DLJ JOB # 20077

UNIVERSITY OF UTAH
BIOLOGY BLDG 84
FUME HOOD REPLACEMENT PHASE 2

257 S. 1400 E.
SALT LAKE CITY, UTAH
U OF U PROJECT #: 22437
ISSUE DATE: OCTOBER 13, 2021

THE UNIVERSITY OF UTAH

Construction Project Delivery

1795 East So. Campus Drive, Room 201
Salt Lake City, Utah 84112
Ph.#: (801) 585-3123
Email: Stephen.laraway@fm.utah.edu
CONTACT: STEVE LARAWAY

MECHANICAL (PRIME)

DAVID L. JENSEN & ASSOCIATES

547 West 500 South Suite #140
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Ph.#: (801) 294-9299
E-mail: habercrombie@dljeng.com
CONTACT: HAL ABERCROMBIE

EXP. 03/31/23

ARCHITECTURAL

TSA ARCHITECTS

1486 South 1100 East
Salt Lake City, Utah 84105
Ph.#: (801) 463-7108
E-mail: tracy@tsa-usa.com
CONTACT: TRACY STOCKING

10/13/2021

ELECTRICAL

ENVISION ENGINEERING

240 East Morris Ave. Suite 200
Salt Lake City, Utah 84115
Ph.#: (801) 534-1130
E-mail: tspencer@envisioneng.com
CONTACT: TREVOR SPENCER

STRUCTURAL

BHB ENGINEERING

2766 South Main Street
Salt Lake City, Utah 84115
Ph.#: (801) 355-5656
E-mail: brett.goodman@bhbengineers.com
CONTACT: BRETT GOODMAN

10/13/2021
exp. 03/21/2022

GENERAL SCOPE:

BASIS OF DESIGN:
PROJECT SCOPE IS TO REPLACE CHEMICAL FUME HOODS, CHEMICAL FUME HOOD EXHAUST FANS AND DUCT. UPGRADE LABORATORY CONTROLS AND VAV TERMINAL UNIT CONTROLS.
ALTERNATE #1: SECOND FLOOR OFFICES HVAC CONTROLS UPGRADE.

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ARCHITECTURAL

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ME502	MECHANICAL CONTROLS

ELECTRICAL

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ED104	LEVEL 4/ROOF ELECTRICAL DEMOLITION PLAN
EP100	BASEMENT ELECTRICAL REMODEL PLAN
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U of U project #
22437

Sheet Number
GI101

Design Set
PERMIT SET

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PROJECT REQUIREMENTS

1. THE WORK IN EACH LABORATORY SHALL BE SCHEDULED WITH THE USER GROUP FOR ACCESS. HOWEVER, THE CONTRACTOR SHALL PLAN THAT THE WORK IN THE LABORATORIES CAN BE DONE DURING NORMAL WORK HOURS.
2. THE CONTRACTOR SHALL PROTECT LABORATORY EQUIPMENT FROM DAMAGE AND DUST THROUGHOUT THE PROJECT.
3. CONTRACTOR SHALL SEAL OFF SUPPLY AND TRANSFER DUCTS WHILE WORKING IN EACH LABORATORY TO CREATE A NEGATIVE PRESSURE FROM THE EXHAUST IN THE LAB FOR DUST CONTROL.
4. CONTRACTOR SHALL PROVIDE A CONSTRUCTION TRAILER FOR ON SITE OFFICE NEEDS. CONTRACTOR TO CONNECT TO TEMPORARY POWER SOURCE.

CONSTRUCTION SCHEDULING

1. CONTRACTOR SHALL PREPARE AN OVERALL CONSTRUCTION SCHEDULE AND A 3 WEEK DETAILED LOOK AHEAD SCHEDULE FOR THE PROJECT WHICH SHALL BE UPDATED EACH WEEK AND PRESENTED AT THE OAC MEETING.
2. CONSTRUCTINTIME IN EACH SPACE SHALL BE KEPT TO A MINIMUM (APPROX 10 DAYS) TO HAVE THE LEASTE DISTRUPTION TO THE USERS AS POSSIBLE.

THE UNIVERSITY OF UTAH

PROJECT PARKING PLAN WORKSHEET

The objective of a Project Parking Plan is to establish the parking impact during and after a construction Project. This Plan is to be done during the design process to provide direction in the contract documents that will inform the bidding and successful contractor what parking will be available to the project during construction. This plan is to be developed jointly by the Design Team, Project Manager, Project Planner, and Commuter Services. Once prepared, the Project Manager should submit it to the CIP Committee for review and approval before including it in contract documents.

PROJECT MANAGEMENT INFORMATION:

Project Name: Biology Building fume hood upgrade project (phase 1)

Project Number: 22437 Project Client/User: OEHS/PDC/Biology Department/S&E

Project Manager: Steve Laraway Project Planner: NA

Design Team: DLJ and Associates

PARKING IMPACT OF PROJECT:

Describe Project Limit Lines:

All work for this project will take place either in the interior or on the roof of Building 0084. However, staging, construction trailer parking, and conex parking will be located on the exterior of the building.

List all Parking lot #(s) being impacted by project scope None

Parking space changes as result of Project: Eliminated 0 Added 0 Net (add+/loss-) _____

CONSTRUCTION CONTRACTOR & SUBCONTRACTOR PARKING IMPACT: (Include information in contract documents)

Construction Start date: 4.10.2021 Duration: 10 (months)

Describe Construction Staging Area Limit Lines:

The footprint of the area previously occupied by building 126 as shown on the attached sketches. Building 26 has been removed.

Number of spaces (at contractor discretion) estimated available within the construction staging area 5

Number of Permits available for purchase in campus lots per month (expand table as needed)

Lot#	Month:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CS	# of Permits	5	5	5	5	5	5	5	5	5	5					
CON	# of Permits	7	7	7	7	7	7	7	7	7	7					
CV	# of Permits	3	3	3	3	3	3	3	3	3	3					

CIP COMMITTEE REVIEW/APPROVAL:

Approved _____

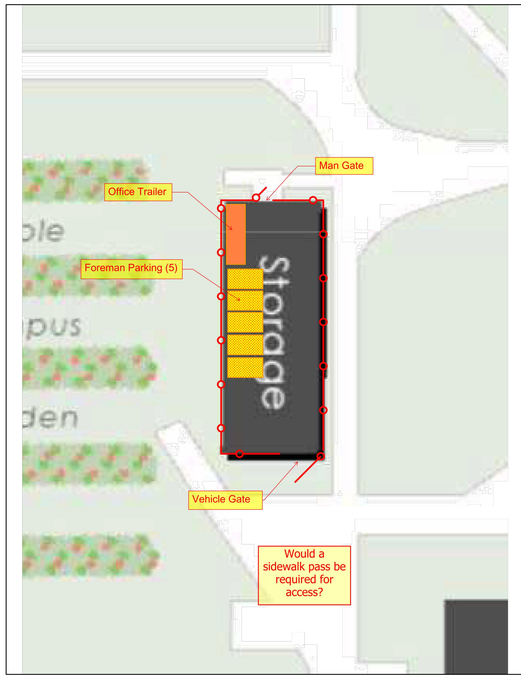
Recommended Revision

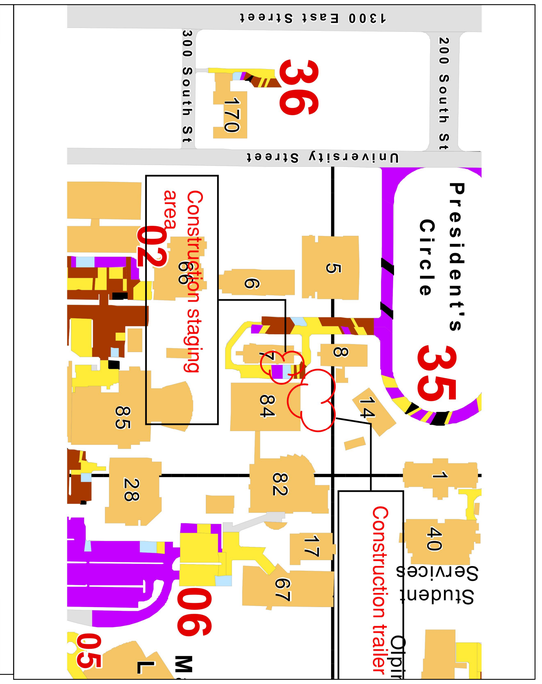
Commuter Services
Parking • Shuttles • Transit
1901 E South Campus Drive Room 101
Salt Lake City, Utah 84112-9350

PERMIT DESCRIPTIONS

1. "CS" (staging) Permits –virtual permit
   a. Staging permit, available for FREE
   b. Location specific
      i. Location will be identified on permit
      ii. Vehicle must be parked in:
         1. Loading dock (include building number)
         2. Construction area designated with cones, fencing, bollards, etc...
         3. Sidewalk with cones, fencing, bollards, etc. without blocking pedestrian access
   c. Used only for construction vehicles, no personal/commuter cars
2. "Con" (regular) Permits – virtual permit
   a. Call (801)581-6415 for current pricing
   b. Available in monthly or daily terms
   c. Valid in A, U, or E stalls
      i. Only valid in lots 32, 39, 40, and/or 75
3. "CV" (vendor/maintenance) Permits –virtual permit
   a. Call (801)581-6415 for current pricing
   b. Available in monthly or daily terms
   c. Valid in A, U, E, Maintenance Stalls and Meters/Pay-by-phone without payment
      i. May not park in Load Zone meters
      ii. Campus wide excluding LDSI parking lots (15,17,18,19,21)

Current Parking Map can be found HERE





N W E S

SITE/STAGING PLAN
SCALE: 1"=80'-0"

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547 WEST 500 SOUTH SUITE #140
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PHONE: (801) 294-9299

STAMP:

REGISTERED PROFESSIONAL ENGINEER No. 181307 DAVID L. JENSEN STATE OF UTAH

EXP. 03/31/23

CONSULTANT:

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CONSTRUCTION PROJECT DELIVERY
1795 E. So. Campus Dr, Rm. 201
Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

PROJECT REQUIREMENTS, SCHEDULING, SITE/STAGING PLAN & PROJECT PARKING PLAN

SHEET NUMBER:

GI102

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CODE ANALYSIS

THE UNIVERSITY OF UTAH

Office of the Building Official
V.Randall Turpin University Services Building
1795 E. South Campus Dr., Room 211
Salt Lake City, Utah 84112-9403
Phone: (801) 581-5953 / (801) 581 6081 Fax /
bryan.romney@fm.utah.edu

General Notes:
1. Room area is determined by Space Planning NASF pro-rated square footages.
2. GSF is determined by satellite imagery and verified by field dimensions.
3. Attached floor plans are for general reference only. Scale is unspecified.

BUILDING IDENTIFICATION:

Biology Building - Bldg. 84 - 257 South 1400 East

CODE ANALYSIS COMPLETION DATE: March 2011 - UPDATED FOR CURRENT PROJECT December 10, 2020

Part 1

Applicable Codes	Year	Applicable Codes	Year
International Building Code (IBC & IEBC)	2018	National Electrical Code	2020
International Fire Code (IFC)	2018	ADA (ADAAG)	2010
International Mechanical Code (IMC)	2018	ICC / ANSI A117.1	2009
International Energy Conservation Code (IECC)	2018	NFPA	N/A
International Plumbing Code (IPC)	2018		

IEBC CHAPTER 6 CLASSIFICATION OF WORK: 602 ALTERATION LEVEL 1

BUILDING AREA G.S.F.

Part 2 **(THIS PROJECT DOES NOT CHANGE EXISTING AREAS OR OCCUPANCIES)**

Occupancy Group (Chapter 3)			(T601) Const.	Area			Height (T503)		Stories (T503)		(508)	(508.4.2)
Floor	Name	Group	Type (*1)	Actual	Tabular (T503) Aa		Tabular (T503)	Increase (504.2)	Tabular (T503)	Increase	Mixed Use Type (*3)	Area Ratio
B		F-1	II-B	13,590	15,500	58,125	55	75	2	3	NSO	
B		B		17,216	23,000	86,250	55	75	3	4	NSO	
Basement Floor Total:				30,806		58,125						
1		B		30,806	23,000	86,250	55	75	3	4	NSO	0.36
First Floor Total:				30,806		86,250						0.36
2		S-1		3,526	15,500	58,125	55	75	2	3	NSO	0.1
2		B		25,231	15,500	58,125	55	75	3	4	NSO	0.71
2		A-3		2,047	9,500	35,625	55	75	2	3	NSO	0.06
2nd Floor Total:				30,806		35,625						0.87
3		B		29,426	23,000	86,250	55	75	3	4	NSO	0.83
3		A3		374	9,500	35,625	55	75	2	3	NSO	0.01
3		S-1		1,006	17,500	65,625	55	75	2	3	NSO	0.03
3rd Floor Total:				30,806		35,625						0.87
4		S-1(B)		329	17,500	65,625	55	75	3	4	AO	0.003
4		F-1(B)		623	15,500	58,125	55	75	3	4	AO	0.007
4	Open roof space (B)			24,029	23,000	86,250					NSO	0.28
4		B		11,793	23,000	86,250	55	75	3	4	NSO	0.14
4th Floor Total:				36,774		86,250						0.43
Building Total (*2)			II-B	159,998		243,750						2.53

(*1) Construction Type shall be the most restrictive occupancy requirement for the entire building (508.3 & 508.4)
(*2) Area- Total building Area dependant on Single or Mixed Occupancy Building (506.4 or 506.5)
(*3) Mixed Use - IAO=Incidental Accessory Occupancy / AO=Accessory Occupancy / SO=Separated Occupancies / NSO=Nonseparated Occupancies

gsf= bldg area nsf= floor area

C

Part 3 **Area Modifications** **(NA - THIS PROJECT DOES NOT CHANGE EXISTING AREAS OR OCCUPANCY LOADS)**

Part 4 **Grade Plane Elevation & Height / Stories (504)**
(NA - PROJECT DOES NOT CHANGE EXISTING GRADE PLANE ELEVATIONS FOR HEIGHTS)

Building Wall	Grade Plane Elevation
North	105.5
South	105.5
East	111.5
West	99.5
	Total Building G.P.E. 105.5

Story	Finished Floor Elevation	Story Above G.P.E.	Height
Basement	86'	Basement	
1st Floor	100	1	
2nd Floor	114	2	
3rd Floor	128	3	
4th Floor Roof	132	4	26.5
Total Building			26.5

Part 5 **Automatic Fire Sprinkler (903.T503)**
(SPRINKLERS IN ALTERATION AREAS WILL COMPLY)

Item	Yes/No	Reference/Comments
Required	No	As per chapter 506
Area Increase	Yes	As per chapter 506
Height Increase	Yes	As per chapter 506
Fire-Resistance Substitution (T601)	Not Required	

Part 6 **Occupancy Separations (T508.4)**
(Modify as needed for additional floors/areas)

OCCUPANCY / OCCUPANCY	RATING	IBC / UL DESIGN #
None	N/A	

Part 7 **Other Building Elements (T601 and T602)** **(NA - NO RELATED WORK)**

ELEMENT	MATERIAL	RATING	IBC/UL DESIGN # (720.1)
Interior Bearing Wall	Non-Combustible	0	NA
Interior Non-bearing Wall	Non-Combustible	0	SEE WALL TYPES
Structural Frame	Non-Combustible	0	NA
Exterior Structural Frame	Non-Combustible	0	NA
Shaft Enclosure (708)	Non-Combustible	2	SEAL NEW PENETRATIONS
Floor/Ceiling Assembly	Non-Combustible	0	NA
Roof/Ceiling Assembly	Non-Combustible	0	NA
Vertical Exit Enclosure (1022)	Non-Combustible	2	NA
Exterior Bearing Wall	Non-Combustible	0	NA

Part 8 **Exterior Wall Opening Protection (T705.8)** **(NA - NO RELATED WORK)**
(Modify as needed for additional stories)

Wall Location	Protected	Unprotected	Parapet Req'd (705.11)
North	UL	UL	N/R
South	UL	UL	N/R
East	UL	UL	N/R
West	UL	UL	N/R

Part 9 **Exit Requirements** **(NO CHANGES PROPOSED)**
(Modify as needed for additional floors/areas)

Floor Level	Occupancy	Room Area	Occupant Load Factor (T1004.1.1)	# of Occupants (1004)	# of exits (1021/1015)	Req'd Egress width (1005)	Req'd Stair width (1005)	Req'd Aisle width (1018)	Req'd Common Path (actual) (1014.3)	Total Travel Distance (actual) (1016)
B	F-1	13,590	100	136	2	27	41	3'min		250
B	B	17,216	100	172	2	34	52	3'min		300
Floor Total:		30,806		308		61	93			
1	B	30,806	100	309	2	62	93	6'min		300
Floor Total:		30,806		309		62	93			
2	S-1	3,526	100	35	2	7	11	3'min		250
2	B	25,231	100	252	2	50	7	5'min		300
2	**A-3**	2,047	15	137	2	4	6	3'min		250
Floor Total:		30,806		424		61	24			
3	B	29,426	100	294	2	59	88	5'min		300
3	A-3	374	15	25	2	1	1	3'min		250
3	S-1	1,006	100	10	2	2	3	3'min		250
Floor Total:		30,806		329		62	92			
4	S-1	329	500	1	2	1	1	3'min		250
4	F-1	623	100	6	2	1	1	3'min		250
4	B	35,822	100	358	2	72	107	3'min		300
Floor Total:		36,774		365		74	109			
Building Total:		159,998		1427						

Part 10 **Additional Requirements (Specify Project Requirements) *Building already in compliance***

Accessible Means of Egress (1007)	NOT REQ'D - 1007.1 EXCEPTION #1
Accessible route (3411.7)	20% OF REMODELING BUDGET
Special Occupancy Requirements (Chapter 4)	
Atrium	404 - non-compliant existing conditions
	new openings in atrum walls to be protected

Plumbing Fixtures (T 2902.1) **(NA - no changes in occupant load or count)**

		Occupancy/load F-1 (142)	B (1385)	S-1 (46)	A3 (162)	Total
Men W.C.	Required	1.42	28.7	0.46	1.3	31.88
	Actual	n/a	11	n/a	n/a	11
Women W.C.	Required	1.42	28.7	0.46	2.49	33.07
	Actual	n/a	18	n/a	n/a	18
Urinals	Required	n/a	n/a	n/a	n/a	n/a
	Actual	n/a	12	n/a	n/a	12
Men Sinks	Required	1.42	18.3	0.46	0.81	20.99
	Actual	n/a	12	n/a	n/a	12
Women's Sinks	Required	1.42	18.3	0.46	0.81	20.99
	Actual	n/a	12	n/a	n/a	12
Service Sinks	Required	1	1	1	1	4
	Actual	n/a	11	n/a	n/a	11
Drinking Fountains	Required	1	14	1	1	17
	actual	n/a	11	n/a	n/a	11
Family Assisted Restrooms(FAR)*	Required					
	Actual					2

* Existing restrooms are non accessible - FAR located on 3rd and Basement Floors

Part 11 **Building Performance Parameters** **SEE M/E/P PLANS AND CALCULATIONS)**
Include a summary of building performance parameters (design temperatures for spaces, humidity control set-points, special ventilation requirements, lighting levels for spaces, etc.) with Code Summary. Also include structural calculations and energy calculations.

Part 12 **Deferred Submittals, Nonstructural Components Checklist, & Special Inspections List**

Provide the following information in the Code Analysis, deleting nonapplicable sections.

List of Deferred Submittals

Item	Drawing Reference	Specification Reference	Submittal Date
MECHANICAL SEISMIC RESTRAINT	VARIES	DIVISION 23	30 DAYS FROM CONTRACT
FIRE SUPPRESSION	VENDOR SHOP DRAWINGS	DIVISION 21	30 DAYS FROM CONTRACT
FUME HOOD SEISMIC RESTRAINT	VARIES	N/A	30 DAYS FROM CONTRACT
FIRE ALARM SYSTEM	VENDOR SHOP DRAWINGS	DIVISION 21	30 DAYS FROM CONTRACT

Nonstructural Component Checklist

Item Description	Not Required	On Constr. Documents		Deferred Submittal	Comments
Architectural Components:					
Interior Non-structural Walls & Partitions		X			
Cantilever Elements (i.e. parapets, etc.).	X				
Exterior Non-structural Wall Elements	X				
Veneer	X				
Penthouses	X				
Ceilings (i.e. suspended grid or hard-lip)		X			
Cabinets (i.e. storage cabinets, equip, etc)		X			
Access Floors	X				
Storage Racks	X				
Appendages and Ornamentations	X				
Signs and Billboards	X				
Other:					
Other:					
MEP Components:					
Fire Sprinklers					
Mechanical Equipment (i.e. HVAC fans, air handlers, boilers, furnaces, tanks, chillers, water heaters, heat exchangers, evaporators, engines, turbines, pumps, compressors, MFR equipment, etc.)				X	
Electrical Equipment (i.e. generators, batteries, inverters, transformers, MCC, panel boards, switch gear, cabinets, etc.)		X			
Elevator and Escalator Components	X				
Communications Equipment, Computers, Instrumentation, and Controls				X	
Roof-Mounted Chimneys, Stacks, Cooling & Electrical Towers	X				
Lighting Fixtures		X			
Vibration Isolated Components	X				
Piping & Conduit Systems	X				
Ductwork (Including in-line components)	X				
Conveyors	X				
Cable Trays					
Other:	X				

Notes:

1.

Special Inspections List (NA - NOT REQUIRED FOR THIS PROJECT)

B

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DAVID L. JENSEN & ASSOCIATES
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547 WEST 500 SOUTH SUITE #140
BOUNTIFUL, UTAH 84010
PHONE: (801) 294-9299

STAMP:

STATE OF UTAH
NO. 135781
TRACY D. STOCKING
5/31/2022
LICENSED ARCHITECT

CONSULTANT:

1486 South 1100 East
Salt Lake City, UT 84105
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CONSTRUCTION PROJECT DELIVERY
1795 E. So. Campus Dr, Rm. 201
Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

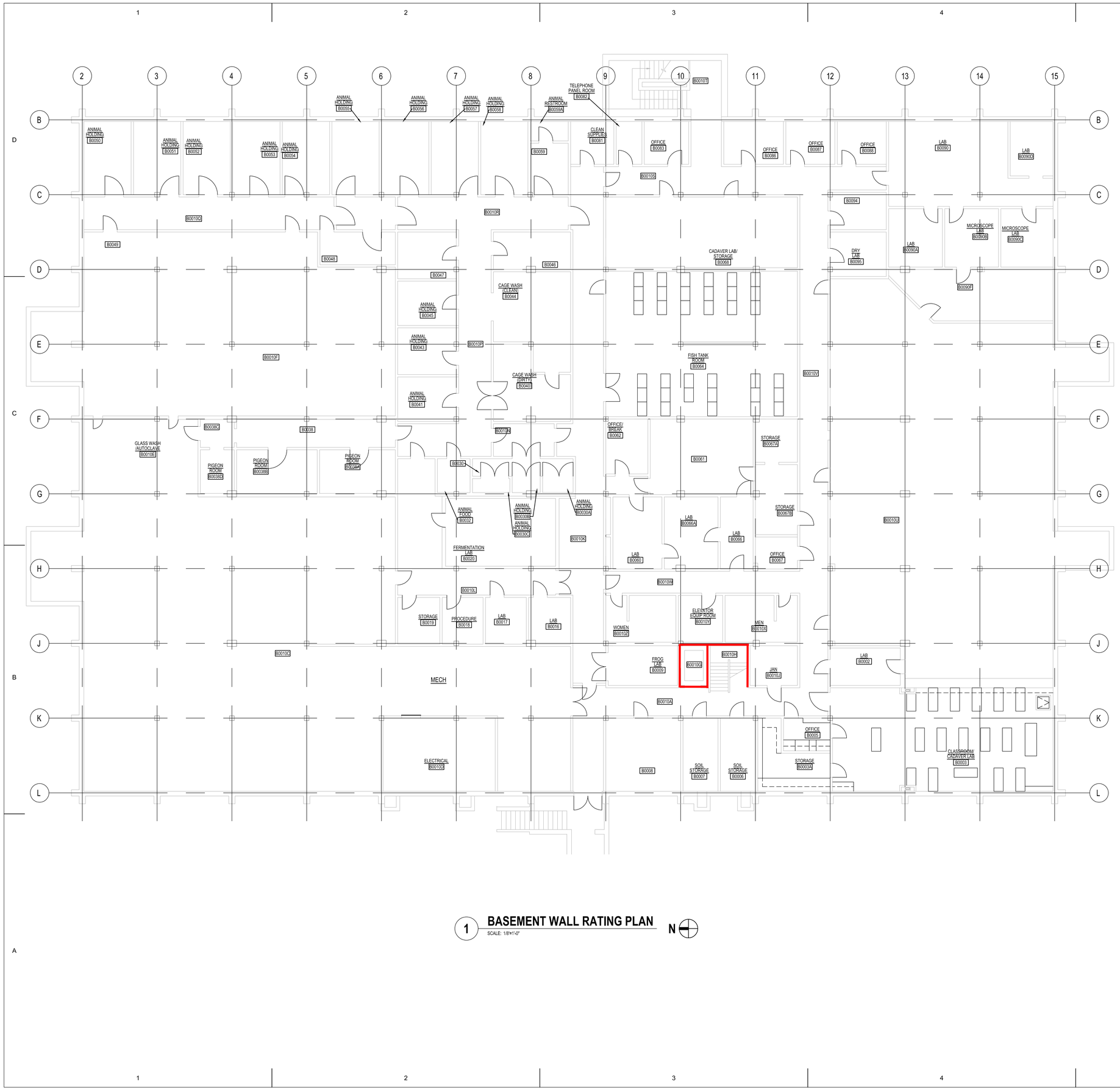
ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
CODE REVIEW

SHEET NUMBER:
G010



1 **BASEMENT WALL RATING PLAN**
SCALE: 1/8"=1'-0"

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WALL RATING LEGEND

VERTICAL SHAFTS 2-HOUR FIRE RATING

1-HOUR FIRE RATING @ ATRIUM

SMOKE BARRIER W/ 1-HOUR FIRE RATING ABOVE CEILING

NOTE - NEITHER THE ORGINAL CONSTRUCTION DRAWINGS, NOR THE CODE ANALYSIS PREPARED BY THE UNIVERSITY BUILDING OFFICIAL IN 2011 INCLUDE COMPLETE FIRE-RATING REQUIREMENTS. THE DETERMINATION SHOWN HERE IS BASED ON CURRENT CODE REQUIREMENTS AND/OR RECENT CODE-REVIEW COMMENTS FROM THE UNIVERSITY BUILDING OFFICIAL AND/OR THIRD PARTY CODE REVIEW CONSULTANTS.

CHEMICAL CONTROL AREA - FULL BUILDING

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PHONE: (801) 294-9299

STAMP:

STATE OF UTAH
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Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

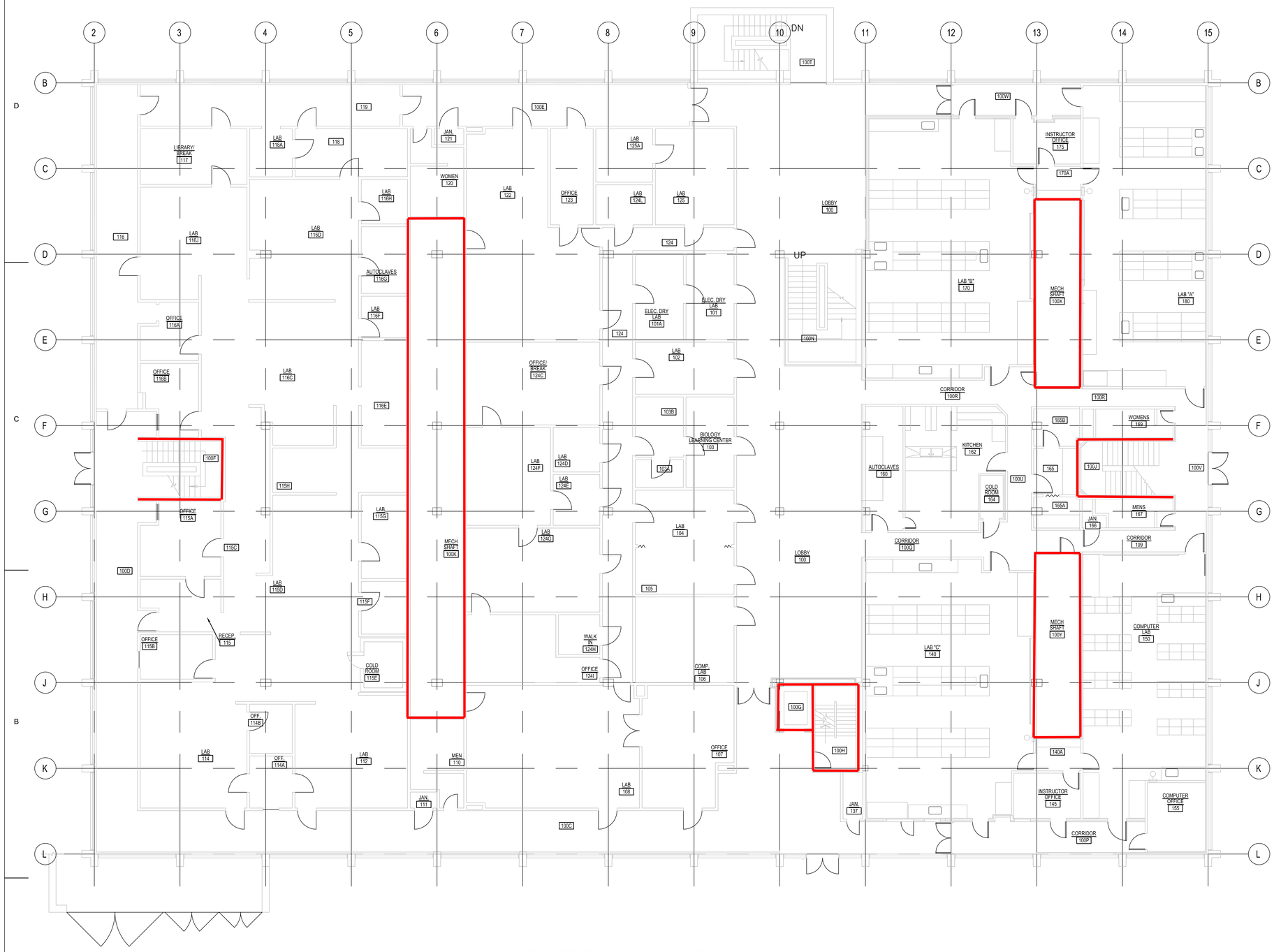
22437

SHEET TITLE:

BASEMENT WALL RATING PLAN

SHEET NUMBER:

G200



1 FIRST FLOOR WALL RATING PLAN

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

N

WALL RATING LEGEND

VERTICAL SHAFTS 2-HOUR FIRE RATING

1-HOUR FIRE RATING @ ATRIUM

SMOKE BARRIER W/ 1-HOUR FIRE RATING ABOVE CEILING

NOTE - NEITHER THE ORGINAL CONSTRUCTION DRAWINGS, NOR THE CODE ANALYSIS PREPARED BY THE UNIVERSITY BUILDING OFFICIAL IN 2011 INCLUDE COMPLETE FIRE-RATING REQUIREMENTS. THE DETERMINATION SHOWN HERE IS BASED ON CURRENT CODE REQUIREMENTS AND/OR RECENT CODE-REVIEW COMMENTS FROM THE UNIVERSITY BUILDING OFFICIAL AND/OR THIRD PARTY CODE REVIEW CONSULTANTS.

CHEMICAL CONTROL AREA - FULL BUILDING

DAVID L. JENSEN & ASSOCIATES
MECHANICAL ENGINEERS
547 WEST 500 SOUTH SUITE #140
BOUNTIFUL, UTAH 84010
PHONE: (801) 294-9299

STAMP:

STATE OF UTAH NO. 135781 TRACY D. STOCKING 5/31/2022 LICENSED ARCHITECT

CONSULTANT:

1486 South 1100 East
Salt Lake City, UT 84105
801.463.7108
www.tsa-usa.com
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1795 E. So. Campus Dr, Rm. 201
Salt Lake City, UT 84112-9403
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FAX: (801) 581-6081

BUILDING NAME:

University of Utah Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

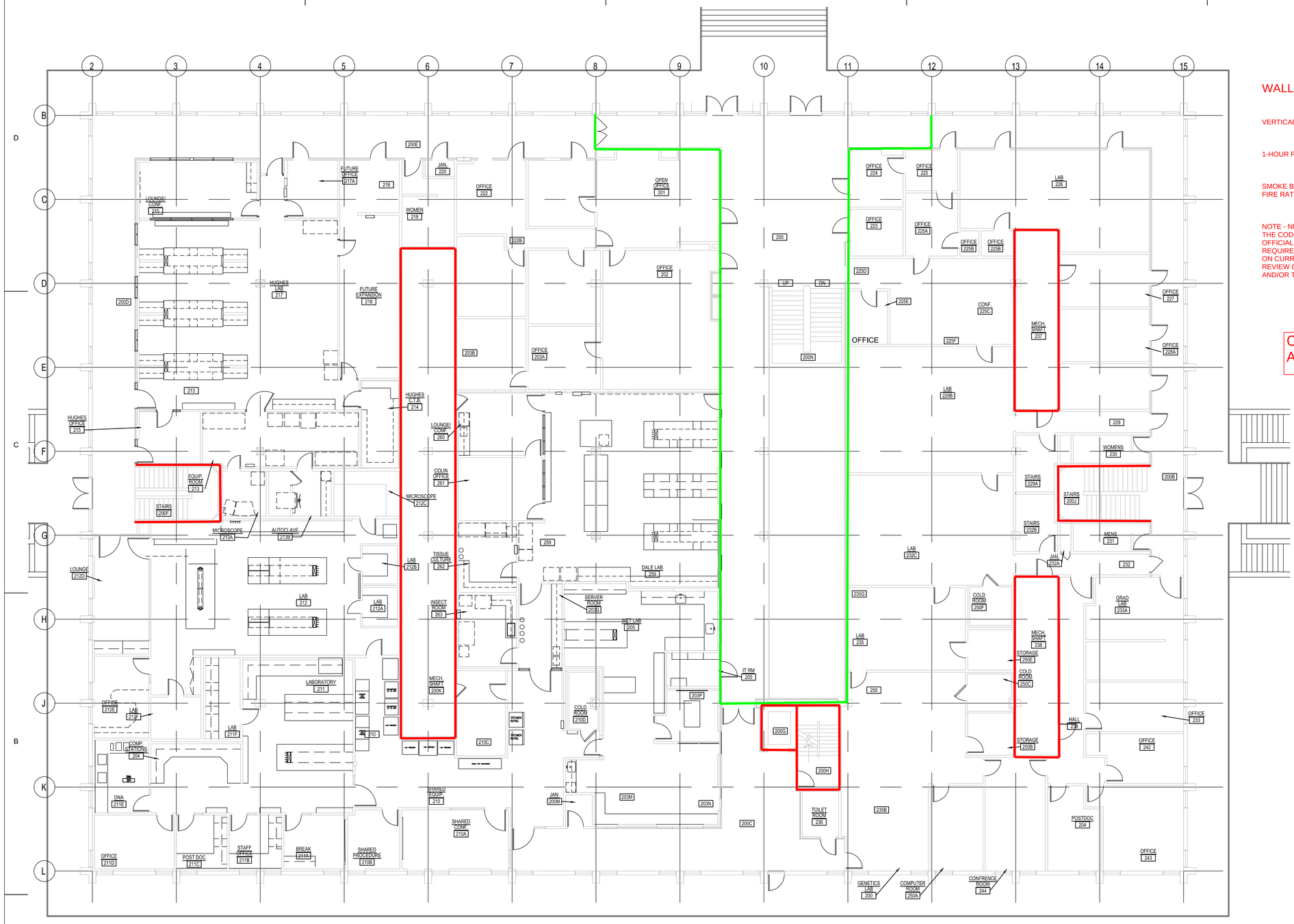
22437

SHEET TITLE:

FIRST FLOOR WALL RATING PLAN

SHEET NUMBER:

G201



1 SECOND FLOOR WALL RATING PLAN
SCALE: 1/8"=1'-0"

N

WALL RATING LEGEND

VERTICAL SHAFTS 2-HOUR FIRE RATING

1-HOUR FIRE RATING @ ATRIUM

SMOKE BARRIER W/ 1-HOUR FIRE RATING ABOVE CEILING

NOTE - NEITHER THE ORGINAL CONSTRUCTION DRAWINGS, NOR THE CODE ANALYSIS PREPARED BY THE UNIVERSITY BUILDING OFFICIAL IN 2011 INCLUDE COMPLETE FIRE-RATING REQUIREMENTS. THE DETERMINATION SHOWN HERE IS BASED ON CURRENT CODE REQUIREMENTS AND/OR RECENT CODE-REVIEW COMMENTS FROM THE UNIVERSITY BUILDING OFFICIAL AND/OR THIRD PARTY CODE REVIEW CONSULTANTS.

CHEMICAL CONTROL AREA - FULL BUILDING

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REVISIONS:

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ISSUE TYPE:

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ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

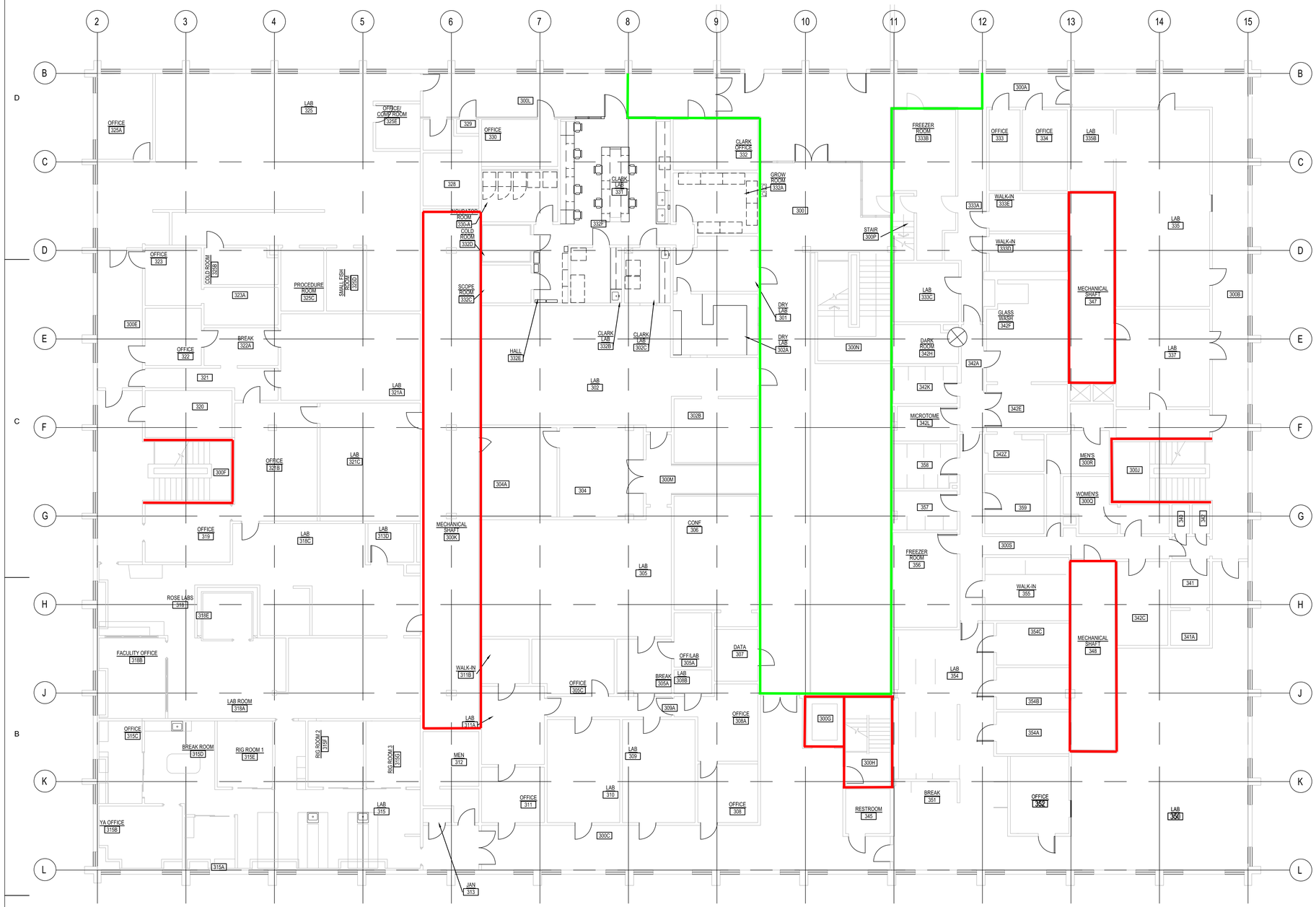
22437

SHEET TITLE:

SECOND FLOOR WALL RATING PLAN

SHEET NUMBER:

G202



1 THIRD FLOOR WALL RATING PLAN
SCALE: 1/8"=1'-0"

N

WALL RATING LEGEND

VERTICAL SHAFTS 2-HOUR FIRE RATING

1-HOUR FIRE RATING @ ATRIUM

SMOKE BARRIER W/ 1-HOUR FIRE RATING ABOVE CEILING

NOTE - NEITHER THE ORGINAL CONSTRUCTION DRAWINGS, NOR THE CODE ANALYSIS PREPARED BY THE UNIVERSITY BUILDING OFFICIAL IN 2011 INCLUDE COMPLETE FIRE-RATING REQUIREMENTS. THE DETERMINATION SHOWN HERE IS BASED ON CURRENT CODE REQUIREMENTS AND/OR RECENT CODE-REVIEW COMMENTS FROM THE UNIVERSITY BUILDING OFFICIAL AND/OR THIRD PARTY CODE REVIEW CONSULTANTS.

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UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

THIRD FLOOR WALL RATING PLAN

SHEET NUMBER:

G203



1 BASEMENT REMODEL FLOOR PLAN & REFLECTED CEILING PLAN

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

N

KEY NOTES

1. N/A
2. (E) SUSPENDED GYPSUM BOARD CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. BLEND WITH EXISTING TEXTURE AND RE-PAINT CEILING IN ENTIRE ROOM
3. (E) SUSPENDED ACOUSTICAL CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. REPLACE MISSING AND DAMAGED CEILING TILES.
4. N/A
5. N/A
6. N/A

AREA MOST LIKELY EXTENT OF CEILING TO BE IMPACTED. CONTRACTOR SHALL CONFRIM ON SITE AND NOTIFY THE A/E AND OWNER IF THE EXTENT INCREASES DUE TO UNFORSEEN CONDITIONS.

GENERAL NOTES

A. CONTRACTOR TO VERIFY ALL EXISTING CONSTRUCTION AND DIMENSIONS – IF CONDITIONS VARY FROM DRAWINGS NOTIFY THE ARCHITECT

B. CONTRACTOR SHALL REPAIR TO LIKE NEW CONDITION ANY EXISTING FINISH DAMAGED DURING DEMOLITION OR CONSTRUCTION

C. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS

D. ALL ITEMS TO BE SALVAGED FOR RE-USE OR TO OWNER ARE TO BE PROTECTED AND REMOVED AND RE-INSTALLED WITHOUT DAMAGE.

E. ADDITIONAL DEMOLITION MAY BE REQUIRED FOR ACCESS AND ROUTING OF MEP UTILITIES. COORDINATE WITH APPROPRIATE PLANS

F. BEFORE ANY FINISH FLOOR SYSTEM IS TO BE REMOVED, GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT FOR EXTENT OF FINISH FLOOR SYSTEM TO BE REMOVED & WHICH (E) FINISH FLOOR SYSTEM SHALL REMAIN TO BE PROTECTED IN PLACE

G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

K. PRIOR TO START OF DEMOLITION MEET W/ OWNER TO SELECT ALL ITEMS TO BE SALVAGED TO OWNER

L. DEMOLISH, REMOVE AND DISPOSE OF ALL ITEMS SHOWN DASHED ON DEMOLITION PLAN. INCLUDE ALL RELATED UTILITIES AND ACCESSORIES

M. CAP RETURN AND SUPPLY DUCT OPENINGS WITHIN AREA WORK UNTIL CONSTRUCTION HAS BEEN COMPLETED

N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

Q. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED.

R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

S. PATCH ALL ABANDONED PENETRATIONS IN WALLS, FLOORS AND ROOFS WITH SAME OR MORE DURABLE MATERIAL AS CURRENT CONSTRUCTION. MATCH FIRE/SMOKE RATING OF CURRENT CONSTRUCTION. IN CYP. BD. WALLS PROVIDE ADDITIONAL METAL STUD FRAMING TO SECURE CYP. BD. WHERE EXPOSED RE-FINISH ENTIRE WALL TO NEAREST INTERSECTION.

T. ALL NEW PENETRATIONS IN WALLS SHALL BE NEATLY SAW-CUT WITH MINIMUM ANNULAR SPACE AND SEALED PER GENERAL FIRE/SMOKE PENETRATION DETAIL.

CEILING LEGEND

EXISTING

- PENDANT LIGHT FIXTURE
- SURFACE-MTD LIGHT FIXTURE
- 2X4 LAY-IN TROFFER LIGHT FIXTURE
- 1X4 LAY-IN TROFFER LIGHT FIXTURE
- 2X2 LAY-IN TROFFER LIGHT FIXTURE
- SUSPENDED INDIRECT LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- HVAC SUPPLY GRILLE
- HVAC RETURN GRILLE
- 2X4 SUSPENDED ACOUSTICAL CEILING GRID
- 2X2 SUSPENDED ACOUSTICAL CEILING GRID
- 12x12 SUSPENDED PRESSED TIN CEILING
- 5/8" GYPSUM BOARD TEXTURED & PAINTED
- ACCESS DOOR
- LIGHTED EXIT SIGN

SUSPENDED CEILING REQUIREMENTS

"The suspended ceiling lateral force-bracing members shall be located a minimum of 6 inches from all horizontal piping or duct work that are not provided with bracing restraints for horizontal forces. Cable trays and electrical conduits shall be supported independently of the ceiling"

"Except where rigid braces are used to limit lateral deflection, sprinkler heads and other penetrations through the ceiling tile require minimum 2-inch rings, sleeves or adapters that will allow a minimum 1-inch ceiling movement in all horizontal directions. Alternatively, a swing joint can be provided at the top of the sprinkler head extension to accommodate the 1-inch movement". [ASCE 7, Sec. 13.5.6.2.2].

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STATE OF UTAH
NO. 9378T
BRIAN D. STOCKING
12/31/2022
LICENSED ARCHITECT

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Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

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PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

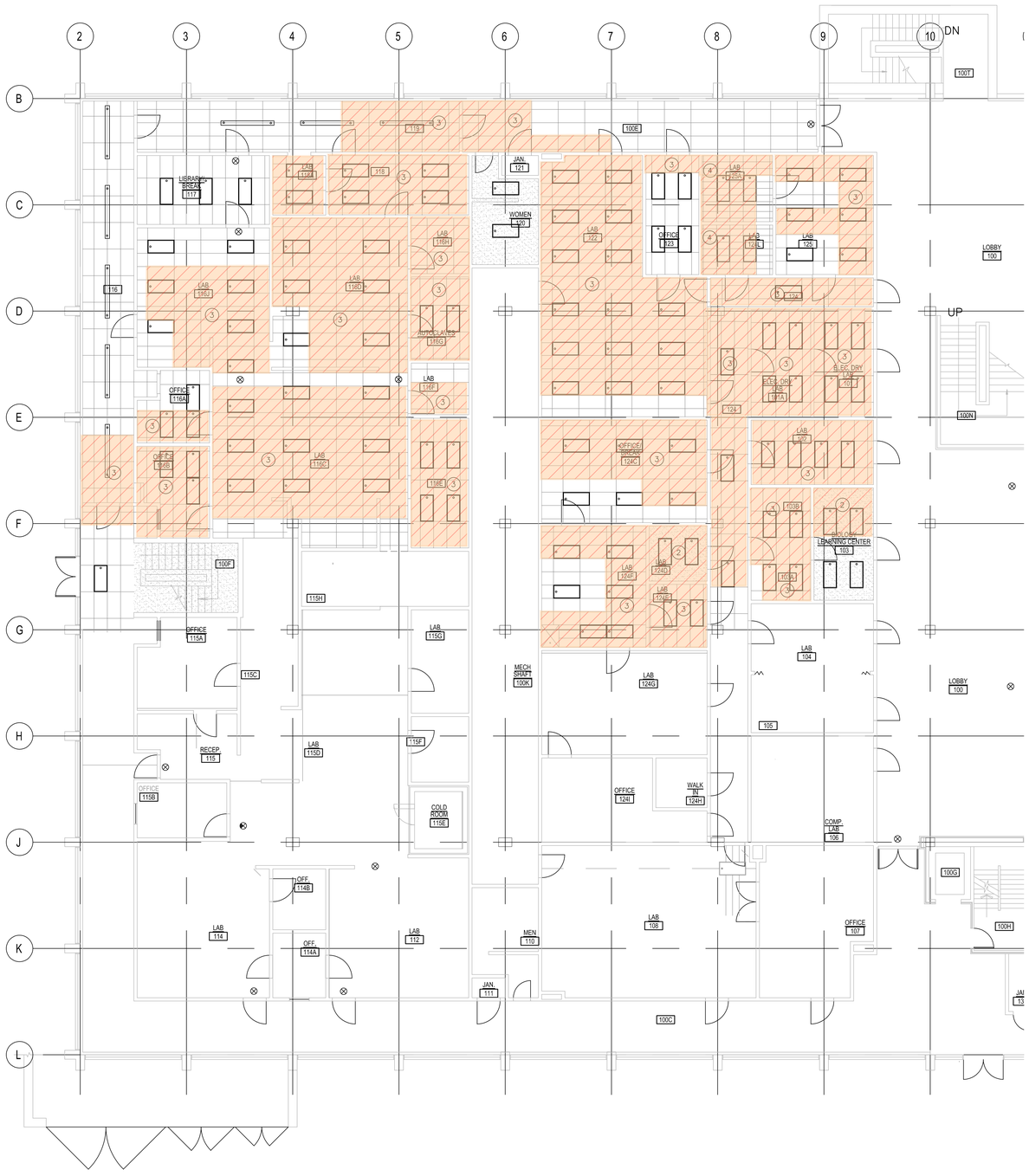
22437

SHEET TITLE:

BASEMENT - REMODEL FLOOR PLAN & REFLECTED CEILING PLAN

SHEET NUMBER:

A140



1 FIRST FLOOR REMODEL REFLECTED CEILING PLAN

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

N

KEY NOTES

1. N/A
2. (E) SUSPENDED GYPSUM BOARD CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. BLEND WITH EXISTING TEXTURE AND RE-PAINT CEILING IN ENTIRE ROOM
3. (E) SUSPENDED ACOUSTICAL CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. REPLACE MISSING AND DAMAGED CEILING TILES.
4. (E) 12X24 SUSPENDED PRESSED TIN CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. REPLACE MISSING AND DAMAGED CEILING TILES.
5. N/A
6. N/A

AREA MOST LIKELY EXTENT OF CEILING TO BE IMPACTED. CONTRACTOR SHALL CONFRIM ON SITE AND NOTIFY THE A/E AND OWNER IF THE EXTENT INCREASES DUE TO UNFORSEEN CONDITIONS.

SUSPENDED CEILING REQUIREMENTS

"The suspended ceiling lateral force-bracing members shall be located a minimum of 6 inches from all horizontal piping or duct work that are not provided with bracing restraints for horizontal forces. Cable trays and electrical conduits shall be supported independently of the ceiling"

"Except where rigid braces are used to limit lateral defiection, sprinkler heads and other penetrations through the ceiling tile require minimum 2-inch rings, sleeves or adapters that will allow a minimum 1-inch ceiling movement in all horizontal directions. Alternatively, a swing joint can be provided at the top of the sprinkler head extension to accommodate the 1-inch movement". [ASCE 7, Sec. 13.5.6.2.2].

GENERAL NOTES

A. CONTRACTOR TO VERIFY ALL EXISTING CONSTRUCTION AND DIMENSIONS – IF CONDITIONS VARY FROM DRAWINGS NOTIFY THE ARCHITECT

B. CONTRACTOR SHALL REPAIR TO LIKE NEW CONDITION ANY EXISTING FINISH DAMAGED DURING DEMOLITION OR CONSTRUCTION

C. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS

D. ALL ITEMS TO BE SALVAGED FOR RE-USE OR TO OWNER ARE TO BE PROTECTED AND REMOVED AND RE-INSTALLED WITHOUT DAMAGE.

E. ADDITIONAL DEMOLITION MAY BE REQUIRED FOR ACCESS AND ROUTING OF MEP UTILITIES. COORDINATE WITH APPROPRIATE PLANS

F. BEFORE ANY FINISH FLOOR SYSTEM IS TO BE REMOVED, GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT FOR EXTENT OF FINISH FLOOR SYSTEM TO BE REMOVED & WHICH (E) FINISH FLOOR SYSTEM SHALL REMAIN TO BE PROTECTED IN PLACE

G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

K. PRIOR TO START OF DEMOLITION MEET W/ OWNER TO SELECT ALL ITEMS TO BE SALVAGED TO OWNER

L. DEMOLISH, REMOVE AND DISPOSE OF ALL ITEMS SHOWN DASHED ON DEMOLITION PLAN. INCLUDE ALL RELATED UTILITIES AND ACCESSORIES

M. CAP RETURN AND SUPPLY DUCT OPENINGS WITHIN AREA WORK UNTIL CONSTRUCTION HAS BEEN COMPLETED

N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

Q. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED.

R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

S. PATCH ALL ABANDONED PENETRATIONS IN WALLS, FLOORS AND ROOFS WITH SAME OR MORE DURABLE MATERIAL AS CURRENT CONSTRUCTION. MATCH FIRE/SMOKE RATING OF CURRENT CONSTRUCTION. IN CYP. BD. WALLS PROVIDE ADDITIONAL METAL STUD FRAMING TO SECURE CYP. BD. WHERE EXPOSED RE-FINISH ENTIRE WALL TO NEAREST INTERSECTION.

T. ALL NEW PENETRATIONS IN WALLS SHALL BE NEATLY SAW-CUT WITH MINIMUM ANNULAR SPACE AND SEALED PER GENERAL FIRE/SMOKE PENETRATION DETAIL.

CEILING LEGEND

EXISTING

- PENDANT LIGHT FIXTURE
- SURFACE-MTD LIGHT FIXTURE
- 2X4 LAY-IN TROFFER LIGHT FIXTURE
- 1X4 LAY-IN TROFFER LIGHT FIXTURE
- 2X2 LAY-IN TROFFER LIGHT FIXTURE
- SUSPENDED INDIRECT LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- HVAC SUPPLY GRILLE
- HVAC RETURN GRILLE
- 2X4 SUSPENDED ACOUSTICAL CEILING GRID
- 2X2 SUSPENDED ACOUSTICAL CEILING GRID
- 12x24 SUSPENDED PRESSED TIN CEILING
- 5/8" GYPSUM BOARD TEXTURED & PAINTED
- ACCESS DOOR
- LIGHTED EXIT SIGN

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STAMP:

STATE OF UTAH
NO. 13781
JAMES D. STOCKING
11/1/2021
LICENSED ARCHITECT

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Salt Lake City, UT 84112-9403
Phone: (801)581-6883
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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

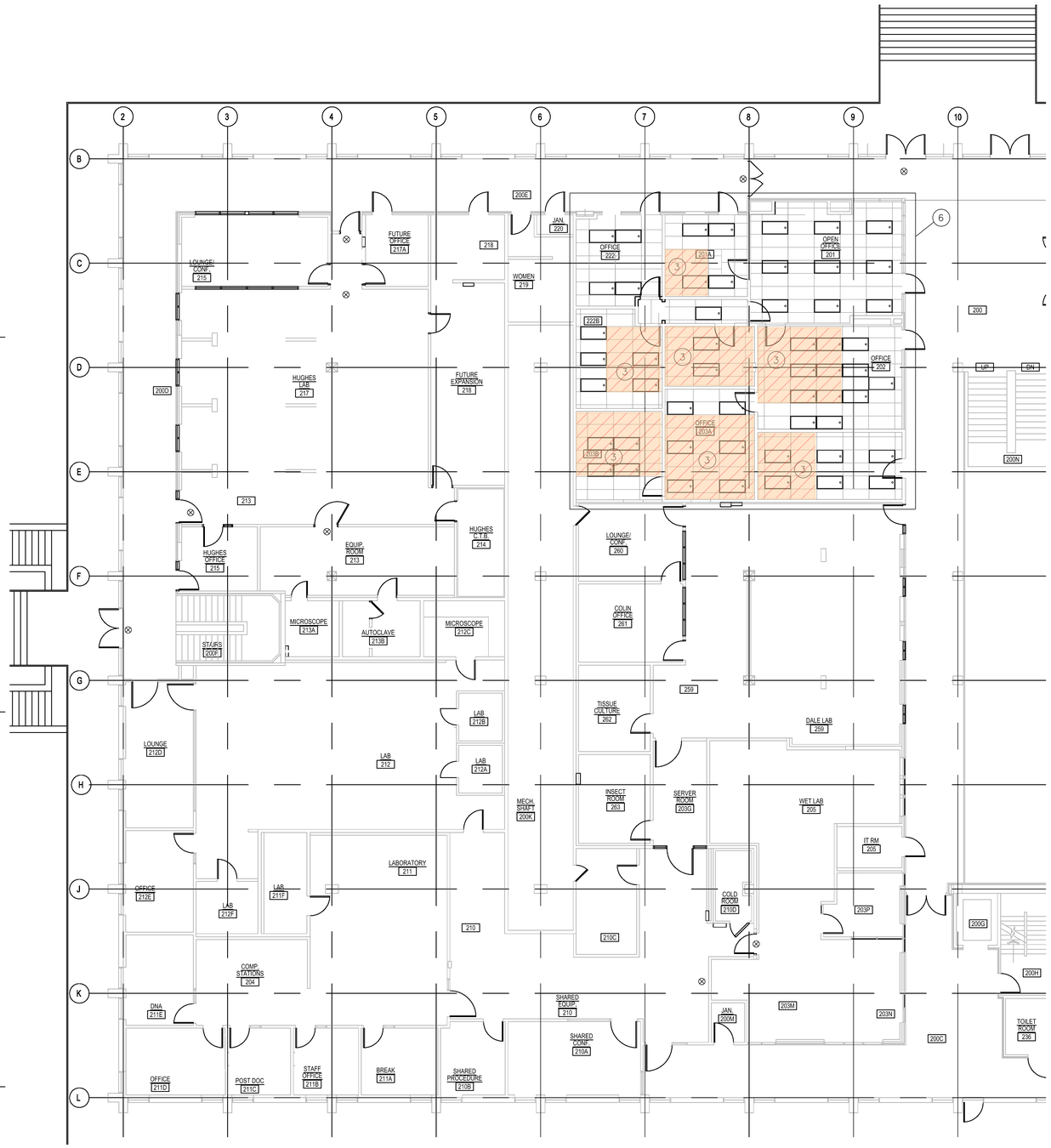
22437

SHEET TITLE:

FIRST FLOOR - REMODEL REFLECTED CEILING PLAN

SHEET NUMBER:

A141



1 SECOND FLOOR REMODEL REFLECTED CEILING PLAN

KEY NOTES

1. N/A
2. N/A
3. (E) SUSPENDED ACOUSTICAL CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. REPLACE MISSING AND DAMAGED CEILING TILES.
4. N/A
5. N/A
6. BID WORK IN THIS AREA AS ADD ALTERNATE #1

AREA MOST LIKELY EXTENT OF CEILING TO BE IMPACTED. CONTRACTOR SHALL CONFIRM ON SITE AND NOTIFY THE A/E AND OWNER IF THE EXTENT INCREASES DUE TO UNFORSEEN CONDITIONS.

GENERAL NOTES

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B. CONTRACTOR SHALL REPAIR TO LIKE NEW CONDITION ANY EXISTING FINISH DAMAGED DURING DEMOLITION OR CONSTRUCTION

C. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS

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E. ADDITIONAL DEMOLITION MAY BE REQUIRED FOR ACCESS AND ROUTING OF MEP UTILITIES. COORDINATE WITH APPROPRIATE PLANS

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G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

K. PRIOR TO START OF DEMOLITION MEET W/ OWNER TO SELECT ALL ITEMS TO BE SALVAGED TO OWNER

L. DEMOLISH, REMOVE AND DISPOSE OF ALL ITEMS SHOWN DASHED ON DEMOLITION PLAN. INCLUDE ALL RELATED UTILITIES AND ACCESSORIES

M. CAP RETURN AND SUPPLY DUCT OPENINGS WITHIN AREA WORK UNTIL CONSTRUCTION HAS BEEN COMPLETED

N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

Q. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED.

R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

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T. ALL NEW PENETRATIONS IN WALLS SHALL BE NEATLY SAW-CUT WITH MINIMUM ANNULAR SPACE AND SEALED PER GENERAL FIRE/SMOKE PENETRATION DETAIL.

CEILING LEGEND

EXISTING

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1X4 LAY-IN TROFFER LIGHT FIXTURE	
2X2 LAY-IN TROFFER LIGHT FIXTURE	
SUSPENDED INDIRECT LIGHT FIXTURE	
RECESSED CAN LIGHT FIXTURE	
HVAC SUPPLY GRILLE	
HVAC RETURN GRILLE	
2X4 SUSPENDED ACOUSTICAL CEILING GRID	
2X2 SUSPENDED ACOUSTICAL CEILING GRID	
12x12 SUSPENDED TIN CEILING	
5/8" GYPSUM BOARD TEXTURED & PAINTED	
ACCESS DOOR	
LIGHTED EXIT SIGN	

SUSPENDED CEILING REQUIREMENTS

"The suspended ceiling lateral force-bracing members shall be located a minimum of 6 inches from all horizontal piping or duct work that are not provided with bracing restraints for horizontal forces. Cable trays and electrical conduits shall be supported independently of the ceiling"

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UNIVERSITY PROJECT NUMBER:

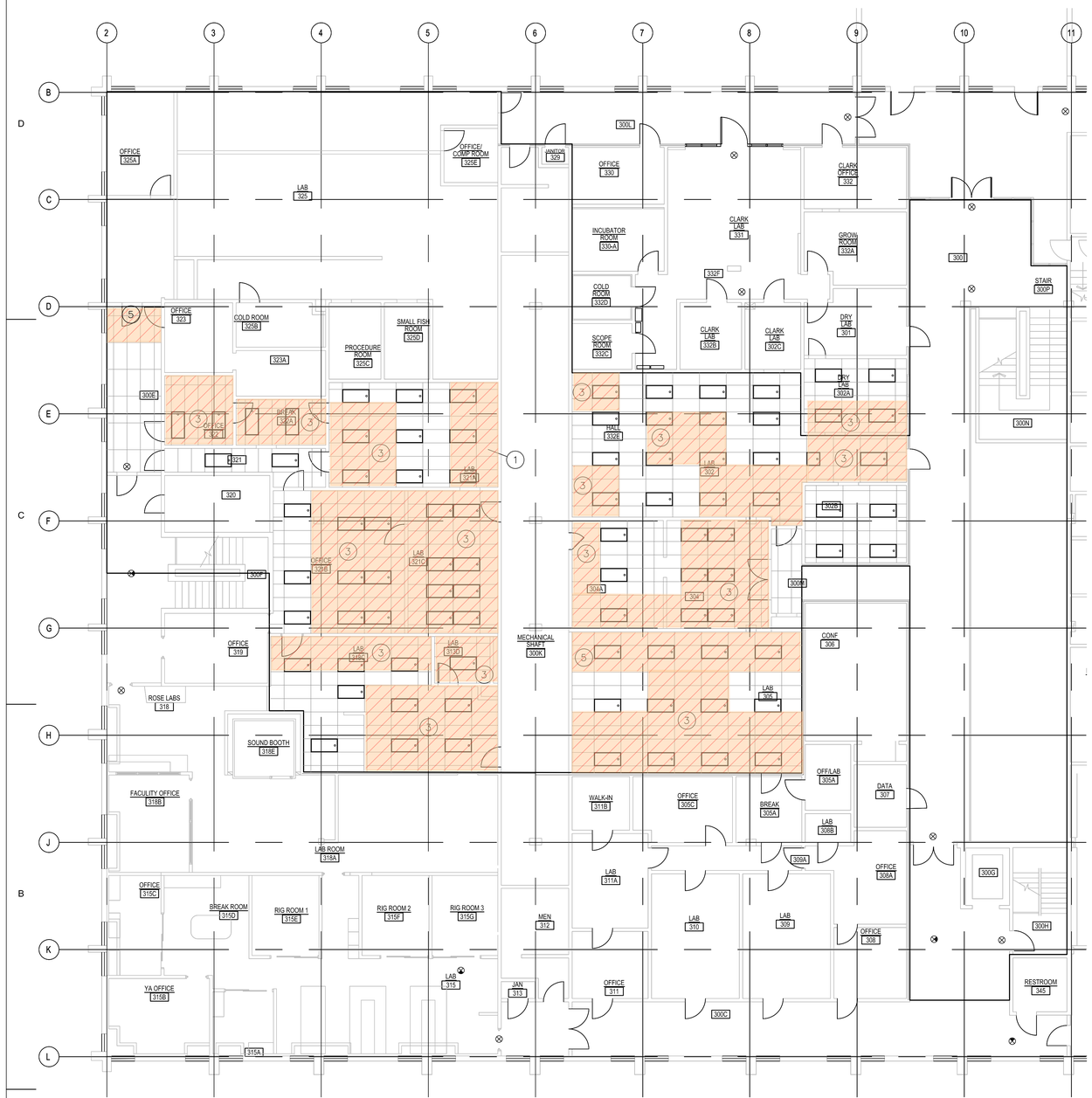
22437

SHEET TITLE:

SECOND FLOOR REMODEL REFLECTED CEILING PLAN

SHEET NUMBER:

A142



1 THIRD FLOOR REMODEL REFLECTED CEILING PLAN

KEY NOTES

1. SAW-CUT & REMOVE PORTIONS OF THE (E) WOOD SHELVING THAT IS ATTACHED TO THE EXISTING FUME HOOD. MODIFY THE SHELVING TO BE SELF-SUPPORTING AFTER RENOVATION
2. (E) SUSPENDED GYPSUM BOARD CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. BLEND WITH EXISTING TEXTURE AND RE-PAINT CEILING IN ENTIRE ROOM
3. (E) SUSPENDED ACOUSTICAL CEILING – REMOVE FOR NEW MEP WORK AND RE-INSTALL. REPLACE MISSING AND DAMAGED CEILING TILES.
4. N/A
5. REMOVE EXISTING CASEWORK, BASE CABINETS UNDER EXISTING FUME HOOD. KEEP EXISTING EPOXY RESIN COUNTER TOP BUT SEPARATE IT FROM THE ADJACENT PLASTIC CABINET- WHICH IS TO REMAIN IN PLACE.
6. N/A

AREA MOST LIKELY EXTENT OF CEILING TO BE IMPACTED. CONTRACTOR SHALL CONFRIM ON SITE AND NOTIFY THE A/E AND OWNER IF THE EXTENT INCREASES DUE TO UNFORSEEN CONDITIONS.

SUSPENDED CEILING REQUIREMENTS

"The suspended ceiling lateral force-bracing members shall be located a minimum of 6 inches from all horizontal piping or duct work that are not provided with bracing restraints for horizontal forces. Cable trays and electrical conduits shall be supported independently of the ceiling"

"Except where rigid braces are used to limit lateral deflection, sprinkler heads and other penetrations through the ceiling tile require minimum 2-inch rings, sleeves or adapters that will allow a minimum 1-inch ceiling movement in all horizontal directions. Alternatively, a swing joint can be provided at the top of the sprinkler head extension to accommodate the 1-inch movement". [ASCE 7, Sec. 13.5.6.2.2].

GENERAL NOTES

A. CONTRACTOR TO VERIFY ALL EXISTING CONSTRUCTION AND DIMENSIONS – IF CONDITIONS VARY FROM DRAWINGS NOTIFY THE ARCHITECT

B. CONTRACTOR SHALL REPAIR TO LIKE NEW CONDITION ANY EXISTING FINISH DAMAGED DURING DEMOLITION OR CONSTRUCTION

C. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS

D. ALL ITEMS TO BE SALVAGED FOR RE-USE OR TO OWNER ARE TO BE PROTECTED AND REMOVED AND RE-INSTALLED WITHOUT DAMAGE.

E. ADDITIONAL DEMOLITION MAY BE REQUIRED FOR ACCESS AND ROUTING OF MEP UTILITIES. COORDINATE WITH APPROPRIATE PLANS

F. BEFORE ANY FINISH FLOOR SYSTEM IS TO BE REMOVED, GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT FOR EXTENT OF FINISH FLOOR SYSTEM TO BE REMOVED & WHICH (E) FINISH FLOOR SYSTEM SHALL REMAIN TO BE PROTECTED IN PLACE

G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

K. PRIOR TO START OF DEMOLITION MEET W/ OWNER TO SELECT ALL ITEMS TO BE SALVAGED TO OWNER

L. DEMOLISH, REMOVE AND DISPOSE OF ALL ITEMS SHOWN DASHED ON DEMOLITION PLAN. INCLUDE ALL RELATED UTILITIES AND ACCESSORIES

M. CAP RETURN AND SUPPLY DUCT OPENINGS WITHIN AREA WORK UNTIL CONSTRUCTION HAS BEEN COMPLETED

N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

Q. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED.

R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

S. PATCH ALL ABANDONED PENETRATIONS IN WALLS, FLOORS AND ROOFS WITH SAME OR MORE DURABLE MATERIAL AS CURRENT CONSTRUCTION. MATCH FIRE/SMOKE RATING OF CURRENT CONSTRUCTION. IN GYP. BD. WALLS PROVIDE ADDITIONAL METAL STUD FRAMING TO SECURE GYP. BD. WHERE EXPOSED RE-FINISH ENTIRE WALL TO NEAREST INTERSECTION.

T. ALL NEW PENETRATIONS IN WALLS SHALL BE NEATLY SAW-CUT WITH MINIMUM ANNULAR SPACE AND SEALED PER GENERAL FIRE/SMOKE PENETRATION DETAIL.

CEILING LEGEND

EXISTING

- PENDANT LIGHT FIXTURE
- SURFACE-MTD LIGHT FIXTURE
- 2X4 LAY-IN TROFFER LIGHT FIXTURE
- 1X4 LAY-IN TROFFER LIGHT FIXTURE
- 2X2 LAY-IN TROFFER LIGHT FIXTURE
- SUSPENDED INDIRECT LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- HVAC SUPPLY GRILLE
- HVAC RETURN GRILLE
- 2X4 SUSPENDED ACOUSTICAL CEILING GRID
- 2X2 SUSPENDED ACOUSTICAL CEILING GRID
- 12x12 SUSPENDED TIN CEILING
- 5/8" GYPSUM BOARD TEXTURED & PAINTED
- ACCESS DOOR
- LIGHTED EXIT SIGN

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STATE OF UTAH
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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

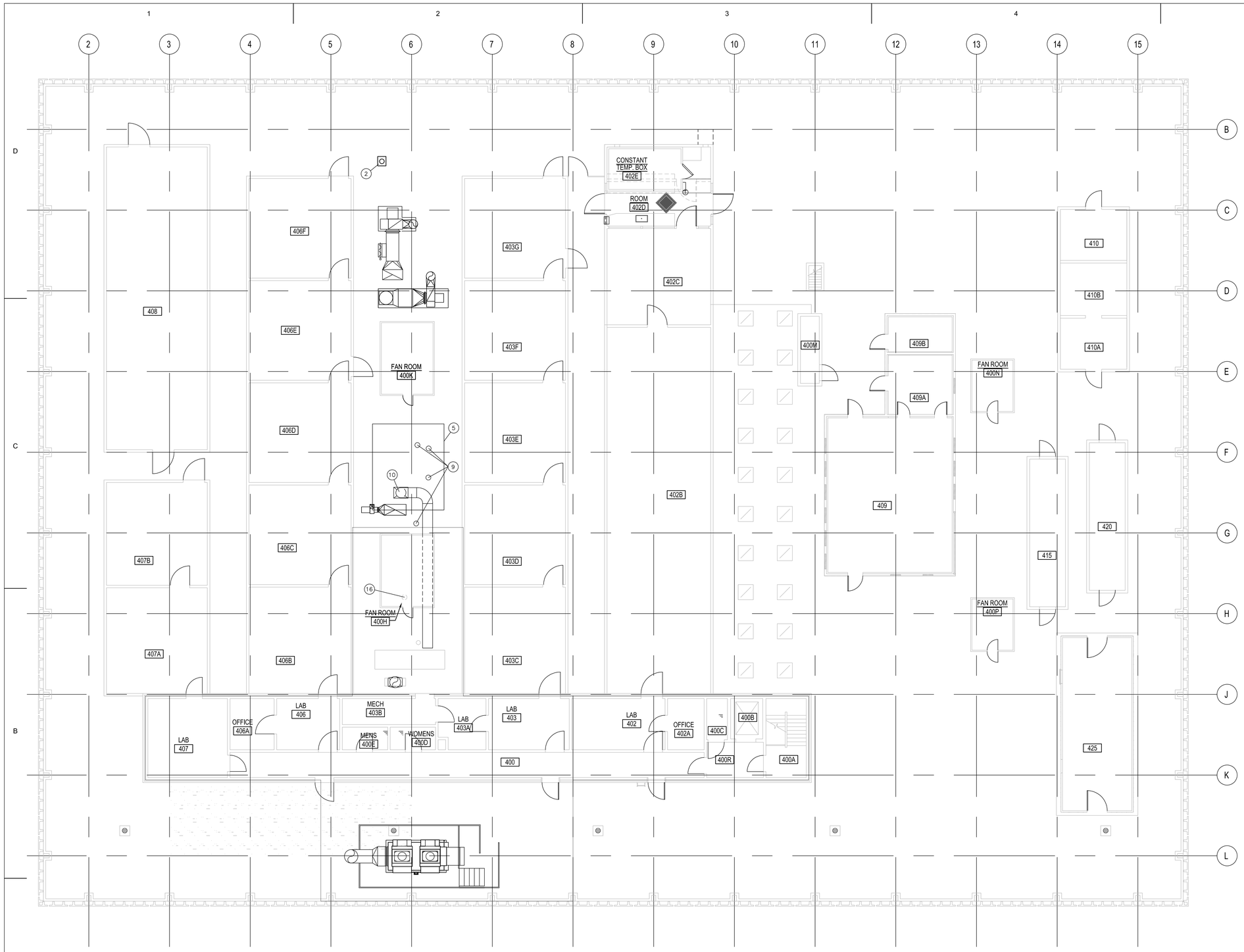
22437

SHEET TITLE:

THIRD FLOOR REMODEL REFLECTED CEILING PLAN

SHEET NUMBER:

A143



KEY NOTES

1. N/A
2. (E) ROOF DRAIN TO REMAIN– PROTECT IN PLACE
3. N/A
4. N/A
5. PATCH ROOF AND PAVERS
6. N/A
7. N/A
8. N/A L
9. PATCH AND REPAIR ROOF WHERE EXISTING PENETRATION IS ABANDONED.
10. PATCH AND FILL IN ROOF AND PAVERS AROUND NEW REDUCED DUCT PENETRATION. PROVIDE NEW FLASHING.
11. N/A
12. N/A
13. N/A
14. N/A
15. N/A
16. PATCH AND REPAIR METAL PENTHOUSE FAN ROOM WALL & ROOF PENETRATIONS FROM DUCT REMOVAL.

1 LEVEL 4/ROOF PLAN

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

N

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Phase 2

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MARK	DATE	DESCRIPTION

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PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

LEVEL 4/ROOF PLAN

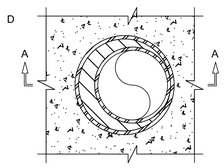
SHEET NUMBER:

A161

UL/cUL SYSTEM NO. F-A-1028
METAL PIPE THROUGH CONCRETE FLOOR OR CONCRETE FLOOR OVER METAL DECKING

F-RATING = 2-HR.
T-RATING = 0-HR.

TOP VIEW



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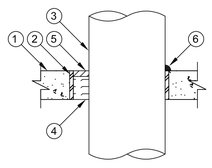


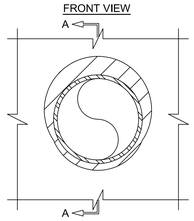
1. CONCRETE FLOOR ASSEMBLY (2-HR. FIRE-RATING):
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 2-1/2" THICK).
   B. STEEL FLOOR UNIT/FLOOR ASSEMBLY - NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK) OVER METAL DECKING.
2. [OPTIONAL] ANY OF THE FOLLOWING STEEL SLEEVES MAY BE USED :
   A. MAXIMUM 32" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR HEAVIER).
   B. MAXIMUM 6" (MIN. 26 GA.) OR 12" (MIN. 24 GA.) DIAMETER GALVANIZED STEEL SLEEVE WITH SQUARE FLANGE SPOT WELDED TO BOTTOM OF SLEEVE AND SIZED MINIMUM 2" LARGER THAN SLEEVE DIAMETER. SLEEVE MAY EXTEND MAXIMUM 1" ABOVE TOP SURFACE OF FLOOR. WHEN USED ON METAL DECKS, STEEL FLANGE SPOT WELDED TO THE SLEEVE AT APPROXIMATE MID-HEIGHT AND MAY EXTEND A MAXIMUM OF 4" BELOW THE BOTTOM OF THE DECK.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 30" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" NOMINAL DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. MINIMUM 2" THICKNESS MINERAL WOOL (MINIMUM 4 PCF DENSITY) TIGHTLY PACKED.
5. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 31-7/8".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-7/8".

UL/cUL SYSTEM NO. W-L-1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM / SQ FT
L-RATING AT 400°F = LESS THAN 1 CFM / SQ FT

FRONT VIEW



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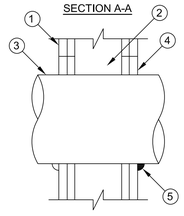


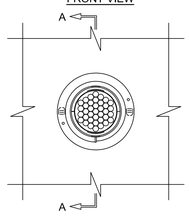
1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. [NOT SHOWN] WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
5. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING :
A. 32-1/4" FOR STEEL STUD WALLS.
B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".
3. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT OF CONTACT.
4. PIPE MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45° FROM PERPENDICULAR.

UL/cUL SYSTEM NO. W-L-3334
CABLE BUNDLE THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR., 2-HR., 3-HR., OR 4-HR.
T-RATING = 0-HR., 1-HR., 1 3/4-HR., 2-HR., 3-HR., OR 4-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM (SEE TABLE)
L-RATING AT 400°F = 1 OR LESS THAN 1 CFM (SEE TABLE)

FRONT VIEW



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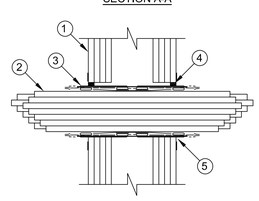


1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, OR V400 SERIES) (1-HR., 2-HR., 3-HR., OR 4-HR. FIRE-RATING) (4-HR. SHOWN) TO INCLUDE THE FOLLOWING CONSTRUCTION FEATURES :
   A. [NOT SHOWN] WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER (SPACED MAXIMUM 16" OC). STEEL STUDS TO BE MINIMUM 2-1/2" WIDE [FOR 1-HR. OR 2-HR. FIRE-RATING], MINIMUM 3-5/8" WIDE [FOR 3-HR. OR 4-HR. RATING], AND MINIMUM 3-1/2" WIDE [WHEN 3/4" THICK GYPSUM WALLBOARD IS USED] (SPACED MAXIMUM 24" OC).
   B. NOMINAL 5/8" THICK GYPSUM WALLBOARD. TYPE, NUMBER OF LAYERS, AND SHEET ORIENTATION AS SPECIFIED IN THE INDIVIDUAL UL DESIGN (FOR 1-HR. OR 2-HR. FIRE-RATING, MINIMUM ONE LAYER 3/4" THICK GYPSUM WALLBOARD MAY BE USED).
2. CABLE BUNDLE TO BE A COMBINATION OF ANY OF THE FOLLOWING :
   A. MAXIMUM 100 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
   B. MAXIMUM 7/C NO. 12 AWG COPPER CONDUCTOR CONTROL CABLE WITH PVC OR XLPE JACKET AND INSULATION.
   C. MAXIMUM 4/0 AWG TYPE RHH GROUND CABLE.
   D. MAXIMUM 4 PAIR NO. 22 AWG CAT 5 OR CAT 6 COMPUTER CABLE.
   E. MAXIMUM RG 6/U COAXIAL CABLE.
   F. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLE (24 FIBER) WITH PVC OR PE JACKET AND INSULATION.
   G. MAXIMUM 20/C NO. 22 AWG SHIELDED PRINTER CABLE WITH PVC JACKET.
   H. MAXIMUM 2/C NO. 18 AWG POWER OR NON-POWER LIMITED FIRE ALARM CABLE WITH OR WITHOUT METAL JACKET (MANUFACTURED BY AFC CABLE SYSTEMS, INC.).
   I. MAXIMUM 1/4" DIAMETER S-VIDEO CABLE CONSISTING OF TWO MAXIMUM 24 AWG 75 OHM COAX OR TWISTED PAIR CABLE WITH PE INSULATION AND PVC JACKET.
   J. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
   K. ANY CABLES, METAL-CLAD CABLES, OR ARMORED CABLES CURRENTLY LISTED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
3. HILTI CP 653 SPEED SLEEVE (2" OR 4") SLID INTO AND CENTERED WITHIN WALL. DEVICE FLANGES SPUN CLOCKWISE ONTO DEVICE THREADS, BUTTING TIGHTLY TO BOTH SIDES OF WALL (DEVICE FLANGES ARE OPTIONAL EXCEPT WHEN 3/4" GYPSUM WALLBOARD IS USED) (DEVICE FLANGES ARE REQUIRED WHEN L-RATING IS REQUIRED).
4. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT OR CP 606 FLEXIBLE FIRESTOP SEALANT FLUSH WITH BOTH SURFACES OF WALL (SEE NOTE NO. 5 BELOW).
5. MINIMUM 1/4" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT OR CP 606 FLEXIBLE FIRESTOP SEALANT APPLIED AROUND PERIPHERY OF DEVICE (SEE NOTE NO. 5 BELOW).

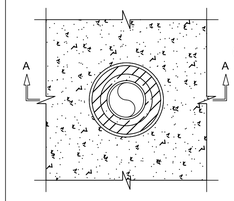
	-				

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 2-1/2" (FOR 2" DEVICE) OR 4-1/2" (FOR 4" DEVICE).
2. CABLES MAY REPRESENT 0% TO 100% VISUAL FILL OF DEVICE.
3. ANNULAR SPACE BETWEEN DEVICE AND PERIPHERY OF OPENING = MINIMUM 0".
4. L-RATING APPLIES ONLY WHEN FLANGE AND HILTI FS-ONE OR CP 606 FIRESTOP SEALANT ARE USED, AND INNER FABRIC SEAL IS TWISTED CLOSED.
5. AS AN ALTERNATE TO HILTI FS-ONE OR CP 606 FIRESTOP SEALANT, WHEN DEVICE FLANGES ARE USED, GYPSUM DRYWALL COMPOUND MAY BE USED.
6. [OPTIONAL] INNER FABRIC MAY REMAIN OPEN WHEN L-RATING IS NOT REQUIRED.

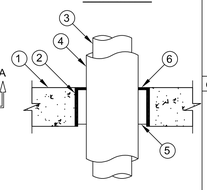
UL/cUL SYSTEM NO. C-AJ-5090
INSULATED METAL PIPE THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

F-RATING = 2-HR. OR 3-HR.
T-RATING = 0-HR.
L-RATING AT AMBIENT = 4 CFM/SQ. FT.
L-RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.

FRONT VIEW



SECTION A-A



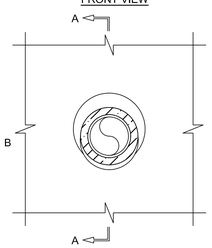
1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. OR 3-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MINIMUM 4-1/2" THICK).
   B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
2. OPTIONAL: MAXIMUM 18" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER) MAY EXTEND MAXIMUM 3" ABOVE FLOOR, OR BOTH SURFACES OF WALL.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 4" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 5 OR HEAVIER).
   B. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE OR TUBING.
4. MINIMUM 1/2" TO MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION. NOMINAL 1" THICK AB/PVC PIPE INSULATION MAY BE USED ON 3" PIPES AND SMALLER FOR A MAXIMUM 2-HR. FIRE-RATING.
5. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
6. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT, WHEN MAXIMUM ANNULAR SPACE DOES NOT EXCEED 1-1/2". WHEN MAXIMUM ANNULAR SPACE DOES EXCEED 1-1/2", APPLY MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 18".
2. ANNULAR SPACE [FOR 2-HR. FIRE-RATING] = MINIMUM 1/2", MAXIMUM 12".
3. ANNULAR SPACE [FOR 3-HR. FIRE-RATING] = MINIMUM 1/2", MAXIMUM 1-1/2".
4. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL.

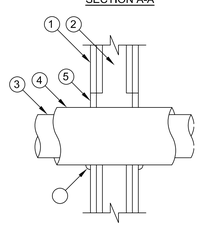
UL/cUL SYSTEM NO. W-L-5028
INSULATED METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR., 3/4-HR., OR 1-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM / SQ FT
L-RATING AT 400°F = LESS THAN 1 CFM / SQ FT

FRONT VIEW



SECTION A-A



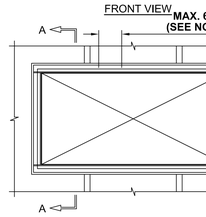
1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, V400, OR W400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. [NOT SHOWN] WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 4" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 40 OR HEAVIER).
   B. MAXIMUM 2" NOMINAL DIAMETER COPPER PIPE OR TUBING.
4. MINIMUM 1/2" TO MAXIMUM 1" THICK AB/PVC FLEXIBLE FOAM PIPE INSULATION.
5. MINIMUM 5/8" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 7-1/2".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

UL/cUL SYSTEM NO. W-L-7040
METAL DUCT (WITHOUT DAMPER) THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L-RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.

FRONT VIEW **MAX. 6" C/C SPACING (SEE NOTE NO. 3 BELOW)**



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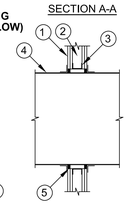


1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300 OR U400 SERIES WALL) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. OPENING TO BE "FRAMED OUT" WITH LIGHT GAUGE METAL FRAMING STUDS.
4. MAXIMUM 48" x 24" RECTANGULAR SHEET METAL DUCT (MIN. 24 GA.)
   NOTE : NOT FOR USE IN DUCT SYSTEMS CONTAINING A FIRE DAMPER
5. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT. HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, OR HILTI CP 606 FLEXIBLE FIRESTOP SEALANT.
6. [NOT SHOWN] APPLY MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT, HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, OR HILTI CP 606 FLEXIBLE FIRESTOP SEALANT AT POINT OF CONTACT PRIOR TO ATTACHING STEEL ANGLE.

NOTES : 1. MAXIMUM AREA OF OPENING = 1300 SQ. IN., WITH A MAXIMUM DIMENSION OF 50".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2".
3. AFTER SEALING SPACE BETWEEN DUCT AND GYPSUM WALL ASSEMBLY WITH HILTI FIRESTOP SEALANT, FASTEN STEEL ANGLE (MIN. 18 GA.) TO DUCT WITH MINIMUM NO. 8 x 3/4" LONG SHEET METAL SCREWS. STEEL ANGLE TO OVERLAP DUCT BY MINIMUM 2" AND GYPSUM WALL ASSEMBLY BY MINIMUM 1". ANGLE DOES NOT HAVE TO BE FASTENED TO GYPSUM WALL ASSEMBLY. WHEN DUCT IS AT POINT OF CONTACT, ANGLES TO BE INSTALLED PRIOR TO FULL MATERIAL CURING.

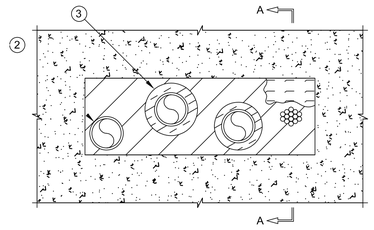
FIRE SPRAY REQUIREMENTS:

ALL (E) PRIMARY STRUCTURAL FRAME COMPONENTS IN NEW WORK AREA SHALL BE PROTECTED WITH RATED SPRAYED ON FIRE PROOFING OR EQUIVALENT GYPSUM BOARD. ANY PRIMARY STRUCTURE UNCOVERED DURING DEMOLITION AND CONSTRUCTION THAT IS DEFICIENT IS TO BE PATCHED AND REPAIRED TO MATCH ADJACENT LEVEL OF PROTECTION REGARDLESS OF ANY OTHER WORK THAT IS OR IS NOT TO BE PERFORMED IN THE LOCATION THAT IS DEFICIENT ANY EXISTING FIRE SPRAY REMOVED FOR NEW WORK IS TO BE PATCHED AND REPAIRED AROUND NEW CONNECTION OR ATTACHMENT.

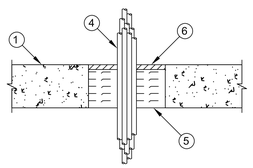
UL/cUL SYSTEM NO. C-AJ-8099
MULTIPLE PENETRATING ITEMS THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

F-RATING = 3-HR.
T-RATING = 0-HR. OR 3/4-HR.

TOP VIEW



SECTION A-A



F-RATING = 3-HR.
T-RATING = 0-HR. OR 3/4-HR.

1. CONCRETE FLOOR OR WALL ASSEMBLY (3-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 4-1/2" THICK).
   B. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 5" THICK).
   C. PRECAST (HOLLOW-CORE) CONCRETE FLOOR (MINIMUM 6" THICK).
   D. ANY UL CLASSIFIED CONCRETE BLOCK WALL.
2. ONE OR MORE OF THE FOLLOWING PIPES, AND IN ANY COMBINATION MAY BE INSTALLED WITHIN THE OPENING :
   A. MAXIMUM 3" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 3" NOMINAL DIAMETER CAST IRON PIPE.
   C. MAXIMUM 3" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 3" NOMINAL DIAMETER STEEL CONDUIT OR EMT.
   E. MAXIMUM 1" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT.
   E. MAXIMUM 2" NOMINAL DIAMETER FLEXIBLE STEEL GAS PIPING (WITH OR WITHOUT PLASTIC COVERING) MANUFACTURED BY OMEGA FLEX, INC. OR WARD MFG., INC.
   F. MAXIMUM 1" NOMINAL DIAMETER FLEXIBLE STEEL GAS PIPING (WITH OR WITHOUT PLASTIC COVERING) MANUFACTURED BY GASTITE, DIVISION OF TITEFLEX.
3. [OPTIONAL] ANY OR ALL PIPES MAY BE INSULATED WITH MAXIMUM 1" THICK GLASS-FIBER OR MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION.
4. MAXIMUM 2" DIAMETER CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING :
   A. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
   B. MAXIMUM 500 KCMIL POWER CABLE WITH PVC JACKET.
   C. MAXIMUM 7/C NO. 12 AWG POWER CABLE WITH PVC JACKET.
   D. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLE (24 FIBER).
   E. MAXIMUM 3/C NO. 12 AWG METAL-CLAD CABLE.
5. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED. WHEN INSTALLED IN PRECAST (HOLLOW-CORE) CONCRETE FLOOR, MINERAL WOOL TO FILL FLOOR, FLUSH WITH BOTTOM AND RECESSED TO ACCOMMODATE SEALANT ON TOP SIDE.
6. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM AREA OF SQUARE, RECTANGULAR, OR CIRCULAR OPENING IS 192 SQ. IN. WITH A MAXIMUM DIMENSION OF 24" IN NORMAL CONCRETE, 49 SQ. IN. WITH A MAXIMUM DIMENSION OF 7" IN PRECAST (HOLLOW-CORE) CONCRETE.
2. ANNULAR SPACE BETWEEN CABLE BUNDLE, PIPES, AND INSULATED PIPES = MINIMUM 1/2", MAXIMUM 3-1/8".
3. ANNULAR SPACE BETWEEN PIPES/INSULATED PIPES AND PERIPHERY OF OPENING = MINIMUM 1/2", MAXIMUM 5".
4. ANNULAR SPACE BETWEEN CABLE BUNDLE & PERIPHERY OF OPENING = MIN. 2", MAX. 4".
5. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.

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STAMP:

STATE OF UTAH
NO. 9781
MARK D. STOCKING
10/31/2021
LICENSED ARCHITECT

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Phone: (801)581-6883
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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

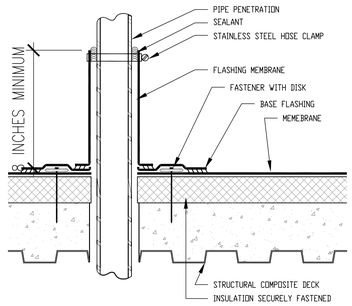
22437

SHEET TITLE:

DETAILS - FIRE PENETRATIONS

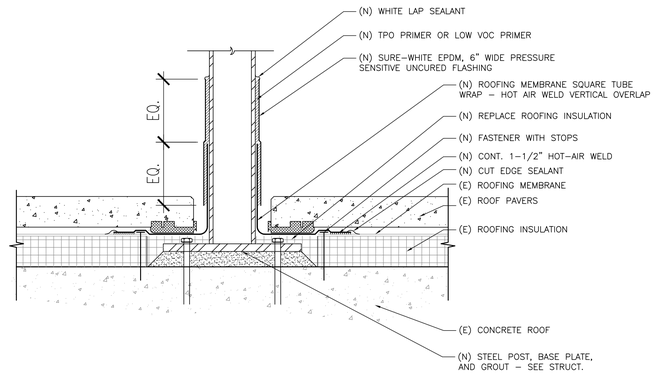
SHEET NUMBER:

A520



1 PIPE FLASHING DETAIL

SCALE: 3"=1'-0"



2 SQUARE POST FLASHING DETAIL

SCALE: 3"=1'-0"

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1	04-22-21	ADDENDUM #1

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ISSUE DATE:

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UNIVERSITY PROJECT NUMBER:

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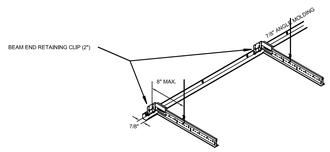
SHEET TITLE:

ROOF DETAILS

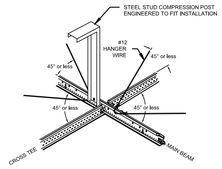
SHEET NUMBER:

A530

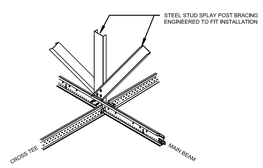


1 SEISMIC ACT CEILING - TRIM

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



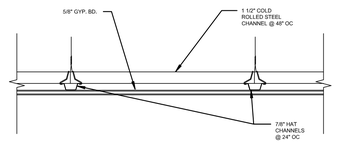
TYPICAL #12 WIRE SPLAY BRACING



TYPICAL RIGIDSPLAY BRACING PER ASCE 7-05

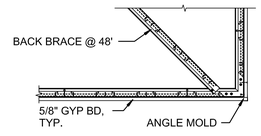
2 SEISMIC ACT CEILING - BRACING

SCALE 1/2" = 1'-0"



3 SUSPENDED CEILING DETAIL - TYP.

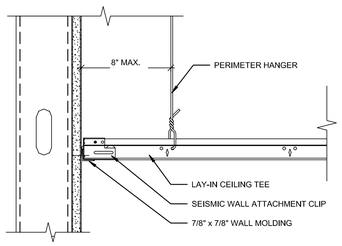
SCALE: 3" = 1'-0"



SECTION @ BULKHEAD

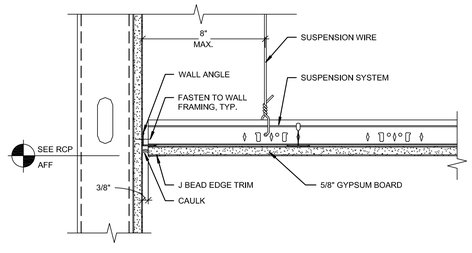
4 TYP. GYP BULKHEAD BRACING DETAIL

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



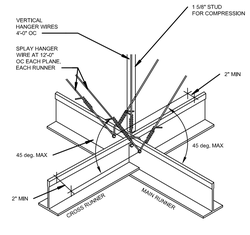
5 TYP. ACOUSTICAL LAY-IN CEILING PERIMETER DETAIL

SCALE: 3" = 1'-0"



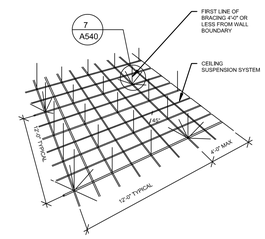
6 TYP. SUSPENDED GYP. BD. CEILING - PERIMETER DETAIL

SCALE: 3" = 1'-0"



7 SEISMIC BRACING DETAIL - TYP.

SCALE: 3" = 1'-0"



8 SEISMIC BRACING DETAIL - TYP.

SCALE: 3" = 1'-0"

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SHEET TITLE:

DETAILS - CEILINGS

SHEET NUMBER:

A540

GENERAL STRUCTURAL NOTES

GENERAL

1. The structural notes are intended to complement the project specifications. Specific notes and details in the drawings shall govern over the structural notes and typical details.
2. Typical details and sections shall apply where specific details are not shown.
3. The structural drawings are not all-inclusive and do not contain all dimensions, elevations, openings, mechanical shafts and penetrations needed to build the structure. The contractor shall coordinate these items with the Architectural, Mechanical and Electrical drawings.
4. Omissions or conflicts between the contract drawings and/or specifications shall be brought to the attention of the architect/engineer before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the architect/engineer at no additional cost to the owner.
5. The contractor shall submit a written request to the architect/engineer before proceeding with any changes, substitutions or modifications. Any work done by the contractor before receiving written approval will be at the contractor's risk.
6. The contractor shall coordinate with all trades any items that are to be integrated into the structural system such as openings, penetrations, mechanical and electrical equipment, etc. Sizes and locations of mechanical and other equipment that differs from those shown on the contract drawings shall be reported to the architect/engineer.
7. The contractor shall provide adequate shoring and bracing as required for the chosen method of erection. Shoring and bracing shall remain in place until final connections for the permanent members are completed. The building shall not be considered stable until all connections are completed. Walls shall not be considered self-supporting and shall be braced until the floor/roof system is completed.
8. The contractor shall not cut or core any holes in masonry or concrete walls without prior review by the architect/engineer.
9. Site observations by BHB Consulting Engineers' field representative shall not be construed as approval of construction procedures nor special inspection.
10. Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings. The structural drawings shall be used in conjunction with the architectural and other consultant's drawings. Some dimensions and elements such as elevations, depressions, slopes, mechanical housekeeping pads, etc. are not shown in the structural drawings. All dimensions shown on structural drawings shall be verified by contractor with architectural, mechanical and electrical drawings.
11. Contractor shall review shop drawings for compliance with contract documents, and stamp shop drawings with review stamp prior to submission to architect for review. Review of shop drawings by BHB Consulting Engineers is for general compliance only and is not intended for approval. The shop drawing review shall not relieve the contractor from the responsibility of completing the project according to the contract documents. Fabrication shall not begin until shop drawings review process is complete. Shop drawings made from reproductions of the contract drawings will be rejected unless the contractor signs a release agreement prior to the shop drawings being reviewed.
12. Only an authorized representative of BHB Consulting Engineers may make changes to these contract drawings. BHB Consulting Engineers shall not be held responsible or liable for any claims arising directly or indirectly from changes made without written authorization by an authorized representative of BHB Consulting Engineers.
13. Bidding, pricing or construction done prior to receiving final building permits from the authorities having jurisdiction is at the contractor's own risk. Changes to the drawings may be required as part of the plan check process. BHB Consulting Engineers will not be held liable for, nor compensate for, changes to these drawings before final jurisdiction approval is obtained.

BASIS OF DESIGN

1. Governing Code — International Building Code 2018
   a. Risk Category — III
2. Snow Loads
   a. Ground Snow Load — P_g = 35 psf
   b. Snow Importance Factor — I_s = 1.1
   c. Snow Exposure Coefficient — C_e = 1.0
   d. Thermal Exposure Coefficient — C_t = 1.1
   e. Roof Snow Load — $P_f = 0.7*C_e*C_t*I_s*P_g$ = 27 psf plus Snow Drift
3. Rain Loads
   a. Rain Intensity — i = 1.5 in/hr
4. Roof Live Load — 20 psf
5. Floor Live Loads
   a. Maintenance access floors — 40 psf
6. Seismic Loads (Engineers Note: Typical case)
   a. Seismic Importance Factor, I_e — 1.25
   b. Seismic Design Category — D
   c. Mapped Spectral Acceleration — S_S = 1.350g; S_1 = 0.501g
   d. Soil Site Class — D
   e. Soil Site Coefficients — F_a = 1.2; F_v = 1.8
   f. 5% Damped Design Spectral Response Acceleration — $S_{DS} = 2/3 * F_a * S_S$ = 1.080g; $S_{D1} = 2/3 * F_v * S_1$ = 0.601g
7. Wind Loads
   a. Basic Wind Velocity (3 Second Gust) — 109 mph
   b. Exposure Type — C
   c. Internal Pressure Coefficient, GCpi — +/-0.18
   d. Topographic Factor, Kzt — 1.0
   e. Ground Elevation Factor, Ke — 1.0
   f. Components and Cladding Wind Force Table (psf, Strength Design)

	Effective Wind Area for Component (sq ft.)				
Wall Zone	10 sq ft.	20 sq ft.	50 sq ft.	100 sq ft.	500 sq ft.
4	26.0	25.9	25.5	24.9	20.0
5	32.0	31.8	31.1	29.9	20.0

EXISTING CONDITIONS

1. Structural connections and the framing systems shown in the structural drawings are based on a existing structural drawings and have not been site verified. The contractor shall verify the existing conditions of exposed framing systems, connections, walls, and other structural elements within the project area. If existing conditions vary from the information in the contract documents, the contractor shall notify the architect/engineer prior to proceeding with the fabrication or construction of any affected elements.
2. Existing framing systems and foundations taking new loads are assumed to be in good condition, unless noted otherwise in the contract documents. The contractor shall immediately notify the architect/engineer of any deficiencies in the existing structure that are observed or revealed during construction (e.g. corrosion of steel members, cracking or crumbling of concrete, checking or splitting of wood members) prior to proceeding with the fabrication or construction of any affected elements.
3. While performing work adjacent to existing structures, the contractor shall be responsible for adequate shoring and protection of all existing structures. utilities, and services which will be affected by the work in the contract documents.

STRUCTURAL STEEL

1. Material:
   a. Wide Flanges Section — ASTM A992 (50 ksi)
   b. All Thread Rods, Other Shapes & Plates — ASTM A36 (36 ksi) or ASTM A572 Gr 50 (50 ksi) where indicated on plans.
   c. Square or Rectangular HSS — ASTM A500 (50 ksi) Grade C or ASTM A1085 (50ksi)
   d. Round HSS — ASTM A500 (46 ksi) Grade B
   e. Standard (Schedule 40) Pipe — ASTM A53 (35 ksi) Grade B
   f. Extra Strong (Schedule 80) Pipe — ASTM A53 (35ksi) Grade B
   g. Double Extra Strong (Schedule 120) Pipe — ASTM A53 (35ksi) Grade B
   h. Stainless Steel shapes & plates — ASTM A240 (30 ksi)
   i. Stainless Steel Rectangular HSS — ASTM A554 (UNS S30403) Grade 304L
   j. Stainless Steel Pipe — ASTM A312 (UNS S30403) Grade 304L
   k. Deformed Bar Anchors (DBA) — ASTM A496
   l. Headed Stud Anchors (HSA) — ASTM A108
   m. Non-Metallic Shrinkage Resistant Grout — ASTM C 1107
   n. Anchor Rods Typical, uno — ASTM F1554, Grade 36, with ASTM A563 heavy hex nuts and ASTM F436 hardened washers Grade A
   o. Bolted Connections: — ASTM F3125 Grade A325 with ASTM A563 nuts and ASTM F436 hardened washers.
2. Fabrication and construction shall comply with the latest edition of the following Codes and Standards:
   a. American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," with "Commentary".
   b. AISC "Code of Standard Practice" excluding the following: Section 3.2, Section 4.4, Section 4.4.1,
   c. AISC "Specification for Structural Joints Using High-Strength Bolts"
   d. American Welding Society (AWS). Structural Welding Code (specific items do not apply when they conflict with the AISC requirements).
   e. AISC "Seismic Provision for Structural Steel Buildings"- ANSI/AISC 341
   f. All exterior steel elements, including anchor rods and bolts shall be hot-dip galvanized in accordance with ASTM A123 and A153 where applicable.
3. Welding
   a. Field weld flags that have been put in these documents are for suggestion only. The contractor has the option to substitute shop welding for field welding or vice versa. The steel fabrication and steel erection drawings must clearly distinguish between shop welds and field welds prior to any work being performed.
   b. Steel fabricators shall indicate the shop welds that are excluded from their bids. Steel erectors shall indicate the field welds that are excluded from their bids. It is the responsibility of the contractor to coordinate shop welding and field welding with the appropriate subcontractors.
   c. All welding and cutting shall be performed by AWS certified welders.
   d. Use E-70 XX (58 ksi yield, 70 ksi tensile) unless noted otherwise.
   e. All intersecting steel shapes which are not bolted shall be connected by a fillet weld all around, unless noted otherwise. Where fillet weld sizes are not shown they shall be 1/16" less than the thinnest of the connected parts for thicknesses 1/4" and larger. Fillet welds on plates less than 1/4" shall be of the same size as the thinnest of the connected part.
   f. Reinforcing Bars: Do not weld rebar. Do not substitute reinforcing bars for deformed bar anchors (DBAs), machine bolts, or headed stud anchors (HSAs).
   g. Do not weld anchor bolts, including "tack" welds.
   h. Headed Stud Anchors (HSAs) welding and deformed bar anchor welding shall conform to the manufacturer's specifications.
   i.
4. Bolted Connections:
   a. Use bolts for steel to steel connections, as noted herein or as noted on the drawings. Bolts shall be used in connections for simple span framing and beam (or girder) to bearing plate connections. Tighten bolts to a snug tight condition. See sheet S601.
   b. Use hardened washers beneath the turned element of all bolts or nuts. Use hardened beveled washers, to compensate for the lack of parallelism, where the outer face of the bolted parts has a slope greater than one in twenty with respect to the plane normal to the bolt axis. At oversized holes hardened washers or plates shall conform with ASTM F-436 and shall completely cover the slot after installation.
   c. Where a steel to steel beam connection is not shown, provide a standard AISC framed connection for one half the total uniform load capacity of the beam for the span and steel specified.
   d. Bolts, nuts and washers shall not be reused.
5. Provide baseplate anchor rod connections to concrete elements that correlate with ACI 117. Circular or square washers are acceptable:

ANCHOR ROD DIAMETER	HOLE DIAMETER	WASHER SIZE	WASHER THICKENESS (MIN)
3/4"	1.5/16"	2"	1/4"
7/8"	1.9/16"	2.1/2"	5/16"
1"	1.7/8"	3"	3/8"
1.1/4"	2.1/8"	3.1/2"	1/2"
1.1/2"	2.3/8"	4"	1/2"
1.3/4"	2.7/8"	4.1/2"	5/8"
2"	3.1/4"	5"	3/4"
2.1/2"	3.3/4"	5.1/2"	7/8"

6. Provide full-depth web-stiffener plates at each side of all beams at all bearing points. Stiffener plates shall be the thickness called out below unless noted otherwise and shall be welded both sides with fillet welds all around:

FLANGE WIDTH	STIFFENER THICKNESS	WELD SIZE
Less than 8.1/4"	1/4"	3/16"
8.1/4" to 12.1/4"	3/8"	1/4"
12.1/4" to 16.1/2"	1/2"	5/16"
16.1/2" to 20.3/4"	5/8"	3/8"

LEGEND OF MARKS AND ABBREVIATIONS

AB	ANCHOR BOLT(S)	k	KIP(S) = 1000 POUNDS
ABV	ABOVE	KLF	KIPS PER LINEAL FOOT
ALT	ALTERNATE	KSF	KIPS PER SQUARE FOOT
APPROX	APPROXIMATE		
ARCH	ARCHITECT(URAL)	LBS	POUNDS
		LF	LINEAL FOOT
BLDG	BUILDING	LLH	LONG LEG HORIZONTAL
BLW	BELOW	LLV	LONG LEG VERTICAL
BM	BEAM	LSH	LONG SIDE HORIZONTAL
BOT	BOTTOM	LSV	LONG SIDE VERTICAL
BRG	BEARING		
BTWN	BETWEEN	MAX.	MAXIMUM
		MECH	MECHANICAL
CC.	CENTER-TO CENTER	MFR	MANUFACTURER
CC–x	CONCRETE COLUMN	MIN	MINIMUM
C.J.	CONST/CONTROL JOINT	MISC	MISCELLANEOUS
CJP	COMPLETE JOINT PENETRATION GROOVE WELD (FULL PEN WELD)	MSW	METAL STUD WALL
COL	COLUMN	NIC	NOT IN CONTRACT
CONC	CONCRETE	NTS	NOT TO SCALE
CONST	CONSTRUCTION		
CP-x	CONCRETE PIER	O.C.	ON CENTER
CRW-x	CONCRETE RETAINING WALL	O.F.	OUTSIDE FACE
CTR	CENTER	OPNG	OPENING
CW-x	CONCRETE WALL	OPP	OPPOSITE
DB	DECK BEARING	PAF	POWDER-ACTUATED FASTENER
DBA	DEFORMED BAR ANCHOR	PCF	POUNDS PER CUBIC FOOT
DBE	DECK BEARING ELEVATION	PL	PLATE
DBL	DOUBLE	PLF	POUNDS PER LINEAL FOOT
DET	DETAIL	PNL	PANEL
DIA	DIAMETER	PSF	POUNDS PER SQUARE FOOT
DIM	DIMENSION	PSI	POUNDS PER SQUARE INCH
DN	DOWN	PT	POINT
DWG	DRAWING		
DWL	DOWEL	REINF	REINFORCING
		REQD	REQUIRED
(E)	EXISTING	R.D.	ROOF DRAIN
EA	EACH	RTU	ROOF TOP UNITS
E.F.	EACH FACE		
E.J.	EXPANSION JOINT	SBP-x	STEEL BASE PLATE MARK
ELEC	ELECTRICAL	SC-x	STEEL COLUMN MARK
ELEV	ELEVATION	SCP-x	STEEL CAP PLATE MARK
E.O.D.	EDGE OF DECK	SHT	SHEET
E.O.S.	EDGE OF SLAB	SI	SPECIAL INSPECTION
EQUIP	EQUIPMENT	SIM	SIMILAR
EQ.	EQUAL	SMU	SUSPENDED MECHANICAL UNITS
E.W.	EACH WAY	SOG	SLAB-ON-GRADE
EXST	EXISTING	SQ.	SQUARE
		STAG	STAGGERED
EXT	EXTERIOR	STD	STANDARD
		STL	STEEL
FC-x	CONTINUOUS FOOTING MARK	STR	STRUCTURAL
F.D.	FLOOR DRAIN	STS	SELF TAPPING SCREWS
FDN	FOUNDATION		
F.F.	FINISHED FLOOR	T&B	TOP AND BOTTOM
FR-x	RECTANGULAR FOOTING	TEMP	TEMPERATURE
FS-x	SQUARE FOOTING MARK	THDS	THREADS
FT	FOOT	T.O.	TOP OF
FTG	FOOTING	TOC	TOP OF CONCRETE
FTS-x	THICKENED SLAB MARK	TOD	TOP OF DECK
		TOF	TOP OF FOOTING
GA	GAUGE	TOS	TOP OF STEEL
GALV	GALVANIZED	TOW	TOP OF WALL
GSN	GENERAL STRUCTURAL NOTES	TYP	TYPICAL
HORIZ	HORIZONTAL	UNO	UNLESS NOTED OTHERWISE
HSA	HEADED STUD ANCHOR		
HT	HEIGHT	VERT	VERTICAL
		W/	WITH
ICC	INTERNATIONAL CODE COUNCIL	WT	WALL THICKNESS
IBC	INTERNATIONAL BUILDING CODE	WWF	WELDED WIRE FABRIC
I.F.	INSIDE FACE	WWM	WELDED WIRE MESH
IN.	INCH		
INT	INTERIOR		
JT	JOINT		
JST	JOIST		

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

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GENERAL NOTES

SHEET NUMBER:
S001

REQUIREMENTS FOR SPECIAL INSPECTION, MATERIALS TESTING AND STRUCTURAL OBSERVATION

STATEMENT OF SPECIAL INSPECTION AND QUALITY ASSURANCE

Special inspection and quality assurance (including structural testing), as required by section 1704 and 1705 of the 2018 IBC, shall be provided by an independent agency employed by the owner for the items in this section and other areas of the approved construction documents, unless waived by the building official.	
The names and credentials of the Special Inspectors to be used shall be submitted to the Building Official for approval.	
Responsibilities of the Special Inspector	
	Special Inspector shall review all work listed in the special inspection schedules herein for conformance with the approved construction plans, specifications and 2018 IBC.
	Testing and inspection reports shall be sent on a weekly basis to the architect, engineer, building official and contractor for review. All items not in compliance shall be brought to the immediate attention of the contractor for correction, and if uncorrected, to the architect, engineer and building official.
	Once corrections have been made by the contractor, the special inspector shall submit a final signed report to the building official stating that the work requiring special inspection was, to the best of the special inspector's knowledge, in conformance with the approved construction plans, specifications and 2018 IBC.
Responsibilities of the Contractor	
	The contractor shall submit a written statement of responsibility to the owner and the building official prior to the commencement of work in accordance with 2018 IBC section 1704.4. This statement shall indicate that the contractor will coordinate and cooperate with the required inspections contained herein.
	The contractor shall notify the designated special inspector that work is ready for inspection at least 24 hours before said inspection is required.
	All work requiring special inspection shall remain open and accessible until it has been observed by the special inspector and deemed acceptable through inspection report.
	Special inspection during fabrication is not required if the fabricator is registered and approved by the authority having jurisdiction to perform such work without special inspection. Upon completion of fabrication, the approved fabricator shall submit a certificate of compliance for submittal to the building official.
	The contractor shall be responsible for their own quality control including materials, fabrication, erection, etc.

STEEL BOLTED CONSTRUCTION INSPECTIONS

Where special inspections are listed under "Random Basis", special inspection of elements and items shall be performed on a random basis. Operations need not be delayed pending these inspections. Where special inspection items are listed under "Every Element", special inspection shall be performed for each element, joint, or member, as applicable based on the task listed below.

High Strength bolted connections (2018 IBC section 1705.2.1, section 1705.12.1 and section 1705.13.1 and AISC 360-16 Chapter N and AISC 341-16 Chapter J)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION PLAN		COMMENTS
	Every Element	Random Basis	
Inspection Tasks Prior to Bolting			
Manufacturer's certifications available for fastener materials	X	-	
Fasteners	-	X	Marked in accordance with ASTM requirements
Proper fasteners selected for the joint detail	-	X	Including grade, type, bolt length if threads are to be excluded from shear plane.
Proper bolting procedure selected for joint detail	-	X	
Connecting elements	-	X	Including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements
Proper storage	-	X	Storage provided for bolts, nuts, washers and other fastener components
Inspection Tasks During Bolting			
Fastener assemblies, of suitable condition	-	X	Verify that fasteners placed in all holes and washers (if required) are positioned as required.
Joint	-	X	Verify that joint brought to the snug-tight condition (min) unless noted otherwise.
Fastener component	-	X	Verify that fastener component not turned by the wrench prevented from rotating

STEEL WELDED CONSTRUCTION INSPECTIONS

Definition of Terms

Where special inspections are listed under "Random Basis", special inspection of elements and items shall be performed on a random basis. Operations need not be delayed pending these inspections. Where special inspection items are listed under "Every Element", special inspection shall be performed for each element, joint, or member, as applicable based on the task listed below.

Structural Welding (2018 IBC section 1705.2 and section 1705.12.1 and section 1705.13.1 and AISC 360-16 Chapter N and AISC 341-16 Chapter J)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION PLAN		COMMENTS
	Every Element	Random Basis	
Inspection Tasks Prior to Welding			
Welding procedures specifications and manufacturer certifications for welding consumables shall be available	X	-	Welding procedures shall be submitted to the Engineer of Record for review.
Material identification (type/grade)	-	X	
Welder identification system	-	X	Verify there is a system in place to identify the welder who has welded a joint or member.
Fit-up of groove welds	-	X	Including joint geometry, joint preparation, dimensions, cleanliness, tacking and backing type and fit.
Configuration and finish of access holes	-	X	
Fit-up of fillet welds	-	X	Including alignment, gaps at root, dimensions, cleanliness and tacking.
Check welding equipment	-	X	
Inspection Tasks During Welding			
Use of qualified welders	-	X	
Control and handling of welding consumables	-	X	Including packaging and exposure control
Cracked tack welds	-	X	Verify no welding over cracked tack welds.
Environmental conditions	-	X	Including wind speed within limits and precipitation and temperature
WPS followed	-	X	Including settings on welding equipment, travel speed, selected welding materials, shielding gas type/flow rate, preheat applied, interpass temperature (min./max.) maintained, proper position (F, V, H, OH)
Welding techniques	-	X	Including interpass and final cleaning, each pass within profile limitations, each pass meets quality requirements
Inspection Tasks After Welding			
Welds cleaned	-	X	
Size, length and location of welds	X	-	
Welds meet visual acceptance criteria	X	-	Including crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercut and porosity.
Arc strikes, k-area, weld access holes for flanges greater than 2", backing removed and weld tabs removed (if required), repair activities	X	-	When welding of doubler plates, continuity plates, or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3" of the weld.
Ultrasonic testing (UT) for complete-joint-penetration (CJP) groove welds, partial penetration groove welds when used in column splices, and welds subject to fatigue	X	-	Perform UT on all welds subject to transversely applied tension loading in butt, T- and corner joints, in material 5/16" thick or greater. For materials less than 5/16" thick, ultrasonic testing is not required. A reduction in the rate of UT is allowed per Section N5.5e
Document acceptance or rejection of each welded joint or member	X	-	

POST-INSTALLED ANCHOR INSPECTIONS

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Post-Installed Anchors and Reinforcing Bars (2018 IBC Section 1705.1.1)			
Adhesive Anchors and Reinforcing Bars	X	-	Special inspection shall be performed per manufacturer's requirements and approved ICC-ES reports noted in POST-INSTALLED ANCHOR section of the General Structural Notes prior to installation of epoxy and anchor rod. If the anchor is not installed in a horizontal, upwardly inclined or overhead orientation meant to resist sustained tension loads, special inspection may be reduced to a periodic frequency. A pull test shall be provided for 10% of the anchors.
Mechanical Anchors and Screw Anchors	-	X	Special inspection shall be provided per manufacturer's requirements and approved ICC-ES reports noted in POST-INSTALLED ANCHOR section of the General Structural Notes prior to installation of mechanical or screw anchor.

NON-STRUCTURAL COMPONENT CONSTRUCTION INSPECTIONS

Mechanical and Electrical Components located in Seismic Design Categories C, D, E and F (2018 IBC Sections 1705.12.4 and 1705.12.6)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Anchorage of emergency or standby power systems	-	X	Verify that anchorage complies with approved construction documents.
Piping systems carrying flammable, combustible or highly toxic materials	-	X	Verify that installation and restraint comply with approved construction documents.
HVAC ductwork containing hazardous materials	-	X	Verify that installation and restraint comply with approved construction documents.
Designated seismic systems	-	X	Verify that manufacturer's certificate of compliance conforms to the requirements of Section 13.2 of ASCE 7-16. Verify that the label, anchorage or mounting conforms to the manufacturer's certificate of compliance.

STRUCTURAL OBSERVATION PROGRAM

If structural observations are required, they shall be done by the Engineer of Record or an approved subordinate at the stages of construction listed in the Construction Notification Phases section of these notes. At the conclusion of the project, the designated structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that to the best of the structural observer's knowledge have not been resolved (See IBC 2018 1704.6).

STRUCTURAL OBSERVATION PROGRAM REQUIRED BY CODE:	YES	NO
		X

CONSTRUCTION MILESTONE SCHEDULE

CONTRACTOR TO NOTIFY ENGINEER AT THE FOLLOWING CONSTRUCTION PHASES:	
STEEL	
Steel framing	After substantial portion of framing is erected

DEFERRED SUBMITTALS

For the purposes of this section, deferred submittals are defined as per section 107.3.4.1 of the IBC 2018. Submittal documents for deferred submittal items shall be submitted to the engineer, architect and building official for their review for general conformance with the design of the building.

DEFERRED STRUCTURAL SUBMITTALS FOR THIS PROJECT ARE

None

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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

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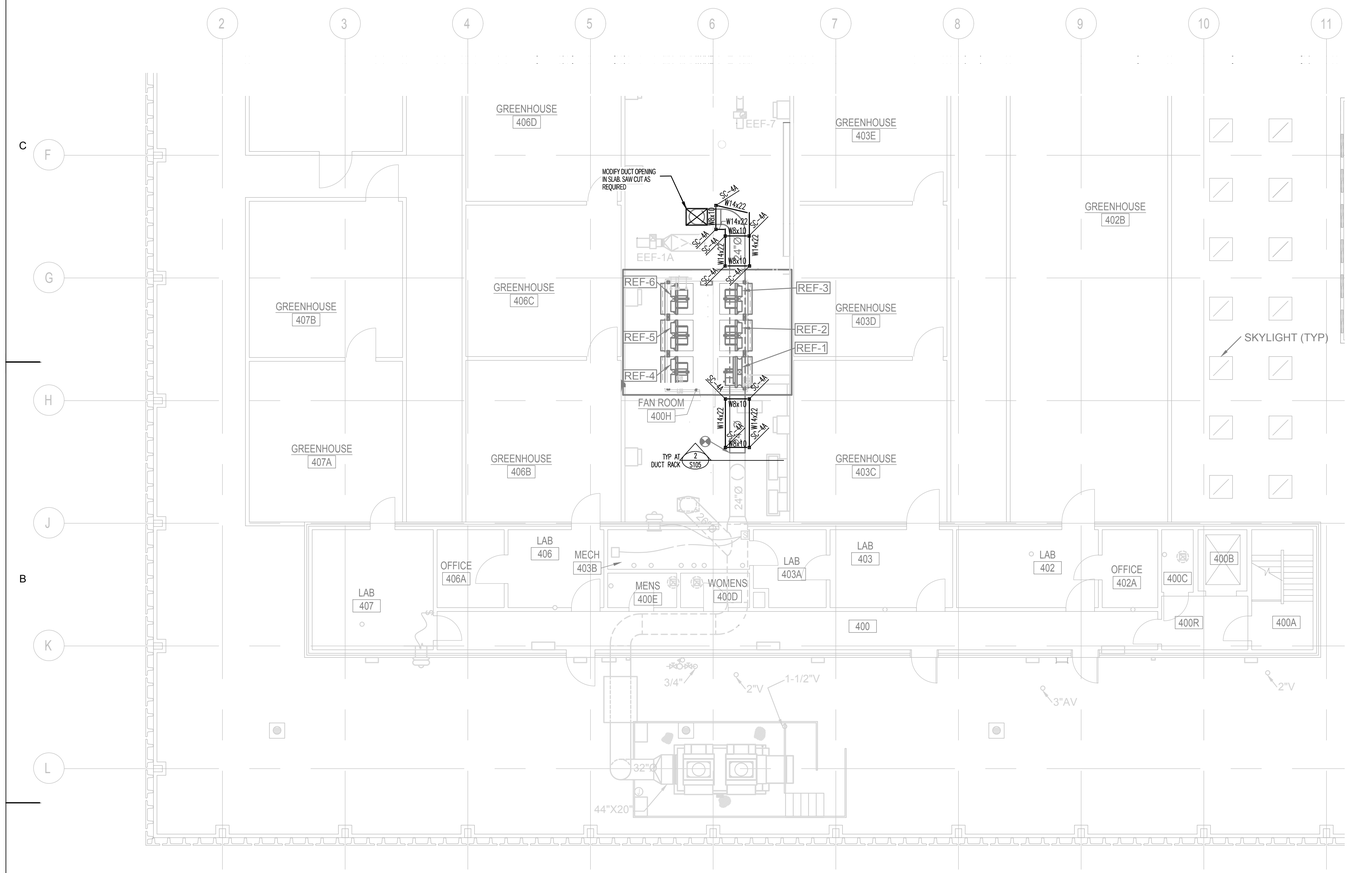
SPECIAL INSPECTIONS

SHEET NUMBER:

S002

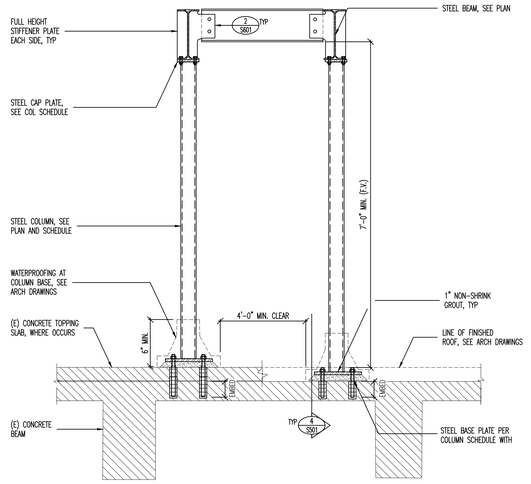
STRUCTURAL PLAN NOTES

1. ALL EXTERIOR STEEL ELEMENTS, INCLUDING ANCHOR RODS AND BOLTS SHALL BE HOT-DIPPED GALVANIZED, GALVANIZING PER ASTM A123 AND A153 WHERE APPLICABLE.
2. SEE DETAIL 2/S501 FOR TYPICAL OPENINGS IN EXISTING MASONRY WALLS. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING EXISTING CMU REINFORCEMENT. PLEASE SUBMIT REQUEST TO ENGINEER TO APPROVE ANY NEW OPENING LOCATIONS THAT MAY INTERUPT EXISTING REINFORCEMENT
3. SEE DETAIL 1/S503 FOR TYPICAL INFILL DETAIL AT EXISTING SLAB OPENING (WHERE REQUIRED). SEE MECHANICAL AND ARCHITECTURAL DRAWINGS.
4. SEE DETAIL 3/S501 FOR TYPICAL OVERHEAD ADHESIVE ANCHORAGE DETAIL (WHERE REQUIRED). SEE MECHANICAL AND ARCHITECTURAL DRAWINGS.



1 STRUCTURAL ROOF PLAN

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



2 TYPICAL TUBE STEEL DUCT FRAME SECTION

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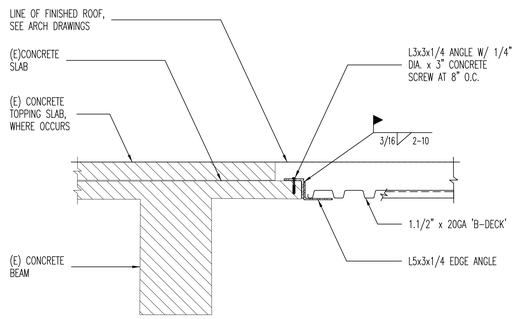
STRUCTURAL FRAMING PLANS

SHEET NUMBER:

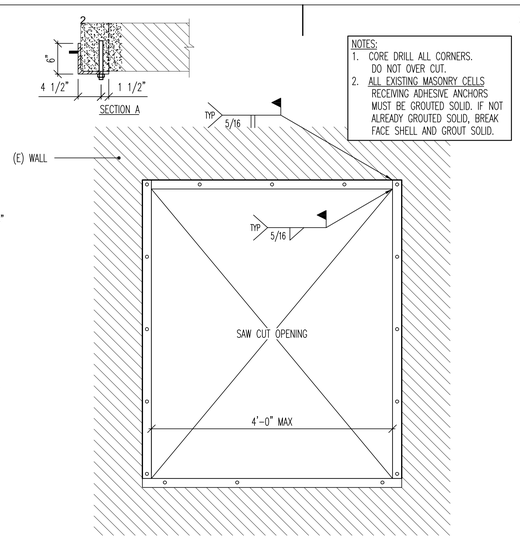
S105



1 TYPICAL INFILL DETAIL AT (E) SLAB OPENING

NO SCALE

190423_S501

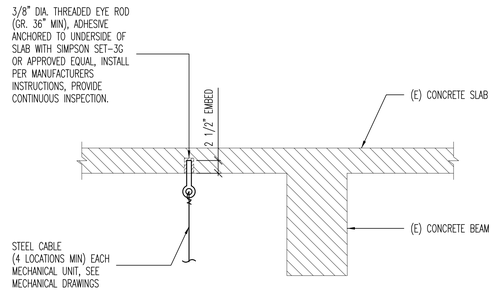


NOTES:
1. CORE DRILL ALL CORNERS. DO NOT OVER CUT.
2. ALL EXISTING MASONRY CELLS RECEIVING ADHESIVE ANCHORS MUST BE GROUTED SOLID. IF NOT ALREADY GROUTED SOLID, BREAK FACE SHELL AND GROUT SOLID.

2 NEW OPENING THROUGH EXISTING MASONRY WALL

NO SCALE

190423_S501



3 TYPICAL OVERHEAD ADHESIVE ANCHORAGE DETAIL

NO SCALE

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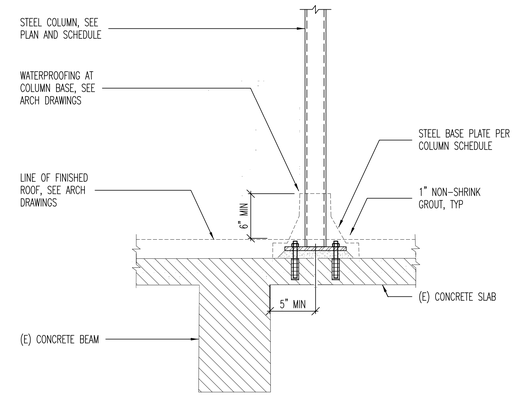

4 TYPICAL STEEL COLUMN CONNECTION AT (E) SLAB

NO SCALE

190423_S501

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DETAILS

SHEET NUMBER:

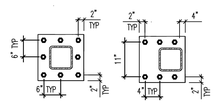
S501

STEEL COLUMN SCHEDULE

MARK	SIZE	STEEL BASE PLATE	STEEL CAP PLATE	COMMENTS
SC-4A	HSS4X4X5/16	3/4" (SBP-1)	1/4" (SCP-1)	(SBP-2) AT CONTRACTORS OPTION

STEEL COLUMN NOTES:
1. PROVIDE 5/8" DIA A316 STAINLESS STEEL ALL THREAD RODS ANCHORED TO CONCRETE WITH SIMPSON SET-3G ADHESIVE AND 3.1/2" EFFECTIVE EMBEDMENT. INSTALL ANCHORS AND PREPARE HOLES PER MANUFACTURER'S INSTRUCTIONS. ALL RODS SHALL BE INSTALLED WITH HARDENED WASHERS BENEATH THE NUT. ANY BOLT HOLES LARGER THAN THE ROD DIAMETER PLUS 5/16" SHALL HAVE 5/16" PLATE WASHERS INSTALLED BENEATH THE HARDENED WASHERS.
2. ALL CAP PLATE BOLTS SHALL BE 3/4"DIA A325N BOLTS, TYPICAL UNLESS NOTED OTHERWISE.
3. ANCHOR RODS SHALL NOT BE WELDED (INCLUDING TACK WELDS).
4. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

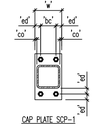
STEEL BASE PLATE TYPES:



BASE PLATE SBP-1 BASE PLATE SBP-2

PLATE LEGEND
co = 1/2" MINIMUM
ed = 1.1/2" MINIMUM
sp = 3" MINIMUM
bc = BEAM OR GIRDER GAGE
w = BEAM OR GIRDER GAGE + 3"
OR
BEAM OR GIRDER WIDTH + 1"
OR
COLUMN WIDTH + 1"
WHICHEVER IS GREATER

STEEL CAP PLATE TYPES:



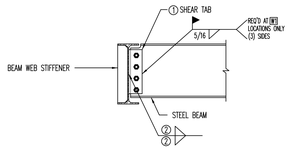
CAP PLATE SCP-1

1 STEEL COLUMN SCHEDULE
NO SCALE

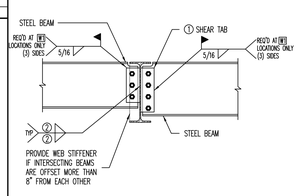
A-325 BOLT SCHEDULE

MAXIMUM BEAM SIZE IN EACH BEAM DEPTH GROUP	A-325N BOLTS		
	No. PER BEAM	SIZE	ASD CAPACITY
W8	2	3/4"DIA	16.45K
W10	2	3/4"DIA	21.2K
W12	3	3/4"DIA	24.45K
W14	3	3/4"DIA	31.8K
W16	4	3/4"DIA	42.4K
W18	5	3/4"DIA	53.0K
W21	6	3/4"DIA	63.6K
W24	7	3/4"DIA	74.2K
W27	8	3/4"DIA	84.8K
W30	9	3/4"DIA	95.4K

1. SHEAR TAB SHALL BE 1/2" THICK.
2. 5/16" FILLET WELD EACH SIDE OF SHEAR TAB.
3. BOLT SPACING SHALL BE 3" TYP. REDUCE BOLT SPACING TO 2.7/8 WHERE NEEDED TO FIT THE REQUIRED QUANTITY OF BOLTS.
4. WHEN MORE THAN ONE ROW OF BOLTS IS NEEDED, THE FIRST ROW SHALL BE A COMPLETE ROW WITH THE REMAINDER OF THE BOLTS PLACED IN A SECOND ROW WITH (3) BOLTS MIN AT SECOND ROW.
5. HSS COLUMN THAT DO NOT HAVE A MINIMUM 1/4" WALL THICKNESS SHALL USE A SINGLE ANGLE CONNECTION WHERE STEEL TUBE WALL IS TOO THIN.
6. BOLT EDGE DISTANCE, Leh SHALL BE EQUAL TO TWICE THE BOLT DIAMETER FOR BOTH THE PLATE AND THE BEAM WEB.
7. BOLT EDGE DISTANCE, Lev SHALL BE 1.1/4" FOR BOLT DIAMETERS 7/8" OR LESS AND 1.3/4xBOLT DIAMETER FOR BOLT DIAMETERS GREATER THAN 7/8".
8. ANGLE SIZE SHALL BE 3" FOR SHORT LEG AND 4 TIMES THE BOLT DIAMETER +1" FOR THE LONG LEG.



BEAM TO BEAM SHEAR TAB CONNECTION



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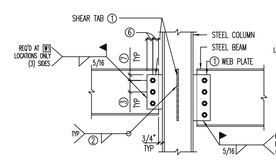
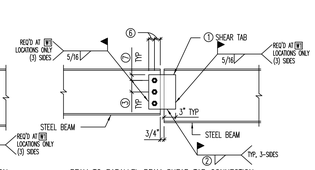
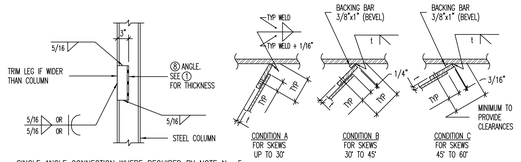


BEAM TO HSS COLUMN SHEAR TAB CONNECTION



BEAM TO PARALLEL BEAM SHEAR TAB CONNECTION



SINGLE ANGLE CONNECTION WHERE REQUIRED BY NOTE No. 5

SHEAR CONNECTOR PLATES AT SKEWED MEMBERS

2 TYPICAL 3/4"DIA BOLTED SHEAR TAB CONNECTIONS WITH BOLT SCHEDULE [SINGLE SHEAR - STEEL TUBE COLUMNS]
NO SCALE

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
SCHEDULES

SHEET NUMBER:
S601

PLUMBING GENERAL NOTES

1 THE CONTRACTOR SHALL PROVIDE ALL ITEMS WHICH ARE OBVIOUSLY AND REASONABLY NECESSARY TO COMPLETE THE INSTALLATION.

2 THE CONTRACTOR SHALL TAKE OUT PERMITS, PROCURE CERTIFICATES, AND PAY FEES CONNECTED THEREWITH.

3 DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS.

4 RUN-OUT SIZES TO INDIVIDUAL PLUMBING FIXTURES TO BE EQUAL TO ROUGH-IN SIZE NOTED IN THE PLUMBING FIXTURE SCHEDULE.

5 PLUMBING/PIPING IS SHOWN SCHEMATICALLY FOR VIEWING PURPOSES ONLY; DURING INSTALLATION FIELD MODIFICATIONS TO ROUTING MAY BE REQUIRED.

6 INSTALL ALL REQUIRED CLEANOUTS TO CLEAR EQUIPMENT AND FIXTURES.

7 ALL WORK SHALL BE PROPERLY TESTED, BALANCED AND CLEANED AND DISINFECTED.

PLUMBING LEGEND

NOTE: NEW ITEMS SHOWN DARK, EXISTING ITEMS SHOWN LIGHT. ALL ITEMS MAY NOT APPEAR ON DRAWINGS.

DESCRIPTION	SYMBOL
WALL CLEAN OUT	WCO
CLEAN OUT	CO
CLEAN OUT TO GRADE	COTG
FLOOR CLEAN OUT	FCO
DROP	
RISE	
CAPPED PIPE	
PIPE REDUCER	
BALL VALVE	
UNION	
GAS COCK VALVE	
DIRECTION OF SLOPE	
FLOW DIRECTION	
J BOX	J

DESCRIPTION	SYMBOL
DOMESTIC COLD WATER PIPING	
INDUSTRIAL COLD WATER PIPING	ICW
DOMESTIC HOT WATER PIPING	
DOMESTIC HOT WATER RECIRCULATION PIPING	
VENT PIPING	
ACID VENT PIPING	AV
WASTE PIPING (ABOVE GRADE OR FLOOR)	
WASTE PIPING (BELOW GRADE OR FLOOR)	
ACID WASTE PIPING (ABOVE GRADE OR FLOOR)	AW
ACID WASTE PIPING (BELOW GRADE OR FLOOR)	AW
ROOF DRAIN PIPING (ABOVE GRADE OR FLOOR)	RD
ROOF DRAIN PIPING (BELOW GRADE OR FLOOR)	RD
SECONDARY ROOF DRAIN PIPING	SRD
GAS PIPING	G
COMPRESSED AIR PIPING	A
NITROGEN PIPING	N
VACUUM PIPING	VAC
DEIONIZED WATER PIPING	DIW
DRAIN PIPING	D
FIRE SPRINKLER PIPING	F
FUEL OIL SUPPLY	FOS
FUEL OIL RETURN	FOR
KEYED NOTE	#
PLUMBING FIXTURE CALLOUT	P-??
DETAIL NUMBER SHEET DETAIL APPEARS	X S#
EQUIPMENT TYPE EQUIPMENT NUMBER	X #
LARGE SCALE NUMBER SHEET LARGE SCALE APPEARS	# S#
SECTION LETTER SHEET NUMBER	A M-3
ROOM NAME ROOM NUMBER	ROOM NO
REVISION DELTA	1

PLUMBING ABBREVIATIONS

A	LAB COMPRESSED AIR	G	NATURAL GAS	RD	ROOF DRAIN
AFF	ABOVE FINISHED FLOOR	GAL	GALLON(S)	REQD	REQUIRED
ALT	ALTERNATE	GPM	GALLONS PER MINUTE	REV	REVISION
CO	CLEANOUT	HD	HEAD	SCHED	SCHEDULE
COTG	CLEANOUT TO GRADE	HZ	HERTZ	SPEC	SPECIFICATION
DEG	DEGREE FAHRENHEIT	ICW	INDUSTRIAL COLD WATER	SQ FT	SQUARE FEET
DEMO	DEMOLITION	IHW	INDUSTRIAL HOT WATER	SRD	SECONDARY ROOF DRAIN
DET	DETAIL	MAX	MAXIMUM	STD	STANDARD
DI	DEIONIZED WATER	MECH	MECHANICAL	TEMP	TEMPERATURE
DIA	DIAMETER	MECH RM	MECHANICAL ROOM	TYP	TYPICAL
DIM	DIMENSION	MFR	MANUFACTURER	V	LAB VACUUM
DIV	DIVISION	MIN	MINIMUM	VTR	VENT THRU ROOF
DN	DOWN	MISC	MISCELLANEOUS	W/	WITH
FCO	FLOOR CLEANOUT	PH	PHASE	WCO	WALL CLEAN OUT
FLR	FLOOR	PSI	POUNDS PER SQUARE INCH	W/O	WITHOUT
FT	FEET	QTY	QUANTITY		

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University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

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PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

PLUMBING LEGEND AND GENERAL NOTES

SHEET NUMBER:

P001

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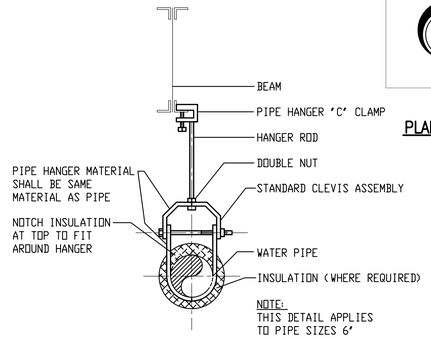
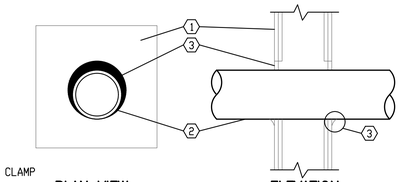


5 PIPE HANGER DETAIL
SCALE: NONE

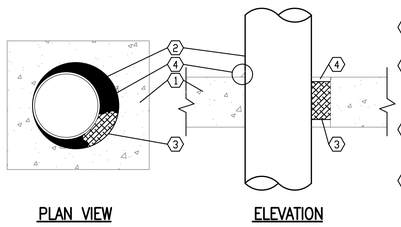


1. RATED GYPSUM WALLBOARD ASSEMBLY.
2. MAX 24" STEEL OR IRON PIPE, 6" COPPER PIPE OR TUBE. THE ANNULAR SPACE WITHIN THE FIRESTOP SYSTEM SHALL RANGE FROM POINT CONTACT TO 1-3/4" MAX.
3. SPECSEAL SERIES 100 SEALANT INSTALLED WITHIN ANNULUS TO 5/8" DEPTH. AT POINT CONTACT, INSTALL A 3/8" BEAD AT PENETRANT/GYPSUM WALLBOARD INTERFACE.

NOTE:
THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS:

- ASTM E814 (UL1479). REFER TO SYSTEM NO. WL-1049.
- ASTM E119 (TIME/TEMPERATURE EXPOSURE) (COTTON WASTE IGNITION).
- ANNULAR SPACE REQUIREMENTS.

2 PIPE PENETRATION AT RATED WALL (2HR)
SCALE NONE



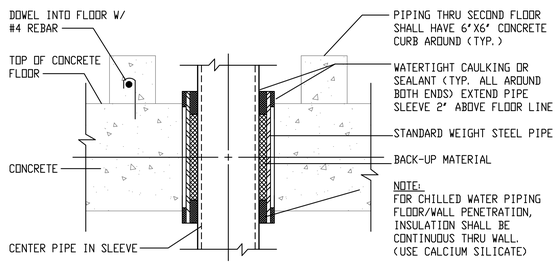
1. CONCRETE SLAB OR CONCRETE OVER STEEL DECK.
2. METALLIC PIPE OR TUBE (SEE FIGURE 3). THE ANNULAR SPACE WITHIN THE FIRESTOP SYSTEM SHALL RANGE FROM POINT CONTACT TO 1-7/8" MAXIMUM.
3. MINERAL WOOL BATT, NOMINAL 4 PCF. REFER TO TABLE BELOW FOR REQUIRED DEPTH OF PACKING MATERIAL.
4. SPECSEAL SERIES 100 SEALANT INSTALLED INTO ANNULUS TO A DEPTH OF 1/2". AT POINT CONTACT APPLY A 3/8" COVE BEAD OF SEALANT BETWEEN PIPE AND TOP SURFACE OF CONCRETE.

PENETRANT TYPE	MAX SIZE	M.W. DEPTH
STEEL OR IRON PIPE	6"	1-1/2"
STEEL OR IRON PIPE	24"	3"
COPPER PIPE OR TUBE	4"	3"

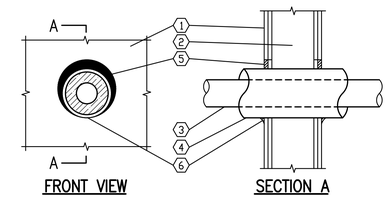
NOTE:
THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS:

- ASTM E814 (UL1479). REFER TO SYSTEM NO. CAJ-1079
- ASTM E119 (TIME/TEMPERATURE EXPOSURE) (COTTON WASTE IGNITION)

3 PIPE PENETRATION AT RATED FLOOR (3HR)
SCALE: NONE

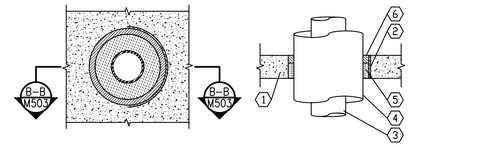


6 FLOOR/WALL PIPE SLEEVE DETAIL
SCALE: NONE



1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1HR. OR 2-HR. FIRE RATING) 2-HR. SHOWN.
2. (NOT SHOWN) WOOD STUDS TO CONSIST OF NOMINAL 2"X4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 20 OR HEAVIER).
   B. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   C. MAXIMUM 4" NOMINAL DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. MAXIMUM 2" THICK GLASS-FIBER PIPE INSULATION.
5. MINIMUM 5/8" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

4 INSULATED METAL PIPE THROUGH GYPSUM RATED WALL (1HR OR 2HR)
SCALE: NONE NOTE: UL SYSTEM WL-5029



1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. FIRE-RATING).
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MIN. 4-1/2" THICK).
   B. ANY UL/ULC CLASSIFIED CONCRETE BLOCK WALL.
2. OPTIONAL: MAXIMUM 20" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
4. MAXIMUM 2" THICK GLASS FIBER INSULATION.
5. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
6. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTES:
1. MAXIMUM DIAMETER OF OPENING = 20".
2. ANNULAR SPACE = MINIMUM 1/2", MAXIMUM 2-1/4.
3. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL.

1 INSULATED METAL PIPE THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL
SCALE: NONE NOTE: UL SYSTEM CAJ5091

PLUMBING REQUIREMENTS FOR CHEMICAL FUME HOODS

NOTES:
(1) FUME HOOD BEING REPLACED WITH NEW.
- (A) EXISTING HOODS THAT HAVE CUP SINK(S) ARE CONNNECTED TO GLASS ACID WASTE AND VENT PIPING. WHILE REPLACING FUME HOOD, CONTRACTOR SHALL REMOVE ALL GLASS ACID WASTE AND VENT PIPING ASSOCIATED WITH THE FUME HOOD WITHIN THE LAB INCLUDING THE WALL/FLOOR/CEILING PENETRATION AND REPLACE WITH POLYMER PIPE AS SPECIFIED. ACID WASTE AND VENT PIPING OUTSIDE THE LAB SHALL REMAIN AS-IS.
- (B) CONTRACTOR TO REMOVE ALL EXISTING WATER PIPE AND LAB GAS PIPE TO ALLOW FOR REMOVAL AND REPLACEMENT OF FUME HOOD. ALL PIPING NOT REUSED SHALL BE REMOVED BACK TO WITHIN 6 INCHES OF MAIN PIPE SYSTEM AND CAPPED. PATCH ANY HOLES IN WALLS/CEILINGS FROM PIPE REMOVAL.
- (C) NEW HOODS SHALL BE ORDERED WITH OUTLETS PRE-PIPED TO TOP OF HOOD. THIS CONTRACTOR TO EXTEND PIPING TO NEW HOOD. INSTALL ISOLATION VALVE AND CONNECT TO PIPE STUB AT HOOD UNLESS NOTED OTHERWISE. ALL PRE-PIPED SUPPLY OUTLETS ARE 1/2" PIPE DIAMETER. ACID WASTE AND VENT ARE 1-1/2" DIAMETER.
- (D) REMOVE EXISTING BACKFLOW PREVENTER(S), IF EXIST, AND INSTALL NEW INDUSTRIAL WATER BACKFLOW PREVENTER ON INDUSTRIAL COLD WATET SUPPLY TO HOOD. NEW INDUSTRIAL WATER BACKFLOW PREVENTER SHALL BE LOCATED NOT MORE THAN 54 INCHES ABOVE FINISH FLOOR. THIS APPLIES TO BOTH HOT AND COLD WATER.
- (E) FOR QUANTITY AND LOCATION OF NEW CUP SINKS, SEE CHEMICAL FUME HOOD AND BASE CABINET SCHEDULE.

HOOD MARK NUMBER	EXISTING SUPPLY OUTLETS LEFT SIDE	EXISTING SUPPLY OUTLETS RIGHT SIDE	NEW SUPPLY OUTLETS LEFT SIDE	NEW SUPPLY OUTLETS RIGHT SIDE	EXISTING CUP SINK(S)	NEW CUP SINK (S)	REMARKS
H-060	-	ICW	-	ICW	YES	YES	(1)
H-116E	G, A, V, ICW	DW, IHW	G, A, V, ICW	DW, IHW	YES	YES	(1)
H-124F	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-302.1	A, G, IHW, ICW	A, G	A, G, IHW, ICW	A, G	YES	YES	(1)
H-302.2	A, G, IHW, ICW	A, G	A, G, IHW, ICW	A, G	YES	YES	(1)
H-305	V, A, G, ICW, DI	-	V, A, G, ICW, DI	-	YES	YES	(1)
H-318C	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-321A	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-321C	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)

OUTLET LEGEND

A	COMPRESSED AIR
G	NATURAL GAS
V	VACUUM
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
DI	DEIONIZED WATER

PLUMBING PIPE INSULATION SCHEDULE

NOTES:
(1) FIRE AND SMOKE HAZARD RATINGS SHALL NOT EXCEED INDEXES AS FOLLOWS: FLAME SPREAD OF 25, FUEL CONTRIBUTION OF 50, SMOKE DEVELOPMENT OF 50.
(2) THE PIPING TO THE HEAT TRAP, OR THE FIRST 8 FEET OF PIPING, WHICHEVER IS LESS, SHALL BE INSULATED ON THE INLET AND OUTLET PIPING OF A STORAGE WATER HEATER OR HEATED WATER STORAGE TANK

DUTY	FLUID OPERATING TEMPERATURE RANGE AND USAGE, F	INSULATION CONDUCTIVITY, BTU*IN./(HR*FT^2*F)	MEAN RATING TEMPERATURE, F	INSULATION THICKNESS, INCHES				
				PIPE DIAMETER, INCHES				
				< 1	1 TO < 1.5	1.5 TO < 4	4 TO <8	>= 8
DOMESTIC OR INDUSTRIAL HOT WATER OR HOT WATER	105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
DOMESTIC OR INDUSTRIAL COLD WATER	<40	0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5

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Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
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ISSUE DATE:
OCTOBER 13, 2021
UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
PLUMBING SCHEDULES AND DETAILS

SHEET NUMBER:
P601

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HVAC GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE ALL ITEMS WHICH ARE OBVIOUSLY AND REASONABLY NECESSARY TO COMPLETE THE INSTALLATION.
2. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS.
3. COORDINATE EXACT LOCATIONS OF AIR DISTRIBUTION DEVICES WITH CEILING GRID AND LIGHT FIXTURE LAYOUT.
4. RECTANGULAR DUCT SIZES SHOWN INDICATE REQUIRED AIRFLOW SIZES. SHEETMETAL CONTRACTOR SHALL INCREASE SIZES TO ALLOW FOR LINER.
5. NO DUCTWORK SHALL BE FABRICATED WITHOUT FIRST FIELD VERIFYING THAT THE AVAILABLE SPACE UNDER ACTUAL JOB CONDITIONS WILL PERMIT INSTALLATION OF THE DUCTWORK WITHOUT STRUCTURAL OR OTHER CONFLICTS. DUCT SIZES THAT REQUIRE ON THE JOB MODIFICATION SHALL BE MADE WITHOUT ANY ADDITIONAL COST TO THE OWNER.

MECHANICAL ABBREVIATIONS

AD	ACCESS DOOR	FAV	FUME HOOD EXHAUST AIR VALVE	NTS	NOT TO SCALE
AFF	ABOVE FINISHED FLOOR	FPM	FEET PER MINUTE	OA	OUTSIDE AIR
ALT	ALTERNATE	FT	FEET	OBD	OPPOSED BLADE DAMPER
AMP	AMPERE	GAV	GENERAL EXHAUST AIR VALVE	PD	PRESSURE DROP
BTU	BRITISH THERMAL UNIT	GPM	GALLONS PER MINUTE	PH	PHASE
BTUH	BRITISH THERMAL UNIT PER HOUR	HR	HOUR	QTY	QUANTITY
CFM	CUBIC FEET PER MINUTE	HTG	HEATING	RPM	REVOLUTIONS PER MINUTE
DB	DRY BULB	HZ	HERTZ	SD	SMOKE DAMPER
DEG	DEGREE FAHRENHEIT	INWC	INCHES OF WATER COLUMN	SEN	SENSIBLE
DEMO	DEMOLITION	KW	KILOWATT	SPEC	SPECIFICATION
DIA	DIAMETER	LAT	LEAVING AIR TEMPERATURE	SQ FT	SQUARE FEET
DIV	DIVISION	LB	POUND	TEMP	TEMPERATURE
DN	DOWN	LWT	LEAVING WATER TEMPERATURE	TSP	TOTAL STATIC PRESSURE
EA	EXHAUST AIR	MAX	MAXIMUM	TYP	TYPICAL
ESP	EXTERNAL STATIC PRESSURE	MBH	THOUSAND BRITISH THERMAL UNITS/HOUR	V	VOLT
EWT	ENTERING WATER TEMPERATURE			VFD	VARIABLE FREQUENCY DRIVE
EXH	EXHAUST	MECH	MECHANICAL	W/	WITH
EXST	EXISTING	MIN	MINIMUM	WB	WET BULB
F	FAHRENHEIT	MISC	MISCELLANEOUS	W/O	WITHOUT
FD	FIRE DAMPER	NIC	NOT IN CONTRACT	WPD	WATER PRESSURE DROP
FSD	FIRE, SMOKE DAMPER				

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
GHS	GLYCOL HEATING SUPPLY PIPING
GHR	GLYCOL HEATING RETURN PIPING
	PIPE SUPPORT
	DIRECTION OF SLOPE DOWN
PCWS	PROCESS CHILLED WATER SUPPLY
PCWR	PROCESS CHILLED WATER RETURN
RAS	RUN AROUND SUPPLY
RAR	RUN AROUND RETURN
GLY	GLYCOL MAKE UP

SYMBOL	DESCRIPTION
	GATE VALVE
	CHECK VALVE
	STRAINER
	COMBINATION VALVE & CIRCUIT SETTER
	MANUAL VENT WITH BALL VALVE
	BALL VALVE
	GLOBE VALVE
	BUTTERFLY VALVE
	UNION
	FLANGED UNION
	THERMOMETER
	CAPPED END W/BALL VALVE
	PIPE DROP
	PIPE RISER
	INLINE DROP
	INLINE RISE
	PRESSURE GAGE W/BALL VALVE
	AUTOMATIC 3-WAY VALVE
	AUTOMATIC 2-WAY VALVE
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
C.	COMMON
	SCREWED CONCENTRIC REDUCER
	IMMERSION WELL
	RELIEF VALVE
	DIRECTION OF SLOPE
	FLOW DIRECTION
	FLEXIBLE CONNECTION

SYMBOL	DESCRIPTION
	BRANCH DUCT TAKE-OFF WITH MANUAL DAMPER
	DUCT FLEXIBLE CONNECTION
	TURNING VANES
	DUCT TEE CONNECTION
	DUCT TRANSITION
	SQUARE TO ROUND DUCT TRANSITION
	AUTOMATIC DAMPER
	VOLUME DAMPER
BD	BACK-DRAFT DAMPER
	DUCT ACCESS DOOR
	RETURN AIR, RISE AND DROP
	SUPPLY AIR, RISE AND DROP
	EXHAUST AIR, RISE AND DROP
	OUTSIDE AIR, RISE AND DROP
	RELIEF AIR, RISE AND DROP
	ROUND DUCT, RISE AND DROP
	FLAT OVAL DUCT, RISE AND DROP
FD	FIRE DAMPER
FSD	FIRE SMOKE DAMPER
T	THERMOSTAT
S	SENSOR
X-#	AIR DEVICE
X-# / #	AIR DEVICE CFM
#	KEYED NOTE
X / S#	DETAIL NUMBER SHEET DETAIL APPEARS
X / #	EQUIPMENT TYPE EQUIPMENT NUMBER
# / S#	LARGE SCALE NUMBER SHEET LARGE SCALE APPEARS
	AIR FLOW DIRECTION
A / M-3	SECTION LETTER SHEET NUMBER
ROOM / NO	ROOM NAME ROOM NUMBER
1	REVISION DELTA
	NEW CONNECTION
OC	OCCUPANCY SENSOR

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EXP. 03/31/23

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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

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ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

MECHANICAL LEGEND AND GENERAL NOTES

SHEET NUMBER:

M001

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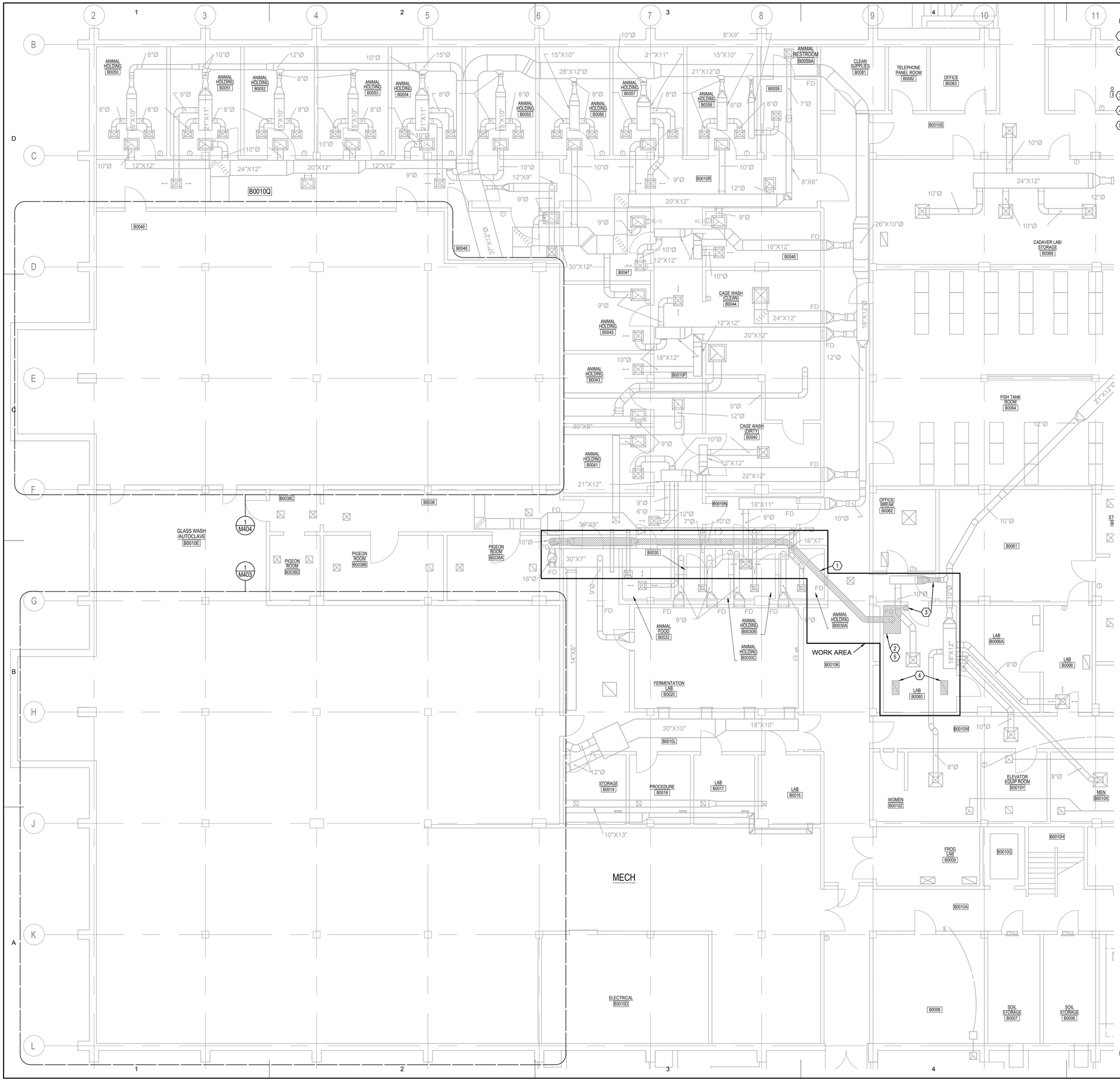

KEYED NOTES FOR SHEET MD100

1. REMOVE FUME HOOD EXHAUST DUCT.
2. REMOVE LAB GAS PIPE, WATER PIPE, ACID WASTE PIPE AND ACID VENT PIPE FROM CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS FOR CHEMICAL FUME HOODS SCHEDULE" FOR DETAILS. ALSO, REMOVE DUCTWORK AND CONTROLS FROM CHEMICAL FUME HOOD.
3. REMOVE SUPPLY VENTURI VALVE AND CONTROLS.
4. REMOVE RETURN GRILLES.
5. REMOVE MILLWORK TYPE BASE CABINET AND COUNTER.

GENERAL NOTE:
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B. MODIFY EXISTING WET FIRE SPRINKLING SYSTEM TO ACCOMMODATE REMODEL. SEE SPECIFICATIONS FOR CONTRACTOR PERFORMANCE CRITERIA.
C. CONTRACTOR SHALL REROUTE EXISTING PIPES, CONDUITS, DUCTS, WIRING, ETC. TO ALLOW FOR THE DEMOLITION AND REMODEL SCOPE DEPICTED IN THESE DOCUMENTS.

1 **BASEMENT MECHANICAL DEMOLITION PLAN**
SCALE: 3/16=1'-0"

N

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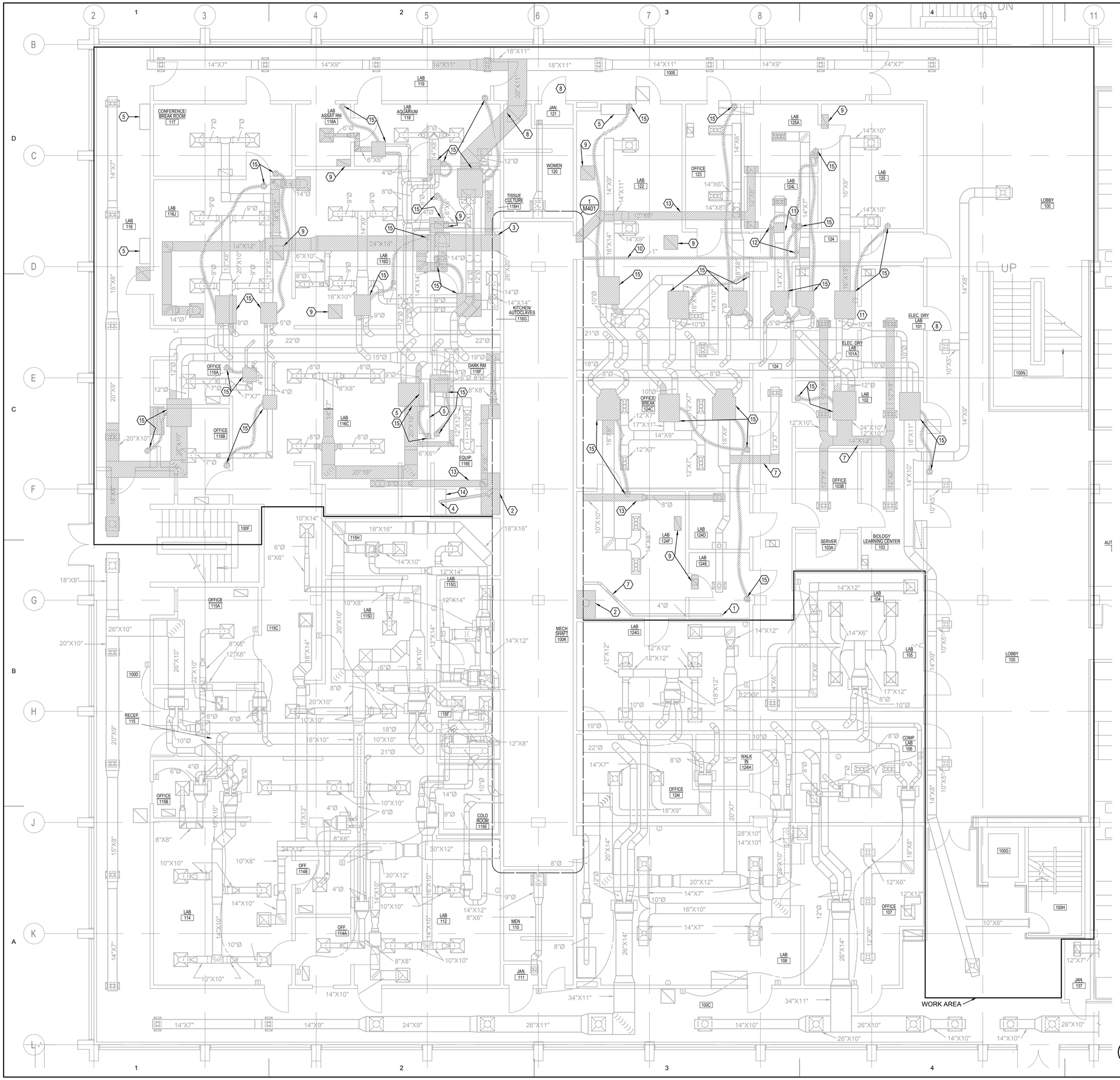
22437

SHEET TITLE:
BASEMENT MECHANICAL DEMOLITION PLAN

SHEET NUMBER:
MD100



KEYED NOTES FOR SHEET MD101

1. EXISTING SNORKEL SN-1.
2. REMOVE LAB GAS PIPE, WATER PIPE, ACID WASTE PIPE AND ACID VENT PIPE FROM CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS FOR CHEMICAL FUME HOODS SCHEDULE" FOR DETAILS. ALSO, REMOVE DUCTWORK AND CONTROLS FROM CHEMICAL FUME HOOD.
3. GENERAL EXHAUST DUCT .
4. REMOVE 4" DIA. EXHAUST DUCT TO EQUIPMENT.
5. FLAMMABLE STORAGE CABINET.
6. OMIT NOTE.
7. REMOVE HATCHED DUCT.
8. DOOR GRILLE.
9. REMOVE RETURN GRILLE.
10. REMOVE STEAM PIPE SHOWN HATCHED.
11. CURTAIN, NO DOOR.
12. REMOVE 1" STEAM PIPE (+/-) USED FOR DUCT HUMIDIFIER.
13. REMOVE GENERAL EXHAUST DUCT.
14. APEX 396 SYNTHESIZER TO REMAIN.
15. REMOVE DUAL DUCT VAV BOX AND PNEUMATIC CONTROLS. CAP PNEUMATIC TUBING AT MAIN.

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FIRST FLOOR MECHANICAL DEMOLITION PLAN

1 SCALE: 3/16"=1'-0"

N

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Replacement
Phase 2

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OCTOBER 13, 2021

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22437

SHEET TITLE:
FIRST FLOOR MECHANICAL DEMOLITION PLAN

SHEET NUMBER:
MD101

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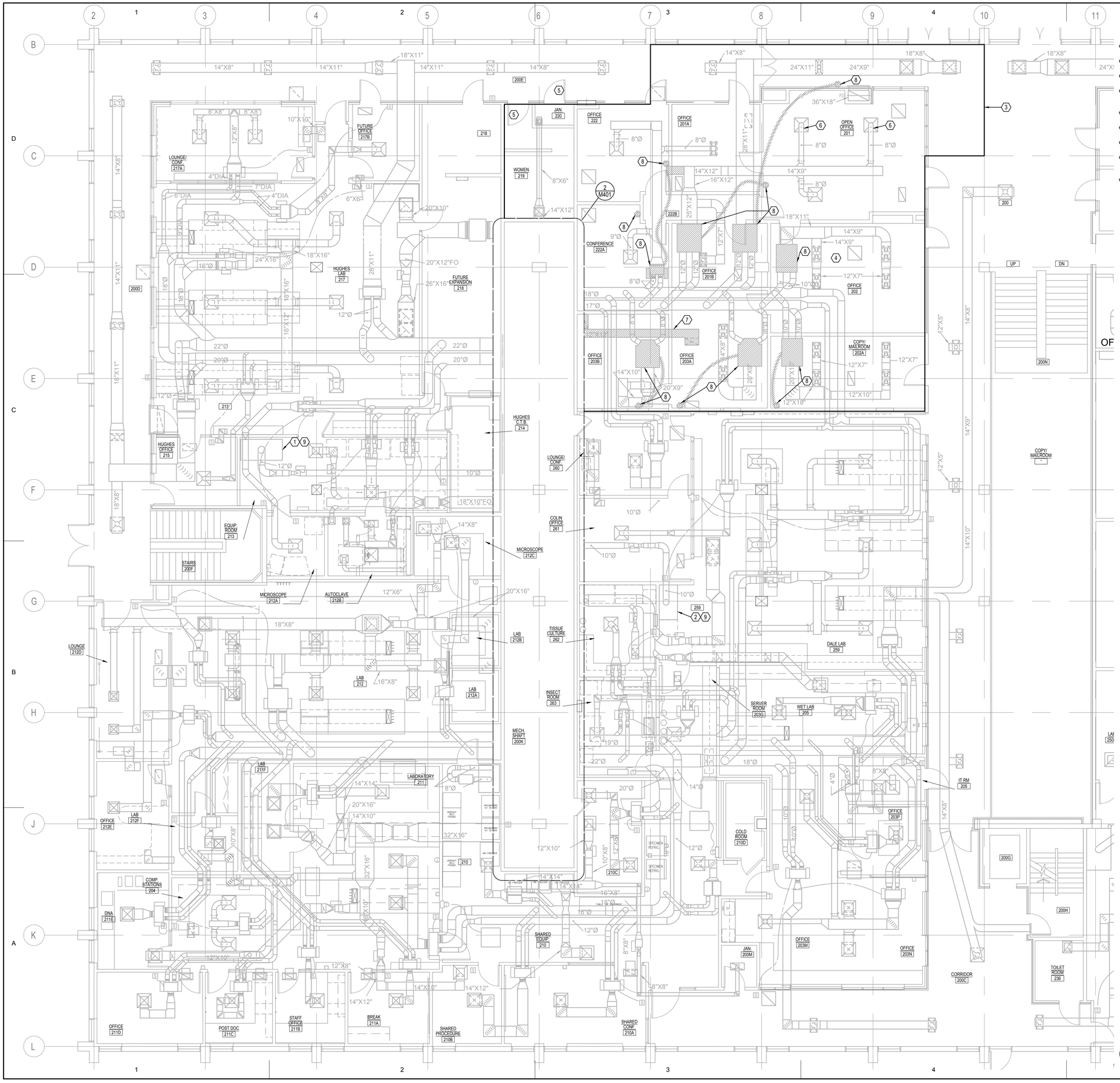

KEYED NOTES FOR SHEET MD102.

1. CHEMICAL FUME HOOD H-213.
2. CHEMICAL FUME HOOD H-259.
3. BID WORK IN THIS AREA AS ALTERNATE #1.
4. THERMOSTAT IS MISSING FOR DUAL DUCT BOX. REMOVE ALL PNUEMATIC CONTROLS BACK TO MAIN.
5. DOOR GRILLE.
6. EXISTING FLEX DUCT IS DISCONNECTED AT DIFFUSER.
7. REMOVE GENERAL EXHAUST DUCT.
8. REMOVE DUAL DUCT VAV BOX AND PNEUMATIC CONTROLS. CAP PNEUMATIC TUBING AT MAIN.
9. COORDINATE FUME HOOD DOWNTIME WHEN VERTICAL RISER IN CHASE IS RE-BUILT.

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B. MODIFY EXISTING WET FIRE SPRINKLING SYSTEM TO ACCOMMODATE REMODEL. SEE SPECIFICATIONS FOR CONTRACTOR PERFORMANCE CRITERIA.
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1 **SECOND FLOOR MECHANICAL DEMOLITION PLAN**
SCALE: 3/16=1'-0"

N

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BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

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ISSUE TYPE:
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ISSUE DATE:
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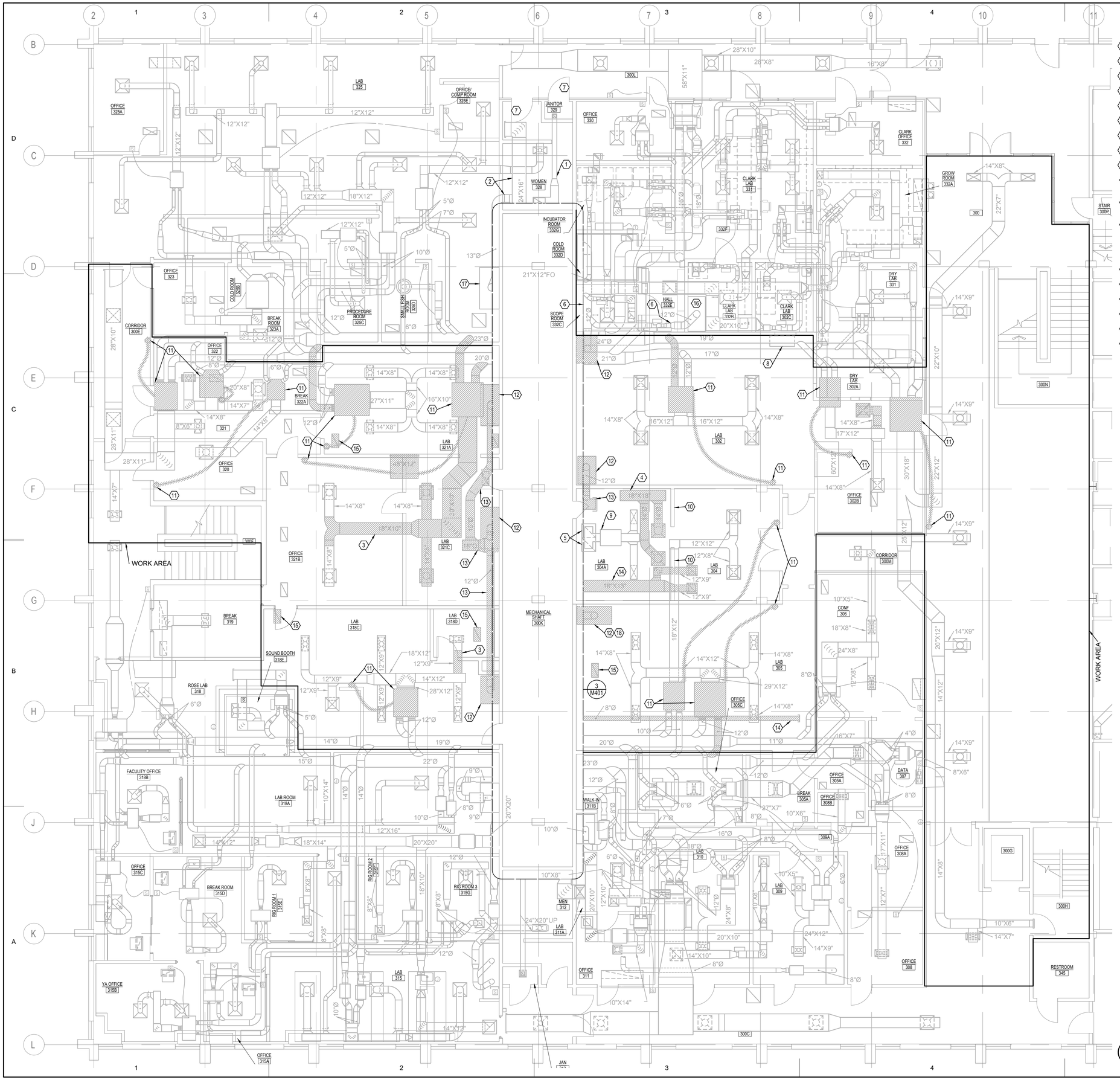
UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
SECOND FLOOR MECHANICAL DEMOLITION PLAN

SHEET NUMBER:
MD102



1 2 3 4 5

KEYED NOTES FOR SHEET MD103

1. GENERAL EXHAUST DUCT.
2. CHEMICAL FUME HOOD EXHAUST DUCT.
3. REMOVE HATCHED SECTION OF DUCT.
4. REMOVE ABANDONED DUCT.
5. FILTERS BELOW CEILING ON RETURN GRILLES.
6. CHEMICAL FUME HOOD EXHAUST DUCT.
7. DOOR GRILLE.
8. FLAMMABLE STORAGE CABINET.
9. FAN COIL W/DX COIL.
10. GLASS WALL STOPS ABOUT 18 INCHES BELOW CEILING.
11. REMOVE DUAL DUCT BOX AND PNEUMATIC CONTROLS. CAP PNEUMATIC TUBE AT MAIN.
12. REMOVE LAB GAS PIPE, WATER PIPE, ACID WASTE PIPE AND ACID VENT PIPE FROM CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS FOR CHEMICAL FUME HOODS SCHEDULE" FOR DETAILS. ALSO, REMOVE DUCTWORK AND CONTROLS FROM CHEMICAL FUME HOOD.
13. REMOVE CHEMICAL FUME HOOD EXHAUST DUCT.
14. REMOVE GENERAL EXHAUST DUCT.
15. REMOVE RETURN GRILLE.
16. CHEMICAL FUME HOOD H-332B.
17. CHEMICAL FUME HOOD.
18. REMOVE MILLWORK BASE CABINET AND COUNTER TOP BELOW CHEMICAL FUME HOOD. PATCH END OF CABINET AND COUNTER TO MATCH EXISTING.

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THIRD FLOOR MECHANICAL DEMOLITION PLAN
1 SCALE: 3/16"=1'-0"

N

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

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ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
THIRD FLOOR MECHANICAL DEMOLITION PLAN

SHEET NUMBER:
MD103

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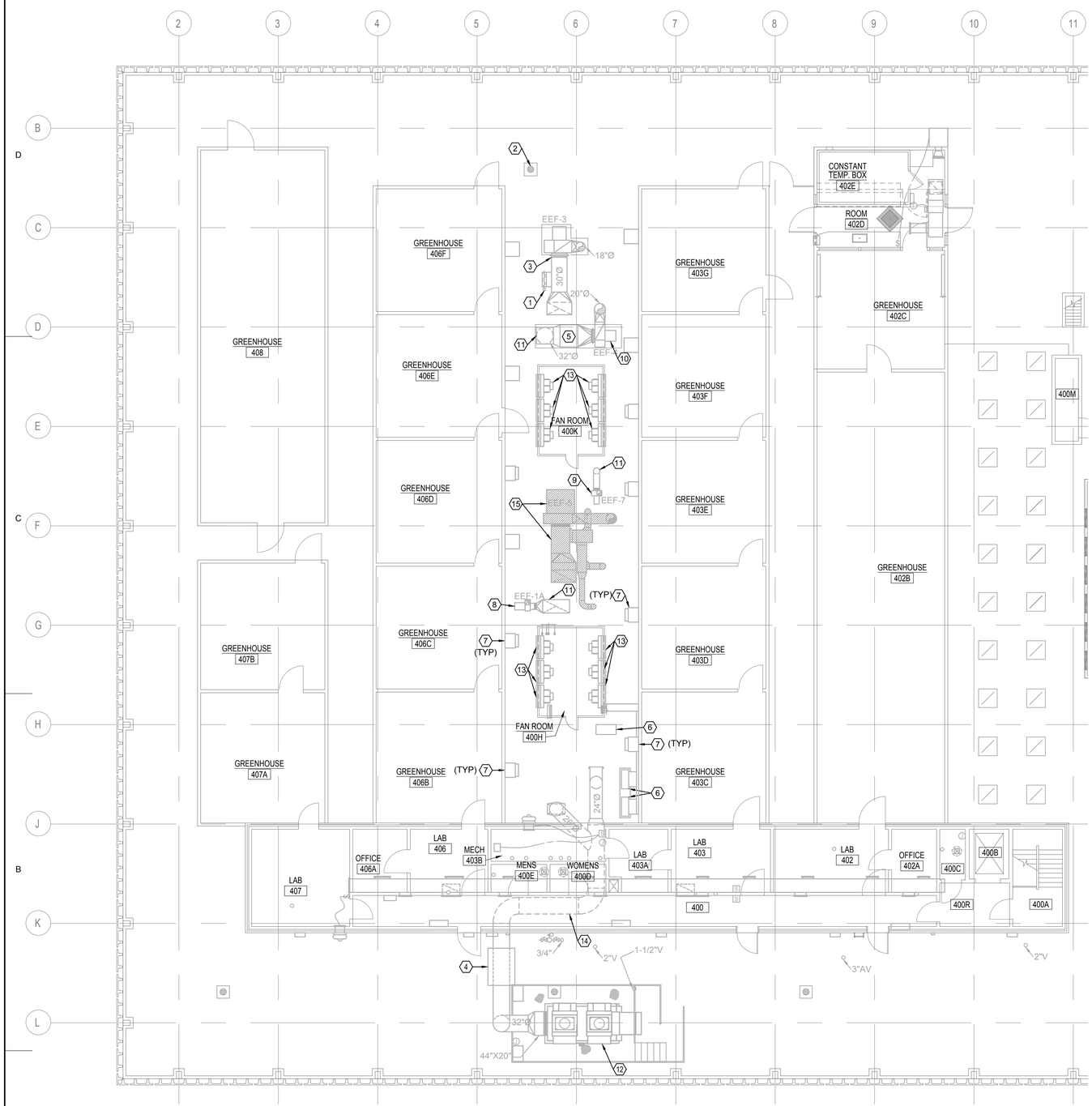

1 FOURTH FLOOR/ ROOF MECHANICAL DEMOLITION PLAN

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

N

KEYED NOTES FOR SHEET MD104.

1. EXISTING BYPASS CONTROL DAMPER.
2. EXISTING 26"X26" DECK DRAIN.
3. CHEMICAL FUME HOOD EXHAUST FAN AND DUCT.
4. SOUND TRAP.
5. IN-LINE FILTER BOX FOR VIVARIUM.
6. DUCTLESS SPLIT AIR CONDITIONING UNIT.
7. GREENHOUSE FAN.
8. VIVARIUM ROOM 020 EXHAUST FAN.
9. VIVARIUM CAGE WASH EXHAUST FAN.
10. VIVARIUM GENERAL EXHAUST FAN.
11. VIVARIUM GENERAL EXHAUST DUCT.
12. VERTICAL CHEMICAL FUME HOOD EXHAUST FAN FHE-1.
13. RELIEF/EXHAUST FAN.
14. DASHED DUCT IS ABOVE PENTHOUSE ROOF.
15. REMOVE CHEMICAL FUME HOOD EXHAUST FAN AND ASSOCIATED DUCT.

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Fume Hood
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UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

FOURTH FLOOR/ ROOF MECHANICAL DEMOLITION PLAN

SHEET NUMBER:

MD104

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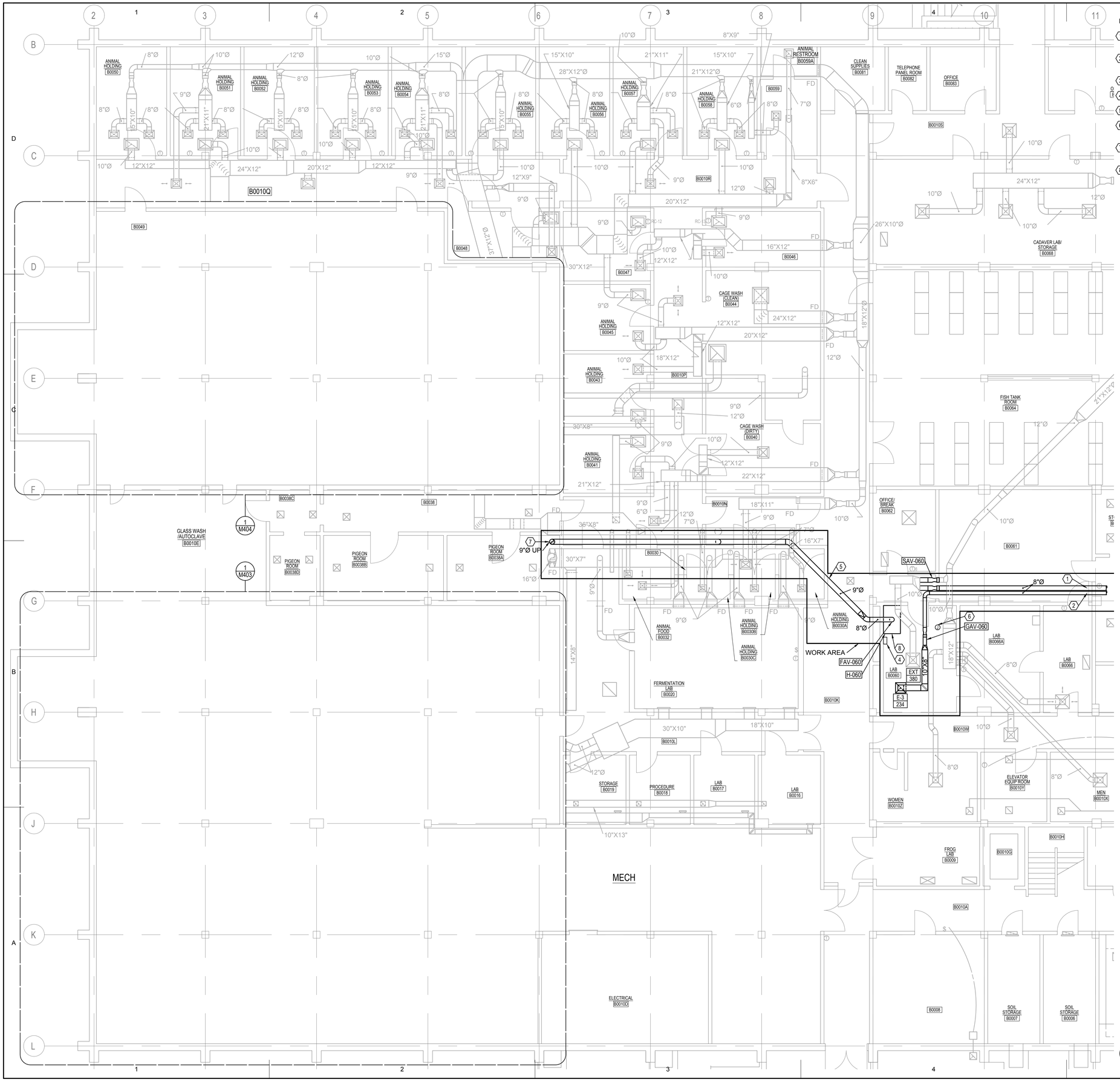

KEYED NOTES FOR SHEET MH100

1. HOT DECK SUPPLY TO CONNECT TO AHU-C. SEE SHEET MH100A FOR CONTINUATION..
2. GENERAL EXHAUST DUCT. SEE SHEET MH100A FOR CONTINUATION.
3. OMIT NOTE.
4. LAB CONTROLS.
5. CHEMICAL FUME HOOD EXHAUST DUCT.
6. DIVISION 26 TO PROVIDE 120 VOLTS TO J-BOX ABOVE CEILING TO BE USED FOR TEMPERATURE CONTROLS.
7. CHEMICAL FUME HOOD EXHAUST UP THROUGH CONCRETE FLOOR.
8. CONNECT LAB GAS PIPING, WATER PIPE, BACKFLOW PREVENTER, ACID WASTE AND ACID VENT PIPE TO NEW CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS OF CHEMICAL FUME HOOD SCHEDULE" FOR DETAILS.

GENERAL NOTE:
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1 **BASEMENT MECHANICAL REMODEL PLAN**
SCALE: 3/16=1'-0"

N

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SHEET TITLE:
BASEMENT MECHANICAL REMODEL PLAN

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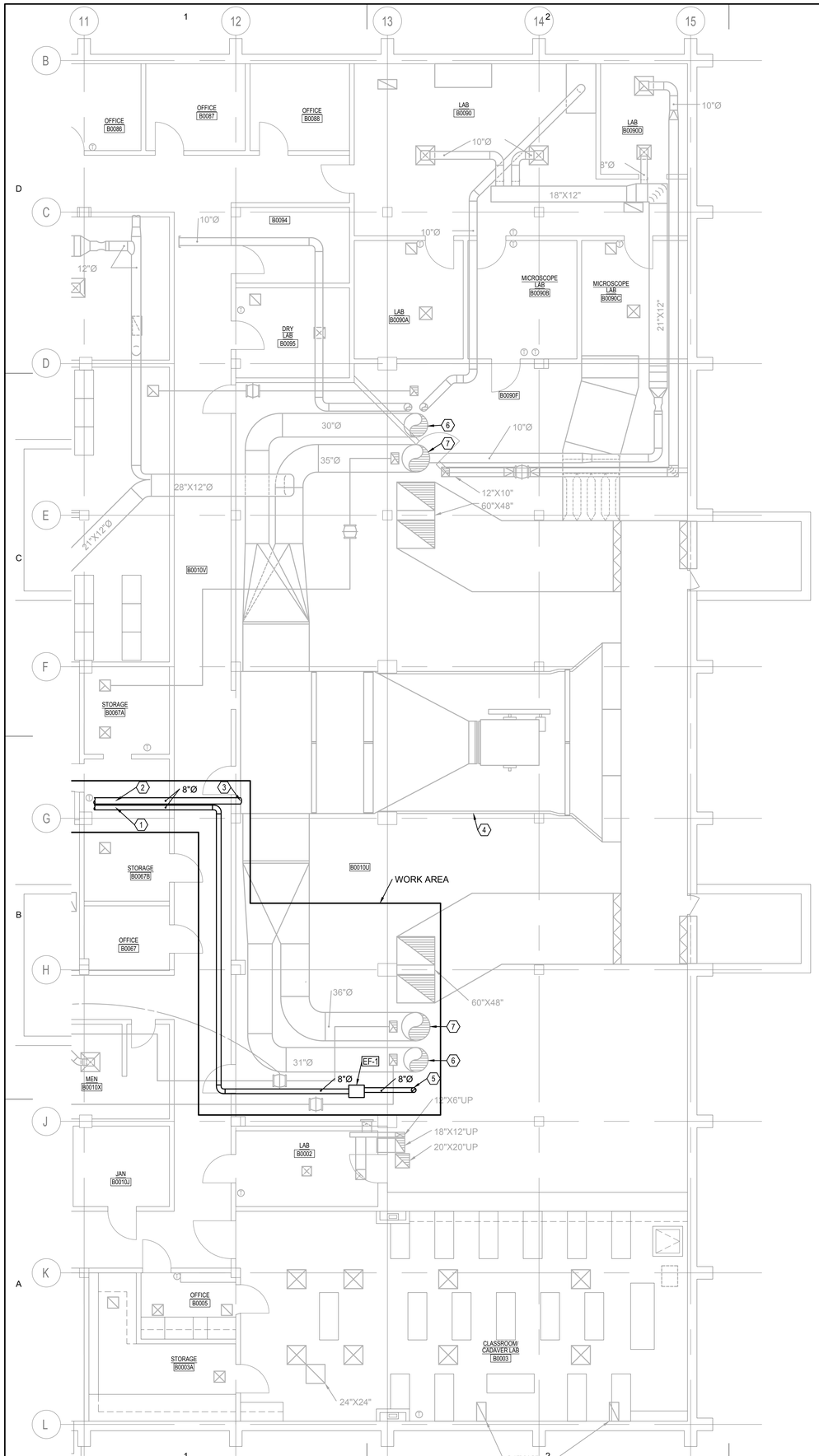
MH100



KEYED NOTES FOR SHEET MH100A

1. GENERAL EXHAUST DUCT.
2. HOT DECK SUPPLY AIR DUCT.
3. CONNECT TO HOT DECK OF AH-C.
4. EXISTING AH-C TO REMAIN.
5. GENERAL EXHAUST UP THROUGH CONCRETE FLOOR INTO EXHAUST SHAFT.
6. HOT DECK.
7. COLD DECK.

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1 **BASEMENT MECHANICAL REMODEL PLAN**
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N

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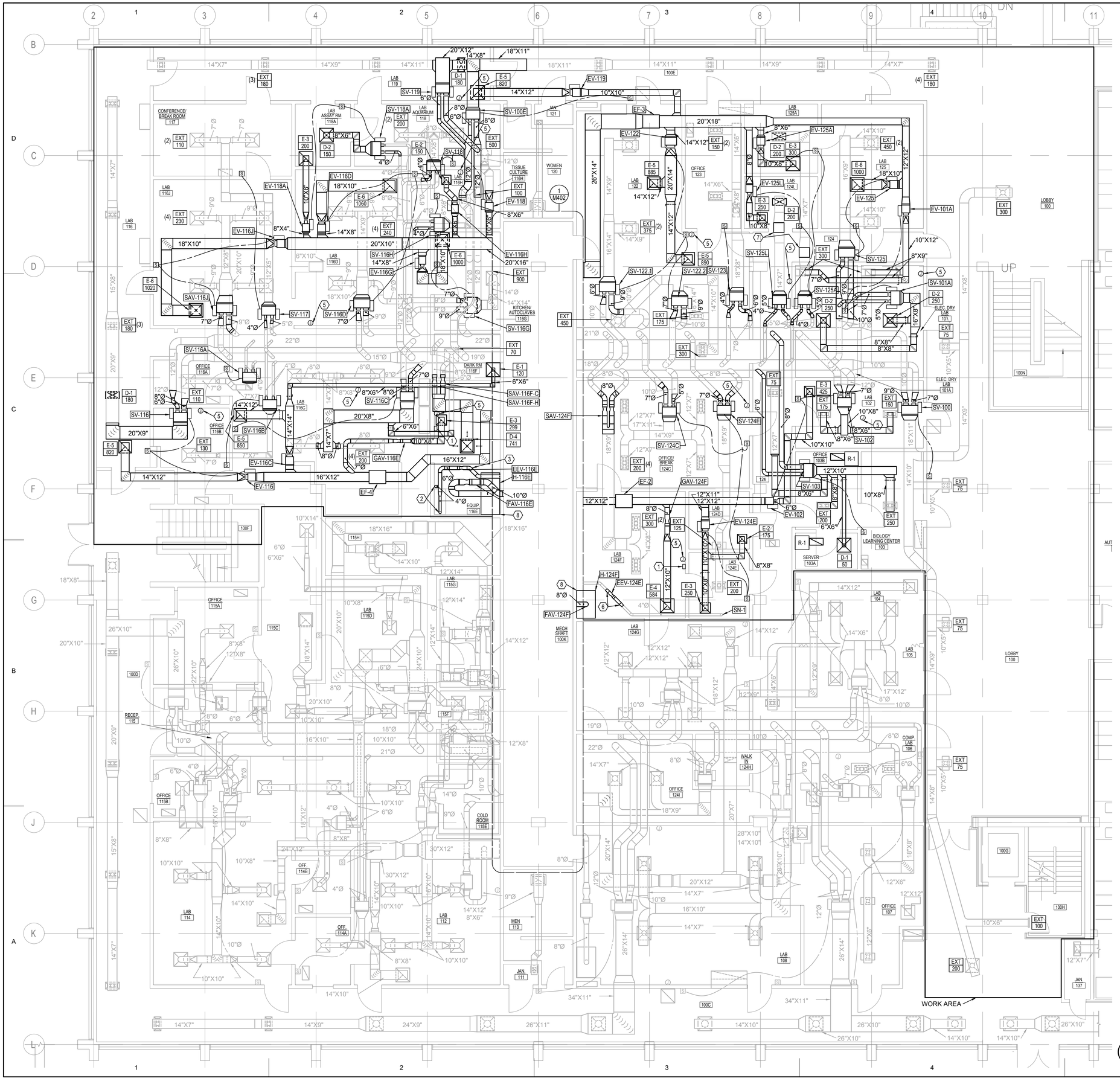
MH100A



KEYED NOTES FOR SHEET MH101

1. VENTURI VALVE LAB CONTROLLER.
2. DROP CHEMICAL FUME EXHAUST DUCT AND CONNECT TO APEX SYNTESIZER WITH 4 INCH DIA. DUCT AND BALANCE DAMPER. BALANCE TO 30 CFM.
3. CHEMICAL FUME HOOD EXHAUST DUCT.
4. SOUND TRAP.
5. DIVISION 26 TO PROVIDE 120 VOLTS TO J-BOX ABOVE CEILING TO BE USED FOR HVAC CONTROLS.
6. TRANSITION AND CONNECT TO EXISTING DUCT.
7. PATCH DUCT FROM HUMIDIFIER REMOVAL.
8. CONNECT LAB GAS PIPING, WATER PIPE, BACKFLOW PREVENTER, ACID WASTE AND ACID VENT PIPE TO NEW CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS OF CHEMICAL FUME HOOD SCHEDULE" FOR DETAILS.

GENERAL NOTE:
A. DEMOLITION AND REMODEL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS FOR THE INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED. A SEPARATE PERMIT IS REQUIRED FOR REVISIONS OR EXTENSIONS OF THE FOLLOWING:
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* FIRE SPRINKLER (IFC 907 AND NFPA)

SUBMITTALS SHALL BE SUBMITTED TO THE UNIVERSITY FIRE MARSHALL FOR REVIEW AND APPROVAL. A FIRE WATCH (IFC 901.7) IS REQUIRED FOR ANY FIRE PROTECTION SYSTEM IMPAIRMENT. FIRE PROTECTION SYSTEMS SHALL BE PLACED BACK IN SERVICE DURING ALL PERIODS OF NON-WORK. INSPECTION AND TESTING OF ALL FIRE SYSTEMS IS REQUIRED WHEN REVISED OR MODIFIED.
B. MODIFY EXISTING WET FIRE SPRINKLING SYSTEM TO ACCOMMODATE REMODEL. SEE SPECIFICATIONS FOR CONTRACTOR PERFORMANCE CRITERIA.
C. CONTRACTOR SHALL REROUTE EXISTING PIPES, CONDUITS, DUCTS, WIRING, ETC. TO ALLOW FOR THE DEMOLITION AND REMODEL SCOPE DEPICTED IN THESE DOCUMENTS.

1 **FIRST FLOOR MECHANICAL REMODEL PLAN**
SCALE: 3/16=1'-0"

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EXP. 03/31/23

CONSULTANT:

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FAX: (801) 581-6081

BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

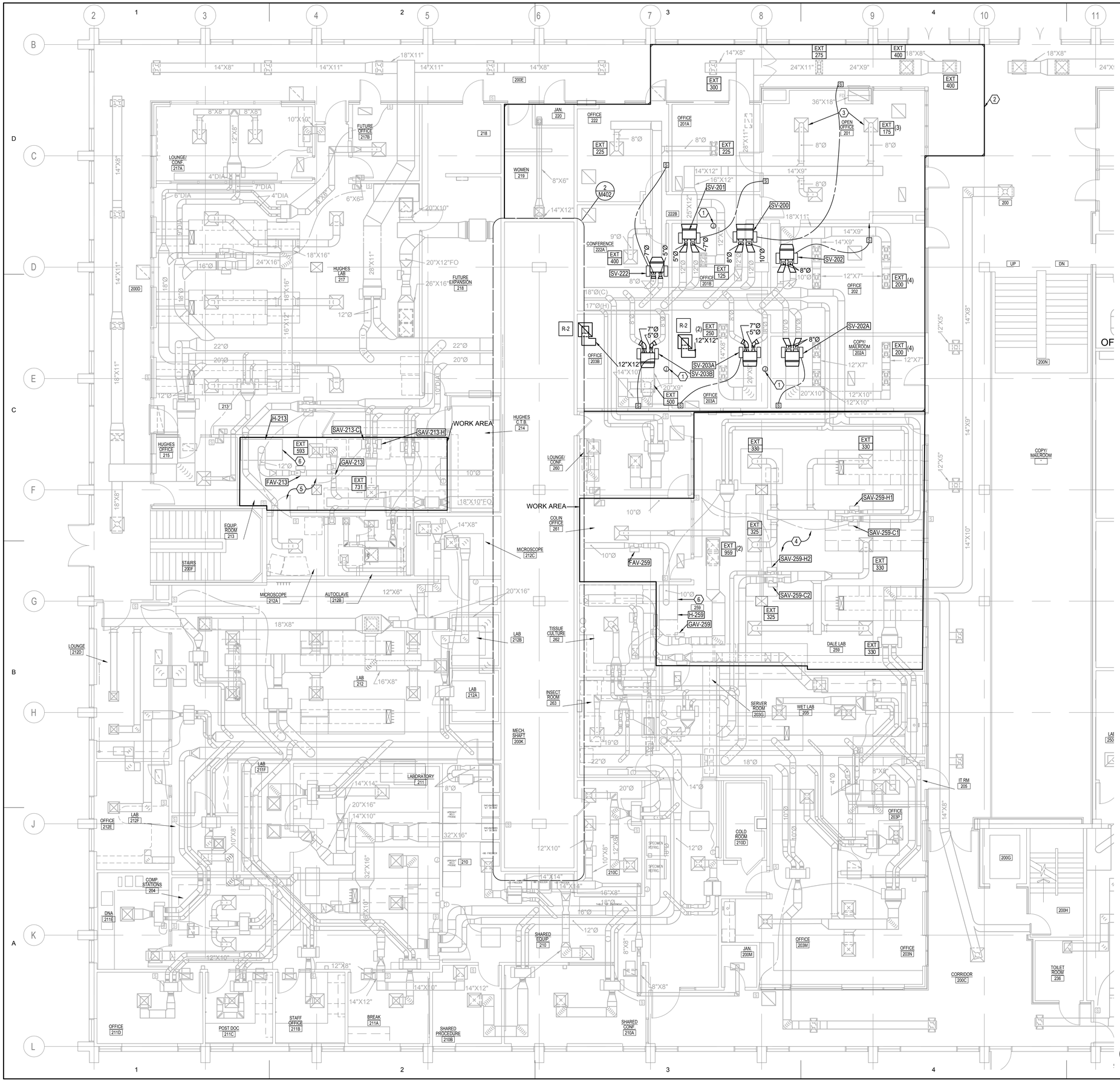
ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
FIRST FLOOR MECHANICAL REMODEL PLAN

SHEET NUMBER:
MH101



KEYED NOTES FOR SHEET MH102

1. DIVISION 26 SHALL PROVIDE 120 VOLTS TO J-BOX ABOVE CEILING FOR HVAC CONTROLS.
2. BID WORK IN THIS AREA AS ADD ALTERNATE #1.
3. RECONNECT FLEX DUCT TO DIFFUSER.
4. REBALANCE ROOM 259 TO AIRFLOWS SHOWN.
5. REBALNCE ROOM 213 TO AIRFLOWS SHOWN.
6. EXISTING CHEMICAL FUME HOOD TO REMAIN.

GENERAL NOTE:
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B. MODIFY EXISTING WET FIRE SPRINKLING SYSTEM TO ACCOMMODATE REMODEL. SEE SPECIFICATIONS FOR CONTRACTOR PERFORMANCE CRITERIA.
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1 SECOND FLOOR MECHANICAL REMODEL PLAN
SCALE: 3/16=1'-0"

N

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ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
SECOND FLOOR MECHANICAL REMODEL PLAN

SHEET NUMBER:
MH102

KEYED NOTES FOR SHEET MH103

1. DIVISION 26 SHALL PROVIDE 120 VOLTS TO J-BOX ABOVE CEILING FOR HVAC CONTROLS.
2. LAB VENTURI VALVE CONTROLLER.
3. FAN COIL UNIT TO REMAIN.
4. CONNECT LAB GAS PIPING, WATER PIPE, BACKFLOW PREVENTER, ACID WASTE AND ACID VENT PIPE TO NEW CHEMICAL FUME HOOD. SEE "PLUMBING REQUIREMENTS OF CHEMICAL FUME HOOD SCHEDULE" FOR DETAILS.
5. RE-BALANCE EXISTING LAB.
6. BALANCE EXISTING FUME HOOD WHEN WORKING ON ASSOCIATED DUCT AND FAN SYSTEM. SEE SCHEDULE FOR FLOW RATES.
7. EXISTING CHEMICAL FUME HOOD TO REMAIN.

GENERAL NOTE:
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THIRD FLOOR MECHANICAL REMODEL PLAN

1 SCALE: 3/16"=1'-0"

N

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OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

THIRD FLOOR
MECHANICAL
REMODEL PLAN

SHEET NUMBER:

MH103

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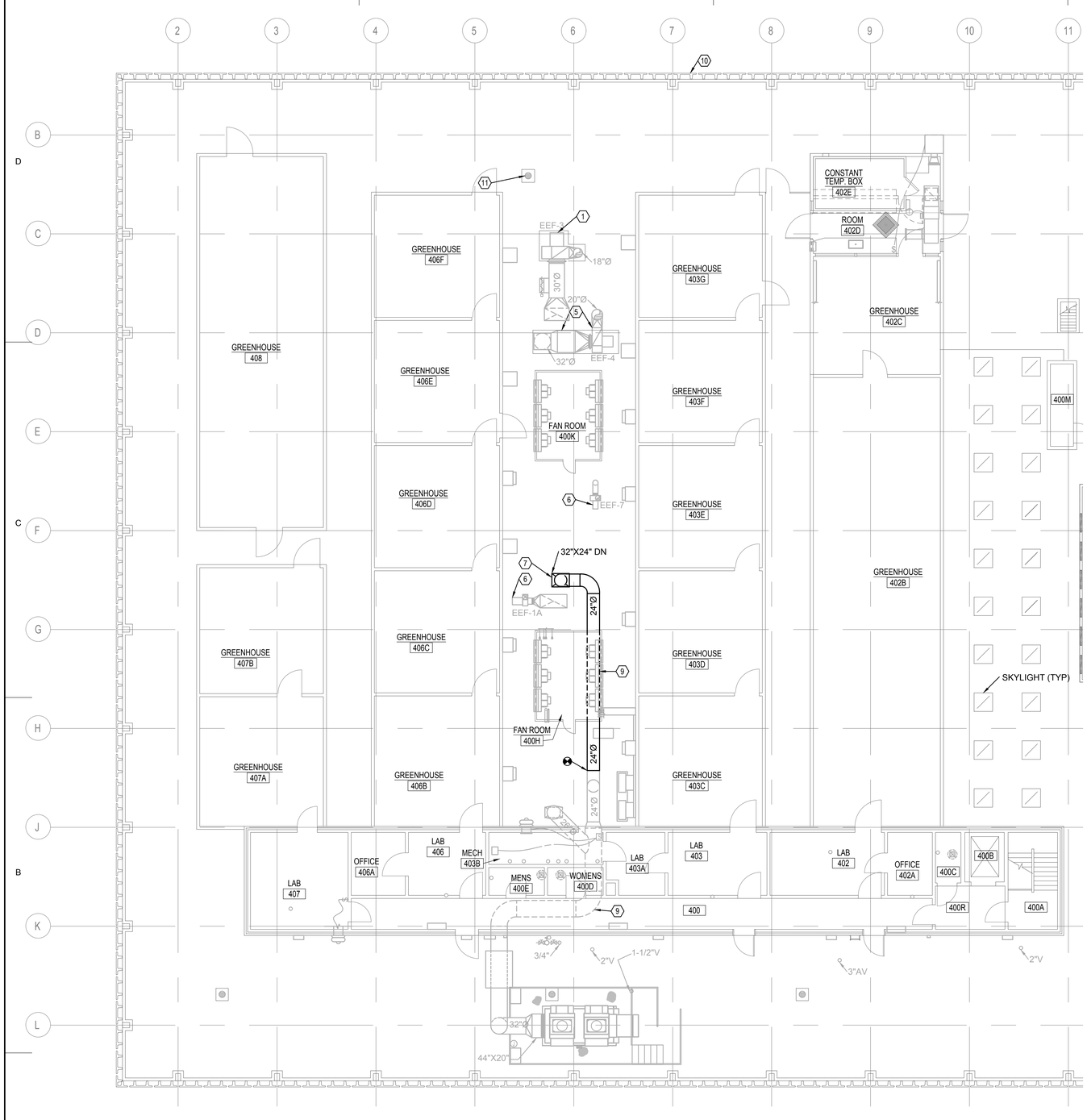

1 FOURTH FLOOR/ ROOF MECHANICAL REMODEL PLAN

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

N

KEYED NOTES FOR SHEET MH104.

1. REBALANCE EXISTING FAN AS PER SHEET M701.
2. NOT USED.
3. NOT USED.
4. NOT USED.
5. EXISTING VIVARIUM EXHAUST FILTER AND FAN TO REMAIN.
6. EXISTING VIVARIUM EXHAUST FAN TO REMAIN.
7. TRANSITION FROM 24" DIA. TO 32"X24" IN DROP.
8. OMIT NOTE.
9. DASHED DUCT IS ABOVE ROOF OF PENTHOUSE.
10. EXISTING PARAPET WALL (APPROX. 10 FEET).
11. EXISTING DECK DRAIN TO REMAIN.

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University of Utah
Biology Bldg 84

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Fume Hood
Replacement
Phase 2

REVISIONS:

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OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

FOURTH FLOOR MECHANICAL REMODEL PLAN

SHEET NUMBER:

MH104

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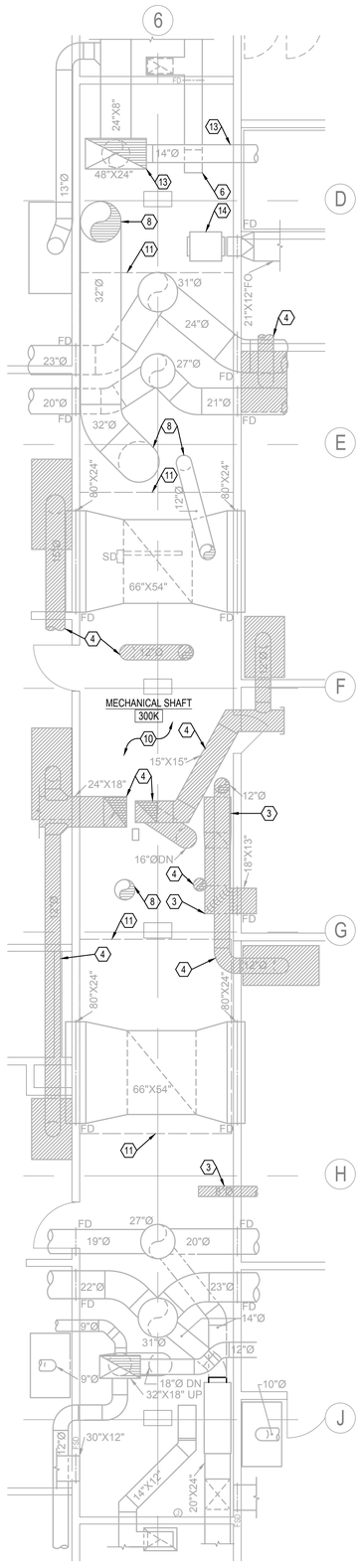
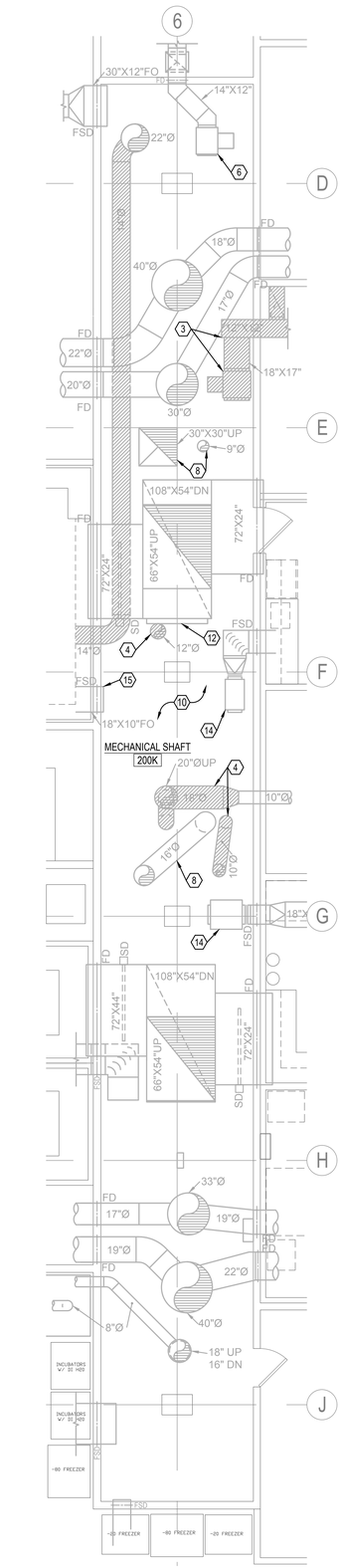
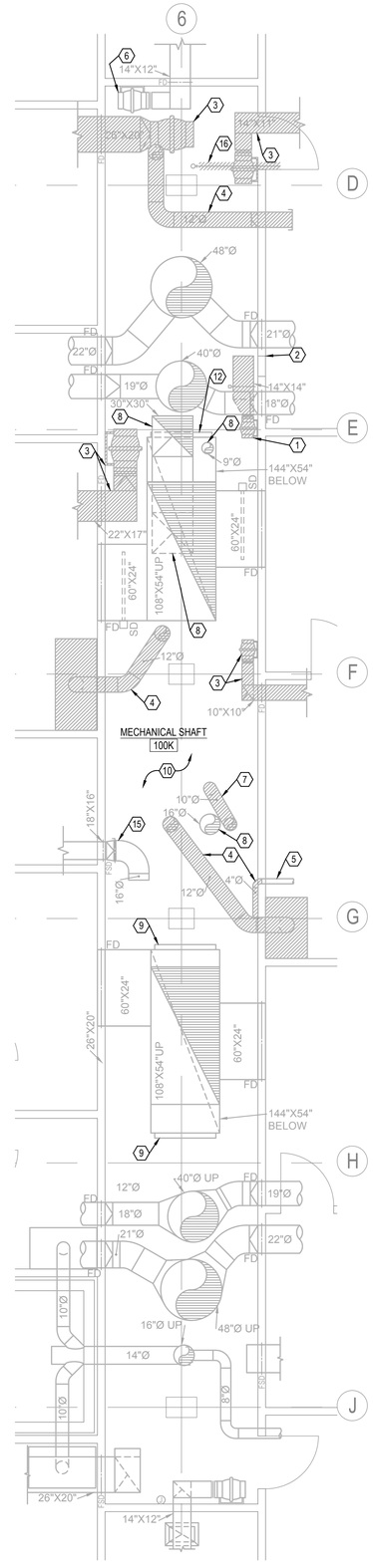


3 **MECHANICAL SHAFT 300K PLAN**
SCALE: 1/4"=1'-0"



2 **MECHANICAL SHAFT 200K PLAN**
SCALE: 1/4"=1'-0"



1 **MECHANICAL SHAFT 100K PLAN**
SCALE: 1/4"=1'-0"

KEYED NOTES FOR SHEET M401.

1. REMOVE ABANDONED FAN AND DUCT.
2. SEAL HOLE IN SHAFT WALL FROM OLD EXHAUST.
3. REMOVE GENERAL EXHAUST FAN AND ASSOCIATED HATCHED DUCT AND CONTROLS.
4. REMOVE FUME HOOD EXHAUST DUCT.
5. DUCT TO SNORKEL SHALL REMAIN.
6. REMOVE CONTROLS FROM CONSTANT VOLUME RESTROOM EXHAUST FAN.
7. REMOVE FUME HOOD DUCT DROP TO BASEMENT LEVEL.
8. EXISTING VIVARIUM EXHAUST DUCT TO REMAIN.
9. 48"X72" RELIEF AIR GRAVITY BACKDRAFT DAMPER MOUNTED ON RETURN TO REMAIN. SERVES AIR HANDLING UNIT A.
10. SHAFT IS AN EXHAUST AIR PLENUM.
11. OUTLINE OF OPENING IN TOP OF SHAFT INTO PENTHOUSE FAN ROOM.
12. 48"X72" RELIEF AIR GRAVITY BACKDRAFT DAMPER MOUNTED ON RETURN TO REMAIN. SERVES AIR HANDLING UNIT B.
13. CHEMICAL FUME HOOD EXHAUST DUCT TO REMAIN.
14. GENERAL EXHAUST FAN AND DDC CONTROLS SHALL REMAIN.
15. GENERAL EXHAUST DUCT TO REMAIN.
16. REMOVE HATCHED STEAM PIPE AND CAP AT MAIN.

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C. CONTRACTOR SHALL REROUTE EXISTING PIPES, CONDUITS, DUCTS, WIRING, ETC. TO ALLOW FOR THE DEMOLITION AND REMODEL SCOPE DEPICTED IN THESE DOCUMENTS.

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL DEMOLITION SERVICE SHAFT LARGE SCALE PLANS

SHEET NUMBER:
M401

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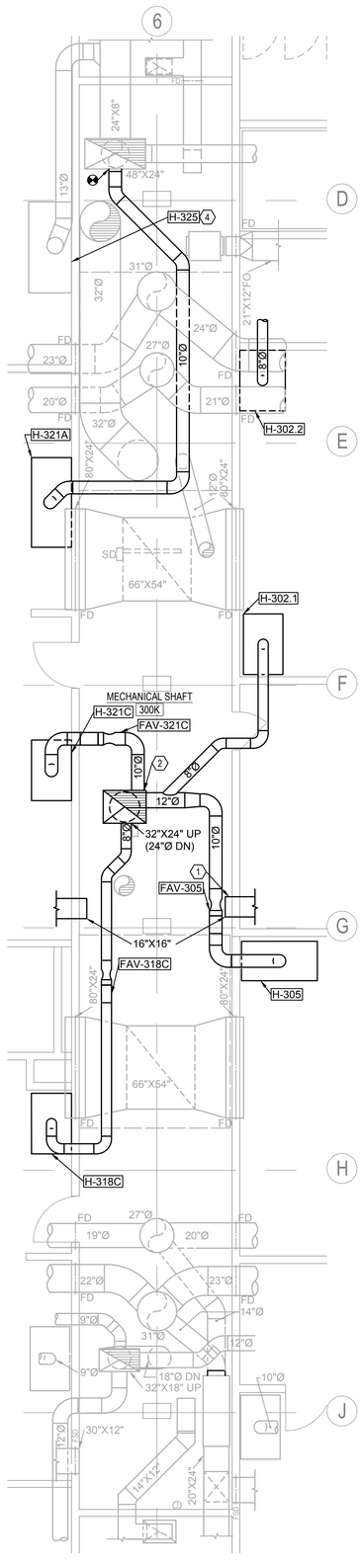
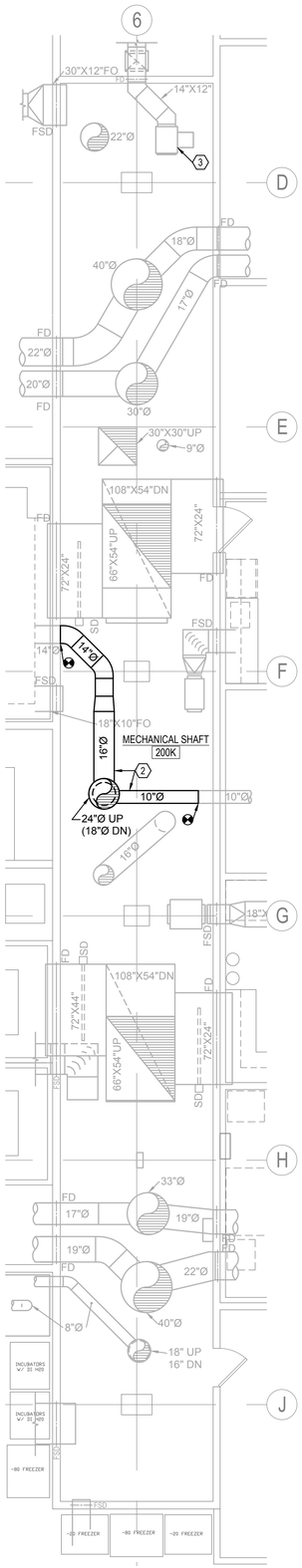
KEYED NOTES FOR SHEET M402.

1. GENERAL EXHAUST DUCT.
2. CHEMICAL FUME HOOD EXHAUST DUCT.
3. ADD JCI DDC CONTROLS TO EXISTING EXHAUST FAN.
4. EXISTING CHEMICAL FUME HOOD TO REMAIN.



3 **MECHANICAL SHAFT 300K PLAN**
SCALE: 1/4"=1'-0"



2 **MECHANICAL SHAFT 200K PLAN**
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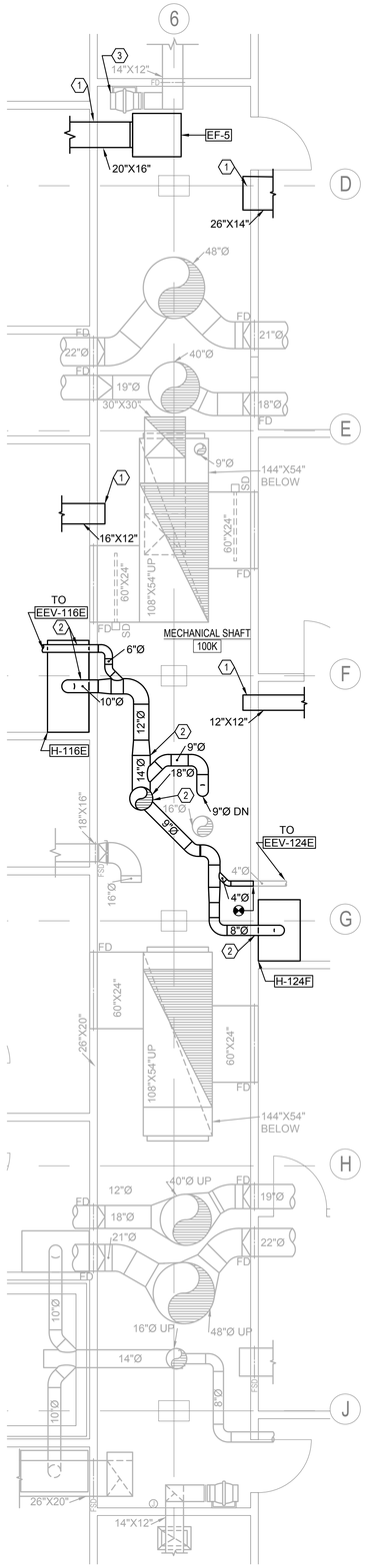

1 **MECHANICAL SHAFT 100K PLAN**
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OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

MECHANICAL
REMODEL
SERVICE SHAFT
LARGE SCALE
PLANS

SHEET NUMBER:

M402

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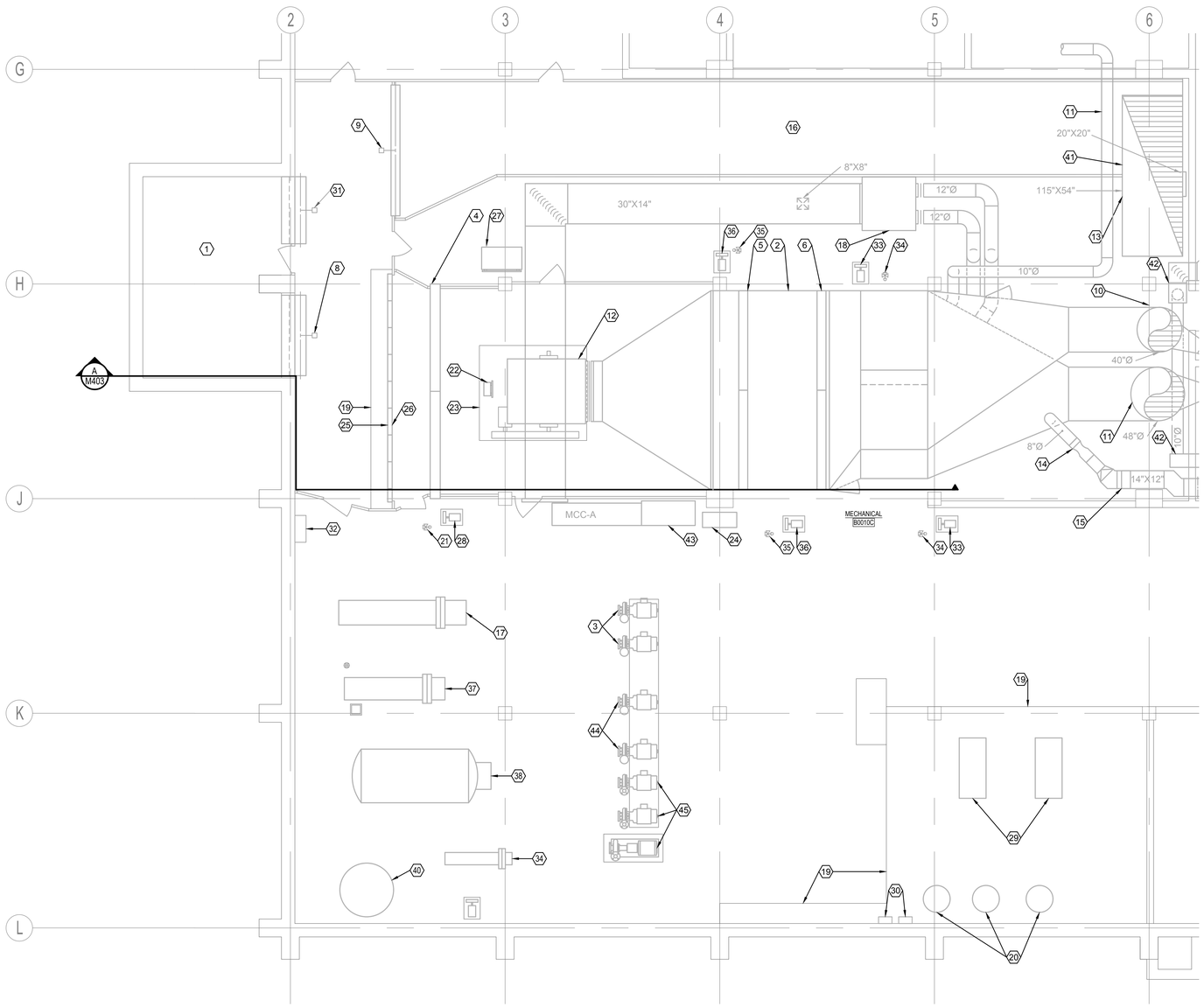
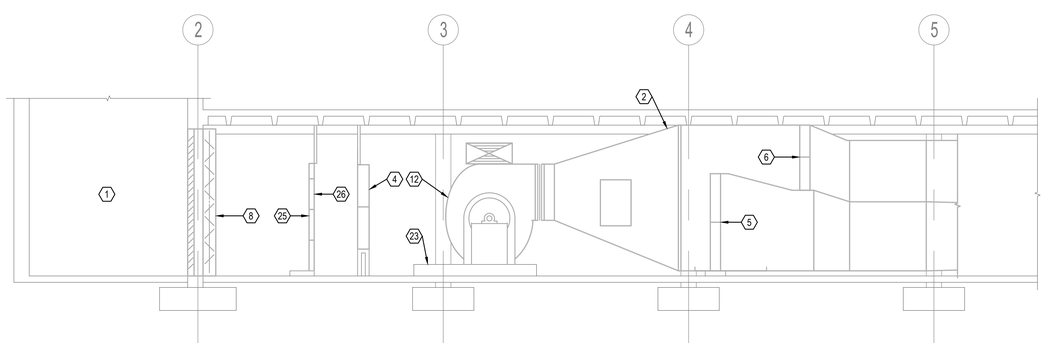


1 MECHANICAL ROOM B0010C DEMOLITION PLAN

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



A MECHANICAL ROOM B0010C DEMOLITION SECTION

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

KEYED NOTES FOR SHEET M403

1. OUTSIDE AIR INTAKE.
2. DUAL DUCT BUILT UP AIR HANDLING UNIT A.
3. BIOLOGY BUILDING HEATING PUMP.
4. HOT WATER PRE-HEAT COIL AND COIL PUMP.
5. CHILLED WATER COOLING COIL.
6. HOT WATER HEATING COIL.
7. OMIT NOTE.
8. 5'-9" WIDE X 9'-7" TALL OUTSIDE AIR CONTROL DAMPER OPERATED BY DDC ACTUATORS.
9. 9'-9" WIDE X 9-7" TALL RETURN AIR CONTROL DAMPER OPERATED BY DDC ACTUATORS.
10. HOT DECK SUPPLY DUCT.
11. COLD DECK SUPPLY DUCT.
12. SUPPLY FAN.
13. RETURN AIR DUCT.
14. PNEUMATIC COOLING ONLY VENTURI VALVE TO REMAIN.
15. REHEAT COIL.
16. RETURN AIR PLENUM.
17. HEATING HOT WATER CONVERTER FOR BIOLOGY BUILDING.
18. DUAL DUCT BOX AND PNEUMATIC CONTROLS.
19. CONCRETE HOUSEKEEPING PAD.
20. EXPANSION TANK.
21. PRE-HEAT COIL CONTROL VALVE.
22. FAN ELECTRICAL DISCONNECT.
23. CONCRETE ISOLATION BASE.
24. JOHNSON CONTROL PANEL FOR HEAT EXCHANGERS
25. MERV 8 FILTER BANK WITH (24) 24"X24"X2" FILTERS AND (11) 12"X24"X12" FILTERS.
26. APPROX. 50% OF FILTERS HAVE BAG FILTERS.
27. VARIABLE FREQUENCY DRIVE SERVING SUPPLY FAN
28. PRE-HEAT COIL PUMP.
29. LAB VACUUM PUMP.
30. BTU METER.
31. 5'-0" WIDE X 9'-7" TALL OUTSIDE AIR CONTROL DAMPER OPERATED BY DDC ACTUATORS.
32. JOHNSON CONTROLS AHU-A CONTROLS WITH NEW CGM BACNET MS/TP CONTROLLER.
33. HEATING WATER COIL PUMP.
34. HEATING WATER COIL 3-WAY CONTROL VALVE AND PNEUMATIC ACTUATOR.
35. CHILLED WATER COIL 3-WAY CONTROL VALVE.
36. CHILLED WATER COIL PUMP.
37. HEATING HOT WATER CONVERTER FOR LIFE SCIENCE BUILDING.
38. STEAM HEAT EXCHANGER.
39. DOMESTIC HOT WATER HEAT EXCHANGER.
40. DOMESTIC HOT WATER STORAGE TANK.
41. 14"X14" RETURN AIR GRILLE.
42. VIVARIUM EXHAUST.
43. OLD PNEUMATIC CONTROL PANEL.
44. LIFE SCIENCE BUILDING HEATING PUMP.
45. CHILLED WATER PUMP.

GENERAL NOTE:
1. SHEET INCLUDED FOR REFERENCE ONLY.

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OCTOBER 13, 2021

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22437

SHEET TITLE:

LARGE SCALE MECHANICAL PLAN AND SECTION

SHEET NUMBER:

M403

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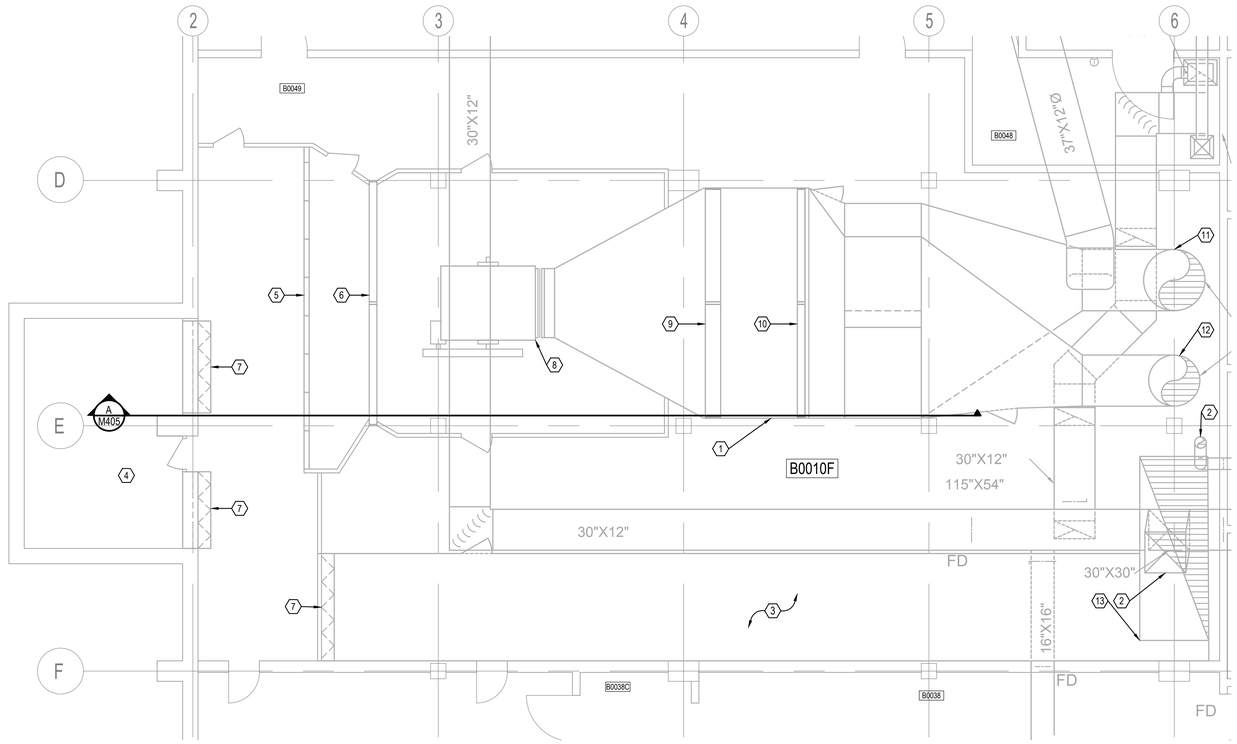
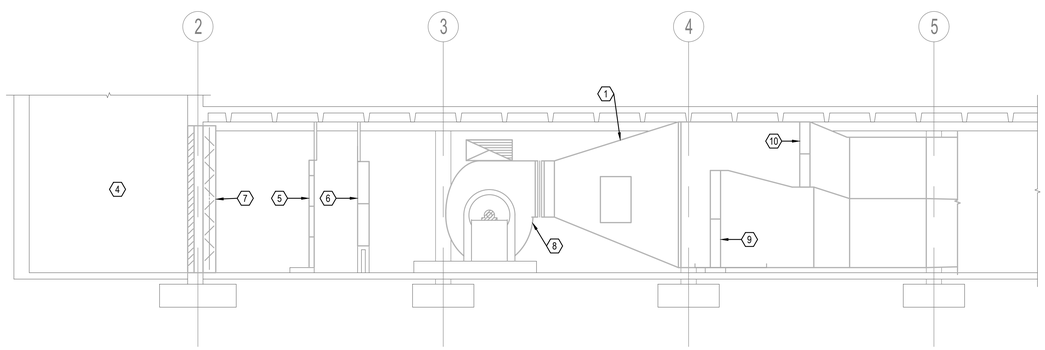
KEYED NOTES FOR SHEET M405

1. AIR HANDLING SYSTEM B TO REMAIN.
2. VIVARIUM EXHAUST DUCT.
3. EXISTING AIR PLENUM.
4. OUTSIDE AIR AREA WELL.
5. FILTER SECTION.
6. PREHEAT COIL SECTION.
7. CONTROL DAMPERS.
8. SUPPLY FAN "B".
9. CHILLED WATER COIL.
10. HEATING WATER COIL.
11. COLD DECK.
12. HOT DECK.
13. RETURN DUCT UP.



1 MECHANICAL ROOM B0010F PLAN
SCALE: 1/4"=1'-0"



A MECHANICAL ROOM B0010F SECTION
SCALE: 1/4"=1'-0"

GENERAL NOTE:
1. SHEET INCLUDED FOR REFERENCE ONLY.

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REGISTERED PROFESSIONAL ENGINEER
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STATE OF UTAH
EXP. 03/31/23

CONSULTANT:

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Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

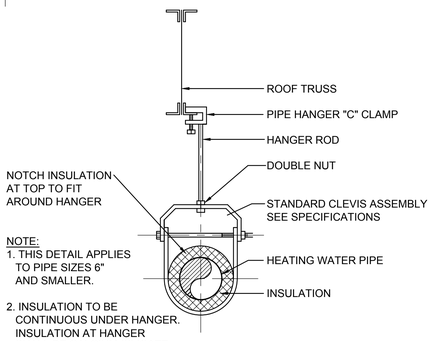
ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

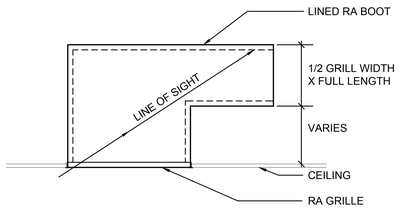
UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
LARGE SCALE MECHANICAL PLAN AND SECTION

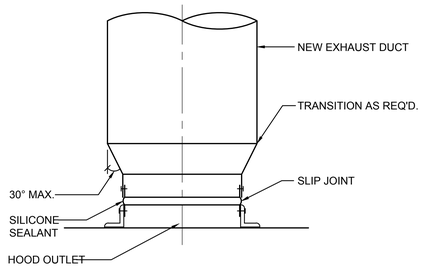
SHEET NUMBER:
M404



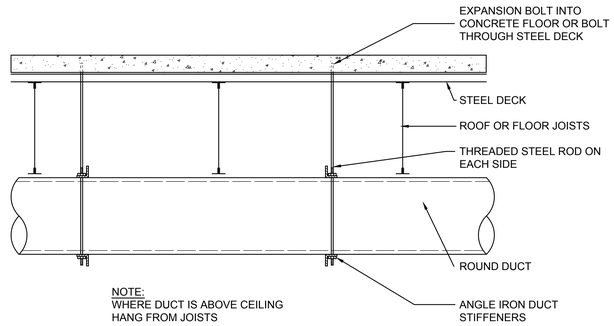
5 PIPE HANGER DETAIL
SCALE: N.T.S.



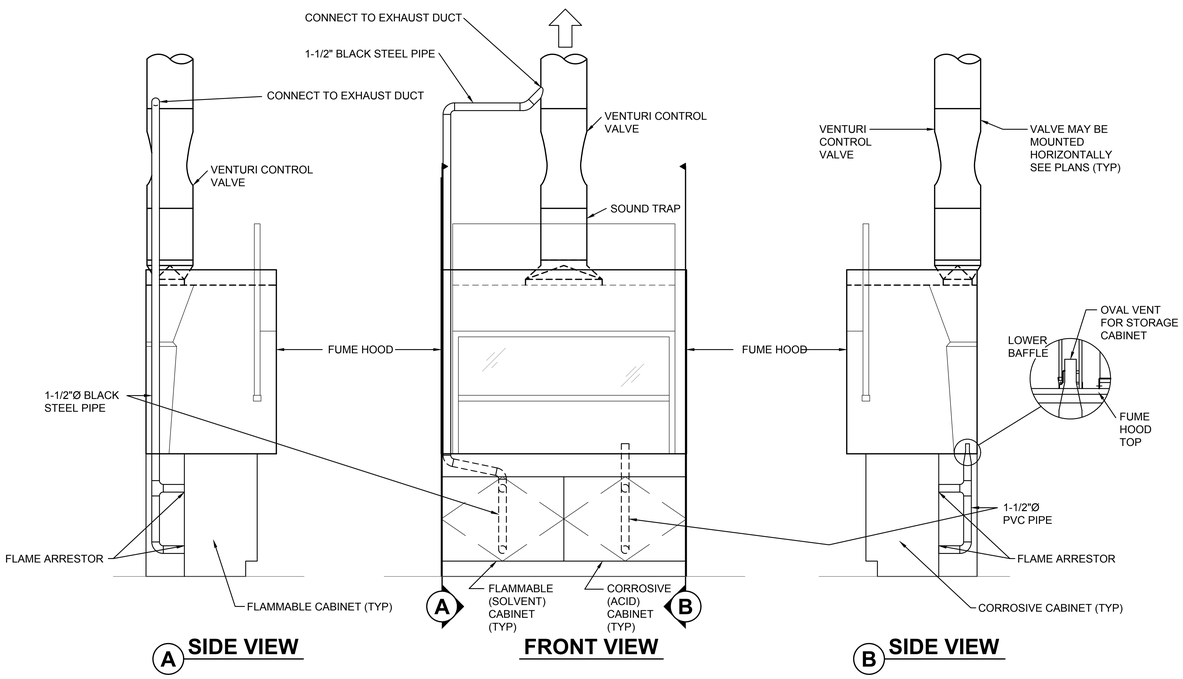
6 RA SOUND BOOT DETAIL
SCALE: N.T.S.



2 FUME HOOD CONNECTION DETAIL
SCALE: NONE



3 ROUND DUCT HANGER DETAIL
SCALE NONE



A SIDE VIEW
FRONT VIEW
B SIDE VIEW

4 FUME HOOD BASE CABINET VENTILATION DETAIL
SCALE NONE

GENERAL NOTE:
1. SEE HOOD SCHEDULE FOR QUANTITIES AND LOCATIONS OF FLAMMABLE AND CORROSIVE CABINETS.

DUCT SEALING REQUIREMENT SCHEDULE

NOTES:
(1) SEE SPECIFICATION FOR FURTHER REQUIREMENTS OF SEALANT MATERIALS AND INSTALLATION.

(2) CLASSIFICATIONS BELOW ARE ACCORDING TO SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"

DUCT TYPE		PRESSURE CLASS, INCH WG	SEAL CLASS	LEAKAGE CLASS, RECTANGULAR	LEAKAGE CLASS, ROUND AND FLAT OVAL
SUPPLY AIR:					
	OUTDOOR	(+) 2	A	12	12
	OUTDOOR	(+) 3	A	6	6
	OUTDOOR	(+) 4	A	3	3
	UNCONDITIONED SPACE	(+) 2	B	12	12
	UNCONDITIONED SPACE	(+) 3	A	6	6
	UNCONDITIONED SPACE	(+) 4	A	3	3
	CONDITIONED SPACE	(+) 2	C	12	12
	CONDITIONED SPACE	(+) 3	B	6	6
	CONDITIONED SPACE	(+) 4	A	3	3
RETURN AIR:					
	OUTDOOR	(+ / -) 2	C	12	12
	OUTDOOR	(+ / -) 3	B	6	6
	OUTDOOR	(+ / -) 4	A	3	3
	UNCONDITIONED SPACE	(+ / -) 2	B	12	12
	UNCONDITIONED SPACE	(+ / -) 3	B	6	6
	UNCONDITIONED SPACE	(+ / -) 4	A	3	3
	CONDITIONED SPACE	(+ / -) 2	C	12	12
	CONDITIONED SPACE	(+ / -) 3	B	6	6
	CONDITIONED SPACE	(+ / -) 4	A	3	3
EXHAUST ENVIRONMENTAL (ASHRAE 62.1, CLASS 1 AND 2) AIR:					
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+) 2	A	12	6
	OUTDOOR, CONDITIONED & UNCONDITIONED	(-) 2	B	12	6
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+) 3	A	6	3
	OUTDOOR, CONDITIONED & UNCONDITIONED	(-) 3	B	6	3
EXHAUST FOR LABORATORY AND PROCESS (ASHRAE 62.1, CLASS 3 AND 4) AIR:					
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+) 3	WELDED	3	3
	OUTDOOR, CONDITIONED & UNCONDITIONED	(-) 3	WELDED	3	3
EXHAUST AIR FOR COMMERCIAL KITCHEN HOODS:					
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+) 3	WELDED	3	3
	OUTDOOR, CONDITIONED & UNCONDITIONED	(-) 3	WELDED	3	3
EXHAUST AIR FOR COMMERCIAL DISHWASHER HOODS:					
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+ / -) 2	WELDED SEAMS AND FLANGED JOINTS	3	3
OUTSIDE & COMBUSTION AIR:					
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+ / -) 2	B	12	6
	OUTDOOR, CONDITIONED & UNCONDITIONED	(+ / -) 3	B	6	3

DUCT INSULATION SCHEDULE

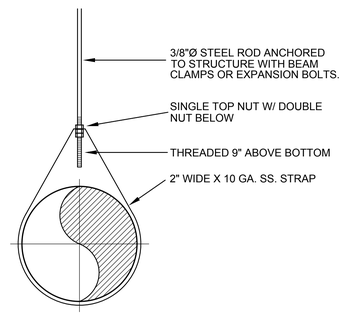
NOTES:
(1) SEE SPECIFICATION FOR FURTHER REQUIREMENTS OF INSULATION AND INSTALLATION. AT A MINIMUM:

(A) INSULATION APPLIED TO OUTSIDE SURFACES OF DUCTS ARE BASED ON MINERAL-FIBER BLANKET, 1.5 PCF, WITH A R-VALUE AS NOTED BELOW. OTHER DUCT INSULATIONS AND THICKNESS MAY BE USED AS PER SPECIFICATION AND APPLICATION INSOFAR AS THE R VALUE MEETS OR EXCEEDS THAT LISTED IN THE TABLE BELOW.

(B) FIRE TEST RESPONSE CHARACTERISTICS SHALL HAVE A FLAME SPREAD INDEX OF 25 OR LESS AND SMOKE DEVELOPED INDEX OF 50 OR LESS AS PER ASTM 84.

(C) WHERE INTERNAL DUCT LINER IS REQUIRED (SEE SPECIFICATIONS). THE INSULATION VALUE OF INTERNAL DUCT FIBROUS-GLASS LINER WITH A THICKNESS OF 1 INCH SHALL HAVE A R-VALUE OF 3.85 AT 75 DEG F MEAN TEMPERATURE. FLEXIBLE ELASTOMERIC LINER WITH A THICKNESS OF 1/2 INCH SHALL HAVE A R-VALUE OF 2.08 AT 75 DEG F MEAN TEMPERATURE. THE LINER INSULATION VALUE MAY BE SUBSTITUTED IN PART FOR THE EXTERNAL INSULATION REQUIREMENT INSOFAR AS THE OVERALL INSULATION VALUE MEETS OR EXCEEDS THAT LISTED IN THE TABLE BELOW.

DUCT / PLENUM TYPE	DUCTS OUTSIDE BUILDING ENVELOPE ASSEMBLY		DUCTS WITHIN BUILDING ENVELOPE ASSEMBLY		DUCTS INSIDE BLDG INSULATION IN UNCONDITIONED SPACE	
	EXT. WRAP THICKNESS IN.	MIN. R VALUE	EXT. WRAP THICKNESS IN.	MIN. R VALUE	EXT. WRAP THICKNESS IN.	MIN. R VALUE
SUPPLY AIR	3	12	3	12	1.5	6
RETURN AIR	3	12	3	12	1.5	6
OUTSIDE AIR	N/A	N/A	3	12	1.5	6



1 EXHAUST DUCT HANGER DETAIL
SCALE NONE

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University of Utah Biology Bldg 84

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Fume Hood Replacement Phase 2

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ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL DETAILS

SHEET NUMBER:
M501

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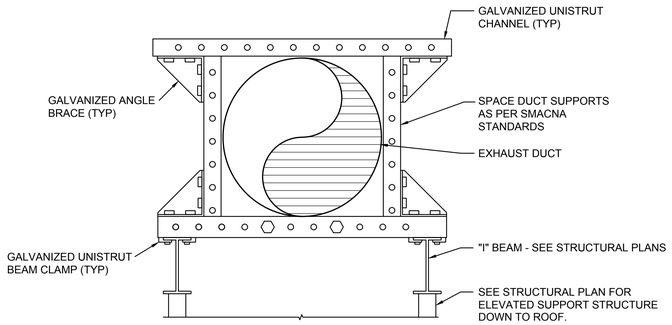
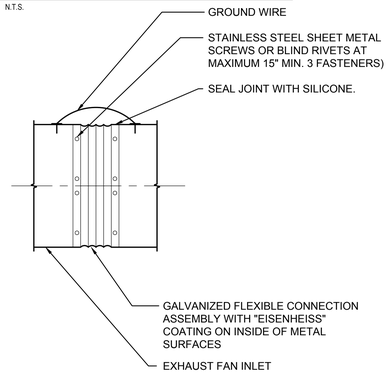
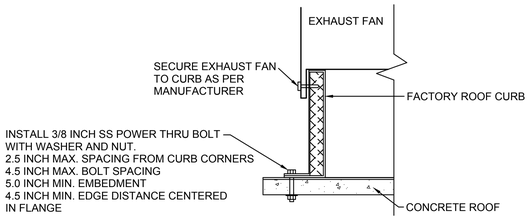


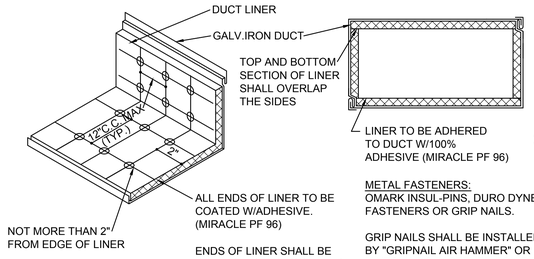
8 DUCT SUPPORT ABOVE ROOF
SCALE: N.T.S.



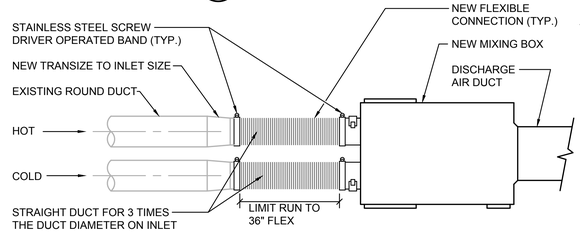
9 FLEXIBLE CONNECTION TO EXHAUST FAN DETAIL
SCALE: N.T.S.



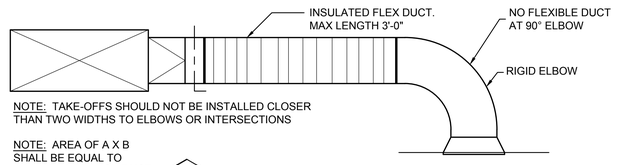
10 ROOFTOP UNIT CURB DETAIL
SCALE: N.T.S.

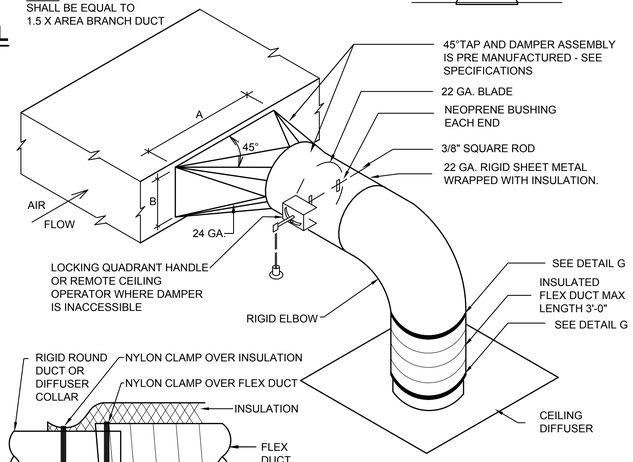


4 DUCT LINER DETAIL
SCALE: N.T.S.

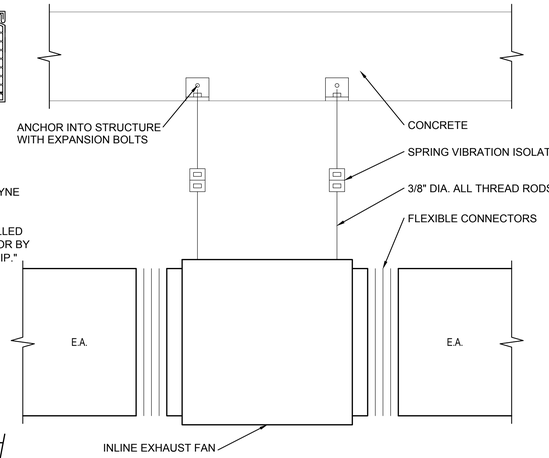


5 MIXING BOX/ FLEX DUCT DETAIL
SCALE: N.T.S.

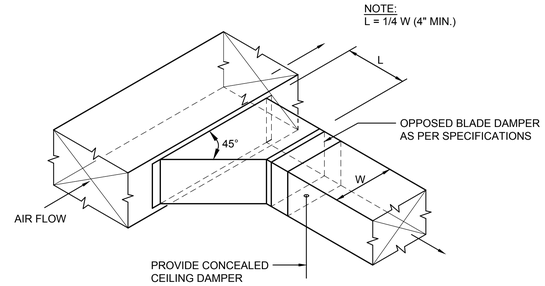




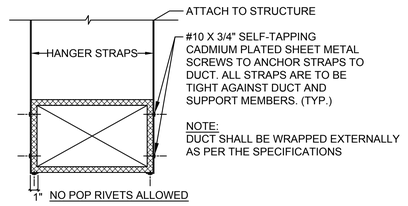
6 SQUARE TO ROUND TAKE-OFF DETAIL
SCALE: N.T.S.



1 IN-LINE EXHAUST FAN MOUNTING DETAIL
SCALE: N.T.S.



2 BRANCH DUCT TAKE-OFF & DAMPER DETAIL
SCALE: N.T.S.



HANGER SIZES FOR RECTANGULAR DUCT

MAX. SIDE	HANGER	HORIZANTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"X18 GAGE STRAP	NONE REQUIRED	8'-0"
38"	1/4" ROUND ROD	1-1/2"X1-1/2"X1/8"	8'-0"
48"	1/4" ROUND ROD	2"X2"X1/8"	8'-0"
60"	5/16" ROUND ROD	2"X2"X1/8"	8'-0"
84"	3/8" ROUND ROD	2"X2"X1/8"	8'-0"

3 DUCT STRAP HANGER DETAIL
SCALE N.T.S.

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EXP. 03/31/23

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL DETAILS

SHEET NUMBER:
M502

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VENTURI AIR VALVE SCHEDULE (5)

NOTES:
(1) PRESSURE DROP FOR ALL VALVES SHALL BE BASED ON MAXIMUM AIRFLOW TIMES 125%.
(2) BALANCE FUME HOOD VALVE WITH SASH AT 18 INCHES SUCH THAT THE FUME HOOD FACE VELOCITY IS 100 FPM IN OCCUPIED MODE AND 65 FPM IN UNOCCUPIED MODE.
(3) FUME HOOD SASH CLOSED.
(4) FUME HOOD SASH OPEN TO 18 INCHES WITH HOOD PROXIMITY SENSOR ACTIVATED.
(5) VALVES BASED ON CRITICAL ROOM CONTROLS MODEL CRC-CLV.
(6) VALVE SHALL NOT EXCEED THE SCHEDULED dB RATINGS AT THE MIN. INLET STATIC PRESSURES LISTED.
(7) GENERAL EXHAUST VALVE MIN. INLET STATIC PRESSURE IS 0.5 IN. WG. AND MAXIMUM PRESSURE DROP SHALL BE 0.15 IN.WG. PROVIDE WITH SOUND TRAP ST-*-G AS PER SOUND TRAP SCHEDULE.
(8) FUME HOOD EXHAUST VALVES AND EQUIPMENT EXHAUST VALVES MIN. INLET STATIC PRESSURE IS 1.0 IN. WG. AND MAXIMUM PRESSURE DROP SHALL BE 0.15 IN. WG. PROVIDE WITH SOUND TRAP ST-*-F AS PER SOUND TRAP SCHEDULE.
(9) COLD AND HOT DECK VALVES MIN. INLET STATIC PRESSURE IS 0.6 IN. WG. AND MAXIMUM PRESSURE DROP IS 0.15 IN. WG. PROVIDE WITH SOUND TRAP ST-*-C AND ST-*-H AS PER SOUND TRAP SCHEDULE
(10) VENTURI VALVES AND CONTROLS ARE EXISTING, DATA FOR REFERENCE ONLY.

ROOM SERVED	COLD DECK SUPPLY VALVE (1,9)							HOT DECK SUPPLY VALVE (1,9)							TOTAL SUPPLY		GENERAL EXHAUST VALVE (1,7)							FUME HOOD EXHAUST VALVE (1,2,8)							EQUIPMENT EXHAUST VALVE (1,8)							ZONE SETPOINTS			NOTES
	MARK	VALVE SIZE, INCHES	MIN. CFM	MAX. CFM	MAXIMUM DISCHARGE SOUND,dB (6) FREQUENCY BAND			MARK	VALVE SIZE, INCHES	MIN. CFM	MAX. CFM	MAXIMUM DISCHARGE SOUND,dB FREQUENCY BAND			MIN. CFM	MAX. CFM	MARK	VALVE SIZE	MIN. CFM	MAX. CFM	MAXIMUM DISCHARGE FREQUENCY BAND			MARK	VALVE SIZE	MIN. CFM (3)	MAX. CFM (4)	DISCHARGE SOUND,dB FREQUENCY BAND			MARK	VALVE SIZE	MIN. CFM	MAX. CFM	DISCHARGE SOUND,dB (6) FREQUENCY BAND			OCCUPIED MIN. EXHAUST, CFM	UNOCCUPIED MIN. EXHAUST, CFM	NEG. ROOM OFFSET CFM	
					125 Hz	250 Hz	500 Hz					125 Hz	250 Hz	500 Hz							125 Hz	250 Hz	500 Hz						125 HZ	250 HZ	500 HZ					125 HZ	250 HZ	500 HZ				
60	SAV-060-C	6	0	340	59.6	59	55.3	SAV-060-H	6	0	280	59.6	59	55.3	16	380	GAV-060	6	0	234	59.6	59	55.3	FAV-060	8	116	480	54.5	51	48.1	-	-	-	-	-	-	-	163	116	100	
116E	SAV-116E-C	8	0	609	59.6	59	55.3	SAV-116E-H	8	0	500	59.6	59	55.3	148	741	GAV-116E	6	0	299	59.6	59	55.3	FAV-116E	10	188	780	56.6	56.1	51.4	EEV-116E	6	60	60	59.6	59	55.3	248	248	100	
124E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EEV-124E	6	60	60	59.6	59	55.3	-	-	-	
124F	SAV-124F-C	8	0	600	59.6	59	55.3	SAV-124F-H	8	0	426	59.6	59	55.3	70	600	GAV-124F	8	54	584	59.6	59	55.3	FAV-124F	8	116	480	54.5	51	48.1	-	-	-	-	-	-	-	284	170	100	
213	SAV-213-C	8	0	731	-	-	-	SAV-213-H	8	0	550	-	-	-	138	731	GAV-213	8	0	593	-	-	-	FAV-213	10	188	780	-	-	-								330	188	50	(10)
259	SAV-259-C1	10	0	985	-	-	-	SAV-259-H1	6	0	430	-	-	-	306	985	GAV-259	14	559	1918	-	-	-	FAV-259	8	165	630	-	-	-								1255	711	100	(10)
	SAV-259-C2	10	0	985	-	-	-	SAV-259-H2	6	0	430	-	-	-	306	985					-	-	-																		
302	SAV-302-C	14	0	1200	-	-	-	SAV-302-H	10	0	936	-	-	-	375	1200	GAV-302	12	243	1068	-	-	-	FAV - 302.1	8	116	480	-	-	-	-	-	-	-	-	-	-	821	475	100	
																								FAV - 302.2	8	116	480	-	-	-											
305	SAV-305-C	14	0	1300	59.6	59	55.3	SAV-305-H	12	0	999	59.6	59	55.3	352	1300	GAV-305	12	300	1235	59.6	59	55.3	FAV-305	10	165	630	55.3	54.9	49.7	-	-	-	-	-	-	-	753	452	100	
318C	SAV-318C-C	14	0	1200	59.6	59	55.3	SAV-318C-H	10	0	821	59.6	59	55.3	207	1200	GAV-318C	12	191	1184	59.6	59	55.3	FAV-318C	8	165	480	54.5	51	48.1	-	-	-	-	-	-	-	511	307	100	
321A	SAV-321A-C	14	0	1032	59.6	59	55.3	SAV-321A-H	10	0	691	59.6	59	55.3	148	1032	GAV-321A	10	60	944	59.6	59	55.3	FAV-321A	10	188	780	56.6	56.1	51.4	-	-	-	-	-	-	-	413	248	100	
321C	SAV-321-C	10	0	730	59.6	59	55.3	SAV-321C-H	8	0	487	59.6	59	55.3	75	728	GAV-321C	10	59	712	59.6	59	55.3	FAV-321C	8	116	480	54.5	51	48.1	-	-	-	-	-	-	-	291	175	100	
332B	SAV-332B-C	6	0	525	-	-	-	SAV-332B-H	6	0	450	-	-	-	117	596	GAV-332B	6	0	83	-	-	-	FAV-332B	8	165	630	-	-	-								152	152	35	(10)

CHEMICAL FUME HOOD AND BASE CABINET SCHEDULE

NOTES:
(1) CHEMICAL FUME HOOD IS **NOT** CLASSIFIED AS HAZARDOUS EXHAUST PER IMC 2018 SECTION 510
(2) NEW FUME HOOD REQUIREMENTS (SEE SPECIFICATION SECTION 115313).
A. SASH FULL OPEN HEIGHT IS 32.15 INCHES PROVIDE SASH STOP AT 18 INCHES.
B. PROVIDE FILLER PANEL BEHIND BASE CABINET AND FROM HOOD TO CEILING TO MATCH FUME HOODS CABINET SIZE.
C. LIGHTS SHALL BE LED WITH LIGHT SWITCH ON SIDE FACE OF HOOD. IF LED IS NOT AVAILABLE THEN T8 FLOURESCENT LAMPS SHALL BE ALLOWED.
D. MAXIMUM STATIC PRESSURE DROP WITH SASH AT 18 INCHES AND AIR VELOCITY OF 100 FPM SHALL BE 0.20 INCHES.
E. BASE CABINETS TO MATCH HOOD WIDTH BY 22 INCHES DEEP BY 36.75 INCHES HIGH (UNLESS ADA COMPLIANT WHICH WILL HAVE A 33 INCH WORK SURFACE HEIGHT). PROVIDE FALSE SIDE PANELS WHERE CABINET IS EXPOSED TO VIEW. ALL CABINET DOORS SHALL BE LOCKABLE. FLAMMABLE STORAGE CABINET DOORS SHALL HAVE SELF CLOSERS AND A THREE POINT LATCH.
F. ADD AIRFLOW CONTROLS TO FUME HOODS IN THE FIELD. HOOD SHALL HAVE KNOCKOUT PANELS TO ACCOMMODATE.
G. SELECTION BASED ON LABCONCO PROTECTOR XL FUME HOOD (VARIABLE VOLUME).
H. ALL 120 VOLT ELECTRICAL OUTLETS TO BE GFCI TYPE WIRED TO SINGLE CIRCUIT. SPECIALTY ELECTRICAL OUTLETS SHALL BE OF NEMA CONFIGURATION AS INDICATED IN SCHEDULE, SEE BELOW.
I. PROVIDE WITH BASE CABINET VENTILATION AS PER SPECIFICATION AND DETAIL 5/M501.
J. SERVICE FIXTURE UTILITIES SHALL BE FACTORY PIPED TO A SINGLE POINT CONNECTION AT TOP OF HOOD WITH VALVE. HOSE CONNECTION SHALL BE 1/4" DIAMETER BARBED FITTING (NOT TAPERED).
K. THE FUME HOOD AND BASE CABINET SHALL BE SEISMICALLY BRACED IN ACCORDANCE WITH THE IBC AND ASCE 7 STANDARDS FOR BRACING OF NON-STRUCTURAL COMPONENTS AS FOLLOWS:
1. THE FUME HOOD SHALL BE CONNECTED TO THE COUNTERTOP BY:
OPTION 1: USING (2) #12 SCREWS OF (3) #8 SCREWS AT EACH CORNER, OR
OPTION 2: USING (1) SIMPSON 233 "L" BRACKET IN EACH CORNER OF FUME HOOD WITH (4) #8 SCREWS IN EACH LEG BRACKET.
2. THE COUNTERTOP SHALL BE ATTACHED TO THE CABINET BASE WITH (3) #8 SCREWS IN EACH CORNER OF THE COUNTERTOP.
3. THE CABINET BASE SHALL BE ATTACHED TO THE FLOOR WITH ONE SIMPSON A33 BRACKET INSTALLED ON THE FOOT OF EACH CORNER OF THE CABINET BASE SUPPORTING THE FUME HOOD, ANCHOR BRACKETS TO UNIT WITH (4) #12 SCREWS. ANCHOR BRACKETS TO THE FLOOR WITH (4) 3/16" X 1" EMBEDMENT HILTI KWIK CON II OR (1) POWER MINI EMBED WITH 3/8" THREADED ROD.
4 OTHER SEISMIC BRACING TECHNIQUES SHALL BE SUBMITTED FOR REVIEW THROUGH A DEFERRED SUBMITTAL FROM CONTRACTOR.
L. SERVICE FIXTURES ARE LISTED FROM LEFT TO RIGHT AS THEY SHALL BE LOCATED FROM TOP TO BOTTOM ON HOOD FACE.
(3) EXISTING CHEMICAL FUME HOOD AND BASE CABINET, DATA PROVIDED FOR REFERENCE ONLY

MARK	HOOD DIMENSIONS (INCHES)			EXHAUST AT CLOSED SASH, CFM	EXHAUST AT 18 INCH SASH, CFM	BASE CABINET WIDTH AND TYPE		CUP SINK	PLUMBING SERVICE FIXTURES		ELECTRICAL DUPLEX RECEPTACLE (120V, GFCI)		ELECTRICAL SPECIAL PURPOSE RECEPTACLES		HOOD AND BASE CABINET WEIGHT, LBS	REMARKS
	WIDTH	DEPTH	HEIGHT			LEFT SIDE WIDTH AND TYPE	RIGHT SIDE WIDTH AND TYPE		LEFT SIDE	RIGHT SIDE	QTY ON LEFT SIDE	QTY ON RIGHT SIDE	QTY AND TYPE ON LEFT SIDE	QTY AND TYPE ON RIGHT SIDE		
H-060	48	31.5	59	116	480	24 INCH FLAMMABLE	24 INCH CORROSIVE	RR	-	ICW	1	1	-	-	660	(1,2)
H-116E	72	36	60	188	780	36 INCH FLAMMABLE	36 INCH CORROSIVE	LR	G, A, V, ICW	DW, IHW	1	2	(1) NEMA 6-20R	(1) NEMA 6-20R	975	(1,2)
H-124F	48	32.5	60	116	480	24 INCH FLAMMABLE	24 INCH CORROSIVE	RF	A, G, ICW	A, G, ICW	2	-	-	(1) NEMA 6-20R	660	(1,2)
H-213	72	32.5	54.5	188	780	36 INCH FLAMMABLE	36 INCH FLAMMABLE	RR	NONE	ICWG	1	1	-	-	975	(1,3)
H-259	60	32.5	54.5	165	630	60 INCH CORROSIVE CABINET		LR, RR	A, G, IHW, ICWG	IHW, ICW	1	1	-	-	820	(1,3)
H-302.1	48	33	60	116	480	24 INCH CORROSIVE	24 INCH FLAMMABLE	LF	A, G, IHW, ICW	A, G	2	-	-	(1) NEMA 6-20R	660	(1,2) HOOD AND BASE CABINET SHALL BE ADA COMPLIANT FOR SIDE ACCESS
H-302.2	48	33	60	116	480	24 INCH CORROSIVE	24 INCH FLAMMABLE	LF	A, G, IHW, ICW	A, G	2	-	-	(1) NEMA 6-20R	660	(1,2)
H-305	60	31.5	54.25	165	630	30 INCH CORROSIVE	30 INCH FLAMMABLE	LF	V, A, G, ICW, DIG	-	-	-	-	-	820	(1,2)
H-318C	48	32.5	60	116	480	24 INCH CORROSIVE	23 INCH FLAMMABLE	LF	A, G, ICW	A, G, ICW	2	-	-	(1) NEMA 6-20R	660	(1,2)
H-321A	72	32.5	60	188	780	36 INCH CORROSIVE	36 INCH FLAMMABLE	LF	A, G, ICW	A, G, ICW	1	1	-	(1) NEMA 6-20R	975	(1,2) FIELD VERIFY THAT HOOD WILL FIT IN EXISTING SPACE BEFORE SUBMITTALS, WIDTH IS VERY TIGHT
H-321C	48	32.5	60	116	480	24 INCH CORROSIVE	24 INCH FLAMMABLE	LF	A, G, ICW	A, G, ICW	2	-	-	(1) NEMA 6-20R	660	(1,2)
H-332B	60	32.5	54.5	165	630	12 INCH CORROSIVE / 24 INCH CORROSIVE	24 INCH FLAMMABLE	LR	ICWG	V, A, G	1	1	-	-	820	(1,3)
H-325	72	32.5	60	188	780	30 INCH CORROSIVE	30 INCH CORROSIVE	LF	A, G, ICW	A, G, ICW	1	1	-	(1) NEMA 6-20R	975	(1,3)

PLUMBING SERVICE FIXTURE LEGEND

A	COMPRESSED AIR	LF	LEFT FRONT
G	NATURAL GAS	LR	LEFT REAR
N	NITROGEN	LS	LEFT SIDE
V	VACUUM	RF	RIGHT FRONT
ICW	INDUSTRIAL COLD WATER	RR	RIGHT REAR
ICWG	INDUSTRIAL COLD WATER WITH GOOSENECK INTO CUP SINK	RS	RIGHT SIDE
PCR	PROCESS CHILLED RETURN	CR	CENTER REAR
PCS	PROCESS CHILLED SUPPLY	DIG	DEIONIZED WATER WITH GOOSENCK INTO CUP SINK
IHW	INDUSTRIAL HOT WATER	DW	DISTILLED WATER

REGISTER AND GRILLE SCHEDULE (1)

NOTES:
(1) MAXIMUM NC=26 @ MAXIMUM CFM.
(2) FINISH SHALL BE BAKED ENAMEL WITH COLOR AS SELECTED BY ARCHITECT.
(3) INSTALL RETURN SOUND BOOT ABOVE CEILING IN PLENUM SPACE, SEE DETAIL.
(4) GRILLE SHALL BE ALUMINUM.

MARK	TYPE	SERVICE	CEILING TYPE	CFM RANGE (1)	FACE SIZE, INCHES	NECK SIZE, INCHES	MODEL	REMARKS
R-1	CEILING	RETURN	LAY-IN	0-450	12 X 24	10 X 22	TITUS 355	(2) (3)
R-2	CEILING	RETURN	LAY-IN	500	24 X 24	12 X 12	TITUS 355	(2) (3)
R-3	CEILING	RETURN	LAY-IN	890	24 X 24	16 X 16	TITUS 355	(2) (3)
E-1	CEILING	EXHAUST	LAY-IN	120	12 X 24	6 X 6	TITUS 355	(2)
E-2	CEILING	EXHAUST	LAY-IN	150 - 175	12 X 24	8 X 8	TITUS 355	(2)
E-3	CEILING	EXHAUST	LAY-IN	234-425	12 X 24	10 X 10	TITUS 355	(2)
E-4	CEILING	EXHAUST	LAY-IN	584 - 600	24 X 24	12 X 12	TITUS 355	(2)
E-5	CEILING	EXHAUST	LAY-IN	820 -890	24 X 24	14 X 14	TITUS 355	(2)
E-6	CEILING	EXHAUST	LAY-IN	1000 - 1235	24 X 24	18 X 18	TITUS 355	(2)

DIFFUSER SCHEDULE (1, 4)

NOTES:
(1) MAXIMUM NC=26 @ MAXIMUM CFM LISTED.
(2) FINISH SHALL BE BAKED ENAMEL WITH COLOR AS SELECTED BY ARCHITECT.
(3) DIFFUSERS ARE 4 WAY BLOW, UNLESS SHOWN OTHERWISE ON PLAN.
(4) VERIFY CEILING TYPE WITH REFLECTED CEILING PLAN.

MARK	TYPE	SERVICE	CEILING TYPE	NECK, INCHES	FACE SIZE, INCHES	CFM RANGE	TITUS MODEL	REMARKS
D-1	CEILING	SUPPLY	LAY-IN	6X6	24 X 24	50 - (200)	TDC	
D-2	CEILING	SUPPLY	LAY-IN	8X8	24 X 24	200-250	TDC	
D-3	CEILING	SUPPLY	LAY-IN	10X10	24 X 24	365	TDC	
D-4	CEILING	SUPPLY	LAY-IN	18X18	24 X 24	726 - 1000	TDC	

PLUMBING REQUIREMENTS FOR CHEMICAL FUME HOODS

NOTES:
(1) FUME HOOD BEING REPLACED WITH NEW.
(A) EXISTING HOODS THAT HAVE CUP SINK(S) ARE CONNNECTED TO GLASS ACID WASTE AND VENT PIPING. WHILE REPLACING FUME HOOD, CONTRACTOR SHALL REMOVE ALL GLASS ACID WASTE AND VENT PIPING ASSOCIATED WITH THE FUME HOOD WITHIN THE LAB INCLUDING THE WALL/FLOOR/CEILING PENETRATION AND REPLACE WITH POLYMER PIPE AS SPECIFIED. ACID WASTE AND VENT PIPING OUTSIDE THE LAB SHALL REMAIN AS-IS.
(B) CONTRACTOR TO REMOVE ALL EXISTING WATER PIPE AND LAB GAS PIPE TO ALLOW FOR REMOVAL AND REPLACEMENT OF FUME HOOD. ALL PIPING NOT REUSED SHALL BE REMOVED BACK TO WITHIN 6 INCHES OF MAIN PIPE SYSTEM AND CAPPED. PATCH ANY HOLES IN WALLS/CEILINGS FROM PIPE REMOVAL.
(C) NEW HOODS SHALL BE ORDERED WITH OUTLETS PRE-PIPED TO TOP OF HOOD. THIS CONTRACTOR TO EXTEND PIPING TO NEW HOOD, INSTALL ISOLATION VALVE AND CONNECT TO PIPE STUB AT HOOD UNLESS NOTED OTHERWISE. ALL PRE-PIPED SUPPLY OUTLETS ARE 1/2" PIPE DIAMETER. ACID WASTE AND VENT ARE 1-1/2" DIAMETER.
(D) REMOVE EXISTING BACKFLOW PREVENTER(S), IF EXIST, AND INSTALL NEW INDUSTRIAL WATER BACKFLOW PREVENTER ON INDUSTRIAL COLD WATET SUPPLY TO HOOD. NEW INDUSTRIAL WATER BACKFLOW PREVENTER SHALL BE LOCATED NOT MORE THAN 54 INCHES ABOVE FINISH FLOOR. THIS APPLIES TO BOTH HOT AND COLD WATER.
(E) FOR QUANTITY AND LOCATION OF NEW CUP SINKS, SEE CHEMICAL FUME HOOD AND BASE CABINET SCHEDULE.

HOOD MARK NUMBER	EXISTING SUPPLY OUTLETS LEFT SIDE	EXISTING SUPPLY OUTLETS RIGHT SIDE	NEW SUPPLY OUTLETS LEFT SIDE	NEW SUPPLY OUTLETS RIGHT SIDE	EXISTING CUP SINK(S)	NEW CUP SINK (S)	REMARKS
H-060	-	ICW	-	ICW	YES	YES	(1)
H-116E	G, A, V, ICW	DW, IHW	G, A, V, ICW	DW, IHW	YES	YES	(1)
H-124F	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-302.1	A, G, IHW, ICW	A, G	A, G, IHW, ICW	A, G	YES	YES	(1)
H-302.2	A, G, IHW, ICW	A, G	A, G, IHW, ICW	A, G	YES	YES	(1)
H-305	V, A, G, ICW, DI	-	V, A, G, ICW, DI	-	YES	YES	(1)
H-318C	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-321A	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)
H-321C	A, G, ICW	A, G, ICW	A, G, ICW	A, G, ICW	YES	YES	(1)

OUTLET LEGEND

A	COMPRESSED AIR
G	NATURAL GAS
V	VACUUM
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
DI	DEIONIZED WATER

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EXP. 03/31/23

CONSULTANT:

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BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NUMBER:
M601

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EXHAUST VARIABLE AIR VOLUME TERMINAL UNIT

NOTES:
(1) SELECTIONS ARE BASED ON TITUS DESV AS MANUFACTURER.
(2) INLET STATIC PRESSURE IS NEGATIVE 0.15 INCHES, DOWNSTREAM STATIC PRESSURE IS NEGATIVE 0.40 INCHES.
(3) RADIATED AND DISCHARGE NC LEVELS SHALL NOT EXCEED 31.
(4) DUCT DIMENSIONS ARE APPROXIMATE AND SHALL BE VERIFIED DURING SUBMITTALS.
(5) SEE LAB WITHOUT FUME HOOD CONTROL TERMINAL CONTROL DIAGRAM
(6) OFFSET CFM = EXHAUST CFM - TOTAL SUPPLY CFM

MARK	INLET DIA, IN	MIN. UNOCCUPIED AIRFLOW, CFM	MIN. OCCUPIED AIRFLOW, CFM	MAX. AIRFLOW, CFM	PRESS. DROP AT MAX CFM, IN. WG.	ROOM OFFSET CFM	REMARKS
EV- 101A	9	194	323	600	0.05	100	
EV- 102	7	116	225	425	0.07	100	
EV- 116	9	290	487	820	0.09	100	
EV- 116C	10	446	747	970	0.08	150	
EV- 116D	10	281	468	1060	0.10	100	
EV- 116G	10	70	150	1000	0.09	100	
EV- 116H	5	50	90	150	0.05	50	
EV- 116J	10	266	443	1020	0.09	100	
EV- 118	8	110	225	500	0.05	100	
EV- 118A	5	50	90	200	0.09	50	
EV- 119	9	277	487	820	0.09	100	
EV- 122	14	500	830	1775	0.07	100	
EV- 124E	7	93	180	425	0.07	100	
EV- 125	10	170	285	1000	0.09	100	
EV- 125A	6	66	165	300	0.06	100	
EV- 125L	6	50	90	250	0.04	50	
EV- 304	9	153	256	600	0.05	100	
EV- 318D	6	42	88	250	0.04	50	

SOUND TRAP SCHEDULE

NOTES:
(1) SOUND IS TRAVELING IN SAME DIRECTION OF AIRFLOW
(2) SOUND IS TRAVELING IN OPPOSITE DIRCTION OF AIRFLOW
(3) MANUFACTURER IS BRD NOISE AND VIBRATION CONTROL, INC.

MARK	VENTURI SERVED	APPLICATION	AIRFLOW, CFM	FACE VELOCITY, FPM	MAX. APD, IN.WG.	SIZE, INCHES					OCTAVE BAND (HERTZ) / MINIMUM DYNAMIC INSERTION LOSS (DB)								WEIGHT, LBS	MODEL NUMBER	NOTES
						DUCT CONNECTION DIA.	SILENCER OUTER DIA.	WIDTH	HEIGHT	LENGTH	63	125	250	500	1000	2000	4000	8000			
ST - 60C	SAV-60-C	SUPPLY	322	1640	0.05	6	14	-	-	24	6	9	14	33	37	25	17	8	19	HDCF24	(1)(3)
ST - 60H	SAV-60-H	SUPPLY	254	1294	0.05	6	14	-	-	24	6	9	14	33	37	25	17	8	19	HDCF24	(1)(3)
ST - 60G	GAV- 60	GENERAL EXHAUST	234	1192	0.05	6	14	-	-	24	6	9	15	34	38	25	16	8	19	HDCF24	(2)(3)
ST - 60F	FAV-60	FUME HOOD EXHAUST	480	1375	0.06	8		20	20	24	11	10	17	23	10	12	8	6	22	HDRP24	(2)(3)
ST - 116C	SAV-116-C	SUPPLY	609	1745	0.05	8	16	-	-	24	5	7	13	27	31	22	15	9	22	HDCF24	(1)(3)
ST - 116H	SAV-116- H	SUPPLY	432	1238	0.05	8	16	-	-	24	5	8	14	29	40	41	39	21	22	HDCF24	(1)(3)
ST - 116G	GAV-116	GENERAL EXHAUST	299	1523	0.05	6	14	-	-	24	6	9	15	35	38	25	16	8	19	HDCF24	(2)(3)
ST - 116F	FAV-116	FUME HOOD EXHAUST	780	1430	0.06	10		20	20	24	10	8	13	23	11	10	7	6	25	HDRP24	(2)(3)
ST - 116E	EEV-116E	EQUIPMENT EXHAUST	60	306	0.05	6	14	-	-	24	6	9	15	34	38	25	16	8	19	HDCF24	(2)(3)
ST - 124C	SAV-124- C	SUPPLY	600	1719	0.05	8	16	-	-	24	5	7	13	27	31	22	15	9	22	HDCF24	(1)(3)
ST - 124H	SAV-124- H	SUPPLY	426	1220	0.05	8	16	-	-	24	5	8	14	29	40	41	39	21	22	HDCF24	(1)(3)
ST - 124G	GAV-124	GENERAL EXHAUST	584	1673	0.05	8	16	-	-	24	5	8	14	28	33	22	15	9	22	HDCF24	(2)(3)
ST - 124F	FAV-124	FUME HOOD EXHAUST	480	1375	0.05	8		20	20	24	11	9	17	23	10	12	8	6	22	HDRP24	(2)(3)
ST - 124E	EEV-124E	SNORKEL EXHAUST	60	306	0.05	6	14	-	-	24	6	9	15	34	38	25	16	8	19	HDCF24	(2)(3)
ST - 302C	SAV-302- C	SUPPLY	1200	1123	0.05	14	22	-	-	24	2	4	10	14	20	15	12	9	25	HDCF24	(1)(3)
ST - 302H	SAV-302- H	SUPPLY	936	1716	0.05	10	18	-	-	24	3	5	11	20	26	20	14	9	25	HDCF24	(1)(3)
ST - 302G	GAV-302	GENERAL EXHAUST	1068	1360	0.05	12	20	-	-	24	3	4	11	15	21	17	13	9	28	HDCF24	(2)(3)
ST - 302.1-F	FAV-302.1	FUME HOOD EXHAUST	480	1375	0.05	8		20	20	24	11	10	17	23	10	12	8	6	22	HDRP24	(2)(3)
ST - 302.2-F	FAV-302.2	FUME HOOD EXHAUST	480	1375	0.05	8		20	20	24	11	10	17	23	10	12	8	6	22	HDRP24	(2)(3)
ST - 305C	SAV-305- C	SUPPLY	1300	1216	0.05	14	22	-	-	24	2	4	10	14	20	15	12	9	25	HDCF24	(1)(3)
ST - 305H	SAV-305- H	SUPPLY	999	1272	0.05	12	20	-	-	24	3	5	11	18	32	42	29	16	28	HDCF24	(1)(3)
ST - 305G	GAV-305	GENERAL EXHAUST	1235	1572	0.05	12	20	-	-	24	3	4	11	15	21	17	13	9	28	HDCF24	(2)(3)
ST - 305F	FAV-305	FUME HOOD EXHAUST	630	1155	0.05	10		20	20	24	11	7	12	23	10	10	7	6	25	HDRP24	(2)(3)
ST - 318C	SAV-318- C	SUPPLY	1200	1123	0.05	14	22	-	-	24	2	4	10	14	20	15	12	9	25	HDCF24	(1)(3)
ST - 318H	SAV-318- H	SUPPLY	821	1505	0.05	10	18	-	-	24	4	5	11	20	26	20	14	9	25	HDCF24	(1)(3)
ST - 318G	GAV-318	GENERAL EXHAUST	1184	1508	0.05	12	20	-	-	24	3	4	11	15	21	17	13	9	28	HDCF24	(2)(3)
ST - 318F	FAV-318	FUME HOOD EXHAUST	480	1375	0.05	8		20	20	24	11	10	17	23	10	12	8	6	22	HDRP24	(2)(3)
ST - 321AC	SAV-321A- C	SUPPLY	1032	965	0.05	14	22	-	-	24	3	5	11	18	32	42	29	16	25	HDCF24	(1)(3)
ST - 321AH	SAV-321A- H	SUPPLY	691	646	0.05	14	22	-	-	24	2	4	10	14	20	15	12	9	25	HDCF24	(1)(3)
ST - 321AG	GAV-321A	GENERAL EXHAUST	944	1731	0.05	10	18	-	-	24	4	6	12	21	27	20	14	9	25	HDCF24	(2)(3)
ST - 321AF	FAV-321A	FUME HOOD EXHAUST	780	1430	0.05	10		20	20	24	11	8	12	23	11	10	7	6	25	HDRP24	(2)(3)
ST - 321CC	SAV-321C- C	SUPPLY	728	1335	0.05	10	18	-	-	24	4	5	11	21	26	20	14	9	25	HDCF24	(1)(3)
ST - 321CH	SAV-321C- H	SUPPLY	487	1395	0.05	8	16	-	-	24	5	7	13	27	31	22	15	9	22	HDCF24	(1)(3)
ST - 321CG	GAV-321C	GENERAL EXHAUST	712	1305	0.05	10	18	-	-	24	4	6	12	21	27	20	14	9	25	HDCF24	(2)(3)
ST - 321CF	FAV-321C	FUME HOOD EXHAUST	480	1375	0.05	8		20	20	24	11	10	17	23	10	12	8	6	22	HDRP24	(2)(3)

IN LINE EXHAUST FAN SCHEDULE

NOTES:
(1) FAN TO BE CONTROLLED BY JCI BACS (DDC).
(2) CAPACITIES SHALL BE RATED FOR JOBSITE ELEVATION OF 5,000 FEET.
(3) DISCONNECT PROVIDED BY DIVISION 26 (ELECTRICAL).
(4) PROVIDE WITH ECM MOTOR AND GREENHECK VARI-GREEN MOTOR WITH 0-10 VDC OUTPUT TO ALLOW BACS TO CONTROL FAN SPEED. CONTROLLER BY CONTROLS CONTRACTOR SHALL BE HOUSED IN METAL ENCLOSURE TO BE SEPARATED FROM RETURN AIR PLENUM.

MARK	FAN					ELECTRICAL REQUIREMENTS		MAXIMUM DIMENSIONS, INCHES			WEIGHT, LBS	GREENHECK MODEL	REMARKS
	AIRFLOW, CFM	EXT. STATIC, IN W.C.	RPM	BHP	dBA	VOLTS/HERTZ/PHASE	HP	WIDTH	HEIGHT	LENGTH			
EF-1	234	0.70	1917	0.19	68	208 / 60 / 1	1/2	15	15	24	53	SQ-97-VG	
EF-2	1434	0.70	1671	0.36	64	208 / 60 / 1	1/2	15	19	24	54	SQ-120-VG	
EF-3	4745	1.25	1472	1.54	69	208 / 60 / 1	3	27	27	27	193	SQ-18-07-0700-VG	
EF-4	2089	0.70	1117	0.43	62	208 / 60 / 1	3/4	26	26	29	134	SQ-160-VG	
EF-5	3930	0.70	1575	1.17	73	208 / 60 / 1	2	26	26	29	161	SQ-160-VG	
EF-6	3090	0.70	1346	0.75	68	208 / 60 / 1	1	26	26	29	161	SQ-160-VG	
EF-7	2903	0.70	1298	0.68	67	208 / 60 / 1	1	26	26	29	135	SQ-160-VG	

SNORKEL SCHEDULE

NOTES:
(1) EQUIPMENT IS EXISTING, DATA PROVIDED FOR REFERENCE
(2) SNORKEL EXHAUST IS NOT CLASSIFIED AS HAZARDOUS EXHAUST PER IMC 2018 SECTION 510.

MARK	TYPE	LOCATION	SERVICE	AIRFLOW, CFM	NECK SIZE, INCHES DIA.	REMARKS
SN-1	EXTRACTION ARM WITH DOME HOOD	LAB 124E	EXHAUST	60	2	(1,2)

DUAL DUCT VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

DUAL DUCT VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE
(1) SELECTION BASED ON TITUS DEDV-N
(2) INLET STATIC PRESSURE IS 0.75 INCH, DOWNSTREAM STATIC PRESSURE IS 0.25 INCHES.
(3) ROOM NC LEVELS SHALL NOT EXCEED 30 WITH VAV BOX LOCATED ABOVE A LAY IN CEILING TILE.
(4) DUCT DIMENSIONS ARE APPROXIMATE AND SHALL BE VERIFIED DURING SUBMITTALS.
(5) REDUCE HIGH PRESSURE DUCT TO BOX INLET AS REQUIRED.
(6) SEE LAB WITHOUT FUME HOOD TERMINAL CONTROL DIAGRAM
(7) SEE NON-LAB DUAL DUCT TERMINAL CONTROL DIAGRAM
(8) INCLUDE IN ADD ALTERNATE #1.

MARK	COLD DECK			HOT DECK			TOTAL TERMINAL AIRFLOW			PRESS. DROP, IN. WG.	REMARKS
	INLET DIA, IN	MIN, CFM	MAX, CFM	INLET DIA, IN	MIN, CFM	MAX, CFM	MIN. UNOCCUPIED, CFM	MIN. OCCUPIED, CFM	MAX, CFM		
SV- 124E	5	0	325	4	0	195	0	80	325	0.05	(1 THRU 6)
SV- 103	8	0	575	6	0	345	0	125	575	0.01	(1 THRU 5, 7)
SV- 102	5	0	325	4	0	195	16	125	325	0.05	(1 THRU 6)
SV- 100	9	0	900	7	0	540	0	215	900	0.05	(1 THRU 5, 7)
SV- 124C	8	0	800	6	0	480	0	120	800	0.03	(1 THRU 5, 7)
SV- 101A	7	0	500	5	0	300	94	223	500	0.09	(1 THRU 6)
SV- 125	9	0	900	7	0	540	70	184	900	0.05	(1 THRU 6)
SV- 125A	5	0	200	4	0	120	0	65	200	0.02	(1 THRU 6)
SV- 125L	5	0	200	4	0	120	0	40	200	0.02	(1 THRU 6)
SV- 123	6	0	300	4	0	180	0	40	300	0.07	(1 THRU 5, 7)
SV- 122.1	9	0	750	6	0	450	200	365	750	0.03	(1 THRU 6)
SV- 122.2	9	0	925	7	0	555	200	365	925	0.05	(1 THRU 6)
SV- 100E	8	0	720	6	0	430	0	50	720	0.02	(1 THRU 5, 7)
SV- 119	8	0	720	6	0	432	177	387	720	0.02	(1 THRU 6)
SV- 118	7	0	400	5	0	240	110	225	400	0.06	(1 THRU 6)
SV- 116H	4	0	100	4	0	60	0	40	100	0.02	(1 THRU 6)
SV- 116G	9	0	900	7	0	540	0	150	900	0.05	(1 THRU 6)
SV- 118A	4	0	150	4	0	90	0	40	150	0.04	(1 THRU 6)
SV- 116D	9	0	960	7	0	576	281	368	960	0.05	(1 THRU 6)
SV- 116C	8	0	870	7	0	582	446	747	870	0.03	(1 THRU 6)
SV- 117	5	0	220	4	0	130	0	90	220	0.02	(1 THRU 5, 7)
SV- 116J	9	0	920	7	0	552	166	343	920	0.05	(1 THRU 6)
SV- 116A	4	0	110	4	0	66	0	25	110	0.03	(1 THRU 5, 7)
SV- 116B	4	0	130	4	0	78	0	25	130	0.03	(1 THRU 5, 7)
SV- 116	8	0	720	6	0	432	0	387	720	0.02	(1 THRU 6)
SV- 200	10	0	1375	8	0	825	0	45	1375	0.01	(1 THRU 5, 7, 8)
SV- 202	7	0	800	5	0	480	0	100	800	0.03	(1 THRU 5, 7, 8)
SV- 202A	7	0	800	5	0	480	0	30	800	0.03	(1 THRU 5, 7, 8)
SV- 203A	7	0	500	5	0	300	0	50	500	0.09	(1 THRU 5, 7, 8)
SV- 203B	7	0	500	5	0	300	0	50	500	0.09	(1 THRU 5, 7, 8)
SV- 201	8	0	650	6	0	360	0	125	650	0.02	(1 THRU 5, 7, 8)
SV- 222	8	0	800	7	0	510	0	80	800	0.03	(1 THRU 5, 7, 8)
SV- 321B	8	0	850	7	0	510	0	210	850	0.03	(1 THRU 5, 7)
SV- 318D	5	0	200	4	0	120	0	38	200	0.02	(1 THRU 6)
SV- 300E	9	0	890	7	0	535	0	60	890	0.05	(1 THRU 5, 7)
SV- 322	7	0	425	5	0	255	0	60	425	0.06	(1 THRU 5, 7)
SV- 304	7	0	500	5	0	300	53	156	500	0.09	(1 THRU 6)
SV- 302B	7	0	360	4	0	216	0	100	360	0.04	(1 THRU 5, 7)
SV- 300	14	0	2650	12	0	1590	0	145	2650	0.06	(1 THRU 5, 7)
SV- 320	6	0	300	4	0	180	0	30	300	0.07	(1 THRU 5, 7)

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PHONE: (801) 294-9299

STAMP:
REGISTERED PROFESSIONAL ENGINEER No. 181307 HAL L. ABERCROMBIE STATE OF UTAH 10/13/21
EXP. 03/31/23

CONSULTANT:

THE UNIVERSITY OF UTAH

CONSTRUCTION PROJECT DELIVERY
1795 E. So. Campus Dr, Rm. 201
Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:
University of Utah Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NUMBER:
M602

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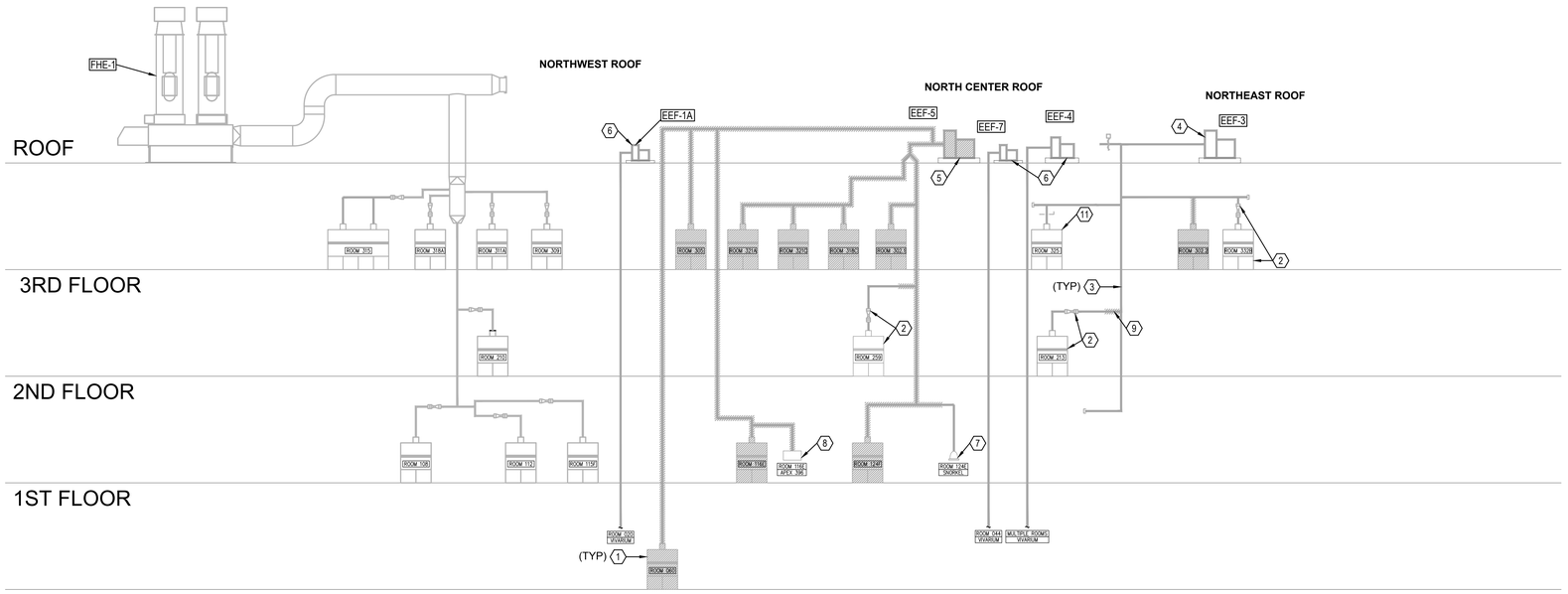
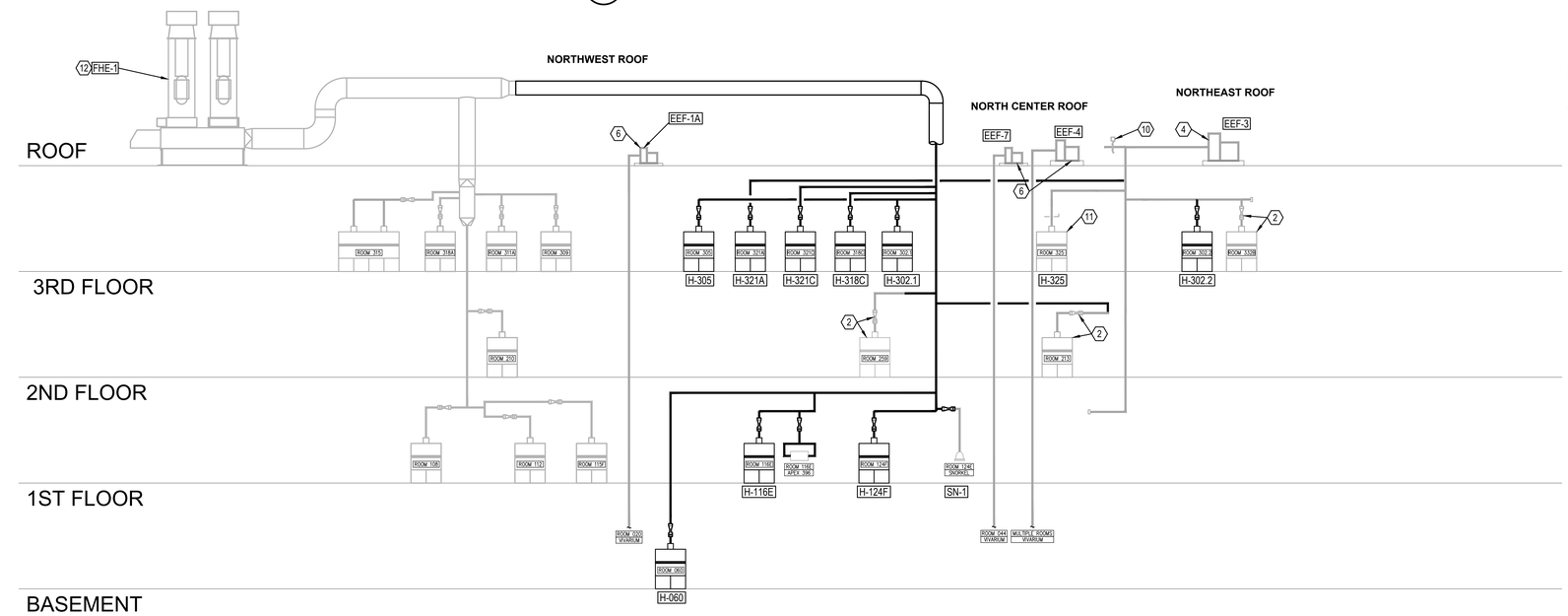


1 CHEMICAL FUME HOOD EXHAUST SYSTEM DEMOLITION DIAGRAM

SCALE: N.T.S.



2 CHEMICAL FUME HOOD EXHAUST SYSTEM REMODEL DIAGRAM.

SCALE: N.T.S.

KEYED NOTES FOR M701

1. REMOVE FUME HOOD.
2. EXISTING FUME HOOD AND VENTURI VALVE TO REMAIN.
3. REMOVE HATCHED DUCT.
4. REBALANCE EEF-3.
5. REMOVE EXHAUST FAN.
6. FAN AND DUCT SERVING VIVARIUM TO REMAIN.
7. EXISTING SNORKEL TO REMAIN.
8. LAB EQUIPMENT TO REMAIN.
9. CAP DUCT.
10. EXISTING 16"X16" BYPASS CONTROL DAMPER TO REMAIN AND BE RE-CALIBRATED TO MAINTAIN MINIMUM REQUIRED AIRFLOW AT FAN AND APPROXIMATELY 2670 CFM AT FUME HOOD BRANCH WHEN ALL HOODS ARE OPEN TO 18 INCHES.
11. EXISTING FUME HOOD TO REMAIN.
12. RE-BALANCE FHE-1 TO ACCOMMODATE NEW HOODS AS THEY ARE ADDED TO FAN SYSTEM.

TEST AND BALANCE OF EXISTING CONSTANT VOLUME FUME HOOD EXHAUST FAN SYSTEM EEF-3

A. SCOPE OF CONTROLS AND AIRFLOW BALANCING IS SHOWN ON PLANS FOR ROOMS 213,332B, 302.2, 321(TOTAL MAX AIRFLOW OF THESE FUME HOODS IS 1890 CFM).
B. EXISTING FUME HOOD IN ROOM 325 SHALL BE BALANCED AS PART OF THIS PROJECT SUCH THAT THE AIRFLOW IS AT 100 FPM WHEN SASH IS AT 18 INCHES (APPROX. 780 CFM).
C. EXHAUST FAN EEF-3 IS AN EXISTING, CONSTANT VOLUME FAN ORIGINALLY RATED FOR 6,000 CFM AT 2.0" STATIC PRESSURE AT APPROX. 1143 RPM (FIELD VERIFY). CONTRACTOR SHALL REPLACE SHIEVES AND BELTS AS NEEDED TO ACHIEVE AIRFLOWS AS INDICATED AT ALL FUME HOODS (APPROXIMATELY 2670 CFM). BYPASS DAMPER IS SIZED FOR 3,330 CFM. EXISTING PRESSURE SENSOR IN DUCT, EXISTING MODULATOR WHERE SHOWN, BYPASS DAMPER TO MAINTAIN 1.25" STATIC (ADJ.)

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BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
MECHANICAL DIAGRAMS

SHEET NUMBER:
M701

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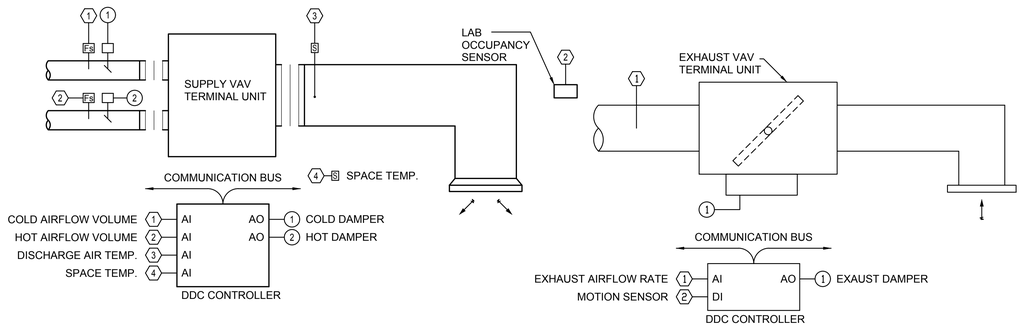
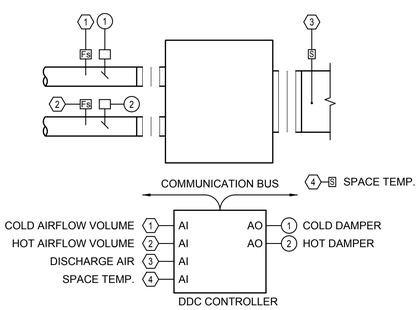


LAB WITHOUT FUME HOOD SEQUENCE OF OPERATION (VAV TERMINAL UNITS WITH JCI CONTROLS)

1. THE LAB AIRFLOW OFFSET SHALL BE NEGATIVE IN OCCUPIED AND UNOCCUPIED MODES BY THE AMOUNT SHOWN ON THE EXHAUST VARIABLE VOLUME TERMINAL UNIT SCHEDULE.
2. IF THE LAB OCCUPANCY SENSOR DETECTS PEOPLE IN THE LAB THEN IT SHALL BE IN THE OCCUPIED MODE AND THE TOTAL MINIMUM EXHAUST AIRFLOW SHALL BE AS SCHEDULED. IF THE ROOM OCCUPANCY SENSOR DOES NOT DETECT PEOPLE IN THE LAB FOR 15 MINUTES (ADJUSTABLE) THEN IT SHALL BE IN THE UNOCCUPIED MODE AND THE TOTAL MINIMUM EXHAUST AIRFLOW SHALL BE AS SCHEDULED.
3. OPTIMIZED MINIMUM SUPPLY AIRFLOW: THE TOTAL MINIMUM BOX SUPPLY AIRFLOW IS PROPORTIONED FROM THE HOT AND COLD DECK DURING THE DEADBAND WHEN THE BOX IS SATISFIED, WHEN IN HEATING OR COOLING, THE TOTAL MINIMUM BOX FLOW IS TAKEN FROM THE HOT OR COLD DECK, RESPECTIVELY.
4. DUAL DUCT SUPPLY VARIABLE AIR VOLUME TERMINAL UNITS SHALL VARY BETWEEN TOTAL SUPPLY MINIMUM AND MAXIMUM CFM BY MODULATING THE HOT DECK AND COLD DECK DAMPERS TO MAINTAIN SPACE TEMPERATURE SETPOINTS. THE DAYTIME OCCUPIED AND UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 75 DEGREES IN SUMMER AND 70 DEGREES IN WINTER (ADJUSTABLE). THE NIGHTTIME UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 80 DEGREES IN SUMMER AND 65 DEGREES IN WINTER (ADJUSTABLE).
5. THE GENERAL EXHAUST VARIABLE AIR VOLUME TERMINAL UNIT SHALL MODULATE ITS DAMPER FROM MINIMUM TO MAXIMUM POSITIONS TO MAINTAIN THE ROOM EXHAUST OFFSET REQUIREMENT IN OCCUPIED AND UNOCCUPIED MODES OF OPERATION.
6. GRAPHICS SHALL BE DEVELOPED ON THE JOHNSON SYSTEM TO VIEW ALL VAV DAMPER POSITIONS, ALL VAV TERMINAL UNIT AIRFLOW RATES, SPACE TEMPERATURE, SUPPLY AIR TEMPERATURE AND AIRFLOW SETPOINTS, AND OVERALL ROOM SUPPLY AND EXHAUST AIRFLOW RATES.
7. UPON SIGNAL THAT FIRE ALARM HAS INITIATED LIMIT TOTAL SUPPLY AIRFLOW TO 50% OF MAXIMUM SCHEDULED AIRFLOW AND LIMIT EXHAUST AIRFLOW TO 50% OF MAXIMUM SCHEDULED AIRFLOW.

4 LAB WITHOUT FUME HOOD CONTROL DIAGRAM

SCALE: N.T.S.

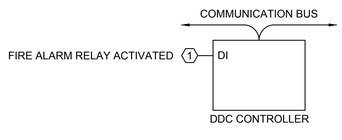


NON-LAB DUAL DUCT SEQUENCE OF OPERATION (VAV TERMINAL UNITS WITH JCI CONTROLS)

1. DUAL DUCT SUPPLY VARIABLE AIR VOLUME TERMINAL UNITS SHALL VARY BETWEEN SCHEDULED TOTAL SUPPLY MINIMUM AND MAXIMUM CFM BY MODULATING THE HOT DECK AND COLD DECK DAMPERS TO MAINTAIN SPACE TEMPERATURE SETPOINTS. THE DAYTIME OCCUPIED AND UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 75 DEGREES IN SUMMER AND 70 DEGREES IN WINTER (ADJUSTABLE). THE NIGHTTIME UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 80 DEGREES IN SUMMER AND 65 DEGREES IN WINTER (ADJUSTABLE).
2. GRAPHICS SHALL BE DEVELOPED ON THE JOHNSON SYSTEM TO VIEW ALL VAV DAMPER POSITIONS, ALL VAV TERMINAL UNIT AIRFLOW RATES, SPACE TEMPERATURE, SUPPLY AIR TEMPERATURE, ALL TEMPERATURE AND AIRFLOW SETPOINTS.
3. UPON SIGNAL THAT FIRE ALARM HAS INITIATED CLOSE BOTH HOT AND COLD DECK DAMPERS.

1 NON-LAB DUAL DUCT TERMINAL CONTROL DIAGRAM

SCALE: N.T.S.

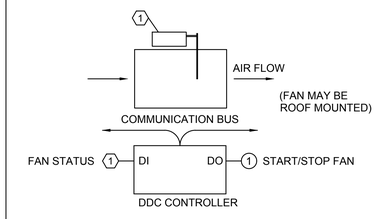


SEQUENCE OF OPERATION:

1. VAV BOXES AND VENTURI VALVES (EXCEPT THOSE SERVING FUME HOODS) SHALL REDUCE AIRFLOW RATE. SEE SEQUENCES 1/ME501, 6/ME501 AND 1/ME502.

5 FIRE ALARM INTERLOCK INTO BACS DIAGRAM

SCALE: N.T.S.



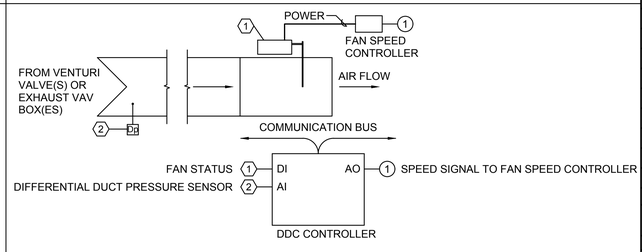
EXISTING EXHAUST FANS TO BE CONVERTED TO DDC ARE AS FOLLOWS:	
FAN LOCATION	ROOM(S) SERVED
1ST LEVEL SHAFT	WOMENS 110 / JAN 121
2ND LEVEL SHAFT	WOMENS 219 / JAN 220
3RD LEVEL SHAFT	WOMENS 328/JAN 329

SEQUENCE OF OPERATION

1. FAN SHALL RUN CONTINUOUSLY IN OCCUPIED MODE OF THE BUILDING.
2. FAN SHALL BE OFF IN UNOCCUPIED MODE.

2 TOILET ROOM/JANITOR ROOM EXHAUST FAN CONTROL DIAGRAM

SCALE: N.T.S. CONVERT EXISTING TOILET ROOM FANS TO DDC



SEQUENCE OF OPERATION

1. FAN SPEED SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE SETPOINT OF 0.5 IN. WC (ADJ). ACTUAL SETPOINT TO BE PROVIDED BY TEST AND BALANCE CONTRACTOR.

3 LAB IN LINE GENERAL EXHAUST FAN CONTROL DIAGRAM

SCALE: N.T.S.

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Phone: (801)581-6883
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BUILDING NAME:

University of Utah Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

MECHANICAL CONTROLS

SHEET NUMBER:

ME501

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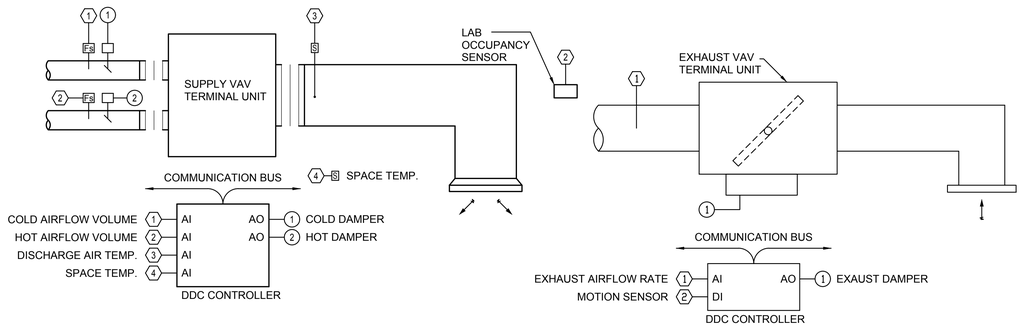
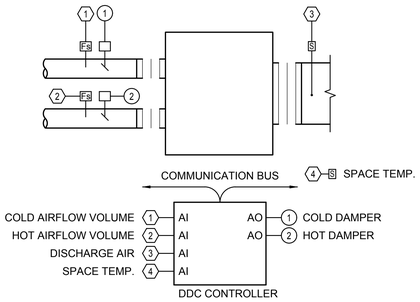


LAB WITHOUT FUME HOOD SEQUENCE OF OPERATION (VAV TERMINAL UNITS WITH JCI CONTROLS)

1. THE LAB AIRFLOW OFFSET SHALL BE NEGATIVE IN OCCUPIED AND UNOCCUPIED MODES BY THE AMOUNT SHOWN ON THE EXHAUST VARIABLE VOLUME TERMINAL UNIT SCHEDULE.
2. IF THE LAB OCCUPANCY SENSOR DETECTS PEOPLE IN THE LAB THEN IT SHALL BE IN THE OCCUPIED MODE AND THE TOTAL MINIMUM EXHAUST AIRFLOW SHALL BE AS SCHEDULED. IF THE ROOM OCCUPANCY SENSOR DOES NOT DETECT PEOPLE IN THE LAB FOR 15 MINUTES (ADJUSTABLE) THEN IT SHALL BE IN THE UNOCCUPIED MODE AND THE TOTAL MINIMUM EXHAUST AIRFLOW SHALL BE AS SCHEDULED.
3. OPTIMIZED MINIMUM SUPPLY AIRFLOW: THE TOTAL MINIMUM BOX SUPPLY AIRFLOW IS PROPORTIONED FROM THE HOT AND COLD DECK DURING THE DEADBAND WHEN THE BOX IS SATISFIED, WHEN IN HEATING OR COOLING, THE TOTAL MINIMUM BOX FLOW IS TAKEN FROM THE HOT OR COLD DECK, RESPECTIVELY.
4. DUAL DUCT SUPPLY VARIABLE AIR VOLUME TERMINAL UNITS SHALL VARY BETWEEN TOTAL SUPPLY MINIMUM AND MAXIMUM CFM BY MODULATING THE HOT DECK AND COLD DECK DAMPERS TO MAINTAIN SPACE TEMPERATURE SETPOINTS. THE DAYTIME OCCUPIED AND UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 75 DEGREES IN SUMMER AND 70 DEGREES IN WINTER (ADJUSTABLE). THE NIGHTTIME UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 80 DEGREES IN SUMMER AND 65 DEGREES IN WINTER (ADJUSTABLE).
5. THE GENERAL EXHAUST VARIABLE AIR VOLUME TERMINAL UNIT SHALL MODULATE ITS DAMPER FROM MINIMUM TO MAXIMUM POSITIONS TO MAINTAIN THE ROOM EXHAUST OFFSET REQUIREMENT IN OCCUPIED AND UNOCCUPIED MODES OF OPERATION.
6. GRAPHICS SHALL BE DEVELOPED ON THE JOHNSON SYSTEM TO VIEW ALL VAV DAMPER POSITIONS, ALL VAV TERMINAL UNIT AIRFLOW RATES, SPACE TEMPERATURE, SUPPLY AIR TEMPERATURE AND AIRFLOW SETPOINTS, AND OVERALL ROOM SUPPLY AND EXHAUST AIRFLOW RATES.
7. UPON SIGNAL THAT FIRE ALARM HAS INITIATED LIMIT TOTAL SUPPLY AIRFLOW TO 50% OF MAXIMUM SCHEDULED AIRFLOW AND LIMIT EXHAUST AIRFLOW TO 50% OF MAXIMUM SCHEDULED AIRFLOW.

4 LAB WITHOUT FUME HOOD CONTROL DIAGRAM

SCALE: N.T.S.



NON-LAB DUAL DUCT SEQUENCE OF OPERATION (VAV TERMINAL UNITS WITH JCI CONTROLS)

1. DUAL DUCT SUPPLY VARIABLE AIR VOLUME TERMINAL UNITS SHALL VARY BETWEEN SCHEDULED TOTAL SUPPLY MINIMUM AND MAXIMUM CFM BY MODULATING THE HOT DECK AND COLD DECK DAMPERS TO MAINTAIN SPACE TEMPERATURE SETPOINTS. THE DAYTIME OCCUPIED AND UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 75 DEGREES IN SUMMER AND 70 DEGREES IN WINTER (ADJUSTABLE). THE NIGHTTIME UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 80 DEGREES IN SUMMER AND 65 DEGREES IN WINTER (ADJUSTABLE).
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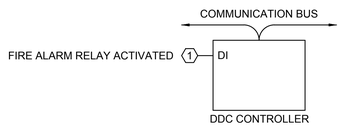
3. UPON SIGNAL THAT FIRE ALARM HAS INITIATED CLOSE BOTH HOT AND COLD DECK DAMPERS.

1 NON-LAB DUAL DUCT TERMINAL CONTROL DIAGRAM

SCALE: N.T.S.

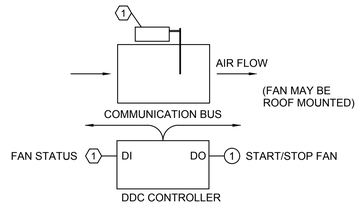


SEQUENCE OF OPERATION:

1. VAV BOXES AND VENTURI VALVES (EXCEPT THOSE SERVING FUME HOODS) SHALL REDUCE AIRFLOW RATE. SEE SEQUENCES 1/ME501, 6/ME501 AND 1/ME502.

5 FIRE ALARM INTERLOCK INTO BACS DIAGRAM

SCALE: N.T.S.



EXISTING EXHAUST FANS TO BE CONVERTED TO DDC ARE AS FOLLOWS:	
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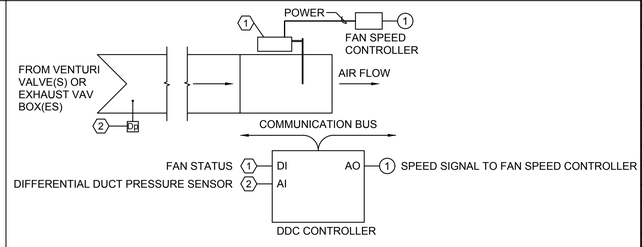
2ND LEVEL SHAFT	WOMENS 219 / JAN 220
3RD LEVEL SHAFT	WOMENS 328/JAN 329

SEQUENCE OF OPERATION

1. FAN SHALL RUN CONTINUOUSLY IN OCCUPIED MODE OF THE BUILDING.
2. FAN SHALL BE OFF IN UNOCCUPIED MODE.

2 TOILET ROOM/JANITOR ROOM EXHAUST FAN CONTROL DIAGRAM

SCALE: N.T.S. CONVERT EXISTING TOILET ROOM FANS TO DDC



SEQUENCE OF OPERATION

1. FAN SPEED SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE SETPOINT OF 0.5 IN. WC (ADJ). ACTUAL SETPOINT TO BE PROVIDED BY TEST AND BALANCE CONTRACTOR.

3 LAB IN LINE GENERAL EXHAUST FAN CONTROL DIAGRAM

SCALE: N.T.S.

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REGISTERED PROFESSIONAL ENGINEER No. 181307 DAVID L. JENSEN STATE OF UTAH

EXP. 03/31/23

CONSULTANT:

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CONSTRUCTION PROJECT DELIVERY
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BUILDING NAME:

University of Utah Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

22437

SHEET TITLE:

MECHANICAL CONTROLS

SHEET NUMBER:

ME501

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FLOOR BOX & POKE THRU SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
	SINGLE-GANG FLOOR BOX WITH DEVICE	FLOOR	DEVICES SHOWN ARE EXAMPLES OF WHAT MAY BE SHOWN ON DRAWINGS. REFER TO WIRING DEVICE SCHEDULE FOR SYMBOL DESCRIPTIONS.
	DOUBLE-GANG FLOOR BOX WITH DEVICES	FLOOR	
	TRIPLE-GANG FLOOR BOX WITH DEVICES	FLOOR	
IG	MULTI-SERVICE FLOOR BOX WITH DEVICES	FLOOR	
	FLUSH MULTI-SERVICE POKE-THRU WITH DUPLEX RECEPTACLE & COMMUNICATIONS PORTS	FLOOR	
	MULTI-SERVICE POKE-THRU WITH FURNITURE FEED CONNECTIONS. (POWER & COMMUNICATIONS)	FLOOR	PROVIDE ELECTRICAL CONNECTIONS TO SYSTEMS FURNITURE. COORDINATE PLACEMENT OF OUTLETS WITH SYSTEM FURNITURE INSTALLER PRIOR TO ROUGH-IN.
P	POKE-THRU WITH FURNITURE FEED CONNECTIONS. (POWER ONLY)	FLOOR	
C	POKE-THRU WITH FURNITURE FEED CONNECTIONS. (COMMUNICATIONS ONLY)	FLOOR	
P	OUTLET BOX WITH FURNITURE FEED CONNECTIONS. (POWER ONLY)	+18"	
C	OUTLET BOX WITH FURNITURE FEED CONNECTIONS. (COMMUNICATIONS ONLY)	+18"	
P	UNDERFLOOR DISTRIBUTION BOX WITH FURNITURE FEED CONNECTIONS. (POWER ONLY)	BELOW RAISED FLOOR	
C	UNDERFLOOR DISTRIBUTION BOX WITH FURNITURE FEED CONNECTIONS. (COMMUNICATIONS ONLY)	BELOW RAISED FLOOR	
	MULTI-SERVICE FLOOR BOX WITH FURNITURE FEED CONNECTIONS	FLOOR	
	POWER POLE WITH FURNITURE FEED CONNECTIONS	FLOOR/CEILING	

ACCESS CONTROL SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
REX	REQUEST-TO-EXIT MOTION DETECTOR	CEILING	
	ELECTROMAGNETIC DOOR STRIKE	DOOR	
	MAGNETIC DOOR CONTACT SWITCH	DOOR	
	MAGNETIC LOCK	DOOR	
KP	KEYPAD	+48"	
P.X	PROXIMITY CARD READER / KEYPAD	+48"	
M.X	MAGNETIC STRIP CARD READER / KEYPAD	+48"	
P.R	PROXIMITY CARD READER	+48"	
M.R	MAGNETIC STRIP CARD READER	+48"	

FIRE ALARM SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
BDT	BEAM DETECTOR - TRANSMITTER	4" BELOW CEILING TO TOP OF DETECTOR	
BDR	BEAM DETECTOR - RECEIVER	4" BELOW CEILING TO TOP OF DETECTOR	
EOL	END OF LINE DEVICE	MANUFACTURER RECOMMENDED	
T	TAMPER SWITCH	AT VALVE	
W	WATER FLOW INDICATOR	ON FIRE RISER	
FSD	FIRE/SMOKE DAMPER		
	HEAT DETECTOR	CEILING	
	SMOKE DETECTOR	CEILING	
D	DUCT SMOKE DETECTOR	SIDE OF DUCT	
F	FIRE ALARM MANUAL STATION	+48"	
M	CONTROL MODULE	AT DEVICE(S) TO BE CONTROLLED	
I	MONITOR MODULE	AT DEVICE(S) TO MONITOR	
R	FAN SHUTDOWN RELAY	AT FAN CONTROL PANEL	
	MAGNETIC DOOR HOLDER	COORDINATE WITH DOOR INSTALLER	COORDINATE WITH DOOR INSTALLER; SUBSCRIPT 'F' INDICATES TO MOUNT AT FLOOR LEVEL
WF	WATER FLOOD INDICATOR	FLOOR	
H	AUDIO HORN	80" MIN AND 96" MAX; MEASURED FROM LENS. IF CEILING IS LESS THAN 80", MOUNT WITHIN 6" OF CEILING.	SUBSCRIPT 'WP' INDICATES THAT A WEATHER PROOF BACK BOX IS REQ. SUBSCRIPT 'C' INDICATES CEILING MOUNTING. NUMERIC SUBSCRIPT INDICATES CANDELLA RATING OF STROBE (I.E. - 15, 75, 110)
M	MINI AUDIO HORN		
	FIRE ALARM VISUAL STROBE		
	FIRE ALARM AUDIO/VISUAL HORN/STROBE		
M	MINI AUDIO/VISUAL HORN/STROBE		
S	FIRE ALARM AUDIO SPEAKER		
S	FIRE ALARM AUDIO/VISUAL SPEAKER/STROBE		
B	FIRE PROTECTION SPRINKLER RISER BELL	+90"	FURNISHED BY FIRE PROTECTION CONTRACTOR AND INSTALLED AND CONNECTED BY DIV. 26

WIRING DEVICE SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
$	SINGLE-POLE TOGGLE SWITCH	+48"	
$a	SINGLE-POLE TOGGLE SWITCH	+48"	SUBSCRIPT KEYS SWITCH TO FIXTURES CONTROLLED.
$2	DOUBLE-POLE TOGGLE SWITCH	+48"	
$3	THREE-WAY TOGGLE SWITCH	+48"	
$4	FOUR-WAY TOGGLE SWITCH	+48"	
$K	KEY-OPERATED SINGLE-POLE TOGGLE SWITCH	+48"	
$P	SINGLE-POLE TOGGLE SWITCH WITH PILOT LIGHT	+48"	
$DIM	DIMMER SWITCH	+48"	RATE DIMMER SWITCH FOR MAXIMUM POSSIBLE WATTAGE
$TIM	TIMER SWITCH	+48"	
$$	(2) SINGLE-POLE TOGGLE SWITCH	+48"	DUAL LEVEL SWITCH OUTBOARD LAMPS SEPARATELY FROM INBOARD LAMPS.
$LV	LOW VOLTAGE MOMENTARY CONTACT SWITCH	+48"	
$3PM	3-POSITION MOMENTARY CONTACT SWITCH	+48"	REFER TO DETAIL UP-ON; CENTER-NEUTRAL; DOWN-OFF
$3PN	3-POSITION MAINTAINED CONTACT SWITCH	+48"	UP-ON; CENTER-OFF; DOWN-ON
$OS	WALL MOUNTED OCCUPANCY SENSOR SWITCH	+48"	
$2OS	DUAL RELAY WALL MOUNTED OCCUPANCY SENSOR SWITCH	+48"	
	OCCUPANCY SENSOR	AS NOTED	CEILING MOUNTED WITH SUBSCRIPT 'C'; WALL-MOUNTED WITH SUBSCRIPT 'W'
	SPLIT-WIRED DUPLEX RECEPTACLE	+18"	
	SIMPLEX RECEPTACLE	+18"	
	DUPLEX RECEPTACLE	+18"	
	125/250V RECEPTACLE	+18"	RANGE – NEMA 14-50R DRYER – NEMA 14-30R
	FOURPLEX RECEPTACLE	+18"	
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE	+18"	
	GROUND FAULT CIRCUIT INTERRUPTER FOURPLEX RECEPTACLE	+18"	
	EMERGENCY DUPLEX RECEPTACLE	+18"	
	EMERGENCY FOURPLEX RECEPTACLE	+18"	
	MULTI-OUTLET ASSEMBLY	4" ABOVE BACKSPLASH	
	POWER / TELEPHONE POLE	FLOOR/CEILING	
	CORD DROP WITH DUPLEX RECEPTACLE		REFER TO DETAIL
(5-20R)	SPECIAL PURPOSE OUTLET	+18"	SUBSCRIPT IN PARENTHESIS INDICATES NEMA CONFIGURATION IF SHOWN. REFER TO DRAWINGS AND/OR EQUIPMENT SCHEDULES. CONFIRM EXACT CONFIGURATION WITH OWNER PRIOR TO INSTALLATION.

GEAR AND CONTROL SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
$T	MANUAL STARTER WITH THERMAL OVERLOAD(S)	AT EQUIPMENT	
	ELECTRIC MOTOR		
	NON-FUSED DISCONNECT SWITCH	TOP AT +48"-72"	
	FUSED DISCONNECT SWITCH	TOP AT +48"-72"	
	CIRCUIT BREAKER AND ENCLOSURE	TOP AT +48"-72"	
	MAGNETIC STARTER	TOP AT +48"-72"	
	COMBINATION MAGNETIC STARTER / NON-FUSED DISCONNECT	TOP AT +48"-72"	
	COMBINATION MAGNETIC STARTER / FUSED DISCONNECT	TOP AT +48"-72"	
	COMB. MAGNETIC STARTER / MOTOR CIRCUIT PROTECTOR (MCP)	TOP AT +48"-72"	
VFD	COMB. VARIABLE FREQUENCY DRIVE / MOTOR CIRCUIT PROTECTOR (MCP)	FLOOR OR WALL AS SPECIFIED	TOP AT +72" IF WALL MOUNTED
RVS	REDUCED VOLTAGE STARTER	FLOOR OR WALL AS SPECIFIED	TOP AT +72" IF WALL MOUNTED
	LOAD CENTER (SURFACE-MOUNTED)	TOP AT +72"	14"W X 3"D
	LOAD CENTER (FLUSH-MOUNTED)	TOP AT +72"	14"W X 3"D
	LIGHTING AND APPLIANCE PANELBOARD (SURFACE-MOUNTED)	TOP AT +72"	20"W X 6"D
	LIGHTING AND APPLIANCE PANELBOARD (FLUSH-MOUNTED)	TOP AT +72"	20"W X 6"D
	POWER DISTRIBUTION PANELBOARD	WALL	THESE SYMBOLS ARE GENERAL IN NATURE AND MAY VARY IN SIZE AND SHAPE TO SUIT APPLICATION. CROSS HATCHING INDICATES "MAIN PANELBOARD OR SWITCHBOARD" NAME IS INDICATED IN SEMI-QUOTES (I.E. 'L2A', 'MDP')
	SWITCHBOARD	FLOOR	
	METER BASE	TOP AT +72"	FURNISH SWITCH UNLESS FURNISHED BY ANOTHER DIVISION. INSTALL AND CONNECT COMPLETE. REFER TO RELATED SPECIFICATION SECTIONS.
	OPEN - STOP - CLOSE SWITCH	+60"	
T	HVAC THERMOSTAT	+60"	PROVIDED BY DIVISION 23
	HAND - OFF - AUTO SWITCH	+60"	
GF	GROUND FAULT PROTECTION		

SIGNAL BELL SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
B	BELL/CHIME	+90"	
	BUZZER	+90"	
	SIGNAL BELL PUSH BUTTON	+48"	

TELEVISION SYSTEM SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
	TELEVISION OUTLET	+18"	
	ANTENNA	ROOF	

ELECTRICAL SYMBOL SCHEDULE GENERAL NOTES

1. MOUNT ALL OUTLETS, DEVICES, AND EQUIPMENT AT HEIGHTS INDICATED BELOW, UNLESS NOTED OTHERWISE ON THE DRAWINGS. UNLESS NOTED OTHERWISE, HEIGHTS ARE GIVEN FROM FINISHED FLOOR TO CENTER OF OUTLET BOX.
2. WHERE OUTLETS, DEVICES, AND EQUIPMENT ARE NOTED BY SUBSCRIPTS, REFER TO ABBREVIATION SCHEDULE FOR DEFINED REQUIREMENTS.
3. WHERE OUTLETS, DEVICES AND EQUIPMENT ARE NOTED BY THE SUBSCRIPT 'A', MOUNT AT 4" ABOVE COUNTER. IF COUNTER HAS A BACK SPLASH, MOUNT AT 4" ABOVE BACK SPLASH. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS AND COORDINATE WITH CASEWORK SUPPLIER.
4. NOT ALL ELECTRICAL SYMBOLS MAY BE USED.

GENERAL SYMBOLS

SYMBOL	DESCRIPTION	REMARKS
XX	KEYED NOTE	
1 E-1	DETAIL REFERENCE	TOP NUMBER INDICATES DETAIL NUMBER; BOTTOM LETTER-NUMBER INDICATES WHERE DETAIL IS SHOWN.
2 E-2	ELEVATION REFERENCE	TOP NUMBER INDICATES ELEVATION NUMBER; BOTTOM LETTER-NUMBER INDICATES WHERE ELEVATION IS SHOWN.
3 E-3	SECTION REFERENCE	TOP NUMBER INDICATES SECTION NUMBER; BOTTOM LETTER-NUMBER INDICATES WHERE SECTION IS SHOWN.
100	ARCHITECTURAL ROOM NUMBER	
AHU 1	EQUIPMENT NAME / NUMBER	TOP NUMBER ABBREVIATES EQUIPMENT NAME OR TYPE; BOTTOM NUMBER INDICATES EQUIPMENT NUMBER. REFER TO EQUIPMENT SCHEDULE.
1	REVISION NUMBER	USED TO DENOTE CHANGES EITHER ISSUED BY ADDENDUM OR DURING CONSTRUCTION AND TO DENOTE RECORD DRAWING CHANGES.
	BREAKLINE	USED TO BREAK DRAWINGS.

BRANCH CIRCUITING SYMBOLS

SYMBOL	DESCRIPTION	REMARKS
	1 CIRCUIT, 2 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	ARROWS: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS REQUIRED. SHORT CROSS LINES: NUMBER OF SHORT CROSS LINES INDICATES NUMBER OF PHASE, TRAVELER, AND/OR SWITCHED CONDUCTORS REQUIRED IF GREATER THAN 1 (ONE). LONG CROSS LINES: NUMBER OF LONG CROSS LINES INDICATES NUMBER OF NEUTRAL CONDUCTORS REQUIRED FOR MULTI-WIRE HOME RUNS. EQUIPMENT GROUND AND ISOLATED GROUND CONDUCTORS: EQUIPMENT GROUND AND ISOLATED GROUND CONDUCTORS ARE NOT SHOWN, BUT ARE REQUIRED AS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.
	2 CIRCUIT, 4 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	
	3 CIRCUIT, 6 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	
	MULTIPLE WIRE BRANCH CIRCUITING BETWEEN FIXTURES, SWITCHES, DEVICES, ETC.	
	BRANCH CIRCUITING (U.N.O.) TURNED UP OR TOWARDS OBSERVER.	
	BRANCH CIRCUITING (U.N.O.) TURNED DOWN OR AWAY FROM OBSERVER.	
	BRANCH CIRCUITING (U.N.O.) CONTINUATION	
	CONDUIT STUB-IN	CAP AND MARK
	INCOMING SERVICE	
J	JUNCTION BOX	MOUNT AS NOTED. SUBSCRIPT 'F' INDICATES TO PROVIDE A FLOOR BOX WITH BLANK COVERPLATE

ELECTRONIC SYSTEM GENERAL SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
PANEL NAME	ELECTRONIC SYSTEM PANELBOARD (SURFACE MOUNT)	TOP AT 72"	ELECTRONIC SYSTEMS MAY INCLUDE BUT ARE NOT SPECIFICALLY LIMITED TO, TELEPHONE, DATA, TELEVISION, LIGHTING CONTROL, CLOCKS, FIRE ALARM, ACCESS CONTROL, SECURITY, CCTV, SOUND SYSTEM, NURSE CALL, OR INTERCOM.
PANEL NAME	ELECTRONIC SYSTEM PANELBOARD (FLUSH MOUNT)	TOP AT 72"	
	ELECTRONIC SYSTEM TERMINAL BOARD	TOP AT 72"	

TELEPHONE / DATA SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
	TELEPHONE OUTLET	+18"	
	DATA OUTLET	+18"	
	COMBINATION TELEPHONE/DATA OUTLET	+18"	
	TELEPHONE TERMINAL BOARD	TOP AT 72"	

SOUND SYSTEM SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING	REMARKS
	RECESSED SPEAKER	CEILING	IF SHOWN, SUBSCRIPT INDICATES TYPE.
	SURFACE-MOUNTED SPEAKER	CEILING	
	WALL-MOUNTED SPEAKER	+90"	
SM	SENSING MICROPHONE	CEILING	
V	VOLUME CONTROL SWITCH	+48"	
	SOUND SYSTEM EQUIPMENT CABINET	+72" TO TOP OF CABINET	
M	MICROPHONE OUTLET	+18"	SUBSCRIPT 'F' INDICATES TO MOUNT OUTLET IN FLOOR BOX
PANEL NAME	SOUND SYSTEM CABINET (WALL MOUNT)	TOP AT 72"	

ELECTRICAL SHEET INDEX

EG001	SYMBOL SCHEDULES AND NOTES
EG501	ELECTRICAL DETAILS
ED100	BASEMENT ELECTRICAL DEMOLITION PLAN
ED101	FIRST FLOOR ELECTRICAL DEMOLITION PLAN
ED102	SECOND FLOOR ELECTRICAL DEMOLITION PLAN
ED103	THIRD FLOOR ELECTRICAL DEMOLITION PLAN
ED104	LEVEL 4/ROOF ELECTRICAL DEMOLITION PLAN
EP100	BASEMENT ELECTRICAL REMODEL PLAN
EP101	FIRST FLOOR ELECTRICAL REMODEL PLAN
EP102	SECOND FLOOR ELECTRICAL REMODEL PLAN
EP103	THIRD FLOOR ELECTRICAL REMODEL PLAN
EP104	LEVEL 4/ROOF ELECTRICAL REMODEL PLAN
EP801	ELECTRICAL SCHEDULES

ABBREVIATION SCHEDULE

NOTE: NOT ALL ABBREVIATIONS MAY BE USED.

A	ABOVE COUNTER	ISO	ISOLATED
A	AMP OR AMPS	KVA	KILO VOLT AMPERES
ADJ	ADJACENT	KW	KILOWATTS
AFF	ABOVE FINISHED FLOOR	LFMC	LIQUID-TIGHT METAL CONDUIT
AHJ	AUTHORITY HAVING JURISDICTION	LFNC	LIQUID-TIGHT NONMETAL CONDUIT
AL	ALUMINUM	MCA	MINIMUM CIRCUIT AMPS
C	CONDUIT	MLO	MAIN LUGS ONLY
CB	CIRCUIT BREAKER	N.C.	NORMALLY CLOSED
CKT	CIRCUIT	N.I.C.	NOT IN CONTRACT
C.O.'S	CONVENIENCE OUTLETS	N.L.	NIGHT LIGHT
CU	COPPER	N.O.	NORMALLY OPEN
EA	EACH	O.C.	ON CENTER(S)
ELEC	ELECTRICAL	OCP	OVER CURRENT PROTECTION
EM	EMERGENCY	QTY	QUANTITY
EMT	ELECTRIC METALLIC TUBING	R	REMOVE
ENT	ELECTRIC NONMETALLIC TUBING	REQ.	REQUIREMENTS
EQUIP	EQUIPMENT	RMC	RIGID METAL CONDUIT
EWC	ELECTRIC WATER COOLER	RNC	RIGID NONMETALLIC CONDUIT
E. EX	EXISTING	RR	REMOVE AND RELOCATE
EXP	EXPLOSION PROOF	SS	SURGE SUPPRESSION
FA	FIRE ALARM	SCP	SECURITY CONTROL PANEL
FACP	FIRE ALARM CONTROL PANEL	TR	TAMPER RESISTANT
FLA	FULL LOAD AMPS	TYP	TYPICAL
FMC	FLEXIBLE METAL CONDUIT	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
FOB	FREIGHT ON BOARD	UF	UNDER FLOOR
GND	GROUND CONDUCTOR	UG	UNDERGROUND
HOA	HAND-OFF-AUTO	U.N.O.	UNLESS NOTED OTHERWISE
HP	HORSE POWER	W/	WITH
IG	ISOLATED GROUND	WP	WEATHER PROOF
IMC	INTERMEDIATE METAL CONDUIT	XFMR	TRANSFORMER
INS	INSULATED		

GENERAL PROJECT NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR READING AND APPLYING WHAT IS IN THE SPECIFICATIONS TO THIS PROJECT. ANYTHING THAT IS NOT INCLUDED ON THE PROJECT THAT IS CALLED OUT IN THE SPECIFICATION SHALL BE LISTED ON THE SUBSTANTIAL COMPLETION PUNCHLIST. THE CONTRACTOR WILL BE REQUIRED TO REMEDY THESE DEFICIENCIES. THERE WILL BE NO EXCEPTIONS.
2. THE CONTRACTOR MAY SCHEDULE A PRE-CONSTRUCTION MEETING , AT THEIR DISCRETION WITH THE ELECTRICAL ENGINEER AND REVIEW THE DRAWINGS AND SPECIFICATIONS. THE MEETING SHALL BE A MAXIMUM OF ONE HOUR AND SHALL TAKE PLACE AT THE ENGINEER'S OFFICE.
3. THE FOLLOWING ITEMS ARE SOME OF THE REQUIREMENTS THAT ARE LISTED IN THE SPECIFICATIONS, THESE ITEMS DO NOT REPRESENT ALL ITEMS AND THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL REQUIREMENTS OF THE SPECIFICATIONS:
   A. INSULATED THROAT CONNECTORS OR PLASTIC BUSHINGS SHALL BE UTILIZED FOR ALL CONDUIT SIZES USED ON THIS PROJECT.
   B. A DEDICATED NEUTRAL CONDUCTOR WILL BE PROVIDED FOR ALL LIGHTING AND POWER CIRCUITS.
   C. THE CONTRACTOR SHALL LABEL ALL ELECTRICAL EQUIPMENT AS IT IS CALLED OUT IN THE SPECIFICATIONS.
   D. THE CONTRACTOR SHALL PROVIDE SEISMIC SUPPORT AND BRACING FOR ALL ELECTRICAL EQUIPMENT AS REQUIRED BY LOCAL AND NATIONAL CODE.
4. THE CONTRACTOR SHALL FOLLOW THE PANELBOARD SCHEDULES AS INDICATED IN THE DRAWINGS. EACH CIRCUIT BREAKER HAS BEEN ASSIGNED A SPECIFIC AREA OF THE BUILDING. NO DEVIATION WILL BE ALLOWED WITHOUT THE APPROVAL FROM THE ELECTRICAL ENGINEER.
5. THE CONTRACTOR SHALL INSTALL PROPER WIRE SIZE AS CALLED OUT ON THE PANELBOARD SCHEDULES. HOWEVER, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE WIRE IS LARGE ENOUGH FOR VOLTAGE DROP.
6. THE CONTRACTOR SHALL VERIFY ALL MECHANICAL OVERCURRENT DEVICES FOR THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED ON THE JOB, PRIOR TO RELEASE OF ANY ELECTRICAL DISTRIBUTION EQUIPMENT. CONTACT THE ELECTRICAL ENGINEER WITH ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING THE BID, AND SHALL EXAMINE ALL PHYSICAL CONDITIONS WHICH MAY BE MATERIAL TO THE PERFORMANCE OF HIS WORK. NO EXTRA PAYMENTS WILL BE ALLOWED TO THE CONTRACTOR AS A RESULT OF EXTRA WORK MADE NECESSARY BY HIS FAILURE TO DO SO. ANY CASE OF DISCREPANCY OR LACK OF CLARITY SHALL BE PROMPTLY IDENTIFIED TO THE OWNER'S REPRESENTATIVE AND THE ENGINEER FOR CLARIFICATION.
8. THE CONTRACTOR SHALL MAKE SURE THAT ALL BRANCH CIRCUITS THAT ARE AFFECTED BY THIS PROJECT ARE NOT OVERLOADED. PROVIDE ADDITIONAL BRANCH CIRCUITS FROM ELECTRICAL PANELS AS NECESSARY TO COMPLY WITH THE BRANCH CIRCUIT LOADING REQUIREMENTS. PROVIDE ALL MATERIAL AND LABOR AS NECESSARY FOR A COMPETE AND OPERATING SYSTEM.
9. PROVIDE UPDATED, TYPED PANELBOARD SCHEDULE(S) TO REFLECT ALL THE CHANGES MADE INCLUDING EXISTING LOADS. THE EXISTING LOADS SHALL BE NAMED THE SAME AS LISTED ON THE EXISTING PANELBOARD SCHEDULE.

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2021-117.00

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Biology Bldg 84

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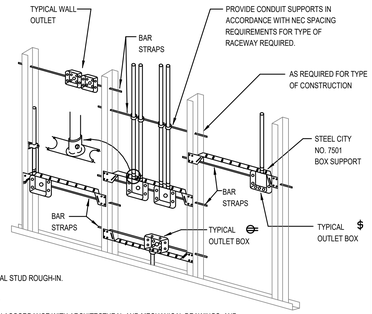
SYMBOLS, SCHEDULES AND NOTES

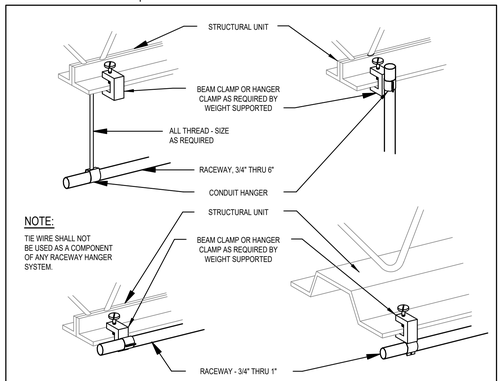
SHEET NUMBER:
EG001



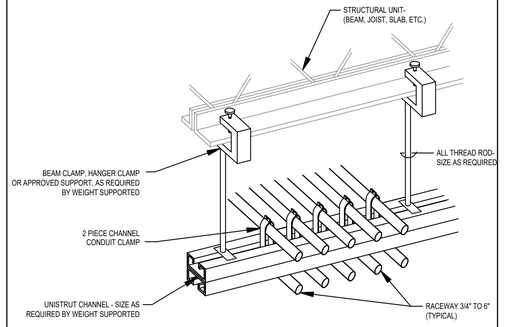
NOTES:

1. TYPICAL FOR WOOD AND METAL STUD ROUGH-IN.
2. PLASTER RINGS NOT SHOWN.
3. LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
4. IN ACCORDANCE WITH UBC 4303 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.

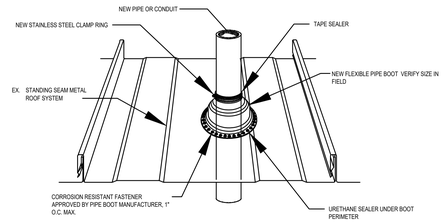
3 TYPICAL ROUGH-IN REQUIREMENTS
SCALE: NONE



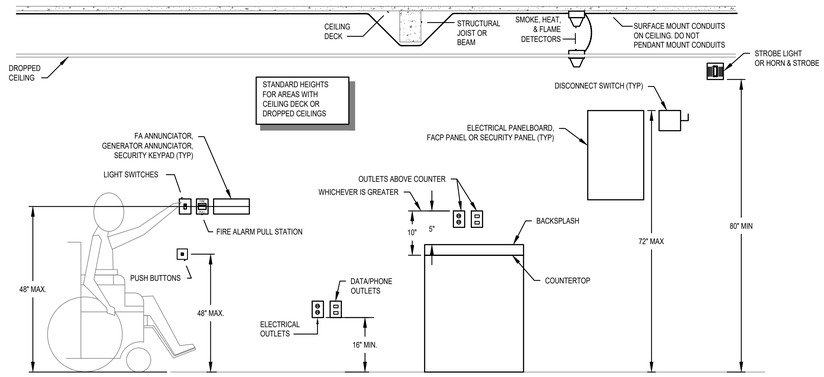
2 TYPICAL RACEWAY DETAILS
SCALE: NONE



1 MULTIPLE RACEWAY SUPPORT DETAIL
SCALE: NONE



5 ROOF PENETRATION DETAIL
SCALE: NONE



4 ADA ELEVATION DETAIL
SCALE: NONE

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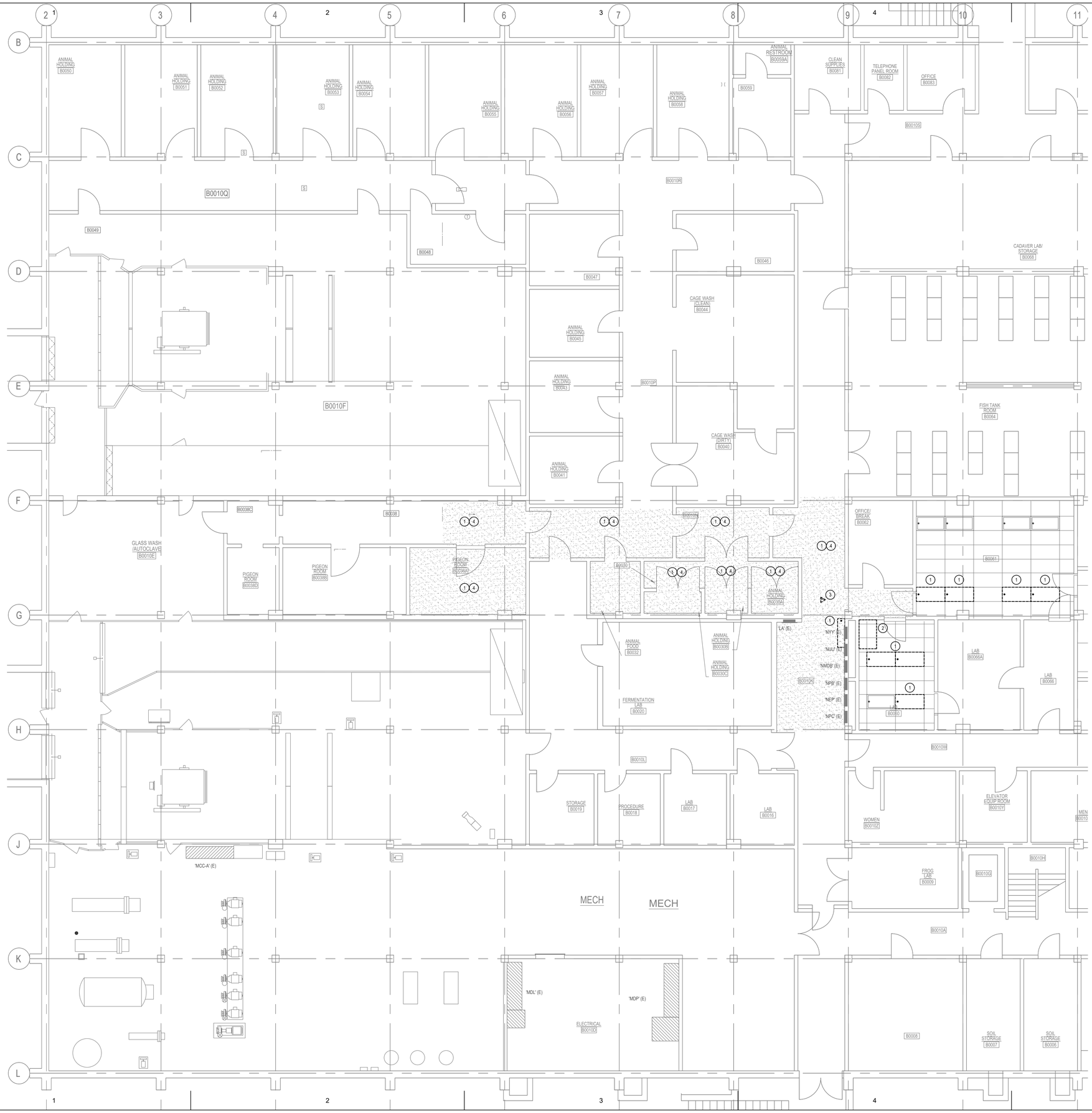
SHEET NUMBER:
EG501



GENERAL DEMOLITION NOTES:

A. CONTRACTOR TO VERIFY ALL EXISTING CONSTRUCTION AND DIMENSIONS - IF CONDITIONS VARY FROM DRAWINGS NOTIFY THE ARCHITECT

B. CONTRACTOR SHALL REPAIR TO LIKE NEW CONDITION ANY EXISTING FINISH DAMAGED DURING DEMOLITION OR CONSTRUCTION

C. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS

D. ALL ITEMS TO BE SALVAGED FOR RE-USE OR TO OWNER ARE TO BE PROTECTED AND REMOVED AND RE-INSTALLED WITHOUT DAMAGE.

E. ADDITIONAL DEMOLITION MAY BE REQUIRED FOR ACCESS AND ROUTING OF MEP UTILITIES. COORDINATE WITH APPROPRIATE PLANS

F. BEFORE ANY FINISH FLOOR SYSTEM IS TO BE REMOVED, GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT FOR EXTENT OF FINISH FLOOR SYSTEM TO BE REMOVED & WHICH (E) FINISH FLOOR SYSTEM SHALL REMAIN TO BE PROTECTED IN PLACE

G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

K. PRIOR TO START OF DEMOLITION MEET W/ OWNER TO SELECT ALL ITEMS TO BE SALVAGED TO OWNER

L. DEMOLISH, REMOVE AND DISPOSE OF ALL ITEMS SHOWN DASHED ON DEMOLITION PLAN. INCLUDE ALL RELATED UTILITIES AND ACCESSORIES

M. CAP RETURN AND SUPPLY DUCT OPENINGS WITHIN AREA WORK UNTIL CONSTRUCTION HAS BEEN COMPLETED

N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

Q. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33 AS ADOPTED.

R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

S. PATCH ALL ABANDONED PENETRATIONS IN WALLS, FLOORS AND ROOFS WITH SAME OR MORE DURABLE MATERIAL AS CURRENT CONSTRUCTION. MATCH FIRE/SMOKE RATING OF CURRENT CONSTRUCTION. IN GYP. BD. WALLS PROVIDE ADDITIONAL METAL STUD FRAMING TO SECURE GYP. BD. WHERE EXPOSED RE-FINISH ENTIRE WALL TO NEAREST INTERSECTION.

T. ALL NEW PENETRATIONS IN WALLS SHALL BE NEATLY SAW-CUT WITH MINIMUM ANNULAR SPACE AND SEALED PER GENERAL FIRE/SMOKE PENETRATION DETAIL.

KEYED NOTES: (#)

1. CAREFULLY REMOVE EXISTING FIXTURE TO ALLOW FOR DEMOLITION AND INSTALLATION OF NEW HVAC EQUIPMENT/DUCTWORK. PROTECT AND MAINTAIN EXISTING WIRING AND ENSURE ALL FIXTURES UPSTREAM/DOWNSTREAM REMAIN FUNCTIONAL. REINSTALL EXISTING FIXTURE IN SAME LOCATION. CONNECT TO EXISTING CIRCUIT AND REUSE EXISTING CONTROLS. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

2. DISCONNECT ELECTRICAL CONNECTIONS FOR FUME HOOD, WHICH WILL BE REPLACED. EXISTING CIRCUITING TO REMAIN AND BE REUSED FOR NEW FUME HOOD IN SAME LOCATION. REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR QUANTITY AND TYPE OF CONNECTIONS.

3. CAREFULLY REMOVE EXISTING WIRELESS ACCESS POINT TO ALLOW FOR DEMOLITION AND INSTALLATION OF NEW HVAC EQUIPMENT/DUCTWORK. PROTECT AND MAINTAIN EXISTING WIRING. REINSTALL AND RECONNECT WAP IN SAME LOCATION AFTER HVAC AND CEILING WORK IS COMPLETE.

4. CONTRACTOR TO VERIFY LIGHT LOCATIONS.

BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE: 3/16" = 1'-0"

NORTH

DAVID L. JENSEN & ASSOCIATES
MECHANICAL ENGINEERS
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Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

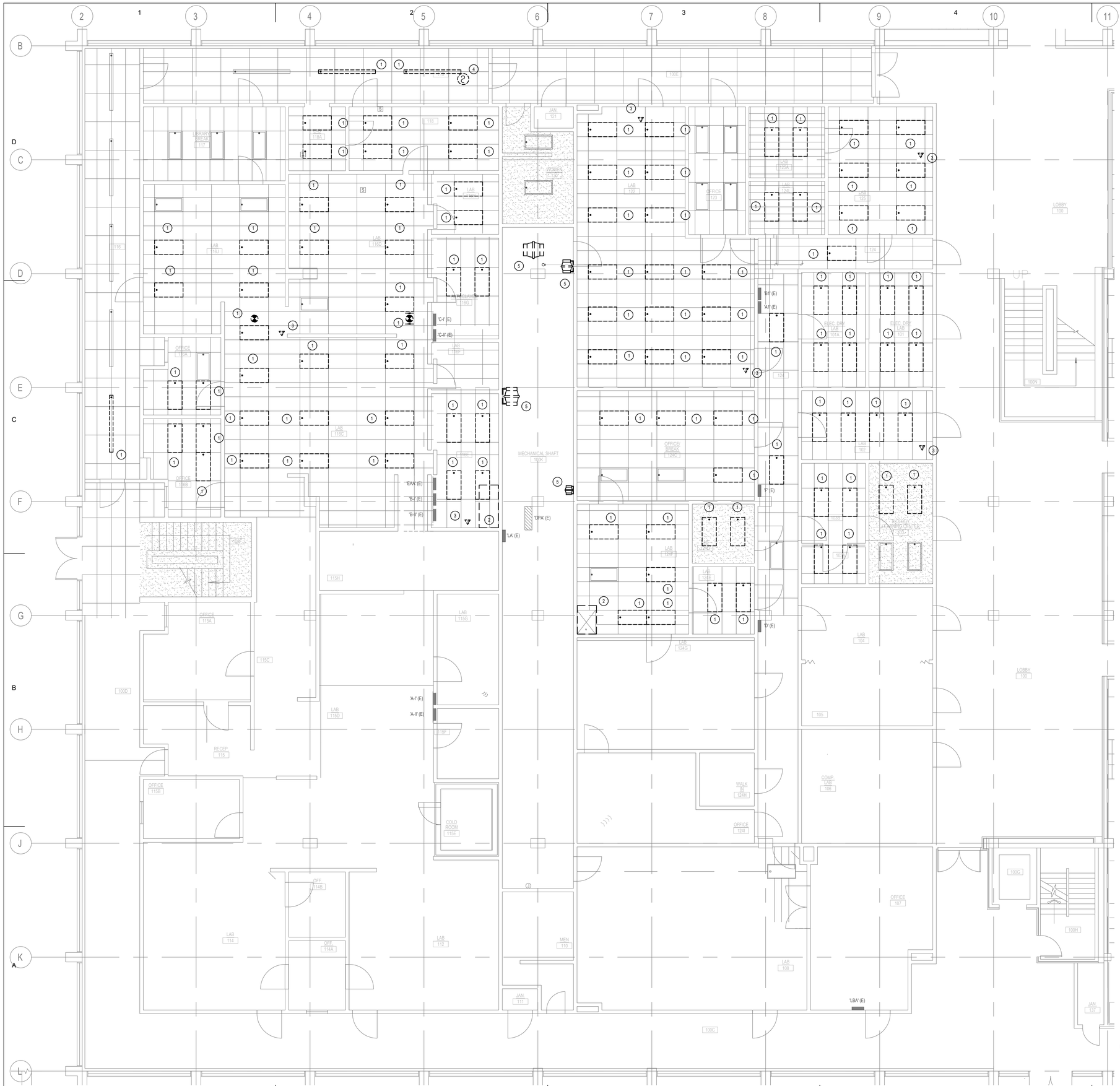
22437

SHEET TITLE:

BASEMENT ELECTRICAL DEMOLITION PLAN

SHEET NUMBER:

ED100



GENERAL DEMOLITION NOTES:

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G. ALL DEMOLITION DEBRIS, TRASH, AND/OR REMOVED ITEMS SHALL BE HAULED OFF SITE AND DISPOSED OF IN A LEGAL MANNER

H. SEE MECHANICAL DRAWINGS FOR MECHANICAL INFORMATION.

J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

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N. CONSTRUCTION BARRIERS ARE TO EXTEND FROM FLOOR TO (E) CEILING WITH FIRE RESISTANT MEMBRANE TO DECK. SEAL TIGHT ALL PENETRATIONS

P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

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R. PATCH ALL OPENINGS IN WALLS/FLOORS AS A RESULT OF THIS PROJECT WORK DUE TO MECHANICAL/PLUMBING OR ELECTRICAL SYSTEM MODIFICATIONS.

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4. CAREFULLY REMOVE EXISTING SMOKE DETECTOR TO ALLOW FOR DEMOLITION AND INSTALLATION OF NEW HVAC EQUIPMENT/DUCTWORK. PROTECT AND MAINTAIN EXISTING WIRING AND ENSURE THAT ALL UPSTREAM AND DOWNSTREAM DEVICES REMAIN ACTIVE. REINSTALL AND RECONNECT EXISTING DEVICE IN SAME LOCATION AFTER HVAC AND CEILING WORK IS COMPLETE.
5. DISCONNECT AND DEMOLISH ELECTRICAL CONNECTION TO EXHAUST FAN COMPLETE TO SOURCE.

FIRST FLOOR ELECTRICAL DEMOLITION PLAN

NORTH

SCALE: 3/16" - 1'-0"

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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

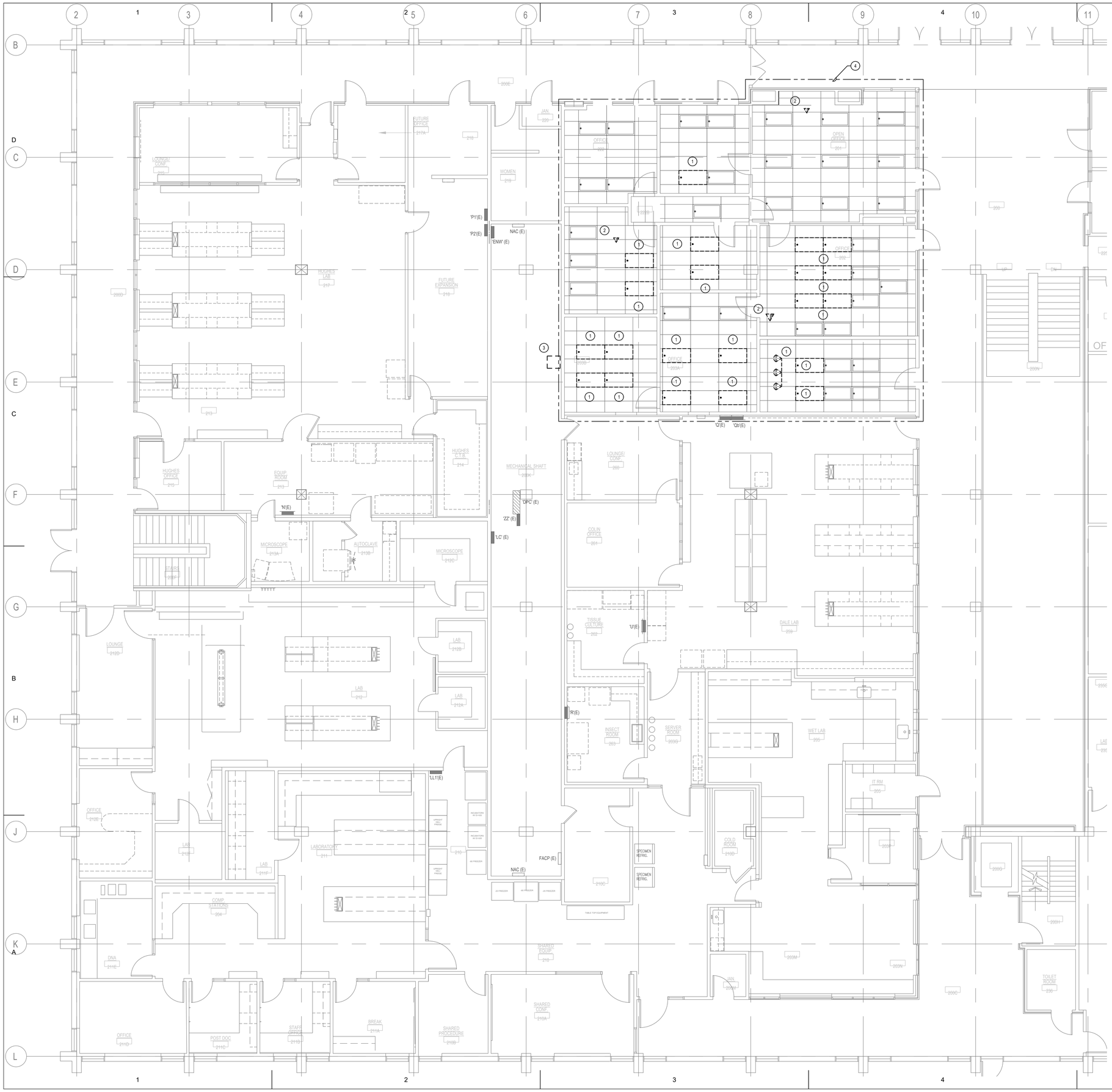
22437

SHEET TITLE:

FIRST FLOOR
ELECTRICAL
DEMOLITION PLAN

SHEET NUMBER:

ED101



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J. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL INFORMATION

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P. DEACTIVATE SPRINKLER HEADS IN CONSTRUCTION AREA. ONLY SPRINKLER HEADS OUTSIDE AREA TO REMAIN ACTIVE

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3. DISCONNECT AND DEMOLISH ELECTRICAL CONNECTION TO EXHAUST FAN COMPLETE TO SOURCE.

4. ALL WORK IN THIS AREA TO BE BID AS PART OF ALTERNATE #01.

SECOND FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 3/16" - 1'-0"

NORTH

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CONSULTANT:

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Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

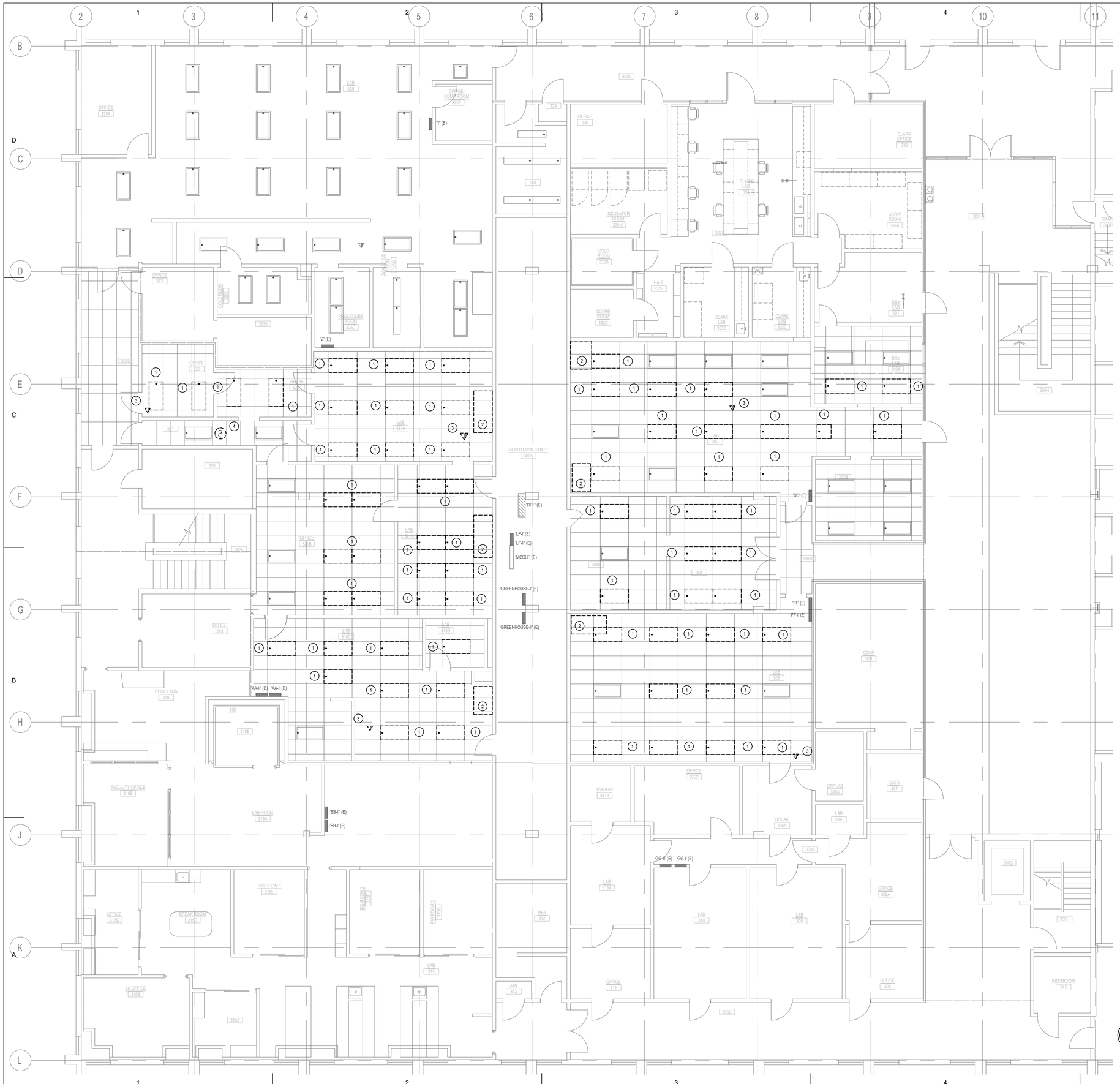
22437

SHEET TITLE:

SECOND FLOOR
ELECTRICAL
DEMOLITION PLAN

SHEET NUMBER:

ED102



THIRD FLOOR
ELECTRICAL DEMOLITION PLAN
SCALE: 3/16" - 1'-0"

NORTH

GENERAL DEMOLITION NOTES:

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STAMP:

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University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

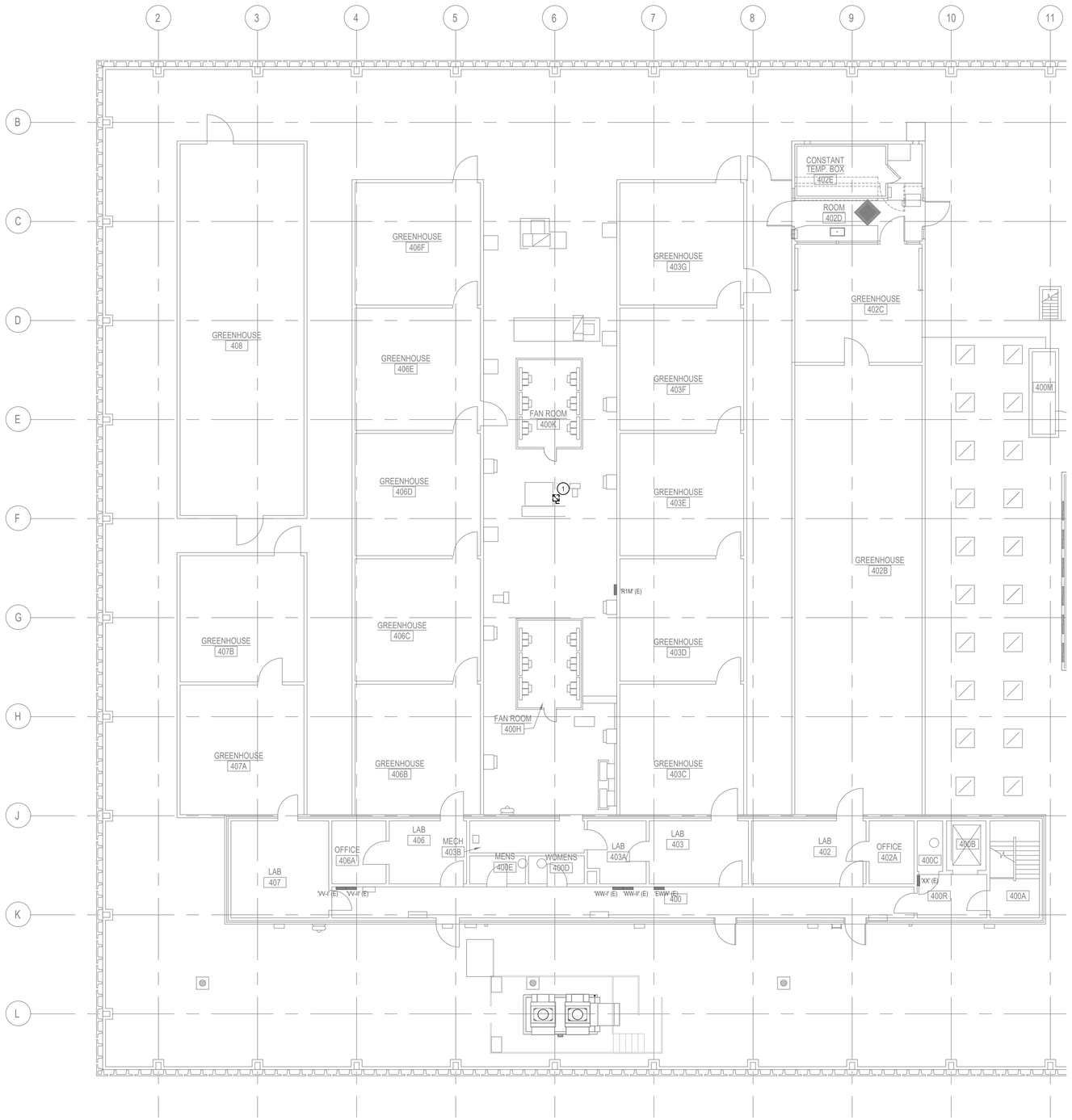
22437

SHEET TITLE:

THIRD FLOOR
ELECTRICAL
DEMOLITION PLAN

SHEET NUMBER:

ED103



LEVEL4/ROOF ELECTRICAL DEMOLITION PLAN

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

NORTH

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KEYED NOTES: (#)

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CONSTRUCTION PROJECT DELIVERY
1795 E. So. Campus Dr, Rm. 201
Salt Lake City, UT 84112-9403
Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

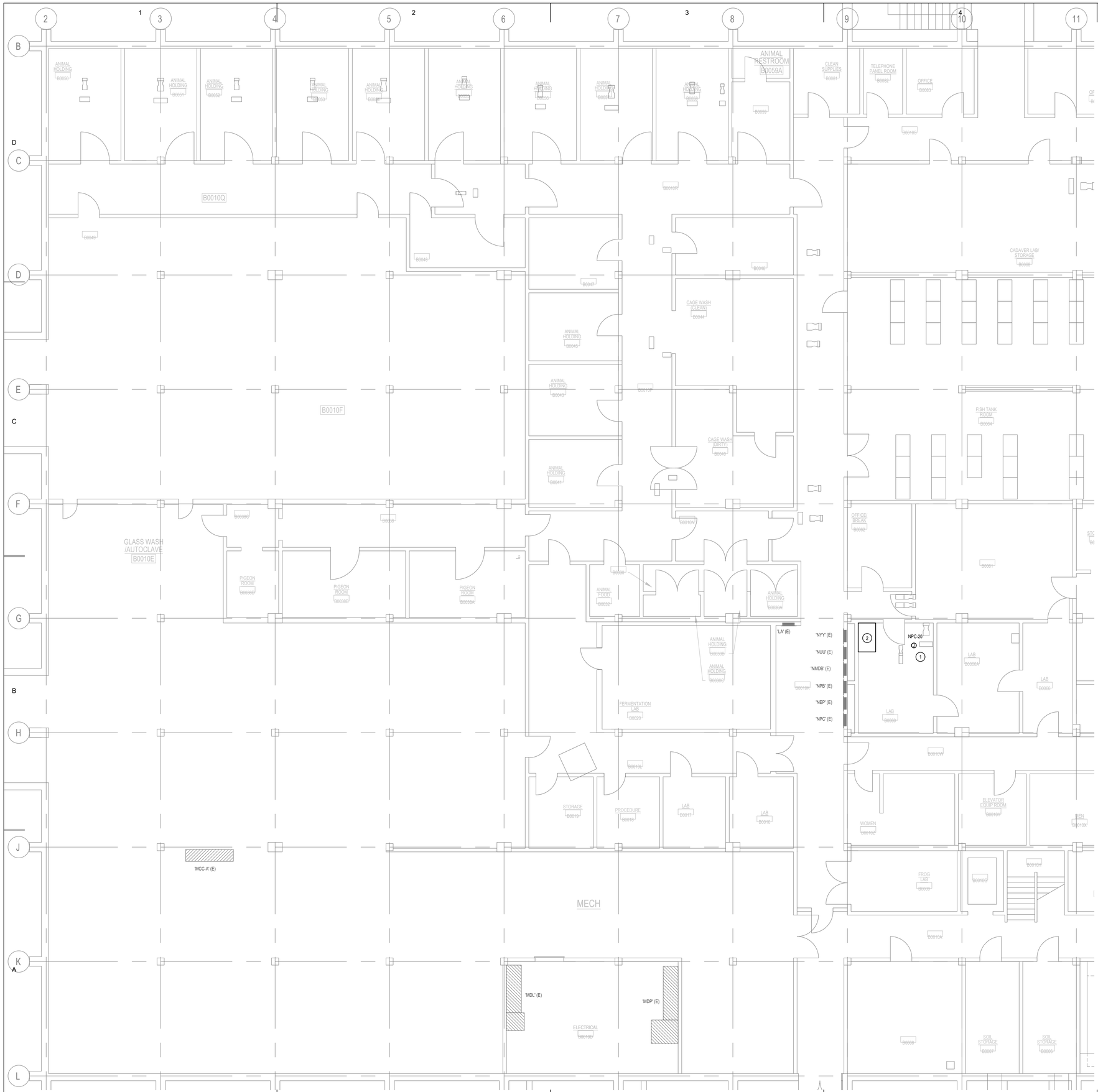
22437

SHEET TITLE:

LEVEL 4/ROOF ELECTRICAL DEMOLITION PLAN

SHEET NUMBER:

ED104



GENERAL NOTES:

A. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF ALL CONDUITS IN THE FIELD. THIS PLAN REPRESENTS A SCHEMATIC REPRESENTATION OF DEVICES LOCATIONS AND CONDUIT RUNS.

B. SHEET SHOWN FOR REFERENCE ONLY.

KEYED NOTES: (#)

1. PROVIDE 120V POWER FOR HVAC CONTROLS. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH IN.

2. CONNECT NEW FUME HOOD TO EXISTING CIRCUIT(S) USED FOR DEMOLISHED FUME HOOD IN SAME LOCATION. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO FUME HOOD SCHEDULE ON MECHANICAL SHEET M601 FOR ADDITIONAL INFORMATION ON TYPE AND QUANTITY OF CONNECTIONS.

BASEMENT ELECTRICAL REMODEL PLAN

SCALE: 1/8" - 1'-0"

NORTH

DAVID L. JENSEN & ASSOCIATES
MECHANICAL ENGINEERS
547 WEST 500 SOUTH SUITE #140
BOUNTIFUL, UTAH 84010
PHONE: (801) 294-9299

STAMP:

PROFESSIONAL ENGINEER
10/13/2021
8357784-2202
REGISTERED
TREVOR REED SPENCER
STATE OF UTAH

CONSULTANT:

ENVISION ENGINEERING
240 E. MORRIZ AVE. SUITE 200
SALT LAKE CITY, UT 84115
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www.envisioneng.com
2021-117.00

THE UNIVERSITY OF UTAH

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BUILDING NAME:

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Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

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ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

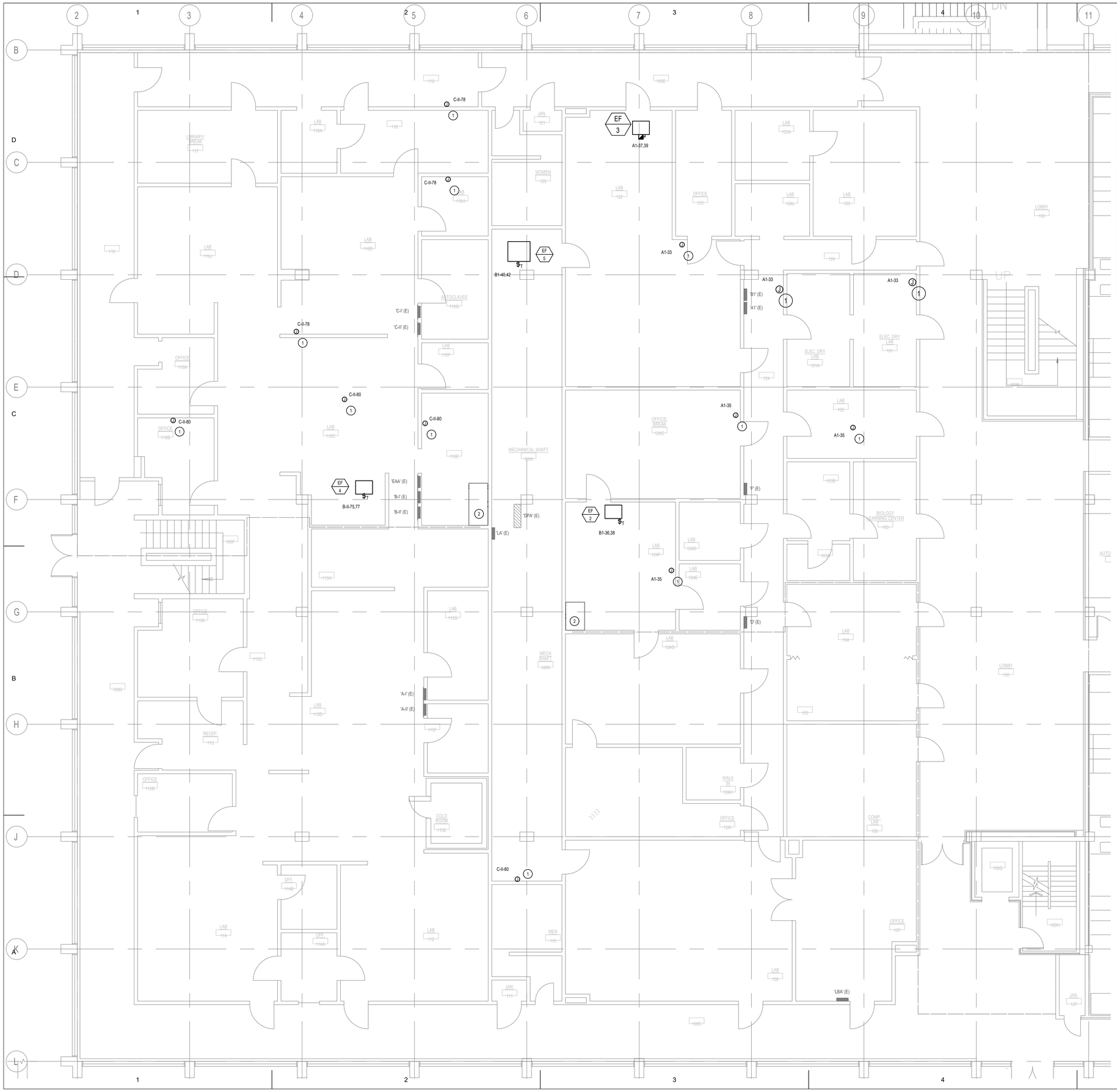
22437

SHEET TITLE:

BASEMENT
ELECTRICAL
REMODEL PLAN

SHEET NUMBER:

EP100



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A B C D E F G H J K L

GENERAL NOTES:

A. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF ALL CONDUITS IN THE FIELD. THIS PLAN REPRESENTS A SCHEMATIC REPRESENTATION OF DEVICES LOCATIONS AND CONDUIT RUNS.

B. ALL CEILING MOUNTED LIGHTING FIXTURES, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, ETC. REMOVED DURING DEMOLITION TO BE REINSTALLED IN SAME LOCATION AFTER MECHANICAL EQUIPMENT/DUCTWORK INSTALLED. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO DEMOLITION PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

KEYED NOTES: (#)

1. PROVIDE 120V POWER FOR HVAC CONTROLS. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH IN.

2. CONNECT NEW FUME HOOD TO EXISTING CIRCUIT(S) USED FOR DEMOLISHED FUME HOOD IN SAME LOCATION. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO FUME HOOD SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION ON TYPE AND QUANTITY OF CONNECTIONS.

NORTH

FIRST FLOOR ELECTRICAL REMODEL PLAN

SCALE: 3/16" - 1'-0"

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BUILDING NAME:

University of Utah
Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

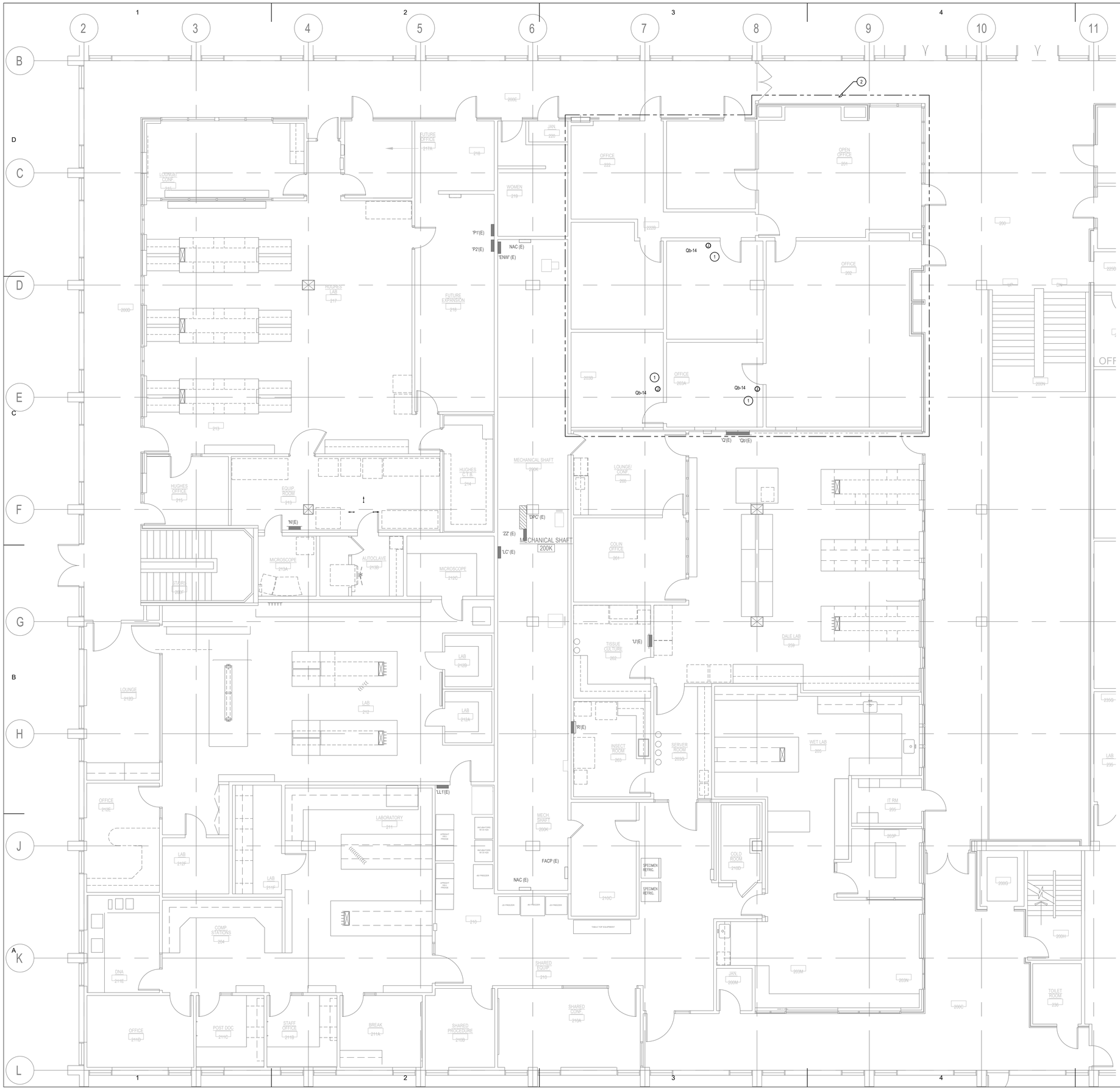
22437

SHEET TITLE:

FIRST FLOOR
ELECTRICAL
REMODEL PLAN

SHEET NUMBER:

EP101



SECOND FLOOR
ELECTRICAL REMODEL PLAN
SCALE: 3/16" - 1'-0"

NORTH

GENERAL NOTES:

A. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF ALL CONDUITS IN THE FIELD. THIS PLAN REPRESENTS A SCHEMATIC REPRESENTATION OF DEVICES LOCATIONS AND CONDUIT RUNS.

B. ALL CEILING MOUNTED LIGHTING FIXTURES, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, ETC. REMOVED DURING DEMOLITION TO BE REINSTALLED IN SAME LOCATION AFTER MECHANICAL EQUIPMENT/DUCTWORK INSTALLED. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO DEMOLITION PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

KEYED NOTES: (#)

1. PROVIDE 120V POWER FOR HVAC CONTROLS. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH IN.

2. ALL WORK IN THIS AREA TO BE BID AS PART OF ALTERNATE #01.

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STAMP:

PROFESSIONAL ENGINEER
10/13/2021
8357784 - 2202
REGISTERED
TREVOR REED SPENCER
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BUILDING NAME:

University of Utah
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PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

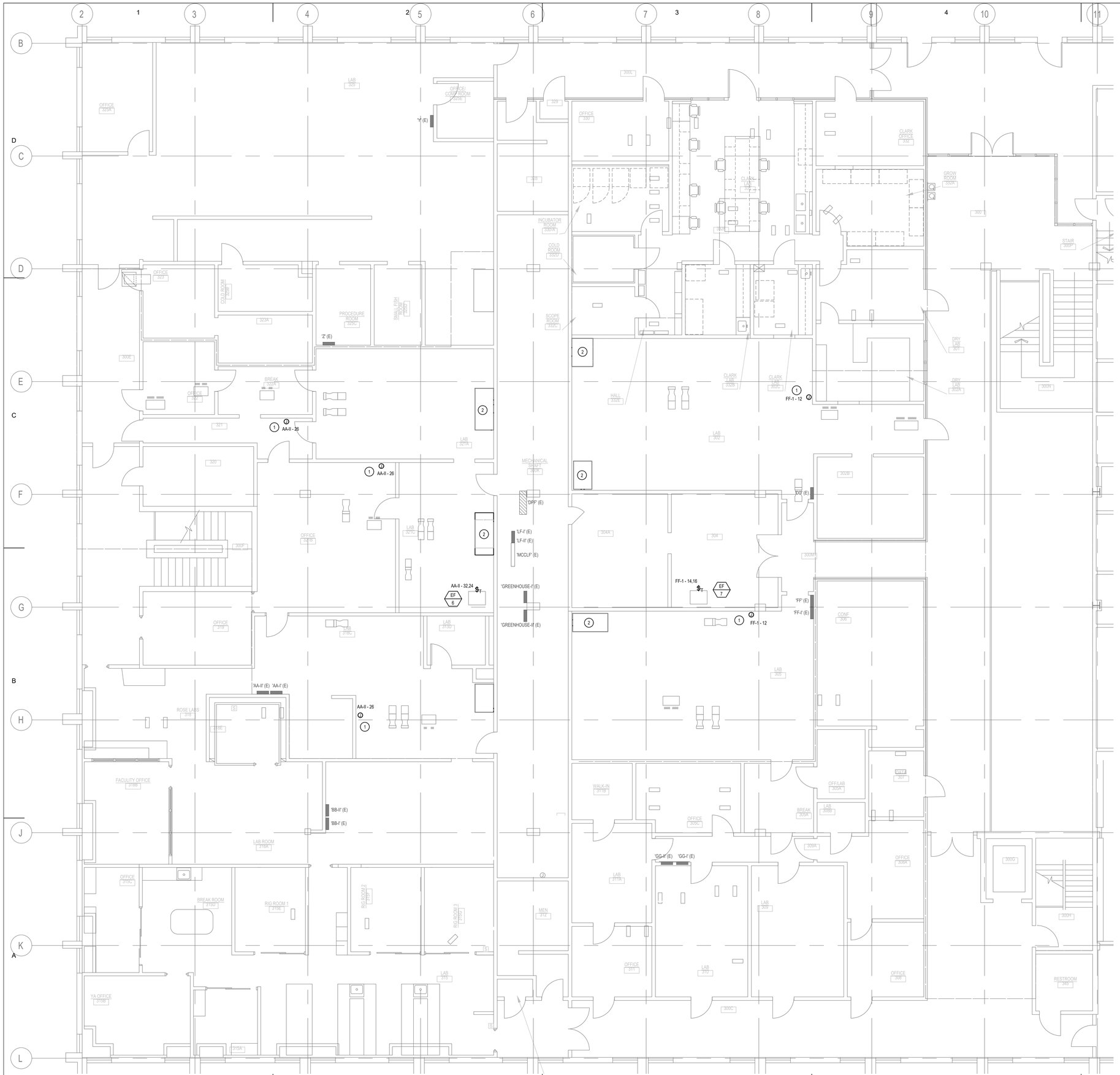
22437

SHEET TITLE:

SECOND FLOOR
ELECTRICAL
REMODEL PLAN

SHEET NUMBER:

EP102



THIRD FLOOR
ELECTRICAL REMODEL PLAN
SCALE: 3/16" - 1'-0"

NORTH

GENERAL NOTES:

A. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF ALL CONDUITS IN THE FIELD. THIS PLAN REPRESENTS A SCHEMATIC REPRESENTATION OF DEVICES LOCATIONS AND CONDUIT RUNS.

B. ALL CEILING MOUNTED LIGHTING FIXTURES, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, ETC. REMOVED DURING DEMOLITION TO BE REINSTALLED IN SAME LOCATION AFTER MECHANICAL EQUIPMENT/DUCTWORK INSTALLED. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO DEMOLITION PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

KEYED NOTES: (#)

1. PROVIDE 120V POWER FOR HVAC CONTROLS. COORDINATE EXACT LOCATION WITH MECHANICAL PRIOR TO ROUGH IN.

2. CONNECT NEW FUME HOOD TO EXISTING CIRCUIT(S) USED FOR DEMOLISHED FUME HOOD IN SAME LOCATION. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO FUME HOOD SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION ON TYPE AND QUANTITY OF CONNECTIONS.

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STAMP:

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10/13/2021
8357784 - 2202
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Biology Bldg 84

PROJECT TITLE:

Fume Hood
Replacement
Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:

PERMIT SET

ISSUE DATE:

OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:

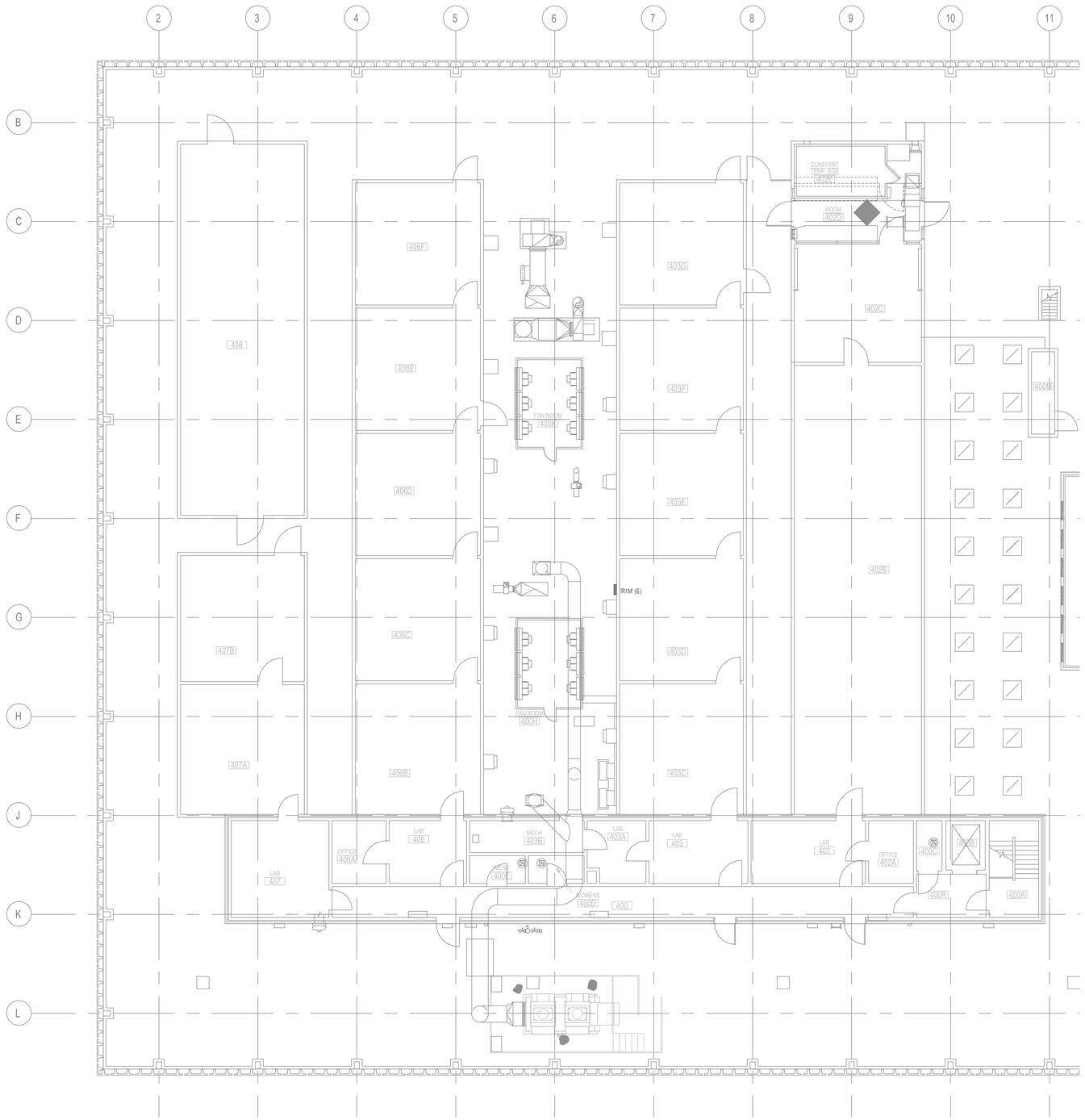
22437

SHEET TITLE:

THIRD FLOOR
ELECTRICAL
REMODEL PLAN

SHEET NUMBER:

EP103



LEVEL4/ROOF ELECTRICAL REMODEL PLAN
SCALE: 1/8" - 1'-0"

NORTH

GENERAL NOTES:

A. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF ALL CONDUITS IN THE FIELD. THIS PLAN REPRESENTS A SCHEMATIC REPRESENTATION OF DEVICES LOCATIONS AND CONDUIT RUNS.

B. ALL CEILING MOUNTED LIGHTING FIXTURES, LIGHTING CONTROL DEVICES, FIRE ALARM DEVICES, ETC. REMOVED DURING DEMOLITION TO BE REINSTALLED IN SAME LOCATION AFTER MECHANICAL EQUIPMENT/DUCTWORK INSTALLED. REUSE EXISTING CONDUIT AND WIRE WHERE POSSIBLE. PROVIDE NEW AS REQUIRED. REFER TO DEMOLITION PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

C. ALL CONDUIT FOR ROOFTOP EQUIPMENT SHALL BE RUN OVERHEAD ON UNISTRUT RACKS TO PREVENT PENETRATION OF ROOF STRUCTURE OUTSIDE OF MECHANICAL CHASE. WHERE POSSIBLE, SHARE UNISTRUT RACK WITH HVAC DUCTWORK. MINIMUM HEIGHT FOR CONDUITS SHALL BE 6'6" ABOVE ROOF. UNISTRUT RACKS SHALL BE SUBMITTED AS A DEFERRED SUBMITTAL, BASED UPON ACTUAL CONDUIT RUNS TO BE PROVIDED. RACK DESIGN AND SUBMITTAL SHALL BE BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF UTAH AND MEET ALL REQUIREMENTS FOR SEISMIC CONTROL AS INDICATED IN THE SPECIFICATIONS. SEAL ALL PENETRATIONS FOR SUPPORTS AND CONDUIT.

KEYED NOTES: (#)

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PROFESSIONAL ENGINEER
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Phone: (801)581-6883
FAX: (801) 581-6081

BUILDING NAME:
University of Utah
Biology Bldg 84

PROJECT TITLE:
Fume Hood Replacement Phase 2

REVISIONS:

MARK	DATE	DESCRIPTION

ISSUE TYPE:
PERMIT SET

ISSUE DATE:
OCTOBER 13, 2021

UNIVERSITY PROJECT NUMBER:
22437

SHEET TITLE:
LEVEL 4/ROOF ELECTRICAL REMODEL PLAN

SHEET NUMBER:
EP104

PANELBOARD SCHEDULE

PANEL NAME: A1 (EXISTING)
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: SQUARE D, TYPE NQOD
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	EXISTING LOAD	20	1		1				2		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		3				4		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		5				6		20	1	EXISTING LOAD	1,9
9	EXISTING LOAD	20	1		7				8		20	1	EXISTING LOAD	1,9
9	EXISTING LOAD	20	1		9				10		20	1	EXISTING LOAD	1,9
9	EXISTING LOAD	20	1		11				12		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		13				14		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		15				16		-	-	-	
9	EXISTING LOAD	20	1		17				18		-	-	-	
9	EXISTING LOAD	20	1		19				20		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		21				22		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		23				24		20	2	EXISTING LOAD	9
9	EXISTING LOAD	20	1		25				26		-	-	-	
9	EXISTING LOAD	20	1		27				28		20	1	EXISTING LOAD	9
9	EXISTING LOAD	20	1		29				30		20	1	EXISTING LOAD	9
9	122 CORD DROP	20	1		31				32		20	1	EXISTING LOAD	9
8	MECHANICAL CONTROL POWER	20	1	E	33		540		34		20	1	EXISTING LOAD	9
8	MECHANICAL CONTROL POWER	20	1	E	35			540	36		20	1	SPACE ONLY	
8	EF-3	20	2	M	37	1,144			38		20	1	SPACE ONLY	
	-	-	-	M	39		1,144		40		20	1	SPACE ONLY	
	SPACE ONLY	20			41			684	42		20	1	SPACE ONLY	
	TOTAL CONNECTED LOAD PER PHASE (VA):					1,144	1,684	540						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					1,430	1,970	540						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					12	16	5						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 3,368 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: 572 VA
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 3,940 VA
E	EQUIPMENT	1,080 VA	100%	1,080 VA	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 11 AMPS
M	MOTOR	2,288 VA	100%	2,288 VA	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 16 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: AA-II (EXISTING)
MOUNTING: RECESSED
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: SQUARE D, NQOD
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
	SPARE	20	1		1				2		20	1	SPARE	
9	RECEPTACLE RM 318	20	1		3				4		20	1	SPARE	
9	J-BOX RM 318	20	1		5				6		20	1	SPARE	
9	SPARE	20	1		7				8		20	1	SPARE	
	SPARE IN J-BOX RM 321B	20	1		9				10		20	1	SPARE	
9	RECPTACLES - RM 321	20	1		11				12		20	1	SPARE	
	SPARE	20	1		13				14		20	1	SPARE	
9	RECPTACLES - FISH ROOM	20	1		15				16		20	1	SPARE	
9	TIME CLOCK	20	1		17				18		20	1	SPARE	
	SPARE	20	1		19				20		20	1	SPARE	
9	RM 318	30	1		21			360	22	E	20	1	MECHANICAL CONTROL POWER	9
	SPACE ONLY	20	1		23			360	24	E	20	1	MECHANICAL CONTROL POWER	9
	SPACE ONLY	20	1		25	540			26	E	20	1	MECHANICAL CONTROL POWER	8
	SPACE ONLY	20	1		27			832	28	M	20	2	EF-8	9
	SPACE ONLY	20	1		29				30	M	-	-	-	
	SPACE ONLY	20	1		31	500			32	M	20	2	EF-6	8
	SPACE ONLY	20	1		33			500	34	M	-	-	-	
	SPACE ONLY	20	1		35				36		20	1	SPACE ONLY	
	SPACE ONLY	20	1		37				38		20	1	SPACE ONLY	
	SPACE ONLY	20	1		39				40		20	1	SPACE ONLY	
	SPACE ONLY	20	1		41				42		20	1	SPACE ONLY	
	TOTAL CONNECTED LOAD PER PHASE (VA):					1,040	1,692	1,192						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					1,040	1,900	1,400						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					9	16	12						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 3,924 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: 416 VA
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 4,340 VA
E	EQUIPMENT	1,260 VA	100%	1,260 VA	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 12 AMPS
M	MOTOR	2,664 VA	100%	2,664 VA	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 16 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: B1 (EXISTING)
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: SQUARE D, NQOD
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	RECPT - RM 100 WEST	20	1		1				2		20	1	RECPT - RM 100 NORTH	9
9	EWC	20	1		3				4		20	1	RECPT - RM 100 NORTH	9
9	RECPT - RM 100 WEST	20	1		5				6		20	1	RECPT - RM 122 EAST	9
9	RECPT - RM 125 SOUTH	20	1		7				8		20	1		
9	WIREMOLD - RM 125 SOUTH	20	1		9				10		20	1	RECPT - RM 180 WEST	9
9	WIREMOLD - RM 125 EAST	20	1		11				12		20	1	RECPT - RM 101A EAST 101	9
	SPARE	20	2		13				14		20	1	RECPT - RM 123	9
	-	-	-		15				16		20	1	RECPT - RM 100A NORTH	9
9	EF SW RM 120, 100A, 124	20	1		17				18		20	1	RECPT - RM 100A NORTH	9
9	RECPT - RM 123	20	1		19				20		20	1	EXISTING LOAD	9
9	RECPT - RM 124L WEST	20	1		21				22		20	1	EXISTING LOAD	9
9	RECPT - RM 124L SOUTH	20	1		23				24		20	1	RECPT - RM 100A EAST	9
9	RECPT - RM 100A WEST	20	1		25				26		20	1	EXISTING LOAD	9
9	RECPT - RM 124L SOUTH	20	1		27				28		20	1	EXISTING LOAD	9
9	RECPT - RM 101A, 101 EAST	20	1		29				30		20	1	EXISTING LOAD	9
9	VENDING MACHINE	20	1		31				32		20	1	XEROX - RM 101	9
9	VENDING MACHINE	20	1		33				34		20	1	-	
	SPACE ONLY	20	1		35			260	36	M	20	2	EF-2	8
	SPACE ONLY	20	1		37	260			38	M	-	-	-	
	SPACE ONLY	20	1		39		815		40	M	20	2	EF-5	8
	SPACE ONLY	20	1		41			815	42	M	-	-	-	
	TOTAL CONNECTED LOAD PER PHASE (VA):					260	815	1,075						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					260	1,019	1,279						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					2	8	11						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 2,150 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: 408 VA
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 2,558 VA
E	EQUIPMENT	-	-	-	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 7 AMPS
M	MOTOR	2,150 VA	100%	2,150 VA	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 11 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: B-II (EXISTING)
MOUNTING: RECESSED
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: GE, A-SERIES
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	PLUGMOLD PREP LAB WEST WALL	20	1		43				44		20	1	PLUGMOLD FILES	9
9	PLUGMOLD PREP LAB WEST WALL	20	1		45				46		20	1	PLUG EQP 113 SOUTH WALL	9
9	PLUGMOLD LAB #3 NORTH WALL	20	1		47				48		20	1	PLUGMOLD OFFICE 109	9
9	PLUGMOLD LAB #3 NORTH WALL	20	1		49				50		20	1	PLUGMOLD OFFICE 109	9
9	PLUGMOLD OFFICE 108	20	1		51				52		20	1	PLUGMOLD OFFICE 109	9
9	PLUGMOLD OFFICE 108	20	1		53				54		20	1	PLUGMOLD ISLAND LAB 3	9
9	PLUGMOLD OFFICE 108	20	1		55				56		20	1	PLUGMOLD ISLAND LAB 3	9
9	PLUGMOLD OFFICE 108	20	1		57				58		20	1	PLUGMOLD ISLAND LAB 3	9
9	PLUGMOLD ISLAND LAB 3	20	1		59				60		20	1	SPARE	
8	EF-2	20	2	M	61	832			62		20	1	SPACE ONLY	
	-	-	-	M	63		832		64		20	1	SPACE ONLY	
8	EF-3	20	2	M	65			832	66		20	1	SPACE ONLY	
	-	-	-	M	67	832			68		20	1	SPACE ONLY	
	SPACE ONLY	20	1		69				70		20	1	SPACE ONLY	
8	MECHANICAL CONTROL POWER	20	1	E	71			360	72		20	1	SPACE ONLY	
8	MECHANICAL CONTROL POWER	20	1	E	73	360			74		20	1	SPACE ONLY	
8	EF-4	20	2	M	75		385		76		20	1	SPACE ONLY	
	-	-	-	M	77			385	78		20	1	SPACE ONLY	
	SPACE ONLY	20	1		79				80		20	1	SPACE ONLY	
	SPACE ONLY	20	1		81				82		20	1	SPACE ONLY	
	SPACE ONLY	20	1		83				84		20	1	SPACE ONLY	
	TOTAL CONNECTED LOAD PER PHASE (VA):					2,024	1,217	1,577						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					2,232	1,425	1,577						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					19	12	13						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 4,818 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: 416 VA
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 5,234 VA
E	EQUIPMENT	720 VA	100%	720 VA	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 15 AMPS
M	MOTOR	4,098 VA	100%	4,098 VA	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 19 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: C-II (EXISTING)
MOUNTING: RECESSED
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: GE, A-SERIES
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	PLUGMOLD KITCEN/DARK RM	20	1		43				44		20	1	PLUGMOLD LAB 1 N WALL/ISLAND	9
9	PLUGMOLD KITCEN/DARK RM	20	1		45				46		20	1	PLUGMOLD LAB 1 N WALL/ISLAND	9
9	PLUGMOLD KITCEN/DARK RM	20	1		47				48		20	1	PLUGMOLD LAB 1 N WALL/ISLAND	9
9	PLUGMOLD LAB 1 S WALL	20	1		49				50		20	1	PLUGMOLD CONFER/LAB2/ASSAY	9
9	PLUGMOLD LAB 1 S WALL	20	1		51				52		20	1	PLUGMOLD CONFER/LAB2/ASSAY	9
9	PLUGMOLD LAB 1 S WALL	20	1		53				54		20	1	PLUGMOLD CONFER/LAB2/ASSAY	9
9	PLUGMOLD AQUARIUM/LAB 2 ISLAND	20	1		55				56		20	1	PLUGMOLD LAB 2	9
9	PLUGMOLD AQUARIUM/LAB 2 ISLAND	20	1		57				58		20	1	PLUGMOLD LAB 2	9
9	PLUGMOLD AQUARIUM/LAB 2 ISLAND	20	1		59				60		20	1	PLUGMOLD AQUARIUM E WALL	9
9	PLUGMOLD AQUARIUM E WALL	20	1		61				62		20	1	PLUGMOLD AQUARIUM E WALL	9
9	PLUGMOLD AQUARIUM E WALL	20	1		63				64		20	1	PLUGMOLD AQUARIUM E WALL	9
9	PLUGMOLD AQUARIUM E WALL	20	1		65				66		20	1	PLUGMOLD AQUARIUM W WALL	9
9	PLUGMOLD RM. 116	20	1		67				68		20	1	PLUGMOLD AQUARIUM W WALL	9
9	PLUGMOLD RM. 116	20	1		69				70		20	1	SPARE	
9	PLUGMOLD RM. 116	20	1		71				72		20	1	PLUGMOLD ISLAND LAB 1	9
	SPARE	20	1		73				74		20	1	PLUGMOLD ISLAND LAB 2	9
	SPARE	20	1		75				76		20	1	PLUGMOLD ISLAND LAB 2	9
	SPARE	20	1		77				78	E	20	1	MECHANICAL CONTROL POWER	
9	AUTOCLAVE KITCHEN	40	3		79		540		80	E	20	1	MECHANICAL CONTROL POWER	
	-	-	-		81				82		-	-	SPARE	
	-				83				84		20	1	SPARE	
	TOTAL CONNECTED LOAD PER PHASE (VA):					540		540						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					540		540						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					5		5						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 1,080 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: -
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 1,080 VA
E	EQUIPMENT	1,080 VA	100%	1,080 VA	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 3 AMPS
M	MOTOR	-	-	-	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 5 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: FF-I (EXISTING)
MOUNTING: SURFACE W/SKIRT ABOVE
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: GE, A-SERIES
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	WIREMOLD - RM 304	20	1		1				2		20	1	EXISTING LOAD	9
9	WIREMOLD - RM 304	20	1		3				4		20	1	EXISTING LOAD	9
9	WIREMOLD - RM 304	20	1		5				6		20	1	EXISTING LOAD	9
9	WIREMOLD - RM 304	20	1		7				8		20	1	OUTLETS - OFFICE AREA	9
9	CONDENSING UNIT	30	2		9				10		20	1	OUTLETS - OFFICE AREA	9
	-	-	-		11			360	12	E	20	1	HVAC CONTROL POWER	8
9	EVAP COOLER	20	1		13	500			14	M	20	2	EF-7	8
9	THERMOSTAT	20	1		15		500		16	M	-	-	-	
	SPACE ONLY	20	1		17				18		20	1	SPACE ONLY	
	SPACE ONLY	20	1		19				20		20	1	SPACE ONLY	
	SPACE ONLY	20	1		21				22		20	1	SPACE ONLY	
	SPACE ONLY	20	1		23				24		20	1	SPACE ONLY	
	SPACE ONLY	20	1		25				26		20	1	SPACE ONLY	
	SPACE ONLY	20	1		27				28		20	1	SPACE ONLY	
	SPACE ONLY	20	1		29				30		20	1	SPACE ONLY	
	SPACE ONLY	20	1		31				32		20	1	SPACE ONLY	
	SPACE ONLY	20	1		33				34		20	1	SPACE ONLY	
	SPACE ONLY	20	1		35				36		20	1	SPACE ONLY	
	SPACE ONLY	20	1		37				38		20	1	SPACE ONLY	
	SPACE ONLY	20	1		39				40		20	1	SPACE ONLY	
	SPACE ONLY	20	1		41				42		20	1	SPACE ONLY	
	TOTAL CONNECTED LOAD PER PHASE (VA):					500	500	360						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					625	625	360						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					5	5	3						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 1,360 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: 250 VA
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 1,610 VA
E	EQUIPMENT	360 VA	100%	360 VA	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 4 AMPS
M	MOTOR	1,000 VA	100%	1,000 VA	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 5 AMPS
K	KITCHEN	-	-	-	
	OTHER	-	-	-	

PANELBOARD SCHEDULE

PANEL NAME: NPC (EXISTING)
MOUNTING: RECESSED
ENCLOSURE: NEMA 1
DOOR STYLE: STANDARD
MANUFACTURER: GE
VOLTAGE: 208Y/120
PHASE: 3
WIRE: 4
MIN. A.I.C. RATING: 22KA
MAINS TYPE: MLO
BUS MATERIAL: COPPER
BUS RATING: 225 AMPS
MCB RATING: NONE
SPD: NONE
NEUTRAL: 100% RATED
BRANCH OCP TYPE: BOLT-ON CBs
ISOLATED GROUND: NO

KEYED NOTE	CIRCUIT DESCRIPTION	BREAKER AMPS	BREAKER POLE	LOAD TYPE	CKT. #	CONNECTED LOAD/PHASE (VA) A	B	C	CKT. #	LOAD TYPE	BREAKER AMPS	BREAKER POLE	CIRCUIT DESCRIPTION	KEYED NOTE
9	SPECIAL OUTLET D - RM 040	30	2		1				2		20	2	HASKRIS CHILLER - RM 040	9
	-	-	-		3				4		-	-	-	
9	DIFFRACTOMETER - RM 039	30	2		5				6		20	2	HASKRIS CHILLER DIFRACTOMETER - RM 039	9
	-	-	-		7				8		-	-	-	
9	HASKRIS CHILLER DIFRACTOMETER - RM 039	20	2		9		150		10		20	2	EF-1	8,10
	-	-	-		11			150	12		-	-	-	
9	SPECIAL OUTLET - RM 61	30	2		13				14		30	3	OUTLET - RM 042	9
	-	-	-		15				16		-	-	-	
9	SPACE ONLY	20	1		17				18		-	-	-	
9	FOURPLEX - RM 39	20	1		19	180			20		20	1	MECHANICAL CONTROLS	
9	WIREMOLD - RM 032	20	1		21				22		20	1	SPARE	
9	AUTOCLAVE	20	1		23				24		20	1	WIREMOLD - RM 030	9
9	WIREMOLD - RM 030	20	1		25				26		20	1	SPARE	
9	OUTLETS - RM 032	20	1		27				28		20	1	SPARE	
9	OUTLETS - RM 031	20	1		29				30		20	1	CEILING OUTLETS - RM 030	9
9	OUTLETS - RM 031	20	1		31				32		20	1	ATC TIME CLOCK - RM 010	9
9	OUTLETS - RM 038	20	1		33				34		20	1	EWC	9
9	FC-1, FC-2	20	1		35				36		20	1	EF-8	9
9	SPARE TO TRANSFER SWITCH	20	1		37				38		20	1	OUTLET - RM 038	9
9	GENERATOR BLOCK HEATER	20	1		39				40		20	1	OUTLET - RM 069	9
9	OUTLETS - RM 069	20	1		41				42		20	1	OUTLET - RM 069	9
	TOTAL CONNECTED LOAD PER PHASE (VA):					180	150	150						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (VA):					180	150	150						
	TOTAL ESTIMATED DEMAND LOAD PER PHASE (AMPS):					2	1	1						

TYPE	LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
P	SUB-PANEL	SUB-PANEL LOADS BROKEN OUT BY LOAD CLASIFICATION BELOW			
R	RECEPTACLES	-	-	-	TOTAL CONNECTED LOAD: 480 VA
L	LIGHTING	-	-	-	25% OF LARGEST MOTOR: -
C	CONTINUOUS	-	-	-	TOTAL ESTIMATED DEMAND LOAD: 480 VA
E	EQUIPMENT	-	-	-	TOTAL ESTIMATED DEMAND BALANCED CURRENT: 1 AMPS
M	MOTOR	-	-	-	MAXIMUM ESTIMATED DEMAND PHASE CURRENT: 2 AMPS
K	KITCHEN	-	-	-	
	OTHER	480 VA	100%	480 VA	

PANELBOARD S