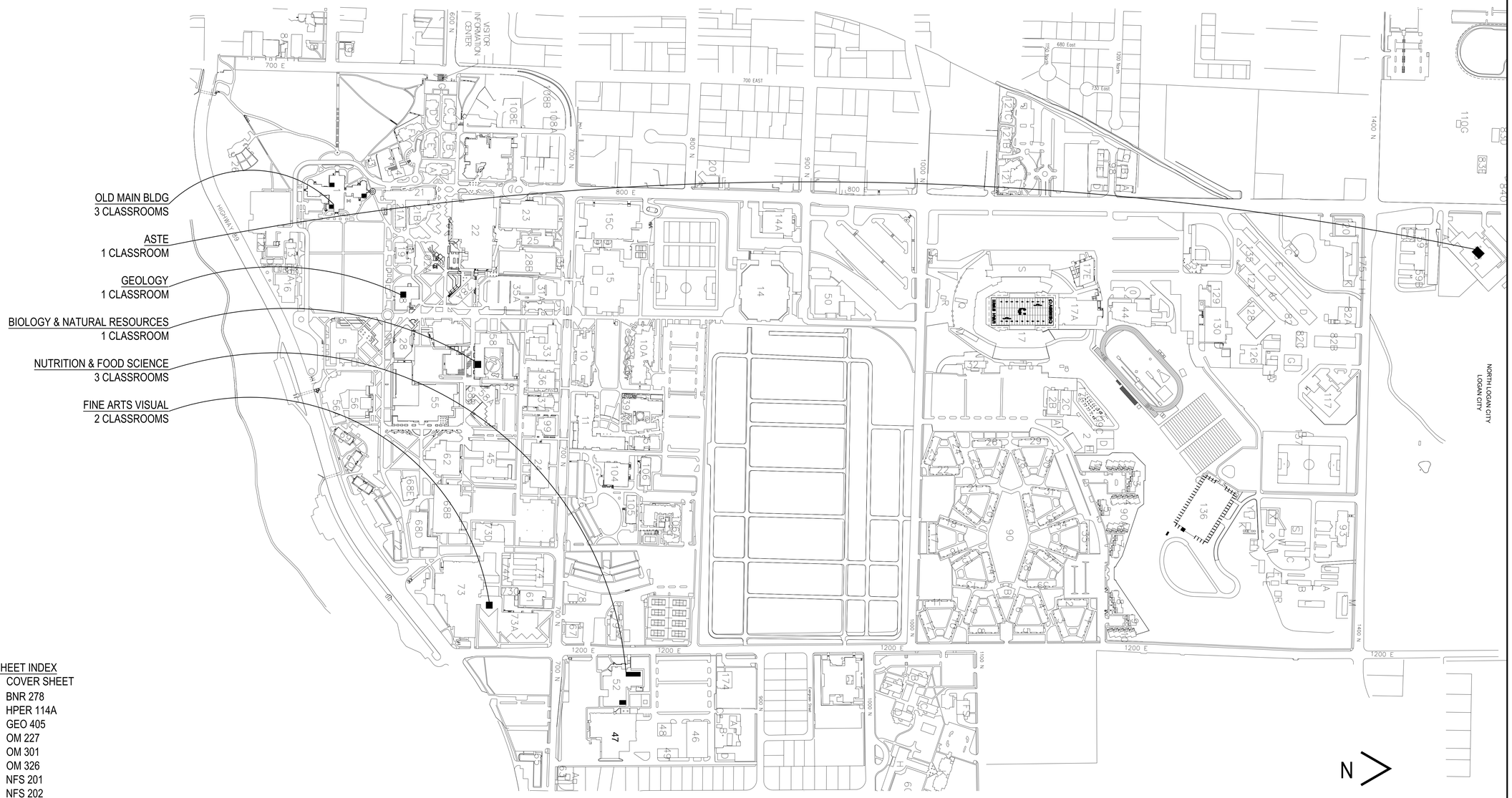
USU LOGAN MISC. CLASSROOM REMODELS - 2025



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CRSA

PROJECT **25-012**

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

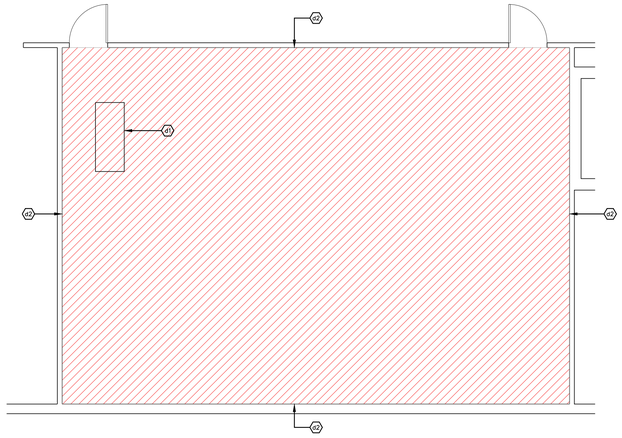
UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS
FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

UtahState University

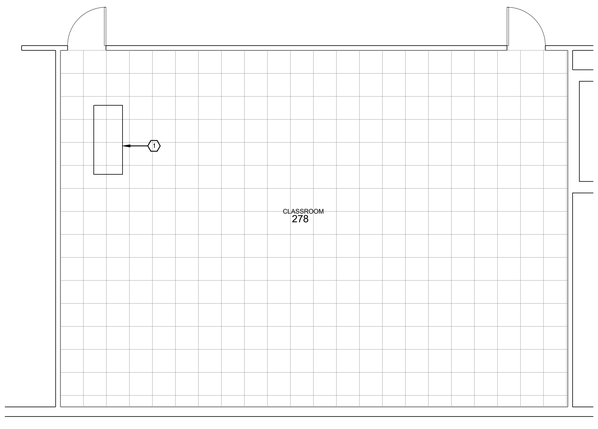
STATE OF UTAH
ROBERT SONNTAG
No. 9786545-0301
04/11/25
LICENSED ARCHITECT

COVER SHEET
G1000

(801) 355-5915



D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"



A1 FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

d1 REMOVE EXISTING TEACHING CONSOLE AS REQUIRED TO DEMOLISH VCT FLOOR. PRESERVE FOR REINSTALLATION. COORDINATE WITH USU.

x2 REMOVE EXISTING WALL BASE.

DEMOLITION LEGEND

USU TO TEST FOR ASBESTOS IN EXISTING VCT TILE. IF ABATEMENT IS REQUIRED, USU WILL ABATE AND DEMOLISH VCT. IF NO ASBESTOS IS FOUND, CONTRACTOR TO DEMOLISH EXISTING VCT AND CLEAN FLOOR TO PREPARE FOR NEW CARPET TILES.

KEYNOTES

1 REINSTALL TEACHING CONSOLE. COORDINATE WITH USU AV FOR FINAL CONNECTIONS

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH. PATCH AND REPAIR PAINTED WALLS AS REQUIRED AFTER INSTALLATION.

CRSA

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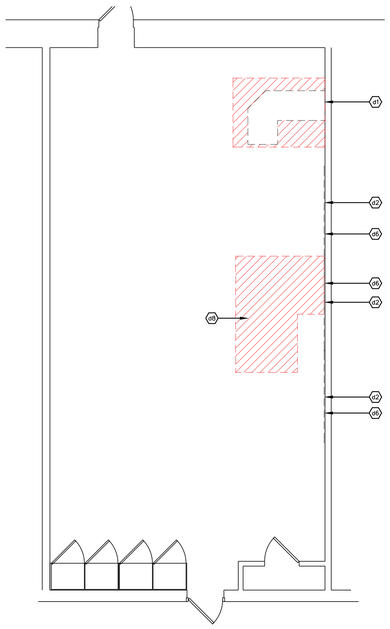
STATE OF UTAH
ROBERT SONNTAG
No. 9786545-0301
04/11/25
LICENSED ARCHITECT

BNR 278

AE101.02

(801) 355-5915



D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

x1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

x2 REMOVE EXISTING (3) WHITEBOARDS

x3 REMOVE EXISTING (2) PROJECTOR SCREENS COMPLETELY

x4 USU AV GROUP WILL REMOVE EXISTING PROJECTOR AND MOUNTING BRACKET

x5 USU AV GROUP WILL REMOVE AND SALVAGE EXISTING SPEAKER FOR REINSTALLATION

x6 REMOVE SECTION OF SHEETROCK WALL FURRING AS NEEDED FOR NEW ELECTRICAL WORK

x7 REMOVE EXISTING 1X4 LED LIGHTING. RECYCLE TO USU FOR REUSE. CIRCUITING TO REMAIN FOR REUSE WITH UPDATED FIXTURES.

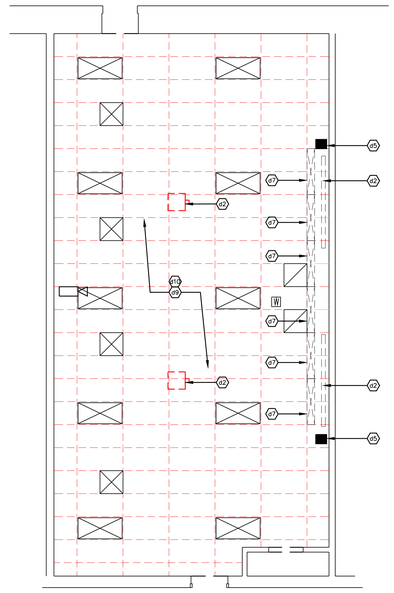
x8 SAWCUT EXISTING CONCRETE FLOOR SLAB FOR NEW CONDUIT PATHWAYS AS NEEDED FOR CONDUIT TO NEW CONSOLE.

x9 REMOVE EXISTING 2X4 CEILING TILES COMPLETELY

x10 REMOVE ALL UNUSED ABOVE CEILING CONDUIT PATHWAYS FROM PREVIOUS WORK.

DEMOLITION LEGEND

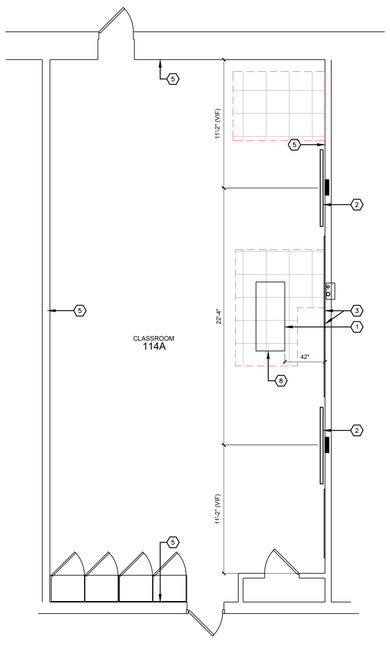
REMOVE EXISTING CARPET TILES FOR SEAMLESS REPAIR AROUND DEMOLISHED CONSOLE AND AT AREA OF SAW CUTTING FOR NEW CONDUIT PATHWAYS



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP



A1 FLOOR PLAN
3/16" = 1'-0"

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. CENTER BETWEEN NORTH AND SOUTH WALLS

2 (2) 85" TV DISPLAY PROVIDED AND INSTALLED BY USU AV GROUP. "CHIEF AV WALL MOUNTED BOX" TO BE PROVIDED AND INSTALLED BY CONTRACTOR AT +74" AFF.

3 PROVIDE (1) 4'X8' AND (1) 4'X6' EVERWHITE WHITEBOARD WITH CHALK RAIL AT LOCATIONS SHOWN. COORDINATE ACTUAL LOCATIONS WITH TV DISPLAY LOCATION.

4 EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.

5 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT NORTH, WEST, AND SOUTH WALLS "USU WHITE". PAINT EAST WALL ACCENT COLOR "TBD". PAINT TO BOTTOM OF ROOF DECK ABOVE.

6 PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.

7 PROVIDE 2'X2' LITHONIA (OR EQUAL) CPANL SURFACE LED FLAT PANEL FIXTURES WITH WHITE TRIM KIT, 4000K, 45 W (VFY). PATCH AND REPAIR EXISTING GYP BD CEILING PRIOR TO NEW FIXTURE INSTALLATION.

8 SAWCUT EXISTING CONCRETE SLAB. PROVIDE BURIED CONDUITS PER ELECTRICAL. PATCH EXISTING CONCRETE SLAB SMOOTH.

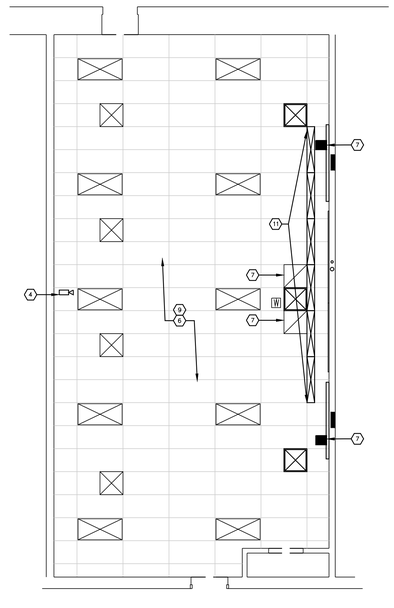
9 PATCH AND REPAIR EXISTING RECESSED CEILING GRID SYSTEM AS NEEDED FOR NEW LIGHT INSTALLS. REPLACE ALL 2X4 CEILING TILES WITH NON-TEGULAR ARMSTRONG TILES.

10 EXISTING SPEAKERS TO BE REINSTALLED BY USU AV. PROVIDE CONDUIT CONNECTIONS TO NEW DISPLAY SYSTEM VIA NEW JBOX. COORDINATE EXACT LOCATION WITH USU AV.

11 NEW 1X4 LIGHT FIXTURES. RE: ELECTRICAL

FINISH LEGEND

PATCH AND REPAIR CARPET TILES AND BASE TO MATCH EXISTING.



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

CRSA

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HPER 114A

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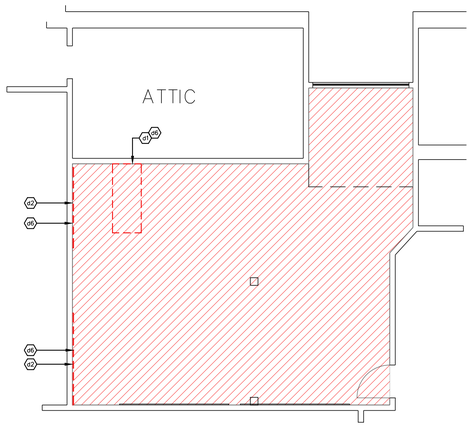


D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

D1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

D2 REMOVE EXISTING (2) WHITEBOARDS AT WEST WALL

D3 REMOVE EXISTING PROJECTOR SCREEN COMPLETELY

D4 USU AV GROUP WILL REMOVE EXISTING PROJECTOR AND MOUNTING BRACKET

D5 USU AV GROUP WILL REMOVE AND SALVAGE EXISTING SPEAKER FOR REINSTALLATION

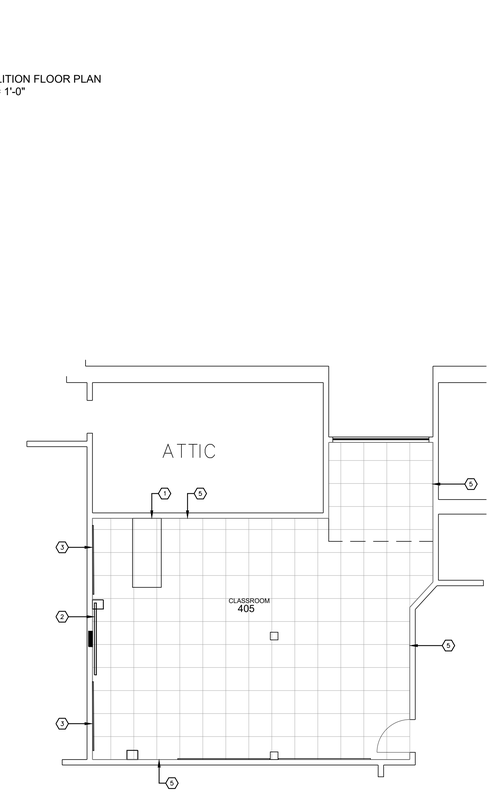
D6 REMOVE SECTION OF SHEETROCK AS NEEDED FOR NEW ELECTRICAL WORK

D7 REMOVE EXISTING 1X4 LIGHTING. RECYCLE TO USU FOR REUSE. CIRCUITING TO REMAIN FOR REUSE.

D8 REMOVE EXISTING REGISTER OR GRILLE. DUCT TO REMAIN. PREP FOR NEW REGISTER OR GRILLE.

DEMOLITION LEGEND

REMOVE EXISTING CARPET TILES AND BASE. PREP FOR NEW CARPET TILES AND BASE.



A1 FLOOR PLAN
3/16" = 1'-0"

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. PATCH, REPAIR, & REPLACE TRIM & DRYWALL AT LOCATION OF DEMOLISHED CONSOLE.

2 (1) 85" TV DISPLAY PROVIDED AND INSTALLED BY USU AV GROUP. "CHIEF AV WALL MOUNTED BOX" TO BE PROVIDED AND INSTALLED BY CONTRACTOR AT +74" AFF. CENTER ON WALL.

3 PROVIDE (2) 4'X6' EVERWHITE WHITEBOARD WITH CHALK RAIL AT LOCATION SHOWN. CENTER BETWEEN TV DISPLAY AND WALL.

4 EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.

5 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT NORTH, WEST, AND EAST WALLS "USU WHITE". PAINT SOUTH WALL ACCENT COLOR "TBD". REMOVE & REINSTALL WALL-MOUNTED FIXTURES AS REQUIRED TO FULLY PAINT WALL.

6 PROTECT EXISTING CEILING-MOUNTED DEVICES AS NEEDED DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.

7 PROVIDE 1X4 LIGHT FIXTURES. RE: ELECTRICAL.

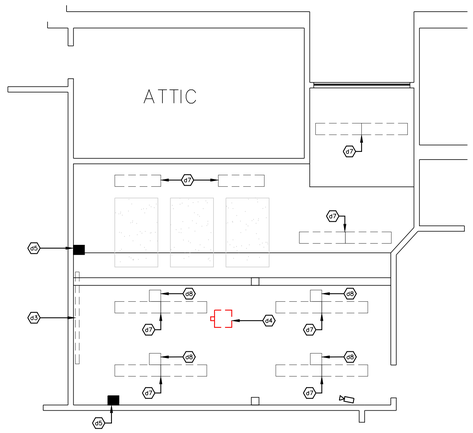
8 PATCH AND REPAIR CEILING, REPLACE EXISTING DAMAGED 1X1 CEILING TILES

9 PAINT EXISTING PAINTED GYP BOARD CEILING PANELS.

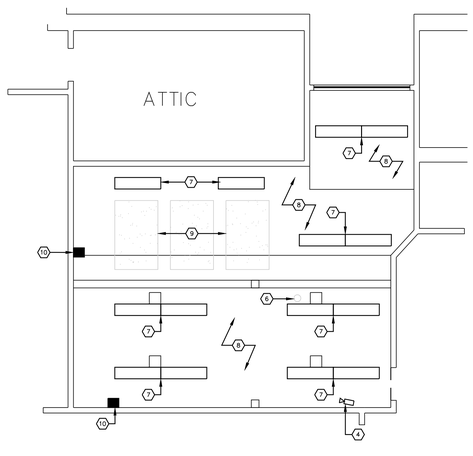
10 EXISTING SPEAKERS TO BE REINSTALLED BY USU AV. PROVIDE CONDUIT CONNECTIONS TO NEW DISPLAY SYSTEM VIA NEW J BOX. COORDINATE EXACT LOCATION WITH USU AV.

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH.



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

CRSA

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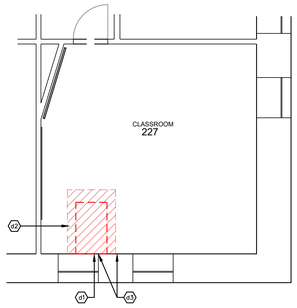
FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

STATE OF UTAH
ROBERT SONNTAG
No. 9786545-0301
04/11/25
LICENSED ARCHITECT

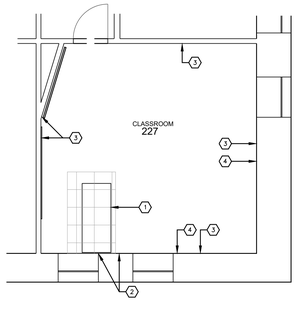
GEO 405

AE101.04

(801) 355-5915



D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"



A1 FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

A1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

A2 REMOVE EXISTING CARPET TILES AS NEEDED AFTER CONSOLE IS REMOVED FOR SEAMLESS CARPET AROUND NEW CONSOLE.

A3 REMOVE EXISTING WOOD BASE AND WINDOW TRIM , PREP FOR NEW TRIM TO ALIGN WITH NEW CONSOLE

DEMOLITION LEGEND

REMOVE EXISTING CARPET TILES AND BASE. PREP FOR NEW CARPET TILES AND BASE.

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION.

2 REPLACE WOOD BASE AND WINDOW TRIM TO MATCH EXISTING ADJACENT

3 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT WALLS "USU WHITE".

4 OAK CHAIR RAILS, FINISHED TO MATCH EXISTING ON ADJACENT WALL.

FINISH LEGEND

PATCH AND REPAIR CARPET TILES AND BASE TO MATCH EXISTING

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

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OLD MAIN 227

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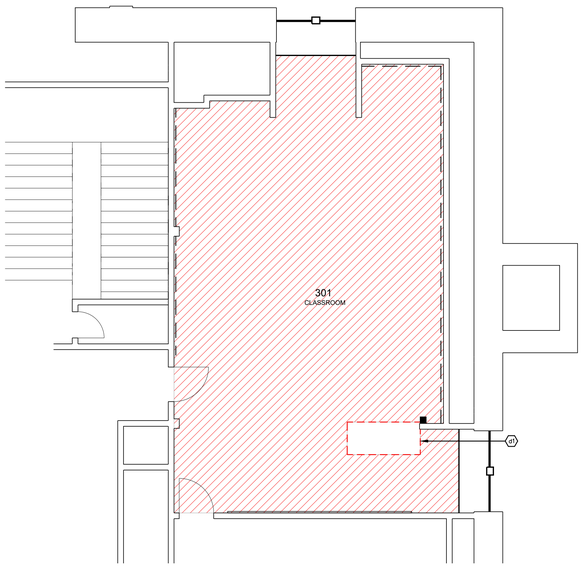
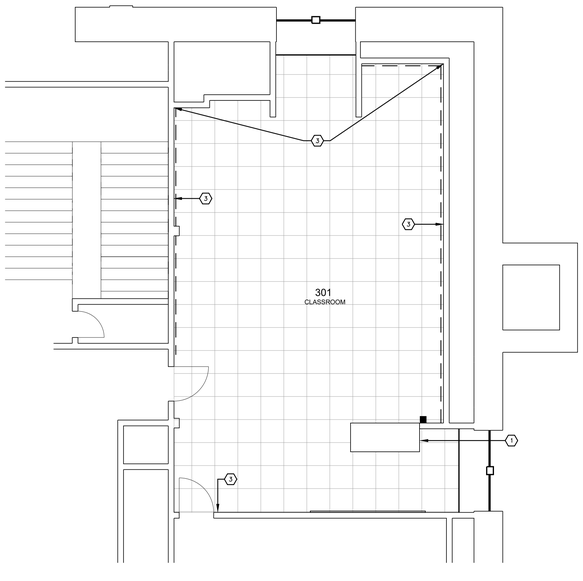


D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"



A1 FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

D1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

D2 REMOVE EXISTING SUSPENDED LIGHTING, RECYCLE TO USU FOR REUSE. CIRCUITING TO REMAIN FOR REUSE.

DEMOLITION LEGEND

REMOVE EXISTING CARPET TILES AND BASE. PREP FOR NEW CARPET TILES AND BASE.

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. PATCH, REPAIR, & REPLACE TRIM & DRYWALL AT LOCATION OF DEMOLISHED CONSOLE.

2 EXISTING CLASSROOM CAMERA TO REMAIN.

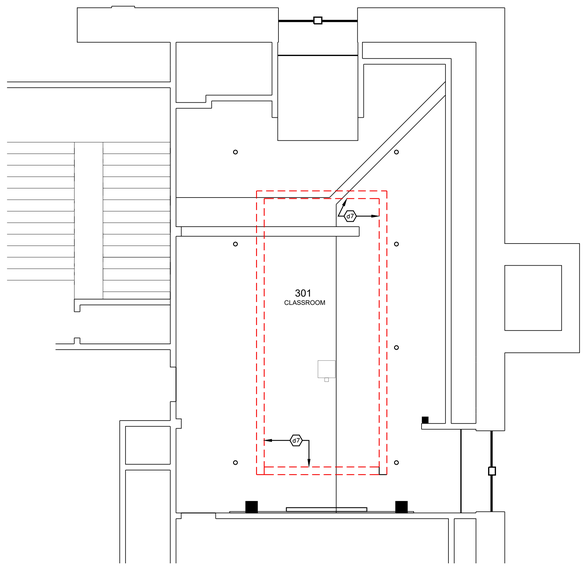
3 PATCH AND REPAIR EXISTING SHEETROCK WALLS AND CEILING THROUGHOUT. PAINT CEILING AND WALLS "USU WHITE". REMOVE & REINSTALL WALL-MOUNTED FIXTURES AS REQUIRED TO FULLY PAINT WALL.

4 LIGHT FIXTURES. RE: ELECTRICAL.

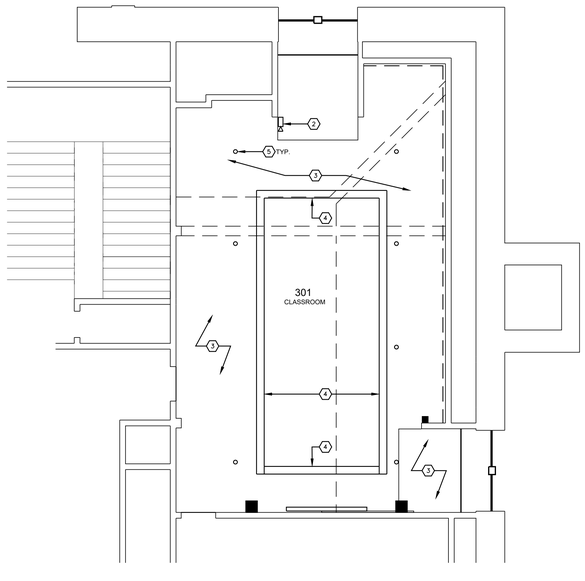
5 PROTECT EXISTING CEILING-MOUNTED DEVICES AS NEEDED DURING CONSTRUCTION.

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH.



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

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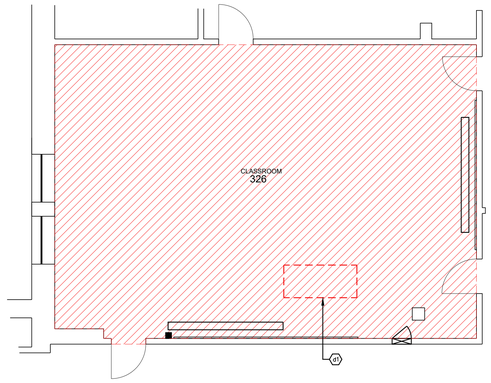
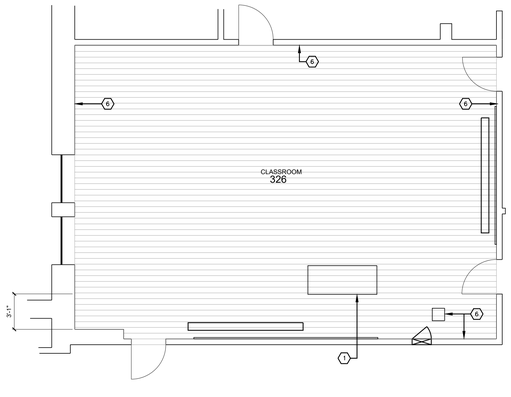


D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"



A1 FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

01 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

05 REMOVE SECTION OF SHEETROCK AS NEEDED FOR NEW ELECTRICAL WORK

07 REMOVE EXISTING 2X4 LIGHTING, RECYCLE TO USU. CIRCUITING TO REMAIN FOR REUSE.

08 REMOVE EXISTING 2X4 CEILING TILES COMPLETELY

09 REMOVE EXISTING REGISTER OR GRILLE

DEMOLITION LEGEND

REMOVE EXISTING CARPET TILES AND BASE. PREP FOR NEW CARPET TILES AND BASE.

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. PROVIDE POWER AND COMMS CONNECTION THROUGH FLOOR. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION.

4 REGISTER OR GRILLE

6 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT WALLS "USU WHITE". PAINT TO BOTTOM OF DECK ABOVE.

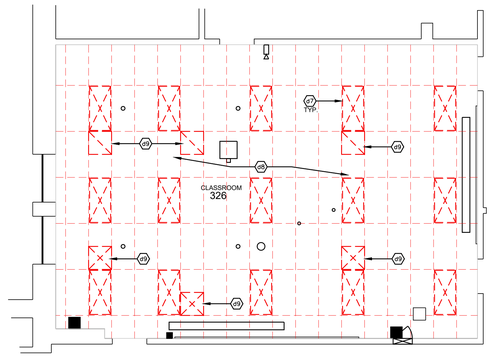
7 PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.

8 PATCH AND REPAIR EXISTING RECESSED CEILING GRID SYSTEM AS NEEDED FOR NEW LIGHT INSTALLS. REPLACE ALL 2X4 CEILING TILES WITH NON-TEGULAR ARMSTRONG TILES.

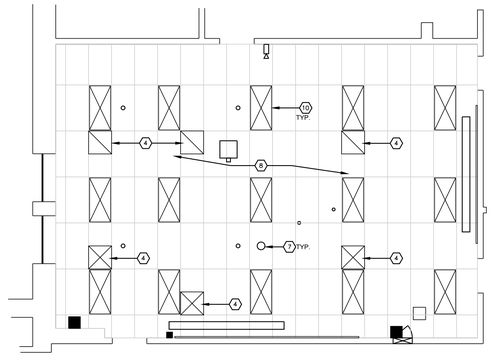
10 2X4 LED FIXTURE. RE: ELECTRICAL

FINISH LEGEND

PROVIDE NEW WOOD FLOOR (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" BASE TRIM AT PERIMETER TO MATCH.



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

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OLD MAIN 326

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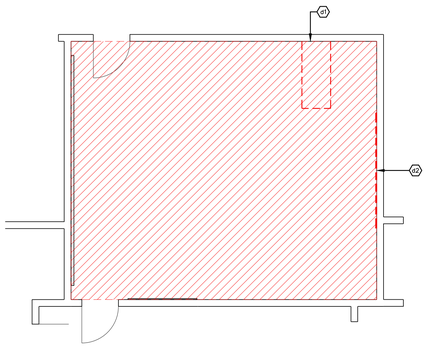


D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

X1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

X2 REMOVE EXISTING WHITE BOARD. PRESERVE FOR SALVAGE BY USU.

X3 REMOVE EXISTING PROJECTOR SCREEN COMPLETELY

X4 USU AV GROUP WILL REMOVE EXISTING PROJECTOR AND MOUNTING BRACKET

X5 USU AV GROUP WILL REMOVE AND SALVAGE EXISTING SPEAKER FOR REINSTALLATION

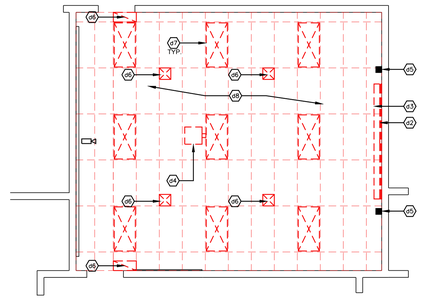
X6 REMOVE EXISTING REGISTER OR GRILLE

X7 REMOVE EXISTING 2X4 LIGHTING, RECYCLE TO USU. CIRCUITING TO REMAIN FOR REUSE.

X8 REMOVE EXISTING 2X4 CEILING TILES COMPLETELY. REMOVE INCLINED GRID AT WEST END OF ROOM

DEMOLITION LEGEND

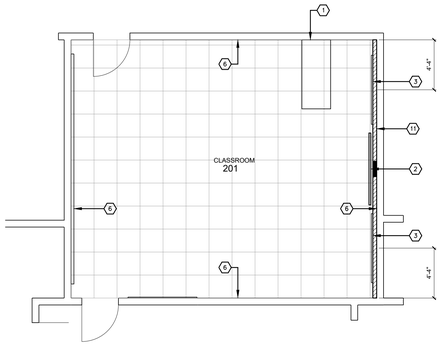
USU TO TEST FOR ASBESTOS AND REMOVE VCT. COORDINATE WITH USU FOR REMEDIATION.



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP



A1 FLOOR PLAN
3/16" = 1'-0"

KEYNOTES

1 CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. PATCH, REPAIR, & REPLACE TRIM & DRYWALL AT LOCATION OF DEMOLISHED CONSOLE.

2 85" TV DISPLAY PROVIDED AND INSTALLED BY USU AV GROUP. "CHIEF AV WALL MOUNTED BOX" TO BE PROVIDED AND INSTALLED BY CONTRACTOR AT +74" AFF. CENTER ON WALL.

3 PROVIDE (2) 4'X6' EVERWHITE WHITEBOARDS WITH CHALK RAIL AT LOCATIONS SHOWN. COORDINATE ACTUAL LOCATIONS WITH TV DISPLAY LOCATION.

4 EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE NEW 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.

5 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT ALL WALLS "USU WHITE". PAINT TO BOTTOM OF DECK ABOVE. REMOVE & REINSTALL WALL-MOUNTED EQUIPMENT TO REMAIN AS REQUIRED FOR PAINTING.

6 PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.

7 PATCH AND REPAIR EXISTING RECESSED CEILING GRID SYSTEM AS NEEDED FOR NEW LIGHT INSTALLS. REPLACE ALL 2X4 CEILING TILES WITH NON-TEGULAR ARMSTRONG TILES. PROVIDE NEW GRID AT WEST END OF ROOM.

8 EXISTING SPEAKERS TO BE REINSTALLED BY USU AV. PROVIDE CONDUIT CONNECTIONS TO NEW DISPLAY SYSTEM. COORDINATE WITH USU AV.

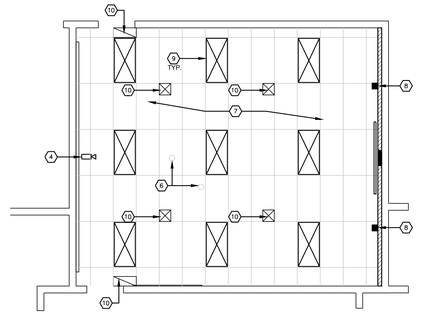
9 2X4 LED FIXTURE. RE: ELECTRICAL

10 REGISTER OR GRILLE

11 FURRED WALL, ⅝" GYP BD. ON 3 ⅝" STUDS OVER EXISTING CMU EXTEND GYP BOARD AND PAINT TO DECK ABOVE.

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH.



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

CRSA

PROJECT **25-012**

BID SET 2025-04-10

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FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

Utah State University

STATE OF UTAH
ROBERT SONNTAG
No. 9786545-0301
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LICENSED ARCHITECT

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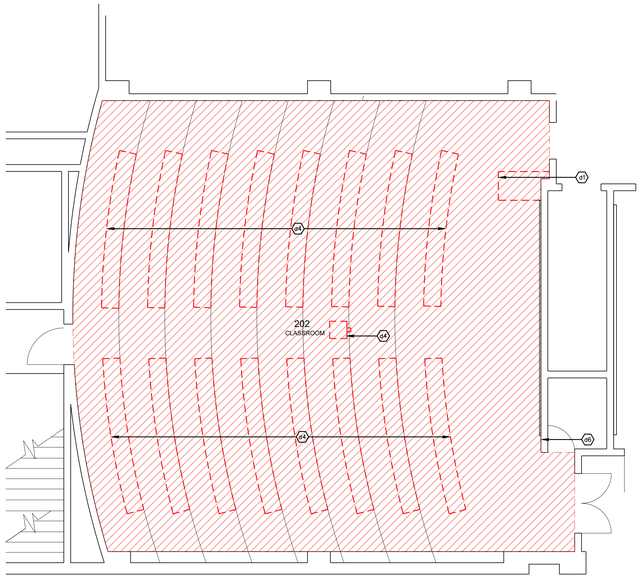
AE101.08

(801) 355-5915



D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

D1 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY

D2 REMOVE EXISTING REGISTER OR GRILLE

D3 REMOVE EXISTING PROJECTOR SCREEN COMPLETELY

D4 REMOVE EXISTING FIXED TABLE TOPS, BASES TO REMAIN

D5 EXISTING SPEAKER TO REMAIN

D6 REMOVE SECTION OF SHEETROCK AS NEEDED FOR NEW ELECTRICAL WORK

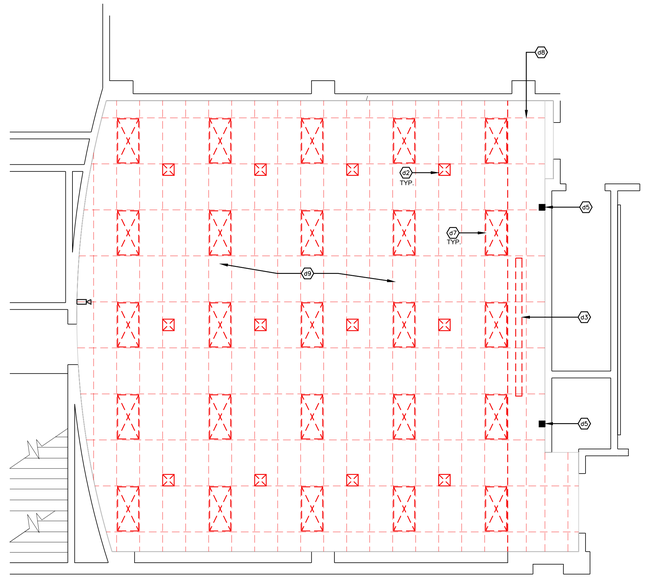
D7 REMOVE EXISTING 2X4 LIGHTING, RECYCLE TO USU. CIRCUITING TO REMAIN FOR REUSE.

D8 REMOVE ANGLED SOFFIT GRID & TILES

D9 REMOVE EXISTING 2X4 CEILING TILES COMPLETELY. REMOVE ANGLED GRID AT EAST END OF ROOM.

DEMOLITION LEGEND

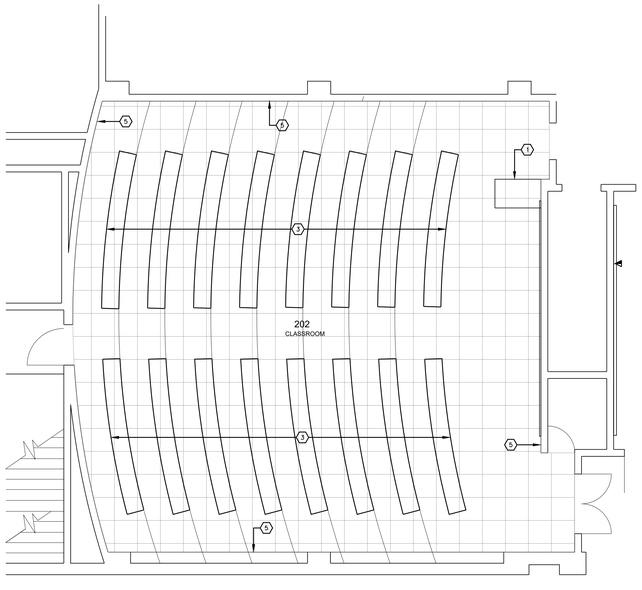
REMOVE EXISTING CARPET AND BASE. CUT CARPET AROUND EXISTING FIXED TABLE LEGS AND PROTECT LEGS DURING NEW CARPET INSTALLATION. REMOVE ANY EXISTING FLOOR OUTLETS AND RETAIN FOR REINSTALLATION.



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP



A1 FLOOR PLAN
3/16" = 1'-0"

KEYNOTES

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2 PROJECTOR SCREEN, OWNER FURNISHED, CONTRACTOR INSTALLED

3 FIXED TABLE COUNTERTOP. MATERIAL & FINISH TO BE SELECTED BY USU

4 EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE NEW 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.

5 PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT ALL WALLS "USU WHITE". PAINT TO BOTTOM OF DECK ABOVE. REMOVE & REINSTALL WALL-MOUNTED EQUIPMENT TO REMAIN AS REQUIRED FOR PAINTING.

6 PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.

7 PATCH AND REPAIR EXISTING RECESSED CEILING GRID SYSTEM AS NEEDED FOR NEW LIGHT INSTALLS. REPLACE ALL 2X4 CEILING TILES WITH NON-TEGULAR ARMSTRONG TILES. EXTEND CEILING GRID TO WALL THROUGH AREA OF DEMOLISHED ANGLED SOFFIT.

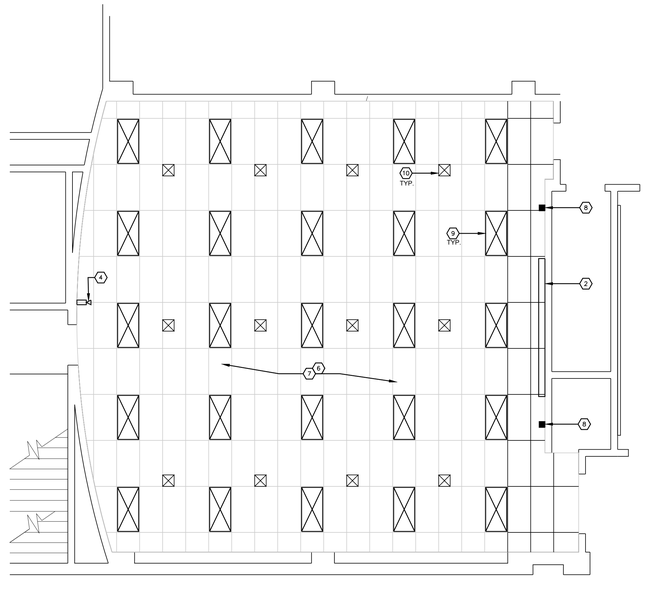
8 EXISTING SPEAKERS TO REMAIN

9 2X4 LED FIXTURE. RE: ELECTRICAL

10 REGISTER OR GRILLE

FINISH LEGEND

PROVIDE NEW CARPET (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH. PROVIDE FLEXCO #202 DOUBLE-BUTT CARPET STAIR NOSINGS THROUGHOUT. PROVIDE MANUFACTURERS STANDARD INSTALLATION REQUIREMENTS - COLOR: BLACK



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

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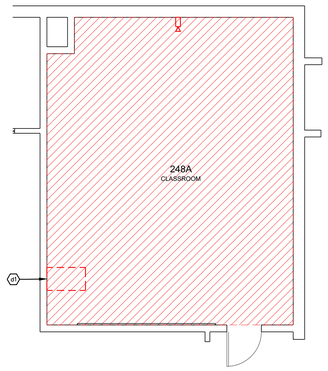

D1 DEMOLITION FLOOR PLAN
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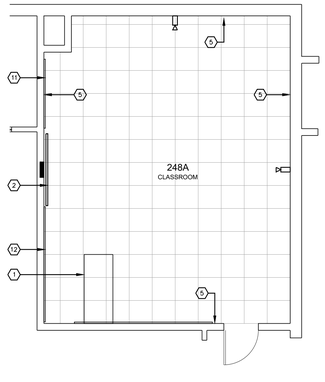


A1 FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

- d1 REMOVE EXISTING TEACHING CONSOLE COMPLETELY
- d2 USU AV GROUP WILL REMOVE AND SALVAGE EXISTING CLASSROOM CAMERA FOR REINSTALLATION
- d3 REMOVE EXISTING PROJECTOR SCREEN COMPLETELY
- d4 USU AV GROUP WILL REMOVE EXISTING PROJECTOR AND MOUNTING BRACKET
- d5 USU AV GROUP WILL REMOVE AND SALVAGE EXISTING SPEAKER FOR REINSTALLATION
- d6 REMOVE EXISTING REGISTER OR GRILLE
- d7 REMOVE EXISTING 2X4 LIGHTING, RECYCLE TO USU. CIRCUITING TO REMAIN FOR REUSE.
- d8 REMOVE EXISTING 2X4 CEILING TILES COMPLETELY

DEMOLITION LEGEND

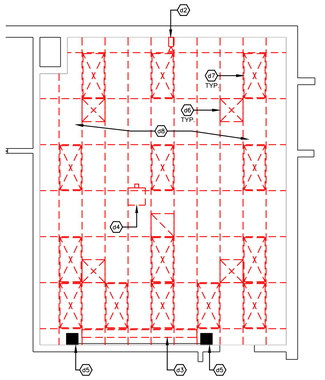
USU TO TEST FOR ASBESTOS AND REMOVE VCT. COORDINATE WITH USU FOR REMEDIATION.

KEYNOTES

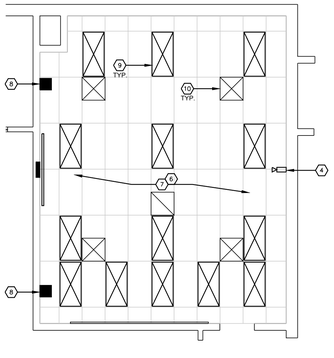
1. CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. PATCH, REPAIR, & REPLACE TRIM & DRYWALL AT LOCATION OF DEMOLISHED CONSOLE.
2. 85" TV DISPLAY PROVIDED AND INSTALLED BY USU AV GROUP. "CHIEF AV WALL MOUNTED BOX" TO BE PROVIDED AND INSTALLED BY CONTRACTOR AT +74" AFF. CENTER BETWEEN EAST AND WEST WALLS
3. REINSTALL SALVAGED 4'X12' EVERWHITE WHITEBOARD WITH CHALK RAIL AT LOCATION SHOWN.
4. EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE NEW 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.
5. PATCH AND REPAIR EXISTING SHEETROCK WALLS THROUGHOUT. PAINT ALL WALLS "USU WHITE". PAINT TO BOTTOM OF DECK ABOVE. REMOVE & REINSTALL WALL-MOUNTED EQUIPMENT TO REMAIN AS REQUIRED FOR PAINTING.
6. PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION. REINSTALL IN EXISTING LOCATIONS WITH NEW CEILING TILES.
7. PATCH AND REPAIR EXISTING RECESSED CEILING GRID SYSTEM AS NEEDED FOR NEW LIGHT INSTALLS. REPLACE ALL 2X4 CEILING TILES WITH NON-TEGULAR ARMSTRONG TILES.
8. EXISTING SPEAKERS TO BE REINSTALLED BY USU AV. PROVIDE CONDUIT CONNECTIONS TO NEW DISPLAY SYSTEM. COORDINATE WITH USU AV.
9. 2X4 LED FIXTURE. RE: ELECTRICAL
10. REGISTER OR GRILLE
11. 4X6 EVERWHITE WHITEBOARD WITH CHALK RAIL AT LOCATION SHOWN.
12. 4X10 EVERWHITE WHITEBOARD WITH CHALK RAIL AT LOCATION SHOWN.

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH.



D1 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

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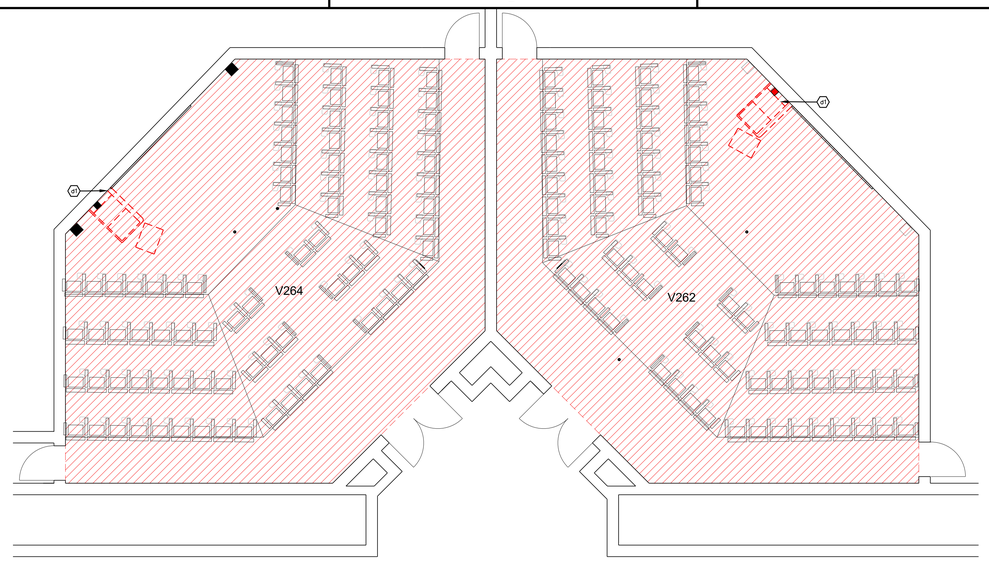
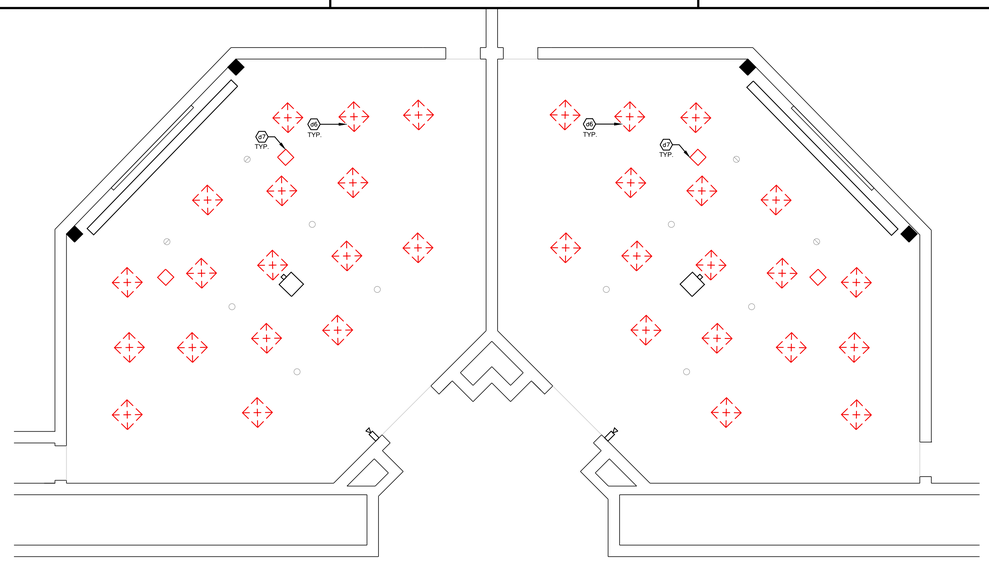


D1 DEMOLITION FLOOR PLAN
3/16" = 1'-0"

DEMOLITION KEYNOTES

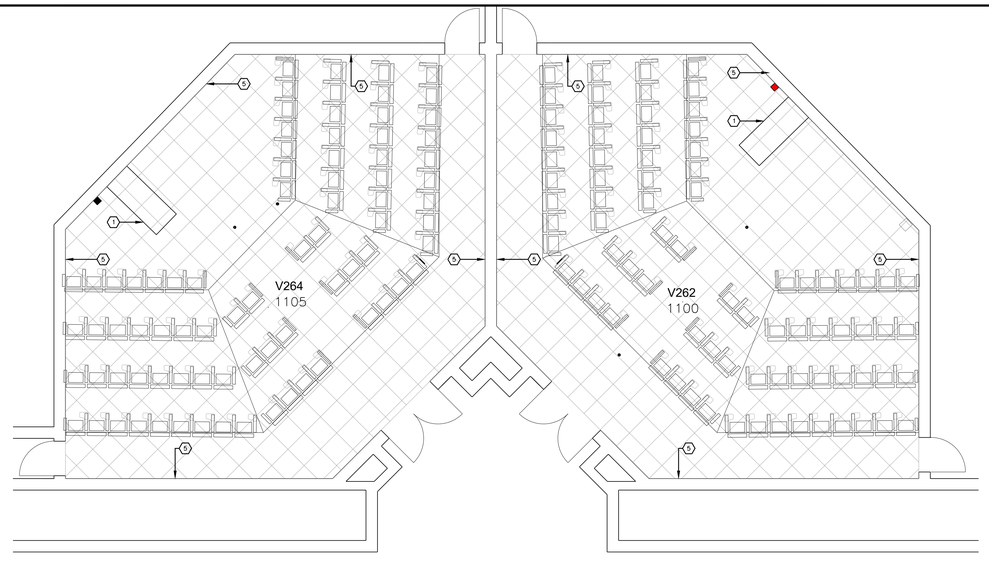
- #7 REMOVE EXISTING WOOD TEACHING CONSOLE COMPLETELY
- #5 REMOVE SECTION OF SHEETROCK AS NEEDED FOR NEW ELECTRICAL WORK
- #6 REMOVE EXISTING 2X2 LIGHTING, RECYCLE TO USU. CIRCUITING TO REMAIN FOR REUSE.
- #7 REMOVE EXISTING REGISTER OR GRILLE



D4 DEMOLITION REFLECTED CEILING PLAN
3/16" = 1'-0"

DEMOLITION LEGEND

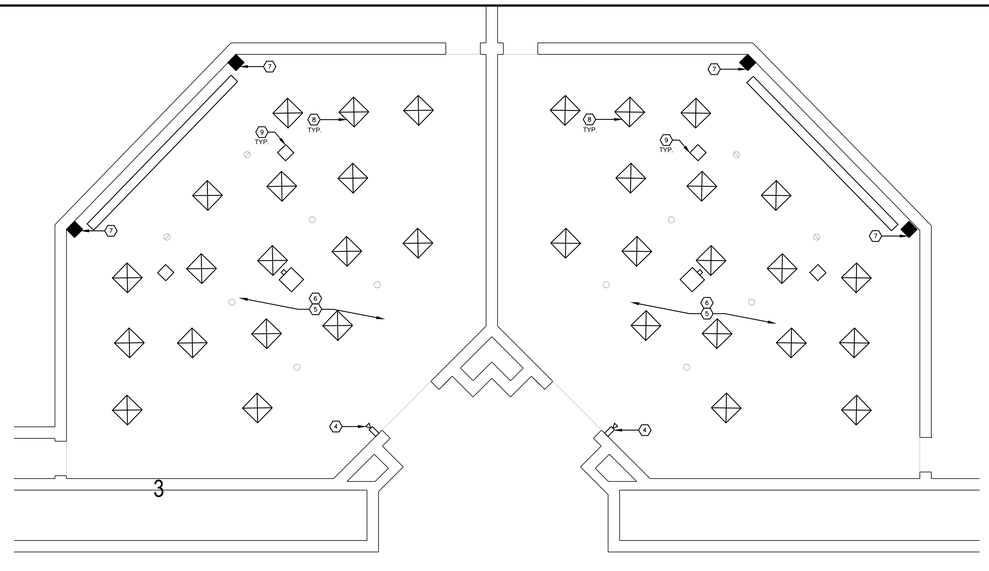
REMOVE EXISTING CARPET TILES AND BASE. CUT CARPET AROUND EXISTING FIXED SEATING LEGS AND PROTECT LEGS DURING NEW CARPET INSTALLATION. REMOVE ANY EXISTING FLOOR OUTLETS AND RETAIN FOR REINSTALLATION.



A1 FLOOR PLAN
3/16" = 1'-0"

KEYNOTES

1. CONSOLE PROVIDED BY USU AV GROUP. CONTRACTOR TO COORDINATE WITH USU AV FOR FINAL CONSOLE INSTALLATION. PATCH, REPAIR, & REPLACE TRIM & DRYWALL AT LOCATION OF DEMOLISHED CONSOLE.
2. 526 PAC BOX TO BE PROVIDED AND INSTALLED BY CONTRACTOR, CENTER ON WALL. COORDINATE MOUNTING HEIGHT WITH USU AV GROUP. RE: ELECTRICAL PROVIDE CONDUIT CONNECTION TO TEACHER CONSOLE
3. EXISTING CLASSROOM CAMERA TO REMAIN. PROVIDE NEW 1" CONDUIT PATHWAY TO ABOVE CEILING 8X8 JBOX.
4. PATCH AND REPAIR EXISTING SHEETROCK WALLS & CEILING THROUGHOUT. PAINT ALL WALLS, 2-COLORS TBD. REMOVE & REINSTALL WALL-MOUNTED EQUIPMENT TO REMAIN AS REQUIRED FOR PAINTING.
5. PROTECT EXISTING CEILING-MOUNTED DEVICES TO REMAIN DURING CONSTRUCTION.
6. EXISTING SPEAKERS TO REMAIN; PROVIDE CONDUIT CONNECTIONS TO TEACHER CONSOLE. COORDINATE WITH USU AV.
7. 2x2 LED FIXTURE. RE: ELECTRICAL
8. REGISTER OR GRILLE



A4 REFLECTED CEILING PLAN
3/16" = 1'-0"

FINISH LEGEND

PROVIDE NEW CARPET TILES (TBD, COORDINATE WITH USU FOR FINAL SELECTION) WITH 4" CARPET BASE AT PERIMETER TO MATCH.

GENERAL NOTES:

1. FINAL AV CONNECTIONS TO BE BY USU CLASSROOMS GROUP

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ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED

AD	ACCESS DOOR	MCA	MINIMUM CIRCUIT AMPS
AIR	AIR CONDITION(–ING,–ED)	MFR	MANUFACTURER
COND		MIN	MINIMUM
APD	AIR PRESSURE DROP	N/A	NOT APPLICABLE
BD	BALANCING DAMPER	NC	NORMALLY CLOSED
BHP	BRAKE HORSE POWER	NC	NOISE CRITERIA
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
BTUH	BTU/HOUR	NO	NORMALLY OPEN
CFH	CUBIC FEET PER HOUR	NPSH	NET POSITIVE SUCTION HEAD
CFM	CUBIC FEET PER MINUTE		
CLG	COOLING	NTS	NOT TO SCALE
COMP	COMPONENT	OA	OUTSIDE AIR
COND	CONDENS(–ER, –ING, –ATION)	OD	OUTSIDE DIAMETER
		OZ	OUNCE
CV	CONTROL VALVE	PD	PRESSURE DROP OR DIFFERENCE
CW	COLD WATER		
DIA	DIAMETER	PG	PROPYLENE GLYCOL
DISCH	DISCHARGE	PH	PHASE
DP	DEPTH OR DEEP	PPM	PARTS PER MILLION
DB	DRY BULB TEMPERATURE	PRESS	PRESSURE
(E)	EXISTING	PSF	POUNDS PER SQUARE FOOT
EER	ENERGY EFFICIENCY RATIO		
EFF	EFFICIENCY	PSI	POUNDS PER SQUARE INCH
EG	ETHYLENE GLYCOL		
ELEC	ELECTRIC	PSIA	PSI ABSOLUTE
ELEV	ELEVATION	PSIG	PSI GAUGE
ENT	ENTERING	R	THERMAL RESISTANCE
EVAP	EVAPORAT(–E, –ING, –ED, –OR)	RA	RETURN AIR
		RECIRC	RECIRCULATE
EWT	ENTERING WATER TEMPERATURE	REFR	REFRIGERATION
		REQD	REQUIRED
EXT	EXTERNAL	RLA	RATED ––– AMPS
(F)	FUTURE	RPM	REVOLUTIONS PER MINUTE
F	FAHRENHEIT	RW	RAINWATER
FC	FLEXIBLE CONNECT(–OR, –ION)	SA	SUPPLY AIR
		SC	SHADING COEFFICIENT
FD	FIRE DAMPER	SCFM	STANDARD CUBIC FEET PER MINUTE
FLA	FULL LOAD AMPS		
FPI	FINS PER INCH	SCW	SOFT COLD WATER
FPM	FEET PER MINUTE	SF	SAFETY FACTOR
FPS	FEET PER SECOND	SH	SENSIBLE HEAT
FSD	FIRE SMOKE DAMPER	SL	SEA LEVEL
FT	FEET	SP	STATIC PRESSURE
GAL	GALLON(S)	SPECS(S)	SPECIFICATION(S)
GPH	GALLONS PER HOUR	SQ	SQUARE
GPM	GALLONS PER MINUTE	STD	STANDARD
HD	HEAD	STM	STEAM
HG	MERCURY	TEMP	TEMPERATURE
HR	HOUR	TD	TEMP. DROP OR DIFF.
HT	HEIGHT	THERM	THERMAL
HTG	HEATING	TOT	TOTAL
HP	HORSE POWER	TSTAT	THERMOSTAT
HW	HOT WATER	V	VOLT
HZ	HERTZ(FREQUENCY)	VAC	VACUUM
ID	INSIDE DIAMETER	VAV	VARIABLE AIR VOLUME
IN	INCH	VEL	VELOCITY
KW	KILOWATT	VENT	VENT, VENTILATION
LAT	LEAVING AIR TEMPERATURE	VERT	VERTICAL
		VFD	VARIABLE FREQUENCY DRIVE
LBS	POUNDS		
LG	LENGTH	VOL	VOLUME
LH	LATENT HEAT	WC	WATER COLUMN
LRA	LOCKED ROTOR AMPS	WG	WATER GAUGE
LVG	LEAVING	WPD	WATER PRESSURE DROP
LWT	LEAVING WATER TEMPERATURE	WTR	WATER
		WT	WEIGHT
MAX	MAXIMUM	WB	WET BULB TEMP
MBH	THOUSAND BTU PER HOUR	YR	YEAR

MECHANICAL SHEET INDEX

SYMBOL LEGEND

SYMBOL	DESCRIPTION
VALVES, METERS, AND GAUGES	
	SHUT OFF VALVE
	GATE VALVE
	CHECK VALVE
	AUTO 2–WAY VALVE
	AUTO 3–WAY VALVE
	GLOBE VALVE
	BALL VALVE
	RELIEF VALVE
	CHAIN OPERATED GATE VALVE
	PRESSURE REDUCING VALVE
	BUTTERFLY VALVE
	SOLENOID VALVE
	ANGLE VALVE
	VENTURI
	BALANCING OR PLUG COCK
	FLOW SETTER
	EXPANSION VALVE (REFRIG.)
	GAS COCK
MAV	MANUAL AIR VENT
	STRAINER
	GAUGE COCK
	FLEXIBLE CONNECTION
	PRESSURE GAUGE
	THERMOMETER
	VICTUALIC COUPLING
	REDUCER CONCENTRIC
	REDUCER ECCENTRIC
	REFRIGERANT SITE GLASS
	REFRIGERANT STRAINER
	REFRIGERANT FILTER DRIER
	90° ELBOW UP
	90° ELBOW DOWN
	90° TEE UP
	90° TEE DOWN
	UNION
	CAPPED PIPE
	ANCHOR
	FLOAT AND THERMOSTATIC TRAP
HVAC SYMBOLS	
T	THERMOSTAT
S	TEMPERATURE SENSOR
H	HUMIDISTAT
PLUMBING SYMBOLS	
W.H.	WALL HYDRANT
H.B.	HOSE BIBB
	CLEANOUT TO GRADE
	FLOOR CLEANOUT
	WALL CLEANOUT

SYMBOL LEGEND

SINGLE LINE	DOUBLE LINE	DESCRIPTION
DUCTWORK		
		RECTANGULAR SUPPLY DUCT UP
		RECTANGULAR SUPPLY DUCT DOWN
		RECTANGULAR RETURN DUCT UP
		RECTANGULAR RETURN DUCT DOWN
		RECTANGULAR EXHAUST DUCT UP
		RECTANGULAR EXHAUST DUCT DOWN
		ROUND DUCT UP
		ROUND DUCT DOWN
		ACOUSTICALLY LINED RECTANGULAR DUCT
		90° RECTANGULAR ELBOW WITH TURNING VANES
		90° RADIUS ELBOW R=1.5
		DUCT SIZE OR SHAPE TRANSITION
		OPPOSED BLADE BALANCING DAMPER (O.B.D.) IN RECT DUCT
		BUTTERFLY BALANCING DAMPER IN ROUND DUCTS
		COMBINATION TEE
		SPLITTER DAMPER
		SQUARE OR RECTANGULAR CEILING DIFFUSER
		SIDEWALL REGISTER SUPPLY OR RETURN
		ROUND FLEXIBLE DUCT
		RETURN GRILLE
		EXHAUST GRILLE
FSD	FSD	FIRE/SMOKE DAMPER
		FIRE DAMPER
SD	SD	SMOKE DAMPER
FC	FC	FLEXIBLE CONNECTION

SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
# / SHEET	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, EXTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, INTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
100	ROOM OR SPACE NUMBER.
1	KEYNOTE INDICATOR.
X	REVISION INDICATOR.
CU–1	EQUIPMENT INDICATOR.
P–	PLUMBING FIXTURE INDICATOR.
TYPE / CFM / SIZE	DIFFUSER/GRILLE INDICATOR.
TYPE / SIZE	DIFFUSER/GRILLE INDICATOR.
	BREAK, STRAIGHT
	BREAK, ROUND.
MATCH LINE / SEE XX/X–XXX	MATCH LINE INDICATOR
	HIDDEN FEATURES LINE: HIDDEN, THIN LINE
	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE
	NEW CONNECTION POINT TO EXISTING

SYMBOL LEGEND

SYMBOL	DESCRIPTION
PLUMBING PIPING	
	SOIL, WASTE – ABOVE GRADE
	SOIL, WASTE – BELOW GRADE
	VENT
	COLD WATER
	HOT WATER
	HOT WATER CIRCULATE
VTR	VENT THRU ROOF
	NON POTABLE WATER
(E)	EXISTING PIPE
(E)	EXISTING PIPE TO BE REMOVED

GENERAL NOTES

1. ALL GRILLES SHOWN AS SUCH ARE CD–1, SG–1, SWS–1 CFM AS NOTED, UNLESS OTHERWISE NOTED. SEE DETAIL.
2. ALL RETURN GRILLES SHOWN AS SUCH ARE RG–1 UNLESS OTHERWISE NOTED.
3. COORDINATE EXACT LOCATION OF THERMOSTAT WITH OWNER.
4. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'–0" DEEP AND 6'–6" HIGH. DO NOT ROUTE DUCTS AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM.
5. COORDINATE EXACT LOCATIONS OF GRILLES WITH ARCHITECTURAL PLANS.
6. ALL DUCT DIMENSIONS ARE INSIDE FREE AREA DIMENSIONS. ADJUST SHEET METAL DIMENSION FOR LINED DUCT.
7. PROVIDE CEILING ACCESS PANELS AS REQUIRED WHERE MECHANICAL EQUIPMENT, VALVES, FIRE DAMPERS, ETC. ARE LOCATED ABOVE INACCESSIBLE CEILINGS.
8. ROOF DECK SHALL NOT BE USED TO SUPPORT LOADS FROM PIPING, DUCTWORK OR EQUIPMENT, UNLESS NOTED OTHERWISE. HANGER LOADS LESS THAN 50 LBS. MAY BE HUNG FROM THE STEEL ROOF DECK IN CASES WHEN HANGING FROM THE STEEL ROOF DECK CANNOT BE AVOIDED; THE ATTACHMENT METHOD MUST DISTRIBUTE THE LOAD ACROSS THE DECK AS APPROVED BY THE STRUCTURAL ENGINEER.
9. COORDINATE INSTALLATION OF NEW MECHANICAL EQUIPMENT WITH EXISTING CONDITIONS.
10. ALL SURFACES DAMAGED AS A RESULT OF NEW CONSTRUCTION SHALL BE PATCHED AND REPAIRED AS REQUIRED TO MATCH EXISTING SURFACES.
11. PROVIDE MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE AROUND ALL SIDES OF MECHANICAL EQUIPMENT.
12. THERMOSTATS SHALL NOT BE LOCATED ON EXTERIOR WALLS. COORDINATE EXACT LOCATION OF THERMOSTAT WITH OWNER.
13. LOCATE ALL EXHAUST VENTS AND PLUMBING VENTS MINIMUM 10 FT. FROM ALL BUILDING INTAKES.
14. INSTALL WATER, GAS, AND VENT PIPING SHOWN ABOVE THE CEILING UNLESS NOTED OTHERWISE.
15. INSTALL WASTE PIPING SHOWN BELOW THE FLOOR UNLESS NOTED OTHERWISE.
16. PROVIDE 2" MINIMUM WASTE PIPING BELOW GRADE.
17. COORDINATE EXACT LOCATION OF FIXTURES AND DRAINS WITH ARCHITECTURAL DRAWINGS.
18. PROVIDE 3" MINIMUM VENT THROUGH ROOF. INCREASE VENT LINE 12" BELOW BUILDING INSULATION.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
HVAC PIPING	
D	DRAIN LINE
(E)	EXISTING PIPE
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN

CRSA

PROJECT **25002**

BID SET 2025-02-28

REVISIONS

NO.	DATE	DESCRIPTION

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS
FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

UtahState University

PROFESSIONAL ENGINEER
6136918-2202
MARTIN THOMAS CARRILLO
12/28/2025
STATE OF UTAH

MECHANICAL GENERAL INFORMATION
ME001

C-MECH ENGINEERING
(801) 355-5915

SPECIFICATIONS – 1

SECTION 230100 – MECHANICAL REQUIREMENTS

A. WORK INCLUDED: FURNISH ALL LABOR, MATERIALS ,EQUIPMENT, APPLIANCES AND NECESSARY INCIDENTALS FOR THE COMPLETE INSTALLATION OF ALL HEATING, VENTILATION AND AIR CONDITIONING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.
   1. AIR CONDITIONING AND HEATING TO EXISTING A/C UNITS AS INDICATED ON PLANS COMPLETE WITH DUCTWORK, AND CONTROLS.

B. RELATED WORK INCLUDED IN THIS SECTION:
   1. FURNISHING ELECTRICAL DEVICES NECESSARY FOR MECHANICAL WORK, EXCEPT DISCONNECTS UNLESS INDICATED OTHERWISE.
   2. LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS INCLUDING FINAL CONNECTIONS AS INDICATED ON WIRING DIAGRAMS.
   3. CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS INDICATED ON WIRING DIAGRAMS.
   4. RESPONSIBILITY FOR OBTAINING CLARIFICATION OF DISCREPANCIES BETWEEN MECHANICAL AND ELECTRICAL WORK FROM ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.'
   5. RESPONSIBILITY FOR PROPER OPERATION OF AUTOMATIC ELECTRICAL CONTROLS AND EQUIPMENT, AND OF ELECTRIC POWER DRIVEN EQUIPMENT FURNISHED UNDER THIS SECTION.

C. RELATED WORK IN OTHER SECTIONS:
   1. ELECTRICAL WORK AS FOLLOWS WILL BE PROVIDED UNDER ELECTRICAL DIVISION:

D. CONDUIT FOR LINE VOLTAGE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED EXCEPT CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS SPECIFIED UNDER DIVISION 23.

E. LINE VOLTAGE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED HEREIN EXCEPT LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS AS SPECIFIED UNDER DIVISION 23.

F. PROVIDING DISCONNECT SWITCHES.

G. INSTALLING ELECTRICAL DEVICES SUCH AS STARTERS AND DISCONNECTS, AND WHEN INDICATED, FURNISHING ALL SUCH DEVICES.

H. CODES AND STANDARDS:
   1. IN ADDITION TO THE REQUIREMENTS OF ALL GOVERNING CODES, ORDINANCES AND AGENCIES, CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
   2. 2021 INTERNATIONAL MECHANICAL CODE.
   3. 2021 INTERNATIONAL BUILDING CODE.
   4. 2021 INTERNATIONAL PLUMBING CODE.
   5. 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
   6. 2021 INTERNATIONAL FUEL AND GAS CODE.
   7. ASHRAE 90.1-2016.
   8. 2020 NATIONAL ELECTRIC CODE.

I. DESIGN CONDITIONS
   1. OUTSIDE DESIGN CONDITIONS: USE THE FOLLOWING CLIMATE DATE FROM ASHRAE 2017 FUNDAMENTAL HANDBOOK 24.14 FOR LOGAN, UTAH
      a. ELEVATION, 4785 FT
      b. SUMMER DESIGN DRY BULB TEMP, (ASHRAE 1%), 93°F
      c. SUMMER MEAN COINCIDENT WEB BULB, (ASHRAE 1%), 63°F
      d. COOLING TOWER WEB BULB TEMP, (ASHRAE 1%), 53°F
      e. WINTER DESIGN DRY BULB TEMP, (ASHRAE 99%), -3°F
      f. WINTER DESIGN DRY BULB TEMP, (LOGAN BEST ENG. PRACTICE), -20°F

J. ALL GAS FIRED EQUIPMENT SHALL INCLUDE A LABEL INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE ALTITUDE WHEREIN THE PROJECT IS TO BE LOCATED. THE APPLIANCE SHALL ALSO INCLUDE A COMPLIANCE STATEMENT INDICATING THAT THE APPLIANCE HAS BEEN ADJUSTED, MODIFIED OR RE-CALIBRATED FOR THE PROPER OPERATION AT THE ALTITUDE OF THE PROJECT AND SHALL BE LISTED CAPABLE FOR USE WITH NATURAL GAS OR PROPANE GAS IF PROPANE IS LISTED ON THE DRAWINGS.

SPECIFICATIONS – 2

SECTION 230500 – BASIC MECHANICAL MATERIALS AND METHODS
PART 1 – GENERAL
1.1 SECTION REQUIREMENTS
A. SUMMARY: GENERAL REQUIREMENTS FOR MOTORS, HANGERS AND SUPPORTS, VIBRATION ISOLATION AND SEISMIC RESTRAINTS, VALVES, AND METERS AND GAGES.
B. SUBMITTALS: PRODUCT DATA FOR MATERIALS AND EQUIPMENT SPECIFIED IN THIS SECTION.
PART 2 – PRODUCTS
2.1 MOTORS
A. MOTOR CHARACTERISTICS:
1. MOTORS 3/4 HP AND LARGER: THREE PHASE.
2. MOTORS SMALLER THAN 3/4 HP: SINGLE PHASE.
3. FREQUENCY RATING: 60 HZ.
4. VOLTAGE RATING: NEMA STANDARD VOLTAGE SELECTED TO OPERATE ON NOMINAL CIRCUIT VOLTAGE TO WHICH MOTOR IS CONNECTED.
5. SERVICE FACTOR: 1.15 FOR OPEN DRIPPROOF MOTORS; 1.0 FOR TOTALLY ENCLOSED MOTORS.
6. DUTY: CONTINUOUS DUTY AT AMBIENT TEMPERATURE OF 105°F AND AT ALTITUDE OF 4500 FEET ABOVE SEA LEVEL.
7. CAPACITY AND TORQUE CHARACTERISTICS: SUFFICIENT TO START, ACCELERATE, AND OPERATE CONNECTED LOADS AT DESIGNATED SPEEDS, AT INSTALLED ALTITUDE AND ENVIRONMENT, WITH INDICATED OPERATING SEQUENCE, AND WITHOUT EXCEEDING NAMEPLATE RATINGS OR CONSIDERING SERVICE FACTOR.
8. ENCLOSURE: UNLESS OTHERWISE INDICATED, OPEN DRIPPROOF.
9. MOTORS USED WITH VARIABLE FREQUENCY CONTROLLERS: RATINGS, CHARACTERISTICS, AND FEATURES COORDINATED WITH AND APPROVED BY CONTROLLER MANUFACTURER.
2.2 HANGERS AND SUPPORTS
A. HANGER AND PIPE ATTACHMENTS: FACTORY FABRICATED WITH GALVANIZED COATINGS; NONMETALLIC COATED FOR HANGERS IN DIRECT CONTACT WITH COPPER TUBING.
B. BUILDING ATTACHMENTS: POWDER-ACTUATED-TYPE, DRIVE-PIN ATTACHMENTS WITH PULLOUT AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS.
C. MECHANICAL-EXPANSION ANCHORS: INSERT WEDGE-TYPE ATTACHMENTS WITH PULLOUT AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS.
2.3 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICES
A. VIBRATION SUPPORTS:
1. RESTRAINED ELASTOMERIC MOUNTS: DOUBLE-DEFLECTION TYPE, WITH MOLDED, OIL-RESISTANT RUBBER OR NEOPRENE ISOLATOR ELEMENTS WITH FACTORY-DRILLED, ENCAPSULATED TOP PLATE FOR BOLTING TO EQUIPMENT AND BASEPLATE FOR BOLTING TO STRUCTURE. PROVIDE ISOLATOR WITH MINIMUM 0.5-INCH STATIC DEFLECTION.
2. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING ISOLATORS. PROVIDE ISOLATOR WITH MINIMUM 1-INCH STATIC DEFLECTION.
B. VIBRATION HANGERS:
1. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE, WITH MOLDED, OIL-RESISTANT RUBBER OR NEOPRENE ISOLATOR ELEMENTS BONDED TO STEEL HOUSINGS WITH THREADED CONNECTIONS FOR HANGER RODS. PROVIDE ISOLATOR WITH MINIMUM 0.5-INCH STATIC DEFLECTION.
2. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGER WITH SPRING AND INSERT IN COMPRESSION. PROVIDE ISOLATOR WITH MINIMUM 1-INCH STATIC DEFLECTION.
C. SEISMIC RESTRAINTS:
1. RESILIENT ISOLATION WASHERS AND BUSHINGS: 1-PIECE, MOLDED, BRIDGE-BEARING NEOPRENE COMPLYING WITH AASHTO M 251 AND HAVING A DUROMETER HARDNESS OF 50, PLUS OR MINUS 5, WITH A FLAT WASHER FACE.
2. RESTRAINING CABLES: GALVANIZED STEEL CABLES WITH END CONNECTIONS MADE OF STEEL ASSEMBLIES THAT SWIVEL TO FINAL INSTALLATION ANGLE AND UTILIZE TWO CLAMPING BOLTS FOR CABLE ENGAGEMENT.
3. ANCHOR BOLTS: SEISMIC-RATED, DRILL-IN, AND STUD-WEDGE OR FEMALE-WEDGE TYPE. SELECT ANCHOR BOLTS WITH STRENGTH REQUIRED FOR ANCHOR AND AS TESTED ACCORDING TO ASTM E 488/E 488M.
2.4 PRESSURE GAGES AND TEST PLUGS
A. PRESSURE GAGES: DIRECT-MOUNTING, INDICATING-DIAL TYPE COMPLYING WITH ASME B40.100. DRY METAL CASE, MINIMUM 2-1/2 INCH DIAMETER WITH RED POINTER ON WHITE FACE, AND PLASTIC WINDOW. MINIMUM ACCURACY 3 PERCENT OF MIDDLE HALF OF RANGE. RANGE TWO TIMES OPERATING PRESSURE.
B. TEST PLUG: CORROSION-RESISTANT BRASS OR STAINLESS-STEEL BODY WITH TWO SELF-SEALING RUBBER CORE INSERTS AND GASKETED AND THREADED CAP, WITH EXTENDED STEM FOR UNITS TO BE INSTALLED IN INSULATED PIPING. MINIMUM PRESSURE AND TEMPERATURE RATING 500 PSIG AT 200°F.
PART 3 – EXECUTION
3.1 MOTOR INSTALLATION
A. ANCHOR MOTOR ASSEMBLY TO BASE, ADJUSTABLE RAILS, OR OTHER SUPPORT, ARRANGED AND SIZED ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
3.2 GENERAL PIPING INSTALLATIONS
A. INSTALL PIPING FREE OF SAGS AND BENDS.
B. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
C. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS, GYPSOM-BOARD PARTITIONS AND CONCRETE FLOOR AND ROOF SLABS.
D. EXTERIOR WALL, PIPE PENETRATIONS: MECHANICAL SLEEVE SEALS INSTALLED IN STEEL OR CAST-IRON PIPES FOR WALL SLEEVES.
E. FIRE-BARRIER PENETRATIONS: SEAL PIPE PENETRATIONS WITH THROUGH-PENETRATION FIRESTOP SYSTEMS SPECIFIED IN DIVISION 7.
F. INSTALL UNIONS AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
G. INSTALL DIELECTRIC UNIONS AND FLANGES TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN GAS PIPING.
H. INSTALL DIELECTRIC COUPLING AND NIPPLE FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS IN WATER PIPING.
3.3 GENERAL EQUIPMENT INSTALLATIONS
A. INSTALL EQUIPMENT TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS ARE NOT INDICATED.
B. INSTALL EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE INDICATED.
C. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICE, MAINTENANCE, AND REPAIR OR REPLACEMENT OF COMPONENTS. CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS. EXTEND GREASE FITTINGS TO ACCESSIBLE LOCATIONS.
D. INSTALL EQUIPMENT TO ALLOW RIGHT OF WAY FOR PIPING INSTALLED AT REQUIRED SLOPE.
3.4 CONCRETE BASES
A. ANCHOR EQUIPMENT TO CONCRETE BASE ACCORDING TO EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND ACCORDING TO SEISMIC CODES AT PROJECT.
B. CONSTRUCT CONCRETE BASES OF DIMENSIONS INDICATED, BUT NOT LESS THAN 4 INCHES LARGER IN BOTH DIRECTIONS THAN SUPPORTED UNIT.
C. UNLESS OTHERWISE INDICATED, INSTALL DOWEL RODS ON 18-INCH CENTERS AROUND THE FULL PERIMETER OF THE BASE TO CONNECT CONCRETE BASE TO CONCRETE FLOOR.
D. INSTALL EPOXY-COATED ANCHOR BOLTS FOR SUPPORTED EQUIPMENT THAT EXTEND THROUGH CONCRETE BASE, AND ANCHOR INTO STRUCTURAL CONCRETE FLOOR.
E. PLACE AND SECURE ANCHORAGE DEVICES. USE SUPPORTED EQUIPMENT MANUFACTURER'S SETTING DRAWINGS, TEMPLATES, DIAGRAMS, INSTRUCTIONS, AND DIRECTIONS FURNISHED WITH ITEMS TO BE EMBEDDED.
F. INSTALL ANCHOR BOLTS TO ELEVATIONS REQUIRED FOR PROPER ATTACHMENT TO SUPPORTED EQUIPMENT.
G. USE 3000-PSI, 28-DAY COMPRESSIVE-STRENGTH CONCRETE AND REINFORCEMENT AS SPECIFIED IN DIVISION 3 SECTION "CAST-IN-PLACE CONCRETE."
3.5 HANGERS AND SUPPORTS
A. COMPLY WITH MSS SP-69 AND MSS SP-89. INSTALL BUILDING ATTACHMENTS WITHIN CONCRETE OR TO STRUCTURAL STEEL.
B. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED THERMAL AND SEISMIC MOVEMENT OF PIPING SYSTEMS.
C. INSTALL POWDER-ACTUATED DRIVE-PIN FASTENERS IN CONCRETE AFTER CONCRETE IS CURED. DO NOT USE IN LIGHTWEIGHT CONCRETE OR IN SLABS LESS THAN 4 INCHES THICK.
D. INSTALL MECHANICAL-EXPANSION ANCHORS IN CONCRETE AFTER CONCRETE IS CURED. DO NOT USE IN LIGHTWEIGHT CONCRETE OR IN SLABS LESS THAN 4 INCHES THICK.
E. SEE DIVISION 13 SECTION "FIRE SUPPRESSION PIPING" FOR SUPPORT OF FIRE-PROTECTION SYSTEM PIPING.
F. LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADING AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.
G. HORIZONTAL-PIPING HANGERS AND SUPPORTS: UNLESS OTHERWISE INDICATED AND EXCEPT AS SPECIFIED IN PIPING SYSTEM SPECIFICATION SECTIONS, INSTALL THE FOLLOWING TYPES:
1. ADJUSTABLE STEEL CLEVIS HANGERS (MSS TYPE 1): FOR SUSPENSION OF NONINSULATED OR INSULATED STATIONARY PIPES.
2. PIPE HANGERS (MSS TYPE 5): FOR SUSPENSION OF PIPES, NPS 1/2 TO NPS 4, TO ALLOW OFF-CENTER CLOSURE FOR HANGER INSTALLATION BEFORE PIPE ERECTION.
3. ADJUSTABLE STEEL BAND HANGERS (MSS TYPE 7): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 8.
4. ADJUSTABLE BAND HANGERS (MSS TYPE 9): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 8.
5. ADJUSTABLE SWIVEL-RING BAND HANGERS (MSS TYPE 10): FOR SUSPENSION OF NONINSULATED STATIONARY PIPES, NPS 1/2 TO NPS 8.
H. VERTICAL-PIPING CLAMPS: UNLESS OTHERWISE INDICATED AND EXCEPT AS SPECIFIED IN PIPING SYSTEM SPECIFICATION SECTIONS, INSTALL THE FOLLOWING TYPES:
1. EXTENSION PIPE OR RISER CLAMPS (MSS TYPE 8): FOR SUPPORT OF PIPE RISERS, NPS 3/4 TO NPS 20.
2. CARBON- OR ALLOY-STEEL RISER CLAMPS (MSS TYPE 42): FOR SUPPORT OF PIPE RISERS, NPS 3/4 TO NPS 20, IF LONGER ENDS ARE REQUIRED FOR RISER CLAMPS.
3.6 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICE INSTALLATION
A. ADJUST VIBRATION ISOLATORS TO ALLOW FREE MOVEMENT OF EQUIPMENT LIMITED BY RESTRAINTS.
B. INSTALL RESILIENT BOLT ISOLATION WASHERS ON EQUIPMENT ANCHOR BOLTS.
C. INSTALL CABLES SO THEY DO NOT BEND ACROSS SHARP EDGES OF ADJACENT EQUIPMENT OR BUILDING STRUCTURE.
3.7 PRESSURE GAGES AND TEST PLUGS
A. INSTALL PRESSURE GAGES AT SUCTION AND DISCHARGE OF EACH PUMP.
B. INSTALL TEST PLUGS AT SUPPLY AND RETURN FOR HYDRONIC TERMINALS, AND BOILERS.
END OF SECTION 230500

SPECIFICATIONS – 3

SECTION 230523 – VALVES
PART 1 – GENERAL (NOT APPLICABLE)
PART 2 – PRODUCTS
2.1 GENERAL-DUTY VALVES
A. END CONNECTIONS: THREADS SHALL COMPLY WITH ANSI B1.20.1. FLANGES SHALL COMPLY WITH ANSI B16.1 FOR CAST-IRON VALVES AND ANSI B16.24 FOR BRONZE VALVES. SOLDER-JOINT CONNECTIONS SHALL COMPLY WITH ANSI B16.18.
B. ONE-PIECE, COPPER-ALLOY BALL VALVES: BRASS OR BRONZE BODY WITH CHROME-PLATED BRONZE BALL, PTFE OR TFE SEATS, AND 400-PSIG MINIMUM CWP RATING.
C. TWO-PIECE, COPPER-ALLOY BALL VALVES: BRONZE BODY WITH REGULAR-PORT, CHROME-PLATED BRONZE BALL; PTFE OR TFE SEATS; AND 600-PSIG MINIMUM CWP RATING AND BLOWOUT-PROOF STEM.
D. BRONZE, SWING CHECK VALVES: CLASS 125, BRONZE BODY WITH NONMETALLIC DISC AND SEAT.
E. BRONZE GATE VALVES: CLASS 125, BRONZE BODY WITH NONRISING STEM AND BRONZE SOLID WEDGE.
F. CAST-IRON GATE VALVES: CLASS 125, NONRISING CAST-IRON BODY AND SOLID-WEDGE DISC.
G. BRONZE GLOBE VALVES: CLASS 125, BRONZE BODY WITH BRONZE DISC.
PART 3 – EXECUTION
3.1 INSTALLATION
A. USE GATE AND BALL VALVES FOR SHUTOFF DUTY; GLOBE AND BALL FOR THROTTLING DUTY.
B. LOCATE VALVES FOR EASY ACCESS AND PROVIDE SEPARATE SUPPORT WHERE NECESSARY.
C. INSTALL VALVES FOR EACH FIXTURE AND ITEM OF EQUIPMENT.
D. INSTALL THREE-VALVE BYPASS AROUND EACH PRESSURE-REDUCING VALVE USING THROTTLING-TYPE VALVES.
E. INSTALL VALVES IN HORIZONTAL PIPING WITH STEM AT OR ABOVE CENTER OF PIPE.
F. INSTALL VALVES IN A POSITION TO ALLOW FULL STEM MOVEMENT.
G. INSTALL CHECK VALVES FOR PROPER DIRECTION OF FLOW IN HORIZONTAL POSITION WITH HINGE PIN LEVEL.
END OF SECTION 230523

SECTION 230548 – MECHANICAL VIBRATION AND SEISMIC CONTROLS
PART 1 – GENERAL
1.1 SEISMIC AND VIBRATION CONTROL
A. GENERAL: DIVISION 15 SHALL BE RESPONSIBLE FOR PURCHASING AND INSTALLING VIBRATION ISOLATORS, FLEXIBLE CONNECTIONS, RIGID STEEL FRAMES, ANCHORS, INSERTS, HANGERS AND ATTACHMENTS AND SEISMIC BRACING AND SNUBBERS AS REQUIRED FOR SEISMIC CONTROL AND PREVENTION OF THE TRANSMISSION OF VIBRATION FOR BOTH ISOLATED AND NON-ISOLATED SYSTEMS.
B. ALL MECHANICAL EQUIPMENT SHALL BE DESIGNED FOR THE SITE SPECIFIC SEISMIC ZONE AS PER THE INTERNATIONAL BUILDING CODE.
C. REFERENCE STANDARDS: THE WORK SHALL COMPLY TO THE FOLLOWING STANDARDS:
1. INTERNATIONAL BUILDING CODE, CURRENT EDITION
2. NFPA BULLETIN 90A, CURRENT EDITION
3. BRIDGE BEARING SPECIFICATIONS
D. DESIGN PARAMETERS: REFER TO SECTION 1621 OF THE 2003 INTERNATIONAL BUILDING CODE AND ASCE 7-02.
E. APPROVED MANUFACTURERS:
1. IN ORDER TO INSURE THAT THE REQUIREMENTS OF THE PROJECT ARE ACHIEVED, THE CONTRACTOR MUST SECURE THE SERVICES OF A MANUFACTURER OR SUPPLIER WHO HAS PROVEN CAPABILITIES OF DEALING EFFECTIVELY WITH VIBRATION CHARACTERISTICS, EFFECTS AND CRITERIA AND CAN PROVIDE FACILITIES AND CAPABILITIES FOR MEASURING, EVALUATING AND DESIGNING FOR SEISMIC DISTURBANCES.
2. MANUFACTURERS APPROVED FOR USE ARE:
A. MASON INDUSTRIES, INC.
B. AMBER/BOOTH COMPANY.
C. VIBRATION ELIMINATOR CO.
D. KINETICS NOISE CONTROL.
3. THE MANUFACTURER'S RESPONSIBILITIES SHALL INCLUDE DESIGNING AND PROVIDING ALL VIBRATION ISOLATORS AND SEISMIC RESTRAINTS. HE SHALL ALSO BE RESPONSIBLE FOR THE PROPER INSTALLATION OF THESE COMPONENTS. PERIODIC INSPECTIONS TO THE JOB SITE WILL BE MADE AS REQUIRED. HE SHALL MAKE A FINAL INSPECTION AND SUBMIT A REPORT TO THE ARCHITECT CERTIFYING COMPLIANCE TO THESE SPECIFICATIONS, DRAWINGS AND RELATED STANDARDS. PROVIDE SUBMITTALS AS SPECIFIED.
E. SUBMITTALS: SUBMITTAL DATA PRIOR TO FABRICATION, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
1. COMPLETE ENGINEERING CALCULATIONS AND SHOP DRAWINGS FOR ALL VIBRATION AND SEISMIC REQUIREMENTS FOR ALL EQUIPMENT, PIPING AND DUCTWORK.
2. THE UTAH STATE PROFESSIONAL STAMP OF THE ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN AND OPERATION OF THE VIBRATION AND SEISMIC SYSTEM.
3. THE TYPE, SIZE, AND DEFLECTION OF EACH ISOLATOR PROPOSED FOR ITEMS IN THIS SPECIFICATION AND ON THE DRAWINGS.
4. DETAILS FOR ALL THE ISOLATORS AND SEISMIC BRACING WITH SNUBBERS PROPOSED FOR ITEMS IN THIS SPECIFICATION AND ON THE DRAWINGS.
5. THE SIZE, LOADING AND LOCATION OF PIPE AND DUCT SUPPORTS WITH AN AS-BUILT PLAN OR COMPLETE DESCRIPTION OF THE SYSTEM.
G. VIBRATION ISOLATION:
1. ALL MECHANICAL EQUIPMENT 1 HP, AND OVER UNLESS OTHERWISE NOTED, SHALL BE ISOLATED FROM THE STRUCTURE BY MEANS OF RESILIENT VIBRATION AND NOISE ISOLATORS DESIGNED AND SUPPLIED BY THE SEISMIC AND VIBRATION CONTROL MANUFACTURER. PIPING AND DUCTWORK CONNECTED TO VIBRATING EQUIPMENT SHALL BE ISOLATED FROM THE STRUCTURE AS REQUIRED TO PREVENT VIBRATION TRANSMISSION. ISOLATION EQUIPMENT, HANGERS, CONNECTIONS, AND OTHER ISOLATING DEVICES SHALL BE DESIGNED AND INSTALLED TO PREVENT TRANSMISSION OF VIBRATION TO THE STRUCTURE FROM THE MECHANICAL EQUIPMENT OR ANY OF THE ASSOCIATED PIPING AND DUCTWORK.
H. VIBRATION ISOLATORS SHALL BE PROVIDED AS FOLLOWS AND AS OTHERWISE INDICATED:
1. ISOLATE ALL WATER PIPING THAT IS CONNECTED TO VIBRATION ISOLATED EQUIPMENT, FOR A DISTANCE OF AT LEAST 50 FEET FROM THE EQUIPMENT. ISOLATORS SHALL BE TYPE D SPRING HANGERS.
2. ISOLATE ALL DUCTWORK THAT IS CONNECTED TO VIBRATION ISOLATED EQUIPMENT, FOR A DISTANCE OF AT LEAST 50 FEET FROM THE EQUIPMENT. ISOLATORS SHALL BE TYPE D SPRING HANGERS WITH NEOPRENE ELEMENTS.
I. VIBRATION ISOLATORS SHALL BE AS FOLLOWS:
1. TYPE D SPRING HANGERS: VIBRATION HANGERS SHALL CONTAIN A STEEL SPRING AND 0.3" DEFLECTION NEOPRENE ELEMENT IN SERIES. THE NEOPRENE ELEMENT SHALL BE MOLDED WITH A ROD ISOLATION BUSHING THAT PASSES THROUGH THE HANGER BOX. SPRING DIAMETERS AND HANGER BOX LOWER HOLE SIZES SHALL BE LARGE ENOUGH TO PERMIT THE HANGER ROD TO SWING THROUGH A 30 DEGREE ARC BEFORE CONTACTING THE HOLE AND SHORT CIRCUITING THE SPRING. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID EQUAL TO 50% OF THE RATED DEFLECTION. HANGERS SHALL BE TYPE 30N AS MANUFACTURED BY MASON INDUSTRIES, INC. OR EQUAL BY AMBER-BOOTH.
2. TYPE P NEOPRENE PAD: A PAD TYPE MOUNTING CONSISTING OF TWO LAYERS OF 3/8" THICK RIBBED OR WAFFLED BRIDGE BEARING NEOPRENE PADS BONDED TO A 16 GAGE GALVANIZED STEEL SEPARATOR PLATE. ANCHOR BOLT WITH NEOPRENE WASHER AND SLEEVE.
J. SEISMIC RESTRAINTS:
1. GENERAL: THE INTENT OF THE SEISMIC RESTRAINTS IS TO RESTRAIN THE MECHANICAL EQUIPMENT, PIPES AND DUCTS DURING AN EARTHQUAKE FOR LIFE SAFETY PURPOSES; TO PREVENT EQUIPMENT FROM OVERTURNING; TO PREVENT SUSPENDED EQUIPMENT, PIPES AND DUCTS FROM SWAYING OR FALLING AND CREATING A POTENTIAL LIFE SAFETY HAZARD. FOR "ESSENTIAL" AND "HAZARDOUS" FACILITIES (AS DEFINED IN THE INTERNATIONAL BUILDING CODE), THE INTENT OF THE SEISMIC RESTRAINT SYSTEM ALSO INCLUDES KEEPING THE MECHANICAL SYSTEMS OPERATIONAL DURING AND FOLLOWING AN EARTHQUAKE. SEE SECTION 05500 "METAL FABRICATION" FOR STANDARDS FOR MISCELLANEOUS METAL FABRICATION.
2. THE FOLLOWING MECHANICAL ITEMS SHALL BE SEISMIC ALLY BRACED AS SPECIFIED, DETAILED ON THE DRAWINGS, OR AS RECOMMENDED BY THE SEISMIC AND VIBRATION CONTROL MANUFACTURER:
A. ROOF HOODS – ANCHOR BOLTS
B. PACKAGED ROOFTOP AIR HANDLERS – ANCHOR BOLTS
C. WATER HEATER – ANCHOR BOLTS
D. INLINE EXHAUST FANS – CABLES
E. ALL DUCT WORK AND PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE CURRENT EDITION OF THE INTERNATIONAL BUILDING CODE. INSULATED PIPING LONGITUDINAL RESTRAINTS SHALL BE ATTACHED DIRECTLY TO PIPING.
3. CONNECTIONS OF THE SEISMIC BRACING TO THE STRUCTURE SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND ACCEPTABLE TO THE STRUCTURAL ENGINEERS. IN GENERAL, CONNECT TO BEAMS, CONCRETE SLABS, OR TO THE TOP MEMBER OF THE JOISTS AT THE PANEL POINTS. DIVISION 15 SHALL PROVIDE SPANNER BEAMS WHERE REQUIRED FOR SEISMIC BRACING. SEISMIC ANCHORAGE SHALL EXTEND THROUGH CONCRETE HOUSE KEEPING PADS AND ANCHOR TO THE BUILDING FLOOR SLABS.
4. THE SEISMIC AND VIBRATION CONTROL MANUFACTURER SHALL DETERMINE THE NUMBER, SIZE, AND TYPE OF ANCHOR BOLTS, CABLE RESTRAINTS, SEISMIC SNUBBERS, ETC., FOR EACH PIECE OF EQUIPMENT AND GROUPS OF PIPES AND DUCTS. INDIVIDUAL PIPES AND DUCTS SHALL BE BRACED AS PER THE SMACNA DETAILS AND APPROVED AND VERIFIED BY THE SEISMIC AND VIBRATION CONTROL MANUFACTURER.
K. SEISMIC SNUBBERS:
1. THE CAPACITY OF THE SEISMIC SNUBBER AT 3/8" DEFLECTION SHALL BE 3 TO 4 TIMES THE LOAD ASSIGNED TO THE MOUNT GROUPING IN ITS IMMEDIATE AREA. SUBMITTALS SHALL INCLUDE LOAD DEFLECTION CURVES UP TO 1/2" DEFLECTION IN THE Y AND Z PLANES. TEST SHALL BE CONDUCTED IN AN INDEPENDENT LABORATORY OR UNDER THE SIGNED SUPERVISION OF AN INDEPENDENT REGISTERED ENGINEER. THE SNUBBER ASSEMBLIES SHALL BE BOLTED TO THE TEST MACHINE AS THE SNUBBER IS NORMALLY INSTALLED. TEST REPORTS SHALL CERTIFY THAT NEITHER THE NEOPRENE ELEMENTS NOR THE SNUBBER BODY SUSTAINED ANY OBVIOUS DEFORMATION AFTER RELEASE OF LOAD. SNUBBERS SHALL BE SERIES Z-1011 AS MANUFACTURED BY MASON INDUSTRIES, INC. OR EQUAL BY AMBER-BOOTH.
END OF SECTION 230548

SPECIFICATIONS – 4

SECTION 230594 – TESTING, ADJUSTING, AND BALANCING
PART 1 – GENERAL
1.1 SECTION REQUIREMENTS
A. THIS SECTION INCLUDES TESTING AND BALANCING TO PRODUCE DESIGN OBJECTIVES FOR AIR SYSTEMS.
B. CERTIFIED REPORTS: SUBMIT TWO COPIES OF REPORTS PREPARED, AS SPECIFIED IN THIS SECTION, ON APPROVED FORMS CERTIFIED BY TEST AND BALANCE FIRM.
C. TAB FIRM QUALIFICATIONS: ENGAGE A TAB FIRM CERTIFIED BY EITHER AABC OR NEBB.
D. TAB REPORT FORMS: USE STANDARD FORMS FROM AABC'S "NATIONAL STANDARDS FOR TESTING AND BALANCING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS" OR NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS."
PART 2 – PRODUCTS (NOT APPLICABLE)
PART 3 – EXECUTION
3.1 EXAMINATION
A. EXAMINE THE CONTRACT DOCUMENTS TO BECOME FAMILIAR WITH PROJECT REQUIREMENTS AND TO DISCOVER CONDITIONS IN SYSTEMS' DESIGNS THAT MAY PRECLUDE PROPER TEST AND BALANCE OF SYSTEMS AND EQUIPMENT.
B. EXAMINE APPROVED SUBMITTAL DATA OF HVAC SYSTEMS AND EQUIPMENT.
C. EXAMINE SYSTEM AND EQUIPMENT INSTALLATIONS TO VERIFY THAT THEY ARE COMPLETE AND THAT TESTING, CLEANING, ADJUSTING, AND COMMISSIONING SPECIFIED IN INDIVIDUAL SECTIONS HAVE BEEN PERFORMED.
D. EXAMINE HVAC SYSTEM AND EQUIPMENT INSTALLATIONS TO VERIFY THAT INDICATED BALANCING DEVICES, SUCH AS TEST PORTS, GAGE COCKS, THERMOMETER WELLS, FLOW-CONTROL DEVICES, BALANCING VALVES AND FITTINGS, AND MANUAL VOLUME DAMPERS, ARE PROPERLY INSTALLED, AND THAT THEIR LOCATIONS ARE ACCESSIBLE AND APPROPRIATE FOR EFFECTIVE BALANCING AND FOR EFFICIENT SYSTEM AND EQUIPMENT OPERATION.
E. EXAMINE SYSTEMS FOR FUNCTIONAL DEFICIENCIES THAT CANNOT BE CORRECTED BY ADJUSTING AND BALANCING.
F. EXAMINE HVAC EQUIPMENT TO ENSURE THAT CLEAN FILTERS HAVE BEEN INSTALLED, BELTS ARE ALIGNED AND TIGHT, AND EQUIPMENT WITH FUNCTIONING CONTROLS IS READY FOR OPERATION.
G. EXAMINE AUTOMATIC TEMPERATURE SYSTEM COMPONENTS TO VERIFY THE FOLLOWING:
1. DAMPERS, VALVES, AND OTHER CONTROLLED DEVICES ARE OPERATED BY THE INTENDED CONTROLLER.
2. DAMPERS AND VALVES ARE IN THE POSITION INDICATED BY THE CONTROLLER.
3. INTEGRITY OF DAMPERS AND VALVES FOR FREE AND FULL OPERATION AND FOR TIGHTNESS OF FULLY CLOSED AND FULLY OPEN POSITIONS. THIS INCLUDES DAMPERS IN MULTIZONE UNITS, MIXING BOXES, AND VARIABLE-AIR-VOLUME TERMINALS.
4. THERMOSTATS AND HUMIDISTATS ARE LOCATED TO AVOID ADVERSE EFFECTS OF SUNLIGHT, DRAFTS, AND COLD WALLS.
5. SENSORS ARE LOCATED TO SENSE ONLY THE INTENDED CONDITIONS.
6. SEQUENCE OF OPERATION FOR CONTROL MODES IS ACCORDING TO THE CONTRACT DOCUMENTS.
7. CONTROLLER SET POINTS ARE SET AT INDICATED VALUES.
8. INTERLOCKED SYSTEMS ARE OPERATING.
9. CHANGEOVER FROM HEATING TO COOLING MODE OCCURS ACCORDING TO INDICATED VALUES.
H. REPORT DEFICIENCIES DISCOVERED BEFORE AND DURING PERFORMANCE OF TEST AND BALANCE PROCEDURES.
3.2 GENERAL PROCEDURES FOR TESTING AND BALANCING
A. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS FOR TESTING AND BALANCING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS" OR NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS"
B. CUT INSULATION, DUCTS, PIPES, AND EQUIPMENT CABINETS FOR INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY TO ALLOW ADEQUATE PERFORMANCE OF PROCEDURES. AFTER TESTING AND BALANCING, CLOSE PROBE HOLES AND PATCH INSULATION WITH NEW MATERIALS IDENTICAL TO THOSE REMOVED. RESTORE VAPOR BARRIER AND FINISH ACCORDING TO INSULATION SPECIFICATIONS FOR THIS PROJECT.
C. MARK EQUIPMENT AND BALANCING DEVICE SETTINGS WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL, INCLUDING DAMPER-CONTROL POSITIONS, VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, TO SHOW FINAL SETTINGS.
D. TAKE AND REPORT TESTING AND BALANCING MEASUREMENTS IN INCH-POUND (IP) UNITS.
3.3 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS
A. PREPARE SCHEMATIC DIAGRAMS OF SYSTEMS' "AS-BUILT" DUCT LAYOUTS.
B. DETERMINE THE BEST LOCATIONS IN MAIN AND BRANCH DUCTS FOR ACCURATE DUCT AIRFLOW MEASUREMENTS.
C. VERIFY THAT MOTOR STARTERS ARE EQUIPPED WITH PROPERLY SIZED THERMAL PROTECTION.
D. CHECK FOR AIRFLOW BLOCKAGES.
E. CHECK CONDENSATE DRAINS FOR PROPER CONNECTIONS AND FUNCTIONING.
F. CHECK FOR PROPER SEALING OF AIR-HANDLING UNIT COMPONENTS.
G. CHECK FOR PROPER SEALING OF AIR DUCT SYSTEM.
3.4 TOLERANCES
A. SET HVAC SYSTEM AIRFLOW RATES WITHIN THE FOLLOWING TOLERANCES:
1. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: PLUS 5 TO PLUS 10 PERCENT.
2. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
END OF SECTION 230594

SECTION 230700 – MECHANICAL INSULATION
PART 1 – GENERAL
1.1 SECTION REQUIREMENTS
A. SUBMITTALS: PRODUCT DATA FOR EACH TYPE OF MECHANICAL INSULATION.
B. QUALITY ASSURANCE: LABELED WITH MAXIMUM FLAME-SPREAD INDEX OF 25 AND MAXIMUM SMOKE- DEVELOPED INDEX OF 50 ACCORDING TO ASTM E 84.
PART 2 – PRODUCTS
2.1 PIPE INSULATION
A. PERFORMED, GLASS-FIBER PIPE INSULATION: ASTM C 547, CLASS 1, WITH FACTORY-APPLIED, ALL-PURPOSE, VAPOR-RETARDER JACKET.
B. FLEXIBLE, ELASTOMERIC-CELLULAR PIPE INSULATION: CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534, TYPE I.
C. POLYOLEFIN PIPE INSULATION: UNICELLULAR POLYETHYLENE, PERFORMED PIPE INSULATION. COMPLY WITH ASTM C 534, TYPE I, EXCEPT FOR DENSITY.
2.2 DUCT AND EQUIPMENT INSULATION
A. GLASS-FIBER-BOARD INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 612, TYPE IB, WITHOUT FACING AND WITH ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM.
B. GLASS-FIBER-BLANKET INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II, WITHOUT FACING AND WITH ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM.
C. FLEXIBLE ELASTOMERIC-CELLULAR SHEET INSULATION: CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534, TYPE II.
PART 3 – EXECUTION
3.1 PIPE INSULATION INSTALLATION
A. INSTALL VAPOR BARRIERS ON INSULATED PIPES WITH SURFACE OPERATING TEMPERATURES BELOW 60°F.
B. INSULATE PIPE, FITTINGS, VALVES, AND SPECIALTIES, EXCEPT IN HOT WATER SYSTEMS, WHERE VALVES AND SPECIALTIES DO NOT REQUIRE INSULATION.
C. SEAL VAPOR-BARRIER PENETRATIONS FOR HANGERS, SUPPORTS, ANCHORS, AND OTHER PROJECTIONS.
D. COAT GLASS-FIBER PIPE INSULATION ENDS WITH VAPOR-BARRIER COATING.
E. ROOF PENETRATIONS: APPLY INSULATION FOR INTERIOR APPLICATIONS TO THE ROOF FLASHING.
F. EXTERIOR WALL PENETRATIONS: FOR PENETRATIONS BELOW GRADE, TERMINATE INSULATION FLUSH WITH MECHANICAL SLEEVE SEAL. FOR PENETRATIONS ABOVE GRADE, TERMINATE AT INSIDE SURFACE OF EXTERIOR CLADDING.
G. INTERIOR WALLS AND PARTITIONS PENETRATIONS: APPLY INSULATION CONTINUOUSLY THROUGH WALLS AND PARTITIONS, EXCEPT FIRE-RATED WALLS AND PARTITIONS.
H. FIRE-RATED WALLS AND PARTITIONS PENETRATIONS: TERMINATE INSULATION AT PENETRATIONS THROUGH FIRE-RATED WALLS AND PARTITIONS. SEAL AROUND PENETRATION WITH THROUGH-PENETRATION FIRESTOP SYSTEMS SPECIFIED IN DIVISION 7.
I. FLOOR PENETRATIONS: TERMINATE INSULATION AT THE UNDERSIDE OF THE FLOOR ASSEMBLY AND AT THE FLOOR SUPPORT AT TOP OF FLOOR. SEAL AROUND PENETRATION WITH THROUGH-PENETRATION FIRESTOP SYSTEMS SPECIFIED IN DIVISION 7.
J. FLEXIBLE ELASTOMERIC INSULATION INSTALLATION: SEAL JOINTS WITH ADHESIVE.
K. INTERIOR PIPING SYSTEM APPLICATIONS: INSULATE THE FOLLOWING PIPING SYSTEMS:
1. DOMESTIC HOT WATER.
2. RECIRCULATED DOMESTIC HOT WATER.
3. ROOF DRAIN BODIES AND HORIZONTAL RAINWATER LEADERS OF STORM WATER PIPING.
4. EXPOSED WATER SUPPLIES AND SANITARY DRAINS OF FIXTURES FOR PEOPLE WITH DISABILITIES.
5. REFRIGERANT SUCTION PIPING.
6. VENT PIPING 5 FT. INSIDE BUILDING.
L. DO NOT APPLY INSULATION TO THE FOLLOWING SYSTEMS, MATERIALS, AND EQUIPMENT:
1. FLEXIBLE CONNECTORS.
2. FIRE-PROTECTION PIPING SYSTEMS.
3. SANITARY DRAINAGE AND VENT PIPING.
4. DRAINAGE PIPING LOCATED IN CRAWLSPACES, UNLESS OTHERWISE INDICATED.
5. CHROME-PLATED PIPES AND FITTINGS, EXCEPT FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
6. PIPING SPECIALTIES, INCLUDING AIR CHAMBERS, UNIONS, STRAINERS, CHECK VALVES, PLUG VALVES, AND FLOW REGULATORS.
M. PIPE INSULATION THICKNESSS APPLICATION SCHEDULE: INSULATE PIPING WITH THE FOLLOWING MATERIALS AND THICKNESSES:
1. DOMESTIC HOT WATER AND RECIRCULATED HOT WATER: 1-INCH THICK, PERFORMED, GLASS-FIBER PIPE INSULATION.
2. HYDRONIC COOLING PIPING, 40 TO 60°F: PERFORMED, GLASS- FIBER PIPE INSULATION.
A. PIPE DIAMETER LESS THAN NPS 1-1/2: 1 INCH THICK.
B. PIPE DIAMETER NPS 1-1/2 AND LARGER: 1 INCH THICK.
3. HYDRONIC HEATING PIPING, 140 TO 200°F: 1-INCH THICK, PERFORMED, GLASS-FIBER PIPE INSULATION.
4. REFRIGERANT SUCTION PIPING: 1/2-INCH THICK, FLEXIBLE, ELASTOMERIC-CELLULAR PIPE INSULATION.
5. SANITARY DRAINS AND STORM WATER PIPING: 1-INCH THICK, PERFORMED, GLASS-FIBER PIPE INSULATION.
3.2 DUCT INSULATION INSTALLATION
A. INSTALL INSULATION CONTINUOUSLY ON DUCTS THAT PENETRATE WALLS AND FLOORS, EXCEPT WHERE FIRE-RATED ASSEMBLIES TERMINATE INSULATION AT THE ASSEMBLY. MAINTAIN INSULATION VAPOR RETARDERS ON COLD DUCTS.
B. INSTALL REMOVABLE OR SEGMENTED INSULATION ON ACCESS PANELS AND DOORS.
C. INSTALL VAPOR BARRIERS ON INSULATED DUCTS AND PLENUMS WITH SURFACE OPERATING TEMPERATURES BELOW 60 °F. SEAL JOINTS AND SEAMS TO MAINTAIN VAPOR BARRIER ON INSULATION REQUIRING A VAPOR BARRIER.
D. TAPER GLASS-FIBER INSULATION ENDS AT A 45-DEGREE ANGLE AND SEAL WITH ADHESIVE. CUT ENDS OF FLEXIBLE ELASTOMERIC CELLULAR INSULATION SQUARE AND SEAL WITH ADHESIVE.
E. BOARD INSULATION INSTALLATION: SECURE INSULATION TIGHT AND SMOOTH WITH SPEED WASHERS AND ANCHOR PINS. SPACE ANCHOR PINS 18 INCHES APART EACH WAY AND 3 INCHES FROM INSULATION JOINTS. APPLY VAPOR-BARRIER COATING COMPOUND TO INSULATION AT OPEN JOINTS, BREAKS, PUNCTURES, AND VOIDS IN VAPOR BARRIER.
F. BLANKET INSULATION INSTALLATION: BOND DUCTS HAVING LONG SIDES OR DIAMETERS SMALLER THAN 24 INCHES WITH BONDING ADHESIVE APPLIED IN 6-INCH-WIDE TRANSVERSE STRIPS ON 12-INCH CENTERS. BOND DUCTS HAVING LONG SIDES OR DIAMETERS 24 INCHES AND LARGER WITH ANCHOR PINS SPACED 12 INCHES APART EACH WAY. APPLY BONDING ADHESIVE TO PREVENT SAGGING OF INSULATION. OVERLAP JOINTS 3 INCHES . SEAL JOINTS, BREAKS, AND PUNCTURES WITH VAPOR-BARRIER COMPOUND.
G. DUCT SYSTEM APPLICATIONS: INSULATE INDOOR CONCEALED SUPPLY-, RETURN-, AND OUTSIDE-AIR DUCTS.
H. DO NOT APPLY INSULATION TO THE FOLLOWING SYSTEMS, MATERIALS, AND EQUIPMENT:
1. METAL DUCTS WITH DUCT LINER.
2. FACTORY-INSULATED FLEXIBLE DUCTS.
3. FACTORY-INSULATED PLENUMS, CASINGS, TERMINAL BOXES, AND FILTER BOXES AND SECTIONS.
4. FLEXIBLE CONNECTORS.
5. VIBRATION-CONTROL DEVICES.
6. TESTING LABORATORY LABELS AND STAMPS.
7. NAMEPLATES AND DATA PLATES.
I. DUCT INSULATION THICKNESS AND APPLICATION SCHEDULE: INSULATE DUCTS WITH THE FOLLOWING MATERIALS AND THICKNESSES:
1. CONCEALED APPLICATIONS: GLASS-FIBER BLANKET, 1-1/2 INCHES THICK.
2. EXPOSED APPLICATIONS: GLASS-FIBER BOARD, 2 INCHES THICK.
END OF SECTION 230700

SPECIFICATIONS – 5

SECTION 233113 – DUCTS AND ACCESSORIES
PART 1 – GENERAL
1.1 SECTION REQUIREMENTS
A. SUMMARY: METAL AND NONMETAL DUCTS AND ACCESSORIES IN PRESSURE CLASSES 2-INCH WG OR LESS AND A MAXIMUM VELOCITY OF 2400 FPM.
B. COMPLY WITH NFPA 90A FOR SYSTEMS SERVING SPACES MORE THAN 25,000 CU. FT. IN VOLUME OR BUILDING TYPES II, IV, AND V CONSTRUCTION MORE THAN 3 STORIES IN HEIGHT.
C. COMPLY WITH NFPA 90B FOR SYSTEMS SERVING SPACES IN 1- OR 2-FAMILY DWELLINGS OR SERVING SPACES LESS THAN 25,000 CU. FT.
D. COMPLY WITH UL 181 AND UL 181A FOR DUCTS AND CLOSURES.
PART 2 – PRODUCTS
2.1 DUCTS
A. GALVANIZED STEEL SHEET: FORMING STEEL WITH MINIMUM G60 HOT-DIP GALVANIZED COATING.
B. DUCT LINER: ASTM C 1071, TYPE II, 1 INCH THICK; WITH AN AIRSTREAM SURFACE COATED WITH A HIGH-TEMPERATURE-RESISTANT COATING.
1. ADHESIVE: ASTM C 916, TYPE I.
2. MECHANICAL FASTENERS: GALVANIZED STEEL PIN, LENGTH REQUIRED TO PENETRATE LINER PLUS A MAXIMUM 1/8-INCH PROJECTION INTO THE AIRSTREAM.
C. JOINT AND SEAM TAPE, AND SEALANT: COMPLY WITH UL 181A.
D. RECTANGULAR METAL DUCT FABRICATION: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARD" FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE-ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.
E. FIBROUS-GLASS LINER: COMPLY WITH NFPA 90A OR NFPA 90B AND WITH NAIMA AH124.
1. THICKNESS: 1 INCH.
2. LINER ADHESIVE: COMPLY WITH NFPA 90A OR NFPA 90B AND WITH ASTM C 916.
3. MECHANICAL FASTENERS: GALVANIZED STEEL SUITABLE FOR ADHESIVE ATTACHMENT, MECHANICAL ATTACHMENT, OR WELDING ATTACHMENT.
2.2 ACCESSORIES
A. VOLUME-CONTROL DAMPERS: FACTORY-FABRICATED VOLUME-CONTROL DAMPERS, COMPLETE WITH REQUIRED HARDWARE AND ACCESSORIES. SINGLE BLADE AND MULTIPLE OPPOSED BLADE, STANDARD LEAKAGE RATING, AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS.
B. FLEXIBLE CONNECTORS: FLAME-RETARDED OR NONCOMBUSTIBLE FABRICS, COATINGS, AND ADHESIVES COMPLYING WITH UL 181, CLASS 1.
C. FLEXIBLE DUCTS: FACTORY-FABRICATED, INSULATED, ROUND DUCT, WITH AN OUTER JACKET ENCLOSING 1-INCH THICK, GLASS-FIBER INSULATION AROUND A CONTINUOUS INNER LINER.
PART 3 – EXECUTION
3.1 INSTALLATION
A. DUCT SYSTEM PRESSURE CLASS: CONSTRUCT AND INSTALL EACH DUCT SYSTEM FOR THE SPECIFIC DUCT PRESSURE CLASSIFICATION INDICATED.
B. CONCEAL DUCTS FROM VIEW IN FINISHED AND OCCUPIED SPACES.
C. AVOID PASSING THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES.
D. SUPPORT AND CONNECT METAL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARD."
E. INSTALL DUCT ACCESSORIES ACCORDING TO DETAILS OF CONSTRUCTION AS SHOWN IN SMACNA STANDARDS.
F. INSTALL VOLUME-CONTROL DAMPERS IN LINED DUCT WITH METHODS TO AVOID DAMAGE TO LINER AND TO AVOID EROSION OF DUCT LINER.
3.2 TESTING, ADJUSTING, AND BALANCING
A. BALANCE AIRFLOW WITHIN DISTRIBUTION SYSTEMS, INCLUDING SUBMAINS, BRANCHES, AND TERMINALS TO INDICATED QUANTITIES.
END OF SECTION 233113

SECTION 233700 – AIR OUTLETS AND INLETS

PART 1 – GENERAL
1.1 SECTION REQUIREMENTS
A. SUBMIT PRODUCT DATA, INCLUDING COLOR CHARTS FOR FACTORY FINISHES.
B. AIR DISTRIBUTION EQUIPMENT SHALL BE OF SIZES AND CAPACITIES INDICATED.
A. REGISTERS, GRILLES, AND DIFFUSERS OF THE SIZES SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN SHALL BE FURNISHED AND INSTALLED. ALL GRILLES, DIFFUSERS, AND REGISTERS SHALL BE COMPLETE WITH FRAMES WITH RUBBER GASKETS SUITABLE FOR THE AREA AND WALL CONSTRUCTION WHERE SHOWN ON THE DRAWINGS.
B. FINISH FOR ALL REGISTERS, DIFFUSERS, GRILLES, ETC., SHALL BE OFF-WHITE UNLESS OTHERWISE SELECTED BY THE OWNER.
B.A. APPROVED MANUFACTURERS FOR ALL AIR DISTRIBUTION PRODUCTS SHALL BE:
B.A.A. PRICE INDUSTRIES,
B.A.B. KRUEGER,
B.A.C. NAILOR,
B.A.D. METAL AIR,
B.A.E. TUTTLE & BAILEY,
B.A.F. J&J, CARNES,
B.A.G. HART AND COOLEY, OR
B.A.H. ANEMOSTAT.
C. SUPPLY AIR SHALL BE INTRODUCED INTO CONDITIONED SPACE IN SUCH A MANNER THAT CONDITIONED AIR AND ROOM AIR IS RAPIDLY AND EVENLY MIXED, RESULTING IN EQUALIZATION OF TEMPERATURE AND DRAFTLESS AIR DISTRIBUTION THROUGHOUT ZONES OF OCCUPANCY WITH TEMPERATURE DIFFERENTIALS UP TO 25 °F FOR BOTH COOLING AND HEATING AIR. QUANTITIES AND THROWS SHALL BE AS INDICATED.
D. VELOCITY OF MOVING AIR BELOW 5 FOOT LEVEL, DURING COOLING CYCLE, SHALL NOT EXCEED LIMITS OF EITHER 50 FPM AT 1.5 °F BELOW AVERAGE ROOM TEMPERATURE OR 70 FPM AT 1 °F BELOW AVERAGE ROOM TEMPERATURE. VELOCITY OF MOVING AIR AT THE 1 FT LEVEL, DURING HEATING CYCLE, SHALL NOT BE LESS THAN 10 FPM. TEMPERATURE DIFFERENCE AT OR BELOW THE 5 FT LEVEL SHALL NOT EXCEED THE FOLLOWING: 2 °F BELOW AVERAGE ROOM TEMPERATURE AT 30 FPM, 1.5 °F BELOW AVERAGE ROOM TEMPERATURE AT 50 FPM, 1.0 °F BELOW AVERAGE ROOM TEMPERATURE AT 70 FPM. SOUND PRESSURE LEVEL IN ALL OCTAVE BANDS FOR EACH DIFFUSER SHALL NOT EXCEED NC35 NOISE CRITERIA CURVE AT TASK LEVEL WHEN UNITS OPERATE AT DESIGNED CAPACITIES.
E. CEILING DIFFUSERS, GRILLES AND REGISTERS SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE SO THAT THEY ARE NOT DEPENDING ON THE CEILING FOR SUPPORT.
F. CEILING DIFFUSERS MAY BE ROUND NECKED OR EQUIVALENT SIZE SQUARE NECK. PROVIDE SQUARE TO ROUND NECK ADAPTER AS NECESSARY. FLEX DUCT SHALL TYPICALLY CONNECT DIRECTLY TO THE DIFFUSER USING A 1-1/2" RADIUS FLEXIBLE DUCT ELBOW. IF SPACE DOES NOT ALLOW FOR A FULL 1-1/2" RADIUS TO BE PROVIDED, THEN A LINED SHEET METAL BOOT SHALL BE PROVIDED. THE FLEXIBLE DUCT SHALL BE CONNECTED TO THE SIDE OF THE SHEET METAL BOOT. THE FLEXIBLE DUCT SHALL NOT BE CONNECT TO THE TOP OF THE SHEET METAL BOOT.
G. DO NOT ROUTE PIPING IN FRESH AIR INTAKE DUCTS.
H. PROVIDE MOTORIZED BUILDING RELIEF AIR DAMPERS IN LIEU OF GRAVITY DAMPERS.
I. OVERSIZE OUTSIDE AIR INTAKE LOUVERS TO PREVENT HOAR FROST.
J. LOCATE SUPPLY AIR DIFFUSERS CENTRALLY IN SPACE.
K. LOCATE RETURN AIR GRILLES FOR OPTIMUM EFFICIENCY AND TO MINIMIZE SHORT CIRCUITING.
L. PROVIDE RADIAL FLOW TYPE SUPPLY DIFFUSERS PROPERLY LOCATED FOR CRITICAL ENVIRONMENTS.

PART 2 – PRODUCTS
2.1 OUTLETS AND INLETS
A. DIFFUSERS:
1. MATERIAL: STEEL.
3. FINISH: BAKED ENAMEL, COLOR SELECTED BY ARCHITECT.
4. MOUNTING: FLUSH OR LAY IN AS REQUIRED FOR CEILING TYPE.
B. WALL AND CEILING GRILLES:
1. MATERIAL: STEEL.
3. FINISH: BAKED ENAMEL, COLOR SELECTED BY ARCHITECT.
MOUNTING: COUNTERSUNK SCREW.

PART 3 – EXECUTION
3.1 INSTALLATION
A. COORDINATE LOCATION AND INSTALLATION WITH DUCT INSTALLATION AND INSTALLATION OF OTHER CEILING- AND WALL-MOUNTED ITEMS.
B. LOCATE CEILING DIFFUSERS, REGISTERS, AND GRILLES, AS INDICATED ON DRAWINGS. UNLESS OTHERWISE INDICATED, LOCATE UNITS ON CENTER LINE OF ACOUSTICAL CEILING PANELS.
END OF SECTION 233713

C-MECH ENGINEERING

CRSA

PROJECT 25002
BID SET 2025-02-28

REVISIONS

NO.	DATE	DESCRIPTION

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS
FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

UtahState University

PROFESSIONAL ENGINEER
6136918-2202
MARTIN THOMAS CARRILLO
02/28/2025
STATE OF UTAH

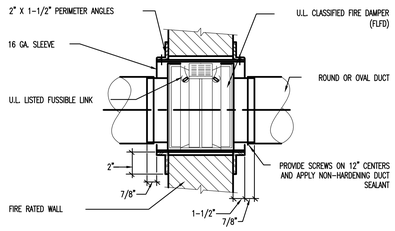
MECHANICAL SPECIFICATIONS
ME002

(801) 355-5915

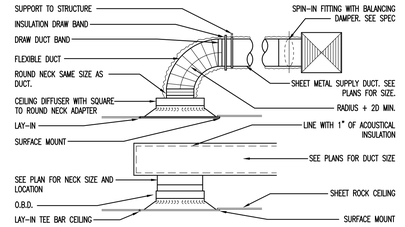
GRILLE, REGISTER & DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	SIZE	MAX CFM	MAX NC	DESCRIPTION
CD-1	EH PRICE	SPD	8/8	235	30	SQUARE PLAQUE CEILING DIFFUSERS. REMOVABLE FACE & CORE ALUMINUM CONSTRUCTION WITH OBD. FRAME SHALL BE FOR SURFACE OR LAY-IN MOUNTING AS REQUIRED BY CEILING TYPE. LAY-IN FRAMES SHALL BE 12" x 12" AS REQUIRED TO FIT CEILING SPACE AVAILABLE. PROVIDE ROUND NECK ADAPTER. COLOR BY ARCHITECT.
CD-2	EH PRICE	SPD	6"ø 8"ø 10"ø 12"ø 14"ø 15"ø	110 235 420 600 800 890	30	SQUARE PLAQUE CEILING DIFFUSERS. REMOVABLE FACE & CORE ALUMINUM CONSTRUCTION WITH OBD. FRAME SHALL BE FOR SURFACE OR LAY-IN MOUNTING AS REQUIRED BY CEILING TYPE. LAY-IN FRAMES SHALL BE 24" x 24", AS REQUIRED TO FIT CEILING SPACE AVAILABLE. PROVIDE ROUND NECK ADAPTER WHERE REQUIRED. COLOR BY ARCHITECT.
CD-3	EH PRICE	SPD-FR W/FD	6/6 8/6 10/10 12/12 14/14	110 235 420 600 800	30	SQUARE PLAQUE CEILING DIFFUSERS. REMOVABLE FACE & CORE ALUMINUM CONSTRUCTION WITH OBD AND FUSIBLE LINK FIRE DAMPER. FRAME SHALL BE FOR SURFACE OR LAY-IN MOUNTING AS REQUIRED BY CEILING TYPE. LAY-IN FRAMES SHALL BE 24" x 24", 24" x 12" OR 12" x 12" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE. PROVIDE ROUND NECK ADAPTER WHERE REQUIRED. COLOR BY ARCHITECT. (1)
RG-1	EH PRICE	PDDR	6/6 8/6 10/10 12/12 14/14	100 210 380 600 750	25	PERFORATED FACE EXHAUST AIR UNIT, REMOVABLE FACE & CORE. FRAME SHALL BE FOR SURFACE MOUNTING AS REQUIRED BY CEILING TYPE. FRAMES SHALL BE 24" x 24" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE. AIR QUANTITY SHALL MATCH ROOM SUPPLY OR EXHAUST AIR QUANTITY. COLOR BY ARCHITECT.
RG-2	EH PRICE	PDDR	10/10 12/12 14/14	380 600 750	25	PERFORATED FACE EXHAUST AIR UNIT, REMOVABLE FACE & CORE. FRAME SHALL BE FOR SURFACE OR LAY-IN MOUNTING AS REQUIRED BY CEILING TYPE. LAY-IN FRAMES SHALL BE 24" x 24", 24" x 12" OR 12" x 12" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE. AIR QUANTITY SHALL MATCH ROOM SUPPLY OR EXHAUST AIR QUANTITY. PROVIDE WITH SOUND BOOT. COLOR BY ARCHITECT.
RG-3	EH PRICE	PDDR-FR W/FD	6/6 8/6 10/10 12/12 14/14	100 210 380 600 750	25	PERFORATED FACE EXHAUST AIR UNIT, REMOVABLE FACE & CORE. FRAME SHALL BE FOR SURFACE OR LAY-IN MOUNTING AS REQUIRED BY CEILING TYPE. LAY-IN FRAMES SHALL BE 24" x 24", 24" x 12" OR 12" x 12" AS REQUIRED TO FIT CEILING TILE SPACE AVAILABLE. AIR QUANTITY SHALL MATCH ROOM SUPPLY OR EXHAUST AIR QUANTITY. COLOR BY ARCHITECT. (1)

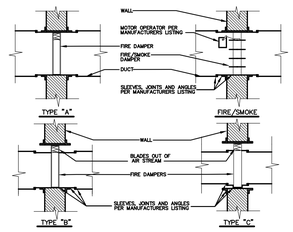
(1) SUPPLY DIFFUSERS/ RETURN AIR GRILLES SHALL BE FIRE RATED AND SUPPLIED COMPLETE WITH FUSIBLE LINK FIRE DAMPER ACCESSIBLE BY FACE REMOVAL.



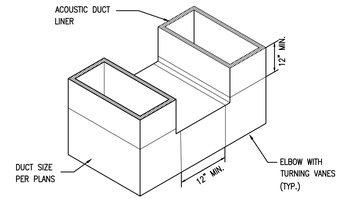
6 ROUND OVAL FIRE DAMPER
SCALE: NTS



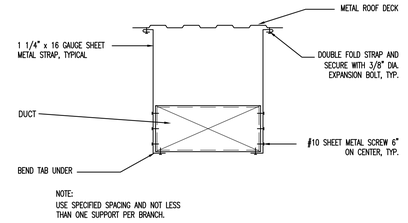
1 CEILING DIFFUSER DETAIL
SCALE: NTS



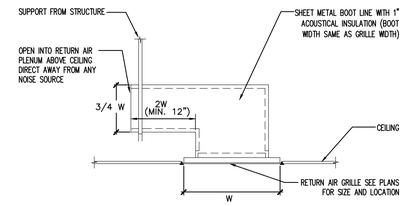
7 FIRE DAMPER AND FIRE/SMOKE DAMPER DETAIL
SCALE: NTS



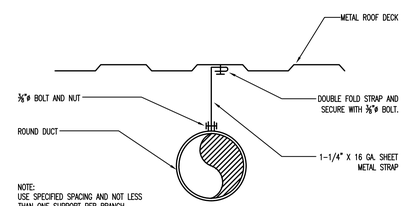
2 RETURN AIR TRANSFER DUCT DETAIL
SCALE: NTS



3 RECTANGULAR DUCT SUPPORT DETAIL
SCALE: NTS



4 RETURN AIR WITH SOUND BOOT
SCALE: NTS



5 ROUND DUCT SUPPORT DETAIL
SCALE: NTS

C-MECH ENGINEERING

CRSA

PROJECT **25002**

BID SET 2025-02-28

REVISIONS

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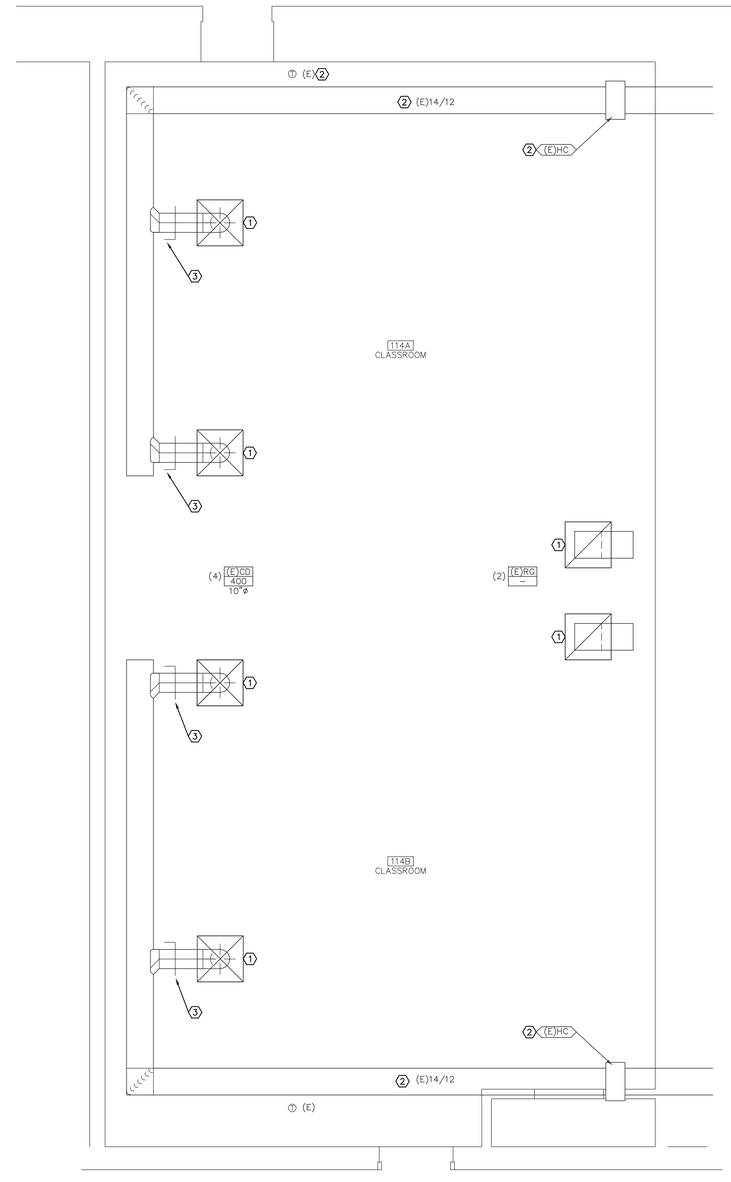
UtahState University

PROFESSIONAL ENGINEER
6136918-2202
MARTIN THOMAS CARRILLO
STATE OF UTAH
5/22/2025

MECHANICAL DETAILS
ME501

(801) 355-5915



M1 MECHANICAL PLAN
3/8" = 1'-0"

GENERAL NOTES

1. LINE-ITEM COST: BALANCE ALL DIFFUSERS IN ROOM TO CFM NOTED.
2. WHERE BRANCH DUCT TO SUPPLY DIFFUSER HAS ACCESSIBLE/ADJUSTABLE BALANCING DAMPER, OBD ADJUSTABLE THROUGH FACE SHALL BE REMOVED WHERE APPLICABLE.

⬡ SHEET KEYNOTES

1. REMOVE FACE/CORE AND CLEAN DIFFUSER/GRILLE WITH DAMP CLOTH. RE-INSTALL DIFFUSER/GRILLE FACE/CORE.
2. EXISTING HVAC EQUIPMENT NOTED FOR REFERENCE PURPOSES ONLY.
3. LINE-ITEM COST: BALANCE DIFFUSER TO SPECIFIED AIRFLOW

CRSA

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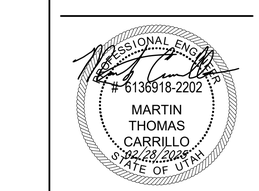


HPR 114A
MECHANICAL PLANS
MH101.3

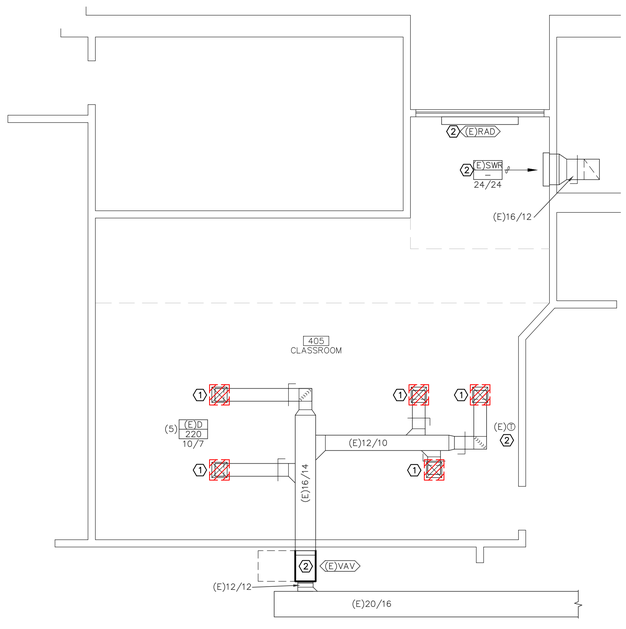
C-MECH ENGINEERING
(801) 355-5915

GENERAL NOTES

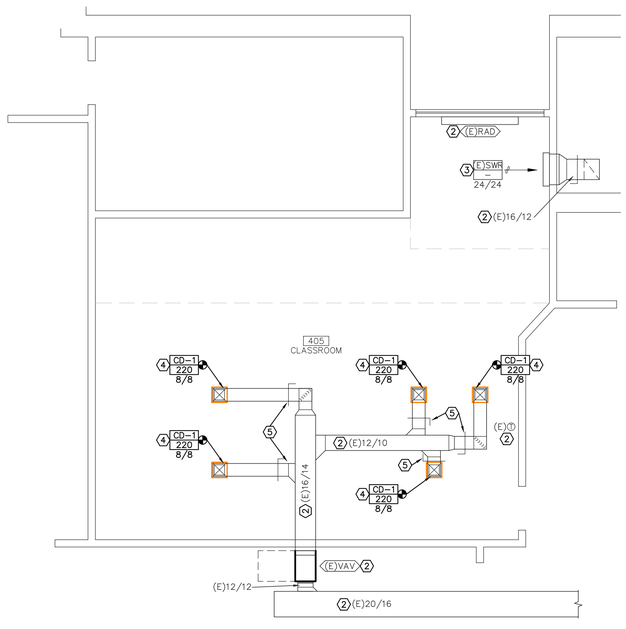
1. LINE–ITEM COST: BALANCE ALL DIFFUSERS IN ROOM TO CFM NOTED.
2. WHERE BRANCH DUCT TO SUPPLY DIFFUSER HAS ACCESSIBLE/ADJUSTABLE BALANCING DAMPER, OBD ADJUSTABLE THROUGH FACE SHALL BE REMOVED WHERE APPLICABLE.

⬡SHEET KEYNOTES

1. DEMOLISH AND REMOVE EXISTING CEILING DIFFUSER. PREPARE DUCT FOR CONNECTION TO NEW DIFFUSER.
2. EXISTING HVAC EQUIPMENT NOTED FOR REFERENCE PURPOSES ONLY.
3. CLEAN AND WIPE DOWN WITH DAMP CLOTH EXISTING GRILLE AT THIS LOCATION.
4. PROVIDE AND INSTALL NEW CEILING DIFFUSER AND CONNECT INTO EXISTING DUCT. PATCH, REPAIR AND SEAL CEILING TO MATCH EXISTING.
5. LINE–ITEM COST: BALANCE DIFFUSER TO SPECIFIED AIRFLOW.



D1 MECHANICAL DEMOLITION PLAN
1/4" = 1'-0"



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C-MECH ENGINEERING

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PROFESSIONAL ENGINEER
6136918-2202
MARTIN THOMAS CARRILLO
04/28/2025
STATE OF UTAH

GEO 405
MECHANICAL PLANS
MH101.4

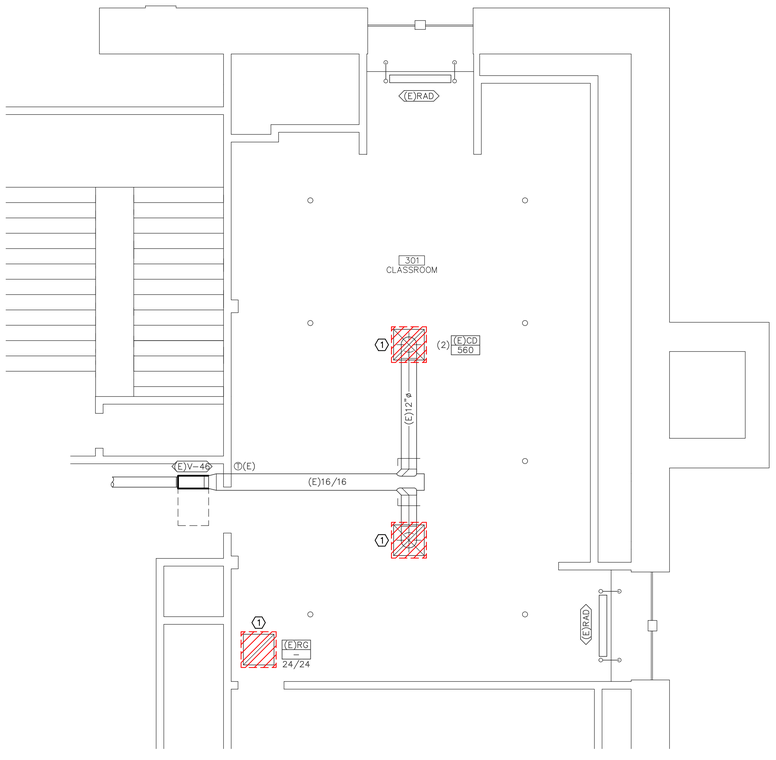
(801) 355-5915

GENERAL NOTES

1. LINE–ITEM COST: BALANCE ALL DIFFUSERS IN ROOM TO CFM NOTED.
2. WHERE BRANCH DUCT TO SUPPLY DIFFUSER HAS ACCESSIBLE/ADJUSTABLE BALANCING DAMPER, OBD ADJUSTABLE THROUGH FACE SHALL BE REMOVED WHERE APPLICABLE.

⬡SHEET KEYNOTES

1. DEMOLISH AND REMOVE EXISTING CEILING DIFFUSER/GRILLE. PREPARE LOCATION/DUCT FOR INSTALLATION OF NEW DIFFUSER/GRILLE.
2. EXISTING HVAC EQUIPMENT NOTED FOR REFERENCE PURPOSES ONLY.
3. CLEAN AND WIPE DOWN WITH DAMP CLOTH EXISTING GRILLE AT THIS LOCATION.
4. PROVIDE AND INSTALL NEW CEILING DIFFUSER/GRILLE. CONNECT INTO EXISTING DUCT OR CEILING SYSTEM. SEAL ALL DUCT/CEILINGS AND PATCH/PAINT TO MATCH EXISTING CONDITIONS.
5. LINE–ITEM COST: BALANCE DIFFUSER TO SPECIFIED AIRFLOW.



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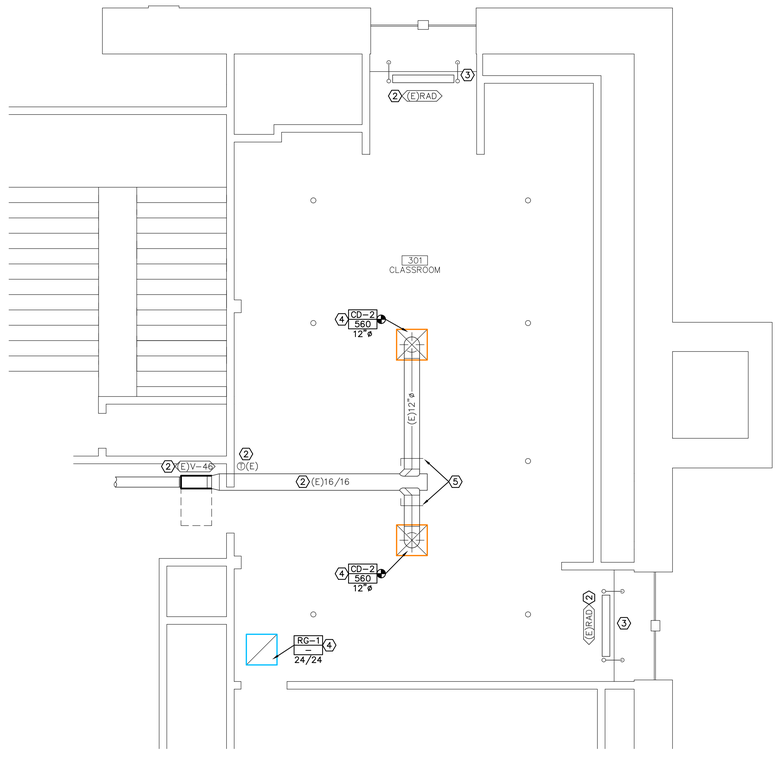

M1 MECHANICAL PLAN
1/4" = 1'-0"

C-MECH ENGINEERING

CRSA

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6136918-2202
MARTIN THOMAS CARRILLO
02/28/2025
STATE OF UTAH

OLD MAIN 301
MECHANICAL PLANS
MH101.6

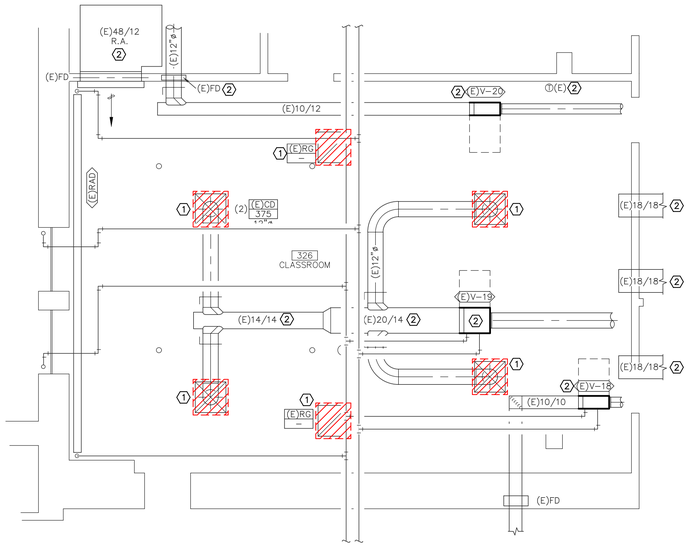
(801) 355-5915

GENERAL NOTES

1. LINE-ITEM COST: BALANCE ALL DIFFUSERS IN ROOM TO CFM NOTED.
2. WHERE BRANCH DUCT TO SUPPLY DIFFUSER HAS ACCESSIBLE/ADJUSTABLE BALANCING DAMPER, OBD ADJUSTABLE THROUGH FACE SHALL BE REMOVED WHERE APPLICABLE.

⬡SHEET KEYNOTES

1. DEMOLISH AND REMOVE EXISTING CEILING DIFFUSER/GRILLE. PREPARE LOCATION/DUCT FOR INSTALLATION OF NEW DIFFUSER/GRILLE.
2. EXISTING HVAC EQUIPMENT NOTED FOR REFERENCE PURPOSES ONLY.
3. CLEAN AND WIPE DOWN WITH DAMP CLOTH EXISTING RADIATOR/GRILLE AT THIS LOCATION.
4. PROVIDE AND INSTALL NEW CEILING DIFFUSER/GRILLE. CONNECT INTO EXISTING DUCT OR CEILING SYSTEM. SEAL ALL DUCT/CEILINGS AND PATCH/PAINT TO MATCH EXISTING CONDITIONS.
5. LINE-ITEM COST: BALANCE DIFFUSER TO SPECIFIED AIRFLOW.



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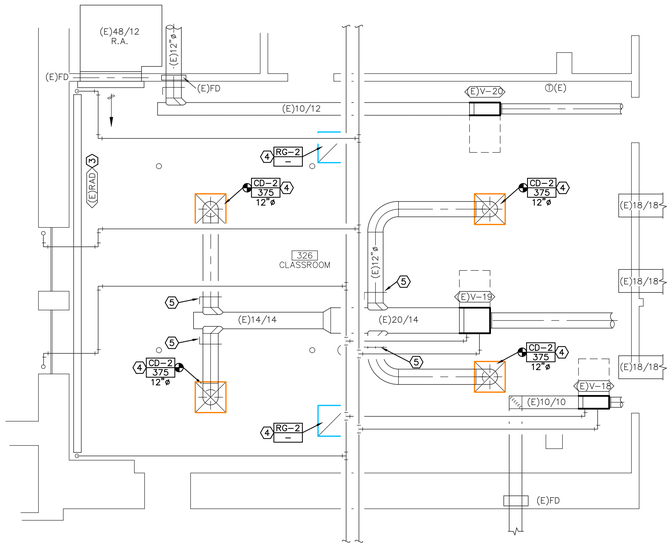

M1 MECHANICAL PLAN
1/4" = 1'-0"

C-MECH ENGINEERING

CRSA

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6136918-2202
MARTIN THOMAS CARRILLO
10/28/2025
STATE OF UTAH

OLD MAIN 326
MECHANICAL PLANS
MH101.7

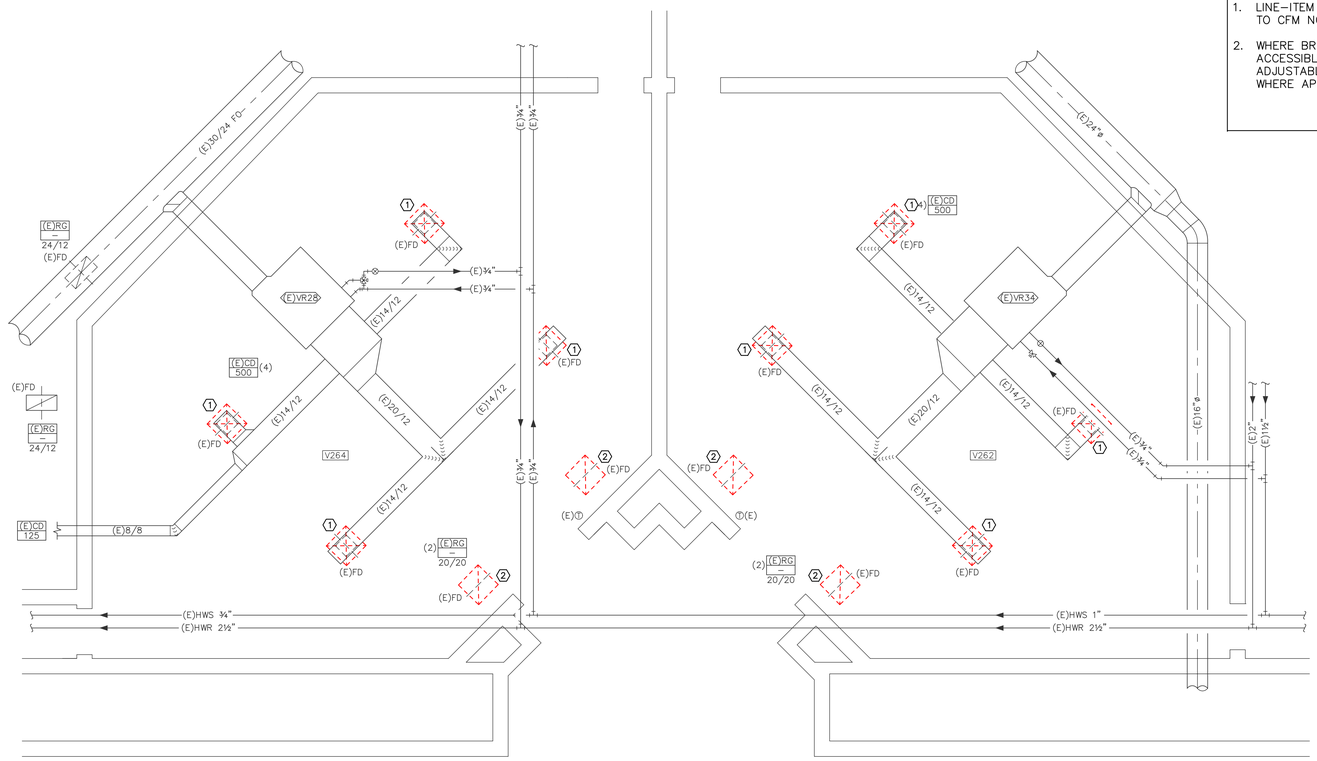
(801) 355-5915

GENERAL NOTES

1. LINE-ITEM COST: BALANCE ALL DIFFUSERS IN ROOM TO CFM NOTED.
2. WHERE BRANCH DUCT TO SUPPLY DIFFUSER HAS ACCESSIBLE/ADJUSTABLE BALANCING DAMPER, OBD ADJUSTABLE THROUGH FACE SHALL BE REMOVED WHERE APPLICABLE.

⬡SHEET KEYNOTES

1. DEMOLISH AND REMOVE EXISTING CEILING DIFFUSER/FIRE DAMPER. PREPARE DUCT FOR CONNECTION TO NEW DIFFUSER.
2. DEMOLISH AND REMOVE EXISTING CEILING MOUNTED RETURN AIR GRILLE/FIRE DAMPER. PREPARE LOCATION FOR INSTALLATION OF NEW GRILLE/FIRE DAMPER.
3. INSTALL NEW CEILING DIFFUSER AT THIS LOCATION. SEAL ALL DUCT/CEILING PENETRATIONS. PATCH AND REPAIR CEILING TO MATCH EXISTING.
4. INSTALL NEW RETURN AIR GRILLE AT THIS LOCATION. SEAL ALL CEILING PENETRATIONS. PATCH AND REPAIR CEILING TO MATCH EXISTING.



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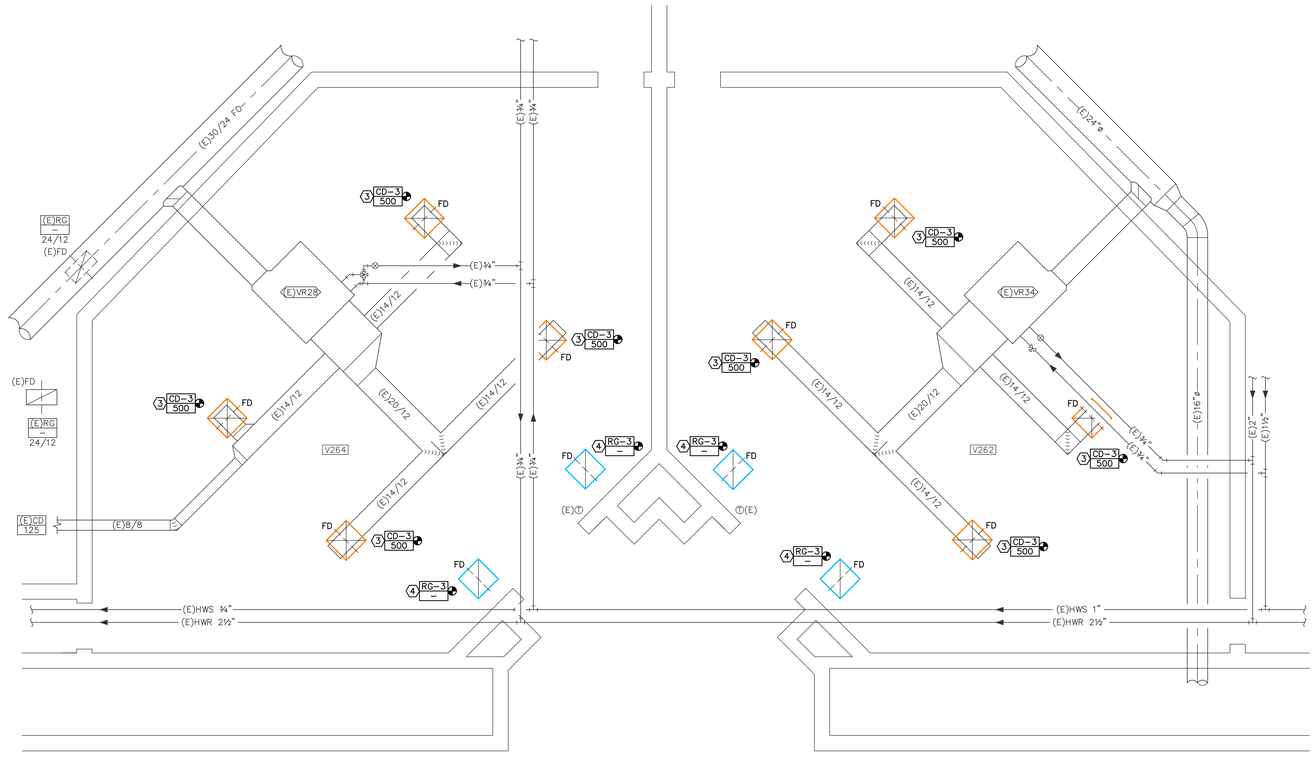

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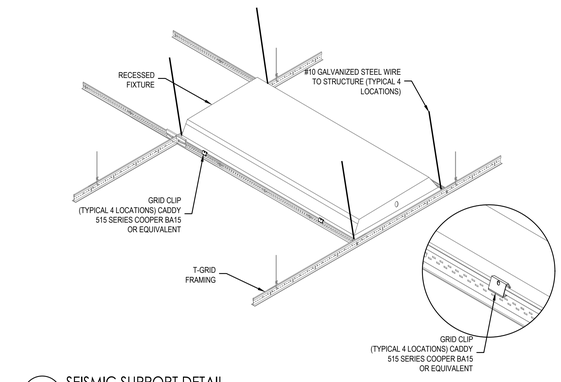
02/28/2025
STATE OF UTAH

C-MECH ENGINEERING

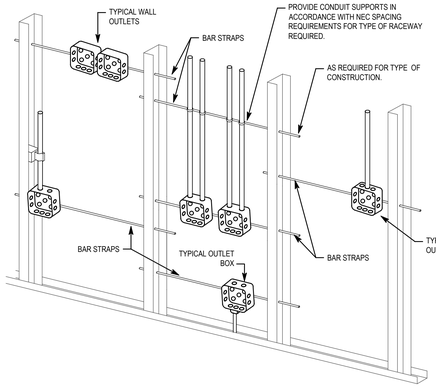
FAV 262 & 264
MECHANICAL PLANS
MH101.11

(801) 355-5915



2 SEISMIC SUPPORT DETAIL

1/8" = 1'-0"



1 TYPICAL ROUGH-IN REQUIREMENTS DETAIL

1/8" = 1'-0"

GENERAL 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. OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE IN A RATED FIRE SEPARATION WALL MUST BE SEPARATED BY A MINIMUM OF 24" HORIZONTAL DISTANCE.
5. IN NON-RATED WALLS, OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY 16" FOR SOUND ATTENUATION.

GENERAL PROJECT NOTES

1. ALL ELECTRICAL INSTALLATIONS TO CONFORM TO THE LATEST NEC AND LOCAL CODES.
2. ELECTRICAL CONTRACTOR'S PROJECT MANAGER AND ON-SITE PROJECT FOREMAN SHALL REVIEW VENDOR SUBMITTALS FOR ACCURACY PRIOR TO SUBMITTING TO ENGINEER. INACCURACIES SHALL BE CORRECTED PRIOR TO ENGINEER SUBMITTAL.
3. THE CLARITY OF RECORD DRAWING CHANGES MADE BY THE CONTRACTOR SHALL BE EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ARCHITECT OR THE RECORD SET WILL BE RETURNED TO THE CONTRACTOR FOR CLARIFICATION.
4. WHEN THE GENERAL CONTRACT CALLS FOR 'RECORD' OR "AS-BUILT" DRAWINGS TO BE FURNISHED BY THE CONTRACTOR AT JOB COMPLETION, THE ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO FURNISH A COMPLETE SET OF "BLUE-PRINT READY" AUTOCAD ELECTRICAL DRAWINGS FOR ALL CONTRACTOR GENERATED CHANGES FROM THE DRAWINGS OF A CLARITY EQUAL TO THE ORIGINAL DRAWINGS AS JUDGED BY THE ENGINEER. CONTACT ARCHITECT FOR DISKS OR REPRODUCIBLE ORIGINAL MEDIA. PROVIDE DRAWINGS ON CD IN AUTOCAD FORMAT.
5. DO NOT SCALE ELECTRICAL FLOOR PLANS. SEE ARCHITECTURAL DRAWINGS FOR ACCURATE DIMENSIONS AND FLOOR PLANS.
6. ELECTRICAL DEVICES CANNOT BE SHOWN TO SCALE AND SOMETIMES OVERLAP BUILDING ELEMENTS. REFER TO ARCHITECTURAL ELEVATIONS FOR ACCURATE MOUNTING LOCATIONS
7. PANEL INDEXES SHALL INCLUDE ALL PERTINENT INFORMATION ON THE PANEL SCHEDULES INCLUDING DISTINCT NAMES FOR EACH CIRCUIT AND INFORMATION ON LIGHTS, OUTLETS, EQUIPMENT, ETC. DO NOT SIMPLY COPY THE CIRCUIT DESCRIPTION COLUMN. INDEXES TO BE TYPEWRITTEN. INCLUDE UPDATES MADE AS PART OF THIS PROJECT.
8. COORDINATE MOUNTING HEIGHT AND LOCATION OF ALL OUTLETS, SWITCHES, AUXILIARY EQUIPMENT, AND OTHER DEVICES WITH THE ARCHITECTURAL DRAWINGS. PRIOR TO INSTALLATION, REVIEW WITH THE GENERAL CONTRACTOR THE LOCATION OF MILLWORK AS A FINAL CHECK TO PREVENT COVERING OF ELECTRICAL ITEMS.
9. MOUNTING HEIGHT OF GENERAL PURPOSE OUTLETS AND SWITCHES SHALL BE 16" TO BOTTOM AND 48" TO TOP RESPECTIVELY UNLESS OTHERWISE NOTED.
10. ALL ELECTRICAL EQUIPMENT SHALL BE LOCATED SO AS NOT TO INTERFERE WITH WOOD TRIM AND MOLDINGS. THE ELECTRICAL CONTRACTOR SHALL REVIEW FINISH SCHEDULES AND ARCHITECTURAL DETAILS BEFORE ROUGH-IN OF OUTLET OR SWITCH BOXES TO PREVENT BOXES AND PLATES FROM BEING PLACED BEHIND OR IN TRIMS AND MOLDINGS. REFER SPECIAL CONDITIONS TO ARCHITECT PRIOR TO ROUGH-IN.
11. CIRCUIT WIRE SIZES MUST, AT MINIMUM, MATCH NEC REQUIRED CONDUCTOR SIZES FOR CORRESPONDING OVER-CURRENT PROTECTIVE DEVICES. VERIFY WITH PANEL SCHEDULES BEFORE PULLING WIRE.
12. THE ELECTRICAL CONTRACTOR SHALL RUN BRANCH CIRCUIT CONDUITS IN ATTIC SPACES IN A NEAT AND WORKMANLIKE MANNER SO AS TO CONSERVE OPEN SPACES AS MUCH AS POSSIBLE. HVAC DUCTWORK AND PLUMBING SHALL HAVE LOCATION PRIORITY OVER BRANCH CIRCUIT CONDUIT RUNS.
13. CIRCUIT WIRING SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY DEVIATIONS SHALL BE INITIATED BY A CHANGE ORDER FROM THE ARCHITECT. OTHERWISE THE RECORD SET SHALL MATCH THE CONSTRUCTION SET.
14. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR, PULLED INTO THE CONDUIT WITH THE PHASE CONDUCTOR, IN ALL SERVICE, FEEDER, AND BRANCH CIRCUITS.
15. PROVIDE A NEUTRAL CONDUCTOR FOR EACH BREAKER TRIP HANDLE. NEUTRALS SHALL NOT BE SHARED BETWEEN BRANCH CIRCUITS.
16. ALL CIRCUITS TO BE MINIMUM #12 CU IN MINIMUM 3/4" CONDUIT UNLESS OTHERWISE NOTED.
17. MC CABLE IS NOT AN APPROVED ALTERNATE TO CONDUCTORS IN CONDUIT.
18. DO NOT INSTALL MORE THAN THREE PHASE CONDUCTORS IN ANY HOME-RUN CONDUITS UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
19. IDENTIFY ALL OUTLET COVER PLATES WITH THE PANEL AND CIRCUIT NUMBER.
20. OUTLETS, SWITCHES, AND COVER PLATES TO BE COLOR CODED (BROWN, WHITE, IVORY, OR GRAY) TO THE WALL THEY ARE MOUNTED ON AS DIRECTED BY THE ARCHITECT.
21. ALL CONVENIENCE OUTLETS MUST BE MOUNTED FLUSH WITH THE COVER PLATE AND SECURED FIRMLY TO THE OUTLET BOX.
22. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO MAKE SURE OUTLET BOXES ARE SET FLUSH WITH FINISH WALL SURFACES WHERE WALL PANELING OR ACOUSTICAL WALLS ARE INSTALLED OR WHERE OUTLETS ARE INSTALLED ON CARPETED RISERS.
23. GFI OUTLETS SHALL BE INSTALLED AND/OR CIRCUITED SO THAT THE TRIPPING OF A GFI OUTLET IN A STUDENT ACCESSED AREA WILL NOT SHUT OF ANY DOWN-STREAM OUTLETS.
24. REMOVE ALL OLD AND/OR UNUSED EXISTING CONDUIT AND ELECTRICAL APPARATUS FROM EXTERIOR OR INTERIOR EXPOSED SURFACES.
25. WHERE EXISTING ELECTRICAL EQUIPMENT IS TO REMAIN BUT THE SURFACE THAT IT IS MOUNTED ON IS TO BE REWORKED UNDER OTHER CONTRACTS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND INSTALL OR MODIFY THE EXISTING EQUIPMENT AS REQUIRED TO MEET THE DESIGN INTENT. SEE ARCHITECTURAL DRAWINGS FOR ROOF, CEILINGS, WALLS, SOFFITS, FLOORS, ETC.
26. REMOVE ALL UNUSED CONDUITS AND CIRCUITS IN THE DEMOLITIONED AREA AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
27. REMOVE ALL EXISTING ELECTRICAL DEVICES, EQUIPMENT, AND APPARATUS AS THEY ARE IDENTIFIED AS UNUSED OR ABANDONED.
28. RELOCATE EXISTING CONDUITS AND CIRCUITS AS REQUIRED THAT ARE PRESENTLY SERVING EQUIPMENT THAT IS INTENDED TO REMAIN IN SERVICE BUT SAID CONDUITS ARE CURRENTLY RUNNING THROUGH AREAS TO BE DEMOLITIONED.
29. WHERE EXISTING CONDUIT RUNS ARE RE-USED BY SPECIAL PERMISSION FROM THE ARCHITECT, A SEPARATE GREEN, INSULATED GROUND WIRE SHALL BE PULLED IN THE CONDUIT AND BONDED AT EACH END AS REQUIRED.
30. RE-ROUTE EXISTING CIRCUIT CONDUITS AS REQUIRED AT ALL AREAS WHERE EXISTING WALLS ARE TO BE DEMOLITIONED OR HAVE DOORWAYS CUT IN THEM. PLAN ON AN AVERAGE OF ONE, 3/4" CONDUIT RELOCATION FOR EACH PENETRATION OR WALL REMOVAL.
31. FIELD VERIFY CONDITIONS FOR NEW WIRING. SURFACE RACEWAYS MUST RECEIVE PRIOR APPROVAL FROM THE ARCHITECT AND OWNER AND WILL BE EVALUATED ON A CASE BY CASE BASIS DURING CONSTRUCTION. APPROVED RACEWAYS MUST BE PAINTED TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED.
32. ALL PATCH, REPAIR, REPAINT AND COVER UP REQUIRED AS A RESULT OF ELECTRICAL REMODEL IS TO BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR, BUT ACTUAL WORK IS TO BE PERFORMED BY QUALIFIED PERSONNEL.
33. COORDINATE LOCATION OF CEILING LIGHT FIXTURES WITH THE REFLECTED CEILING PLAN.
34. FIXTURE COUNTS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE TO VERIFY FIXTURE COUNTS AS PART OF BIDDING PROCESS.
35. ELECTRICAL CONTRACTOR SHALL VERIFY CEILING THICKNESSES AND USE CEILING TRIM EXTENDERS ON DOWNLIGHTS AS REQUIRED.
36. ELECTRICAL CONTRACTOR SHALL REVIEW THE EXACT LOCATION OF ALL SKYLIGHTS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN OF CEILING OUTLET BOXES.
37. SUPPORT RECESSED T-BAR MOUNT FIXTURES WITH FOUR EXTRA GALVANIZED WIRE SUPPORTS ON OPPOSITE CORNERS PER IBC. CONNECT WIRES TO BUILDING STRUCTURE.
38. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW ALL SWITCH LOCATIONS WITH THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN TO PREVENT ANY SWITCHES FROM BEING LOCATED ON THE WRONG SIDE OF THE DOOR.
39. COORDINATE LOCATION OF EXIT LIGHTS WITH ARCHITECT.
40. VERIFY FIXTURE COUNT WITH REFLECTED CEILING PLAN.
41. THERMOSTAT AND CONTROL WIRING FOR MECHANICAL EQUIPMENT BY MECHANICAL CONTRACTOR.
42. BEFORE RUNNING CONDUITS, PLACING OUTLETS OR ORDERING EQUIPMENT, THE CONTRACTOR SHALL REVIEW THE SPECIFICATIONS AND DESIGN AND SHOP DRAWINGS OF THE OTHER TRADES SERVED BY THE CONDUIT, OUTLETS, AND/OR EQUIPMENT.
43. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL COMMUNICATIONS, SECURITY, AND OTHER LOW VOLTAGE CONDUITS FOR USE BY LOW VOLTAGE SYSTEM CONTRACTOR.
44. ELECTRICAL CONTRACTOR SHALL INSTALL A PULL STRING IN ALL UNUSED POWER AND LIGHTING CONDUITS.
45. INSTALL CEILING SMOKE AND HEAT DETECTORS A MINIMUM OF THREE FEET AWAY FROM ANY SUPPLY AIR DUCT.
46. COORDINATE LOCATION OF ALL FIRE ALARM DEVICES WITH NFPA AND ADA REQUIREMENTS. COORDINATE LOCATIONS WITH MILLWORK AS REQUIRED.
47. REVIEW THE STATE DESIGN REQUIREMENTS MANUAL PRIOR TO BID
48. REVIEW THE USU A&E DESIGN MANUAL PRIOR TO BID.
49. WHERE THERE ARE CONFLICTS IN THE DRAWINGS AND/OR SPECIFICATIONS THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO BID. WHERE NO NOTIFICATION IS GIVEN THE MORE STRINGENT INTERPRETATION (GENERALLY INTERPRETED TO BE THE MORE COSTLY) WILL BE ENFORCED.

ELECTRICAL LEGEND

ANNOTATIONS

X / XXX	DETAIL CALL-OUT; TOP "X" REFERS TO DETAIL NUMBER & BOTTOM "XXX" REFERS TO SHEET NUMBER
#	KEYED NOTE CALLOUT
#.#	EQUIPMENT CALLOUT
---- xCDy ----	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER

LIGHTING FIXTURES

FIXTURE LUMEN INDICATOR
FIXTURE SIZE INDICATOR
FIXTURE TYPE
XXX-XX (X)
FIXTURE ACCESSORY APPEND

	EMERGENCY LIGHT
	BATTERY PACK
	EXIT LIGHT: CEILING - FACE(S) AS SHOWN
	EXIT LIGHT: WALL - FACE(S) AS SHOWN
	EXIT LIGHT: FACE SIDE
	EXIT LIGHT: DIRECTIONAL ARROWS, DOUBLE FACE
	RECESSED FIXTURE
RPP	RECESSED CAN: ADJUSTABLE PULL-DOWN
RE	RECESSED CAN: ADJUSTABLE EYEBALL
	STRIP LIGHT
	LINEAR FIXTURE
	EMERGENCY FIXTURE
	WALL MOUNT FIXTURE
	BOLLARD FIXTURE
	SUSPENDED FIXTURE

LIGHTING CONTROL

GENERAL CONTROLS

$ DT	OCCUPANCY SENSOR: DUAL TECHNOLOGY
$ VS	OCCUPANCY SENSOR: VACANCY SENSOR FUNCTION
$ OS	OCCUPANCY SENSOR: OCCUPANCY SENSOR FUNCTION
$ #	OCCUPANCY SENSOR: # INDICATES WATTSTOPPER CAT# FOR COVERAGE PATTERN OR EQUIVALENT AS SPECIFIED
P	PHOTOCELL
	TIME CLOCK
	PUSH BUTTON

LOCAL CONTROLS

$ X	SINGLE POLE SWITCH; "x" INDICATES SWITCH GROUP
$ 3	THREE WAY SWITCH
$ 4	FOUR WAY SWITCH
$ K	SWITCH: KEYED
$ DL	DIMMER SWITCH: LED; 600 W MINIMUM
VS	WALL MOUNT OCCUPANCY SENSOR: VACANCY SENSOR FUNCTION
OS	WALL MOUNT OCCUPANCY SENSOR: OCCUPANCY SENSOR FUNCTION

CENTRAL SYSTEM CONTROLS
(SEE LIGHTING CONTROL SCHEDULES FOR COMPLETE INFORMATION)

$ LSX/SY	DIGITAL LIGHTING CONTROL TOGGLE; SX = SWITCH CONTROL TYPE #1; SY = SWITCH CONTROL TYPE #2; ETC.
$ DL	SWITCH: DAYLIGHT ZONE AS DETAILED
$ LC#	OCCUPANCY SENSOR: LIGHTING CONTROL SYSTEM; C# = LIGHTING CONTROL TYPE
P LP#	PHOTOCELL: INTEGRATED TO LIGHTING CONTROL SYSTEM; P# = LIGHTING CONTROL TYPE
DLDX/DY	DIGITAL LIGHTING CONTROL DIMMING SWITCH: DX = SWITCH CONTROL TYPE #1; DY = SWITCH CONTROL TYPE #2; ETC.
DLGUI	DIGITAL LIGHTING CONTROL STATION; MULTI-ZONE; GRAPHICAL USER INTERFACE

BRANCH CIRCUITING

	DUPLEX OUTLET
USB	DUPLEX RECEPTACLE WITH (2)USB; LEVITON T5832 SERIES OR EQUIVALENT
	FACELESS GFCI PROTECTION DEVICE
	DUPLEX OUTLET: GROUND FAULT INTERRUPTER
EWC	ELECTRIC WATER COOLER OUTLET: GFCI UNLESS NOTED
	DOUBLE DUPLEX OUTLET
	DOUBLE DUPLEX OUTLET: GROUND FAULT INTERRUPTER
	SPECIAL OUTLET: SEE PANEL SCHEDULE
FPCS	FLUSH IN USE BOX FLOOR. NUMERIC VALUES GIVEN FOR "P" AND "C" REPRESENT. P = QUANTITY OF DUPLEX RECEPTACLES C = QUANTITY OF DATA PORTS S = DESIGNATION REPRESENTS PROVISIONS FOR OWNER AUXILIARY SYSTEMS CONNECTIONS SEE FLOOR BOX SCHEDULE FOR FURTHER DESCRIPTION

WPCS	FLUSH IN USE BOX WALL. NUMERIC VALUES GIVEN FOR "P" AND "C" REPRESENT. P = QUANTITY OF DUPLEX RECEPTACLES C = QUANTITY OF DATA PORTS S = DESIGNATION REPRESENTS PROVISIONS FOR OWNER AUXILIARY SYSTEMS CONNECTIONS SEE FLOOR BOX SCHEDULE FOR FURTHER DESCRIPTION
J	JUNCTION BOX
	DISCONNECT; NO OVER-CURRENT PROTECTION
	DISCONNECT WITH OVER-CURRENT PROTECTION (CIRCUIT BREAKER STYLE OR AS SPECIFIED)
$ m	MOTOR PROTECTIVE THERMAL SWITCH
$ S	SWITCH: MOTORIZED EQUIPMENT RAISE/LOWER
	QUANTITY OF CONDUCTORS: SHORT LINES = PHASE /SWITCH, LONG LINES = NEUTRAL
	HOME-RUN
	CIRCUITING: LINE VOLTAGE
	CIRCUITING: CONTROL

POWER AND DISTRIBUTION

	DISTRIBUTION PANEL
	PANELBOARD

COMMUNICATIONS

---- xCDy ----	COMMUNICATIONS RACEWAY: "x" CONDUITS OF "y" DIAMETER
LR#	COMMUNICATIONS LADDER RACK. SEE SPECIFICATIONS AND / OR SCHEDULES
CT#	COMMUNICATIONS RACEWAY CABLE TRAY. SEE SPECIFICATIONS AND / OR SCHEDULES
	PHONE BACKBOARD
	COMMUNICATIONS ENCLOSURE
	COMMUNICATIONS OUTLET, 1-PORT DEVICE, 5"SQ x 3"D BOX WITH 5/8" MUD-RING; 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (1)CAT 6 CABLES/JACK;CABLE BY OWNER
	COMMUNICATIONS OUTLET, 2-PORT DEVICE, 5"SQ x 3"D BOX WITH 5/8" MUD-RING; 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6 CABLES/JACKS; CABLE BY OWNER
	COMMUNICATIONS OUTLET, 3-PORT DEVICE, 5"SQ x 3"D BOX WITH 5/8" MUD-RING; 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (3)CAT 6 CABLES/JACKS; CABLE BY OWNER
X	COMMUNICATIONS OUTLET, 6-PORT DEVICE, 5"SQ x 3"D BOX WITH 5/8" MUD-RING; 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (X)CAT 6 CABLES/JACKS; CABLE BY OWNER
WAP	COMMUNICATIONS OUTLET, WIRELESS ACCESS POINT;2-PORT DEVICE, 5"SQ x 3"D BOX WITH 5/8" MUD-RING; 1.25" CONDUIT; 4-PORT KEYSTONE FACEPLATE; (2)CAT 6 CABLES/JACKS; CABLE BY OWNER

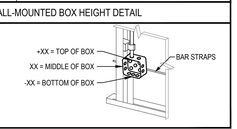
FIRE ALARM

FACP	FIRE ALARM CONTROL PANEL
	SMOKE DETECTOR
X	FIRE ALARM STROBE; "X" = MINIMUM CANDELA RATING
X	CEILING MOUNTED FIRE ALARM STROBE; "X" = MINIMUM CANDELA RATING
X	FIRE ALARM HORN AND STROBE; "X" = MINIMUM CANDELA RATING
X	CEILING MOUNTED FIRE ALARM HORN AND STROBE; "X" = MINIMUM CANDELA RATING
X	CEILING MOUNTED FIRE ALARM VOICE EVAC SPEAKER AND STROBE; "X" = MINIMUM CANDELA RATING
S X	FIRE ALARM VOICE EVAC SPEAKER AND STROBE; "X" = MINIMUM CANDELA RATING
F	FIRE ALARM PULL STATION

AUDIO/VISUAL

V	VOLUME CONTROL
S	SPEAKER : CEILING FLANGE OR GRID MOUNT
S	SPEAKER : PENDANT MOUNT
A	AUXILIARY INPUT
PROJ	OVERHEAD PROJECTOR : CEILING MOUNT

GENERAL WALL-MOUNTED BOX HEIGHT DETAIL



SHEET INDEX

ELECTRICAL ABBREVIATIONS

A	AMPERE	LTG	LIGHTING
AF	AMP FUSE	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MCB	MAIN CIRCUIT BREAKER
AFG	ABOVE FINISHED GRADE	MECH	MECHANICAL
AFI	ARC-FAULT CIRCUIT-INTERRUPTER	MFR	MANUFACTURER
AIC	AMPERE INTERRUPTING CAPACITY	MIN	MINIMUM
AL	ALUMINUM	MLO	MAIN LUGS ONLY
ARCH	ARCHITECT(URAL)	MTD	MOUNTED
AS	AMP SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	NECA	NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION
BLDG	BUILDING	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BKBD	BACKBOARD	NEUT	NEUTRAL
C	CONDUIT	NFC	NATIONAL FIRE CODE
CAB	CABINET	NC	NORMALLY CLOSED
CAT	CATALOG/CATEGORY	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NL	NIGHT LITE
CKT	CIRCUIT	NO	NORMALLY OPEN
CLG	CEILING	NTS	NOT TO SCALE
CO	CONDUIT ONLY	OCP	OVERCURRENT PROTECTION
COMM	COMMUNICATION	P	POLE
CONN	CONNECTION	PH	PHASE
CU	COPPER	PNL	PANEL
DEMO	DEMOLITION/DEMOLISH	PWR	POWER
DISC	DISCONNECT	QTY	QUANTITY
DN	DOWN	RECEP	RECEPTACLE
DWG	DRAWING	REQD	REQUIRED
EA	EACH	RGSC	RIGID GALVANIZED STEEL CONDUIT
ELEC	ELECTRICAL	RM	ROOM
ELEV	ELEVATOR	SCHED	SCHEDULE
EMER, EM	EMERGENCY	SECT	SECTION
EMT	ELECTRICAL METALLIC TUBING	SP	SINGLE POLE
EOLR	END OF LINE RESISTOR	SN	SOLID NEUTRAL
EQUIP	EQUIPMENT	SPEC	SPECIFICATION
EX, EXIST	EXISTING	SW	SWITCH
FBO	FURNISHED BY OTHERS	SWBD	SWITCHBOARD
FCU	FAN COIL UNIT	SWGR	SWITCH GEAR
FF	FINISHED FLOOR	SYS	SYSTEM
FIXT	FIXTURE	TEMP	TEMPORARY
FLEX	FLEXIBLE METALLIC CONDUIT (STEEL)	TELE	TELEPHONE
FLUOR	FLUORESCENT	XFMR	TRANSFORMER
FT	FEET OR FOOT	T-STAT	THERMOSTAT
GFI	GROUND FAULT INTERRUPTER	TWP	TWISTED PAIR
GND	GROUND	TWSP	TWISTED SHEILDED PAIR
HP	HORSEPOWER	TYP	TYPICAL
HVAC	HEATING, VENTILATING & AIR CONDITIONING	UBC	UNIFORM BUILDING CODE
IG	ISOLATED GROUND	UL	UNDERWRITERS LABORATORY
IMC	INTERMEDIATE METAL CONDUIT	UMC	UNIFORM MECHANICAL CODE
IN	INCH(ES)	UNO	UNLESS NOTED OTHERWISE
ISC	SHORT CIRCUIT AMPERES, KA	V	VOLT OR VOLTAGE
JB, J-BOX	JUNCTION BOX	VA	VOLT AMPERE
KCMIL	THOUSAND CIRCULAR MILS	W	WATT
KVA	KILOVOLT AMPERE	WI	WITH
KW	KILOWATT	WG	WIRE GUARD
		WP	UL LISTED WEATHERPROOF, NEMA 3R or 4

CRSA

PROJECT **25-012**

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

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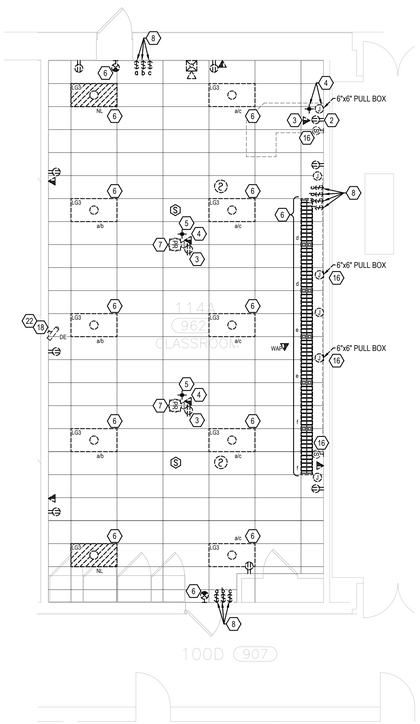
REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
4/10/2025
STATE OF UTAH

ABBREVIATIONS, G.P.N., LEGEND & SHEET INDEX

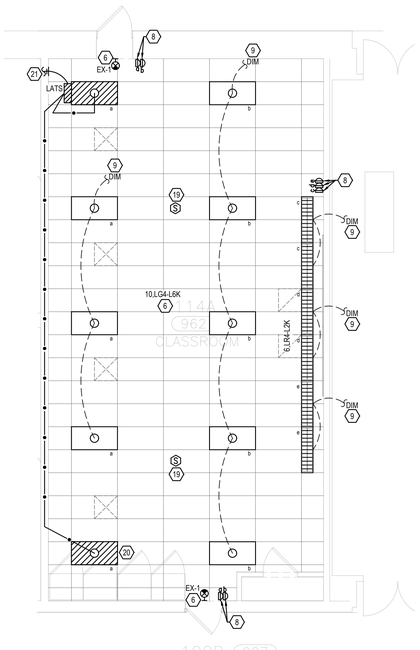
EE001.01

(801) 355-5915

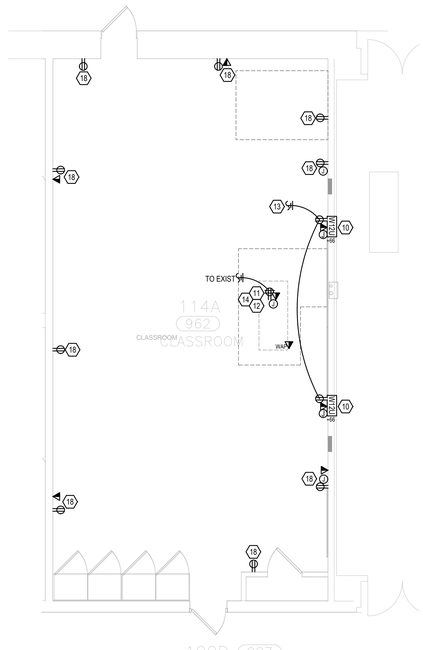
TIME: 15 OCT 2013 - 12:29PM CHEFFE - T:\JOBS\2025\10 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EE001.01 ABBREVIATIONS, G.P.N., LEGEND & SHEET INDEX.DWG
LAST SAVED: 10 Apr 25



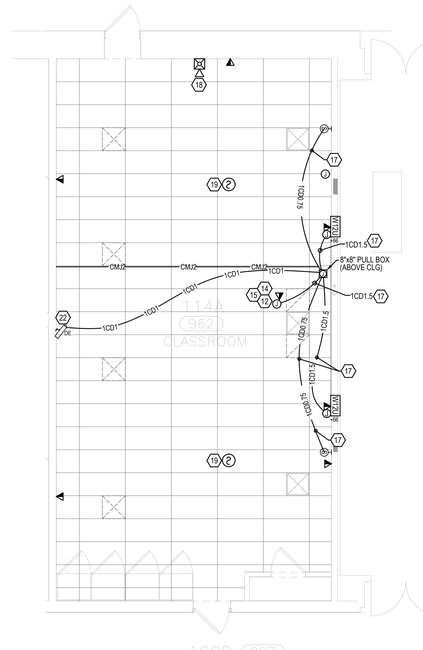
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D1 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

LIGHT FIXTURE SCHEDULE

	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
	EX- 1	LITHONIA LE-S-1-G-120/277 COOPER CX6-1-G DUAL LITE SE-S-G-BN EXITRONIX G400S-LB-BL EQUIVALENT ONLY WITH PRIOR UNIVERSITY APPROVAL	UNIVERSITY STANDARD EXIT SIGN; LED; SINGLE-FACE; BRUSHED ALUMINUM FACE; BLACK HOUSING (SIDE)	SURFACE OR WALL	3W	LED
	L ATS	DUAL LITE ATSD SERIES OR EQUIVALENT	LIGHTING TRANSFER SWITCH TO TRANSFER FROM SWITCHED POWER TO GENERATOR POWER ON NORMAL POWER FAILURE; RATINGS PER LOAD CONTROLLED; DIMMER COMPATIBLE	CEILING/FIXTURE	N/A	N/A
	LG4- L6K	LITHONIA CPX-2X4-6000LMHE-80CRI-40K-SWL-MIN1-ZT-MVOLT OR EQUIVALENT	LED FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SMOOTH WHITE LENS;	RECESSED	41.8 W	6000 LUMEN NOMINAL LED 4000K
	LR4- L2K	MARK SL6L-LOP-4-FLP-*-80CRI-40K-500LMF-MIN1-MVOLT-SCBA-ZT OR EQUIVALENT	RECESSED LINEAR, 6" NOMINAL WIDTH; RECESS MOUNT; DIFFUSE LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER;	RECESS	20 W	2000 LUMEN NOMINAL LED 4000K

NOTES

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
CMJ2	CABLE HOOKS; 2"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH32 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED

FLOOR, TABLE, AND WALL BOX SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF	PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS

SHEET KEYED NOTES

1. NOT USED.
2. REMOVE EXISTING OUTLETS AS INDICATED.
3. REMOVE EXISTING COMMUNICATIONS DEVICES AS INDICATED.
4. REMOVE EXISTING A/V BOX AND 2" CONDUIT TO ALLOW FOR CABINET REMOVAL.
5. REMOVE EXISTING A/V CONDUIT.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. PROVIDE NEW WALL BOX AS SPECIFIED.
11. PROVIDE NEW OUTLET IN NEW A/V CABINET PER USU A/V REQUIREMENTS. CONNECT TO EXISTING CIRCUIT SERVING REMOVED A/V CABINET.
12. SEE ARCHITECTURAL DRAWINGS FOR FLOOR CUT, PATCH AND REPAIR REQUIREMENTS FOR NEW INSTALLATIONS. SEPARATE POWER AND LOW VOLTAGE RACEWAYS A MINIMUM OF 6".
13. CIRCUIT TO EXISTING CIRCUIT SERVING REMOVED PROJECTORS.
14. OUTLET(S) MOUNTED IN MILLWORK. COORDINATE WITH USU A/V DEPARTMENT FOR REQUIREMENTS.
15. PROVIDE COMM OUTLETS AS SPECIFIED.
16. REMOVE EXISTING A/V INSTALLATIONS.
17. PROVIDE CONDUIT, SIZED AS INDICATED, BETWEEN BOXES OR STUBBED AS INDICATED. CONCEAL CONDUITS IN BUILDING FINISHES.
18. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
19. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
20. CONNECT FIXTURE TO EM CIRCUIT INDICATED. *PROVIDE ADDITIONAL 1-LAMP BALLAST/DRIVER IN MULTI-LAMP FIXTURES. CONNECT 1-LAMP BALLAST/DRIVER TO OPERATE WITH SWITCHES IN NORMAL MODE. PROVIDE AUTOMATIC SWITCHING DEVICE (LATS) FOR FIXTURE AS REQUIRED. FIXTURES ON A COMMON SWITCH SHALL BE CONNECTED TO A SINGLE SWITCHING DEVICE WITH APPROPRIATE RATINGS. LATS SHOWN FOR INTENT ONLY. LOCATE DEVICES IN ACCESSIBLE LOCATION ON OR NEAR FIRST CONTROLLED FIXTURE.
21. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.
22. EXISTING DISTANCE ED CAMERA TO REMAIN. PROVIDE NEW CONDUIT CONNECTION AS SHOWN.

GENERAL SHEET NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.

CRSA

PROJECT **25-012**

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

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HPER 114A

EP100.03

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TIME: 15 OCT 2013 - 12:25PM CREFE - T:\JOBS\2025\012 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EP100.03 HPER 114A.DWG
LAST SAVED: 10 Apr 25

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
LS1- L3K	LITHONIA CPX-1X4-3200LM-80CRI-35K-SWL-MIN10-ZT-MVOLT(-10WLCP)-1X4SMKSH OR EQUIVALENT	1X4, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER;	SURFACE	29.3 W	3000 LUMEN NOMINAL LED 3500K
LS1- L4K	LITHONIA CPX-1X4-4000LM-80CRI-35K-SWL-MIN10-ZT-MVOLT-1X4SMKSH OR EQUIVALENT	1X4, FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER;	SURFACE	35.5 W	4000 LUMEN NOMINAL LED 3500K

NOTES

FLOOR, TABLE, AND WALL BOX SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL, RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF	PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS

COMMUNICATIONS RACEWAY SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING

PANEL 4P2 — NEW / X EXISTING / AS NEMA RATING / X BOLT ON BREAKERS / ISOLATED GROUND BUS / SURGE PROTECT (SPD)

TYPE SQ D NQOB — 3 Ø 4 WIRE 120/208 VOLTS

REMARKS -ALL CIRCUITS CONSIDERED TO BE EXISTING UNLESS OTHERWISE INDICATED IN THESE DRAWINGS
-~=EXISTING CIRCUIT ANTICIPATED TO BE MADE SPARE BY THIS PROJECT. NOTIFY ENGINEER OF CONFLICTS

LOCATION: ELEC 410

MOUNTING: FLUSH / X SURFACE

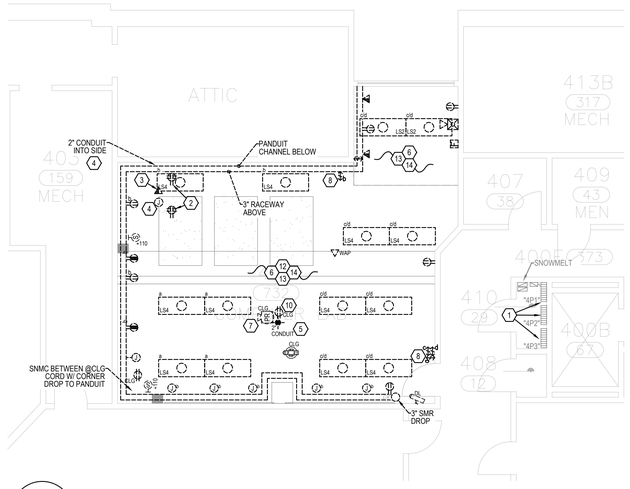
225 AMP MAIN / X LUGS / BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND PH	N	G	C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND PH	N	G	C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	PLUGS: 405				EX	EX	EX	EX		0				EX	EX	EX	EX				PLUGS: 401	20	1	2
3	20	1	PLUGS: 405				EX	EX	EX	EX			0			EX	EX	EX	EX				PLUGS: 401	20	1	4
5	20	1	PLUGS: 405				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: 401	20	1	6
7	20	1	PLUGS: 401				EX	EX	EX	EX		0				EX	EX	EX	EX				PLUGS: MECH 408	20	1	8
9	20	1	PLUGS: 401				EX	EX	EX	EX			0			EX	EX	EX	EX				PLUGS: RR	20	1	10
11	20	1	PLUGS: 405				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: 401 W	20	1	12
13	20	1	PLUGS: 405 TV'S			2	12S	12S	12S	3/4S	720	720				EX	EX	EX	EX				PLUGS: 401 W	20	1	14
15	20	1	VAV PLUG				EX	EX	EX	EX			0			EX	EX	EX	EX				PLUGS: 401 W	20	1	16
17	20	1	EX: ??				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: 401 W	20	1	18
19	20	1	PLUGMOLD 404				EX	EX	EX	EX		0											SPARE	30	3	20
21	20	1	PLUGMOLD 404				EX	EX	EX	EX			0										-	-	-	22
23	20	1	PLUGMOLD 404				EX	EX	EX	EX				0									-	-	-	24
25	20	3	EX: ??				EX	EX	EX	EX		0											SPARE	30	3	26
27	-	-	-				EX						0										-	-	-	28
29	-	-	-				EX							0									-	-	-	30
31	30G	2	HEAT TAPE				EX	EX	EX	EX		0				EX	EX	EX	EX				PLUGS: 401 W	20	1	32
33	-	-	-				EX						0			EX	EX	EX	EX				PLUGS: 401 W	20	1	34
35	30G	2	HEAT TAPE				EX	EX	EX	EX				0		EX	EX	EX	EX				PLUGS: 401 W	20	1	36
37	-	-	-				EX					0				EX	EX	EX	EX				HEAT TAPE	30G	2	38
39	30G	2	HEAT TAPE				EX	EX	EX	EX			0			EX							-	-	-	40
41	-	-	-				EX							0									SPACE	20	1	42
											TOTALS	720	0	0											
											AMPS/PHASE	6	0	0											

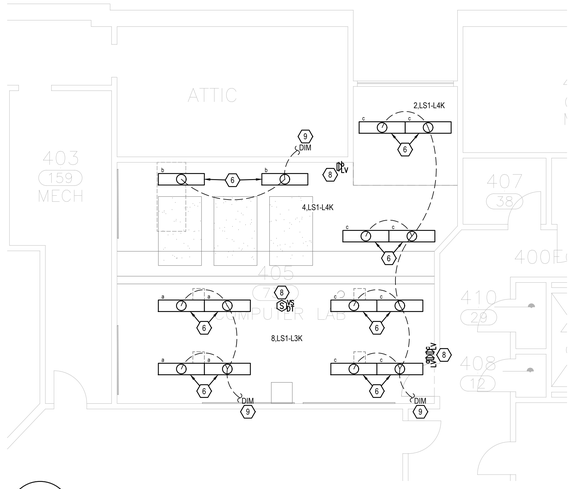
FEEDER EXISTING

AIC EX 10K
SCCR EX 10K
PARALLEL RUNS SEE ONE-LINE

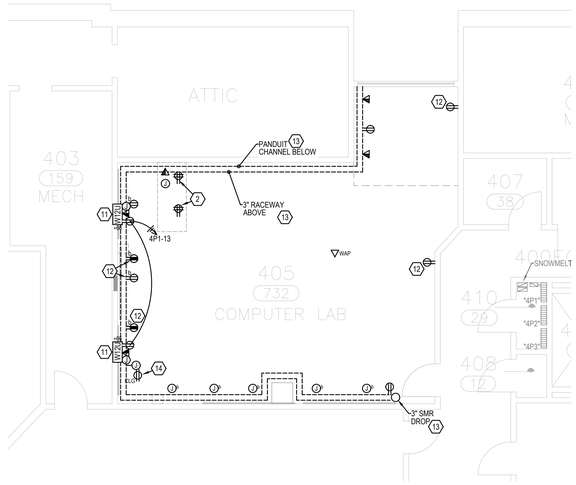
BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADD'L ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED



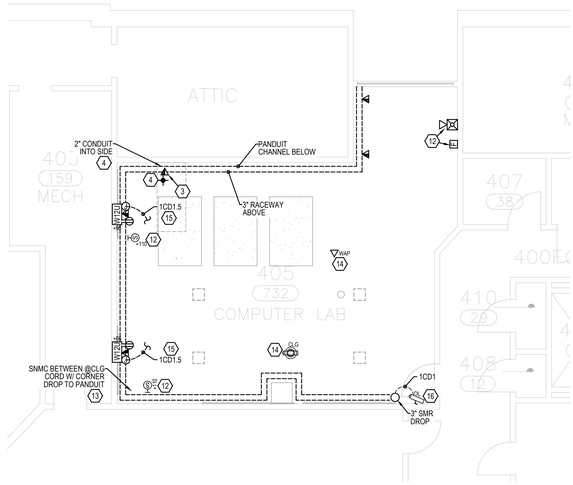
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D4 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

SHEET KEYED NOTES

1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE AND REINSTALL EXISTING POWER OUTLET TO ALLOW FOR CABINET UPGRADE.
3. REMOVE AND REINSTALL EXISTING COMMUNICATIONS OUTLET TO ALLOW FOR CABINET UPGRADE.
4. REMOVE EXISTING A/V CONNECTIONS AND RACEWAY TO ALLOW FOR CABINET UPGRADE AND NEW A/V CONNECTIONS.
5. REMOVE EXISTING A/V CONDUIT.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. REMOVE EXISTING COMMUNICATIONS DEVICES AS INDICATED.
11. PROVIDE NEW WALL BOX AS SPECIFIED.
12. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
13. REMOVE AND REINSTALL SURFACE RACEWAY AND PANDUIT CHANNEL AROUND AND UP PERIMETER WALLS TO ALLOW FOR WALL PAINTING. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
14. REMOVE AND REINSTALL EXISTING CEILING DEVICES TO FACILITATE PAINTING.
15. PROVIDE CONDUIT, SIZED AS INDICATED, FOR WALL BOX CONNECTION INTO BACK OF PANDUIT CHANNEL ON WALL BELOW. A/V CABLES TO RUN THROUGH CONDUIT THEN THROUGH PANDUIT TO NEW A/V CABINET.
16. EXISTING DISTANCE ED CAMERA TO REMAIN. PROVIDE NEW CONDUIT CONNECTION AS SHOWN.

GENERAL SHEET NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.

CRSA

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93 W Golf Course Road
Suite 102
Logan, Ut 84321
office: (435) 787-1445
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www.sinesource.net

PROJECT 25-012

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS

FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

LICENSED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
4/10/2025
STATE OF UTAH

GEO 405

EP100.04

(801) 355-5915

TIME: 15 OCT 2013 - 12:25PM CHEFE - T:\JOBS\2025\012 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECTSHEETS\EP100.04 GEO 405.DWG
LAST SAVED: 21 Mar - 25

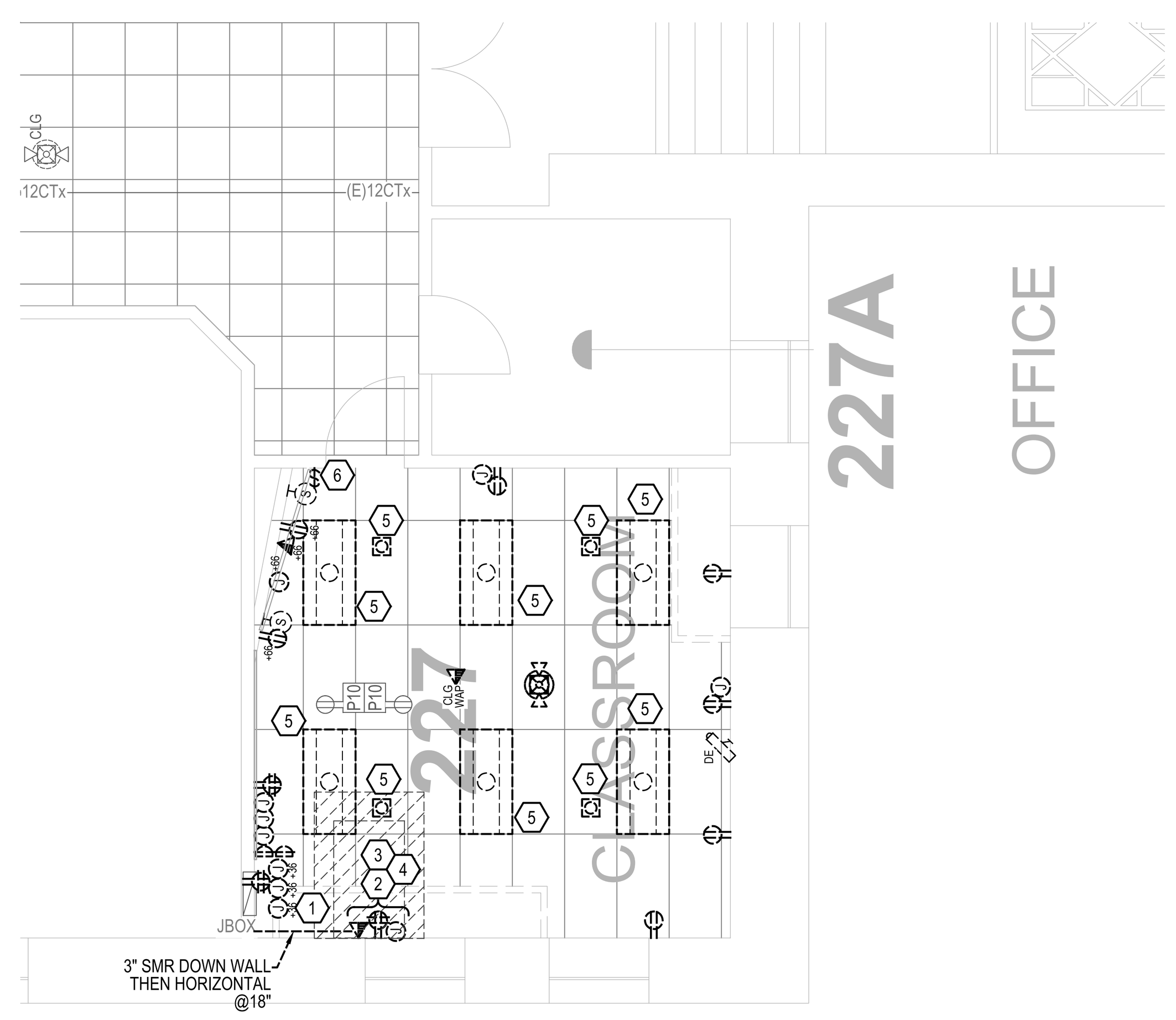
	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
LIGHT FIXTURE SCHEDULE--OLD MAIN 227						
	IR4- L4K	LITHONIA 2BLT4-40LHE-ADP-MVOLT-GZ1-LP840 OR EQUIVALENT	RECESSED, CENTER BASKET FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER;	RECESSED	28.8 W	4000 LUMEN NOMINAL LED 4000K
	RL- L25	LITHONIA LDN6-40-25-LO6-AR-LD-MVOLT-GZ1 OR EQUIVALENT	RECESSED CAN; LED LAMPING; CLEAR, OPEN, SEMI-SPECULAR CONE; 6" NOMINAL OPENING; SELF-FLANGED CONE WITH BLACK TRIM RING; DIMMABLE;	RECESS	28.3 W	2500 LUMEN NOMINAL LED 4000K
	NOTES					

SHEET KEYED NOTES

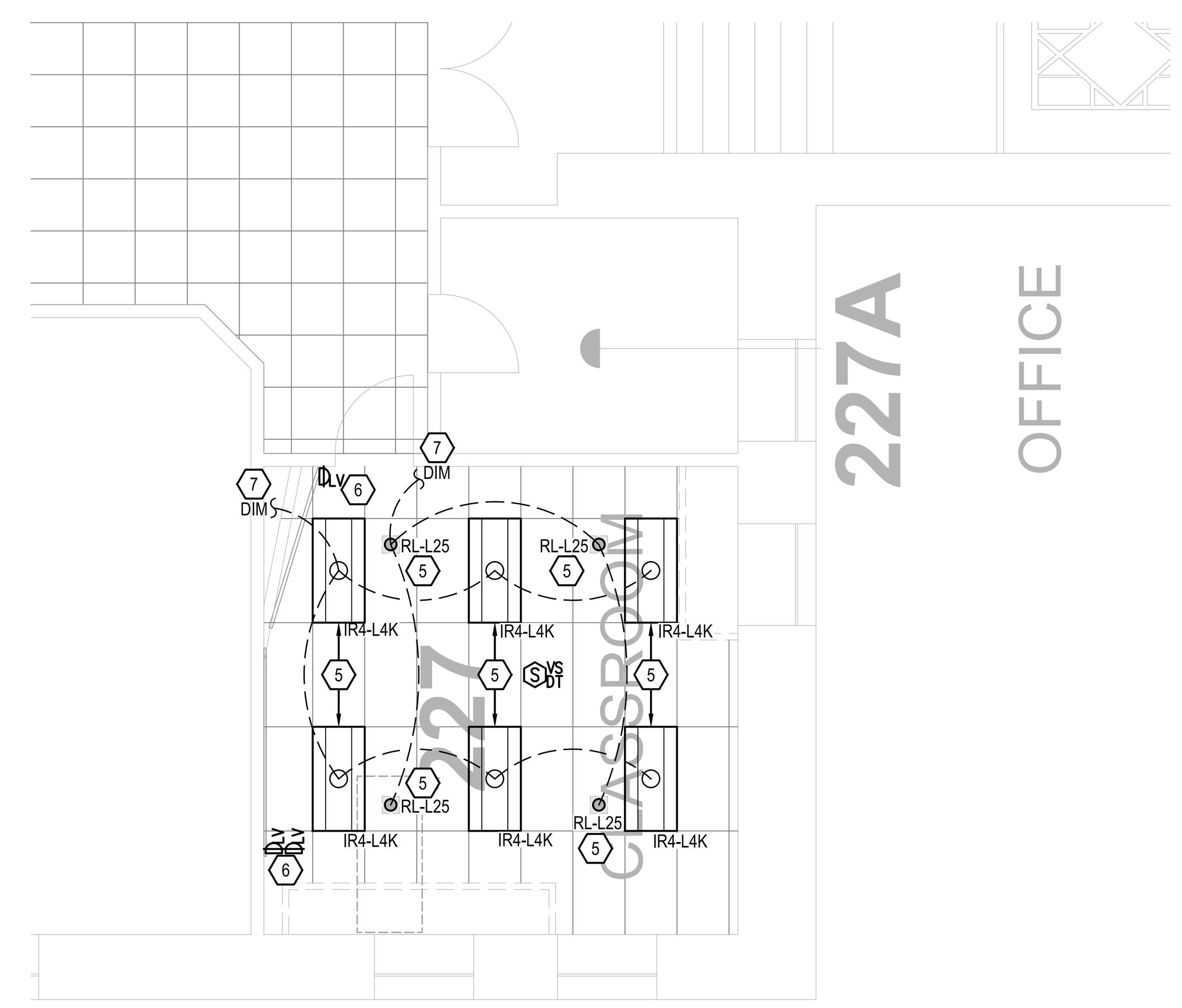
1. NOT USED.
2. REMOVE AND REINSTALL EXISTING POWER OUTLET TO ALLOW FOR CABINET UPGRADE.
3. REMOVE AND REINSTALL EXISTING COMMUNICATIONS OUTLET TO ALLOW FOR CABINET UPGRADE.
4. REMOVE AND REINSTALL EXISTING A/V BOX AND 2" CONDUIT TO ALLOW FOR CABINET UPGRADE.
5. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
6. PROVIDE NEW LIGHTING CONTROLS FOR UPGRADED LIGHTING.
7. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
8. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
9. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.

GENERAL SHEET NOTES

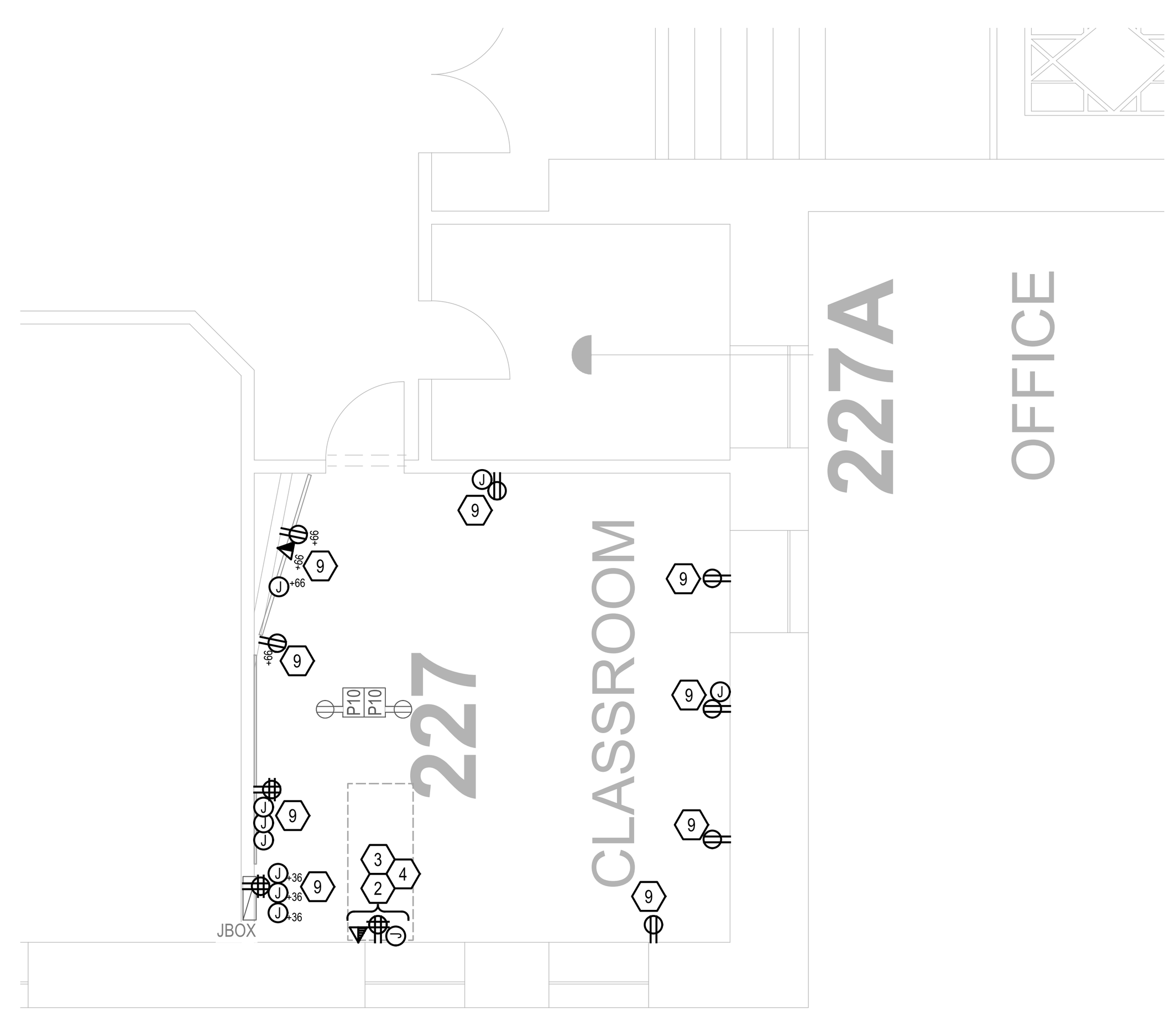
1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.



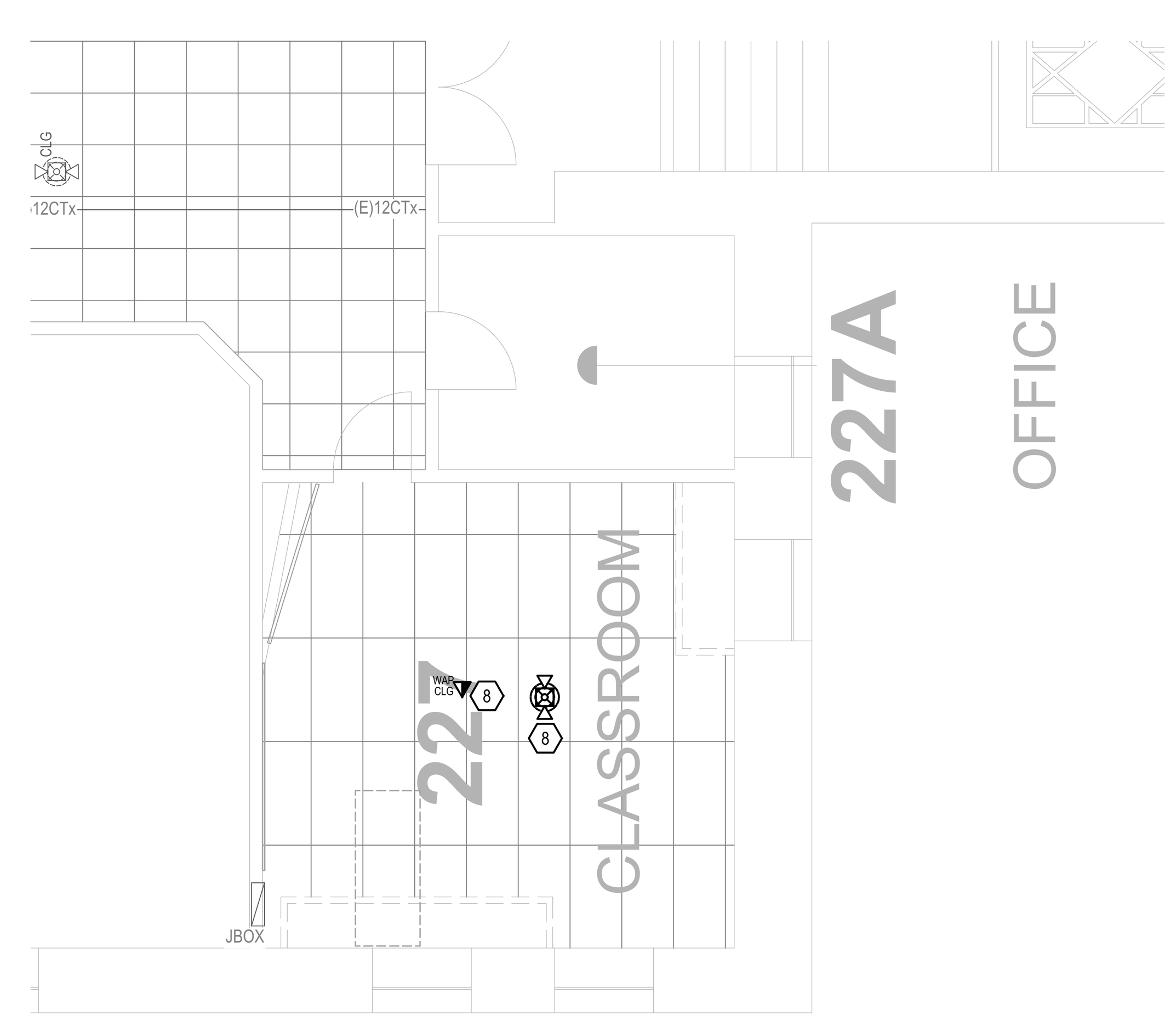
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D4 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

CRSA

PROJECT 25-012

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

SINE SOURCE ENGINEERING
95 W Golf Course Road
Suite 102
Logan, Ut 84321
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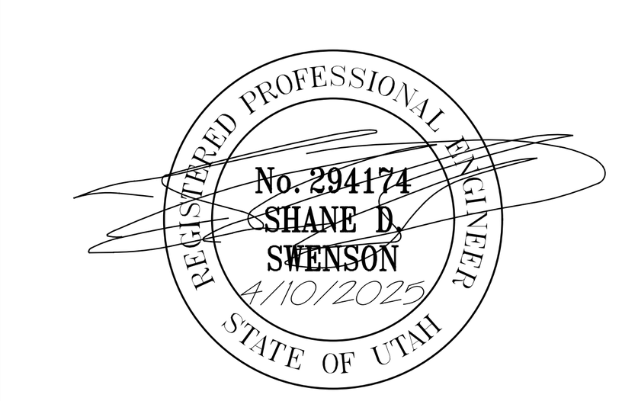
fax: 1-877-207-3199
www.sinesource.net

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS

FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600



OM 227

EP100.05

(801) 355-5915

FLOOR, TABLE, AND WALL BOX SCHEDULE				
SYMBOL	DESCRIPTION	MANUFACTURER / MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS

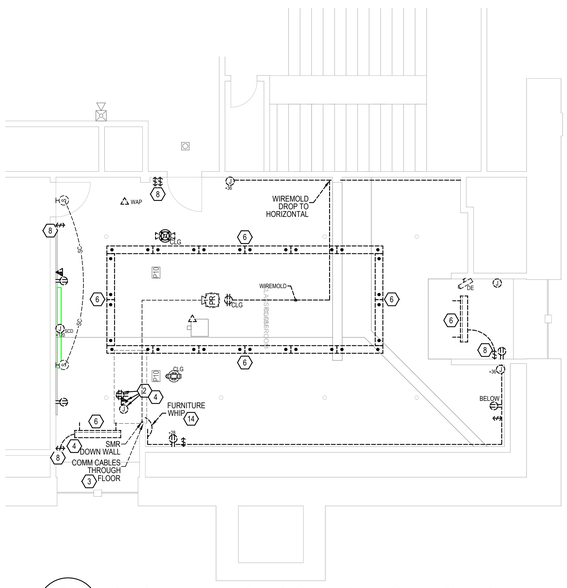
LIGHT FIXTURE SCHEDULE--OLD MAIN 301						
	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
	LD8- L6K	MARK S2PD-LLP-8FT-MSL8-80CRI-40K-750LMF-SCT-MIN1-FLL-MVOLT-SCBA(-E10WLCP)-ZT-MOUNT-XXA-RDCY-*-* OR EQUIVALENT	SUSPENDED LINEAR; MULTI-VOLT, ELECTRONIC, DIMMABLE (1%) DRIVER SUSPENSION LENGTH AS INDICATED ON ARCHITECTURAL DRAWINGS; COLOR AS SELECTED BY ARCHITECT; FLUSH MOUNT CANOPY; MOUNTING ACCESSORIES AS REQUIRED AT INSTALLED LOCATION;	CABLE SUSPENDED	46.8 W	6000 LUMEN NOMINAL LED 4000K
	LD24- L18	MARK S2PD-LLP-24FT-MSL8-80CRI-40K-750LMF-SCT-MIN1-FLL-MVOLT-SCBA(-E10WLCP)-ZT-MOUNT-XXA-RDCY-*-* OR EQUIVALENT	SUSPENDED LINEAR; MULTI-VOLT, ELECTRONIC, DIMMABLE (1%) DRIVER SUSPENSION LENGTH AS INDICATED ON ARCHITECTURAL DRAWINGS; COLOR AS SELECTED BY ARCHITECT; FLUSH MOUNT CANOPY; MOUNTING ACCESSORIES AS REQUIRED AT INSTALLED LOCATION;	CABLE SUSPENDED	140.4 W	18000 LUMEN NOMINAL LED 4000K
	LW4- L4K	MARK S2WD-LLP-4FT-MSL4-80CRI-40K-1000LMF-SCT-MIN1-FLL-MVOLT-SCBA(-E10WLCP)-ZT OR EQUIVALENT	WALL MOUNT LINEAR; MULTI-VOLT, ELECTRONIC, DIMMABLE (1%) DRIVER SUSPENSION LENGTH AS INDICATED ON ARCHITECTURAL DRAWINGS; COLOR AS SELECTED BY ARCHITECT; EM BATTERY WHERE (B) OPTION SHOWN	WALL	32 W	4000 LUMEN NOMINAL LED 4000K
	NOTES					

SHEET KEYED NOTES

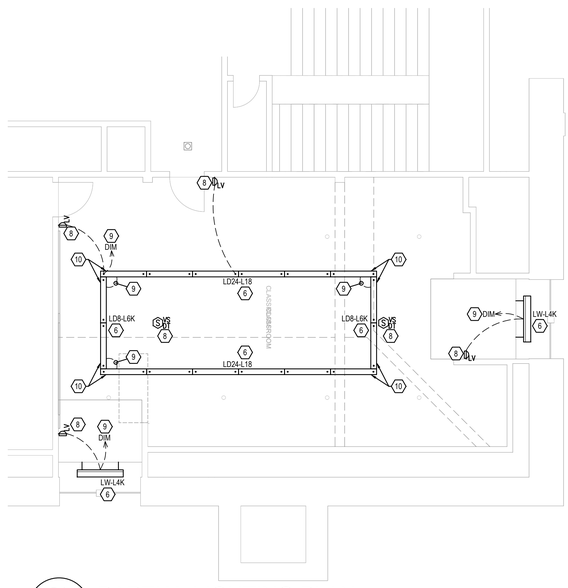
1. NOT USED.
2. REMOVE AND REINSTALL EXISTING POWER OUTLET(S) TO ALLOW FOR CABINET UPGRADE.
3. REMOVE EXISTING COMMUNICATIONS CABLES THROUGH FLOOR INTO A/V CABINET. PROVIDE NEW WIREMOLD PATH/BOX FOR CABLES INTO NEW CABINET.
4. REMOVE EXISTING A/V CONNECTIONS AND RACEWAY TO ALLOW FOR CABINET UPGRADE AND NEW A/V CONNECTIONS.
5. REMOVE EXISTING SURFACE RACEWAY CONNECTION TO REMOVED EQUIPMENT.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. MOUNT FIXTURES SIDE TO END TO MATCH EXISTING PATTERN WITH CONCEALED ACCESSORIES TO MAINTAIN CONNECTION BETWEEN FIXTURES.
11. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
12. REMOVE AND REINSTALL EXISTING CEILING DEVICES TO FACILITATE PAINTING.
13. REMOVE AND REINSTALL EXISTING SURFACE RACEWAY AND WALLS TO ALLOW FOR WALL PAINTING. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

GENERAL SHEET NOTES

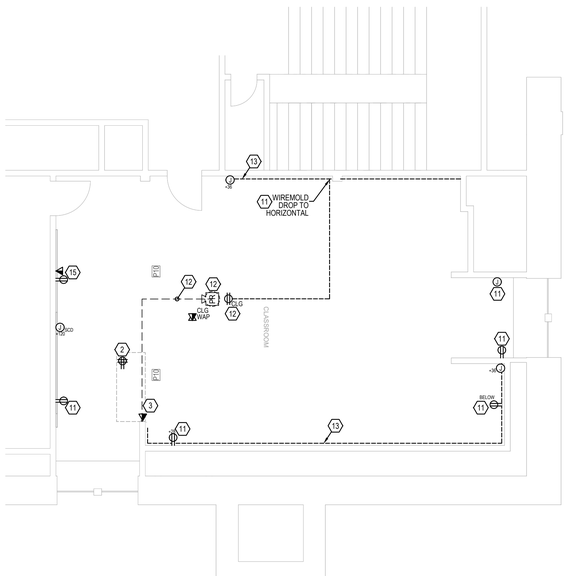
1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.



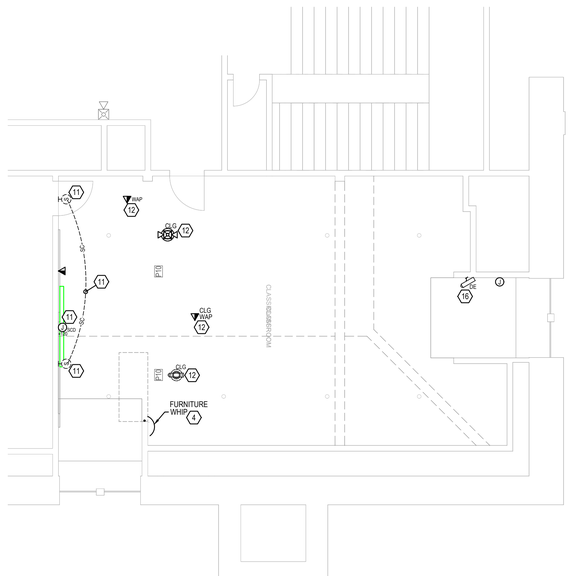
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D4 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

CRSA

SINE SOURCE ENGINEERING
93 W Golf Course Road
Suite 102
Logan, Ut 84321
office: (435) 787-1445
fax: 1-877-207-3199
www.sinesource.net

PROJECT 25-012

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS

FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
4/10/2025
STATE OF UTAH

OM 301

EP100.06

(801) 355-5915

TIME: 15 OCT 2013 - 12:25PM CMDTE - T:\JOBS\2025\12 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EP100.06 OM 301.DWG
LAST SAVED: 10-Apr-25

	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
	EX- 1	LITHONIA LE-S-1-G-120/277 COOPER CX6-1-G DUAL LITE SE-S-G-BN EXITRONIX G400S-LB-BL EQUIVALENT ONLY WITH PRIOR UNIVERSITY APPROVAL	UNIVERSITY STANDARD EXIT SIGN; LED; SINGLE-FACE; BRUSHED ALUMINUM FACE; BLACK HOUSING (SIDE)	SURFACE OR WALL	3W	LED
	IR4- L4K	LITHONIA 2BLT4-40LHE-ADP-MVOLT-GZ1-LP840 OR EQUIVALENT	RECESSED, CENTER BASKET FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMING, DRIVER; EM BATTTERY PACK WHERE NOTED ON DRAWINGS;	RECESSED	28.8 W	4000 LUMEN NOMINAL LED 4000K
	L ATS	DUAL LITE ATSD SERIES OR EQUIVALENT	LIGHTING TRANSFER SWITCH TO TRANSFER FROM SWITCHED POWER TO GENERATOR POWER ON NORMAL POWER FAILURE; RATINGS PER LOAD CONTROLLED; DIMMER COMPATIBLE	CEILING/FIXTURE	N/A	N/A

LIGHT FIXTURE SCHEDULE--OLD MAIN 326

NOTES

COMMUNICATIONS RACEWAY SCHEDULE

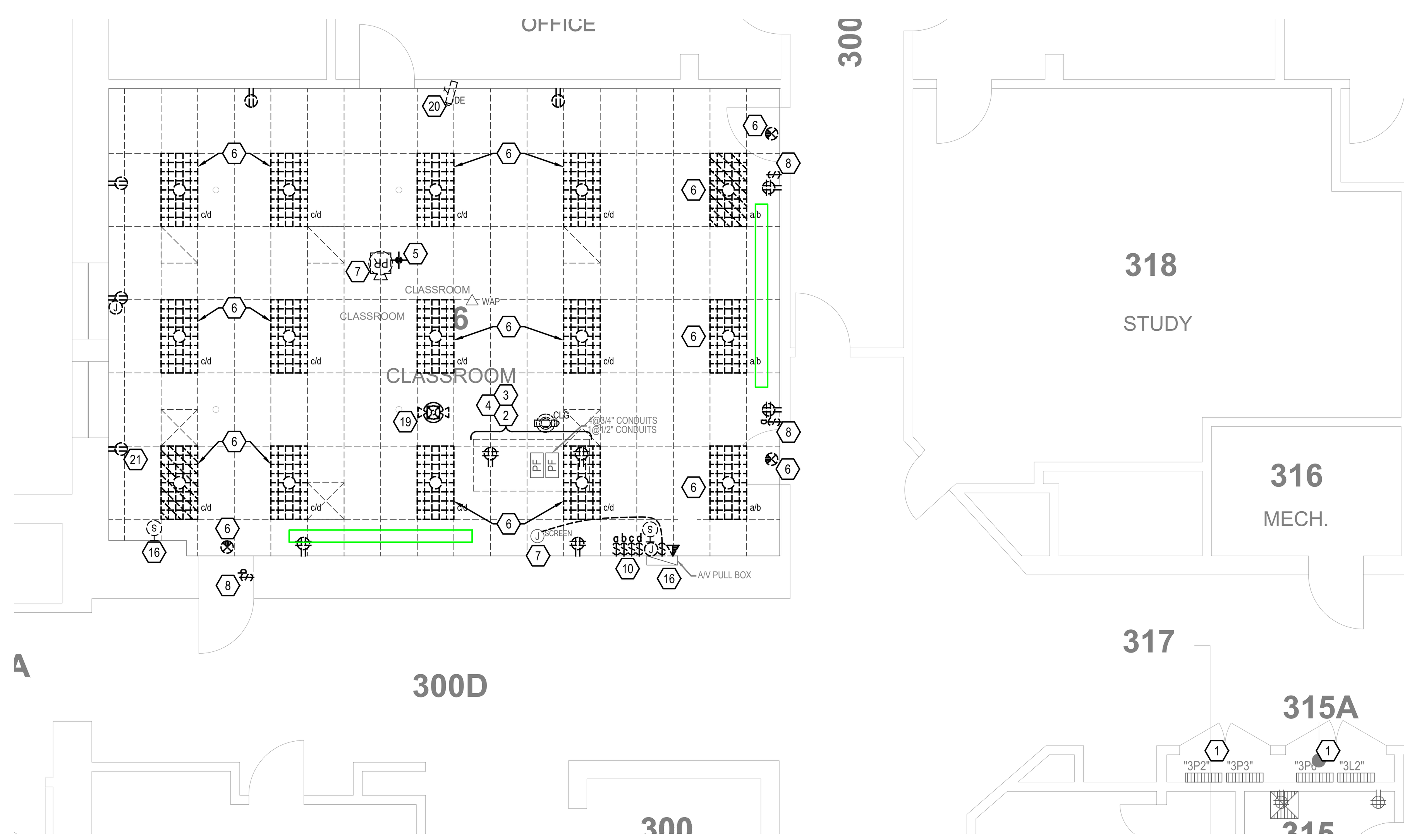
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING

SHEET KEYED NOTES

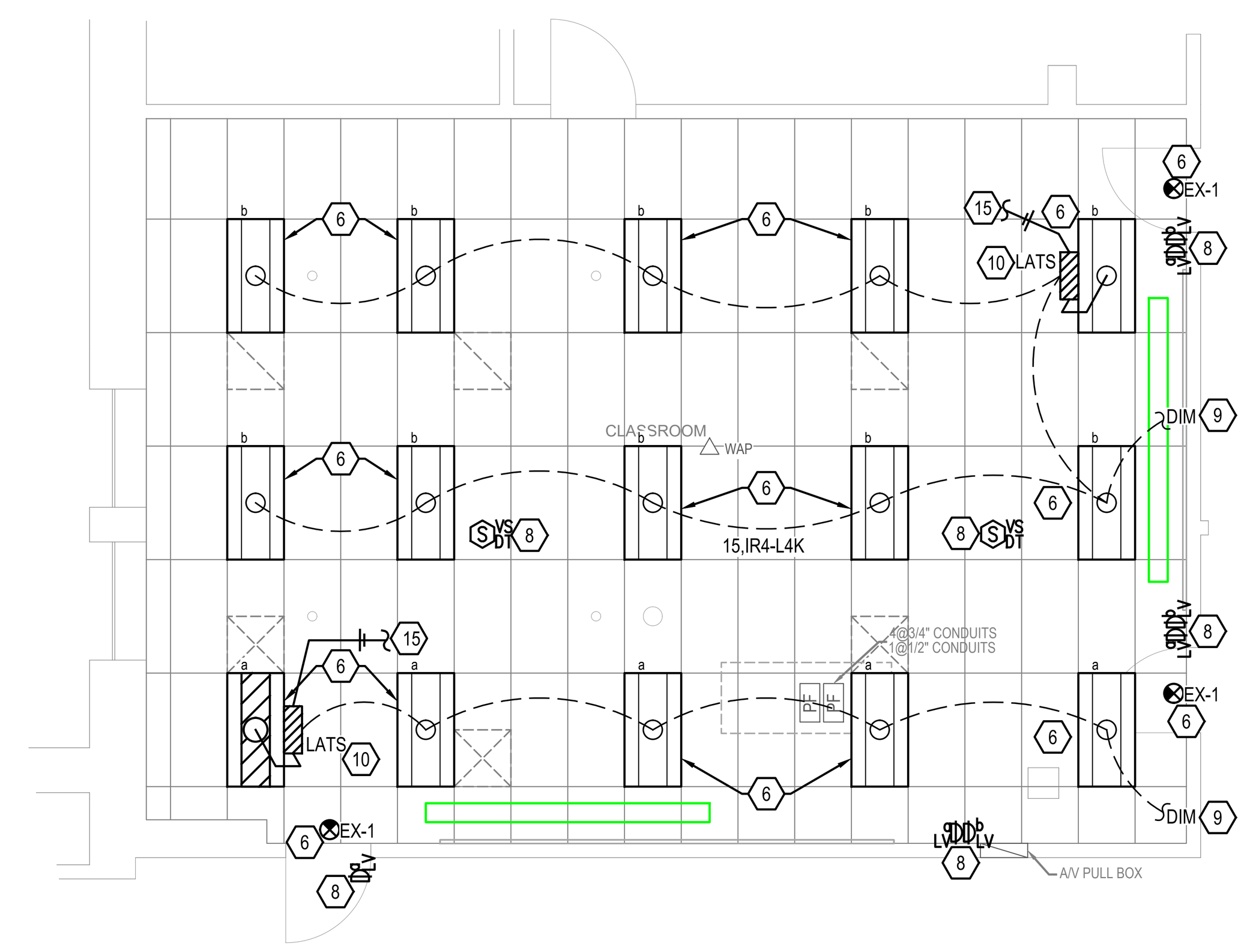
1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE AND RE-INSTALL EXISTING POWER OUTLET TO ALLOW FOR CABINET UPGRADE.
3. REMOVE AND RE-INSTALL EXISTING COMMUNICATIONS OUTLET TO ALLOW FOR CABINET UPGRADE.
4. REMOVE AND RE-INSTALL EXISTING A/V CONNECTIONS TO ALLOW FOR CABINET UPGRADE.
5. EXISTING FLOOR BOXES SERVING PODIUM TO REMAIN.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED. REVISE SWITCHING GROUPS AS INDICATED.
7. REMOVE EXISTING FIXTURES AND/OR LIGHTING CONTROL AS INDICATED.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. PROVIDE LIGHTING TRANSFER SWITCH FOR EM LIGHTING FRO EM CIRCUIT FIXTURE(S) TO BE CONTROLLED WITH LIGHTING CONTROLS IN SPACE AND OVERRIDE ON WITH NORMAL POWER FAILURE.
11. PROVIDE CONDUIT, SIZED AS INDICATED, BETWEEN BOXES OR STUBBED AS INDICATED. CONCEAL CONDUITS IN BUILDING FINISHES.
12. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
13. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
14. EXISTING DISTANCE ED CAMERA TO REMAIN. PROVIDE NEW CONDUIT CONNECTION AS SHOWN.
15. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.

GENERAL SHEET NOTES

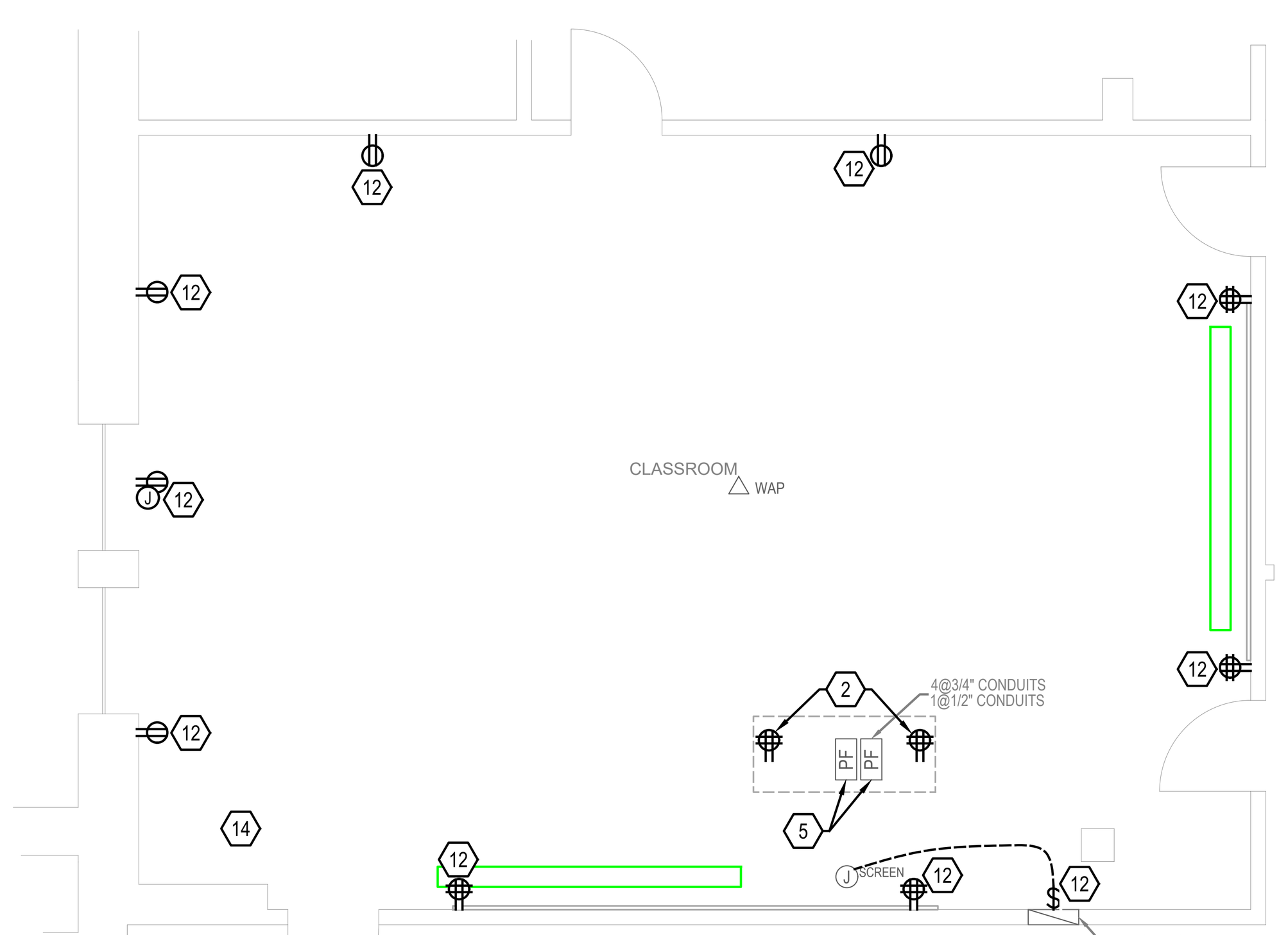
1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.



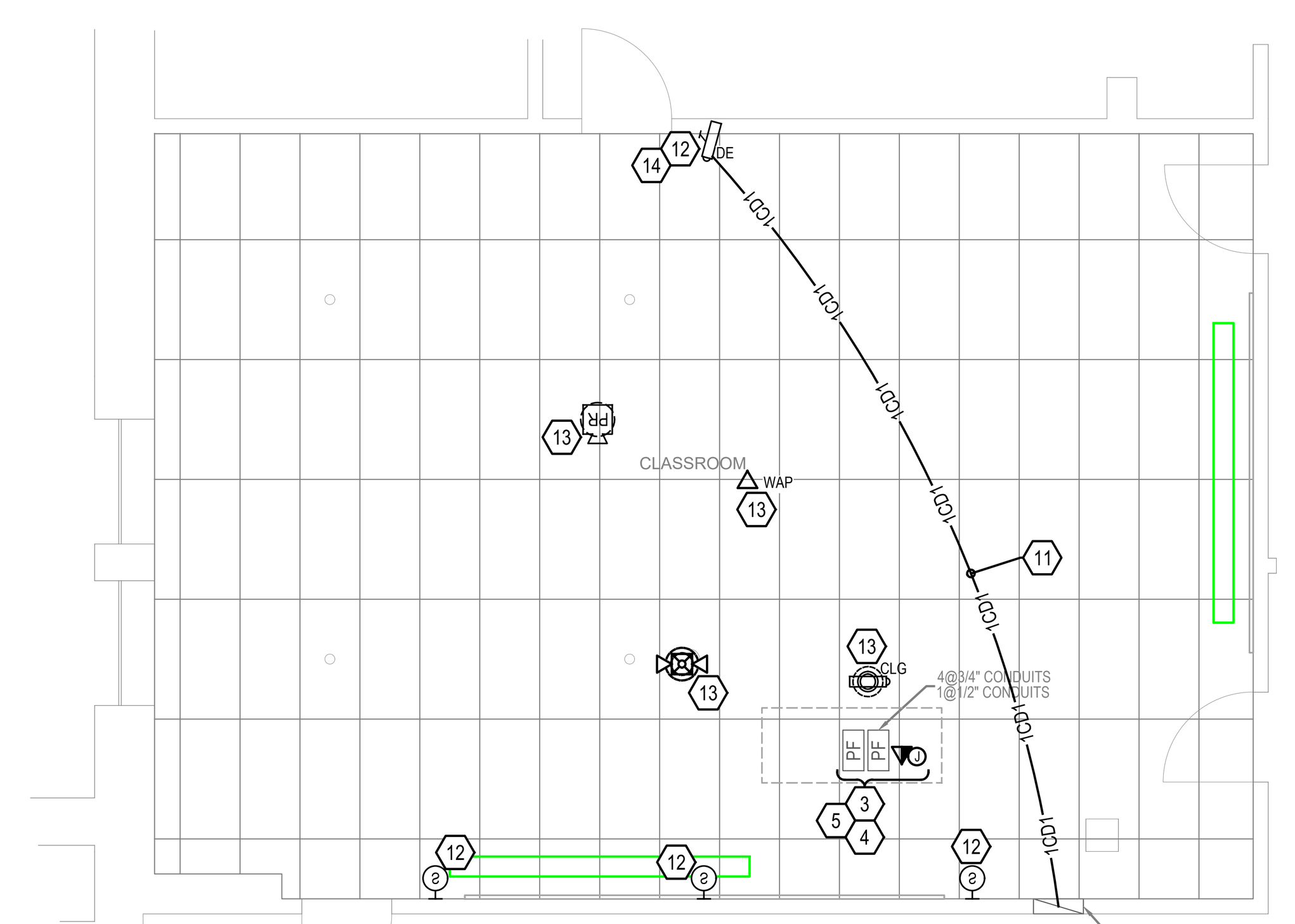
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D4 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

CRSA

PROJECT 25-012

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

SINE SOURCE ENGINEERING
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REGISTERED PROFESSIONAL ENGINEER No. 294174 SHANE D. SWENSON STATE OF UTAH

OM 326

EP100.07

(801) 355-5915

LIGHT FIXTURE SCHEDULE

	TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
	L ATS	DUAL LITE ATSD SERIES OR EQUIVALENT	LIGHTING TRANSFER SWITCH TO TRANSFER FROM SWITCHED POWER TO GENERATOR POWER ON NORMAL POWER FAILURE; RATINGS PER LOAD CONTROLLED; DIMMER COMPATIBLE	CEILING/FIXTURE	N/A	N/A
	LG4- L4K	LITHONIA CPX-2X4-4000LM-80CRI-40K-SWL-MIN1-ZT-MVOLT OR EQUIVALENT	LED FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SMOOTH WHITE LENS;	RECESSED	36.7 W	5000 LUMEN NOMINAL LED 4000K

NOTES

PANEL BPP

	NEW
X	EXISTING
1	NEMA RATING
X	BOLT ON BREAKERS
	ISOLATED GROUND BUS
	SURGE PROTECT (SPD)

TYPE SQ D NQOB 3 Ø 4 WIRE 120/208 VOLTS

REMARKS
-ALL CIRCUITS CONSIDERED TO BE EXISTING UNLESS OTHERWISE INDICATED IN THESE DRAWINGS
-~=EXISTING CIRCUIT ANTICIPATED TO BE MADE SPARE BY THIS PROJECT. NOTIFY ENGINEER OF CONFLICTS

LOCATION: STORAGE 217

MOUNTING: ( ) FLUSH (X) SURFACE

( ) 100 AMP MAIN (X) LUGS ( ) BREAKER

No.	BRKR A	BRKR P	CIRCUIT DESCRIPTION	L	O	M	WIRE/CND P	WIRE/CND N	WIRE/CND G	WIRE/CND C	CIRC. LOAD	A	B	C	CIRC. LOAD	WIRE/CND P	WIRE/CND N	WIRE/CND G	WIRE/CND C	L	O	M	CIRCUIT DESCRIPTION	BRKR A	BRKR P	No.
1	20	1	???				EX	EX	EX	EX		876			876	12S	12S	12S	3/4S			1	TV: 201	20~	1	2
3	20	1	???				EX	EX	EX	EX			0			EX	EX	EX	EX				A/V BOX RM 201	20	1	4
5	20	1	???				EX	EX	EX	EX				0		EX	EX	EX	EX				???	20	1	6
7	20	1	SPACE								0												SPACE	20	1	8
9	20	1	SPACE										0										SPACE	20	1	10
11	20	1	SPACE											0									SPACE	20	1	12
											TOTALS	876	0	0											

FEEDER EXISTING

AMPS/PHASE 7 0 0

AIC EXISTING
SCCR EXISTING
PARALLEL RUNS SEE ONE-LINE

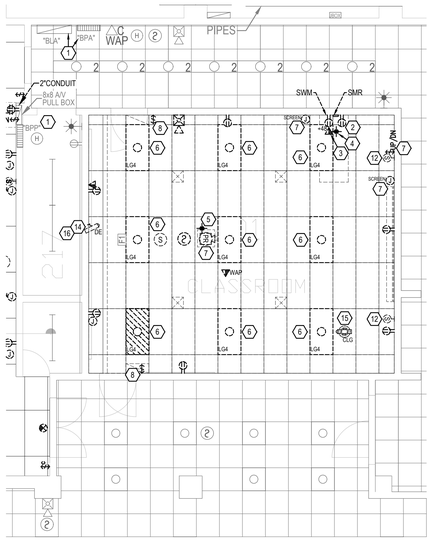
BREAKER CODES
A=ARC-FAULT; G=GROUND FAULT; H=HACR; L=LOCKING HANDLE; S=SHUNT TRIP; R=RED PAINTED HANDLE
WIRE CODES
I=ADDL ISO GROUND TO MATCH SAFETY GROUND; S=UNLESS OTHERWISE SPECIFIED
GENERAL CODES
1LIN=SEE ONE-LINE DIAGRAM; AS=AS SPECIFIED

FLOOR, TABLE, AND WALL BOX SCHEDULE

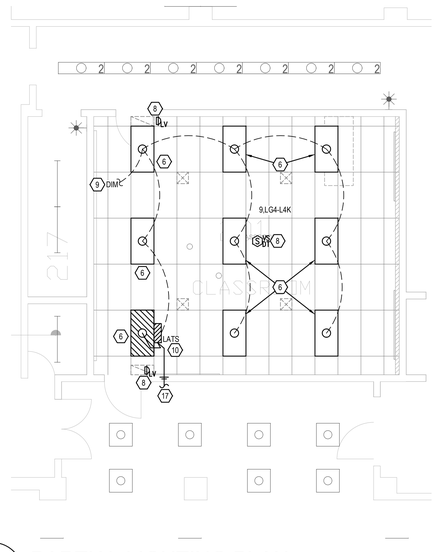
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF	PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS

COMMUNICATIONS RACEWAY SCHEDULE

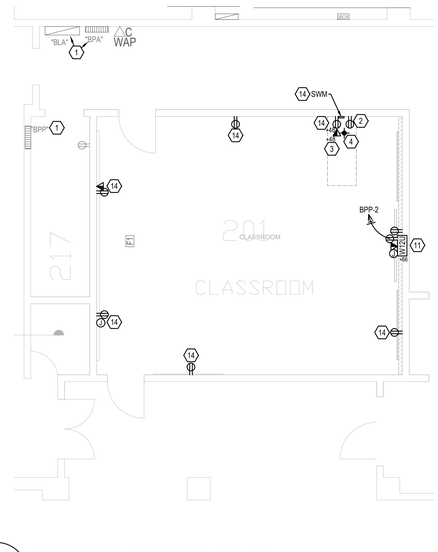
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
CMJ2	CABLE HOOKS; 2", RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH32 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED



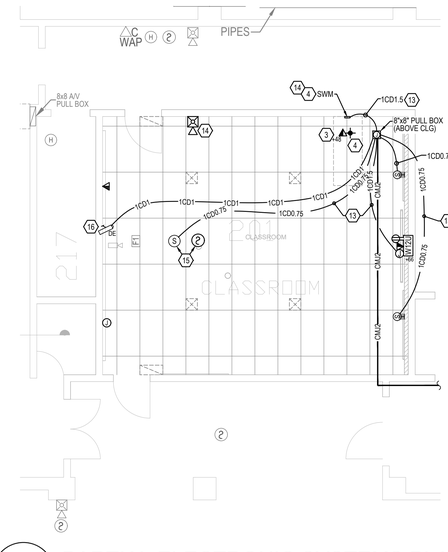
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



A1 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A3 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

SHEET KEYED NOTES

1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE EXISTING POWER OUTLET TO ALLOW FOR CABINET REMOVAL.
3. REMOVE EXISTING COMMUNICATIONS OUTLET TO ALLOW FOR CABINET REMOVAL.
4. REMOVE EXISTING A/V CONNECTIONS TO ALLOW FOR CABINET REMOVAL.
5. REMOVE EXISTING A/V CONDUIT.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. PROVIDE LIGHTING TRANSFER SWITCH FOR EM LIGHTING FRO EM CIRCUIT FIXTURE(S) TO BE CONTROLLED WITH LIGHTING CONTROLS IN SPACE AND OVERRIDE ON WITH NORMAL POWER FAILURE.
11. PROVIDE NEW WALL BOX AS SPECIFIED.
12. REMOVE EXISTING A/V INSTALLATIONS.
13. PROVIDE CONDUIT, SIZED AS INDICATED, BETWEEN BOXES OR STUBBED AS INDICATED. CONCEAL CONDUITS IN BUILDING FINISHES.
14. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
15. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
16. EXISTING DISTANCE ED CAMERA TO REMAIN. PROVIDE NEW CONDUIT CONNECTION AS SHOWN.
17. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.

GENERAL SHEET NOTES

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2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.

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PROJECT 25-012

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS
FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

NFS 201

EP100.08

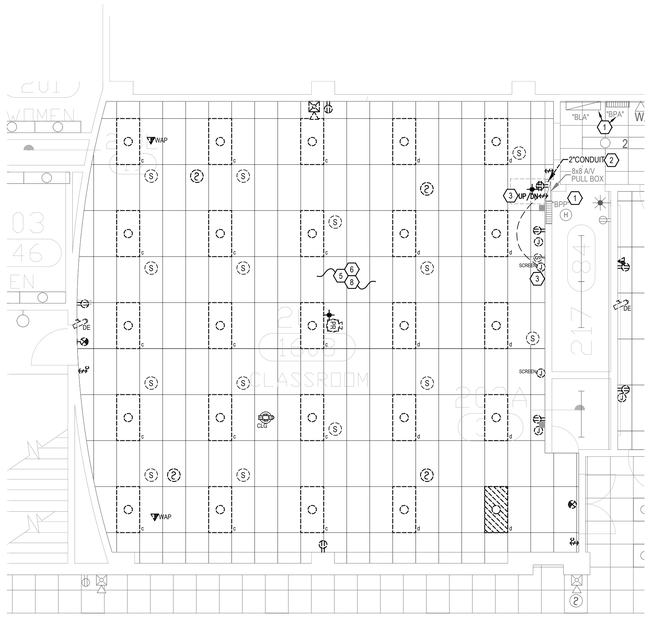
(801) 355-5915

TIME: 15 OCT 2025 - 12:25PM CHEFE - T:\JOBS\2025\012 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECTSHEETS\EP100.08 NFS 201.DWG
LAST SAVED: 21 Mar 25

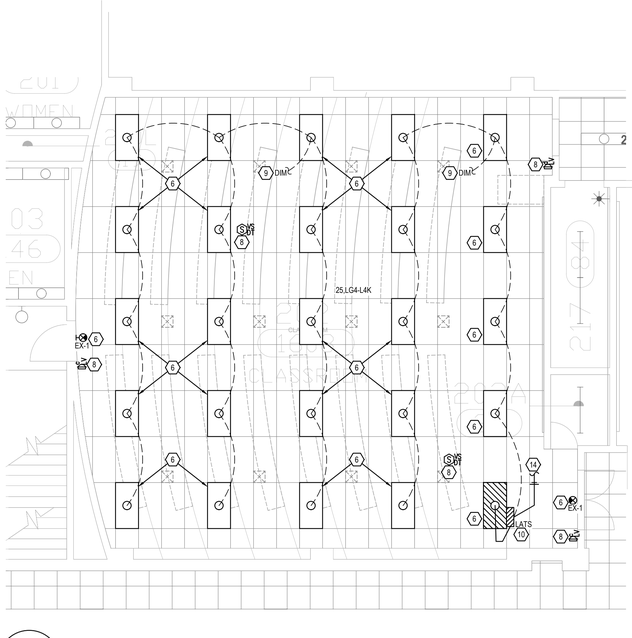
LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
EX- 1	LITHONIA LE-S-1-G-120/277 COOPER CX6-1-G DUAL LITE SE-S-G-BN EXITRONIX G400S-LB-BL EQUIVALENT ONLY WITH PRIOR UNIVERSITY APPROVAL	UNIVERSITY STANDARD EXIT SIGN; LED; SINGLE-FACE; BRUSHED ALUMINUM FACE; BLACK HOUSING (SIDE)	SURFACE OR WALL	3W	LED
L ATS	DUAL LITE ATSD SERIES OR EQUIVALENT	LIGHTING TRANSFER SWITCH TO TRANSFER FROM SWITCHED POWER TO GENERATOR POWER ON NORMAL POWER FAILURE; RATINGS PER LOAD CONTROLLED; DIMMER COMPATIBLE	CEILING/FIXTURE	N/A	N/A
LG4- L4K	LITHONIA CPX-2X4-4000LM-80CRI-40K-SWL-MIN1-ZT-MVOLT OR EQUIVALENT	LED FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SMOOTH WHITE LENS;	RECESSED	36.7 W	5000 LUMEN NOMINAL LED 4000K

NOTES



C1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



A1 PARTIAL LIGHTING PLAN
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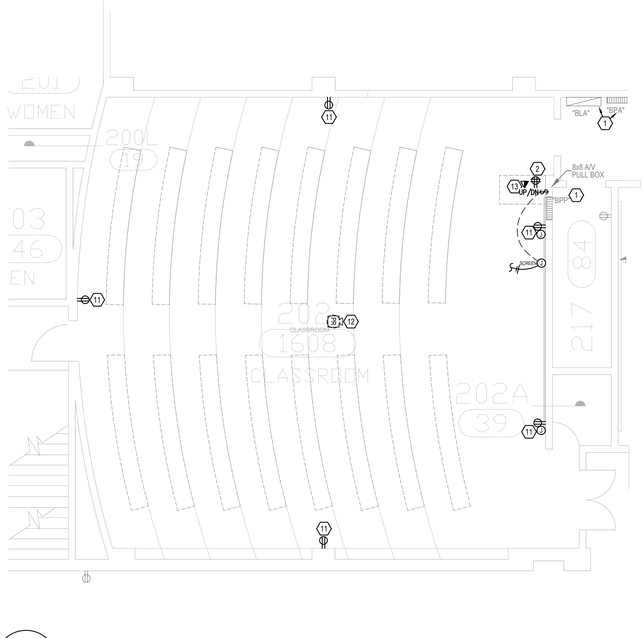

A3 PARTIAL POWER PLAN
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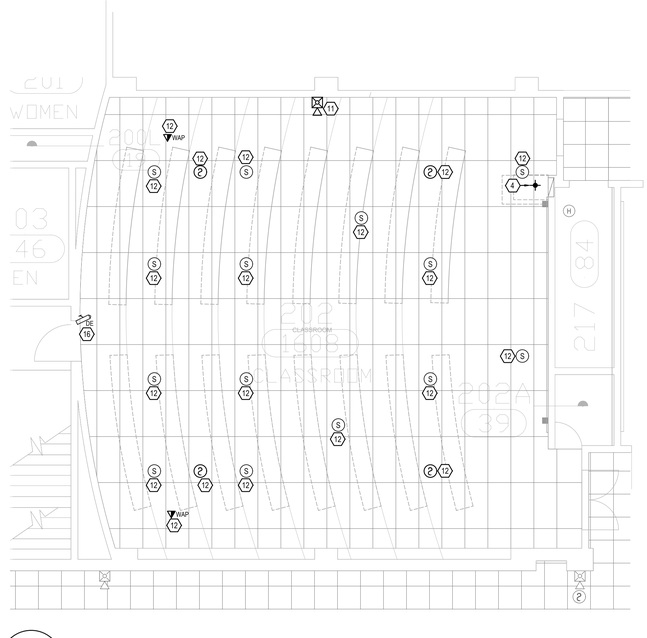

A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

SHEET KEYED NOTES

1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE AND REINSTALL EXISTING POWER OUTLET TO ALLOW FOR CABINET UPGRADE.
3. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY OTHERS.
4. REMOVE EXISTING A/V CONNECTIONS TO ALLOW FOR CABINET REMOVAL.
5. REMOVE EXISTING A/V CONDUIT.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. PROVIDE LIGHTING TRANSFER SWITCH FOR EM LIGHTING FRO EM CIRCUIT FIXTURE(S) TO BE CONTROLLED WITH LIGHTING CONTROLS IN SPACE AND OVERRIDE ON WITH NORMAL POWER FAILURE.
11. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
12. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
13. PROVIDE NEW COMM OUTLET IN A/V CABINET AS SPECIFIED.
14. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.
15. PROVIDE POWER TO NEW SCREEN PER EQUIPMENT REQUIREMENTS. PROVIDE NEW UP/DOWN CONTROL SWITCH WITH 3/4" CONDUIT AND CONTROL WIRING TO SCREEN PER MANUFACTURER REQUIREMENTS. CONNECT NEW SCREEN TO EXISTING CIRCUIT SERVING REMOVED SCREEN.

GENERAL SHEET NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. NO INTERIOR OR EXTERIOR RACEWAYS SHALL BE SURFACE MOUNTED WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND ARCHITECT.
8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
14. ALL NEW LIGHTING CONTROLS SHALL BE OF SAME TYPE AS EXISTING SYSTEM.
15. FINAL A/V CONNECTIONS TO BE BY USU CLASSROOM GROUP.
16. WHERE EXISTING DEVICES ARE NOTED TO BE REMOVED/REINSTALLED TO ALLOW FOR PAINTING, PLATES SHALL BE COMPLETELY REMOVED. EXISTING WIRING DEVICES TO BE REMOVED COMPLETELY OR LOOSENED FROM WALL AND DEVICES AND ASSOCIATED SCREW HEADS TAPED OFF PRIOR TO PAINTING.

CRSA

PROJECT **25-012**

BID SET 2025-04-10

REVISIONS

NO.	DATE	DESCRIPTION

SINE SOURCE ENGINEERING
93 W Golf Course Road
Suite 102
Logan, Ut 84321
office: (435) 787-1445
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UTAH STATE UNIVERSITY
2025 CLASSROOM REMODELS

FACILITIES PLANNING, DESIGN, & CONSTRUCTION
1295 E 700 N. LOGAN, UT 84322-6600

NFS 202

EP100.09

(801) 355-5915

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
LG4- L3K	LITHONIA CPX-2X4-3000LM-80CRI-40K-SWL-MIN1-ZT-MVOLT OR EQUIVALENT	LED FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SMOOTH WHITE LENS;	RECESSED	24.6 W	5000 LUMEN NOMINAL LED 4000K
LG4- L4K	LITHONIA CPX-2X4-4000LM-80CRI-40K-SWL-MIN1-ZT-MVOLT OR EQUIVALENT	LED FLAT PANEL; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; SMOOTH WHITE LENS;	RECESSED	36.7 W	5000 LUMEN NOMINAL LED 4000K

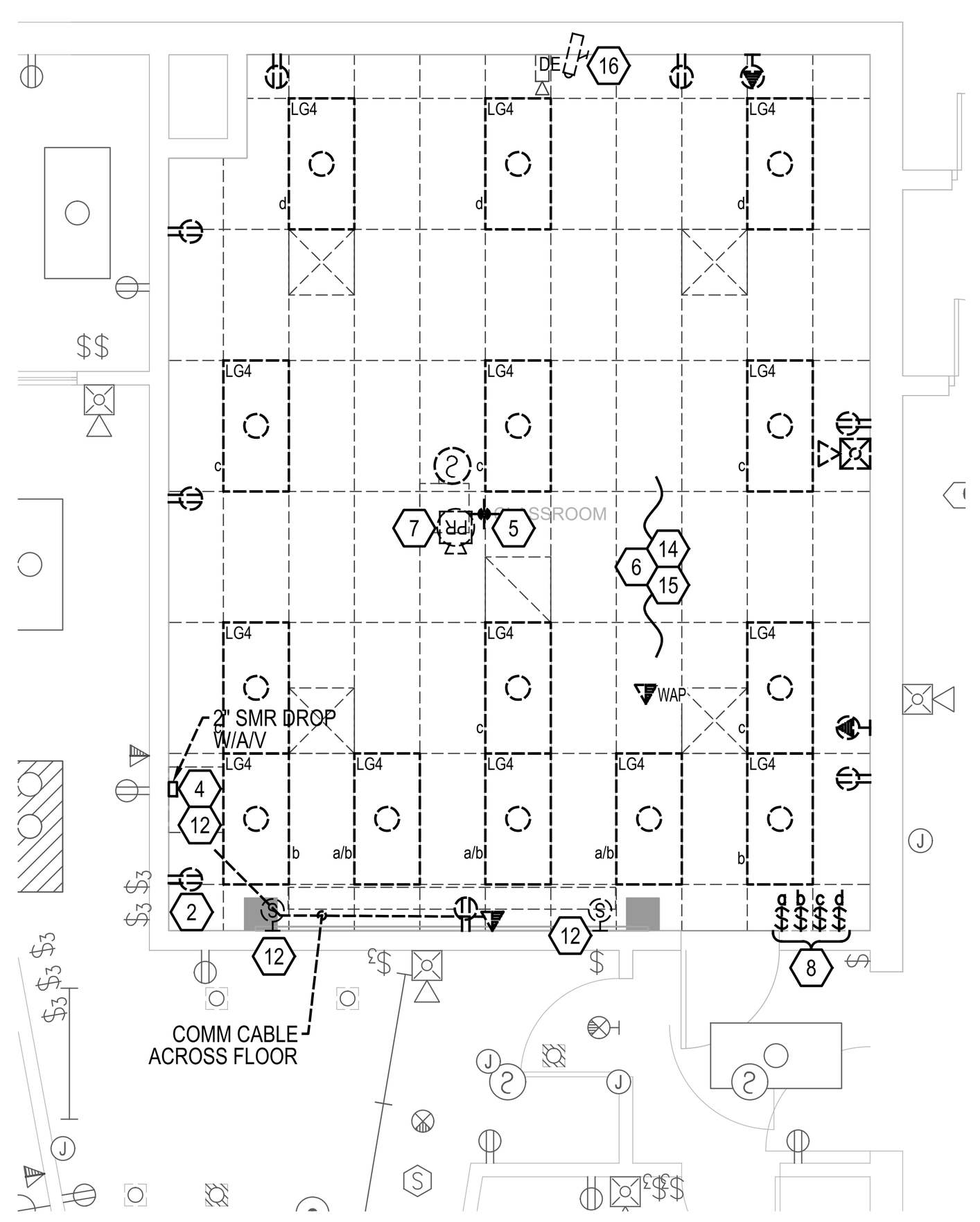
NOTES

FLOOR, TABLE, AND WALL BOX SCHEDULE

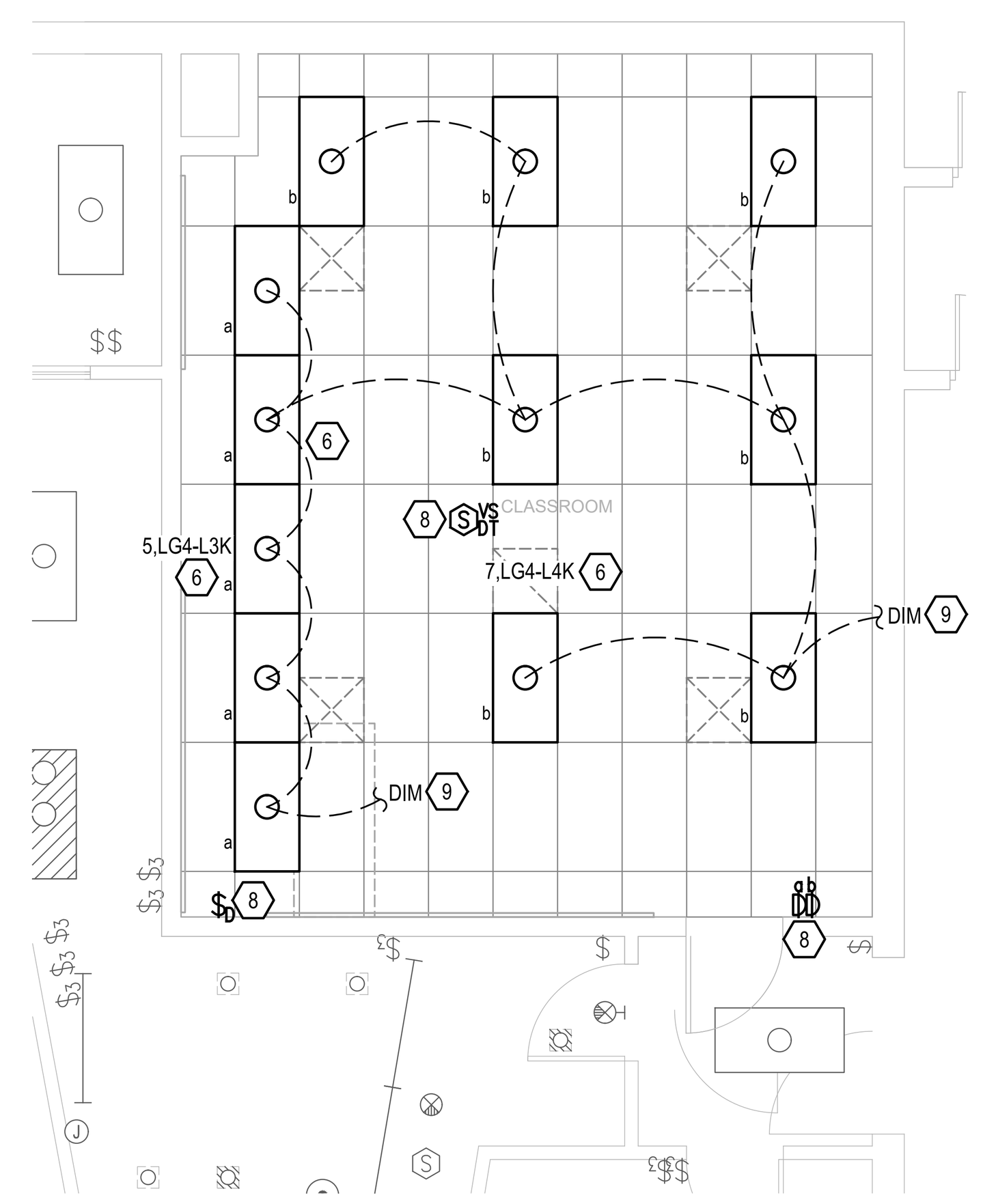
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF	PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS

COMMUNICATIONS RACEWAY SCHEDULE

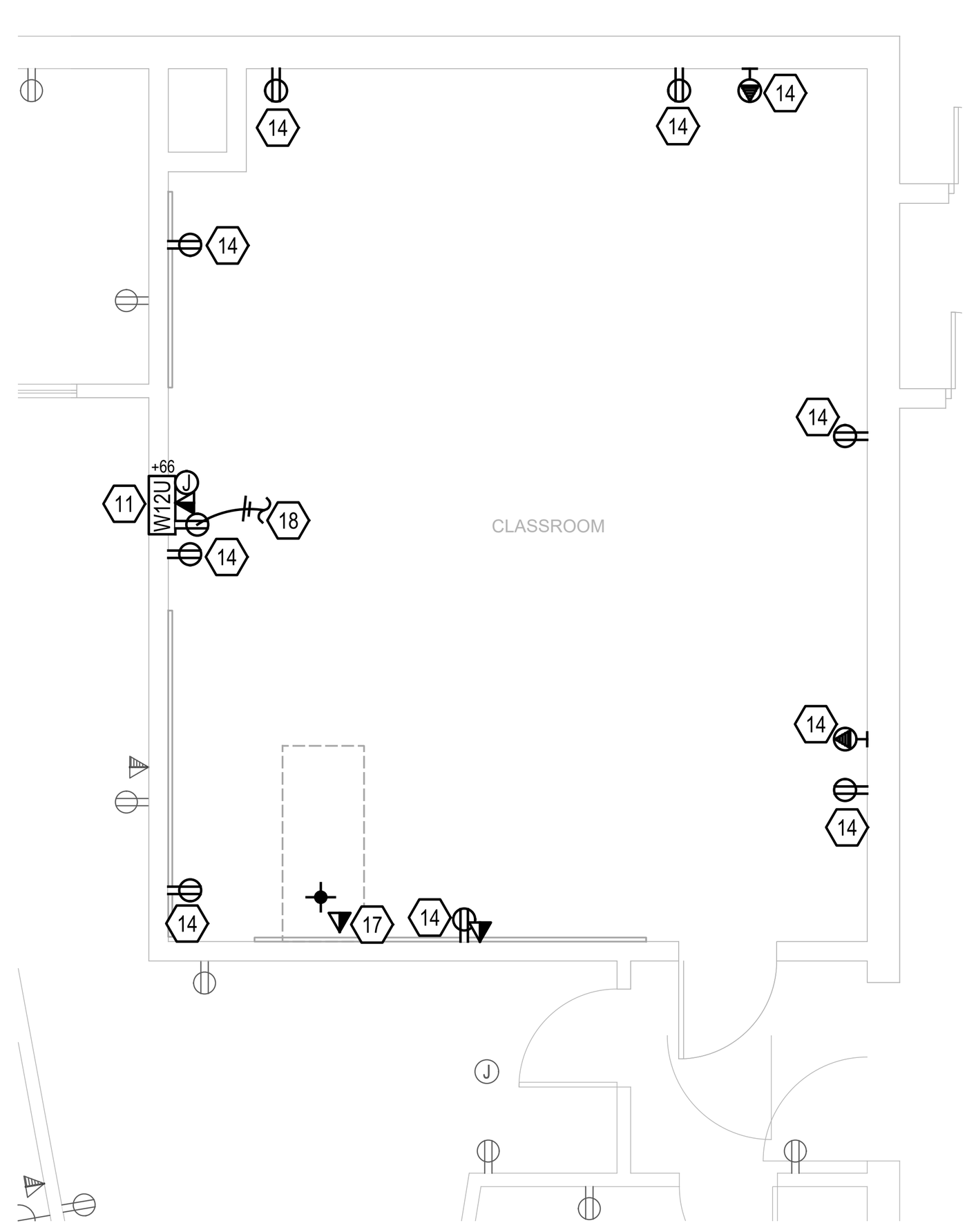
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
xCDy	CONDUIT; QUANTITY "X", DIAMETER "Y" AS INDICATED ON SYMBOL SCHEDULE	AS SPECIFIED		INSULATED THROAT CONNECTORS ON ALL ENDS; PULL STRING
CMJ2	CABLE HOOKS; 2"; RETAINING CLIP QUANTITY AS REQUIRED FOR CURRENT CABLING PLUS 50% SPARE CAPACITY	COOPER B-LINE	BCH32 SERIES (OR EQUIVALENT)	RETAINER (BCHR64) OTHER ACCESSORIES AS REQUIRED



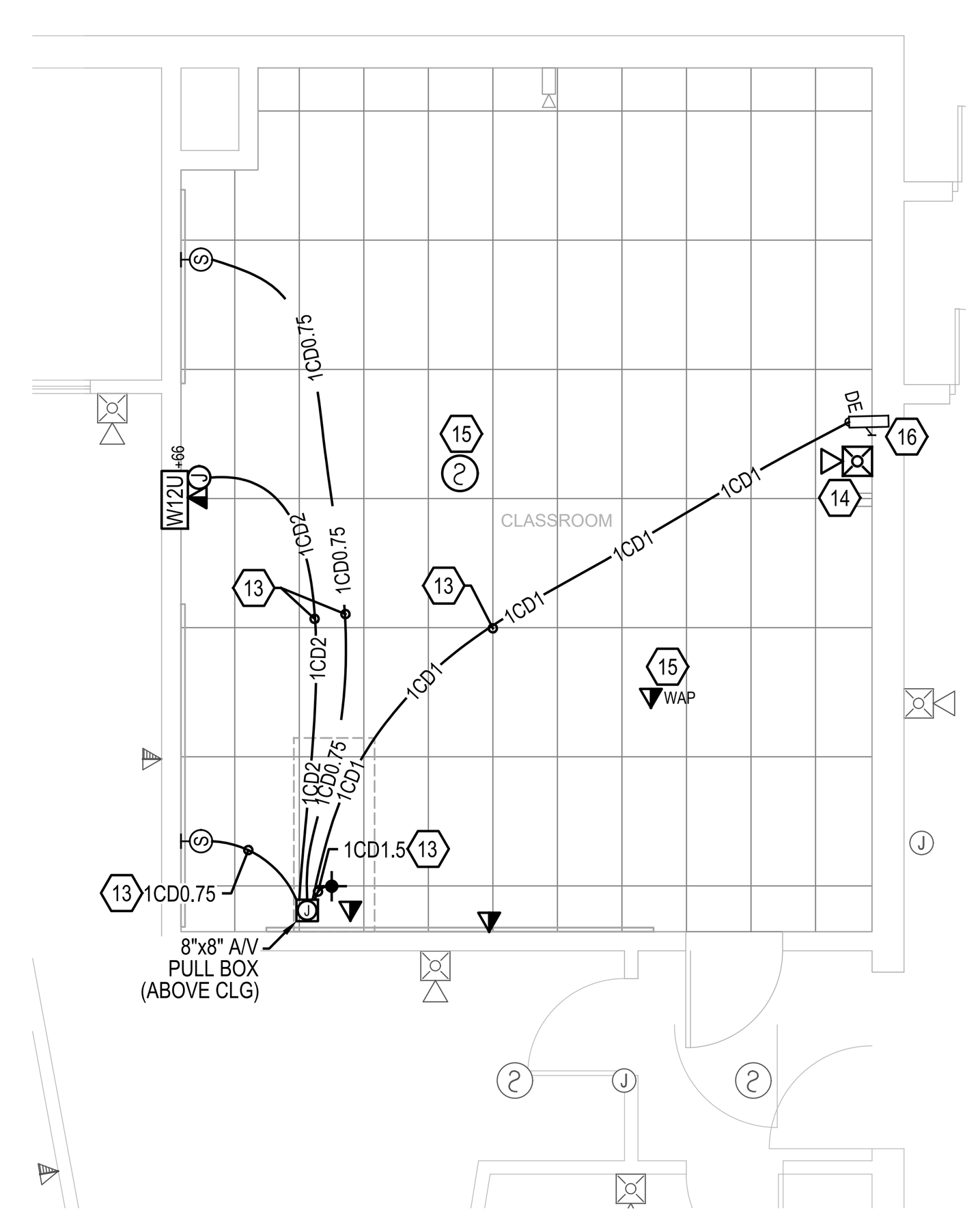
D1 PARTIAL ELECTRICAL DEMOLITION PLAN
3/16" = 1'-0"



D4 PARTIAL LIGHTING PLAN
3/16" = 1'-0"



A1 PARTIAL POWER PLAN
3/16" = 1'-0"



A4 PARTIAL ELECTRONIC SYSTEMS PLAN
3/16" = 1'-0"

SHEET KEYED NOTES

1. NOT USED.
2. REMOVE EXISTING OUTLETS AS INDICATED.
3. NOT USED.
4. REMOVE EXISTING A/V BOX AND 2" CONDUIT TO ALLOW FOR CABINET REMOVAL.
5. REMOVE EXISTING A/V CONDUIT.
6. UPGRADE EXISTING FIXTURE WITH NEW AS INDICATED.
7. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL.
10. NOT USED.
11. PROVIDE NEW WALL BOX AS SPECIFIED.
12. REMOVE EXISTING A/V INSTALLATIONS.
13. PROVIDE CONDUIT, SIZED AS INDICATED, BETWEEN BOXES OR STUBBED AS INDICATED. CONCEAL RACEWAYS IN BUILDING FINISHES.
14. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
15. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
16. EXISTING DISTANCE ED CAMERA TO BE RELOCATED. PROVIDE NEW CONDUIT CONNECTION AS SHOWN.
17. PROVIDE NEW COMM OUTLET IN A/V CABINET AS SPECIFIED.
18. CONNECT TO EXISTING CIRCUIT PREVIOUSLY SERVING REMOVED PROJECTOR.

GENERAL SHEET NOTES

1. DEMOLITION PLAN IS ENGINEER'S ATTEMPT TO ASSIST BIDDERS IN ESTIMATING REMOVAL COSTS OF EXISTING EQUIPMENT. PLAN IS NOT INTENDED TO BE ALL-INCLUSIVE, AND IT IS THE BIDDERS RESPONSIBILITY TO VERIFY ALL EXISTING EQUIPMENT AND DEVICES TO BE REMOVED PRIOR TO BIDDING.
2. EXISTING ITEMS TO BE REMOVED ARE INDICATED AS BOLD/DASHED. ITEMS TO REMAIN ARE SHOWN AS LIGHT/SOLID.
3. MAINTAIN CIRCUIT CONTINUITY FOR DEVICES DOWNSTREAM OF ITEMS TO BE REMOVED.
4. WHERE DEVICES ARE SHOWN TO BE REMOVED, COMPLETELY REMOVE ALL RACEWAYS, BOXES AND CONDUCTORS TO PANEL OR TO FIRST J-BOX TO REMAIN ACTIVE IN CIRCUIT PATH.
5. COMMUNICATIONS CABLING AND NETWORK EQUIPMENT REMOVAL BY USU IT.
6. ARCHITECTURAL CEILINGS SHOWN FOR CONTRACTOR CONVENIENCE IN BIDDING INSTALLATION REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
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8. CONTRACTOR TO FURNISH OCCUPANCY SENSORS WITH COVERAGE PATTERNS APPROPRIATE FOR THEIR INSTALLED LOCATIONS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO BID.
9. CONNECT OCCUPANCY SENSORS TO ENABLE ALL SWITCHES IN CONTROLLED SPACE.
10. CONNECT OCCUPANCY SENSORS, BATTERY BALLASTS, EXIT SIGNS, ETC. TO UNSWITCHED SOURCE CONDUCTOR.
11. EXISTING LIGHTING, ELECTRICAL AND ELECTRONIC DEVICES SHOWN LIGHT. NEW DEVICES SHOWN DARK.
12. NEW DEVICES SHOWN ON EXISTING WALLS SHALL FINISH FLUSH WITH WALL UNLESS OTHERWISE NOTED. CUT, PATCH AND REPAIR SURFACES AS REQUIRED.
13. ALL NEW LIGHTING CONTROLS (SWITCH, OCCUPANCY SENSORS, DIMMERS, ETC.) SHALL BE LOW VOLTAGE TYPE THAT ALLOWS SWITCHES AND SENSORS TO COMMUNICATE TO MEET MANUAL ON, AUTO OFF REQUIREMENTS OF ENERGY CODE.
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CRSA

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1295 E 700 N. LOGAN, UT 84322-6600

No. 294174 SHANE D. SWENSON STATE OF UTAH

NFS 248A

EP100.10

(801) 355-5915

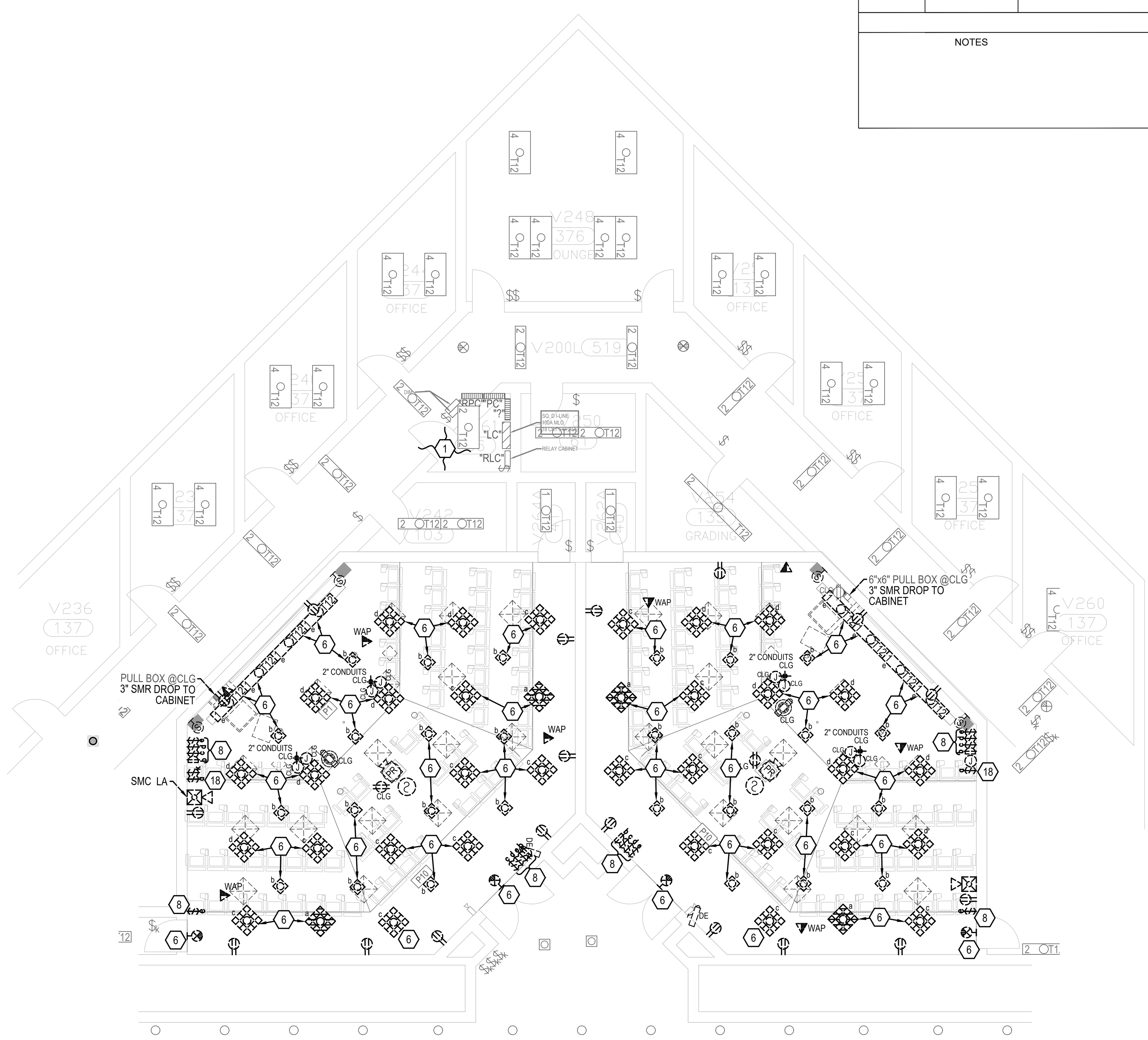
LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/CATALOG NO.	DESCRIPTION	MOUNTING	POWER	LAMPS
EX- 1	LITHONIA LE-S-1-G-120/277 COOPER CX6-1-G DUAL LITE SE-S-G-BN EXITRONIX G400S-LB-BL EQUIVALENT ONLY WITH PRIOR UNIVERSITY APPROVAL	UNIVERSITY STANDARD EXIT SIGN; LED; SINGLE-FACE; BRUSHED ALUMINUM FACE; BLACK HOUSING (SIDE)	SURFACE OR WALL	3W	LED
IF2- L4K	LITHONIA 2BLT2-40LHE-ADP-GZ1-LP840-DGA22 OR EQUIVALENT	LED VOLUMETRIC TROFFER; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; CURVED, RIBBED CENTER BASKET	RECESS FLANGE	29.9W	4000 LUMEN NOMINAL LED 4000K
L ATS	DUAL LITE ATSD SERIES OR EQUIVALENT	LIGHTING TRANSFER SWITCH TO TRANSFER FROM SWITCHED POWER TO GENERATOR POWER ON NORMAL POWER FAILURE; RATINGS PER LOAD CONTROLLED; DIMMER COMPATIBLE	CEILING/FIXTURE	N/A	N/A
LR4- L5K	MARK SL6L-LOP-4FT-FLP-*-80CRI-40K-1200LMF-MIN1-0DL-MIN1-MVOLT-SCBA-ZT NEO-RAY S122RDR-S-1005D-8-40-*-4FO-1-U-DD-F-S OR EQUIVALENT	RECESSED LINEAR, 6" NOMINAL WIDTH; RECESS MOUNT; FLUSH, DIFFUSE LENS; MULTI-VOLT, ELECTRONIC, DIMMABLE DRIVER; COLOR AS SELECTED BY ARCHITECT;	RECESSED	40 W	5000 LUMEN NOMINAL LED 4000K
RR- L5K	LITHONIA LDN7RV-27-50-LR-6-AR-LS-MVOLT-EZB-TRW OR EQUIVALENT WITH PRIOR APPROVAL	RECESSED CAN; LED LAMPING; CLEAR, OPEN, SPECULAR CONE; 6" NOMINAL OPENING; WHITE TRIM RING; DIM TO BLACK; RETROFIT APPLICATION-- CONTRACTOR VERIFY COMPATIBILITY WITH EXISTING FIXTURES TO BE REPLACED PRIOR TO FINAL ORDER.	RECESS	55 W	5000 LUMEN NOMINAL LED 2700K

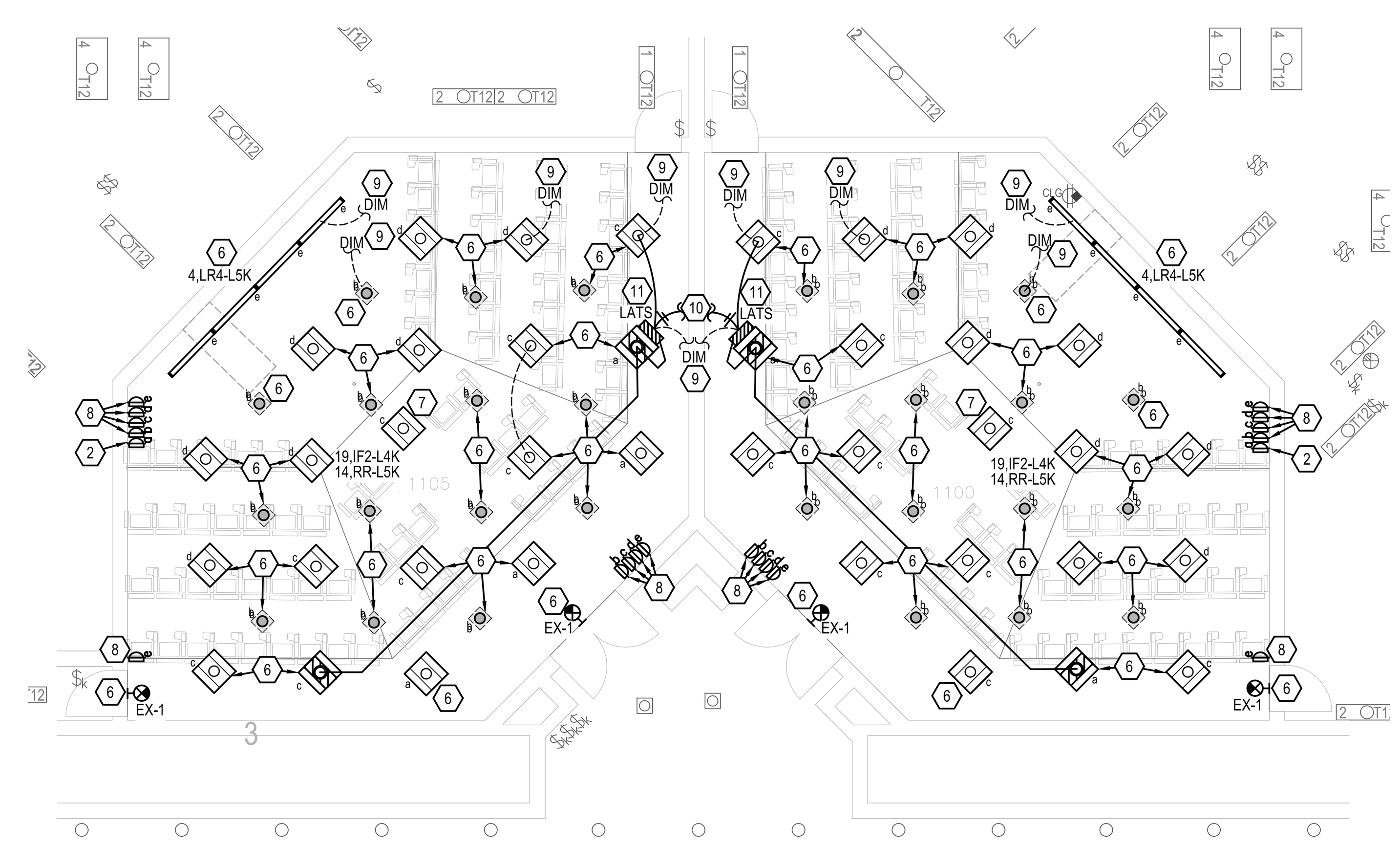
NOTES

FLOOR, TABLE, AND WALL BOX SCHEDULE

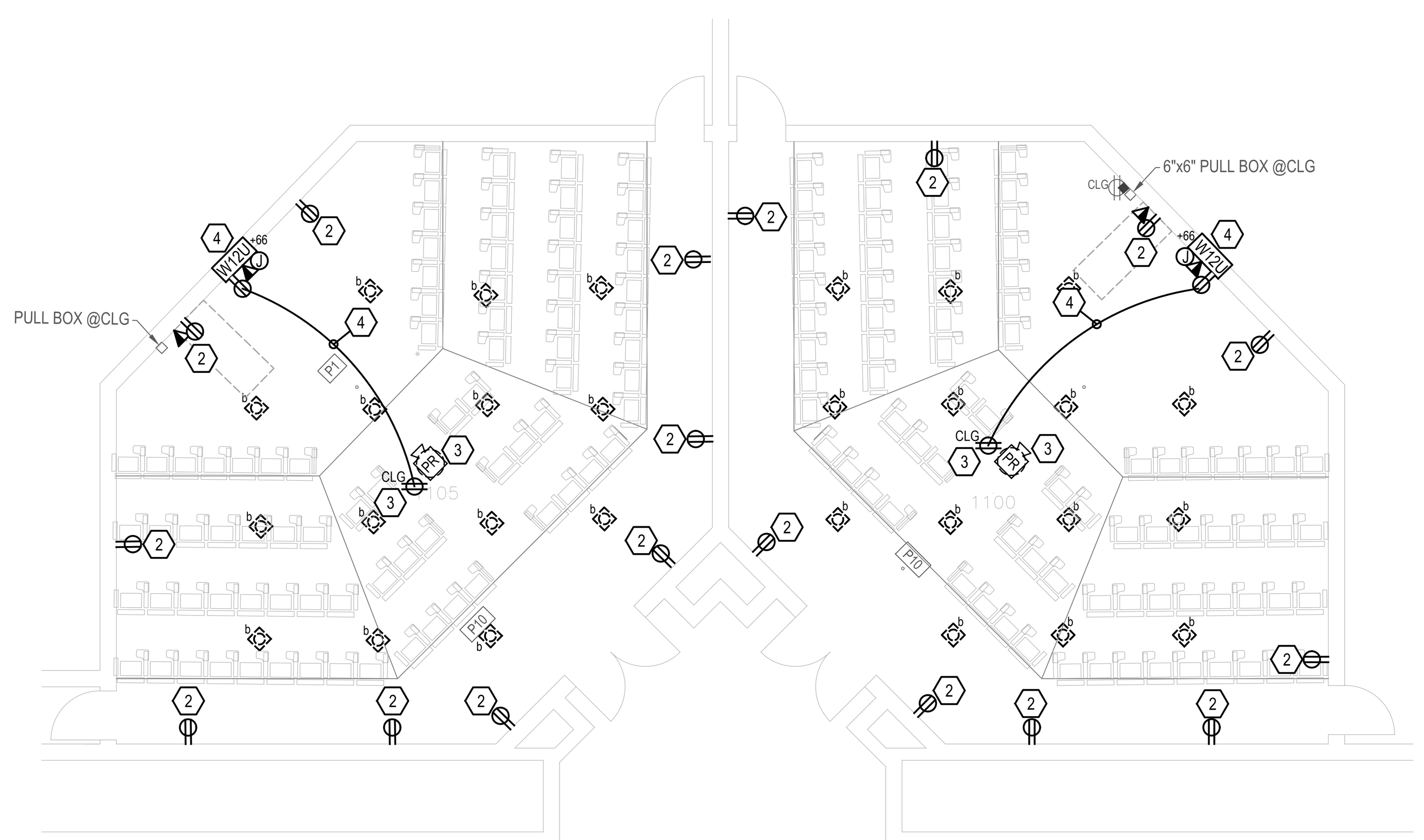
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	DEVICES
W12U	USU STANDARD, MULTI-SERVICE, X-LARGE CAPACITY WALL BOX; STEEL; RECESS MOUNT IN WALL; COVER FIELD PAINTED CUSTOM COLOR AS SELECTED BY OWNER/ARCHITECT	CHIEF	PAC 526	PER USU STANDARD	-ONE DUPLEX -1 @ 1.25" COMM CONDUIT WITH COMM/TV PORTS PER OWNER -A/V PLATES/CONNECTORS PER OWNER -A/V CONDUIT AS NOTED ON DRAWINGS



D1 PARTIAL ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"



D4 PARTIAL LIGHTING PLAN
1/8" = 1'-0"



A1 PARTIAL POWER PLAN
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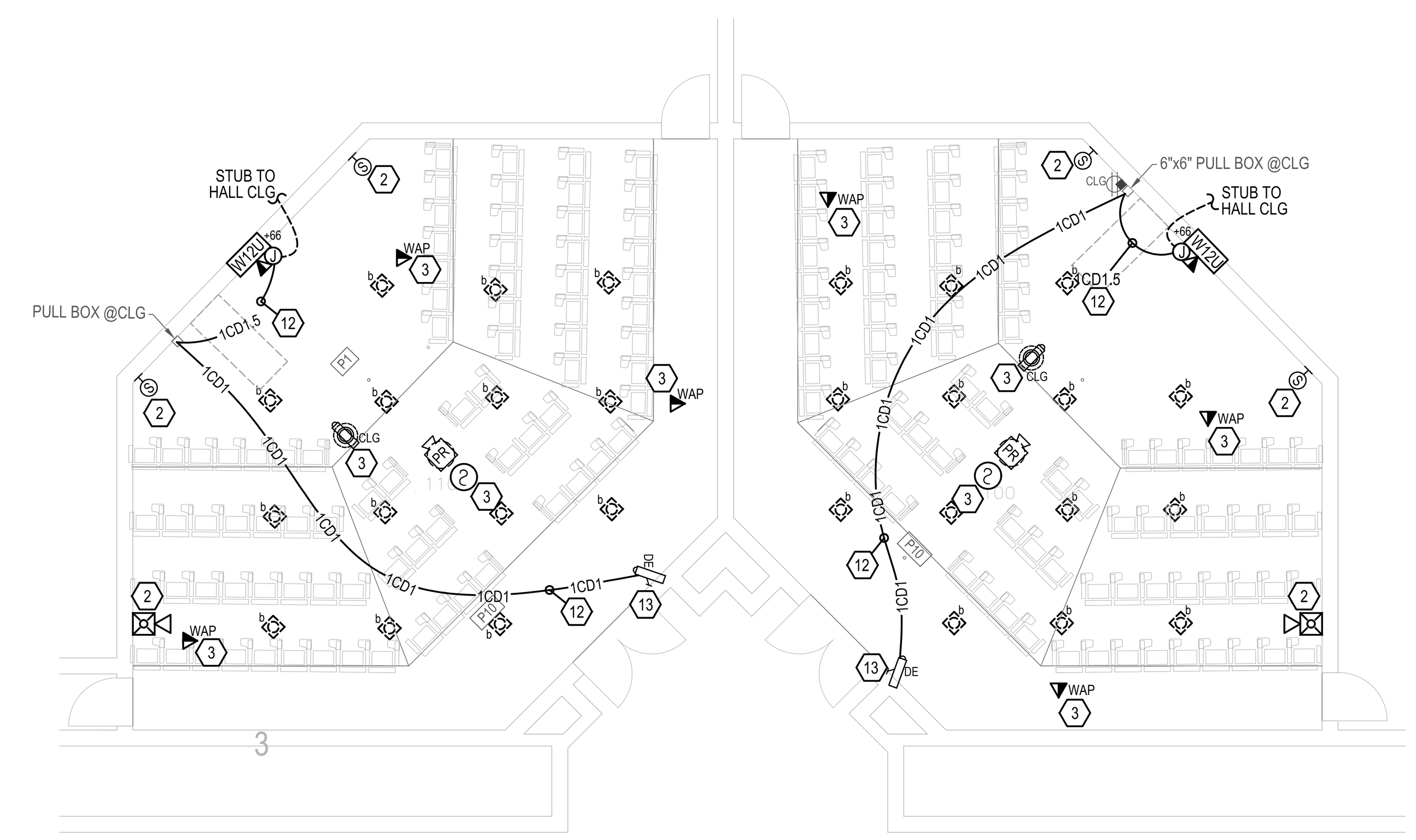

A4 PARTIAL ELECTRONIC SYSTEMS PLAN
1/8" = 1'-0"

SHEET KEYED NOTES

1. EXISTING DISTRIBUTION TO REMAIN.
2. REMOVE AND REINSTALL EXISTING WALL-MOUNT DEVICES TO ALL FOR PAINTING.
3. REMOVE AND REINSTALL EXISTING CEILING MOUNTED DEVICES TO ALLOW FOR CEILING TILE REPLACEMENTS.
4. PROVIDE NEW WALL BOX AS SPECIFIED.
5. CONNECT TO EXISTING CIRCUIT INDICATED.
6. UPGRADE EXISTING FIXTURE IN SAME LOCATION WITH NEW OF TYPE INDICATED. REVISE SWITCHING GROUPS AS INDICATED.
7. PROVIDE SPARE FIXTURE OF TYPE INDICATED FOR OWNER STOCK TO BE INSTALLED AT FUTURE TIME WHEN OVERHEAD PROJECTOR IS REMOVED.
8. PROVIDE NEW LIGHTING CONTROLS FOR EXISTING/UPGRADED LIGHTING.
9. PROVIDE NEW DIMMING CONTROL WIRING TO UPGRADED LIGHTING CONTROL. CONNECTION SHOWN IS SINGLE FIXTURE IN EACH SWITCH GROUP. EXTEND CONTROL CONNECTIONS TO ALL OTHER FIXTURES IN SAME SWITCHING GROUP.
10. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.
11. PROVIDE LIGHTING TRANSFER SWITCH FOR EM LIGHTING FOR EM CIRCUIT FIXTURE(S) TO BE CONTROLLED WITH LIGHTING CONTROLS IN SPACE AND OVERRIDE ON WITH NORMAL POWER FAILURE.
12. PROVIDE CONDUIT, SIZED AS INDICATED, BETWEEN BOXES OR STUBBED AS INDICATED. CONCEAL CONDUITS IN BUILDING FINISHES.
13. CONNECT TO EXISTING EM CIRCUIT PREVIOUSLY SERVING NIGHT LIGHT FIXTURES.

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1295 E 700 N. LOGAN, UT 84322-6600

REGISTERED PROFESSIONAL ENGINEER
No. 294174
SHANE D. SWENSON
4/10/2025
STATE OF UTAH

FAV 262 & 264

EP100.11

(801) 355-5915

TIME: 15 OCT 2013 - 12:25PM CHEFE - T:\JOBS\2025012 USU MISC CLASSROOMS 2025\01 DRAWINGS\05 ELECTRICAL\SINE SOURCE PROJECT\SHEETS\EP100.11 FAV 262 & 264.DWG
LAST SAVED: 02 Apr 25