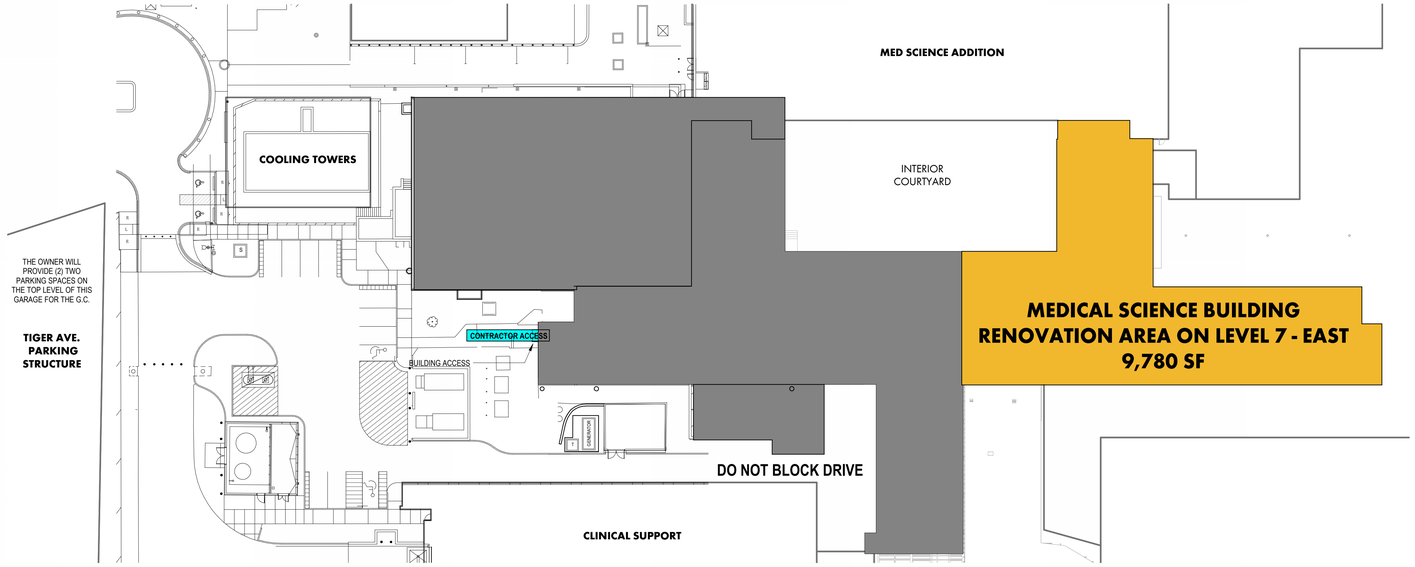
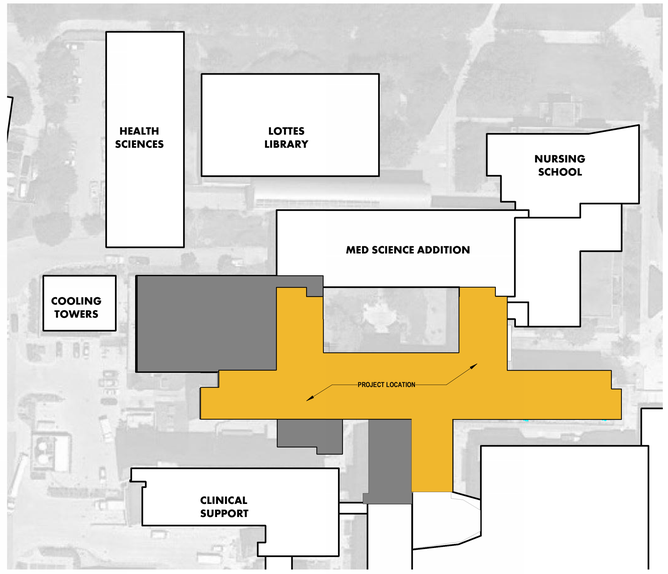


CONSTRUCTION ACCESS PLAN **D3**
1" = 30'-0"

0 30' - 0" 60' - 0" 90' - 0"

NORTH



PROJECT LOCATION PLAN **D1**
1" = 60'-0"

NORTH

UNIVERSITY OF MISSOURI

FOR: The Curators of the University of Missouri - Project No.: CP2400920

MEDICAL SCIENCE BUILDING

7TH FLOOR EAST LIKE FOR LIKE LAB RENOVATION

CONTRACT DOCUMENTS - JULY 8, 2025

LEVEL 7 EAST - 3D

DRAWING INDEX

DISCIPLINE	SHEET #	SHEET TITLE
ARCHITECTURAL	A003L	COVER
	A105L	GENERAL INFORMATION
	A106L	TYPICAL PARTITIONS & INTERIOR DETAILS
	A107L	UL- RATED ASSEMBLIES
	A108L	UL- RATED ASSEMBLIES
	A109L	UL- RATED ASSEMBLIES
	A175L	LEVEL 7 & ROOF - CODE PLAN - OVERALL
	A176L	LEVEL 7 - ENLARGED CODE PLAN BASE
	A275L	ORIGINAL DESIGN - FOR REFERENCE ONLY
	A276L	DEMOLITION PLAN - LEVEL 7 - EAST
	A277L	DEMOLITION RCP - LEVEL 7 - EAST
	A285L	DEMOLITION PLAN - ROOF
	A376L	LEVEL 7 PLAN - EAST
	A377L	LEVEL 7 ENLARGED PLAN - AREA 'G'
	A385L	ROOF PLAN - OVERALL
	A675L	LEVEL 7 REFLECTED CEILING PLAN - EAST
	A702L	LEVEL 7 DOOR & OPENING SCHEDULES
	A805L	CASEWORK & LAB DETAILS
	A870L	LEVEL 7 INTERIOR ELEVATIONS
	A905L	MATERIAL LEGEND & FINISH SCHEDULE
	A906L	SIGNAGE PLAN
	A970L	FINISH PLAN - LEVEL 7 EAST
STRUCTURAL	S101L	GENERAL NOTES, PLANS, AND DETAILS
FIRE PROTECTION	FP000L	FIRE PROTECTION SYMBOLS AND ABBREVIATIONS
	FP373L	LEVEL 7 - FIRE PROTECTION NEW WORK PLAN - EAST
	FP374L	LEVEL 7 - FIRE PROTECTION NEW WORK PLAN - EAST AS-BUILT
	FP502L	FIRE PROTECTION DETAILS
PLUMBING	P000L	PLUMBING SYMBOLS AND ABBREVIATIONS
	P272L	LEVEL 7 - PLUMBING DEMOLITION PLAN - EAST
	P375L	LEVEL 7 - PLUMBING NEW WORK PLAN - EAST
	P376L	LEVEL 7 - PLUMBING LAB GAS NEW WORK PLAN - EAST
	P501L	LEVEL 6 - PLUMBING DETAILS
	P601L	LEVEL 6 - PLUMBING SCHEDULES
MECHANICAL	M001L	MECHANICAL SYMBOLS AND ABBREVIATIONS
	M275L	LEVEL 7 - MECHANICAL DUCTWORK DEMO PLAN - EAST
	M276L	LEVEL 7 - MECHANICAL PIPING DEMO PLAN - EAST
	M375L	LEVEL 7 - MECHANICAL DUCTWORK NEW WORK PLAN - EAST
	M376L	LEVEL 7 - MECHANICAL PIPING NEW WORK PLAN - EAST
	M383L	ROOF DEMOLITION & NEW WORK PLAN - EAST
	M505L	MECHANICAL DETAILS
	M506L	MECHANICAL DETAILS
	M606L	MECHANICAL SCHEDULES
	M713L	MECHANICAL CONTROLS
	M714L	MECHANICAL CONTROLS
	M715L	MECHANICAL CONTROLS
ELECTRICAL	E010L	7E - ELECTRICAL GENERAL NOTES & LEGEND
	E175L	LEVEL 7 PLAN - ELECTRICAL DEMO - EAST
	E275L	LEVEL 7 PLAN - LIGHTING - EAST
	E375L	LEVEL 7 PLAN - POWER - EAST
	E475L	LEVEL 7 PLAN - HVAC POWER - EAST
	E485L	ROOF PLAN - HVAC POWER - EAST
	E675L	7E - ELECTRICAL DETAILS
	E676L	7E - ELECTRICAL DETAILS
	E775L	7E - RISER DIAGRAM - DEMOLITION
	E776L	7E - RISER DIAGRAM - NEW WORK
	E805L	7E - LUMINAIRE AND CONTROL SCHEDULES
	E875L	PANELBOARD SCHEDULES LEVEL 7
	E876L	PANELBOARD SCHEDULES LEVEL 7
FIRE ALARM	FA175L	LEVEL 7 PLAN - FIRE ALARM - EAST

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RANDALL STEVEN CRAMER
NUMBER A-2007007722
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7/8/2025

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BOB D. CAMPBELL & CO, INC.
Structural Engineers
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MO STATE CERTIFICATE OF AUTHORITY #2006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

COVER

DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
SHEET #: **A003L**

Author
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/LM SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
6/30/2025 5:06:01 PM

ABBREVIATIONS

℄	Angle
℄	Center Line
[	Channel

A

AT.	Acoustic Tile
ADA or ADAAG	Americans with Disabilities Act Accessibility Guidelines
AD	Area Drain
ADJ.	Adjustable
AFF.	Above Finish Floor
AHU	Air Handling Unit
ALT.	Alternate
ALUM.	Aluminum
ASA	American Standards Association Inc.
ASTM	American Society for Testing Materials
AUTO.	Automatic
AUX.	Auxiliary
AVG.	Average

B

BD.	Board
BLDG.	Building
BLK.	Block
BLKG.	Blocking
BLT-IN	Built-in
B.M.	Bench Mark
BM.	Beam
B.O.F.	Bottom of Footing
BOT.	Bottom
BRG.	Bearing
BSMT.	Basement

C

CAB.	Cabinet
C.B.	Catch Basin
CHAM.	Chamfer
CFCI	Contractor Furnished, Contractor Installed
C.I.P.	Cast In Place
CG	Corner Guard
CHEM.	Chemical
CJ	Control Joint
C.L.	Center Line
CLNG.	Ceiling
CM	Construction Manager
CMU	Concrete Masonry Unit
C.O.	Clean Out
COL.	Column
COMP.	Composition
CONC.	Concrete
CONF.	Conference
CONT.	Continuous
CONTR.	Contractor
COR.	Corner
CP	Carpet
CPT.	Carpet Tile
C.T.	Continued
CTD.	Ceramic Tile
CU	Condensing Unit
C.W.	Cold Water
CWALL	Curtain Wall
CYL.	Cylinder

D

D.B.	Decibel
DBL.	Double
DET.	Detail
D.F.	Drinking Fountain
DIA.	Diameter
DIM.	Dimension
DN.	Down
DR.	Door
D.S.	Downspout
DUP.	Duplicate
DWG.	Drawing
DWL.	Dowel

E

E.H.	Electric Heater
EJ.	Expansion Joint
ELEV.	Elevator
ENTR.	Entrance
EP	Electrical Panelboard
EQ.	Equall
EWC.	Electric Water Cooler
EWH.	Electric Water Heater
EXH.	Exhaust
EXP.	Expansion
EP.	Epoxy Paint
ELEC.	Electrical
EXIS.	Existing

F

F	Finished Filler (casework)
F.A.	Fire Alarm
FB	Face Brick
FC	Footcandle
F.D.	Floor Drain
FDN.	Foundation
FEC	Fire Extinguisher Cabinet
F.F.	Finish Floor
F.F.E.	Finish Floor Elevation
F.H.C.	Fire Hose Cabinet
F.HYD.	Fire Hydrant
FIN.	Finish
F.O.	Face of
F.O.M.	Face of Masonry
F.O.S.	Face of Stud
F.O.W.	Face of Wall
F.P.	Fireproof
FR.	Frame
FRD.	Fire Damper
F.S.	Full Size
FT.	Foot or Feet
FTG.	Footing
FUR.	Furring
F.V.	Field Verify

G

GA.	Gauge
GAL.	Gallon
GALV.	Galvanized
G.C.	General Contractor
GSKT.	Gasket
GL.	Glass / Glazing
GFRC.	Fiberglass-Reinforced
GND.	Concrete
GPM.	Ground
GR.	Gallons per Minute
GT.	Grade
GYP.	Grout
	Gyosum

H

H.B.	Hose Bibb
H.C.	Hollow Core
HD.	Head
HDCP.	Handicapped (Accessible)
HDR.	Header
HDW.	Hardware
HDWD.	Hardwood
HM.	Hollow Metal
HP.	High Pressure
H.PT.	High Point
HR.	Hour
HT.	Height
HTG.	Heating
HTR.	Heater
HVAC	Heating, Vetilation & Air Conditioning
H.W.	Hot Water
HSS	Hollow Structural Shape
HAZ.	Hazardous

I

I.D.	Inside Diameter
INCAN.	Incandescent
INFO.	Information
INT.	Interior
IRREG.	Irregular
IGU.	Insulated Glass Unit

J

JAN.	Janitor
JCT.	Junction
JST.	Joist
JT.	Joint

K

K.D.	Kiln Dried
K.O.	Knock Out
KPL.	Kickplate

L

LAM.	Laminate(d)
LAV.	Lavatory
LBS. or #	Pounds
LIN.	Linear
L.L.	Live Load
L.PT.	Low Point
LVR.	Louver
LW.	Lightweight

M

M	Meter(s)
MACH.	Machine
MAINT.	Maintenance
MAS.	Masonry
MATL.	Material(s)
MAX.	Maximum
MECH.	Mechanical
MED.	Medium
MEP	Mechanical, Electrical, & Plumbing
MFR.	Manufacture(r)
M.H.	Manhole
MIN.	Minimum
MISC.	Miscellaneous
MM	Millimeter(s)
M.O.	Masonry Opening
M.R.	Moisture Resistant
MTD.	Mounted
MTG.	Meeting
MTL.	Metal
MULL.	Mullion

N

NO. or #	Number
NOM.	Nominal
NRC.	Noise Reduction Coefficient
NTS.	Not To Scale

O

O.C.	On Center
O.D.	Outside Diameter
OFD.	Overflow Drain
OFCI	Owner Furnished, Contractor Installed
OFOI	Owner Furnished, Owner Installed
OPG.	Opening
OPHD.	Opposite Hand
OPP.	Opposite
OTO.	Out to Out
OTS.	Open To Structure

P

PEMB.	Pre-engineered Metal Building
PFN.	Prefinished
PLAT.	Platform
PLUM.	Plumbing
PNL.	Panel
POL.	Polished
PR.	Pair
PRCST.	Precast
PREFAB	Prefabricated
PRELIM.	Preliminary
PRF.	Preformed
PROJ.	Projection
PT.	Point
PTD.	Painted
PTN.	Partition
PVC	Polyvinyl Chloride
PVT.	Private

Q

QT.RND.	Quarter-Round
QTY.	Quantity

R

RAD.	Radius
R.B.	Rubber Base
RCP.	Reflected Ceiling Plan
R.D.	Roof Drain
RE:	Reference
REBAR	Reinforcing Bar
RECP.	Receptacle
REF.	Reference
REG.	Register
REINF.	Reinforcement(ed)
REQD.	Required
REV.	Revision
RM.	Room
RND.	Round
R.O.	Rough Opening
R.O.W.	Right of Way

S

S.C.	Solid Core
SCHED.	Schedule
SCN.	Screen
S.D.	Storm Drain
SECT.	Section
SEW.	Sewer
SF	Square Foot / Feet
SHT.	Sheet
SHWR.	Shower
SIM.	Similar
S.M.	Sheet Metal
SPEC.	Specification(s)
SPK.	Speaker
SPKLR.	Sprinkler
SP.BL.	Splash Block
SQ.	Square
SS	Stainless Steel
SSG.	Structural Silicone Glazing
SSRF.	Solid Surface
ST.	Stair
STAG.	Staggered
STC.	Sound Transmission Coefficient
STD.	Standard
STGR.	Stringer
STL.	Steel
STO.	Storage
STOR.	Storage
STRUC.	Structural
SUBFL.	Subfloor
SUSP.	Suspended

T

T&G	Tongue & Groove
TAN.	Tanget
TEL.	Telephone
TEMP.	Temperature / Tempered
THK.	Thick
T.O.C.	Top of Concrete / Curb
T.O.S.	Top of Slab / Steel
TYP.	Typical

U

UNEX.	Unexcavated
UNFIN.	Unfinished
U.N.O.	Unless Noted Otherwise
U.O.N.	Unless Otherwise Noted
UPS	Uninterrupted Power Supply

V

VNR.	Veneer

W

W	W-shape Steel Beam
W/	With
W/I	Within
W/O	Without
WD.	Wood
WDW.	Window
W.V.	Wall Vent
WWF.	Welded Wire Fabric
WG	Wall Guard

SYMBOL LEGEND

KEYNOTES
BOXED NOTE INDICATES ASSOC. SPECIFICATION SECTION
(09200) GYP. BOARD

CALLOUTS
SIM. 1/ A101 — CONSTRUCTION IS SIMILAR TO REFERENCED DETAIL
1 A101 — DETAIL # ON SHEET
1 A101 — SHEET #

STRUCTURAL GRIDS
0 EXIS. GRID
A.1 NEW GRID

FLOOR LEVEL
LEVEL X 100'-0"

NORTH ARROW
PLAN NORTH
TRUE NORTH
NORTH NORTH

GRAPHIC SCALE
0 20' - 0"
0 10' - 0" 30' - 0"
SCALE: 1" = 10' - 0"

SECTION CUTS
1 A101 BUILDING SECTION
1 A101 WALL SECTION
1 A101 SECTION DETAIL

SPOT ELEVATION
97'-0"

DOOR TAGS (BOXED OR UNBOXED)
###-X ###-X

WINDOW TAGS (BOXED OR UNBOXED)
A A

GLAZING TAGS (BOXED OR UNBOXED)
3 3

CASEWORK TAG
LEGEND NOTATION / PLAN / ELEV. NOTATION
CASEWORK TYPE
WIDTH

PARTITION TAG
(SEE WALLTYPE DETAILS ON SHEET A1.50 FOR DETAILS)
SIZE, MATERIAL, TYPE
HEAD & CONSTRUCTION DESCRIPTORS

ROOM TAGS
Room name 101 150 SF
Room name 101

CEILING TAG
+1'-0" HT. ABOVE FLOOR LEVEL
+1'-0" CLNG. TYPE — TYPE PER FINISH SCHED.

DRAWING TITLE
VIEW TITLE
VIEW SCALE
X# — NAME, NUMBER ON SHEET, SCALE

MATERIAL PATTERNS

ALUMINUM	PLASTIC
BATT INSUL.	PLYWOOD
BRASS	RIGID INSUL.
BRICK / MASONRY	ROCK
CAST STONE	RUBBLE
CLAY	SAND
CONCRETE	SHINGLE ROOFING
CONC. MASONRY (CMU)	STONE (Ashlar Veneer)
EARTH	STONE (Section)
FILL - GRANULAR	STONES (Random)
FILL - SOILS	STEEL
GRAVEL	
GROUT / MORTAR	WOODS (Finished)
GYP. BD. or PLASTER	
MEMBRANE ROOFING	WOODS (Rough)
METAL	
N.I.C. / NO WORK	WINDOW FILM

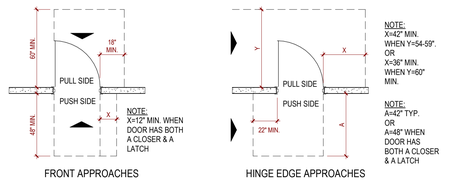
KEYNOTE ANNOTATIONS

GENERAL NOTES:
KEYNOTES ARE PROVIDED THROUGHOUT THE DRAWINGS TO INDICATE WHERE MORE INFORMATION IS DEFINED ON SPECIFIC COMPONENTS, FINISHES, EQUIPMENT, AND/OR ASSOCIATED ASSEMBLIES.

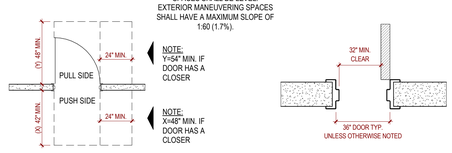
KEYNOTES DO NOT INDICATE OR LIMIT A SPECIFIC TRADES SCOPE OF WORK, NOR DO THEY RELIEVE ANY REQUIREMENTS TO REVIEW THE ENTIRE SET OF CONTRACT DOCUMENTS FOR PERTINENT INFORMATION TO WORK BEING PERFORMED.

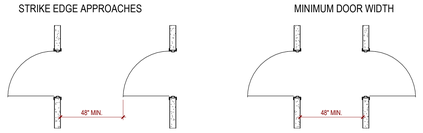
KEYNOTES LIST 7TH FLOOR

KEYNOTE	SPEC TITLE
024119	SELECTIVE DEMOLITION
025129	SURFACE CLEANING DECONTAMINATION
033000	MISCELLANEOUS CAST-IN PLACE CONCRETE
033511	CONCRETE FLOOR FINISHES
042200	CONCRETE UNIT MASONRY
055000	METAL FABRICATIONS
055200	PIPE & TUBE RAILINGS
061053	MISCELLANEOUS ROUGH CARPENTRY
064116	PLASTIC LAMINATE CLAD ARCHITECTURAL CABINETS
070150	PREPARATION FOR ROOFING REPAIR
072100	THERMAL INSULATION
076200	SHEET METAL FLASHING
078413	PENETRATION FIRESTOPPING
079200	ACOUSTICAL JOINT SEALANTS
081113	HOLLOW METAL DOORS AND FRAMES
081416	FLUSH WOOD DOORS
083113	ACCESS DOORS AND FRAMES
087100	DOOR HARDWARE
088000	GLAZING
092116	GYPSUM BOARD SHAFT WALL ASSEMBLIES
092216	NON STRUCTURAL METAL FRAMING
093013	CERAMIC TILING
095113	ACOUSTICAL PANEL CEILINGS
096513	RESILIENT BASE AND ACCESSORIES
096519	RESILIENT TILE FLOORING
096723	RESINOUS FLOORING REPAIR
096813	TILE CARPETING
098433	SOUND ABSORBING WALL UNITS
099123	INTERIOR PAINTING
101100	VISUAL DISPLAY UNITS
101400	PANEL SIGNAGE
102113	TOILET COMPARTMENT
102600	WALL AND DOOR PROTECTION
102800	TOILET ACCESSORIES
104413	FIRE PROTECTION CABINETS
104416	FIRE EXTINGUISHERS
105113	METAL LOCKERS
115300	LABORATORY EQUIPMENT
115313	LABORATORY FUME HOODS
123553	LABORATORY CASEWORK
123653	LABORATORY WORKSURFACES
123661	SOLID SURFACE COUNTERTOPS
130300	CONTROLLED ENVIRONMENT ROOMS
ELEC	ELECTRICAL
EXIST	EXISTING
MECH	REFER TO MECHANICAL DOCUMENTS
MEP	REFER TO MECHANICAL; ELECTRICAL; PLUMBING DOCUMENTS
PLUMB.	PLUMBING FIXTURE, RE: PLUMBING DWGS.

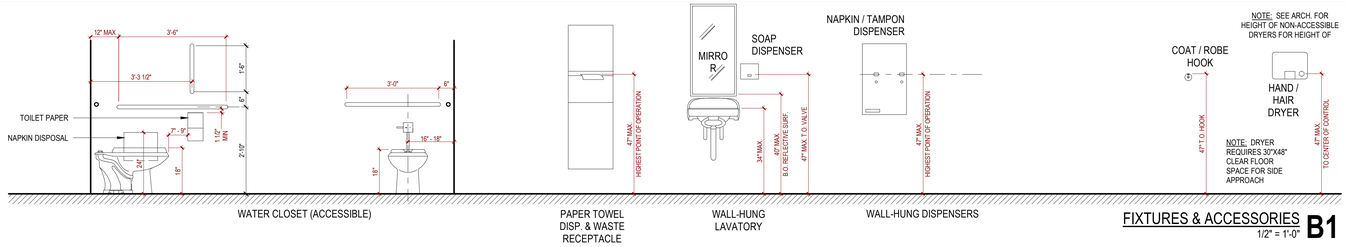


NOTE: INTERIOR MANEUVERING SPACES SHALL BE LEVEL. EXTERIOR MANEUVERING SPACES SHALL HAVE A MAXIMUM SLOPE OF 1:60 (1.7%).



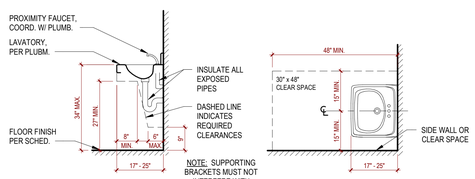


DOOR CLEARANCES A5
1/2" = 1'-0"

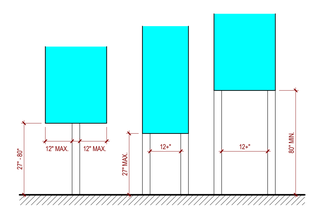


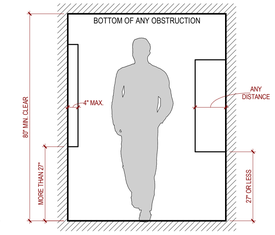
FIXTURES & ACCESSORIES B1
1/2" = 1'-0"

2010 ADA STANDARDS TYPICAL MIN. DIMENSIONS GENERAL NOTES.
1. THESE DIAGRAMS DEPICT MIN. DIMENSIONS AS REQUIRED BY THE AMERICANS WITH DISABILITIES ACT GUIDELINES PUBLISHED 2010.
2. GENERAL CONTRACTOR IS TO REVIEW FIELD LAYOUT AGAINST THESE MIN. DIMENSIONS AND NOTIFY ARCHITECT IF MINIMUM DIMENSIONS ARE ENCROACHED UPONG PRIOR TO INSTALLATION.
3. NOT ALL ADAAG DIAGRAMS SHOWN HERE MAY PERTAIN TO THIS PROJECT.



LAVATORY CLEARANCES A2
1/2" = 1'-0"





PROTRUDING OBJECTS A1
1/2" = 1'-0"

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RANDALL STEVEN CRAMER
NUMBER A-2007031792
ARCHITECT
7/8/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

GENERAL INFORMATION

DATE:	07/08/2025
DRAWN: Author	CHECKED: Checker
PGAV # 53660-20	CLIENT # CP2400920
SHEET #	A105L

Author
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU-SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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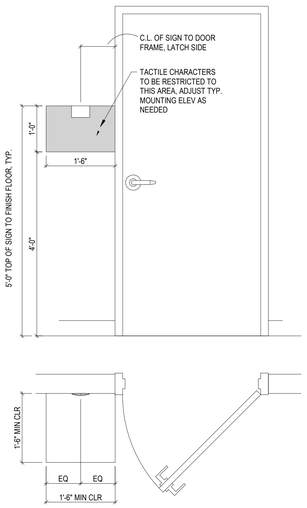
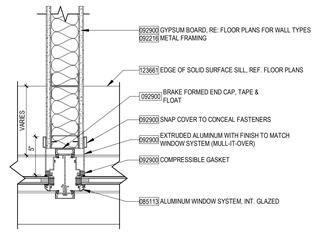
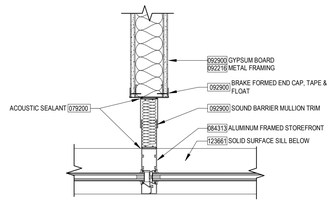


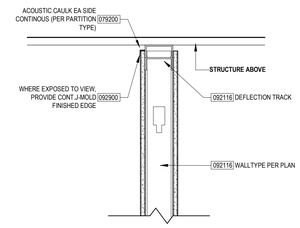
SIGNAGE INSTALLATION D5
3/4" = 1'-0"



TYP. WALL TO FIXED WINDOW DETAIL D4
1 1/2" = 1'-0"

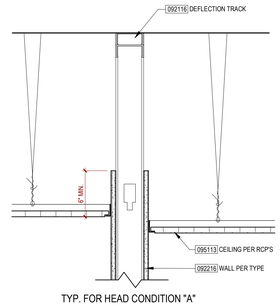


TYP. WALL TO STOREFRONT DETAIL D3
1 1/2" = 1'-0"



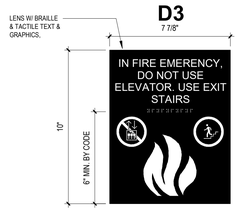
HEAD DETAIL - WALL UP TO STRUCTURE ABOVE

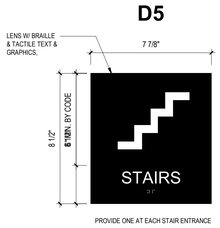
GYP HEAD OF WALL TO STRUCTURE D2
1 1/2" = 1'-0"

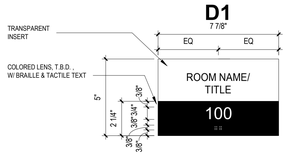


TYP. FOR HEAD CONDITION "A"

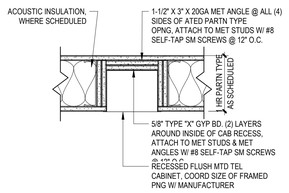
GYP HEAD OF WALL - SUSPENDED CEILING D1
1 1/2" = 1'-0"



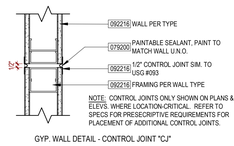




SIGNAGE TYPES C4
3" = 1'-0"

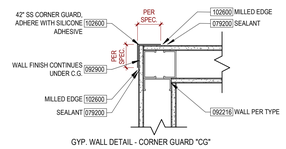


RECESSED ELEC CAB. C3
1 1/2" = 1'-0"



GYP. WALL DETAIL - CONTROL JOINT "CJ"

GYP WALL - CONT. JOINT "CJ" C2
1 1/2" = 1'-0"



GYP. WALL DETAIL - CORNER GUARD "CG"

GYP WALL - CORNER GUARD "CG" C1
1 1/2" = 1'-0"

GENERAL PARTITION NOTES

APPLIED FINISH MATERIALS

APPLIED FINISHES INCLUDE, BUT ARE NOT LIMITED TO: PAINT, RESINOUS COATINGS, ACOUSTICAL WALL PANELS, AND WOOD MILLWORK TRIM.

GENERALLY, WALL TYPES DO NOT INCLUDE OR SHOW ANY APPLIED FINISHES; (WALL TYPES WITH WOOD PANEL AND/OR OTHER VENEERS MAY BE CREATED). SEE FINISH SCHEDULE AND INTERIOR ELEVATIONS FOR MATERIALS TO BE INSTALLED OVER THE BASIC PARTITION ASSEMBLY.

THE CONTRACTOR SHALL COORDINATE DIMENSIONAL LAYOUT WITH APPLIED FINISH THICKNESS WHERE CLEAR OR MINIMUM CLEAR DIMENSIONS ARE REQUIRED

THE CONTRACTOR SHALL COORDINATE ANY ADDITIONAL REQUIREMENTS WITHIN WALL FRAMING NECESSARY FOR APPLIED FINISH MATERIALS.

FIRE-RATED & SMOKE-RATED WALLS

FIRE/SMOKE SEALANTS AND/OR FIRE SAFING IS REQUIRED AT RATED PARTITIONS WHERE THE PARTITION JAMB CONDITIONS INTERFACE WITH DISSIMILAR MATERIALS OR WHERE FIRE TAPING AT THE INTERFACE OF MATERIALS IS NOT POSSIBLE.

FIRE SEALANTS ARE NOT REQUIRED AT THE BASE/SILL CONDITION OF PARTITIONS.

WHERE A FIRE-RATED PARTITION IS ALSO NOTED TO HAVE ACOUSTICAL ELEMENTS, FIRE SEALANTS AND/OR FIRE SAFING SHALL BE PROVIDED IN LIEU OF ACOUSTICAL SEALANTS. ACOUSTICAL SEALANT SHALL BE PROVIDED AT THE BASE/SILL OF PARTITIONS.

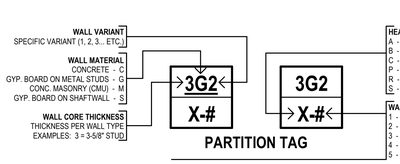
GYPSUM BOARD

GYPSUM BOARD IS TYPICALLY 5/8" TYPE 'X', UNLESS NOTED OTHERWISE.

PROVIDE **MOISTURE-RESISTANT OR CEMENTITOUS BOARDS** WHERE REQUIRED IN GYPSUM BOARD SPECIFICATION 092900 AND WHERE NOTED IN THE DRAWINGS.

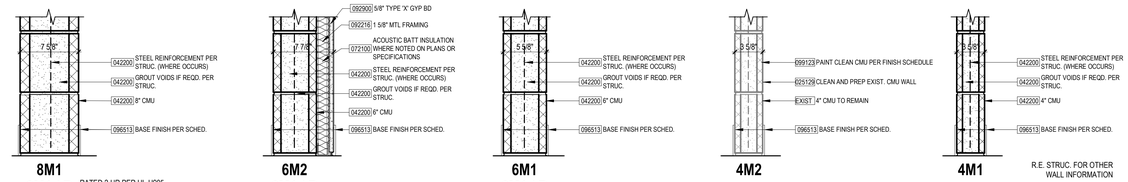
PROVIDE **IMPACT-RESISTANT BOARDS** WHERE REQUIRED IN THE GYPSUM BOARD SPECIFICATION 092900 AND WHERE NOTED IN THE DRAWINGS.

PARTITION DESIGNATIONS

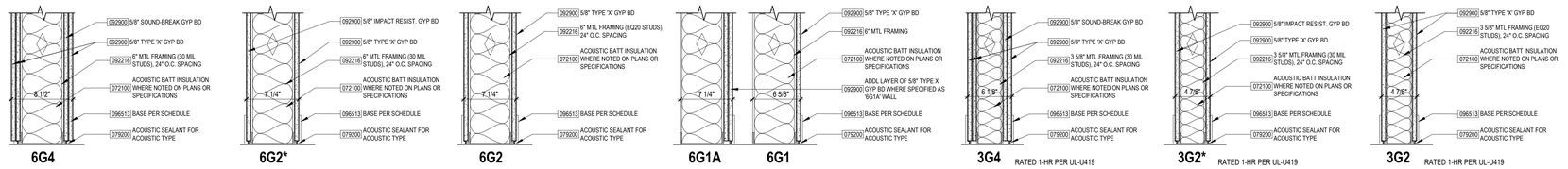


HEAD CONSTRUCTION
A - EXTEND TO 6" ABOVE CEILING HEIGHT.
B - FULL-HEIGHT WALL, EXTEND TO DECK OR BEAM ABOVE.
C - FULL-HEIGHT WALL, FRAMED WITH COLD-FORMED METAL STUDS PER SPEC. 054000.
P - PARTIAL-HEIGHT WALL. HEIGHT AS NOTED ON PLAN OR ON DETAIL.
R - FULL-HEIGHT, **FIRE-RATED WALL**, SEALED TO STRUC. ABOVE PER FIRE ASSEMBLY.
S - SPECIAL HEAD CONDITION, PER DETAIL.

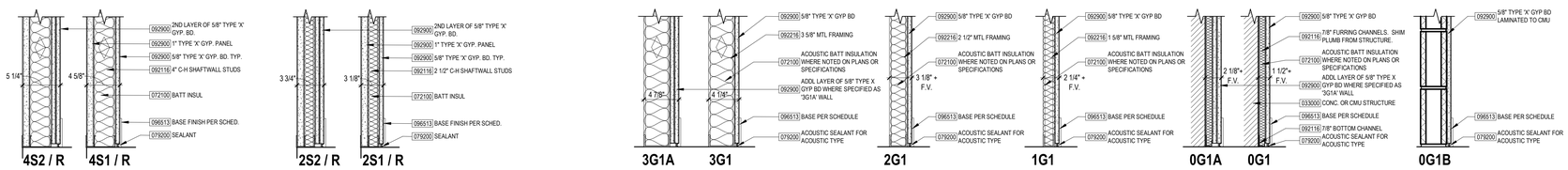
WALL ADDITIONS (WHERE APPLICABLE)
1 - ACOUSTIC ASSEMBLY W/ BATT INSULATION & SEALANT. STUD SPACING AT 24" O.C.
2 - THERMAL INSULATION, FULL-DEPTH OF STUD CAVITY U.N.O.
3 - SMOKE PARTITION, SEAL WALL PERIMETER & PENETRATIONS.
4 - IMPACT RESISTANT GYP. BOARD FROM FLOOR TO 48" ABOVE FLOOR MINIMUM.
5 - SPECIAL TREATMENT, PER NOTES.



'M' PARTITIONS

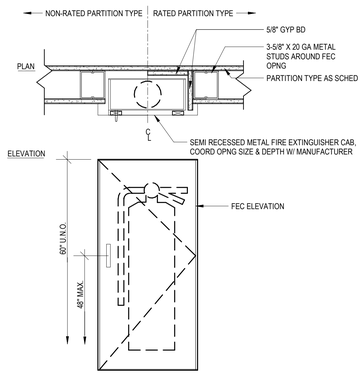


'G' PARTITIONS



'S' PARTITIONS

'G' PARTITIONS



FIRE EXTINGUISHER CAB A5
1 1/2" = 1'-0"

PGAV ARCHITECTS
PECKHAM GUYTON ALBERS & VIETS, INC.
1900 s 47th Place, #300, Westwood, KS 66205
(913) 362-6500 www.PGAV.COM

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7/8/2025

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MO STATE CERTIFICATE OF AUTHORITY #000086

Introba
INTROBA, INC.
Mechanical and Plumbing Engineers
6 South Old Orchard
St louis, MO 631 19 (314) 918 8383
MO STATE CERTIFICATE OF AUTHORITY #2023008136

Antella
ANTELLA CONSULTING ENGINEERS, INC.
Electrical Engineers
1600 Genessee St. Suite 733
Kansas City, MO 64102 (816) 421-0950
MO STATE CERTIFICATE OF AUTHORITY #2005013590

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BOB D. CAMPBELL & CO, INC.
Structural Engineers
4338 Belleview Avenue
Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #2006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced. 0" 1"

TYPICAL PARTITIONS & INTERIOR DETAILS

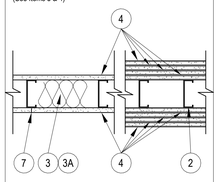
DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
SHEET # **A106L**

Autodesk Docs://53660-10 MU-SCNC MSB Lab Renovations/MU-SCNC_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
6/27/2025 5:51:58 AM
Author

Design No. U419

October 27, 2005

Nonbearing Wall Ratings -- 1, 2, 3 or 4 Hr
(See Items 3 & 4)



1. **Floor and Ceiling Runners** -- (Not shown) -- Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

2. **Steel Studs** -- Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width as indicated under Item 4, min 1-1/4 in. flanges and 1/4 in. return, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

3. **Batts and Blankets*** -- (Required as indicated under Item 4) -- Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 4. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

3A. **Batts and Blankets*** -- (Optional) -- Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

4. **Gypsum Board*** -- Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Wallboard Protection on Each Side of Wall

Rating	Min Stud Depth	No. of Layers & Thkns of Panel	Min Thickness of Insulation (Item 3)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

CANADIAN GYPSUM COMPANY -- 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE
UNITED STATES GYPSUM CO -- 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in.thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Types IP-X3 or ULTRACODE
USG MEXICO S A DE C V -- 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 6B, Steel Framing Members*, is used, Nonbearing Wall Rating is limited to 1 Hr; Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 3) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 5. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 5.

4A. **Gypsum Board*** -- (As an alternate to Item 4) -- 5/8 in. thick, 2 ft. wide, tongue and groove edge, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 5. Joint covering (Item 7) not required.

CANADIAN GYPSUM COMPANY -- Type SHX.
UNITED STATES GYPSUM CO -- Type SHX.
USG MEXICO S A DE C V -- Type SHX.

5. **Fasteners** -- (Not shown) -- Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 6). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. Two layer systems: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. Three-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. Four-layer systems: First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6. **Furring Channels** -- (Optional, not shown, for single or double layer systems) -- Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 4A.

6A. **Steel Framing Members** (Not Shown)* -- (Optional on one or both sides, not shown, for single or double layer systems) -- As an alternate to Item 6, furring channels and Steel Framing Members as described below:
a. Furring Channels -- Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 5. Not for use with Item 4A.
b. Steel Framing Members* -- Used to attach furring channels (Item 6Aa) to studs (Item 2). Clips spaced max. 48 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.

PAC INTERNATIONAL INC -- Type RSIC-1.

6B. **Steel Framing Members** (Optional, Not Shown)* -- As an alternate to Item 6, furring channels and Steel Framing Members on only one side of studs as described below:
a. Furring Channels -- Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Batts and Blankets placed in stud cavity as described in Item 4. Two layers of gypsum board attached to furring channels as described in Item 4. Not for use with Item 4A.
b. Steel Framing Members* -- Used to attach furring channels (Item 6Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.

KINETICS NOISE CONTROL INC -- Type Isomax

7. **Joint Tape and Compound** -- Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

8. **Siding, Brick or Stucco** -- (Optional, not shown) -- Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

9. **Caulking and Sealants*** -- (Optional, not shown) -- A bead of acoustical sealant applied around the partition perimeter for sound control.

UNITED STATES GYPSUM CO -- Type AS

*Bearing the UL Classification Mark

Design No. U415

February 03, 2006

Nonbearing Wall Ratings -- 1, 2, 3 or 4 Hr

1. **Floor, Side and Ceiling Runners** -- "J" - shaped runner, min 2-1/2 in. deep (min 4 in. deep when System C is used), with unequal legs of 1 in. and 2 in., fabricated from min 24 MSG (min 20 MSG when Item 4A or 7 are used) galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC. "E" - shaped studs (Item 2A) may be used as side runners in place of "J" - shaped runners.

2. **Steel Studs** -- "C-H" - shaped studs, min 2-1/2 in. deep (min 4 in. deep when System C is used), fabricated from min 25 MSG (min 20 MSG when Item 2D or Item 7 is used) galv steel. Cut to lengths 3/8 to 1/2 in. less than floor-to-ceiling height and spaced 24 in. or 600 mm OC.

2A. **Steel Studs** -- (Not Shown) -- "E" - shaped studs installed back to back in place of "C-H" - shaped studs (Item 2) "E" - shaped studs secured together with steel screws spaced a maximum 12 in. OC. Fabricated from min 25 MSG (min 20 MSG when Item 2D or Item 7 is used) galv steel, min 2-1/2 in. deep (min 4 in. deep when System C is used), with one leg 1 in. long and two legs 3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 to 1/2 in. less than floor to ceiling heights.

2B. **Furring Channels** -- (Optional, not shown) -- For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG corrosion protected steel, installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting "C-H" or "E" stud on side of stud opposite the 1 in. liner panels with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically only. Not to be used with Type FRX or FRX-G gypsum wallboard (Item 4A) or cementitious backer units (Item 7).

2C. **Furring Channels** -- For use with System I - "Hat" - shaped, 25 MSG galv steel furring channels attached directly over the inner layers of wallboard to each stud with 2 in. long Type S pan head steel screws. Screws alternate from top flange to bottom flange at each stud intersection. Furring channels spaced vertically max 24 in. OC.

2D. **Steel Framing Members*** -- (Optional, not shown) -- For use with single or double layer systems. Furring channels and Steel Framing Members as described below. Not to be used with Type FRX or FRX-G gypsum wallboard (Item 4A) or cementitious backer units (Item 7).
a. Furring Channels -- Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board installed vertically only and attached to furring channels as described in Item 5.
b. Steel Framing Members* -- Used to attach furring channels (Item 2Da) to studs (Item 2 or 2A). Clips spaced max. 24 in. OC., and secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.

PAC INTERNATIONAL INC -- Type RSIC-1.

3. **Gypsum Board*** -- Gypsum liner panels, nom 1 in. thick, 24 in. or 600 mm (for metric spacing) wide. Panels cut 1 in. less in length than floor to ceiling height. Vertical edges inserted in "H" portion of "C-H" studs or the gap between the two 3/4 in. legs of the "E" studs. Free edge of end panels attached to long leg of vertical "J" - runners with 1-5/8 in. long Type S steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of the wall. Horizontal joints need not be backed by steel framing. In System I, butt joints in liner panels are staggered min 36 in. Butt joints backed with 6 in. by 22 in. strips of 3/4 in. thick gypsum wallboard (Item 4). Wallboard strips centered over butt joints and secured to liner panels with six 1-1/2 in. long Type G steel screws, three screws along the 22 in. dimension at the top and bottom of the strips.

CANADIAN GYPSUM COMPANY -- Type SLX
UNITED STATES GYPSUM CO -- Type SLX
USG MEXICO S A DE C V -- Type SLX

4. **Gypsum Board*** --

System A - 1 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. when installed vertically or 8 in OC when installed horizontally. Horizontal joints need not be backed by steel framing.

CANADIAN GYPSUM COMPANY -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System B - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in two layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 12 in. OC when installed vertically and staggered 12 in. from base layer screws or 8 in. OC when installed horizontally and staggered 8 in. from base layer screws. Horizontal joints between inner and outer layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in.

CANADIAN GYPSUM COMPANY -- 1/2 in. Type C, IP-X2, IPC-AR or WRC;5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- 1/2 in. Types C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- 1/2 in. Types C, IP-X2, IPC-AR or WRC;5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System C - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, secured with 1-1/4 in. long Type S steel screws spaced 8 in. OC along vertical edges and 12 in. OC in the field when installed vertically or 8 in. OC along the vertical edges and in the field when installed horizontally. Horizontal joints need not be backed by steel framing. Screws along side joints offset 4 in. Requires min 4 in. deep framing per Items 1, 2 and 3. Requires min 3 in. thick mineral wool batts per Item 6.

CANADIAN GYPSUM COMPANY -- Types IP-X3, or ULTRACODE
UNITED STATES GYPSUM CO -- Types IP-X3, or ULTRACODE
USG MEXICO S A DE C V -- Types IP-X3, or ULTRACODE

System D - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached directly to studs with 1 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. . Horizontal joints need not be backed by steel framing. Requires face layer of 1/2 or 5/8 in. thick cementitious backer units per Item 7 and min 1-1/2 in. thick mineral wool batts per Item 6.

CANADIAN GYPSUM COMPANY -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System E - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. OC when installed vertically or 8 in. when installed horizontally. Horizontal joints need not be backed by steel framing.

CANADIAN GYPSUM COMPANY -- 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- 1/2 in. Types C, IP-X2, IPC-AR; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- 1/2 in. Types C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System F - 2 Hr
Gypsum panels, with beveled, square or tapered edges, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically in two layers. Inner or base layer attached to resilient furring channels (Item 2B) with 1 in. long Type S steel screws spaced 24 in. Outer or face layer attached to resilient furring channels (Item 2B) with 1-5/8 in. long Type S steel screws spaced 12 in. OC and staggered 12 in. from base layer screws. Joints between inner and outer layers staggered 24 in.

CANADIAN GYPSUM COMPANY -- 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
UNITED STATES GYPSUM CO -- 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX
USG MEXICO S A DE C V -- 1/2 in. Type C, IP-X2, IPC-AR or WRC; 5/8 in. Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX

System G - 3 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in three layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in OC when installed horizontally. Middle layer attached to studs with 1-5/8 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 2-1/4 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY -- Types C, IP-X2, IPC-AR, WRC
UNITED STATES GYPSUM CO -- Types C, IP-X2, IPC-AR, WRC
USG MEXICO S A DE C V -- Types C, IP-X2, IPC-AR, WRC

System H - 3 Hr
Gypsum panels, with beveled, square or tapered edges, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, two layers over the flange of the "C" section of the studs, one layer over the flange of the "H" section of the studs. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. Horizontal joints need not be backed by steel framing. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY -- Types C, IP-X2, IPC-AR, WRC
UNITED STATES GYPSUM CO -- Types C, IP-X2, IPC-AR, WRC
USG MEXICO S A DE C V -- Types C, IP-X2, IPC-AR, WRC

System I - 4 Hr
Gypsum panels, with beveled, square or tapered edges, nom 3/4 in. thick, 4 ft wide (or 1200 mm for metric spacing) wallboard with square or tapered edges. Total of four layers to be used. First and second (inner) layers applied vertically or horizontally over the steel studs. Horizontal joints need not be backed by steel framing. When applied vertically, joints centered over studs and staggered min 24 in., otherwise all joints staggered min 12 in. First layer secured to studs with 1-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 24 in. OC. Second layer secured to studs with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Third layer applied vertically over the furring channels (Item 2C) with a 1-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. Fourth layer applied vertically or horizontally with 2-1/4 in. long Type S self-drilling, self-tapping bugle-head steel screws spaced 12 in. OC. When applied vertically, joints to be staggered min 24 in. from third layer, otherwise all joints staggered min 12 in.

CANADIAN GYPSUM COMPANY -- Types IP-X3, or ULTRACODE
UNITED STATES GYPSUM CO -- Types IP-X3, or ULTRACODE
USG MEXICO S A DE C V -- Types IP-X3, or ULTRACODE

5. **Joint Tape and Compound** -- (Not Shown)
Systems A, B, C, E, F, G, H, I
Joints on outer layers of gypsum boards (Item 4 and 4A) covered with paper tape and joint compound. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges. Exposed screw heads covered with joint compound.

6. **Batts and Blankets*** --
Systems A, B, E, F, G, H, I
(Optional) -- Mineral wool or glass fiber batts partially or completely filling stud cavity. Any mineral wool or glass fiber batt mineral bearing the UL Classification Marking as to Fire Resistance.

Systems C & D
Min 3 in. (System C) and min 1-1/2 in. (System D) thick mineral wool batts, friction fitted between the studs and floor and ceiling runners.

THERMAFIBER INC -- Type SAFB

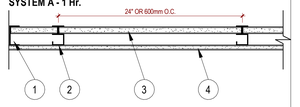
7. **Cementitious Backer Units*** -- (System D) -- Nom 1/2 or 5/8 in. thick panels, square edge, attached to studs over gypsum wallboard with 1-5/8 in. long, Type S-12, corrosion resistant steel screws spaced 8 in. OC and staggered 8 in. from gypsum wall board screws. Joints covered with glass fiber mesh tape. Vertical joints staggered one stud cavity from gypsum wallboard joints. Horizontal joints staggered a min of 12 in. from the gypsum wallboard joints.

UNITED STATES GYPSUM CO -- DUROCK Exterior Cement Board or DUROCK Brand Cement Board.

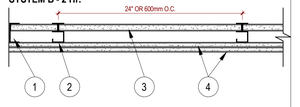
8. **Laminating Adhesive*** -- (Optional, Not Shown) -- Used to bond outer layer of Cementitious Backer Units (Item 7) to inner layers of Gypsum Board (Item 4) in System D. ANSI A136.1 Type 1 organic adhesive applied with 1/4 in. square notched trowel. See Adhesives (BYWR) in the Fire Resistance Directory or Adhesives (BJLZ) in the Building Materials Directory for names of Classified companies.

*Bearing the UL Classification Mark

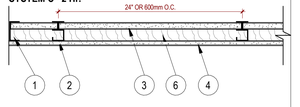
SYSTEM A - 1 Hr.



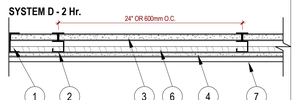
SYSTEM B - 2 Hr.



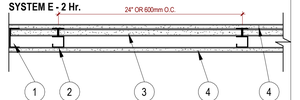
SYSTEM C - 2 Hr.



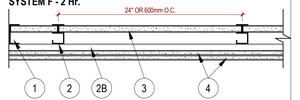
SYSTEM D - 2 Hr.



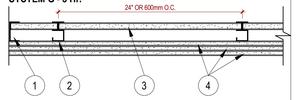
SYSTEM E - 2 Hr.



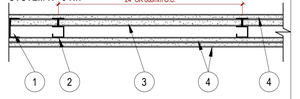
SYSTEM F - 2 Hr.



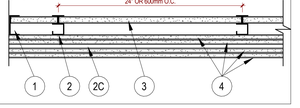
SYSTEM G - 3 Hr.



SYSTEM H - 3 Hr.



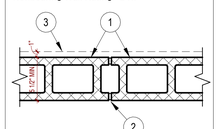
SYSTEM I - 4 Hr.



Design No. U906

December 16, 2006

Bearing Wall Rating - 2 Hr
Nonbearing Wall Rating - 2 Hr



1. **Concrete Blocks*** -- Nominal 6 by 8 by 16 in, hollow or solid. Classification D-2 (2 Hr).
ANCHOR CONCRETE PRODUCTS, INC.
GAGNE & SONE CONCRETE BLOCK INC.
Allowable compressive stress of 57% of max. allowable compressive stress in accordance wiht the empirical design method.
BETCO BLOCK & PRODUCTS, INC. DBA ARTHUR WHITCOMB
WESTBROOK CONCRETE BLOCK CO. INC.
Allowable compressive stress of 57% of max. allowable compressive stress in accordance wiht the empirical design method.

2. **Mortar** -- Blocks laid in full bed of mortar, nom. 3/8-in. thick, of not less thann 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50-percent hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland Cement Stuccor or Gypsum Plaster (if used)** -- Adds 1/2-HR to Classification. Attached to concrete blocks (Item 1).

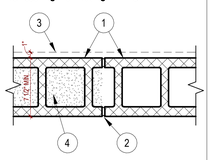
4. **Foamed Plastic* (Optional, Not Shown)** -- 1-1/2-in. thick max, 4-ft wide sheathing attached to concrete blocks (Item 1).
THE DOW CHEMICAL CO. - Type Thermax

* Bearing the UL Classification Mark

Design No. U905

December 16, 2006

**Bearing Wall Rating - 2 Hr & 4 Hr **
Nonbearing Wall Rating - 2 Hr & 4 Hr **



1. **Concrete Blocks*** -- Various designs. With UL-Approved Classification D-2 (2 hr).

2. **Mortar** -- Blocks laid in full bed of mortar, nom. 3/8-in. thick, of not less thann 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50-percent hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland Cement Stuccor or Gypsum Plaster (if used)** -- Adds 1/2-HR to Classification. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 HR. Attached to concrete blocks (Item 1).

4. **"Loose Masonry Fill (if used)** -- Add 2-HR to fire resistance rating, if all core spaces are filled with loose dry expanded slag, burned clay or shale (rotary-kiln process), water-repelant vermiculite masonry fill insulation, or silicone-treated perlite loose fill insulation.

5. **Foamed Plastic* (Optional, Not Shown)** -- 1-1/2-in. thick max, 4-ft wide sheathing attached to concrete blocks (Item 1).

* Bearing the UL Classification Mark

UL DESIGN U906 1 1/2" = 1'-0" **A4**

UL DESIGN U905 1 1/2" = 1'-0" **A3**

UL DESIGN U419 1 1/2" = 1'-0" **A2**

UL DESIGN U415 1 1/2" = 1'-0" **A1**

PGAV ARCHITECTS
PECKHAM GUYTON ALBERS & VIETS, INC.
1900 s 47th Place, #300, Westwood, KS 66205
(913) 362-6500
www.PGAV.COM

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RANDALL STEVEN CRAMER
NUMBER A-2007037752
ARCHITECT
7/8/2025

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Mechanical and Plumbing Engineers
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St Louis, MO 63119 (314) 918-8383
MO STATE CERTIFICATE OF AUTHORITY #2023008136

Antella
ANTELLA CONSULTING ENGINEERS, INC.
Electrical Engineers
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Kansas City, MO 64102 (816) 421-0950
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Structural Engineers
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Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #2006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

UL- RATED ASSEMBLIES

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A107L**

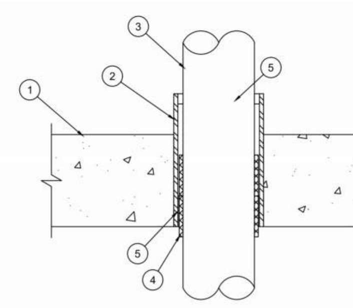
6/27/2025 8:52:01 AM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/M SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

Author

6 5 4 3 2 1

ENGINEERING JUDGMENT FIRESTOP DETAIL
F Rating - 2 HR

PMZ | Drawing No. NS109924027 | Rev. -



1. **Floor Assembly (2 Hr) -** Min 3-1/2" thick concrete floor assembly. Max diam of opening is 4".
2. **Sleeve -** Max 4" diam (or smaller) Sch 10 steel sleeve cast or grouted into floor assembly. Sleeve may extend max 2" above top surface of floor.
3. **Penetrant -** Max 3" diam (or smaller) Sch 40 PVC (open or closed). Annular space is nom 1/4".
4. **Wrap Strip -** Two stacks of one layer of SpecSeal® SSWBLU or SSWBLU2 Wrap Strip tightly wrapped around penetrant and escured in place with tape. Wrap strip stacks slid along penetrant into sleeve with end protruding nom 1/2" from bottom edge of sleeve. See UL System No. F-A-2077 for more detail.
5. **Sealant -** A generous bead of SpecSeal® SSS or LCI Sealant applied to leading edge of wrap strip stack prior to insertion into annulus. Sufficient sealant to be applied to wrap strip to fill annular space between wrap strip and sleeve. Additional sealant applied to a min 1/2" depth into top end of sleeve, flush with top end of sleeve.
6. **Sealant (Alternate, Not Shown) -** As an alternate to #5, SpecSeal® SIL300 Silicone Sealant may be used in top end of sleeve over min 2" thick mineral wool batt insulation recessed to accommodate sealant.

THIS DESIGN REPRESENTS A FIRESTOP SYSTEM EXPECTED TO PASS THE STATED RATINGS IF TESTED

Project: University of Missouri Medical Science	Signature: Carrie Meis	System Reference: F-A-2077, C-AJ-2282
Project Address: Columbia, Missouri 65203		
Designed by: Carrie Meis, Advanced Application Engineer		
Contractor/ Architect: Rebel Firestoppers	Scale: N.T.S.	Date: 4/8/2024 Page 1 of 1 — Based on testing to ASTM E814/UL1479: Standard for Fire Tests of Penetration Firestops

Specified Technologies Inc. — 210 Evans Way, Somerville, NJ 08876 USA, www.stifirestop.com

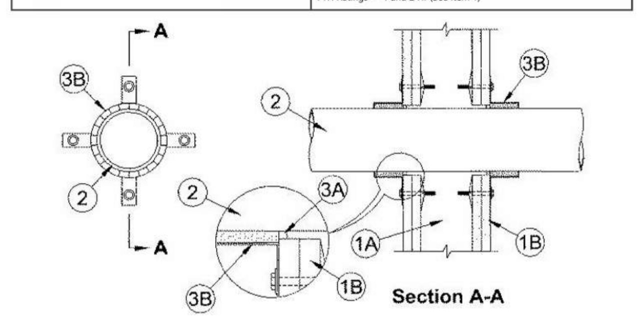
All statements, technical information, and recommendations contained herein are based upon tests we believe to be accurate; however since the conditions of use and application are beyond our control, STI shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. STI's sole warranty shall be to refund or replace materials found to be defective.

FIRESTOP SYSTEM - ENGINEERING JUDGEMENT 3 **C6**
1" = 1'-0"

System No. W-L-2237

October 11, 2021

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Ratings — 1 and 2 Hr (See Item 1)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, V300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm)lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in.(610 mm) OC.

B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Designs. For nom 2-1/2 in. (64 mm) diam and smaller pipes and conduits, diam of opening shall be max 1/4 in. (6 mm) larger than nom pipe diam. For pipes and conduits greater than nom 2-1/2 in. (64 mm) diam of opening shall be max 1/2 in. (13 mm) larger than nom pipe diam.

The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** One nonmetallic pipe or conduit to be centered within opening with a max annular space between pipe or conduit and periphery of 1/8 in. (3.2 mm) for nom 2-1/2 in. (64 mm) diam and smaller pipes and conduits and 1/4 in. (6 mm) for pipes and conduits greater than 2-1/2 in. (64 mm) diam. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes and conduits may be used.
A. **Polyvinyl Chloride (PVC) Pipe —** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 4 in. (102 mm) diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. **Acrylonitrile Butadiene Styrene (ABS) Pipe —** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

D. **Rigid Nonmetallic Conduit+ —** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA 70).

3. **Firestop System —** The firestop system consists of the following:
A. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. (6 mm) thickness applied within annulus, flush with both surfaces of wall.

SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

B. **Firestop Device* —** Galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant. Device shall be installed around through penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to both surfaces of wall assembly by means of 3/16 in. (4.8 mm) diam steel toggle bolts in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCC Collar or SpecSeal SSC Collar

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

+Bearing the UL Listing Mark

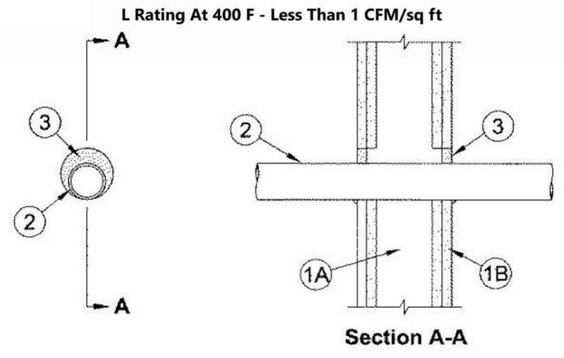
Last Updated on 2021-10-11

FIRESTOP SYSTEM NO. W-L-2237 **C5**
1" = 1'-0"

System No. W-L-2241

March 07, 2013

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1/4, 1 and 1-3/4 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Diam of opening to be 1 in. to 1-1/8 in. (25 to 29 mm) larger than outside diam of pipe.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. When Item 2G or 2H is used, the hourly F Rating is 1 hr.

2. **Through Penetrant —** One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
A. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 or Schedule 80 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

C. **Rigid Nonmetallic Conduit+ —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

D. **Electrical Nonmetallic Tubing+ —** Nom 2 in. (51 mm) diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

E. **Cross Linked Polyethylene (PEX) Tubing —** Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

F. **Acrylonitrile Butadiene Styrene (ABS) pipe —** Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 1/4 in. (6 mm) to max 3/4 in. (19 mm).

G. **Polyvinyl Chloride (PVC) Pipe —** Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

H. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 3 in. (76 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

When Item 2A or 2B is used, the T Rating is 1/4 hr. When Item 2C, 2D, or 2E is used, the T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively. When Item 2F, 2G, or 2H is used, T Rating is 0 hr.

3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant or Type WF300 Firestop Caulk (for wood studs only)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

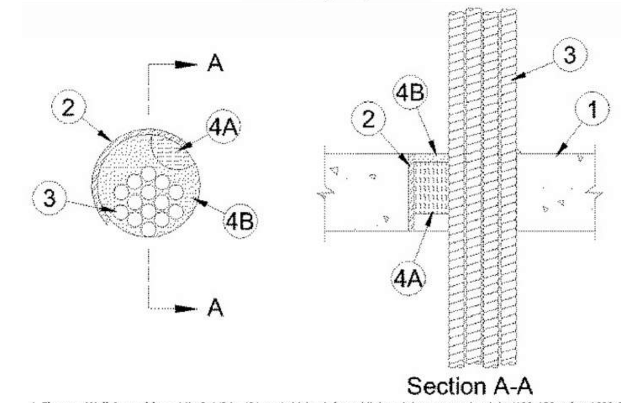
Last Updated on 2013-03-07

FIRESTOP SYSTEM NO. W-L-2241 **C4**
1" = 1'-0"

System No. C-AJ-3259

December 16, 2016

F Rating — 2 Hr
T Rating — 1/2 Hr



1. **Floor or Wall Assembly —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor. Floor may also be constructed of any min 6 in. (152 mm) thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 6 in. (152 mm).
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional) — Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51 mm) beyond the floor or wall surfaces.

3. **Through Penetrating Products* —** Max four aluminum or copper conductor No. 5 AWG (or smaller) aluminum **Metal-Clad Cable+**. Aggregate cross sectional area of cables in opening to be max 34 percent of the cross sectional area of the opening. Tight bundle of cables to be installed in the opening. The annular space between the cable bundle and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Cable bundle to be rigidly supported on both sides of the floor or wall assembly.
SOUTHWIRE CO

4. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation compressed and tightly packed into opening. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete units. When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface. When 1 in. (25 mm) of fill material (Item 4B) is used, mineral wool packing material thickness may be reduced to 1-1/2 in. (38 mm).

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/2 in. (13 mm) thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. (13 mm) thickness of fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. When thickness of concrete is less than 4-1/2 in. (114 mm), min 1 in. (25 mm) depth of sealant applied within annulus flush with top of floor/top edge of sleeve or both sides of wall/ ends of sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surface of floor. At point contact location, apply min 1/4 in. (6 mm) diam bead of fill material at cable/concrete or cable/steel sleeve interface on top surface of floor or on both surfaces of wall or precast concrete units.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

+Bearing the UL Listing Mark

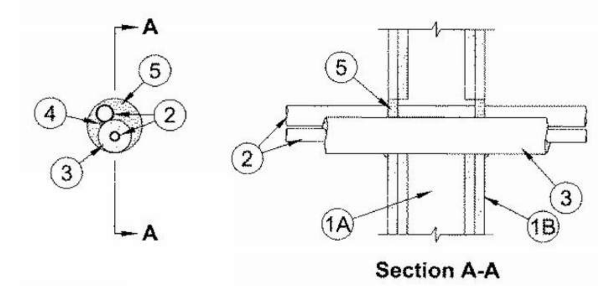
Last Updated on 2016-12-16

FIRESTOP SYSTEM NO. C-AJ-3259 **C3**
1" = 1'-0"

System No. W-L-8025

October 28, 2009

F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 1/4 Hr



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features.
A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 3-1/2 in. (89 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant —** A max of two pipes or tubes to be installed within the opening. Of the two pipes or tubes, only one may have a nom diam greater than 1/2 in. (13 mm). Annular space between pipes or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Separation between uninsulated pipes or tubes shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Pipes or tubing to be rigidly supported on both sides of the wall assembly. The following types and sizes of through penetrants may be used:
A. **Steel Pipe —** Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Pipe —** Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.

D. **Copper Tube —** Nom 1 in (25 mm) diam (or smaller) Type L (or heavier) copper tube.

3 **Tube Insulation - Plastics# —** Nom 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tube. The annular space between the insulated penetrating item and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). The space between insulated and uninsulated pipes or tubing shall be 0 in. (point contact).
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. **Cable —** One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. Cable to be spaced min 0 in. (point contact) to max 1/2 in. (13 mm) from the other penetrants. The space between the cable and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). Cable to be rigidly supported on both sides of wall assembly.

5. **Fill, Void or Cavity Material*- Sealant —** Min 5/8 in (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at through penetrant/gypsum board interface on both surfaces of wall. Additional fill material forced into grouped penetrant interstices to max extent possible.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant or Type WF300 Firestop Caulk (wood stud walls only).

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

#Bearing the UL Recognized Component Marking

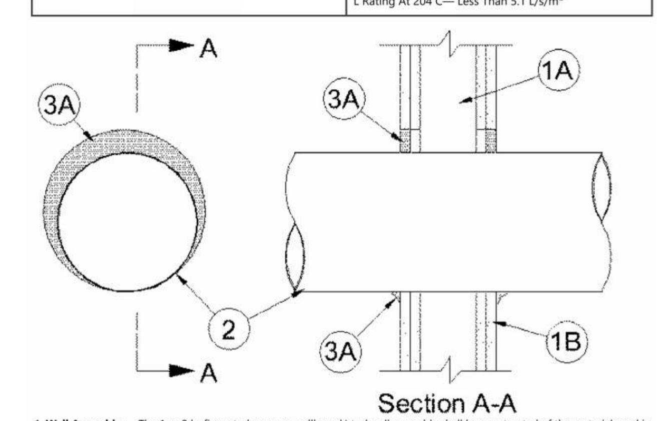
Last Updated on 2009-10-28

FIRESTOP SYSTEM NO. W-L-8025 **C2**
1" = 1'-0"

System No. W-L-7026

July 20, 2017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 5.1 L/s/m²
	L Rating At 204 C— Less Than 5.1 L/s/m²



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. **Studs —** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. When diam of opening exceeds width of stud cavity, additional lengths of steel stud installed to frame out opening around steel duct (Item 2).

B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max diam of opening is 25-1/2 in. (648 mm).
The hourly F and FH Rating of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Duct —** Max 24 in. (610 mm) diam No. 28 gauge (or heavier) galv steel vent duct or No. 26 gauge (or heavier) spiral wound galv steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (point contact) to max 1-1/2 in. (38 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of the wall assembly.

2A. **Coated Ducts* —** As an alternate to Item 2, max 24 in. (610 mm) diam (or smaller) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. One duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the duct and the periphery of the opening shall be min 0 in. (point contact) to a max of 1-1/2 in. (38 mm). Duct to be rigidly supported on both sides o wall assembly.
FIRESPRAY INTERNATIONAL LTD — FLAMEBAR BW11 fire rated ductwork

3. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).
B. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board. For 2 hr Rated walls when LC150 or LE600 Sealant is used, fill material thickness installed to full depth of gypsum board layers on each side of wall assembly.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant, or SpecSeal LE600 Sealant

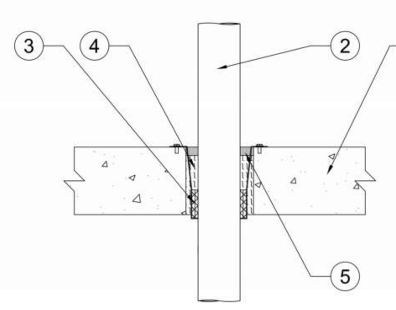
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2017-07-20

FIRESTOP SYSTEM NO. W-L-7026 **C1**
1" = 1'-0"

ENGINEERING JUDGEMENT FIRESTOP DETAIL
F Rating - 2Hr

Drawing No. NS109624005 | Rev. -



1. **Floor Assembly (2Hr)** — Min 3.5" thick concrete floor. The size of the opening to be nom 6" diameter.
2. **Penetrant** — Nom 3" diam Trade Size (or smaller) Sch40 PVC pipe (closed or vented). Pipe to be rigidly supported. The annular space between penetrant and periphery of the opening to be nom 1" to max 2".
3. **SpecSeal ® SSW BLU Wrap Strip & Collar** — Min one stack consisting of three (3) layers of RED2 or BLU2 intumescent wrap strips wrapped around penetrant and held in place with foil tape. Wrap strips to be installed in successive layers aligned or offset. Enclosed wrap strips with steel restraining collar (cat. No. SSWRC2 or SSWRC incorporating a min 1" overlap at seam with min three (3) mounting tabs. See UL System No. F-A-2073 instruction for more installation instruction.
4. **Packing Material** — Min 4lb/ft³ mineral wool batt insulation tightly packed into annular space from top side access to full depth, recessed from top side of floor to accommodate sealant. Mineral wool to completely abut trailing edges of wrap strip collar from top side access.
5. **SpecSeal ® SSS or LCI Sealant** — Min ½" thickness of sealant applied over packing material, flushed with top surface of floor.

THIS DESIGN REPRESENTS A FIRESTOP SYSTEM EXPECTED TO PASS THE STATED RATINGS IF TESTED

Project: University of Missouri Medical Science	Signature:	System Reference: C-AJ-2297, F-A-2073
Project Address: Columbia Missouri 65303, USA		
Designed by: Ariel Arcilla Estarte		
Contractor: Rebel Firestoppers	Scale: N.T.S.	Date: 04.05.2024 PAGE 1 OF 1 — Based on testing to ASTM E814 / UL1479 : Standards for Fire Tests of Penetration Firestops

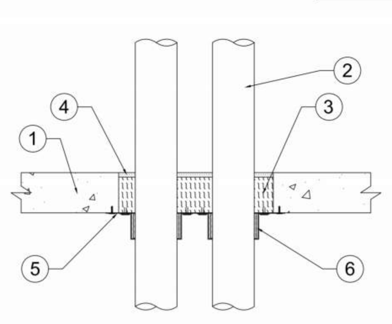
Specified Technologies Inc. — 210 Evans Way • Somerville, NJ 08876 USA • Toll Free: 800-992-1180 • T: +1 908-526-8000 • F: +1 908-231-8415 • E: techserv@stifirestop.com • www.stifirestop.com

All statements, technical information, and recommendations contained herein are based upon tests we believe to be accurate; however since the conditions of use and application are beyond our control, STI shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. STI's sole warranty shall be to refund or replace materials found to be defective.

FIRESTOP SYSTEM - ENGINEERING JUDGEMENT 2 **B6**
1" = 1'-0"

ENGINEERING JUDGEMENT FIRESTOP DETAIL
F Rating - 2Hr

Drawing No. NS109624004 | Rev. -



1. **Floor Assembly (2Hr)** – Min 3.5" thick concrete floor. The size of the opening is max 10" x 5".
2. **PVC Pipe** – Max two (2) nom 3" diam, trade size (or smaller), Sch40 PVC pipes (closed or vented) installed within the opening. The annular space between penetrant and periphery of the opening to be min 2" to max 3".
3. **Packing Material** – Min 4lb/ft³ mineral wool batt insulation tightly packed into opening to full depth, recessed from top side of floor to accommodate for sealant.
4. **Sealant** – Min ½" thickness of **SpecSeal® LCI Intumescent Sealant** applied over packing material, flushed with top side of floor. Min 1/2 continuous diam bead of sealant to be applied on butted seams of steel plate.
5. **Steel Plate** – One layer of min 20GA galvanized steel plate cut to contour of opening and penetrant and installed on bottom side of floor. Plate to overlap concrete by min 2" and fasten to concrete with min ¼" diam and 1 ¼" long steel screws in conjunction with min 1" diam steel fender washers spaced max 4" OC. The seam(s) of steel plate to be tightly butted and sealed with sealant.
6. **SpecSeal® SSW Wrap Strip & Collar** – Min one stack consisting of four (4) layers of SSW RED2 or BLU2 or BLU wrap strips wrapped around penetrants and held in place with foil tape on bottom side of floor. Wrap strips to be installed in successive layers aligned or offset. Encircle wrap strips with steel restraining collar (Cat. No. SSWRC2 or SSWRC) with min three (3) mounting tabs. Tighten wrap strips and collar with min ½" wide and 0.028" thick stainless-steel hose clamp position at the mid-height of the wrap strip stack. On steel plate, fasten mounting tabs with min no.8 and ½" long steel screws in conjunction with min 1" diam steel fender washers.

THIS DESIGN REPRESENTS A FIRESTOP SYSTEM EXPECTED TO PASS THE STATED RATINGS IF TESTED

Project: University of Missouri Medical Science	Signature:	System Reference: C-AJ-2297, C-AJ-8113, F-A-2210
Project Address: Columbia Missouri 65203, USA		
Designed by: Ariel Arcilla Estarte		
Contractor: Rebel Firestoppers	Scale: N.T.S.	Date: 04.05.2024 PAGE 1 OF 1 — Based on testing to ASTM E814 / UL1479 : Standards for Fire Tests of Penetration Firestops

Specified Technologies Inc. — 210 Evans Way • Somerville, NJ 08876 USA • Toll Free: 800-992-1180 • T: +1 908-526-8000 • F: +1 908-231-8415 • E: techserv@stifirestop.com • www.stifirestop.com

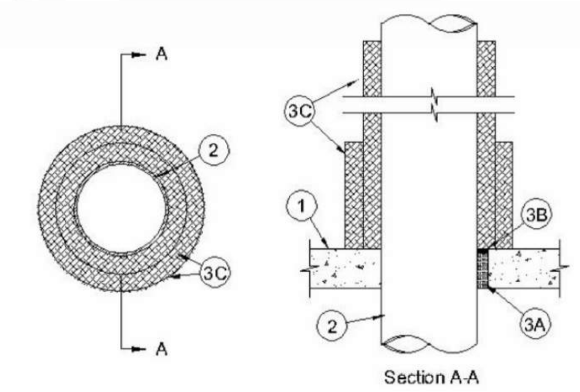
All statements, technical information, and recommendations contained herein are based upon tests we believe to be accurate; however since the conditions of use and application are beyond our control, STI shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. STI's sole warranty shall be to refund or replace materials found to be defective.

FIRESTOP SYSTEM - ENGINEERING JUDGEMENT 1 **A6**
1" = 1'-0"

System No. F-A-1093

January 09, 2018

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Ratings - 1-1/2, 1-3/4 and 2 Hr (See Item 2)	FT Ratings - 1-1/2, 1-3/4 and 2 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 2 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1-1/2, 1-3/4 and 2 Hr (See Item 2)
W Rating - Class 1 (See Item 3B)	L Rating At Ambient Less Than 5.1 L/s/m²
	L Rating At 204 C Less Than 5.1 L/s/m²



1. **Floor Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. As an alternate, any min 2 hr fire rated D700, D800 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory having a min 2-1/2 in. (64 mm) thickness of lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete topping over the steel deck may be used. Floor may also be constructed of any min 6 in. (152 mm) thick hollow core UL Classified **Precast Concrete Units***. Max diam of opening 12 in. (305 mm). Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in. (178 mm).
See **Precast Concrete Units** (CFTV) category in Fire Resistance Directory for names of manufacturers.

2. **Through-Penetrant —** One metallic pipe, conduit or tubing installed concentrically or eccentrically within opening. Annular space between penetrant and periphery of opening shall be min of 0 in. (0 mm, point contact) to max 2 in. (51 mm). Penetrant to be rigidly supported on both sides of floor assembly. The following types and sizes of penetrants may be used:
A. **Steel Pipe —** Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 10 in. (254 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Tubing —** Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.

D. **Copper Pipe —** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

E. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) steel conduit, nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT), or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.

The T, FT and FTH Ratings are 2 Hr when Item 2A, 2B or 2E is used or when max 2 in. (51 mm) diam copper tubing (Item 2C) or copper pipe (Item 2D) is used. The T,FT and FTH Ratings are 1-1/2 hr when copper tubing or copper pipe (Item 2C or 2D) larger than nom 2 in. (51 mm) diam is used in floors having a min concrete thickness which is less than 4-1/2 in. (114 mm). The T, FT and FTH Ratings are 1-3/4 Hr when copper tubing or copper pipe (Item 2C or 2D) larger than nom 2 in. (51 mm) diam is used in floors having a min 4-1/2 in. (114 mm) concrete thickness.

3. **Firestop System —** The details of the firestop system shall be as follows:
A. **Packing Material —** Min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to extend through entire thickness of concrete floor except for recess at top surface of floor to

B. **Fill, Void or Cavity Materials* - Sealant or Putty —** Min 1/2 in. (13 mm) thickness of caulk or putty applied within the annulus, flush with top surface of floor. At point contact, apply min 1/4 in. (6 mm) bead at penetrant/concrete interface on top surface of floor.
SPECIFIED TECHNOLOGIES INC — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant, SpecSeal LE600 Sealant, SpecSeal Putty, Pensil 300 Sealant or SpecSeal Series SIL300 Sealant for floors or walls and Pensil 300 SL Sealant or SpecSeal Series SIL300SL Sealant for floors only.

W Rating applies only when Pensil 300, SpecSeal Series SIL300, Pensil 300 S/L or SpecSeal Series SIL300SL Sealants are used with solid penetrant (not flexible steel conduit).

C. **Duct Wrap Material* —** Min 1-1/2 in. (38 mm) thick duct wrap tightly wrapped around penetrant to extend 36 in. (914 mm) above floor. An additional layer of min 1-1/2 in. (38 mm) thick duct wrap tightly wrapped around the first layer of duct wrap to extend 12 in. (305 mm) above floor. All longitudinal seams of both layers of duct wrap are sealed with foil tape.
THERMAL CERAMICS INC — FireMaster FastWrap+, FireMaster FastWrap XL, or Pyroscat Duct Wrap XL.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

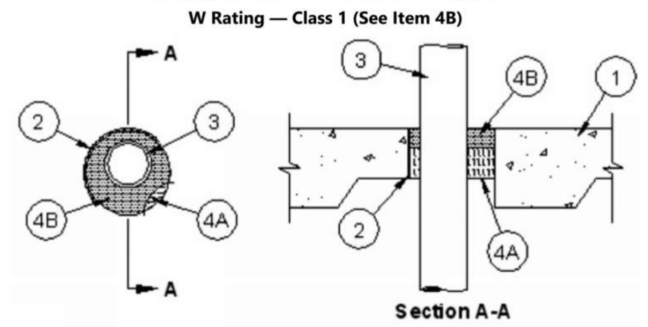
Last Updated on 2018-01-09

FIRESTOP SYSTEM NO. F-A-1093 **A5**
1" = 1'-0"

System No. F-A-2186

November 19, 2008

F Rating — 2 Hr
T Rating — 2 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft
W Rating — Class 1 (See Item 4B)



1. **Floor Assembly —** The fire rated concrete and steel deck floor assembly shall be constructed of the materials and in the manner specified in the individual D900 Series designs in the UL Fire Resistance Directory and as summarized below:
A. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete topping.

B. **Steel Floor and Form Units* —** Composite or noncomposite min 1-1/2 in. (38 mm) deep fluted galv units as specified in the individual Floor-Ceiling design. Diam of opening through floor to be min 1-1/2 in. (38 mm) larger than outside diam of pipe or conduit. Max diam of opening through floor is 4 in. (102 mm).

1A. **Floor Assembly —** As an alternate to Item 1, min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor.

2. **Steel Sleeve —** (Optional) - Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe or nom 4 in. (102 mm) diam (or smaller) No. 26 gauge (0.022 in. or 0.56 mm thick) sheet steel sleeve with square flange spot welded to the sleeve at approx mid-height cast or grouted into floor assembly, flush with floor surfaces.

3. **Through Penetrants —** One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and sleeve (Item 2) shall be min 1/4 in. (6 mm) to max 1-3/8 in. (35 mm). When steel sleeve (Item 2) is not provided, the annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1-5/8 in. (41 mm). Pipe to be rigidly supported on both sides of floor assembly. The following types and sizes of nonmetallic pipes may be used:
A. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) piping systems.

B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

C. **Rigid Nonmetallic Conduit+ —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA 70).

D. **Crosslinked Polyethylene (PEX) Tubing —** Nom 1 in. (25 mm) diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems.

4. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** Min 1-1/2 in. (38 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** Min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with top surface of floor. Additionally, nom 1/2 in. (13 mm) diam bead of fill material applied at concrete/penetrant interface at point contact location on top surface of floor.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant, SpecSeal Series 100, 101, 102, 120, 129, or 105 Sealant, Pensil 300 Sealant, or SpecSeal Series SIL300 Sealant for floors or walls and Pensil 300 SL Sealant or SpecSeal Series SIL300SL Sealant for floors only.

W Rating applies only when Pensil 300 Sealant, SpecSeal Series SIL300, Pensil 300 S/L or SpecSeal Series SIL300SL Sealants are used.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

+Bearing the UL Listing Mark

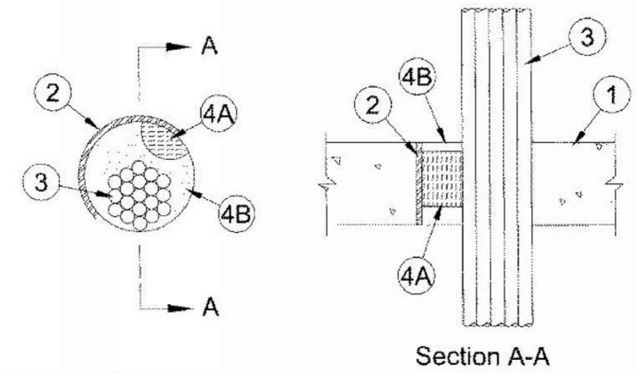
Last Updated on 2008-11-19

FIRESTOP SYSTEM NO. F-A-2186 **A4**
1" = 1'-0"

System No. C-AJ-3177

August 05, 2003

F Rating — 2 Hr
T Rating — 1/2 Hr



1. **Floor or Wall Assembly —** Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 6 in.
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional) — Nom 6 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. beyond the floor or wall surfaces.

3. **Cables —** Aggregate cross sectional area of cables in opening to be max 34 percent of the cross sectional area of the opening. Tight bundle of cables to be installed in the opening. The annular space between the cable bundle and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Cable bundle to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of cables may be used:
A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.

B. Max 1/C No. 750 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket.

C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.

D. Max 3/C No. 3/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.

E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEK cable.

F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.

G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket.

H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.

I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.

3A. **Through Penetrating Product* —** (Not Shown) As an alternate Item 3), one or more through-penetrating product to be installed within the opening. Max aggregate cross-sectional area of cables to be 34 percent of the cross-sectional area of the opening. Annular space between through-penetrating products and periphery of opening to be min 0 in. (point contact) to max 2 in. Through penetrant product rigidly supported on both sides of floor or wall assembly. The following types of Through-Penetrating Products may be used:
A. Max four copper conductors No. 4/0 AWG (or smaller) aluminum or steel **Armored Cable#** or **Metal-Clad Cable+**.
AFC CABLE SYSTEMS INC

B. Two or more twisted copper conductors No. 6 AWG (or smaller) **Power Limited Circuit Cable+** with or without a jacket under a metal armor.
AFC CABLE SYSTEMS INC

C. Two or more twisted copper conductors No. 10 AWG (or smaller) **Power Limited Fire Alarm Cable+** with or without a jacket under a metal armor.
AFC CABLE SYSTEMS INC

D. Two or more twisted copper conductors No. 12 AWG (or smaller) **Non Power Limited Fire Alarm Cable+** with or without a jacket under a metal armor.
AFC CABLE SYSTEMS INC

4. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** Min 3 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into opening. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete units. When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface. When 1 in. of fill material (Item 4B) is used, mineral wool packing material thickness may be reduced to 1-1/2 in.

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. thickness of fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. When thickness of concrete is less than 4-1/2 in., min 1 in. depth of sealant applied within annulus flush with top of floor/top edge of sleeve or both sides of wall/ ends of sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surface of floor. At point contact location, apply min 1/4 in. diam bead of fill material at cable/concrete or cable/steel sleeve interface on top surface of floor or on both surfaces of wall or precast concrete units.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

+Bearing the UL Listing Mark

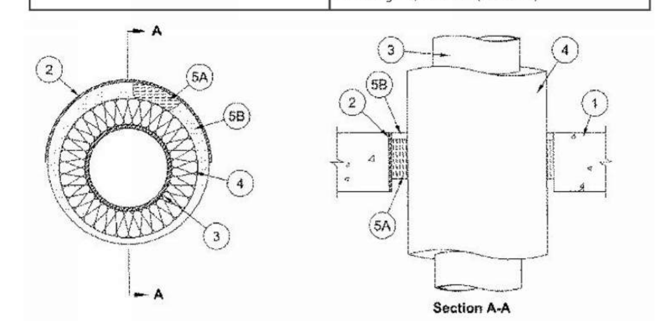
Last Updated on 2003-08-05

FIRESTOP SYSTEM NO. C-AJ-3177 **A3**
1" = 1'-0"

System No. C-AJ-5138

August 18, 2011

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Ratings - 3/4 and 1 Hr (See Item 2)	FT Ratings - 3/4 and 1 Hr (See Item 2)
	FH Rating - 2 Hr
	FTH Ratings - 3/4 and 1 Hr (See Item 2)



1. **Floor or Wall Assembly —** Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 12 in. Max diam of opening in floors constructed of hollow-core precast concrete units is 7 in.
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional) — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces. **When steel sleeve is used, the T Rating is 3/4 hr. When steel sleeve is omitted in min 4-1/2 in. thick concrete , the T Rating is 1 hr.**

3. **Through Penetrant —** One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
A. **Steel Pipe —** Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 6 in. diam (or smaller) cast or ductile iron pipe.

C. **Copper Pipe —** Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.

D. **Copper Tube —** Nom 4 in. diam (or smaller) Regular L (or heavier) copper tube.

4. **Pipe Coverings —** One of the following types of pipe coverings shall be used:
A. **Pipe and Equipment Covering Materials* —** Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product.
See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

B. **Pipe Covering Materials* —** Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.
INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc
C. **Sheathing Material* —** Used in conjunction with Item 4B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 4B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.
See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

5. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** Min 4 pcf mineral wool batt insulation compressed and tightly packed into opening as a permanent form . Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 5B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 5B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface. Packing material depth is dependent upon several variables, as shown in the table under Item 5B.

B. **Fill, Void or Cavity Material* — Sealant —** Fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surfaces of floor. Fill material depth is dependent upon several variables, as shown in the following table:

Min Floor or Wall thickness, in.	Annular Space, in.	Min Packing Material Depth, in.	Min Fill Material Depth, in.
2-1/2	1/4 to 5/8	1-1/2	1
4-1/2	1/4 to 1-5/8	3	1/2

SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

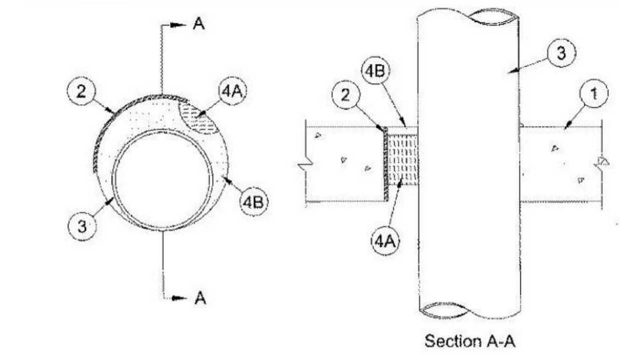
Last Updated on 2011-08-18

FIRESTOP SYSTEM NO. C-AJ-5138 **A2**
1" = 1'-0"

System No. C-AJ-1353

December 4, 2023

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 3 Hr	F Rating - 3 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 3 Hr
L Rating At 400° F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 5.1 L/S/m²
	L Rating At 204° C - Less Than 5.1 L/S/m²



1. **Floor or Wall Assembly —** Lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor or wall. Min thickness of concrete is shown in table in Item 4B. Floor may also be constructed of any min 6 in. (152 mm) thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 14 in. (356 mm). Max diam of opening in floors constructed of hollow-core is 7 in. (178 mm).
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional) — Nom 14 in. (356 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe or No. 26 ga (0.022 in. or 0.56 mm thick) sheet steel sleeve with square anchor flange spot welded to the sleeve at approx mid-height. Sleeve cast or grouted in place flush with floor or wall surfaces. Steel pipe sleeve may project a max of 2 in. (51 mm) beyond the floor or wall surfaces.

3. **Through Penetrant —** One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact). The max annular space is 1 in. or 2 in. (25 or 51 mm) as shown in the table in Item 4B . Pipe, conduit or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
A. **Steel Pipe —** Nom 12 in. (305 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit, nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. (102 mm) diam (or smaller) flexible steel conduit.

D. **Copper Pipe —** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

E. **Copper Tube —** Nom 4 in. (102 mm) diam (or smaller) Regular L (or heavier) copper tube.

F. **Stainless Steel Pipe –** Nom 12 in. (305 mm) diam (or smaller) Schedule 5 (or heavier) stainless steel pipe.

3A. **Through Penetrating Product* — Flexible Metal Piping —** As an alternate to Item 3, one nom 2 in. (51 mm) diam (or smaller) flexible steel pipe (with or without plastic jacketing) to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (0 mm or point contact). The max annular space is 1 or 2 in. (25 or 51 mm) as shown in the table in Item 4B. Pipe to be rigidly supported on both sides of the floor or wall assembly.
OMEGA FLEX INC

GASTITE, DIV OF TITEFLEX

ASC Engineered Solutions, LLC

4. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** When required as shown in the table in Item 4B, min 4 pcf (64 kg/m³) mineral wool batt insulation compressed and tightly packed to min 2-1/4 in. (57 mm) thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 4B). When packing material is shown as being optional, mineral wool or glass fiber insulation or polyethylene foam backer rod may be used as a permanent form to facilitate installation of the fill material. In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 4B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.

B. **Fill, Void or Cavity Material* — Sealant —** Fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls and in floors constructed from hollow core precast concrete units, fill material applied symmetrically on both sides of assembly flush with wall/floor surfaces or both ends of steel sleeve. At point contact location, apply min 1/4 in. (6 mm) diam bead of fill material at pipe/concrete interface or pipe/steel sleeve interface on top surface of floor or both surfaces of wall or precast concrete units. The fill material thickness shall be as specified in the following table:

Min Concrete Thickness, in. (mm)	Steel Sleeve	Max Annular Space, in. (mm)	Packing Material	Min Fill Material Thickness in. (mm)	F Rating
2-1/2 (64)	Optional	2 (51)	Required	1/4 (6)	3 hr
4-1/2 (114)	Optional	1 (25)	Optional	1/2 (13)	2 hr

SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2023-12-04

FIRESTOP SYSTEM NO. C-AJ-1353 **A1**
1" = 1'-0"

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PECKHAM GUYTON ALBERS & VIETS, INC.
1900 w.47th Place, #300, Westwood, KS 66205
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STATE OF MISSOURI — RANDALL STEVEN CRAMER — NUMBER A-2020037022 — ARCHITECT — 7/8/2025

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ANTELLA CONSULTING ENGINEERS, INC.
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Kansas City, MO 64102 (816) 421-0950
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Structural Engineers
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Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

UL- RATED ASSEMBLIES

DATE: 07/08/2025	
DRAWN: Author	CHECKED: Checker
PGAV #: 53660-20	CLIENT #: CP2400920
SHEET #: **A108L**	

6/27/2025 8:52:05 AM
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/UM SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

Author

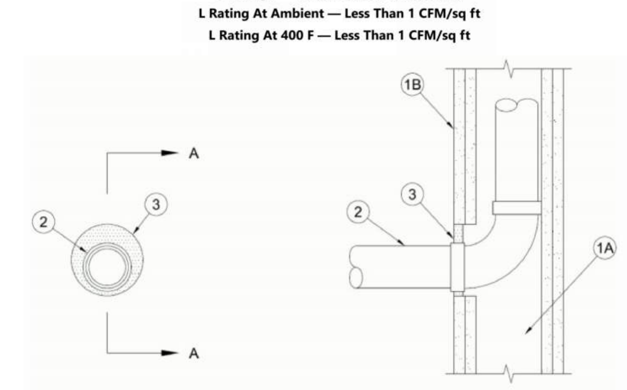
6 5 4 3 2 1

E D C B A

System No. W-L-2635

August 24, 2016

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 1-1/4 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 4 in. (127 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating of the firestop system is 1 hr in 1 hr fire rated walls and 1-1/4 hr in 2 hr fire rated walls.

2. **Nonmetallic Penetrant —** One nonmetallic pipe or conduit to be installed within stud cavity and connected to a 45° or 90° elbow. Additional nonmetallic pipe or conduit shall be connected to elbow and penetrate one side of the wall either concentrically or eccentrically within the firestop system. The annular space between pipe or conduit and periphery of the opening shall be min 1/4 in. (6 mm) to max 1 in. (25 mm). The penetrant may be installed at an angle not greater than 45 degrees from perpendicular. Pipe or conduit shall be rigidly supported within the wall and on the penetrated side of the wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
   A. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

   C. **Rigid Nonmetallic Conduit+ —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA 70).

3. **Fill, Void or Cavity Material* — Sealant —** Min 1/2 in. (13 mm) thickness of fill material applied within annulus, flush with surface of wall assembly.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

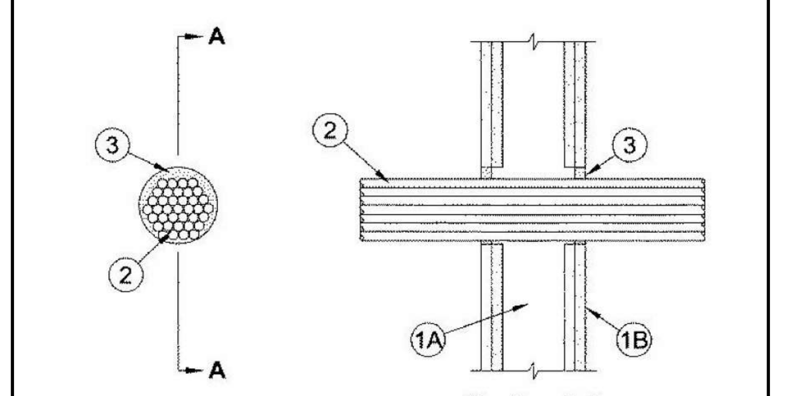
Last Updated on 2016-08-24

FIRESTOP SYSTEM NO. W-L-2635 **C6**
1" = 1'-0"

System No. W-L-3169

March 26, 2008

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/4 and 3/4 Hr (See Item 2A)



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Cables —** Max 4-1/2 in. diam tight bundle of cables to be installed eccentrically or concentrically within the opening. The annular space between the cables and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1/2 in. (13 mm). Cable bundle to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of cables may be used:
   A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.

   B. Max 1/C No. 350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket.

   C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.

   D. Max 3/C No. 2/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.

   E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEK cable.

   F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.

   G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket.

   H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.

   I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.

   J. Max 4/C (with ground) No. 300 kcmil (or smaller) aluminum conductor SER cables with PVC insulation and jacket.

2A. **Through Penetrating Product* —** As an alternate to the cables (Item 2), max 4 in. (102 mm) diam tight bundle of max 4/C No. 2/0 AWG (or smaller) aluminum or steel **Armored Cable+** or **Metal Clad Cable+** installed within the opening. Annular space between through-penetrating products and periphery of opening to be min 0 in. (0 mm, point contact) to max 1 in. (25 mm). Through penetrating product rigidly supported on both sides of floor or wall assembly. **When Armored Cable or Metal Clad Cable is used, T Rating is 1/4 hr.**
AFC CABLE SYSTEMS INC

3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Sealant to be forced into interstices of cable bundle to max extent possible. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at cable bundle/gypsum board interface on both surfaces of wall.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

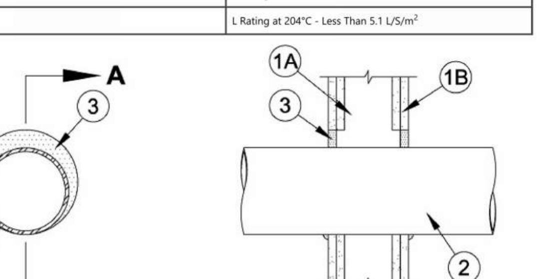
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),**

FIRESTOP SYSTEM NO. W-L-3169 **C5**
1" = 1'-0"

System No. W-L-1049

December 4, 2023

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating at 400°F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating at Ambient - Less Than 5.1 L/S/m²
	L Rating at 204°C - Less Than 5.1 L/S/m²



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, V300, U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.

   B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400, V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 38 in. (965 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

1A. **Metallic Sleeve —** (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.

2. **Through Penetrant —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. **Steel Pipe —** Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 36 in. (914 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit, nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. (102 mm) diam (or smaller) flexible steel conduit.

   D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

   E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

   F. **Stainless Steel Pipe –** Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) stainless steel pipe

2A. **Through Penetrating Product* — Flexible Metal Piping —** As an alternate to Item 2, one nom 2 in. (51 mm) diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Pipe to be rigidly supported on both sides of the wall assembly.

OMEGA FLEX INC

GASTITE, DIV OF TITEFLEX

ASC Engineered Solutions, LLC

3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.

SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

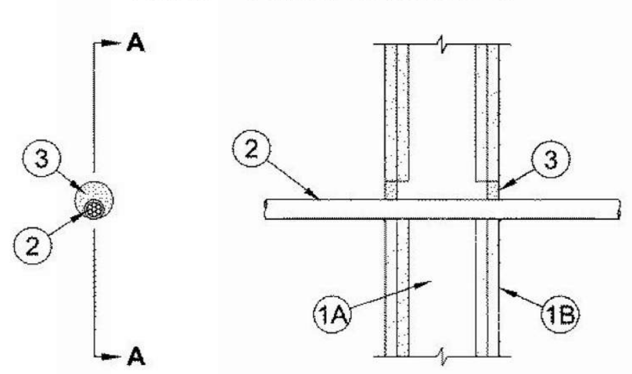
Last Updated on 2023-12-04

FIRESTOP SYSTEM NO. W-L-1049 **C4**
1" = 1'-0"

System No. W-L-3171

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/4 and 3/4 Hr (See Item 2A)



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.

   B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 1 in. larger than OD of cable (Item 2).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Cable —** One cable to be installed eccentrically or concentrically within the opening. The annular space between the cable and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Cable to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of cable may be used:
   A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.

   B. Max 1/C No. 350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket.

   C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.

   D. Max 3/C No. 2/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.

   E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEK cable.

   F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.

   G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket.

   H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.

   I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.

2A. **Through Penetrating Product* —** As an alternate to the cable (Item 2), one max 4/C No. 2/0 AWG (or smaller) aluminum or steel **Armored Cable+** or **Metal Clad Cable+** installed within the opening. Annular space between through-penetrating product and periphery of opening to be min 0 in. (point contact) to max 1 in. Through penetrating product rigidly supported on both sides of wall assembly. **When Armored Cable or Metal Clad Cable is used, T Rating is 1/4 hr.**
AFC CABLE SYSTEMS INC

3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at cable/gypsum board interface on both surfaces of wall.
SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

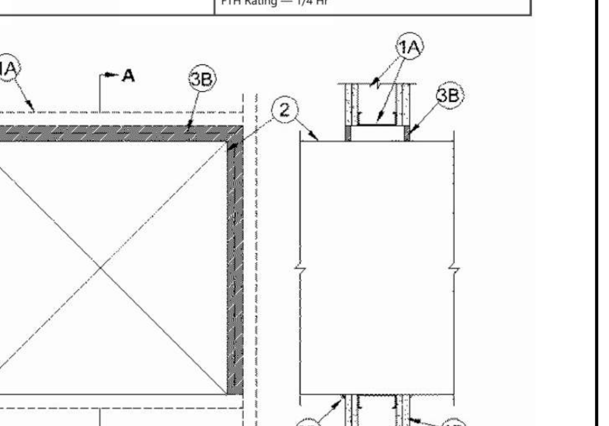
Last Updated on 2000-10-04

FIRESTOP SYSTEM NO. W-L-3171 **C3**
1" = 1'-0"

System No. W-L-7029

July 20, 2017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 1/4 Hr	FT Rating — 1/4 Hr
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Rating — 1/4 Hr



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400, or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. Additional steel studs shall be used to completely frame opening.

   B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Designs in the UL Fire Resistance Directory. Max area of opening is 690 sq in. (0.45 m2) with max dimension of 27 in. (686 mm).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed.

2. **Steel Duct —** Max 24 by 24 in. (610 by 610 mm) No. 26 gauge (or heavier) steel duct to be installed within the opening. The annular space within the firestop system shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.

2A. **Coated Ducts* —** As an alternate to Item 2, max 24 by 24 in. (610 by 610 mm) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Annular space between duct and periphery of opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of wall assembly.
FIRESPRAY INTERNATIONAL LTD — FLAMEBAR BW11 fire rated ductwork

3. **Firestop System —** The firestop system shall consist of the following:
   A. **Packing Material —** (Optional, Not Shown) - Mineral wool batt insulation, foam backer rod or glass fiber insulation installed as a permanent form to facilitate installation of fill material (Item 3B).
   B. **Fill, Void or Cavity Material* - Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Min 1/4 in. (6 mm) diam bead of fill material to be applied at point contact location between the steel duct and the gypsum board.
   SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

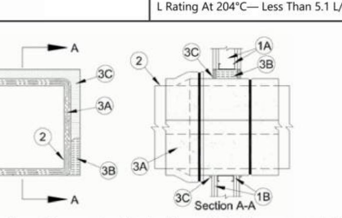
Last Updated on 2017-07-20

FIRESTOP SYSTEM NO. W-L-7029 **C2**
1" = 1'-0"

System No. W-L-7145

October 31, 2018

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400°F — Less Than 1 CFM/sq ft	FTH Ratings — 1 and 2 Hr (See Item 1)
	L Rating At Ambient — Less Than 5.1 L/s/m²
	L Rating At 204°C— Less Than 5.1 L/s/m²



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400, V400 or W-400 Series Wall and Partition Design in the Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing shall consist of min 3-1/2 in. (89 mm) wide channel shaped steel studs spaced max 24 in. (610 mm) OC. Additional framing members shall be installed in stud cavity to form a rectangular box around the penetrant.

   B. **Gypsum Board* —** 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening is 78 ft.2 (7.3 m²) with a max dimension of 107 in. (272 cm).

   The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Air Duct —** One steel duct to be installed within the firestop system. Duct to be rigidly supported on both sides of wall assembly. Min 26 gauge (0.5 mm) galv steel duct having a max perimeter dimension of 400 in. (10.16 m) and a max individual dimension of 100 in. (2.54 m).

3. **Firestop System —** The firestop system shall consist of the following:
   A. **Duct Wrap Materials* —** Nom 1-1/2 in. (38 mm) thick blanket totally encapsulated within foil-scrim facers. The steel air duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly Nos. V-1 or V-19. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. When steel angles (Item 3D) are used, the edges of the duct wrap material are to abut the protruding leg of the angle and the tight seam is to be covered with an additional 6 in. (152 mm) wide "collar" of duct wrap. The annular space between the insulated duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm).
   THERMAL CERAMICS INC — FireMaster Fast Wrap+, FireMaster FastWrap XL, or Pyroscat Duct Wrap XL

   A1. **Duct Wrap Materials* —** (Not Shown) - As an alternate to Item 3A, nom 1-1/2 in. (38 mm) thick blanket totally encapsulated within foil-scrim facers. The steel air duct shall be wrapped with two layers of duct wrap installed in accordance with Ventilation Assembly No. V-2. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. When steel angles (Item 3D) are used, the edges of the duct wrap material are to abut the protruding leg of the angle and the tight seam is to be covered with an additional 6 in. (152 mm) wide "collar" of duct wrap. The annular space between the insulated duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm).
   THERMAL CERAMICS INC — FireMaster Fast Wrap+, FireMaster FastWrap XL, or Pyroscat Duct Wrap XL.

   B. **Packing Material —** Min 3-1/2 in. (89 mm) and 4-3/4 in. (121 mm) thickness of unfaced scrap duct wrap material or min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into the opening as a permanent form for 1 and 2 hr rated walls, respectively. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material (Item 3C).

   C. **Fill, Void or Cavity Material*— Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/insulated duct interface on both surfaces of wall assembly.
   SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant, SpecSeal LC150 Sealant, SpecSeal LCI Sealant, or SpecSeal SIL300 Sealant

   D. **Retaining Angles —** (Not Shown) —When dimensions of duct exceed 84 by 84 in. (213 by 213 cm), min No. 16 gauge (0.059 in. or 1.5 mm thick) galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm) shall be attached to steel duct. Angles attached to steel duct on both sides of wall within 1 in. (25 mm) of wall with min No. 10 by 1/2 in. (13 mm) long steel sheet metal screws or welds located a max of 1 in. (25 mm) from each end of steel duct and spaced a max of 6 in. (152 mm) OC.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

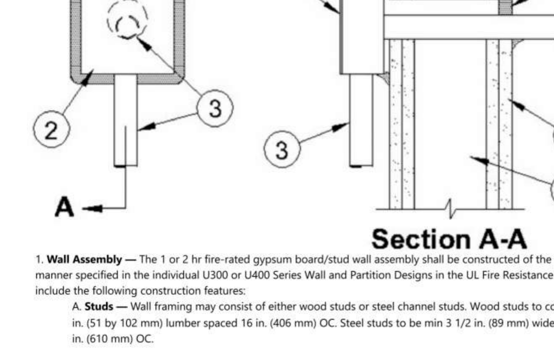
Last Updated on 2018-10-31

FIRESTOP SYSTEM NO. W-L-7145 **C1**
1" = 1'-0"

System No. W-L-1448

August 23, 2011

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 Hr



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3 1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Diam of opening to be 1/2 in. (13 mm) to 1 in. (25 mm) larger than outside diam of through penetrant. Max diam of opening is 2-1/4 in. (57 mm).

   The F Rating of the firestop system is equal to the fire rating of the wall assembly.

2. **Pull or Junction Box+ —** Min 16 ga steel pull or junction box mounted flush with or max 1/4 in. (6 mm) from surface of wall.
   See **Junction and Pull Boxes** (BGUZ) category in the Electrical Construction Material Directory for names of manufacturers.

3. **Conduit —** One nom 1 in. (25 mm) diam (or smaller) steel conduit or steel electrical metallic tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. (point contact) to max 1 in. (25 mm). Conduit or EMT to be secured to back surface of pull or junction box with steel connector and rigidly supported on both sides of wall assembly.

4. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with surface of wall opposite the pull or junction box. A min 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location between the conduit and wall. A min 1/2 in. (13 mm) diam bead of fill material shall be applied around the entire perimeter of the pull or junction box at its interface with the wall surface. The fill material shall lap min 1/2 in. (13 mm) onto both the wall and the sides of the pull or junction box.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant, or SpecSeal LE600 Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

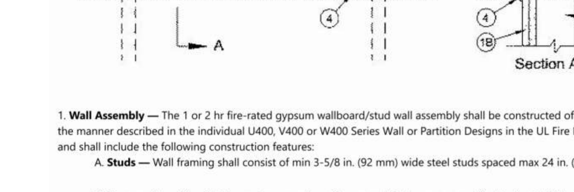
Last Updated on 2011-08-23

FIRESTOP SYSTEM NO. W-L-1448 **A6**
1" = 1'-0"

System No. W-L-1168

August 30, 2012

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)	FT Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing shall consist of min 3-5/8 in. (92 mm) wide steel studs spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** Thickness, type, number of layers and fasteners , as specified in the individual U400, V400 or W400 Series design. Max height of opening is 6 in. (152 mm). Max width of opening is 36 in. (914 mm).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** Multiple pipes or conduits installed in single layer array within the firestop system. The annular space between the pipes and conduits and the edges of the opening shall be min 0 in. (point contact) to max 3 in. (76 mm). The separation between pipes and conduits to be min 1/4 in. (6 mm) to max 3 in. (76 mm). Pipes and conduits to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipe or conduit may be used:
   A. **Steel Pipe —** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit or steel electrical metallic tubing (EMT).
   When diam of pipe or conduit is greater than 2 in. (51 mm), T, FT and FTH Ratings are 1/4 hr. Otherwise, T, FT and FTH Ratings are 3/4 hr or 1 hr as detailed in Item 4.

3. **Forming Material —** (Optional, Not Shown) - Foam backer rod, mineral wool batt insulation or glass fiber insulation packed into opening and recessed min 5/8 in. (16 mm) from each surface of the wall to accommodate fill material.

4. **Fill Void or Cavity Materials* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material installed to completely fill annular space between pipes, conduits and gypsum wallboard flush with each surface of wall. Min 1/4 in. (6 mm) diam bead of fill material applied to the pipe/wall interface at the point contact locations on both sides of the wall.
SPECIFIED TECHNOLOGIES INC — SpecSeal LC150 Sealant, SpecSeal Series SSS Sealant or SpecSeal LCI Sealant. **When SpecSeal LC150 Sealant is used with max 2 in. (51 mm) diam pipe or conduit, T, FT and FTH Ratings are 3/4 hr. Otherwise, when SpecSeal LCI or SpecSeal Series SSS Sealant is used with max 2 in. (51 mm) diam pipe or conduit, T, FT and FTH Ratings are 1 hr.**

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

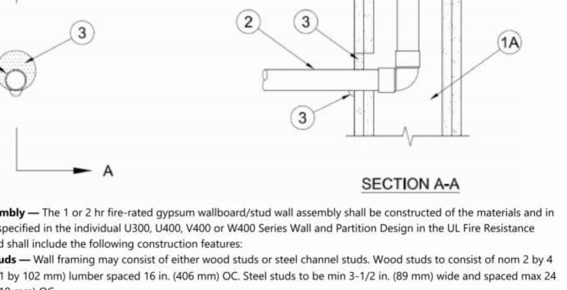
Last Updated on 2012-08-30

FIRESTOP SYSTEM NO. W-L-1168 **A5**
1" = 1'-0"

System No. W-L-1527

August 24, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1 and 2 Hr (See Item 1)
	L Rating At Ambient — Less Than 5.1 L/s/m²
	L Rating At 400 F — Less Than 5.1 L/s/m²



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).

   The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Metallic Penetrant —** One metallic pipe, conduit or tube to be installed either concentrically or eccentrically, penetrating wall assembly on one side of wall. The annular space between the pipe, conduit or tubing and the periphery of opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm). Pipe, conduit or tubing shall be rigidly supported within the wall and on the penetrated side of the wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. **Steel Pipe —** Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Conduit —** Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT), nom 3 in. (76 mm) diam steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.

   D. **Copper Tubing —** Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing.

   E. **Copper Pipe —** Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.

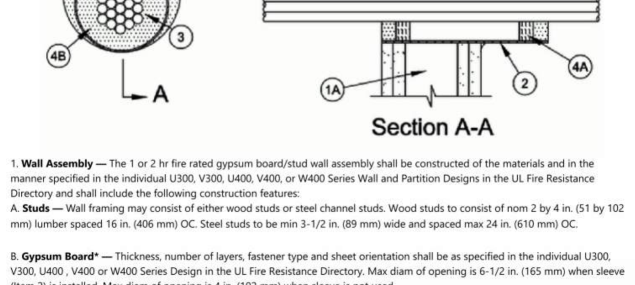
3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with surface of wall assembly. At point contact location, min 3/8 in. (10 mm) diam bead of fill material to be applied at the penetrant/gypsum board interface.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

FIRESTOP SYSTEM NO. W-L-1527 **A4**
1" = 1'-0"

System No. **W-L-3210**

October 4, 2022

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 3/4 Hr	FT Rating — 3/4 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft (See Items 3 and 4B)	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating at 400°F - Less Than 1 CFM/sq ft (See Items 3 and 4B)	FTH Rating — 3/4 Hr
	L Rating at Ambient – Less Than 5.1 L/S/m² (See Items 3 and 4B)
	L Rating at 204°C – Less Than 5.1 L/S/m² (See Items 3 and 4B)



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, V300, U400, V400, or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400 , V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 6-1/2 in. (165 mm) when sleeve (Item 2) is installed. Max diam of opening is 4 in. (102 mm) when sleeve is not used.

The hourly F and FH rating of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Sleeve — (Optional) —** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT), steel conduit, Schedule 5 (or heavier) steel pipe sleeve or min 0.016 in. thick (0.41 mm, No. 28 ga) galv steel sleeve installed flush with wall surfaces. The annular space between the steel sleeve and periphery of opening shall be min 0 in. (continuous point contact) to max 2 in. (51 mm). When Schedule 5 steel pipe or EMT is used, sleeve may be installed flush with or extend up to 18 in. (46 cm) beyond one or both wall surfaces. Steel sleeve may be installed at an angle not greater than 45 degrees from perpendicular. Schedule 5 steel pipe or EMT sleeves may extend continuously beyond one wall surface. Sleeve to be rigidly supported when extending from the wall surfaces.

3. **Cables —** Aggregate cross-sectional area of cables in opening when a steel sleeve (Item 2) is not used, or within steel sleeve to be max 48 percent of the aggregate cross-sectional area of the opening or sleeve. Cables to be bundled and rigidly supported on both sides of wall assembly. When the sleeve is installed, the annular space between the cables and the sleeve shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). When the sleeve (Item 2) is not used, the annular space between the cables and the opening shall be a min 0 in. (point contact) to a max 1/2 in. (13 mm). When L Ratings for penetrants are required, min separation between cables and between cables and periphery of opening or the sleeve os 1/8 in. (3 mm). Cable bundle, using cables described below, may penetrate the wall at an angle not greater than 45 degrees. Any combination of the following types and sizes of copper conductor cable may be used:
A. Max 200 pair No. AWG (or smaller) copper conductor cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.

B. Max 3/C No. 2/0 AWG (or smaller) aluminum or copper conductor service entrance cable with PVC insulation and jacket.

C. Max 3/C No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with copper conductors, PVC insulation and jacket.

D. Max 7/C No. 2/0 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation and XLPE or PVC jacket.

E. Max RG/U (or smaller) coaxial cable with fluorinated ethylene or plenum-rated insulation and jacketing.

F. Max 62.5/48 fiber optic cable with PVC or plenum-rated insulation and jacketing.

G. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with PVC or plenum-rated insulation and jacket.

H. Max 4/C No. 2/0 aluminum or copper conductor aluminum or steel Metal-Clad# or Armored-Clad# cable.

I. Max 3/4-in. (19 mm) diam copper ground cable with or without a PVC jacket.

4. **Firestop System —** The firestop system shall consist of the following:
A. **Packing Material —** When required (See table in Item 4B), min 1 in. (25 mm) thickness of min 4.0 pcf (64 kg/m³) mineral wool batt insulation firmly packed into each end of sleeve (Item 2) as a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material. When the sleeve is not used, the packing material is not required.

B. **Fill, Void or Cavity Material* - Sealant or Putty —** When sleeve (Item 2) is used, fill material applied to appropriate thickness within steel sleeve as shown in the table below, flush with edges of steel sleeve on both surfaces of wall. Min 1/2 in. (13 mm) thickness of fill material installed into annular space between sleeve and wall flush with both surfaces of the wall. Min 1/2 in. (13 mm) diam bead of sealant or "rope" of putty shall be applied around the perimeter of the sleeve on each side of the wall when sleeve extends beyond surface of wall and is installed at continuous point contact. When sleeve is not used, a min 5/8 in. (16 mm) thickness of fill material shall be applied within the annulus, flush with both surfaces of the wall. At point contact location, apply min 1/4 in. (6 mm) diam bead of fill material at cable/gypsum board interface on both sides of the wall.

Sealant or Putty Type	Thickness, In. (mm)	Packing Material Required
SpecSeal Series SSS Sealant or LCI Sealant	1/2 in. (13)	Yes
SpecSeal Series SSS Sealant or LCI Sealant	1 in. (25)	No
SpecSeal Putty	1 in. (25)	No

SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant, SpecSeal LCI Sealant or SpecSeal Putty

L Ratings apply only when SpecSeal Series SSS or SpecSeal LCI Sealants are used.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

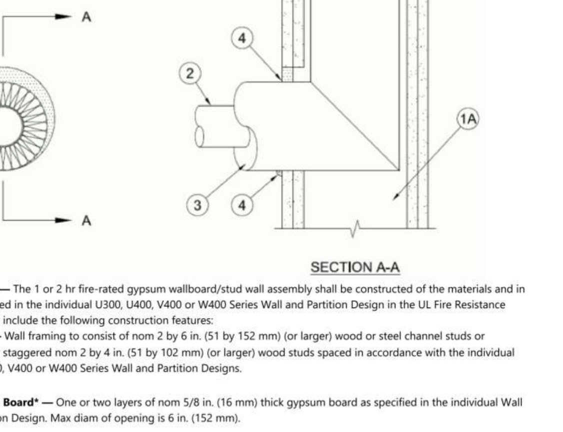
Last Updated on 2022-10-04

FIRESTOP SYSTEM NO. W-L-3210 **A3**
1" = 1'-0"

System No. W-L-5327

September 08, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1 and 2 Hr (See Item 1)
	L Rating At Ambient — Less Than 5.1 L/s/m²
	L Rating At 400 F — Less Than 5.1 L/s/m²



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing to consist of nom 2 by 6 in. (51 by 152 mm) (or larger) wood or steel channel studs or doubled or staggered nom 2 by 4 in. (51 by 102 mm) (or larger) wood studs spaced in accordance with the individual U300, U400, V400 or W400 Series Wall and Partition Designs.

   B. **Gypsum Board* —** One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 6 in. (152 mm).

   The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Penetrant —** One metallic pipe or tube to be installed either concentrically or eccentrically, penetrating wall assembly on one side of wall. Penetrant shall be rigidly supported within the wall and on the penetrated side of the wall assembly. One of the following types and sizes of pipe or tube may be used:
   A. **Steel Pipe —** Nom 2 in. (51 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 2 in. (51 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Copper Tubing —** Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing.

   D. **Copper Pipe —** Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Pipe Coverings* —** One of the following types of pipe coverings shall be used:
   A. **Pipe and Equipment Covering Materials* —** Max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf (56 kg/m³)) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between insulated penetrating item and the edge of the through opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm).
   See **Pipe and Equipment Covering-Materials*** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   B. **Pipe Covering Materials* —** Max 2 in. (51 mm) thick unfaced mineral fiber pipe insulation sized to the outside diam of pipe or tube. Pipe insulation secured with min 18 AWG steel wire spaced max 12 in. (305 mm) OC. The annular space between insulated penetrating item and the edge of the through opening shall be min 0 in. (point contact) to 7/8 in. (22 mm) max.
   INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc

   C. **Sheathing Material* —** Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.
   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with surface of wall assembly. At point contact location, min 3/8 in. (10 mm) diam bead of fill material to be applied at the penetrant/gypsum board interface.
SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

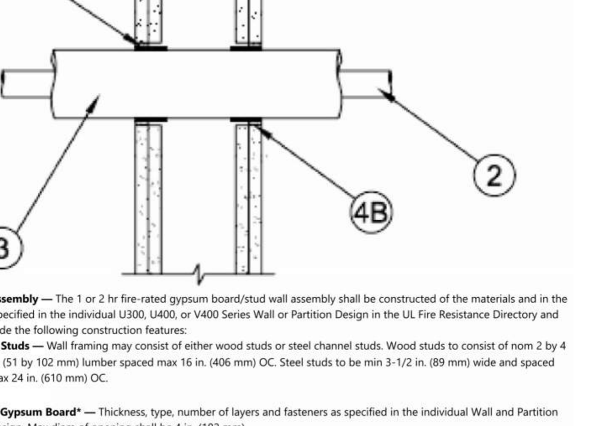
Last Updated on 2016-09-08

FIRESTOP SYSTEM NO. W-L-5327 **A2**
1" = 1'-0"

System No. W-L-5290

August 23, 2011

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)	FT Ratings — 1 and 2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1 and 2 Hr (See Item 1)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening shall be 4 in. (102 mm).
   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant —** One nonmetallic pipe, conduit or tube to be centered within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
   A. **Polyvinyl Chloride (PVC) Pipe —** Nom 1 in. (25 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems.

   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 1 in. (25 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

   C. **Cross Linked Polyethylene (PEX) Tubing —** Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.

3. **Pipe and Equipment Covering Materials* —** Max 1 in. (25 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 57 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between insulated penetrating item and the edge of the through opening shall be nom 11/32 in. (8.7 mm).

4. **Firestop System —** The firestop system shall consist of the following items:
   A. **Fill, Void or Cavity Material* — Wrap Strip —** Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips or 1/8 or 1/4 in. (3.2 or 6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Single layer of wrap strip wrapped around the through penetrant with the ends butted and held in place by means of foil tape. The wrap strip is slid along the through penetrant into annulus such that outer edge of wrap strip is flush with wall surface. One set of wrap strips to be installed on each side of wall. As an option when 1/8 in. (3.2 mm) thick wrap strip (BLU2) is used, the strips may be cut to a width of 1-1/2 in. (38 mm).
   SPECIFIED TECHNOLOGIES INC — SpecSeal BLU Wrap Strip, SpecSeal BLU2 Wrap Strip or SpecSeal RED Wrap Strip, SpecSeal RED2 Wrap Strip

   B. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly.
   SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant or SpecSeal Series SSS Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2011-08-23

FIRESTOP SYSTEM NO. W-L-5290 **A1**
1" = 1'-0"

PGAV ARCHITECTS
PECKHAM GUYTON ALBERS & VIETS, INC.
1900 w.47th Place, #300, Westwood, KS 66205
(913) 362-6500 www.PGAV.COM

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STATE OF MISSOURI
RANDALL STEVEN CRAMER
NUMBER A-2020037022
ARCHITECT
7/8/2025

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PECKHAM GUYTON ALBERS & VIETS, INC.
MO STATE CERTIFICATE OF AUTHORITY #000086

Introba
INTROBA, INC.
Mechanical and Plumbing Engineers
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Structural Engineers
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Kansas City, MO 64111 (816) 531-4144
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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

UL- RATED ASSEMBLIES

DATE: 07/08/2025	
DRAWN: Author	CHECKED: Checker
PGAV #: 53660-20	CLIENT #: CP2400920
SHEET #: **A109L**	

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/UM SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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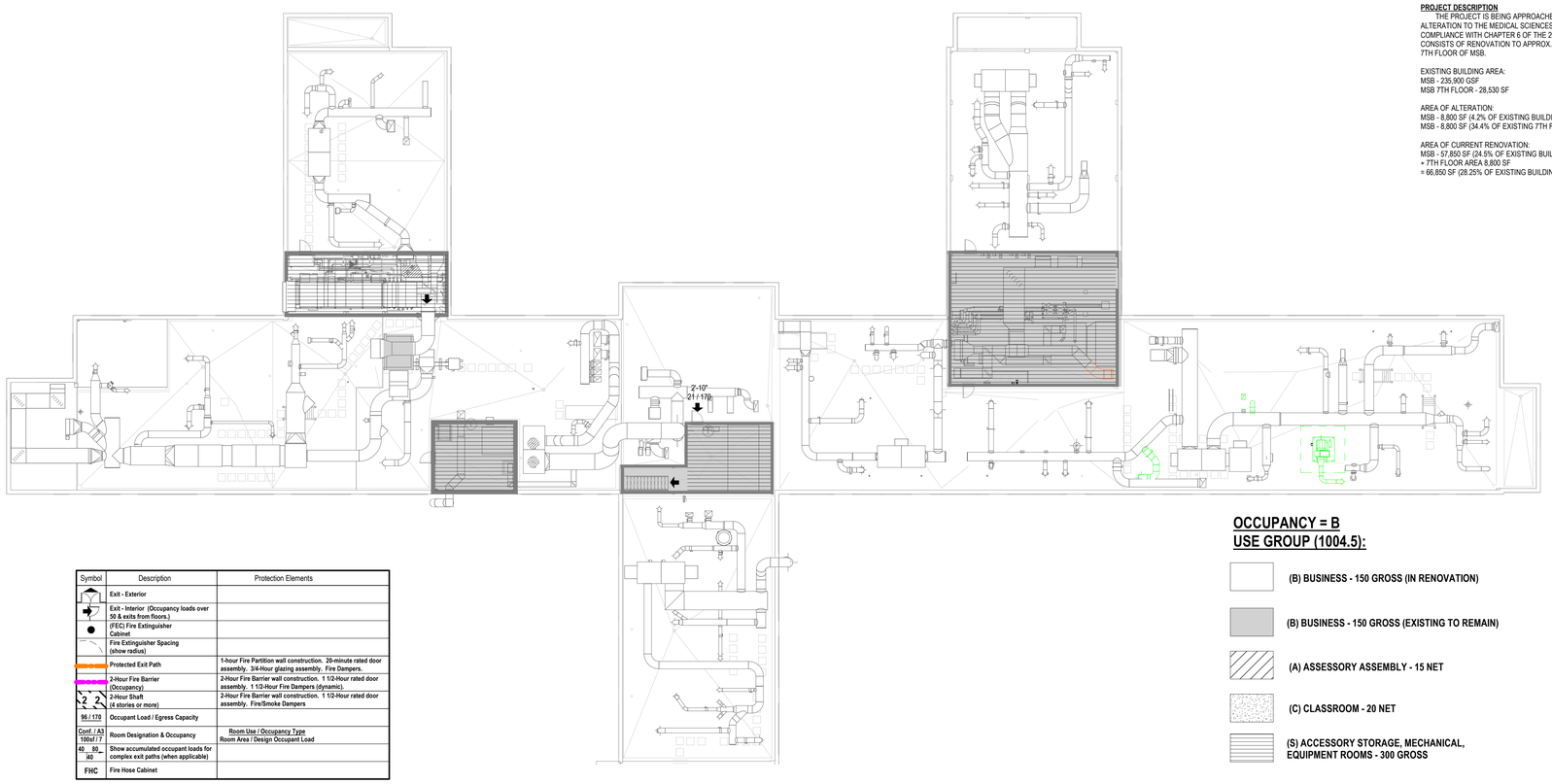
Author



Symbol	Description	Protection Elements
	Exit - Exterior	
	Exit - Interior (Occupancy loads over 50 & exits from floors.)	
	(FEC) Fire Extinguisher Cabinet	
	Fire Extinguisher Spacing (show radius)	
	Protected Exit Path	1-hour Fire Partition wall construction. 20-minute rated door assembly. 3/4-Hour glazing assembly. Fire Dampers.
	2-Hour Fire Barrier (Occupancy)	2-Hour Fire Barrier wall construction. 1 1/2-Hour rated door assembly. 1 1/2-Hour Fire Dampers (dynamic).
2 2	2-Hour Shaft (4 stories or more)	2-Hour Fire Barrier wall construction. 1 1/2-Hour rated door assembly. Fire/Smoke Dampers
96 / 170	Occupant Load / Egress Capacity	
Conf. / A3 100sf / 7	Room Designation & Occupancy	Room Use / Occupancy Type Room Area / Design Occupant Load
40 80 / 80	Show accumulated occupant loads for complex exit paths (when applicable)	
FHC	Fire Hose Cabinet	

CODE ROOF PLAN - OVERALL C1

1/16" = 1'-0"

PROJECT DESCRIPTION

THE PROJECT IS BEING APPROACHED AS A LEVEL 2 ALTERATION TO THE MEDICAL SCIENCES BUILDING IN COMPLIANCE WITH CHAPTER 6 OF THE 2021 IEBC. PROJECT CONSISTS OF RENOVATION TO APPROX. 8,800 SF ON THE 7TH FLOOR OF MSB.

EXISTING BUILDING AREA:
MSB - 235,900 GSF
MSB 7TH FLOOR - 28,530 SF

AREA OF ALTERATION:
MSB - 8,800 SF (4.2% OF EXISTING BUILDING AREA)
MSB - 8,800 SF (34.4% OF EXISTING 7TH FLOOR AREA)

AREA OF CURRENT RENOVATION:
MSB - 57,850 SF (24.5% OF EXISTING BUILDING AREA)
+ 7TH FLOOR AREA 8,800 SF
= 66,850 SF (28.25% OF EXISTING BUILDING AREA)

BUILDING INFORMATION
MEDICAL SCIENCES BUILDING
UNIVERSITY OF MISSOURI COLUMBIA
COLUMBIA MISSOURI 65211
LAB RENOVATIONS - PHASE 1

OWNER:
CURATORS OF THE UNIVERSITY OF MISSOURI

AUTHORITY HAVING JURISDICTION
UM SYSTEM

ORIGINAL BUILDING BUILT
1954

MAJOR ADDITIONS
1964 AND 1966

NUMEROUS RENOVATIONS
THROUGH THE PAST 60 YEARS

HEIGHT
7 STORIES; 73' TO HIGHEST HABITED FLOOR;
84' TO ROOF SLAB; 88' TO TOP OF PARAPET

AREA
28,500 SF (7TH FLOOR)

RENOVATION AREA
8,900 SF (31.3% OF 7TH FLOOR)

CONSTRUCTION TYPE
1-B

OCCUPANCY CLASSIFICATION
BUSINESS (B)

RISK CATEGORY: III

FIRE - RESISTIVE RATING REQUITREMENTS:

STRUCTURAL FRAME -	2 HOUR
BEARING WALLS -	2 HOUR
NON BEARING WALLS -	0 HOUR
FLOOR CONSTRUCTION -	2 HOUR
ROOF CONSTRUCTION -	1 HOUR

PASSIVE FIRE PROTECTION FEATURES:

1. STRUCTURAL FRAME - PER CONSTRUCTION TYPE

2. CEILING/ FLOOR - PER CONSTRUCTION TYPE

3. STAIRS SEPARATED BY 2-HOUR FIRE RESISTIVE CONSTRUCTION

4. CORRIDORS - 1-HOUR RATED/ PROVIDED IN NEW CONSTRUCTION. EXISTING CONSTRUCTION TO REMAIN OUTSIDE RENOVATION AREA.

MAX. DEAD END CORRIDOR DISTANCE - IBC 1020.5:

WITHOUT SPRINKLER SYSTEM: 20 FT
BUSINESS (B) - WITH SPRINKLER SYSTEM: 50 FT

MAX. COMMON PATH OF TRAVEL DISTANCE - IBC 1006.2.1:

BUSINESS (B) WITHOUT SPRINKLER SYSTEM: 75 FT
BUSINESS (B) - WITH SPRINKLER SYSTEM: 100 FT

CODES OF RECORD:

2024	INTERNATIONAL BUILDING CODE
2024	INTERNATIONAL EXISTING BUILDING CODE (LEVEL 2 ALTERATIONS ONLY WITH PREAPPROVAL FROM THE AHJ)
2024	INTERNATIONAL PLUMBING CODE
2024	INTERNATIONAL MECHANICAL CODE
2024	INTERNATIONAL FIRE CODE
2024	INTERNATIONAL FUEL GAS CODE
2017	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - 2017
2023	NATIONAL ELECTRICAL CODE/ NFPA 70
2022	NFPA150, FIRE AND LIFE SAFTEY IN ANIMAL HOUSING FACILITIES CODE
2022	NFPA110, STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS
2024	NFPA 90A, INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS
2024	NFPA 75, STANDARD FOR THE FIRE PROTECTION OF INFORMATION TECHNOLOGY EQUIPMENT
2022	NFPA 72, NATIONAL FIRE ALARM CODE
2024	NFPA 45, STANDARD ON FIRE PROTECTION FOR LABORATORIES USING CHEMICALS
2024	NFPA 14, STANDARD FOR INSTALLATION OF STANDPIPE, PRIVATE HYDRANTS AND HOSE SYSTEMS
2022	NFPA 13, INSTALLATION OF FIRE SPRINKLER SYSTEMS
2022	ASHRAE 90.1, ENERGY STANDARD FOR BUILDINGS
2016	ASME A17.1, SAFTEY CODE FOR ELEVATORS AND ESCALATORS
2010	ADA STANDARDS FOR ACCESSIBLE DESIGN

ACTIVE FIRE PROTECTION FEATURES:

1. EXISTING BUILDING IS PARTIALLY SPRINKLERED. THE CURRENT PROJECT WILL INSTALL SPRINKLER PIPING THROUGHOUT THE PRIMARY RENOVATION AREA (EAST & CENTER-EAST WINGS). ALL EGRESS STAIRS SERVING THE PRIMARY RENOVATION AREAS WILL BE EQUIPPED WITH STANDPIPES AND WILL BE FULLY SPRINKLERED TO THE POINT OF EXIT DISCHARGE. FIRE SUPPRESSION INFRASTRUCTURE WILL BE SIZED TO ACCOMMODATE EXTENSION OF SPRINKLER SYSTEM THROUGHOUT REMAINDER OF THE FLOOR.

2. MANUAL FIRE ALARM SYSTEM REQUIRED AND PROVIDED.

3. SMOKE DETECTION PROVIDED.

4. EMERGENCY LIGHTS DOUBLE-HEADED TYPE THROUGHOUT ON BATTERY - BACKUP.

5. EXIT SIGNS AT REQUIRED EXITS ON BATTERY - BACKUP.

6. FIRE EXTINGUISHERS PROVIDED THROUGHOUT RENOVATED FLOORS.

7. FIRE HOSE VALVES WILL REMAIN ACTIVE.

LEVEL 2 EGRESS WIDTHS - IBC 1005.3:

.3"/ OCCUPANT FOR STAIRS
.2"/ OCCUPANT FOR DOORS/ OTHER EGRESS
.2"/ OCCUPANT WITH SPRINKLER SYSTEM
.15"/ OCCUPANT WITH SPRINKLER SYSTEM

HAZARDOUS MATERIAL QUANTITIES:

BASED ON OUR UNDERSTANDING OF THE RESEARCH BEING CONDUCTED, WE ANTICIPATE THE RENOVATED LABS TO BE CLASSIFIED AS TYPE 'C' OR TYPE 'D' PER NFPA 45. BASED ON THIS CATEGORIZATION, WE ANTICIPATE NO ISSUES WITH MAXIMUM ALLOWABLE HAZARDOUS MATERIAL QUANTITIES, AND ANTICIPATE THAT NO ADDITIONAL FIRE PROTECTION MEASURES WILL BE REQUIRED.

MAX. EGRESS ACCESS TRAVEL DISTANCE - IBC TABLE 1017.2:

BUSINESS (B) - WITHOUT SPRINKLER SYSTEM: 200 FT
BUSINESS (B) - WITH SPRINKLER SYSTEM: 300 FT

SPECIAL INSPECTIONS - IBC 1704.2.3:

1.) REINFORCEMENT INSPECTION
2.) ANCHORS
3.) CONCRETE TESTING
4.) FIRESTOPPING

DEFERRED SUBMITTALS - IBC 107.3.4.1:

1.) 211000 - WATER-BASED FIRE SUPPRESSION SYSTEMS
2.) 283100 - FIRE DETECTION AND ALARM

OCCUPANCY = B
USE GROUP (1004.5):

(B) BUSINESS - 150 GROSS (IN RENOVATION)

(B) BUSINESS - 150 GROSS (EXISTING TO REMAIN)

(A) ASSESSORY ASSEMBLY - 15 NET

(C) CLASSROOM - 20 NET

(S) ACCESSORY STORAGE, MECHANICAL, EQUIPMENT ROOMS - 300 GROSS

OCCUPANCY
OCCUPANT AREA FACTOR
B/ 100
ROOM NAME
XXX SF/ XXX
GENERAL ROOM USE
ROOM OCCUPANT LOAD
ROOM AREA
X'-X"
XXX / XXX
EXIT ACCESS COMPONENT
OCCUPANT CAPACITY OF EXIT
X'-X"
XXX / XXX
BUILDING EXIT
OF OCCUPANTS EXITING
EXIT WIDTH PROVIDED
EXIT DISTANCE XX'
PATH OF TRAVEL & TRAVEL DIST
1-HR RATED WALLS
2-HR RATED WALLS
FEC
FIRE EXTINGUISHER CABINET

LIFE SAFETY LEGEND

7TH FLOOR CHART PROVIDED BY PGAV IN RELATION TO CP2400920 7 EAST LAB PROJECT.

IBC 2021 TABLE 307.1(1)

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD ADJUSTED FOR PROJECT SPECIFIC CONDITIONS

Material	Class	Group when Quantity is Exceeded	STORAGE: Solid Pounds *Cubic Feet*	STORAGE: Liquid Gallons *Pounds*	STORAGE: Gas Cubic *Feet at NTP*	USE - CLOSED SYSTEMS: Solid Pounds *Cubic Feet*	USE - CLOSED SYSTEMS: Liquid gallons *Pounds*	USE - CLOSED SYSTEMS: Gas cubic feet at NTP	USE - OPEN SYSTEMS: Solid pounds *Cubic feet*	USE - OPEN SYSTEMS: Liquid Gallons *Pounds*
Combustible Dust	NA	H-2	See Note Q	NA	NA	See Note q	NA	NA	See Note Q	NA
Combustible Fiber	Loose Baled	H-3	***5*** ***50***	NA	NA	***5*** ***50***	NA	NA	***1*** ***10***	NA
Combustible Liquid	II IIIA IIIB	H-2 or H-3 H-2 or H-3 NA	NA	12 33 1320	NA	NA	6 16.5 660	NA	NA	2 4 165
Consumer Fireworks	1.4G	H-3	12.5	NA	NA	NA	NA	NA	NA	NA
Cryogenic Flammable	NA	H-2	NA	2.25	NA	NA	2.25	NA	NA	0.5
Cryogenic inert	NA	NA	NA	NA	NL	NA	NA	NL	NA	NA
Cryogenic oxidizing	NA	H-3	NA	2.25	NA	NA	2.25	NA	NA	0.5
Explosives	Div. 1.1 Div. 1.2 Div. 1.3 Div. 1.4 Div. 1.4G Div. 1.5 Div. 1.6	H-1 H-1 H-1 or H-2 H-3 H-3 H-1 H-1	0 0 0 0 12.5 0 0	***0*** ***0*** ***0*** ***0*** NA ***0*** NA	NA	0 0 0 0 NA 0 NA	***0*** ***0*** ***0*** ***0*** NA ***0*** NA	NA	***0*** 0 ***0*** NA NA 0 NA	***0*** ***0*** ***0*** NA NA ***0*** NA
Flammable gas	Gaseous Liquified	H-2	NA	NA ***15***	100 NA	NA	100 ***15***	NA	NA	NA
Flammable liquid	IA IB, IC	H-2 or H-3	NA	3 12	NA	NA	1.5 6	NA	NA	1 1.5
Flammable liquid, combination IA, IB, IC*	NA	H-2 or H-3	NA	12	NA	NA	6	NA	NA	1.5
Flammable Solid	NA	H-3	12.5	NA	NA	6.25	NA	NA	1.25	NA
Inert Gas	Gaseous Liquified	NA NA	NA NA	NA NA	NL NL	NA NA	NA NA	NL NL	NA NA	NA NA
Organic Peroxide	UD I II III IV V	H-1 H-2 H-3 H-3 NA NA	0 0.5 5 12.5 NL NL	***0*** ***0.5*** ***5*** ***12.5*** NL NL	NA	0 0.05 2.5 6.25 NL NL	***0*** ***0.05*** ***2.5*** ***6.25*** NL NL	NA	0 0.05 0.5 1.25 NL NL	***0.0125*** ***0.05*** ***0.5*** ***1.25*** NL NL
Oxidizer	4 3 2 1 NA	H-1 H-2 or H-3 H-3 NA 8000	0 1 25 8000	***0*** ***1*** ***25*** ***8000***	NA	0 0.1 12.5 4000	***0*** ***0.1*** ***12.5*** ***4000***	NA	0 0.1 12.5 4000	***0*** ***0.1*** ***12.5*** ***4000***
Oxidizing gas	Gaseous Liquified	H-3	NA	NA ***15***	150 NA	NA	NA ***15***	150 NA	NA	NA
Pyrophoric	NA	H-2	0	***0***	0	0	***0***	0	0	***0***
Unstable	4 3 2 1	H-1 H-1 or H-2 H-3 NA	0 0.5 5 NL	***0*** ***0.5*** ***5*** NL	0 5 75 NL	0 0.05 2.5 NL	***0*** ***0.05*** ***2.5*** NL	0 1 75 NL	0 0.05 0.5 NL	***0*** ***0.05*** ***0.5*** NL
Water Reactive	3 2 1	H-2 H-3 NA	0.5 5 NL	***0.5*** ***5*** NL	NA	0.25 2.5 NL	***0.25*** ***2.5*** NL	NA	0.05 0.5 NL	***0.05*** ***0.5*** NL

CODE LEVEL 7 PLAN - OVERALL LFL A1

1/16" = 1'-0"

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(816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #2006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

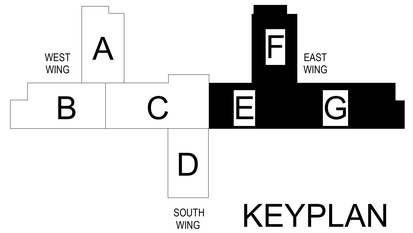
University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

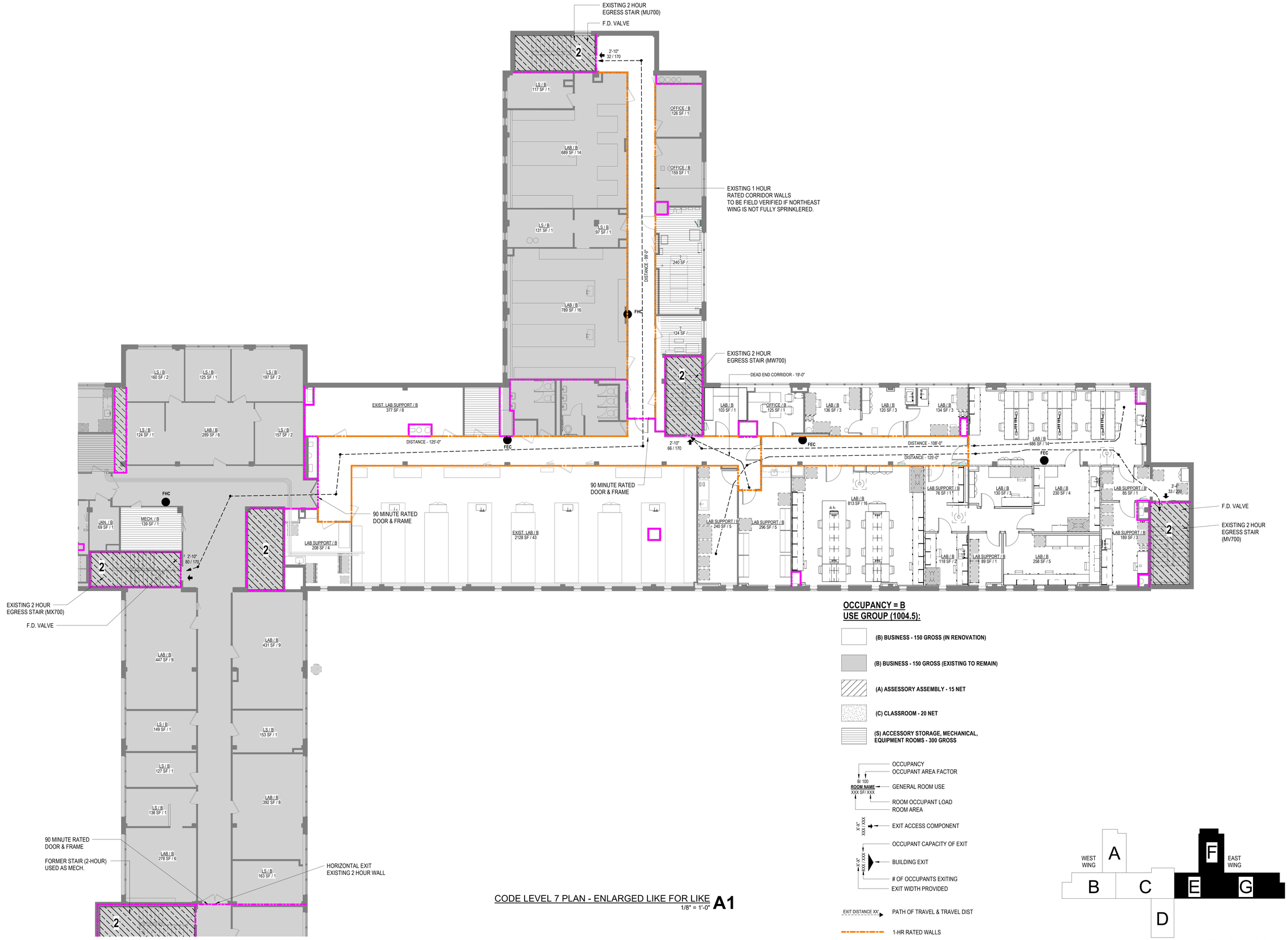
LEVEL 7 & ROOF - CODE PLAN - OVERALL

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A175L**



KEYPLAN

6/27/2025 8:42:23 AM Autodesk Docs://53660-10 MU-SCIM MSB Lab Renovations/UM SCIM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt



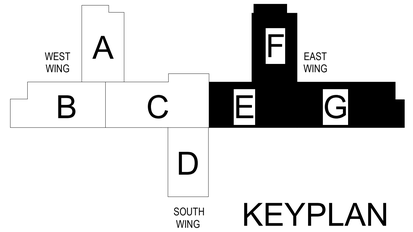
CODE LEVEL 7 PLAN - ENLARGED LIKE FOR LIKE **A1**
1/8" = 1'-0"

OCCUPANCY = B
USE GROUP (1004.5):

- (B) BUSINESS - 150 GROSS (IN RENOVATION)
- (B) BUSINESS - 150 GROSS (EXISTING TO REMAIN)
- (A) ASSESSORY ASSEMBLY - 15 NET
- (C) CLASSROOM - 20 NET
- (S) ACCESSORY STORAGE, MECHANICAL, EQUIPMENT ROOMS - 300 GROSS

OCCUPANCY
OCCUPANT AREA FACTOR
B/ 100
ROOM NAME
XXX SF/ XXX
GENERAL ROOM USE
ROOM OCCUPANT LOAD
ROOM AREA
X'-X"
XXX / XXX
EXIT ACCESS COMPONENT
OCCUPANT CAPACITY OF EXIT
X'-X"
XXX / XXX
BUILDING EXIT
OF OCCUPANTS EXITING
EXIT WIDTH PROVIDED
EXIT DISTANCE XX'
PATH OF TRAVEL & TRAVEL DIST
1-HR RATED WALLS
2-HR RATED WALLS
FEC
FIRE EXTINGUISHER CABINET

LIFE SAFETY LEGEND



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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 - ENLARGED CODE PLAN BASE

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A176L**

Author
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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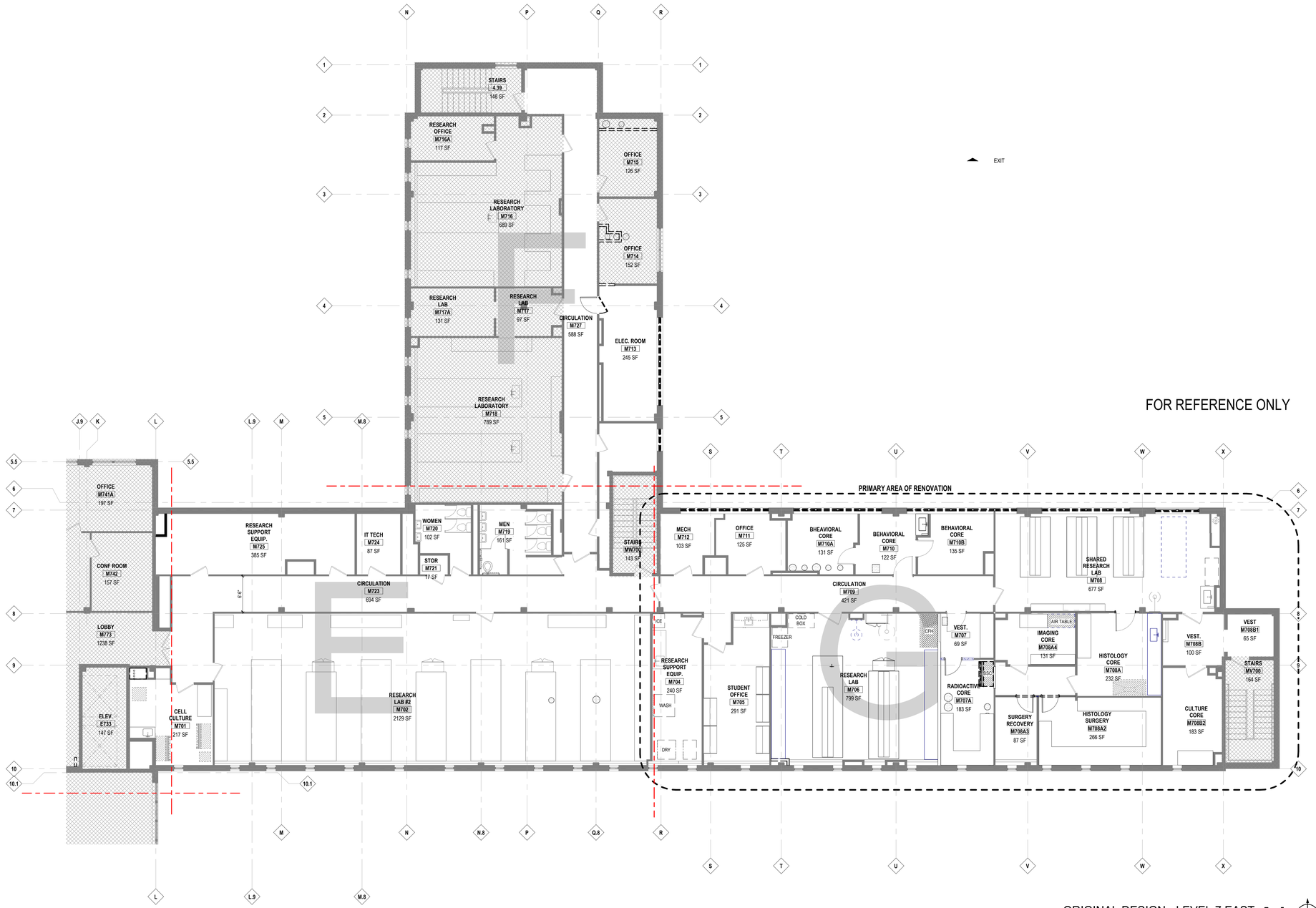
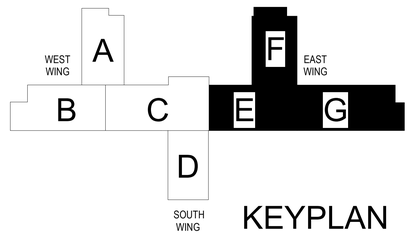


FOR REFERENCE ONLY

ORIGINAL DESIGN - LEVEL 7 EAST **A1**
1/8" = 1'-0"

NORTH



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0" 1"

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A275L

Author
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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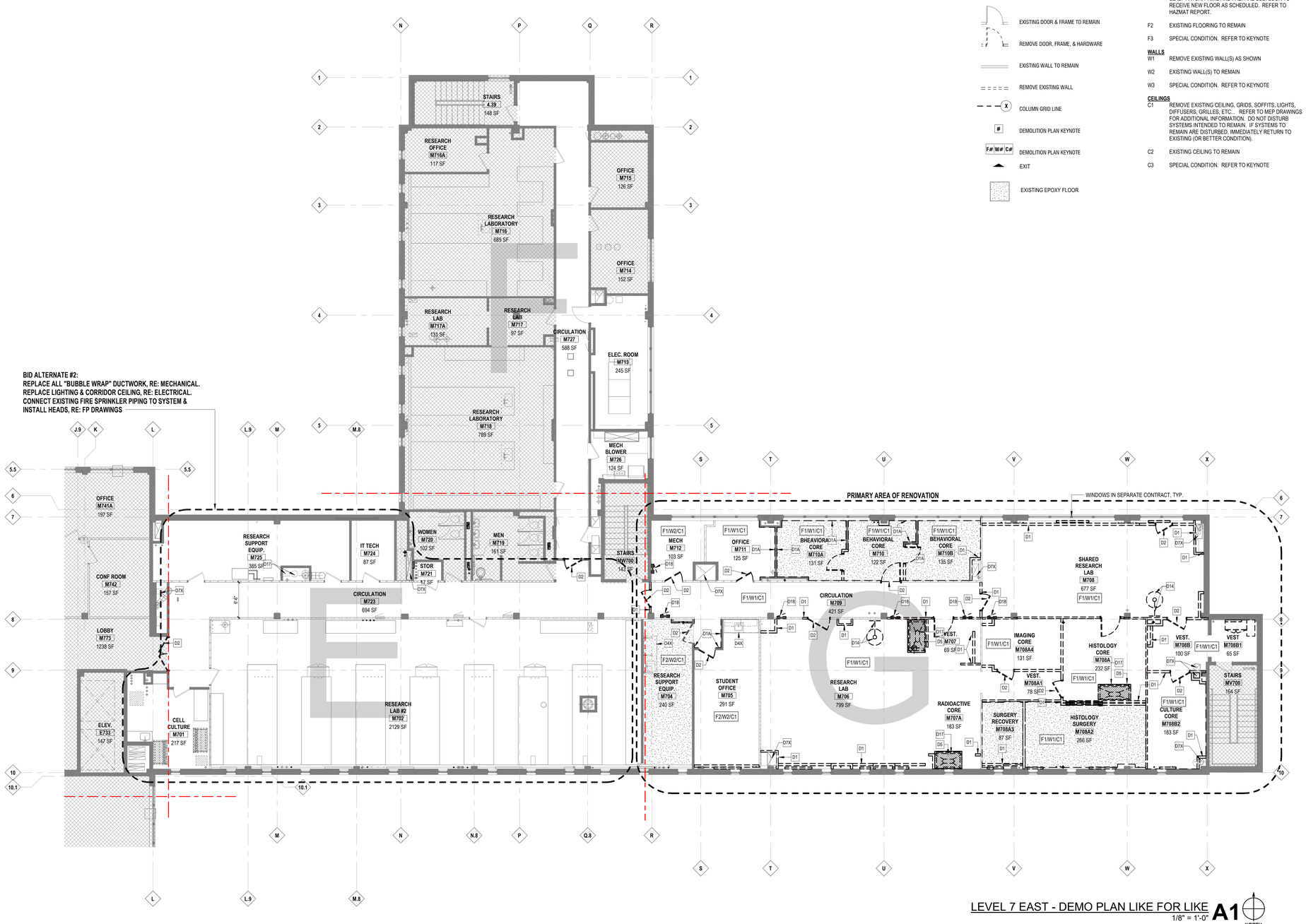


LEVEL 7 EAST - DEMO PLAN LIKE FOR LIKE **A1**
1/8" = 1'-0" NORTH

DEMO PLAN LEGEND

- EXISTING DOOR & FRAME TO REMAIN
- REMOVE DOOR, FRAME, & HARDWARE
- EXISTING WALL TO REMAIN
- REMOVE EXISTING WALL
- (X) COLUMN GRID LINE
- # DEMOLITION PLAN KEYNOTE
- F# W# C# DEMOLITION PLAN KEYNOTE
- EXIT
- EXISTING EPOXY FLOOR

FLOOR
- F1 REMOVE EXISTING FLOORING, ADHESIVE, ETC FROM SLAB. PATCH, PRIME AND PREPARE SUBFLOOR TO RECEIVE NEW FLOOR AS SCHEDULED. REFER TO HAZMAT REPORT.
- F2 EXISTING FLOORING TO REMAIN
- F3 SPECIAL CONDITION. REFER TO KEYNOTE

WALLS
- W1 REMOVE EXISTING WALL(S) AS SHOWN
- W2 EXISTING WALL(S) TO REMAIN
- W3 SPECIAL CONDITION. REFER TO KEYNOTE

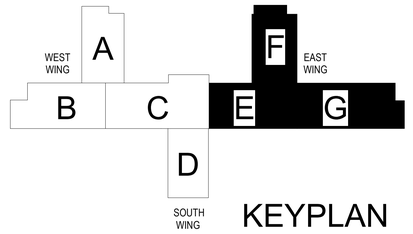
CEILINGS
- C1 REMOVE EXISTING CEILING, GRIDS, SOFFITS, LIGHTS, DIFFUSERS, GRILLES, ETC... REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. DO NOT DISTURB SYSTEMS INTENDED TO REMAIN. IF SYSTEMS TO REMAIN ARE DISTURBED, IMMEDIATELY RETURN TO EXISTING (OR BETTER CONDITION).
- C2 EXISTING CEILING TO REMAIN
- C3 SPECIAL CONDITION. REFER TO KEYNOTE

GENERAL DEMO PLAN NOTES

1. PROVIDE TEMPORARY PROTECTION OF ALL EXISTING CONSTRUCTION TO REMAIN. INSTALL TEMPORARY CONSTRUCTION BARRIERS AS REQUIRED TO CREATE A SECURE ENCLOSURE TO SEPARATE DEMOLITION AND CONSTRUCTION ACTIVITIES FROM OCCUPIED SPACES.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK. REPORT ANY DISCREPANCIES TO ARCHITECT IN WRITING PRIOR TO BEGINNING WORK IN THE AFFECTED AREAS. DIMENSIONS PROVIDED ARE FOR REFERENCE ONLY AND SHALL BE CONFIRMED IN THE FIELD.
3. CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF EXISTING CONDITIONS TO REMAIN, NOTING SPECIFICALLY ALL MATERIALS OR ITEMS WHICH ARE DAMAGED PRIOR TO BEGINNING WORK.
4. REFER TO MEP/FP DRAWINGS FOR ADDITIONAL DEMOLITION WORK. ALL ABANDONED SYSTEMS WITHIN PROJECT AREA SHALL BE REMOVED UNLESS SPECIFICALLY NOTED OTHERWISE. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR BELOW THE FLOOR. REPAIR WALL, FLOOR, AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR REROUTING OF NEW AND/OR EXISTING PIPING, DUCTWORK, CONDUIT, ETC. AS REQUIRED TO BLEND SEAMLESSLY WITH ADJACENT FINISHES.
5. ALL SYSTEMS SERVING OCCUPIED SPACES SHALL BE MAINTAINED, UNLESS OTHERWISE COORDINATED WITH OWNER. WHERE DEMOLITION DISRUPTS OR DISTURBS EXISTING ELECTRICAL, MECHANICAL OR PLUMBING SERVICES TO OCCUPIED AREAS OUTSIDE THE RENOVATION AREA, CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO ENSURE UNINTERRUPTED SERVICE.
6. CONTRACTOR SHALL REMOVE COMPLETELY EXISTING CONSTRUCTION WHICH CONFLICTS WITH NEW CONSTRUCTION.
7. WHERE NEW FLOOR FINISHES ARE TO BE INSTALLED, CONTRACTOR SHALL REMOVE EXISTING FLOOR FINISHES AND ADHESIVES AND PREPARE SLAB TO RECEIVE NEW FLOOR FINISHES, PATCHING HOLES AS REQUIRED. SEE SPECIFICATIONS FOR ADDITIONAL FLOOR PREP REQUIREMENTS.
8. EXISTING WALL CONSTRUCTION VARIES THROUGHOUT PROJECT AREA (CLAY TILE, CMU, GYP ON METAL STUD, ETC.). REVIEW EXISTING WALLS INDICATED TO BE DEMOLISHED ON SITE PRIOR TO PREPARING BIDS. WHERE NEW WORK REQUIRES PATCHING EXISTING WALLS, PATCH USING MATERIALS MATCHING EXISTING CONSTRUCTION.
9. CONTRACTOR SHALL PATCH TO MATCH SURROUNDING FINISHES, ANY AREAS DAMAGED AS A RESULT OF, OR CAUSED BY, THE WORK INDICATED THROUGHOUT THE CONTRACT DOCUMENTS. EXISTING CEILING TILE AND GRID BEING REMOVED AND RE-INSTALLED AS PART OF THIS PROJECT SHALL BE REPLACED WITH NEW IF DAMAGED.
10. REFER TO SPECIFICATIONS FOR HAZARDOUS MATERIAL INFORMATION.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING AREAS OUTSIDE OF THE CONSTRUCTION LIMITS CLEAN AND FREE OF DUST AT ALL TIMES.
12. MAINTAIN TWO SEPARATE CLEAR AND ACCESSIBLE PATHS OF EXIT FROM OCCUPIED SPACES AT ALL TIMES.

DEMOLITION NOTES 7th Floor Copy 1

- D1 DEMOLISH WALL, COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING WALL AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D1A DEMOLISH GYP. ON THIS SIDE OF WALL ONLY, COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING WALL AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D2 DEMOLISH DOOR, DOOR FRAME AND HARDWARE. INFILL OPENING TO MATCH EXISTING WALL AND WALL THICKNESS.
- D2A DEMOLISH FRAME AND HARDWARE. SALVAGE AND PROTECT DOOR LEAF TO REINSTALL WITH NEW HARDWARE.
- D3 DEMOLISH WINDOW FRAME AND GLAZING, AND REMOVE ANY EXISTING WINDOW AC UNITS, RE: MECH. PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS FOR COMPLETE SCOPE OF WORK
- D4 DEMOLISH ALL CASEWORK AND CABINETS.
- D4A DEMOLISH CASEWORK. COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING CASEWORK AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D4X CASEWORK AND CABINETS TO REMAIN
- D5 DEMOLISH HOOD & PLUMBING FIXTURES. CAP SUPPLY AND DRAIN PIPING PER MEP DRAWINGS & SPECS.
- D6 DEMOLISH WALL LOUVER AND FRAME, PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS FOR COMPLETE SCOPE OF WORK.
- D7E EXISTING ELECTRICAL PANEL TO REMAIN
- D7P EXISTING PIPING TO REMAIN
- D7X EXISTING EXHAUST DUCT TO REMAIN
- D8 DEMOLISH EXISTING CARPET OR VCT FLOORING. COORDINATE EXTENTS OF DEMOLITION WITH NEW FLOOR FINISH PLAN.
- D9 TEMPORARILY REMOVE AND REINSTALL EXISTING LAY-IN CEILINGS AS REQUIRED FOR MECHANICAL / ELECTRICAL WORK IN PLENUM, OR AT CONTRACTOR'S OPTION, SELECTIVELY DEMO AND INSTALL NEW LAY-IN CEILING AS REQUIRED.
- D10 DEMOLISH SUSPENDED TILE CEILING AND GRID. DISCONNECT LIGHT FIXTURES PER ELEC. SPECS. COORD. EXTENT OF DEMO WITH NEW CEILINGS.
- D10A DEMOLISH SUSPENDED TILE CEILING AND GRID. 2ND SUSPENDED CEILING OBSERVED ABOVE THAT WILL ALSO NEED TO BE DEMOLISHED. DISCONNECT LIGHT FIXTURES PER ELEC. SPECS. COORD. EXTENT OF DEMO WITH NEW CEILINGS.
- D11 DEMOLISH ACOUSTICAL CEILING AND METAL STUD FRAMING.
- D12 EXISTING DUCTS TO BE RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D12P EXISTING PIPING TO BE REMOVED / RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D12X EXISTING DUCTS TO BE RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D14 DEMOLISH EXISTING EYEWASH STATION AND ASSOCIATED PIPING. CAP SUPPLY AND DRAIN PIPING PER MEP DRAWINGS & SPECS.
- D15 REMOVE EXISTING BRICK AND EXTERIOR WALL AT NEW WINDOW OPENING. PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS AND DETAILS FOR COMPLETE SCOPE OF WORK.
- D16 DEMO EXISTING STEAM PIPING PENETRATIONS AT FLOOR. SALVAGE AND REPLACE CEILINGS AS NEEDED FOR ACCESS BELOW. PREP FOR NEW FLOOR INFILL (2 HR FLOOR ASSEMBLY). RE: MECH. FOR MORE INFORMATION.
- D17 DEMOLISH EXHAUST DUCT AND/OR TRANSITE PIPE FROM FLOOR ABOVE AND CAP BELOW 7TH FLOOR FOR INSTALLATION OF NEW FLOOR INFILL. CAP TRANSITE PIPE PER ABATEMENT REQUIRMENTS AND SECURE TRANSITE PIPE AS REQUIRED FOR CAPPING BELOW 7TH FLOOR.
- D17A DEMOLISH EXHAUST DUCT ON ROOF. DEMOLISH ROOF CURBS & PATCH HOLES IN ROOF SLAB PER STRUCT. COORD. WITH MECH. DRAWINGS FOR FULL SCOPE. PATCH ROOFING TO MATCH EXISTING.
- D18 DEMOLISH EXISTING ELECTRICAL PANEL. REF. ELEC. DRAWINGS & SPECS.
- D19 DEMOLISH EXISTING FIRE HOSE CABINET. REF. FP DRAWINGS.
- D22 PRIOR TO DEMOLITION OF PROJECT AREA, INSTALL INSULATED TEMP. PARTITION AND TEMP. DOOR & FRAME. STARC REALWALL OR EQUAL WITH BEST 7-PIN DOOR HARDWARE. FIRE RETARDANT PLASTIC ABOVE CEILING, AT CONTRACTORS OPTION, VINYL FACED GYPSUM WITH LOCKING DOOR CAN BE USED IN LIEU OF STARC PANELS.



KEYPLAN

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PECKHAM GUYTON ALBERS & VIETS, INC.
MO STATE CERTIFICATE OF AUTHORITY #000086

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Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #0006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

DEMOLITION PLAN - LEVEL 7 - EAST

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A276L**

Author
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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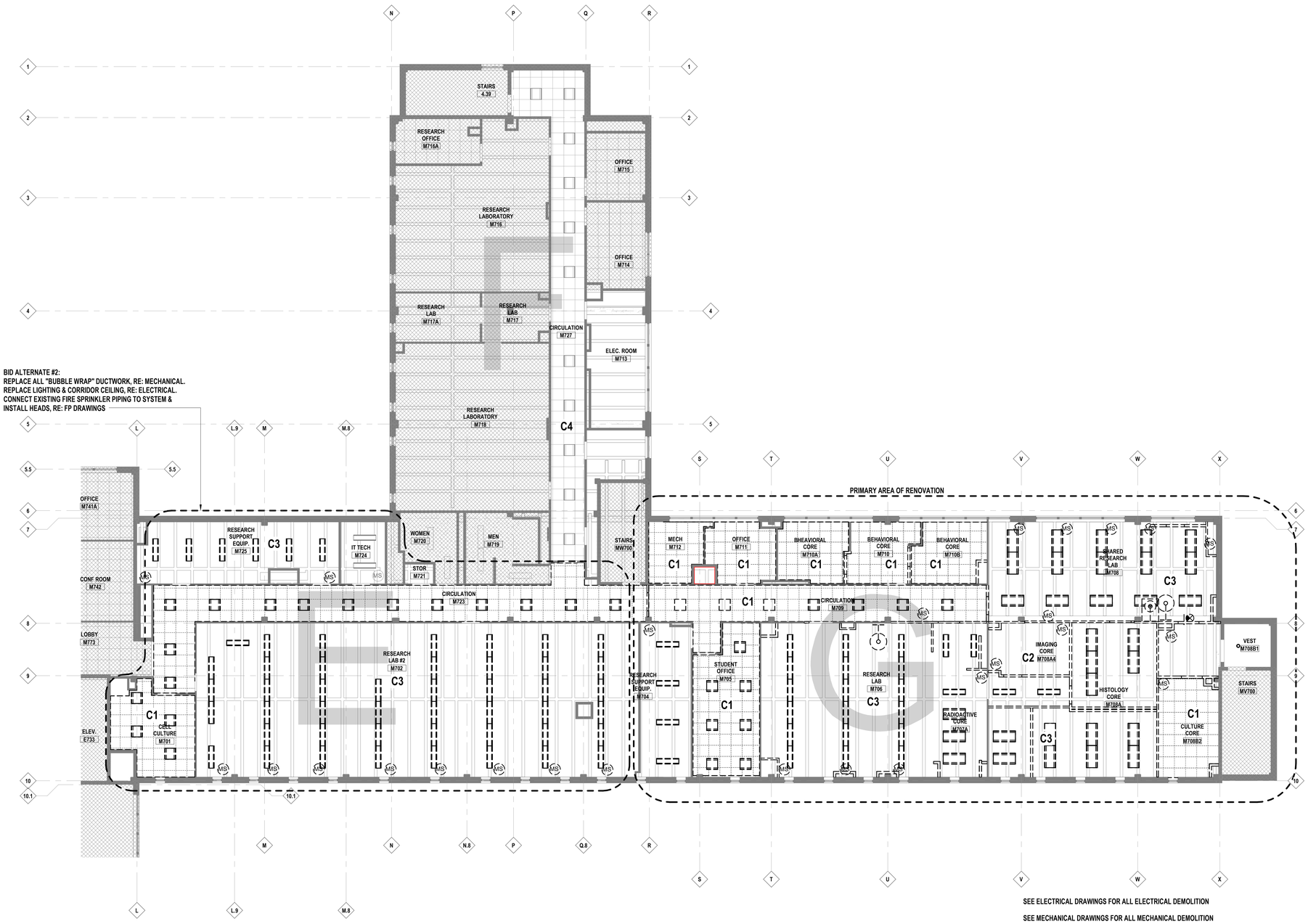


LEVEL 7 DEMO RCP LIKE FOR LIKE **A1**
1/8" = 1'-0"

NORTH

DEMO RCP LEGEND

- EXISTING GYP CEILING TO REMAIN
- DEMO GYP CEILING
- DEMO 2X2 ACT CEILING
- EXISTING 2X2 ACT CEILING TO REMAIN
- DEMO 2X4 LIGHT FIXTURE
- DEMO 2X2 LIGHT FIXTURE
- DEMO CAN LIGHT FIXTURE

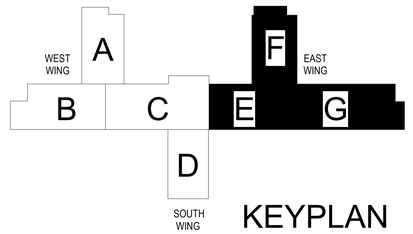
CEILING

C1 REMOVE EXISTING CEILING, GRIDS, SOFFITS, LIGHTS, DIFFUSERS, GRILLES, ETC...).

C2 EXISTING CEILING TO REMAIN.

C3 EXISTING EXPOSED STRUCTURE TO REMAIN.

C4 TEMP. SUPPORT CEILING / LIGHTING FOR PLUMBING & FP WORK ABOVE CEILING



KEYPLAN

PGAV ARCHITECTS
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NUMBER A-2007037
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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

DEMOLITION RCP - LEVEL 7 - EAST

DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
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A277L

Author
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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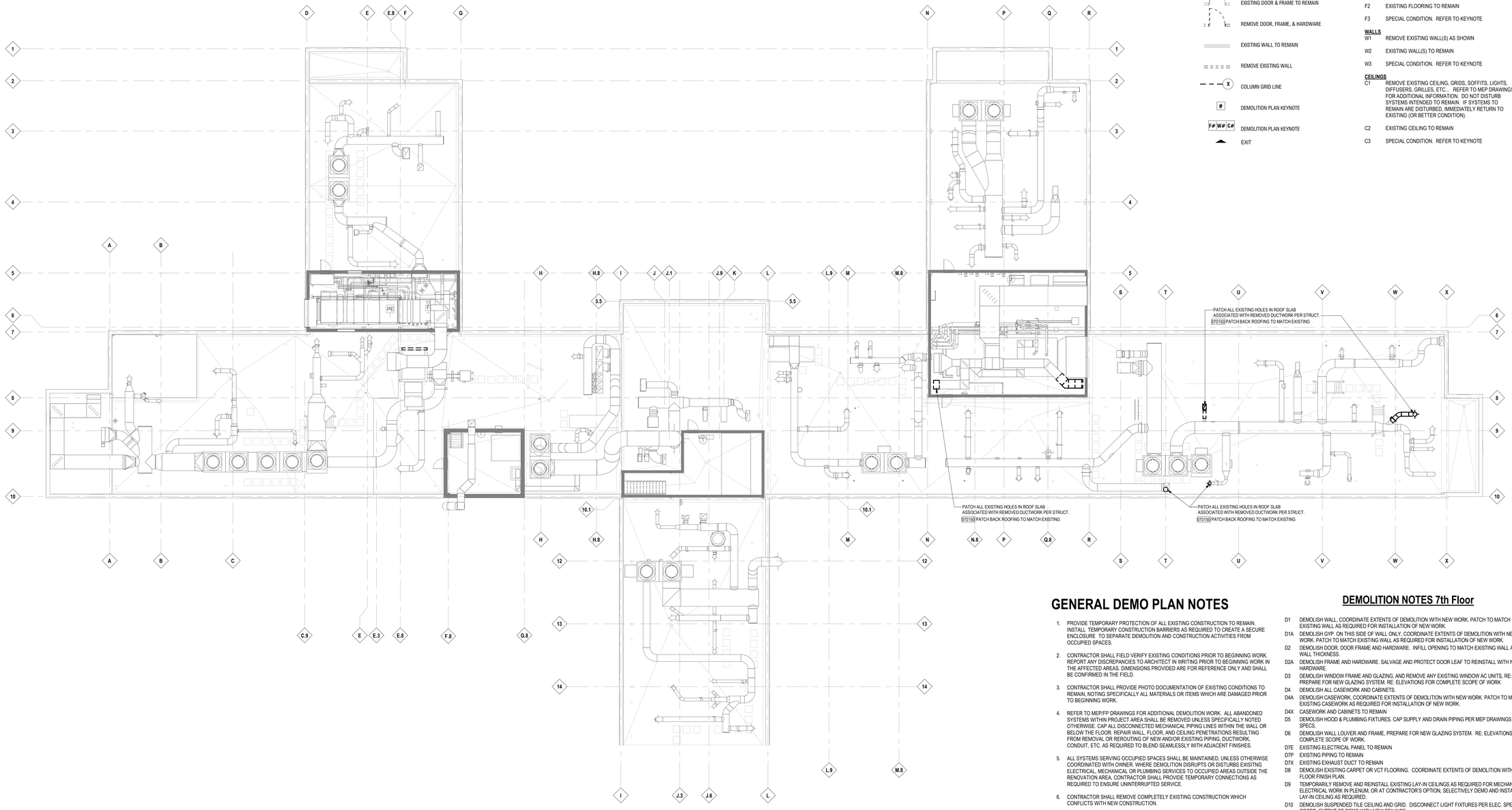


OVERALL ROOF DEMOLITION **A1**
1" = 5/64"

DEMO PLAN LEGEND

- EXISTING DOOR & FRAME TO REMAIN
- REMOVE DOOR, FRAME, & HARDWARE
- EXISTING WALL TO REMAIN
- REMOVE EXISTING WALL
- COLUMN GRID LINE
- DEMOLITION PLAN KEYNOTE
- DEMOLITION PLAN KEYNOTE
- EXIT

FLOOR
- F1 REMOVE EXISTING FLOORING, ADHESIVE, ETC FROM SLAB. PATCH, PRIME AND PREPARE SUBFLOOR TO RECEIVE NEW FLOOR AS SCHEDULED. REFER TO HAZMAT REPORT.
- F2 EXISTING FLOORING TO REMAIN
- F3 SPECIAL CONDITION. REFER TO KEYNOTE

WALLS
- W1 REMOVE EXISTING WALL(S) AS SHOWN
- W2 EXISTING WALL(S) TO REMAIN
- W3 SPECIAL CONDITION. REFER TO KEYNOTE

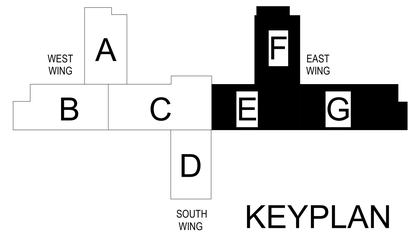
CEILINGS
- C1 REMOVE EXISTING CEILING, GRIDS, SOFFITS, LIGHTS, DIFFUSERS, GRILLES, ETC... REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. DO NOT DISTURB SYSTEMS INTENDED TO REMAIN. IF SYSTEMS TO REMAIN ARE DISTURBED, IMMEDIATELY RETURN TO EXISTING (OR BETTER CONDITION).
- C2 EXISTING CEILING TO REMAIN
- C3 SPECIAL CONDITION. REFER TO KEYNOTE

GENERAL DEMO PLAN NOTES

1. PROVIDE TEMPORARY PROTECTION OF ALL EXISTING CONSTRUCTION TO REMAIN. INSTALL TEMPORARY CONSTRUCTION BARRIERS AS REQUIRED TO CREATE A SECURE ENCLOSURE TO SEPARATE DEMOLITION AND CONSTRUCTION ACTIVITIES FROM OCCUPIED SPACES.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK. REPORT ANY DISCREPANCIES TO ARCHITECT IN WRITING PRIOR TO BEGINNING WORK IN THE AFFECTED AREAS. DIMENSIONS PROVIDED ARE FOR REFERENCE ONLY AND SHALL BE CONFIRMED IN THE FIELD.
3. CONTRACTOR SHALL PROVIDE PHOTO DOCUMENTATION OF EXISTING CONDITIONS TO REMAIN, NOTING SPECIFICALLY ALL MATERIALS OR ITEMS WHICH ARE DAMAGED PRIOR TO BEGINNING WORK.
4. REFER TO MEP/FP DRAWINGS FOR ADDITIONAL DEMOLITION WORK. ALL ABANDONED SYSTEMS WITHIN PROJECT AREA SHALL BE REMOVED UNLESS SPECIFICALLY NOTED OTHERWISE. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR BELOW THE FLOOR. REPAIR WALL, FLOOR, AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR REROUTING OF NEW AND/OR EXISTING PIPING, DUCTWORK, CONDUIT, ETC. AS REQUIRED TO BLEND SEAMLESSLY WITH ADJACENT FINISHES.
5. ALL SYSTEMS SERVING OCCUPIED SPACES SHALL BE MAINTAINED, UNLESS OTHERWISE COORDINATED WITH OWNER. WHERE DEMOLITION DISRUPTS OR DISTURBS EXISITNG ELECTRICAL, MECHANICAL, OR PLUMBING SERVICES TO OCCUPIED AREAS OUTSIDE THE RENOVATION AREA, CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO ENSURE UNINTERRUPTED SERVICE.
6. CONTRACTOR SHALL REMOVE COMPLETELY EXISTING CONSTRUCTION WHICH CONFLICTS WITH NEW CONSTRUCTION.
7. WHERE NEW FLOOR FINISHES ARE TO BE INSTALLED, CONTRACTOR SHALL REMOVE EXISTING FLOOR FINISHES AND ADHESIVES AND PREPARE SLAB TO RECEIVE NEW FLOOR FINISHES. PATCHING HOLES AS REQUIRED. SEE SPECIFICATIONS FOR ADDITIONAL FLOOR PREP REQUIREMENTS.
8. EXISTING WALL CONSTRUCTION VARIES THROUGHOUT PROJECT AREA (CLAY TILE, CMU, GYP ON METAL STUD, ETC.). REVIEW EXISTING WALLS INDICATED TO BE DEMOLISHED ON SITE PRIOR TO PREPARING BIDS. WHERE NEW WORK REQUIRES PATCHING EXISTING WALLS, PATCH USING MATERIALS MATCHING EXISTING CONSTRUCTION.
9. CONTRACTOR SHALL PATCH TO MATCH SURROUNDING FINISHES, ANY AREAS DAMAGED AS A RESULT OF, OR CAUSED BY, THE WORK INDICATED THROUGHOUT THE CONTRACT DOCUMENTS. EXISTING CEILING TILE AND GRID BEING REMOVED AND RE-INSTALLED AS PART OF THIS PROJECT SHALL BE REPLACED WITH NEW IF DAMAGED.
10. REFER TO SPECIFICATIONS FOR HAZARDOUS MATERIAL INFORMATION.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING AREAS OUTSIDE OF THE CONSTRUCTION LIMITS CLEAN AND FREE OF DUST AT ALL TIMES.
12. MAINTAIN TWO SEPARATE CLEAR AND ACCESSIBLE PATHS OF EXIT FROM OCCUPIED SPACES AT ALL TIMES.

DEMOLITION NOTES 7th Floor

- D1 DEMOLISH WALL, COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING WALL AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D1A DEMOLISH GYP. ON THIS SIDE OF WALL ONLY, COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING WALL AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D2 DEMOLISH DOOR, DOOR FRAME AND HARDWARE. INFILL OPENING TO MATCH EXISTING WALL AND WALL THICKNESS.
- D2A DEMOLISH FRAME AND HARDWARE. SALVAGE AND PROTECT DOOR LEAF TO REINSTALL WITH NEW HARDWARE.
- D3 DEMOLISH WINDOW FRAME AND GLAZING, AND REMOVE ANY EXISTING WINDOW AC UNITS, RE: MECH. PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS FOR COMPLETE SCOPE OF WORK.
- D4 DEMOLISH ALL CASEWORK AND CABINETS.
- D4A DEMOLISH CASEWORK, COORDINATE EXTENTS OF DEMOLITION WITH NEW WORK. PATCH TO MATCH EXISTING CASEWORK AS REQUIRED FOR INSTALLATION OF NEW WORK.
- D4X CASEWORK AND CABINETS TO REMAIN
- D5 DEMOLISH HOOD & PLUMBING FIXTURES. CAP SUPPLY AND DRAIN PIPING PER MEP DRAWINGS & SPECS.
- D6 DEMOLISH WALL LOUVER AND FRAME, PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS FOR COMPLETE SCOPE OF WORK.
- D7E EXISTING ELECTRICAL PANEL TO REMAIN
- D7P EXISTING PIPING TO REMAIN
- D7X EXISTING EXHAUST DUCT TO REMAIN
- D8 DEMOLISH EXISTING CARPET OR VCT FLOORING. COORDINATE EXTENTS OF DEMOLITION WITH NEW FLOOR FINISH PLAN.
- D9 TEMPORARILY REMOVE AND REINSTALL EXISTING LAY-IN CEILINGS AS REQUIRED FOR MECHANICAL / ELECTRICAL WORK IN PLENUM, OR AT CONTRACTOR'S OPTION, SELECTIVELY DEMO AND INSTALL NEW LAY-IN CEILING AS REQUIRED.
- D10 DEMOLISH SUSPENDED TILE CEILING AND GRID. DISCONNECT LIGHT FIXTURES PER ELEC. SPECS. COORD. EXTENT OF DEMO WITH NEW CEILINGS.
- D10A DEMOLISH SUSPENDED TILE CEILING AND GRID. 2ND SUSPENDED CEILING OBSERVED ABOVE THAT WILL ALSO NEED TO BE DEMOLISHED. DISCONNECT LIGHT FIXTURES PER ELEC. SPECS. COORD. EXTENT OF DEMO WITH NEW CEILINGS.
- D11 DEMOLISH ACOUSTICAL CEILING AND METAL STUD FRAMING.
- D12 EXISTING DUCTS TO BE RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D12P EXISTING PIPING TO BE REMOVED / RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D12X EXISTING DUCTS TO BE RELOCATED. REF. MEP AND FLOOR PLAN FOR NEW LOCATION AND ROUTING INFORMATION. REF. STRUCTURAL FOR FLOOR INFILL
- D14 DEMOLISH EXISTING EYEWASH STATION AND ASSOCIATED PIPING. CAP SUPPLY AND DRAIN PIPING PER MEP DRAWINGS & SPECS.
- D15 REMOVE EXISTING BRICK AND EXTERIOR WALL AT NEW WINDOW OPENING. PREPARE FOR NEW GLAZING SYSTEM. RE: ELEVATIONS AND DETAILS FOR COMPLETE SCOPE OF WORK.
- D16 DEMO EXISTING STEAM PIPING PENETRATIONS AT FLOOR. SALVAGE AND REPLACE CEILINGS AS NEEDED FOR ACCESS BELOW. PREP FOR NEW FLOOR INFILL (2 HR FLOOR ASSEMBLY). RE: MECH. FOR MORE INFORMATION.
- D17 DEMOLISH EXHAUST DUCT AND/OR TRANSITE PIPE FROM FLOOR ABOVE AND CAP BELOW 7TH FLOOR FOR INSTALLATION OF NEW FLOOR INFILL. CAP TRANSITE PIPE PER ABATEMENT REQUIRMENTS AND SECURE TRANSITE PIPE AS REQUIRED FOR CAPPING BELOW 7TH FLOOR.
- D17A DEMOLISH EXHAUST DUCT ON ROOF. DEMOLISH ROOF CURBS & PATCH HOLES IN ROOF SLAB PER STRUCT. COORD. WITH MECH. DRAWINGS FOR FULL SCOPE. PATCH ROOFING TO MATCH EXISTING.
- D18 DEMOLISH EXISTING ELECTRICAL PANEL. REF. ELEC. DRAWINGS & SPECS.
- D19 DEMOLISH EXISTING FIRE HOSE CABINET. REF. FP DRAWINGS.
- D22 PRIOR TO DEMOLITION OF PROJECT AREA, INSTALL INSULATED TEMP. PARTITION AND TEMP. DOOR & FRAME. STARC REALWALL OR EQUAL WITH BEST 7-PIN DOOR HARDWARE. FIRE RETARDANT PLASTIC ABOVE CEILING. AT CONTRACTORS OPTION, VINYL FACED GYPSUM WITH LOCKING DOOR CAN BE USED IN LIEU OF STARC PANELS.



KEYPLAN

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NUMBER A-2007012722
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7 Hospital Drive, Columbia, MO 65201

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0" 1"

DEMOLITION PLAN - ROOF

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV # 53660-20
CLIENT # CP2400920
SHEET # **A285L**

Author
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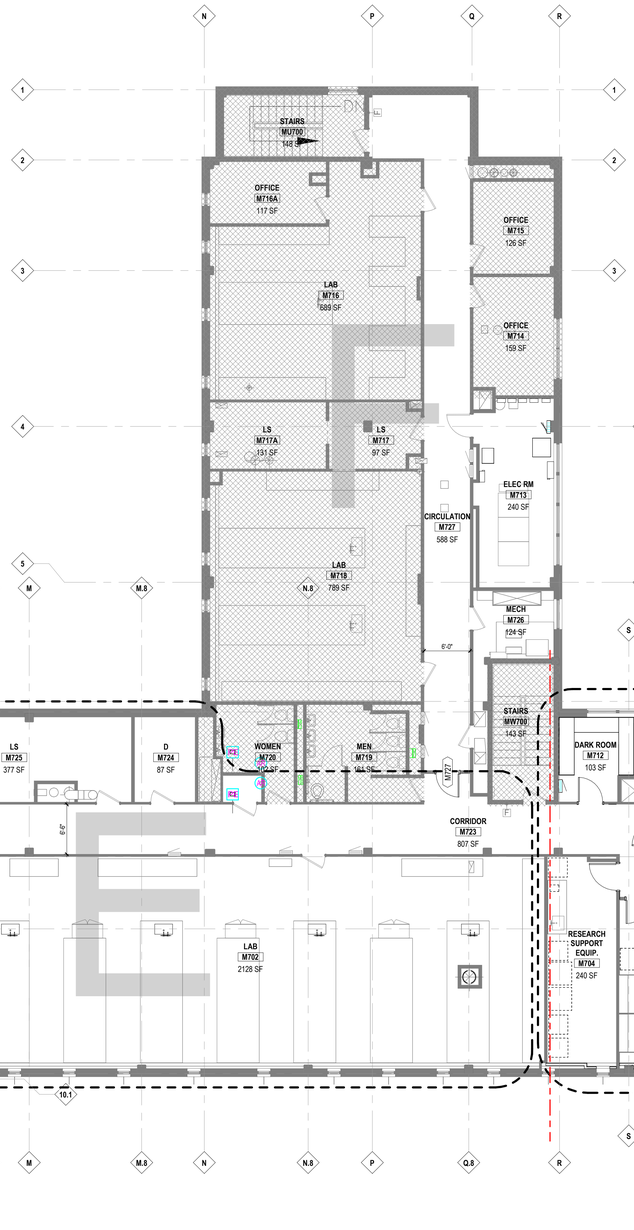

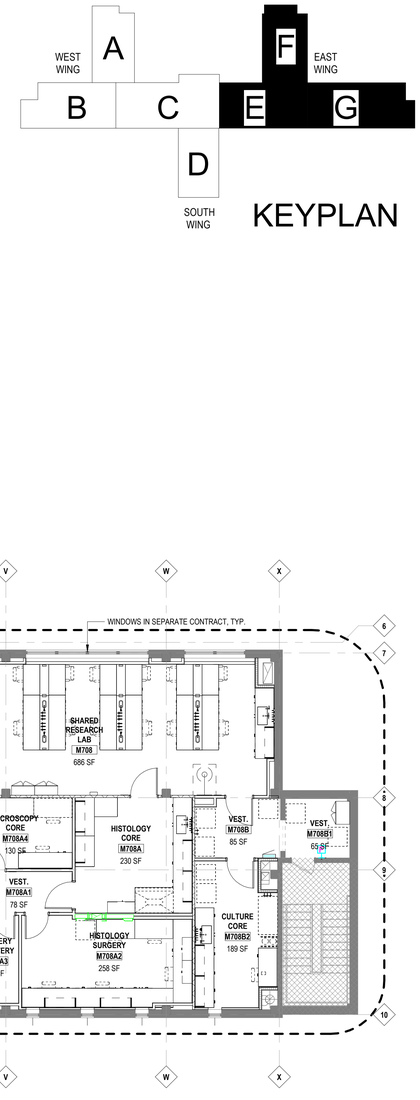

LEVEL 7 - RENOVATION PLAN LIKE FOR LIKE **A1**
1/8" = 1'-0"

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0 1" 2"

LEVEL 7 PLAN - EAST

DATE:	07/08/2025
DRAWN: Author	CHECKED: Checker
PGAV # 53660-20	CLIENT # CP2400920
SHEET # **A376L**	

Author
6/27/2025 9:36:14 AM Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU-SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

LAB EQUIPMENT SCHEDULE - 7 EAST LIKE FOR LIKE

PLAN MARK	Count	ITEM	MANUFACTURER / MODEL	PROCUREMENT	INSTALLATION	EQ. HEIGHT	EQ. LENGTH	EQ. DEPTH	WEIGHT	MOUNTING	POWER	EQUIPMENT COMMENTS
M704												
RESEARCH SUPPORT EQUIP.												
7.01L	1	ICE	SCOTSMAN UF424	CM	CM	6' -0"	2' -6"	2' -6"		FLOOR	115V / 60 HZ / 1-PHASE	
7.07L	1	CENT	KENMORE	OWNER	CM	6' -0"	2' -6"	2' -6"		FLOOR	110V	
7.09L	2	-80 FREEZER	SANYO	OWNER	CM	6' -0"	3' -0"	3' -0"	800 LBS	FLOOR	220V	
7.11L	1	WASH	KENMORE	OWNER	CM	6' -0"	2' -6"	2' -6"		FLOOR	110V	
7.12L	1	DRY	KENMORE	OWNER	CM	6' -0"	2' -6"	2' -6"		FLOOR	110V	
7.13L	1	MILLIPORE	MILLI-Q IQ7000 / #ZIQ7000T0	OWNER	CM	1' -8"	10 13/32"	1' -2"		BENCH	100-240V, 50-60 HZ	TYPE 1 - ULTRA PURE WATER W/ DISPENSER #ZIQPDOOOO
M705												
STUDENT OFFICE												
7.10L	2	-20 FREEZER		OWNER	CM	6' -0"	2' -10"	2' -10"		FLOOR	120V	
M706												
RESEARCH LAB												
7.08L	1	+4 FRIDGE		OWNER	CM	6' -0"	2' -6"	2' -6"		FLOOR	120V	
7.10L	1	-20 FREEZER		OWNER	CM	6' -0"	2' - 10"	2' -10"		FLOOR	120V	
PEGBOARD	1											
M708A2												
HISTOLOGY SURGERY												
7.08L	1	+4 FRIDGE		OWNER	CM	6' -6"	2' -6"	2' -6"		FLOOR	120V	
M708A4												
MICROSCOPY CORE												
7.03L	1	EQUIPMENT ZONE		OWNER	CM	2' -6"	5' -0"	2' -6"		FLOOR	110V	
M708B												
VEST.												
7.06L	1	INC	SANYO	OWNER	USER	5' -6"	2' -6"	2' -6"		FLOOR	110V	CONNECTS TO GAS CYLINDER
7.08L	1	+4 FRIDGE	KENMORE	OWNER	USER	6' -6"	2' -6"	2' -6"		FLOOR	110V	
7.10L	1	-20 FREEZER	KENMORE	OWNER	CM	5' -7"	2' -6"	2' -6"		FLOOR	110V	Upright Refrigerator/Freezer
M708B1												
VEST.												
7.10L	2	-20 FREEZER	KENMORE	OWNER	CM	5' -7"	2' -6"	2' -6"		FLOOR	110V	Upright Refrigerator/Freezer
M708B2												
CULTURE CORE												
7.01L	1	GAS RACK		CM	CM							
7.03L	1	EQUIPMENT ZONE		OWNER	CM	2' -6"	5' -0"	2' -6"		FLOOR	110V	
7.06L	1	INC	SANYO	OWNER	USER	5' -6"	2' -6"	2' -6"		FLOOR	110V	CONNECTS TO GAS CYLINDER
7.07L	1	CENT		OWNER	USER	4' -0"	2' -0"	2' -6"		FLOOR	110V	
7.12L	1	SCOPE										
M710A												
BEHAVIORAL CORE												
7.02L	1	ELEC. RACK		OWNER	CM	6' -0"	2' -0"	2' -0"		FLOOR	110V	
7.03L	2	EQUIPMENT ZONE		OWNER	CM	2' -6"	5' -0"	2' -6"		FLOOR	110V	
7.04L	1	EQUIPMENT ZONE		OWNER	CM	6' -0"	4' -0"	2' -6"		FLOOR	110V	
M710B												
BEHAVIORAL CORE												
7.02L	1	ELEC. RACK		OWNER	CM	6' -0"	2' -0"	2' -0"		FLOOR	110V	
7.03L	1	EQUIPMENT ZONE		OWNER	CM	2' -6"	5' -0"	2' -6"		FLOOR	110V	
7.04L	1	EQUIPMENT ZONE		OWNER	CM	6' -0"	4' -0"	2' -6"		FLOOR	110V	

LABORATORY CONTAINMENT DEVICE SCHEDULE - 7 EAST LIKE FOR LIKE

ROOM NUMBER	ROOM NAME	Comments	PLAN MARK	PROCUREMENT	INSTALLATION	MANUFACTURER	MOUNTING	EXHAUST	PLUMBING	ELECTRICAL SERVICE	COMM.	LAB SUITE
48" CFH												
M707A	RADIOACTIVE CORE	48" CFH	CFH 7.02	CM	CM	LABCONCO / 4' PROTECTOR XL LABORATORY HOOD	BENCH	100 FPM FACE VELOCITY	CUP SINK, CW, VAC, CA	115V GFCI		7 EAST
M708A	HISTOLOGY CORE	48" CFH	7.01L	CM	CM	LABCONCO / 5' PROTECTOR XL LABORATORY HOOD	BENCH	100 FPM FACE VELOCITY	CUP SINK, CW, VAC, CA	115V GFCI		7 EAST
72" CFH ADA												
M706	RESEARCH LAB	72" CFH ADA	7.01L	CM	CM		STAND (BY MANUFACTURER)	RECIRCULATING (HEPA FILTERED)	VAC	115V GFCI		7 EAST
Grand total: 3												

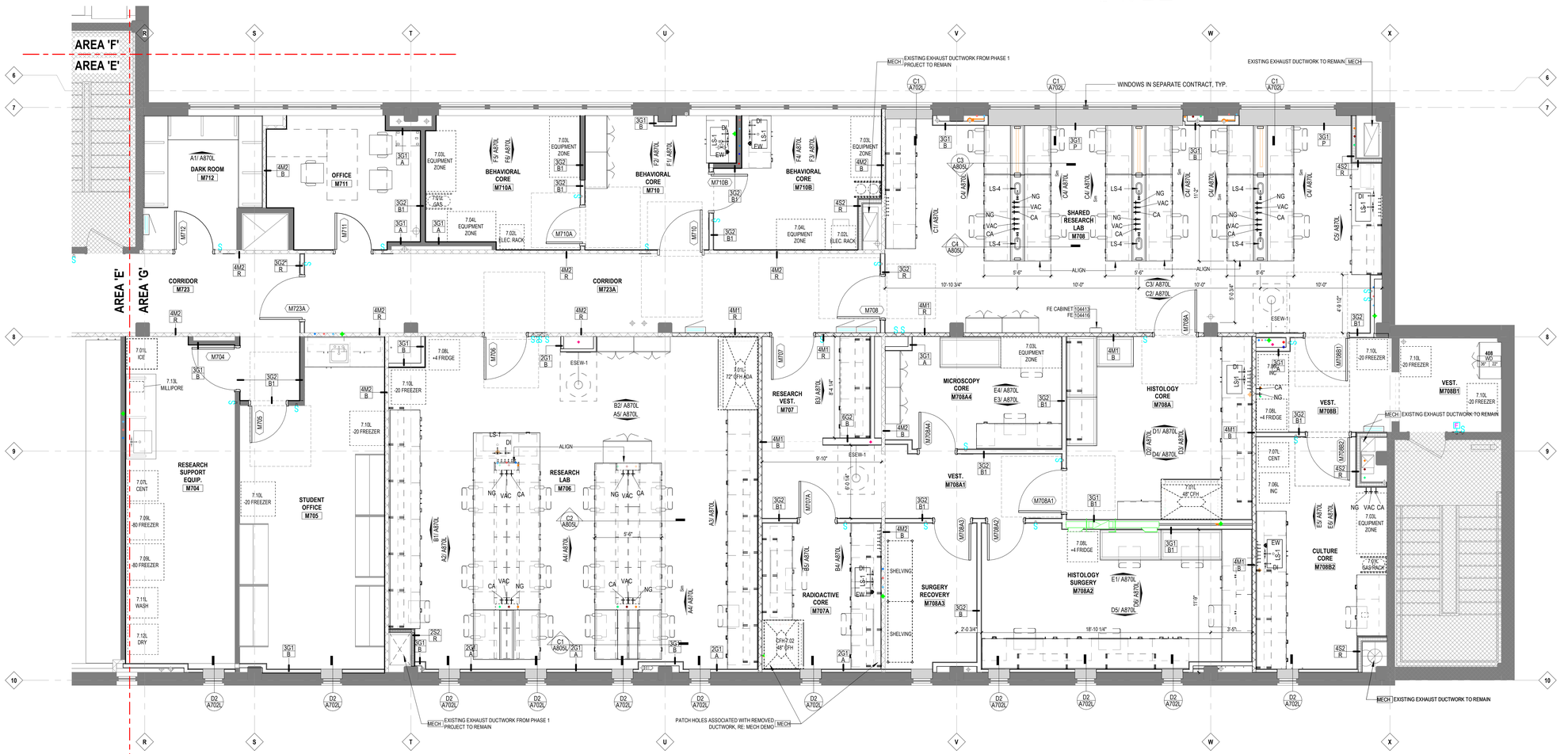
LABORATORY SINK SCHEDULE

INTENT IS FOR SINKS TO BE MANUFACTURER'S STANDARD SIZES. IF SIZE INDICATED IS NON STANDARD REQUEST A SUBSTITUTION OF A STANDARD SIZE FOR ARCHITECT REVIEW.

DESIGNATION	DESCRIPTION	DIMENSIONS (LxDxH)	TRIM & NOTES
LS-1	EPOXY LAB SINK SPEC 123553	28" X 15" X 12"	FIXTURES BY DIVISION 22 MOUNT FIXTURES TO BE ADAAG SIDE REACH COMPATIBLE
LS-2	ADAAG LAVATORY SINK EPOXY LAB SINK SPEC 123553	14" X 14" X 5"	FIXTURES BY DIVISION 22 MOUNT FIXTURES TO BE ADAAG FRONT REACH COMPATIBLE
LS-3	EPOXY LAB SINK SPEC 123553 STEPPED BASIN TO ALLOW ADAAG COMPLIANT FRONT APPROACH	25" x 15" x (5" and 11")	FIXTURES BY DIVISION 22 MOUNT FIXTURES TO BE ADAAG FRONT REACH COMPATIBLE DUAL LEVEL - 5" STEPPED TO 11" ID
LS-4	EPOXY CUP SINK SPEC 123553		

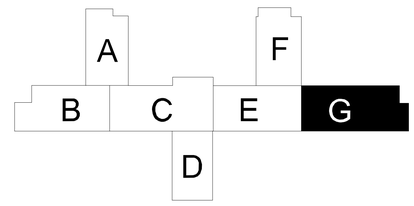
LABORATORY SINK SCHEDULE D2

12" = 1'-0"



LEVEL 7 ENLARGED PLAN - RENOVATION AREA LFL A1

1/4" = 1'-0"



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MO STATE CERTIFICATE OF AUTHORITY #2023008106

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1600 Genessee St. Suite 733
Kansas City, MO 64102 (816) 421-0950
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Structural Engineers
4338 Belview Avenue
Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

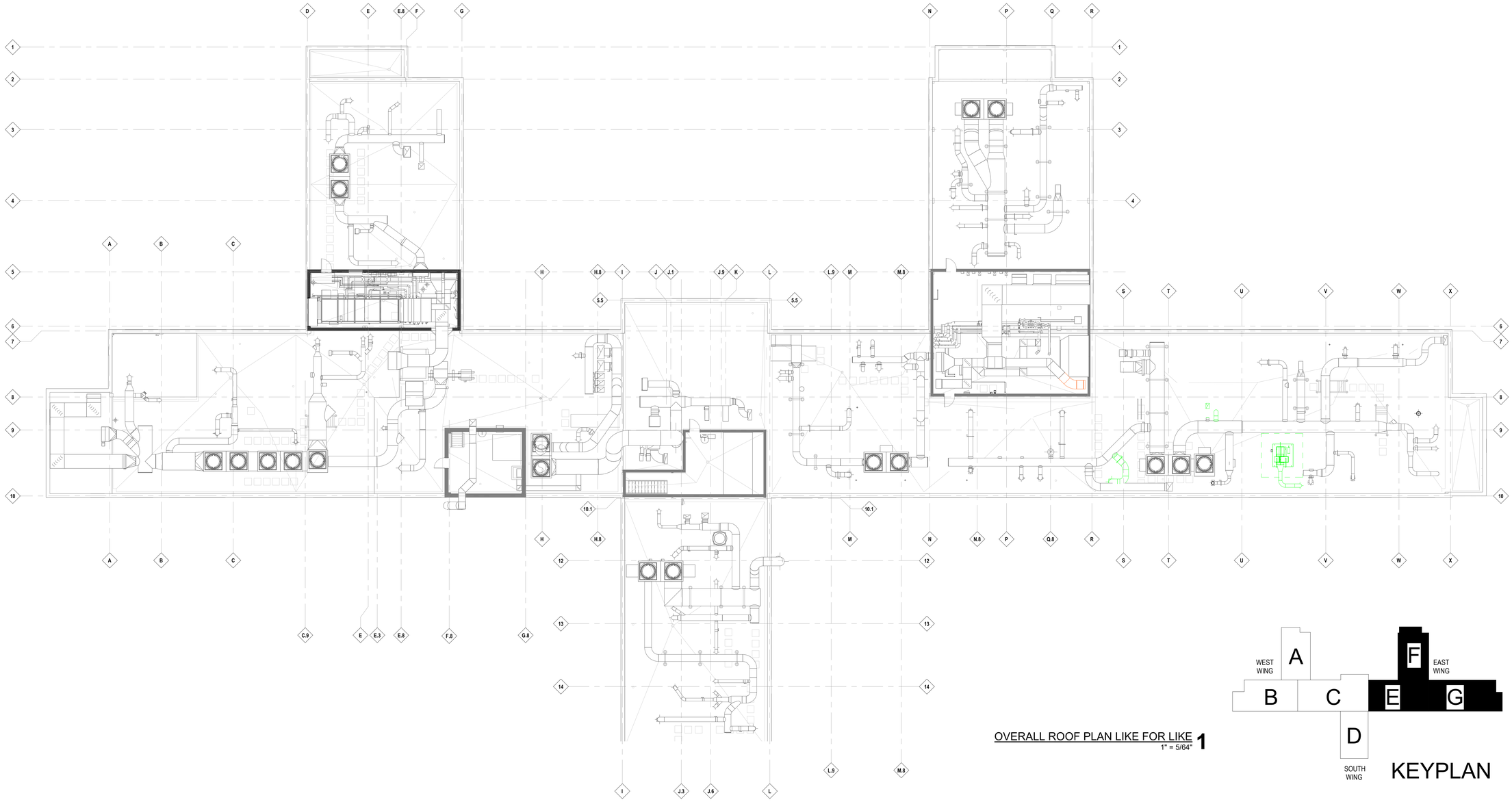
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 ENLARGED PLAN - AREA 'G'

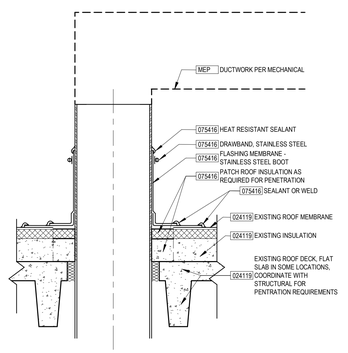
DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
SHEET # **A377L**

6/27/2025 2:41:18 PM Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU-SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

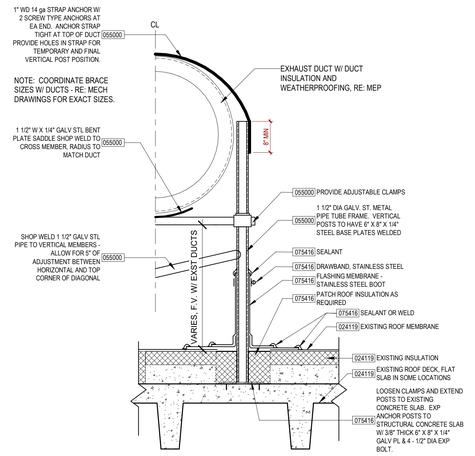


OVERALL ROOF PLAN LIKE FOR LIKE **1**
1" = 5/64"

KEYPLAN



ROUND DUCT PENETRATION **A2**
1 1/2" = 1'-0"



EQUIPMENT SUPPORT LEG **A1**
1 1/2" = 1'-0"

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2 South Old Orchard
St louis, MO 63119 (314) 918-8383
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Structural Engineers
4338 Bellview Avenue
Kansas City, MO 64111 (816) 531-4144
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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

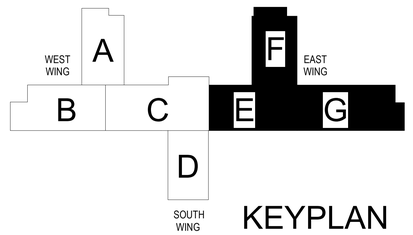
ROOF PLAN - OVERALL

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV # 53660-20
CLIENT # CP2400920
SHEET #
A385L

Author
6/27/2025 8:53:01 AM Autodesk Docs://53660-10 MU-SCM MSB Lab Renovations IAM SCM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

LEVEL 7 RCP-E Insurance LIKE FOR LIKE **1**
1/8" = 1'-0"

NORTH



KEYPLAN

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St Louis, MO 631 19 (314) 918 8383
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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 REFLECTED CEILING PLAN - EAST

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A675L**

Author
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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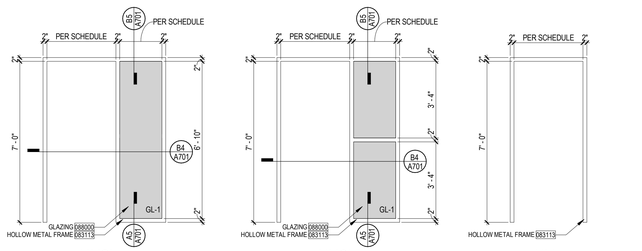
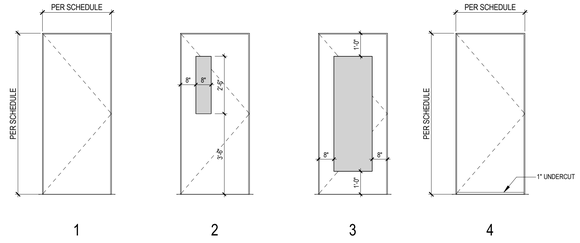


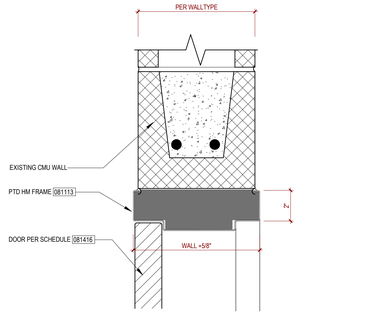


DOOR TYPES & FRAMES

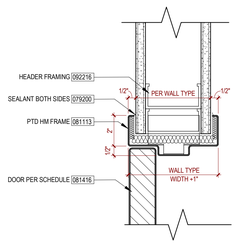
PER IBC 2018, SECTION 2406.4 – GLASS PANELS IN THE FOLLOWING LOCATIONS SHALL BE IMPACT SAFETY RATED:
- WITHIN AND IMMEDIATELY ADJACENT TO DOORS.
- WITHIN 3-FEET OF WALKING SURFACES WITH EXPOSED BOTTOM EDGES WITHIN 18-INCHES ABOVE THE FLOOR OR EXPOSED TOP EDGES WITHIN 36-INCHES OF THE FLOOR.

DOOR SCHEDULE LEVEL 7 LIKE FOR LIKE

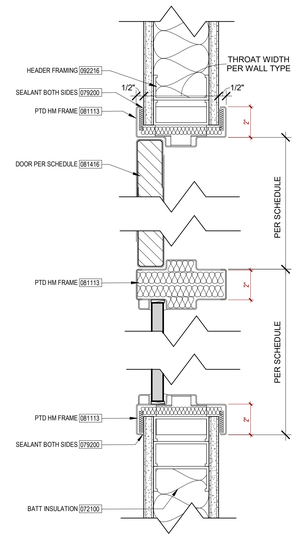
DOOR #	TYPE	MATERIAL	FRAME	RATING	SECURITY	HARDWARE SET	LEAF A WIDTH	LEAF B WIDTH	HEIGHT	HEAD DETAIL	JAMB DETAIL	THRESHOLD DETAIL	COMMENTS
LEVEL SEVEN													
M700	1 / 1	WD-1	HM	90	CR		3' - 0"	3'-0"	7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M704	2	WD-1	HM	45	CR		3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M705	2	WD-1	HM	45	CR		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M706	2	WD-1	HM	45			3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M707	2	WD-1	HM	45			3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M707A	2	WD-1	HM		KC		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708	2	WD-1	HM	45			3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M708A	2	WD-1	HM		KC		3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708A1	2	WD-1	HM		KC		3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708A2	2	WD-1	HM		KC		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708A3	2	WD-1	HM		KC		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708A4	2	WD-1	HM		KC		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	BLACKOUT KIT ON DOOR
M708B1	2	WD-1	HM				3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M708B2	2	WD-1	HM				3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M710	1	WD-1	HM	45	KC		3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M710A	1	WD-1	HM				3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M710B	1	WD-1	HM				3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	
M711	1	WD-1	HM	45	KC		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M712	1	WD-1	HM	45	CR		3' - 2"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	BLACKOUT KIT ON DOOR
M723A	1	WD-1	HM	45	CR		3' - 6"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR
M727	2	WD-1	HM	90	CR		3' - 0"		7' - 0"	C3/A702L	B4/A702L	A4/A702L	CORRIDOR DOOR



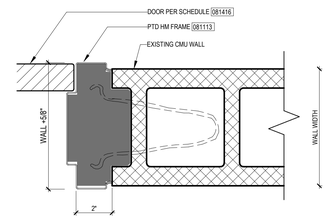
DOOR HEAD - CMU B5
3" = 1'-0"



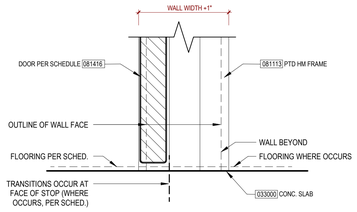
DOOR JAMB - GYP. TYPICAL B4
3" = 1'-0"



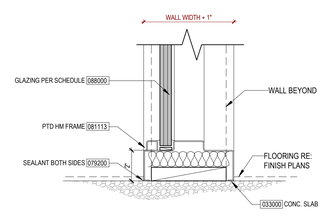
DOOR JAMB - INTERIOR W/ SIDELITE B3
3" = 1'-0"



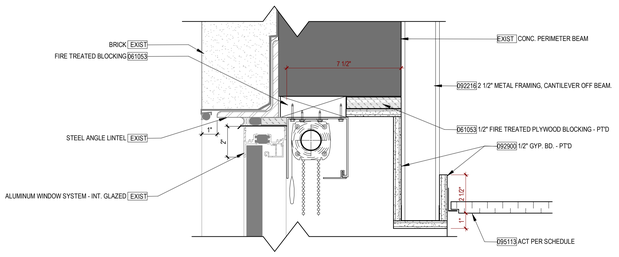
DOOR JAMB - CMU A5
3" = 1'-0"

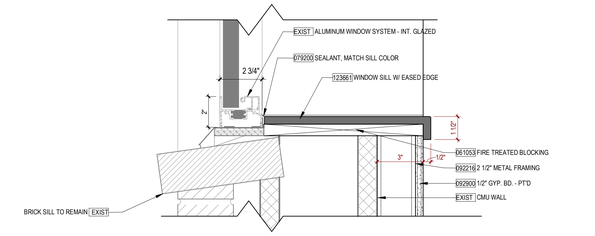


DOOR THRESHOLD - TYP. INTERIOR A4
3" = 1'-0"

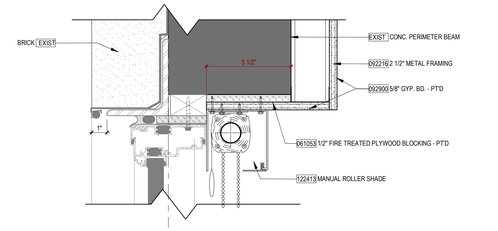


DOOR THRESHOLD - SIDELITE A3
3" = 1'-0"

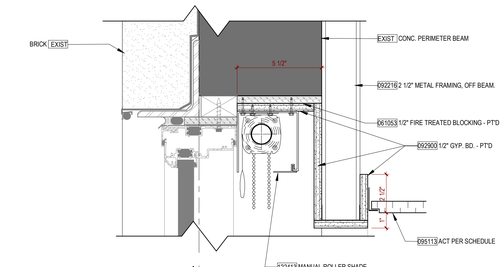


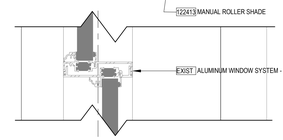


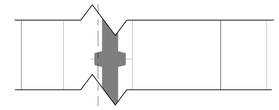
TYPICAL WINDOW - HEAD, SILL AND MULLION DETAILS - FIXED D2
3" = 1'-0"

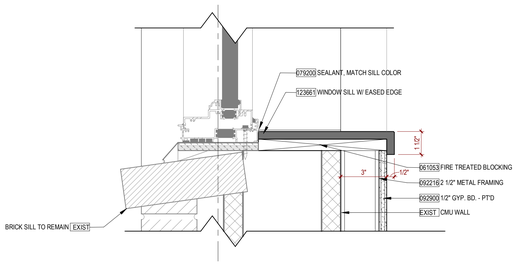


TYPICAL WINDOW - HEAD @ OTS E1
3" = 1'-0"

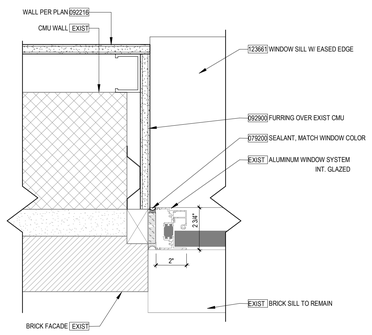




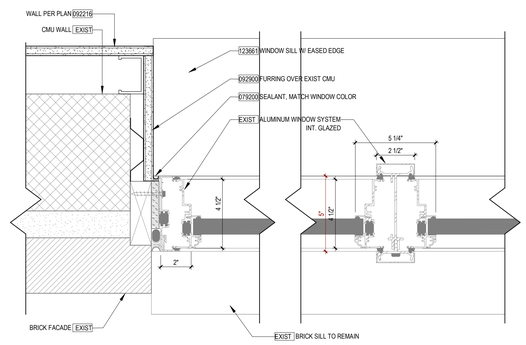




TYPICAL WINDOW - HEAD, SILL AND MULLION DETAILS - OFFSET FIXED C1
3" = 1'-0"



WINDOW JAMB DETAIL - FIXED A2
3" = 1'-0"



WINDOW JAMB AND MULLION DETAIL - OFFSET FIXED A1
3" = 1'-0"

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St Louis, MO 63117
MO STATE CERTIFICATE OF AUTHORITY #2023008106

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Electrical Engineers
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Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #2006442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

LEVEL 7 DOOR & OPENING SCHEDULES

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV # 53660-20
CLIENT # CP2400920
SHEET # **A702L**

Author
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
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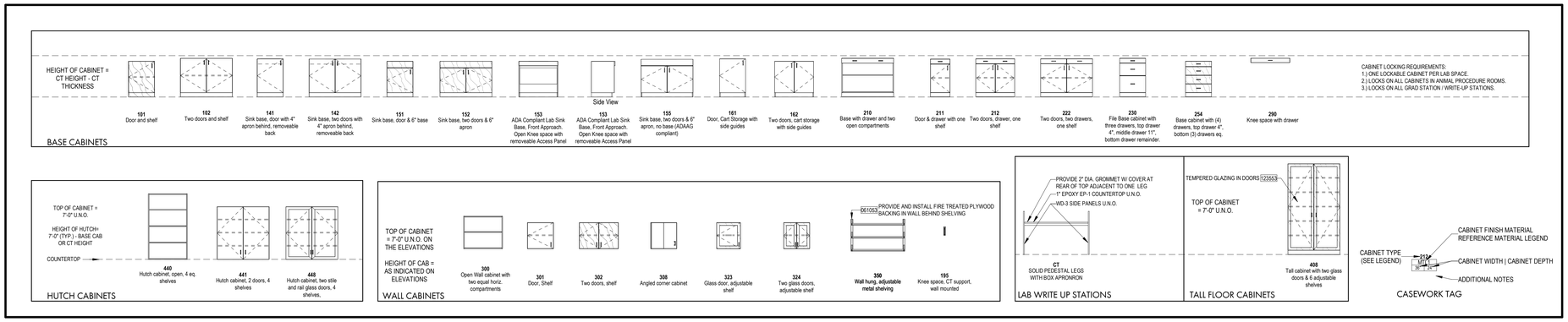
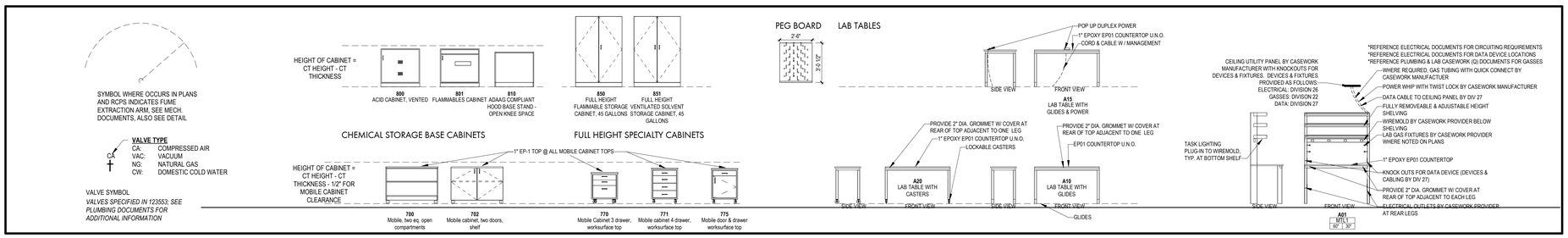
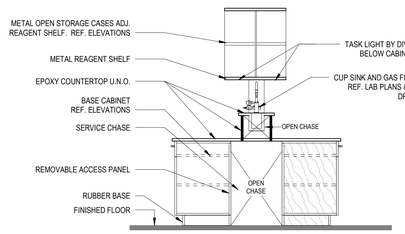


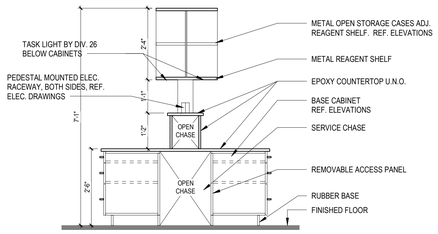
FIXED CASEWORK LEGEND



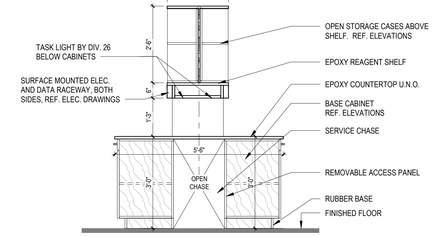
ADAPTABLE & SPECIALITY LABORATORY CASEWORK LEGEND



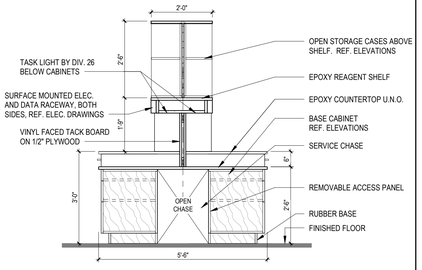
TYP. LAB ISLAND BENCH SECTION M708 **C4**
1/2" = 1'-0"



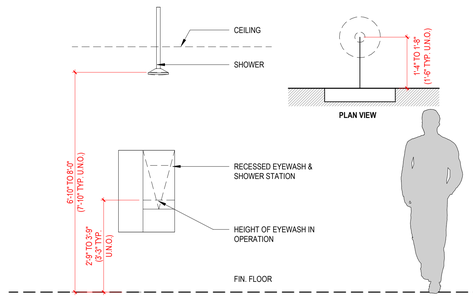
TYP. LAB ISLAND SECTION M708 **C3**
1/2" = 1'-0"



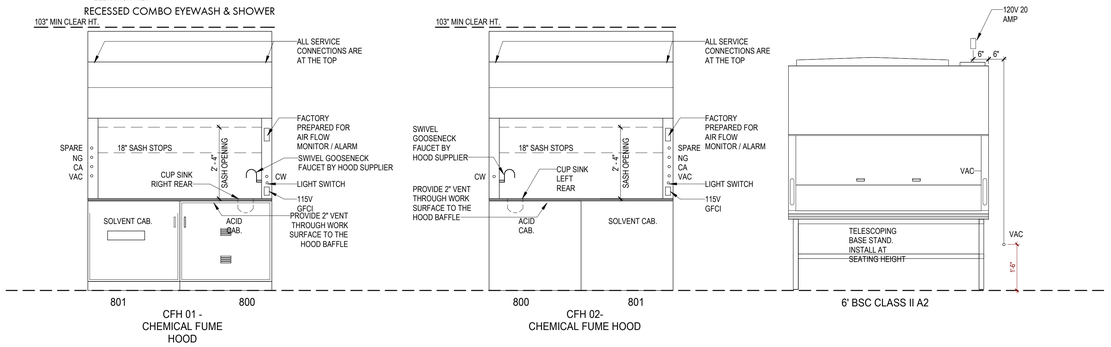
TYP. LAB ISLAND BENCH SECTION M706 **C2**
1/2" = 1'-0"



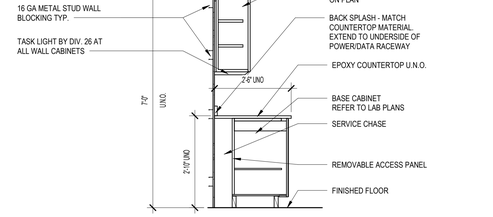
TYPICAL LAB ISLAND SECTION M706 **C1**
1/2" = 1'-0"



RECESSED COMBO EYEWASH & SHOWER

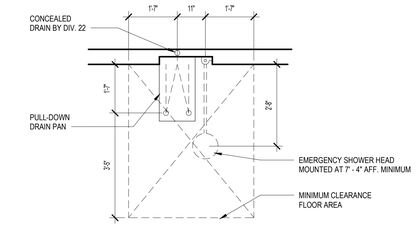


LABORATORY CASEWORK LEGEND

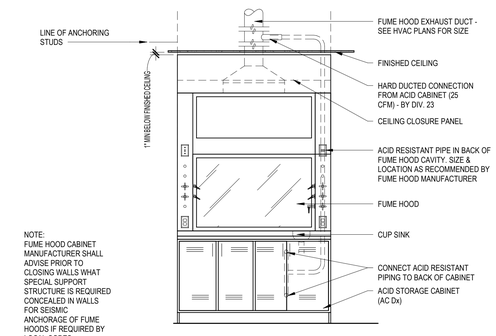


TYPICAL KNEE SPACE SECTION @ 2" APRON **B3**
1/2" = 1'-0"

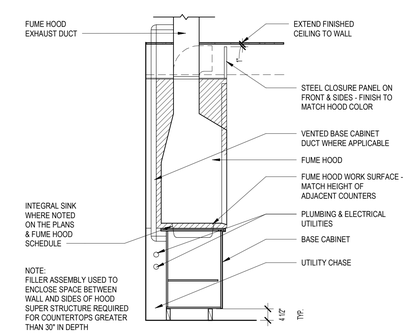
TYPICAL SECTION @ FIXED WALL CASEWORK **B2**
1/2" = 1'-0"



TYPICAL "SWING DOWN" EYEWASH/SHOWER **B1**
1/2" = 1'-0"



TYPICAL FUME HOOD ELEVATION WITH ACID CABINET VENT **A2**
1/2" = 1'-0"



TYPICAL FUME HOOD SECTION **A1**
1/2" = 1'-0"

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Structural Engineers
4338 Belleview Avenue
Kansas City, MO 64111 (816) 531-4144
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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

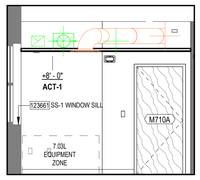
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

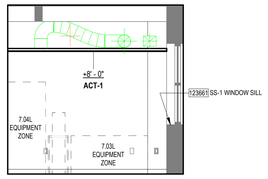
CASEWORK & LAB DETAILS

DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
SHEET #
A805L

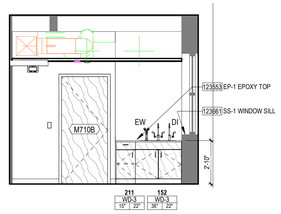
Author
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/MU-SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt
6/27/2025 8:53:04 AM



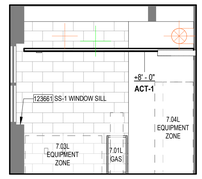
M710A - BEHAVIORAL CORE - 02 1/4" = 1'-0" **F6**



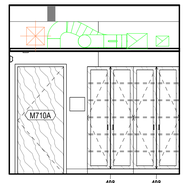
M710A - BEHAVIORAL CORE - 01 1/4" = 1'-0" **F5**



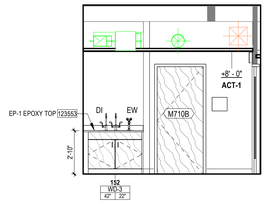
M710B - BEHAVIORAL CORE - 02 1/4" = 1'-0" **F4**



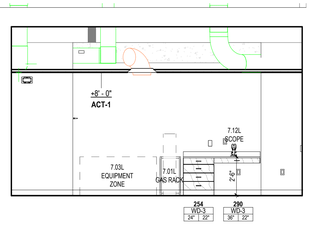
M710B - BEHAVIORAL CORE - 01 1/4" = 1'-0" **F3**



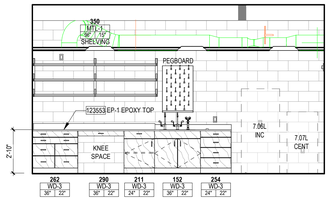
M710 - BEHAVIORAL CORE - 02 1/4" = 1'-0" **F2**



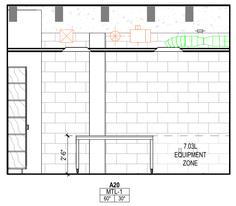
M710 - BEHAVIORAL CORE - 01 1/4" = 1'-0" **F1**



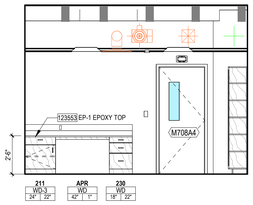
M708B2 - CULTURE CORE - 02 1/4" = 1'-0" **E6**



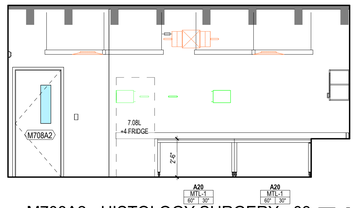
M708B2 - CULTURE CORE - 01 1/4" = 1'-0" **E5**



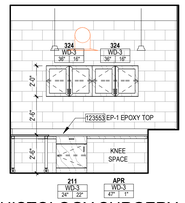
M708A4 - MICROSCOPY CORE - 02 1/4" = 1'-0" **E4**



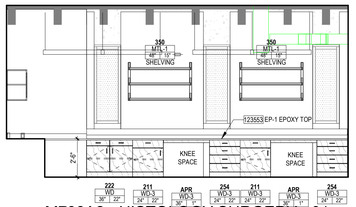
M708A4 - MICROSCOPY CORE - 01 1/4" = 1'-0" **E3**



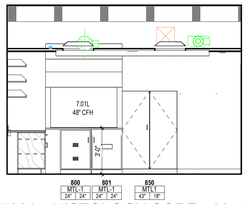
M708A2 - HISTOLOGY SURGERY - 03 1/4" = 1'-0" **E1**



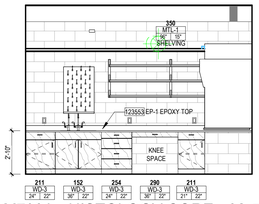
M708A2 - HISTOLOGY SURGERY - 02 1/4" = 1'-0" **D6**



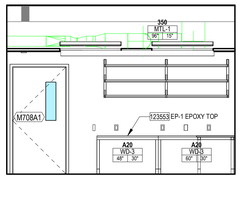
M708A2 - HISTOLOGY SURGERY - 01 1/4" = 1'-0" **D5**



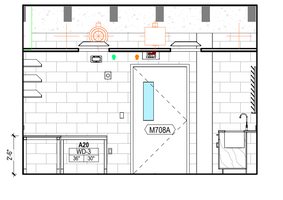
M708A - HISTOLOGY CORE - 03 1/4" = 1'-0" **D4**



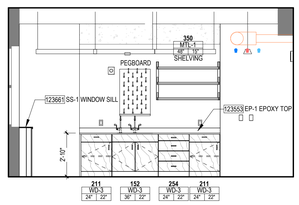
M708A - HISTOLOGY CORE - 02 1/4" = 1'-0" **D3**



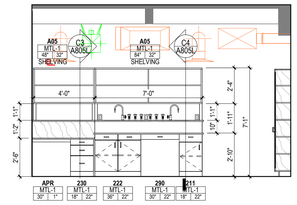
M708A - HISTOLOGY CORE - 01 1/4" = 1'-0" **D2**



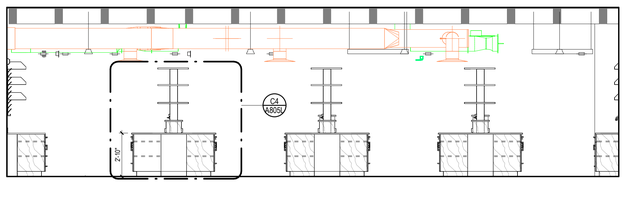
Elevation 87 - a 1/4" = 1'-0" **D1**



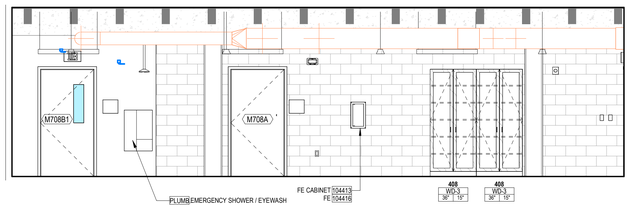
M708 - SHARED RESEARCH LAB - 05 1/4" = 1'-0" **C5**



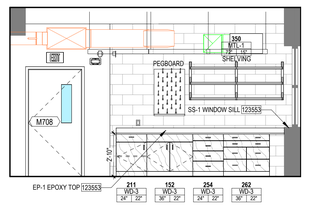
M708 - SHARED RESEARCH LAB - 04 1/4" = 1'-0" **C4**



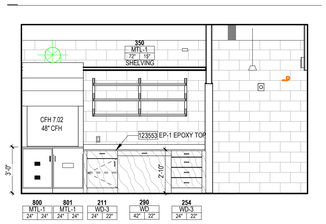
M708 - SHARED RESEARCH LAB - 03 1/4" = 1'-0" **C3**



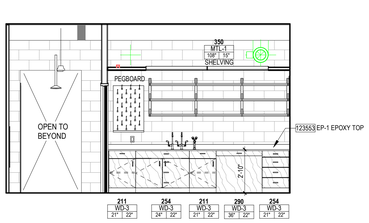
M708 - SHARED RESEARCH LAB - 02 1/4" = 1'-0" **C2**



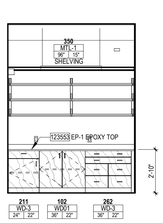
M708 - SHARED RESEARCH LAB - 01 1/4" = 1'-0" **C1**



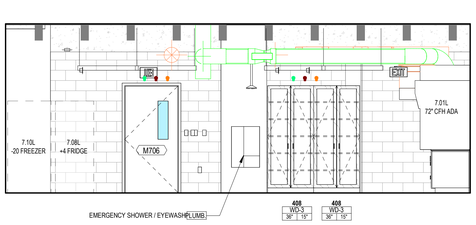
M707A - RADIOACTIVE CORE - 03 1/4" = 1'-0" **B5**



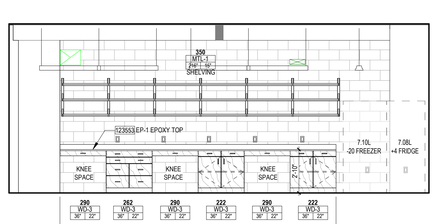
M707A - RADIOACTIVE CORE - 01 1/4" = 1'-0" **B4**



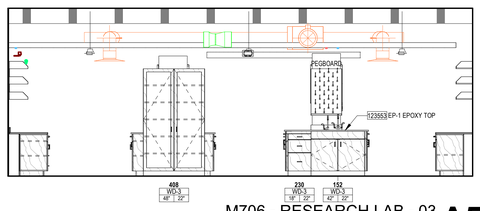
M707 - RADIOACTIVE VEST. - 01 1/4" = 1'-0" **B3**



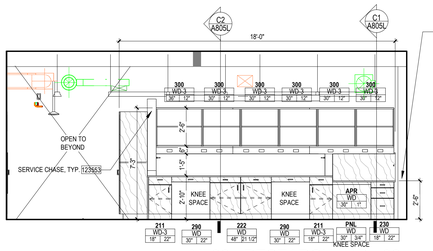
M706 - RESEARCH LAB - 05 1/4" = 1'-0" **B2**



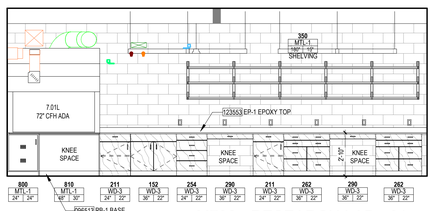
M706 - RESEARCH LAB - 04 1/4" = 1'-0" **B1**



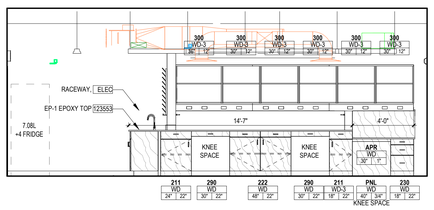
M706 - RESEARCH LAB - 03 1/4" = 1'-0" **A5**



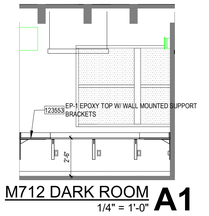
M706 - RESEARCH LAB - 02 1/4" = 1'-0" **A4**



M706 - RESEARCH LAB - 01 1/4" = 1'-0" **A3**



M706 - RESEARCH LAB - 1 1/4" = 1'-0" **A2**



M712 DARK ROOM 1/4" = 1'-0" **A1**

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7/8/2025

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MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 INTERIOR ELEVATIONS

DATE:	07/08/2025
DRAWN: Author	CHECKED: Checker
PGAV # 53660-20	CLIENT # CP2400920
SHEET #	**A870L**

6/30/2025 12:23:32 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

GENERAL FINISH NOTES

1. PAINT ALL OPEN STRUCTURE CEILINGS INCLUDING ALL EXPOSED COMPONENTS, U.N.O., PAINT COLOR TO BE PT-2, EXCLUDE MECHANICAL, STORAGE, AND IT ROOMS, U.N.O ON RCP.

2. REFER TO FINISH PLANS FOR TYPE AND EXTENT OF FLOOR FINISHES.

3. REFER TO REFLECTED CEILING PLAN FOR TYPE AND EXTENT OF CEILING FINISHES.

4. REFER TO FINISH PLANS, ELEVATIONS AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.

5. ALL GYP CEILINGS AND SOFFITS TO BE PAINTED PT-2, FLAT FINISH UNLESS NOTED OTHERWISE ON RCP OR ELEVATIONS.

6. AT ELECTRICAL ROOMS, HOUSE KEEPING, SPRINKLER ROOMS, IT/AV ROOMS, STORAGE ROOMS, AND MECHANICAL ROOMS, PAINT HOLLOW METAL DOORS AND FRAMES PT-6, U.N.O.

7. PAINT ACCESS PANELS WHERE THEY OCCUR TO MATCH ADJACENT CEILING OR WALL FINISH.

8. ALL INTERSECTIONS OF FLOOR FINISH MATERIALS SHALL BE LOCATED DIRECTLY UNDER CENTER OF DOOR, WHERE OCCURS, U.N.O..

9. LABEL ALL SUBMITTAL SAMPLES TO MATCH MATERIAL LEGEND DESIGNATION.

10. PROVIDE SEMI GLOSS PAINT SHEEN AT THE FOLLOWING LOCATIONS: HM DOORS, HM DOOR FRAMES, PAINTED METAL RAILINGS

11. PROVIDE EGGSHELL PAINT SHEEN AT ALL OTHER LOCATIONS, TYPICAL WALL FINISH.

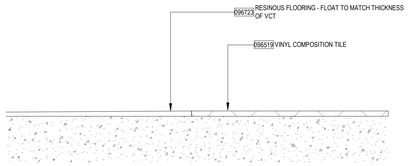
12. ALL EXISTING WALL SURFACES SCHEDULED TO BE RE-PAINTED SHALL BE PATCHED WHERE WALL MOUNTED ITEMS HAVE BEEN REMOVED OR DAMAGE HAS OCCURED AND PREPARED FOR NEW FINISH.

13. ALL CRACKS, HOLES, IMPERFECTIONS IN EXISTING WALLS, PARTITIONS OR GYP BOARD SHALL BE FILLED WITH PATCHING PLASTER AND SMOOTHED OFF TO MATCH ADJOINING SURFACES.

14. REMOVE EXISTING FLOORING, ADHESIVE AND MASTIC AT ALL EXISTING FLOORING SCHEDULED FOR DEMOLITION. PATCH AND PREP SUBFLOOR TO MEET MANUFACTURER'S REQUIREMENTS FOR NEW FLOORING MATERIALS. FLOAT SUBFLOOR AS NECESSARY TO ALIGN FINISHED SURFACE BETWEEN NEW FLOORING AND EXISTING TO REMAIN.

15. WHERE 'PATCH' IS NOTED ON THE FINISH SCHEDULE FOR CEILINGS, WALL BASE, FLOORING, AND PAINT, INTENT IS TO MATCH PROFILES, FINISH, COLOR, AND MATERIAL OF ADJACENT EXISTING MATERIAL.

16. ALL FLOOR FINISHES TO EXTEND INTO CABINET TOE KICKS AND KNEE SPACES. COORDINATE WITH CASEWORK SHOP DRAWINGS.



FLOOR TRANSITION- VCT TO EPOXY **C4**
6" = 1'-0"

MATERIAL LEGEND - LIKE FOR LIKE

TAG	PRODUCT DESCRIPTION	MANUFACTURER	PATTERN / TYPE	NAME / COLOR	FINISH / CONTENT	SIZE	REMARKS
064116 PLASTIC LAMINATE CLAD ARCHITECTURAL CABINETS							
PL-3	PLASTIC LAMINATE	WILSONART LAMINATE	--	KENSINGTON MAPLE 1077-60	MATTE FINISH	PER DWGS	CASEWORK
081416 FLUSH WOOD DOORS							
WD-1	WOOD DOOR	PER SPEC	MAPLE, PLAIN SLICE, SLIP MATCH	--	TRANSPARENT FINISH	PER SCHEDULE	
095113 ACOUSTICAL TILE CEILINGS							
ACT-1	ACOUSTICAL CEILING TILE	ARMSTRONG	CORTEGA BEVELED TEGULAR	2195 / WHITE		24 x 24 x 5/8	LAY-IN 9/16" GRID, SEAL/SHELLAC CONCRETE STRUCTURE ABOVE CEILING PER SPEC
096513 RESILIENT BASE AND ACCESSORIES							
RB-1	RUBBER BASE	TARKETT	BASEWORKS RUBBER, TOE	MOONROCK WG 29	TYPE TP RUBBER	4" HIGH COIL	
096519 RESILIENT TILE FLOOR							
VCT-1	VINYL COMPOSITION TILE	ARMSTRONG	MATCH EXISTING	MATCH EXISTING	PER SPEC	12" x 12"	
XVCT-1	EXISTING VCT	ARMSTRONG	--	--	--	12" x 12"	EXISTING FLOOR TO REMAIN. CLEAN, STRIP EXISTING COATING, RESEAL PER MANUF SPECIFICATIONS
096723 RESINOUS FLOORING							
EPB-1	EPOXY BASE	DESCO	SEE SPEC	TBD	SEE SPEC	4" HIGH	MATCH EPF-1
EPF-1	EPOXY FLOOR	DESCO	SEE SPEC	TBD	SEE SPEC	SEE DRAWINGS	EVERTHANE CHEMICAL-RESISTANT URETHANE TOPCOAT
099123 INTERIOR PAINTING							
PT-1	PAINT	SHERWIN WILLIAMS	SEE SPEC	ACCESSIBLE BEIGE SW7036	SEE GENERAL NOTES	SEE DWGS	FIELD COLOR
PT-2	PAINT	SHERWIN WILLIAMS	SEE SPEC	SHOJI WHITE SW7042	SEE SPEC	SEE DWGS	
PT-3	PAINT	SHERWIN WILLIAMS	SEE SPEC	SEA SALT SW6204	SEE SPEC	SEE DWGS	
PT-4	PAINT	SHERWIN WILLIAMS	SEE SPEC	COASTAL PLAIN SW6192	SEE SPEC	SEE DWGS	
PT-5	PAINT	SHERWIN WILLIAMS	SEE SPEC	KALE GREEN SW6460	SEE SPEC	SEE DWGS	
PT-6	PAINT	SHERWIN WILLIAMS	SEE SPEC	URBANE BRONZE SW7048	SEE SPEC	SEE DWGS	HOLLOW METAL DOORS AND FRAMES
PT-7	PAINT	SHERWIN WILLIAMS	SEE SPEC	POOLHOUSE SW7603	SEE SPEC	SEE DWGS	
122116 VERTICAL LOUVER BLINDS							
WB-1	WINDOW BLINDS	SEE SPEC	--	--	SEE SPEC	SEE DWGS	
123553 LABORATORY CASEWORK							
EP-1	EPOXY TOP	DURCON	SEE SPEC	GRAPHITE	SEE SPEC	PER DWGS	
MTL-1	METAL SHELVING	KEWAUNEE	SEE SPEC	78 SNOW WHITE	SEE SPEC	PER DWGS	
WD-3	WOOD CASEWORK	KEWAUNEE	SEE SPEC	FLUSH OVERLAY, 201 NATURAL MAPLE	SEE SPEC	SEE DWGS	
123661 SOLID SURFACE COUNTERTOPS							
SS-1	SOLID SURFACE COUNTERTOP	LG HAUSYS	HI-MAX	SHADOW CONCRETE M552	SEE SPEC	SEE DWGS	COUNTERTOPS AND SILLS

FINISH SCHEDULE - LIKE FOR LIKE

NUMBER	NAME	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	BASE	CEILING	FINISH REMARKS
M702	LAB	PT-1	PT-1	PT-1	PT-1	RB-1	PT-2	
M704	RESEARCH SUPPORT EQUIP.	PT-1	PT-1	PT-1	PT-1	--	PT-2	
M705	STUDENT OFFICE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M706	RESEARCH LAB	PT-1	PT-1	PT-1	PT-1	RB-1	PT-2	
M707	RESEARCH VEST.	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M707A	RADIOACTIVE CORE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M708	SHARED RESEARCH LAB	PT-1	PT-1	PT-1	PT-1	RB-1	--	
M708A	HISTOLOGY CORE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M708A1	VEST.	PT-1	PT-1	PT-1	PT-1	RB-1	PT-2	
M708A2	HISTOLOGY SURGERY	PT-1	PT-1	PT-1	PT-1	EPB-1	PT-2	
M708A3	SURGERY RECOVERY	PT-1	PT-1	PT-1	PT-1	EPB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M708A4	MICROSCOPY CORE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M708B	VEST.	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M708B1	VEST.	PT-1	PT-1	PT-1	PT-1	--	PT-2	
M708B2	CULTURE CORE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M710	BEHAVIORAL CORE	PT-1	PT-1	PT-1	PT-1	EPB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M710A	BEHAVIORAL CORE	PT-1	PT-1	PT-1	PT-1	EPB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M710B	BEHAVIORAL CORE	PT-1	PT-1	PT-1	PT-1	EPB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M711	OFFICE	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M712	DARK ROOM	PT-1	PT-1	PT-1	PT-1	RB-1	PT-2	
M713	ELEC RM	PT-1	PT-1	PT-1	PT-1	--	PT-2	
M718	LAB	--	--	--	--	--	--	
M723	CORRIDOR	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M723A	CORRIDOR	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
M726	MECH	PT-1	PT-1	PT-1	PT-1	--	PT-2	
M727	CIRCULATION	PT-1	PT-1	PT-1	PT-1	RB-1	ACT-1	SEAL/SHELLAC STRUCT PRIOR TO ACT INSTALLATION
MV700	STAIRS	PT-1	PT-1	PT-1	PT-1	--	--	
MW700	STAIRS	PT-1	PT-1	PT-1	PT-1	--	--	

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

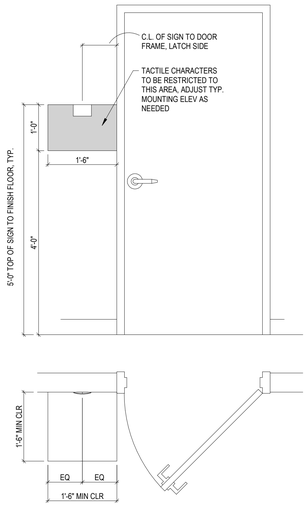
Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

MATERIAL LEGEND & FINISH SCHEDULE

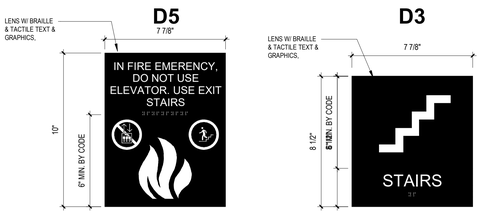
DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #:

A905L

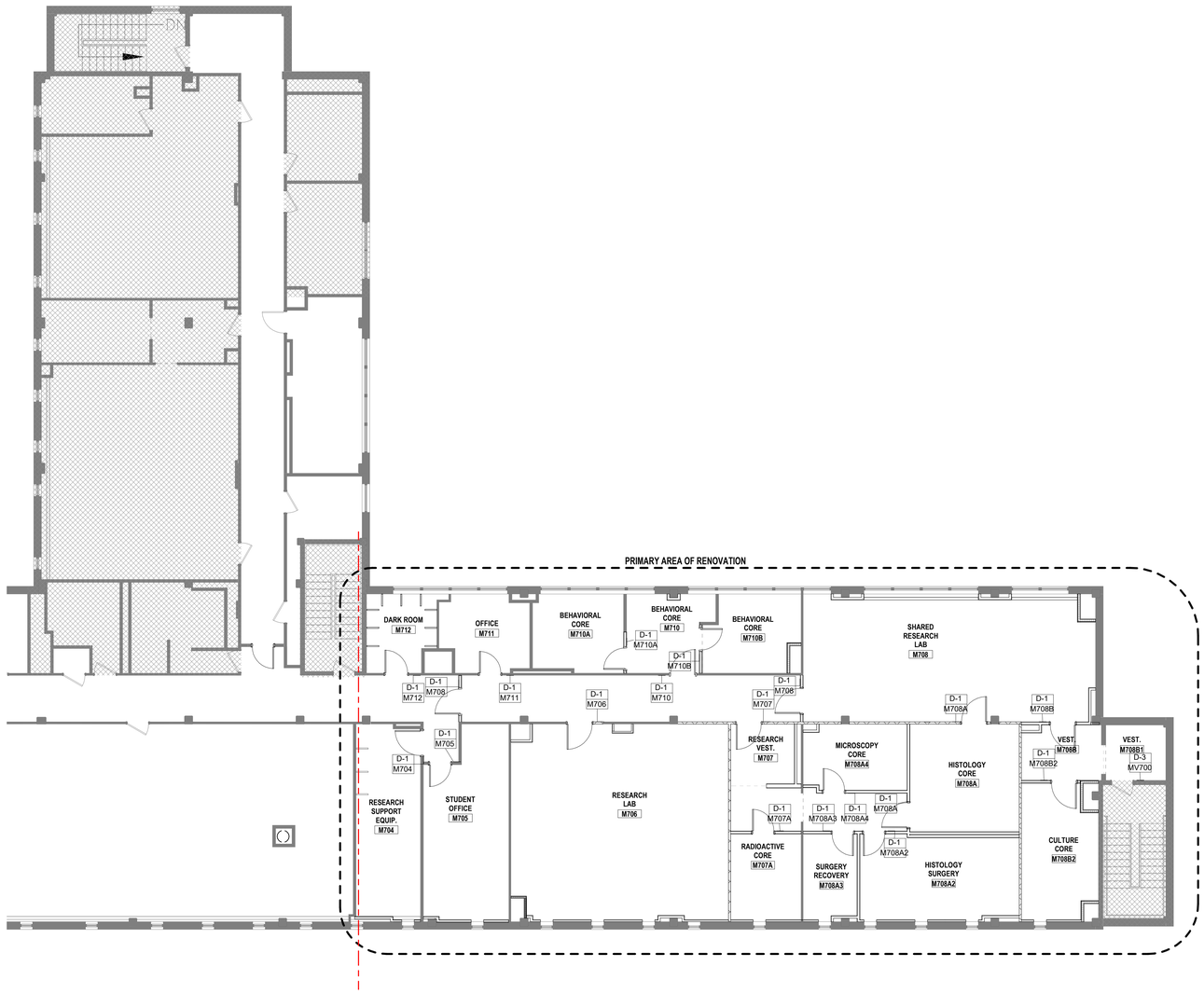
6/27/2025 3:28:19 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/UM SOM_MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt



SIGNAGE INSTALLATION **B5**
3/4" = 1'-0"



SIGNAGE TYPES **A4**
3" = 1'-0"



LEVEL 7 - SIGNAGE PLAN LIKE FOR LIKE **A1**
1/8" = 1'-0"

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7 Hospital Drive, Columbia, MO 65201

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0" 1"

SIGNAGE PLAN

DATE: 07/08/2025
DRAWN: Author
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **A906L**

Author
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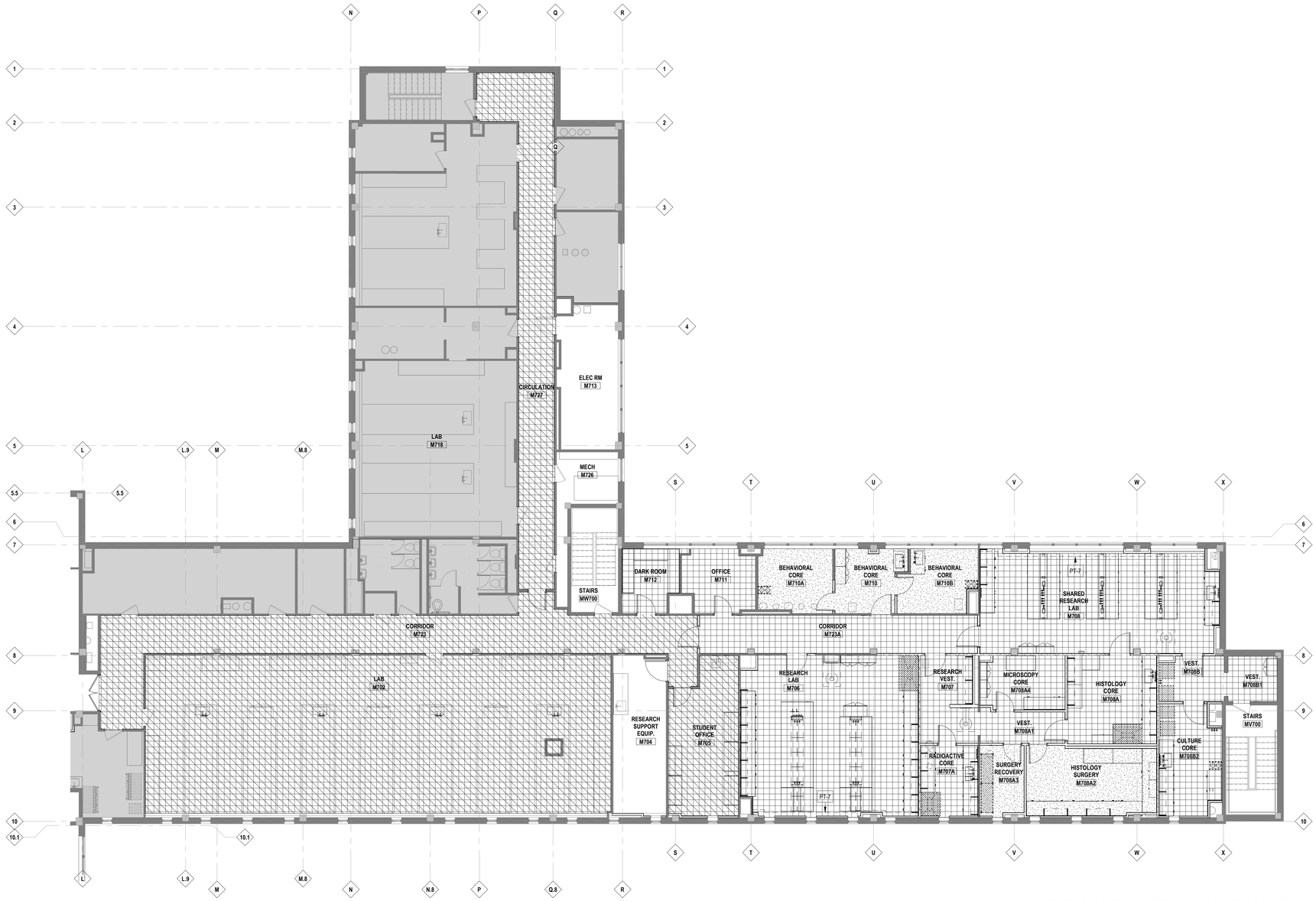


LEVEL 7 EAST - FINISH PLAN LIKE FOR LIKE A1
1/8" = 1'-0"

NORTH

FINISH NOTES

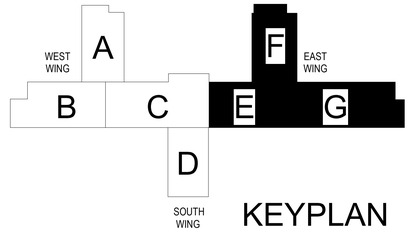
PT-00

CG-00

ACCENT WALL FINISH/COLOR DESIGNATED WITH DASHED LINES AND FINISH NOTE

CORNER GUARD DESIGNATED WITH LINES AND FINISH NOTE

- 09 68 13 FLOORING CARPET, CPT-2
- 09 65 19 FLOORING RESILIENT, XVCT-01
- 09 67 23 RESINOUS FLOORING, EPF-1
- NIC
- 09 65 19 FLOORING RESILIENT, LVT-01
- 09 65 19 FLOORING RESILIENT, LVT-02
- EXISTING FLOORING TO REMAIN



KEYPLAN

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University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

FINISH PLAN - LEVEL 7 EAST

DATE: 07/08/2025
DRAWN: Author | CHECKED: Checker
PGAV # 53660-20 | CLIENT # CP2400920
SHEET #
A970L

Author
6/27/2025 8:53:10 AM
Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/UM-SOM-MSB_7TH_FLOOR_LIKE_FOR_LIKE_REVIT 2022.rvt

GENERAL NOTES - STRUCTURAL

1. General Information

A. The contractor shall verify dimensions and conditions before construction and notify the engineer of any discrepancies, inconsistencies, or difficulties affecting the work before proceeding.
B. The contractor shall coordinate all disciplines, verifying size and location of all openings, whether shown on structural drawings or not, as called for on architectural, mechanical, or electrical drawings. In the case of work in an existing building the contractor shall scan existing structure to locate all rebar in the area of the new core/opening using ground penetrating radar and notify the engineer of record for review prior to coring/cutting. Conflicts, inconsistencies, or other difficulties affecting structural work shall be called to the architect or engineer's attention for direction before proceeding.
C. All design and construction work for this project shall conform to the requirements of the following governing design codes:
   1. International Building Code (IBC 2021) as amended by the University of Missouri
   2. Minimum Design Loads for Buildings and Other Structures (ASCE7-16)
   3. Specification for Structural Steel Buildings (AISC 360-16)
      Member Design Basis is Allowable Stress Design (ASD)
      Connection Design Basis is Allowable Stress Design (ASD)
   4. Structural Welding Code (AWS D1.4/D1.4M-18)
   5. Building Code Requirements for Structural Concrete (ACI 318-19)
   6. Building Code Requirements for Masonry Structures (TMS 402-16)
   7. North American Specification for the Design of Cold-Formed Steel Structural Members (AISI S100-16)
   8. National Design Specification (NDS) for Wood Construction with 2018 Supplements (ANSI/AWC NDS-2018)
   9. Special Design Provisions for Wind and Seismic (AWC SDPWS-2021)
D. These drawings are for this specific project and no other use is authorized.

2. Structural Load Design Criteria

A. Floor Live = 40 psf at classrooms
   = 80 psf at corridors above first floor
B. Roof Live = 20 psf
C. Snow: Pg = 20psf, Pf =16psf, Is = 1.1, Ce = 1.0, Ct = 1.0, Drift per ASCE/SEI 7
D. Lateral Loads:
   1.) Wind: V = 116 mph, Exposure B
   Risk Category III, Iw=1.0 GCpi=+/-0.18
   Design wind pressures to be used for the design of exterior component and cladding materials on the designated zones of wall and roof surfaces shall be per section 30.7 and Table 30.7-2 of ASCE/SEI 7. Tabulated pressures shall be multiplied by effective area reduction factors, exposure adjustment factors, and topographic factors where applicable
   2.) Seismic: Ss = 0.163, S1 = 0.094
   Risk Category III, Ie=1.25,
   Site Classification C; Sds = 0.141; Sd1 = 0.094
   Seismic Design Category B
E. This project is designed to resist the most critical effects resulting from the load combinations of section 1605.3 of the International Building Code.

3. Concrete

A. All concrete for interior flatwork shall develop minimum ultimate compressive design strength of 4000 psi in 28 days, but not less than 540 pounds of cement shall be used per cubic yard of concrete regardless of strengths obtained, not over 5.40 gallons of water per 100 pounds of cement and not over 4 inches of slump. Concrete mix shop drawing shall contain testing data proving concrete design mix shrinkage is less than 0.034% at 28 days when tested according to ASTM C157 (air drying method only).
B. All concrete for exterior flatwork shall have a minimum design compressive strength of 4500 psi in 28 days, with not less than 560 pounds of cement per cubic yard of concrete, not over 5 gallons of water per 100 pounds of cement, with 6% +/- 1% air entrainment, and a maximum of 4 inches of slump.
C. The preceding minimum mix requirements may have water-reducing admixtures conforming to ASTM C494 added to the mix at manufacturer's dosage rates for improved workability.
D. The preceding minimum mix requirements may have up to 15% maximum of the cement content replaced with an approved ASTM C618 Class C fly ash, provided the total minimum cementitious content is not reduced.
E. Combined aggregate (coarse plus fine) for all concrete shall be well graded from coarsest to finest with no more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 and finer sieves. Submit this gradation report with the concrete mix design shop drawings.
F. All concrete is reinforced concrete unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas. Any details not shown shall be detailed per ACI 315 and meet requirements of ACI 318, current editions.
G. Contractor shall verify that all concrete inserts, reinforcing and embedded items are correctly located and rigidly secured prior to concrete placement.
H. Construction joints in beams, slabs, and grade beams shall occur at midspan (middle third) unless noted otherwise. Provide 2 x 4 horizontal keys at construction joints for shear transfer.
I. No aluminum items shall be embedded in any concrete.

4. Reinforcing Steel

A. All reinforcing steel shall conform to the requirements of ASTM A615 or A706 grade 60 steel. Welded plain wire fabric shall be supplied in sheets and conform to the requirements of ASTM A185.
B. Clear coverage of concrete over reinforcing steel shall be as follows:

1.	Concrete placed against earth:	3"
2.	Formed concrete against earth:	2"
3.	Slabs:	1"
4.	Beams or Columns:	1-1/2"
5.	Other	2"

   All coverage shall be nominal bar diameter minimum.
C. All dowels shall be the same size and spacing as adjoining main bars (splice lap 48 bar diameters or 24" minimum unless noted otherwise).
D. At corners of all walls, beams, and grade beams supply corner bars (minimum 2'-0" in each direction or 48 bar diameters) in outside face of wall, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply 3 - #4 vertical support bars for corner bars.
E. Bars marked continuous and all vertical steel shall be lapped 48 bar diameters (2'-0" minimum) at splices and embedments, unless shown otherwise. Splice top bars near midspan and splice bottom bars over supports, unless noted otherwise.
F. At all holes in new concrete slabs, add (2) #4 bars (opening dimension plus 96 diameters long) at each of four sides and add (2) #4x4'-0" diagonally at each of four corners of hole.
G. Accessories shall be as specified in latest edition of the ACI Detailing Handbook and the concrete Reinforcing Steel Institute Design Handbook. Maximum accessory spacing shall be 4'-0" on center, and all accessories on exposed surfaces are to have plastic coated feet.
H. All slabs and stairs not shown otherwise shall be 6" thick with #4 bars at 12" on center each way. All exterior porches and stoops not otherwise detailed may be constructed in any standard manner, solid or hollow, but must be reinforced with #4 bars at 12" on center each way minimum. Porches shall be doweled to adjacent walls or grade beams with #4 bars at 12" on center, hooked or embedded 48 diameters into both members. Slope porches 1/8" per foot for drainage unless noted otherwise.

5. Post Installed Anchors

A. Post-installed anchors shall be used only where specified on the drawings unless approved in writing by the engineer of record. See drawings for anchor diameter, spacing and embedment. Performance values of the anchors shall be obtained for specified products using appropriate design procedures and/or standards as required by the governing building code. Anchors installed in concrete shall have an ICC-ES Evaluation Service Report. Special inspection is required for all post installed anchors. The contractor shall coordinate an on-site meeting with the post installed anchor manufacturer field representative to educate the construction team on the anchor installation guidelines and requirements.
B. Mechanical anchors used in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ACI 355.2 and ICC-ES AC193. All anchors shall be installed per the anchor manufacturer's written instructions.
C. Adhesive anchors used in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ICC-ES AC308. All anchors shall be installed per the anchor manufacturer's written instructions.

6. Deferred Submittal and Shop Drawing

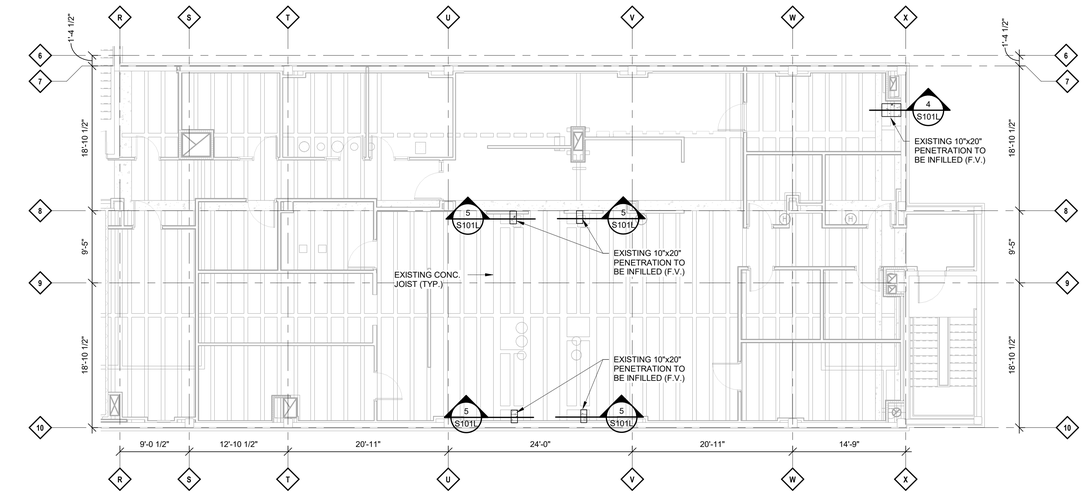
A. Bob D. Campbell and Company, Inc. will review the General Contractor's (GC) shop drawings and related submittals (as indicated below) with respect to the ability of the detailed work, when complete, to be a properly functioning integral element of the overall structural system designed by Bob D. Campbell and Company, Inc.
B. Deferred submittals shall be submitted to the architect of record for review who shall forward to the building official for review and approval. Design calculations for deferred sub mittals shall be submitted at the same time as the shop drawings for review. Design calculations shall be prepared and sealed by a Professional Engineer licensed in the state of the project. The deferred submittal items shall not be installed until the deferred submittal documents have been approved by the building official.
C. Prior to submittal of a shop drawing or any related material to Bob D. Campbell and Company, Inc., the GC shall:
   1. Review each submission for conformance with the means, methods, techniques, sequences and operations of construction and safety precautions and programs incidental thereto, all of which are the sole responsibility of the GC.
   2. Review and approve each submission.
   3. Stamp each submission as approved.
D. Bob D. Campbell and Company, Inc. shall assume that no submission comprises a variation unless the GC advises Bob D. Campbell and Company, Inc. with written documentation.
E. Bob D. Campbell and Company, Inc. shall review shop drawings and related materials with comments provided that each submission has met the above requirements. Bob D. Campbell and Company, Inc. shall return without comment unrequired material or submissions without GC approval stamp.
F. Shop drawings and related material (if any) required are indicated below. Should Bob D. Campbell and Company, Inc. require more than ten (10) working days to perform the review, Bob D. Campbell and Company, Inc. shall so notify the GC.
   1. Concrete mix designs and material certificates including admixtures and compounds applied to the concrete after placement.
   2. Reinforcing steel shop drawings including erection drawings and bending details.Bar list will not be reviewed for correct quantities.
   3. Miscellaneous anchors shown on the structural drawings.

7. Statement of Structural Special Inspections

A. The structural design for this project is based on completion of special inspections during construction in accordance with section 1704 of the International Building Code. The owner shall employ one or more qualified special inspectors to provide the required special inspections.
B. The special inspector shall furnish inspection reports to the building official, owner, architect and structural engineer, and any other designated person.
C. All discrepancies shall be brought to the immediate attention of the contractor for correction, then, if uncorrected, to the proper design authority, building official and structural engineer.
D. The special inspector shall submit a final signed report stating that the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of the building code.
E. The following inspections and tests are required with the frequency (continuous or periodic) as defined within the referenced section or standard listed below. The General Contractor shall provide notification to the inspector when items requiring inspection are ready to be inspected and provide access for those inspections.
   1. Concrete Construction per Section 1705.3 and Table 1705.3
      a. Reinforcing Steel Placement
      b. Post Installed Anchors
      c. Design Mix Verification
      d. Concrete Sampling and Testing
      e. Concrete Placement
      f. Concrete Curing

8. Disclaimer

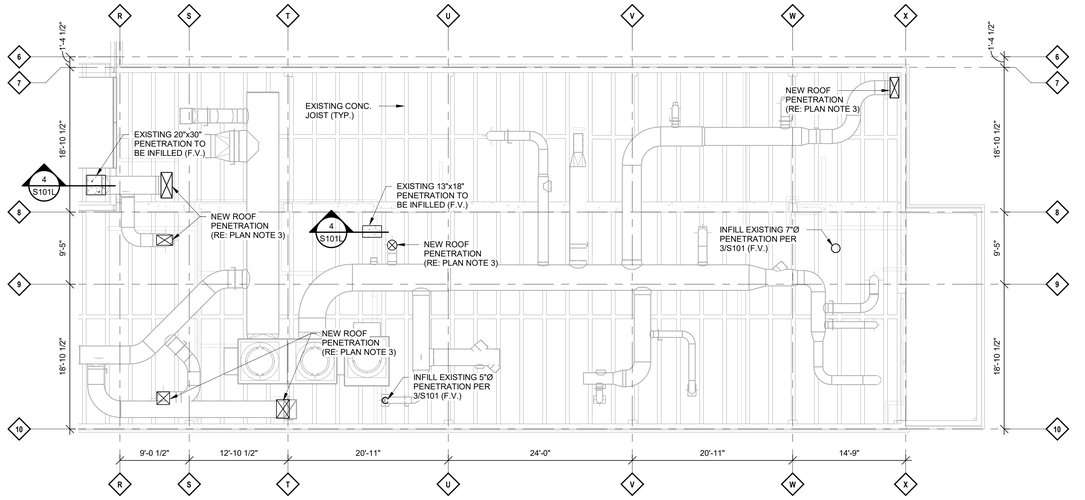
A. I, Steven J. Brooks, P.E., registered engineer and a representative of Bob D. Campbell and Company, Inc., do hereby accept professional responsibility as required by the professional registration laws of this state for the structural design drawings consisting of S-series drawings. I hereby disclaim responsibility for all other drawings in the construction document package, they being the responsibility of other design professionals whose seals and signed statements may appear elsewhere in the construction document package.



1 LEVEL 7 FRAMING PLAN - AREA G

1/8" = 1'-0"

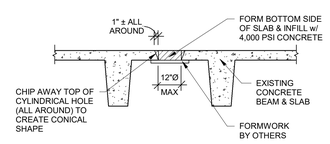
NOTES:
1. REFER TO GENERAL NOTES ON THIS SHEET.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY BOB D. CAMPBELL & CO. OF ANY DISCREPANCIES WITH THIS DRAWING.
3. REFER OT TYPICAL SECTIONS ON THIS SHEET FOR INFILL OF EXISTING OPENINGS.



2 ROOF FRAMING PLAN - AREA G

1/8" = 1'-0"

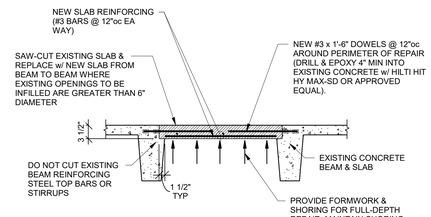
NOTES:
1. REFER TO GENERAL NOTES ON THIS SHEET.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY BOB D. CAMPBELL & CO. OF ANY DISCREPANCIES WITH THIS DRAWING.
3. COORDINATE LOCATIONS & DIMENSIONS OF NEW OPENINGS THROUGH EXISTING STRUCTURE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. NEW CIRCULAR OPENINGS IN EXISTING STRUCTURE SHALL BE CORED. NEW RECTANGULAR OPENINGS SHALL BE SAW-CUT. PRE-DRILL OR CORE THE CORNERS OF THE RECTANGULAR OPENING PRIOR TO CUTTING TO AVOID OVERCUTTING THE CORNERS. DO NOT CUT ANY EXISTING CONCRETE JOISTS OR BEAMS.
4. REFER OT TYPICAL SECTIONS ON THIS SHEET FOR INFILL OF EXISTING OPENINGS.



TYPICAL INFILL OF EXISTING CIRCULAR HOLES IN CONCRETE PAN-JOIST SLAB (12" Ø MAXIMUM HOLE SIZE)

3 SECTION

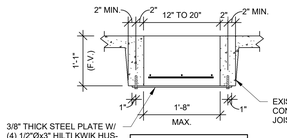
3/4" = 1'-0"



TYPICAL INFILL OF EXISTING OPENINGS IN CONCRETE PAN-JOIST SLAB (FOR OPENINGS GREATER THAN 12" Ø)

4 SECTION

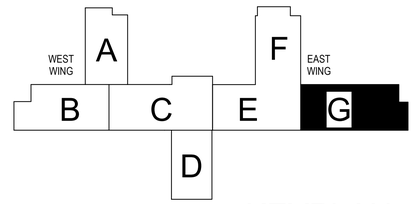
3/4" = 1'-0"



INFILL OF 12" TO 20" OPENINGS

5 SECTION

3/4" = 1'-0"



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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
7 Hospital Drive, Columbia, MO 65201

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

GENERAL NOTES, PLANS, & DETAILS

DATE: 07/08/2025
DRAWN: SJB | CHECKED: SJB
PGAV # 53660-20 | CLIENT # CP2400920
SHEET # **S101L**

6/26/2025 8:59:18 AM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/MU SoM Renovation - Structural_r22.rvt

FIRE PROTECTION GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED, INSTALLED, AND TESTED IN COMPLIANCE WITH THE CODES AND AMENDMENTS ADOPTED BY THE INSPECTION AUTHORITY. NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THIS PROJECT:
   A. 2021 - IFC
   B. 2021 - IBC
   C. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
   D. NATIONAL FIRE PROTECTION ASSOCIATION EDITIONS LISTED IN THE IBC OR MOST CURRENT EDITIONS OF THE FOLLOWING
      a. NFPA 13
      b. NFPA 25
2. THE CONTRACTOR SHALL INCLUDE IN THEIR BID, A FULLY CODE COMPLIANT SPRINKLER SYSTEM AS OUTLINED WITHIN THESE DOCUMENTS. PROJECT SHALL BE DESIGNED, CONSTRUCTED, AND TESTED PER THE NFPA STANDARDS AND/OR FM GLOBAL REQUIREMENTS.
3. THESE DRAWINGS ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, HOWEVER, LOCATIONS, DEPTHS, ELEVATIONS AND SIZES WERE TAKEN FROM DIFFERENT SOURCES AND ARE SUBJECT TO DEVIATION. THE CONTRACTOR SHALL ASSUME SOME DEVIATIONS AND INCLUDE OFFSETS, ADDITIONAL PIPING, ETC AT THE TIME OF BID.
4. ALL SYSTEMS, EQUIPMENT, AND MATERIALS ARE TO BE INSTALLED IN A NEAT WORKMAN LIKE MANNER, WORK NOT DONE SO SHALL BE REMOVED AND REINSTALLED SATISFACTORILY.
5. THE FIRE PROTECTION BID IS A DESIGN/BUILD CONTRACT. BEFORE SUBMITTING THE BID, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS AND VERIFY LOCATIONS, ELEVATIONS, AND SIZES OF ALL UTILITIES AT SITE PRIOR TO PROCEEDING WITH WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY ASSUMPTIONS, OMISSIONS, OR ERRORS MADE AS A RESULT OF THE FAILURE TO BECOME FULLY FAMILIAR WITH EXISTING CONDITIONS. EXISTING SYSTEMS AND STRUCTURE SHALL BE INVESTIGATED FOR BEST POSSIBLE ROUTING OF FIRE PROTECTION PIPING.
6. WHEN PLACING NEW SPRINKLER PIPING, CONTRACTOR SHALL VERIFY LOCATIONS OF POTENTIAL OBSTRUCTIONS FROM MECHANICAL EQUIPMENT AND ARCHITECTURAL FEATURES PRIOR TO BID AND PRICE ACCORDINGLY TO MAKE ALLOWANCES IN BID.
7. THE CONTRACTOR SHALL PERFORM A FLOW TEST PRIOR TO DESIGN AND SUBMITTAL OF THE HYDRAULICALLY CALCULATED SYSTEM. THE FLOW TEST SHALL NOT BE MORE THAN 12 MONTHS OLD FROM THE DATE OF CONSTRUCTION.
8. AT LEAST ONE HYDRAULIC CALCULATION SHALL BE PROVIDED PER SPRINKLER ZONE BASED ON THE CURRENT FLOW TEST. THE CALCULATION WILL INCLUDE HOSE ALLOWANCES AT THE BASE OF THE RISER PER NFPA 13 REQUIREMENTS BASED ON THE IDENTIFIED HAZARD. THERE WILL BE A 10% SAFETY ALLOWANCE PROVIDED FOR THE SPRINKLER SYSTEM BASED ON THE AVAILABLE PRESSURE AT THE SOURCE AND SYSTEM DEMAND. (10% OF THE SUM OF THE SPRINKLER DEMAND PLUS THE SAFETY FACTOR).
9. THE CONTRACTOR SHALL SUBMIT ALL DRAWINGS AND CALCULATIONS TO THE FIRE DEPARTMENT, GOVERNING AGENCIES, AND INSURING AGENCY AND RECEIVE APPROVAL PRIOR TO SUBMITTING DESIGN SHOP DRAWINGS.
10. SUBMIT ACCURATE AS-BUILT DRAWINGS TO THE ENGINEER AND OWNER.
11. IF THIS CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS OR IS NOT COMPLETELY SURE OF THEIR MEANING, THIS CONTRACTOR SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND/OR INTERPRETATION PRIOR TO SUBMITTING BIDS, SINCE THIS CONTRACTOR WILL BE HELD RIGIDLY TO THE INTERPRETATION OF THE ENGINEER.
12. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THE ONLY AVAILABLE INFORMATION HAS BEEN OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FILED SURVEYS. THE EXACT LOCATION OF PIPING AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED BY THESE DRAWINGS. EXTREME ACCURACY IS NOT GUARANTEED. THIS CONTRACTOR SHALL BE PREPARED TO MAKE ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT JOB CONDITIONS. THIS CONTRACTOR SHALL REPORT, IN WRITING, ANY DISCREPANCIES WHICH PREVENT THE INSTALLATION OF WORK AS SHOWN.
13. IT IS ASSUMED THAT AREAS OUTSIDE THE SCOPE OF WORK ARE TESTED, MAINTAINED, AND MEET THE CODE REQUIREMENTS WHEN IT WAS INSTALLED, AND THE EXISTING SYSTEM IS ACCEPTED BY THE LOCAL AHJ. WORK PERFORMED WITHIN SCOPE OF WORK WILL PROVIDE A SYSTEM TO MEET THE REQUIREMENTS SET BY THE AHJ LIMITED BY THE BOUNDARY OF WORK.
14. THE SPRINKLER CONTRACTOR PRIOR TO TIME OF BID SHALL EVALUATE THE SITE AND VERIFY ALL SPRINKLER PIPING AND EQUIPMENT THAT IS EXISTING TO REMAIN WITHIN OR SERVING THE SCOPE OF WORK, IS IN GOOD WORKING CONDITION.
15. FURNISH AND INSTALL TAMPER SWITCHES ON ALL INDICATING VALVES AND FLOW SWITCHES PER NFPA 13 REQUIREMENTS AND PER THE DESIGN DOCUMENTS BY THE CONTRACTOR.
16. THE CONTRACTOR SHALL FURNISH DRAIN VALVES AND INSPECTOR'S TEST CONNECTIONS AS REQUIRED BY NFPA 13 REQUIREMENTS AND AT THE DISCRETION OF THE FIRE MARSHAL, ENGINEER OR GOVERNING AGENCY.
17. ALL OPENINGS THROUGH FIRE RATED FLOORS, WALLS, OR PARTITIONS SHALL BE FIRE STOPPED WITH UL RATED ASSEMBLIES OF EQUAL OR GREATER FIRE RATING. REFER TO FIRE STOPPING NOTES FOR ADDITIONAL INFORMATION.
18. COORDINATE WITH STRUCTURAL ENGINEER WHEN SAW-CUTTING THROUGH CONCRETE FLOOR OR WALL CONSTRUCTION. LEAVE SUFFICIENT REBAR EXPOSED TO TIE NEW REINFORCING REPLACEMENT CONCRETE AND/OR OTHER STRUCTURAL ATTACHMENTS FOR NEW CONSTRUCTION.
19. VALVES, TAMPER SWITCHES, OR ANY MECHANICAL/ELECTRICAL ITEM SHALL NOT BE LOCATED ABOVE A HARD CEILING, UNLESS PROVIDED WITH EQUIVALENTLY RATED ACCESS AND SIGNAGE MEETING NFPA 13 REQUIREMENTS.
20. SPRINKLERS SHALL BE LOCATED IN THE CENTER OF CEILING TILES, COORDINATE FINAL LAYOUT WITH ARCHITECT, AND OTHER DISCIPLINES.
21. EXTENDED COVERAGE SPRINKLERS ARE PERMITTED. CONTRACTOR SHALL VERIFY ADDITIONAL PRESSURE REQUIREMENTS IF THIS TYPE IS SELECTED.
22. THE SPRINKLER CONTRACTOR SHALL OBTAIN AND UTILIZE THE ARCHITECTURAL REFLECTED CEILING PLAN FOR THE LOCATING OF SPRINKLER HEADS. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR CEILING DEVICE LOCATIONS AND THE SPECIFICATIONS FOR COORDINATION DRAWING REQUIREMENTS.
23. PIPING SHALL BE INSTALLED AT LEAST 12" ABOVE FINISHED CEILING ELEVATION TO ALLOW FOR SUITABLE ACCESS ABOVE CEILING.
24. INSTALL NO PIPING IN A LOCATION OR MANNER WHICH WILL ALLOW FREEZING.
25. COORDINATE PIPE ROUTING NEAR ELECTRICAL EQUIPMENT PER NFPA 70. PIPING IS NOT TO BE ROUTED ABOVE ELECTRICAL PANELS, TRANSFORMERS, COMPUTER RACKS ETC. FIELD VERIFY AND COORDINATE WITH ELECTRICAL CONTRACTOR ALL EXISTING AND NEW ELECTRICAL LOCATIONS PRIOR TO DESIGN OF THE FIRE PROTECTION PLANS.
26. ROUTING OF SPRINKLER MAINS, BRANCHLINES, AND HEADS SHALL BE THOROUGHLY COORDINATED WITH ALL OTHER DISCIPLINES AND BUILDING STRUCTURE PRIOR TO SUBMISSION OF COORDINATED SHOP DRAWINGS. THIS IS OF THE UTMOST IMPORTANCE ESPECIALLY WHERE SPACE IS LIMITED. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR COORDINATING, PREPARING, AND SUBMITTING COORDINATION DRAWINGS FOR APPROVAL/REVIEW.
27. ADVISE THE ENGINEERS OF ANY CONFLICTS, ERRORS, OMISSIONS, ETC. AT LEAST 10 DAYS PRIOR TO BID DATE, TO ALLOW CLARIFICATION BY WRITTEN ADDENDUM.
28. IF SEISMIC BRACING IS REQUIRED, FIRE PROTECTION CONTRACTOR SHALL FURNISH AND INSTALL ALL END OF BRANCH LINE RESTRAINTS PER NFPA 13.
29. SPRINKLER CONTRACTOR TO AVOID ROUTING PIPE THROUGH SHEAR WALLS. ANY SHEAR WALL PENETRATIONS SHALL BE COORDINATED WITH THE STRUCTURAL ENGINEER. REFER TO STRUCTURAL DRAWINGS FOR SHEAR WALL LOCATIONS.
30. THE FIRE SERVICE LEAD-IN, BACKFLOW PREVENTER, AND FIRE DEPARTMENT CONNECTION ARE EXISTING TO REMAIN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE UNDERGROUND SERVICE MAINS, LEAD-IN CONNECTIONS, AND ALL HYDRANTS ARE COMPLETELY FLUSHED, PER NFPA 13, BEFORE CONNECTING THE FIRE SERVICE LINE TO THE FIRE SPRINKLER SYSTEM.
31. WHEN WORK REQUIRES TEMPORARY INTERRUPTIONS OF FIRE PROTECTION SERVICES OR UTILITIES THE FOLLOWING ACTIONS WILL BE TAKEN:
   A. COORDINATION WITH MAINTENANCE PERSONNEL TO SHUT OF SERVICES AT NEAREST MAIN.
   B. PROVIDE TEMPORARY AND ACCESSIBLE ISOLATION VALVES CLOSE TO THE POINT OF WORK.
   C. ENSURE BUILDING OPERATIONS CONTINUE WITH MINIMAL INTERRUPTIONS AND OPERATION OF EXISTING SYSTEMS BE INTERFACED WITH AS LITTLE DISRUPTION AS POSSIBLE EXCEPT IN VACATED AREAS.
   D. WORK INTERFERING WITH OPERATION OF DOWNTIME WILL BE SCHEDULED AFTER CONSULTATION WITH AND PERMISSION GIVEN BY OWNER 10 DAYS PRIOR TO ANTICIPATED INTERRUPTION OF SYSTEMS.
   E. SUCH WORK MAY BE REQUIRED TO BE PERFORMED OUTSIDE OF NORMAL WORKING HOURS.
   F. REFER TO FIRE WATCH NOTES FOR DISRUPTION OF FIRE SPRINKLER SYSTEMS IN OCCUPIED BUILDINGS WHEN DISRUPTION EXCEEDS 4 HOURS.

FIRE PROTECTION SYMBOLS & ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

	AIR VENT (AUTOMATIC)
	DOUBLE CHECK VALVE ASSEMBLY
	DRY PIPE VALVE
	ELECTRONIC SUPERVISED INDICATING VALVE
	FIRE DEPARTMENT VALVE (FDV)
	FLOW SWITCH
	PREACTION VALVE
	PRESSURE RELIEF VALVE
	SOLENOID VALVE
	DRAIN LINE
DRY	DRY PIPE
	FIRE MAIN (BULK)
SPR	SPRINKLER MAIN/BRANCH PIPING
	DRIP CONNECTION
	FIRE DEPARTMENT CONNECTION-FREE STANDING
	FIRE DEPARTMENT CONNECTION-WALL MOUNT
	FLUSH TYPE FIRE DEPARTMENT INLET CONNECTION
	FIRE PUMP TEST HEADER-WALL MOUNT
	FIRE PUMP TEST HEADER-FREE STANDING
EX	EXSTING SPRINKLER HEAD
EX	EXISTING SPRINKLER HEAD TO BE REMOVED
	SPRINKLER HEAD (SEE SCHEDULE FOR TYPE)
	SIDEWALL SPRINKLER HEAD (SEE SCHEDULE FOR TYPE)
AP	ACCESS PANEL
AC	AIR COMPRESSOR
AS	AUTOMATIC SPRINKLERS
BFP	BACKFLOW PREVENTER
BTC	BRANCH TO CONNECTION
CI	CAST IRON
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DPV	DRY PIPE VALVE
DSP	DRY STANDPIPE PIPING
DSV	DRY STANDPIPE VALVE
FDC	FIRE DPARTMENT CONNECTION
FDV	FIRE DEPARTMENT VALVE
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FP	FIRE PUMP
FPC	FIRE PUMP CONTROLLER
FPTH	FIRE PUMP TEST HEADER
JP	JOCKEY PUMP
JPC	JOCKEY PUMP CONTROLLER
NAS	NO AUTOMATIC SPRINKLERS
NIC	NOT IN CONTRACT
PIV	POST INDICATOR VALVE
SP	SUMP PUMP
TS	TAMPER SWITCH

FIRE PROTECTION DEMOLITION NOTES

1. PROTECT PIPING WHICH IS NOT TO BE REMOVED FROM DAMAGE, DIRT AND DEBRIS.
2. ALL FIRE EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES AND PROPERLY DISPOSED OF BY THE DEMOLITION CONTRACTOR.
3. THE CONTRACTOR SHALL PLUG OR CAP ALL PIPING OUTLETS NOT INTENDED FOR REUSE.
4. CEILING REMOVAL, STORAGE, AND REPLACEMENT WILL BE MADE BY THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO REPAIR THE EXISTING SURFACES TO REMAIN WHERE THEIR WORK HAS BEEN COMPLETED. REPAIR INCLUDES BUT SHALL NOT BE LIMITED TO, ANY EXISTING WALL, CEILING, OR FLOOR THAT IS SCHEDULED TO REMAIN. REPAIR, PAINTING, AND PATCHING SHALL BE COMPLETED BY AN APPROPRIATE CONTRACTOR QUALIFIED FOR THIS TYPE OF WORK.
5. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, THE CONTRACTOR WILL NOTIFY BUILDING OWNER OF THE HAZARDOUS MATERIAL.
6. ARCHITECTURAL DEMOLITION DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH THESE DRAWINGS.
7. THE CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH PROJECT'S PHASING SCHEDULE PRIOR TO ANY WORK

DRAWING REFERENCES

1 TITLE / SCALE	PLAN DETAIL REFERENCE TITLE
#	KEYED NOTE DESIGNATION
PLAN NORTH / TRUE NORTH	NORTH ARROW
AHU 1	PLAN MARK EQUIPMENT DESIGNATION REFER TO MEP SCHEDULE FOR CIRCUITING AND DEVICE REQUIREMENTS AND FLOOR PLANS FOR LOCATIONS
	EQUIPMENT NUMBER
SIM 1 A101	PLAN MARK ENLARGED PLAN REFERENCE
	SHEET NUMBER
1 AD886	SECTION
	INTERFACE, EXISTING TO NEW
	EXTENT OF DEMOLITION
	MATCHLINE
1	REVISION TAG

LINE TYPE LEGEND

	EXISTING TO REMAIN OR NEW WORK BY OTHERS (LIGHT, SOLID LINE)
	NEW WORK BY THIS CONTRACTOR (DARK, SOLID LINE)
	EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK, DASHED LINE, DEMOLITION PLANS)

COMMON PIPING SYMBOLS & ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

	DIRECTION OF FLOW
	BRANCH CONNECTION, BOTTOM
	BRANCH CONNECTION, TOP
	ELBOW, TURNED DOWN
	ELBOW TURNED UP
	SHUTOFF VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
	PRESSURE GAUGE
	UNION
	PIPING CAP
X / #	RISER DESIGNATION
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITIES HAVING JURISDICTION
AP	ACCESS PANEL
BOP	BOTTOM OF PIPE
DIA	DIAMETER
DN	DOWN
EX OR EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
IE OR INV. ELEV	INVERT ELEVATION
NC	NORMALLY CLOSED
NTS	NOT TO SCALE
PSI	POUNDS PER SQUARE INCH
RPM	REVOLUTIONS PER MINUTE
RI	ROUGH-IN
SOV	SHUTOFF VALVE
TDH	TOTAL DYNAMIC HEAD
VIF	VERIFY IN FIELD

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07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

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1 Hospital Drive, Columbia, MO 65212

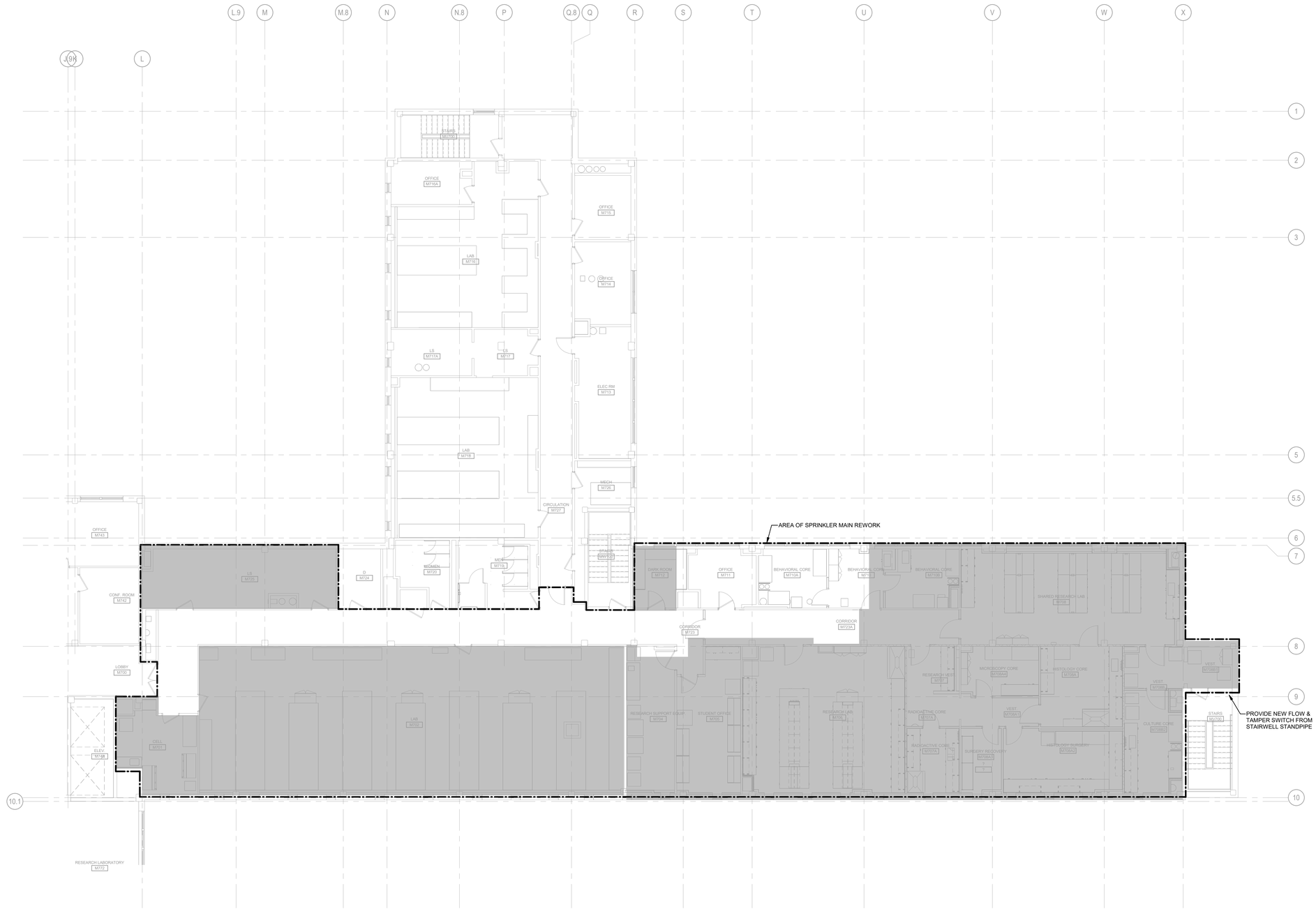
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced
0" 1" 2"

FIRE PROTECTION SYMBOLS AND ABBREVIATIONS

DATE:	7/08/2025
DRAWN: AJH	CHECKED: PZ
PGAV # 53660-20	CLIENT # CP2400920
SHEET #	FP000L

2025-06-26 2:41:21 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/001765_MEPFPLFLL_r22.rvt



HAZARD CLASSIFICATION LEGEND

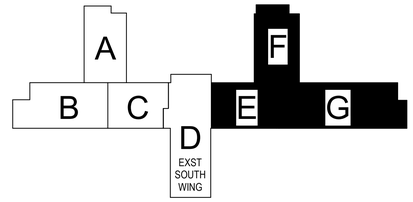
NFPA 13

	ALL AREAS NOTED ARE TO BE CONSIDERED LIGHT HAZARD WITH A MINIMUM SPRINKLER DISCHARGE DENSITY OF 0.10 GPM/SQ. FT. FOR THE MOST HYDRAULICALLY REMOTE 1,500 SQ. FT. AND A 100 GPM HOSE STREAM, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
	ALL AREAS NOTED ARE TO BE CONSIDERED ORDINARY HAZARD GROUP I WITH A MINIMUM SPRINKLER DISCHARGE DENSITY OF 0.15 GPM/SQ. FT. FOR THE MOST HYDRAULICALLY REMOTE 1,500 SQ. FT, AND A 250 GPM HOSE STREAM. SPRINKLER HEAD SPACING SHALL NOT EXCEED MAXIMUM SPACING DISTANCES SET FORTH BY NFPA 13.

GENERAL NOTES

A. EXISTING FIRE PROTECTION SYSTEM IS COMPOSED OF EXISTING MAINS RUNNING THROUGH THE 7TH FLOOR. PIPING IS NOT CHARGED AND DOES NOT INCLUDE ANY BRANCH PIPING/ARM OVERS OR SPRINKLER HEADS. CONTRACTOR SHALL INSPECT EXISTING PIPING CONDITION AND CHARGE WITH AIR TO TEST FOR LEAKS. IF PIPING CONDITION IS FOUND TO BE IN POOR CONDITION OR SYSTEM IS LEAKING, SYSTEM SHALL BE REPLACED WITH A NEW MAIN TO MATCH THE EXISTING. NEW WORK EXCLUDES BRANCHES AND SPRINKLER HEADS. HYDRAULIC CALCULATIONS SHALL BE PROVIDED FOR A FULLY DESIGNED SYSTEM PROVING CAPACITY OF THE MAIN TO BE INSTALLED. SEE SHEET FP374 FOR EXISTING CONDITIONS.

1 **LEVEL 7 - FIRE PROTECTION NEW WORK PLAN - EAST**
1/8" = 1'-0"



KEYPLAN

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07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 - FIRE PROTECTION NEW WORK PLAN - EAST

DATE:	7/08/2025
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PGAV #: 53660-20	CLIENT #: CP2400920
SHEET #:	FP373L

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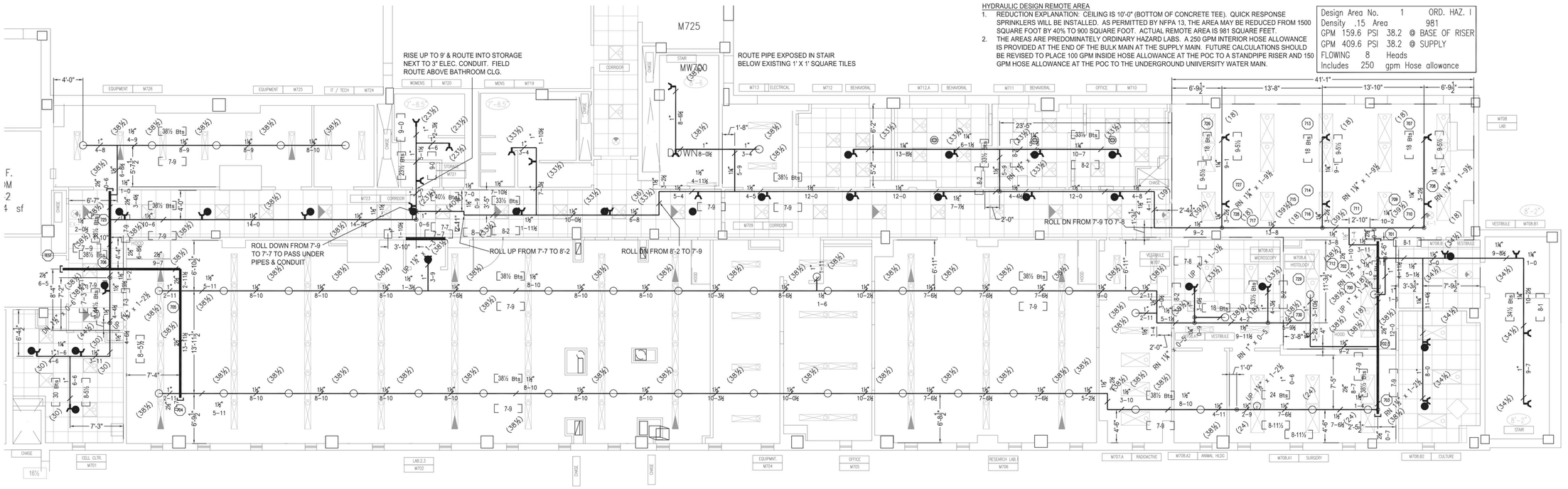


HYDRAULIC DESIGN REMOTE AREA

1. REDUCTION EXPLANATION: CEILING IS 10'-0" (BOTTOM OF CONCRETE TEE). QUICK RESPONSE SPRINKLERS WILL BE INSTALLED. AS PERMITTED BY NFPA 13, THE AREA MAY BE REDUCED FROM 1500 SQUARE FOOT BY 40% TO 900 SQUARE FOOT. ACTUAL REMOTE AREA IS 981 SQUARE FEET.
2. THE AREAS ARE PREDOMINATELY ORDINARY HAZARD LABS. A 250 GPM INTERIOR HOSE ALLOWANCE IS PROVIDED AT THE END OF THE BULK MAIN AT THE SUPPLY MAIN. FUTURE CALCULATIONS SHOULD BE REVISED TO PLACE 100 GPM INSIDE HOSE ALLOWANCE AT THE POC TO A STANDPIPE RISER AND 150 GPM HOSE ALLOWANCE AT THE POC TO THE UNDERGROUND UNIVERSITY WATER MAIN.

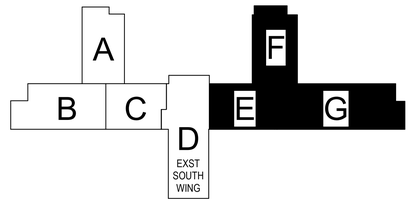
Design Area No.	1	ORD. HAZ. I	
Density .15	Area	981	
GPM 159.6	PSI	38.2	@ BASE OF RISER
GPM 409.6	PSI	38.2	@ SUPPLY
FLOWING	8	Heads	
Includes	250	gpm	Hose allowance

1 EXISTING FIRE PROTECTION AS-BUILTS

NOT TO SCALE

GENERAL NOTES

A. AS-BUILTS SHOWN FOR BIDDING REFERENCE ONLY. DRAWING IS NOT SHOWN TO SCALE. SPRINKLER HEADS SHOWN WERE NOT INSTALLED.



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MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

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LEVEL 7 - FIRE PROTECTION NEW WORK PLAN - EAST AS-BUILT

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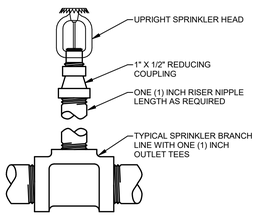
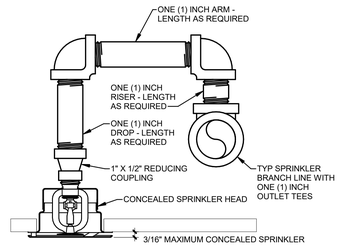


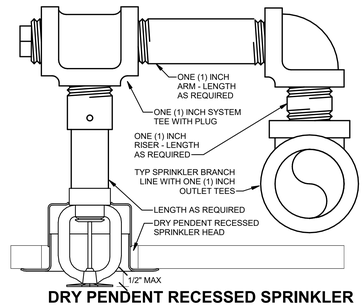
1 UPRIGHT SPRINKLER HEAD

NOT TO SCALE



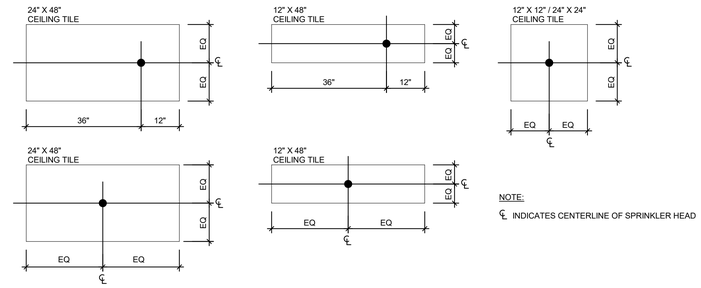
2 CONCEALED SPRINKLER HEAD

NOT TO SCALE



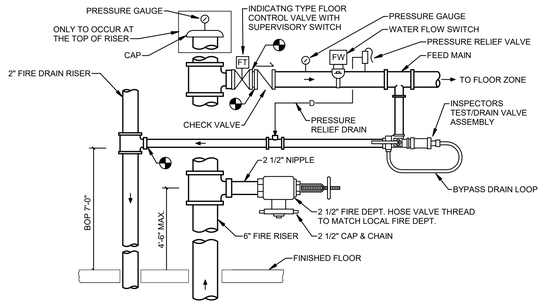
3 DRY PENDENT RECESSED SPRINKLER HEAD

NOT TO SCALE



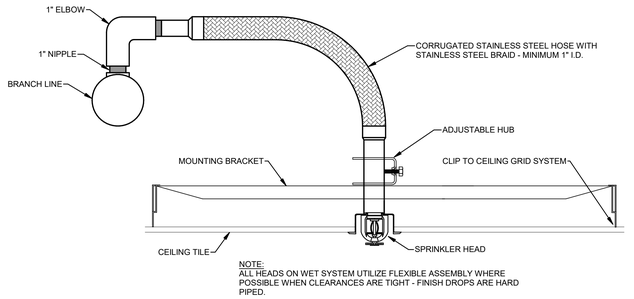
4 SPRINKLER HEAD LOCATION

NOT TO SCALE



5 COMBINATION STANDPIPE/SPRINKLER SYSTEM

NOT TO SCALE



6 FLEXIBLE SPRINKLER DROP

NOT TO SCALE

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FIRE PROTECTION DETAILS

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PROCESS PIPING SYMBOLS & ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

CA	COMPRESSED AIR PIPING (NON-MEDICAL)
LCW	LAB COLD WATER
LHW	LAB HOT WATER
LHWR	LAB HOT WATER RETURN
LG	LAB GAS PIPING
LV	LAB VACUUM PIPING
	EXISTING GAS OUTLET
	NEW GAS OUTLET
ESOV	EMERGENCY SHUT-OFF VALVE
ZV	ZONE VALVE

GENERAL NOTES

1. DUE TO THE LIMITED SPACE AVAILABLE FOR THE INSTALLATION OF ALL THE PLUMBING WORK, COORDINATION BETWEEN ALL OTHER TRADES IS OF UTMOST IMPORTANCE.
2. THIS CONTRACTOR SHALL VISIT THE PROJECT SITE AND VERIFY LOCATIONS, ELEVATIONS AND SIZES OF ALL UTILITIES AT SITE PRIOR TO PROCEEDING WITH WORK. EXISTING SYSTEMS AND STRUCTURE SHALL BE INVESTIGATED FOR BEST POSSIBLE ROUTING OF COLD WATER, HOT WATER, SANITARY WASTE AND VENT, STORM AND MEDICAL LABORATORY GAS PIPING.
3. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THE ONLY AVAILABLE INFORMATION HAS BEEN OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FIELD SURVEYS. THE EXACT LOCATION OF PIPING, FIXTURES AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS. EXTREME ACCURACY IS NOT GUARANTEED. THIS CONTRACTOR SHALL BE PREPARE TO MAKE ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT JOB CONDITIONS. THIS CONTRACTOR SHALL FURNISH A COMPLETE CODE COMPLYING SYSTEM. THIS CONTRACTOR SHALL REPORT, IN WRITING, ANY DISCREPANCIES WHICH PREVENT THE INSTALLATION OF WORK AS SHOWN.
4. IF THIS CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS OR IS NOT COMPLETELY SURE OF THEIR MEANING, THIS CONTRACTOR SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND/OR INTERPRETATION PRIOR TO SUBMITTING BIDS, SINCE THIS CONTRACTOR WILL BE HELD RIGIDLY TO THE INTERPRETATION OF THE ENGINEER.
5. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO REPAIR THE EXISTING SURFACES TO REMAIN WHERE THEIR WORK HAS BEEN COMPLETED. REPAIR SHALL INCLUDE, BUT NOT LIMITED TO, ANY EXISTING WALL, CEILING OR FLOOR THAT IS SCHEDULED TO REMAIN. REPAIR, PAINTING, AND PATCHING SHALL BE COMPLETED BY AN APPROPRIATE CONTRACTOR QUALIFIED FOR THIS TYPE OF WORK.
6. THE OWNER SHALL MAINTAIN ALL SALVAGE RIGHTS OF FIXTURES, EQUIPMENT AND MATERIALS REMOVED, HOWEVER, ALL FIXTURES, EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES AND PROPERLY DISPOSED OF THE BY THE DEMOLITION CONTRACTOR.
7. CEILING REMOVAL, STORAGE AND REPLACEMENT FOR NEW PIPING INSTALLATION SHALL BE BY THE GENERAL CONTRACTOR.
8. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, THE CONTRACTOR WILL NOTIFY BUILDING OWNER OF THE HAZARDOUS MATERIAL.
9. TEMPORARY CONNECTION SHALL BE PROVIDED BY RESPECTIVE PLUMBING AND FIRE PROTECTION CONTRACTORS WHEN EXTENDED INTERRUPTIONS OF SERVICES AND UTILITIES SUCH AS WATER, WASTE AND FIRE PROTECTION WHICH SERVE OTHER AREAS ARE NECESSARY.
10. COORDINATE WITH MAINTENANCE PERSONNEL AS TO SOURCE OF UTILITIES AND TEMPORARILY DISCONNECT OR SHUT OFF SERVICES OR UTILITIES AT NEAREST MAIN. TEMPORARY AND ACCESSIBLE ISOLATION VALVES SHALL BE INSTALLED CLOSE TO THIS POINT OF WORK.
11. IT IS ESSENTIAL THAT BUILDING OPERATIONS CONTINUE WITH MINIMAL INTERRUPTIONS. IT IS NECESSARY THAT OPERATION OF EXISTING SYSTEMS BE INTERFACED WITH AS LITTLE DISRUPTION AS POSSIBLE EXCEPT IN AREAS VACATED FOR CONSTRUCTION WORK. WORK WHICH WILL INTERFERE WITH OPERATION OF EXISTING FIRE SUPPRESSION AND PLUMBING SYSTEMS OR WHICH REQUIRE DOWNTIME WILL BE SCHEDULED ONLY AFTER CONSULTATION WITH AND PERMISSION GIVEN BY THE OWNER. ALLOW 10 DAYS PRIOR TO ANTICIPATED INTERRUPTION OF SYSTEMS. WORK MAY BE REQUIRED TO BE PERFORMED OUTSIDE NORMAL WORKING HOURS.
12. ARCHITECTURAL DEMOLITION DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH THESE DRAWINGS.
13. ALL PIPING HANGERS AND SUPPORTS SHALL BE REMOVED ALONG WITH PIPING BEING REMOVED.
14. THE CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH PROJECT'S PHASING SCHEDULE PRIOR TO COMMENCEMENT OF ANY WORK.
15. WHEN PLACING NEW PLUMBING FIXTURES, CONTRACTOR SHALL VERIFY LOCATIONS OF PLUMBING VENTS. OFFSET VENTS THAT TERMINATE WITHIN 25 FEET OF HVAC UNITS OUTDOOR AIR INTAKES. CONTRACTOR SHALL FIELD VERIFY PRIOR TO BID WHERE THE INTERFERENCE'S ARE PRICE ACCORDINGLY OR MAKE ALLOWANCES IN BID.
16. USE CAUTION WHEN SAW-CUTTING THROUGH EXISTING CONCRETE FLOOR OR WALL CONSTRUCTION FOR THE INSTALLATION OF PLUMBING SYSTEMS TO AVOID CUTTING REBAR AT EDGE OF OPENING. LEAVE SUFFICIENT REBAR EXPOSED TO TIE NEW REINFORCING REPLACEMENT CONCRETE AND/OR OTHER STRUCTURAL ATTACHMENTS FOR NEW CONSTRUCTION.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS, TRANSITIONS, OFFSETS, ETC., TO AVOID DUCTWORK, PIPING, EQUIPMENT OR STRUCTURE NEW OR EXISTING AND TO MAKE A COMPLETE AND FUNCTIONING SYSTEM.

PLUMBING SYMBOLS & ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

	TRAPPED CONNECTION
	STRAINER
	BALANCING VALVE
	CLEANOUT (CO)
	OS & Y GATE VALVE
	TEMPERATURE GAUGE
	THERMOSTATIC MIXING VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER
	HOSE BIBB/WALL HYDRANT
	DOMESTIC COLD WATER PIPING (CW)
	DOMESTIC HOT WATER PIPING (HW)
	DOMESTIC HOT WATER RETURN PIPING (HWR)
D	DRAIN PIPING
DI	DEIONIZED WATER PIPING
G	NATURAL GAS PIPING
NP	NON-POTABLE WATER PIPING
OST	OVERFLOW STORM PIPING
PD	PUMP DISCHARGE PIPING
RO	REVERSE OSMOSIS PIPING (RO)
S	SANITARY PIPING
SCW	SOFTENED COLD WATER PIPING
SHW	SOFTENED HOT WATER PIPING
SSD	SUBSOIL DRAINAGE PIPING
ST	STORM PIPING
TW	TEMPERED WATER PIPING
	VENT PIPING
W	WASTE PIPING
	FLEXIBLE CONNECTION
	FLOOR DRAIN/FLOOR SINK (FD/FS)
	CIRCULATION PUMP

DRAWING REFERENCES

1 TITLE / SCALE	PLAN DETAIL REFERENCE TITLE
#	KEYED NOTE DESIGNATION
PLAN NORTH / TRUE NORTH	NORTH ARROW
AHU 1	PLAN MARK EQUIPMENT DESIGNATION REFER TO MEP SCHEDULE FOR CIRCUITING AND DEVICE REQUIREMENTS AND FLOOR PLANS FOR LOCATIONS EQUIPMENT NUMBER
1 SIM / A101	PLAN MARK ENLARGED PLAN REFERENCE SHEET NUMBER
1 / AD888	SECTION
	INTERFACE, EXISTING TO NEW
	EXTENT OF DEMOLITION
	MATCHLINE
1	REVISION TAG

LINE TYPE LEGEND

	EXISTING TO REMAIN OR NEW WORK BY OTHERS (LIGHT, SOLID LINE)
	NEW WORK BY THIS CONTRACTOR (DARK, SOLID LINE)
	EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK, DASHED LINE, DEMOLITION PLANS)

COMMON PIPING SYMBOLS & ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

	DIRECTION OF FLOW
	BRANCH CONNECTION, BOTTOM
	BRANCH CONNECTION, TOP
	ELBOW, TURNED DOWN
	ELBOW TURNED UP
	SHUTOFF VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
	PRESSURE GAUGE
	UNION
	PIPING CAP
X / #	RISER DESIGNATION

AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITIES HAVING JURISDICTION
AP	ACCESS PANEL
BOP	BOTTOM OF PIPE
DIA	DIAMETER
DN	DOWN
EX OR EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
IE OR INV. ELEV	INVERT ELEVATION
NC	NORMALLY CLOSED
NTS	NOT TO SCALE
PSI	POUNDS PER SQUARE INCH
RPM	REVOLUTIONS PER MINUTE
RI	ROUGH-IN
SOV	SHUTOFF VALVE
TDH	TOTAL DYNAMIC HEAD
VIF	VERIFY IN FIELD

PLUMBING ABBREVIATIONS

NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

ADA	AMERICANS WITH DISABILITIES ACT
A.F.F.	ABOVE FINISH FLOOR
AP	ACCESS PANEL
BP	BOOSTER PUMP
BT	BATHTUB
BTC	BRANCH TO CONNECTION
CBV	CALIBRATED BALANCING VALVE
CI	CAST IRON
CO	CLEANOUT
CSS	CLINICAL SERVICE SINK
CW	COLD WATER
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DF	DRINKING FOUNTAIN
DI	DEINOZIED WATER
DS	DOWNSPOUT
DW	DISHWASHER
DWH	DOMESTIC WATER HEATER
EEW	EMERGENCY EYE WASH
ESEW	EMERGENCY SHOWER & EYE WASH
ESH	EMERGENCY SHOWER
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
F.F.	FINISH FLOOR ELEVATION
FS	FLOOR SINK
G	NATURAL GAS
GCO	GRADE CLEANOUT
GD	GARBAGE DISPOSAL
HB	HOSE BIBB
HW	HOT WATER
HWR	HOT WATER RETURN
HWRP	HOT WATER RETURN PUMP
HWST	HOT WATER STORAGE TANK
I.E.	INVERT ELEVATION
IM	ICE MAKER
IW	INDIRECT WASTE
LA	LAVATORY
MB	MOP BASIN
NIC	NOT IN CONTRACT
NP	NON-POTABLE
OB	OUTLET BOX
ORD	OVERFLOW ROOF DRAIN
PG	PRESSURE GAUGE
PRV	PRESURE REDUCING VALVE
RD	ROOF DRAIN
RH	ROOF HYDRANT
RO	REVERSE OSMOSIS
RPZ	REDUCED PRESSURE BACKFLOW PREVENTER
S	SANITARY
SCW	SOFTENED COLD WATER
SH	SHOWER
SHW	SOFTENED HOT WATER
SK	SINK
SOV	SHUT OFF VALVE
SP	SUMP PUMP
S/S	STAINLESS STEEL
SS	SANITARY STACK
SSD	SUBSOIL DRAINAGE
SSK	SHOP SINK
TD	TRENCH DRAIN
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TW	TREATED WATER
UR	URINAL
V	VENT
VIV	VALVE IN VERTICAL
VB	VACUUM BREAKER
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WD	WASHER DRAIN
WH	WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WM	WATER METER
WS	WASTE STACK
WSV	WASTE STACK VENT
YCO	YARD CLEANOUT
YH	YARD HYDRANT

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

PLUMBING SYMBOLS AND ABBREVIATIONS

DATE: 7/08/2025
DRAWN: AJH
CHECKED: PZ
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **P000L**

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/001765_MEPPRLFL_r22.rvt
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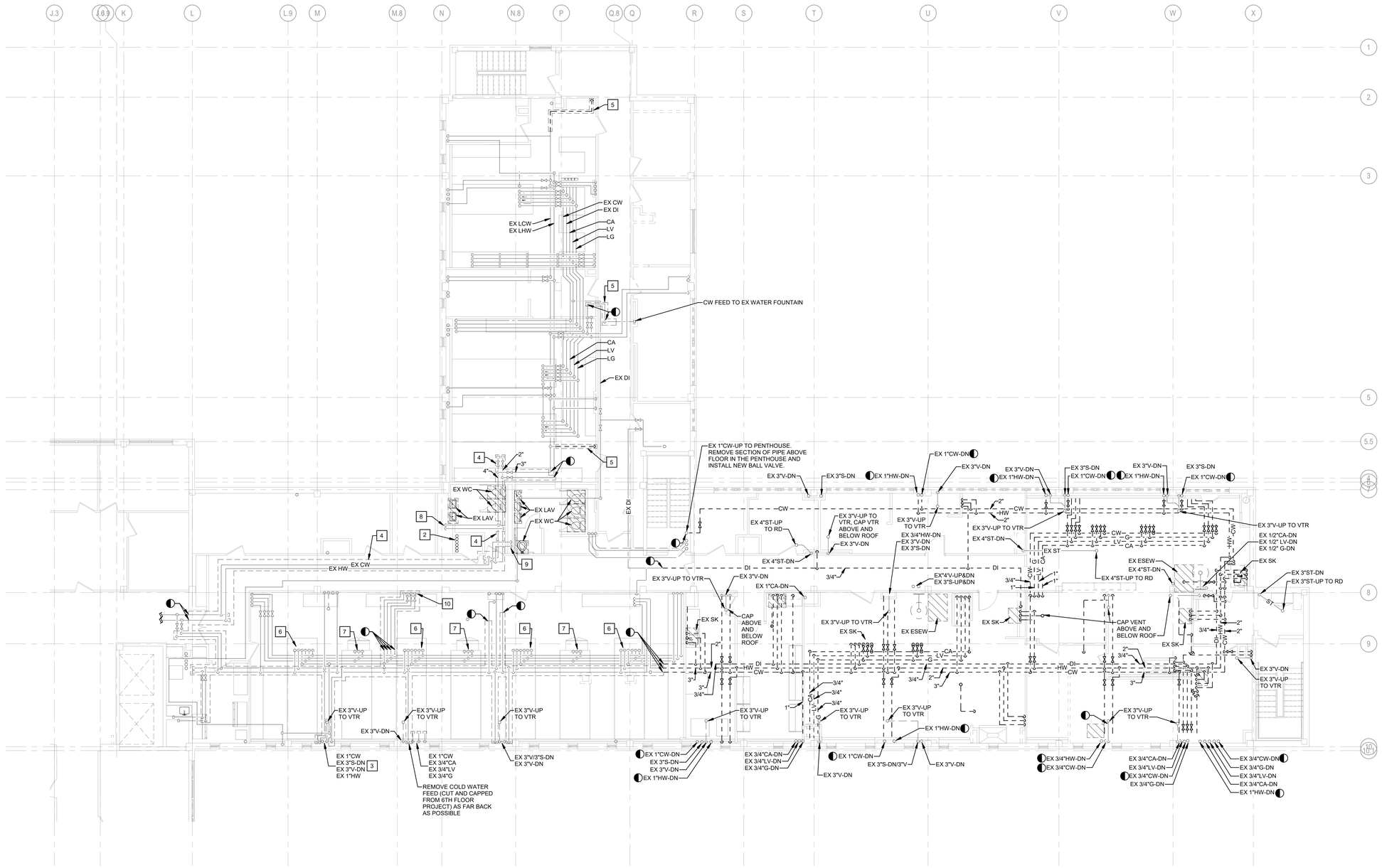

1 LEVEL 7 - PLUMBING DEMOLITION PLAN - EAST

1/8" = 1'-0"

KEYED NOTES

1. CUT AND CAP PIPE
2. EX 3/4"LG-DN, EX 1"CA-DN, EX 1 1/2"LV-DN, EX 1 1/2"LCW-DN, EX 3/4"LHW-DN, EX 3/4"LHWR-DN, EX 3/4"HWR-DN, EX 1 1/2"HW-DN, EX 2 1/2"CW-DN. PREPARE ALL PIPING FOR NEW CONNECTIONS TO FEED 7TH FLOOR RENOVATION.
3. REMOVE COLD AND HOT WATER PIPING TO 6TH FLOOR (CUT AND CAPPED DURING 6TH FLOOR PROJECT) AS FAR AS ACCESSIBLE.
4. PIPING DEMOLITION AND REWORK IN DASHED BOXED TO BE PRICED AS ALTERNATE #4.
5. PIPING DEMOLITION AND REWORK IN DASHED BOX TO BE PRICED AS ALTERNATE #3.
6. EX LAB SINK AND 3/4"LAB COLD, LAB HOT, DI WATER, COMPRESSED AIR, LAB VAC AND LAB GAS TO REMAIN.
7. EX 3/4"COMPRESSED AIR, LAB VAC AND LAB GAS TO REMAIN.
8. EX 2"CW AND 1 1/4"HW TO REMOVED BACK TO MAIN AND CAPPED IF ALTERNATE #4 IS NOT ACCEPTED. IF ALTERNATE #4 IS ACCEPTED, REMOVE ENTIRELY.
9. EX 3"CW AND 1 1/4"HW TO REMOVED BACK TO MAIN AND CAPPED IF ALTERNATE #4 IS NOT ACCEPTED. IF ALTERNATE #4 IS ACCEPTED, REMOVE ENTIRELY.
10. EX CW, CA LV AND G, CUT BACK AS FAR AS POSSIBLE AND CAP.

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MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
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CONTRACT DOCUMENTS

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LEVEL 7 - PLUMBING DEMOLITION PLAN - EAST

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PGAV #: 53660-20
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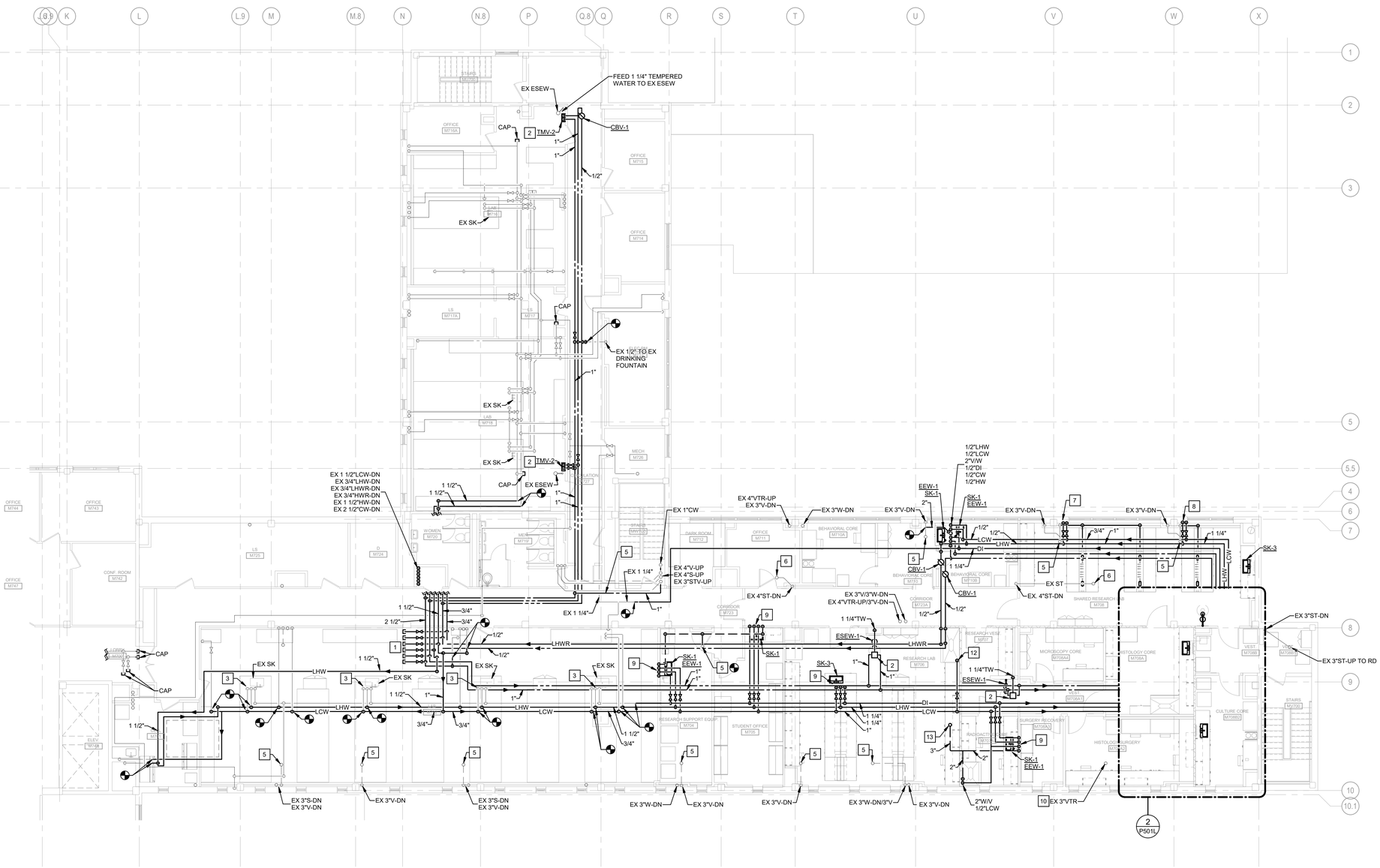

1 LEVEL 7 - PLUMBING NEW WORK PLAN - EAST

1/8" = 1'-0"

KEYED NOTES

1. 1/2"DI, 1/2"LHW, 2"V/2"W-DN, 1/2"LCW, 1/2"HW, 1/2"CW
2. 1"HW & 1"CW TO TMV-2, 1 1/4" TEMPERED WATER FROM TMV-2 TO ESEW-1
3. EXISTING 3/4" LAB COLD, LAB HOT AND DI WATER.
4. NEW 1/2"CW TO FEED EXISTING DRINKING FOUNTAIN TO REMOVE FEED FROM LAB (NON-POTABLE) SYSTEM.
5. EXISTING 3"V-UP TO EXISTING VTR.
6. EXISTING 4"ST-UP TO EXISTING ROOF DRAIN.
7. EXISTING 3"V/3"W-DN. CONNECT NEW 2" WASTE LINE FROM TABLE CUP SINKS TO 3"W-DN. 3/4"LHW & LCW DROP INTO WALL AND FEED TABLE CUP SINKS.
8. EXISTING 3"V/3"W-DN. CONNECT NEW 2" WASTE LINE FROM TABLE CUP SINKS TO 3"W-DN. 1/2"LHW & LCW DROP INTO WALL AND FEED TABLE CUP SINKS.
9. 1/2"DI, 1/2"LHW, 1/2"LCW & 2"V/2"W-DN. UTILIZE EXISTING WASTE CONNECTION AND RECONNECT NEW PIPING TO EXISTING. VERIFY EXISTING PIPING IS NOT DAMAGED/LEAKS. REPLACE ANY DAMAGED PIPING TO BELOW FLOOR.
10. CAP EXISTING VENT THROUGH ROOF ABOVE AND BELOW ROOF.
11. 3"V-UP TO EX 3"VTR.

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MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

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0" 1"

LEVEL 7 - PLUMBING NEW WORK PLAN - EAST

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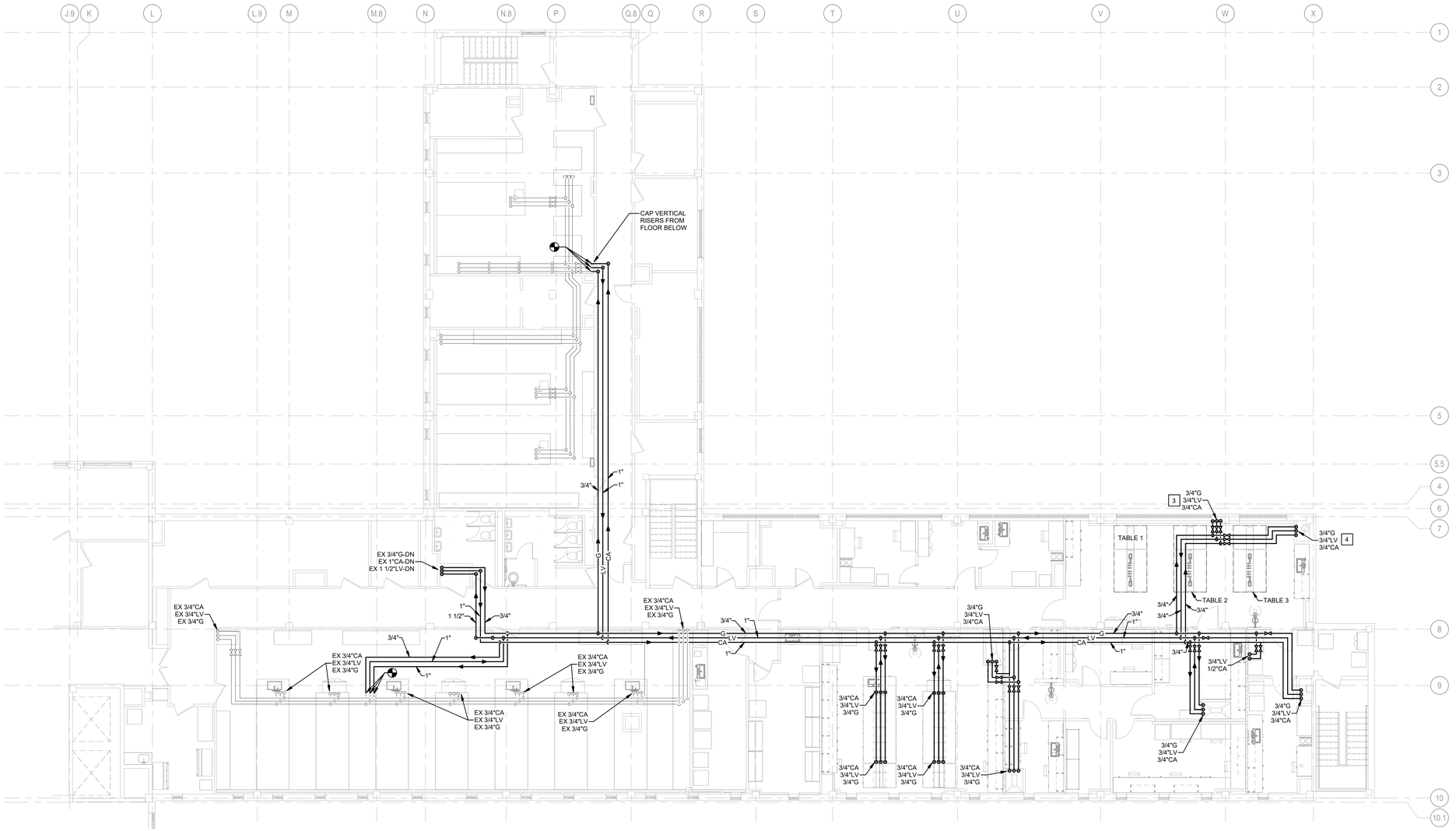
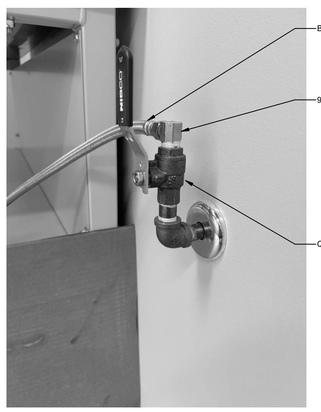


1 LEVEL 7 - PLUMBING LAB GAS NEW WORK - EAST

1/8" = 1'-0"



2 GAS CONNECTION TO FUME HOOD DETAIL

NOT TO SCALE

KEYED NOTES

1. EMERGENCY GAS SHUT OFF VALVE.
2. PIPING TO FUME HOOD. SEE ARCHITECTURAL DRAWINGS FOR FUME HOOD INFORMATION. SEE DETAIL 2 ON THIS SHEET FOR PIPE OUTLET AT WALL AND CONNECTION TO FUME HOOD.
3. GAS LINES TO DROP INTO CHASE UNDER WINDOW AND FEED TABLES 1 & 2.
4. GAS LINE TO DROP INTO CHASE UNDER WINDOW AND FEED TABLE 3.

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LEVEL 7 - PLUMBING LAB GAS NEW WORK PLAN - EAST

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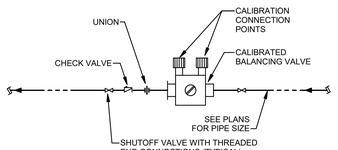
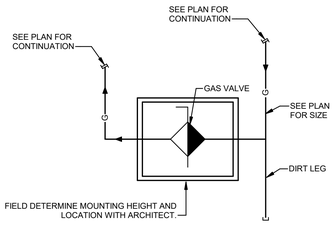


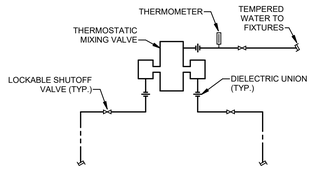
1 CALIBRATED BALANCING VALVE

NOT TO SCALE



3 EMERGENCY GAS SHUT-OFF VALVE BOX

NOT TO SCALE

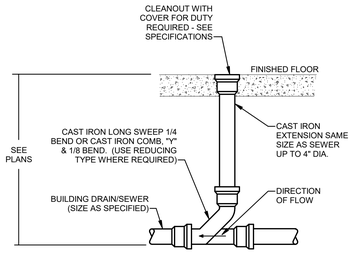


NOTE:

PROVIDE CHECK VALVE ON INLETS TO MIXING VALVES WHEN CHECK STOPS ARE NOT PROVIDED IN MIXING VALVE ASSEMBLY.

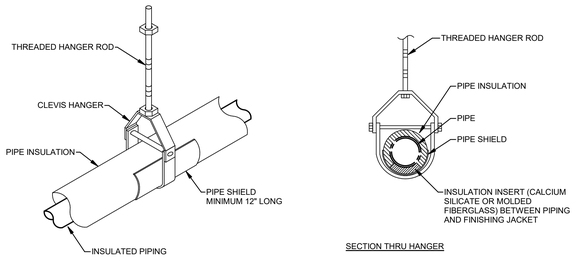
4 EMERGENCY THERMOSTATIC MIXING VALVE

NOT TO SCALE



5 FLOOR CLEANOUT

NOT TO SCALE



6 INSULATED PIPE HANGER SUPPORT

NOT TO SCALE

SECTION THRU HANGER

REFER TO SPECS FOR INSULATION AND HANGER SUPPORTS.

TABLE

IPC TRAP ARM INCHES	MAXIMUM DISTANCE TRAP TO VENT FEET SLOPE (IN./FT.)	
1 1/4	5	1/4
1 1/2	6	1/4
2	8	1/4
3	12	1/8
4 & >	16	1/8

GENERAL NOTES:
1. FOR PIPE SIZES REFER TO PLUMBING FIXTURE SCHEDULE

7 TRAP TO VENT MAXIMUM DISTANCE

NOT TO SCALE

NOTE:
1. HANGER ROD, NUTS, WASHER AND PIPE STRAPS SHALL BE OF ZINC COATED GALVANIZED PLATED MATERIAL
2. REFER TO SPECS FOR INSULATION.

8 TRAPEZE PIPE SUPPORT

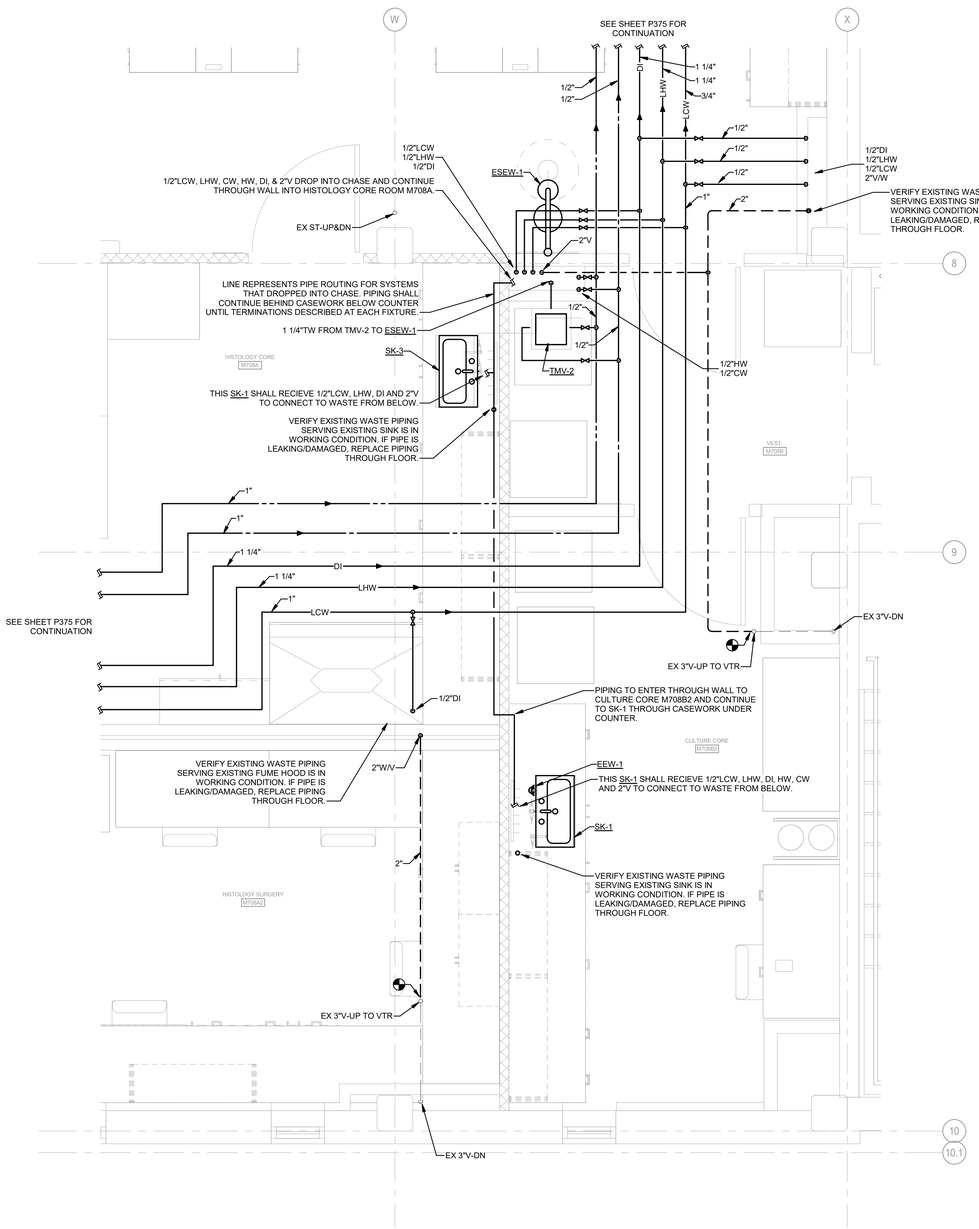
NOT TO SCALE

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE A WHA AT ALL QUICK-CLOSING VALVES.

SINGLE/ DOUBLE FIXTURE		
WHA SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1-11
B	3/4"	12-32
C	1"	33-60
D	1 1/4"	61-113
E	1 1/2"	114-154
F	2"	154-330

9 WATER HAMMER ARRESTOR SCHEMATIC

NOT TO SCALE



2 LEVEL 7 - PLUMBING NEW WORK PLAN - EAST - Callout 1

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0" 1"

PLUMBING DETAILS

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PLUMBING FIXTURE SCHEDULE

PLAN MARK	DESCRIPTION	MANUFACTURER	MODEL	TRIM	DRAIN / TRAP	SUPPLIES	CARRIER	SEAT	HOT WATER	COLD WATER	TEMPERED WATER	SANITARY / WASTE	VENT	NOTES
EEW-1	DECK MOUNTED EMERGENCY EYE WASH	GUARDIAN	G5022	-	-	-	-	-	-	-	1/2"	-	-	PROVIDE WITH TMV-1.
ESEW-1	EMERGENCY SHOWER AND EYEWASH	GUARDIAN	GBF2150	-	1 1/2"	-	-	-	-	-	1 1/4"	2"	2"	PROVIDE WITH TMV-2.
SK-1	SINGLE BOWL SST SINK	SEE ARCHITECTURAL DRAWINGS	SEE ARCHITECTURAL DRAWINGS	CHICAGO FAUCETS MODEL# LWM2-A23-F CHROME PLATED FAUCET WITH ATMOSPHERIC VACUUM BREAKER AND 2.2 GPM LAMINAR FLOW OUTLET. DI FAUCET WATER SAVER L691.	2" P-TRAP	CHICAGO FAUCET LOOSE KEY ANGLE STOPS AND RISERS	-	-	1/2"	1/2"	-	2"	2"	PROVIDE POINT OF USE THERMOSTATIC MIXING VALVE UNDER SINK LIMITING TEMPERATURE TO 105 DEGREES.
SK-2	CUP SINK	SEE ARCHITECTURAL DRAWINGS	SEE ARCHITECTURAL DRAWINGS	CHICAGO FAUCETS MODEL# LWM2-A23-F CHROME PLATED FAUCET WITH ATMOSPHERIC VACUUM BREAKER AND 2.2 GPM LAMINAR FLOW OUTLET. DI FAUCET WATER SAVER L691.	2" P-TRAP	CHICAGO FAUCET LOOSE KEY ANGLE STOPS AND RISERS	-	-	1/2"	1/2"	-	2"	2"	PROVIDE POINT OF USE THERMOSTATIC MIXING VALVE UNDER SINK LIMITING TEMPERATURE TO 105 DEGREES.
SK-3	SINGLE BOWL SST SINK	SEE ARCHITECTURAL DRAWINGS	SEE ARCHITECTURAL DRAWINGS	CHICAGO FAUCETS MODEL#626-GN2BVBE7CP CHROME PLATED FAUCET WITH ATMOSPHERIC VACUUM BREAKER AND 625-ABRCF FOOT PEDAL. DI FAUCET WATER SAVER L691	2" P-TRAP	CHICAGO FAUCET LOOSE KEY ANGLE STOPS AND RISERS	-	-	1/2"	1/2"	-	2"	2"	PROVIDE POINT OF USE THERMOSTATIC MIXING VALVE UNDER SINK LIMITING TEMPERATURE TO 105 DEGREES.

DRAIN SCHEDULE

PLAN MARK	DESCRIPTION	MANUFACTURER	MODEL	BODY	STRAINER	NOTES
FD-1	SQUARE FLOOR DRAIN	JAY R. SMITH	2005Y-NB	CAST IRON	NICKEL BRONZE	PROVIDE WITH RECTORSEAL SURESEAL WATERLESS INLINE DRAIN TRAP SEAL.

THERMOSTATIC MIXING VALVE SCHEDULE

PLAN MARK	DESCRIPTION	MANUFACTURER	MODEL	FLOW		LEAVING TEMPERATURE	NOTES
				MINIMUM GPM	GPM AT 10 PSI LOSS		
TMV-1	EMERGENCY THERMOSTATIC MIXING VALVE	ACORN CONTROLS	ET71-1	0.5	5.66	85°F	PROVIDE WITH EEW-1.
TMV-2	THERMOSTATIC MIXING VALVE	ACORN CONTROLS	ET71-2	1	20.3	80°F	

BALANCING VALVE SCHEDULE

PLAN MARK	DESCRIPTION	SIZE	ADJUSTED FLOW RATE	NOTES
CBV-1	CALIBRATED BALANCING VALVE	1/2"	0.5 GPM	

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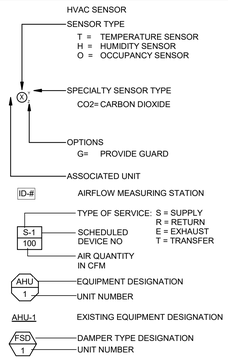
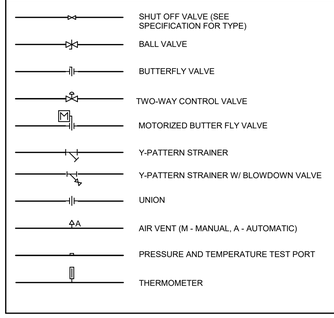
PIPE SYSTEM ABBREVIATIONS

CD	CONDENSATE DRAIN
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LPR	LOW PRESSURE CONDENSATE RETURN (15 PSIG)
LPS	LOW PRESSURE STEAM SUPPLY (15 PSIG)

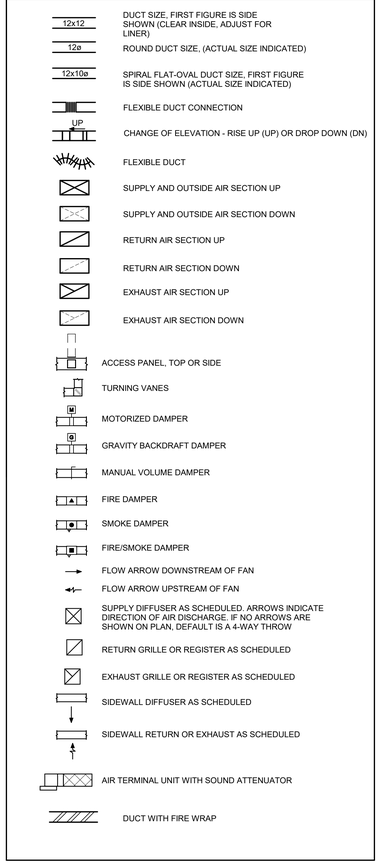
MECHANICAL SYMBOLS



PIPE LINE SYMBOLS



DUCT SYSTEM SYMBOLS



MECH EQUIPMENT DESIGNATION

MECH	EQUIPMENT DESIGNATION
AHU / AH	AIR HANDLING UNIT
BCU	BLOWER COIL UNIT
CWP	CHILLED WATER PUMP
EAV	EXHAUST AIR TERMINAL UNIT
EF	EXHAUST FAN
F	FAN
FEV	FUME EXHAUST AIR CONTROL VALVE
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FFU	FAN FILTER UNIT
FSD	COMBINATION FIRE/SMOKE DAMPER
GEV	GENERAL EXHAUST AIR CONTROL VALVE
H	HUMIDIFIER
HC	HEATING COIL
HWP	HEATING WATER PUMP
L	LOUVER
LSV	SUPPLY AIR CONTROL VALVE
MAU	MAKE-UP AIR UNIT
MD	MOTORIZED DAMPER
P	PUMP
RF	RETURN FAN
RHC	TERMINAL REHEAT COIL
SF	SUPPLY FAN
ST	STEAM TRAP
TCP	TEMPERATURE CONTROL PANEL
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME BOX
VFD	VARIABLE FREQUENCY DRIVE

MECHANICAL ABBREVIATIONS

A	AIR OR AMP (PER CONTEXT)
ACC	ACCESSORIES
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFS	AIR FLOW SWITCH
AHRI	AIR CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE
AI	ANALOG SIGNAL INPUT
AMB	AMBIENT
AO	ANALOG SIGNAL OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APLV	APPLICATION PART LOAD VALUE
APPROX	APPROXIMATE
ARCH	ARCHITECTURE/ARCHITECT
AUX	AUXILIARY
AV	AUTOMATIC VENT
AVG	AVERAGE
BDD	BACK DRAFT DAMPER
BFC	BELOW FINISHED CEILING
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BI	BINARY SIGNAL INPUT
BMS	BUILDING MANAGEMENT SYSTEM
BO	BINARY SIGNAL OUTPUT
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BS	BEAM SPACE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWE	BAKED WHITE ENAMEL
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CLG	COOLING DUCT (COLD DUCT)
CO	CLEAN OUT
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECTION
CORR	CORRIDOR
CV	CONTROL VALVE
D	DEPTH
DB	DRY BULB
DBA	A-WEIGHTED DECIBELS
DEFL	DEFLECTION
DEG	DEGREES
DEG F	DEGREES FAHRENHEIT
DES	DESIGN
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DIV	DIVISION
DN	DOWN
DP	DIFFERENTIAL PRESSURE SENSOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DTL	DETAIL
DWG(S)	DRAWING(S)
EA	EXHAUST AIR OR EACH (PER CONTEXT)
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENT RATIO
EFF	EFFICIENCY
ELEC	ELECTRIC
ELEV	ELEVATION
EQ	EQUAL
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING AIR WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST, EX	EXISTING
EXT	EXTERNAL
F	FAHRENHEIT
F&T	FLOAT AND THERMOSTATIC
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FIN	FINISHED
FLR	FLOOR
FPF	FINS PER FOOT
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FT	FEET
FT-HD	HEAD IN FEET
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HEIGHT
HD	HEAD
HEV	HOSE END VALVE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HOUR
HTG	HEATING DUCT (HOT DECK)
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HW	HOT WATER
HZ	HERTZ
IB	INVERTED BUCKET
IE	INVERT ELEVATION
IN	INCH/INCHES
INDIC	INDICATOR
IPLV	INTEGRATED PART-LOAD VALUE
ISP	INTERNAL STATIC PRESSURE
JS	JOIST SPACE
KW	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LB(S)	POUNDS
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LS	LIGHT SPACE
LVL	LEVEL
LWT	LEAVING WATER TEMPERATURE
MAN	MANUAL
MANU	MANUFACTURER
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MERV	MINIMUM EFFICIENCY REPORTING VALUE (ASHRAE 52.2)
MFR	MANUFACTURER
MIN	MINIMUM OR MINUTE (PER CONTEXT)
MTD	MOUNTED
MTL	METAL
MV	MANUAL VENT
NC	NORMALLY CLOSED OR NOISE CRITERIA (PER CONTEXT)
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN OR NUMBER (PER CONTEXT)
NOM	NOMINAL
NPLV	NON-STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OT	OIL TRAP
PA	PIPE ANCHOR
PBD	PARALLEL BLADE DAMPER
PD	PRESSURE DROP
PENT	PENTHOUSE
PH	PHASE
PHC	PREHEAT COIL
PLBG	PLUMBING
PNEU	PNEUMATIC
PPH	POUNDS PER HOUR
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
QTY	QUANTITY
R	RISE
RA	RETURN AIR
RAD	RADIATED
RD	ROOF DRAIN
REFR	REFRIGERANT
REQ	REQUIRED
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RM	ROOM
RND	ROUND
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAN	SANITARY
SECN	SECTION
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FOOT
SH	SENSIBLE HEAT
SHT	SHEET
SND	SOUND
SOL	SOLENOID
SP	STATIC PRESSURE
SPD	STATIC PRESSURE DIFFERENTIAL
SPT	STATIC PRESSURE TRANSMITTER
SQ	SQUARE
SST	STAINLESS STEEL
STL	STEEL
STM	STEAM
T&P	TEMPERATURE AND PRESSURE
TC	TEMPERATURE CONTROL
TD	THERMODYNAMIC OR TEMPERATURE DIFFERENTIAL (PER CONTEXT)
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE
TOT	TOTAL
TPD	TOTAL PRESSURE DROP
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UC	UNDERCUT DOOR
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VAC	VACUUM
VD	VOLUME DAMPER (MANUAL)
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VTR	VENT THRU ROOF
W	WATT OR WIDTH (PER CONTEXT)
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WPD	WATER PRESSURE DIFFERENTIAL
WT	WEIGHT

ROOF PROTECTION NOTES:

THE INTEGRITY OF THE EXISTING ROOF MUST BE MAINTAINED DURING THE CONTRACTOR'S ACTIVITIES. THEREFORE, THE FOLLOWING ROOF PROTECTION NOTES MUST APPLY.

1. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF SEVEN (7) DAYS PRIOR TO THE BEGINNING OF WORK THAT INVOLVES ACTIVITY ON THE BUILDING ROOF.
2. TRAFFIC OVER THE EXISTING ROOF SURFACES SHALL BE KEPT TO AN ABSOLUTE MINIMUM.
3. CONTRACTORS SHALL UTILIZE THE SERVICES OF A ROOFING CONTRACTOR WHO IS CERTIFIED TO WORK ON A FULLY ADHERED EPDM ROOFING SYSTEM. THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE SHALL INSPECT THE EXPOSED ROOFING MEMBRANE SYSTEM AND DOCUMENT CONTAINS OF THE ROOF IN WRITING AND/OR PHOTOGRAPHS PRIOR TO STARTING ANY WORK ON THE EXISTING ROOF.
4. CONTRACTOR SHALL PROTECT THE EXISTING ROOF DURING ALL CONSTRUCTION ACTIVITIES ON THE ROOF. THE CONTRACTOR SHALL PLACE ONE LAYER OF 1/2 INCH CONSTRUCTION GRADE PLYWOOD OVER 1/2 INCH FOAM BOARD WITH OVERLAPPED JOINTS ON THE ROOF IN THE ENTIRE AREA WITHIN THE LIMITS OF WORK AND AS A WALKWAY FROM THE ROOF ACCESS TO THE WORK AREA. CONTRACTOR SHALL PROVIDE AND PLACE SAND FILLED BAGS ON ROOF PROTECTION SYSTEM TO SECURE TO ROOF THROUGHOUT PROJECT COMPLETION.
5. THE CONTRACTOR SHALL REMOVE ALL PROJECT DEBRIS FROM ALL ROOF SURFACES DAILY.
6. THE CONTRACTOR SHALL ADVISE THE OWNER'S REPRESENTATIVE WHEN THE WORK ON THE ROOF SURFACE IS COMPLETE AND THE PROTECTION BOARDS HAVE BEEN REMOVED. THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE SHALL EXAMINE ALL ROOF SURFACES WHERE WORK HAS OCCURRED AND CONTRACTOR SHALL REPAIR ALL DEFECTS NOT PREVIOUSLY DOCUMENTED.

MECHANICAL PROJECT GENERAL NOTES

1. ALL ELBOWS, FITTINGS, ETC., IN PIPING AND DUCTWORK REQUIRED TO CLEAR ALL JOB OBSTRUCTIONS ARE NOT NECESSARILY INDICATED. ALL NECESSARY TRANSITIONS, FITTINGS AND OFFSETS ARE REQUIRED WHETHER SHOWN OR NOT.
2. BECAUSE OF THE LIMITED SPACE AVAILABLE TO INSTALL ALL OF THE MECHANICAL WORK, COORDINATION BETWEEN THE VARIOUS TRADES IS OF THE UTMOST IMPORTANCE. SEE SPECIFICATION 230100 FOR REQUIRED COORDINATION DRAWINGS.
3. THE CONTRACTOR SHALL COORDINATE STAGING AND SCHEDULING WITH THE CONSTRUCTION MANAGER.
4. EXISTING CONDITIONS ARE BASED ON INFORMATION OBTAINED FROM PREVIOUS CONSTRUCTION DOCUMENTS AND INFORMAL FIELD OBSERVATION AND SHALL NOT BE CONSTITUTED AS "AS BUILT." THE CONTRACTOR SHALL FIELD-VERIFY EXISTING CONDITIONS BEFORE THE ONSET OF CONSTRUCTION.
5. DEMOLISH ALL PIPING, DUCTWORK EQUIPMENT, ETC., SHOWN TO BE REMOVED, IN ITS ENTIRETY, INCLUDING ALL HANGERS AND SUPPORTS.
6. WHERE CONTRACTOR IS REQUIRED TO CONCEAL NEW WORK, REMOVE OR MODIFY EXISTING CONSTRUCTION OR EQUIPMENT, OR ATTACH TO EXISTING CONSTRUCTION, THE CONTRACTOR SHALL REPAIR OR REPLACE EXISTING CONSTRUCTION AND MATERIALS TO MATCH CONDITIONS AT THE ONSET OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND REPLACE EXISTING CEILINGS AND WALLS REQUIRED FOR INSTALLATION OF MECHANICAL SYSTEMS.
7. THE OWNER SHALL MAINTAIN ALL SALVAGE RIGHTS OF EQUIPMENT AND MATERIALS REMOVED. ALL EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES BY THIS CONTRACTOR.
8. ALL WORK SHALL BE INSTALLED PER THE REFERENCE DETAILS, REGARDLESS OF WHETHER OR NOT THE DETAILS ARE CALLED OUT ON THE PLANS. REFER TO 500 SERIES SHEETS.
9. PROVIDE VENTS AT ALL HYDRONIC PIPING HIGH POINTS, AND DRAINS AT ALL PIPING LOW POINTS, REGARDLESS OF WHETHER SHOWN OR NOT. ALL MANUAL VENTS SHALL HAVE A 3/4-INCH MALE HOSE BIB CONNECTION.
10. ALL DUCTWORK SHALL COMPLY WITH "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," 3RD EDITION, SMACNA 2005, EXCEPT WHERE MORE RESTRICTIVE REQUIREMENTS ARE SPECIFIED. ANY PLAN REFERENCES TO "SMACNA FIGURE ---" REFERS TO THIS STANDARD. SEE SPECIFICATIONS FOR SCHEDULE OF DUCT PRESSURE CLASS AND SEAL CLASS.
11. IN GENERAL, THE FINAL FLEX DUCT RUNOUT TO EACH DIFFUSER, REGISTER, OR GRILLE IS NOT SIZED ON PLANS. FLEX DUCT RUNOUT SIZE SHALL MATCH AIR OUTLET NECK SIZE, UNO.
12. IT IS THE INTENT OF THESE DRAWINGS THAT A MANUAL BALANCING DAMPER BE PROVIDED AT EVERY INDIVIDUAL DUCTED CONNECTION TO AN AIR DEVICE, UNLESS A BALANCING DAMPER IS SCHEDULED TO BE FURNISHED WITH AIR DEVICE. PROVIDE A MANUAL BALANCING DAMPER IN EACH INDIVIDUAL BRANCH DUCT SERVING AN AIR DEVICE BETWEEN THE TO THE DUCT SERVING MULTIPLE DEVICES AND THE AIR DEVICE WHEN HARD DUCTED AND AT EACH POINT OF CONNECTION OF FLEX DUCT RUNOUT TO BRANCH DUCT (AT SPIN-IN FITTING) WHERE FLEX DUCT IS USED.
13. THE CONTRACTOR SHALL CONNECT THE NEW HVAC SYSTEM TO THE OWNER'S EXISTING BUILDING CONTROL SYSTEM. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
14. THESE PLANS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR SHALL BE PREPARED TO MAKE SOME ALTERATIONS TO THE EXACT LOCATION OF DUCTWORK, PIPING AND EQUIPMENT FROM THE LOCATION INDICATED ON THESE DRAWINGS TO FIT ACTUAL JOB CONDITIONS.
15. DO NOT SCALE THE LOCATION OF HVAC CEILING ELEMENTS, SUCH AS AIR INLETS AND OUTLETS, FROM THE M-SERIES DRAWINGS. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT HVAC CEILING ELEMENT LOCATIONS. REFLECTED CEILING PLANS GOVERN THE LOCATION OF DIFFUSERS, REGISTERS, AND GRILLES. M-SERIES DRAWINGS GOVERN TYPE, STYLE, AND SIZE OF DIFFUSERS, REGISTERS, AND GRILLES.
16. IN GENERAL, IF THE FINAL HYDRONIC PIPING RUNOUT TO A COIL OR TERMINAL DEVICE IS NOT SIZED ON THE PLANS, SEE HYDRONIC PIPE RUNOUT SIZE ON EQUIPMENT SCHEDULE SHEETS. MINIMUM HYDRONIC PIPE RUNOUT SIZE TO ANY COIL SHALL BE 3/4-INCH.
17. DUE TO EXTENSIVE OCCURRENCE OF HAZARDOUS MATERIALS USED IN THE ORIGINAL CONSTRUCTION OF THE BUILDING (I.E. LEAD-BASED PAINT AND ASBESTOS INSULATION), THE CONTRACTOR SHALL COORDINATE ALL DEMOLISH WITH THE ABATEMENT CONTRACTOR. EFFORTS HAVE BEEN MADE TO SHOW THE MAJORITY OF THIS DEMOLITION ON THESE AND THE ARCHITECTURAL PLANS, BUT CLEARLY, THE EXACT LOCATION AND EXTENT OF THIS DEMOLITION MUST BE FULLY COORDINATED. SEE SPECIFICATION SECTIONS IN DIVISION 02 EXISTING CONDITIONS FOR REQUIREMENTS ASSOCIATED WITH THE REMOVAL OF HAZARDOUS MATERIALS. NOTE: FOR ALL PIPING SYSTEMS THAT HAVE EXISTING HAZARDOUS MATERIALS REMOVED AND THE SYSTEMS REMAIN, CONTRACTOR SHALL INSTALL NEW INSULATION ON EXPOSED PIPING MEETING INSULATION SPECIFICATIONS. DO NOT LEAVE ANY EXISTING PIPING UNINSULATED.
18. ALL NEW DUCTWORK SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL ADJUST SHEET METAL SIZES AS NECESSARY TO ACCOMMODATE INTERNAL DUCT LINER AND/OR DOUBLE WALL INSULATED DUCTWORK. REFER TO SPECIFICATIONS.
19. ALL PIPING AND DUCT WALL PENETRATIONS SHALL BE SEALED AIRTIGHT TO MAINTAIN ROOM AIR PRESSURE RELATIONSHIP TO ADJACENT ROOMS.
20. ALL OPENINGS THROUGH WALLS (EXISTING OR NEW) MUST BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATTING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.
21. DI-ELECTRIC PIPE FITTINGS ARE NOT ALLOWED. REFER TO SPECIFICATION SECTION 232113 FOR REQUIREMENTS OF JOINING DISSIMILAR MATERIALS.
22. FOR SELECTIVE DEMOLITION OF ANY APPLIANCE OR PIECE OF EQUIPMENT CONTAINING A CFC, HCFC, OR HFC REFRIGERANT: PRIOR TO DEMOLITION, REFRIGERANT SHALL BE EVACUATED AND CAPTURED IN FULL COMPLIANCE WITH THE CLEAN AIR ACT, USING ONLY TECHNICIANS WITH THE PROPER REFRIGERANT LICENSE AS ACCORDING TO LAW, STORED IN APPROVED CONTAINERS, AND SHIPPED TO A LICENSED REFRIGERANT RECYCLING FACILITY ALL AS REQUIRED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
23. DEMOLISH ALL EQUIPMENT, PNEUMATIC CONTROLS, PIPING, DUCTWORK, ETC MADE OBSOLETE BY WORK OF THIS PROJECT, IN ITS ENTIRETY, INCLUDING ALL HANGERS, SUPPORTS AND CONCRETE HOUSEKEEPING PADS OR CURBS. DO NOT LEAVE PIPING, DUCTWORK, CONTROLS, PNEUMATIC TUBING, SUPPORTS, HANGERS OR ANY OTHER MECHANICAL SYSTEMS ABANDONED IN PLACE UNLESS SPECIFICALLY NOTE BY THE DESIGN ENGINEER.
24. THE CONSTRUCTION AREAS OF THIS PROJECT ARE ADJACENT TO, ABOVE AND BELOW AREAS OF THIS BUILDING WHICH SHALL REMAIN FULLY FUNCTIONAL AND OPERATIONAL THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. THERE ARE MECHANICAL SYSTEMS THAT SERVE OTHER AREAS OF THIS BUILDING THAT MUST REMAIN ACTIVE. COORDINATE ALL SYSTEM SHUT DOWN PRIOR TO DEMOLITION.
25. PRIOR TO BEGINNING DEMOLITION, CONTACT THE OWNER CONCERNING REMOVAL OF EXISTING CONTROLLERS, ZONE SENSORS AND LAB CONTROL VALVES. ALL CONTROLLERS, TEMPERATURE SENSORS, DUAL DUCT BOX CONTROLLERS AND PHOENIX LAB CONTROLLERS SHALL BE REMOVED BY THE OWNER. RECONNECT THE EXISTING NETWORK BUS WIRING SO COMMUNICATIONS ARE MAINTAINED. CONTACT THE OWNER CONCERNING THE BUS ROUTING. SPLICING OF WIRES IS NOT ALLOWED. PULL NEW WIRES IF EXISTING WIRES ARE TOO SHORT. REMOVE ALL EXISTING PNEUMATIC TUBING, RELATED CONTROLS AND ALL ACCESSORIES MADE OBSOLETE BY WORK OF THIS PROJECT. PROVIDE A BRASS COMPRESSION CAP TYPE FITTING AT ALL UNUSED PNEUMATIC TUBING TERMINATIONS. DO NOT PINCH-OFF TUBING.
26. THE LOW-PRESSURE STEAM SHUTDOWNS SHALL ONLY BE ALLOWED WHEN THE OUTSIDE AIR TEMPERATURES ARE TO BE ABOVE 65 DEGREES F FOR SEVEN (7) CONSECUTIVE DAYS UNLESS APPROVED OTHERWISE BY THE OWNER'S REPRESENTATIVE.
27. HEATING HOT WATER AND CHILLED WATER SHUTDOWNS ONLY ARE ALLOWED AFTER HOURS OR WEEKENDS AND MUST BE APPROVED BY OWNER'S REPRESENTATIVE A MINIMUM SEVEN (7) DAYS IN ADVANCE.
28. THE EXISTING EXHAUST AIR SYSTEM (EXHAUST RISERS) WITHIN THIS BUILDING TIE TOGETHER ON THE ROOF TO GANGED FAN SYSTEMS. SHUT DOWN AND TEMPORARY CAPPING AND/OR TYING INTO AN EXISTING RISER SHALL OCCUR AFTER 5PM OR ON WEEKENDS AND MUST BE SCHEDULED WITH OWNER'S REPRESENTATIVE A MINIMUM OF SEVEN (7) DAYS IN ADVANCE. ALL SHUTDOWNS ARE ALLOWED FOR A MAXIMUM OF A 12-HOUR PERIOD UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
29. CONTRACTOR SHALL FIELD VERIFY SERVICE ACCESS. REFER TO ARCHITECTURAL PLANS FOR PROJECT CONSTRUCTION ACCESS. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 72 HOURS PRIOR TO THE BEGINNING OF WORK THAT INVOLVES MOVING EQUIPMENT AND/OR SUPPLIES THROUGH AREAS OUTSIDE OF THE CONSTRUCTION AREA. THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE SHALL INSPECT THE AREAS INTO AND OUT OF CONSTRUCTION WORK ZONE AND DOCUMENT THE CONDITIONS IN WRITING AND/OR WITH PHOTOS. ACCESS INTO AND OUT OF THE CONSTRUCTION ZONE THROUGH THE FIRST FLOOR CORRIDORS AND ELEVATORS MUST BE COORDINATED TO MAINTAIN PEDESTRIAN USE. CONTRACTOR SHALL INCLUDE IN HIS OR HER BID ALL ASSOCIATED COSTS FOR SPACE PROTECTION THROUGH THE ACTIVE SPACES, INCLUDING BUT NOT LIMITED TO BRING IN AND REMOVE CONSTRUCTION DEBRIS, TOOLS, EQUIPMENT AND ALL NECESSITIES. CONTRACTOR SHALL FULLY PROJECT THE INTERIOR OF EACH SPACE, INCLUDING BUT NOT LIMITED TO THE FLOOR, WALLS, CEILING AND INTERIOR OF ELEVATORS. CONTRACTOR SHALL ADVISE OWNER'S REPRESENTATIVE WHEN PROTECTIVE COVERINGS HAVE BEEN REMOVED. OWNER'S REPRESENTATIVE AND CONTRACTOR SHALL VISIT THE AREAS USED TO DOCUMENT CONDITION OF EACH SPACE. CONTRACTOR SHALL REPAIR ALL DEFECTS NOT PREVIOUSLY DOCUMENTED.
30. THE CONTRACTOR SHALL CONNECT THE NEW HVAC SYSTEMS TO THE OWNER'S EXISTING BUILDING AUTOMATION SYSTEM. REFER TO THE SPECIFICATIONS AND SERIES 700 (S) SHEETS FOR ADDITIONAL REQUIREMENTS.

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STATE OF MISSOURI
RANDY JAMES DIEMER
NUMBER PE-2011015702
PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

MECHANICAL SYMBOLS & ABBREVIATIONS

DATE:	07/08/2025
DRAWN: NLP	CHECKED: RJD
PGAV # 53660-20	CLIENT # CP2400920
SHEET #:	

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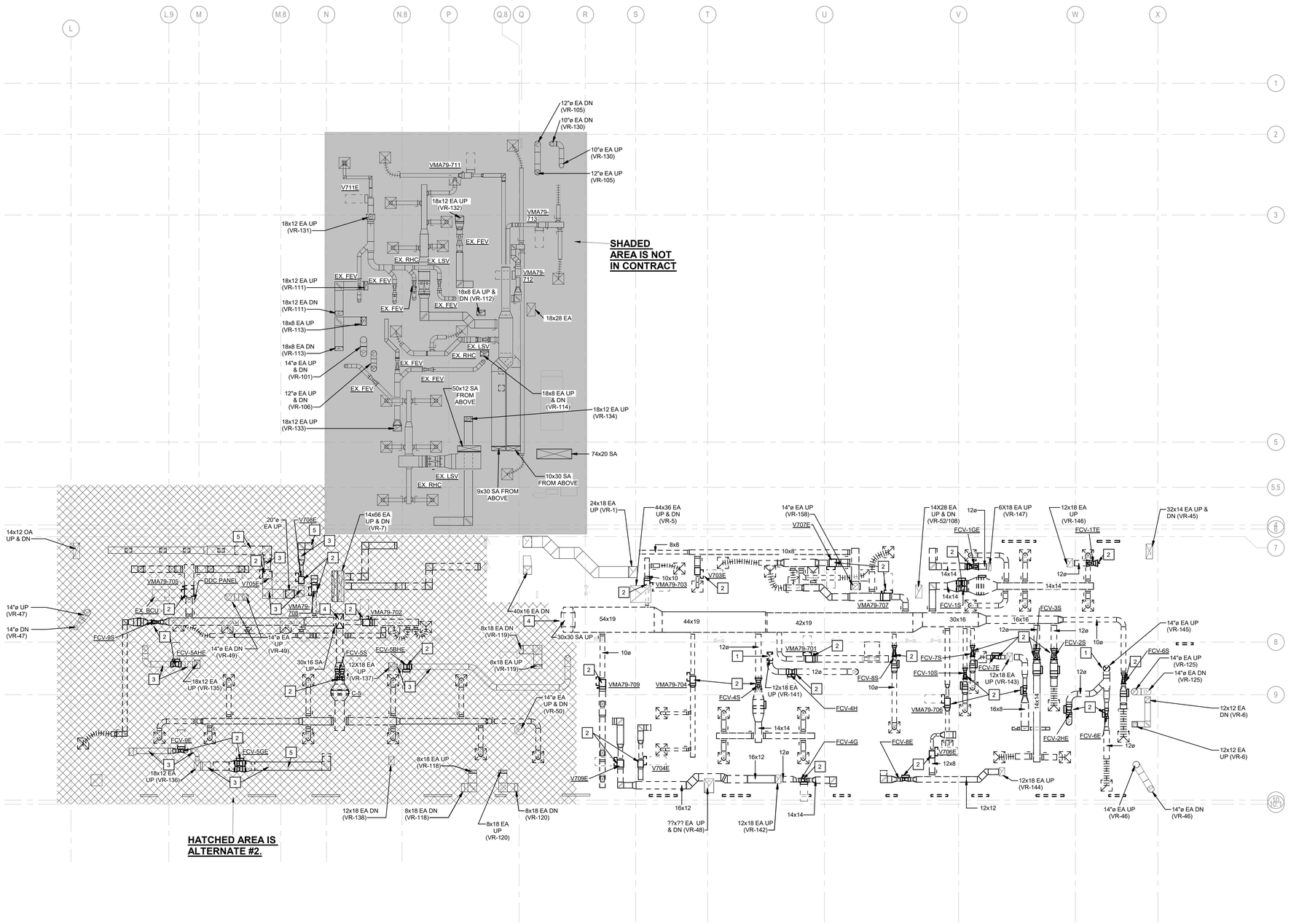


1 PHASE 7TH RENO - LEVEL 7 - MECHANICAL DUCTWORK DEMOLITION PLAN - EAST

1/8" = 1'-0"

ALTERNATE #2 WORK

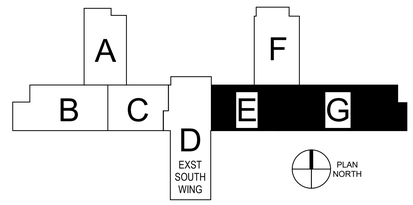
ALL WORK SHOWN IN HATCHED SHALL BE BID AS ALTERNATE. IF ALTERNATE IS NOT ACCEPTED NO MECHANICAL WORK SHALL BE PERFORMED IN THE HATCHED.

DEMOLITION GENERAL NOTES

1. SEE SHEET M000 FOR MECHANICAL SYMBOLS & ABBREVIATIONS.
2. INSULATION ON PIPING AND DUCTWORK MAY CONTAIN ASBESTOS. SEE ASBESTOS REPORT IN PROJECT MANUAL. CONTRACTOR SHALL RE-INSULATE ALL PIPING AND DUCTWORK THAT SHALL REMAIN WHERE INSULATION IS REMOVED BY ABATEMENT SCOPE OF WORK. SUCH THAT INSULATION OF PIPING AND DUCTWORK IS CONTINUOUS AND UNINTERRUPTED.
3. ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.
4. PROVIDE TEMPORARY CAPS ON DUCTS THAT ARE REUSED.
5. SUPPLY DUCTS THAT ARE NOT BEING REUSED SHALL BE CAPPED AIRTIGHT WITH SHEETMETAL. INSULATE CAP WITH 1 1/2" THICK FOIL FACED INSULATION.
6. NOTIFY OWNERS REPRESENTATIVE 2 WEEK PRIOR TO START OF DEMOLITION FOR OWNER SALVAGE OF EXISTING CONTROLS.
7. N2 BUS MUST REMAIN IN TACT TO PENTHOUSE CONTROLLERS DURING CONSTRUCTION. RE-RUN BUS THRU PROJECT AREA WITHOUT SPLICES.

KEYED NOTES

1. REMOVE EXISTING EA RISER UP THROUGH ROOF. REFER TO ARCHITECTURAL PLANS FOR INFILL DETAILS.
2. REMOVE EXISTING AIR TERMINAL UNIT (OR AIR CONTROL VALVE AS APPLICABLE) AND ALL ASSOCIATED CONTROLS. REFER TO DUCTWORK NEW WORK PLAN AND PIPING PLAN FOR ADDITIONAL INFORMATION.
3. EXHAUST DUCTWORK TO REMAIN. ONLY REMOVE DUCT WITH INTERNAL DUCT LINER AND AS REQUIRED TO DISCONNECT AND REMOVE AIR TERMINAL (OR AIR CONTROL VALVE) AND RECONNECT NEW AS INDICATED ON NEW DUCTWORK PLAN.
4. ALL EXISTING INTERNALLY INSULATED SUPPLY DUCTWORK SHALL BE COMPLETELY DEMOLISHED. DISCONNECT AND REMOVE EXISTING SUPPLY AIR DUCT UP INTO THE PENTHOUSE MECHANICAL ROOM.
5. REMOVE PORTION OF EXHAUST DUCTWORK WITH INTERNAL DUCT LINER.



KEYPLAN

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MO STATE CERTIFICATE OF AUTHORITY #000086

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St Louis, MO 63119
MO STATE CERTIFICATE OF AUTHORITY #2023008713

Antella CONSULTING ENGINEERS, INC.
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Structural Engineers
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Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #000444

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

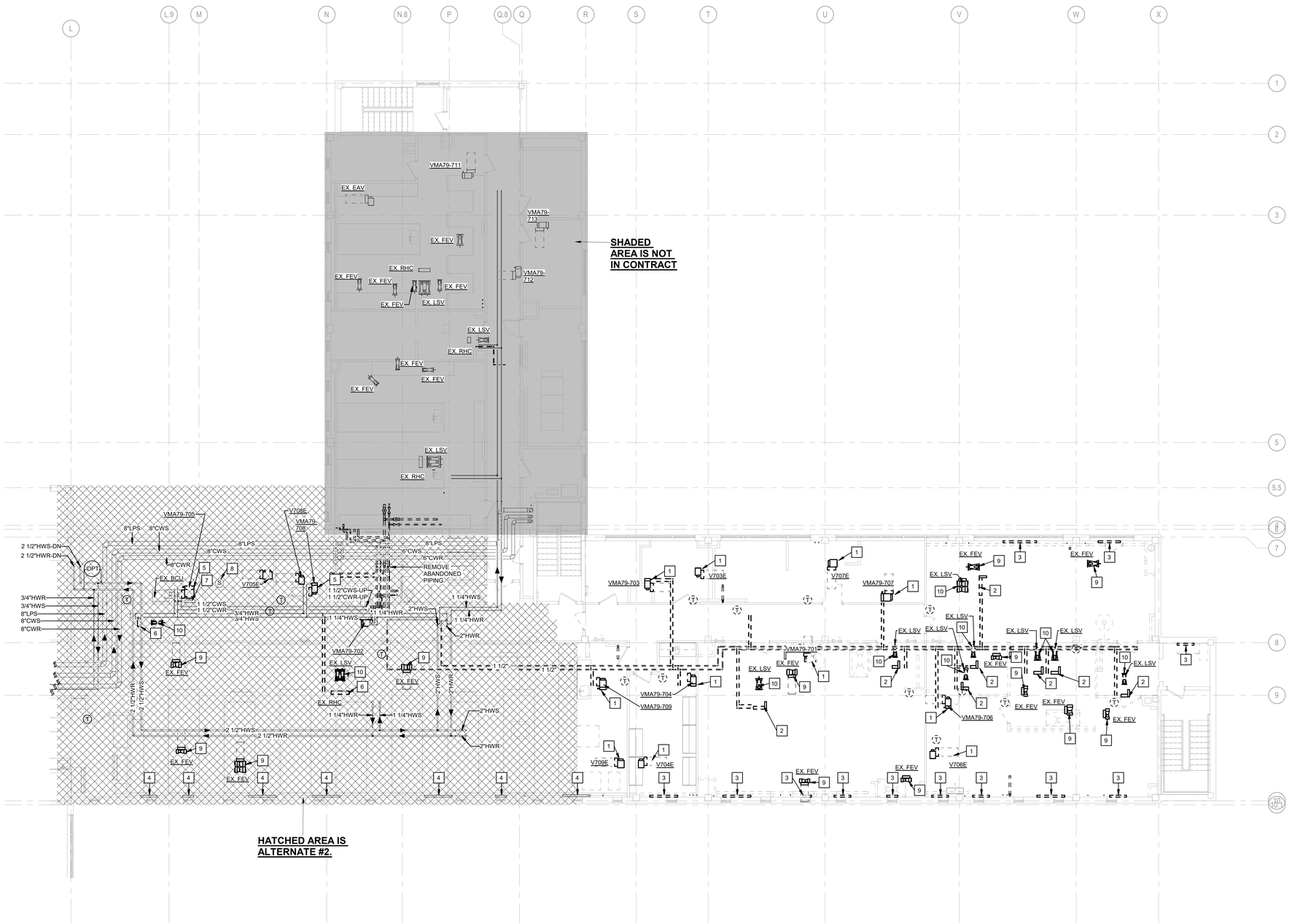
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

LEVEL 7 - MECHANICAL DUCTWORK DEMO PLAN - EAST

DATE:	07/08/2025
DRAWN: NLP	CHECKED: RJD
PGAV # 53660-20	CLIENT # CP2400920
SHEET #:	M275L

NLP
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/9011765_MEPFPLFL_v22.rvt
2025-06-26 11:39:38 PM



1 PHASE 7TH RENO - LEVEL 7 - MECHANICAL PIPING DEMOLITION PLAN - EAST

NOT TO SCALE

ALTERNATE #2 WORK

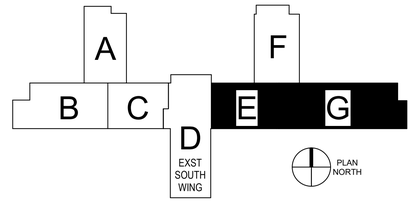
ALL WORK SHOWN IN HATCHED SHALL BE BID AS ALTERNATE. IF ALTERNATE IS NOT ACCEPTED NO MECHANICAL WORK SHALL BE PERFORMED IN THE HATCHED.

DEMOLITION GENERAL NOTES

1. SEE SHEET M000 FOR MECHANICAL SYMBOLS & ABBREVIATIONS.
2. INSULATION ON PIPING AND DUCTWORK MAY CONTAIN ASBESTOS. SEE ASBESTOS REPORT IN PROJECT MANUAL. CONTRACTOR SHALL RE-INSULATE ALL PIPING AND DUCTWORK THAT SHALL REMAIN WHERE INSULATION IS REMOVED BY ABATEMENT SCOPE OF WORK. SUCH THAT INSULATION OF PIPING AND DUCTWORK IS CONTINUOUS AND UNINTERRUPTED.
3. ALL PENETRATIONS THROUGH WALLS AND FLOORS SHALL BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.
4. PROVIDE TEMPORARY CAPS ON DUCTS THAT ARE REUSED.
5. SUPPLY DUCTS THAT ARE NOT BEING REUSED SHALL BE CAPPED AIRTIGHT WITH SHEETMETAL. INSULATE CAP WITH 1 1/2" THICK FOIL FACED INSULATION.

KEYED NOTES

1. REMOVE EXISTING AIR TERMINAL UNIT, ASSOCIATED PIPING, TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROLS.
2. REMOVE EXISTING DUCT MOUNTED COIL, ASSOCIATED PIPING, TEMPERATURE SENSOR AND ALL ASSOCIATED CONTROLS.
3. REMOVE EXISTING STEAM STEAM RADIATOR PREVIOUSLY ABANDONED IN WALL.
4. EXISTING STEAM RADIATOR HAS BEEN INSTALLED BEHIND DRYWALL. STEAM PIPING SERVING UNIT AND CONTROLS HAVE BEEN REMOVED AND/OR ABANDONED IN PLACE AND SHALL REMAIN IN PLACE.
5. REMOVE EXISTING AIR TERMINAL UNIT AND ALL ASSOCIATED CONTROLS. DISCONNECT EXISTING HWS/R PIPING AT COIL AND CAP FOR RECONNECTION TO NEW COIL. EXISTING ASSOCIATED TEMPERATURE SENSOR TO REMAIN.
6. REMOVE EXISTING DUCT MOUNTED COIL AND ALL ASSOCIATED CONTROLS. DISCONNECT EXISTING HWS/R PIPING AT COIL AND CAP FOR RECONNECTION TO NEW COIL. EXISTING ASSOCIATED TEMPERATURE SENSOR TO REMAIN.
7. EXISTING DDC CONTROL PANEL SHALL REMAIN. PROTECT DDC CONTROL PANEL DURING CONSTRUCTION TO NOT ALLOW ANY DIRT AND/OR DEBRIS FROM ENTERING THE PANEL. EXISTING CONTROLS FOR BLOWER COIL UNIT SHALL BE REPLACED WITH NEW. REFER TO CONTROL SHEET M715 DETAIL 3.
8. TEMPORARILY DISCONNECT O2 DETECTOR FROM WALL TO ALLOW FOR REMOVAL OF CHASE WALL. PROTECT SENSOR DURING CONSTRUCTION FROM ANY DIRT AND/OR DEBRIS.
9. REMOVE EXISTING FUME HOOD EXHAUST AIR VALVE.
10. REMOVE EXISTING SUPPLY AIR CONTROL VALVE.



KEYPLAN

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RANDY JAMES DIEMER
NUMBER PE-2017015702
PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

LEVEL 7 - MECHANICAL PIPING DEMO PLAN - EAST

DATE:	
07/08/2025	
DRAWN: NLP	CHECKED: RJD
PGAV # 53660-20	CLIENT # CP2400920
SHEET # **M276L**	

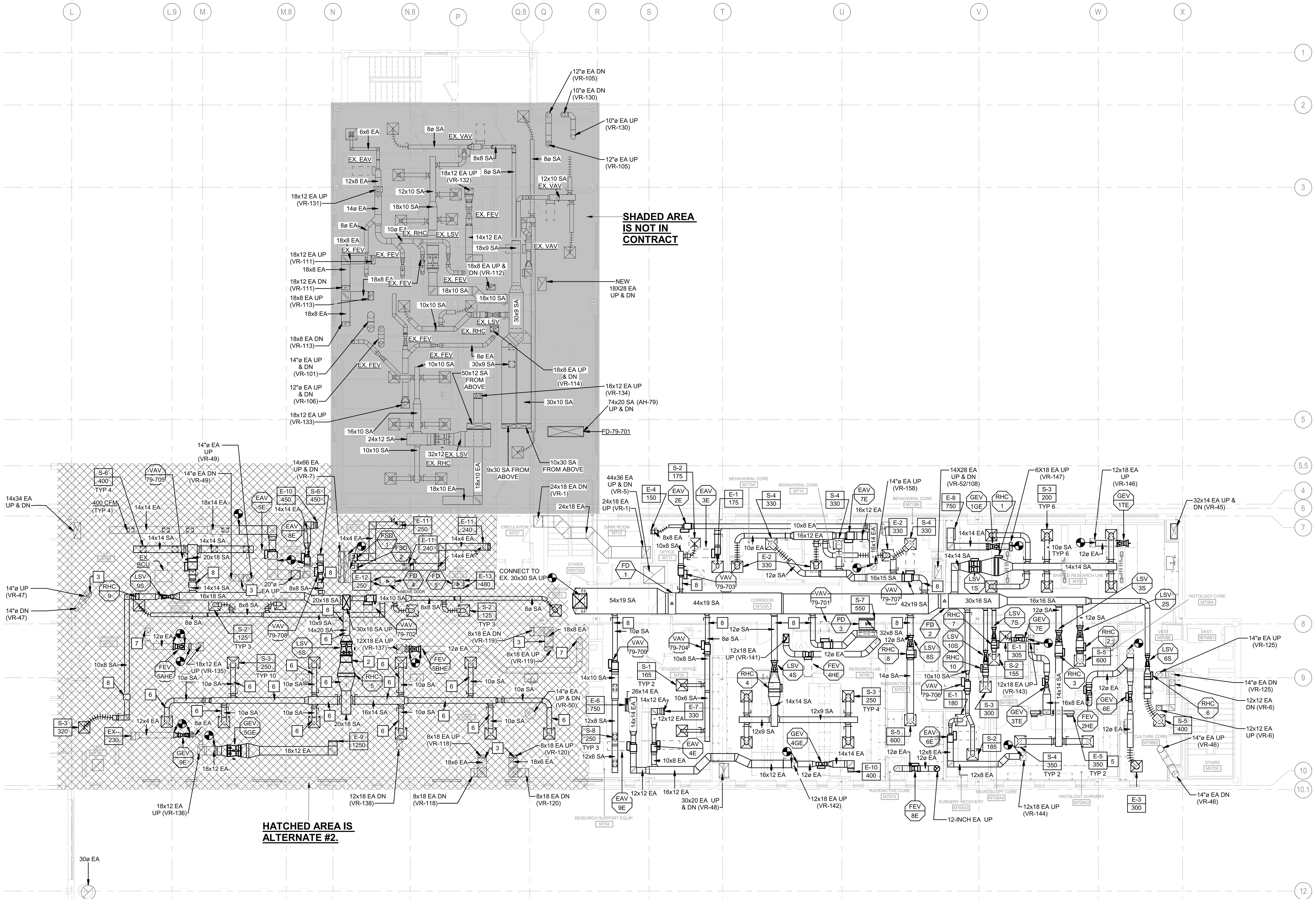
2025-06-26 11:29:45 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/0011765_MEPPPLFL_v22.rvt

ALTERNATE #2 WORK

ALL WORK SHOWN IN HATCHED SHALL BE BID AS ALTERNATE. IF ALTERNATE IS NOT ACCEPTED NO MECHANICAL WORK SHALL BE PERFORMED IN THE HATCHED.

ALTERNATE WORK

ALL WORK SHOWN IN WOMEN ROOM 720 AND MEN ROOM M719 SHALL BE BID AS ALTERNATE. IF ALTERNATE IS NOT ACCEPTED NO MECHANICAL WORK SHALL BE PERFORMED IN THESE ROOMS.



1 PHASE 7TH RENO - LEVEL 7 - MECHANICAL DUCTWORK NEW WORK PLAN - EAST

1/8" = 1'-0"

DUCTWORK GENERAL NOTES

1. SEE SHEET M000 FOR MECHANICAL SYMBOLS & ABBREVIATIONS.
2. FUME HOOD EXHAUST AIR DUCTWORK (BETWEEN HOOD AND EXHAUST DUCT MAIN) SHALL BE CONSTRUCTED OF FULLY WELDED STAINLESS STEEL PER SPECIFICATIONS.
3. ALL EXPOSED DUCTWORK SHALL BE ROUND OR FLAT OVAL UNLESS OTHERWISE NOTED. EXPOSED SUPPLY AIR DUCTWORK SHALL BE DOUBLE-WALL CONSTRUCTION REFER TO SPECIFICATIONS FOR MORE INFORMATION. THIS DOES NOT APPLY TO DUCTWORK LOCATED IN MECHANICAL ROOMS.
4. ALL AIRFLOW CONTROL VALVES SHALL BE INSTALLED WITH CONTROLS FACING OUTWARD OR DOWNWARD FOR EASY ACCESS.
5. ALL DUCTWORK LOCATED IN EXPOSED CEILING SPACES SHALL BE PAINTED (REFER TO ARCHITECTURAL CEILING PLANS FOR ALL EXPOSED CEILING SPACES):

   -FIELD PAINTING OF DUCTWORK, ASSOCIATED AIR DEVICES, AIR TERMINAL UNITS, AND HANGERS AND SUPPORTS SHALL BE BY CONTRACTOR AND MATCH COLOR APPROVED BY ARCHITECT DURING SHOP DRAWING PROCESS. ALL DUCTWORK AND EQUIPMENT TO BE PAINTED SHALL HAVE A PAINT GRIP FINISH.

   -LAB M702 ALL SUPPLY DUCTWORK SHALL BE PROVIDED PRE-PAINTED. NO FIELD PAINTING IS ALLOWED.

   -LABORATORY AIRFLOW CONTROL VALVES SHALL NOT BE PAINTED. CONTRACTOR SHALL PROTECT AIRFLOW CONTROL VALVES THROUGHOUT PAINTING PROCESS.
6. ALL OPENINGS THROUGH RATED WALLS MUST BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.

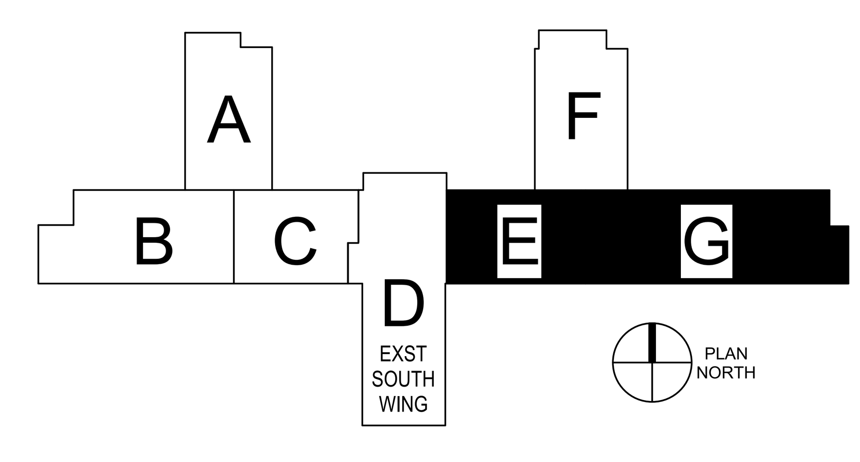
GENERAL NOTES

1. PAINTING AND JACKETING FOR MECHANICAL PIPING EXPOSED IN CEILING SPACES (REFER TO ARCHITECTURAL CEILING PLANS FOR ALL EXPOSED CEILING SPACES):

   -HOT WATER, CHILLED WATER, STEAM, STEAM CONDENSATE RETURN, DOMESTIC AND LABORATORY WATER, DRAIN PIPING, AND ALL OTHER INSULATED PIPE SYSTEMS SHALL RECEIVE PVC JACKETING IN COLOR TO MATCH DUCTWORK PAINT COLOR APPROVED BY ARCHITECT DURING SHOP DRAWING PROCESS. FIELD PAINTING OF INSULATED PIPING IS NOT ACCEPTABLE. DO NOT PAINT VALVES OR GROOVED PIPING FITTINGS.
3. ALL OPENINGS THROUGH RATED WALLS MUST BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.

KEYED NOTES

1. 12"Ø EXHAUST DUCT DOWN TO FUME HOOD. TRANSITION AS REQUIRED FOR CONNECTION TO HOOD OUTLET SIZE. BALANCE FOR 600 CFM.
2. PROVIDE AIR VALVE MANUFACTURERS "NEUTRALIZER" SOUND CANCELLATION DEVICE ON DISCHARGE SIDE OF SUPPLY AIR VALVE.
3. HATCHED DUCTWORK SHALL BE WRAPPED OR ENCASED WITH LISTED OR APPROVED MATERIALS HAVING A FIRE RESISTANCE RATING EQUAL TO THE FIRE BARRIER FOR 10'-0" OF THE DUCT INCLUDING DUCT SUPPORTS WITHIN THIS SPAN.
4. REMOVE CAP ON EXISTING EA DUCT ABOVE 7TH FLOOR. CONNECT NEW EA AND EXTEND UP THROUGH ROOF. SEE ROOF PLAN FOR CONTINUATION.
5. MOUNT THE TOP OF THE EXHAUST GRILLE APPROXIMATELY 6" BELOW THE UNDERSIDE OF THE TABLE TOP. COORDINATE WITH ARCHITECTURAL PLANS.
6. ALL NEW EXPOSED SUPPLY AIR DUCTWORK LOCATED IN LAB M702 SHALL BE PROVIDED PRE-PAINTED. ARCHITECT SHALL APPROVE PAINT COLOR DURING SHOP DRAWING REVIEW.
7. EXISTING HOOD - 750 CFM.
8. PROVIDE UL LISTED ASSEMBLY - A MINIMUM 12" LONG x 0.060" THICK STEEL SLEEVE CENTERED IN EACH DUCT OPENING. THE SLEEVE SHALL BE SECURED TO BOTH SIDES OF THE WALL AND ALL FOUR SIDES OF THE SLEEVE WITH MINIMUM 1 1/2" x 1 1/2" x 0.060" STEEL RETAINING ANGLES. THE RETAINING ANGLES SHALL BE SECURED TO THE SLEEVE AND THE WALL WITH NO. 10 SCREWS. THE ANNULAR SPACE BETWEEN THE STEEL SLEEVE AND THE WALL OPENING SHALL BE FILLED WITH ROCK (MINERAL) WOOL BATTING ON ALL SIDES. DUCT INSULATION SHALL NOT PENETRATE THE ASSEMBLY. INSTALL DUCT INSULATION OVER THE ASSEMBLY AND TERMINATE AT WALL.



KEYPLAN

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

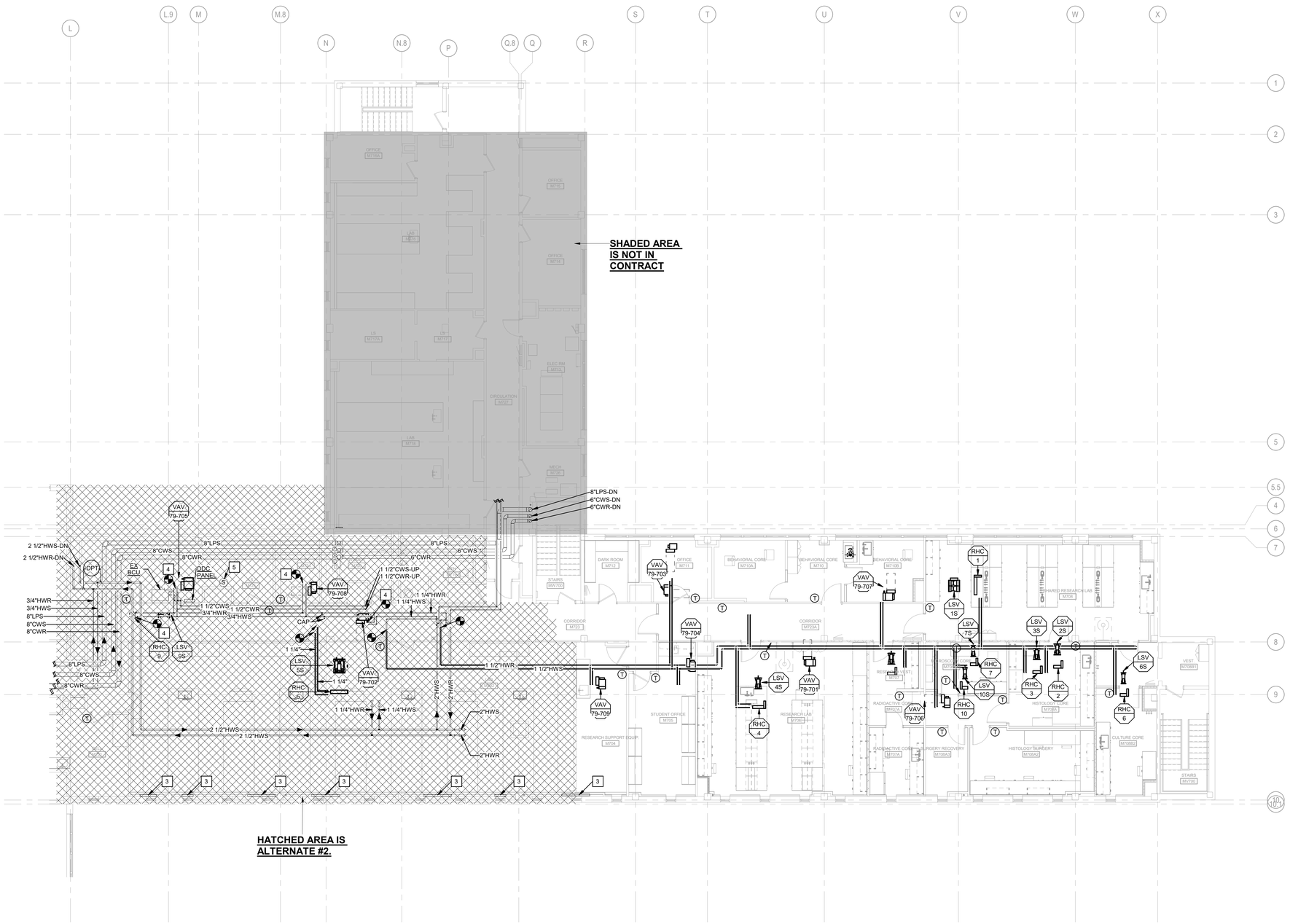
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

LEVEL 7 - DUCTWORK NEW WORK PLAN - EAST

DATE: 07/08/2025
DRAWN: NLP
CHECKED: RJD
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **M375L**

NLP
2025-06-26 11:39:57 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/0011765_MEPFP(LFL)_v22.rvt



ALTERNATE #2 WORK

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GENERAL NOTES

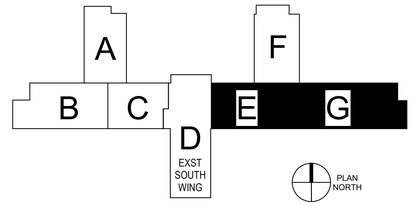
1. SEE SHEET M000 FOR MECHANICAL SYMBOLS & ABBREVIATIONS.
2. PAINTING FOR MECHANICAL PIPING EXPOSED IN CEILING SPACES (REFER TO ARCHITECTURAL CEILING PLANS FOR ALL EXPOSED CEILING SPACES):
   - HOT WATER, CHILLED WATER, STEAM, STEAM CONDENSATE RETURN, DOMESTIC AND LABORATORY WATER, DRAIN PIPING, AND ALL OTHER INSULATED PIPE SYSTEMS SHALL BE PAINTED IN COLOR TO MATCH DUCTWORK PAINT COLOR APPROVED BY ARCHITECT DURING SHOP DRAWING PROCESS. DO NOT PAINT VALVES OR GROOVED PIPING FITTINGS.
   - LAB M702 ALL PIPING SHALL RECEIVE A PVC JACKETING COVER OVER THE INSULATION IN A COLOR APPROVED BY THE ARCHITECT DURING SHOP DRAWING REVIEW PROCESS. FIELD PAINTING OF INSULATED PIPING IS NOT ACCEPTABLE. DO NOT FIELD PAINT IN LAB M702.
1. ALL OPENINGS THROUGH RATED WALLS MUST BE PATCHED AND SEALED AIR TIGHT TO MEET THE RATING OF THE WALL AND TO MAINTAIN AIR PRESSURE RELATIONSHIPS TO ADJACENT SPACES.

KEYED NOTES

1. TRAP CONDENSATE DRAIN LINE AND ROUTE TO FLOOR SINK LOCATED IN THIS ROOM. COORDINATE WITH PLUMBING DRAWINGS.
2. 3/4" BYPASS LINE CONNECTING THE SUPPLY AND RETURN LINES TOGETHER TO PROVIDE CONTINUOUS FLOW IN LINES. INSTALL AUTOFLOW VALVE IN BYPASS WITH 3 GPM CARTRIDGE.
3. ABANDONED STEAM RADIATOR.
4. CONNECT TO EXISTING PIPING AND EXTEND TO NEW COIL.
5. INSTALL EXISTING O2 DETECTOR ON NEW WALL.
6. THIS SPACE SHALL MAINTAIN 68-72 DEGREES F AND 30-50% HUMIDITY.

1 **PHASE 7TH RENO - LEVEL 7 - MECHANICAL PIPING NEW WORK PLAN - EAST**

NOT TO SCALE



KEYPLAN

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

LEVEL 7 - MECHANICAL PIPING NEW WORK PLAN - EAST

DATE:	07/08/2025
DRAWN: NLP	CHECKED: RJD
PGAV # 53650.20	CLIENT # CP2400920
SHEET #	**M376L**

Autodesk Docs://53650.10 MU-SOM MSB Lab Renovations/9011765_MEPFP-PLFL_422.rvt
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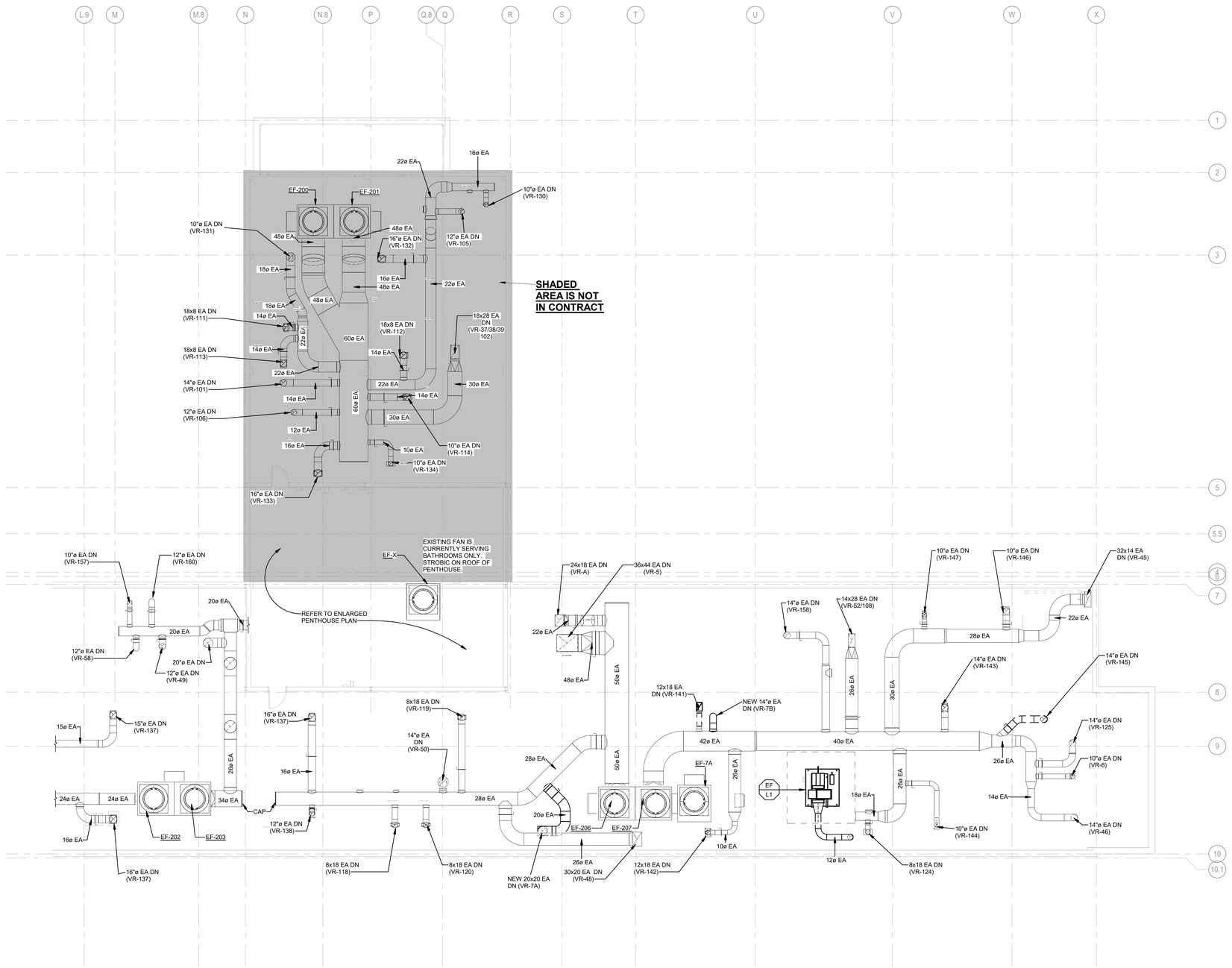
DUCTWORK GENERAL NOTES

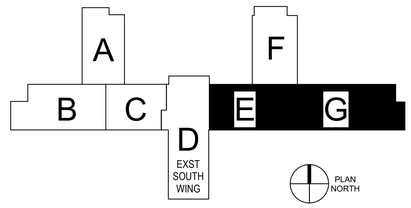
1. SEE SHEET M000 FOR MECHANICAL SYMBOLS & ABBREVIATIONS.
2. ALL EXPOSED DUCTWORK SHALL BE ROUND OR FLAT OVAL UNLESS OTHERWISE NOTED. ALL EXPOSED EXHAUST AIR DUCTWORK SHALL BE WELDED STAINLESS STEEL. REFER TO SPECIFICATIONS FOR ALL REQUIREMENTS.
3. ALL EXPOSED DUCTWORK ON THE ROOF SHALL BE SUPPORTED ABOVE ROOF WITH DUCT SUPPORTS. REFER TO DETAIL SHEETS FOR SUPPORT REQUIREMENTS.

KEYED NOTES

1. WELD NEW CAP TO EXISTING DUCT AIR TIGHT.
2. DEMOLISH EXISTING EXHAUST DUCT THROUGH ROOF. REFER TO ARCHITECTURAL PLANS FOR ROOF PATCHING AND INFILL DETAILS.
3. REMOVE TRANSITE DUCT UP THROUGH ROOF AND REPLACE WITH NEW STAINLESS STEEL DUCT PER SPECIFICATIONS.



1 **PHASE 7TH RENO - ROOF - MECHANICAL DEMOLITION & NEW WORK PLAN - EAST**
NOT TO SCALE



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0" 1"

ROOF DEMOLITION & NEW WORK PLAN EAST

DATE: 07/08/2025
DRAWN: NLP
CHECKED: RJD
PGAV #: 53660-20
CLIENT #: CP2A00920
SHEET #: **M383L**

NLP
Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/0001780_MEPFPLFLL_r22.rvt
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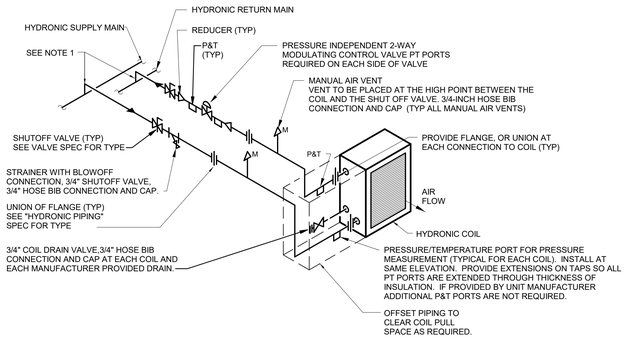
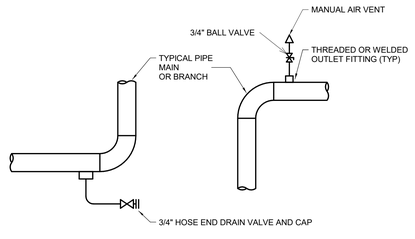


NOTE:

1. BRANCH PIPES SHALL TAP OFF THE TOP OF MAINS.
2. DETAIL APPLIES TO DUCT MOUNTED HEATING COILS (RHC), AIR TERMINAL REHEAT COILS (VAV) AND BLOWER COIL UNITS (BCU).

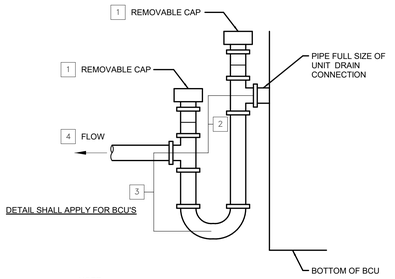
1 COIL CONNECTION WITH 2-WAY (PIC) VALVE DETAIL-

NOT TO SCALE



2 HVAC DRAIN AND VENT DETAIL-

NOT TO SCALE

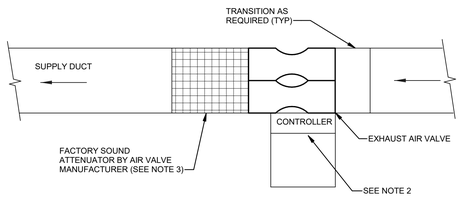


NOTE:

1. LOCATE TRAPS SO AS TO BE ACCESSIBLE FOR CLEANING.
2. DRAW-THRU: SUBTRACT SCHEDULED E.S.P. FROM T.S.P. THEN ADD 1". BLOW-THRU: 1"
3. DRAW-THRU: 1/2 OF NOTE 2 DIMENSION BUT NOT LESS THAN 2" BLOW-THRU: SCHEDULED E.S.P. THEN ADD 1".
4. ROUTE TO NEAREST SANITARY (FLOOR) DRAIN, SLOPE AT 1/4" PER FOOT.

3 BCU CONDENSATE DRAIN TRAP-

NOT TO SCALE

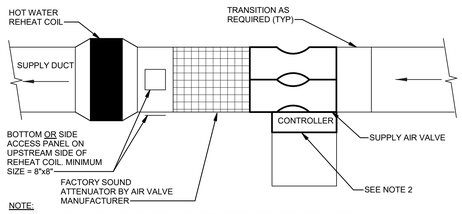


NOTE:

1. INSTALL AIR VALVE PLUMB AND LEVEL WITH SERVICE SPACE FOR CONTROLS, ETC.
2. CONTROLLER ON BOTTOM. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE IN FRONT OF EXHAUST AIR VALVE CONTROL PANEL.
3. FUME HOOD AIRFLOW CONTROL VALVES DO NOT REQUIRE A FACTORY SOUND ATTENUATOR.

4 EXHAUST LABORATORY AIR VALVE DETAIL-

NOT TO SCALE

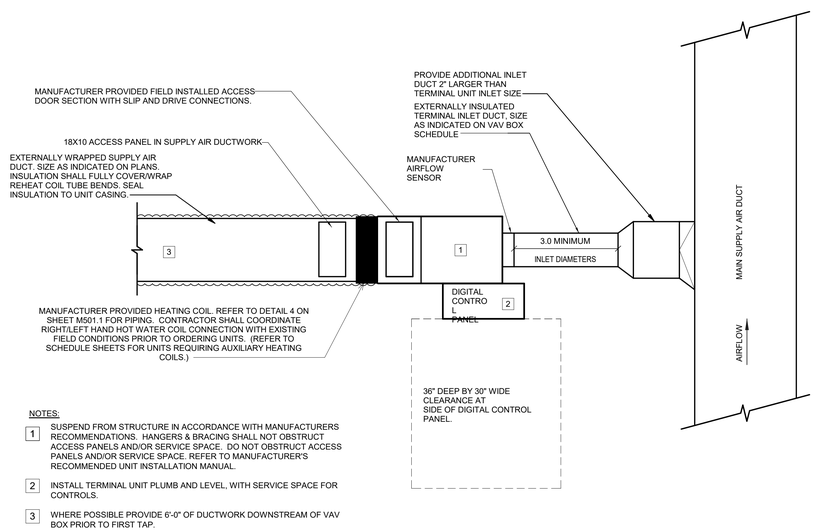


NOTE:

1. INSTALL AIR VALVE PLUMB AND LEVEL WITH SERVICE SPACE FOR CONTROLS, ETC.
2. CONTROLLER ON BOTTOM. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE IN FRONT OF SUPPLY AIR VALVE CONTROL PANEL.

5 SUPPLY LABORATORY AIR VALVE DETAIL-

NOT TO SCALE

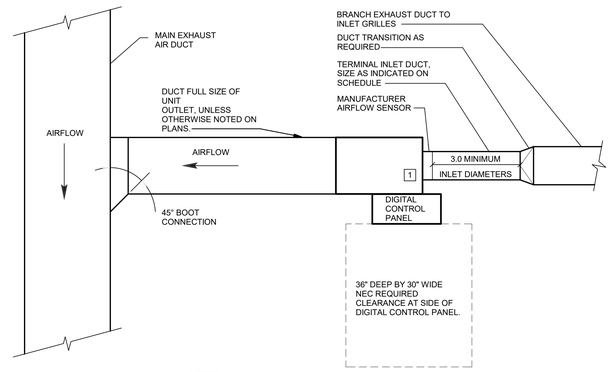


NOTES:

1. SUSPEND FROM STRUCTURE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. HANGERS & BRACING SHALL NOT OBSTRUCT ACCESS PANELS AND/OR SERVICE SPACE. DO NOT OBSTRUCT ACCESS PANELS AND/OR SERVICE SPACE. REFER TO MANUFACTURER'S RECOMMENDED UNIT INSTALLATION MANUAL.
2. INSTALL TERMINAL UNIT PLUMB AND LEVEL, WITH SERVICE SPACE FOR CONTROLS.
3. WHERE POSSIBLE PROVIDE 6'-0" OF DUCTWORK DOWNSTREAM OF VAV BOX PRIOR TO FIRST TAP.

6 SUPPLY AIR TERMINAL UNIT INSTALLATION-

NOT TO SCALE

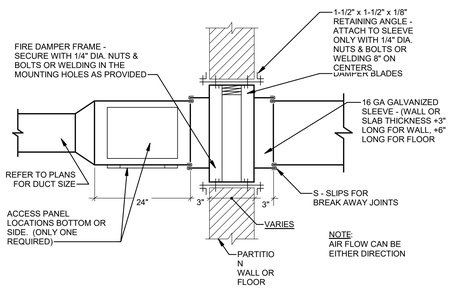


NOTES:

1. INSTALL TERMINAL UNIT PER THE SPECIFICATIONS PLUMB AND LEVEL WITH SERVICE SPACE FOR CONTROLS, ETC.

7 EXHAUST AIR TERMINAL UNIT (VAV/CAV) DETAIL-

NOT TO SCALE

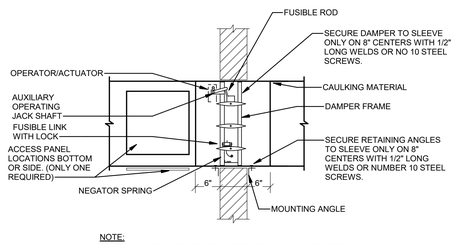


NOTES:

1. REFER TO APPROVED DAMPER MANUFACTURERS INSTALLATION INSTRUCTION FOR MANUFACTURERS APPROVED UL INSTALLATION ASSEMBLY.
2. ACCESS PANEL SHALL BE 18"x18" WHEREVER POSSIBLE.
3. IF 18"x18" ACCESS PANEL IS NOT POSSIBLE, PROVIDE 18" LONG FLANGED, REMOVABLE SEGMENT OF DUCT AT CONNECTION TO DAMPER WITH A 6"x6" ACCESS PANEL FOR VISUAL INSPECTION OF DAMPER.

8 FIRE DAMPER INSTALLATION DETAIL

NOT TO SCALE



NOTE:

1. INSTALLATION APPLIES TO HORIZONTAL (WALL) OR VERTICAL (FLOOR) POSITION. REFER TO APPROVED DAMPER MANUFACTURERS INSTALLATION INSTRUCTIONS FOR MANUFACTURERS APPROVED UL INSTALLATION ASSEMBLY.
2. ACCESS PANEL SHALL BE 18"x18" WHENEVER POSSIBLE.
3. IF 18"x18" ACCESS PANEL IS NOT POSSIBLE, PROVIDE 18" LONG FLANGED, REMOVABLE SEGMENT OF DUCT AT CONNECTION TO DAMPER WITH A 6"x6" ACCESS PANEL FOR VISUAL INSPECTION OF DAMPER.

9 COMBINATION FIRE/SMOKE DAMPER DETAIL

NOT TO SCALE

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STATE OF MISSOURI
RANDY JAMES DIEMER
NUMBER PE-2017015702
PROFESSIONAL ENGINEER
07/08/2025

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Structural Engineers
4338 Bellview Avenue
Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #000444

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

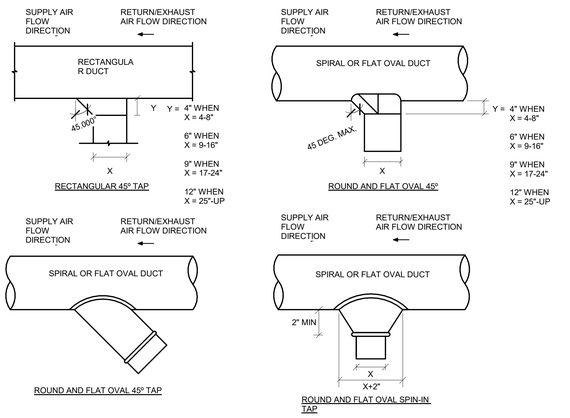
CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

MECHANICAL DETAILS

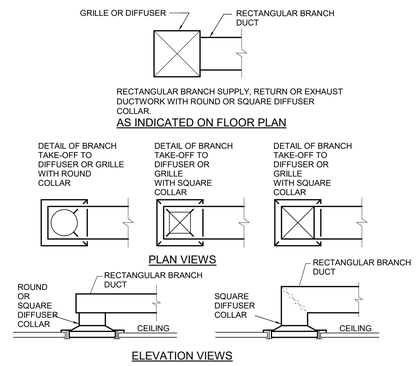
DATE: 07/08/2025
DRAWN: NLP
CHECKED: RJD
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **M505L**

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/0001780_MEPFP-LFL-L-422.rvt
2025-06-26 11:40:15 PM
NLP



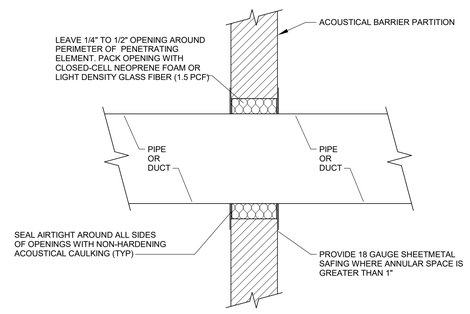
1 DUCT CONNECTION DETAILS-

NOT TO SCALE



2 RIGID DUCTWORK CONNECTION TO DIFFUSER DETAIL-

NOT TO SCALE

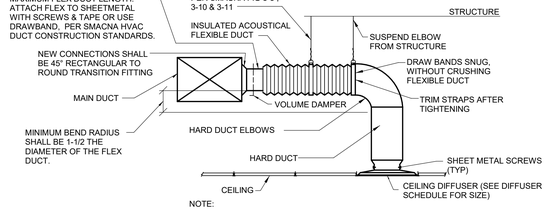


NOTE:

1. THIS DETAIL APPLIES TO ALL DUCT PENETRATIONS WHERE PARTITION INCLUDES BATT INSULATION OR ACOUSTIC BLANKET.

3 PENETRATION OF ACOUSTICAL PARTITIONS-

NOT TO SCALE

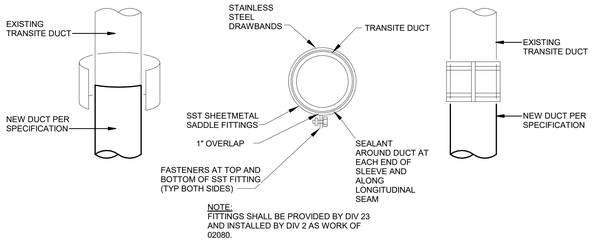


NOTE:

1. INSTALL FLEXIBLE DUCTWORK SUPPORTS AT ALL ROUND NECK OUTLETS/INLETS UNLESS OTHERWISE NOTED ON DRAWINGS.
2. FLEXIBLE DUCT LENGTH SHALL BE A MINIMUM 3'-0" AND A MAXIMUM OF 5'-0".
3. CONNECT RIGID DUCTWORK TO DIFFUSER WITH MINIMUM FOUR (4) SHEET METAL SCREWS.
4. FLEXIBLE DUCTWORK IS NOT ALLOWED FOR EXHAUST AND RETURN DUCTWORK. USE RIGID DUCTWORK IN ITS PLACE.

4 FLEXIBLE DUCT CONNECTION TO AIR OUTLET / INLET-

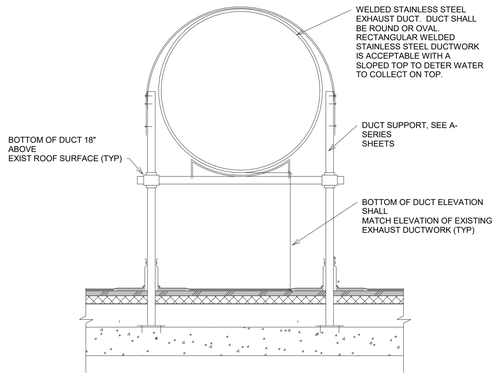
NOT TO SCALE



NOTE:
FITTINGS SHALL BE PROVIDED BY DIV 23 AND INSTALLED BY DIV 2 AS WORK OF 02080.

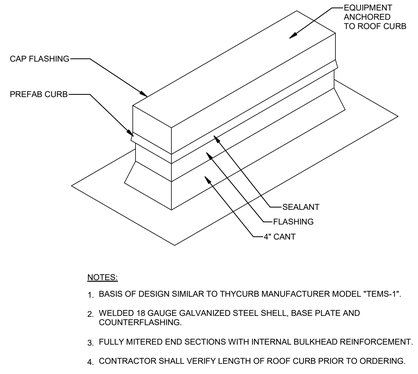
5 EXHAUST DUCT FITTING DETAIL-

NOT TO SCALE



6 ROOF MOUNTED DUCT SUPPORT DETAIL-

NOT TO SCALE

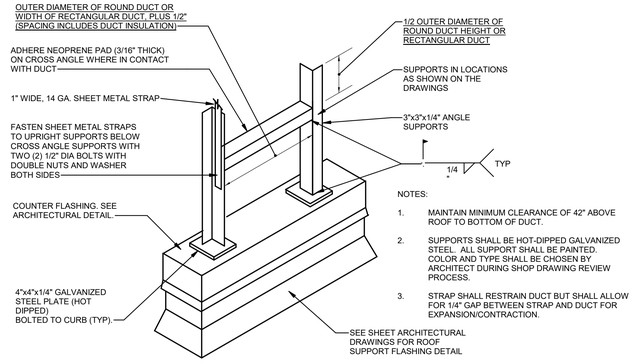


NOTES:

1. BASIS OF DESIGN SIMILAR TO THYCURB MANUFACTURER MODEL "TEMS-1".
2. WELDED 18 GAUGE GALVANIZED STEEL SHELL, BASE PLATE AND COUNTERFLASHING.
3. FULLY MITERED END SECTIONS WITH INTERNAL BULKHEAD REINFORCEMENT.
4. CONTRACTOR SHALL VERIFY LENGTH OF ROOF CURB PRIOR TO ORDERING.

7 ROOF EQUIPMENT SUPPORT DETAIL W/ PRE-FAB CURB

NOT TO SCALE

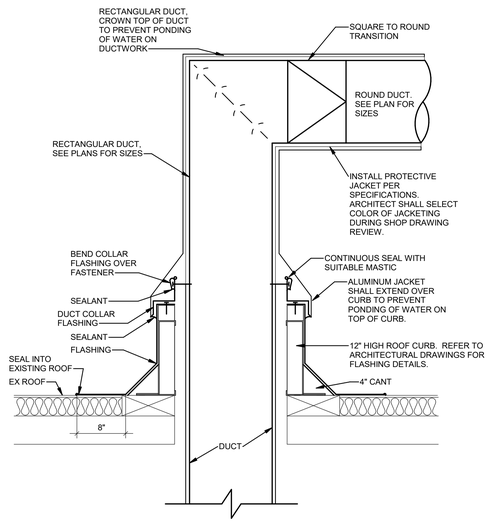


NOTES:

1. MAINTAIN MINIMUM CLEARANCE OF 42" ABOVE ROOF TO BOTTOM OF DUCT.
2. SUPPORTS SHALL BE HOT-DIPPED GALVANIZED STEEL. ALL SUPPORT SHALL BE PAINTED. COLOR AND TYPE SHALL BE CHOSEN BY ARCHITECT DURING SHOP DRAWING REVIEW PROCESS.
3. STRAP SHALL RESTRAIN DUCT BUT SHALL ALLOW FOR 1/4" GAP BETWEEN STRAP AND DUCT FOR EXPANSION/CONTRACTION.

8 ROOF DUCT SUPPORT DETAIL (SECURED)

NOT TO SCALE



9 DUCT THROUGH ROOF DETAIL

NOT TO SCALE

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RANDY JAMES DIEMER
NUMBER PE-2017015702
PROFESSIONAL ENGINEER
07/08/2025

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MO STATE CERTIFICATE OF AUTHORITY #000444

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced

0" 1" 2"

MECHANICAL DETAILS

DATE: 07/08/2025
DRAWN: NLP | CHECKED: RJD
PGAV # 53660-20 | CLIENT # CP2400920
SHEET #
M506L

2025-06-26 11:40:18 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/0011765_MEPPRLP-L_r22.rvt

AIR TERMINAL UNIT SCHEDULE PHASE 7TH FLOOR

NOTES:
1. MAX TOTAL PRESSURE DROP SHALL INCLUDE BOX AND REHEAT COIL (WHERE APPLICABLE).
2. PROVIDE THE NUMBER OF COIL ROWS AS REQUIRED TO MEET SCHEDULED PERFORMANCE AND STILL FALL WITHIN REHEAT COIL PRESSURE DROP LIMITATION.
3. INLET SIZE WITH "E" INDICATES OVERSIZED CASING.
4. PROVIDE WITH BOTTOM ACCESS DOOR PER THE SPECIFICATIONS.
5. PROVIDE UNIT WITH INTEGRAL SOUND ATTENUATOR.
6. COOLING ONLY AIR TERMINAL.
7. CONSTANT VOLUME FOR EXHAUST MAKE-UP.

MARK		MFR.	MODEL	TYPE	SERVICE	ROUND DUCT INLET SIZE (IN)	COOLING MAX	UNOCCUPIED MINIMUM HEATING/COOLING	DESIGN INLET STATIC PRESSURE (IN WC)	MAX PRESSURE DROP (IN WC) (NOTE 1)	OUTLET DUCT SIZE WxD (IN)	AUXILIARY HOT WATER HEATING COIL											SOUND SUMMARY		NOTES
ID	#											HEATING MAX (CFM)	CAPACITY (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	ROWS (NOTE 2)	MAX WPD (FT HD)	MAX APD (IN WC)	CONTROL VALVE	DISCHARGE	RADIATED	
7th Floor Renovation																									
VAV	79-701	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	CORRIDOR M709	1E	550	550	1.0	0.5	14x12 1/2	550	31.6	55	94	180	127	1.0	2	5.0	0.4	2-WAY	24	22	
VAV	79-702	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	CORRIDOR M723	1E	750	750	1.0	0.5	14x12 1/2	750	25.9	55	87	180	122	1.0	2	5.0	0.4	2-WAY	24	23	
VAV	79-703	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	OFFICE M111	6	175	80	1.0	0.5	12x8	175	7.0	55	92	180	170	1.5	1	5.0	0.4	2-WAY	19	13	
VAV	79-704	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	STUDENT OFFICE 705	8	330	150	1.0	0.5	12x10	330	13.4	55	92	180	135	0.6	2	5.0	0.4	2-WAY	24	15	
VAV	79-705	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	RESEARCH SUPPORT M725 & 726	14	1600	450	1.0	0.5	20x17 1/2	1600	64.2	55	92	180	109	2.0	3	5.0	0.4	2-WAY	15	15	
VAV	79-706	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	SURGERY RECOVERY M708A2	6	185	80	1.0	0.5	12x8	185	6.9	55	90	180	166	1.0	1	5.0	0.4	2-WAY	20	13	
VAV	79-707	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	BEHAVIORAL CORE M710, A & B	2E	990	330	1.0	0.5	16x15	990	39.9	55	92	180	125	1.5	2	5.0	0.4	2-WAY	23	19	
VAV	79-708	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	IT TECH ROOM M724	8	450	145	1.0	0.5	12x10	450	19.2	55	94	180	137	0.9	2	5.0	0.4	2-WAY	27	19	
VAV	79-709	TITUS	DESV	SINGLE DUCT PRESSURE INDEPENDENT	RESEARCH SUPPORT M704	1E	750	230	1.0	0.5	14x12 1/2	750	30.1	55	92	180	129	1.2	2	5.0	0.4	2-WAY	24	22	

DUCT MOUNTED COIL SCHEDULE PHASE 7TH FLOOR

NOTES:
1.

MARK		MFR.	MODEL	TYPE	AIRFLOW (CFM)	COIL SIZE (WxH) (IN)	MAX. APD (IN WC)	CAPACITY (MBH)	HOT WATER HEATING						NOTES
ID	#								EAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	MAX WPD (FT)	ROWS	
7th Floor Renovation															
RHC	1	DAIKIN	5WH	WATER	1200	38"W x 18"H	0.04	45.4	55	180	140	3.0	5.0	1	
RHC	2	DAIKIN	5WH	WATER	600	16"W x15"H	0.05	22.7	55	180	140	2.0	5.0	1	
RHC	3	DAIKIN	5WH	WATER	700	20"W x 17-1/2"W	0.03	26.5	55	180	140	2.0	5.0	1	
RHC	4	DAIKIN	5WH	WATER	1000	24"W x 18"H	0.04	37.8	55	180	140	5.0	5.0	1	
RHC	5	DAIKIN	5WH	WATER	2500	38"W x 18"H	0.09	82.0	55	180	140	9.0	5.0	1	
RHC	6	DAIKIN	5WH	WATER	400	14"W x 12-1/2"H	0.04	15.1	55	180	140	2.0	5.0	1	
RHC	7	DAIKIN	5WH	WATER	155	12"W x 10"H	0.02	5.9	55	180	140	1.0	5.0	1	
RHC	8	DAIKIN	5WH	WATER	600	16"W x15"H	0.05	22.7	55	180	140	2.0	5.0	1	
RHC	9	DAIKIN	5WH	WATER	320	16"W x15"H	0.01	12.1	55	180	140	2.0	5.0	1	
RHC	10	DAIKIN	5WH	WATER	300	14"W x 12-1/2"H	0.02	11.3	55	180	140	3.0	5.0	1	

SUPPLY AIR CONTROL VALVE SCHEDULE PHASE 7TH FLOOR

NOTES:
1. PROVIDE WITH FACTORY SOUND ATTENUATING "NEUTRALIZER" TO MATCH VALVE SIZE.
2. VARIABLE VOLUME VALVE WITH PRESSURE ALARM.
3. OCCUPIED MAX IS BASED ON COOLING MAX AIRFLOW.
4. PROVIDE WITH HIGH SPEED ACTUATOR.

PLAN MARK		MANUFACTURER	MODEL	TYPE	SERVICE	SIZE	AIRFLOW (CFM)		MAX. APD (IN WC)	NOTES
							MAX	MIN		
7th Floor Renovation										
LSV	1S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	SHARED RESEARCH LAB M708	12" DUAL	1200	200	0.3	1, 2, 3, 4
LSV	2S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	HISTOLOGY CORE M708A	12" SINGLE	600	150	0.3	1, 2, 3, 4
LSV	3S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	SURGERY CORE M708A1	12" SINGLE	700	150	0.3	1, 2, 3, 4
LSV	4S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB M706	12" SINGLE	1000	250	0.3	1, 2, 3, 4
LSV	5S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	LAB M702	12" DUAL	2500	1000	0.3	1, 2, 3, 4
LSV	6S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	CULTURE CORE	8" SINGLE	400	100	0.3	1, 2, 3, 4
LSV	7S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	MICROSCOPY CORE M708A3	8" SINGLE	155	50	0.3	1, 2, 3, 4
LSV	8S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RADIOCATIVE CORE M707A	12" SINGLE	600	150	0.3	1, 2, 3, 4
LSV	9S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	CELL CULTURE 701B	8" SINGLE	320	135	0.3	1, 2, 3, 4
LSV	10S	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	SURGERY CORE VESTIBULE 708A1	8" SINGLE	300	300	0.3	1, 2, 3, 4

FUME EXHAUST AIR CONTROL VALVE SCHEDULE PHASE 7TH FLOOR

NOTES:
1. VARIABLE VOLUME EXHAUST VALVE WITH PRESSURE ALARM.
2. PROVIDE WITH HIGH SPEED ACTUATOR.

PLAN MARK		MANUFACTURER	MODEL	TYPE	SERVICE	SIZE	AIRFLOW (CFM)		MAX APD (IN WC)	NOTES
							MAX	MIN		
7th Floor Renovation										
FEV	2HE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	HISTOLOGY CORE M708A	12"	750	300	0.3	1, 3
FEV	4HE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB 1 M706	12"	750	300	0.3	1, 2
FEV	5AHE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB 2 M702	12	750	300	0.3	1, 2
FEV	5BHE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB 2 M702	12	750	300	0.3	1, 2
FEV	8E	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RADIOCATIVE CORE M707A	12"	750	300	0.3	1, 2

GENERAL EXHAUST AIR CONTROL VALVE SCHEDULE PHASE 7TH FLOOR

NOTES:
1. PROVIDE WITH HIGH SPEED ACTUATOR.

PLAN MARK		MANUFACTURER	MODEL	TYPE	SERVICE	SIZE	AIRFLOW (CFM)		MAX. APD (IN WC)	NOTES
							MAX	MIN		
7th Floor Renovation										
GEV	1GE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	SHARED RESEARCH LAB M708	12" SINGLE	750	175	0.3	1
GEV	1TE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	SHARED RESEARCH LAB M708	12" SINGLE	600	175	0.3	1
GEV	3TE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	HISTOLOGY SURGERY M708A1	8" SINGLE	600	50	0.3	1
GEV	4GE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB 1 M706	8" SINGLE	400	100	0.3	1
GEV	5GE	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	RESEARCH LAB 2 M702	12" DUAL	1250	400	0.3	1
GEV	6E	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	CULTURE CORE M708B2	8" SINGLE	300	0	0.3	1
GEV	7E	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	MICROSCOPY CORE M708A3	8" SINGLE	305	200	0.3	1
GEV	9E	PHOENIX CONTROLS	ACCEL II	LOW PRESSURE	CELL CULTURE 701B	8" SINGLE	220	35	0.3	1

FIRE SMOKE DAMPER SCHEDULE 7TH FLOOR

NOTES:
1. 165° F HEAT ACTUATED CONTROLLED CLOSURE DEVICE.
2. ALL COMBINATION FIRE/SMOKE DAMPERS OR SMOKE DAMPERS SHALL BE 115 VOLT ACTUATOR, POWER, AND CONTROL TO THIS DAMPER SHALL BE THE WORK OF DIVISION 26.
3. PROVIDE REMOTE TEST STATION AS INDICATED ON FLOOR PLANS.

MARK		MFR.	MODEL	LOCATION	SERVICE	ORIENTATION	DUCT SIZE WxH (IN)	DAMPER RATINGS (HR)	FUSIBLE LINK TEMP (°F)	ELECTRICAL DATA		NOTES
ID	#									VOLTS	PHASE	
7th Floor Renovation												
FSD	1	RUSKIN	FSD-60	WOMEN 720	EXHAUST	WALL	14 x 4	1-1/2	165	115	1	1, 2, 3
FSD	2	RUSKIN	FSD-60	WOMEN 720	EXHAUST	WALL	14 x 4	1-1/2	165	115	1	1, 2, 3

FIRE DAMPER SCHEDULE

NOTES:
1. 165° F HEAT ACTUATED CLOSURE DEVICE. UNLESS NOTED OTHERWISE

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	ORIENTATION	DUCT SIZE WxH (IN)	DAMPER RATINGS (HR)	FUSIBLE LINK TEMP (°F)	NOTES
ID	#										
7th Floor Renovation											
FD	1	RUSKIN	DIBD2	DYNAMIC CURTAIN TYPE	CIRCULATION M709	AH-79 SA	WALL	44x19	1-1/2	165	
FD	2	RUSKIN	DIBD2	DYNAMIC CURTAIN TYPE	CIRCULATION M709	AH-79 SA	WALL	30x16	1-1/2	165	
FD	3	RUSKIN	DIBD2-GA	DYNAMIC CURTAIN TYPE	CIRCULATION M709	AH-79 SA	WALL	32x8	1-1/2	165	
FD	4	RUSKIN	DIBD2-GA	DYNAMIC CURTAIN TYPE	CIRCULATION M709	EA MAKE-UP	WALL	30x4	1-1/2	165	
FD	5	RUSKIN	DIBD2-GA	DYNAMIC CURTAIN TYPE	CIRCULATION M709	EA MAKE-UP	WALL	24x14	1-1/2	165	

EXHAUST AIR TERMINAL UNIT SCHEDULE PHASE 7TH FLOOR

MARK		MFR.	MODEL	TYPE	SERVICE	ROUND DUCT INLET SIZE (IN)	PRIMARY AIRFLOW (CFM)		DESIGN INLET STATIC PRESSURE (IN WC)	MAX PRESSURE DROP (IN WC)	DUCTSIZE OUTLET (IN)	MAX NC LEVEL @ MAX CFM		NOTES
ID	#						MAX	OCC/UNOCC MIN				DISCHARGE	RADIATED	
7th Floor Renovation														
EAV	2E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	DARK ROOM M712	6	150	150	1.0	0.5	12x8	18	11	
EAV	3E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	OFFICE M111	6	175	80	1.0	0.5	12x8	20	13	
EAV	4E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	STUDENT OFFICE M705	8	330	150	1.0	0.5	12x10	24	15	
EAV	5E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	RESEARCH SUPPORT M725 & 726	14	1600	450	1.0	0.5	20x17 1/2	22	22	
EAV	6E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	SURGERY RECOVERY M708A2	6	285	180	1.0	0.5	12x8	27	20	
EAV	7E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	BEHAVIORAL CORE M710, A & B	12	990	330	1.0	0.5	16x15	24	22	
EAV	8E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	IT TECH ROOM M724	8	450	145	1.0	0.5	12x10	27	19	
EAV	9E	TITUS	DESV	PRESSURE INDEPENDENT SINGLE DUCT	RESEARCH SUPPORT M704	10	750	230	1.0	0.5	14x12 1/2	25	24	

AIR DEVICE SCHEDULE PHASE 7TH FLOOR

NOTES:
1. COORDINATE BORDER FRAME WITH ARCHITECTURAL PLANS.
2. PROVIDE WITH ACCESSORIES AS LISTED IN THE SPECIFICATIONS.
3. PROVIDE WITH BACKPAN WITH SQUARE TO ROUND ADAPTER TO ACCOMODATE SCHEDULED NECK SIZE.
4. PROVIDE WITH INTEGRAL BALANCING DAMPER.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	NECK SIZE (IN)	FACE SIZE (IN x IN)	MATERIAL	FINISH	MAX TPD (IN WC)	MAX NOISE (NC)	MAX CFM @ LISTED CONDITIONS	NOTES
ID	#													
7th Floor Renovation														
S	1	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	6	24x24	ALUMINUM	WHITE	0.1	20	130	1, 2
S	2	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	8	24x24	ALUMINUM	WHITE	0.1	20	280	1, 2
S	3	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	10	24x24	ALUMINUM	WHITE	0.1	20	420	1, 2
S	4	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	12	24x24	ALUMINUM	WHITE	0.1	20	510	1, 2
S	5	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	14	24x24	STEEL	WHITE	0.1	30	600	1, 2
S	6	TITUS	301RL	LOUVERED FACE	SIDEWALL/CEILING	SUPPLY AIR	12x12	14x14	ALUMINUM	WHITE	0.1	20	500	1, 2
S	7	TITUS	301RL	LOUVERED FACE	WALL	SUPPLY AIR	34x10	32x8	STEEL	WHITE	0.1	30	550	1, 2
S	8	TITUS	301RL	LOUVERED FACE	WALL	SUPPLY AIR	12x8	14x10	STEEL	WHITE	0.1	20	340	1, 2
E	1	TITUS	OMNI	SQUARE PLAQUE	CEILING	EXHAUST AIR	8	24x24	ALUMINUM	WHITE	0.1	20	305	1, 2
E	2	TITUS	OMNI	SQUARE PLAQUE	CEILING	EXHAUST AIR	10	24x24	ALUMINUM	WHITE	0.1	20	420	1, 2
E	3	TITUS	OMNI	SQUARE PLAQUE	CEILING	EXHAUST AIR	12	24x24	ALUMINUM	WHITE	0.1	20	510	1, 2
E	4	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	8x8	10x10	STEEL	WHITE	0.1	20	185	1, 2
E	5	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	12x8	14x10	STEEL	WHITE	0.1	20	300	1, 2
E	6	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	26x14	28x12	STEEL	WHITE	0.1	20	350	1, 2
E	7	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	14x12	16x14	STEEL	WHITE	0.1	20	300	1, 2
E	8	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	24x14	26x16	STEEL	WHITE	0.1	30	750	1, 2
E	9	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	18x12	20x14	STEEL	WHITE	0.1	30	1250	1, 2
E	10	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	12x12	14x14	STEEL	WHITE	0.1	20	300	1, 2
E	11	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	14x8	16x10	STEEL	WHITE	0.1	20	250	1, 2
E	12	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	30x4	32x6	STEEL	WHITE	0.1	30	250	1, 2
E	13	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	22x14	24x16	STEEL	WHITE	0.1	30	480	1, 2

FAN SCHEDULE PHASE 7TH FLOOR

NOTES:
1. SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFERRED TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
2. REFER TO ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS.
3. PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION. VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 26.
4. PROVIDE 1" SPRING ISOLATORS.
5. FAN IS A CENTRIFUGAL VERTICAL DISCHARGE EXHAUST FAN.
6. PROVIDE FAN WITH FACTORY 18-INCH ROOF CURB, AND NEMA-3R DISCONNECT SWITCH..

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	DRIVE	AIRFLOW (CFM)	ESP (IN WC)	FAN SPEED (RPM)	MIN STATIC EFF (%)	MAX SOUND POWER RATING (INLET / OUTLET) OCTAVE								MAX WEIGHT (LBS)	ELECTRICAL DATA			NOTES
ID	#											63	125	250	500	1000	2000	4000	8000		HP	VOLTS	PHASE	
7th Floor Renovation																								
EF	L1	GREENHECK	USF-12-B7	CENTRIFUGAL EXHAUST FAN	EAST ROOF	M707A - RADIOACTIVE CORE	DIRECT	750	1.27	1,760	63	83	83	77	75	67	65	60	54	500	1/2	460	3	ALL NOTES APPLY

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STATE OF MISSOURI
RANDY JAMES DIEMER
NUMBER PE-2017015702
PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced
0" 1"

MECHANICAL SCHEDULES

DATE: 07/08/2025
DRAWN: NLP CHECKED: RJD
PGAV # 53660-20 CLIENT # CP2400920
SHEET # **M606L**

2025-06-26 11:40:24 PM Autodesk Docs://53660-10 MU-SOM-MSB Lab Renovations/0011765_MEPPFPLFL_r22.rvt

GENERAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONTROL POINT NUMBERS FOR CONTROL POINTS INDICATED ON THESE DRAWINGS.

SEQUENCES OF OPERATION

GENERAL:

THE CONTRACTOR SHALL SUBMIT ENGINEERED CONTROL DRAWINGS, WIRING DIAGRAMS, EQUIPMENT SCHEDULES, ETC., AS REQUIRED FOR A COMPLETE CONTROL SYSTEM. THE CONTRACTOR WILL BE EXPECTED TO WORK OUT THE DETAILS OF CONTROLLER ACTION, CONTROL LOOP TUNING, NORMALLY OPEN/NORMALLY CLOSED CONNECTIONS, EXACT EQUIPMENT REQUIREMENTS, ETC., TO PROVIDE A WORKING CONTROL SYSTEM TO ACHIEVE THE SEQUENCES OF OPERATION BELOW. THE WRITTEN SEQUENCE OF OPERATION SHALL BE THE CRITERION USED TO JUDGE THE FINAL PERFORMANCE OF THE CONTROL SYSTEM. ALL FUNCTIONS IN THE SEQUENCE WILL BE REQUIRED EVEN IF THE REQUIRED EQUIPMENT AND CONNECTIONS ARE NOT DEPICTED ON THESE DRAWINGS.

THE CONTRACTOR SHALL COORDINATE THE LOCATIONS OF BUILDING CONTROL PANELS WITH THE OWNER'S REPRESENTATIVE.

THE UNIVERSITY OF MISSOURI - COLUMBIA UTILIZES JOHNSON CONTROLS EQUIPMENT FOR THEIR CAMPUS ENERGY MANAGEMENT CONTROL SYSTEM (EMCS). NEW DDC CONTROL SYSTEM SHALL FULLY INTERFACE WITH THE CAMPUS JOHNSON CONTROLS METASYS SYSTEM.

THE FOLLOWING RESPONSIBILITIES EXIST FOR THIS PROJECT REGARDING CONNECTION TO THE CAMPUS ENERGY MANAGEMENT CONTROL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER CONTROL ELEMENTS REQUIRED AS A PART OF THESE SEQUENCES OF OPERATION, EXCEPT AS SPECIFICALLY INDICATED BELOW:

OWNER:

THE OWNER WILL PROVIDE THE JOHNSON CONTROLS METASYS PANEL(S) THAT IS REQUIRED FOR THE POINTS INDICATED.

THE OWNER WILL PROVIDE ALL PROGRAMMING OF THE NEW METASYS PANEL(S).

THE OWNER WILL ADDRESS START-UP OF THE NEW METASYS PANEL(S) AS IT RELATES TO THE NEW CONTROL AND MONITORING POINTS AND WILL TERMINATE WIRING WITHIN THE METASYS PANEL(S).

NOTE: THE OWNER'S RESPONSIBILITIES ARE LIMITED TO WORK ASSOCIATED WITH THE METASYS PANELS ONLY, AND ONLY AS INDICATED ABOVE, AND SHALL NOT EXTEND BEYOND THAT.

CONTRACTOR:

THE CONTRACTOR SHALL MOUNT THE METASYS PANEL(S) FURNISHED BY THE OWNER.

THE CONTRACTOR SHALL ROUTE ALL WIRING TO THE METASYS PANEL(S) FOR THE FIELD MOUNTED SENSORS/EQUIPMENT AS REQUIRED TO ACHIEVE THE SEQUENCE OF OPERATION. NOTE THAT TERMINATION OF THE WIRING IS BY THE OWNER AT THE METASYS PANEL.

THE CONTRACTOR SHALL PROVIDE POWER TO THE METASYS CONTROL PANEL(S) AND CONTROL SENSORS/METERS REQUIRING SAME.

100% OUTSIDE AIR CENTRAL STATION AIR HANDLING UNIT (AHU-79) LOCATED IN EAST PENTHOUSE MECHANICAL ROOM M803:

THE PROJECT AREA IS SERVED BY EXISTING AIR HANDLING UNIT (AHU-79) AND IS UNDER THE CONTROL FO THE ENERGY MANAGEMENT CONTROL SYSTEM (EMCS). THE AIR HANDLING UNIT IS LOCATED IN THE EAST PENTHOUSE MECHANICAL ROOM (M803). THE CONTROLS FOR AHU-79 SHALL REMAIN AS-IS AND ARE NOT TO BE MODIFIED AS PART OF THIS PROJECT.

EXISTING EXHAUST FAN SYSTEMS (E200, E201, E202, AND E203)
THE PROJECT AREA IS SERVED BY EXISTING FAN SYSTEMS LOCATED ON ROOF. THE CONTROLS FOR THE EXHAUST FAN SYSTEMS SHALL REMAIN AS-IS AND ARE NOT TO BE MODIFIED AS PART OF THIS PROJECT.

LABORATORY AIRFLOW CONTROL SYSTEM (LACS) - LABS M702 AND M705
GENERAL: THE LACS SHALL CONTROL AIRFLOW TO AND FROM LABS M702 AND M705 IN RESPONSE TO OCCUPANCY AND SPACE TEMPERATURE INDIVIDUALLY FOR EACH SPACE. THE LACS SHALL UTILIZE DDC MICROPROCESSOR BASED LOGIC TO ACHIEVE ALL CONTROL FUNCTIONS.

OCCUPANCY SENSOR STATUS: PROVIDE CONNECTION TO THE OCCUPANCY SENSOR ISOLATED RELAYS IN THE SPACE. ISOLATED RELAYS SHALL BE CONNECTED IN SERIES. WHEN ALL OCCUPANCY SENSORS WITHIN AN INDIVIDUAL SPACE INDICATE THE SPACE IS UNOCCUPIED, THE LACS SHALL COMMAND THE SPACE TO UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE LACS SHALL RESET SPACE TEMPERATURE SETPOINT TO THE UNOCCUPIED SETPOINT LISTED BELOW.

FUME HOOD AIRFLOW CONTROLS: EACH FUME HOOD SHALL BE EQUIPPED WITH A VARIABLE EXHAUST AIR VALVE, SASH POSITION SENSOR, AND PROXIMITY SENSOR. AT ALL TIMES THE LACS SHALL MODULATE EACH EXHAUST VALVE TO MAINTAIN A CONSTANT FACE VELOCITY OF 100 FPM ACROSS THE HOOD OPENING BETWEEN SASH OPERATING HEIGHT (18-INCHES) AND SASH CLOSED WHENEVER AN OPERATOR IS PRESENT. IF THE HOOD IS UNOCCUPIED, AS DETECTED BY THE HOOD PROXIMITY SENSOR, OR THE SASH IS CLOSED, THE LACS SHALL POSITION THE EXHAUST VAVLE TO ITS UNOCCUPIED MINIMUM AIRFLOW SETPOINT.

LABS WITH NO GENERAL EXHAUST (THIS APPLIES PRIMARILY TO LABORATORY SUPPORT SPACES): AT ALL TIMES THE SUPPLY AIR VALVE SHALL MODULATE TO MAINTAIN A CONSTANT SUPPLY AIRFLOW TO THE SPACE.

LABS WITH GENERAL EXHAUST: AT ALL TIMES THE SUPPLY AIR VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. THE GENERAL EXHAUST AIR VALVE SHALL MODULATE TO MAINTAIN THE CONSTANT NET NEGATIVE OR POSITIVE OFFSET NOTED ON THE AIRFLOW DIAGRAMS UNLESS NOTED OTHERWISE BELOW UNDER SPECIAL CONDITIONS.

WHEN ALL OCCUPANCY SENSORS WITHIN THE SPACE INDICATE THE SPACE IS UNOCCUPIED, THE LACS SHALL COMMAND THE SPACE TO UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE LACS SHALL RESET SPACE TEMPERATURE SETPOINT TO THE UNOCCUPIED SETPOINT (68 AND 78 DEG F FOR HEATING AND COOLING RESPECTIVELY; ADJUSTABLE), AND POSITION THE SUPPLY AIR VALVE, FUME HOOD VALVES AND GENERAL EXHAUST AIR VALVES TO THEIR UNOCCUPIED POSITION (3 ACH). SHOULD SPACE TEMPERATURE RISE ABOVE UNOCCUPIED COOLING SETPOINT (78 DEG F; ADJUSTABLE), THE LACS SHALL OPEN THE SUPPLY AND GENERAL EXHAUST VALVES TO MAINTAIN SETPOINT. SHOULD SPACE TEMPERATURE FALL BELOW UNOCCUPIED HEATING SETPOINT (68 DEG F; ADJUSTABLE), THE LACS SHALL MODULATE THE REHEAT VALVE OPEN TO MAINTAIN SETPOINT.

WHEN ONE OR MORE OCCUPANCY SENSORS INDICATE THE SPACE IS OCCUPIED, THE LACS SHALL MODULATE THE SUPPLY AIR VALVE AND GENERAL EXHAUST AIR VALVES SIMULTANEOUSLY BETWEEN THEIR SPECIFIED OCCUPIED (6 ACH) MIN AND MAX AIRFLOWS TO MAINTAIN THE OCCUPIED SPACE TEMPERATURE SETPOINT (72 DEG F, WITH LOCAL OCCUPANT ADJUSTMENT RANGE FROM 70 TO 74 DEG F) MAINTAINING A CONSTANT NEGATIVE OFFSET UNDER ALL CONDITIONS. SHOULD SPACE TEMPERATURE CONTINUE TO DROP BELOW SETPOINT WITH SUPPLY AIR VALVE AT ITS MINIMUM OCCUPIED POSITION, THE LACS SHALL MODULATE THE REHEAT COIL CONTROL VALVE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE FUME HOOD AIR VALVES SHALL REMAIN POSITIONED AT THEIR OCCUPIED SETTING WHILE THE SPACE IS OCCUPIED.

FOR ALL FUME HOOD AIRFLOW CONTROL VALVES, ANNUNCIATE A LOCAL ALARM AT THE FUME HOOD MONITOR IF THERE IS NOT SUFFICIENT PRESSURE DIFFERENTIAL (0.3-INCH) TO ENSURE FUNCTIONALITY OF THE AIRFLOW CONTROL VALVE.

LABORATORY AIRFLOW CONTROL SYSTEM (LACS) - TISSUE CULTURE M705G AND M705H
GENERAL: THE LACS SHALL CONTROL AIRFLOW TO AND FROM TISSUE CULTURE M705G AND M705H IN RESPONSE TO OCCUPANCY AND SPACE TEMPERATURE INDIVIDUALLY FOR EACH SPACE. THE LACS SHALL UTILIZE DDC MICROPROCESSOR BASED LOGIC TO ACHIEVE ALL CONTROL FUNCTIONS.

OCCUPANCY SENSOR STATUS: PROVIDE CONNECTION TO THE OCCUPANCY SENSOR ISOLATED RELAYS IN THE SPACE. ISOLATED RELAYS SHALL BE CONNECTED IN SERIES.

WHEN ALL OCCUPANCY SENSORS WITHIN THE SPACE INDICATE THE SPACE IS UNOCCUPIED, THE LACS SHALL COMMAND THE SPACE TO UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE LACS SHALL RESET THE SPACE TEMPERATURE SETPOINT TO THE UNOCCUPIED SETPOINT (68 AND 78 DEG F FOR HEATING AND COOLING, RESPECTIVELY, ADJUSTABLE), AND POSITION THE SUPPLY AIR VALVE AND GENERAL EXHAUST AIR VALVES TO THEIR UNOCCUPIED POSITION. SHOULD SPACE TEMPERATURE RISE ABOVE UNOCCUPIED COOLING SETPOINT (78 DEG F; ADJUSTABLE), THE LACS SHALL OPEN THE SUPPLY AND GENERAL EXHAUST VALVES TO MAINTAIN SETPOINT. SHOULD SPACE TEMPERATURE FALL BELOW UNOCCUPIED HEATING SETPOINT (68 DEG F; ADJUSTABLE), THE LACS SHALL MODULATE THE REHEAT VALVE OPEN TO MAINTAIN SETPOINT.

WHEN THE OCCUPANCY SENSOR INDICATE THE SPACE IS OCCUPIED, THE LACS SHALL POSITION THE SUPPLY AIR VALVE AND GENERAL EXHAUST AIR VALVES TO THEIR OCCUPIED POSITION AND MODULATE THE REHEAT VALVE TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT (72 DEG F WITH LOCAL OCCUPANT ADJUSTMENT RANGE FROM 70 TO 74 DEG F).

SUPPLY AND EXHAUST AIR VALVES SHALL TRACK WITH A POSITIVE OFFSET TO THE ADJACENT SPACES.

LABORATORY SPACE HEATING:
CONTROL OF SPACE HEATING SHALL BE ACCOMPLISHED BY THE LACS.

AS TEMPERATURE IN THE SPACE DROPS BELOW THE SPACE TEMPERATURE SETPOINT, THE HEATING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. WHEN SPACE TEMPERATURE IS ABOVE SETPOINT, THE HEATING COIL CONTROL VALVE SHALL CLOSE. OCCUPIED MODE: SPACE TEMPERATURE SETPOINT SHALL BE 72 DEG-F. LOCAL OCCUPANT ADJUSTMENT SHALL RANGE FROM 70 DEG-F TO 74 DEG-F.

UNOCCUPIED MODE: HEATING AND COOLING SPACE TEMPERATURE SETPOINTS SHALL BE 68 DEG-F AND 78 DEG-F FOR WINTER AND SUMMER, RESPECTIVELY.

FREEZERS M703 - BLOWER COIL UNIT BCU 7-1, VAV 79-703, EAV 79-703 & EXHAUST FANS EF-206, EF-207 AND EF-X:
BLOWER COIL UNIT BCU 7-1 AND VAV 79-703 BOTH SERVE THE FREEZERS M703 BUT SHALL NOT SERVE THE SPACE SIMULTANEOUSLY.

THE BLOWER COIL UNIT (BCU 7-1) SHALL BE UNDER THE CONTROL OF THE ENERGY MANAGEMENT CONTROL SYSTEM (EMCS). THE UNIT FAN SHALL OPERATE ONLY WHEN VAV 79-703, EAV 79-703 AND MOTORIZED DAMPER (MD 7-01) ARE COMPLETELY CLOSED (0 CFM). PROVIDE A TIME DELAY TO START BCU 7-1 (5 MINUTES, ADJUSTABLE). THE BLOWER COIL UNIT SHALL OPERATE ONLY WHEN OUTSIDE AIR TEMPERATURE IS GREATER THAN 70 DEGREES F OR WHEN AH-79 IS DOWN.

UPON RECEIVING A SIGNAL FROM THE EMCS TO BEGIN OPERATION, THE BLOWER COIL FAN SHALL BE ACTIVATED AND RUN CONTINUOUSLY AT CONSTANT SPEED TO DELIVER THE SPECIFIED CFM. THE COOLING COIL 2-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (72 DEG F, ADJUSTABLE).

WHEN THE OUTSIDE AIR TEMPERATURE (OA-T) IS LESS THAN 55 DEGREES F, THE EMCS SHALL DE-ENERGIZE BCU 7-1. PROVIDE A TIME DELAY TO ENERGIZE VAV 79-703 (5 MINUTES, ADJUSTABLE).

VAV TERMINAL 79-703, EAV TERMINAL 79-703 AND MOTORIZED DAMPER MD 7-01 SHALL BE UNDER THE CONTROL OF THE EMCS. REFER TO ABOVE SECTION FOR SPECIFIC RESPONSIBILITIES OF OWNER AND CONTRACTOR REGARDING THE INSTALLATION OF CONTROLS FOR THESE UNITS. VAV TERMINAL UNIT SHALL UTILIZE DDC MICROPROCESSOR BASED LOGIC TO ACHIEVE ALL CONTROL FUNCTIONS. WHEN SPACE TEMPERATURE IS ABOVE SETPOINT, UNIT CONTROLLER SHALL MODULATE ITS AIR DAMPER BETWEEN ITS MINIMUM AND MAXIMUM POSITION TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (72 DEG F, ADJUSTABLE).

SPACE TEMPERATURE SETPOINT SHALL BE ADJUSTABLE BY THE OCCUPANT WITHIN A RANGE PROGRAMMED THRU THE EMCS .

AN ALARM SHALL BE ANNUNCIATED AT THE EMCS IF SPACE TEMPERATURE SENSOR INDICATES A TEMPERATURE ABOVE 80 DEGREES F.

EXHAUST FANS EF-206, EF-207 AND EF-7A: THE EXISTING EXHAUST FANS EF-206, EF-207 & EF-7A ARE UNDER CONTROL OF THE EMCS. THE EXHAUST FANS RUN CONTINOUSLY. OPERATE VAV 79-703 AND EAV 79-703 IN CONJUNCTION WITH TO MAINTAIN EQUAL PRESSURE RELATIONSHIP TO CORRIDOR.

VAV TERMINAL UNITS:
DUAL MAXIMUM CONTROL SHALL BE USED AS FOLLOWS:

VAV TERMINAL SHALL BE UNDER THE CONTROL OF THE EMCS. REFER TO SHEET M714 AND M715 FOR SPECIFIC RESPONSIBILITIES OF OWNER AND CONTRACTOR REGARDING THE INSTALLATION OF CONTROLS FOR THESE UNITS. VAV TERMINAL UNITS SHALL UTILIZE DDC MICROPROCESSOR BASED LOGIC TO ACHIEVE ALL CONTROL FUNCTIONS. DURING COOLING MODE (SPACE TEMPERATURE ABOVE SETPOINT), EACH SUPPLY AIR VAV UNIT CONTROLLER SHALL MODULATE ITS AIR DAMPER BETWEEN ITS MINIMUM AND MAXIMUM POSITION TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (72 DEG F, ADJUSTABLE).

DURING HEATING MODE, (SPACE TEMPERATURE BELOW SETPOINT) THE SUPPLY AIR VAV UNIT CONTROLLER SHALL MODULATE THE HEATING CONTROL VALVE TO MAINTAIN DAT SETPOINT. SETPOINT TO BE RESET TO SATISFY ZONE TEMPERATURE WITH THE DAMPER AT MINIMUM POSITION. ONCE THE DAT SETPOINT IS AT MAX, AND THE SPACE REMAINS BELOW SETPOINT, THE DAMPER SHALL MODULATE BETWEEN MINIMUM AND MAXIMUM HEATING POSITION WHILE THE HEATING CONTROL VALVE CONCURRENTLY MAINTAINS MAX DAT.

EMCS CONNECTION TO OCCUPANCY SENSORS: INSTALLATION OF OCCUPANCY SENSORS IS WORK OF DIVISION 26, SEE E-SERIES SHEETS FOR FINAL LOCATIONS. A CONTROL CIRCUIT SHALL BE CONNECTED TO ALL OCCUPANCY SENSORS AS WORK OF DIVISION 23. A CONTROL SIGNAL SHALL BE RELAYED TO THE VAV TERMINAL UNITS THAT SERVE THAT SPACE. IN LOCATIONS WHERE MULTIPLE OCCUPANCY SENSORS ARE PRESENT, ALL SENSORS SHALL BE MONITORED AND TRANSMIT A SIGNAL TO THE VAV TERMINAL UNITS WITHIN THAT SPACE. ALL SENSORS SHALL BE WIRED IN SERIES.

IF ALL OCCUPANCY SENSORS ASSOCIATED WITH THE VAV TERMINAL UNITS INDICATE THE ZONE IS UNOCCUPIED, THE EMCS SHALL POSITION THE SUPPLY AIR DAMPER TO ITS SCHEDULED MINIMUM AIRFLOW, AND RESET SPACE TEMPERATURE SETPOINT TO 62 DEG F HEATING 80 DEG F COOLING (ADJUSTABLE) TO MINIMIZE REHEAT.

EXHAUST AIR VAV TERMINALS: THE EMCS SHALL MODULATE THE EXHAUST AIR TERMINAL DAMPER TO MAINTAIN THE SPECIFIED OFFSET (OR MATCH SUPPLY AIR, AS APPLICABLE) FROM IT'S ASSOCIATED SUPPLY AIR TERMINAL AT ALL TIMES.

COMBINATION FIRE/SMOKE DAMPERS:

FIRE/SMOKE DAMPERS SHALL NOT BE CONTROLLED BY THE EMCS. ALL WIRING BETWEEN FIRE/SMOKE DAMPERS AND ANY HVAC EQUIPMENT SHALL BE PART OF DIVISION 26. ALL FIRE/SMOKE DAMPERS SHALL BE DRIVEN OPEN WHENEVER THE AIR HANDLING UNIT (AH) IS OPERATING AND SHALL BE DRIVEN TIGHTLY CLOSED WHENEVER THE AIR HANDLING UNIT IS OFF. THIS SHALL BE ACCOMPLISHED VIA HARDWIRE INTERLOCK WITH THE AIR HANDLING UNIT START CIRCUIT. DAMPERS SHALL ALSO CLOSE VIA THEIR CONTROLLED CLOSURE DEVICE AT TEMPERATURES ABOVE 165 DEG F.

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RANDY JAMES DIEMER
NUMBER PE-2017015702
PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

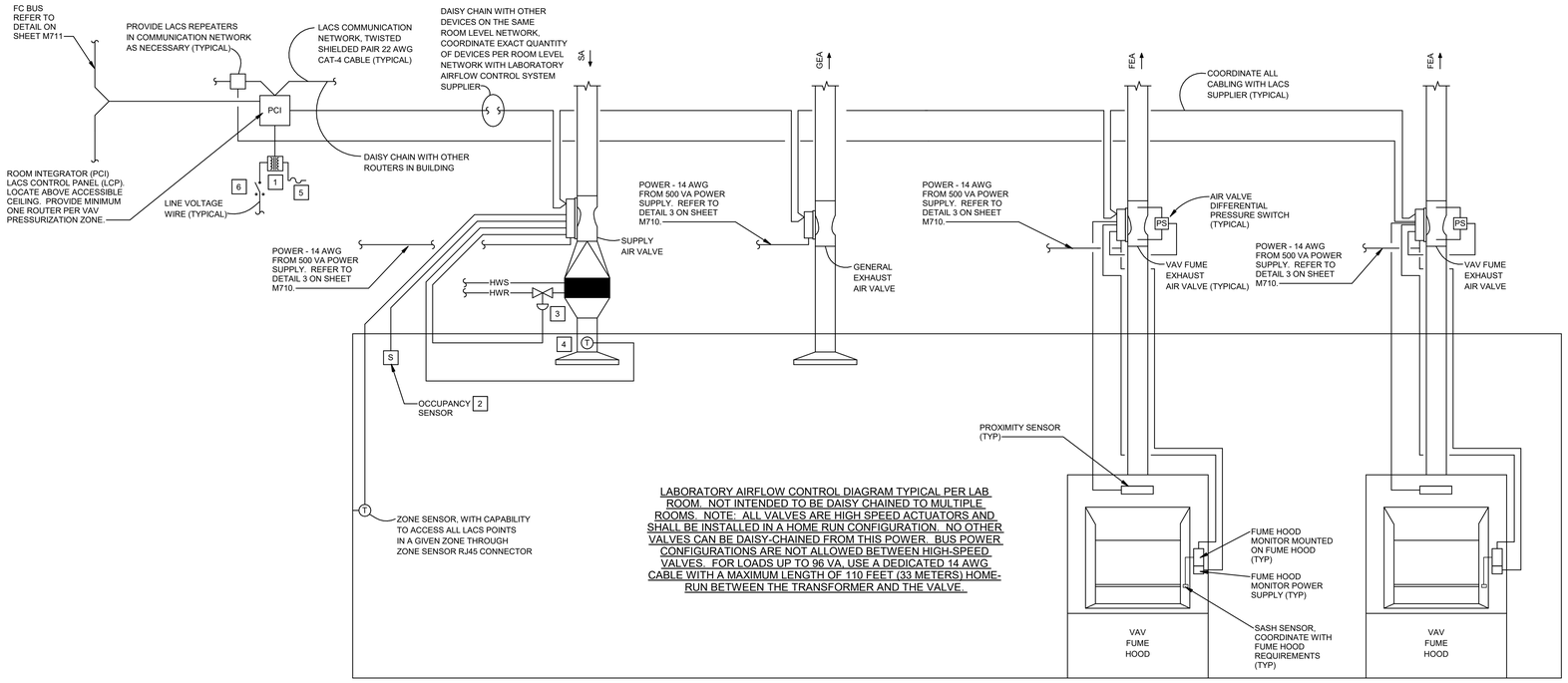
Original Size: 1 1/2" Drawing may have been reduced.
0" 1" 2"

CONTROLS

DATE: 07/08/2025
DRAWN: NLP
CHECKED: RJD
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #:

M713L

2025-06-26 11:40:25 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/20011795_MEPFPLFLL_r22.rvt



LABORATORY AIRFLOW CONTROL DIAGRAM TYPICAL PER LAB ROOM. NOT INTENDED TO BE DAISY CHAINED TO MULTIPLE ROOMS. NOTE: ALL VALVES ARE HIGH SPEED ACTUATORS AND SHALL BE INSTALLED IN A HOME RUN CONFIGURATION. NO OTHER VALVES CAN BE DAISY-CHAINED FROM THIS POWER. BUS POWER CONFIGURATIONS ARE NOT ALLOWED BETWEEN HIGH-SPEED VALVES. FOR LOADS UP TO 96 VA, USE A DEDICATED 14 AWG CABLE WITH A MAXIMUM LENGTH OF 110 FEET (33 METERS) HOME-RUN BETWEEN THE TRANSFORMER AND THE VALVE.

1 LABORATORY AIRFLOW CONTROL SYSTEM CONTROL DRAWING-

NOT TO SCALE

KEYED NOTES:

1. 24VAC TRANSFORMER, PROVIDED AND INSTALLED BY DIV. 26 CONTRACTOR.
2. OCCUPANCY SENSORS PROVIDED AND INSTALLED BY DIV. 26 CONTRACTOR. CONTROL WIRING BETWEEN OCCUPANCY SENSOR AND LACS BY DIV. 23 CONTRACTOR. NOTE THAT MULTIPLE OCCUPANCY SENSORS WILL BE INSTALLED IN LABS.
3. PRESSURE INDEPENDENT CONTROL VALVE.
4. VAV SUPPLY TEMP SENSOR PROVIDE BY LACS SUPPLIER, LOCATED APPROX. 8 FT. FROM REHEAT COIL DISCHARGE.
5. INLINE FUSE ON SECONDARY OF 24VAC TRANSFORMER. LOCATED WITHIN EYESIGHT OF ELECTRIC ACTUATOR. COORDINATE FUSE SIZE WITH DIV. 26 CONTRACTOR AND LACS SUPPLIER.
6. SERVICE DISCONNECT/SWITCH. LOCATED WITHIN EYESIGHT OF LACS CONTROL PANELS.
7. FUME HOOD MONITOR POWER SUPPLY PROVIDED AND INSTALLED BY DIV. 26 CONTRACTOR.

2 VAV BOX CONTROL WITH REHEAT DIAGRAM-

NOT TO SCALE

3 VAV BOX WITH REHEAT AND EXHAUST CONTROL DIAGRAM-

NOT TO SCALE

GENERAL NOTES:

1. VMA TERMINAL INCLUDES CONSTANT VOLUME (CV) UNITS & VARIABLE AIR VOLUME (VAV) UNITS. UNLESS OTHERWISE NOTED, ALL CONTROL WORK SHALL BE BY CONTRACTOR.
2. CAPS FOR VAV DP TEST PORTS MUST BE NEOPREME CAPS OR 1/4" BRASS PLUGS. NO RUBBER CAPS ALLOWED.

KEYED NOTES:

1. CONTROLLER WILL BE FURNISHED BY OWNER. CONTROLLER WILL BE JCI MODEL MS-VMA-16XX SERIES OR M4-CVM-3050. PROGRAMMING WILL BE PROVIDED BY OWNER.
2. NETWORK SENSOR WILL BE FURNISHED BY OWNER & INSTALLED BY CONTRACTOR. NETWORK SENSOR WILL BE JCI NS SERIES.
3. FC COMMUNICATION BUS WIRE SHALL BE 22 AWG, PLENUM RATED, TWISTED SHIELDED, 3 CONDUCTOR, WITH BLUE OUTER CASING, DESCRIPTED AS 22-03 OAS STR PLNM NEON BLU JK DISTRIBUTED BY WINDY CITY WIRE CONSTRUCTED BY CABLE-TEK, OR APPROVED EQUIVALENT.
4. INSTALLATION OF OCC SENSOR IS WORK OF DIVISION 26, SEE E-SERIES SHEETS FOR FINAL LOCATIONS. A CONTROL CIRCUIT SHALL BE CONNECTED TO ALL OCC SENSORS AS WORK OF DIVISION 23. A CONTROL SIGNAL SHALL BE RELAYED TO THE VAV TERMINAL UNIT THAT SERVES THAT SPACE. IN LOCATIONS WHERE MULTIPLE OCC SENSORS ARE PRESENT, ALL SENSORS SHALL BE MONITORED AND TRANSMIT A SIGNAL TO THE VAV TERMINAL UNIT WITHIN THAT SPACE. ALL SENSORS SHALL BE WIRED IN PARALLEL.
5. CONTROLLER MUST HAVE A MINIMUM OF 18 INCHES OF ACCESSIBLE CLEARANCE.
6. VAV SUPPLY TEMP SENSOR 1000 OHM PLATINUM RTD LOCATED APPROX. 8 FT. FROM VAV BOX DISCHARGE. PROVIDED, INSTALLED, & WIRED TO CONTROLLER BY CONTRACTOR.
7. FUSE LOCATED WITHIN 2 FEET OF VMA CONTROLLER.
8. LOW VOLTAGE WIRE BY DIVISION 23. SEE ELECTRICAL DRAWINGS FOR SOURCE.
9. VALVE WITH PROPORTIONAL 0-10 VOLT ACTUATOR OR EQUIVALENT.
10. SA BUS WIRE SHALL BE 22 AWG, PLENUM RATED, TWISTED SHIELDED, 4 CONDUCTOR.
11. CO2 SENSOR. SEE PLANS FOR LOCATION.

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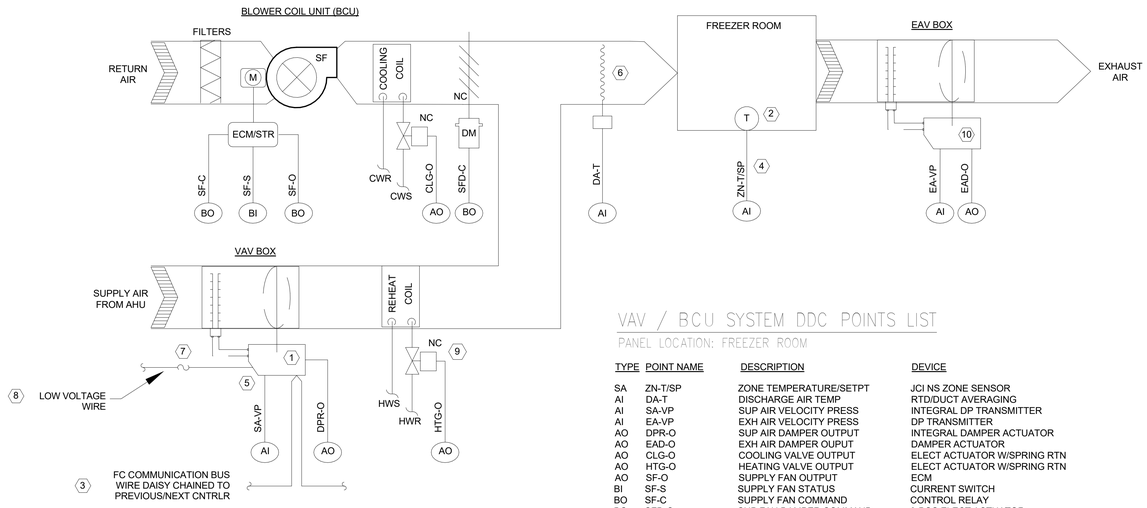


VAV / BCU SYSTEM DDC POINTS LIST

PANEL LOCATION: FREEZER ROOM

TYPE	POINT NAME	DESCRIPTION	DEVICE
SA	ZN-T/SP	ZONE TEMPERATURE/SETPT	JCI NS ZONE SENSOR
AI	DA-T	DISCHARGE AIR TEMP	RTD/DUCT AVERAGING
AI	SA-VP	SUP AIR VELOCITY PRESS	INTEGRAL DP TRANSMITTER
AI	EA-VP	EXH AIR VELOCITY PRESS	DP TRANSMITTER
AO	DPR-O	SUP AIR DAMPER OUTPUT	INTEGRAL DAMPER ACTUATOR
AO	EAD-O	EXH AIR DAMPER OUPUT	DAMPER ACTUATOR
AO	CLG-O	COOLING VALVE OUTPUT	ELECT ACTUATOR W/SPRING RTN
AO	HTG-O	HEATING VALVE OUTPUT	ELECT ACTUATOR W/SPRING RTN
AO	SF-O	SUPPLY FAN OUTPUT	ECM
BI	SF-S	SUPPLY FAN STATUS	CURRENT SWITCH
BO	SF-C	SUPPLY FAN COMMAND	CONTROL RELAY
BO	SFD-C	SUP FAN DAMPER COMMAND	2-POS ELECT ACTUATOR

NOTES:

1. VMA TERMINAL INCLUDES CONSTANT VOLUME (CV) UNITS & VARIABLE AIR VOLUME (VAV) UNITS. UNLESS OTHERWISE NOTED, ALL CONTROL WORK SHALL BE BY CONTRACTOR.
2. CAPS FOR VAV DP TEST PORTS MUST BE NEOPREME CAPS OR 1/4" BRASS PLUGS. NO RUBBER CAPS ALLOWED.

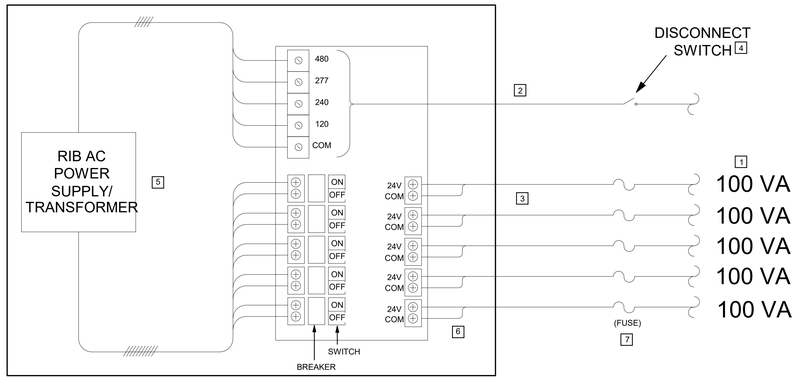
KEYED NOTES:

1. CONTROLLER WILL BE FURNISHED BY OWNER. CONTROLLER WILL BE JCI MODEL MS-VMA-16XX SERIES OR M4-CVM-3050. PROGRAMMING WILL BE PROVIDED BY OWNER.
2. NETWORK SENSOR WILL BE FURNISHED BY OWNER & INSTALLED BY CONTRACTOR. NETWORK SENSOR WILL BE JCI NS SERIES.
3. FC COMMUNICATION BUS WIRE SHALL BE 22 AWG, PLENUM RATED, TWISTED SHIELDED, 3 CONDUCTOR, WITH BLUE OUTER CASING. DESCRIPTED AS 22-03 OAS STR PLNM NEON BLU JK DISTRIBUTED BY WINDY CITY WIRE CONSTRUCTED BY CABLE-TEK, OR APPROVED EQUIVALENT.
4. SA BUS WIRE SHALL BE 22 AWG, PLENUM RATED, TWISTED SHIELDED, 4 CONDUCTOR.
5. CONTROLLER MUST HAVE A MINIMUM OF 18 INCHES OF ACCESSIBLE CLEARANCE.
6. VAV SUPPLY TEMP SENSOR 1000 OHM PLATINUM RTD LOCATED APPROX. 8 FT. FROM VAV BOX DISCHARGE. PROVIDED, INSTALLED, & WIRED TO CONTROLLER BY CONTRACTOR.
7. FUSE LOCATED WITHIN 2 FEET OF VMA CONTROLLER.
8. LOW VOLTAGE WIRE BY DIVISION 23. SEE ELECTRICAL DRAWINGS FOR SOURCE.
9. VALVE WITH PROPORTIONAL 0-10 VOLT ACTUATOR OR EQUIVALENT.
10. ELECTRIC FLOATING POINT ACTUATOR WITH DIFFERENTIAL PRESSURE TRANSMITTER PROVIDED BY CONTRACTOR. JOHNSON CONTROLS MODEL M9104-AGP-2S OR EQUIVALENT.

1 FREEZER ROOM CONTROL DIAGRAM WITH VAV AND BCU

NOT TO SCALE

PSH500A
ENCLOSED AC POWER SUPPLY



GENERAL NOTES:

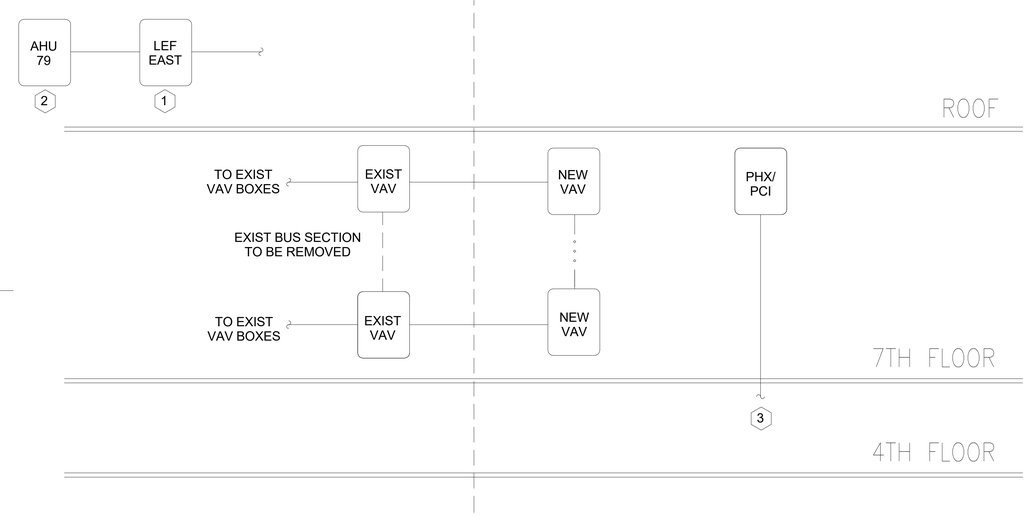
1. SECONDARY LINE CAN BE RAN IN SAME CONDUIT AS FC.
2. ENCLOSED POWER SUPPLY MUST BE LOCATED IN ELECTRICAL ROOM, MECHANICAL ROOM, OR JANITOR'S CLOSET AND BE ACCESSIBLE. ANY OTHER LOCATION MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE.

KEYED NOTES:

1. EACH SECONDARY OUTPUT LINE CAN POWER 3-5 VAV CONTROLLERS MAXIMUM. (100 VA).
2. PRIMARY LINE INFO: 480/277/240/120 Vac, #12 AWG MINIMUM.
3. SECONDARY LINE INFO: 24 Vac, #12-26 AWG, 100 VA. MAX LENGTH 175 FEET USING #14 AWG.
4. DISCONNECT SWITCH REQUIRED, EXTERNALLY MOUNTED WITHIN 12 INCHES OF RIB POWER SUPPLY.
5. 500VA POWER SUPPLY - RIB MODEL# PSMN500A OR APPROVED EQUIVALENT.
6. ALL SECONDARY LINES MUST BE LABELED IN ENCLOSURE AS TO WHICH VAV'S THEY POWER PRIOR TO ENERGIZING POWER SUPPLY.
7. A SEPARATE 3 AMP FUSE IS REQUIRED WITHIN 3 FEET OF EACH VAV.

2 500 VA POWER SUPPLY DIAGRAM-

NOT TO SCALE



NOTES:

1. FC BUS TO BE CONTINUOUS DAISY CHAIN WITHOUT SPLICES. CONNECTIONS CAN ONLY BE MADE AT CONTROLLERS. SEE PLANS FOR QUANTITY AND LOCATIONS OF CVM/VMA CONTROLLERS.
2. BREAK BUS BETWEEN TWO EXISTING CONNECTED VAV CONTROLLERS AND REROUTE AS SHOWN. BUS CAN BE REROUTED IN MULTIPLE LOCATIONS TO KEEP OVERALL BUS LENGTH SHORT. COORDINATE FC BUS ROUTING AND OUTAGES WITH OWNERS REP.
3. FC/N2 COMMUNICATION BUS WIRE SHALL BE 22 AWG FC OR 18 AWG N2, PLENUM RATED, TWISTED SHIELDED, 3 CONDUCTOR, WITH BLUE OUTER CASING, DESCRIPTED AS XX-03 OAS STR PLNM NEON BLU JK DISTRIBUTED BY WINDY CITY WIRE, CONSTRUCTED BY CABLE-TEK, OR APPROVED EQUIVALENT.
4. EXISTING N2 BUS MUST REMAIN INTACT TO EXISTING N2 DEVICES THAT REMAIN OUTSIDE OF THIS CONTRACT SCOPE. ROUTE NEW N2 BUS BETWEEN EXISTING DEVICES TO REMAIN AS REQUIRED WITHOUT SPLICES.

KEYED NOTES:

1. LAB EXHAUST FAN BANK TO BE CONVERTED TO FC DURING CURRENT LAB RENOVATION CP221461.
2. AH79 TO BE CONVERTED FROM N2 TO FC.
3. NEW PHOENIX PCI TO BE ROUTED TO EXISTING PCI INSTALLED ON NAE146 IN MECH RM 447A AS A PART OF CP221461.

3 FC BUS SPLICE DIAGRAM

NOT TO SCALE

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2025-06-26 11:40:28 PM
NLP

MSS

PLAN NOTE LEGEND

TAG VALUE	PLAN NOTE TEXT
ED000	ELECTRICAL DEMOLITION
EL000	LIGHTING
EP000	POWER
EH000	HVAC POWER
FA000	FIRE ALARM
TA000	TELECOMMUNICATIONS-AUDIO VISUAL

WIRING SCHEDULE-VOLTAGE DROP

DISTANCE	CONDUCTOR SIZE
120V-20A BRANCH CIRCUIT	
UP TO 100'	#12
100'-150'	#10
150'-250'	#8
250'-OVER	#6
277V-20A BRANCH CIRCUIT	
UP TO 200'	#12
200'-375'	#10
375'-OVER	#8

NOTE:
FOR ALL CIRCUITS WITH #6 CONDUCTORS, REDUCE TO #8 CONDUCTORS AT PANEL FOR FINAL CONNECTION TO CIRCUIT BREAKER.

GENERAL NOTES: (TYPICAL ALL SHEETS)

A) ALL WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE LATEST NATIONAL ELECTRICAL CODE, UNDERWRITER'S LABORATORIES, INC., OCCUPATIONAL SAFETY AND HEALTH ACT, AND ALL STATE, LOCAL, MUNICIPAL, AND STATUTORY REQUIREMENTS.

B) REFER TO ARCHITECTS REFLECTED CEILING PLANS FOR EXACT PLACEMENT OF LIGHT FIXTURES, SPEAKER AND F.A. DEVICES IN THE CEILING SYSTEM.

C) CONTRACTOR SHALL REFER TO ARCHITECTS DETAILS AND ELEVATIONS FOR COORDINATION OF LOCATION OF ALL WIRING DEVICES BEFORE ROUGH-IN OF J-BOXES.

D) REFER TO ARCHITECTS PLANS FOR DETAIL OF ALL CONDUIT THRU ROOF PENETRATIONS.

E) ALL JUNCTION BOXES FOR RECEPTACLES SHALL BE EVENLY SPACED ALONG WALL. NO BACK TO BACK JUNCTION BOXES SHALL BE PERMITTED FOR DEVICES ON OPPOSITE SIDES OF THE WALL.

F) CONTRACTOR SHALL ALIGN ALL WIRING DEVICES IN VERTICAL ALIGNMENT. IF ANY DEVICE(S) ARE FOUND NOT TO BE INSTALLED PER DETAIL CONTRACTOR SHALL RELOCATE AND PAY ALL ASSOCIATED COSTS ASSOCIATED WITH THE RELOCATION(S).

G) ELECTRICAL CONTRACTOR TO VERIFY EXACT PLACEMENT OF ALL DEVICES SHOWN ON THE ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, MECHANICAL AND PLUMBING DOCUMENTS PRIOR TO FINAL PLACEMENT. COORDINATE DEVICES ON OPPOSITE SIDES OF THE WALL SUCH THAT THERE ARE NO BACK TO BACK DEVICE LOCATIONS.

H) ALL LIGHT FIXTURES SHALL BE SUPPORTED PER ASTM E580/E580M-06 WITH A MINIMUM OF (2) 12 GA. HANGER WIRES TO STRUCTURE ABOVE.

I) EXIT AND EMERGENCY LIGHTS SHALL BE CONNECTED TO AN UNSWITCHED HOT LEG.

J) ALL LINE VOLTAGE SWITCHES SHALL BE WIRED WITH A NEUTRAL CONDUCTOR.

K) ALL SINGLE PHASE, SINGLE POLE LOADS TO HAVE DEDICATED NEUTRALS. LABEL NEUTRAL CONDUCTORS WITH CORRESPONDING CIRCUIT NUMBER AT EACH PULL BOX, JUNCTION BOX, HANDHOLE AND OTHER SPLICE POINTS. USE OF BREAKER TIES IS NOT PERMITTED. SHARING OF NEUTRALS IS NOT PERMITTED.

L) CONTRACTOR SHALL COORDINATE INSTALLATION REQUIREMENTS AND SCHEDULING OF ALL SYSTEM FURNITURE WITH FURNITURE INSTALLER.

M) DISCONNECTS FOR MECHANICAL EQUIPMENT ARE PROVIDED BY DIVISION 26. UNLESS NOTED OTHERWISE.

N) MC CABLE SHALL BE ALLOWED WHERE CONCEALED ABOVE CEILINGS AND IN WALLS AS PERMITTED BY CODE. HOME RUNS TO PANELBOARDS SHALL BE IN EMT CONDUIT UNLESS NOTED OTHERWISE. MC CABLE SHALL NOT BE USED WHERE EXPOSED. SUPPORT PER NEC REQUIREMENTS. REFER TO SPECIFICATIONS FOR FURTHER LIMITATIONS ON MAXIMUM LENGTH OF MC CABLE TO BE USED.

O) CONTRACTOR SHALL PROVIDE A MINIMUM OF 3/4" CONDUIT PER SPECIFICATIONS. MINIMUM OF 1" CONDUIT SHALL BE USED FOR DATA/ VOICE CABLING.

P) USE OF 3M SCOTCHLOK CONNECTORS OR PUSH-IN WIRE CONNECTORS (SIMILAR TO WAGO PUSH-IN CONNECTORS) ARE NOT PERMITTED. ALL WIRING CONNECTIONS TO BE DONE WITH WIRE NUT CONNECTORS.

Q) WIREMOLD SHALL ONLY BE PERMITTED WHERE SHOWN ON PLANS. IF ADDITIONAL WIREMOLD IS REQUIRED TO FEED DEVICES ON EXISTING WALLS/ CEILINGS, ROUTING SHALL BE APPROVED BY ARCHITECT/OWNER PRIOR TO INSTALLATION.

R) IF CONTRACTOR CHOOSES TO GROUP CIRCUITS FOR HOME RUNS, CONTRACTOR SHALL APPLY ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A RACEWAY PER NEC TABLE 310.15(B)(3)(a). CONDUCTORS SHALL BE UPSIZED AS REQUIRED TO MAINTAIN FULL AMPACITY RATING.

S) RECESS NEW DEVICES AND BOXES IN NEW CMU WALLS.

T) ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A PULL WIRE.

U) ALL MATERIALS WITHIN A PLENUM SHALL BE NON-COMBUSTIBLE OR HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50.

V) CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL WORK ABOVE THE CEILING TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION OF PLUMBING AND MECHANICAL INSTALLATION.

W) ALL PANELBOARDS, SWITCHBOARDS AND LINE VOLTAGE CONTROL EQUIPMENT SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTING, SERVICING OR MAINTENANCE OF EQUIPMENT. MARKING SHALL BE SELF ADHESIVE, COMMERCIAL LABEL CONFORMING TO NEC AND ANSI REQUIREMENTS.

X) IN MECHANICAL ROOMS COORDINATE EXACT LIGHT FIXTURE LOCATIONS WITH MECHANICAL DUCTWORK, PIPING AND EQUIPMENT.

Y) ALL MOTOR CONNECTIONS SHALL BE SPLIT-BOLT CONNECTION TYPE WITH RAYCHEM CAPS.

Z) CONTRACTOR SHALL USE CABLE TRAY WHERE NOTED AND J-HOOKS FOR DATA/ VOICE CABLING SUPPORT.

AA) FIRE ALARM SYSTEM
- a) ALL VISUAL DEVICES SHALL BE SYNCHRONIZED WITH OTHER UNITS. REFER TO SPECIFICATIONS.
- b) PROVIDE ALL NECESSARY AUXILIARY POWER SUPPLIES PER FLOOR TO POWER INDICATING DEVICES AS REQUIRED. AUXILIARY POWER SUPPLIES TO BE LOCATED IN ELECTRICAL ROOMS AND PROPERLY LABELED. REFER TO SPECIFICATIONS.
- c) CONTRACTOR SHALL SUBMIT ALL CALCULATIONS AS INDICATED IN THE SPECIFICATIONS INCLUDING BUT NOT LIMITED TO VOLTAGE DROP, BATTERY SIZING, POWER SUPPLY SIZING AND AMP SIZING. REFER TO SPECIFICATIONS.

AB) BATTERY DISPOSAL: BATTERIES SHALL BE PROPERLY DISPOSED OF PER UNIVERSITY CAMPUS STANDARDS.
- a) AFFIX ONE UNIVERSAL WASTE LABEL TO EACH COLLECTION CONTAINER BEFORE USE.
- b) MARK AN 'X' IN THE BOX TO THE LEFT OF THE "UNIVERSAL WASTE-BATTERY(IES)"
- c) ON LINE IMMEDIATELY FOLLOWING "ACCUMULATION START DATE", WRITE THE DATE/MONTH/DAY/YEAR OF THE DAY BATTERIES ARE BEGUN ACCUMULATED IN CONTAINER.

AC) PROPERLY DISPOSE OF FLUORESCENT LAMPS PER UNIVERSITY CAMPUS STANDARDS. OWNER SHALL PROVIDE EMPTY DRUMS/BOXES FOR LAMP DISPOSAL. DO NOT TAPE LAMPS TOGETHER. LAMPS MUST BE SORTED BY TYPE.
- a) GREEN TIPPED "ALTO" LAMPS ARE INCLUDED IN LAMPS TO BE RECYCLED.
- b) UP TO FOUR (4) FOOT STRAIGHT TUBE LAMPS IN FOUR (4) FOOT BOX OR DRUM.
- c) OVER FOUR (4) FEET UP TO EIGHT (8) FOOT STRAIGHT TUBE LAMPS IN EIGHT (8) FOOT BOX.
- d) SHATTERSHIELD LAMPS MUST BE ACCUMULATED/STORED/COUNTED SEPARATE FROM REGULAR STRAIGHT FLUORESCENT LAMPS.
- e) COMPACT CIRCULAR AND ROUND FLUORESCENT LAMPS BE COLLECTED TOGETHER.
- f) U-TUBE LAMPS TOGETHER.
- g) HID LAMPS TOGETHER.
- h) BROKEN LAMPS MUST BE PUT INTO THE BROKEN LAMP DRUM.
- i) PROPERLY LABEL DRUMS/BOXES PER OWNER INSTRUCTIONS.
- j) DELIVER CONTAINERS OF LAMPS TO LOCATION AS DIRECTED BY OWNER'S REPRESENTATIVE.

AD) INSTALL BLANK COVER PLATE ON ALL OPEN OR ABANDONED DEVICE BOXES. VERIFY COLOR WITH ARCHITECT.

AE) WIRING TO BE REMOVED BACK TO THE NEAREST DEVICE TO REMAIN. WIRING SHALL NOT BE TAKEN PAST THE FIRST JUNCTION BOX BEFORE THE PANELBOARD.

AF) ANY MATERIAL REMOVED THAT OWNER DOES NOT WISH TO RETAIN SHALL BE REMOVED FROM PROJECT SITE AND DISPOSED OF BY THE CONTRACTOR.

AG) UPDATED, TYPEWRITTEN PANELBOARD DIRECTORY SHALL BE PROVIDED FOR EACH PANELBOARD THAT CIRCUITS HAVE BEEN ADDED TO OR MODIFIED.

AH) CONTRACTOR SHALL LOCATE ALL IN SLAB REBAR PRIOR TO CORE DRILLING AND SHALL ADJUST CORE LOCATIONS AS TO AVOID REBAR. ALL CORE DRILLING AND WORK DONE BELOW FLOOR SHALL BE DONE AFTER HOURS.

AI) THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN BID ALL COSTS ASSOCIATED WITH FIRE ALARM MODIFICATIONS. THIS WORK SHALL INCLUDE POWER EXTENDER PANEL, SMOKE DETECTORS, HORN/STROBES, PULL STATIONS, REMOTE INDICATING LIGHTS AND ANY OTHER FIRE ALARM WORK SHOWN ON PLANS. ALL WIRING, CONDUIT AND CABLING, BETWEEN DEVICES SHALL BE INCLUDED IN WORK TO PROVIDE AN OPERATIONAL EXTENSION OF THE EXISTING FIRE ALARM SYSTEM.

AJ) PROTECT EXISTING TELECOM EQUIPMENT AND ASSOCIATED POWER/TELEPHONE SERVICE FROM CONSTRUCTION RELATED DAMAGE. ANY DAMAGE SHALL BE REPAIRED TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE.

GENERAL DEMO NOTES:

A) REMOVE ALL WIRING BACK TO SOURCE (CONDUIT, CONDUCTORS, BOXES, ETC.), INCLUDING LOW-VOLTAGE AND TELECOM, ABANDONED AS PART OF THIS PROJECT.

B) CONTRACTOR SHALL DISCONNECT AND REMOVE ALL CONDUCTORS, CONDUIT AND DEVICES ASSOCIATED WITH MECHANICAL EQUIPMENT NOTED TO BE DEMOLISHED ON MECHANICAL PLANS. COORDINATE WITH MECHANICAL DEMOLITION PLANS.

C) ANY EXISTING DEVICE AND/OR CIRCUIT SHOWN ARE INDICATED ONLY FOR INFORMATION PURPOSES. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL CONDITIONS AS THEY EXIST AND SHALL REMOVE, RELOCATE AND/OR REWORK ANY ELECTRICAL EQUIPMENT OR CIRCUITS NECESSARY FOR A COMPLETE REWIRING SYSTEM.

D) UNLESS NOTED OTHERWISE,THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL WORK TO BE DONE BY OBSERVATION OF THE SITE. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR PERFORMING ALL WORK NECESSARY TO PROVIDE A WORKMANLIKE INSTALLATION.

E) THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ANY MODIFICATIONS TO THE EXISTING SYSTEMS WHICH ARE TO REMAIN AND SHALL, UPON COMPLETION OF THIS PROJECT, DELIVER "RECORD" DRAWINGS TO THE ARCHITECT INDICATING ALL SUCH CHANGES. THE CONTRACTOR SHALL MAINTAIN IN THE PROJECT OFFICE, AS WORK PROGRESSES, AN UP-TO-DATE NEATLY MARKED COPY OF THESE DRAWINGS FOR REVIEW BY THE APPROPRIATE PARTIES.

F) WHERE FEEDERS OR OTHER CIRCUITS ARE ABANDONED AND ARE CONCEALED WITHIN WALLS OR FLOORS, SUCH CIRCUITS SHALL BE DISCONNECTED AT BOTH ENDS AND LABELED. ALL EXPOSED CONDUITS, CONDUITS ABOVE LAY-IN CEILINGS OR EQUIPMENT WHICH IS ABANDONED SHALL BE REMOVED, UNLESS NOTED OTHERWISE

G) WHERE NEW WORK INTERFERES WITH CIRCUITS IN ROOMS OTHERWISE UNDISTURBED, EXISTING CIRCUITS SHALL BE REWORKED AS REQUIRED TO MAINTAIN SERVICE.

H) THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES, THE CONDITION OF EXISTING BUILDING DEVICES AND MATERIALS, AND SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE SAME DURING THE COURSE OF THIS WORK. EXISTING UTILITIES, EXISTING BUILDING, AND/OR MATERIALS WHICH ARE DAMAGED BY NEGLIGENCE ON THIS CONTRACTOR'S PART OR ANY PARTIES ASSOCIATED WITH THIS CONTRACTOR, SHALL BE REPAIRED OR REPLACED AT THIS CONTRACTOR'S EXPENSE, IN A TIMELY MANNER, AND TO THE ARCHITECT'S AND OWNER'S WRITTEN ACCEPTANCE.

I) CIRCUIT ROUTINGS SHOWN IN REMODELED AREAS MAY BE MODIFIED TO SUIT FIELD CONDITIONS, HOWEVER, CARE SHOULD BE TAKEN TO KEEP DEVICES AND/OR FIXTURES AND CIRCUITS AS INDICATED TO AVOID OVERLOADING OF THE CIRCUIT.

J) WHERE EXISTING ELECTRICAL LIGHTING AND DISTRIBUTION PANELBOARDS ARE TO BE REMOVED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN POWER TO BRANCH AND FEEDER CIRCUITS UNTIL A PERMANENT PANEL IS INSTALLED TO RECONNECT THE EXISTING REMAINING CIRCUITS.

K) WHERE EQUIPMENT IS REMOVED FROM, OR RELOCATED TO, A LOCATION WHICH PENETRATES A FIRE RATED STRUCTURE, FIRE STOP CONTRACTOR SHALL PROVIDE THE APPROPRIATE FIRE STOPPING MATERIALS SUCH THAT THE RATING OF THE STRUCTURE WILL BE MAINTAINED.

L) MAINTAIN CONTINUITY OF EXISTING CIRCUITS SERVING DEVICES, FIXTURES OR EQUIPMENT TO REMAIN.

M) PROVIDE BLANK COVER PLATES ON ALL ABANDONED BOXES LOCATED IN EXISTING WALLS.

N) ALL NEW AND EXISTING DEVICES AND EQUIPMENT LOCATED IN EXISTING REMAINING WALLS, FLOORS, AND CEILINGS SHALL BE CONNECTED WITH CONCEALED CONDUIT. ELECTRICAL CONTRACTOR SHALL INCLUDE ALL ASSOCIATED COSTS IN BID TO CUT, CHANNEL, AND PATCH TO MATCH EXISTING WALLS, FLOORS, AND CEILINGS TO CONCEAL ALL CONDUIT.

O) ONLY WHERE ABSOLUTELY NECESSARY DUE TO EXISTING BUILDING CONDITIONS SHOULD SURFACE MOUNTED WIREMOLD BE INSTALLED - WRITTEN APPROVAL SHALL BE OBTAINED FROM THE ARCHITECT PRIOR TO ANY SUCH INSTALLATION.

P) REFER TO ARCHITECTURAL PHASING PLANS FOR ORDER OF DEMOLITION. CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS THAT CROSS AND/OR EXTEND INTO AREAS TO REMAIN DUE TO PHASING OF CONSTRUCTION.

Q) ON LOWER LEVEL FLOORS 1,2,3 WHERE LIMITED SCOPE FOR REMOVAL OF LIGHT FIXTURES INVOLVE FIXTURES WITH LED RETROFIT BULBS, SALVAGE BULBS AND AND LED DRIVERS AND TURN OVER TO OWNER FOR FIRST RIGHT OF REFUSAL.

DATA GENERAL NOTES:

A) CONTRACTOR SHALL INSTALL OWNER FURNISHED DATA/VOICE/TV CABLING. OWNER TO SUPPLY CABLING TO CONTRACTOR. OWNER SHALL MAKE TERMINATIONS AND PROVIDE JACKS.

B) CONTRACTOR SHALL PROVIDE 12" TAIL AT THE OUTLET END FOR EACH CABLE AND 20 FT OF EXTRA CABLE AT THE TELECOM ROOM SIDE.

C) ALL TELECOM ROOMS SHALL BE LINED WITH 3/4" PAINTED WHITE AC GRADE FIRE RETARDANT PLYWOOD 8FT TALL. NO EXPOSED CONDUIT SHALL BE RUN ON THE PLYWOOD WALLS.

D) EACH CABLE RUN SHALL NOT EXCEED 295FT.

E) THE FOLLOWING CONDUIT FILL LIMITS SHALL BE FOLLOWED:
1" - 3 CABLES MAX
1-1/4" - 4 CABLES MAX
1-1/2" - 6 CABLES MAX
2" - 12 CABLES MAX
3" - 20 CABLES MAX

F) DATA CABLING TO BE INSTALLED DIRECTIONALLY FROM TELECOM ROOM TOWARD OUTLET LOCATION.

G) CONTRACTOR SHALL RETURN ANY UNUSED REELS OR BOXES OF CABLING BEYOND 15% OF THE ACTUAL WIRING INSTALLED OR REFUND THE OWNER AT $0.55/ FT. ACTUAL DATA WIRING USED SHALL BE DETERMINED BY THE OWNER'S TESTING EQUIPMENT.

CCTV GENERAL NOTES:

A) CCTV CAMERA CABLING TO BE PLENUM RATED ABOVE ACCESSIBLE CEILINGS. WHERE CABLE CROSSES HARD CEILINGS, WALLS AND INACCESSIBLE LOCATIONS, INSTALL IN 1" CONDUIT. (MAXIMUM OF THREE CABLES PER 1" CONDUIT).

B) AT EXTERIOR CAMERA LOCATIONS: PROVIDE A WALL MOUNTED JUNCTION BOX WITH 1" CONDUIT STUBBED TO ABOVE ACCESSIBLE CEILING AND BUSH.

C) AT INTERIOR CAMERA LOCATIONS, CAMERA ROUGH-IN DOES NOT REQUIRE A JUNCTION BOX.

D) EACH CCTV CAMERA CABLE SHALL BE HOME RUN TO THE TELECOM ROOM ON CORRESPONDING FLOOR WHERE CAMERA IS LOCATED. REFER TO DRAWINGS FOR SPECIFIC LOCATION. CABLING SHALL BE PULLED IN THE DIRECTION FROM THE TELECOM ROOM OUT TO CAMERA LOCATION.

E) CCTV CAMERA CABLE SHALL BE CAT6A TO BE PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR. OWNER SHALL MAKE THE FINAL TERMINATIONS AT EACH END.

F) CAMERAS WILL BE PROVIDED AND INSTALLED BY OWNER. OWNER SHALL MAKE FINAL TERMINATIONS.

G) CONTRACTOR SHALL PULL CABLE IN THE DIRECTION FROM THE TELECOM ROOM OUT TO THE CAMERA LOCATION. LEAVE 20FT EXTRA LENGTH OF CABLING AT TELECOM ROOM END AND 5FT EXTRA LENGTH AT CAMERA END TO ALLOW FOR OWNER TERMINATIONS. PROVIDE A BLANK COVER PLATE AT THE JUNCTION BOX AND LABEL "CCTV CAMERA".

H) CAMERA ROUGH-IN LOCATIONS ARE INDICATED ON THE PLANS. CONTRACTOR SHALL COORDINATE FINAL PLACEMENT WITH OWNER PRIOR TO ROUGH-IN.

ELECTRICAL SYMBOLS:

Symbol	Description
	BRANCH CIRCUIT CONCEALED IN CEILING OR WALL. ARROWS INDICATE HOME RUNS TO PANEL. ALL CONDUCTORS #12 AWG UNLESS NOTED OTHERWISE. EACH SINGLE PHASE CIRCUIT TO HAVE DEDICATED NEUTRAL. PHASE CONDUCTORS / NEUTRAL CONDUCTOR / GROUND CONDUCTOR / DENOTES PARTIAL CIRCUIT
LP1-10	PANEL - BREAKER NUMBER (IDENTIFICATION)
1,3; 1,3,5	INDICATES X,X= 2-POLE C.B.; X,X,X = 3-POLE C.B.
3 5 1	HOME RUN INDICATED LIKE THIS INDICATED THREE SEPARATE SINGLE PHASE CIRCUITS. EACH CIRCUIT TO HAVE DEDICATED NEUTRAL.
	CONDUIT CONCEALED IN CEILING OR WALL WITH THREE CONDUCTORS: 1-PHASE; 1-NEUTRAL; 1-GROUND WIRE, NO.12 AWG UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
	CONDUIT RUN UNDERGROUND OR CONCEALED IN FLOOR SLAB.
	GROUNDING CONDUCTOR NO.12 WIRE EXCEPT AS NOTED.
	LOW VOLTAGE LIGHT FIXTURE CONDUCTORS IN CONDUIT.
W	PREWIRED FLEXIBLE WHIP FURNISHED WITH LIGHT FIXTURE.
OR A# A#	EXIT SIGN - SINGLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
A#	EXIT SIGN - DOUBLE FACED - ARROWS AS SHOWN ON DRAWING. SHADED SIDE(S) INDICATES FACE SIDE(S) OF EXIT. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
OR A# A#	CEILING OR WALL MOUNTED EMERGENCY LIGHTING UNIT WITH INTEGRAL BATTERY AND UNIT MOUNTED HEADS. REFER TO LUMINAIRE SCHEDULE FOR TYPE.
OR A# A#	LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
A#	LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
A#	WALL WASH OR DOWNLIGHT LIGHT FIXTURE, REFER TO LIGHTING FIXTURE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
OR A# A#	WALL MOUNTED LIGHT FIXTURE, REFER TO LIGHTING FIXTURE SCHEDULE FOR TYPE. REFERENCE LIGHT FIXTURE TAG LEGEND.
XLC-# A#,a #,[#] NL,EM	LIGHT FIXTURE TAG LEGEND: 'A#' = UPPERCASE LETTER AND/OR NUMBER COMBO DENOTES FIXTURE TYPE, REFER TO LUMINAIRE SCHEDULE. 'a' = LOWERCASE LETTER DENOTES LIGHTING CONTROL ZONE/SWITCH LEG '#' = DENOTES #CIRCUIT NUMBER '[#]' = NUMBER IN BRACKETS DENOTES CONTROL RELAY/ZONE NL = DENOTES FIXTURE TO BE A NIGHT LIGHT AND REMAIN ON 24/7 EM = DENOTES FIXTURE TO BE ON EMERGENCY POWER OR PROVIDED WITH INTEGRAL EMERGENCY DRIVER AS SCHEDULED. 'XLC-#' = ENCLOSED IN BOX DENOTES LIGHTING CONTROL PANEL NAME AND RELAY NUMBER.
	MOTOR
	208Y/120V OR 120/240V PANELBOARD TOP MOUNTED 72" AFF
	480/277V PANELBOARD TOP MOUNTED 72" AFF
	DISTRIBUTION PANEL (SURFACE OR FLOOR MOUNTED).
	SURFACE MOUNTED EQUIPMENT, TYPE AS INDICATED ON DRAWINGS
	FLUSH MOUNTED EQUIPMENT, TYPE AS INDICATED ON DRAWINGS
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT STUBBED THRU WALL WITH BUSHINGS ON BOTH ENDS. SIZE AS NOTED ON PLANS.
	EMPTY CONDUIT STUB-UP INSIDE WALL TO ABOVE ACCESSIBLE CEILING WITH BUSHING ON THE END. SIZE AS NOTED ON DRAWINGS.
	GROUND
	POWER CONNECTION POINT
	DISCONNECT SWITCH, SIZE AND TYPE AS NOTED TOP MOUNTED 60" AFF
	COMBINATION MAGNETIC MOTOR STARTER, SIZE AND TYPE AS NOTED. TOP MOUNTED 60" AFF
S	SINGLE POLE SWITCH. +48" AFF TO TOP OF BOX OR AS NOTED.
S3	THREE-WAY SWITCH +48" AFF TO TOP OF BOX.
SMS	OCCUPANCY SENSOR WALL SWITCH +48" AFF TO TOP OF BOX. REFER TO MOTION SENSOR SCHEDULE FOR TYPE.
STS	TIMER WALL SWITCH +48" AFF TO TOP OF BOX.
SD	DIMMER SWITCH MOUNTING HEIGHT TO CENTERLINE OF DEVICE BOX. WATTAGE AS NOTED ON PLANS
SL#	LOW-VOLTAGE PUSHBUTTON SWITCH +48" AFF TO TOP OF BOX. REFER TO LIGHTING CONTROL SWITCH DEVICE SCHEDULE FOR TYPE. 'L#' = REFERS TO NUMBER OF PUSHBUTTONS 'LD' = REFERS TO DIMMING SWITCH 'LT' = REFERS TO TOUCH SCREEN 'LMS' = REFERS TO LOW VOLTAGE OCCUPANCY WALL SENSOR
a,b,c,d	SWITCH DESIGNATION
RC D,a #	ROOM CONTROLLER LOCATED ABOVE ACCESSIBLE CEILING. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('D' = DENOTES DIMMING CONTROLLER, 'a' = LIGHTING ZONE, '#' = #CIRCUT NUMBER)
RC PL,a #	PLUG LOAD ROOM CONTROLLER LOCATED ABOVE ACCESSIBLE CEILING. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('D' = DENOTES DIMMING CONTROLLER, 'a' = LIGHTING ZONE, '#' = #CIRCUT NUMBER)
MS #,a	CEILING MOUNTED MOTION SENSOR. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('#' - DENOTES TYPE, 'a' = LIGHTING ZONE)
MS #,a	CEILING CORNER MOUNTED MOTION SENSOR. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('#' - DENOTES TYPE, 'a' = LIGHTING ZONE)
PS #,a	PHOTOSENSOR. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('#' - DENOTES TYPE, 'a' = LIGHTING ZONE)
DI	DATA INTERFACE LOCATED ABOVE ACCESSIBLE CEILING. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE.
EMC #,a	EMERGENCY LIGHTING CONTROL UNIT. REFER TO LIGHTING CONTROL FIXTURE SCHEDULE FOR TYPE. ('#' - DENOTES TYPE, 'a' = LIGHTING ZONE)
	PUSH BUTTON +48" AFF TO TOP OF BOX.
	SINGLE RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED
	DUPLEX RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED
	DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP
	DUPLEX RECEPTACLE. +18" AFF TO CENTERLINEOF BOX OR AS NOTED. (EMERGENCY POWER)
WP	GFCI DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE-IN-USE COVER. HEIGHT AS NOTED.
G	DUPLEX RECEPTACLE W/GROUND FAULT PROTECTION. +18" AFF OR AS NOTED
	DOUBLE DUPLEX RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED
	DOUBLE DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP.
	DOUBLE DUPLEX RECEPTACLE. +18" AFF TO CENTERLINE OF BOX OR AS NOTED. (EMERGENCY POWER)
PL	DUPLEX RECEPTACLE CONNECTED TO LIGHTING CONTROL. REFER TO LIGHTING CONTROL WIRING DIAGRAMS.
P#	FLOOR FLUSH STYLE POKE-THRU DEVICE WITH DUPLEX RECEPTACLE AND DATA OUTLET. FOR EACH DATA OUTLET, INSTALL ONE (1) DATA CABLE UNLESS OTHERWISE NOTED. SEE PLANS AND SCHEDULE FOR SPECIFICATIONS OF FLOOR BOX.
P#	FLUSH FLOOR BOX WITH TYPE INDICATED. SEE SPECS AND SCHEDULE.
	HEAVY DUTY RECEPTACLE. VOLTAGE, PHASE AND AMPS AS NOTED. +18" AFF TO CENTERLINE OF BOX OR AS NOTED.
A	ALERTUS SYSTEM. PROVIDE DOUBLE GANG JUNCTION BOX MOUNTED AT +56" AFF TO CENTERLINE OF BOX. EXTEND 1" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING. INSTALL ONE (1) OWNER FURNISHED CAT 6A CABLE FROM JUNCTION BOX TO NEAREST TELECOM ROOM.
AV X	AUDIO/ VIDEO OUTLET. REFER TO TECHNOLOGY PLANS AND TECHNOLOGY SCHEDULE FOR TYPE. (X-DENOTES TYPE OF OUTLET)
PWR #	REMOTE POWER SUPPLY. REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR TYPE. ('#' = DENOTES TYPE)
INV #	LIGHTING INVERTER. REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR TYPE. ('#' = DENOTES TYPE)
P	CEILING PROJECTOR, ARROW DENOTES DIRECTION.
CR	CARD READER. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG PLASTER RING WITH 3/4"C STUBBED UP INSIDE WALL AND OUT TO ACCESSIBLE CEILING WITH BUSHING ON THE END. +48" AFF OR AS NOTED IN CARD ACCESS ROUGH-IN DETAIL.
AD	ACCESSIBLE DOOR OPERATOR AND PROXIMITY SENSOR. (ADA PUSHBUTTON). PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG PLASTER RING WITH 3/4"C STUBBED UP INSIDE WALL AND OUT TO ACCESSIBLE CEILING WITH BUSHING ON THE END. +48" AFF TO TOP OF BOX OR AS NOTED IN CARD ACCESS ROUGH-IN DETAIL.
CCTV	CLOSED CIRCUIT TV CAMERA. EXTERIOR LOCATIONS: PROVIDE A DOUBLE GANG J-BOX WITH SINGLE GANG PLASTER RING WITH 1" CONDUIT STUBBED TO ABOVE ACCESSIBLE CEILING AND BUSH. INTERIOR LOCATIONS: NO JUNCTION BOX IS TO BE PROVIDED. PULL ONE CAT6A CABLE. REFER TO CCTV GENERAL NOTES THIS SHEET.
WAP#	CEILING MOUNTED DATA OUTLET FOR OWNER PROVIDED WIRELESS ACCESS POINT. CONTRACTOR SHALL INSTALL OWNER-FURNISHED WIRING FROM TELECOM ROOM TO OUTLET LOCATED ON SAME FLOOR. EACH OUTLET TO HAVE 1 (ONE) DATA PORTS UNLESS NOTED OTHERWISE ON THE DRAWINGS. IF MOUNTED ON HARD CEILING EXTEND 1" CONDUIT TO ABOVE ACCESSIBLE CEILING AND BUSH. (#-DENOTES NUMBER OF CABLES IF OVER ONE DATA CABLE)
WAP#	WALL MOUNTED DATA OUTLET FOR OWNER PROVIDED WIRELESS ACCESS POINT. CONTRACTOR SHALL INSTALL OWNER-FURNISHED WIRING FROM TELECOM ROOM TO OUTLET LOCATED ON SAME FLOOR. EACH OUTLET TO HAVE 1 (ONE) DATA PORTS UNLESS NOTED OTHERWISE ON THE DRAWINGS. EXTEND 1" CONDUIT TO ABOVE ACCESSIBLE CEILING AND BUSH. (#-DENOTES NUMBER OF CABLES IF OVER ONE DATA CABLE)
J OR J	WALL MOUNTED OR CEILING MOUNTED JUNCTION BOX.
R	RELAY, 120V.
B	WALL MOUNTED JUNCTION BOX WITH BLANK COPPER PLATE.
T	THERMOSTAT OUTLET BOX WITH 3/4"C, STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING. THERMOSTAT AND WIRING BY OTHERS. +48" AFF TO TOP OF BOX OR AS NOTED.
P	FURNITURE POWER FEED. WALL MOUNTED SINGLE GANG J-BOX WITH 3/4" CONDUIT UP TO ABOVE ACCESSIBLE CEILING. +18" TO CENTERLINE AFF OR AS NOTED.
D	FURNITURE DATA FEED. WALL MOUNTED DOUBLE GANG BOX WITH SINGLE GANG PLASTER RING FROM J-BOX AND PROVIDE (2) 1"C, STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING FOR COMMUNICATION CABLES. +18" TO CENTERLINE AFF OR AS NOTED.
#	VOICE OUTLET WITH 1" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING AND BUSH. MOUNTED +18" AFF TO CENTERLINE OF BOX OR AS NOTED. CONTRACTOR TO INSTALL OWNER-FURNISHED WIRING FROM TELECOM ROOM TO OUTLET ON CORRESPONDING LEVEL. EACH OUTLET TO HAVE A TOTAL OF (ONE) CABLE FOR VOICE UNLESS NOTED OTHERWISE ON THE DRAWINGS. (#-DENOTES NUMBER OF CABLES IF OVER ONE (1))
#	DATA/VOICE OUTLET WITH 1" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING AND BUSH. +18" AFF TO CENTERLINE OF BOX OR AS NOTED. EACH DATA/VOICE OUTLET TO HAVE 2 DATA PORTS FOR A TOTAL OF (TWO) CABLES UNLESS NOTED OTHERWISE ON THE DRAWINGS. CONTRACTOR TO INSTALL OWNER-FURNISHED WIRING FROM TELECOM ROOM TO OUTLET ON CORRESPONDING FLOOR. (#-DENOTES NUMBER OF CABLES IF OVER TWO (2))
#	DATA/VOICE OUTLET WITH 1" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING AND BUSH. INSTALLED ABOVE COUNTERTOP. EACH DATA/VOICE OUTLET TO HAVE 2 DATA PORTS FOR A TOTAL OF (TWO) CABLES UNLESS NOTED OTHERWISE ON THE DRAWINGS. CONTRACTOR TO INSTALL OWNER-FURNISHED WIRING FROM TELECOM ROOM TO OUTLET ON CORRESPONDING FLOOR. (#-DENOTES NUMBER OF CABLES IF OVER TWO (2))
	INDICATES DEVICE ABOVE RE: DRAWING
XX-X	ELECTRICAL EQUIPMENT PROVIDED BY AND INSTALLED BY E.C.
+48"	TOP OF OUTLET BOX ABOVE FINISHED FLOOR
AFF	ABOVE FINISH FLOOR
ETR	EXISTING TO REMAIN
FA	FIRE ALARM
PA	PUBLIC ADDRESS
ER	EXISTING RELOCATED
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
G	GFCI (GROUND FAULT CIRCUIT INTERRUPTER) PROTECTION
UNO	UNLESS NOTED OTHERWISE
XXX X	MECHANICAL EQUIPMENT CALL OUT BUBBLE

FIRE ALARM SYSTEM SYMBOLS

Symbol	Description
DH OR DH	DOOR HOLDER 120V, 1Ø, CONNECT TO FIRE ALARM CONTROL PANEL
PE D	CEILING MOUNTED PHOTO-ELECTRIC SMOKE DETECTOR (D-DENOTES IN DUCT)
HD	CEILING MOUNTED HEAT DETECTOR
RL	CEILING MOUNTED REMOTE INDICATED LIGHT FOR DUCT MOUNTED SMOKE DETECTOR.
FS	SPRINKLER ALARM SYSTEM FLOW SWITCH
TS	SPRINKLER ALARM SYSTEM TAMPER SWITCH
	CEILING MOUNTED FIRE ALARM HORN (FLUSH MOUNTED).
XXcd L	CEILING MOUNTED COMBINATION FIRE ALARM HORN/STROBE FLUSH MOUNTED. UNLESS NOTED OTHERWISE (L-DENOTES STROBE, XXcd-DENOTES MINIMUM CANDELA RATING OF STROBE).
WP L XXcd	WALL MOUNTED COMBINATION FIRE ALARM HORN/STROBE FLUSH MOUNTED WITH WP=WEATHERPROOF ENCLOSURE. UNLESS NOTED OTHERWISE (L-DENOTES STROBE, XXcd- DENOTES MINIMUM CANDELA RATING OF STROBE).
	WALL MOUNTED FIRE ALARM HORN FLUSH MOUNTED
L XXcd	VISUAL FIRE ALARM STROBE LIGHT +92" AFF (XXcd-DENOTES MINIMUM CANDELA RATING OF STROBE)
F	FIRE ALARM MANUAL PULL STATION. +48" AFF TO TOP OF BOX OR AS NOTED
F	WALL MOUNTED FIRE ALARM SPEAKER FLUSH MOUNTED.
F XXcd L	WALL MOUNTED COMBINATION FIRE ALARM SPEAKER/STROBE FLUSH MOUNTED. UNLESS NOTED OTHERWISE (L-DENOTES STROBE, XXcd-DENOTES MINIMUM CANDELA RATING OF STROBE).
F XXcd L	CEILING MOUNTED COMBINATION FIRE ALARM SPEAKER/STROBE FLUSH MOUNTED. UNLESS NOTED OTHERWISE (L-DENOTES STROBE, XXcd- DENOTES MINIMUM CANDELA RATING OF STROBE).
F	CEILING MOUNTED FIRE ALARM SPEAKER (FLUSH MOUNTED).
AR	FIRE ALARM SYSTEM ADDRESSABLE RELAY, 120V.
FSD	FIRE AND SMOKE DAMPER 120V, 1Ø
RA	FIRE ALARM SYSTEM RESCUE ASSISTANCE STATION. +48" AFF TO TOP OF BOX.

EXISTING DEVICES ARE HORN/STROBE SYSTEM

NEW DEVICES TO BE SPEAKER/STROBE SYSTEM. PROGRAMMED TO SOUND LIKE HORNS.

DEFINITIONS

PROVIDE = FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

FURNISH = SUPPLY AND DELIVER TO PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION AND SIMILAR OPERATIONS

INSTALL = OPERATIONS AT PROJECT SITE INCLUDING UNLOADING, TEMPORARILY STORING, UNPACKING, ASSEMBLING, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS.

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MONICA SANTOYO SANTOS
NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

7E - ELECTRICAL GENERAL NOTES & LEGEND

DATE: 07/08/2025
DRAWN: MSS CHECKED: MSS
PGAV #: 53660-20 CLIENT #: CP2400920
SHEET #:

E010L

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/A222-27 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt
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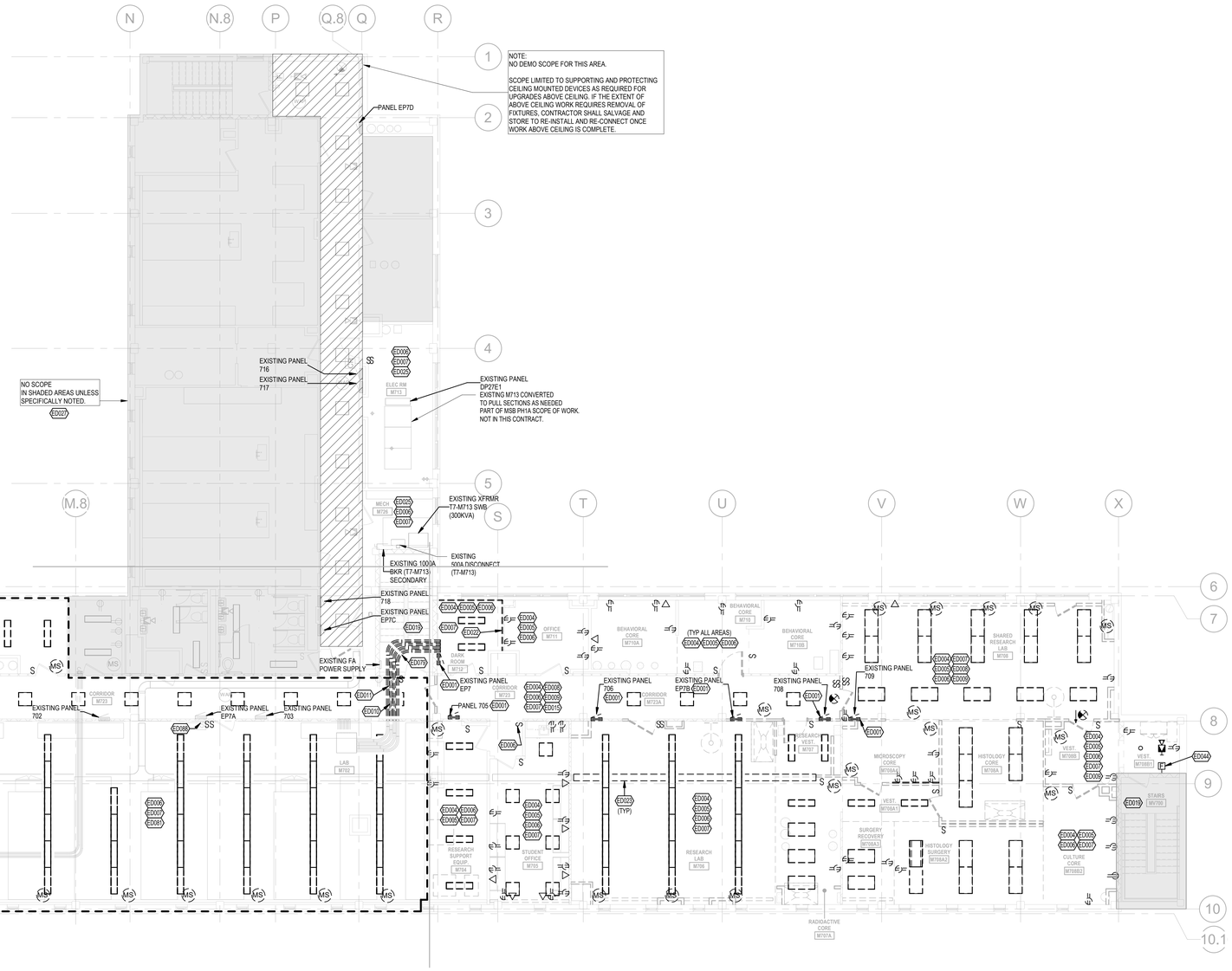
DEMO PLAN NOTES

ED001	DISCONNECT AND REMOVE EXISTING PANEL. REMOVE ALL ASSOCIATED WIRING, FEEDERS, CONDUIT BACK TO POWER SOURCE.
ED004	UNLESS SPECIFICALLY NOTED, DISCONNECT AND REMOVE ALL OUTLETS AND ASSOCIATED WIRING, CONDUIT AND/OR SURFACE RACEWAY BACK TO PANELBOARD SOURCE
ED005	UNLESS SPECIFICALLY NOTED, DISCONNECT AND REMOVE ALL DATA OUTLETS AND ASSOCIATED WIRING, CONDUIT AND/OR SURFACE RACEWAY BACK TO ORIGINATING DATA CLOSET. NO WIRING TO BE ABANDONED IN PLACE.
ED006	UNLESS SPECIFICALLY NOTED, DISCONNECT AND REMOVE ALL SWITCHES IN SPACE. REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO PANELBOARD SOURCE.
ED007	UNLESS SPECIFICALLY NOTED, DISCONNECT AND REMOVE ALL LUMINAIRES AND ASSOCIATED LIGHTING CONTROLS IN SPACE. REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO PANELBOARD SOURCE. WHERE LUMINAIRES CONTAIN LED RETROFIT BULBS, SALVAGE BULBS AND DRIVERS AND TURN OVER TO OWNER FOR FIRST RIGHT OF REFUSAL.
ED008	DISCONNECT AND REMOVE ALL EXIT SIGNS AND EGRESS LIGHTING IN SPACE. REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO PANELBOARD SOURCE.
ED009	UNLESS SPECIFICALLY NOTED, DISCONNECT AND REMOVE FIRE ALARM NOTIFICATION DEVICES. REMOVE WIRING TO BACK TO REMAINING DEVICES. CONTRACTOR SHALL ENSURE THAT NOTIFICATION CIRCUIT IS FULLY FUNCTIONAL FOR DEVICES TO REMAIN ON CIRCUIT.
ED010	EXISTING FIRE ALARM NOTIFICATION DEVICE TO REMAIN. CONTRACTOR SHALL PROTECT DURING CONSTRUCTION AND ENSURE THAT CONTINUITY OF CIRCUIT IS MAINTAINED.
ED011	EXISTING FIRE ALARM PULL STATION TO REMAIN. CONTRACTOR SHALL PROTECT DURING CONSTRUCTION AND ENSURE THAT CONTINUITY OF CIRCUIT IS MAINTAINED.
ED015	DISCONNECT AND REMOVE POWER AND ALL ASSOCIATED APPURTENANCES TO MECHANICAL EQUIPMENT TO BE REMOVED. REFER TO MECHANICAL DEMOLITION PLANS FOR EQUIPMENT TO BE REMOVED.
ED019	MAINTAIN CONTINUITY OF POWER TO LIGHTING IN STAIR.

DEMO PLAN NOTES

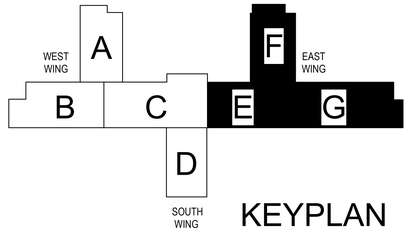
ED022	DISCONNECT AND REMOVE ALL WIREMOLD IN SPACE. REMOVE ALL WIRING AND CONDUIT BACK TO POWER SOURCE.
ED023	CONTRACTOR SHALL REMOVE CABLE TRAY ROUTED WITHIN SPACE.
ED025	PROTECT ALL EQUIPMENT TO REMAIN IN ROOM FROM CONSTRUCTION DEBRIS AND DUST.
ED027	MAINTAIN POWER TO SYSTEMS IN AREAS OUTSIDE OF SCOPE TO ENSURE FULLY OPERATIONAL DURING CONSTRUCTION.
ED044	DISCONNECT AND REMOVE PULL STATION. MAINTAINING WIRING FOR DOWNSTREAM DEVICES.
ED051	UNLESS NOTED OTHERWISE, EXISTING CEILING MOUNTED DEVICES IN AREA TO REMAIN. TEMPORARILY SUPPORT EXISTING SMOKE DETECTORS, WIRELESS ACCESS POINTS, CAMERAS, ETC. DURING ABOVE CEILING WORK AND CEILING REPLACEMENT. RE-INSTALL SAID CEILING MOUNTED DEVICES IN THE SAME LOCATION AFTER CEILING WORK IS COMPLETE.
ED079	REMOVE EXISTING CONDUIT ROUTED THROUGH STAIRWELL. REMOVE BACK TO EXISTING PULLBOX AND SEAL PENETRATIONS.
ED081	DOCUMENT HEIGHT ABOVE FLOOR TO BOTTOM OF EXISTING LIGHT FIXTURES TO BE REMOVED WITHIN ROOM. NEW LIGHT FIXTURES TO MATCH HEIGHT AFF OF EXISTING. SEE NEW WORK PLANS FOR MORE INFORMATION.
ED088	EXISTING THREE-WAY SWITCH CONTROLLING BENCH TASK LIGHTING TO REMAIN. MAINTAIN CONTINUITY OF CIRCUIT SERVING TASK LIGHTING. (SERVED FROM PANEL EP7A)
ED089	DISCONNECT AND REMOVE CARD READER TO BE REPLACED WITH NEW PER NEW WORK PLANS. REPLACE ALL ASSOCIATED WIRING WITH NEW.



LEVEL 7 PLAN - ELECTRICAL DEMO (EAST LIKE-FOR-LIKE SCOPE)

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

0 4' 8' 16'



KEYPLAN

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

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LEVEL 7 PLAN - ELECTRICAL DEMO - EAST

DATE:	07/08/2025
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PGAV #: 53660-20	CLIENT #: CP2400920

SHEET #: **E175L**

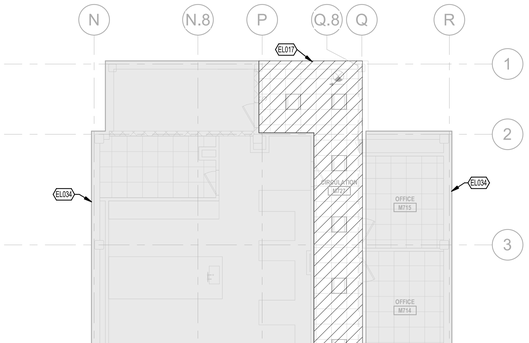
6/25/2025 7:08:21 PM Autodesk Docs://53660-10 MU SCM MSB Lab Renovations/522127 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt

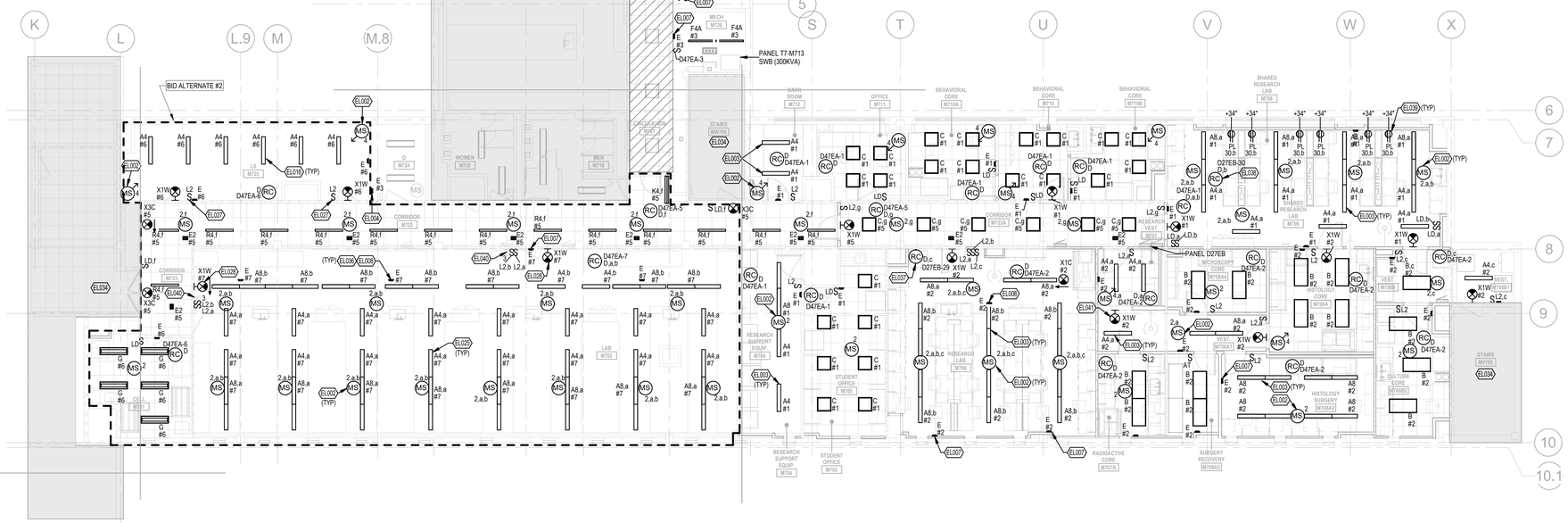
LIGHTING PLAN NOTES

EL002	SUSPEND BOTTOM OF SENSOR ALIGNED WITH BOTTOM OF LIGHT FIXTURE. PROVIDE RIGID STEM SUPPORT AS REQUIRED.
EL003	SUSPEND BOTTOM OF LIGHT FIXTURE AT 8'-0" AFF.
EL004	WALL MOUNT CENTERLINE OF LIGHT FIXTURE AT 7'-0" AFF.
EL007	WALL MOUNT CENTER OF LIGHT FIXTURE AT 8'-0" AFF.
EL008	SUSPEND CENTERLINE OF LIGHT FIXTURE AT 8'-0" AFF. PROVIDE RIGID STEM SUPPORT AS REQUIRED.
EL016	SUSPEND BOTTOM OF LIGHT FIXTURE 7'-6" AFF.
EL017	WITHIN HATCHED AREA, TEMPORARILY SUPPORT EXISTING LIGHTS AND CEILING MOUNTED DEVICES DURING ABOVE CEILING WORK AND CEILING REPLACEMENT. RE-INSTALL SAID LIGHTS AND CEILING MOUNTED DEVICES IN THE SAME LOCATION AFTER CEILING WORK IS COMPLETE. REFER TO ARCHITECTURAL PHASING PLANS FOR MORE INFORMATION.
EL025	SUSPEND BOTTOM OF LIGHT FIXTURE AT SAME HEIGHT AFF AS EXISTING LIGHT FIXTURES REMOVED DURING DEMOLITION.
EL027	LOCATE NEW LIGHTING CONTROL STATION IN PLACE OF THE EXISTING LIGHT SWITCH.
EL028	ALIGN TOP OF EXIT SIGN WITH TOP OF ADJACENT DOOR FRAME.
EL034	NO SCOPE IN THIS AREA. EXISTING TO REMAIN.
EL036	COORDINATE FINAL HEIGHT OF EMERGENCY LIGHTS TO ENSURE THAT TYPE C SERIES LIGHT FIXTURES DO NOT OBSTRUCT LIGHT FROM THE EMERGENCY LIGHTS.
EL037	ROOM CONTROLLER FOR CONTROL OF TASK LIGHTS AT LAB BENCHES. PROVIDE CONTROLLED POWER FEED TO TASK LIGHTS PROVIDED IN EACH BENCH BY OTHERS IN COORDINATION WITH ARCHITECTURAL DRAWINGS AND LAB BENCH FURNITURE SUBMITTALS.
EL038	ROOM CONTROLLER FOR CONTROL OF RECEPTACLES FOR INTEGRAL TASK LIGHTS AT LAB BENCHES.
EL039	LOCATE RECEPTACLE CLOSE TO TASK LIGHT TO MINIMIZE LENGTH OF VISIBLE CORD. NEATLY DRESS CORD ALONG BENCH TO RECEPTACLE.
EL040	EXISTING THREE-WAY SWITCH FOR EXISTING LAB BENCH TASK LIGHTING. TEST AND ENSURE SWITCHING AND CIRCUITING FOR LAB BENCH TASK LIGHTING REMAINS CONTROLLED AS BEFORE RENOVATION WORK.
EL041	WALL MOUNT CENTERLINE OF LIGHT FIXTURE AT 8'-6" AFF.

LIGHTING GENERAL NOTES (7E)

1	REFER TO LUMINAIRE SCHEDULE AND LIGHTING CONTROL SCHEDULES ON SHEET E805L. REFER TO LIGHTING CONTROL DIAGRAMS ON SHEET E676L.
2	DEVICES SHALL BE ALIGNED VERTICALLY. REFER TO TYPICAL WALL MOUNTING DEVICE DETAIL 3 ON SHEET E675L.
3	LIGHTING CONTROL DEVICE LOCATIONS ARE SHOWN DIAGRAMMATICALLY. IN SPACES WITH ACCESSIBLE CEILING OR OPEN TO STRUCTURE, LOCATE ROOM CONTROLLER(S) DIRECTLY ABOVE DOOR. IN SPACES WITHOUT ACCESSIBLE CEILINGS, LOCATE ROOM CONTROLLER(S) WITHIN A NEARBY SPACE THAT HAS AN ACCESSIBLE CEILING OR IS OPEN TO STRUCTURE. LABEL ALL DEVICES WITH ROOM NAME/NUMBER, CIRCUIT NUMBER/PANEL AND LIGHTING ZONE SERVED.
4	REFER TO ARCHITECTURAL DRAWINGS, ELEVATIONS AND DETAILS FOR EXACT LOCATIONS OF LIGHT FIXTURES. NOTIFY ARCHITECT SHOULD THERE BE ANY DISCREPANCIES.
5	REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHT OF WALL MOUNTED LIGHT FIXTURES.
6	BEFORE COMMENCEMENT OF CONSTRUCTION, CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY INCONSISTENCIES BETWEEN THESE PLANS AND OTHER DOCUMENTS, INTERFERENCE BETWEEN DIMENSIONS, SITE CONDITIONS, OR ANY OTHER MECHANICAL, ELECTRICAL, PLUMBING OR ANY OTHER TRADE THAT MAY INTERFERE OR WOULD RESULT IN AFFECTING THE CORRECT INSTALLATION OF THE FIXTURES/DETAILS SHOWN.
7	PROVIDE ALL LIGHTING CONTROL AND LOW VOLTAGE WIRING AS REQUIRED FOR THE PROPER DIMMING AND OPERATION OF LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO, LOW VOLTAGE AND 0-10V CONTROL WIRING.
8	IN MECHANICAL, ELECTRICAL, DATA, EQUIPMENT AND OPEN TO STRUCTURE LABS, COORDINATE LIGHT FIXTURES, EMERGENCY LIGHTS/EXITS AND LIGHTING CONTROL SENSOR LOCATIONS WITH OTHER TRADES AS REQUIRED SO LIGHT OR SENSOR COVERAGE IS NOT BLOCKED BY EQUIPMENT, PIPING OR OTHER SYSTEMS.

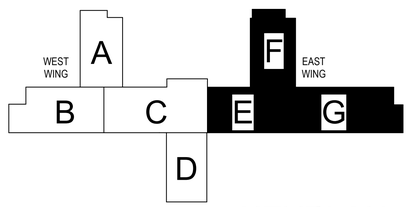




LEVEL 7 PLAN - LIGHTING (EAST LIKE-FOR-LIKE SCOPE)

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

0 4' 8' 16'



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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

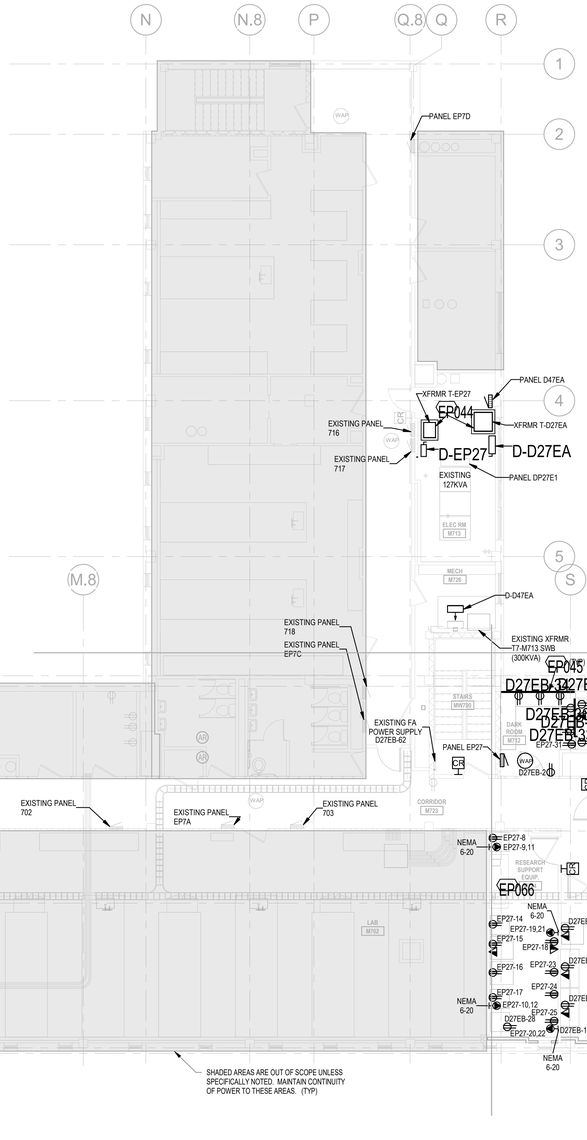
LEVEL 7 PLAN - LIGHTING - EAST

DATE: 07/08/2025
DRAWN: GSR
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #: **E275L**

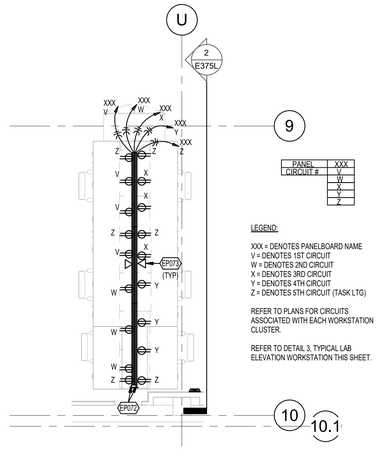
6/26/2025 7:08:53 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/A22X27 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt

POWER PLAN NOTES

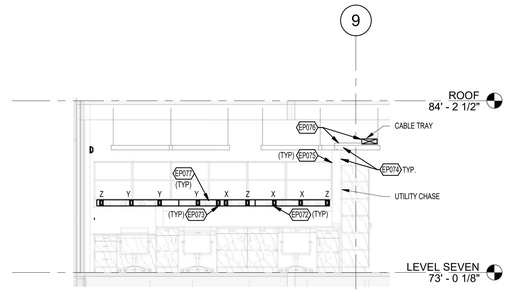
EP009	PROVIDE CEILING MOUNTED OUTLET, TYPE AS INDICATED.
EP044	PROVIDE HOUSEKEEPING PAD FOR TRANSFORMER. REFER TO DETAIL 5 ON SHEET E675L
EP045	PROVIDE DUAL CHANNEL SURFACE MOUNTED RACEWAY. INSTALL DIRECTLY ABOVE COUNTERTOP BACKSPLASH. INSTALL DUPLEX RECEPTACLES IN UPPER CHANNEL QUANTITY AS SHOWN. SPACED AT 42" O.C. EXTEND 1" CONDUIT INTO CORRIDOR AND BUSH FOR DATA WIRING INTO LOWER CHANNEL.
EP066	CIRCUIT NUMBERS IN THIS SPACE SHALL BE CONNECTED TO EM PANEL EP27, UNLESS OTHERWISE NOTED.
EP067	PROVIDE NEW CARD READER IN PLACE OF EXISTING CARD READER, INCLUDING NEW WIRING BACK TO CONTROL PANEL.
EP072	PROVIDE DUAL CHANNEL, SURFACE MOUNTED RACEWAY ON BOTH SIDES OF BENCH SHELF AS SHOWN. WIREMOLD #ALA4800 SERIES OR APPROVED EQUAL. LOCATE RACEWAY TIGHT WITH BOTTOM OF SHELF AND FASTEN TO FASCIA BOARD WITH SCREWS. INSTALL EQUALLY SPACED DUPLEX RECEPTACLES IN UPPER CHANNEL. PROVIDE WIREMOLD #ALA-DR OR ALA-G DEVICE PLATES FOR RECEPTACLES.
EP073	PROVIDE DATA RECEPTACLES IN LOWER CHANNEL OF SURFACE MOUNTED RACEWAY. OWNER TO PROVIDE DEVICE COVERPLATES FOR ALL DATA LOCATIONS. COORDINATE WITH POWER INSTALLED IN UPPER CHANNEL.
EP074	ALL POWER AND LIGHTING CIRCUITS TO BE ROUTED TO LAB BENCHES THROUGH UTILITY CHASE PROVIDED WITH BENCH. PROVIDE CIRCUITS INTO BENCH AS SHOWN ON THE POWER PLAN OF THIS SHEET.
EP075	ALL DATA CABLES TO BE ROUTED THROUGH UTILITY CHASE PROVIDED AT THE END OF THE LAB BENCH.
EP076	PROVIDE 1-1/4" CONDUIT NIPPLE FOR EACH WIREMOLD INTO THE UTILITY CHASE. PROVIDE TWO (2) CONDUITS, EACH 1-1/4", FROM TOP OF CHASE TO CABLE TRAY.
EP077	TASK LIGHTING PRE-INSTALLED UNDER LAB BENCH SHELF. PLUG INTO OUTLET NOTED FOR TASK LIGHTING AS PER DETAIL.
EP078	INSTALL RECEPTACLES BACK TO BACK WITHIN A COMMON SURFACE MOUNTED JUNCTION BOX CENTERED ON TOP OF LAB TABLE. ROUTE POWER CONCEALED WITHIN LAB BENCH BACK TO PANELBOARD.
EP079	PROVIDE WIRE BASKET CABLE TRAY TO MATCH EXISTING. TIE INTO EXISTING CABLE TRAY. PROVIDE ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.

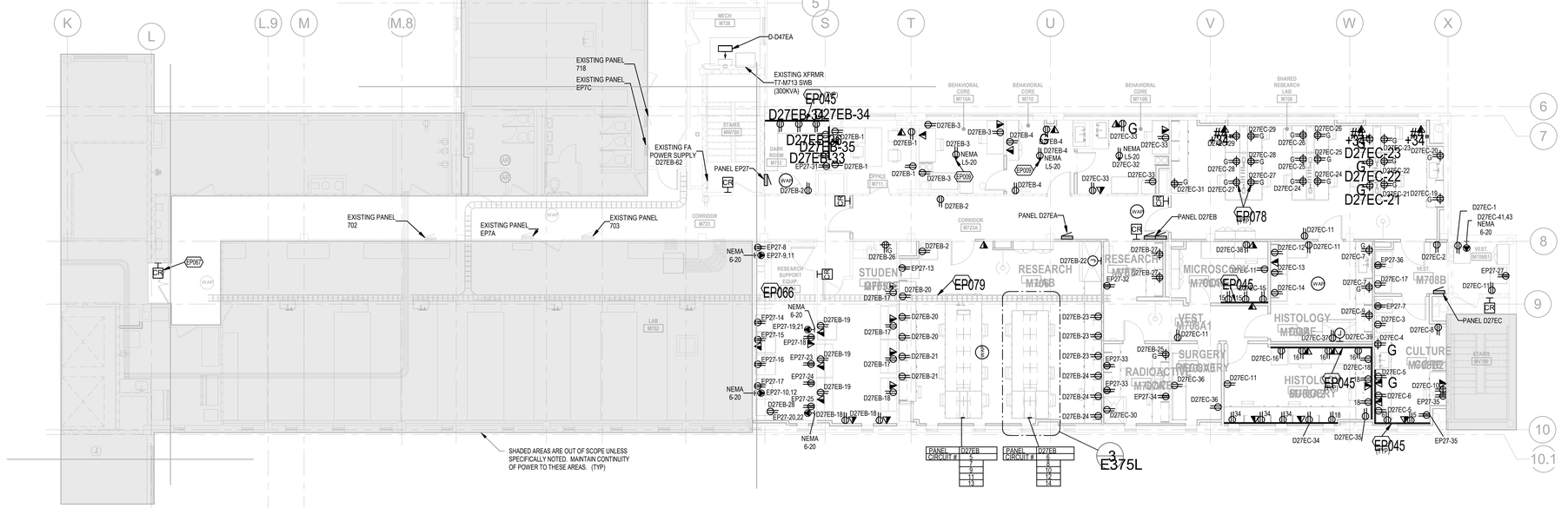


3 TYPICAL LAB DESK LAYOUT
NO SCALE

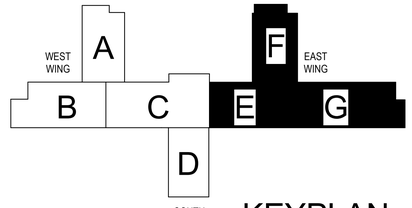


2 TYPICAL LAB ELEVATION WORKSTATION
NO SCALE





LEVEL 7 PLAN - POWER (EAST LIKE-FOR-LIKE SCOPE)



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CONTRACT DOCUMENTS

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0" 1"

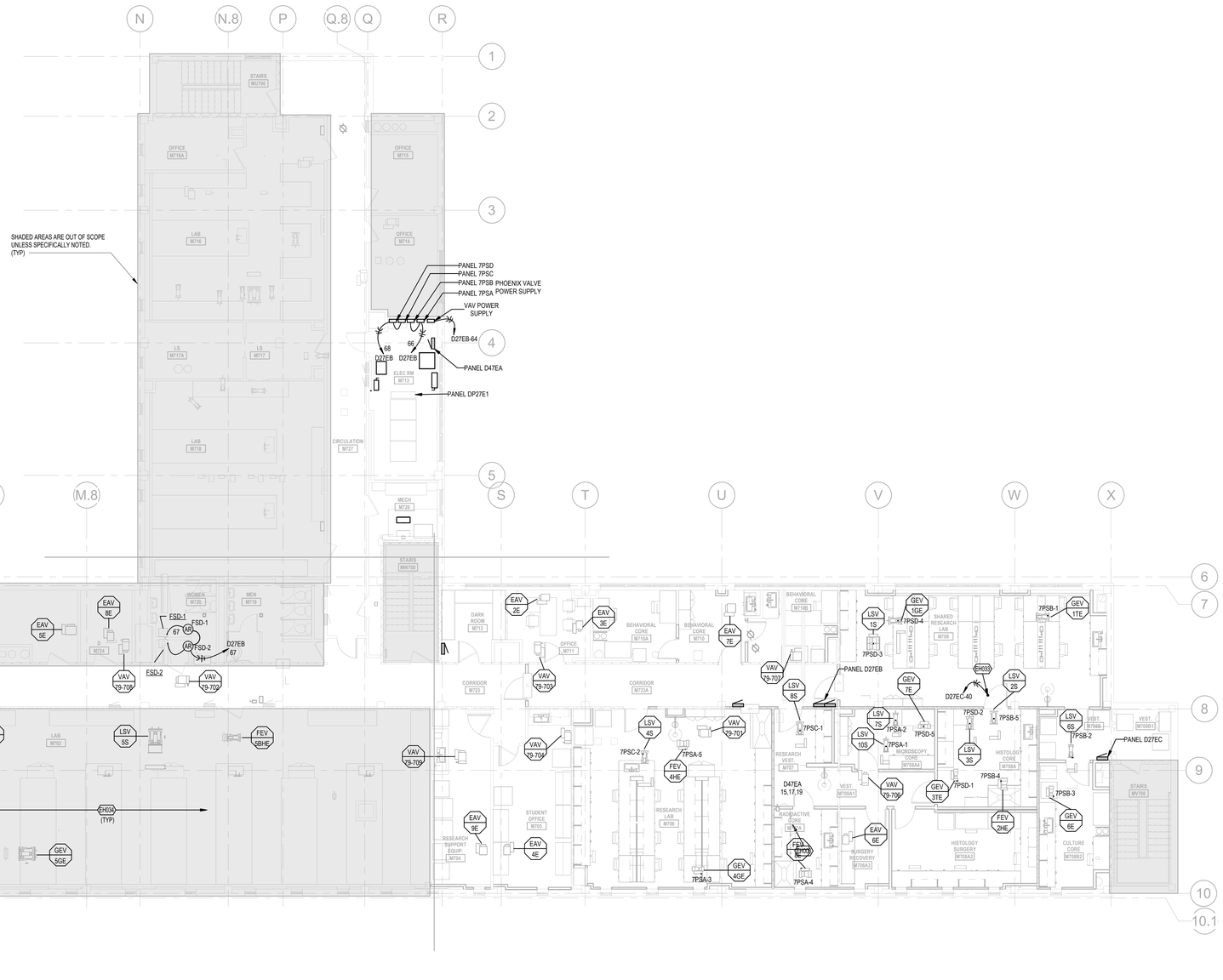
LEVEL 7 PLAN - POWER - EAST

DATE: 07/08/2025
DRAWN: DSF
CHECKED: Checker
PGAV # 53660-20
CLIENT # CP2400920
SHEET # **E375L**

Autodesk Docs://53660-10 MU SOM MSB Lab Renovations/A222-27 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt
6/25/2025 7:09:30 PM

HVAC POWER NOTES

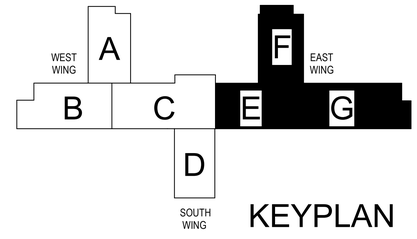
EH008	BLOWER COIL UNIT PROVIDED WITH DISCONNECTING MEANS. MAKE ALL FINAL CONNECTIONS TO UNIT AND CONTROL STEP DOWN TRANSFORMER PER MANUFACTURERS RECOMMENDATIONS.
EH033	MAKE FINAL CONNECTIONS TO FAN FILTER UNIT PER MANUFACTURER RECOMMENDATIONS. UNIT PROVIDED WITH DISCONNECT SWITCH.
EH034	RE-CONNECT REPLACED DEVICES TO EXISTING POWER.



LEVEL 7 PLAN - HVAC POWER (EAST LIKE-FOR-LIKE SCOPE)

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

0 4' 8' 16'



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MO STATE CERTIFICATE OF AUTHORITY #2023008136

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Structural Engineers
4338 Bellview Avenue
Kansas City, MO 64111 (816) 531-4144
MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

0" 1"

LEVEL 7 PLAN - HVAC POWER - EAST

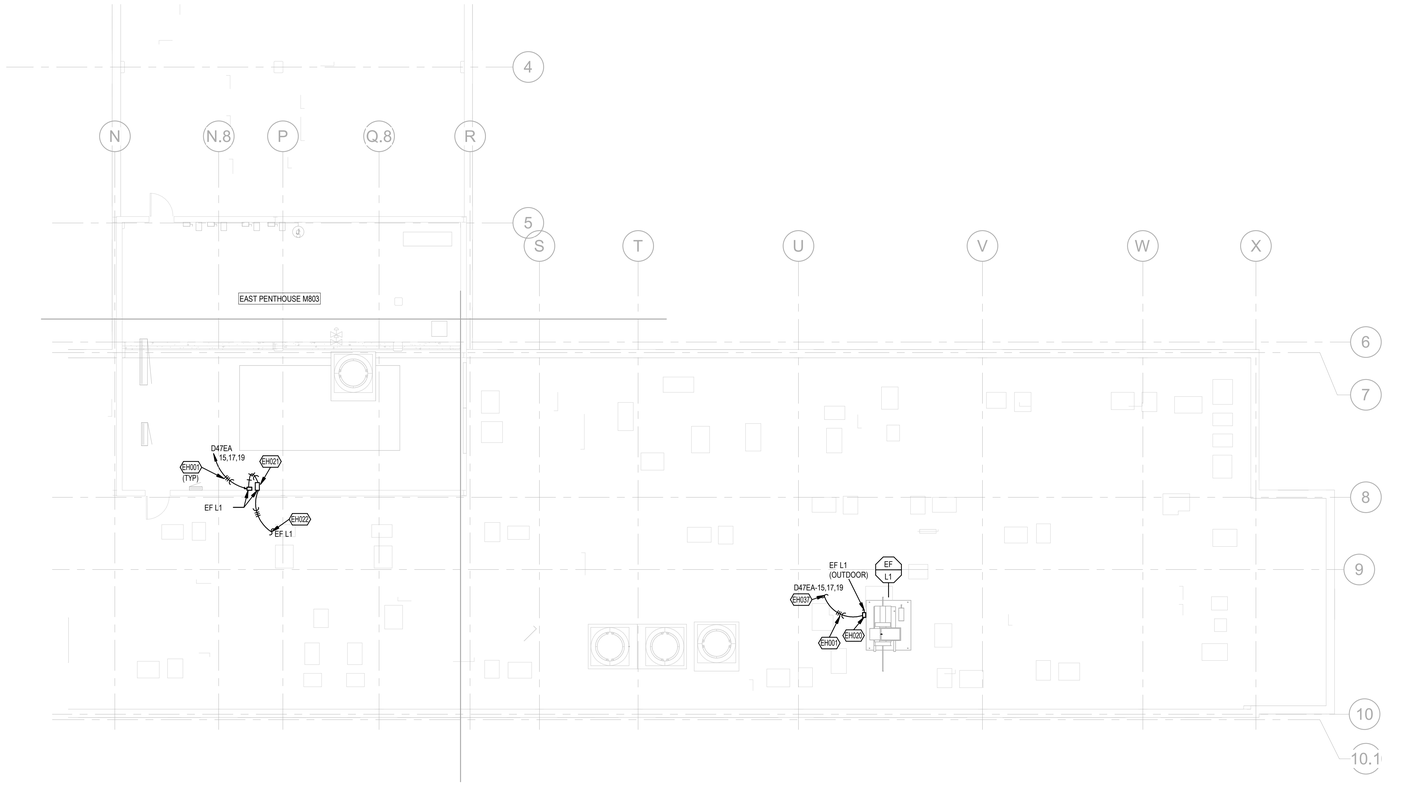
DATE: 07/08/2025

DRAWN:	CHECKED:
MSS	Checker
PGAV #	CLIENT #
53660-20	CP2400920

SHEET #: **E475L**

6/26/2025 7:09:52 PM Autodesk Docs://53660-10 MU SOM MSB Lab Renovations/A222-27 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt

HVAC POWER NOTES	
EH001	PROVIDE 3 #12 AWG AND 1 #12 GROUND IN 3/4" CONDUIT.
EH020	DISCONNECT PROVIDED WITH EF. MAKE FINAL CONNECTIONS TO EF PER MANUFACTURER INSTRUCTIONS. DISCONNECT TO BE PROVIDED WITH AUXILIARY CONTACTS HARDWIRED TO VFD SAFETY CIRCUIT TO SHUT DOWN VFD WHEN DISCONNECT IS OPENED.
EH021	VFD SAFETY CIRCUIT TO BE HARDWIRED TO UNIT MOUNTED DISCONNECT AUXILIARY CONTACTS SO THAT VFD IS SHUT DOWN WHEN DISCONNECT IS OPENED.
EH022	EXTEND TO EF NOTED.
EH037	EXTEND TO VFD SERVING FAN. REFER TO EAST PENTHOUSE.



ROOF PLAN OVERALL - HVAC POWER - EAST (7E SCOPE)

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

0 4' 8' 16'

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MONICA SANTOYO SANTOS
NUMBER E-2000174546
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07/08/2025

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University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

ROOF PLAN - HVAC POWER - EAST

DATE:	
07/08/2025	
DRAWN: MSS	CHECKED: Checker
PGAV # 53660-20	CLIENT # CP2400920

SHEET #
E485L

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/4222-27 ELEC_7TH FLR_LWKE_FOR_LWKE_V22.rvt
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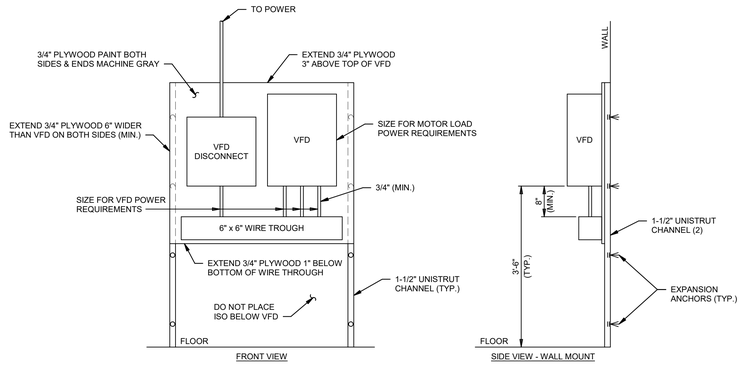
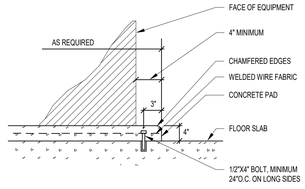


NOTES:

1. VARIABLE FREQUENCY DRIVE (VFD) IS PROVIDED AND INSTALLED BY CONTRACTOR.
2. KEEP ALL LOW VOLTAGE CONTROL WIRING (UNDER 25V) AND HIGH VOLTAGE POWERWIRING (OVER 25V) SEPARATED. (RUN IN SEPARATE CONDUIT).
3. PLYWOOD SIZE IS BASED ON ONE VFD IN EACH LOCATION. FOR MULTIPLE VFD'S, COORDINATE WITH OWNER'S REPRESENTATIVE.
4. POWER TO DRIVE AND LEADS TO MOTOR MUST BE IN SEPARATE CONDUIT.
5. INSTALL ISO TRANSFORMER IF REQUIRED.
6. DO NOT PLACE ISO TRANSFORMER BELOW VFD.
7. IF REMOTE SERVICE DISCONNECT IS REQUIRED IT MUST BE HARDWIRED TO VFD SAFETY CIRCUIT TO SHUT DOWN DRIVE IF DISCONNECT IS OPENED.

6 VFD MOUNTING DETAIL (7E SCOPE)

NO SCALE

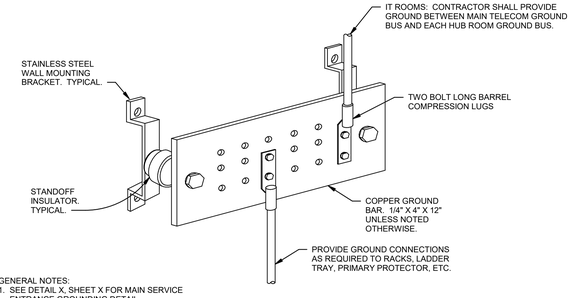


5 HOUSEKEEPING PAD

NO SCALE

NOTE:

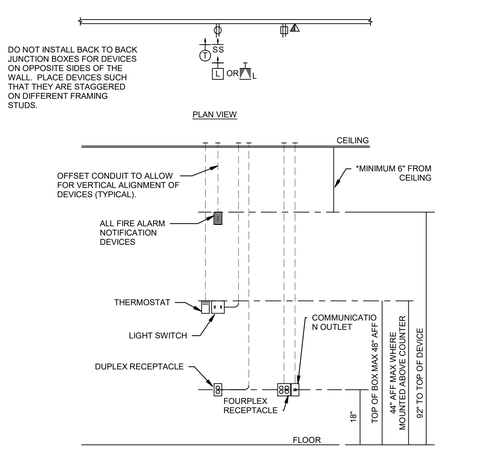
REFER TO FIRE STOPPING DETAILS ON ARCHITECTURAL SHEETS



GENERAL NOTES:
1. SEE DETAIL X, SHEET X FOR MAIN SERVICE ENTRANCE GROUNDING DETAIL.
2. SEE DETAIL X, SHEET X FOR TELECOM GROUNDING RISER.

4 TELECOMMUNICATIONS GROUND BUS BAR

NO SCALE



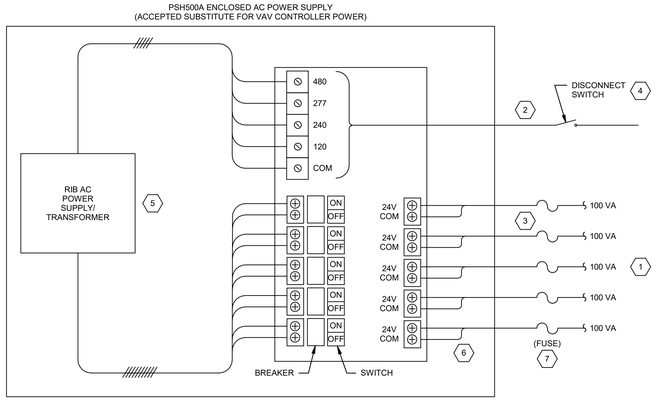
NOTE: ALIGN ALL DEVICES VERTICALLY. IF ANY DEVICE(S) ARE FOUND NOT TO BE INSTALLED PER DETAIL, CONTRACTOR SHALL RELOCATE AND PAY ALL ASSOCIATED COSTS ASSOCIATED WITH THE LOCATION(S). DEVICES SHALL NOT BE PLACED BACK TO BACK IN WALLS.

CONTRACTOR SHALL REFER TO ARCHITECTS DETAILS AND ELEVATIONS FOR COORDINATION OF LOCATION OF ALL WIRING DEVICES BEFORE ROUGH-IN OF J-BOXES. NOTIFY ENGINEER OF ANY HEIGHT DISCREPANCIES.

*FOR LOW CEILING APPLICATIONS, ALL FIRE ALARM NOTIFICATION DEVICES SHALL BE AT A MINIMUM 6" FROM CEILING.

3 TYPICAL WALL MOUNTING DEVICE

NO SCALE



NOTES:

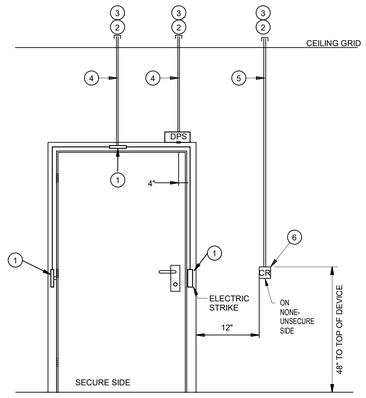
1. SECONDARY LINE CAN BE RAN IN SAME CONDUIT AS N2
2. ENCLOSED POWER SUPPLY MUST BE LOCATED IN ELECTRICAL ROOM, MECHANICAL ROOM, OR JANITOR'S CLOSET AND BE ACCESSIBLE. ANY OTHER LOCATION MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE

KEYED NOTES:

1. EACH SECONDARY OUTPUT LINE CAN POWER 5 VAV CONTROLLERS MAXIMUM. (100 VA)
2. PRIMARY LINE INFO: 480/277/240/120 Vac, #12 AWG MINIMUM
3. SECONDARY LINE INFO: 24 Vac, #12-26 AWG, 100 VA. MAX LENGTH 175 FEET USING #14 AWG
4. DISCONNECT SWITCH REQUIRED, EXTERNALLY MOUNTED WITHIN 12 INCHES OF RIB POWER SUPPLY
5. 500VA POWER SUPPLY - RIB MODEL# PSMN500A OR APPROVED EQUIVALENT
6. ALL SECONDARY LINES MUST BE LABELED IN ENCLOSURE AS TO WHICH VAV'S THEY POWER PRIOR TO ENERGIZING POWER SUPPLY
7. A SEPARATE 3 AMP FUSE IS REQUIRED WITHIN 3 FEET OF EACH VAV

2 500 VA CONNECTION

NO SCALE



KEYED NOTES

1. PROVIDE JUNCTION BOXES FLUSH WITHIN THE DOOR FRAME WITH 1/2" FLEXIBLE CONDUIT BETWEEN BOXES AS REQUIRED FOR ROUTING OF ACCESS CONTROL WIRING INSIDE DOOR FRAME.
2. STUB CONDUIT 6" ABOVE ACCESSIBLE CEILING AND BUSH.
3. LOW VOLTAGE ACCESS CONTROL SYSTEM CABLES: ROUTE TO DOOR ACCESS CONTROL PANEL IN LOCAL TELECOMMUNICATION ROOM.
4. PROVIDE 1/2" CONDUIT.
5. PROVIDE 3/4" CODNUIT.
6. PROVIDE SINGLE GANG RECESSED BACKBOX WHERE CARD READER IS SHOWN ON PLANS.

DOOR FLOOR LOCATION	WIRING HOMERUN LOCATION EAST SIDE	WIRING HOMERUN LOCATION WEST SIDE
SEVENTH FLOOR	EXISTING DATA M724	EXISTING DATA M743

NOTES:
CONTRACTOR SHALL LEAVE A MINIMUM OF 20FT EXTRA CABLE LENGTH AT TELECOM ROOM SIDE TO ALLOW FOR OWNER TERMINATIONS.
OBTAIN SCHEDULE OF DOORS FROM OWNER PRIOR TO PULLING CABLES TO COORDINATE ACTUAL FLOOR TELECOM CLOSET FOR EACH CABLE IS TO LAND.

NOTES:

A. DETAIL IS DIAGRAMMATIC ONLY AND MAY NOT REPRESENT ACTUAL DEVICES/QUANTITY OF DEVICES REQUIRED. COORDINATE ALL REQUIREMETNS WITH FINAL DOOR HARDWARE PROVIDED AND AS CALLED OUT ON ARCHITECTURAL DRAWINGS. COORDINATE WITH SECURITY SYSTEM INSTALLER FOR EXACT ROUGH IN LOCATIONS AND REQUIREMENTS.

B. COORDINATE FINAL REQUIREMENTS WITH ACCESS CONTROL VENDOR. PROVIDE EACH ACCESS CONTROL DOOR WITH ONE (1) 18/6 UNSHIELDED CABLE AND ONE (1) 22/6 SHEILDED CABLE.

1 WIRING FOR CARD ACCESS SYSTEM - MUHC SYSTEM

NO SCALE

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0" 1"

7E - ELECTRICAL DETAILS

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PGAV # 53660-20	CLIENT # CP2400920

SHEET #
E675L

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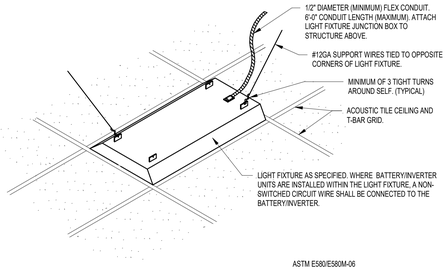
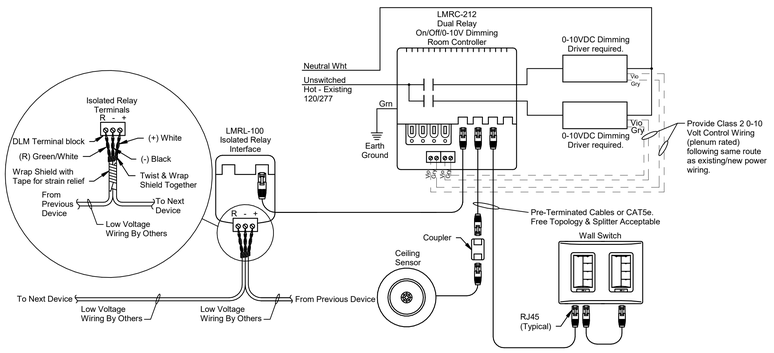


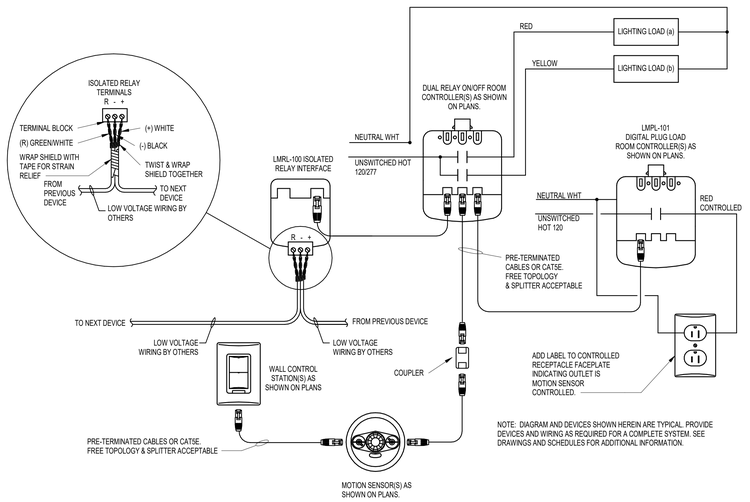
3 LIGHT FIXTURE MOUNTING & BRACING

NO SCALE



2 TYPICAL DIMMING/MOTION SENSOR WIRING DIAGRAM

NO SCALE



1 TYPICAL DIMMING/MOTION SENSOR WIRING DIAGRAM WITH PLUG LOAD

NO SCALE

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SHEET #:	E676L

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1 RISER DIAGRAM - DEMOLITION

NO SCALE

RP-1(AHU-1) 3HP; EX-1B 20HP; EX-1A 20HP; ES-12A 20HP; 1-1/2"C

EXIST PANEL 'D4PWA' 480V 225A PENTHOUSE WEST

SFE48 X HP7

EXIST. PANEL 'ED4PW' 480V 225A (MCB) 2"C

EXIST. PANEL 'MSDP-WEST' 208V 600A

EXIST PANEL '9G' 208V 225A

EXIST. PANEL 'MSDP-EAST' 208V 600A (FAN RM M803)

EXIST. PANEL 'MCC-MC' 208V 600A (FAN RM M803)

EXIST. PANEL 'FR' 208V, 100A (FED PACIFIC) (FAN RM M803)

LABEL OLD PP8 CONDUIT AS "SPARE"

ELEVATOR #1
ELEVATOR #2

PENTHOUSE

7TH FLOOR

EXISTING PULLBOX

EXIST. PANEL 'EP7W' 200A SQUARE D (OLD NAME: '7W')

EXIST. PANEL '7G' (WEM1) 200A

EXIST. 'EP7A' 100A '7TA'; EXIST. 'EP7D' 100A '7TD'; EXIST. 'EP7C' 100A '7TC'; EXIST. 'EP7' 400A '7T'; EXIST. 'EP7B' 100A '7TB'

500A DISC; EXIST. T7 300KVA; 1000A CB

EXIST. 0P27E1 1000A MLO , 208Y/120V RM 713

SECTION TO REMAIN PULLBOX ONLY IF REQUIRED

EXIST. '718'; EXIST. '717'; EXIST. '718'; EXIST. '703'; EXIST. '702'; EXIST. '705'; EXIST. '706'; EXIST. PANEL '709'; EXIST. PANEL '708'

7TH FLOOR

HEIGHT = 11'-2 3/8"

400A; EXIST. PANEL '7PPC' 208V 200A; EXIST. PANEL '7PPB' 208V 200A; EXIST. PANEL '7PPA' 208V 200A; EXIST. '7DPA' 208V 500A; EXIST. T-7DPA 150KVA; EXIST. PANEL '7LPA' 480V 400A

6TH FLOOR

(22KAIC) EXIST PANEL 'M629PA' 208Y/ 225A MLO (LAB M629); EXIST PANEL 'M629PB' 208Y/ 225A MLO (LAB M629); RE-USED PANEL 'M621PB' 208Y/ 225A MLO (LAB M621); RE-USED PANEL 'M631PA' 208Y/ 225A MLO (LAB M621); EXIST PANEL 'M631PA' 208Y/ 225A MLO (EQP M631); EXIST PANEL 'PP2BWA' 208V 400A (ELEC RM M640); EXIST. PANEL 'D28W' 208V 600A/500A MCB (ELEC RM M640); EXIST T-D26W 150 KVA 480Y TO 208V (ELEC RM M640); EXIST. PANEL 'D48W' 480V 400A (ELEC RM M619); EXIST. PANEL 'PL28WA' 200A; EXIST. PANEL 'EPL28WA'; EXIST. PANEL 'ED28W' 208V 200A MCB (ELEC RM M640); EXIST. T5E 45 KVA 480V TO 208V (MECH RM M640); EXIST. PANEL 'ED48W' 480V 225A (MECH RM M640) (42KAIC)

(42KAIC) 400A D-D48W; D-D45W (42KAIC) 400A; 200A/ 150A F. D-EP28EA; EXIST 'T-EP28EA' 45 KVA 480V TO 208V (MECH RM M640); 160A BUSWAY (WEST)

SPARE (3-1/2"C) OLD PNL 7Z5Z FEED

EXIST PANEL 'EP28EA' 208V 225A 150A MCB (10KAIC)

160A BUSWAY (EAST)

EXIST. PANEL 'MS-DP-ME10HA' 400A, 208V; EXIST 'MS-LP-ME10A' 225A MLO (22KAIC); EXIST. 'MS-LP-ME10HA' 225A; EXIST. 'MS-LP-ME10HB' 125A; RE-USED 'M609PA' 225A MLO; EXIST 'D48E' 125A MLO (22KAIC)

EXIST. 'MS-DP-ME10HB' 400A, 208V; EXIST 'M607PA' 225A MLO (22KAIC); EXIST 'M607PB' 225A MLO (22KAIC)

5TH FLOOR

HEIGHT = 11'-2 3/8"

(22KAIC) NEW PANEL 'D25WD' 225A MLO; NEW PANEL 'D25WC' 225A MLO; NEW PANEL 'D25WB' 225A MLO; EXIST PANEL 'D25WA' 225A MLO; EXIST PANEL 'D25W' 208V 600A/500A MCB (42KAIC); EXIST T-D25W 150KVA 480V TO 208V (42KAIC); EXIST PANEL 'D49W' 480V 400A (22KAIC); EXIST. PANEL 'ED25W' 208V 400A MLO (M500 LOBBY); DISC. 400AF/400AT 'D-ED25W' 208V (MECH M573); EXIST 'T-ED25W' 112.5 KVA 480V TO 208V (MECH M573); EXIST. PANEL 'ED49W' 480V 400A (MECH M573) (42KAIC)

(MECH M573)

EXIST. PANEL 'P2SST' 208V (ELEC M579); EXIST. PANEL 'P2SS2' (ELEC M579); EXIST. PANEL 'SHT' 480V (ELEC M579)

EXIST PANEL 'ED25EA' 208V 225A MLO (CORRIDOR) (10KAIC)

EXIST. PANEL 'MS-DP-ME10HA' 400A, 208V; EXIST 'MS-LP-ME10A' 225A MLO (22KAIC); EXIST. 'MS-LP-ME10HA' 225A; EXIST. 'MS-LP-ME10HB' 125A; RE-USED 'M609PA' 225A MLO; EXIST 'D48E' 125A MLO (22KAIC)

EXIST. 'MS-DP-ME10HB' 400A, 208V; EXIST 'M607PA' 225A MLO (22KAIC); EXIST 'M607PB' 225A MLO (22KAIC)

4TH FLOOR

HEIGHT = 11'-2 3/8"

400A DISC 400AF (42KAIC); EXIST 'PH-1' 400A 480V (M524); EXIST 'T-D25E' 150 KVA 480V TO 208V (RM MD12); 600A/ 500A FUSE D-D25E; EXIST PANEL 'D25E' 208V 600A MLO (22KAIC); EXIST PANEL 'D25EA' 225A MLO (22KAIC); EXIST PANEL 'D25EB' 225A MLO (22KAIC); NEW PANEL 'D25EC' 225A MLO (22KAIC); EXIST. PANEL 'PL25EA' 200A MCB (LAB M531); EXIST. 'PL-1' M524 200A MCB (M524) (22KAIC)

200A/ 200A FUSE D-4E BUSWAY; EXISTING BUSWAY ROOMS M415-M416

EXIST. PANEL 'P24S-1' 100A; EXIST. PANEL 'P24S-2' 100A; EXIST. PANEL 'P24S-5' 100A; EXIST. PANEL 'P24S-4' 100A; EXIST. PANEL 'P24S-3B' 208V 150A; EXIST. PANEL 'P24S-3A' 208V 150A; EXIST. PANEL 'P24S-2B' 208V 150A; EXIST. PANEL 'P24S-2A' 208V 150A; EXIST. PANEL 'P24S-1B' 208V 150A; EXIST. PANEL 'P24S-1A' 208V 150A; EXIST. PANEL 'D24S' 208V 500A MCB (ELEC RM M445); EXIST. PANEL 'D44S' 480V 400A (MECH RM M445); EXIST. PANEL 'D44W' 480V 600A (MECH RM M445); EXIST. PANEL 'ED44S' 480V 100A (ELEC RM M445); EXIST. T-44S-T7 150 KVA 480V TO 208V (MECH RM M445); EXIST. T-44S-T3 30 KVA 480V TO 208V (MECH RM M445); EXIST. PANEL 'EP24S' 208V 100A (MECH RM M445)

HAS (1) 100A SPARE

(2) SETS: 4 #350KCMIL, #1 G, 3" C

4"C

2 SETS: 4 #350KCMIL, #1/0 G, 3" C

3 #4/0, #4 G, 2" C

EXIST. PANEL 'D23W-HVAC' 480V 400A MCB (ELEC RM M337); EXIST. PANEL 'EPL23WA' 208V 100A; EXIST. PANEL 'PL23WA' 208V 200A; EXIST. PANEL 'PL23WB' 208V 200A; EXIST. PANEL 'D23W' 208V 600A MCB (ELEC RM M337); EXIST. 'T3' 150 KVA 480V TO 208V (ELEC RM M337); EXIST. PANEL 'D43W' 480V 400A (ELEC RM M337); EXIST. PANEL 'ED43W' 480V 100A (ELEC RM M337); EXIST. 'XFMR' 45 KVA 480V TO 208V (ELEC RM M337); EXIST. PANEL 'ED23W' 208V 100A (ELEC RM M337)

3RD FLOOR

HEIGHT = 13'-2 1/2"

4"C; 3 #500KCMIL, #3 G

4 #500KCMIL, #3 G, 3-1/2" C

4 #350KCMIL, #6 G, 2" C

4 #500KCMIL, 3 G, 3-1/2" C

EXIST. PANEL 'EP22W' 208V 70A (CORR M259); EXIST. PANEL 'P22W-3' 208V 150A (CORR M259); EXIST. PANEL 'P22W-2' 208V 150A (CORR M259); EXIST. PANEL 'P22W-1' 208V 150A (CORR M259); EXIST. PANEL 'P22W-4' 208V 100A (ELEC RM M257); EXIST. PANEL 'D22W' 208V 400A (ELEC RM M257); EXIST. 'T-D22W' 112.5 KVA 480V TO 208V (MECH RM M255); EXIST. PANEL 'D42W' 480V 400A (MECH RM M255)

2ND FLOOR

HEIGHT = 16'- 6 1/2"

EXIST. PANEL '2E' 208V 200A (CORR M259); EXIST. PANEL '2A' 208V (CORR M259); EXIST. PANEL '2EA' 208V 100A (CORR M259); EXIST PANEL 'E22CA' 208V 225A MLO (CORRIDOR) (10 KAIC); EXIST PANEL '22CPA' 225A MLO (22KAIC); EXIST PANEL '22CPB' 225A MLO (22KAIC)

EXIST. PANEL '2C' 208V '7TA' (CLSRM M253); EXIST. PANEL '2D' 208V 200A (CORR M257); EXIST. PANEL '2EB' 208V 100A (CORR M255); EXIST. PANEL '2EC' 208V 100A (CORR M259); EXIST. PANEL '2G' 208V 200A (CORR M259); EXIST. PANEL '2' '7TA'; EXIST. PANEL '2H1' 208V, 200A WESTINGHOUSE (CORR M200); EXIST. PANEL '2H2' 208V

EXIST PANEL 'EP22W' 208V 70A (CORR M259); EXIST PANEL 'LP' 208V 100A (HOUSEKEEPING M128M); EXIST. PANEL 'EP2A' 208V 225A MCB (MECH RM M130)

EXIST. PANEL 'EDM1W-M' 480V 1200A/600A (MKR) (RM ELEC M159); EXIST. 'T-1EPA' 75 KVA 480V TO 208V (MECH RM M130); EXIST. 'T-PSDTD/PL1' 112.5 KVA 480V TO 208V (RM ELEC A202); EXIST. PANEL 'PSDPL1' 208V 400A (RM ELEC A202); EXIST. PANEL 'PSTL1' 208V 150A (RM ELEC A202); EXIST. PANEL 'PSTL2' 208V 150A (RM ELEC A202); EXIST. PANEL 'PSTL3' 208V 150A (RM ELEC A202); EXIST. PANEL 'PSTL4' 208V 150A (RM ELEC A202); EXIST. PANEL '1HPA' 480V 225A (MECH RM M130); EXIST. PANEL 'D41W-HVAC' 480V 600A (RM ELEC M159)

(3"C) (JAN M168)

EXIST. PANEL '1LP' 208V; EXIST. PANEL '1LD' 208V 600A WESTINGHOUSE (RM ELEC M159); EXIST. PANEL '1A' 208V 150A (CORR M124); EXIST. PANEL '1LC' 208V 225A (RM ELEC M159); EXIST. PANEL '1P' 208V 225A (RM ELEC M159) (MOST BKRS OFF)

EXIST. PANEL 'MY100B' 208V 100A (TELECOM MY100B)

EXIST. PANEL '1C' 208V 200A WESTINGHOUSE (7T)

EXIST. PANEL '1PPC' 208V 225A (CORR M122); EXIST. PANEL '1PPB' 208V 225A (CORR M122)

EXIST. PANEL '1PPA' 208V 400A (RM NE400)

EXIST. PANEL '1M' 208V, 200A WESTINGHOUSE (CORR M124); EXIST. PANEL '1E' 208V 400A (CORR M122)

1ST FLOOR

HEIGHT = 13' 11"

EXIST. PANEL 'PDPL1' 208V 500A (RM ELEC A202); EXIST. PANEL 'D41W' 480V 400A (RM MY100); EXIST. 'T-41W-T8' 112.5 KVA 480V TO 208V (RM MY100); EXIST. PANEL 'D21W' 208V 400A (RM MY100); EXIST. PANEL 'IPP-M148' 208V 150A (LAB M148); EXIST. PANEL 'LP144' 208V 100A (LAB M144); EXIST. PANEL 'EP21W' 208V; EXIST. 'T-41W-T4' 45 KVA 480V TO 208V (RM MY100); EXIST. PANEL 'ED41W-1' 480V 400A (RM ELEC M159)

STANDBY DISTRIBUTION PANEL "1STDPH1"; 480Y/277V, 3Ø, 4W, 1200A, 65,000AIC. (ROOM "M159")

EXISTING STANDBY AUTOMATIC TRANSFER SWITCH 'ATS-ST'; 1200A.

EXIST. SEP1 *PROJECT CP221061*

EXISTING MAIN SWITCHBOARD 'D41W-M'; 480Y/277V, 3Ø, 4W, 3000A, 65,000AIC. (ROOM 'M159') *PROJECT CP221061*

EXIST. SEP2 *PROJECT CP221061*

EXIST XMFRMR T-M159-1DP4 480V - 208Y/120V, 300KVA ROOM 'M159' *PROJECT CP221061*

EXIST PANEL M159-1DP4 208Y/120V, 3Ø, 4W. 1000A MCB ROOM 'M159' *PROJECT CP221061*

EXIST XMFRMR T-M159-1DP3 480V - 208Y/120V, 300KVA ROOM 'M159' *PROJECT CP221061*

EXIST PANEL M159-1DP3 208Y/120V, 3Ø, 4W. 1000A MCB ROOM 'M159' *PROJECT CP221061*

TO UTILITY TRANSFORMERS

EXISTING SWITCHBOARD MSB-EMO 3000A, 480Y/277V,3 PHASE MECH RM G001

(42KAIC) EXIST PANEL 'DAGA' 480V 400A (MECH G001A); (42KAIC) EXIST PANEL '1200A' 208V 600A (MECH G001A)

MECH ROOM G001

TO M001DP480

XMFRMR T-M1B 480V - 208Y/120V, 225KVA ROOM 'M100A' "PROJECT CP151671"

EXISTING SWITCHBOARD M1B-MAIN 208Y/120V, 3 PHASE 800A RM M100A "PROJECT CP151671"

EXISTING SWITCHBOARD M1B 208Y/120V, 3 PHASE 800A RM M100A

TO M001DP480

XMFRMR T-M1A 480Y - 208Y/120V, 225KVA ROOM 'M100A' "PROJECT CP151671"

EXISTING SWITCHBOARD M1A-MAIN 208Y/120V, 3 PHASE 800A RM M100A "PROJECT CP151671"

EXISTING SWITCHBOARD M1A 208Y/120V, 3 PHASE 800A MLO RM M100A "PROJECT CP151671"

GROUND FLOOR

EXIST. PANEL 'MS1234' 208Y/ 600A (FED PACIFIC (MECH M007))

HEIGHT = 15'-9"

PGAV ARCHITECTS
PECKHAM GUYTON ALBERS & VIETS, INC.
1000 w 47th Place, #300, Westwood, KS 66205
(913) 362-6500
www.PGAV.COM

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STATE OF MISSOURI — MONICA SANTOYO SANTOS — NUMBER E-2000174546 — REGISTERED PROFESSIONAL ENGINEER — 07/08/2025

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MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.

7E - RISER DIAGRAM - DEMOLITION

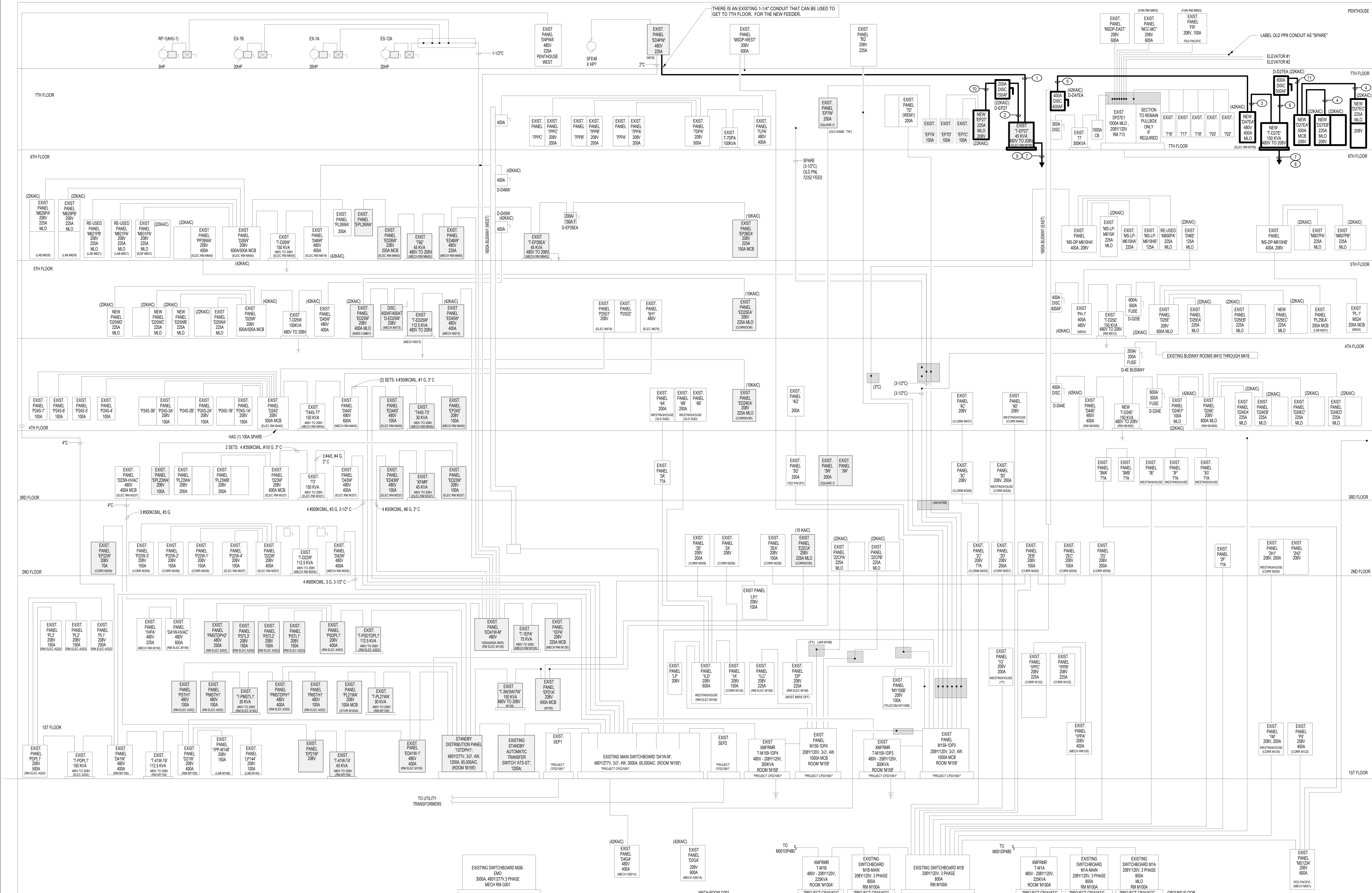
DATE:	07/08/2025
DRAWN: MSS	CHECKED: Checker
PGAV #	CLIENT #
53660-20	CP2400920

SHEET #: **E775L**

6/26/2025 7:10:33 PM Autodesk Docs://53660-10 MU-SCM MSB Lab Renovations/A222-27 ELEC_7TH FLR_LWE_FOR_LWE_V22.rvt

ELECTRICAL RISER FEEDER SCHEDULE (7E)

SYMBOL #	AMPACITY	NUMBER OF RUNS	COPPER FEEDER SIZE_NOTES	TEMP RATING	NOTES
1	70	1	TRANSFORMER FEEDER: 3 #4 AWG AND 1 #8 GROUND IN 1-1/4" CONDUIT	90 DEG C	
2	150	1	FED FROM TRANSFORMER: 4 #1/0 AWG AND 1 #6 GROUNDIN 2" CONDUIT.	90 DEG C	GROUND SIZED PER NEC 250.102C
3	225	1	TRANSFORMER FEEDER: 3 #4/0 AWG AND 1 #4 GROUND IN 2-1/2" CONDUIT	90 DEG C	
4	225	1	4 #4/0 AWG AND 1 #4 GROUND IN 2-1/2" CONDUIT	90 DEG C	
5	400	2	4 #3/0 AWG AND 1 #3 GROUND IN 2" CONDUIT	90 DEG C	
6	500	2	FED FROM TRANSFORMER: 4 #250 MCM AND #2/0 GROUND IN 2-1/2" CONDUIT	90 DEG C	GROUND SIZED PER NEC 250.102C
7			BOND TO INTERIOR METAL WATER PIPING IN THE AREA SERVED BY SEPARATELY DERIVED SYSTEM.		
8			#2/0 GROUNDING ELECTRODE CONDUCTOR		
9			#6 GROUNDING ELECTRODE CONDUCTOR		
10	150	1	4 #1/0 AWG AND 1 #6 GROUNDIN 2" CONDUIT.	90 DEG C	
11	500	2	4 #250 MCM AND #2 GROUND IN 2-1/2" CONDUIT	90 DEG C	



1 RISER DIAGRAM - NEW WORK
NO SCALE

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STATE OF MISSOURI MONICA SANTOYO SANTOS NUMBER E-2000174546 REGISTERED PROFESSIONAL ENGINEER 07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced. 0" 1"

7E - RISER DIAGRAM - NEW WORK

DATE: 07/08/2025
DRAWN: MSS CHECKED: Checker
PGAV #: 53660-20 CLIENT #: CP2400920
SHEET #: **E776L**

LUMINAIRE SCHEDULE (7TH FLOOR EAST)

TYPE	MOUNTING	LAMPS	LUMENS	COLOR TEMP.	CRI	CONTROL TYPE	WATTS	VA	VOLTAGE	MANUFACTURER	DESCRIPTION	EQUALS	EQUALS 2	REVISION
A4	SUSPENDED	LED	4188 lm	3500 K	80	NON-DIM	32 W	36 VA	277 V	LITHONIA LBL4-4000LM-80CRI-35K-NODIM-MVOLT-STACG F36 F2	4'-0"L PRISMATIC WRAPAROUND. PROVIDE MOUNTING HARDWARE TO SUSPENDING TO MOUNTING HEIGHT INDICATED.	PRE-APPROVED EQUAL		
A8	SUSPENDED	LED	9384 lm	3500 K	80	NON-DIM	80 W	89 VA	277 V	LITHONIA LBL8-9600LM-80CRI-35K-MVOLT-STACGF36 F2	8'-0"L PRISMATIC WRAPAROUND. PROVIDE MOUNTING HARDWARE TO SUSPEND TO MOUNTING HEIGHT INDICATED.	PRE-APPROVED EQUAL		
B	RECESSED GRID	LED	6218 lm	3500 K	80	NON-DIM	49 W	54 VA	277 V	LITHONIA 2GTL-4-60L-A12125-EZ1-LP835-PAF	2X4 PRISMATIC TROFFER.	PRE-APPROVED EQUAL		
C	RECESSED GRID	LED	3360 lm	3500 K	80	0-10V (10%)	30 W	33 VA	277 V	LITHONA 2GTL-2-33L-A12125-EZ1-LP835-PAF	2X2 PRISMATIC TROFFER. DIMMING WHERE REQUIRED.	PRE-APPROVED EQUAL		
E	SURFACE	LED	250 lm			NON-DIM	2 W	3 VA	277 V	DUAL-LITE EV-2D-I	SURFACE EMERGENCY LIGHTING UNIT WITH INTEGRAL BATTERY BACKUP. WHITE FINISH. 1W LED LAMPS. SELF-DIAGNOSTIC, SELF-TESTING. INDIVIDUALLY ADJUSTABLE HEADS. MOUNT CENTERLINE OF UNIT AT 7'-6" AFF, UNO.	PRE-APPROVED EQUAL		
E2	RECESSED	LED	352 lm			NON-DIM	4 W	6 VA	277 V	DUALLITE EV-4-R-I	CEILING RECESSED EMERGENCY LIGHTING UNIT WITH BATTERY BACKUP. WHITE FINISH. 4 LED LAMPS. ADJUSTABLE IN PAIRS. SELF-DIAGNOSTIC, SELF-TESTING. 5 YEAR WARRANTY. INSTALL WITH RECTANGULAR FACEPLATE.	PRE-APPROVED EQUAL		
F4A	SUSPENDED	LED	4862 lm	3500 K	80	NON-DIM	33 W	37 VA	277 V	HE WILLIAMS 75R-4-L50-835-ACF/D-96-DIM-UNV-S9658D/W	4'-0" LONG LED STRIP WITH ROUND DIFFUSE LENS. AIRCRAFT CABLE SUSPENSION AND POWER CORD LENGTHS AS REQUIRED. MOUNT AT 9'-0" AFF, UNO. L85>50,000 HRS	PRE-APPROVED EQUAL		
G	RECESSED GRID	LED	3868 lm	3500 K	80	0-10V (1%)	31 W	34 VA	277 V	HE WILLIAMS HETG-S-14-L38-835-A-DIM1-UNV-EQCLIPS	1'X4' RECESSED HIGH EFFICIENCY LED LUMINAIRE SUITABLE FOR GRID CEILINGS. 3-1/2" HOUSING HEIGHT. FLAT WHITE ALUMINUM DOOR FRAME. FROSTED ACRYLIC DIFFUSERS WITH METAL REFLECTOR. L70 > 50,000 HRS. EARTHQUAKE CLIPS.	PRE-APPROVED EQUAL		
K4	RECESSED GYP, FLANGELESS	LED	3000 lm	3500 K	80	0-10V (10%)	36 W	39 VA	277 V	FINELITE HPWS-4W2D-4'-H-835-SW-277-SC-FC-10%-WB-SF-TXL-L-SW	NOMINAL 4-5/8"W X 5-1/8"H X 4'-0"L (UP TO 5'-0" TELESCOPING) RECESSED PERIMETER LED LUMINAIRE SUITABLE FOR GYPBOARD CEILINGS. MUD-IN TYPE SPACKLE FLANGE. 2" REGRESSED LENS. HIGH OUTPUT. SATIN ACRYLIC LENS. WALL-TO-WALL MOUNTING INTENT WITH FIELD TELESCOPING EXTENSION ON ONE SIDE. REFER TO PLANS FOR LENGTHS. L80 > 60,000 HRS. COORDINATE INSTALLATION SO LUMINAIRE IS MOUNTED BEFORE CEILING INSTALLATION. FINAL FIXTURE LENGTHS PER ARCHITECTURAL COVE LENGTHS. SUBMIT FACTORY GENERATED DRAWING DURING SUBMITTALS FOR CONFIRMATION OF LENGTHS TO THE NEAREST INCH. 7.1W/FT, 600 LUMENS/FT.	PRE-APPROVED EQUAL		
R4	RECESSED GRID	LED	3000 lm	3500 K	80	0-10V (10%)	30 W	33 VA	277 V	AXIS LIGHTING CLKLED-750-80-35-SO-4-WH-277-DP-1-TG9	NOMINAL 4"W X 4'-0"L RECESSED LOW PROFILE LINEAR LED LUMINAIRE SUITABLE FOR USE IN 9/16" TEGULAR CEILING GRIDS. 1-9/16" HEIGHT. EXTRUDED ALUMINUM HOUSING WITH FROSTED ACRYLIC LENS. WHITE FINISH. INSTALL LUMINAIRE PER MANUFACTURER'S INSTRUCTIONS TO ENSURE LUMINAIRE IS MAINTAINABLE AND SERVICEABLE FROM BELOW AND SWINGS DOWN AS DESIGNED.			
X1C	CEILING/PENDANT	LED				NON-DIM	4 W	5 VA	277 V	DUAL LITE SE-S-R-W-E-I	CEILING MOUNT DIE-CAST ALUMINUM EXIT SIGN, SINGLE FACE. UNIVERSAL CEILING, END OR WALL MOUNT. RED LETTERS, WHITE FINISH. FIELD REMOVABLE CHEVRONS. AC OPERATION WITH EMERGENCY BATTERY BACKUP. SELF-DIAGNOSTIC, SELF-TESTING. IN OPEN TO STRUCTURE LOCATIONS, PROVIDE RIGID STEM SUPPORT TO SUSPEND EXIT SIGN TO MOUNTING HEIGHT AS REQUIRED.	MULE LIGHTING MD-B-U-R-WW-SD		
X1W	WALL	LED				NON-DIM	4 W	5 VA	277 V	DUAL LITE SE-S-R-W-E-I	WALL MOUNT DIE-CAST ALUMINUM EXIT SIGN, SINGLE FACE. UNIVERSAL CEILING, END OR WALL MOUNT. RED LETTERS, WHITE FINISH. FIELD REMOVABLE CHEVRONS. AC OPERATION WITH EMERGENCY BATTERY BACKUP. SELF-DIAGNOSTIC, SELF-TESTING. AT 8'-0" AFF CEILINGS, WALL MOUNT CENTERED BETWEEN CEILING AND TOP OF DOOR BOTTOM. FOR CEILINGS GREATER THAN 8'-0" AFF, WALL MOUNT BOTTOM OF EXIT SIGN 3 INCHES ABOVE TOP OF DOOR FRAME, UNO. MAXIMUM 9-1/2" EXIT SIGN HEIGHT.	MULE LIGHTING MD-B-U-R-WW-SD		
X3C	RECESSED	LED				NON-DIM	4 W	5 VA	277 V	HE WILLIAMS EXIT/EL/RECESSED-SF-R-MP-AN-EM-SDT-D	RECESSED CEILING MOUNT EDGE-LIT ACRYLIC LED EXIT SIGN, SINGLE FACE. EXTRUDED ALUMINUM HOUSING RECESSED WITHIN CEILING FOR OVERALL HEIGHT OF 8 INCHES. SUITABLE FOR DRYWALL AND GRID CEILINGS. RED LETTERS, ANODIZED ALUMINUM. FIELD APPLIED CHEVRONS. AC OPERATION WITH BATTERY BACKUP. SELF-DIAGNOSTIC, SELF-TESTING.	PRE-APPROVED EQUAL		

LUMINAIRE SCHEDULE GENERAL NOTES:

1. PRE-APPROVAL FOR EQUALS MUST BE SUBMITTED PRIOR TO BIDS. SUBSTITUTIONS WILL NOT BE ENTERTAINED POST BIDS.
2. CONTRACTOR SHALL SUBMIT INDIVIDUAL PRICING. LOT PRICING WILL NOT BE ACCEPTED.
3. ALL LUMINAIRES SHALL BE FIELD SERVICEABLE AND MAINTAINABLE, UNLESS NOTED OTHERWISE. LUMINAIRES SHALL HAVE FIELD-REPLACEABLE LED DRIVERS AND LED BOARDS/LIGHT ENGINES.
4. ALL LUMINAIRES SHALL BE POLYSTER POWDER COAT PAINTED AFTER FABRICATION, UNO. FINAL SELECTION OF PAINT FINISH BY ARCHITECT DURING SHOP DRAWINGS.
5. ALL INTERIOR LUMINAIRES SHALL HAVE A FIVE YEAR WARRANTY.
6. UNLESS NOTED OTHERWISE, ALL LUMINAIRES SHALL PROVIDE L70 > 50,000 HRS.
7. FURNISH AND INSTALL ALL NECESSARY HARDWARE AND MOUNTING BRACKETS.
8. FOR RECESSED PERIMETER TYPE LUMINAIRES AND SHALLOW PLENUM RECESSED LUMINAIRES, CAREFULLY REVIEW INSTALLATION INSTRUCTIONS AND COORDINATE INSTALLATION WITH CEILING INSTALLER AND OTHER TRADES AS REQUIRED. ADDITIONALLY, FOR RECESSED PERIMETER TYPE LUMINAIRES, COORDINATE WITH CEILING INSTALLER SO THAT LUMINAIRE IS INSTALLED PRIOR TO CEILING INSTALLATION.

LIGHTING CONTROL SWITCH DEVICE SCHEDULE (7TH FLOOR EAST)

TYPE	MOUNTING	DESCRIPTION	MANUFACTURER	MODEL	COVERAGE	COLOR
S(AT)	WALL	ASTRONOMICAL TIME CLOCK AND TIMER SWITCH. EIGHT CONTROL PROGRAMS WITH USER SELECTABLE DAYS OF OPERATION AND ON/OFF TIMES. 72 HOURS POWER FAILURE MEMORY. LIGHTED SWITCH. MANUAL COUNTDOWN FEATURE ALLOWS SELECTABLE OVERRIDE BETWEEN 5 MINUTES AND SIX HOURS. - DAYS OF OPERATION CHOICES: EVERYDAY, WEEKDAYS, WEEKEND, SELECTED DAY OR NO DAYS. - ON/OFF TIME CHOICES: SPECIFIC TIME OF DAY, OR UP TO 99 MINUTES BEFORE OR AFTER DUSK OR DAWN. STAND ALONE, NOT PART OF DLM	WATTSTOPPER	RT-200-W	0-800W (120V) 0-1200W (277V)	WHITE
S(L2)	WALL	DIGITAL LIGHTING MANAGEMENT SYSTEM (DLM) SWITCH LOW VOLTAGE PUSHBUTTON SWITCH TWO BUTTON SWITCH	WATTSTOPPER	LMSW-102		WHITE
S(LD)	WALL	DIGITAL LIGHTING MANAGEMENT SYSTEM (DLM) SWITCH LOW VOLTAGE PUSHBUTTON DIMMER SWITCH	WATTSTOPPER	LMDM-101		WHITE

LIGHTING CONTROL FIXTURE SCHEDULE (7TH FLOOR EAST)

TYPE	ID	MOUNTING	DESCRIPTION	MANUFACTURER	MODEL	COVERAGE	COLOR
MS(2)	2	CEILING	DUAL TECHNOLOGY ULTRASONIC AND PASSIVE INFRARED CEILING SENSOR WITH 360 DEGREE PATTERN, COMPONENT OF DIGITAL LIGHTING MANAGEMENT INTEGRATED CONTROL SYSTEM	WATTSTOPPER	LMDC-100	1000 SQFT	WHITE
MS(4)	4	CEILING CORNER MOUNT **MOUNT AS TIGHT TO CORNER AS POSSIBLE FOR COMPLETE COVERAGE	DUAL TECHNOLOGY ULTRASONIC AND PASSIVE INFRARED CEILING/WALL CORNER MOUNT SENSOR, COMPONENT OF DIGITAL LIGHTING MANAGEMENT INTEGRATED CONTROL SYSTEM	WATTSTOPPER	LMDX-100	2000 SQFT	WHITE
RC(D)	D	ABOVE ACCESSIBLE CEILING	PLENUM RATED CONTROLLER WITH LINE VOLTAGE RELAY(S) AND ON/OFF/0-10 VOLT DIMMING POWER SUPPLY COMPONENT OF DIGITAL LIGHTING MANAGEMENT INTEGRATED CONTROL SYSTEM CONNECT TO COMPONENTS WITH CAT 5E CABLES WITH RJ45 CONNECTORS PROVIDE WITH ISOLATED RELAY INTERFACE FOR HVAC CONTROL (PROVIDE ONE PER ROOM) (SEE NOTE BELOW)	WATTSTOPPER	LMRC-211 LMRC-212 LMRC-213 LMRL-100		

LIGHTING CONTROL DEVICE SCHEDULE NOTES:

1. PROVIDE REQUIRED NUMBER OF ROOM CONTROLLERS TO ACCOUNT FOR THE PROPER SWITCHING CONFIGURATION OF LOADS. ONLY ONE SYMBOL IS SHOWN IN PLAN FOR CLARITY.
2. CABLING USED TO INTER-CONNECT DLM SYSTEM DEVICES TO BE WHITE (OR PRE-APPROVED COLOR BY OWNER). ALL CABLING TO BE SAME COLOR. MULTIPLE COLORS SHALL NOT BE PERMITTED REGARDLESS OF LENGTHS.
3. PROGRAM ALL MOTION SENSORS TO BE OCUPANCY SENSORS OR AS NOTED CONTROL SEQUENCES ON THIS SHEET.
4. WATTSTOPPER IS A BASIS OF DESIGN. CONTRACTOR SHALL SUBMIT ANY EQUALS PRIOR TO BID FOR PRE-APPROVAL. SUBSTITUTIONS WILL NOT BE ENTERTAINED AFTER BIDS (CONTRACTOR SHALL PROVIDE DOCUMENTATION THAT ANY EQUALS ARE FULLY COMPATIBLE WITH EXISTING CONTROLS).
5. CONFIRM DEVICE COLOR WITH ARCHITECT PRIOR TO ORDERING

GENERAL LIGHTING CONTROL NOTES:

THE FOLLOWING PROVIDES A GENERAL DESCRIPTION OF THE BUILDING LIGHTING CONTROL SYSTEM AND BASED ON ASHRAE 90.1-2019. INCLUDE WITHIN PROJECT BID, ALL COSTS TO PROVIDE THE CONTROL INTENT DESCRIBED HEREIN, INCLUDING BUT NOT LIMITED TO, MATERIALS/EQUIPMENT, LABOR, START-UP, AND COMMISSIONING. REFER TO PLANS, LIGHTING CONTROL SCHEDULES, DETAILS AND SPECIFICATIONS SECTION 260923 FOR ADDITIONAL INFORMATION.

OCCUPANCY AND VACANCY SENSORS

- MOTION SENSORS SHALL BE PROGRAMED FOR TIME DELAYS OF 20 MINUTES, UNO.
- VACANCY SENSORS SHALL BE PROGRAMMED FOR MANUAL ON OPERATION.
- OCCUPANCY SENSORS SHALL BE PROGRAMMED FOR AUTOMATIC ON OPERATION.
- CONTROL SYSTEM SHALL INCLUDE CONTACT CLOSURES OR OTHER INTERFACES TO ALLOW SENSORS TO SIGNAL OCCUPANCY AND VACANY MODES TO BUILDING HVAC CONTROLS/EQUIPMENT.

CORRIDORS M723:

- LIGHTS SHALL BE CONTROLLED VIA DIMMABLE ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED MOTION SENSORS AND LOCAL CONTROL STATIONS.

- MOTION SENSORS:
  OCCUPANCY TYPE: (AUTO ON)
  TIME DELAY: 20 MINUTES

- LOCAL CONTROL:
  VIA DIMMABLE WALL CONTROL STATIONS. CONTROL STATIONS PROGRAMMED TO ENABLE PATRONS TO RAISE LIGHTS UP TO PRE-SET TOP TRIM (100%) AND DOWN TO PRE-SET LOW TRIM (30%). LIGHTS SHALL NEVER BE ABLE TO TURN OFF COMPLETELY VIA LOCAL CONTROLS DUE TO SECURITY AND SAFETY CONCERNS.

  LOCK OUT STATION (INCLUDING HIGH AND LOW TRIMS) ONCE PROGRAMMED, TO PREVENT ACCIDENTAL RE-PROGRAMMING OF CONTROL STATION.

- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL TURN ON AUTOMATICALLY TO 100% (REGARDLESS OF PRIOR CONTROL STATION LIGHT LEVEL).

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL DIM DOWN TO PRE-SET LOW TRIM (30%).

CORRIDOR M723A, VESTIBULES M707, M708A1, M708B, M708B1:

- LIGHTS SHALL BE CONTROLLED VIA ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED MOTION SENSORS AND LOCAL CONTROL STATIONS.

- MOTION SENSORS:
  OCCUPANCY TYPE: (AUTO ON)
  TIME DELAY: 20 MINUTES

- LOCAL CONTROL:
  VIA WALL CONTROL STATIONS.
- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL TURN ON AUTOMATICALLY.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.

OFFICES, BEHAVIOR CORE ROOMS:

- LIGHTS SHALL BE CONTROLLED VIA DIMMABLE ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED MOTION SENSORS AND LOCAL CONTROL STATIONS.

- MOTION SENSORS:
  OCCUPANCY TYPE: (AUTO ON TO 50%)
  TIME DELAY: 20 MINUTES
- LOCAL CONTROL:
  VIA DIMMABLE WALL CONTROL STATIONS.
- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL NOT TURN ON AUTOMATICALLY.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.

  PROGRAM THE "SENSOR RETRIGGER GRACE PERIOD" TO 60 SECONDS SO THAT LIGHTS WILL TURN ON AUTOMATICALLY DURING THAT GRACE PERIOD IF MOTION IS SENSED.

MICROSCOPY CORE M708A4:

- LIGHTS SHALL BE CONTROLLED VIA ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSORS AND LOCAL CONTROL STATIONS.
- MOTION SENSORS:
  VACANCY TYPE: (MANUAL ON)
  TIME DELAY: 20 MINUTES

- LOCAL CONTROL:
  VIA TWO-BUTTON WALL CONTROL STATION.

SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL NOT TURN ON AUTOMATICALLY. LIGHTS SHALL NEVER TURN ON AUTOMATICALLY DUE TO LIGHT INTERFERING WITH EXPERIMENT CONCERNS.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.
  LIGHTS **SHALL NOT** RE-TRIGGER ON WHEN MOTION IS SENSED AFTER TIMING OUT.

SURGERY RECOVERY M708A3:
- LIGHTS SHALL BE CONTROLLED VIA AN ASTRONOMIC TIMECLOCK/TIMER SWITCH.
- TIMECLOCK:
  EVERY DAY
  DAWN: LIGHTS ON
  DUSK: LIGHTS OFF
- LOCAL CONTROL:
  TEMPORARY OVERRIDE OF OFF SETTING VIA TIMER SWITCH. COUNTDOWN TIMER SELECTABLE FROM 5 MINUTES TO 6 HOURS.
- SEQUENCE:
  LIGHTS TURN ON AT DAWN (OR OWNER SELECTED TIME).
  LIGHTS TURN OFF AT DUSK (OR OWNER SELECTED TIME).
  INTEGRAL SWITCH ENABLES PATRONS TO OVERRIDER TIMECLOCK TEMPORARILY.
- COORDINATE EXACT SCHEDULE AND OVERRIDE COUNTDOWN TIMER SETTING WITH OWNER.

LABS, CULTURE CORE, DARK ROOM, HISTOLOGY CORE, LS, RADIOACTIVE CORE, RESEARCH SUPPORT:

- LIGHTS SHALL BE CONTROLLED VIA ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSORS AND LOCAL CONTROL STATIONS.
- MOTION SENSORS:
  VACANCY TYPE: (MANUAL ON)
  TIME DELAY: 20 MINUTES

- LOCAL CONTROL:
  VIA WALL CONTROL STATIONS.

- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL NOT TURN ON AUTOMATICALLY. LIGHTS SHALL NEVER TURN ON AUTOMATICALLY DUE TO LIGHT INTERFERING WITH EXPERIMENTS CONCERNS.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.
  LIGHTS **SHALL NOT** RE-TRIGGER ON WHEN MOTION IS SENSED AFTER TIMING OUT.

CELL M701:

- LIGHTS SHALL BE CONTROLLED VIA DIMMABLE ROOM CONTROLLERS, LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSORS AND LOCAL CONTROL STATIONS.
- MOTION SENSORS:
  VACANCY TYPE: (MANUAL ON)
  TIME DELAY: 20 MINUTES

- LOCAL CONTROL:
  VIA DIMMABLE WALL CONTROL STATIONS.

- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL NOT TURN ON AUTOMATICALLY. LIGHTS SHALL NEVER TURN ON AUTOMATICALLY DUE TO LIGHT INTERFERING WITH EXPERIMENTS CONCERNS.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.
  LIGHTS **SHALL NOT** RE-TRIGGER ON WHEN MOTION IS SENSED AFTER TIMING OUT.

HISTOLOGY SURGERY M708A2:

- LIGHTS SHALL BE CONTROLLED VIA ROOM CONTROLLERS AND LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSORS AND LOCAL CONTROL STATIONS.
- MOTION SENSORS:
  VACANCY TYPE: (MANUAL ON)
  TIME DELAY: 30 MINUTES

- LOCAL CONTROL:
  VIA DIMMABLE WALL CONTROL STATIONS.

- SEQUENCE:
  WHEN MOTION IS SENSED, LIGHTS SHALL NOT TURN ON AUTOMATICALLY.

  WHEN MOTION IS NOT SENSED WITHIN PROGRAMMED TIME DELAY, LIGHTS SHALL TURN OFF.
  LIGHTS SHALL RE-TRIGGER ON WHEN MOTION IS SENSED AFTER TIMING OUT.

ELECTRICAL/MECHANICAL/TELECOM ROOMS
- LOCAL SWITCHING OF LIGHTS. LIGHTS WILL NOT BE CONTROLLED BY AUTOMATIC MEANS PER NEC AND FOR SAFETY/SECURITY REASONS.

A/V INTERFACES
- LIGHTING CONTROLS SHALL BE INDEPENDENT OF A/V SYSTEM; NO INTEGRATION BETWEEN A/V SYSTEM AND LIGHTS ARE PLANNED.

MOTORIZED SHADES
- LIGHTING CONTROLS SHALL BE INDEPENDENT OF MOTORIZED SHADE CONTROLS; NO INTEGRATION BETWEEN SHADES AND LIGHTS ARE PLANNED.

BMS INTEGRATION
- SEE OCCUPANCY AND VACANCY SENSOR SECTION ABOVE. NO ADDITIONAL INTEGRATION BETWEEN BMS OR HVAC SYSTEMS IS ANTICIPATED FOR THE LIGHTING CONTROLS.

PROGRAMMING/START-UP
- PROVIDE LIGHTING CONTROL SYSTEM PROGRAMMING BY A FACTORY AUTHORIZED REPRESENTATIVE TO MEET OWNER REQUIREMENTS AND THOSE SET FORTH IN THESE DOCUMENTS.

- PROGRAMMING SHALL INCLUDE, BUT NOT BE LIMITED TO, SETUP AND FINE-TUNING OF LIGHT LEVELS, PRESET SCENES, AND BUTTON PROGRAMMING FOR ALL AREAS.

- PRIOR TO PROGRAMMING, ENSURE ALL FACTORY REQUIRED CHECKLISTS AND INSTALLATION REQUIREMETNS HAVE BEEN COMPLETED AND ADDRESSED.

- COORDINATE WITH OWNER AND DESIGN TEAM TO ENSURE APPROPRIATE OWNER'S REPRESENTATIVE(S) ARE PRESENT TO FINALIZE LIGHTING PROGRAMMING.SETTINGS.

- INCLUDE WITHIN BID, COST ASSOCIATED WITH TWO ADDITIONAL VISITS (AFTER PROJECT TURNOVER AND WITHIN THE FIRST YEAR), FOR THE FACTORY AUTHORIZED PROGRAMMER TO RETURN TO THE PROJECT SITE AND MAKE ADJUSTMENTS AS REQUESTED BY THE BUILDING OWNER.

- REFER TO SPECIFICATIONS FOR DEMONSTRATION AND TRAINING REQUIREMENTS.

LIGHTING CONTROL INTENT NARRATIVE

NO SCALE

PGAV ARCHITECTS
PECKHAM GUYTON ALBERS & VIETS, INC.
1000 w 47th Place, #300, Westwood, KS 66205
(913) 362-6500 www.PGAV.COM

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STATE OF MISSOURI
MONICA SANTOYO SANTOS
NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1" 2"

7E - LUMINAIRE AND CONTROL SCHEDULES

DATE:	07/08/2025
DRAWN: GSR	CHECKED: Checker
PGAV # 53660-20	CLIENT # CP2400920
SHEET #	E805L

6/26/2025 7:10:59 PM Autodesk Docs://53660-10 MU-SCAM MSB Lab Renovations/A22-27 ELEC_7TH FLR_LIKE_FOR_LIKE_V22.rvt GSR

PANEL: D47EA

SERVICE: 480/277 Wye , 3 -PHASE , 4 -WIRE
AMP: 400 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:
BUS: COPPER, S/N, GND BUS
NEUTRAL BUS: 100%
MOUNTING: SURFACE
FEED: TOP
ENCLOSURE: TYPE 1
A.I.C. RATING: 42,000
SUPPLIED FROM: E-BUSWAY
LOCATION: ELEC RM M713
FLOOR LOCATED: LEVEL SEVEN

NOTES:

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1	LTG - OFFICES M705,M711, BEHAVIOR M710,...	1	20	1.64			2.12			20	1	LTG - LAB M706, M707-M708...	2	
	3	LTG - MECH M726, ELEC M713	1	20		0.31			0		20	1	SPARE	4	
	5	LTG - CORRIDOR M723/M723A	1	20			0.77			0.41	20	1	LTG - LS M725, CELL M701	6	
	7	LTG - LAB M702	1	20	2			0			20	1	SPARE	8	
	9	SPARE	1	20		0			0		20	1	SPARE	10	
	11	SPARE	1	20			0			0	20	1	SPARE	12	
	13	SPARE	1	20	0			0			20	1	SPARE	14	
	15					0.1			0		20	1	SPARE	16	
	17	EF-1 (EAST ROOF)	3	15			0.1			0	20	1	SPARE	18	
	19				0.1			0			20	1	SPARE	20	
	21	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	22	
	23	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	24	
	25	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	26	
	27	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	28	
	29	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	30	
	31				14.66			--						32	
	33	T-D27EA (75kVA)	3	125		11.64			--		--	3	SPACE FOR 125A BREAKER (NOT BUSSED)	34	
	35						13.91			--				36	
	37				--			--						38	
	39	SPACE ONLY	3	--		--			--		--	3	SPACE ONLY	40	
	41						--			--				42	
		TOTAL LOAD:			20.1 kVA			12.02 kVA			15.06 kVA				
		TOTAL AMPS:			74 A			43 A			56 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	7341 VA	125.00%	9176 VA		
Receptacle	27180 VA	68.40%	18590 VA	**TOTAL CONNECTED LOAD:**	47.12 KVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	57 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	40.39 KVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	49 A
Cooling	2900 VA	100.00%	2900 VA		
Motor	1525 VA	108.20%	1650 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	8810 VA	100.00%	8810 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)

PANEL: EP27

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 225 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:
BUS: COPPER, S/N, GND BUS
NEUTRAL BUS: 100%
MOUNTING: SURFACE
FEED: TOP
ENCLOSURE: TYPE 1
A.I.C. RATING: 22,000
SUPPLIED FROM: T-EP27
LOCATION: DARK ROOM M712
FLOOR LOCATED: LEVEL SEVEN

NOTES:
PANEL REPLACES PANEL 'EP7'

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1				0			0						2	
1	3	EXISTING PANEL EP7D	3	50		0			0		50	3	EXISTING PANEL EP7C	4	1
	5						0			0				6	
	7	REC - CULTURE CORE M708B2 (INCUBATOR)	1	20	0.36			1.92			20	1	REC - RES SUP EQUIP. M704 (-80 FREEZER)	8	
	9	REC - RESEARCH SUPPORT EQUIP. M704 (NEMA 6-20)	2	20		0.96			0.96		20	2	REC - RES SUP EQUIP. M704 (NEMA 6-20)	10	
	11						0.96			0.96				12	
	13	REC - RESEARCH LAB M706 (-80 FREEZER)	1	20	1.92			1.92			20	1	REC - RES SUP EQUIP. M704 (-80 FREEZER)	14	
	15	REC - RES SUP EQUIP. M704 (-80 FREEZER)	1	20		1.92			1.92		20	1	REC - RES SUPEQUIP. M704 (-80 FREEZER)	16	
	17	REC - RES SUPEQUIP. M704 (-80 FREEZER)	1	20			1.92			1.92	20	1	REC - RES SUP EQUIP. M704 (-80 FREEZER)	18	
	19	REC - RESEARCH LAB M706 (-80 FREEZER)	2	20	0.96			0.96			20	2	REC - RES SUP EQUIP. M704 (NEMA 6-20)	20	
	21					0.96			0.96					22	
	23	REC - RES SUP EQUIP. M704 (-80 FREEZER)	1	20			1.92			1.92	20	1	REC - RES SUP EQUIP. M704 (-80 FREEZER)	24	
	25	REC - RES SUP EQUIP. M704 (-80 FREEZER)	1	20	1.92			0			20	1	SPARE	26	
	27	REC - VEST. M708B1 (-20 FREEZER)	1	20		1.92			0		20	1	SPARE	28	
	29	SPARE	1	20			0			0	20	1	SPARE	30	
	31	REC - ELEC/DARK ROOM M712	1	20	0.18			0.18			20	1	REC - RESEARCH VEST. M707	32	
	33	REC - RADIOACTIVE COREM707A	1	20		0.36			0.18		20	1	REC - RADIOACTIVE CORE M707A	34	
	35	REC - CULTURE CORE M708B2	1	20			0.36			0.36	20	1	REC - VEST. M708B (INCUBATOR)	36	
	37	SPARE	1	20	0			0			20	1	SPARE	38	
	39	SPARE	1	20		0			0		20	1	SPARE	40	
	41	SPARE	1	20			0			0	20	1	SPARE	42	
		TOTAL LOAD:			10.32 kVA			10.14 kVA			10.32 kVA				
		TOTAL AMPS:			86 A			85 A			86 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	0 VA	0.00%	0 VA		
Receptacle	7680 VA	100.00%	7680 VA	**TOTAL CONNECTED LOAD:**	30.78 KVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	85 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	30.78 KVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	85 A
Cooling	0 VA	0.00%	0 VA		
Motor	0 VA	0.00%	0 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	23100 VA	100.00%	23100 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)
1. RE-FEED EXISTING PANEL AS NOTED ON RISER DIAGRAM.

EXISTING PANEL: ED4PW

SERVICE: 480/277 Wye , 3 -PHASE , 4 -WIRE
AMP: 225 A
MAINS: MCB
MCB RATING: 225 A
SUBFEED LUGS:
BUS: COPPER, S/N, GND BUS
NEUTRAL BUS: 100%
MOUNTING: SURFACE
FEED: BOTTOM
ENCLOSURE: TYPE 1
A.I.C. RATING: EXISTING FIELD VERIFY
SUPPLIED FROM: ED41W-M
LOCATION: LAB NW710
FLOOR LOCATED: ROOF

NOTES:

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1				0			10.32						2	
	3	EXISTING SFHE-48	3	50		0			10.14		70	3	TRANSFORMER T-EP27	4	1
	5						0			10.32				6	
	7	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	8	
	9	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	10	
	11	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	12	
	13	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	14	
	15	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	16	
	17	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	18	
	19	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	20	
	21	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	22	
	23	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	24	
	25	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	26	
	27	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	28	
	29	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	30	
	31	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	32	
	33	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	34	
	35	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	36	
	37	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	38	
	39	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	40	
	41	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	42	
		TOTAL LOAD:			10.32 kVA			10.14 kVA			10.32 kVA				
		TOTAL AMPS:			37 A			37 A			37 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	0 VA	0.00%	0 VA		
Receptacle	7680 VA	100.00%	7680 VA	**TOTAL CONNECTED LOAD:**	30.78 kVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	37 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	30.78 kVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	37 A
Cooling	0 VA	0.00%	0 VA		
Motor	0 VA	0.00%	0 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	23100 VA	100.00%	23100 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)
1. PROVIDE NEW BREAKER IN AVAILABLE SPACE SIZED AS NOTED. BREAKER TO MATCH PANELBOARD AIC RATING AND MANUFACTURER. UPDATE PANELBOARD SCHEDULE.

PANEL: D27EA

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 600 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:
BUS:
NEUTRAL BUS: 0%
MOUNTING: SURFACE
FEED:
ENCLOSURE: TYPE 1
A.I.C. RATING: 22,000
SUPPLIED FROM: T-D27EA
LOCATION: CORRIDOR M723A
FLOOR LOCATED: LEVEL SEVEN

NOTES:

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1				6.53			8.13						2	
(LSI)	3	NEW PANEL D27EA	3	225		5.28			6.36		225	3	NEW PANEL D27EB	4	(LSI)
	5						5.84			8.07				6	
	7				--			--						8	
	9	SPACE ONLY	3	--		--			--		--	3	SPACE ONLY	10	
	11						--			--				12	
		TOTAL LOAD:			14.66 kVA			11.64 kVA			13.91 kVA				
		TOTAL AMPS:			125 A			97 A			119 A				

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	100 VA	125.00%	125 VA		
Receptacle	27180 VA	68.40%	18590 VA	**TOTAL CONNECTED LOAD:**	40.21 kVA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA	**TOTAL CONNECTED CURRENT:**	112 A
Heating Resistance Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND:**	31.77 kVA
Heating Motor Loads	0 VA	0.00%	0 VA	**TOTAL ESTIMATED DEMAND CURRENT:**	88 A
Cooling	2900 VA	100.00%	2900 VA		
Motor	1220 VA	110.25%	1345 VA		
Misc. Continuous Load	0 VA	0.00%	0 VA		
Misc. Non-Continuous Load	8810 VA	100.00%	8810 VA		
Intermittent Loads	0 VA	0.00%	0 VA		
Elevator	0 VA	0.00%	0 VA		
Water Heater - Instantaneous	0 VA	0.00%	0 VA		
Water Heater Tank - Continuous	0 VA	0.00%	0 VA		
Other	0 VA	0.00%	0 VA		

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)

SWITCHBOARD: DP27E1

SERVICE: 120/208 Wye / 3 - PHASE / 4 - WIRE
AMP: 1000 A
MAINS: MLO
MCB RATING: 0 A
BUS: COPPER, S/N, GND...
NEUTRAL BUS/RATING Yes-(S/N) / 100.00%
GROUND BUS: Yes
FEED: TOP
MOUNTING: PAD
ENCLOSURE: NEMA 1
AIC RATING: 65000
SUPPLIED FROM: T7-M713 SWB (300KVA)
LOCATION: ELEC RM M713

NOTES:
TO REPLACE SWITCHBOARD. NEED TO FIELD VERIFY EXISTING FUSE SIZES

NOTES	CIRCUIT #	DESCRIPTION	BREAKER SIZE P	BREAKER SIZE AMP	BREAKER SIZE FRAME	LOAD KVA A (KVA)	LOAD KVA B (KVA)	LOAD KVA C (KVA)
LSI	1	EXISTING 3RD FLOOR BUSWAY	3	400 A	400 A	--	--	--
LSI	2	EXISTING MSDP-EAST	3	600 A	600 A	52.42	52.42	52.42
LSI	3	EXISTING 7TH FLOOR PANELS WEST (716, 717, 718, 703, 702)	3	400 A	400 A	--	--	--
	4	ELEVATOR (FIELD VERIFY FUSE/FEEDER SIZE)	3	150 A	250 A	--	--	--
	5	ELEVATOR (FIELD VERIFY FUSE/FEEDER SIZE)	3	150 A	250 A	--	--	--
	6	SPARE (REMOVED 4TH FLOOR BUSWAY)	3	400 A	400 A	--	--	--
	7	SPACE ONLY	1	--	--	--	--	--
LSI	8	EXISTING MS-DP-610HB	3	400 A	400 A	41.5	38.67	41.01
LSI	9	EXISTING 7TH FLOOR PANELS EAST (702, 703, 705, 706)	3	400 A	400 A	--	--	--
	10	EXISTING PANEL FR	3	100 A	100 A	0	1	0
	11	EXISTING ST 11 (FIELD VERIFY SIZE FEEDER/FUSE)	3	100 A	100 A	--	--	--
	12	SPACE ONLY	1	--	--	--	--	--
(LSI)	13	EXISTING MCC	3	600 A	600 A	0	0	0
	14	EXISTING - 30 DAY DEMAND (127kVA-67.87kVA)	3	0 A	0 A	19.71	19.71	19.71
	15	SPACE ONLY	1	--	--	--	--	--
	16	SPACE ONLY	1	--	--	--	--	--
	17	SPACE ONLY	1	--	--	--	--	--
	18	SPACE ONLY	1	--	--	--	--	--
	19	SPACE ONLY	1	--	--	--	--	--
	20	SPACE ONLY	1	--	--	--	--	--
	21	SPACE ONLY	1	--	--	--	--	--
		KVA/PHASE TOTAL:				113625 VA	111795 VA	113135 VA
		AMP/PHASE TOTAL:				949 A	932 A	945 A

TOTAL CONNECTED LOAD: 338554 VA
TOTAL CONNECTED CURRENT: 940 A
TOTAL ESTIMATED DEMAND: 341160 VA
TOTAL ESTIMATED DEMAND CURRENT: 947 A

LOAD CLASSIFICATION	CONNECTED LOAD	CONNECTED CURRENT	DEMAND FACTOR	DEMAND KVA	DEMAND CURRENT
Existing Load - 30 Day Metered	59130 VA	164 A	125.00%	73913 VA	205 A
Misc. Non-Continuous Load	64418 VA	179 A	100.00%	64418 VA	179 A
Motor	158306 VA	439 A	107.06%	169479 VA	470 A
Other	0 VA	0 A	0.00%	0 VA	0 A
Receptacle	56700 VA	157 A	58.82%	33350 VA	93 A

NOTES: **(G=GFCI BREAKER; L=LOCK ON BREAKER)**
1. RECONNECT EXISTING PANEL. BREAKER SIZE REDUCED DUE TO MINIMAL CONNECTED LOADS. PROVIDE LABEL AT PANEL TO INDICATE FED FROM REDUCED SIZED BREAKER
2. 7E SCOPE: CHANGE OUT BREAKER TO SIZE INDICATED.

NOTE: DP27E1 IS EXISTING FOR THIS PROJECT:

DISCONNECT/VFD EQUIPMENT SCHEDULE (7E SCOPE)

REVISION	SUPPLIED FROM	EQUIPMENT TAG	MOTOR SIZE / DESCRIPTION	EQUIPMENT VOLTAGE/PHASE	DISCONNECT TYPE	DISCONNECT SIZE / FUSE SIZE	STARTER TYPE	STARTER SIZE (NEMA RATING)	STARTER DISC SIZE / FUSE SIZE	NEMA ENCLOSURE	KAIC RATING	NOTES
7TH EAST	T-D27EA	D-D27EA	DISC FOR PANEL D27EA	208 V / 3 - PHASE	FSS/600A/3P/250V	600A/500A FUSE				NEMA TYPE 1	22000	
7TH EAST	E-BUSWAY	D-D47EA	BUSWAY PLUG-IN FUSIBLE DISCONNECT	480 V / 3 - PHASE	FSS/400A/3P/600V	400A/400A FUSE				NEMA TYPE 1	42000	PROVIDE BUSWAY PLUG-IN FUSIBLE DISCONNECT COMPATIBLE WITH EXISTING BUSWAY.
7TH EAST	T-EP27	D-EP27	DISC FOR PANEL EP27	208 V / 3 - PHASE	FSS/200A/3P/250V	200A/150A FUSE				NEMA TYPE 1	22000	
FANS												
7TH EAST	D47EA	EF L1	1/2 HP	480 V / 3 - PHASE	FSS/30A/3P/600V	30A/15A FUSE				NEMA 3R		NOTE 4
7TH EAST	D47EA	EF L1	1/2 HP	480 V / 3 - PHASE			VFD	1/2 HP		NEMA 3R		NOTE 3, REMOTE MOUNTED FROM FAN
7TH EAST	D47EA	EF L1 (OUTDOOR)	1/2 HP	480 V / 3 - PHASE	NFS/30A/3P/600V					NEMA 3R		DISCONNECT PROVIDED WITH UNIT.

NOTE	DESCRIPTION
	VFD = VARIABLE FREQUENCY DRIVE
	COMB1 = COMBINATION FULL VOLTAGE NON-REVERSING, MAGNETIC STARTER WITH FUSED DISCONNECT SIZED AS NOTED
3	VFD TO BE RATED TO CARRY FULL MOTOR LOAD CURRENT BASED ON NEC TABLES FOR ONE 3 PHASE, 480V MOTOR SIZE AS NOTED. PROVIDE IN NEMA TYPE 1 ENCLOSURE WITH HAND-OFF-AUTO SELECTION SWITCH. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. MAKE ALL FINAL CONNECTIONS PER MANUFACTURERS RECOMMENDATIONS.
4	DISCONNECT TO BE MOUNTED NEXT TO VFD IT IS SERVING. REFER TO VFD MOUNTING DETAIL.
5	
6	

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STATE OF MISSOURI — MONICA SANTOYO SANTOS — NUMBER E-2000174546 — REGISTERED PROFESSIONAL ENGINEER — 07/08/2025

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#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced. 0" 1" 2"

PANELBOARD SCHEDULES LEVEL 7

DATE: 07/08/2025
DRAWN: MSS
CHECKED: Checker
PGAV # 53660-20
CLIENT # CP2400920
SHEET # **E875L**

Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/422127 ELEC_7TH FLR_LWE_FOR_LWE_V22.rvt
6/26/2025 7:11:09 PM

PANEL: D27EC

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 225 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS: No
BUS: COPPER, S/N, GND BUS
NEUTRAL BUS: 100%
MOUNTING: SURFACE
FEED:
ENCLOSURE: TYPE 1
A.I.C. RATING: 22,000
SUPPLIED FROM: D27EA
LOCATION: VEST. M708B
FLOOR LOCATED: LEVEL SEVEN

tw

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1	REC - VEST. M708B1	1	20	1.2			1.2			20	1	REC - VEST. M708B (-20 FREEZER)	2	
	3	REC - CULTURE CORE M708B2 (INCUBATOR)	1	20		0.36			0.18		20	1	REC - CULTURE CORE M708B2	4	
	5	REC - CULTURE CORE M708B2 (RACEWAY)	1	20			0.54			0.36	20	1	REC - CULTURE CORE M708B2 (RACEWAY)	6	
	7	REC - HISTOLOGY CORE M708A	1	20	0.36			1.44			20	1	REC - CULTURE CORE M708B2 (BSC)	8	
	9	REC - HISTOLOGY CORE M708A	1	20		0.18			0.5		20	1	REC - CULTURE CORE M708B2 (DESK)	10	
	11	REC - GENERAL OUTLETS	1	20			1.08			1.44	20	1	REC - HISTOLOGY CORE M708A	12	
	13	REC - HISTOLOGY CORE M708A	1	20	0.18			0.18			20	1	REC - HISTOLOGY CORE M708A	14	
	15	REC - MICROSCOPY CORE M708A4 (RACEWAY)	1	20		0.54			0.72		20	1	REC - HISTOLOGY SURGERY CORE M708A2 (RACEWAY)	16	
	17	REC - VEST. M708B (INCUBATOR)	1	20			0.36			0.72	20	1	REC - HISTOLOGY SURGERY CORE M708A2 (RACEWAY)	18	
-	19	REC - SHARED RESEARCH LAB M708	1	20	0.18			0.18			20	1	REC - SHARED RESEARCH LAB M708	20	
	21	REC - SHARED RESEARCH LAB M708	1	20		0.36			0.36		20	1	REC - SHARED RESEARCH LAB M708	22	
	23	REC - SHARED RESEARCH LAB M708	1	20			0.36			0.36	20	1	REC - SHARED RESEARCH LAB M708	24	
	25	REC - SHARED RESEARCH LAB M708	1	20	0.36			0.36			20	1	REC - SHARED RESEARCH LAB M708	26	
	27	REC - SHARED RESEARCH LAB M708	1	20		0.36			0.36		20	1	REC - SHARED RESEARCH LAB M708	28	
	29	REC - SHARED RESEARCH LAB M708	1	20			0.36			0.5	20	1	REC - RADIOACTIVE CORE M707A	30	
	31	REC - SHARED RESEARCH LAB M708	1	20	0.18			0.18			20	1	REC - BEHAVIORAL CORE M710B	32	
	33	REC - BEHAVIORAL CORE M710B	1	20		0.72			0.72		20	1	REC - HISTOLOGY SURGERY CORE M708A2 (RACEWAY)	34	
	35	REC - HISTOLOGY SURGERY M708A2 (RACEWAY)	1	20			0.18			0.36	20	1	REC - SURGERY RECOVERY M708A3	36	
	37	REC - HISTOLOGY CORE M708A (CENTRIFUGE)	1	20	0.5			0.18			20	1	REC - MICROSCOPY CORE M708A4	38	
	39	JB - HISTOLOGY CORE M708A (HOOD)	1	20		0.5			0.5		20	1	FFU-705C (BEHAVIOR M705B)	40	
	41	REC - VEST M708B1 (FREEZER) (NEMA 6-20)	2	20			1.45			0	20	1	SPARE	42	
	43				1.45			0			20	1	SPARE	44	
	45	SPARE	1	20		0			0		20	1	SPARE	46	
	47	SPARE	1	20			0			0	20	1	SPARE	48	
	49	SPARE	1	20	0			0			20	1	SPARE	50	
	51	SPARE	1	20		0			0		20	1	SPARE	52	
	53	SPARE	1	20			0			0	20	1	SPARE	54	
	55	SPARE	1	20	0			0			20	1	SPARE	56	
	57	SPARE	1	20		0			0		20	1	SPARE	58	
	59	SPARE	1	20			0			0	20	1	SPARE	60	
	61	SPARE	1	20	0			0			20	1	SPARE	62	
	63	SPARE	1	20		0			0		20	1	SPARE	64	
	65	SPARE	1	20			0			0	20	1	SPARE	66	
	67	SPARE	1	20	0			0			20	1	SPARE	68	
	69	SPARE	1	20		0			0		20	1	SPARE	70	
	71	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	72	
	73	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	74	
	75	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	76	
	77	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	78	
	79	SPACE ONLY	1	--	--			--			--	1	SPACE ONLY	80	
	81	SPACE ONLY	1	--		--			--		--	1	SPACE ONLY	82	
	83	SPACE ONLY	1	--			--			--	--	1	SPACE ONLY	84	
			TOTAL LOAD:		8.13 kVA	6.36 kVA		8.07 kVA							
			TOTAL AMPS:		70 A	53 A		69 A							

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Lighting	0 VA	0.00%	0 VA
Receptacle	14040 VA	85.61%	12020 VA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA
Heating Resistance Loads	0 VA	0.00%	0 VA
Heating Motor Loads	0 VA	0.00%	0 VA
Cooling	2900 VA	100.00%	2900 VA
Motor	500 VA	125.00%	625 VA
Misc. Continuous Load	0 VA	0.00%	0 VA
Misc. Non-Continuous Load	5120 VA	100.00%	5120 VA
Intermittent Loads	0 VA	0.00%	0 VA
Elevator	0 VA	0.00%	0 VA
Water Heater - Instantaneous	0 VA	0.00%	0 VA
Water Heater Tank - Continuous	0 VA	0.00%	0 VA
Other	0 VA	0.00%	0 VA

PANEL TOTALS	
TOTAL CONNECTED LOAD:	22.56 kVA
TOTAL CONNECTED CURRENT:	63 A
TOTAL ESTIMATED DEMAND:	20.67 kVA
TOTAL ESTIMATED DEMAND CURRENT:	57 A

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)

PANEL: D27EB

SERVICE: 120/208 Wye , 3 -PHASE , 4 -WIRE
AMP: 225 A
MAINS: MLO
MCB RATING: 0 A
SUBFEED LUGS:
BUS: COPPER, S/N, GND BUS
NEUTRAL BUS: 100%
MOUNTING: SURFACE
FEED: TOP
ENCLOSURE: TYPE 1
A.I.C. RATING: 22,000
SUPPLIED FROM: D27EA
LOCATION: CORRIDOR M723A
FLOOR LOCATED: LEVEL SEVEN

NOTES:

NOTE	CKT #	DESCRIPTION	BREAKER P	BREAKER AMP	LOAD KVA A	LOAD KVA B	LOAD KVA C	LOAD KVA A	LOAD KVA B	LOAD KVA C	BREAKER AMP	BREAKER P	DESCRIPTION	CKT #	NOTE
	1	REC - OFFICE M711	1	20	0.9			0.54			20	1	REC - ELEC/DARK ROOM M712/LAB M706	2	
	3	REC - BEHAVIORAL CORE M710A	1	20		0.9			0.72		20	1	REC - BEHAVIORAL CORE M710	4	
	5	REC - RESEARCH LAB M706 (LAB BENCH)	1	20			0.36			0.36	20	1	REC - RESEARCH LAB M706 (LAB BENCH)	6	
	7	REC - RESEARCH LAB M706 (LAB BENCH)	1	20	0.36			0.36			20	1	REC - RESEARCH LAB M706 (LAB BENCH)	8	
	9	REC - RESEARCH LAB M706 (LAB BENCH)	1	20		0.36			0.36		20	1	REC - RESEARCH LAB M706 (LAB BENCH)	10	
	11	REC - RESEARCH LAB M706 (LAB BENCH)	1	20			0.36			0.36	20	1	REC - RESEARCH LAB M706 (LAB BENCH)	12	
	13	REC - RESEARCH LAB M706 (LAB BENCH)	1	20	0.36			0.36			20	1	REC - RESEARCH LAB M706 (LAB BENCH)	14	
	15	SPARE	1	20		0			0		20	1	SPARE	16	
	17	REC -STUDENT OFFICE M705 (CENT)	1	20			0.54			0.54	20	1	REC -STUDENT OFFICE M705	18	
	19	REC -STUDENT OFFICE M705	1	20	0.54			0.54			20	1	REC - RESEARCH LAB M706	20	
	21	REC - RESEARCH LAB M706	1	20		0.36			0.5		20	1	JB - RESEARCH LAB M706 (FUME HOOD)	22	
	23	REC - RESEARCH LAB M706	1	20			0.54			0.54	20	1	REC - RESEARCH LAB M706	24	
	25	REC - RADIOACTIVE CORE M707A	1	20	0.18			0.18			20	1	REC - STUDENT OFFICE M705	26	
	27	REC - RESEARCH VEST. M707	1	20		0.36			0.18		20	1	REC - RESEARCH SUPPORT EQUIP. M704 (FREEZERS)	28	
	29	LTG - RESEARCH LAB M706 - BENCH LTS	1	20			0.1			1.08	20	1	LTG - SHARED RESEARCH LAB M708 - BENCH LTS	30	
	31	SPARE	1	20	0			0			20	1	SPARE	32	
	33	REC - M712 DARK ROOM	1	20		0.18			0.36		20	1	REC - M712 DARK ROOM	34	
	35	REC - M712 DARK ROOM	1	20			0.18			0.18	20	1	REC - M712 DARK ROOM	36	
	37	SPARE	1	20	0			0			20	1	SPARE	38	
	39	SPARE	1	20		0			0		20	1	SPARE	40	
	41	SPARE	1	20			0			0	20	1	SPARE	42	
	43	SPARE	1	20	0			0			20	1	SPARE	44	
	45	SPARE	1	20		0			0		20	1	SPARE	46	
	47	SPARE	1	20			0			0	20	1	SPARE	48	
	49	SPARE	1	20	0			0			20	1	SPARE	50	
	51	SPARE	1	20		0			0		20	1	SPARE	52	
	53	SPARE	1	20			0			0	20	1	SPARE	54	
	55	SPARE	1	20	0			0			20	1	SPARE	56	
	57	SPARE	1	20		0			0		20	1	SPARE	58	
	59	SPARE	1	20			0			0	20	1	SPARE	60	
	61	SPARE	1	20	0			1			20	1	FA POWER SUPPLY - ELEC M709	62	L
	63	SPARE	1	20		0			1		20	1	VAV POWER SUPPLY - ELEC M713	64	
	65	SPARE	1	20			0			0.7	20	1	PHOENIX VALVE POWER SUPPLIES - 7PSA & 7PSB	66	
	67	FSD 1 & 2 (WOMEN M720)	1	20	0.72			0.49			20	1	PHOENIX VALVE POWER SUPPLIES - 7PSC & 7PSD	68	
	69	SPARE	1	20		0			0		20	1	SPARE	70	
	71	SPARE	1	20			0			0	20	1	SPARE	72	
	73	SPARE	1	20	0			0			20	1	SPARE	74	
	75	SPARE	1	20		0			0		20	1	SPARE	76	
	77	SPARE	1	20			0			0	20	1	SPARE	78	
	79	SPARE	1	20	0			0			20	1	SPARE	80	
	81	SPARE	1	20		0			0		20	1	SPARE	82	
	83	SPARE	1	20			0			0	20	1	SPARE	84	
			TOTAL LOAD:		6.53 kVA	5.28 kVA	5.84 kVA								
			TOTAL AMPS:		55 A	44 A	49 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Lighting	100 VA	125.00%	125 VA
Receptacle	13140 VA	88.05%	11570 VA
Kitchen Equipment - Non-Dwelling Unit	0 VA	0.00%	0 VA
Heating Resistance Loads	0 VA	0.00%	0 VA
Heating Motor Loads	0 VA	0.00%	0 VA
Cooling	0 VA	0.00%	0 VA
Motor	720 VA	112.50%	810 VA
Misc. Continuous Load	0 VA	0.00%	0 VA
Misc. Non-Continuous Load	3690 VA	100.00%	3690 VA
Intermittent Loads	0 VA	0.00%	0 VA
Elevator	0 VA	0.00%	0 VA
Water Heater - Instantaneous	0 VA	0.00%	0 VA
Water Heater Tank - Continuous	0 VA	0.00%	0 VA
Other	0 VA	0.00%	0 VA

PANEL TOTALS	
TOTAL CONNECTED LOAD:	17.65 kVA
TOTAL CONNECTED CURRENT:	49 A
TOTAL ESTIMATED DEMAND:	16.2 kVA
TOTAL ESTIMATED DEMAND CURRENT:	45 A

NOTES:
(G=GFCI BREAKER; L=LOCK ON BREAKER)

PHOENIX VALVE POWER SUPPLY: 7PSB

LOCATION: ELEC RM M713
FLOOR LOCATED: LEVEL SEVEN
SUPPLIED FROM: D27EB

Notes:

CKT	Circuit Description	C
1	GEV-1TE (SHARED RESEARCH LAB M708)	70 VA
2	LSV-6S (VEST M708B)	70 VA
3	GEV-6E (CULTURE CORE M708B2)	70 VA
4	FEV-2HE (HISTOLOGY CORE M708A)	70 VA
5	LSV-2S (HISTOLOGY CORE M708A)	70 VA
		350 VA

Legend:
REFER TO 500VA CONNECTION DETAIL FOR POWER SUPPLY.
SHEET E675L. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH-IN.

Notes:

PHOENIX VALVE POWER SUPPLY: 7PSA

LOCATION: ELEC RM M713
FLOOR LOCATED: LEVEL SEVEN
SUPPLIED FROM: D27EB

Notes:

CKT	Circuit Description	C
1	LSV 10S (MICROSCOPY CORE M708A4)	70 VA
2	LSV-7S (MICROSCOPY CORE M708A4)	70 VA
3	GEV 4GE (RESEARCH LAB M706)	70 VA
4	FEV 8E (RADIOACTIVE CORE M707A)	70 VA
5	FEV 4HE (RESEARCH LAB M706)	70 VA
		350 VA

Legend:
REFER TO 500VA CONNECTION DETAIL FOR POWER SUPPLY.
SHEET E675L. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH-IN.

Notes:

PHOENIX VALVE POWER SUPPLY: 7PSD

LOCATION: ELEC RM M713
FLOOR LOCATED: LEVEL SEVEN
SUPPLIED FROM: D27EB

Notes:

CKT	Circuit Description	A
1	GEV 3TE (HISTOLOGY CORE M708A)	70 VA
2	LAC 3S (HISTOLOGY M708A)	70 VA
3	LSV 1S (SHARED RESEARCH LAB M708)	70 VA
4	GEV 1GE (SHARED RESEARCH LAB M708)	70 VA
5	GEV 7E (MICROSCOPY CORE M708A4)	70 VA
		350 VA

Legend:
REFER TO 500VA CONNECTION DETAIL FOR POWER SUPPLY.
SHEET E675L. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH-IN.

Notes:

PHOENIX VALVE POWER SUPPLY: 7PSC

LOCATION: ELEC RM M713
FLOOR LOCATED: LEVEL SEVEN
SUPPLIED FROM: D27EB

Notes:

CKT	Circuit Description	A
1	LSV 8S (RESEARCH VEST. M707)	70 VA
2	LSV 4S (RESEARCH LAB M706)	70 VA
3	SPARE	0 VA
4	SPARE	0 VA
5	SPARE	0 VA
		140 VA

Legend:
REFER TO 500VA CONNECTION DETAIL FOR POWER SUPPLY.
SHEET E675L. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH-IN.

Notes:

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NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
07/08/2025

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Structural Engineers
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MO STATE CERTIFICATE OF AUTHORITY #0004442

#	DATE	DESCRIPTION

MEDICAL SCIENCE BUILDING 7E RENOVATION OPTION 'L'

University of Missouri
1 Hospital Drive, Columbia, MO 65212

CONTRACT DOCUMENTS

Original Size: 1 1/2" Drawing may have been reduced.
0" 1"

PANELBOARD SCHEDULES LEVEL 7

DATE: 07/08/2025
DRAWN: MSS
CHECKED: Checker
PGAV #: 53660-20
CLIENT #: CP2400920
SHEET #:

E876L

6/25/2025 7:11:18 PM Autodesk Docs://53660-10 MU-SOM MSB Lab Renovations/A22127 ELEC_7TH FLR_LAKE_FOR_LAKE_V22.rvt

FIRE ALARM SYSTEM FUNCTION CHART

OUTPUT FUNCTION	INPUT FUNCTION: SMOKE DETECTORS	DUCT SMOKE DETECTORS	MANUAL PULL STATIONS	WATERFLOW SWITCH	SPRINKLER TAMPER SWITCH	ELEVATOR LOBBY SMOKE	ELEVATOR SHAFT/ MACHINE ROOM SMOKE	ELEVATOR SHAFT/ MACHINE ROOM HEAT	ANY TROUBLE ON SYSTEM
ANNUNCIATE ZONE/DEVICE ON FIRE ALARM PANEL AND ANNUNCIATOR	X		X	X	X	X	X	X	
ACTIVATE DIGITAL COMMUNICATOR CONTACT FOR ALARM CONDITION	X		X	X					
ACTIVATE DIGITAL COMMUNICATOR CONTACT FOR TROUBLE CONDITION									X
ACTIVATE DIGITAL COMMUNICATOR CONTACT FOR SUPERVISORY CONDITION		X			X				
ACTIVATE AUDIBLE/VISUAL DEVICES	X		X	X		X	X	X	
DE-ENERGIZE DOOR HOLDERS	X		X	X		X	X	X	
CAPTURE ELEVATOR						X	X		
SHUNT ELEVATOR							X	X	
CONTROL AHU'S		X							

SHADED AREAS ARE FOR INFORMATION ONLY. NOT SCOPE OF THIS PROJECT.

FIRE WATCH REQUIREMENTS:

FIRE WATCH PERSONNEL MUST BE TRAINED AND/OR HAVE THE FOLLOWING QUALIFICATIONS:

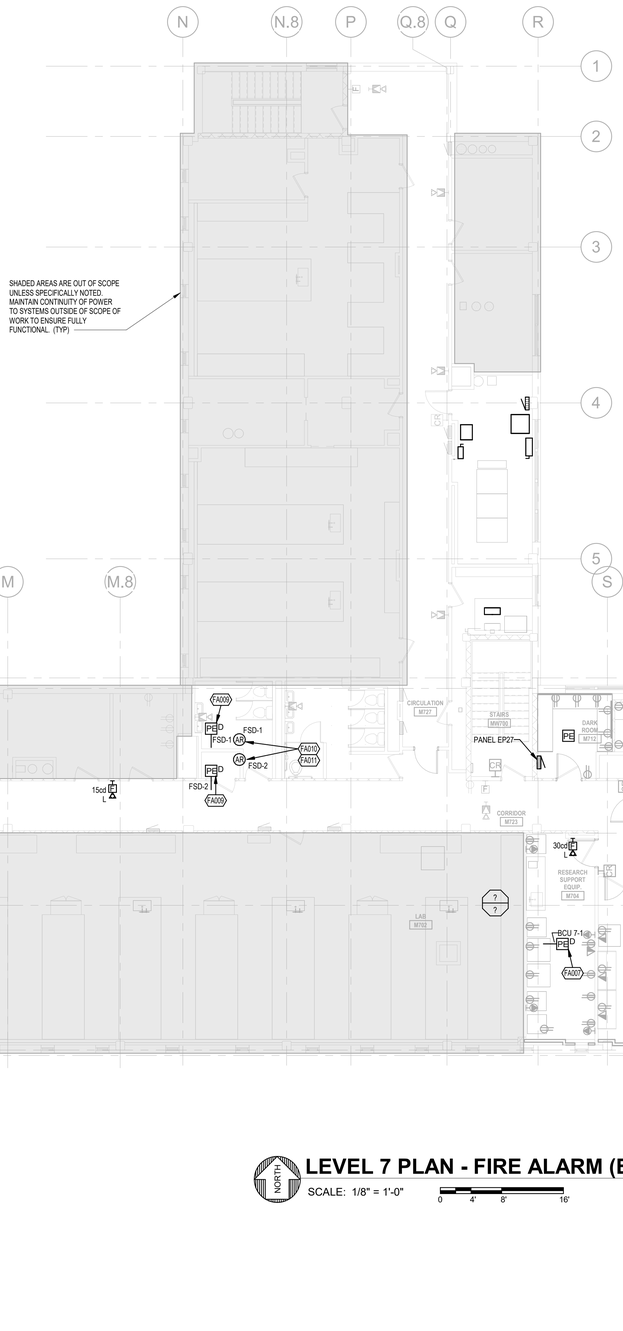
- ACCESS TO ALL AREAS OF THE BUILDING UNDER THE FIRE WATCH
- RECOGNIZE SIGNS OF FIRE OR OTHER HAZARDS THAT COULD CAUSE INJURY.
- KNOW EVACUATION ROUTES
- MANUALLY ALERT BUILDING OCCUPANTS BY SOUNDING A HORN, WHISTLE, ETC.
- USE PORTABLE FIRE EXTINGUISHERS
- PATROL THEIR ASSIGNED BUILDING AREA ONCE EVERY HOUR
- PROPERLY COMPLETE A FIRE WATCH LOG.
- DURING NORMAL WORK HOURS, AFTER TRAINING, CONTRACTOR'S PERSONNEL MAY SERVE AS FIRE WATCH.

FIRE ALARM GENERAL NOTES (7E)

1. FIRE ALARM SYSTEM CONDUIT TO BE PAINTED RED IN UNFINISHED AREAS. COORDINATE PAINT COLOR OF FIRE ALARM SYSTEM CONDUIT IN EXPOSED AREAS WITH ARCHITECT. ALL FIRE ALARM SYSTEM ELECTRICAL BOXES TO BE PAINTED RED AND LABELED.
2. ALL FIRE ALARM WIRING TO BE RUN IN CONDUIT.
3. EXISTING HONEYWELL PANEL IS E3 SERIES. SYSTEM CONSISTS OF HORNS/STROBES. ADDITIONAL MODULES ARE TO BE PROVIDED TO INSTALL NEW SPEAKERS/STROBES IN RENOVATED AREAS. WAV FILES ARE TO MIMIC THE EXISTING HORNS.
4. BUILDING IS TO BE OCCUPIED DURING CONSTRUCTION. THE EXISTING FIRE ALARM PANEL IS TO REMAIN FUNCTIONAL ON ALL LEVELS THAT ARE OCCUPIED. DURING THE DAY, WHILE OCCUPIED, CONTRACTOR SHALL ENSURE THAT FIRE ALARM SYSTEM IS FUNCTIONAL IN ALL AREAS OUTSIDE OF CONSTRUCTION ZONE. ESTABLISH A FIRE WATCH WHEN THE FIRE ALARM SYSTEM IS SHUT DOWN FOR MORE THAN FOUR (4) HOURS IN A 24-HOUR PERIOD.
5. AFTER CONTRACTOR WORK HOURS, ESTABLISH A FIRE WATCH FOR ALL AREAS THAT DO NOT HAVE A FUNCTIONAL FIRE ALARM SYSTEM. CONTRACTOR TO PROVIDE A FIRE WATCH PLAN FOR APPROVAL BY OWNER.
6. FIRE WATCH TO BE PERFORMED BY APPROPRIATELY TRAINED PERSONNEL WHO WILL FUNCTION AS THE FIRE ALARM SYSTEM TO REPORT FIRES OR SIMILAR EMERGENCIES TO THE FIRE DEPARTMENT.
7. REFER TO SHEET E010 FOR FIRE ALARM SYSTEM SYMBOLS LEGEND.

FIRE ALARM NOTES

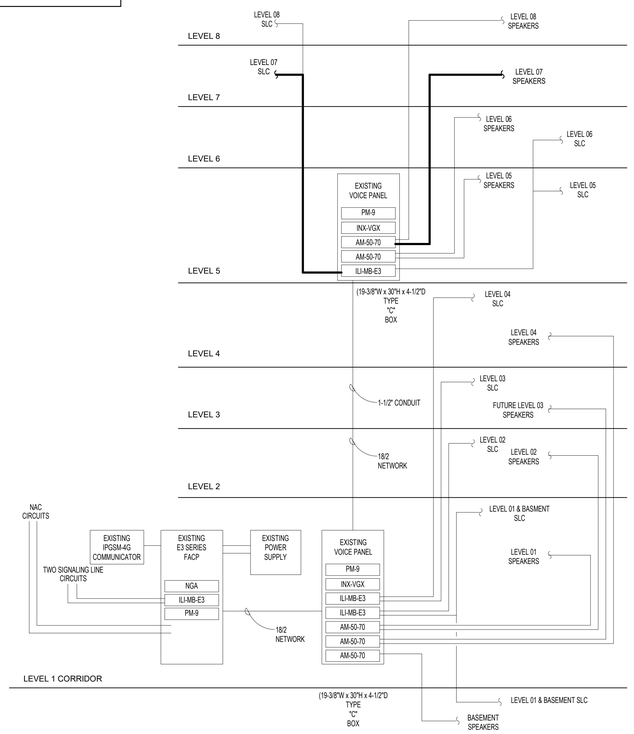
FA001	EXISTING TAMPER SWITCH TO BE TIED INTO THE FIRE ALARM SYSTEM.
FA007	PROVIDE DUCT DETECTOR TO BE MOUNTED IN UNIT RETURN DUCT PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE WITH INTEGRAL RELAY BASE TO SHUT POWER OFF TO UNIT UPON DETECTION OF SMOKE. MAKE ALL FINAL CONNECTIONS.
FA009	PROVIDE FIRE ALARM SYSTEM DUCT DETECTOR TO BE INSTALLED IN DUCTWORK WITHIN 5'-0" OF FIRE SMOKE DAMPER.
FA010	PROVIDE AN ADDRESSABLE RELAY MODULE TO CONTROL FIRE SMOKE DAMPER. PROGRAM FIRE ALARM SYSTEM SUCH THAT UPON DETECTION OF SMOKE, RELAY MODULE SHALL CLOSE FIRE SMOKE DAMPER.
FA011	REFER TO E400 SERIES SHEETS FOR POWER TO ADDRESSABLE RELAY AND FIRE/SMOKE DAMPER.



LEVEL 7 PLAN - FIRE ALARM (EAST LIKE-FOR-LIKE SCOPE)

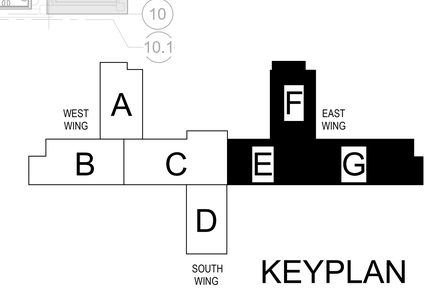
SCALE: 1/8" = 1'-0"

0 4' 8' 16'



2 FIRE ALARM CONTROL PANEL RISER

NO SCALE



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STATE OF MISSOURI
MONICA SANTOYO SANTOS
NUMBER E-2000174546
REGISTERED PROFESSIONAL ENGINEER
07/08/2025

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