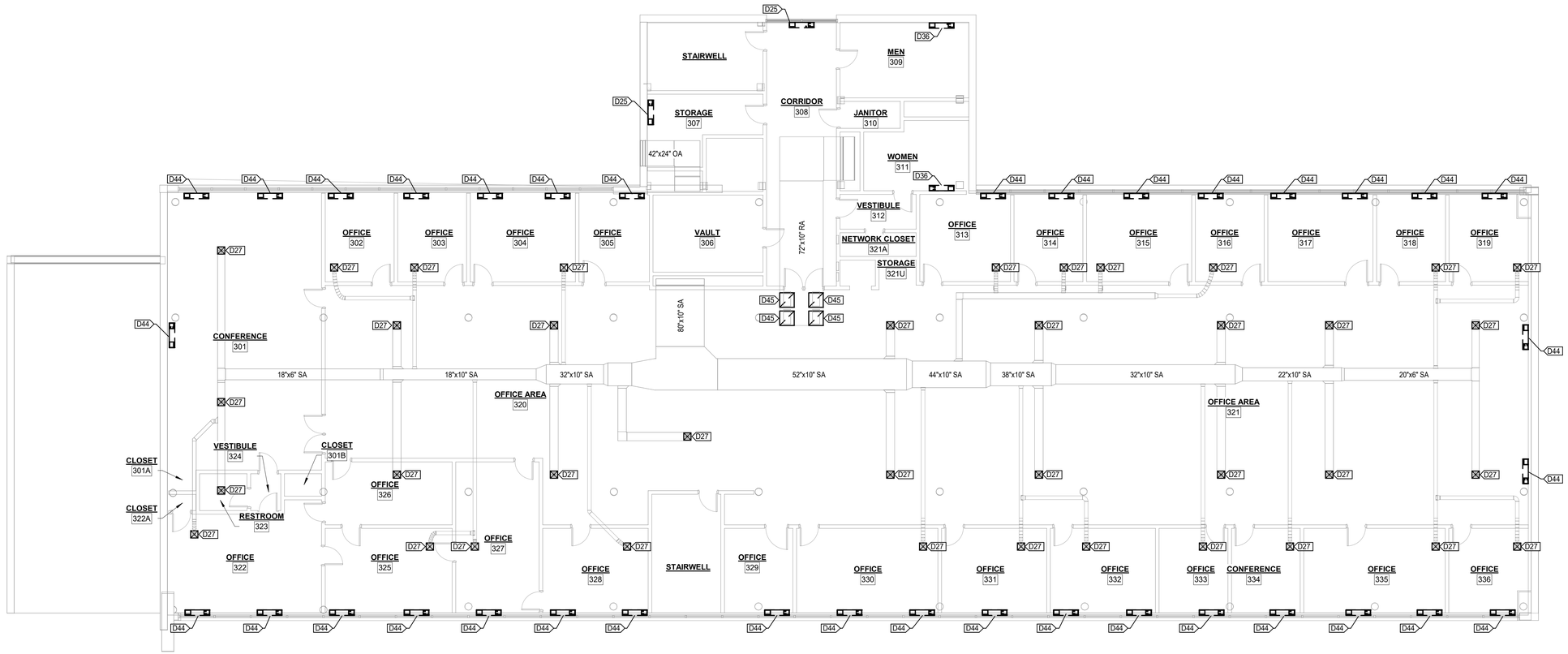
SHEET NUMBER:

D103

SHEET 18 OF 46
JUNE 14, 2024

GENERAL DEMOLITION NOTES:
1. DEMOLISH EXISTING THERMOSTATS. PREPARE FOR NEW THERMOSTAT TO BE INSTALLED IN SAME LOCATION.

KEYNOTE LEGEND	
VALUE	DESCRIPTION
D25	DEMOLISH EXISTING FAN COIL UNIT, ASSOCIATED BRANCH HYDRONIC PIPING, CONDENSATE DRAIN PIPING, AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING BACK TO SOURCE. GROUT EXISTING FLOOR PIPING PENETRATIONS WHERE REQUIRED. REMOVE EXISTING WIRE MOLD.
D27	DEMOLISH EXISITNG SUPPLY AIR DIFFUSER.
D36	DEMOLISH EXISTING RESTROOM FAN COIL UNIT AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. EXISTING FEEDERS TO BE EXTENDED AS REQUIRED TO CONNECT TO NEW FAN COIL UNIT. DEMOLISH CONTROL WIRING AND CONDUIT BACK TO SOURCE.
D44	DEMOLISH EXISTING FAN COIL UNIT, ASSOCIATED BRANCH HYDRONIC PIPING, CONDENSATE DRAIN PIPING, AND HYDRONIC CONTROL VALVE. DISCONNECT EXISTING FAN COIL UNIT FROM EXISTING ELECTRICAL FEEDERS. DEMOLISHED EXISTING ELECTRICAL FEEDERS BACK TO SOURCE. DEMOLISH CONTROL WIRING BACK TO SOURCE. GROUT EXISTING FLOOR PIPING PENETRATIONS WHERE REQUIRED.
D45	DEMOLISH EXISITNG RETURN AIR GRILLE.



1 THIRD LEVEL DEMOLITION PLAN
1/8" = 1'-0"

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

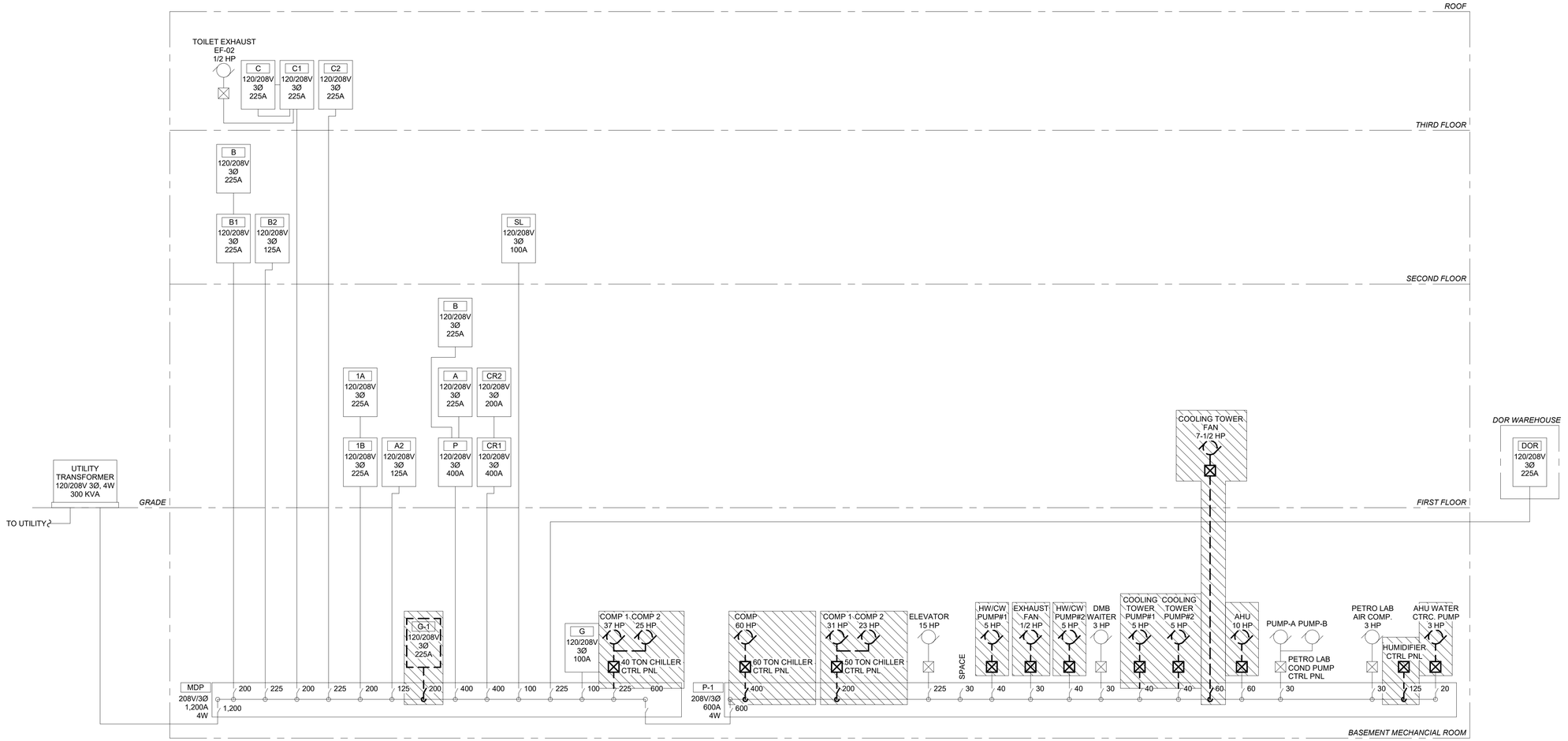
SHEET TITLE:

3RD FLOOR DEMOLITION FLOOR PLAN

SHEET NUMBER:

D104

SHEET 19 OF 46
JUNE 14, 2024



1 ELECTRICAL DEMOLITION ONE-LINE DIAGRAM
NTS

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

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PROJECT # O2440-01
SITE # 1010
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DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
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DESIGNED BY: MHB

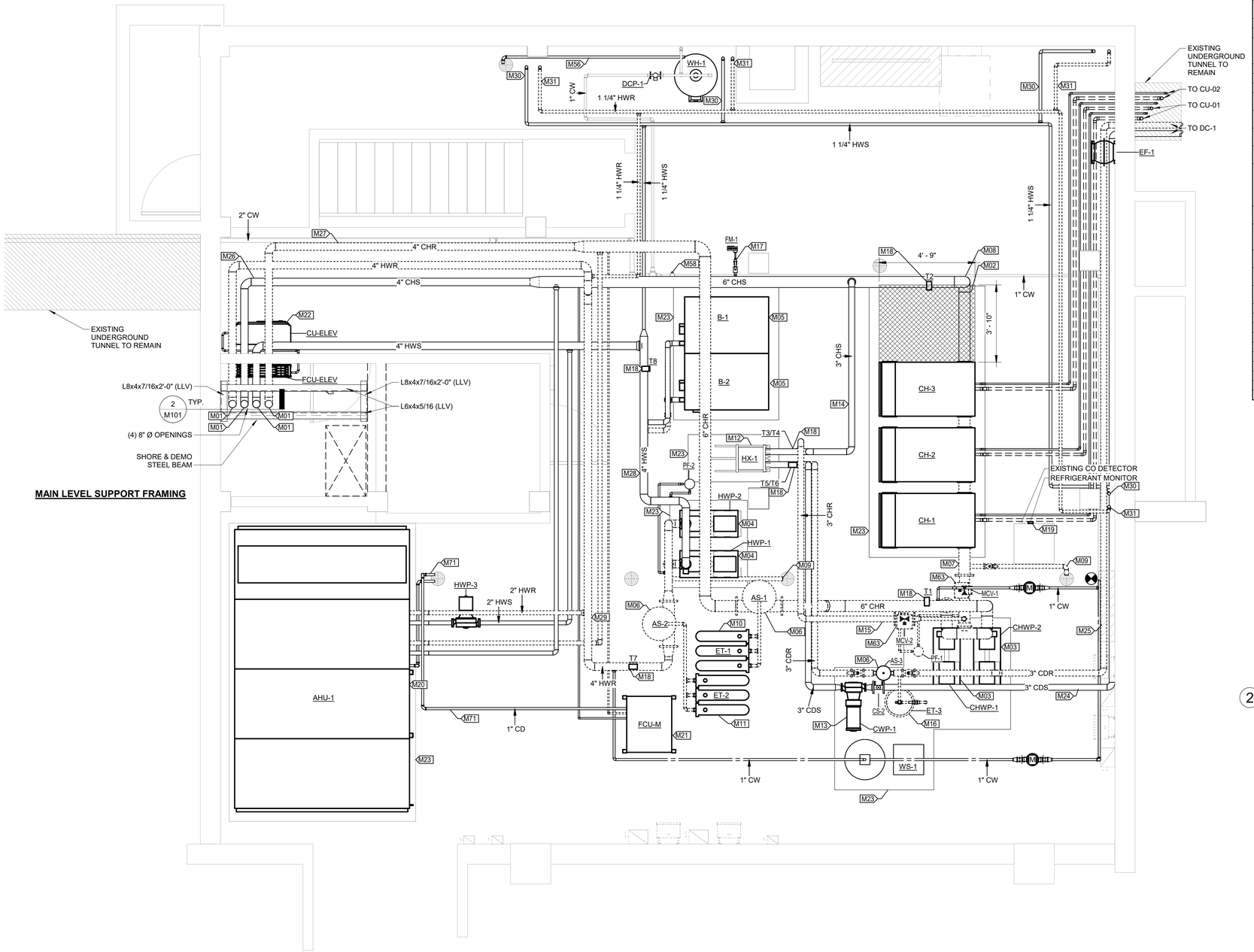
SHEET TITLE:

ELECTRICAL DEMOLITION ONE-LINE

SHEET NUMBER:

D601

SHEET 20 OF 46
JUNE 14, 2024

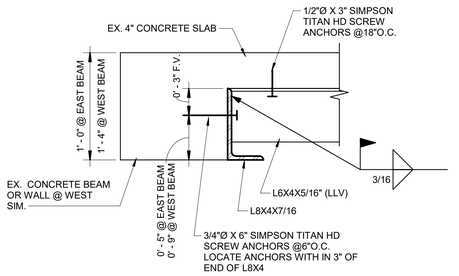


MAIN LEVEL SUPPORT FRAMING

1 BASEMENT FLOOR PLAN
3/8" = 1'-0"

KEYNOTE LEGEND

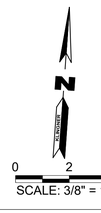
VALUE	DESCRIPTION
M01	CORE DRILL FOR NEW HYDRONIC PIPING RISER.
M02	RESERVE SPACE FOR FUTURE 30 TON CHILLER MODULE.
M03	FURNISH AND INSTALL NEW CHILLED WATER PRIMARY PUMP.
M04	FURNISH AND INSTALL NEW HEATING WATER PRIMARY PUMP.
M05	FURNISH AND INSTALL NEW CONDENSING BOILER. RECONNECT NATURAL GAS PIPING, EXTEND AS REQUIRED.
M06	FURNISH AND INSTALL NEW AIR SEPARATOR.
M07	CHILLED WATER RETURN CONNECTION TO CHILLER PLANT. REFER TO M503, DETAIL 1.
M08	CHILLED WATER SUPPLY CONNECTION TO CHILLER PLANT. REFER TO M503, DETAIL 1.
M09	FURNISH AND INSTALL NEW SYSTEM DRAIN PIPE WITH ISOLATION VALVE. ROUTE TO FLOOR DRAIN.
M10	FURNISH AND INSTALL NEW EXPANSION TANK FOR CHILLED WATER SYSTEM.
M11	FURNISH AND INSTALL NEW EXPANSION TANK FOR HEATING WATER SYSTEM.
M12	FURNISH AND INSTALL NEW WATER-TO-WATER HEAT EXCHANGER. INSTALL NEW MANUAL ISOLATION VALVES, TEMPERATURE SENSORS, AND PRESSURE GUAGES AS SHOWN ON M501, DETAIL 5.
M13	FURNISH AND INSTALL NEW CONDENSER PUMP FOR HEAT EXCHANGER.
M14	FURNISH AND INSTALL NEW CHILLED WATER SUPPLY PIPING FOR THE HEAT EXCHANGER.
M15	FURNISH AND INSTALL NEW CHILLED WATER RETURN PIPING FOR THE HEAT EXCHANGER.
M16	FURNISH AND INSTALL NEW EXPANSION TANK AND AIR SEPARATOR FOR DRY COOLER CONDENSER LOOP. REFER TO M501, DETAIL 6.
M17	FURNISH AND INSTALL NEW FLOW METER AT THIS LOCATION. FLOW METER FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 7.
M18	FURNISH AND INSTALL NEW DDC WATER TEMPERATURE SENSOR WELL. TEMPERATURE SENSOR FURNISHED AND INSTALLED BY CONTROLS VENDOR.
M19	FURNISH AND INSTALL NEW REFRIGERANT MONITOR. CONNECT TO EXISTING BAS SYSTEM AND PROVIDE EXISTING BAS SYSTEM WITH ALARM STATUS.
M20	FURNISH AND INSTALL NEW AIR HANDLING UNIT. INSTALL NEW DDC CONTROLLED OUTDOOR AIR AND RETURN AIR DAMPER ACTUATORS. INSTALL NEW DDC CONTROLLED MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES. MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES AND DAMPER ACTUATORS FURNISHED BY CONTROLS VENDOR.
M21	FURNISH AND INSTALL NEW FAN COIL UNIT FROM BASEMENT CEILING. MAINTAIN 8FT CLEARANCE FROM FINISHED FLOOR TO BOTTOM OF NEW FAN COIL UNIT.
M22	FURNISH AND INSTALL NEW DUCTLESS SPLIT SYSTEM AND REFRIGERANT PIPING FOR ELEVATOR MECHANICAL ROOM. RECONNECT EXISTING ELECTRICAL FEEDERS TO NEW DUCTLESS SPLIT SYSTEM. RECONNECT EXISTING CONDENSATE DRAIN PIPE.
M23	INSTALL NEW REINFORCED CONCRETE EQUIPMENT PAD. REFER TO M503, DETAIL 3 AND DETAIL 5.
M24	FURNISH AND INSTALL NEW CONDENSER WATER SUPPLY PIPING FOR THE HEAT EXCHANGER.
M25	FURNISH AND INSTALL NEW CONDENSER WATER RETURN PIPING FOR THE HEAT EXCHANGER.
M26	FURNISH AND INSTALL NEW CHILLED WATER SUPPLY PIPING.
M27	FURNISH AND INSTALL NEW CHILLED WATER RETURN PIPING.
M28	FURNISH AND INSTALL NEW HEATING WATER SUPPLY PIPING.
M29	FURNISH AND INSTALL NEW HEATING WATER RETURN PIPING.
M30	FURNISH AND INSTALL NEW HEATING WATER SUPPLY FOR RESTROOMS AND CORRIDOR.
M31	FURNISH AND INSTALL NEW HEATING WATER RETURN FOR RESTROOMS AND CORRIDOR.
M56	FURNISH AND INSTALL NEW WATER HEATER DRAIN PIPE. ROUTE TO FLOOR DRAIN.
M58	CAP EXISTING DOMESTIC WATER CONNECTION.
M63	FURNISH AND INSTALL MOTORIZED CONTROL VALVE.
M71	FURNISH AND INSTALL NEW CONDENSATE DRAIN LINE. ROUTE TO NEAREST FLOOR DRAIN.



NOTE: (DO NOT DAMAGE EXISTING REINFORCING STEEL)

2 OPENING SUPPORT
1 1/2" = 1'-0"
SCALE: 1 1/2" = 1'-0"

SEAL APPLIES TO STRUCTURAL FRAMING AND DETAILS ONLY



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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

BASEMENT HYDRONIC FLOOR PLAN

SHEET NUMBER:

M101

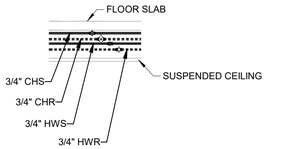
SHEET 21 OF 46
JUNE 14, 2024

GENERAL NOTES:

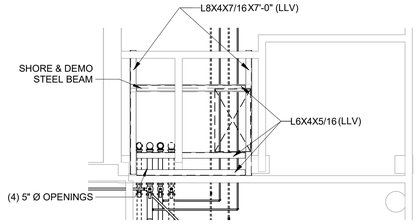
1. ALL NEW HYDRONIC PIPING AND CEILING MOUNTED FAN COIL UNITS TO BE SUSPENDED OVERHEAD. CONTRACTOR SHALL EXERCISE CAUTION WHEN INSTALLING ANCHORS IN EXISTING REINFORCED CONCRETE STRUCTURAL ELEMENTS (I.E. FLOOR SLABS, BEAMS, COLUMNS, ETC.). CONTRACTOR SHALL UTILIZE NON-DISTRUCTIVE MEASURES (I.E. GROUND PENETRATING RADAR (GPR)) TO LOCATE ALL REINFORCING STEEL PRIOR TO INSTALLING ANCHORS. DO NOT DAMAGE OR CUT ANY EXISTING REINFORCEMENT. ALL WORK SHALL STOP IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. CONTRACTOR SHALL REQUEST DIRECTION FOR REPAIRS IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. NO ADDITIONAL FUNDS OR TIME WILL BE ALLOCATED FOR ANY REPAIRS.

KEYNOTE LEGEND

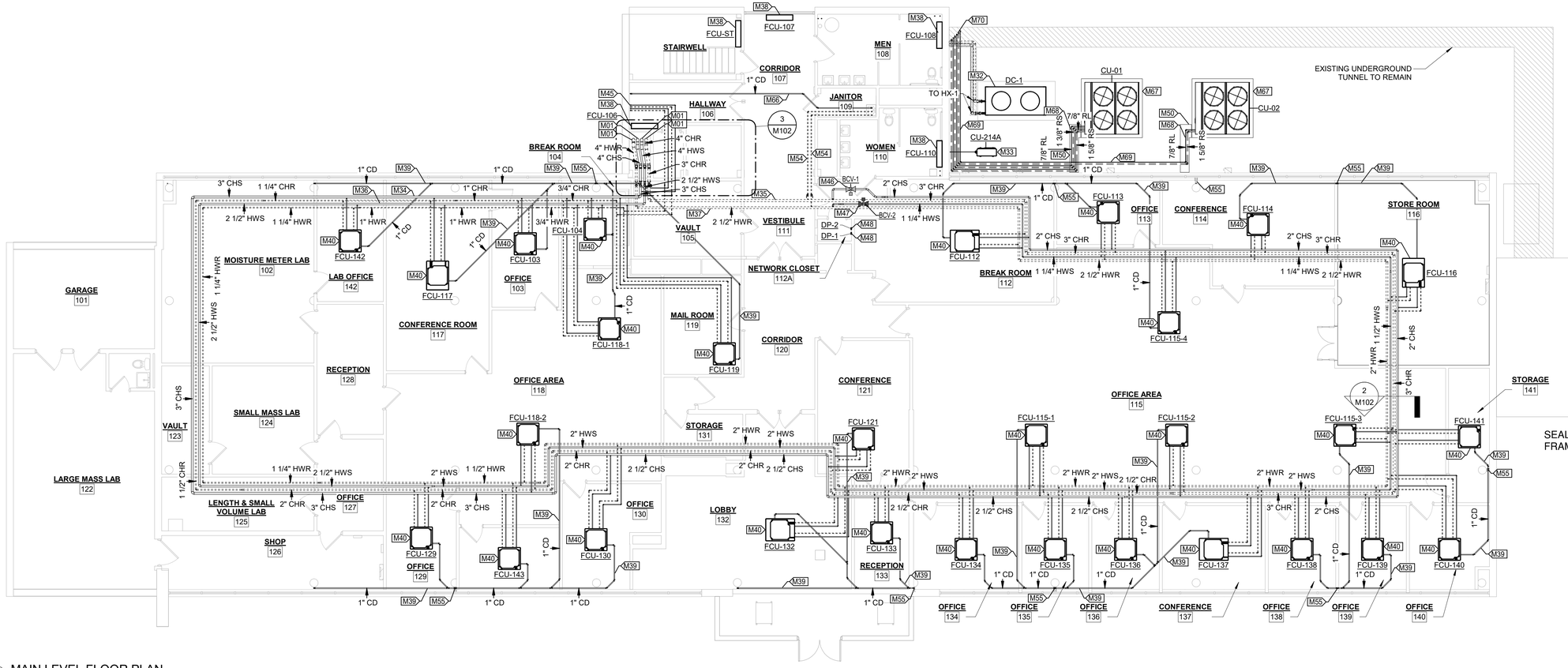
VALUE	DESCRIPTION
M01	CORE DRILL FOR NEW HYDRONIC PIPING RISER.
M32	FURNISH AND INSTALL NEW DRY COOLER. MODIFY EXISTING EQUIPMENT PAD AS REQUIRED.
M33	FURNISH AND INSTALL NEW DUCTLESS SPLIT CONDENSING UNIT FOR DATA CLOSET.
M34	ROUTE NEW CHILLED WATER SUPPLY BRANCH ABOVE FIRST FLOOR SAT CEILING.
M35	ROUTE NEW CHILLED WATER RETURN BRANCH ABOVE FIRST FLOOR SAT CEILING.
M36	ROUTE NEW HEATING WATER SUPPLY BRANCH ABOVE FIRST FLOOR SAT CEILING.
M37	ROUTE NEW HEATING WATER RETURN BRANCH ABOVE FIRST FLOOR SAT CEILING.
M38	FURNISH AND INSTALL NEW HEATING ONLY FLOOR MOUNTED FAN COIL UNIT. REFER TO M502, DETAIL 1.
M39	FURNISH AND INSTALL NEW CONDENSATE DRAIN LINE. ROUTE TO STRUCTURAL COLUMN SHOWN AND FOLLOW EXISTING CONDENSATE PATH.
M40	FURNISH AND INSTALL NEW HYDRONIC CEILING CASSETTE. INSTALL NEW DDC CONTROLLED MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES. MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 9.
M45	ROUTE CHILLED WATER AND HEATING WATER SUPPLY AND RETURN PIPING TIGHT AGAINST EXTERIOR WALL AND CONNECT TO FCU-207 ABOVE.
M46	FURNISH AND INSTALL NEW DDC CONTROLLED CHILLED WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M47	FURNISH AND INSTALL NEW DDC CONTROLLED HEATING WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M48	FURNISH AND INSTALL AND PIPE NEW DIFFERENTIAL PRESSURE SENSOR. DIFFERENTIAL PRESSURE SENSOR FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 8.
M50	INSTALL NEW REINFORCED CONCRETE EQUIPMENT PAD. REFER TO M501, DETAIL 10.
M54	FURNISH AND INSTALL NEW SYSTEM DRAIN PIPE WITH ISOLATION VALVE. ROUTE TO MOP SINK IN JANITOR'S CLOSET.
M55	FURNISH AND INSTALL NEW CONDENSATE DRAIN PIPING COVER. REFER TO ARCHITECTURAL PLANS FOR DETAILS.
M66	ROUTE NEW CONDENSATE DRAIN FOR FCU-207 TO JANITOR'S CLOSET 109. ROUTE CONDENSATE PIPE OVER EXISTING DUCTWORK.
M67	INSTALL NEW REINFORCED CONCRETE EQUIPMENT PAD. REFER TO M503, DETAIL 2 AND DETAIL 3.
M68	SUPPORT REFRIGERANT PIPING OVER GRADE. REFER TO M502, DETAIL 4.
M69	STACK AND ATTACH REFRIGERANT PIPING TO EXTERIOR WALL BELOW WINDOWS.
M70	FURNISH AND INSTALL ALUMINUM REFRIGERANT PIPING SHROUD. REFER TO M503, DETAIL 6.



2 PIPING ARRANGEMENT ELEVATION
1/4" = 1'-0"
0 2' 4' 8'
SCALE: 1/4" = 1'-0"



3 SECOND LEVEL FLOOR - SUPPORT FRAMING PLAN
1/4" = 1'-0"
0 2' 4' 8'
SCALE: 1/4" = 1'-0"



1 MAIN LEVEL FLOOR PLAN
1/8" = 1'-0"

SEAL APPLIES TO STRUCTURAL FRAMING AND DETAILS ONLY

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

1ST FLOOR HYDRONIC FLOOR PLAN

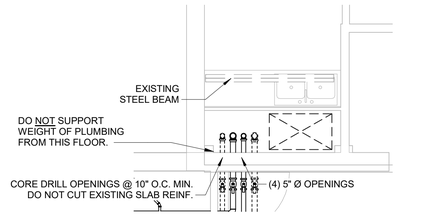
SHEET NUMBER:

M102

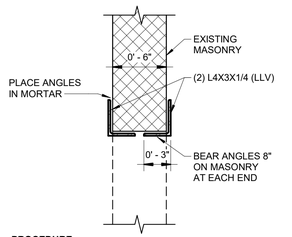
SHEET 22 OF 46
JUNE 14, 2024

GENERAL NOTES:

1. ALL NEW HYDRONIC PIPING AND CEILING MOUNTED FAN COIL UNITS TO BE SUSPENDED OVERHEAD. CONTRACTOR SHALL EXERCISE CAUTION WHEN INSTALLING ANCHORS IN EXISTING REINFORCED CONCRETE STRUCTURAL ELEMENTS (I.E. FLOOR SLABS, BEAMS, COLUMNS, ETC.). CONTRACTOR SHALL UTILIZE NON-DISTRUCTIVE MEASURES (I.E. GROUND PENETRATING RADAR (GPR)) TO LOCATE ALL REINFORCING STEEL PRIOR TO INSTALLING ANCHORS. DO NOT DAMAGE OR CUT ANY EXISTING REINFORCEMENT. ALL WORK SHALL STOP IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. CONTRACTOR SHALL REQUEST DIRECTION FOR REPAIRS IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. NO ADDITIONAL FUNDS OR TIME WILL BE ALLOCATED FOR ANY REPAIRS.

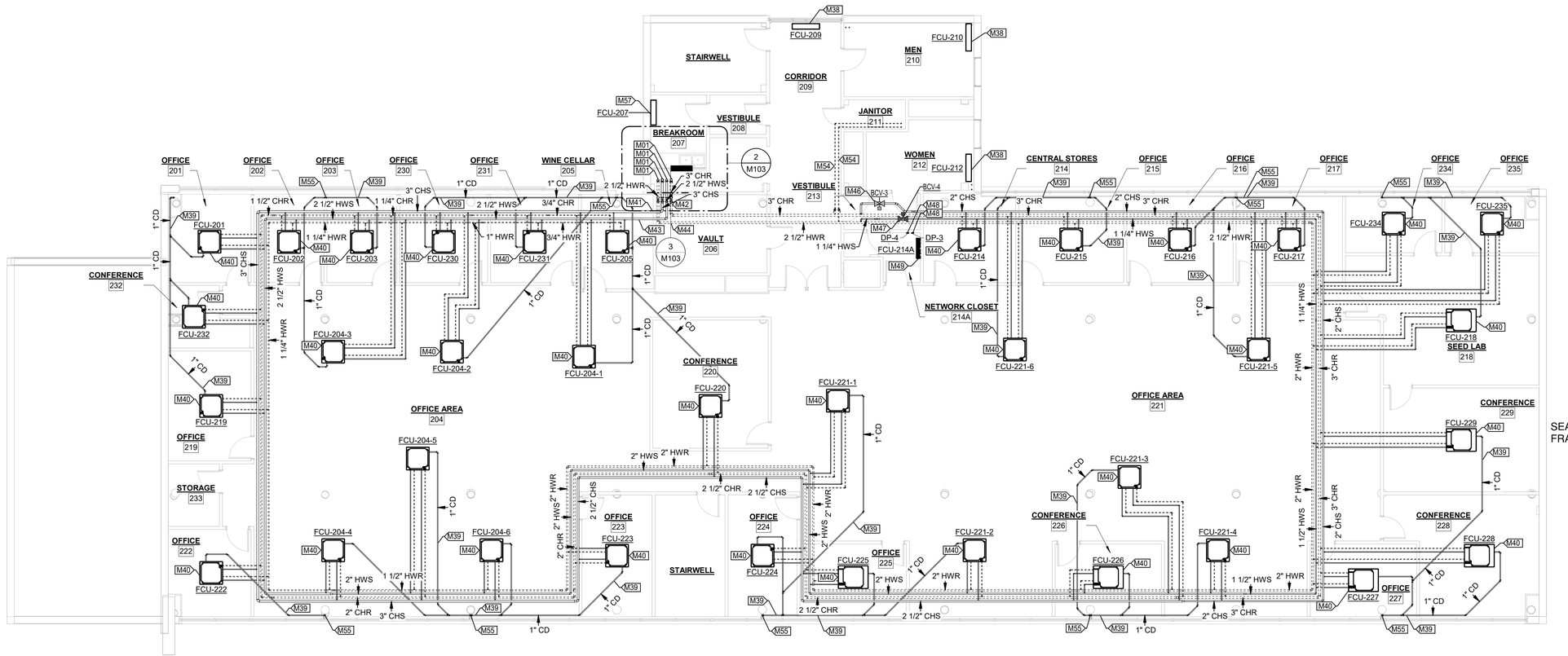


2 THIRD LEVEL FLOOR - SUPPORT FRAMING PLAN
1/4" = 1'-0"
0 2' 4' 8'
SCALE: 1/4" = 1'-0"



PROCEDURE:
1. SAW CUT FOR ANGLE ON FIRST SIDE AND INSTALL.
2. SAW CUT FOR ANGLE ON SECOND SIDE AND INSTALL IN MORTAR.
3. REMOVE MASONRY BELOW ANGLES FOR OPENING.

3 LINTEL AT EXISTING
1 1/2" = 1'-0"
0 3" 6" 1'
SCALE: 1 1/2" = 1'-0"



1 SECOND LEVEL FLOOR PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

VALUE	DESCRIPTION
M01	CORE DRILL FOR NEW HYDRONIC PIPING RISER.
M38	FURNISH AND INSTALL NEW HEATING ONLY FLOOR MOUNTED FAN COIL UNIT. REFER TO M502, DETAIL 1.
M39	FURNISH AND INSTALL NEW CONDENSATE DRAIN LINE. ROUTE TO STRUCTURAL COLUMN SHOWN AND FOLLOW EXISTING CONDENSATE PATH.
M40	FURNISH AND INSTALL NEW HYDRONIC CEILING CASSETTE. INSTALL NEW DDC CONTROLLED MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES. MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 9.
M41	ROUTE NEW CHILLED WATER SUPPLY PIPING ABOVE SECOND FLOOR SAT CEILING.
M42	ROUTE NEW CHILLED WATER RETURN PIPING ABOVE SECOND FLOOR SAT CEILING.
M43	ROUTE NEW HEATING WATER SUPPLY PIPING ABOVE SECOND FLOOR SAT CEILING.
M44	ROUTE NEW HEATING WATER RETURN PIPING ABOVE SECOND FLOOR SAT CEILING.
M46	FURNISH AND INSTALL NEW DDC CONTROLLED CHILLED WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M47	FURNISH AND INSTALL NEW DDC CONTROLLED HEATING WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M48	FURNISH AND INSTALL AND PIPE NEW DIFFERENTIAL PRESSURE SENSOR. DIFFERENTIAL PRESSURE SENSOR FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 8.
M49	FURNISH AND INSTALL NEW DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT FOR DATA CLOSET. RECONNECT EXISTING CONDENSATE DRAIN PIPE TO NEW DUCTLESS SPLIT WALL MOUNTED FAN COIL UNIT. INSTALL NEW REFRIGERANT PIPING FOR DUCTLESS SPLIT SYSTEM. ALL EXTERIOR REFRIGERANT PIPING SHALL HAVE ALUMINUM JACKET.
M54	FURNISH AND INSTALL NEW SYSTEM DRAIN PIPE WITH ISOLATION VALVE. ROUTE TO MOP SINK IN JANITOR'S CLOSET.
M55	FURNISH AND INSTALL NEW CONDENSATE DRAIN PIPING COVER. REFER TO ARCHITECTURAL PLANS FOR DETAILS.
M57	FURNISH AND INSTALL NEW FLOOR MOUNTED FAN COIL UNIT. PROVIDE NEW CONDENSATE DRAIN PIPE. THE REPLACEMENT FAN COIL UNIT CABINET CANNOT IMPEDE WINDOWS OR OTHER NON-MOVABLE ROOM FEATURES. REFER TO M502, DETAIL 1.

SEAL APPLIES TO STRUCTURAL FRAMING AND DETAILS ONLY

N

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
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DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

2ND FLOOR HYDRONIC FLOOR PLAN

SHEET NUMBER:

M103

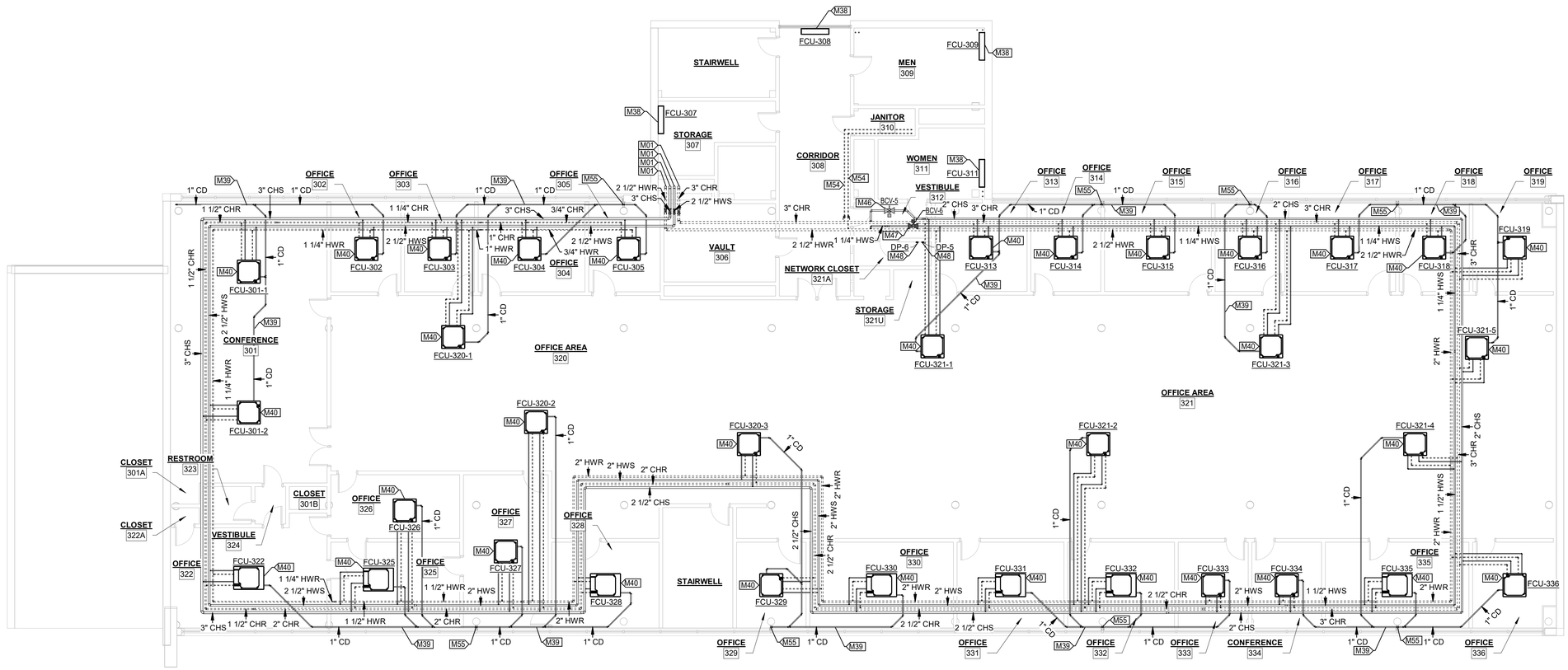
SHEET 23 OF 46
JUNE 14, 2024

GENERAL NOTES:

1. ALL NEW HYDRONIC PIPING AND CEILING MOUNTED FAN COIL UNITS TO BE SUSPENDED OVERHEAD. CONTRACTOR SHALL EXERCISE CAUTION WHEN INSTALLING ANCHORS IN EXISTING REINFORCED CONCRETE STRUCTURAL ELEMENTS (I.E. FLOOR SLABS, BEAMS, COLUMNS, ETC.). CONTRACTOR SHALL UTILIZE NON-DISTRUCTIVE MEASURES (I.E. GROUND PENETRATING RADAR (GPR)) TO LOCATE ALL REINFORCING STEEL PRIOR TO INSTALLING ANCHORS. DO NOT DAMAGE OR CUT ANY EXISTING REINFORCEMENT. ALL WORK SHALL STOP IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. CONTRACTOR SHALL REQUEST DIRECTION FOR REPAIRS IF ANY EXISTING REINFORCEMENT IS DAMAGED OR CUT. NO ADDITIONAL FUNDS OR TIME WILL BE ALLOCATED FOR ANY REPAIRS.

KEYNOTE LEGEND

VALUE	DESCRIPTION
M01	CORE DRILL FOR NEW HYDRONIC PIPING RISER.
M38	FURNISH AND INSTALL NEW HEATING ONLY FLOOR MOUNTED FAN COIL UNIT. REFER TO M502, DETAIL 1.
M39	FURNISH AND INSTALL NEW CONDENSATE DRAIN LINE. ROUTE TO STRUCTURAL COLUMN SHOWN AND FOLLOW EXISTING CONDENSATE PATH.
M40	FURNISH AND INSTALL NEW HYDRONIC CEILING CASSETTE. INSTALL NEW DDC CONTROLLED MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES. MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 9.
M46	FURNISH AND INSTALL NEW DDC CONTROLLED CHILLED WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M47	FURNISH AND INSTALL NEW DDC CONTROLLED HEATING WATER MODULATING BYPASS FLOW CONTROL VALVE AND BYPASS PIPING. MODULATING BYPASS FLOW CONTROL VALVE FURNISHED BY CONTROLS VENDOR.
M48	FURNISH AND INSTALL AND PIPE NEW DIFFERENTIAL PRESSURE SENSOR. DIFFERENTIAL PRESSURE SENSOR FURNISHED BY CONTROLS VENDOR. REFER TO M501, DETAIL 8.
M54	FURNISH AND INSTALL NEW SYSTEM DRAIN PIPE WITH ISOLATION VALVE. ROUTE TO MOP SINK IN JANITOR'S CLOSET.
M55	FURNISH AND INSTALL NEW CONDENSATE DRAIN PIPING COVER. REFER TO ARCHITECTURAL PLANS FOR DETAILS.



1 THIRD LEVEL FLOOR PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
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DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

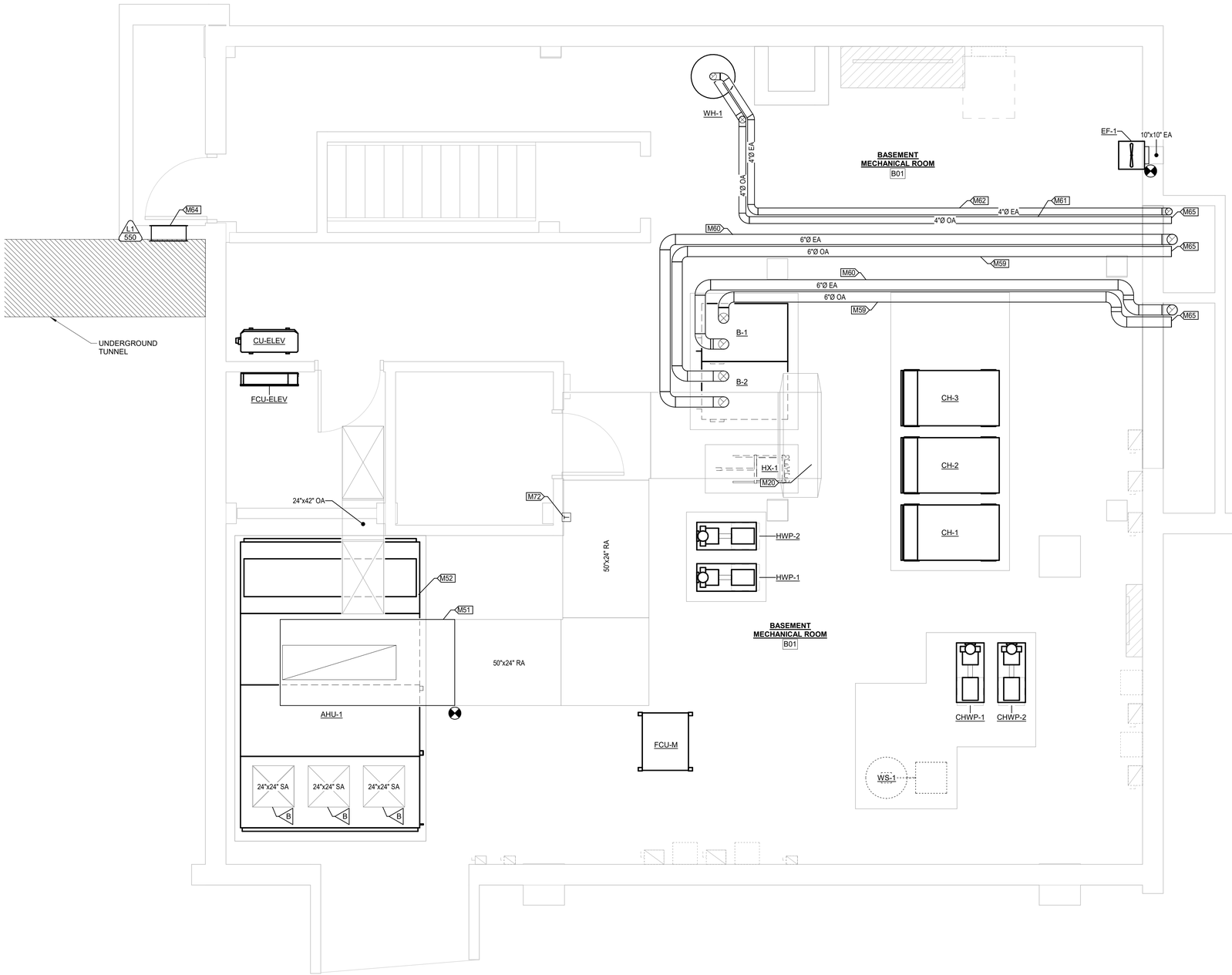
3RD FLOOR HYDRONIC FLOOR PLAN

SHEET NUMBER:

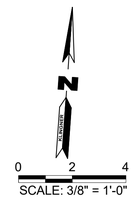
M104

SHEET 24 OF 46
JUNE 14, 2024

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M20	FURNISH AND INSTALL NEW AIR HANDLING UNIT. INSTALL NEW DDC CONTROLLED OUTDOOR AIR AND RETURN AIR DAMPER ACTUATORS. INSTALL NEW DDC CONTROLLED MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES. MODULATING CHILLED WATER AND HEATING WATER CONTROL VALVES AND DAMPER ACTUATORS FURNISHED BY CONTROLS VENDOR.
M51	MODIFY EXISTING RETURN AIR DUCTWORK AS REQUIRED TO FACILITATE REPLACEMENT AIR HANDLING UNIT.
M52	MODIFY EXISTING OUTDOOR AIR DUCTWORK AS REQUIRED TO FACILITATE REPLACEMENT AIR HANDLING UNIT.
M59	FURNISH AND INSTALL NEW OUTDOOR AIR DUCT FOR BOILER. FOLLOW MANUFACTURER'S VENTING REQUIREMENTS.
M60	FURNISH AND INSTALL NEW EXHAUST AIR DUCT FOR BOILER. FOLLOW MANUFACTURER'S VENTING REQUIREMENTS.
M61	FURNISH AND INSTALL NEW OUTDOOR AIR DUCT FOR WATER HEATER. FOLLOW MANUFACTURER'S VENTING REQUIREMENTS.
M62	FURNISH AND INSTALL NEW EXHAUST AIR DUCT FOR WATER HEATER. FOLLOW MANUFACTURER'S VENTING REQUIREMENTS.
M64	FURNISH AND INSTALL NEW LOUVER AND CONTROL DAMPER. REFER TO M501, DETAIL 4.
M65	REFER TO M503, DETAIL 7 FOR VENT TERMINATION REQUIREMENTS
M72	FURNISH AND INSTALL NEW THERMOSTAT. WIRE TO ASSOCIATED FAN COIL UNIT.



1 BASEMENT DUCTWORK PLAN
3/8" = 1'-0"



STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

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DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

BASEMENT DUCTWORK FLOOR PLAN

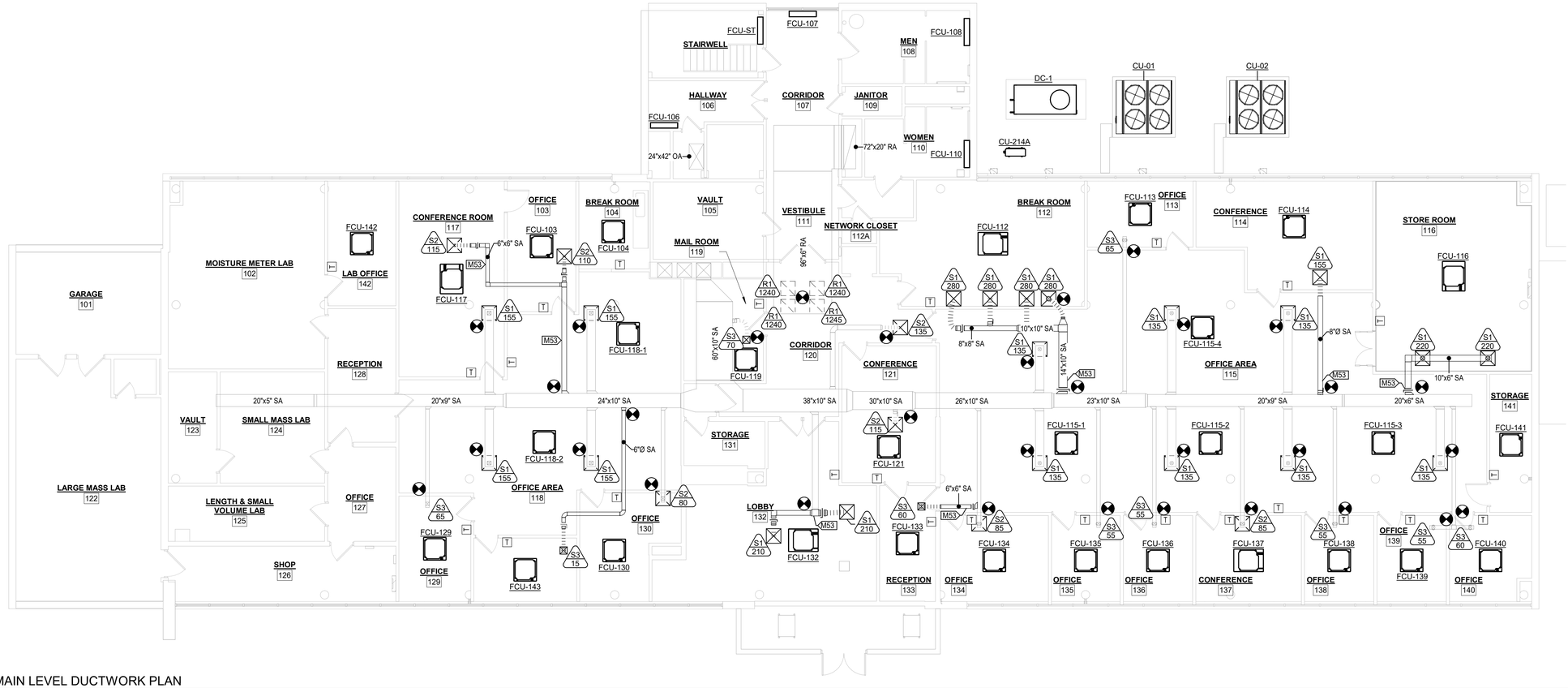
SHEET NUMBER:

M105

SHEET 25 OF 46
JUNE 14, 2024

GENERAL NOTES:
1. INSTALL NEW THERMOSTATS IN LOCATION OF PREVIOUS THERMOSTAT, WHERE APPLICABLE. THERMOSTAT WIRING TO BE CONCEALED IN SURFACE MOUNTED WIRE MOLD. WIRE MOLD COLOR TO BE SELECTED BY OWNER.

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M53	FURNISH AND INSTALL NEW SUPPLY AIR DUCT.



1 MAIN LEVEL DUCTWORK PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

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JEFFERSON CITY, MO 65101

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ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

1ST FLOOR DUCTWORK FLOOR PLAN

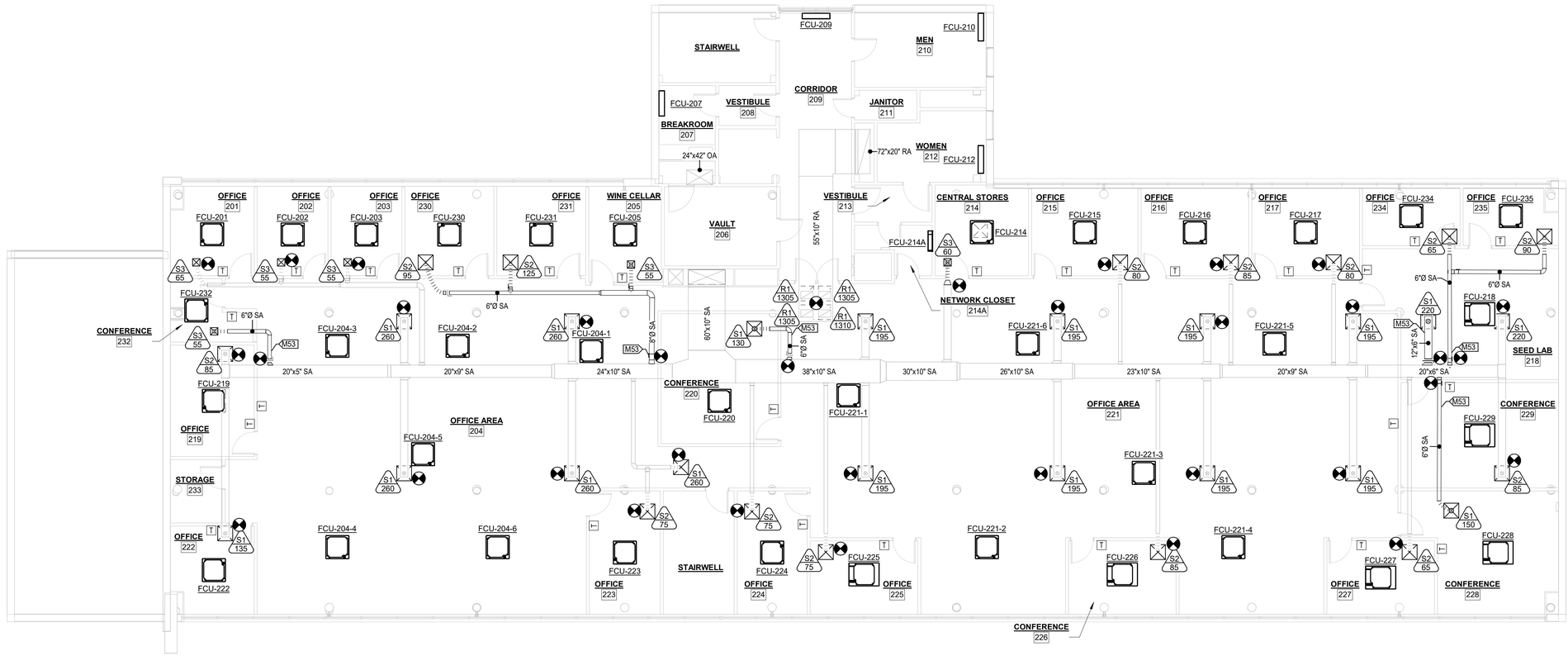
SHEET NUMBER:

M106

SHEET 26 OF 46
JUNE 14, 2024

GENERAL NOTES:
1. INSTALL NEW THERMOSTATS IN LOCATION OF PREVIOUS THERMOSTAT, WHERE APPLICABLE. THERMOSTAT WIRING TO BE CONCEALED IN SURFACE MOUNTED WIRE MOLD. WIRE MOLD COLOR TO BE SELECTED BY OWNER.

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M53	FURNISH AND INSTALL NEW SUPPLY AIR DUCT.



1 SECOND LEVEL DUCTWORK PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

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DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

2ND FLOOR DUCTWORK FLOOR PLAN

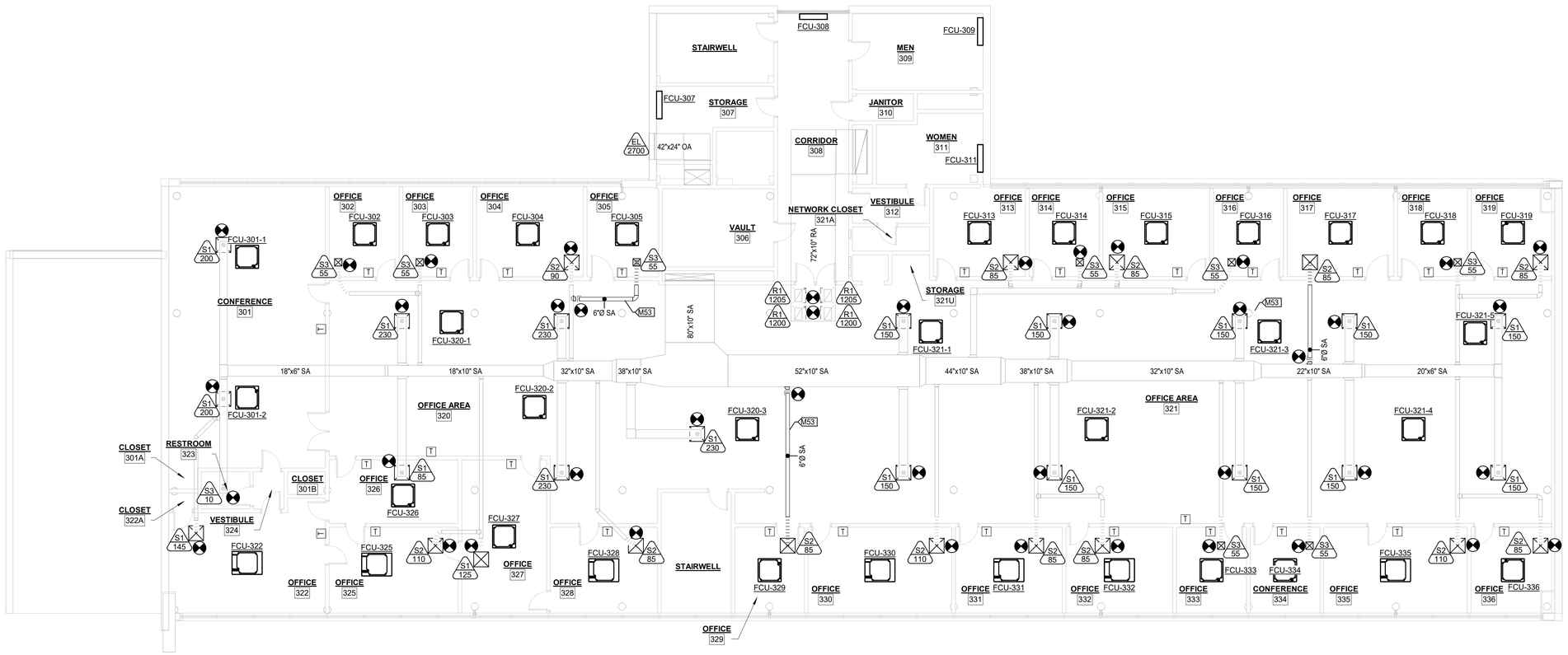
SHEET NUMBER:

M107

SHEET 27 OF 46
JUNE 14, 2024

GENERAL NOTES:
1. INSTALL NEW THERMOSTATS IN LOCATION OF PREVIOUS THERMOSTAT, WHERE APPLICABLE. THERMOSTAT WIRING TO BE CONCEALED IN SURFACE MOUNTED WIRE MOLD. WIRE MOLD COLOR TO BE SELECTED BY OWNER.

KEYNOTE LEGEND	
VALUE	DESCRIPTION
M53	FURNISH AND INSTALL NEW SUPPLY AIR DUCT.



1 THIRD LEVEL DUCTWORK PLAN
1/8" = 1'-0"

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

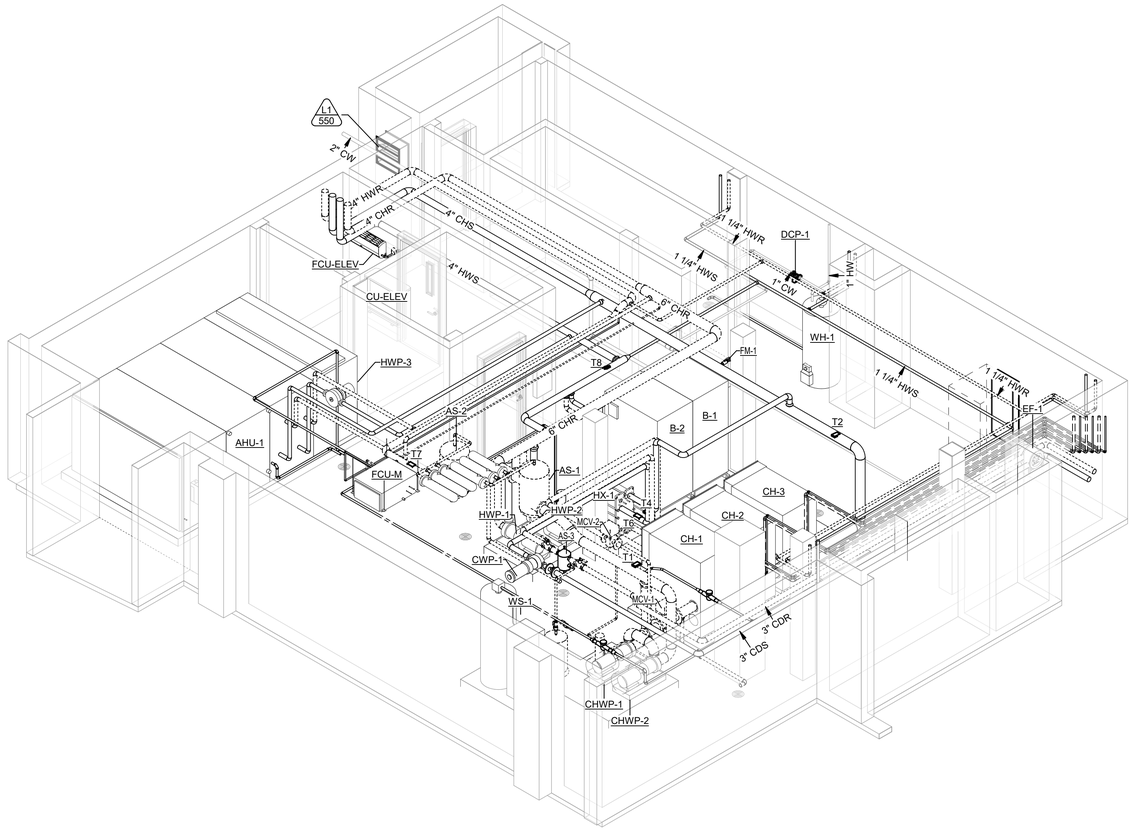
SHEET TITLE:

3RD FLOOR DUCTWORK FLOOR PLAN

SHEET NUMBER:

M108

SHEET 28 OF 46
JUNE 14, 2024



1 BASEMENT MECHANICAL ROOM PIPING ISOMETRIC SOUTHEAST
1/4" = 1'-0"

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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PROFESSIONAL ENGINEER
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ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

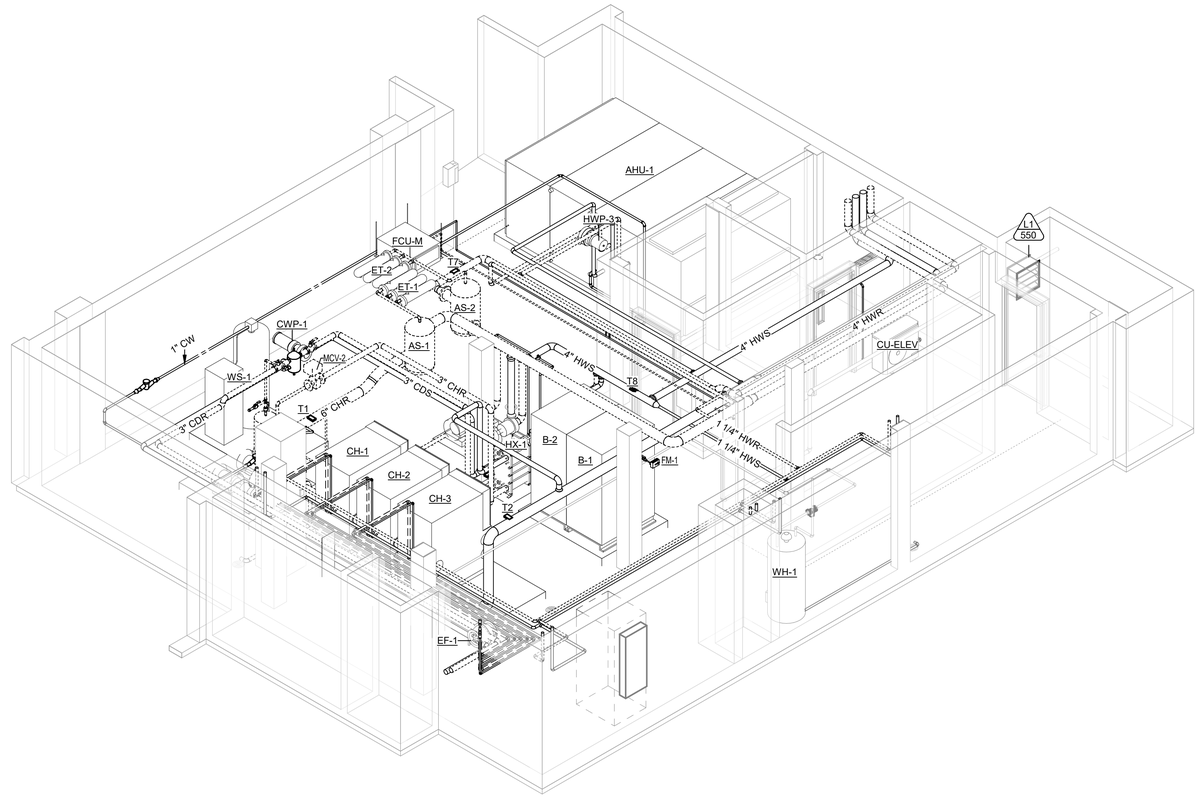
SHEET TITLE:

BASEMENT MECHANICAL ROOM ISOMETRIC

SHEET NUMBER:

M201

SHEET 29 OF 46
JUNE 14, 2024



1 BASEMENT MECHANICAL ROOM PIPING ISOMETRIC NORTHEAST
1/4" = 1'-0"

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
MO # PE-2021031578

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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
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CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

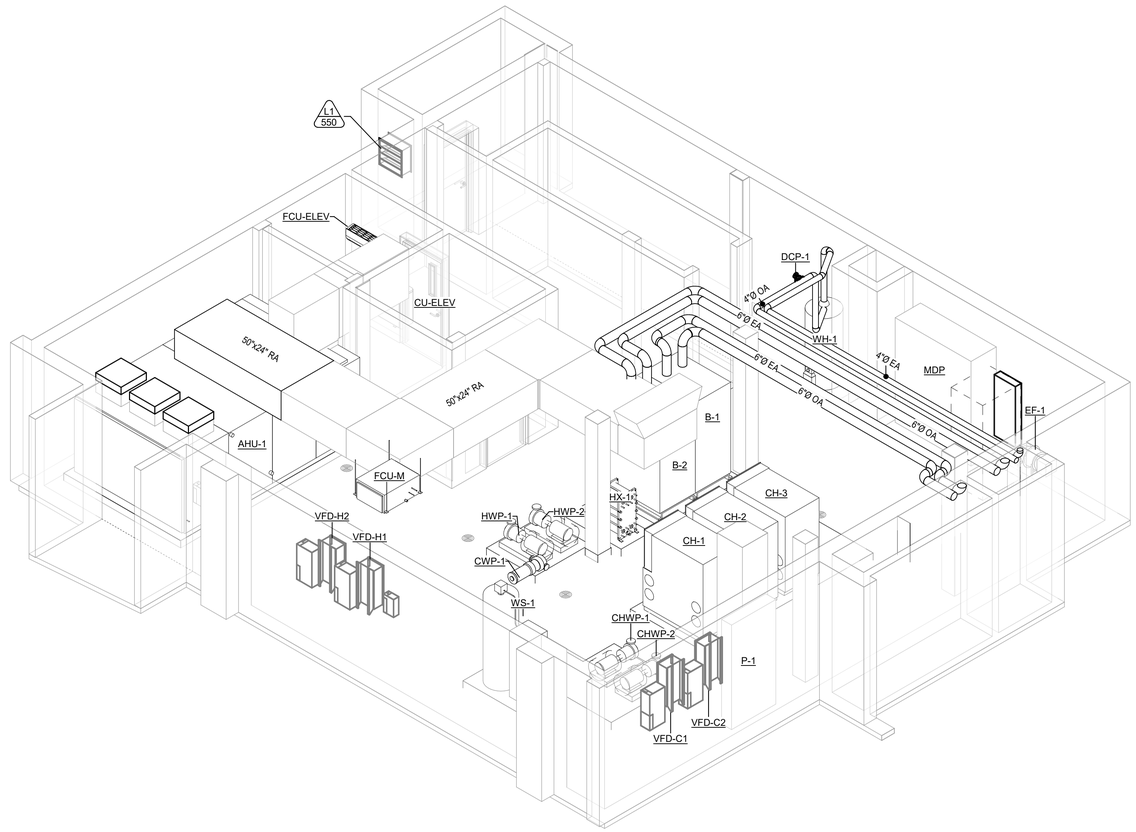
SHEET TITLE:

BASEMENT MECHANICAL ROOM ISOMETRIC

SHEET NUMBER:

M202

SHEET 30 OF 46
JUNE 14, 2024



1 BASEMENT MECHANICAL ROOM DUCTWOK ISOMETRIC
1/4" = 1'-0"

0 2' 4' 8'
SCALE: 1/4" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
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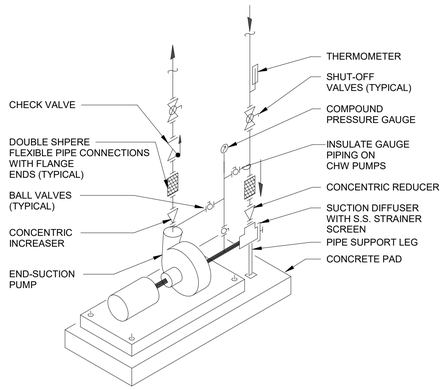
SHEET TITLE:

BASEMENT MECHANICAL ROOM ISOMETRIC

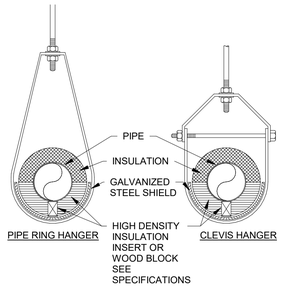
SHEET NUMBER:

M203

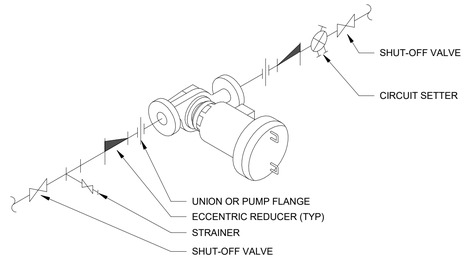
SHEET 31 OF 46
JUNE 14, 2024



1 BASE MOUNTED PUMP DETAIL
NTS

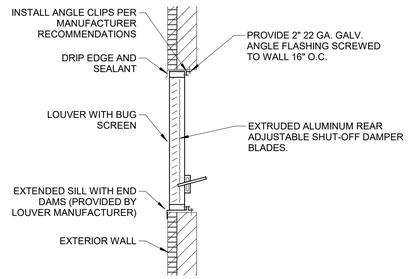


2 INSULATED PIPE AT HANGER DETAIL
NTS



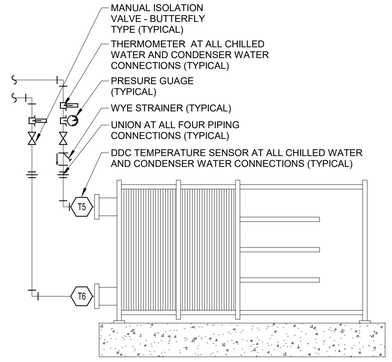
IN-LINE PUMP NOTES:
1. SUPPORT FROM STRUCTURE ABOVE.

3 IN-LINE PUMP DETAIL
NTS



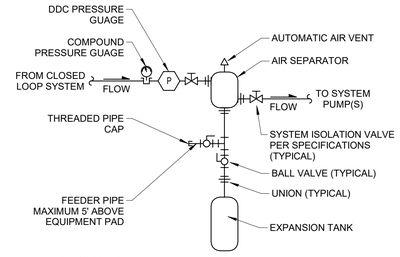
NOTES:
1. FINAL COLOR SELECTION BY ARCHITECT SELECTION FROM MANUFACTURER STANDARD COLOR OPTIONS.
2. COORDINATE PENETRATION FRAMING AND ALL FLASHING AND SEALANT WITH GENERAL CONTRACTOR.

4 LOUVER INSTALLATION DETAIL
NTS



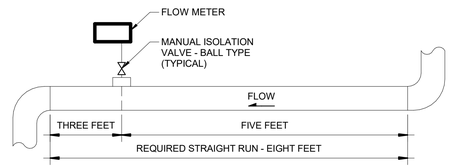
HEAT EXCHANGER NOTES:
1. PIPING CONNECTIONS AND ACCESSORIES ARE COMMON FOR CHILLED WATER AND CONDENSER WATER CONNECTIONS.

5 HEAT EXCHANGER INSTALLATION DETAIL
NTS



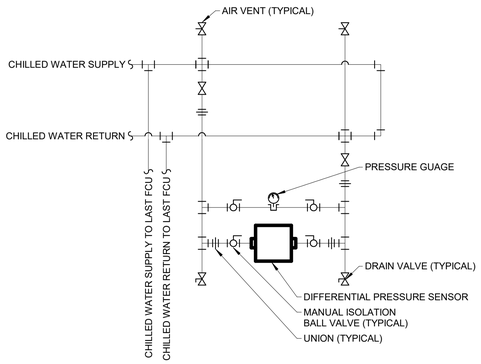
DRY COOLER MAKE-UP WATER NOTES:
1. ALL PIPE 3/4" MINIMUM SIZE.
2. DDC PRESSURE GUAGE TO NOTIFY BAS OF SYSTEM PRESSURE AND BAS TO ALARM IF BELOW THE MINIMUM SET PRESSURE.

6 DRY COOLER MAKE-UP WATER DETAIL
NTS



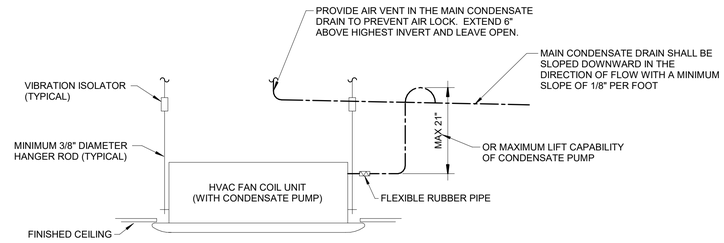
FLOW METER NOTES:
1. CLEARANCES SHOWN MUST BE MAINTAINED BETWEEN THE FLOW METER AND ANY VALVE, ELBOW, FITTING, OR ANY OTHER PIPING ACCESSORY OR CONNECTION.
2. REFER TO MANUFACTURER'S WRITEN INSTRUCTIONS FOR ALL INSTALLATION REQUIREMENTS.

7 FLOW METER INSTALLATION DETAIL
NTS

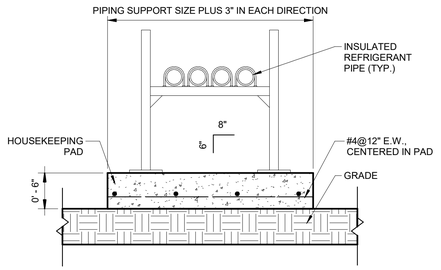


DIFFERENTIAL PRESSURE SENSOR NOTES:
1. REFER TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SPECIFIC INSTALLATION REQUIREMENTS.
2. ALL PIPE SHALL BE MINIMUM SCHEDULE 40 BLACK STEEL BETWEEN POINT OF CONNECTION TO EACH MAIN AND FIRST ISOLATION VALVE. COPPER TUBING MAY BE USED AFTER ISOLATION VALVES.
3. PROVIDE SUPPORTS FOR INSTRUMENTATION AND PIPING AS REQUIRED.
4. ALL PIPING SHALL BE INSTALLED TO BE SELF-VENTING. PITCH HORIZONTAL RUNS OF INSTRUMENT PIPING TOWARD POINT OF CONNECTION.
5. POINTS OF CONNECTION TO HORIZONTAL HYDRONIC PIPING MAINS SHALL BE ON THE SIDE OF THE PIPING. DO NOT CONNECT TO THE BOTTOM OR TOP OF THE HYDRONIC PIPING MAINS.

8 DIFFERENTIAL PRESSURE SENSOR INSTALLATION DETAIL
NTS



9 CEILING CASSETTE FAN COIL DETAIL
NTS



10 PIPING CONCRETE PAD DETAIL
NTS

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI * Matthew Hayes Bridges * NUMBER PE-2021031578 * PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

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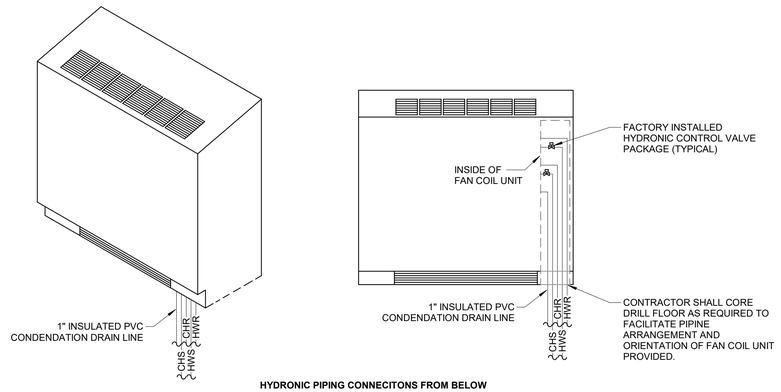
SHEET TITLE:

MECHANICAL DETAILS

SHEET NUMBER:

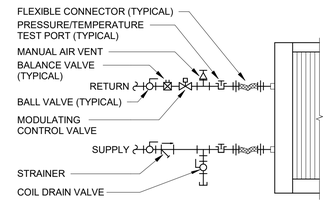
M501

SHEET 32 OF 46
JUNE 14, 2024



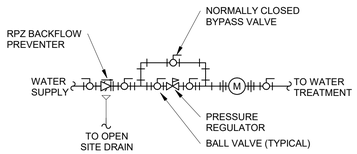
NOTES:
1. FAN COIL UNITS SHALL INCLUDE MANUAL ISOLATION VALVES ABOVE SAT CEILING ON THE FLOOR BELOW ON HYDRONIC COOLING AND HEATING SUPPLY AND RETURN PIPING.

1 CABINET FAN COIL UNIT DETAIL
NTS



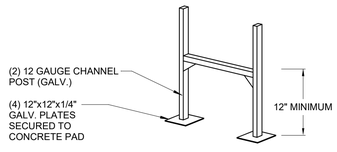
NOTES:
1. REFER TO SPECIFCATIONS FOR PIPE MATERIAL AND VALVE AND ACCESSORIES REQUIREMENTS.
2. DETAIL NOT FOR UNITS WITH FACTORY INSTALLED VALVE PACKAGE.

2 COIL CONNECTION DETAIL
NTS



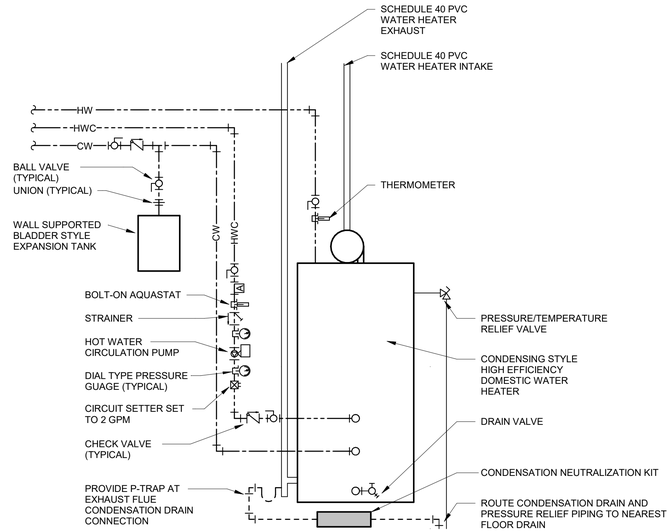
NOTES:
ALL PIPE 3/4" MINIMUM SIZE.

3 MAKE-UP WATER CONNECTION DETAIL
NTS



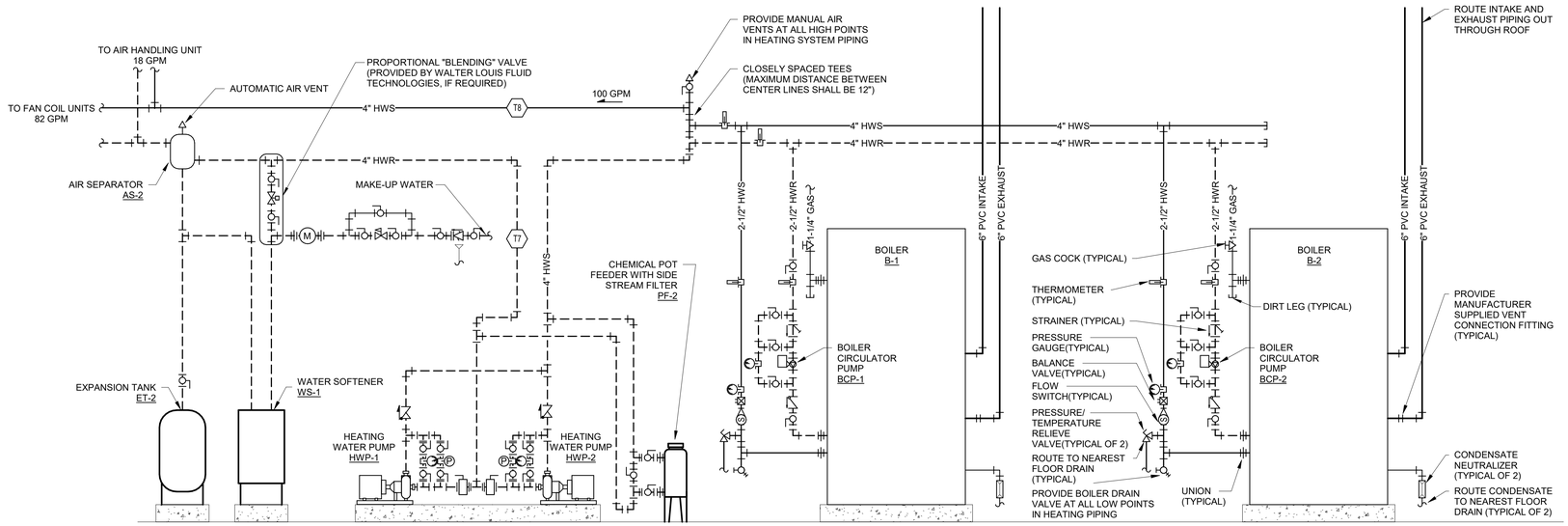
NOTES:
1. MAXIMUM SUPPORT SPACING NOT TO EXCEED 8 FT CENTER TO CENTER.

4 EXTERIOR REFRIGERANT PIPING SUPPORT DETAIL
NTS

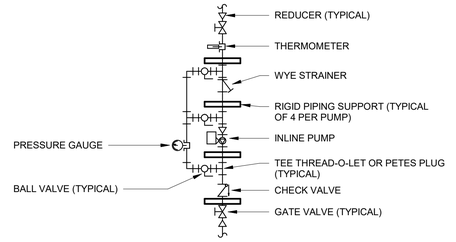


NOTES:
1. CONTRACTOR SHALL PROVIDE ALL PIPE, VALVES, AND ACCESSORIES AS REQUIRED BY WATER HEATER MANUFACTURER RECOMMENDATIONS.
2. HOT WATER CIRCULATOR SHALL RUN WHEN HWC TEMPERATURE IS BELOW 120°F AS DETERMINED BY A PIPE MOUNTED AQUASTAT (NOT INTEGRAL TO THE PUMP).
3. ROUTE WATER HEATER INTAKE AND EXHAUST PIPES TO AN EXTERIOR WALL PENETRATION. REFER TO FLOOR PLAN

5 DOMESTIC WATER HEATER PIPING SCHEMATIC
NTS



6 BOILER SCHEMATIC PIPING DIAGRAM
NTS



NOTES:
1. PROVIDE MINIMUM OF 5 x PUMP INLET PIPE DIAMETER OF PIPING BETWEEN THE STRAINER AND THE INLET OF THE PUMP.
2. PROVIDE A MINIMUM OF 5 x PUMP OUTLET DIAMETER OF PIPING BETWEEN THE PUMP DISCHARGE AND THE CHECK VALVE.
3. SUCTION SIDE GATE VALVE AND STRAINER SHALL BE A MINIMUM OF ONE (1) PIPE DIAMETER LARGER THAN THE PUMP INLET CONNECTION.
4. DISCHARGE SIDE CHECK VALVE AND GATE VALVE SHALL MATCH THE PUMP DISCHARGE CONNECTION.

7 BOILER & BOILER IN-LINE PUMP CONNECTION DETAIL
NTS

STATE OF MISSOURI
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STATE OF MISSOURI — Matthew Hayes Bridges — NUMBER PE-2021031578 — PROFESSIONAL ENGINEER
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MECHANICAL DETAILS

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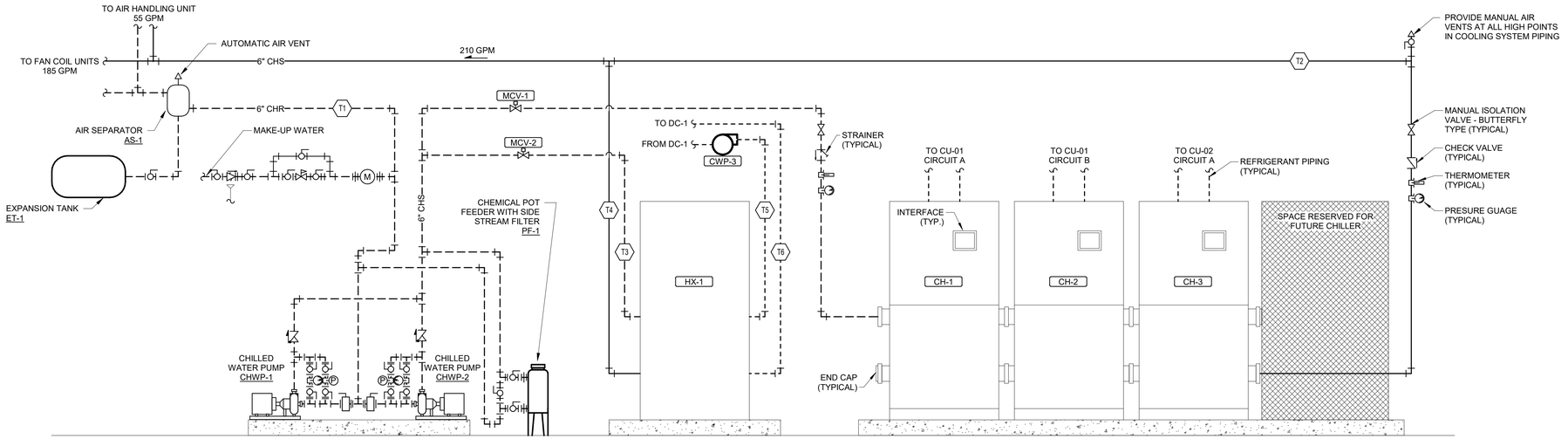
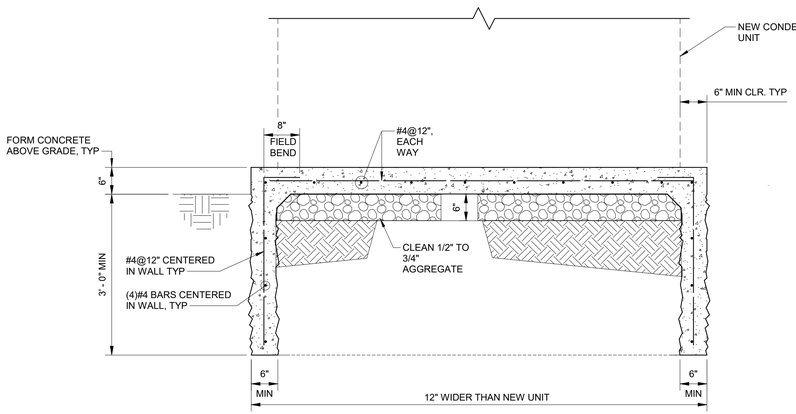
M502

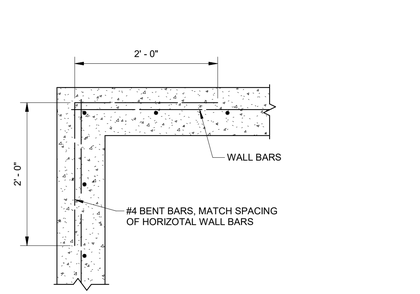
SHEET 33 OF 46
JUNE 14, 2024



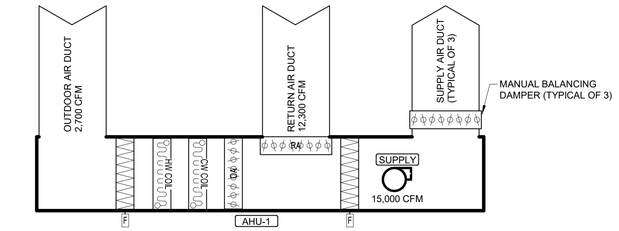
1 CHILLER PLANT PIPING DETAIL
NTS



2 EQUIPMENT PAD ON GRADE DETAIL
NTS

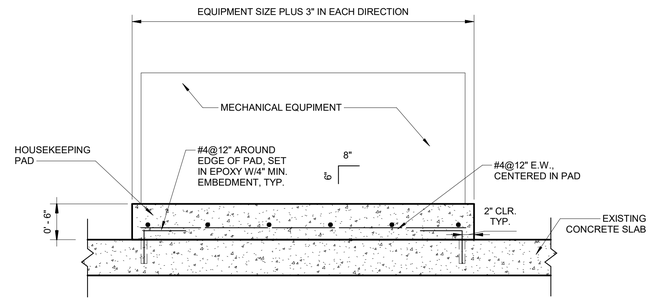


3 EQUIPMENT PAD CORNER REINFORCEMENT DETAIL
NTS

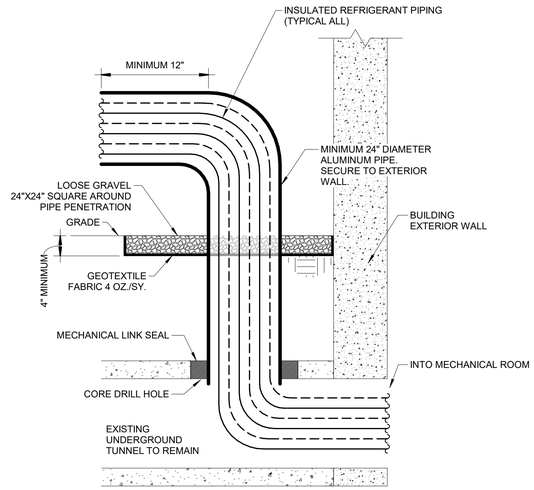


NOTES:
1. AIR HANDLING UNIT TO HAVE THREE SUPPLY AIR DUCT CONNECTIONS ON THE UNIT ROOF.
2. IF THE OUTDOOR AIR FILTER CANNOT BE LOCATED WITHIN THE AIR HANDLING UNIT CABINET, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING AN OUTDOOR AIR FILTER CABINET IN THE OUTDOOR AIR DUCT LOCATED IN STORAGE 307.

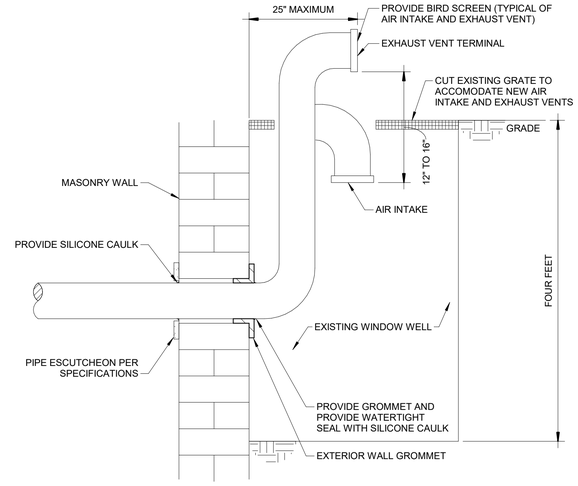
4 AIR HANDLING UNIT DETAIL
NTS



5 EQUIPMENT PAD ON CONCRETE FLOOR DETAIL
NTS



6 EXTERIOR REFRIGERANT PIPE SHROUD
NTS



NOTES:
1. PROVIDE PIPE HANGERS PER SPECIFICATIONS.
2. DO NOT SUPPORT PIPE FROM WALL.
3. MAINTAIN A MINIMUM OF 12" BETWEEN THE EDGE OF EACH AIR INTAKE AND EACH EXHAUST VENT TERMINAL.
4. ALL AIR INTAKES MUST TERMINATE AT THE SAME ELEVATION.
5. ALL EXHAUST VENTS MUST TERMINATE AT THE SAME ELEVATION.
6. EXHAUST VENTS MUST TERMINATE ABOVE THE WINDOW WELL.

7 BOILER AND WATER HEATER VENTING DETAIL
NTS

STATE OF MISSOURI
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MECHANICAL DETAILS

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M503

SHEET 34 OF 46
JUNE 14, 2024

CHILLER SCHEDULE

MARK	BASIS OF DESIGN			NOMINAL CAPACITY (TONS)	MINIMUM CAPACITY (%)	MAXIMUM FULL LOAD ENERGY USAGE (KW/TON)	EVAPORATOR					ELECTRICAL					NOTES
	MANUFACTURER	MODEL	DESCRIPTION				DESIGN FLOW (GPM)	MINIMUM FLOW (GPM)	DESIGN EWT (DEG. F)	DESIGN LWT (DEG. F)	MAXIMUM PD (FT)	VOLTAGE	PHASE	HZ	MCA	MOCP	
CH-1	CARRIER	30MPA	MODULAR, REMOTE-CONDENSER TYPE CHILLER	30	15	1.067	70	43	54	44	15	208	3	60	60.5	80	1,2,3,4,7
CH-2	CARRIER	30MPA	MODULAR, REMOTE-CONDENSER TYPE CHILLER	30	50	1.153	70	43	54	44	15	208	3	60	60.5	80	1,2,5,7
CH-3	CARRIER	30MPA	MODULAR, REMOTE-CONDENSER TYPE CHILLER	30	15	1.067	70	43	54	44	15	208	3	60	60.5	80	1,2,3,6,7

NOTES:
1. PROVIDE WITH FACTORY INSTALLED BACNET CARD AND GRAPHICAL USER INTERFACE.
2. PROVIDE WITH FACTORY PIPING MANIFOLD KIT AND LEVELING LEGS.
3. PROVIDE WITH DIGITAL COMPRESSOR ON LEAD CIRCUIT.
4. CONNECT TO CU-01 REFRIGERANT CIRCUIT A.
5. CONNECT TO CU-01 REFRIGERANT CIRCUIT B.
6. CONNECT TO CU-02 REFRIGERANT CIRCUIT A.
7. REFER TO PACKAGED WATER CHILLERS SPECIFICATION 236411 FOR APPROVED ALTERNATE VENDORS.

CONDENSER SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	NOMINAL CAPACITY (TONS)	REFRIGERANT	DESIGN AMBIENT AIR TEMPERATURE (DEG. F)	MAXIMUM WIDTH (IN.)	MAXIMUM LENGTH (IN.)	ELECTRICAL					NOTES
									VOLTAGE	PHASE	HZ	MCA	MOCP	
CU-01	CARRIER	09DP	DUAL CIRCUIT, AIR-COOLED CONDENSER	75	R-410A	95	90	160	208	3	60	15.2	15	1,2,3
CU-02	CARRIER	09DP	DUAL CIRCUIT, AIR-COOLED CONDENSER	75	R-410A	95	90	160	208	3	60	15.2	15	1,2,3

NOTES:
1. PROVIDE WITH FACTORY INSTALLED LOW SOUND FANS AND NON-FUSED DISCONNECT SWITCH.
2. PROVIDE WITH FACTORY OR FIELD INSTALLED SECURITY GRILLES/HAIL GUARDS AND LOW AMBIENT KIT.
3. VENDOR OF AIR-COOLED REFRIGERANT CONDENSER SHALL BE SAME MANUFACTURER OF CHILLERS PROVIDED.

DRY COOLER SCHEDULE

MARK	BASIS OF DESIGN			DESIGN CAPACITY (TONS)	FLOW RATE (GPM)	FLUID PD (FT)	FLUID TYPE	DESIGN AMBIENT AIR TEMPERATURE (DEG. F)	MAXIMUM WIDTH (IN.)	MAXIMUM LENGTH (IN.)	ELECTRICAL					NOTES
	MANUFACTURER	MODEL	DESCRIPTION								VOLTAGE	PHASE	HZ	MCA	MOCP	
DC-1	USA COIL AND AIR	FCV-4	FLUID COOLER, VERTICAL AIRFLOW	30	76.5	20	30% PG	40	36	56	208	3	60	20	30	1,2

NOTES:
1. SECURE DRY COOLER TO NEW EQUIPMENT PAD.
2. REFER TO LIQUID COOLERS SPECIFICATION 236533 FOR APPROVED ALTERNATE VENDORS.

HEAT EXCHANGER SCHEDULE

MARK	BASIS OF DESIGN			CONDENSER SIDE					CHILLED WATER SIDE					MAXIMUM WIDTH (IN.)	MAXIMUM LENGTH (IN.)	NOTES
	MANUFACTURER	MODEL	DESCRIPTION	FLUID TYPE	FLOW RATE (GPM)	DESIGN PD (FT)	ENTERING FLUID TEMPERATURE (DEG. F)	LEAVING FLUID TEMPERATURE (DEG. F)	FLUID TYPE	FLOW RATE (GPM)	DESIGN PD (FT)	ENTERING FLUID TEMPERATURE (DEG. F)	LEAVING FLUID TEMPERATURE (DEG. F)			
HX-1	TACO	TB427M2	GASKETED PLATE AND FRAME HEAT EXCHANGER	30% PG	76.5	1	42	52	WATER	72	1	54	44	24	54	1,2,3

NOTES:
1. PROVIDE WITH REMOVABLE INSULATION JACKET DESIGNED FOR CHILLED WATER PIPING APPLICATIONS. INSULATION JACKET TO BE CUSTOM MADE TO FIT ACTUAL HEAT EXCHANGER PROVIDED.
2. SECURE HEAT EXCHANGER TO NEW EQUIPMENT PAD.
3. REFER TO HEAT EXCHANGER FOR HVAC SPECIFICATION 235700 FOR APPROVED ALTERNATE VENDORS.

AIR HANDLING UNIT SCHEDULE

MARK	BASIS OF DESIGN			SUPPLY FANS							COOLING COIL								
	MANUFACTURER	MODEL	DESCRIPTION	AIR FLOW (CFM)	ESP (IN. WG)	FAN QTY	FAN HP (EACH)	MINIMUM AIR FLOW (CFM)	OUTDOOR AIR (CFM)	RETURN AIR (CFM)	CAPACITY (TONS)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	PRESSURE DROP (FT)	COIL ENTERING AIR DRY BULB (DEG. F)	COIL ENTERING AIR WET BULB (DEG. F)	COIL LEAVING AIR DRY BULB (DEG. F)	COIL LEAVING AIR WET BULB (DEG. F
AHU-1	CARRIER	39CC	CUSTOM INDOOR AIR HANDLING UNIT	15,000	1.50	2	10	12,300	2,700	12,300	23	44	54	55	7.0	85	79.2	50	50

AIR HANDLING UNIT SCHEDULE CONTINUED

MARK	HEATING COIL							ELECTRICAL					NOTES
	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	PRESSURE DROP (FT)	COIL ENTERING AIR DRY BULB (DEG. F)	COIL LEAVING AIR DRY BULB (DEG. F)	VOLTAGE	PHASE	HZ	MCA	MOCP	
AHU-1	267,300	140	110	18	3.0	0	90	208	3	60	52	60	1,2,3,4,5,6

NOTES:
1. SHIP ANY SECTION THAT WILL NOT FIT THROUGH A 45"x70" DOORWAY FULLY DISASSEMBLED FOR FIELD ERECTION.
2. HYDRONIC CONTROL VALVES, DAMPER ACTUATORS, AND FAN SPEED CONTROLS TO BE PROVIDED BY THE CONTROLS VENDOR.
3. INSTALL UV LIGHT DOWNSTREAM OF COOLING COIL TO DISINFECT THE COOLING COIL AND DRAIN PAN. SIZE UV LIGHT FOR ACTUAL COOLING COIL PROVIDED. UV LIGHT MAY BE FACTORY OR FIELD INSTALLED.
4. MAXIMUM ALLOWABLE UNIT DIMENSIONS: 168" LENGTH, 108" WIDTH, 120" HEIGHT.
5. REFER TO M503, DETAIL 4 FOR UNIT ARRANGEMENT.
6. REFER TO INDOOR CENTRAL-STATION AIR-HANDLING UNITS SPECIFICATION 237300 FOR APPROVED ALTERNATE VENDORS.

HYDRONIC PUMP SCHEDULE

MARK	APPLICATION	BASIS OF DESIGN			DESIGN FLOW RATE (GPM)	DESIGN HEAD LOSS (FT)	MINIMUM FLOW RATE (GPM)	MINIMUM FLOW HEAD LOSS (FT)	MOTOR HP	MAXIMUM MOTOR RPM	ELECTRICAL			NOTES
		MANUFACTURER	MODEL	DESCRIPTION							VOLTAGE	PHASE	HZ	
CHWP-1	CHILLED WATER PRIMARY PUMP	BELL & GOSSETT	e1510	CLOSED-COUPLED, END SUCTION CENTRIFUGAL	240	45	70	30	5	1875	208	3	60	1,2,5
CHWP-2	CHILLED WATER PRIMARY PUMP	BELL & GOSSETT	e1510	CLOSED-COUPLED, END SUCTION CENTRIFUGAL	240	45	70	30	5	1875	208	3	60	1,2,5
CWP-1	CONDENSER WATER PUMP	BELL & GOSSETT	e90	CLOSE-COUPLED, IN-LINE CENTRIFUGAL	76.5	30	76.5	30	1-1/2	1800	208	3	60	3,4,5
HWP-1	HEATING WATER PRIMARY PUMP	BELL & GOSSETT	e1510	CLOSED-COUPLED, END SUCTION CENTRIFUGAL	100	15	30	5	5	1800	208	3	60	1,2,5
HWP-2	HEATING WATER PRIMARY PUMP	BELL & GOSSETT	e1510	CLOSED-COUPLED, END SUCTION CENTRIFUGAL	100	15	30	5	5	1800	208	3	60	1,2,5
HWP-3	AHU-1 HEATING WATER CIRCULATOR PUMP	BELL & GOSSETT	PL-50	CIRCULATOR PUMP	18	6	18	6	1/6	3300	208	3	60	4,5

NOTES:
1. PROVIDE WITH SUCTION DIFFUSER AND TRIPLE DUTY VALVE FROM PUMP MANUFACTURER.
2. PROVIDE WITH INVERTER DUTY MOTOR.
3. FLUID TYPE IS 30% PG.
4. PROVIDE WITH CIRCUIT SETTER.
5. REFER TO HYDRONIC PUMPS SPECIFICATION 232123 FOR APPROVED ALTERNATE VENDORS.

BOILER SCHEDULE

MARK	BASIS OF DESIGN		HEATING TYPE	HEATING INPUT CAPACITY (BTU/HR)	HEATING OUTPUT CAPACITY (BTU/HR)	MINIMUM EFFICIENCY (%)	MINIMUM TURNDOWN	WATER FLOW RATE (GPM)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	WATER CONNECTION SIZE (IN.)	VENT CONNECTION SIZE (IN.)	AIR INTAKE CONNECTION SIZE (IN.)	GAS CONNECTION SIZE (IN.)	MAXIMUM DIMENSIONS		ELECTRCIAL				NOTES
	MANUFACTURER	MODEL													WIDTH (IN.)	DEPTH (IN.)	VOLTAGE	PHASE	HZ	FLA	
B-1	AERCO	AM 750	NAT. GAS	750,000	690,000	92	15:1	46	110	140	2-1/2	6	6	1-1/2	30	45	120	1	60	3.6	1,2,3,4,5
B-2	AERCO	AM 750	NAT. GAS	750,000	690,000	92	15:1	46	110	140	2-1/2	6	6	1-1/2	30	45	120	1	60	3.6	1,2,3,4,5

NOTES:
1. PROVIDE WITH FACTORY INSTALLED BACNET CARD.
2. PROVIDE WITH A DEDICATED 1/2 HP CIRCULATOR PUMP RATED FOR 46 GPM AND 10.0 FT HEAD. CIRCULATOR PUMP TO BE PROVIDED BY BOILER MANUFACTURER.
3. PROVIDE ALL REQUIRED AIR SIDE, WATER SIDE, AND NATURAL GAS ACCESSORIES PER LOCAL CODE AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
4. BOILER MUST BE CAPABLE OF CONTINUOUS OPERATION IN A CLOSED LOOP SYSTEM WITH ZERO GRAINS OF HARDNESS AND WITH CORROSION INHIBITORS. IF PROPOSED BOILER CANNOT OPERATE UNDER THESE CONDITIONS, COORDINATE WITH WALTER LOUIS TO PROVIDE THE BLENDING VALVE AND ASSOCIATED CONTROL SHOWN ON M502, DETAIL 5.
5. REFER TO CONDENSING BOILERS SPECIFICATION 235216 FOR APPROVED ALTERNATE VENDORS.

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI * Matthew Hayes Bridges * NUMBER PE-2021031578 * PROFESSIONAL ENGINEER
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

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SHEET TITLE:

EQUIPMENT SCHEDULES

SHEET NUMBER:

M601

SHEET 35 OF 46
JUNE 14, 2024

CABINET FAN COIL UNIT SCHEDULE

MARK	BASIS OF DESIGN			COOLING COIL				HEATING COIL				AIRFLOW (CFM)	ELECTRICAL				NOTES
	MANUFACTURER	MODEL	COIL HAND	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)		VOLTAGE	PHASE	HZ	MCA	
FCU-106	CARRIER	42VFC02	LEFT	--	--	--	--	4,497	140	110	0.3	200	120	1	60	0.48	1,2,3
FCU-107	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-108	CARRIER	42VFC03	LEFT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-110	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-207	CARRIER	42VFC02	LEFT	5,665	44	54	1.1	4,497	140	110	0.3	200	120	1	60	0.48	1,2,3
FCU-209	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-210	CARRIER	42VFC03	LEFT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-212	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-307	CARRIER	42VFC02	RIGHT	--	--	--	--	4,497	140	110	0.3	200	120	1	60	0.48	1,2,3
FCU-308	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-309	CARRIER	42VFC03	LEFT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-311	CARRIER	42VFC03	RIGHT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3
FCU-ST	CARRIER	42VFC03	LEFT	--	--	--	--	5,710	140	110	0.3	300	120	1	60	0.85	1,2,3

NOTES:
1. PROVIDE UNIT WITH INTEGRAL THERMOSTAT.
2. PROVIDE WITH MANUFACTURER'S FACTORY INSTALLED HYDRONIC CONTROL VALVE PACKAGE.
3. REFER TO FAN COIL UNITS SPECIFICATION 238219 FOR APPROVED ALTERNATE VENDORS.

*COIL HAND IS DETERMINED BY LOOKING AT THE FRONT OF THE FAN COIL UNIT.

DUCTLESS SPLIT SYSTEM SCHEDULE

MARK	BASIS OF DESIGN				REFRIGERANT	COOLING CAPACITY (BTU/HR)	ELECTRICAL					NOTES
	MANUFACTURER	CONDENSING UNIT MODEL	MARK	INDOOR UNIT MODEL			VOLTAGE	PHASE	HZ	MCA	MOCP	
CU-ELEV	CARRIER	38MARBQ18AA3	FCU-ELEV	40MAHBQ18XA3	R-410A	18,000	208	1	60	16	25	1,3,4
CU-214A	CARRIER	38MARBQ18AA3	FCU-214A	40MAHBQ18XA3	R-410A	18,000	208	1	60	16	25	1,2,3,4

NOTES:
1. PROVIDE WITH CONDENSATE PUMP. CONDENSATE PUMPS MAY BE INTEGRAL OR FIELD PROVIDED AND EXTERNALLY MOUNTED.
2. PROVIDE WITH MANUFACTURER'S LOW AMBIENT KIT FOR COOLING OPERATION DOWN TO 0 DEG. F OUTDOOR AMBIENT.
3. INDOOR UNIT POWERED BY OUTDOOR UNIT.
4. REFER TO SPLIT-SYSTEM AIR-CONDITIONERS SPECIFICATION 238126 FOR APPROVED ALTERNATE VENDORS.

EXHAUST FAN SCHEDULE

MARK	DESCRIPTION	BASIS OF DESIGN		AIRFLOW (CFM)	ESP (IN. WG)	MOTOR HP	ELECTRICAL				NOTES
		MANUFACTURER	MODEL				VOLTAGE	PHASE	HZ	FLA	
EF-1	IN-LINE DUCT FAN	CAPTIVEAIRE	DFA-250-CA	550	0.18	0.320	120	1	60	9.8	1,2

NOTES:
1. PROVIDE WITH BACKDRAFT DAMPER.
2. REFER TO HVAC FANS SPECIFICATION 233400 FOR APPROVED ALTERNATE VENDORS.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	TYPE	DISCRIPTION	FACE SIZE		CONNECTION SIZE			TOTAL P.D.	THROW			MAX. NC	DAMPER	MATERIAL	FINISH	FRAME	BASIS OF DESIGN		REMARKS
			LENGTH	WIDTH	RECTANGULAR LENGTH	RECTANGULAR WIDTH	ROUND		150 FPM	100 FPM	50 FPM						MAKE	MODEL	
R1	CEILING RETURN GRILLE	PERFORATED, FLUSH FACE PANEL, 3/16" DIAMETER HOLES, AND NO LESS THAN 51% FREE AREA.	24"	24"	20"	24"							---	ALUMINUM	WHITE ENAMEL	LAY-IN TYPE	TITUS	PXP	1
S1	CEILING DIFFUSER	24x24 ARCHITECTURAL CEILING/SQUARE PLAQUE SUPPLY DIFFUSER WITH ROUND NECK	24"	24"			8"	0.07 in-wg	12'	6'	4'	20	---	ALUMINUM	WHITE ENAMEL	LAY-IN TYPE	TITUS	OMNI	1
S2	CEILING DIFFUSER	24x24 ARCHITECTURAL CEILING/SQUARE PLAQUE SUPPLY DIFFUSER WITH ROUND NECK	24"	24"			6"	0.03 in-wg	6'	3'	2'	14	---	ALUMINUM	WHITE ENAMEL	LAY-IN TYPE	TITUS	OMNI	1
S3	CEILING DIFFUSER	12x12 ARCHITECTURAL CEILING/SQUARE PLAQUE SUPPLY DIFFUSER WITH ROUND NECK	12"	12"			4"	0.10 in-wg	6'	3'	2'	17	---	ALUMINUM	WHITE ENAMEL	LAY-IN TYPE	TITUS	OMNI	1

NOTES:
1. REFER TO DIFFUSERS, REGISTERS, AND GRILLES SPECIFICATION 233713 FOR APPROVED ALTERNATE VENDORS.

LOUVER SCHEDULE

TAG	DESCRIPTION	FUNCTION	AIRFLOW	WIDTH	HEIGHT	FRAME DEPTH	FREE AREA	MAX. P.D.	MAX. VELOCITY	MATERIAL	FINISH	DAMPER		BASIS OF DESIGN		REMARKS
												TYPE	ACTUATOR	MAKE	MODEL	
L1	COMBINATION INTAKE LOUVER	OUTDOOR AIR INTAKE	550 CFM	1' - 10"	1' - 10"	0' - 9"	1.2 SF	0.18 in-wg	500 FPM	ALUMINUM	BAKED ENAMEL	OPPOSED BLADE	24V	RUSKIN	ELC445D	INCLUDED EXTENDED SILL AND END DAMS, INSECT SCREEN. COORDINATE LOUVER COLOR WITH ARCHITECT. NOTE 1.

NOTES:
1. REFER TO LOUVER SPECIFICATION 239100 FOR APPROVED ALTERNATE VENDORS.

WATER HEATER SCHEDULE

TAG	DESCRIPTION	WATER VOLUME	FUEL TYPE	INPUT CAP.	MIN. UEF	RATINGS		ELECTRICAL				MAKE	MODEL	OPERATING WEIGHT	REMARKS
						MAX. PRES.	MAX. TEMP.	VOLT	POLES	FLA	MOP				
WH-1	MODULATING COMMERCIAL GAS WATER HEATER	100.0 gal	NAT. GAS	199000 Btu/h	97	346.0 ftH2O	180 °F	120 V	1	7 A	15 A	A.O. SMITH AMERICAN RHEEM	BTH-199 HCG3-100T199-3N GHE100SS-200	1400 lb	1,2

NOTES:
1. HOT WATER STORAGE TEMPERATURE: 130F.
2. BURNER PRESSURE: 4.4 TO 14 IN. W.C.

DOMESTIC CIRCULATING PUMP SCHEDULE

TAG	TYPE	FLOW	HEAD	ELECTRICAL			BASIS OF DESIGN			REMARKS
				VOLT	POLES	MOP	MAKE	MODEL	WEIGHT	
DCP-1	IN-LINE	20.0 GPM	23.0 ftH2O	120 V	1	15 A	TACO GRUNDFOS BELL & GOSSETT	2400 MAGNA PL-36B	25 lb	1

NOTES:
1. PROVIDE WITH AQUASTAT.

CONTROL VALVE SCHEDULE

TAG	DESCRIPTION	CONTROL	VALVE FAIL POSITION	LOCATION	LOOP WATER P.D.	VALVE FLOW RATE	Cv
BCV-1	2 WAY MODULATING - CHILLED WATER	2-10 VDC	OPEN	FIRST FLOOR	23 FT	20	6.3
BCV-2	2 WAY MODULATING - HEATING WATER	2-10 VDC	OPEN	FIRST FLOOR	23 FT	10	3.1
BCV-3	2 WAY MODULATING - CHILLED WATER	2-10 VDC	OPEN	SECOND FLOOR	23 FT	25	7.9
BCV-4	2 WAY MODULATING - HEATING WATER	2-10 VDC	OPEN	SECOND FLOOR	23 FT	10	3.1
BCV-5	2 WAY MODULATING - CHILLED WATER	2-10 VDC	OPEN	THIRD FLOOR	23 FT	25	7.9
BCV-6	2 WAY MODULATING - HEATING WATER	2-10 VDC	OPEN	THIRD FLOOR	23 FT	10	3.1
MCV-1	2 WAY MODULATING - CHILLED WATER	2-10 VDC	OPEN	BASEMENT	45 FT	240	54.4
MCV-2	2 WAY MODULATING - CHILLED WATER	2-10 VDC	CLOSED	BASEMENT	30 FT	72	20.0

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STATE OF MISSOURI

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PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

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SHEET TITLE:

EQUIPMENT SCHEDULES

SHEET NUMBER:

M602

SHEET 36 OF 46
JUNE 14, 2024

HYDRONIC CEILING CASSETTE SCHEDULE

	BASIS OF DESIGN		COOLING					HEATING						ELECTRICAL				
MARK	MANUFACTURER	MODEL	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	CONTROL VALVE Cv	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	CONTROL VALVE Cv	AIRFLOW (CFM)	VOLTAGE	PHASE	HZ	MCA	NOTES
FCU-103	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-104	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-112	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-113	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-114	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-115-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-115-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-115-3	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-115-4	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-116	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-117	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-118-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-118-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-119	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-121	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-129	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-130	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-132	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-133	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-134	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-135	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-136	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-137	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-138	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-139	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-140	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-141	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-142	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-143	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-201	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-202	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-203	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-204-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-204-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-204-3	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-204-4	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-204-5	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-204-6	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-205	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-214	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-215	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-216	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-217	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-218	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-219	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-220	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-221-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-221-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-221-3	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-221-4	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-221-5	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-221-6	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-222	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-223	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-224	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-225	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-226	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-227	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-228	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-229	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	1,2,3
FCU-230	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-231	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-232	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-234	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-235	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-301-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-301-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-302	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-303	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-304	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-305	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-313	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-314	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-315	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-316	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-317	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-318	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-319	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-320-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-320-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-320-3	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-321-1	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-321-2	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-321-3	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-321-4	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-321-5	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	1,2,3
FCU-322	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-325	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-326	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-327	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-328	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-329	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-330	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-331	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-332	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-333	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-334	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3
FCU-335	CARRIER	42WKN	23,000	44	54	4.6	2.75	40,000	140	110	2.7	3.23	940	120	1	60	2.40	2,3
FCU-336	CARRIER	42WKN	10,000	44	54	2.0	2.24	27,300	140	110	1.8	1.80	360	120	1	60	1.38	2,3

NOTES:
1. PROVIDE WITH CONDENSATE PUMP. CONDENSATE PUMPS MAY BE INTEGRAL OR FIELD PROVIDED AND EXTERNALLY MOUNTED. CONDENSATE PUMP SHALL BE POWERED FROM SAME CIRCUIT AS CELING CASSETTE.
2. HYDRONIC CONTROL VALVE TO BE PROVIDED BY THE CONTROLS VENDOR.
3. REFER TO FAN COIL UNITS SPECIFICATION 238219 FOR APPROVED ALTERNATE VENDORS.

HYDRONIC FAN COIL UNIT SCHEDULE

	BASIS OF DESIGN		COOLING					ELECTRICAL				
MARK	MANUFACTURER	MODEL	CAPACITY (BTU/HR)	ENTERING WATER TEMPERATURE (DEG. F)	LEAVING WATER TEMPERATURE (DEG. F)	FLOW RATE (GPM)	AIRFLOW (CFM)	VOLTAGE	PHASE	HZ	MCA	NOTES
FCU-M	CARRIER	42DF16	40,088	44	54	7.9	1,571	120	1	60	13.50	1,2

NOTES:
1. HYDRONIC CONTROL VALVE TO BE PROVIDED BY THE CONTROLS VENDOR.
2. REFER TO FAN COIL UNITS SPECIFICATION 238219 FOR APPROVED ALTERNATE VENDORS.

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — Matthew Hayes Bridges — NUMBER PE-2021031578 — PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

EQUIPMENT SCHEDULES

SHEET NUMBER:

M603

SEQUENCE OF OPERATION

GENERAL OPERATION

A. OCCUPANCY MODE:
1. THE OCCUPANCY MODE (OCCUPIED OR UNOCCUPIED) SHALL BE DETERMINED THROUGH A USER-ADJUSTABLE, GRAPHICAL, SCHEDULING PROGRAM. SCHEDULING PROGRAM SHALL SUPPORT SEVEN-DAY SCHEDULING, CALENDAR SCHEDULING, AND HOLIDAY SCHEDULE OVERRIDE. THE BAS SHALL SUPPORT DIFFERENT OCCUPANCY SCHEDULES FOR EACH ROOM TEMPERATURE SETPOINT.

B. ROOM TEMPERATURE SETPOINTS (FAN COIL UNITS ONLY)

1. INITIAL OCCUPIED PERIOD ROOM SETPOINTS (REGULARLY SCHEDULED WORK DAYS FROM 7:00 AM- 6:00 PM, MONDAY-FRIDAY)
   a. COOLING
      1. 72°F (ADJUSTABLE BETWEEN 65°F AND 80°F)
      2. USERS SHALL BE ABLE TO OVERRIDE INDIVIDUAL ROOM SETPOINTS AT THE LOCAL THERMOSTATS. USER SELECTED RANGE SHALL BE LIMITED TO +/-5°F (ADJUSTABLE FROM 0°F-10°F) AND WITHIN THE COOLING SETPOINT RANGE DESCRIBED ABOVE. USER OVERRIDES SHALL RESET AFTER 4 HOURS (ADJUSTABLE BETWEEN 30 MINUTE AND 8 HOURS).
   b. HEATING
      1. 68°F (ADJUSTABLE BETWEEN 60°F AND 75°F)
      2. USERS SHALL BE ABLE TO OVERRIDE INDIVIDUAL ROOM SETPOINTS AT THE LOCAL THERMOSTATS. USER SELECTED RANGE SHALL BE LIMITED TO +/-5°F (ADJUSTABLE FROM 0°F-10°F) AND WITHIN THE HEATING SETPOINT RANGE DESCRIBED ABOVE. USER OVERRIDES SHALL RESET AFTER 4 HOURS (ADJUSTABLE BETWEEN 30 MINUTE AND 8 HOURS).

2. INITIAL UN-OCCUPIED PERIOD ZONE SETPOINTS (ALL REMAINING TIME THAT IS NOT DEFINED AS OCCUPIED)
   a. COOLING
      1. 80°F (ADJUSTABLE BETWEEN 65°F AND 80°F)
      2. USERS SHALL BE ABLE TO OVERRIDE INDIVIDUAL ROOM SETPOINTS. USER SELECTED RANGE SHALL BE LIMITED TO +/-5°F (ADJUSTABLE FROM 0°F-10°F) AND WITHIN THE COOLING SETPOINT RANGE DESCRIBED ABOVE. USER OVERRIDES SHALL RESET AFTER 2 HOURS (ADJUSTABLE BETWEEN 30 MINUTE AND 8 HOURS).
   b. HEATING
      1. 60°F (ADJUSTABLE BETWEEN 60°F AND 75°F).
      2. USERS SHALL BE ABLE TO OVERRIDE INDIVIDUAL ROOM SETPOINTS. USER SELECTED RANGE SHALL BE LIMITED TO +/-5°F (ADJUSTABLE FROM 0°F-10°F) AND WITHIN THE HEATING SETPOINT RANGE DESCRIBED ABOVE. USER OVERRIDES SHALL RESET AFTER 2 HOURS (ADJUSTABLE BETWEEN 30 MINUTE AND 8 HOURS).

   c. CONFERENCE ROOM 301
      1. THE BAS SHALL ALLOW FOR AN AUTHORIZED USER TO OVERRIDE THE OCCUPANCY SCHEDULE FOR CONFERENCE ROOM 301. OCCUPANCY SCHEDULE OVERRIDE FOR CONFERENCE ROOM 301 SHALL REQUIRE A START AND END TIME. ONCE THE END TIME IS REACHED, THE SYSTEM SHALL DEFAULT BACK TO THE STANDARD OCCUPANCY SCHEDULE.
      2. IF OCCUPANCY IS DETECTED THROUGH THE SPACE OCCUPANCY SENSOR DURING UNOCCUPIED PERIODS, THE SYSTEM SHALL DEFAULT TO OCCUPIED ROOM SETPOINTS.
      3. WHEN OCCUPANCY IS NOT DETECTED FOR 20 MINUTES (ADJUSTABLE BETWEEN 5 AND 30 MINUTES), THE SYSTEM SHALL REVERT BACK TO UNOCCUPIED PERIOD ROOM SETPOINTS.
   d. ANY USER OVERRIDE SHALL CAUSE THE ENTIRE FLOOR TO FOLLOW THE OCCUPIED MODE SEQUENCE FOR 4 HOURS (ADJUSTABLE BETWEEN 30 MINUTE AND 8 HOURS).

C. ALL SETPOINTS INDICATED SHALL BE ADJUSTABLE WITHIN THE BAS SYSTEM.

HEATING WATER SYSTEM SEQUENCE OF OPERATION

A. CENTRAL BAS SYSTEM CONTROL

1. THE AIR HANDLING UNIT HEATING WATER CONTROL VALVE SHALL BE CONTROLLED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT PROVIDED BY THE BAS.

2. THE FAN COIL UNIT HEATING WATER CONTROL VALVES SHALL BE CONTROLLED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT PROVIDED BY THE BAS.

3. BOILER SUPPLY HEATING WATER SETPOINT SHALL BE DETERMINED BASED ON OUTDOOR AIR TEMPERATURE. WHEN THE OUTDOOR AIR TEMPERATURE IS AT 65ºF (ADJUSTABLE BETWEEN 40ºF AND 80ºF), THE BOILER SUPPLY HEATING WATER SETPOINT SHALL BE 120ºF (ADJUSTABLE BETWEEN 110ºF AND 180ºF). THE BOILER SUPPLY HEATING WATER SETPOINT SHALL THEN INCREASE UP TO 140ºF (ADJUSTABLE BETWEEN 140ºF AND 180ºF) WHEN THE OUTDOOR AIR TEMPERATURE IS AT OR BELOW 40ºF (ADJUSTABLE BETWEEN 0ºF AND 60ºF).

4. WHEN THE OUTDOOR AIR TEMPERATURE IS AT OR ABOVE 65ºF (ADJUSTABLE BETWEEN 40ºF AND 80ºF), THE HEATING WATER LOOP AND ALL ASSOCIATED COMPONENTS SHALL BE DISABLED.

5. HEATING WATER PUMPS SHALL HAVE A MINIMUM PUMP SPEED OF 30% OF THE DESIGN FLOW RATE. MINIMUM AND MAXIMUM PUMP SPEED PROGRAMMING TO BE CONTROLLED BY THE BAS AND NOT THE PUMP VARIABLE FREQUENCY DRIVE CONTROLLER.

6. IN THE EVENT OF A FIRE ALARM, THE BAS SHALL DISABLE ALL HVAC EQUIPMENT.

B. BOILER SEQUENCING

1. THE BAS SHALL ALTERNATE WHICH BOILER IS ENABLED, OR IN STANDBY MODE, BASED ON RUN HOURS. AFTER A BOILER HAS BEEN OPERATING FOR A TOTAL OF 400 HOURS (ADJUSTABLE BETWEEN 200 HOURS AND 800 HOURS), THE CURRENT STANDBY BOILER SHALL BECOME THE ENABLED BOILER AND THE FORMER ENABLED BOILER SHALL ENTER STANDBY MODE.

2. BOILERS SHALL FIRE WHENEVER THE HEATING WATER LOOP SUPPLY TEMPERATURE (MEASURED AT TEMPERATURE SENSOR T8) DROPS BELOW THE BAS PROVIDED SETPOINT.

C. HEATING WATER PUMP SEQUENCING

1. HEATING WATER PUMPS SHALL BE ENABLED WHEN AT LEAST 10 FAN COIL UNITS (ADJUSTABLE BETWEEN 1 AND 30) PROVIDES A CALL FOR HEATING OR THE AIR HANDLING UNIT PROVIDES A CALL FOR HEATING.

2. THE BAS SHALL ALTERNATE WHICH PUMP IS ENABLED, OR IN STANDBY MODE, BASED ON RUN HOURS. AFTER A PUMP HAS BEEN OPERATING FOR A TOTAL OF 400 HOURS (ADJUSTABLE BETWEEN 200 HOURS AND 800 HOURS), THE CURRENT STANDBY PUMP SHALL BECOME THE ENABLED PUMP.

3. VARIABLE SPEED HEATING WATER PUMPS:
   a. HWP-1 AND HWP-2 SHALL VARY SPEED BETWEEN ITS MINIMUM AND MAXIMUM SPEED, WHENEVER ENABLED, TO MAINTAIN THE REQUIRED HEATING WATER LOOP DIFFERENTIAL PRESSURE SETPOINT (MEASURE AT DIFFERENTIAL PRESSURE SENSOR DP-2). REQUIRED HEATING WATER LOOP DIFFERENTIAL SETPOINT SHALL BE DETERMINED DURING THE TESTING, ADJUSTING, AND BALANCING PHASE (ADJUSTABLE BETWEEN 2 PSI AND 20 PSI). COORDINATE MINIMUM FLOW REQUIREMENTS FOR EACH BOILER WITH THE ACTUAL BOILERS PROVIDED.

D. HEATING WATER LOOP PRESSURE CONTROL VALVE:
THE HEATING WATER LOOP BYPASS CONTROL VALVES (BCV-2, BCV-4, AND BCV-6) SHALL MODULATE TO MAINTAIN THE REQUIRED HEATING WATER LOOP DIFFERENTIAL PRESSURE SETPOINT AFTER THE ENABLED HEATING WATER PUMP HAS REACHED IT'S MINIMUM PUMP SPEED.

DEFINITIONS:
ENALBE: PUMP OR BOILER IS AVAILABLE TO OPERATE IF A HEATING CALL IS RECEIVED.
STANDBY: PUMP OR BOILER IS IN BACKUP OPERATIONAL MODE. IF THE ENABLED PUMP OR BOILER IS NOT FUNCTIONAL FOR ANY REASON, THE STANDBY PUMP OR BOILER WILL BE ENABLED.
RUN: PUMP OR BOILER TO OPERATE.
OFF: PUMP OR BOILER IS NOT AVAILABLE TO BE STARTED FOR ANY REASON.

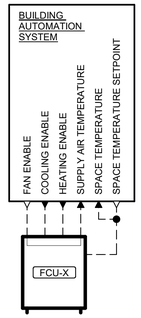
REFER TO M704 FOR SCHEMATIC CONTROL AND PIPING DIAGRAM

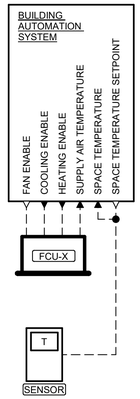
HEATING WATER PLANT CONTROL SUMMARY

	CONTROL POINT	LOCAL CONTROLLER DISPLAY	BAS DISPLAY	BAS ADJUSTABLE	BAS TREND	BAS ALARM*	COMMENTS
BOILERS	BOILER ENABLE	●	●		●		
	HEATING SUPPLY WATER TEMPERATURE	●	●			●	
	HEATING SUPPLY WATER TEMPERATURE SETPOINT	●	●	●			
	HEATING WATER RETURN TEMPERATURE	●	●				
HEATING PUMPS	PUMP ENABLE	●	●		●		
	PUMP SPEED COMMAND	●	●		●		
	VFD OPERATING FREQUENCY	●	●				
	LOOP DIFFERENTIAL PRESSURE		●				
	LOOP DIFFERENTIAL PRESSURE SETPOINT		●	●			

*ADDITIONAL ALARMS MAY BE REQUIRED. CONSULT THE BOILER MANUFACTURER ON RECOMMENDED BOILER ALARMS AND INCORPORATE ALL RECOMMENDED ALARMS.

HEATING WATER SYSTEM SEQUENCE OF OPERATION





FAN COIL UNIT CONTROLS DIAGRAM

FAN COIL UNIT CONTROL SUMMARY

CONTROL POINT	LOCAL CONTROLLER DISPLAY	BAS DISPLAY	BAS ADJUSTABLE	BAS TREND	BAS ALARM	COMMENTS
FCU ON/OFF		●				
SPACE TEMPERATURE		●		●	●	
SPACE TEMPERATURE SET POINT		●	●			
COOLING MODE		●				
HEATING MODE		●				
SUPPLY AIR TEMPERATURE		●				

FAN COIL UNIT SEQUENCE OF OPERATION

A. CENTRAL BAS SYSTEM CONTROL

1. THE BAS SHALL ENABLE THE FAN COIL UNITS AT ALL TIMES.

2. SAFETY SHUTDOWNS/ALARM GENERATION:

   a. AN FCU GENERAL ALARM SHALL BE GENERATED IF THE SPACE TEMPERATURE IS GREATER THAN +/-5°F (ADJUSTABLE BETWEEN 2°F AND 10°F) FROM SETPOINT FOR MORE THAN FIVE MINUTES (ADJUSTABLE BETWEEN 1 AND 20 MINUTES)

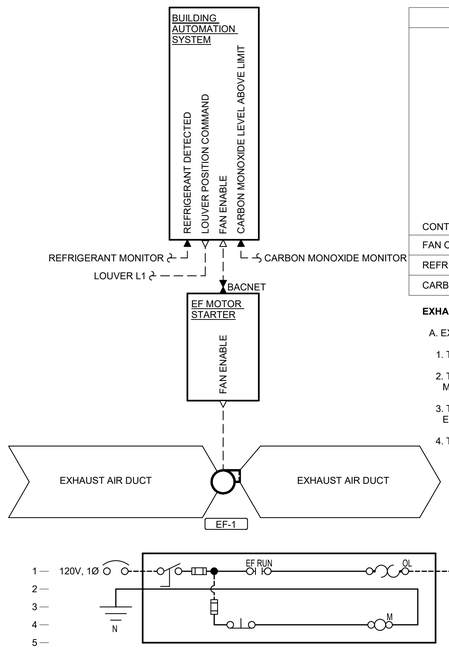
3. FAN COIL UNIT SETPOINTS
   a. SETPOINTS: AS PROVIDED WITHIN THE GENERAL BAS SYSTEM DESCRIPTION.

4. FAN COIL UNITS SHALL OPERATE TO MAINTAIN SPACE TEMPERATURE SETPOINT.

5. THE BAS SHALL AUTOMATICALLY SWITCH FAN COIL UNITS OPERATING MODE BETWEEN HEATING AND COOLING BASED ON THE SPACE TEMPERATURE RELATIONSHIP TO SETPOINT.

6. SPACE TEMPERATURE SETPOINTS SHALL BE CONTROLLED THROUGH THE BAS WITH TEMPORARY OCCUPANT OVERRIDE AT THE LOCAL TEMPERATURE SENSORS.

7. WHEN MULTIPLE CEILING CASSETTE FAN COIL UNITS ARE LOCATED WITHIN A COMMON SPACE, THE FAN COIL UNITS IN THAT SPACE SHALL BE PAIRED WITH A COMMON THERMOSTAT. WHEN MULTIPLE THERMOSTATS ARE LOCATED WITHIN A COMMON SPACE, THE BAS SHALL USE THE AVERAGE THE THERMOSTAT READINGS TO MAINTAIN SPACE TEMPERATURE SETPOINT. THESE SPACES SHALL BE CAPABLE OF INDEPENDENT THERMOSTAT CONTROL THROUGH THE BAS USER INTERFACE.



MECHANICAL ROOM VENTILATION FAN CONTROLS DIAGRAM

EXHAUST FAN (EF-1) CONTROL SUMMARY

CONTROL POINT	LOCAL CONTROLLER DISPLAY	BAS DISPLAY	BAS ADJUSTABLE	BAS TREND	BAS ALARM	COMMENTS
FAN ON/OFF		●		●		
REFRIGERANT DETECTED		●		●	●	
CARBON MONOXIDE LEVEL		●		●	●	

EXHAUST SYSTEM (EF-1)

A. EXHAUST SYSTEM CONTROL

1. THE EXHAUST SHALL BE ENABLE AT ALL TIMES BY THE BAS.

2. THE BAS SHALL ENABLE THE EXHAUST FAN ONLY WHEN THE MECHANICAL ROOM REFRIGERANT MONITOR OR THE CARBON MONOXIDE MONITOR IS IN AN ALARM STATUS.

3. THE EXHAUST FAN SHALL PROVIDE THE AIR FLOW SPECIFIED ON THE EQUIPMENT SCHEDULE WHEN ENABLED.

4. THE BAS SHALL OPEN LOUVER, L1, WHENEVER EXHAUST FAN, EF-1, IS ENABLED.

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

CONTROLS SCHEMATICS

SHEET NUMBER:

M701

SHEET 38 OF 46
JUNE 14, 2024

VARIABLE PRIMARY CHILLED WATER SYSTEM SEQUENCE OF OPERATION

A. CENTRAL BAS SYSTEM CONTROL

1. THE AIR HANDLING UNIT CHILLED WATER CONTROL VALVE SHALL BE CONTROLLED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT PROVIDED BY THE BAS.
2. THE FAN COIL UNIT CHILLED WATER CONTROL VALVES SHALL BE CONTROLLED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT PROVIDED BY THE BAS.
3. AIR-COOLED CHILLERS SUPPLY CHILLED WATER SETPOINT SHALL BE 44ºF WHEN ENABLED (ADJUSTABLE BETWEEN 40ºF AND 48ºF).
4. CHILLED WATER PUMPS SHALL HAVE A MINIMUM PUMP SPEED OF 29% OF THE DESIGN FLOW RATE. MINIMUM AND MAXIMUM PUMP SPEED PROGRAMMING TO BE CONTROLLED BY THE BAS AND NOT THE PUMP VARIABLE FREQUENCY DRIVE CONTROLLER.
5. IN THE EVENT OF A FIRE ALARM, THE BAS SHALL DISABLE ALL HVAC EQUIPMENT.

B. CHILLER SEQUENCING

1. CHILLER STAGING SHALL FOLLOW THE CHILLER STAGING TABLE.
2. CHILLER (CH-1 OR CH-3) SHALL ALWAYS BE THE FIRST CHILLER ENABLED. THE BAS SHALL ALTERNATE WHICH AIR-COOLED CHILLER (CH-1 OR CH-3) IS ENABLED, OR IN STANDBY MODE, BASED ON RUN HOURS. AFTER CH-1 OR CH-3 HAS BEEN OPERATING FOR A TOTAL OF 400 HOURS (ADJUSTABLE BETWEEN 200 HOURS AND 800 HOURS), THE CURRENT STANDBY AIR-COOLED CHILLER SHALL BECOME THE ENABLED AIR-COOLED CHILLER AND THE FORMER ENABLED AIR-NCOOLED CHILLER SHALL ENTER STANDBY MODE.
3. CHILLED WATER LOAD SHALL BE CALCULATED AND TRENDED BY MEASURING THE CHILLED WATER FLOW (FM-1), CHILLED WATER SUPPLY WATER TEMPERATURE (T2), AND RETURN CHILLED WATER TEMPERATURE (T1). THE CALCULATED CHILLED WATER LOAD SHALL BE DISPLAYED THROUGH THE BAS USER INTERFACE.

C. PRIMARY CHILLED WATER PUMP SEQUENCING

1. CHILLED WATER PRIMARY PUMP SEQUENCING SHALL FOLLOW THE PUMP SEQUENCING TABLE.
2. CHILLED WATER PRIMARY PUMPS SHALL BE ENABLED WHEN AT LEAST 10 FAN COIL UNITS (ADJUSTABLE BETWEEN 1 AND 30) PROVIDES A CALL FOR COOLING OR THE AIR HANDLING UNIT PROVIDES A CALL FOR COOLING.
3. THE BAS SHALL ALTERNATE WHICH PUMP IS ENABLED, OR IN STANDBY MODE, BASED ON RUN HOURS. AFTER A PUMP HAS BEEN OPERATING FOR A TOTAL OF 400 HOURS (ADJUSTABLE BETWEEN 200 HOURS AND 800 HOURS), THE CURRENT STANDBY PUMP SHALL BECOME THE ENABLED PUMP.
4. VARIABLE SPEED CHILLED WATER PRIMARY PUMPS:
   a. CHWP-1 AND CHWP-2 SHALL VARY SPEED BETWEEN ITS MINIMUM AND MAXIMUM SPEED, WHENEVER ENABLED, TO MAINTAIN THE REQUIRED CHILLED WATER LOOP DIFFERENTIAL PRESSURE SETPOINT (MEASURE AT DIFFERENTIAL PRESSURE SENSOR DP-1). REQUIRED CHILLED WATER LOOP DIFFERENTIAL SETPOINT SHALL BE DETERMINED DURING THE TESTING, ADJUSTING, AND BALANCING PHASE (ADJUSTABLE BETWEEN 2 PSI AND 20 PSI). COORDINATE MINIMUM FLOW REQUIREMENTS FOR EACH CHILLER WITH THE ACTUAL CHILLERS PROVIDED.

D. MOTORIZED CONTROL VALVES

1. THE BAS SHALL OPEN THE MOTORIZED CONTROL VALVES (MCV-1 & MCV-2) ON THE CHILLED WATER SUPPLY PIPING TO THE CHILLER PLANT AND THE DRY COOLER HEAT EXCHANGER.
2. WHEN THE OUTDOOR AIR TEMPERATURE IS AT OR BELOW 40ºF (ADJUSTABLE BETWEEN 30ºF AND 50ºF), MCV-2 SHALL BE OPEN AND THE CHILLED WATER PUMPS SHALL MAINTAIN THE FLOW RATE SHOWN IN THE CHILLED WATER SYSTEM FLOW RATE TABLE. MCV-1 SHALL BE CLOSED.
3. WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 40ºF (ADJUSTABLE BETWEEN 30ºF AND 50ºF), MCV-1 SHALL BE OPEN AND THE CHILLED WATER PUMPS SHALL FOLLOW THE FLOW RATES SHOWN IN THE CHILLED WATER SYSTEM FLOW RATE TABLE. MCV-2 SHALL BE CLOSED.

E. CHILLED WATER LOOP BYPASS CONTROL VALVE:

1. THE CHILLED WATER LOOP BYPASS CONTROL VALVES (BCV-1, BCV-3, AND BCV-5) SHALL MODULATE TO MAINTAIN THE REQUIRED CHILLED WATER LOOP DIFFERENTIAL PRESSURE SETPOINT AFTER THE ENABLED CHILLED WATER PRIMARY PUMP HAS REACHED IT'S MINIMUM PUMP SPEED.

F. DRY COOLER AND HEAT EXCHANGER SEQUENCING

1. THE BAS SHALL CONTROL OPERATION OF THE DRY COOLER, HEAT EXCHANGER, CWP-1, AND THE ENABLED CHILLED WATER PRIMARY PUMP.
2. THE DRY COOLER SYSTEM SHALL BE ENABLED WHENEVER CONDITIONS MATCH THOSE LISTED IN THE CHILLER STAGING TABLE.
3. WHEN THE DRY COOLER SYSTEM IS CALLED TO RUN, CHWP-1 OR CHWP-2 SHALL BE ENABLED.
4. WHEN THE DRY COOLER SYSTEM IS ENABLED, CWP-1 SHALL RUN WHENEVER THE CHILLED WATER SUPPLY TEMPERATURE IS ABOVE 45ºF (MEASURED AT TEMPERATURE SENSOR T4). WHEN THE CHILLED WATER SUPPLY TEMPERATURE IS BELOW 40ºF (MEASURED AT TEMPERATURE SENSOR T4), CWP-1 SHALL BE DISABLED. MINIMUM AND MAXIMUM CHILLED WATER SUPPLY TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE THROUGH THE BAS.
5. THE DRY COOLER CONDENSER FANS SHALL RUN WHENEVER CWP-1 IS CALLED TO RUN.

DEFINITIONS:
ENALBE: PUMP OR CHILLER IS AVAILABLE TO OPERATE IF A COOLING CALL IS RECEIVED.
STANDBY: PUMP OR CHILLER IS IN BACKUP OPERATIONAL MODE. IF THE ENABLED PUMP OR CHILLER IS NOT FUNCTIONAL FOR ANY REASON, THE STANDBY PUMP OR CHILLER WILL BE ENABLED.
RUN: PUMP OR CHILLER TO OPERATE.
OFF: PUMP OR CHILLER IS NOT AVAILABLE TO BE STARTED FOR ANY REASON.

REFER TO M704 FOR SCHEMATIC CONTROL AND PIPING DIAGRAM

CHILLER STAGING TABLE				
TOTAL SYSTEM TONNAGE*	0 - 30	30- 60	60 - 90	> 90
BELOW 40ºF AMBIENT				
DRY COOLER	ENABLE	OFF	OFF	OFF
AIR-COOLED CHILLER, CH-1**	OFF	ENABLE	ENABLE	ENABLE
AIR-COOLED CHILLER, CH-2	OFF	ENABLE	ENABLE	ENABLE
AIR-COOLED CHILLER, CH-3**	OFF	OFF	ENABLE	ENABLE
ABOVE 40ºF AMBIENT				
DRY COOLER	OFF	OFF	OFF	OFF
AIR-COOLED CHILLER, CH-1**	ENABLE	ENABLE	ENABLE	ENABLE
AIR-COOLED CHILLER, CH-2	OFF	ENABLE	ENABLE	ENABLE
AIR-COOLED CHILLER, CH-3**	OFF	OFF	ENABLE	ENABLE

*ALL OPERATIONAL TONNAGE RANGES SHALL BE ADJUSTABLE THROUGH THE BAS.

**THE BAS SHALL ALTERNATE CH-1 AND CH-3 SEQUENCING BASED ON RUN HOURS AS DETAILED ABOVE.

PUMP STAGING TABLE				
TOTAL SYSTEM TONNAGE	0 - 30	30- 60	60 - 90	> 90
CHILLED WATER PUMPS*				
CHWP-1	ENABLE	ENABLE	ENABLE	ENABLE
CHWP-2	STANDBY	STANDBY	STANDBY	STANDBY
CWP-1**	ENABLE	OFF	OFF	OFF

*THE BAS SHALL ALTERNATE CHWP-1 AND CHWP-2 SEQUENCING BASED ON RUN HOURS AS DETAILED ABOVE.

**ONLY ENABLED WHEN OUTDOOR AIR TEMPERATURE IS BELOW 40ºF.

CHILLED WATER SYSTEM FLOW RATE TABLE					
TOTAL TONNAGE	CHILLED WATER FLOW RATE		CONDENSER OPERATION		CHILLER OPERATION
BELOW 40ºF AMBIENT					
0 TO 30 TONS	FLOW RATE	72 GPM	FLOW RATE	76.5 GPM	DRY COOLER: 0 TO 30 TONS
> 30 TONS	FOLLOW ABOVE 40ºF AMBIENT SEQUENCE BELOW				
ABOVE 40ºF AMBIENT					
0 TO 30 TONS	MINIMUM FLOWRATE*	70 GPM	CU-01 ENABLE	———	AIR-COOLED CHILLER (CH-1): 0 TO 30 TONS
	MAXIMUM FLOWRATE*	70 GPM	CU-01 ENABLE	———	
30 TO 60 TONS	MINIMUM FLOWRATE*	86 GPM	CU-01 ENABLE	———	CH-1 & CH-2: 30 TO 60 TONS
	MAXIMUM FLOWRATE*	140 GPM	CU-01 ENABLE	———	
60 TO 90 TONS	MINIMUM FLOWRATE*	140 GPM	CU-01 & CU-2 ENABLE	———	CH-1, CH-2, & CH-3: 60 TO 90 TONS
	MAXIMUM FLOWRATE*	210 GPM	CU-01 & CU-2 ENABLE	———	
> 90 TONS	MINIMUM FLOWRATE*	210 GPM	CU-01 & CU-2 ENABLE	———	CH-1, CH-2, & CH-3: > 90 TONS
	MAXIMUM FLOWRATE*	210 GPM	CU-01 & CU-2 ENABLE	———	

*MINIMUM AND MAXIMUM PUMP SPEEDS SHALL BE ADJUSTABLE THROUGH THE BAS.

CHILLED WATER PLANT CONTROL SUMMARY

	CONTROL POINT	LOCAL CONTROLLER DISPLAY	BAS DISPLAY	BAS ADJUSTABLE	BAS TREND	BAS ALARM*	COMMENTS
CHILLERS	CHILLER ENABLE	●	●		●		
	CHILLER CAPACITY	●	●		●		
	CHILLER SUPPLY WATER TEMPERATURE	●	●		●	●	
	CHILLER SUPPLY WATER TEMPERATURE SETPOINT	●	●	●			
	CHILLER RETURN WATER TEMPERATURE	●	●		●		
	EVAPORATOR PRESSURE	●	●			●	ALARM IF BELOW MANUFACTURER'S LOW LIMIT
	OIL PRESSURE	●	●			●	ALARM IF ABOVE MANUFACTURER'S HIGH LIMIT
CHILLED WATER PUMPS	PUMP ENABLE	●	●		●		
	PUMP SPEED COMMAND	●	●		●		
	CHILLED WATER SUPPLY FLOW RATE		●		●		
	VFD OPERATING FREQUENCY	●	●				
	LOOP DIFFERENTIAL PRESSURE		●				
	LOOP DIFFERENTIAL PRESSURE SETPOINT		●	●			
DRY COOLER SYSTEM	DRY COOLER ENABLE		●		●		
	CWP-1 PUMP ENABLE		●		●		
	CONDENSER ENTERING FLUID TEMPERATURE		●		●		
	CONDENSER LEAVING FLUID TEMPERATURE		●		●		
	CHILLED WATER RETURN TEMPERATURE		●		●		
	CHILLED WATER SUPPLY TEMPERATURE		●	●	●		

*ADDITIONAL ALARMS MAY BE REQUIRED. CONSULT THE CHILLER MANUFACTURER ON RECOMMENDED CHILLER ALARMS AND INCORPORATE ALL RECOMMENDED ALARMS.

CHILLED WATER SYSTEM SEQUENCE OF OPERATION

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MICHAEL L. PARSON, GOVERNOR

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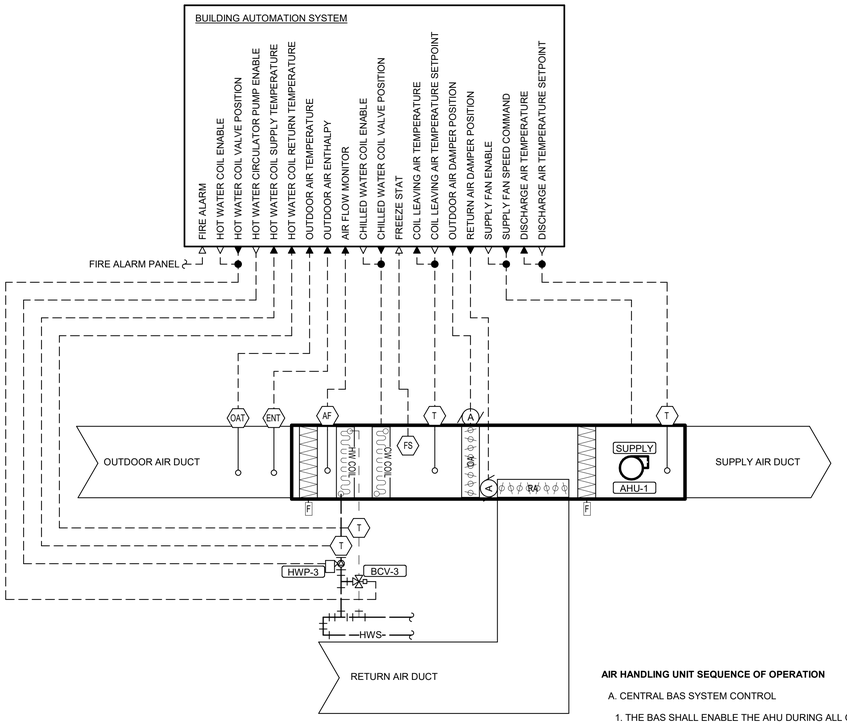
M702



AIR-HANDLING UNIT CONTROLS DIAGRAM

AIR HANDLING UNIT CONTROL SUMMARY						
CONTROL POINT	LOCAL CONTROLLER DISPLAY	BAS DISPLAY	BAS ADJUSTABLE	BAS TREND	BAS ALARM	COMMENTS
FAN ENABLE		●		●		
FAN SPEED COMMAND		●	●			
COOLING MODE		●	●	●		
HEATING MODE		●	●	●		
OUTDOOR AIR FLOW RATE		●			●	
FREEZE STAT		●			●	ALARM IF BELOW 40°F & CLOSE OUTDOOR AIR DAMPER
COIL LEAVING AIR TEMPERATURE		●	●	●	●	
COIL LEAVING AIR TEMPERATURE SETPOINT		●	●			
OUTDOOR AIR TEMPERATURE		●		●		
OUTDOOR AIR ENTHALPY		●		●		
MIXED AIR TEMPERATURE		●		●		
OUTDOOR AIR DAMPER POSITION		●				
RETURN AIR DAMPER POSITION		●				

AIR HANDLING UNIT SEQUENCE OF OPERATION

A. CENTRAL BAS SYSTEM CONTROL

1. THE BAS SHALL ENABLE THE AHU DURING ALL OCCUPIED HOURS.
2. SAFETY SHUTDOWNS/ALARM GENERATION:
   a. BUILDING FIRE ALARM ACTIVATION SHALL DISABLE OPERATION OF THE AHU.
   b. AN AHU GENERAL ALARM SHALL BE GENERATED IF THE AIR FLOW MONITORING STATION DOES NOT DETECT AIRFLOW AFTER 5 MINUTES (ADJUSTABLE BETWEEN 1 MINUTE AND 10 MINUTES) AFTER THE COOLING COIL OR HEATING COIL IS ENABLED.
3. THE AHU SUPPLY FAN SHALL BE ENABLED DURING ALL OCCUPIED HOURS. THE AHU SUPPLY FAN SHALL PROVIDE THE DESIGN AIR FLOW RATE DURING ALL OCCUPIED HOURS AND WHEN OCCUPANCY IS DETECTED IN CONFERENCE ROOM 301 OR THE OCCUPANCY SCHEDULE FOR CONFERENCE ROOM 301 IS OVERRIDDEN.
4. AHU SHALL OPERATE TO MAINTAIN THE COIL LEAVING AIR TEMPERATURE SETPOINT PROVIDED BY THE BAS WHEN THE AHU IS IN COOLING MODE.
5. AHU SHALL OPERATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT PROVIDED BY THE BAS WHEN THE AHU IS IN HEATING MODE.
6. THE AHU SHALL BE IN COOLING MODE WHENEVER THE OUTDOOR AIR TEMPERATURE IS ABOVE 53°F (ADJUSTABLE BETWEEN 48°F AND 58°F).
7. THE AHU SHALL BE IN HEATING MODE WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 47°F (ADJUSTABLE BETWEEN 44°F AND 50°F).
   a. WHEN THE AHU IS IN HEATING MODE, THE COIL CIRCULATING PUMP, HWP-3, SHALL BE ENABLED. THE COIL 3-WAY DIVERTING HYRONIC CONTROL VALVE, BCV-3, SHALL MODULATE TO PROVIDE THE UNIT DISCHARGE AIR TEMPERATURE SETPOINT PROVIDED BY THE BAS.
8. OUTDOOR AIR DAMPER SHALL BE FULLY OPEN DURING ALL OCCUPIED HOURS.
   a. DURING UNOCCUPIED HOURS, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED.
9. RETURN AIR DAMPER SHALL BE OPEN AT ALL TIMES AND BALANCED TO MAINTAIN THE RETURN AIR FLOW RATE SPECIFIED ON THE EQUIPMENT SCHEDULE.
10. WHEN THE AHU IS IN COOLING MODE, THE COIL LEAVING AIR TEMPERATURE SETPOINT SHALL BE 50°F (ADJUSTABLE BETWEEN 47°F AND 53°F).
11. WHEN THE AHU IS IN HEATING MODE , THE UNIT DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 70°F (ADJUSTABLE BETWEEN 65°F AND 80°F).
12. DISCHARGE AIR TEMPERATURE SETPOINTS AND OUTDOOR AIR OPERATIONAL RANGES SHALL BE ADJUSTABLE THROUGH THE BAS.

ROOM-BY-ROOM OUTDOOR AIR FLOW TABLE			
ROOM NAME	ROOM NUMBER	ASHRAE 62.1-2019 REQUIRED OUTDOOR AIR (CFM)	TOTAL SUPPLY AIR (CFM)
OFFICE	103	13	70
CONFERENCE	104	20	110
BREAKROOM	112	202	1,120
OFFICE	113	12	65
OFFICE	114	28	155
OFFICE AREA	115	195	1,080
STORE ROOM	116	79	440
OFFICE	117	8	45
OFFICE AREA	118	111	620
MAIL ROOM	119	13	70
CONFERENCE	121	21	115
OFFICE	129	12	65
OFFICE	130	15	80
LOBBY	132	75	420
RECEPTION	133	11	60
OFFICE	134	15	85
OFFICE	135	10	55
OFFICE	136	10	55
OFFICE	137	15	85
OFFICE	138	10	55
OFFICE	139	10	55
OFFICE	140	11	60
OFFICE	201	12	65
OFFICE	202	10	55
OFFICE	203	10	55
OFFICE AREA	204	234	1,300
WINE CELLER	205	10	55
BREAK ROOM	207	0	0
CENTRAL STORES	214	11	60
OFFICE	215	14	80
OFFICE	216	15	85
OFFICE	217	14	80
SEED LAB	218	79	440
OFFICE	219	15	85
CONFERENCE	220	23	130
OFFICE AREA	221	281	1,560
OFFICE	222	24	135
OFFICE	223	14	75
OFFICE	224	14	75
OFFICE	225	14	75
CONFERENCE	226	15	85
OFFICE	227	12	65
CONFERENCE	228	27	150
CONFERENCE	229	15	85
OFFICE	230	17	95
OFFICE	231	22	125
CONFERENCE	232	10	55
OFFICE	234	11	65
OFFICE	235	16	90
CONFERENCE	301	72	400
OFFICE	302	10	55
OFFICE	303	10	55
OFFICE	304	16	90
OFFICE	305	10	55
OFFICE	313	15	85
OFFICE	314	10	55
OFFICE	315	15	85
OFFICE	316	10	55
OFFICE	317	15	85
OFFICE	318	10	55
OFFICE	319	15	85
OFFICE AREA	320	166	920
OFFICE AREA	321	270	1,500
OFFICE	322	26	145
OFFICE	325	20	110
OFFICE	326	15	85
OFFICE	327	23	125
OFFICE	328	15	85
OFFICE	329	15	85
OFFICE	330	20	110
OFFICE	331	15	85
OFFICE	332	15	85
OFFICE	333	10	55
CONFERENCE	334	10	55
OFFICE	335	20	110
OFFICE	336	15	85

ROOM-BY-ROOM OUTDOOR AIR FLOW TABLE			
ROOM NAME	ROOM NUMBER	ASHRAE 62.1-2019 REQUIRED OUTDOOR AIR (CFM)	TOTAL SUPPLY AIR (CFM)
MECHANICAL ROOM	B01	0	0
GARAGE	101	0*	0
MOISTURE METER LAB	102	0*	0
VAULT	105	0	0
HALLWAY	106	0	0
CORRIDOR	107	0	0
MEN'S RESTROOM	108	0	0
JANITOR	109	0	0
WOMEN'S RESTROOM	110	0	0
VESTIBULE	111	0	0
NETWORK CLOSET	112A	0	0
CORRIDOR	120	0	0
LARGE MASS LAB	122	0*	0
VAULT	123	0*	0
SMALL MASS LAB	124	0*	0
VOLUME LAB	125	0*	0
SHOP	126	0*	0
OFFICE	127	0*	0
RECEPTION	128	0*	0
STORAGE	131	0	0
VAULT	206	0	0
VESTIBULE	208	0	0
CORRIDOR	209	0	0
MEN'S RESTROOM	210	0	0
JANITOR	211	0	0
WOMEN'S RESTROOM	212	0	0
VESTIBULE	213	0	0
NETWORK CLOSET	214A	0	0
STORAGE	232	0	0
STORAGE	233	0	0
CLOSET	301A	0	0
CLOSET	301B	0	0
VAULT	306	0	0
STORAGE	307	0	0
CORRIDOR	308	0	0
MEN'S RESTROOM	309	0	0
JANITOR	310	0	0
WOMEN'S RESTROOM	311	0	0
VESTIBULE	312	0	0
NETWORK CLOSET	321A	0	0
STORAGE	321U	0	0
CLOSET	322A	0	0
RESTROOM	323	0	10
VESTIBULE	324	0	0

* VENTILATION FOR ROOM IS PROVIDED BY AN EXISTING SYSTEM TO REMAIN. VENTILATION RATE FOR THIS ROOM WAS NOT CALCULATED.

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
NUMBER PE-2021031578
PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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DESIGN AND CONSTRUCTION

GEORGE WASHINGTON CARVER STATE OFFICE BUILDING REPLACE HVAC, STRUCTURAL REPAIRS, & REPLACE ROOF VOLUME 1

STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

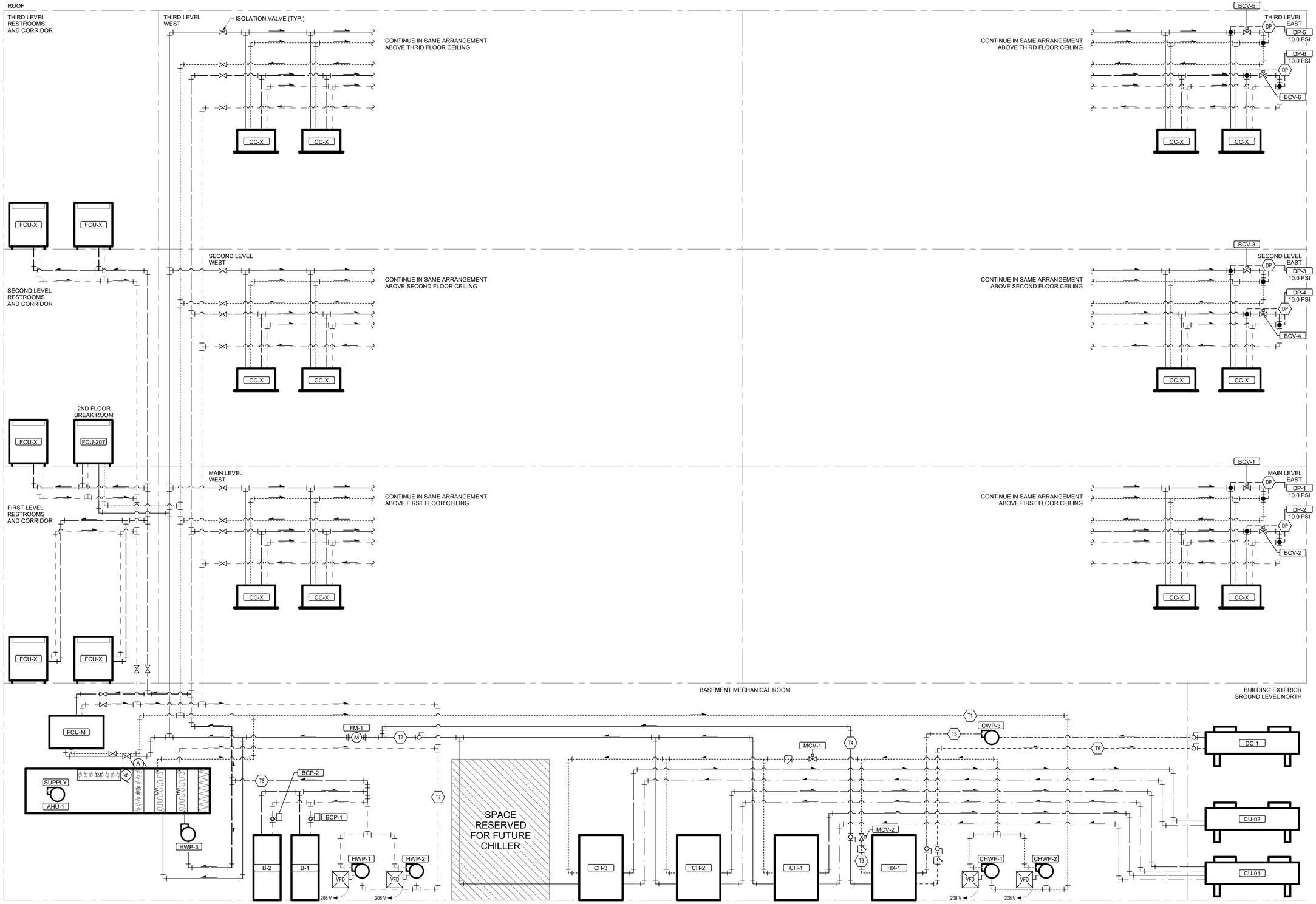
CONTROLS SCHEMATICS

SHEET NUMBER:

M703

SHEET 40 OF 46
JUNE 14, 2024

*FAN COILS SHOWN ARE FOR SCHEMATIC PURPOSES ONLY AND DO NOT REFLECT EXACT NUMBER OF FAN COILS UNITS ASSOCIATES WITH THE PROJECT. ACTUAL QUANITITY OF FAN COIL UNITS SHOULD BE DETERMINED FROM THE FLOOR PLANS.



1 PIPING SCHEMATIC DIAGRAM
NTS

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI * Matthew Hayes Bridges * NUMBER PE-2021031578 * PROFESSIONAL ENGINEER
06/14/24

MATTHEW H. BRIDGES - ENGINEER
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SITE # 1010
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ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

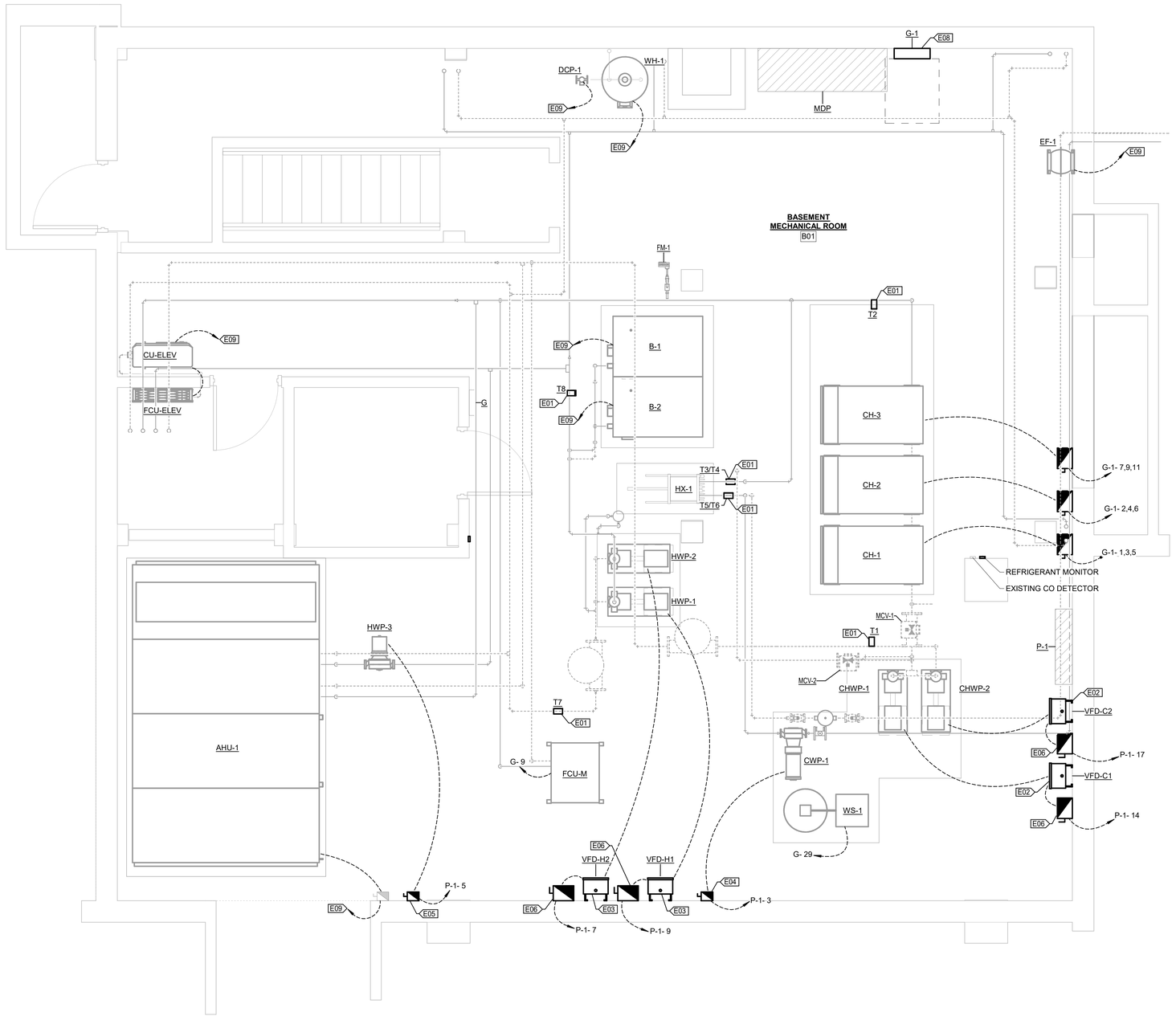
HYDRONIC PIPING SCHEMATIC - CONTROLS

SHEET NUMBER:

M704

SHEET 41 OF 46
JUNE 14, 2024

KEYNOTE LEGEND	
VALUE	DESCRIPTION
E01	INSTALL NEW HYDRONIC TEMPERATURE SENSOR. PROVIDE NEW CONTROL WIRING IN CONDUIT TO CONTROL PANEL IN BASEMENT MECHANICAL ROOM. TEMPERATURE SENSOR FURNISHED BY CONTROLS VENDOR.
E02	FURNISH AND INSTALL NEW CHILLED WATER PUMP VARIABLE FREQUENCY DRIVE.
E03	FURNISH AND INSTALL NEW HEATING WATER PUMP VARIABLE FREQUENCY DRIVE.
E04	FURNISH AND INSTALL NEW COMBINATION MOTOR STARTER AND DISCONNECT FOR CWP-1. SIZE COMBINATION MOTOR STARTER AND DISCONNECT BASED ON ACTUAL PUMP PROVIDED.
E05	FURNISH AND INSTALL NEW COMBINATION MOTOR STARTER AND DISCONNECT FOR HWP-1. SIZE COMBINATION MOTOR STARTER AND DISCONNECT BASED ON ACTUAL PUMP PROVIDED.
E06	FURNISH AND INSTALL NEW DISCONNECT. INSTALL POWER WIRING IN CONDUIT TO ASSOCIATED VARIABLE FREQUENCY DRIVE.
E08	FURNISH AND INSTALL NEW ELECTRICAL PANEL G-1. ROUTE NEW ELECTRICAL FEEDERS IN CONDUIT TO NEW PANEL FROM ELECTRICAL PANEL MDP. INSTALL NEW 400A BREAKER IN ELECTRICAL PANEL MDP IN PLACE OF THE FORMER 200A BREAKER THAT FED THE FORMER G-1 PANEL.
E09	RECONNECT TO EXISTING FEEDER. EXTEND EXISTING ELECTRICAL FEEDER AS REQUIRED.



1 BASEMENT ELECTRCIAL PLAN
3/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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STATE OF MISSOURI

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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
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DATE:
REVISION:
DATE:
ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

BASEMENT ELECTRICAL FLOOR PLAN

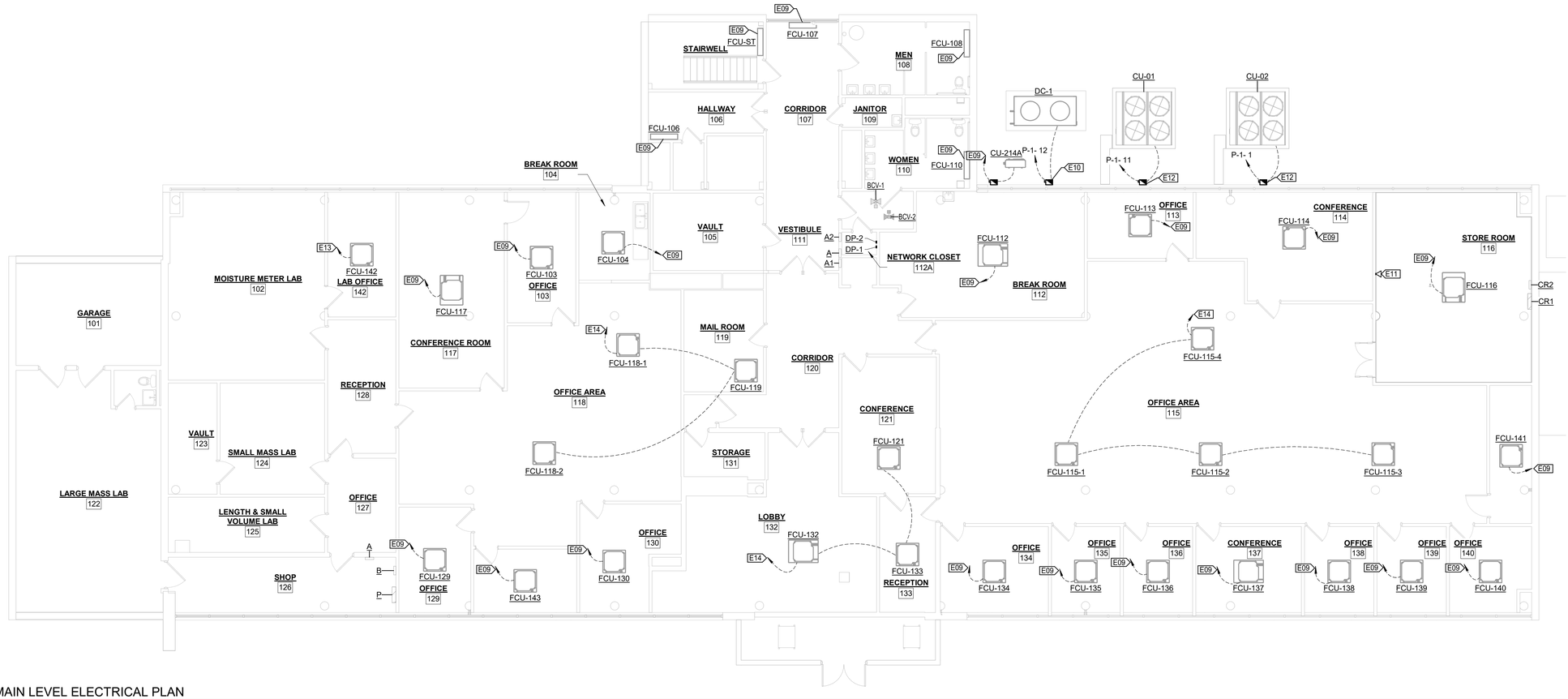
SHEET NUMBER:

E101

SHEET 42 OF 46
JUNE 14, 2024

N
0 2 4
SCALE: 3/8" = 1'-0"

KEYNOTE LEGEND	
VALUE	DESCRIPTION
E09	RECONNECT TO EXISTING FEEDER. EXTEND EXISTING ELECTRICAL FEEDER AS REQUIRED.
E10	FURNISH AND INSTALL NEW DISCONNECT SWITCH FOR DRY COOLER. SIZE DISCONNECT BASED ON MANUFACTURER'S RECOMMENDATIONS. INSTALL NEW CONDUIT AND CONDUCTORS BETWEEN THE NEW DISCONNECT AND ELECTRICAL PANEL "P-1" AND BETWEEN THE NEW DISCONNECT AND THE DC-1.
E11	FURNISH AND INSTALL NEW SURFACE MOUNTED 4-PORT CAT 6 ETHERNET WALL PLATE WITH FOUR RJ45 ETHERNET KEYSTONE INSERTS AND FEED 4 REMAINING DATA CABLES TO WALL PLATE. CORE DRILL NEW ACCESS TO UNDERGROUND SERVICE TUNNEL BELOW. INSTALL 1" CONDUIT BETWEEN FLOOR AND NEW WALL PLATE. FINAL DOWNSTREAM ETHERNET CONNECTIONS BY OWNER.
E12	FURNISH AND INSTALL NEW DISCONNECT SWITCH FOR CONDENSER UNIT. SIZE DISCONNECT BASED ON MANUFACTURER'S RECOMMENDATIONS. INSTALL NEW CONDUIT AND CONDUCTORS BETWEEN THE NEW DISCONNECT AND ELECTRICAL PANEL "P-1" AND BETWEEN THE NEW DISCONNECT AND THE CONDENSER UNIT.
E13	CONNECT TO EXISTING FEEDER SUPPLYING ADJACENT FAN COIL UNITS.
E14	PROVIDE POWER FROM OPEN SPARE IN ELECTRICAL PANEL A1 LOCATED IN VESTIBULE 111.



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

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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STATE OF MISSOURI

1616 MISSOURI BLVD
JEFFERSON CITY, MO 65101

PROJECT # O2440-01
SITE # 1010
ASSET # 3101010001

REVISION:
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REVISION:
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ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

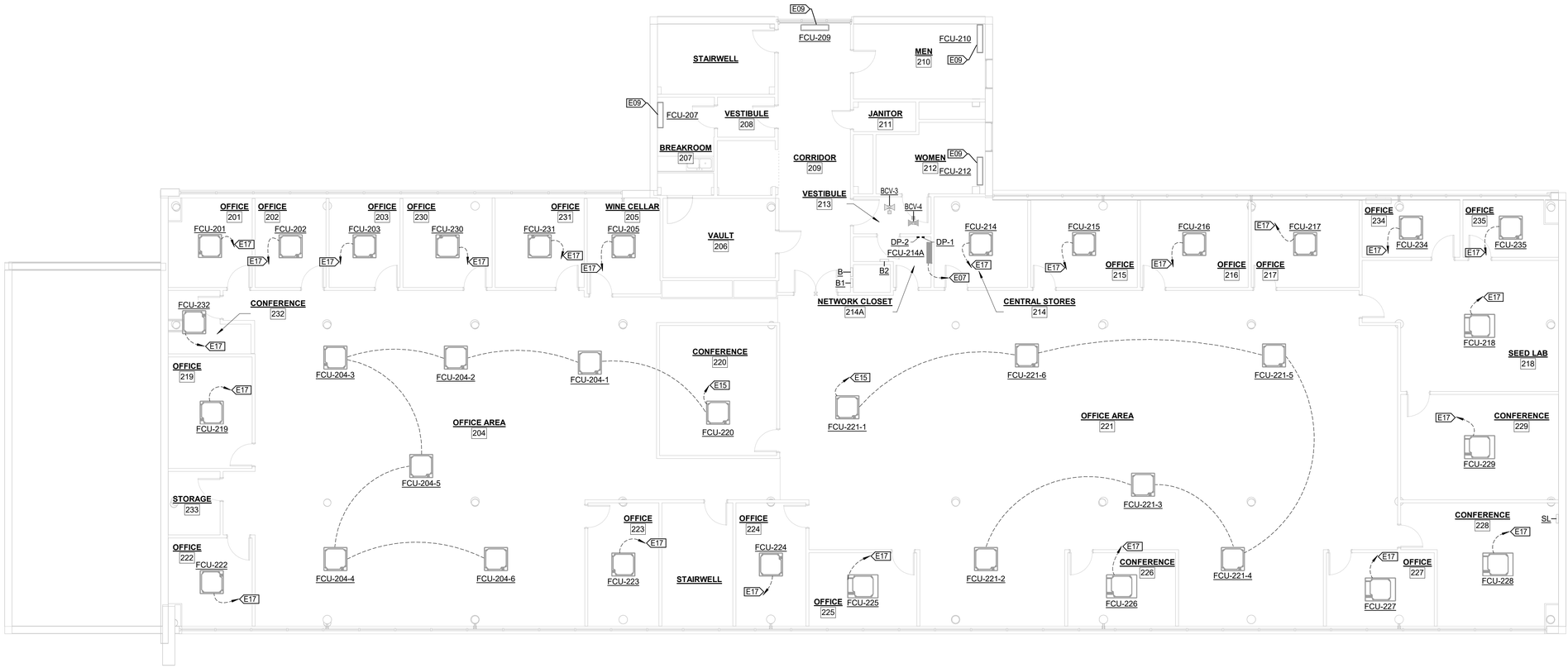
1ST FLOOR ELECTRICAL FLOOR PLAN

SHEET NUMBER:

E102

SHEET 43 OF 46
JUNE 14, 2024

KEYNOTE LEGEND	
VALUE	DESCRIPTION
E07	POWER PROVIDED BY CU-214A.
E09	RECONNECT TO EXISTING FEEDER. EXTEND EXISTING ELECTRICAL FEEDER AS REQUIRED.
E15	PROVIDE POWER FROM OPEN SPARE IN ELECTRICAL PANEL B LOCATED IN CORRIDOR 209.
E17	PROVIDE POWER FROM PREVIOUS CIRCUIT IN ELECTRICAL PANEL B LOCATED IN CORRIDOR 209.



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

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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CAD DWG FILE:
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SHEET TITLE:

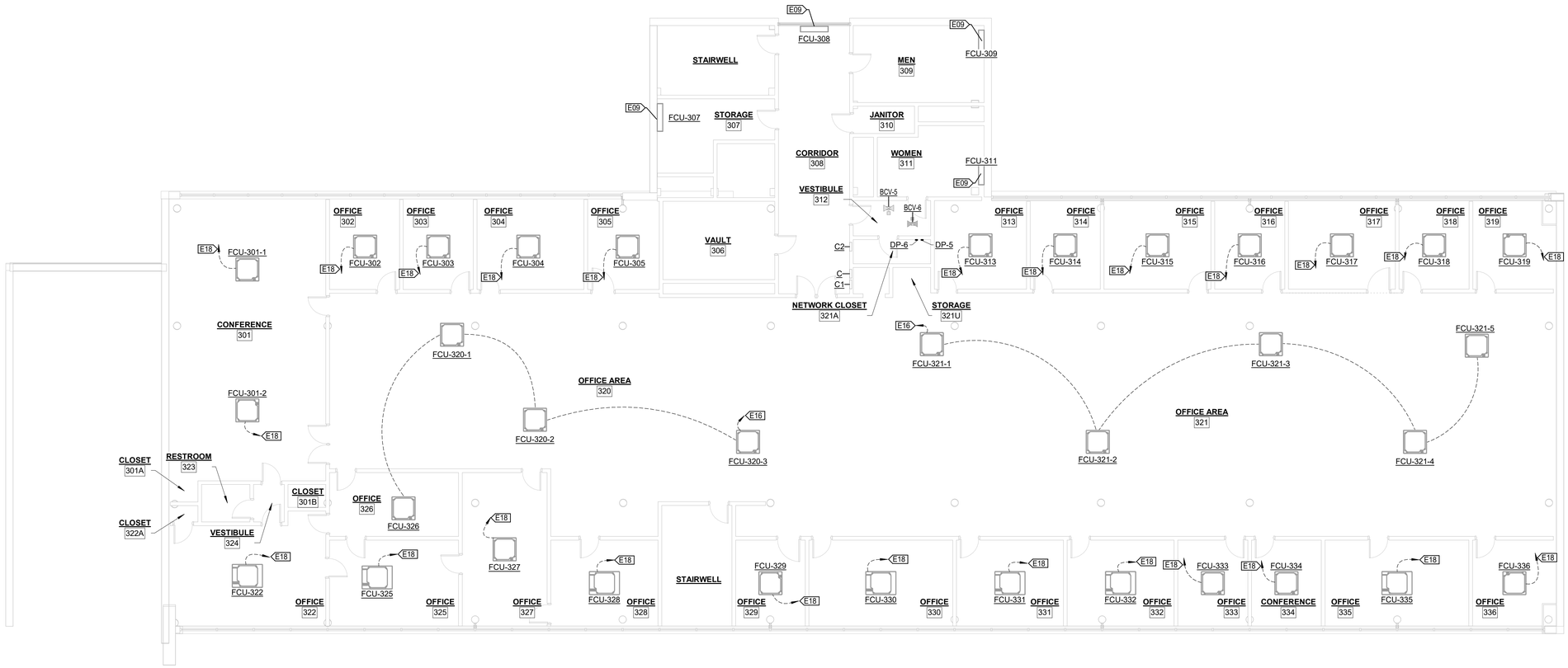
2ND FLOOR ELECTRICAL FLOOR PLAN

SHEET NUMBER:

E103

SHEET 44 OF 46
JUNE 14, 2024

KEYNOTE LEGEND	
VALUE	DESCRIPTION
E09	RECONNECT TO EXISTING FEEDER. EXTEND EXISTING ELECTRICAL FEEDER AS REQUIRED.
E16	PROVIDE POWER FROM OPEN SPARE IN ELECTRICAL PANEL C2 LOCATED IN CORRIDOR 308.
E18	PROVIDE POWER FROM PREVIOUS CIRCUIT IN ELECTRICAL PANEL C2 LOCATED IN CORRIDOR 308.



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

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
Matthew Hayes Bridges
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STATE OF MISSOURI

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JEFFERSON CITY, MO 65101

PROJECT # O2440-01
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ASSET # 3101010001

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ISSUE DATE: 06/14/24

CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

3RD FLOOR ELECTRICAL FLOOR PLAN

SHEET NUMBER:

E104

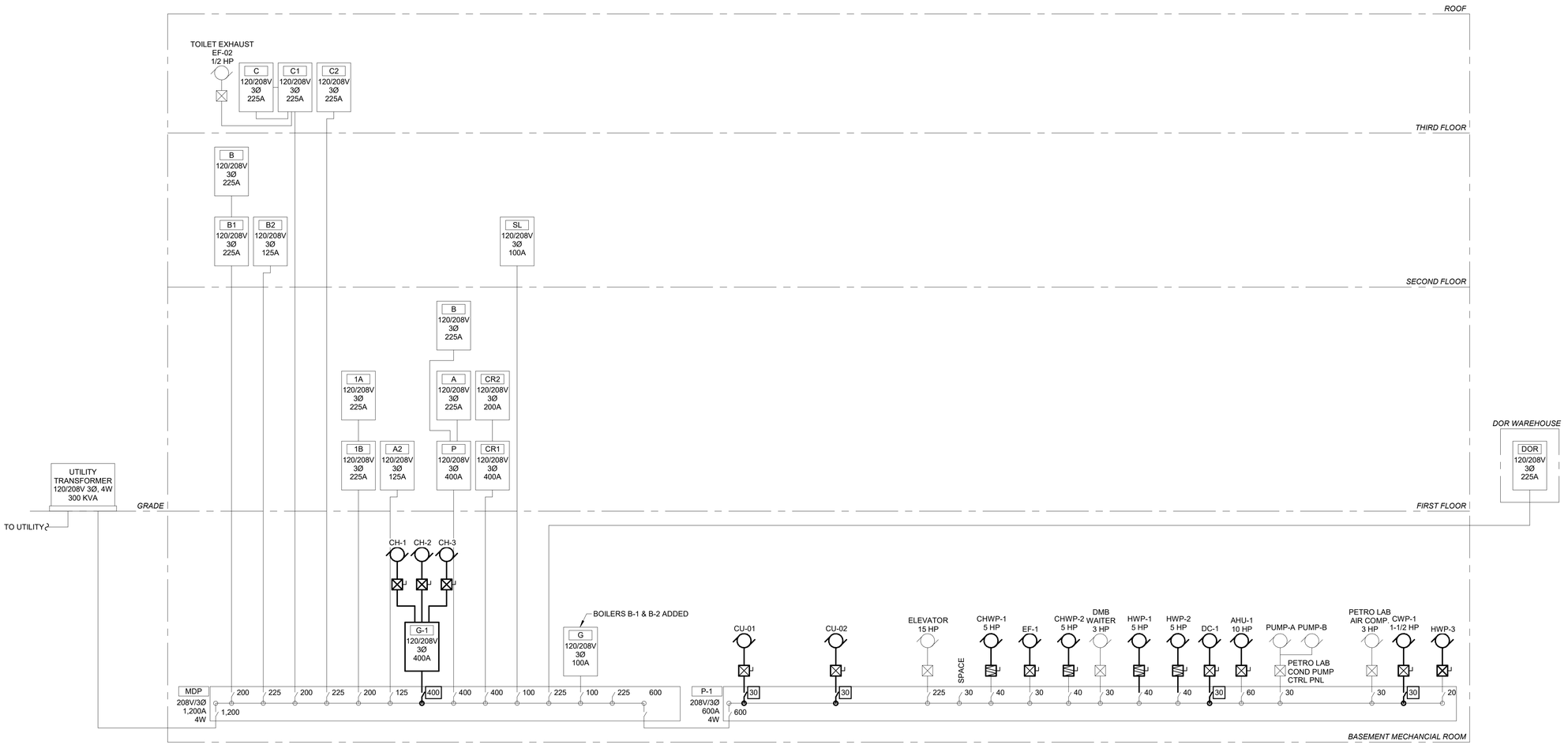
SHEET 45 OF 46
JUNE 14, 2024

BRANCH PANEL: G-1

LOCATION: BASEMENT MECHANICAL ROOM B01 | **VOLTS:** 120/208 | **A.I.C. RATING:** 10,000 AMPS SYMMETRICAL
SUPPLY FROM: MDP | **PHASES:** 3 | **PANEL TYPE:** MLO
MOUNTING: SURFACE | **WIRES:** 4 | **MAINS RATING:** 400 A
ENCLOSURE: NEMA1 | **ACCESSORIES:** PROVIDE FEED-THRU LUGS

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1				7265 VA	7265 VA								2
3	CH-1	80 A	3			7265 VA	7265 VA			3	80 A	CH-2	4
5								7265 VA	7265 VA				6
7				7265 VA	0 VA								8
9	CH-3	80 A	3			7265 VA	0 VA			3	80 A	SPARE	10
11								7265 VA	0 VA				12
13													14
15													16
17													18
19													20
21													22
23													24
25													26
27													28
29													30
		PHASE LOAD:		21,796 VA		21,796 VA		21,796 VA		****TOTAL LOAD:**	**65,388 VA**		
		PHASE AMPS:		182 A		182 A		182 A		****TOTAL AMPS:**	**182 A**		

*** FIELD VERIFY BREAKER SIZE WITH ACTUAL EQUIPMENT PROVIDED. COORDINATE WITH OTHER CONTRACTORS AS NECESSARY.**
****TOTAL LOAD AND TOTAL AMPS DO NOT INCLUDE DEMAND FACTOR CALCULATIONS.**



1 ELECTRICAL ONE-LINE DIAGRAM
NTS

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
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CAD DWG FILE:
DRAWING BY: MHB
CHECKED BY: ALD
DESIGNED BY: MHB

SHEET TITLE:

ELECTRICAL DETAILS

SHEET NUMBER:

E601

SHEET 46 OF 46
JUNE 14, 2024