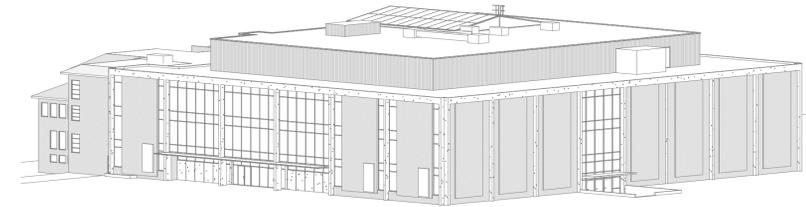
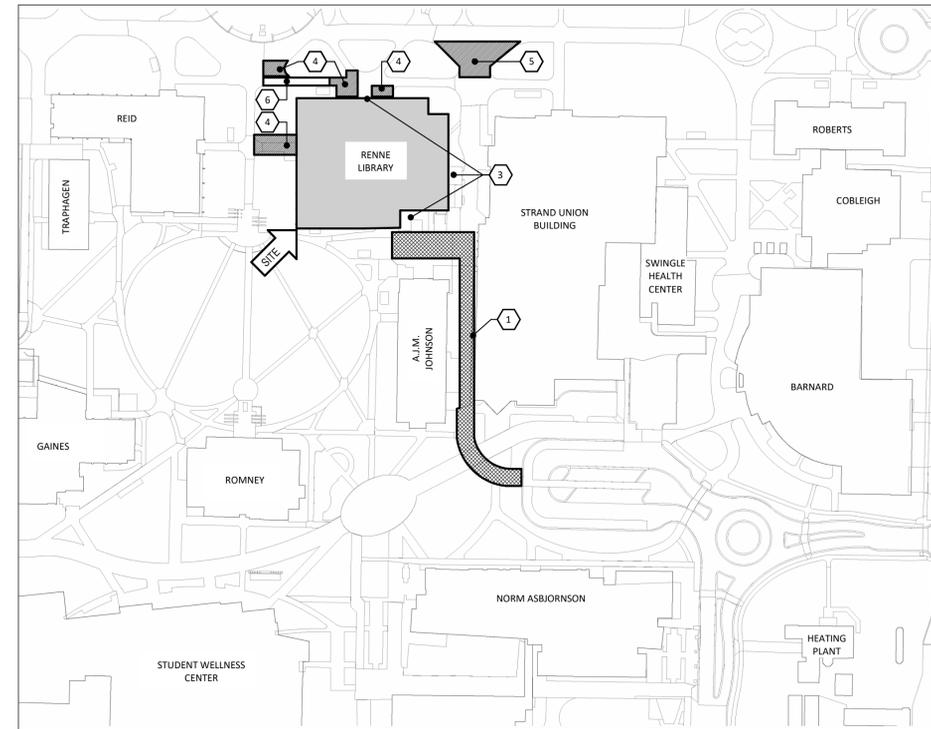


INNOVATION LEARNING STUDIO MONTANA STATE UNIVERSITY

1210 S 8TH AVE
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257



SITE VICINITY MAP



SITE LOCATION MAP

INDEX OF DRAWINGS	
SHEET NUMBER	SHEET NAME
TITLE	
G-001	PROJECT TITLE SHEET
G-011	CODE REVIEW
G-013	ACCESSIBILITY DETAILS
REMEDATION	
REM01	SITE VICINITY MAP
REM03	ASBESTOS REMEDIATION
ARCHITECTURAL	
A-001	ARCHITECTURAL NOTES
AD112	LEVEL 2 DEMOLITION PLAN & RCP
AD211	INTERIOR ELEVATIONS DEMOLITION
A-112	LEVEL 2 FLOOR PLAN & RCP
A-113	LEVEL 2 FLOOR PLAN - ALTERNATE #1
A-132	LEVEL 2 FINISH FLOOR PLAN
A-211	INTERIOR ELEVATIONS
A-521	FINISH DETAILS
A-601	WINDOW & DOOR SCHEDULES & DETAILS
MECHANICAL	
M-001	MECHANICAL TITLE SHEET
M-112	LEVEL 2 HVAC PLAN
M-135	ROOF HVAC PLAN
M-601	MECHANICAL SCHEDULES
ELECTRICAL	
E000	ELECTRICAL LIGHTING & TECHNOLOGY INDEX
E101	ELECTRICAL PLANS
E610	ELECTRICAL ONE-LINE DIAGRAMS
E620	ELECTRICAL EQUIPMENT SCHEDULES
E101	LIGHTING PLANS
TECHNOLOGY	
T101	TECHNOLOGY PLANS
T201	TECHNOLOGY EQUIPMENT ELEVATIONS
T501	TECHNOLOGY TYPICAL DETAILS
T502	TECHNOLOGY TYPICAL DETAILS
T601	TECHNOLOGY INFORMATION & ONE-LINE DIAGRAM
T611	TECHNOLOGY EQUIPMENT SCHEDULES
FIRE PROTECTION	
FX001	GENERAL NOTES, DETAILS, AND LEGEND
FX101	LEVEL 2 FIRE SPRINKLER PLAN

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

GENERAL CONDITIONS

1. THE GENERAL CONTRACTOR IS TO GUARANTEE ALL WORK INCLUDING WORK DONE BY SUBCONTRACTORS FOR A PERIOD OF ONE (1) YEAR COMMENCING WITH THE SUBSTANTIAL COMPLETION OF THE CONTRACT.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH ALL GOVERNING CODES, ORDINANCES AND AUTHORITIES HAVING JURISDICTION. GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL REQUIRED BUILDING PERMITS.
3. THE GENERAL CONTRACTOR IS TO HAVE A FULL TIME QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED.
4. ALL MATERIAL SPECIFIED IS TO BE NEW & INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND SPECIFICATIONS. GENERAL CONTRACTOR IS TO CONSTRUCT PROJECT IN ACCORDANCE WITH THE DOCUMENTS. ANY DEVIATION FROM THE INTENT OF THE DOCUMENTS, WITHOUT ARCHITECT OR ENGINEER'S APPROVAL, ARE AT THE CONTRACTOR'S OWN RISK AND MAY RESULT IN THE WORK BEING DONE OVER AT CONTRACTOR'S EXPENSE (MATERIALS AND LABOR).
5. THE GENERAL CONTRACTOR SHALL RETAIN AND CONTRACT DIRECTLY WITH A QUALIFIED ABATEMENT CONTRACTOR (AC) TO PERFORM ALL REQUIRED HAZARDOUS MATERIAL ABATEMENT WORK ASSOCIATED WITH THE PROJECT.
6. THE GENERAL CONTRACTOR SHALL ALSO RETAIN AND CONTRACT DIRECTLY WITH A CERTIFIED PROFESSIONAL INDUSTRIAL HYGIENIST (PIH) TO PROVIDE ENVIRONMENTAL TESTING, AIR MONITORING, INSPECTIONS, AND DOCUMENTATION AS REQUIRED BY THE AHI.

GENERAL NOTES

1. CONTRACTOR TO REVIEW AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK, INCLUDING EXISTING WALL ASSEMBLIES AND STRUCTURE ELEVATIONS. ANY CONDITIONS NOT INDICATED ON CONTRACT DOCUMENTS ARE TO BE REPORTED TO THE ARCHITECT PRIOR TO BEGINNING WORK. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS IN FIELD. ANY BUILDING COMPONENTS ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. CONTACT ARCHITECT FOR FURTHER CLARIFICATION.
2. CONTRACTOR TO CONTACT LOCAL UTILITIES, IF NECESSARY, SUBMIT ALL APPLICABLE PERMIT DOCUMENTS, QUALIFICATIONS, ETC., AND BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH PERMITS, UTILITY EXTENSIONS, TAP-INS, ETC.
3. PROTECT IRRIGATION IN PLACE. CALL FOR LOCATION OF SPRINKLER HEADS IN ADVANCE OF WORK BEGINNING OR EQUIPMENT ARRIVAL. REPAIR DAMAGED LANDSCAPING AND IRRIGATION SYSTEM TO CONDITION EXISTING PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AS A RESULT OF THIS PROJECT. THE CONTRACTOR WILL REMOVE EXISTING EQUIPMENT, AND RELOCATE PER OWNER.
5. THE CONTRACTOR SHALL SCHEDULE HIS WORK AND MATERIAL AND EQUIPMENT DELIVERIES SO AS NOT TO INTERFERE WITH THE DAILY OPERATIONS OF THE REMAINDER OF THE FACILITY.
6. THE CONTRACTOR SHALL PROTECT EXISTING FACILITIES, EQUIPMENT, FIXTURES, EXISTING SITE IMPROVEMENTS, SITE FURNISHINGS, SIGNAGE, PERMANENT SITE FEATURES, ETC. FROM DAMAGE DURING THE COURSE OF CONSTRUCTION. OWNER WILL PHOTOGRAPH AT PRECONSTRUCTION MEETING WALK-THROUGH PRIOR TO COMMENCEMENT OF WORK.
7. REPAIRING OR REPLACING DAMAGED ITEMS IS CONTRACTOR'S RESPONSIBILITY. RESTORE DAMAGED COMPONENTS TO CONDITION EXISTING PRIOR TO THE START OF CONSTRUCTION.

8. THE CONTRACTOR SHALL KEEP DESIGNATED BUILDING ENTRANCES, ALL STAIRWELLS, AND ELEVATORS CLEAR OF CONSTRUCTION MATERIAL, TOOLS, AND EQUIPMENT AT ALL TIMES. ALL SURFACES AND/OR FINISHES DAMAGED AS A RESULT OF AND ADJACENT TO THE WORK SHALL BE REPAIRED AND FINISHED TO THEIR ORIGINAL CONDITION.
9. EACH SUBCONTRACTOR IS RESPONSIBLE TO COORDINATE AND SCHEDULE HIS WORK WITH THE GENERAL CONTRACTOR AND ALL OTHER SUBCONTRACTORS WHOSE WORK WILL BE AFFECTED.
10. USE DETAILS MARKED 'TYPICAL' (TYP) WHEREVER APPLICABLE.
11. ALL ITEMS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS SHALL BE PERFORMED IN A WORKMANLIKE MANNER BY PERSONS SKILLED IN THEIR RESPECTIVE TRADE AND WHO NORMALLY PARTICIPATE IN THE WORK OF THAT TRADE. CONTRACTOR SHALL COORDINATE WORK OF ALL TRADES TO ENSURE SMOOTH, UNINTERRUPTED CONSTRUCTION.
12. WORDS WHICH HAVE WELL KNOWN TECHNICAL OR TRADEMEANINGS ARE USED IN THE DRAWINGS AND SPECIFICATIONS IN ACCORDANCE WITH SUCH RECOGNIZED MEANINGS.
13. WITHIN THE DRAWINGS AND RELATED SPECIFICATIONS THERE SHALL BE THE FOLLOWING PRECEDENCE:
 - A. ADDENDA OR MODIFICATIONS TO THE DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE OVER THE ORIGINAL, WHEN ISSUED BY THE ARCHITECT.
 - B. SPECIFICATIONS SHALL TAKE PRECEDENCE OVER DRAWINGS.
 - C. WITHIN THE DRAWINGS THE LARGER SCALE TAKES PRECEDENCE OVER THE SMALLER, FIGURED DIMENSIONS OVER SCALED AND NOTED MATERIALS OVER GRAPHIC INDICATIONS.

14. THE ARCHITECT OR ENGINEER SHALL BE IN THE FIRST INSTANCE THE SOLE INTERPRETER OF THE DRAWINGS AND SPECIFICATIONS WITH REGARD TO THEIR MEANING OR INTENT.
15. CONSTRUCTION DOCUMENTS SHOW THE DESIGN INTENT OF THE PROJECT. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY DURING BUILDING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR PROTECTION WHERE NECESSARY TO PROTECT THE PUBLIC DURING THE CONSTRUCTION OF THE PROJECT.
17. CONTRACTOR SHALL ALLOW FOR THE OWNER AND DESIGN TEAM TO ERECT THEIR OWN SIGNAGE AT THE EDGES OF THE PROPERTY WHICH MAY BE A WIND SCREEN MOUNTED TO THE CONTRACTOR'S SITE FENCE.
18. CONTRACTOR SHALL SUBMIT FULL-SIZE SAMPLES OF ALL FINISH MATERIALS AND COLORS FOR APPROVAL BY THE OWNER'S REPRESENTATIVE. THE DRAWINGS MAY CALL OUT COLORS AND MATERIALS, BUT APPROVAL PRIOR TO PURCHASE IS REQUIRED.
19. CONTRACTOR TO ACCESS SITE BY STREETS SHOWN. ACCESS MUST BE COORDINATED WITH MSU.
20. CONTRACTOR SHALL OBTAIN APPROVAL OF ALL CONSTRUCTION STAGING SETUP FROM MSU PRIOR TO BEGINNING CONSTRUCTION. THE STAGING PLAN CAN BE PRESENTED AS A DRAWING AND NARRATIVE AT THE PRECONSTRUCTION MEETING AND UPDATED AT REGULAR A.O.C. MEETING.
21. ALL CONTRACTOR VEHICLES PARKED ON CAMPUS, INCLUDING VEHICLES OWNED BY EMPLOYEES OF THE CONTRACTOR, SHALL BE PARKED IN DESIGNATED PARKING AREAS ONLY. ALL VEHICLES PARKED IN DESIGNATED PARKING AREAS MUST HAVE A VALID MSU PERMIT. VIOLATORS OF MSU VEHICLE REGULATIONS MAY BE TICKETED AND/OR TOWED.

SITE LOCATION MAP LEGEND

-  PRIMARY ACCESS ROUTE
-  CONSTRUCTION STAGING AREA
-  PROJECT LOCATION

PROJECT INFORMATION:

OWNER / DEVELOPER	BUILDING DEPARTMENT
STATE OF MONTANA - MONTANA STATE UNIVERSITY UNIVERSITY FACILITIES MANAGEMENT, MANAGED BY: PLANNING, DESIGN & CONSTRUCTION PLEW BUILDING 6TH & GRANT PO BOX 172760 BOZEMAN, MT 59717-2760 ATTN: ELIZABETH PRITCHARD EMAIL: ELIZABETH.PRITCHARD@MONTANA.EDU TEL: (406) 994-7089	MONTANA DEPARTMENT OF LABOR & INDUSTRY 100 N PARK AVE HELENA, MT 59601 EMAIL: BUILDINGCODES@MT.GOV TEL: (406) 444-2840

DESIGN PROFESSIONALS

JACKOLA ENGINEERING & ARCHITECTURE, P.C. 2250 HWY 93 SOUTH PO BOX 1134 KALISPELL, MT 59903 TEL: (406) 755-3208	ELECTRICAL & PLUMBING ENGINEER: BLACKSHEEP 602 WEST HEMLOCK ST BOZEMAN, MT 59715 EMAIL: ANDY.M@BLACKSHEEP.ENGINEERING TEL: (406) 551-3669
ARCHITECT: CHELSEA HOLLING, AIA	FIRE SUPPRESSION: COFFMAN ENGINEERS, INC. 751 OSTERMAN DR., STE 104 BOZEMAN, MT 59715 EMAIL: JASON.ANDERSON@COFFMAN.COM TEL: (496) 582-1936
MECHANICAL ENGINEER: BLAKE BARTUSIAK, PE	

KEYED SITE/STAGING NOTES

1. PRIMARY ACCESS ROUTE: JOB RELATED TRAFFIC SHALL ENTER THE CONSTRUCTION AREA SITE ONLY BY THIS ROUTE. VEHICLES MAKING DELIVERIES TO THE PROJECT SITE MUST BE REMOVED FROM CAMPUS IMMEDIATELY AFTER UNLOADING. CONTRACTOR SHALL MINIMIZE INTERFERENCE WITH ADJOINING STREETS, SIDEWALKS, PARKING AREAS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES DURING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL NOT BLOCK STREETS, SIDEWALKS, OR ACCESS TO DUMPSTER LOCATION AT ANY TIME.
2. AVAILABLE CONSTRUCTION STAGING AREA: CONTRACTOR SHALL PROVIDE FENCING TO ENCLOSE ALL AREAS USED AS CONSTRUCTION STAGING AREAS, OR APPROVED EQUAL FENCING SHALL PREVENT ACCESS FROM UNAUTHORIZED PERSONNEL. THE CONTRACTOR NEED NOT MAKE USE OF THE ENTIRE CONSTRUCTION STAGING AREA SHOWN. THE CONTRACTOR SHALL RESTORE AREAS USED FOR CONSTRUCTION STAGING THAT ARE DAMAGED DURING THE COURSE OF CONSTRUCTION OPERATIONS, TO CURRENT MSU STANDARDS AS DIRECTED BY THE MSU PROJECT MANAGER, PRIOR TO SUBSTANTIAL COMPLETION. WHERE POSSIBLE, ALL STAGING SHALL BE ON HARD SURFACING. ALL CONCRETE WITHIN THE STAGING AREA MUST BE PROTECTED AND MATERIALS SHOULD BE STORED ON PALLETS.
3. KEEP THE EAST, SOUTH, AND NORTH BUILDING ENTRY/EXIT OPEN. WEST BUILDING ENTRY/EXIT WILL BE USED FOR CONTRACTOR BUILDING ACCESS ONLY. IN CASE OF AN EMERGENCY, THE EAST, SOUTH, AND NORTH ENTRY/EXIT WILL NEED TO REMAIN FREE OF CONSTRUCTION DEBRIS AT ALL TIMES.
4. CONSTRUCTION ZONE AND CONTRACTOR BUILDING ACCESS.
5. STAGING AREA AND CONSTRUCTION ZONE FOR THE INNOVATION LEARNING STUDIO.
6. AREA TO REMAIN OPEN FOR FIRE ACCESS TO THE ROOF.

DRAWN: RH, MC CHECKED: CH, KE

DATE: 03/13/2026

REVISIONS:

PROJECT TITLE SHEET

G-001

BUILDING REQUIREMENTS FROM INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2021

LEVEL 2 (INNOVATION LEARNING STUDIO):

CHAPTER 6 - CLASSIFICATION OF WORK
SECTION 602 ALTERATION - LEVEL 1: LEVEL 1 ALTERATIONS INCLUDE THE REMOVAL AND REPLACEMENT OR THE COVERING OF EXISTING MATERIALS, ELEMENTS, EQUIPMENT OR FIXTURES USING NEW MATERIALS, ELEMENTS, EQUIPMENT OR FIXTURES THAT SERVE THE SAME PURPOSE. LEVEL 2 ALTERATIONS SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 7 FOR LEVEL 1 ALTERATIONS.

CHAPTER 5 - PRESCRIPTIVE COMPLIANCE METHOD
SECTION 503 ALTERATIONS: EXCEPT AS PROVIDED BY SECTION 302.4, 302.5 OR THIS SECTION, ALTERATIONS TO ANY BUILDING OR STRUCTURE SHALL COMPLY WITH THE REQUIREMENTS OF THE IBC FOR NEW CONSTRUCTION. ALTERATIONS SHALL BE SUCH THAT THE EXISTING BUILDING OR STRUCTURE IS NOT LESS COMPLYING WITH THE PROVISIONS OF THE IBC THAN THE EXISTING BUILDING OR STRUCTURE WAS PRIOR TO THE ALTERATION.

SECTION 603 ALTERATION - LEVEL 2: ALTERATIONS INCLUDE THE ADDITION OR ELIMINATION OF ANY DOOR OR WINDOW, THE RECONFIGURATION OR EXTENSION OF ANY SYSTEM, OR THE INSTALLATION OF ANY ADDITIONAL EQUIPMENT, AND SHALL APPLY WHERE THE WORK AREA IS EQUAL TO OR LESS THAN 50 PERCENT OF THE BUILDING AREA. LEVEL 2 ALTERATIONS SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 7 FOR LEVEL 1 ALTERATIONS AS WELL AS THE PROVISIONS OF CHAPTER 8.

CHAPTER 8 - ALTERATIONS LEVEL 2 COMPLIANCE METHOD
SECTION 801: NEW CONSTRUCTION ELEMENTS, COMPONENTS, SYSTEMS, AND SPACES SHALL COMPLY WITH THE REQUIREMENTS OF THE IBC.

EXCEPTIONS:

- WHERE WINDOWS ARE ADDED THEY ARE NOT REQUIRED TO COMPLY WITH THE LIGHT AND VENTILATION REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE.
- NEWLY INSTALLED ELECTRICAL EQUIPMENT SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 806.
- THE LENGTH OF DEAD-END CORRIDORS IN NEWLY CONSTRUCTED SPACES SHALL ONLY BE REQUIRED TO COMPLY WITH THE PROVISIONS OF SECTION 804.7.
- THE MINIMUM CEILING HEIGHT OF THE NEWLY CREATED HABITABLE AND OCCUPIABLE SPACES AND CORRIDORS SHALL BE 7 FEET (2134 MM).
- NEW STRUCTURAL MEMBERS AND CONNECTIONS SHALL BE PERMITTED TO COMPLY WITH ALTERNATIVE DESIGN CRITERIA IN ACCORDANCE WITH SECTION 302.

BUILDING REQUIREMENTS FROM INTERNATIONAL BUILDING CODE (IBC) 2021

LEVEL 2 (INNOVATION LEARNING STUDIO):

USE AND OCCUPANCY CLASSIFICATION (CHAPTER 3)
 ASSEMBLY: B

CHAPTER 10 - MEANS OF EGRESS
SECTION 1004 OCCUPANT LOAD:
 TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT: EDUCATIONAL CLASSROOM OCC. TYPE FLOOR AREA BY OCCUPANT TYPE - 20 NET SF = 1,173 SF/20 = 58 OCC. PROVIDED OCCUPANT LOAD: 57 OCCUPANTS

COMMON PATH OF EGRESS TRAVEL (CPET):
 EAST EXIT: 135' 7"
 WEST EXIT: 74' 1"

SECTION 1005.3.2 OTHER EGRESS COMPONENTS: THE CAPACITY, IN INCHES, OF MEANS OF EGRESS COMPONENTS OTHER THAN STAIRWAYS SHALL BE CALCULATED BY MULTIPLYING THE OCCUPANT LOAD SERVED BY SUCH COMPONENT BY A MEANS OF EGRESS CAPACITY FACTOR OF 0.2 INCH (5.1 MM) PER OCCUPANT.

0.2" PER OCCUPANT - LEVEL 2 OCCUPANT COUNT = 58
 0.2-INCH * 360 OCC = 72" CORRIDOR WIDTH, MINIMUM

SECTION 1006 NUMBER OF EXITS:
 TWO EXITS FROM ANY SPACE SHALL BE PROVIDED WHERE THE DESIGN OCCUPANT LOAD EXCEEDS THE VALUES LISTED IN TABLE 1006.2.1

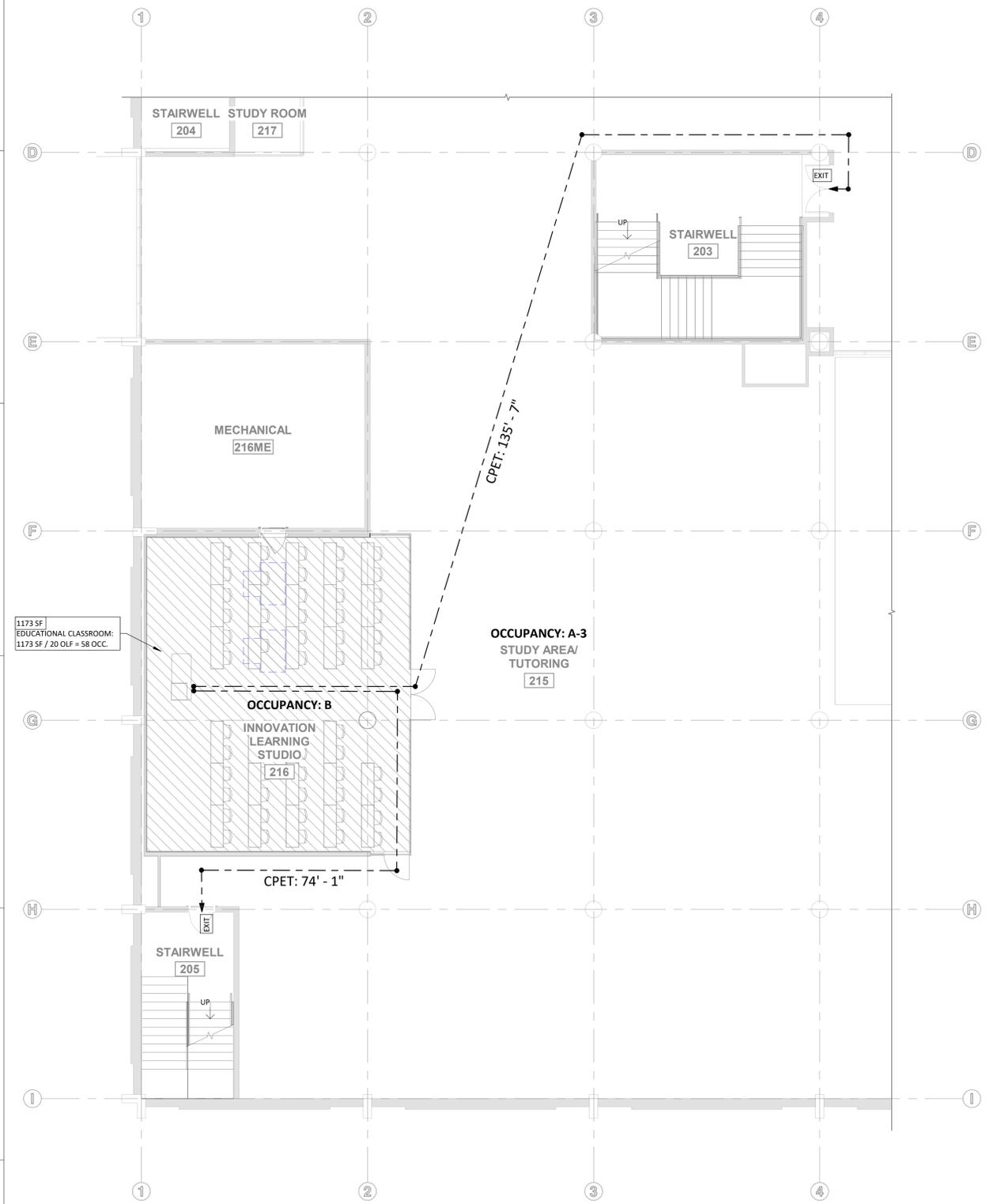
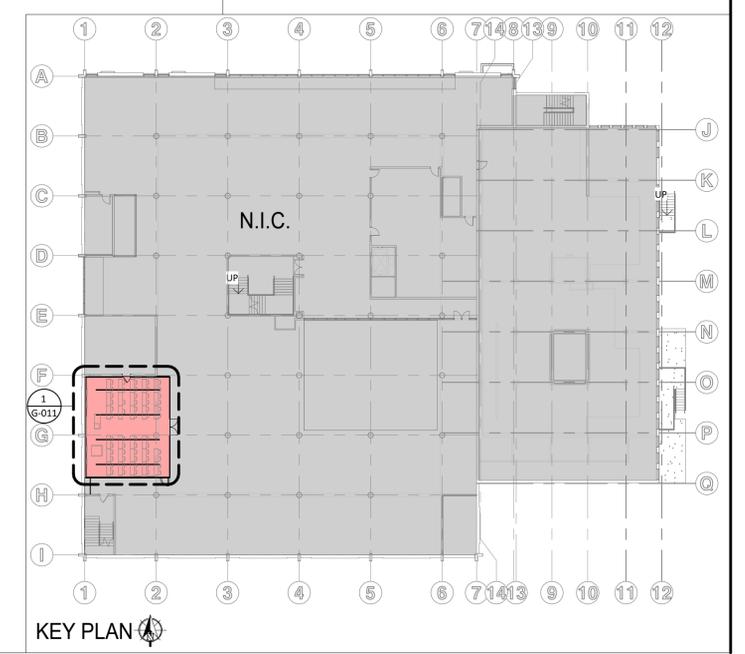
2 EXIT REQUIRED, 2 EXITS PROVIDED

SECTION 1010.1.1 SIZE OF DOORS: THE REQUIRED CAPACITY OF EACH DOOR OPENING SHALL BE SUFFICIENT FOR THE OCCUPANT LOAD AND SHALL PROVIDE A MINIMUM CLEAR OPENING WIDTH OF 32-INCHES.

SECTION 1010.1.2.1 DIRECTION OF SWING: SIDE-HINGED SWINGING DOORS, PIVOTED DOORS, AND BALANCED DOORS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL WHERE SERVING A ROOM OR AREA CONTAINING AN OCCUPANT LOAD OF 50 OR MORE.

CHAPTER 12 - INTERIOR ENVIRONMENT
SECTION 1207.2 INTERIOR SPACE DIMENSIONS: OCCUPIABLE SPACES, HABITABLE SPACES AND CORRIDORS SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7-FEET 6-INCHES ABOVE THE FINISHED FLOOR.

NOTE: PLUMBING FIXTURE COUNT HAS NOT CHANGED.
 NO CHANGE IS BEING MADE TO OCCUPANCY SIZE OR TYPE.
 NO CHANGE TO EXIT DISTANCE OR PATH.
 P LOCATION OF EXISTING ELECTRICAL PANEL. (TBC)



1 LEVEL 2 CODE REVIEW PLAN
 1/8" = 1'-0"
 1,173 SQFT



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

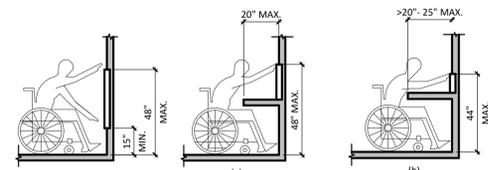
INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE
 DATE: 03/13/2026

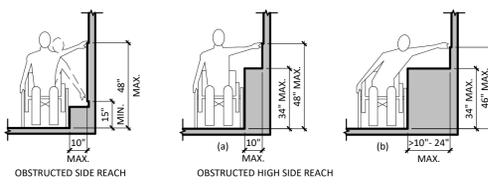
REVISIONS:

CODE REVIEW

G-011

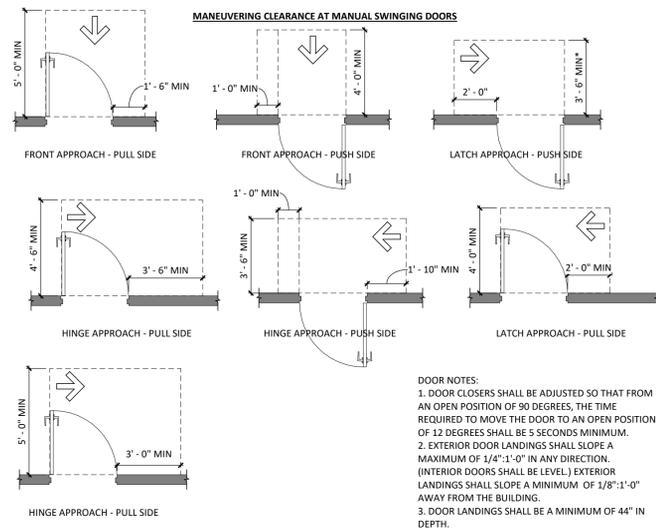


UNOBSTRUCTED FORWARD REACH UNOBSTRUCTED HIGH FORWARD REACH



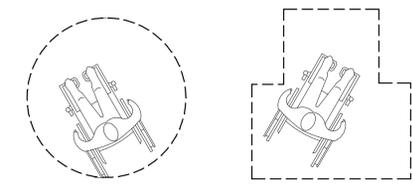
OBSTRUCTED SIDE REACH OBSTRUCTED HIGH SIDE REACH

1 ADA REACH RANGES
1/4" = 1'-0"



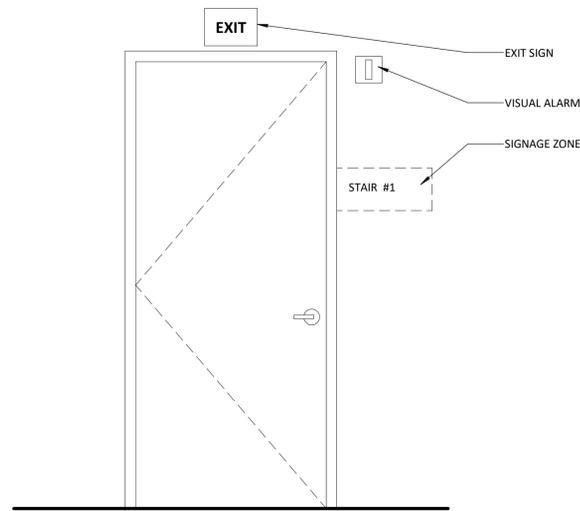
DOOR NOTES:
 1. DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES SHALL BE 5 SECONDS MINIMUM.
 2. EXTERIOR DOOR LANDINGS SHALL SLOPE A MAXIMUM OF 1/4":1'-0" IN ANY DIRECTION. (INTERIOR DOORS SHALL BE LEVEL.) EXTERIOR LANDINGS SHALL SLOPE A MINIMUM OF 1/8":1'-0" AWAY FROM THE BUILDING.
 3. DOOR LANDINGS SHALL BE A MINIMUM OF 44" IN DEPTH.

5 DOOR CLEARANCE AND LANDING REQUIREMENTS
1/4" = 1'-0"

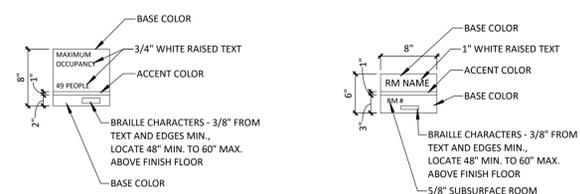


60" Ø SPACE FOR SINGLE WHEELCHAIR T-SHAPED SPACE FOR 180° TURNS

2 WHEELCHAIR TURNING REQRMNTS.
NTS



3 TYP. MOUNTING HTS. @ EXIT DOOR
NTS



SIGN A
BASE AND ACCENT COLORS TO BE SELECTED FROM MANUFACTURERS STANDARD RANGE

SIGN B
BASE AND ACCENT COLORS TO BE SELECTED FROM MANUFACTURERS STANDARD RANGE

4 ACCESSIBLE SIGNAGE
1" = 1'-0"



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE
 DATE: 03/13/2026

REVISIONS:

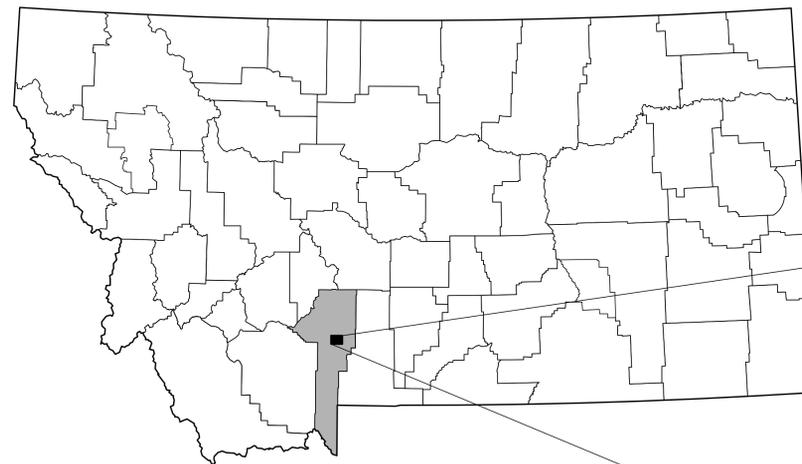
ACCESSIBILITY DETAILS

REM01 – GENERAL NOTES:

- 1) The project abatement contractor (AC) shall coordinate asbestos and lead-based paint (LBP) work activities, including any proposed changes, with the Owner or the Owner's Representative (hereafter collectively referred to as OR) and Owner's General Contractor (GC). Asbestos and LBP work, including associated selective demolition and/or abatement activities, if any - shall be performed by the AC, unless noted otherwise. Owner requires GC to utilize the services of a 3rd party professional industrial hygienist (PIH), and AC shall coordinate with PIH as noted below.
- 2) AC to comply with all applicable federal (EPA, OSHA), state (Montana DEQ), and local (Gallatin County, City of Bozeman) regulations, as well as requirements of the project documents. All asbestos work is to be completed by individuals holding current Montana accreditation as Asbestos Contractor/Supervisors or Asbestos Workers. All LBP work to be completed by individuals currently trained as required by OSHA for handling of LBP.
- 3) The intent of the project is to disturb asbestos and/or LBP only where necessary to complete the renovation work. AC to coordinate with OR/GC to determine locations where removal or disturbance of these materials will be completed by AC. Where disturbance and/or removal of asbestos or LBP is necessary, intact removal shall be favored when feasible. Where intact removal is infeasible, work practices shall be selected to limit the potential for exposure to workers, building occupants, and the environment while adhering to applicable regulatory requirements. As an example, dust generated during drilling an anchor point or hole into a surface with LBP may be captured with a HEPA-filtered vacuum, a foam-filled cup, etc.
- 4) It is understood disturbance of asbestos "target materials" required as part of AC's asbestos work for the project is likely to exceed DEQ's asbestos project quantity criteria (e.g., 10 SF, 3 LF, 3 CF of RACM). The inspection report denotes the anticipated condition of the asbestos target materials if impacted. However, since these determinations depend on conditions at the time of disturbance which cannot be known during the inspection, AC to determine friability during completion of the work. In the event the quantity of ACM to be disturbed exceeds DEQ's asbestos project quantity criteria, it is also understood some asbestos target materials may be feasibly removed as either Category I/II non-friable ACM. If the DEQ asbestos project quantity criteria are not exceeded for the overall project, a DEQ asbestos project permit may not be required for this project. AC to coordinate with PIH regarding likelihood of ACM being rendered friable (RACM) in quantities exceeding the DEQ asbestos project quantity thresholds. If DEQ's asbestos project quantity criteria are exceeded, any ACM which will be or is likely to be friable during completion of the work must be included on the asbestos project permit.
- 5) Prior to initiation of the scope of work, AC to provide all requested submittal information and receive written notice to proceed from OR. Required submittal information includes, but may not be limited to: 1) Copies of current Montana DEQ asbestos accreditation for all on-site project personnel conducting asbestos work. At least 1 individual must hold current Asbestos Contractor/Supervisor accreditation (meeting OSHA's definition of a Competent Person with regard to asbestos, per 29 CFR 1926.1101). All others may instead hold current Montana DEQ Asbestos Worker accreditations, at a minimum; 2) DEQ asbestos project permit, if required per Montana DEQ regulations; 3) Documentation of OSHA lead awareness training for all on-site project personnel conducting LBP work, per 29 CFR 1926.62, Appendix B, Paragraph L.
- 6) Asbestos and LBP "target materials" locations are shown in the project documents for informational purposes only. The actual locations where these materials will be disturbed (and the resulting quantities) may depend on the means and methods selected by the GC for completion of the project. AC shall satisfy themselves regarding the actual quantities to be included in the work during the pre-bid site walk and/or through coordination with OR and GC.
- 7) The PIH shall perform on-site oversight of AC throughout the project, which shall include initial inspections of work areas (e.g., regulated areas, containments, etc.) established by AC for each work area; periodic spot checks of AC's activities; and post-abatement clearance monitoring. PIH shall have stop-work authority over AC in the event noted deficiencies are not adequately addressed by the AC.
- 8) AC to perform asbestos and LBP work in areas noted in the project documents, as necessary for completion of the project (see General Note 6, above). AC to coordinate removal strategies with PIH prior to initiating preparation and/or removal activities, including agreement between AC and PIH regarding which materials will be removed as RACM (if any) and which can be removed as Category I/II non-friable ACM or non-ACM (< 1% asbestos), and methods for removal and/or disturbance of LBP materials. In the event a Montana DEQ asbestos project permit is required for the project, AC to coordinate alternate work practice requests submitted to DEQ, if any, with PIH. Changes to initial removal strategies agreed upon between AC and PIH must be approved in writing by the PIH prior to being initiated.
- 9) Discovery of additional and/or previously unidentified suspect/confirmed asbestos or LBP target materials, if any, shall be reported to the PIH and/or OR as quickly as practicable. Previously unidentified suspect target materials shall be assessed by the PIH or assumed to be asbestos-containing/LBP materials, at the discretion of the PIH and in coordination with the OR. Removal of additional target materials will be coordinated between the OR, PIH, and AC. Additional RACM shall be added to the asbestos project permit by the AC prior to removal, if applicable.
- 10) Electric and mechanical (heat, water, etc.) services at the site will be available for AC's use in completing the work, except where necessary to be deactivated to complete the work. Owner or GC will deactivate services as necessary to complete the work. AC to coordinate with OR and/or GC regarding which services to deactivate for each work area (if any) and whether or not the work may result in potential damage to the building systems.
- 11) AC to provide ground fault circuit interrupters (GFCI) for electrical equipment to be used during asbestos or LBP work which utilizes wet methods. AC shall not be allowed to begin work activities requiring electrical equipment and wet methods until GFCIs are present. AC to coordinate with OR and/or GC to ensure electrical circuits are de-energized as necessary to safely complete the work.
- 12) AC to prevent exposure to hazardous materials associated with their work for the Owner, PIH, GC and other trades, building occupants, the public, the environment, and AC's staff. This may include - but may not be limited to - use of appropriate work area demarcation, use of appropriate work practices (e.g., wet methods, HEPA-filtered vacuums, tools with point-of-cut dust collection and HEPA filtration, etc.), and/or various combinations of the following to prevent migration of contaminants from the work areas: drop sheets, critical barriers, mini-containments, negative pressure enclosures, etc.

- 13) AC to coordinate asbestos and LBP work with PIH prior to initiation of activities, including number and general layout of work areas (e.g., regulated areas, critical barriers, negative pressure enclosures, etc.). AC shall demarcate asbestos and LBP work areas in a manner consistent with OSHA requirements, and which minimizes the number of persons within the area and protects persons outside the area from exposure to contaminants which may be generated as a result of the work. Regulated areas, drop sheets, critical barriers, negative pressure enclosures, etc., shall be utilized in accordance with OSHA requirements for Class I - IV asbestos work (29 CFR 1926.1101) and OSHA requirements for disturbance of materials containing lead (29 CFR 1926.62), as appropriate.
- 14) Removal of asbestos materials and/or stripping of LBP from components shall be completed within negative pressure enclosures. Where asbestos and LBP target materials are impacted without causing potential exposure issues, or where LBP target materials are removed intact, critical barriers, containments, and negative-pressure enclosures may not be required. Where required, AC shall construct work area barriers, critical barriers, or negative pressure enclosures (as applicable) before asbestos or LBP work begins. This shall include use of 6-mil, fire-retardant plastic sheeting for work area critical barriers (2 layers at HVAC openings), mini-containments, or free-standing containment walls/ceilings. Containment walls and ceilings which cover existing surfaces shall consist of 4-mil (or heavier) fire-retardant plastic sheeting unless noted otherwise. Containment floors shall consist of 6-mil (or heavier) fire-retardant plastic sheeting, unless noted otherwise. AC shall construct critical barriers and containment walls and ceilings to extend to fixed surfaces where feasible in order to prevent contaminant leakage. AC shall inspect critical barriers and containments daily and repair failed seams, rips, tears, and/or other damage immediately upon discovery.
- 15) Where negative pressure enclosures are required or otherwise utilized, AC to ensure required air changes (4 per hour, minimum) and negative pressure (minimum of -0.02 column inches water pressure differential) are maintained in each containment from the time of the initial containment inspection (or prior to initiation of abatement activities, if no initial containment inspection is conducted) through satisfactory completion of post-abatement clearance monitoring for the respective containments. Negative air pressure shall be monitored with a manometer fitted with a recording strip or digital recorder. Negative pressure shall be achieved through use of HEPA-filtered negative air machines (NAM), with all exhaust vented to the building exterior. AC responsible for securing all exhaust locations. Additional NAMs shall be available for "scrubbing" in work areas with little or no air movement. At least 1 additional spare NAM shall be available on site for each active containment area, as a back-up in case of failure.
- 16) Unless otherwise noted, filtered make-up air locations on negative pressure containment areas (if any) shall consist of MERV 11 filters (minimum) with interior gravity (weighted) flaps to prevent fiber release in the event of loss of negative pressure within the containment. AC is responsible for securing make-up air locations.
- 17) Items to be left in place (e.g., cabinets, shelves, non-ACM materials, etc.) within each work area should be covered with plastic sheeting and sealed by AC prior to initiation of AC's asbestos or LBP work. Alternatively, uncovered materials which become contaminated may be thoroughly decontaminated by AC or disposed as contaminated waste. Note that non-porous surfaces (e.g., smooth painted walls) can typically be readily decontaminated, whereas porous surfaces (e.g., unpainted walls, most ceiling tiles, carpets, etc.) typically cannot be readily decontaminated. Contaminated materials not already scheduled for disposal may be subject to replacement (i.e., replaced with new materials of equal or greater quality) at AC's expense. Coordinate with OR and/or GC.
- 18) At Owner's option, the PIH shall collect and analyze work area and/or ambient air samples during AC's work; if air samples are occluded or result in concentrations above regulatory criteria, Owner or PIH may issue a stop-work order until AC satisfactorily addresses the deficiency. In any case, AC shall be responsible for conducting all required exposure monitoring for their own personnel.
- 19) AC shall not remove target materials or contaminated materials which cannot be safely and effectively cleaned up during the same work shift they were removed. Owner or PIH may issue a stop worker order if materials or work areas are left uncleaned.
- 20) AC shall place all asbestos and LBP target material waste in rigid, air-tight and leak-tight containers. Alternatively, asbestos and/or LBP target material waste may be double bagged. For sharp or jagged waste, the first bag shall consist of a burlap or woven nylon sack to prevent tearing/ripping. The outer bag shall consist of 6-mil poly and must bear the appropriate labels as required by EPA, OSHA, and/or DEQ. All asbestos waste to be properly packaged, transported, and disposed by AC as asbestos special waste. In the absence of a leachable lead assessment indicating otherwise, AC shall package, transport, and dispose LBP target material waste as presumed hazardous waste, with regard to lead. AC may choose to undertake completion of a leachable lead assessment, at their own expense, following coordination with Owner and PIH. AC's leachable lead assessment methods and results must be reviewed by Owner and PIH to confirm the findings are usable in determining waste disposal requirements.
- 21) AC to complete asbestos and LBP work to minimize damage and leave clean edges where feasible (e.g., where ceiling/wall systems or floor tile will be left in place, etc.) to minimize deterioration of materials and allow for easier tie-in with replacement materials, as appropriate. Coordinate with OR and/or GC.
- 22) "Post-abatement" clearance monitoring may not be regulatorily required for some areas where asbestos and/or LBP work is conducted, so long as the asbestos work is limited to conditions less than the Montana DEQ "asbestos project" criteria, and if the LBP work is not expected to be considered a "lead abatement" as defined by EPA (40 CFR Part 745.223). However, Owner requires post-abatement clearance monitoring in all instances where asbestos or LBP are removed/abated, even when not regulatorily required. Clearance monitoring shall be completed by the PIH and shall include visual confirmation of asbestos or LBP target material removal and cleanup. Post-abatement asbestos clearance air sampling and analysis shall be completed in accordance with either the NIOSH 7400 Method for PCM or the AHERA Method for TEM. LBP clearance monitoring shall consist of collection of surface wipe samples from window sills and/or floors adjacent to LBP work areas, in general accordance with select portions of the methods outlined in 40 CFR 745.277(e)(8). Successful asbestos clearance criteria shall include no visible target material (or associated dust or debris) in the work area; airborne fiber concentrations of ≤ 0.01 f/cc for all asbestos clearance samples from a given PCM air sampling event; and airborne asbestos concentrations ≤ 70 S/mm² for all asbestos clearance samples from a given TEM air sampling event. Successful LBP clearance criteria shall include no visible target material (or associated dust or debris) in the work area; < 5 $\mu\text{g}/\text{ft}^2$ lead for floor wipe samples; < 40 $\mu\text{g}/\text{ft}^2$ lead for window sill wipe samples; and < 100 $\mu\text{g}/\text{ft}^2$ lead for window trough wipe samples. PIH shall utilize overnight shipping and request expedited analytical turnaround for all laboratory analyses of samples. Alternatively, PIH may analyze PCM samples using a portable microscope, adhering to DEQ's analytical requirements. AC to coordinate clearance schedules with PIH and provide as much advanced notice as feasible.
- 23) Upon completion of the work, AC to submit to Owner and PIH documentation of proper disposal of asbestos waste (and LBP waste, if applicable) resulting from their work.

BOZEMAN, GALLATIN COUNTY, MONTANA



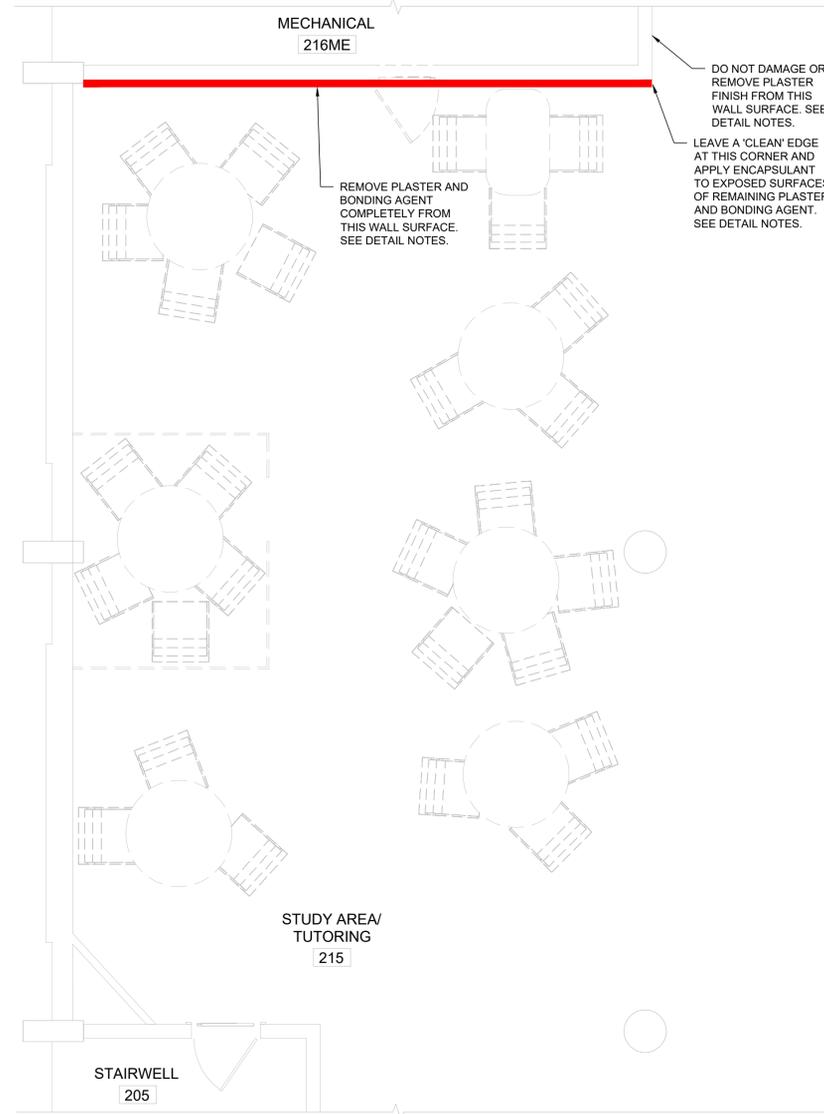
PREPARED BY:
AIR WATER SOIL, LLC
1321 8TH AVENUE NORTH, SUITE 104
GREAT FALLS, MONTANA 59401
CONTACT: J. SCOTT VOSEN
406.315.2201

APPROVED BY (PROJECT OWNER):
MONTANA STATE UNIVERSITY
UNIVERSITY FACILITIES MANAGEMENT
PLANNING, DESIGN & CONSTRUCTION
P.O. BOX 172760
BOZEMAN, MONTANA 59717
CONTACT: ELIZABETH PRITCHARD
406.994.7089

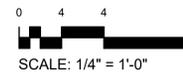
PROPERTY OWNER:
MONTANA STATE UNIVERSITY
P.O. BOX 172760
BOZEMAN, MONTANA 59717

REM02 – DETAIL 1 – BASE SCOPE – EXISTING LEARNING STUDIO – ACM NOTES:

- A) Owner will remove any unfastened equipment, furniture, supplies, etc., as necessary for GC/AC to complete the work.
- B) Disturbance of LBP is not anticipated in this area.
- C) If selective demolition activities are necessary and are likely to result in disturbance of asbestos or LBP, they should be conducted using the same controls and methods required for asbestos or LBP removal, respectively. This may include removal of the lay-in ceiling grid from the plaster wall system materials, for example. See below.
- D) The plaster wall system (P1.1) contains detectable asbestos. Although the plaster itself may be non-asbestos, a thin, white fibrous layer (presumed to be bonding agent) between the plaster and the concrete wall substrate was confirmed to contain 5% asbestos in 1 sample. The analytical laboratory was unsure whether the plaster itself contained asbestos, or if it was "contaminated" by the ACM bonding agent layer. As a result, the plaster was reported by the laboratory as potentially containing 0.5% asbestos, and the bonding agent was reported as containing 5% asbestos. The bonding agent was observed in only 1 of the plaster samples but is presumed to be present throughout the plaster system. Since the materials are inseparable, the overall plaster system is therefore considered ACM. The plaster system materials are anticipated to be friable during removal and are therefore expected to be removed as RACM.
- E) The plaster wall system is present on walls adjoining Room 216ME to the south and east. AC shall remove the plaster and bonding agent materials completely (i.e., to the concrete substrate) along the entire south wall, extending to the exact corner at the east wall (see REM02, Detail 1). A clean edge shall be left at the southeast corner.
- F) Immediately following abatement, and prior to post-abatement clearance monitoring, AC shall apply encapsulant to the exposed plaster and bonding agent materials at the southeast corner (i.e., the south end of the east wall). The intent of the encapsulant will be to limit the potential for fiber release during subsequent new construction. AC shall coordinate with the PIH regarding the selection of the specific bridging encapsulant or penetrating encapsulant to be used for this project.
- G) As discussed in the general notes, Owner requires negative pressure enclosures for removal of all interior asbestos materials (including ACM and non-ACM with detectable asbestos), regardless of condition.
- H) Non-asbestos waste materials, if any, may be disposed as general construction debris (with regard to asbestos) if removed from the work area prior to initiation of abatement activities, unless noted otherwise. Non-asbestos materials which are contaminated with asbestos (if any) shall be removed as asbestos during abatement and are NOT to be included in the general construction waste stream. All asbestos waste shall be transported and properly disposed by AC as asbestos special waste, as discussed in the General Notes.
- I) Clearance monitoring and clearance criteria must be completed as discussed in the General Notes.
- J) Following completion of abatement and encapsulation, GC shall use appropriate caution when installing the new construction, avoiding any impacts to the existing plaster and bonding agent materials at the southeast corner and along the wall east of Room 216ME. GC to promptly notify Owner or Owner's Rep in the event impacts to the existing plaster and/or bonding agent are experienced or expected to be unavoidable. See the Construction Documents for work in this area and how the new construction interfaces with the existing building.



BASE SCOPE - EXISTING LEARNING STUDIO - ACM



LEGEND

P1.1 - PLASTER WALL SYSTEM. THE OVERALL SYSTEM INCLUDES A PLASTER BASE LAYER AND A PRESUMED BONDING AGENT LAYER. THE BONDING AGENT LAYER IS CONFIRMED TO CONTAIN 5% ASBESTOS, AND THE PLASTER BASE LAYER MAY ALSO CONTAIN DETECTABLE ASBESTOS. SINCE THE MATERIALS ARE INSEPARABLE, THE OVERALL SYSTEM IS CONSIDERED ACM. THE PLASTER SYSTEM MATERIALS ARE ANTICIPATED TO BE FRIABLE DURING REMOVAL AND ARE THEREFORE EXPECTED TO BE REMOVED AS RACM.

AC TO REMOVE THE PLASTER AND BONDING AGENT FROM THE AREA INDICATED BY THE RED LINE ON THIS SHEET. SEE PHOTOS BELOW AND DETAIL NOTES ON THIS SHEET FOR MORE INFORMATION.



PHOTO 1: REMOVE PLASTER WALL SYSTEM AND UNDERLYING RACM BONDING AGENT COMPLETELY FROM THE WALL ALONG THE SOUTH SIDE OF ROOM 216ME (PAINTED BLUE IN PHOTO). SEE DETAIL NOTES.



PHOTO 2: DO NOT DAMAGE OR REMOVE THE PLASTER FINISH ON THE WALL ALONG THE EAST SIDE OF ROOM 216ME (PAINTED WHITE/CREAM IN PHOTO). SEE DETAIL NOTES.



PHOTO 3: PLASTER WALL SYSTEM ON CONCRETE WALL SUBSTRATE. VIEW IS ABOVE THE EXISTING LEARNING STUDIO LAY-IN CEILING, LOOKING TOWARD THE WEST END OF THE WALL ALONG THE SOUTH SIDE OF ROOM 216ME. PLASTER EXTENDS APPROXIMATELY 4 TO 6 INCHES ABOVE THE CEILING GRID.

Montana State University, Bozeman, Montana 59715
MSU Renne Library - Innovation Learning Studio (PPA 25-1257)
Asbestos and Lead-Based Paint Remediation Sheets
Montana State University

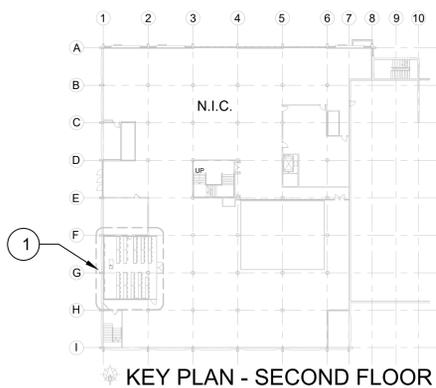
© 2026 | ALL RIGHTS RESERVED

1.26.2026
26047-T2

DRAWN BY
DRESCH
CHECKED BY
JSV

ASBESTOS
REMEDATION

FIGURE
REM02



KEY PLAN - SECOND FLOOR

ABBREVIATIONS

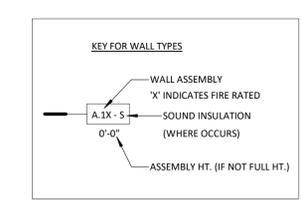
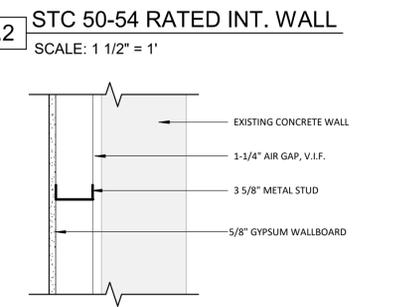
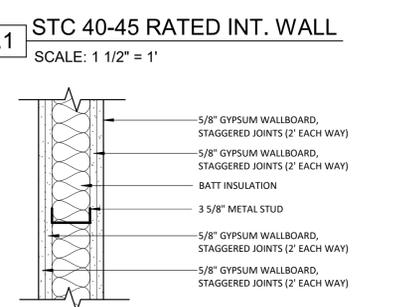
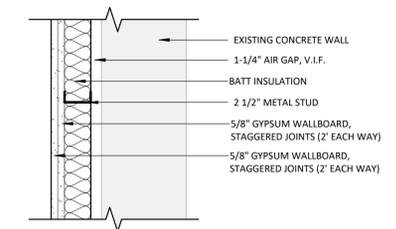
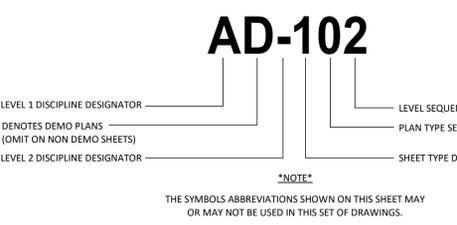
A	AFF ABOVE FINISH FLOOR ACT ACOUSTICAL CEILING TILE ADJ ADJUSTABLE AB ANCHOR BOLT ALUM ALUMINUM ALT ALTERNATE ANOD ANODIZED APPROX APPROXIMATE ARCH ARCHITECT	FOS FACE OF STUDS FIN FINISH FF FINISH FLOOR FEC FIRE EXTINGUISHER/AND OR CABINET FL FLR FD FLOOR DRAIN FT FOOT, FEET FTG FOOTING FND FOUNDATION FURN FURNITURE FUT FUTURE FBO FURNISHED BY OTHERS FRP FIBER REINFORCED PANEL	MATL MATERIAL MAX MAXIMUM MECH MECHANICAL, MECHANICAL ROOM MTL METAL MIN MINIMUM MIRR MIRROR MISC MISCELLANEOUS
B	BSMT BASEMENT BATH BATHROOM BM BEAM BRG BEARING BEDRM BEDROOM BET BETWEEN BLDG BUILDING BO BOTTOM OF BOT BOTTOM BN BOUNDARY NAILING BS BOTH SIDES	GA GAUGE GALV GALVANIZED GEN GENERAL GL GLASS GWB GYPSUM WALL BOARD GYPC GYPCRETE	NOM NOMINAL N NORTH NA NOT APPLICABLE NIC NOT IN CONTRACT NTS NOT TO SCALE NO NUMBER
C	CFCI CONTRACTOR FURNISHED CONTRACTOR INSTALLED CPT CARPET CLG CEILING CT CERAMIC TILE CLR CLEAR CLST CLOSET COL COLUMN CONC CONCRETE CONST CONSTRUCTION CONT CONTINUOUS CONTR CONTRACT, CONTRACTOR CORR CORRIDOR CJ CONTROL JOINT CMU CONCRETE MASONRY UNIT	HALL HALLWAY HDW HARDWARE HVAC HEATING, VENTILATING, & AIR CONDITIONING HT HEIGHT HM HOLLOW METAL HORIZ HORIZONTAL HWT HOT WATER TANK HR HOUR	O ON CENTER OFCI OWNER FURNISHED CONTRACTOR INSTALLED OFF OFFICE OFOI OFFICE FURNISHED OWNER INSTALLED OPG OPENING OPP OPPOSITE OD OUTSIDE DIAMETER OF OF O/O OUT TO OUT
D	DEMO DEMOLISH, DEMOLITION DTL DETAIL DIA DIAMETER DIM DIMENSION DW DISHWASHER DIV DIVISION DL DEAD LOAD DR DOOR DN DOWN DS DOWNSPOUT DWG DRAWING DF DRINKING FOUNTAIN D DRYER	IBC INTERNATIONAL BUILDING CODE INCL INCLUDE, INCLUDED (ING) INFO INFORMATION ID INSIDE DIAMETER INSUL INSULATE, INSULATION INT INTERIOR	P P PNT PAINT, PAINTED PNL PANEL PH PHASE PLAS PLASTIC P-LAM PLASTIC LAMINATE PL PLATE PLYWD PLYWOOD PVC POLYVINYL CHLORIDE PREFIN PREFINISHED PROP PROPERTY
E	EA EACH E EAST ELEC ELECTRIC ELEV ELEVATION, ELEVATOR EQ EQUAL EQUIP EQUIPMENT EXIST EXISTING EXP EXPANSION EJ EXPANSION JOINT EXT EXTERIOR	JAN JANITOR JC JANITOR'S CLOSET JT JOINT	QUAN QUANTITY
F	FOS FACE OF BRICK FOC FACE OF CONCRETE FOM FACE OF MASONRY	JAN JANITOR JC JANITOR'S CLOSET JT JOINT	QUAN QUANTITY

SYMBOLS USED AS ABBREVIATIONS

& AND	∠ ANGLE	@ AT	CL CENTERLINE	u CHANNEL	∅ DIAMETER	PL PLATE
W/W WITH	W/D WASHER / DRYER	W/WF WEATHER RESISTANT BARRIER	W/WF WELDED WIRE FABRIC	W/WM WELDED WIRE MESH	WT WEIGHT	W WEST, WASHER
W/W WITH	W/D WASHER / DRYER	W/WF WEATHER RESISTANT BARRIER	W/WF WELDED WIRE FABRIC	W/WM WELDED WIRE MESH	WT WEIGHT	W WEST, WASHER
W/W WITH	W/D WASHER / DRYER	W/WF WEATHER RESISTANT BARRIER	W/WF WELDED WIRE FABRIC	W/WM WELDED WIRE MESH	WT WEIGHT	W WEST, WASHER

SYMBOLS & MATERIALS

STRUCTURAL FILL	UNDISTURBED EARTH	DISTURBED EARTH	GRAVEL	POURED CONCRETE	CONCRETE BLOCK VENEER	BRICK VENEER	EIFS	ROUGH WOOD	SECTION	ELEVATION	DETAIL	ITEM IDENTIFICATION SHEET WHERE ITEM IS CUT	NORTH ARROW	ROOM FINISH KEY	FINISHED WOOD	PLYWOOD	RIGID INSULATION	BATT INSULATION	SPRAYFOAM INSULATION	SAND, PLASTER, GROUT	METAL	STEEL	BLOCKING	NOT IN CONTRACT (N.I.C.)	WINDOW TYPE	DOOR NUMBER	ROOM NUMBER	WALL TYPE	REVISION NUMBER	KEY NOTE	DEMOLITION NOTE	FINISH TAG	EQUIPMENT TAG	ELEMENTS TO BE DEMOLISHED	EXISTING TO REMAIN	FLOOR TRANSITION
-----------------	-------------------	-----------------	--------	-----------------	-----------------------	--------------	------	------------	---------	-----------	--------	---	-------------	-----------------	---------------	---------	------------------	-----------------	----------------------	----------------------	-------	-------	----------	--------------------------	-------------	-------------	-------------	-----------	-----------------	----------	-----------------	------------	---------------	---------------------------	--------------------	------------------



THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

ARCHITECTURAL SHEET INDEX	
A-001	ARCHITECTURAL NOTES
AD112	LEVEL 2 DEMOLITION PLAN & RCP
AD211	INTERIOR ELEVATIONS DEMOLITION
A-112	LEVEL 2 FLOOR PLAN & RCP
A-113	LEVEL 2 FLOOR PLAN - ALTERNATE #1
A-132	LEVEL 2 FINISH FLOOR PLAN
A-211	INTERIOR ELEVATIONS
A-521	FINISH DETAILS
A-601	WINDOW & DOOR SCHEDULES & DETAILS

DRAWN: RH, MC	CHECKED: CH, KE
DATE: 03/13/2026	
REVISIONS:	

ARCHITECTURAL NOTES

A-001



KALISPELL | BOZEMAN | VANCOUVER
406-755-3208 | 406-585-0757 | 360-852-8748
info@jackola.com | jackola.com



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

**INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY**

RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

GENERAL PLAN NOTES:

- SEE G-001 PROJECT TITLE SHEET FOR GENERAL NOTES.
- CONTRACTOR RESPONSIBLE FOR ANY DAMAGE THAT OCCURS TO THE BUILDING THAT IS NOT PART OF THIS PROJECT.
- SEE OTHER SHEETS IN THIS SET FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL INCLUDE CUTTING AND PATCHING FOR ALL INSTANCES WHERE REQUIRED, WHETHER OR NOT SHOWN/INDICATED ON THESE CONSTRUCTION DOCUMENTS.
- THE EXISTING BUILDING MAY NOT BE LEVEL AND PLUMB. CONTRACTOR SHALL FIELD VERIFY AND PROVIDE CONCEALED SHIMS, ETC. AS NECESSARY TO MAKE NEW WORK LEVEL AND PLUMB, UNLESS SPECIFICALLY NOTED OTHERWISE.
- CONTRACTOR SHALL FULLY CONTAIN ALL DEMOLITION ACTIVITIES WITHIN THE DESIGNATED DEMOLITION AREA. PROVIDE TEMPORARY DUST-TIGHT PARTITIONS, FLOOR-TO-DECK BARRIERS, AND PROTECT AS REQUIRED TO PREVENT DAMAGE TO ADJACENT SPACES, FINISHES, STRUCTURE, AND BUILDING SYSTEMS.
- CONTRACTOR RESPONSIBLE FOR ANY DAMAGE THAT OCCURS TO THE BUILDING THAT IS NOT PART OF THIS PROJECT.

LEVEL 2 DEMO PLAN KEYNOTES

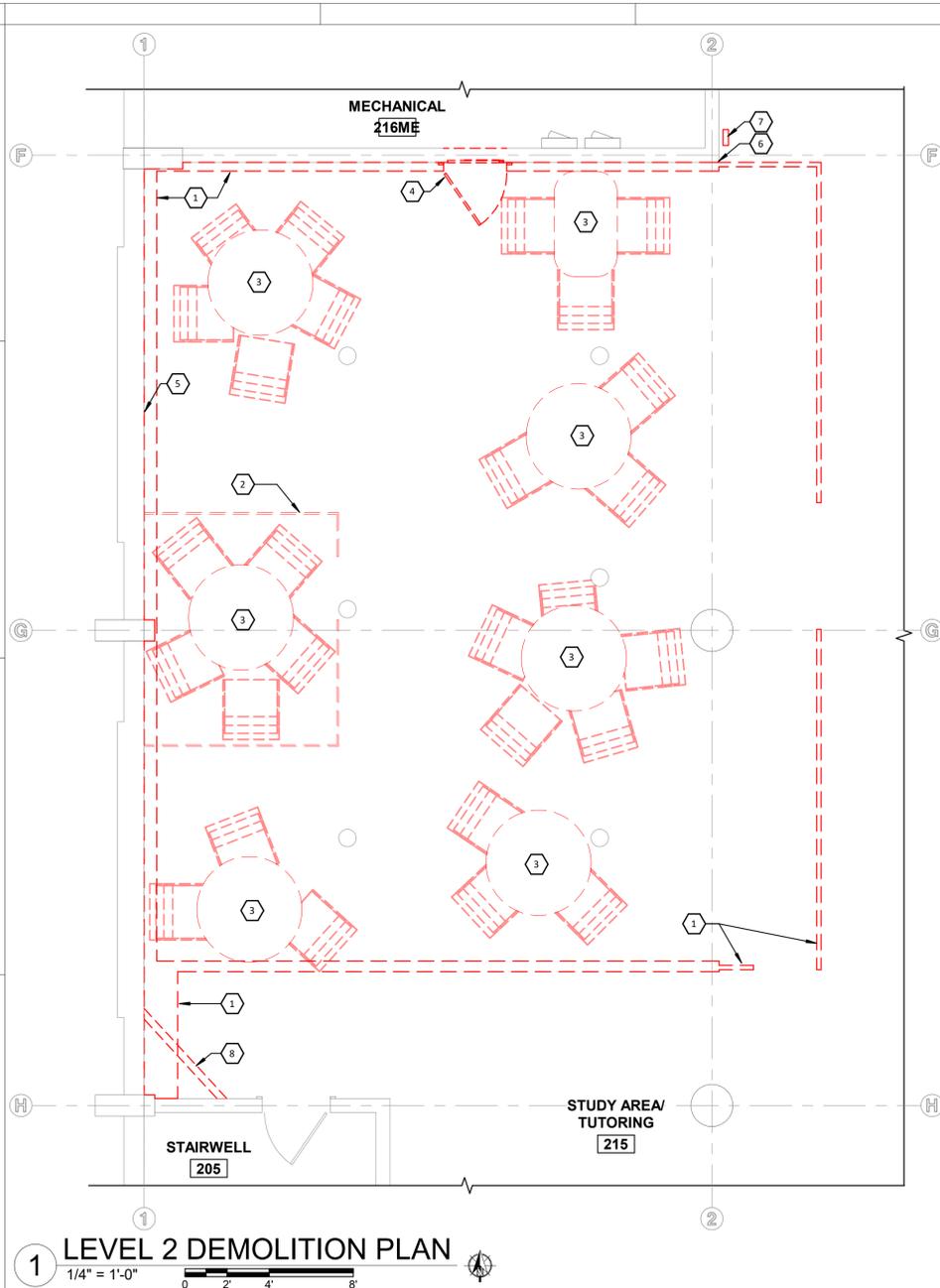
- REMOVE CARPET FLOORING WHERE NEW WALLS ARE TO BE INSTALLED. RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE. CARPET ON EITHER SIDE OF WALL TO REMAIN. TAKE CARE TO REMOVE CARPET ONLY UNDER WALL ITSELF.
- MSU TO REMOVE EXISTING PARTITION WALL PRIOR TO START OF CONSTRUCTION.
- MSU TO REMOVE ALL EXISTING FURNITURE PRIOR TO CONSTRUCTION START.
- DEMOLISH DOOR AND FRAME. PREP FOR NEW STC RATED DOOR AND FRAME.
- REMOVE POE CLOCK, SALVAGE AND RETURN TO OWNER.
- CONTRACTOR TO ENSURE THAT ABATEMENT ALONG SOUTH WALL STOPS WITH A CLEAN EDGE AT THE CORNER OF THE SOUTH WALL AND EAST WALL. DO NOT DAMAGE THE EXISTING FINISH ON EAST WALL IN ANY WAY. REFER TO REMEDIATION DRAWINGS.
- CAREFULLY REMOVE EXISTING CEILING MOUNTED EXIT SIGN AND PREPARE FOR RELOCATION.
- CONTRACTOR TO REMOVE FRAMED WALL IN ITS ENTIRETY, INCLUDING FINISHES AND FASTENING METHODS, ENSURE NO ADDITIONAL DAMAGE OCCURS TO BUILDING ELEMENTS AND FINISHES THAT ARE TO REMAIN.

LEVEL 2 DEMO RCP KEYNOTES

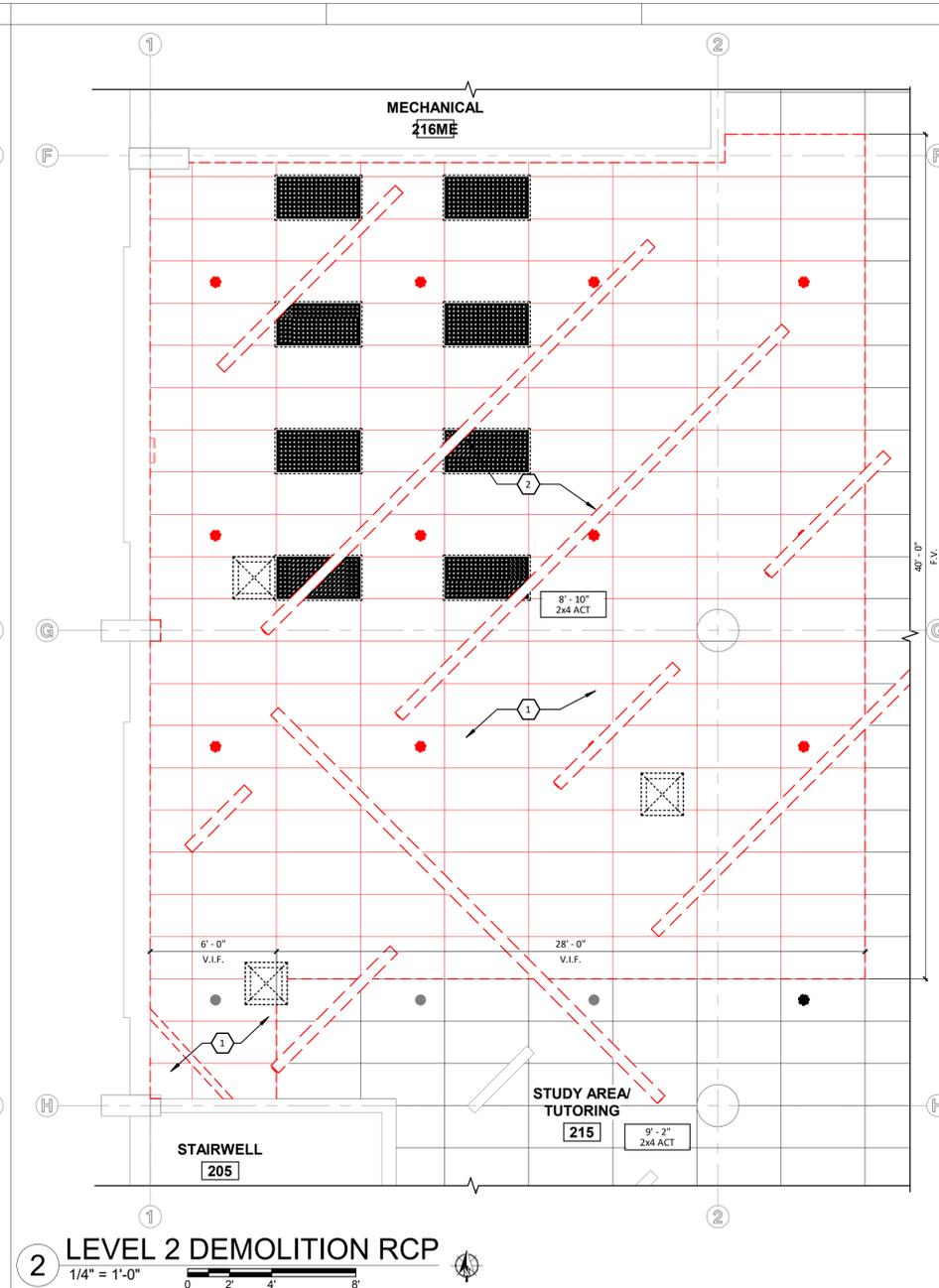
- REMOVE ALL EXISTING ACT PANELS AND GRID TO THE NEXT GRID IN THEIR ENTIRETY.
- REMOVE EXISTING CEILING MOUNTED LIGHT FIXTURES, SALVAGE AND HAND OVER TO MSU.

CEILING PLAN LEGEND

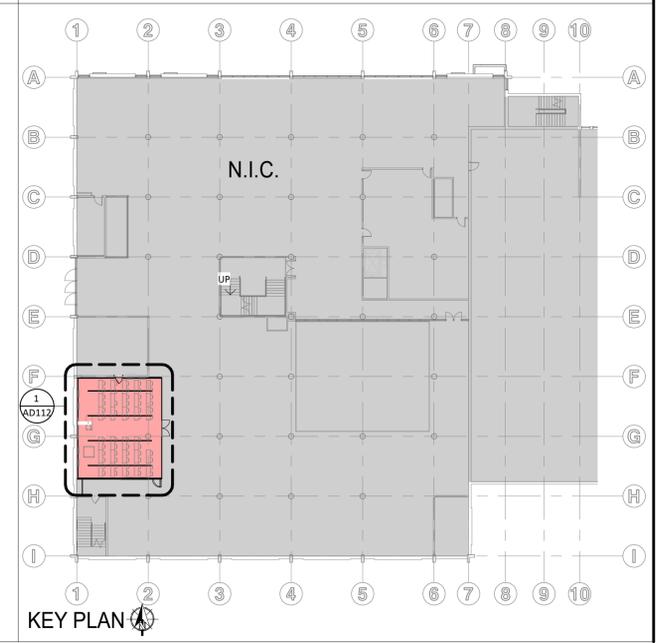
	EXIST 2x4 ACOUSTIC CEILING TILE
	DEMO ACT 2x4 ACOUSTIC CEILING TILE



1 LEVEL 2 DEMOLITION PLAN
1/4" = 1'-0"
0 2' 4' 8'



2 LEVEL 2 DEMOLITION RCP
1/4" = 1'-0"
0 2' 4' 8'



KEY PLAN

DRAWN: RH, MC CHECKED: CH, KE

DATE: 03/13/2026

REVISIONS:

**LEVEL 2
DEMOLITION
PLAN & RCP**

AD112



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

**INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY**
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE

DATE: 03/13/2026

REVISIONS:

**INTERIOR
ELEVATIONS
DEMOLITION**

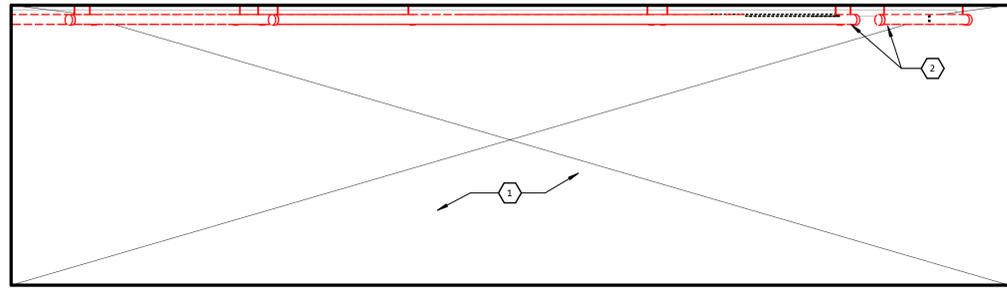
AD211

GENERAL DEMO ELEVATION NOTES:

- A. SEE G-001 PROJECT TITLE SHEET FOR GENERAL NOTES.
- B. PROTECT EXISTING BUILDING OUTSIDE OF THIS SCOPE OF WORK AT ALL TIMES.
- C. SEE OTHER SHEETS IN THIS SET FOR ADDITIONAL INFORMATION.
- D. CONTRACTOR SHALL INCLUDE CUTTING AND PATCHING FOR ALL INSTANCES WHERE REQUIRED, WHETHER OR NOT SHOWN/INDICATED ON THESE CONSTRUCTION DOCUMENTS.
- E. THE EXISTING BUILDING MAY NOT BE LEVEL AND PLUMB. CONTRACTOR SHALL FIELD VERIFY AND PROVIDE CONCEALED SHIMS, ETC. AS NECESSARY TO MAKE NEW WORK LEVEL AND PLUMB, UNLESS SPECIFICALLY NOTED OTHERWISE.
- F. CONDUIT THAT IS DIRECTLY CONNECTED TO COMPONENTS THAT ARE TO BE REMOVED ARE TIED INTO EXISTING ELECTRICAL THAT IS TO REMAIN OR TERMINATES WITHIN THE CEILING. REROUTE OR DEMO PER ELECTRICAL. SEE ELECTRICAL.
- G. CONTRACTOR TO VERIFY WITH MSU EXISTING CONDUIT PATH AND EQUIPMENT FOLLOWING REMOVAL OF DEVICES BY MSU PRIOR TO DEMO.

INTERIOR ELEVATION DEMO KEYNOTES

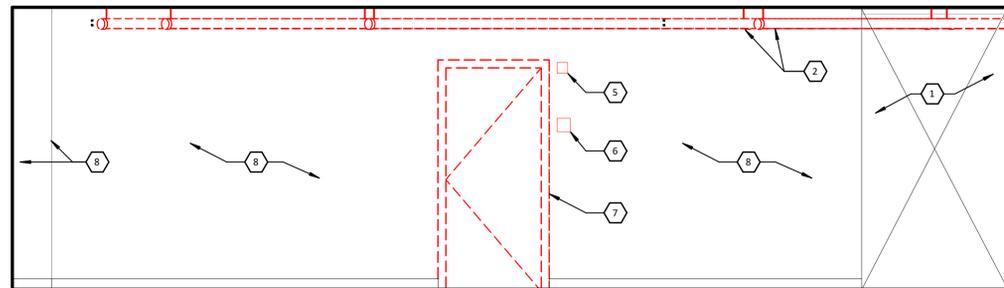
- 1. OPEN TO BEYOND
- 2. REMOVE EXISTING CEILING MOUNTED LIGHT FIXTURES, SALVAGE AND RETURN TO OWNER.
- 3. REMOVE POE CLOCK, SALVAGE AND RETURN TO OWNER.
- 4. EXISTING CONDUIT TO REMAIN
- 5. EXISTING STROBE BOX TO BE REMOVED AND EXTENDED ON NEW FURRED WALL IN THE SAME LOCATION.
- 6. EXISTING ROOM SIGN TO BE REMOVED BY CONTRACTOR AND REINSTALLED ON NEW FURRED WALL.
- 7. DEMOLISH DOOR AND FRAME. PREP FOR NEW STC RATED DOOR AND FRAME. GENERAL CONTRACTOR TO COORDINATE WITH ABATEMENT CONTRACTOR ON DEMO SEQUENCING.
- 8. ABATEMENT CONTRACTOR TO REMOVE EXISTING PLASTER AND BONDING AGENT COMPLETELY FROM WALL SURFACE. SEE REMEDIATION SHEETS. GENERAL CONTRACTOR TO COORDINATE DEMO WITH ABATEMENT CONTRACTOR.



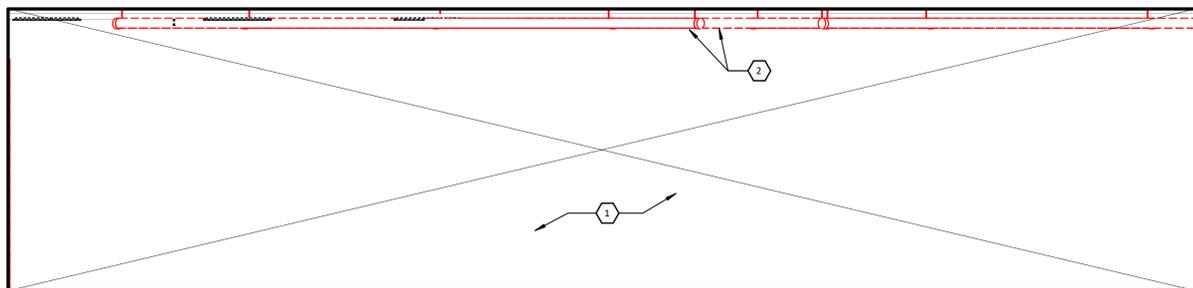
1 INNOVATION LEARNING STUDIO - SOUTH DEMO
3/8" = 1'-0"



2 INNOVATION LEARNING STUDIO - WEST DEMO
3/8" = 1'-0"



3 INNOVATION LEARNING STUDIO - NORTH DEMO
3/8" = 1'-0"



4 INNOVATION LEARNING STUDIO - EAST DEMO
3/8" = 1'-0"

GENERAL PLAN NOTES:

- A. SEE G-001 PROJECT TITLE SHEET FOR GENERAL NOTES.
- B. PROTECT EXISTING BUILDING OUTSIDE OF THIS SCOPE OF WORK AT ALL TIMES.
- C. SEE OTHER SHEETS IN THIS SET FOR ADDITIONAL INFORMATION.
- D. CONTRACTOR SHALL INCLUDE CUTTING AND PATCHING FOR ALL INSTANCES WHERE REQUIRED, WHETHER OR NOT SHOWN/INDICATED ON THESE CONSTRUCTION DOCUMENTS.
- E. THE EXISTING BUILDING MAY NOT BE LEVEL AND PLUMB. CONTRACTOR SHALL FIELD VERIFY AND PROVIDE CONCEALED SHIMS, ETC. AS NECESSARY TO MAKE NEW WORK LEVEL AND PLUMB, UNLESS SPECIFICALLY NOTED OTHERWISE.
- F. THE INTENT IS TO REPLACE CEILING TILES AND FRAME AS PART OF THIS PROJECT. ENSURE THAT NO ADDITIONAL CEILING TILES AND FRAME, OUTSIDE THE SCOPE OF THE PROJECT, GET DAMAGED AS PART OF THIS PROJECT.

LEVEL 2 FLOOR PLAN KEYNOTES

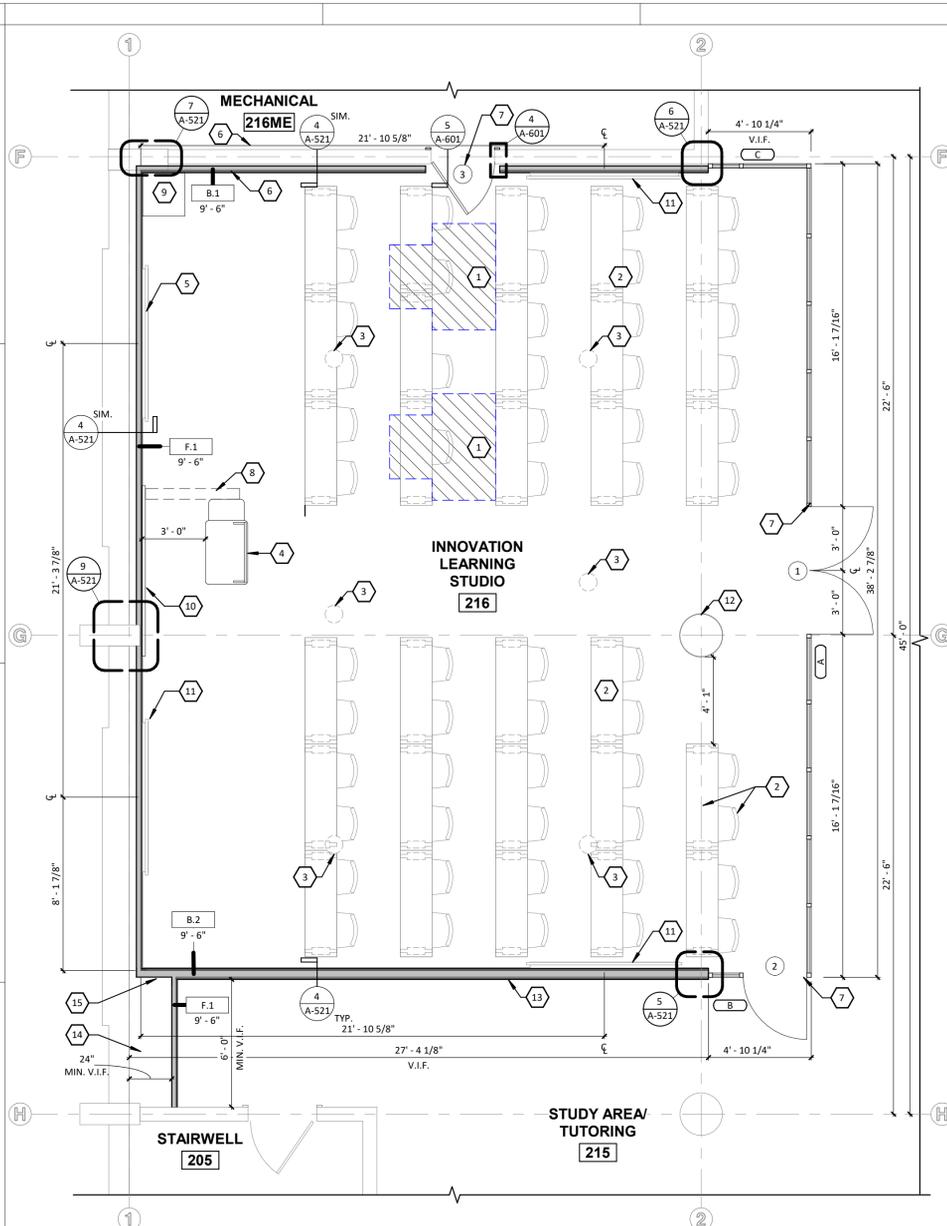
- 1. ADA ACCESSIBLE LOCATION.
- 2. ALL FURNITURE OFPOI AND SHOWN FOR SCHEMATIC LAYOUT ONLY.
- 3. EXISTING FLOOR OUTLETS TO REMAIN. SEE ELECTRICAL FOR OUTLETS AT FRAMED WALLS AND COLUMN.
- 4. WHEELCHAIR ACCESSIBLE, HEIGHT ADJUSTABLE INSTRUCTOR STATION WITH DEDICATED COMPUTER AND CONNECTIONS TO MSU NETWORK. SMART PODIUM LOCATION WILL REQUIRE POWER/NETWORK/AV PATHWAY. SEE ELECTRICAL DRAWINGS. OFOI.
- 5. NEW MECHANICAL ROOM DOOR WILL BE CLOSED, PER FUNCTIONAL USE OF ROOM.
- 6. PACK THE ENTIRE PERIMETER ON BOTH SIDES OF ALL PENETRATIONS THROUGH EXISTING CONCRETE WALL (DUCTS, PIPES, CONDUIT, ETC.) FOR ACOUSTIC REQUIREMENTS, WITH MINERAL WOOL AND SEAL USING SPRAY SEALANT SUCH AS HILTI CP-572.
- 7. SEAL ENTIRE PERIMETER OF DOORS USING HEAD AND JAMB GASKETS AND DOOR BOTTOM.
- 8. UNIBLOCK WIRE RACKWAY. SEE ELECTRICAL.
- 9. AV RACK IN NORTH WEST CORNER, PROVIDED BY MSU. SEE ELECTRICAL/OFOI.
- 10. 4' X 8' WHITEBOARD, NO TRAY, CFCI BASIS OF DESIGN: OPTIMA GREAT WHITE MAGNETIC WHITEBOARD. PROVIDE BLOCKING WHERE NECESSARY TO ENSURE PROPER INSTALLATION OF WHITEBOARD.
- 11. WALL MOUNTED TV. TV AND MOUNT PROVIDED BY MSU. CONTRACTOR TO INSTALL TV MOUNT. MSU TO INSTALL TV. INSTALL FOR BOTTOM OF TV TO ALIGN WITH TOP OF CHAIR RAIL, SEE 1/A-211. SEE 2/112 FOR INSTALL LOCATION ON WALL. OFCI.
- 12. EXISTING COLUMN TO REMAIN.
- 13. RUBBER BASE ON INTERIOR AND EXTERIOR SIDE OF WALL.
- 14. EXISTING SLEEVE TO TR ROOM BELOW TO REMAIN. CORE DRILL SLAB FOR NEW SLEEVE TO TR ROOM BELOW, CENTER BETWEEN CONCRETE JOISTS. SEE TECHNOLOGY SHEETS FOR SPECIFIC LOCATION AND SIZE. AVOID CUTTING EXISTING REBAR, USE X-RAY OR PILOT HOLES TO VERIFY.
- 15. OMIT FINISH ON B.2 IN THIS LOCATION ONLY.

LEVEL 2 RCP KEYNOTES

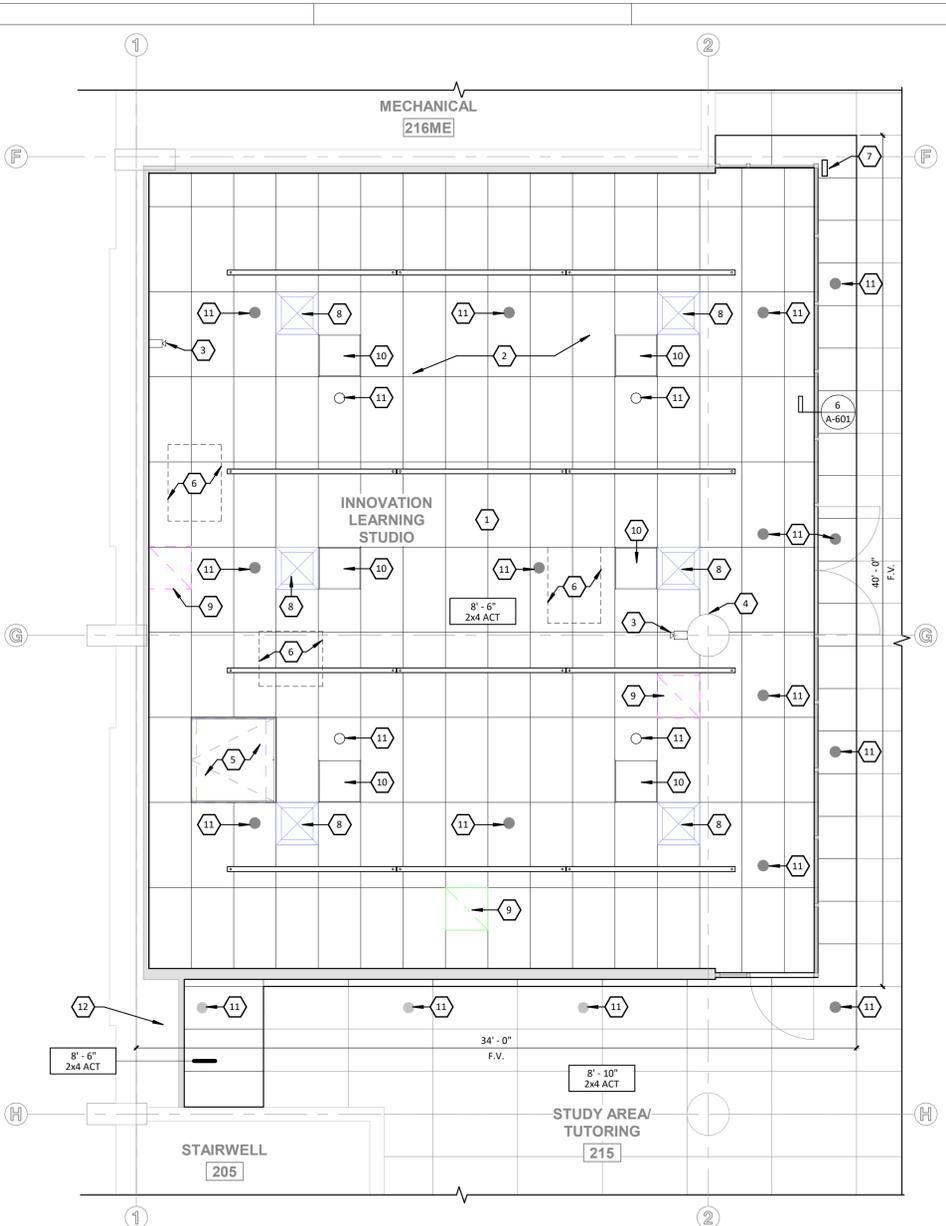
- 1. ADJUSTABLE LIGHTING CONTROLS, SEE ELEC.
- 2. USE INTERNALLY LINED SHEET METAL DUCTS FOR SUPPLY AND RETURN IN STUDIO. DO NOT USE FLEX DUCTS OR OPEN RETURN AIR GRILLES.
- 3. CEILING MOUNTED CAMERA. SEE ELECTRICAL.
- 4. EXISTING COLUMN TO REMAIN.
- 5. CEILING ACCESS PANEL. B.O.D.: WILLIAMS BROTHERS CORPORATION WB TB 1210-48" X 48" ALUMINUM SUSPENDED CEILING ACCESS DOOR/PANEL FOR T-BAR. INSTALL PER MANUFACTURER DETAILS.
- 6. ACCESS TO MECHANICAL EQUIPMENT. DESIGN INTENT IS FOR CEILING TILES TO BE TEMPORARILY MOVED TO ACCESS EQUIPMENT ABOVE. SEE MECHANICAL.
- 7. RELOCATE CEILING MOUNTED EXIT SIGN.
- 8. SUPPLY DIFFUSER, SEE MECHANICAL.
- 9. RETURN DIFFUSER, SEE MECHANICAL.
- 10. CEILING SPEAKER, SEE TECHNOLOGY.
- 11. SPRINKLER PENDENT, SEE FIRE PROTECTION.
- 12. OPEN TO FLOOR STRUCTURE ABOVE.

CEILING PLAN LEGEND

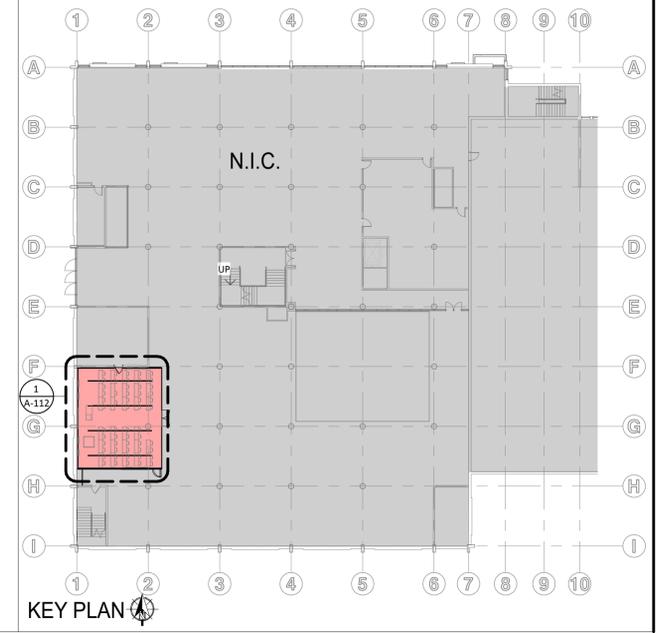
	ACT 2x4 ACOUSTIC CEILING TILE, WITH 15/16" GRID
	ACT EXISTING 2x4 ACOUSTIC CEILING TILE



1 LEVEL 2 FLOOR PLAN
1/4" = 1'-0"
OCCUPANCY: 57
1173 SF/5 STUDENTS = 20.5 SF/ STUDENT



2 LEVEL 2 REFLECTED CEILING PLAN
1/4" = 1'-0"



KEY PLAN

DRAWN: RH, MC CHECKED: CH, KE
DATE: 03/13/2026

REVISIONS:

LEVEL 2 FLOOR PLAN & RCP

A-112

ENTIRE SHEET IS ALTERNATE #1

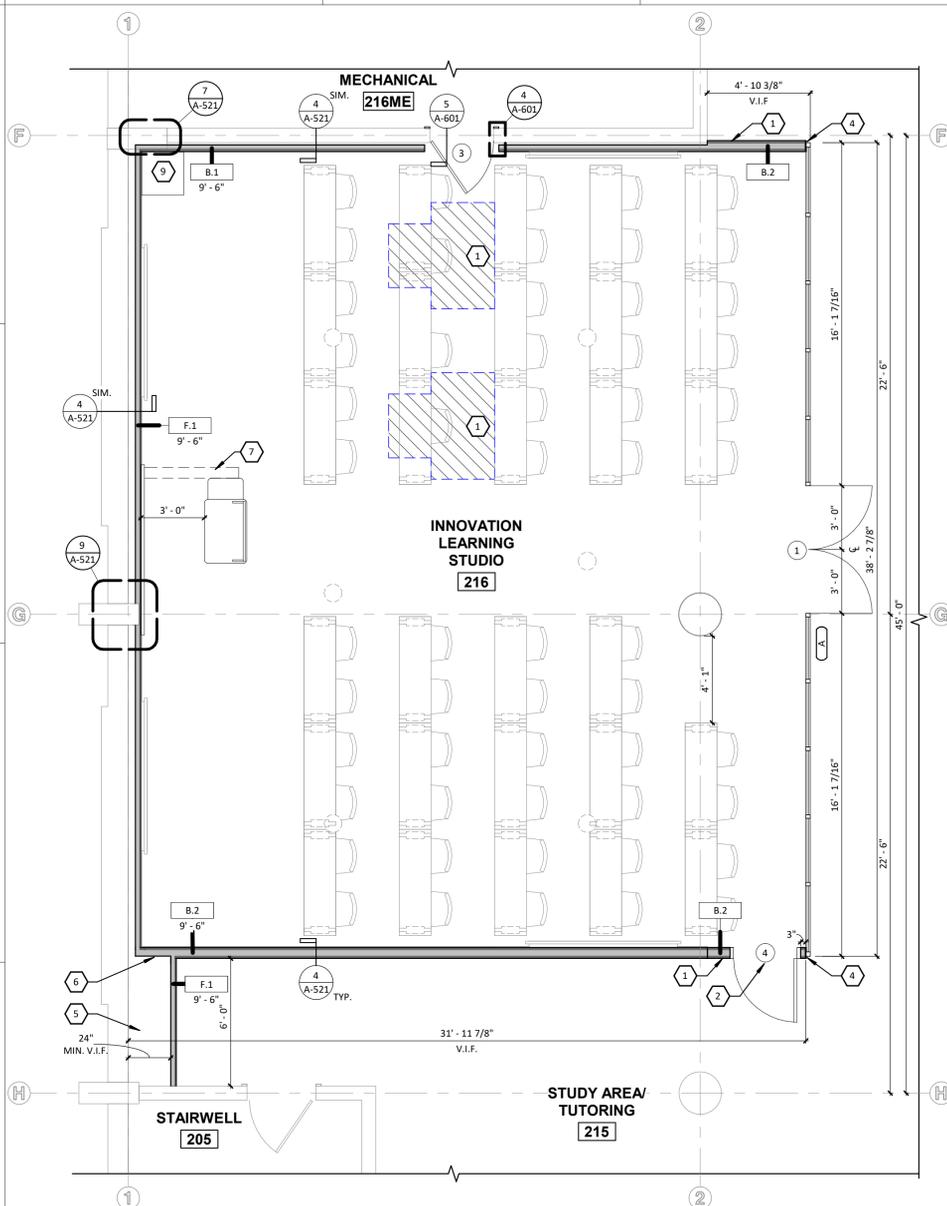
- GENERAL PLAN NOTES:**
- SEE G-001 PROJECT TITLE SHEET FOR GENERAL NOTES.
 - PROTECT EXISTING BUILDING OUTSIDE OF THIS SCOPE OF WORK AT ALL TIMES.
 - SEE OTHER SHEETS IN THIS SET FOR ADDITIONAL INFORMATION.
 - CONTRACTOR SHALL INCLUDE CUTTING AND PATCHING FOR ALL INSTANCES WHERE REQUIRED, WHETHER OR NOT SHOWN/INDICATED ON THESE CONSTRUCTION DOCUMENTS.
 - THE EXISTING BUILDING MAY NOT BE LEVEL AND PLUMB. CONTRACTOR SHALL FIELD VERIFY AND PROVIDE CONCEALED SHIMS, ETC. AS NECESSARY TO MAKE NEW WORK LEVEL AND PLUMB, UNLESS SPECIFICALLY NOTED OTHERWISE.
 - ALL TABLES AND CHAIRS ARE OFF.
 - THE INTENT IS TO REPLACE CEILING TILES AND FRAME AS PART OF THIS PROJECT. ENSURE THAT NO ADDITIONAL CEILING TILES AND FRAME, OUTSIDE THE SCOPE OF THE PROJECT, GET DAMAGED AS PART OF THIS PROJECT.
 - NOT ALL KEYNOTES USED ON THIS SHEET. REFERENCE A-112.
 - ALTERNATE #1 DOES NOT CHANGE THE SCOPE OF THE CEILING WORK ON A-112.

- LEVEL 2 FLOOR PLAN KEYNOTES ALT#1**
- FRAMED WALL REPLACES STOREFRONT WALL IN BASE BID. MATCH WALL FINISH OF ADJACENT WALL.
 - HOLLOW METAL DOOR REPLACED STOREFRONT DOOR IN BASE BID.
 - INTERIOR FINISH OF B.2 TO ALIGN WITH INTERIOR FINISH OF B.1
 - WRAP GWB AT ENDS OF WALL WHERE THEY INTERSECT WITH STOREFRONT SYSTEM.
 - EXISTING SLEEVE TO TR ROOM BELOW TO REMAIN. CORE DRILL SLAB FOR NEW SLEEVE TO TR ROOM BELOW. CENTER BETWEEN CONCRETE JOISTS. SEE TECHNOLOGY SHEETS FOR SPECIFIC LOCATION AND SIZE. AVOID CUTTING EXISTING REBAR, USE X-RAY OR PILOT HOLES TO VERIFY.
 - OMIT FINISH ON B.2 IN THIS LOCATION ONLY.
 - UMBILICAL WIRE RACEWAY. SEE ELECTRICAL.



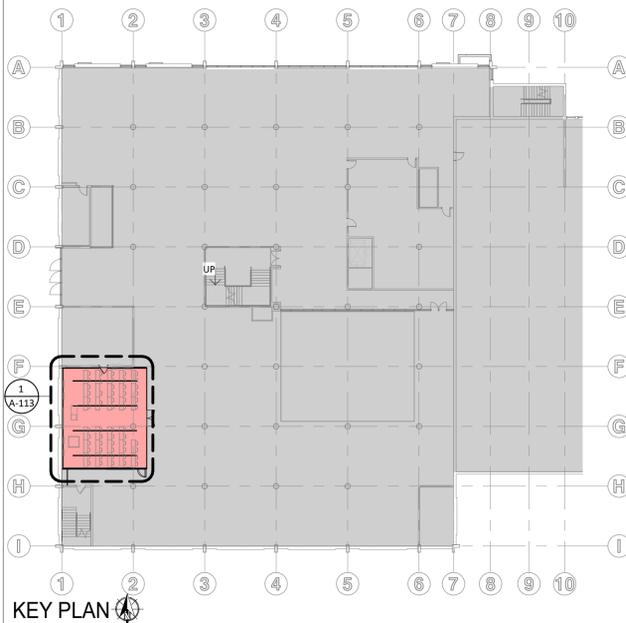
BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.



1 LEVEL 2 FLOOR PLAN - ALTERNATE #1
 1/4" = 1'-0"
 0 2 4 6

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

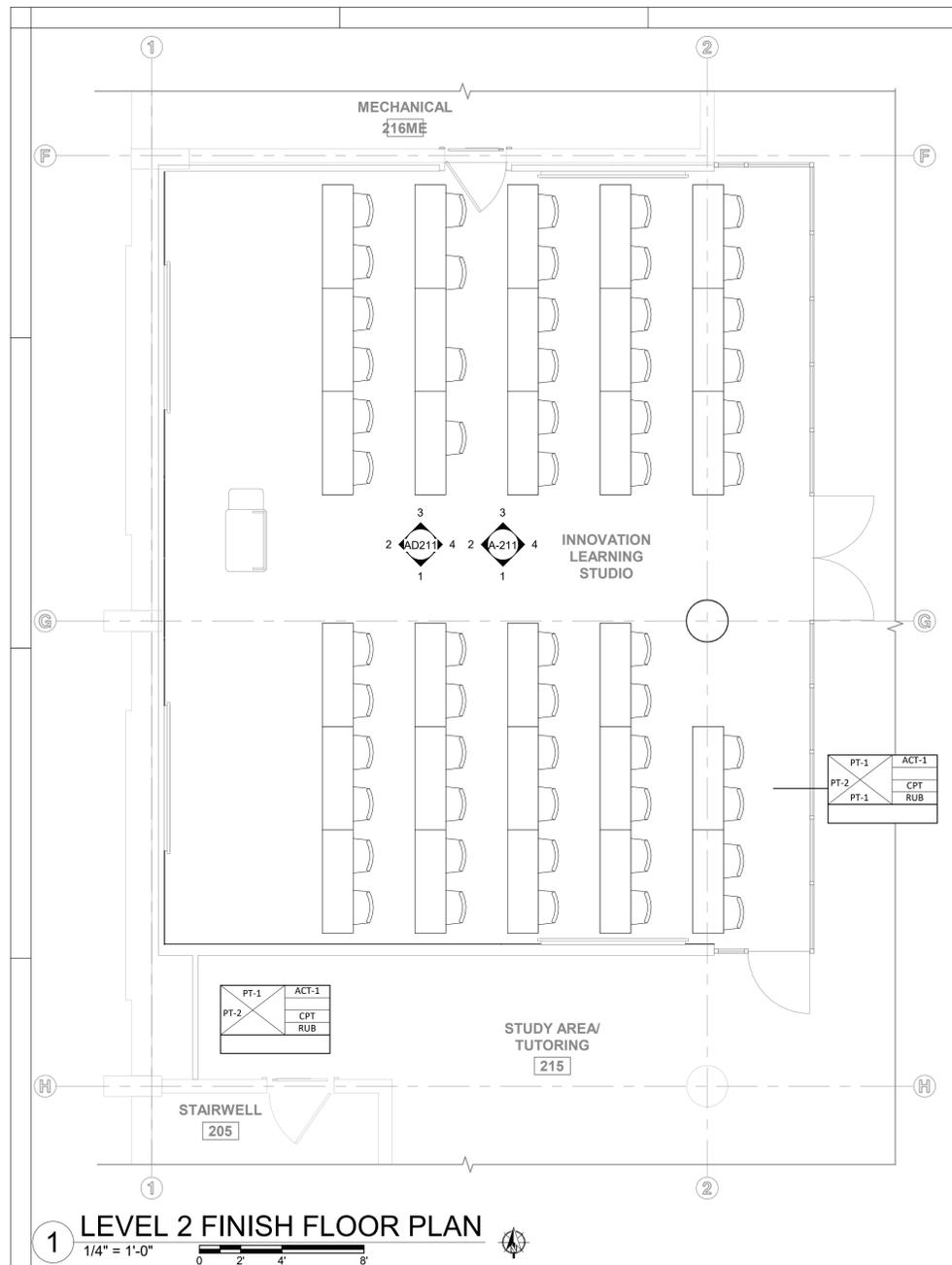


KEY PLAN

DRAWN: KE	CHECKED: CH
DATE: 03/13/2026	
REVISIONS:	

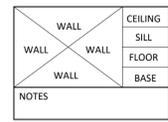
LEVEL 2 FLOOR PLAN - ALTERNATE #1

A-113



1 LEVEL 2 FINISH FLOOR PLAN
 1/4" = 1'-0"
 0 2 4 8

ROOM FINISH KEY



FINISH SCHEDULE

TAG	KEY	COLOR	MANUFACTURER	STYLE	NOTE
ACT-1	ACOUSTIC CEILING TILE	WHITE	ARMSTRONG	CIRRUS 581	24" X 48" SQUARE LAY-IN 15/16, 0.70 NRC
CPT	CARPET TILES	MATCH EXISTING	MATCH EXISTING	MATCH EXISTING	IT APPEARS THAT THE EXISTING CARPET TILES ARE BENTLEY MILLS ARCADE LEGEND ZOMBIE HUNTER 800605. GENERAL CONTRACTOR TO SUBMIT CARPET SPECIFICATION TO OWNER AND ARCHITECT FOR APPROVAL PRIOR TO ORDERING.
MET	DOOR	FIRST STAR	IAC ACOUSTICS	PAINTED METAL	
PT-1	PAINT	LINEN WHITE 912	BENJAMIN MOORE	EGGSHELL	
PT-2	PAINT	SW 6503 BOSPORUS	SHERWIN WILLIAMS	EGGSHELL	PROMAR 200
RUB	RUBBER BASE	BLACK	JOHNSONITE	DURACOVE 4"	THERMOPLASTIC RUBBER 1/8"
SS-1	SOLID SURFACE	CARBON CONCRETE	CORIAN		CHAIR RAIL (9 5/8"H X 1/2"D)



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE

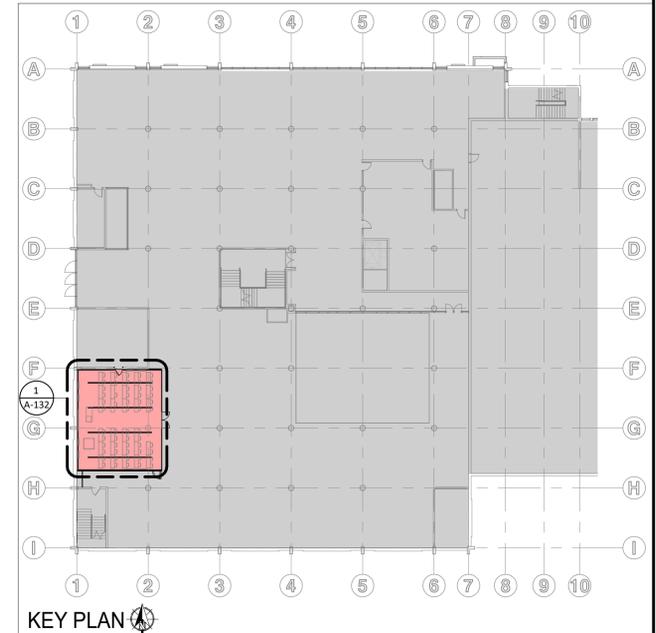
DATE: 03/13/2026

REVISIONS:

NO.	DESCRIPTION

LEVEL 2 FINISH FLOOR PLAN

A-132



KEY PLAN

- INTERIOR ELEVATION KEYNOTES**
- 1 SOLID SURFACE CHAIR RAIL, 36" TO TOP A.F.F
 - 2 4' X 8' WHITEBOARD, NO TRAY, CFCI.
 - 3 INTERACTIVE TOUCH SCREEN TV, TV: OFOI, TV MOUNT: OFCI.
 - 4 ACOUSTIC DOOR, BASIS OF DESIGN: IAC ARCHITECTURAL DOOR: PAINTED METAL, COLOR: FIRST STAR.
 - 5 EXISTING STROBE BOX TO BE EXTENDED ON NEW FURRED WALL IN THE SAME LOCATION.
 - 6 EXISTING ROOM SIGN TO BE REINSTALLED ON NEW FURRED WALL.
 - 7 SEE A-113 FOR ALTERNATE #1.
 - 8 AV RACK IN NORTH WEST CORNER, PROVIDED BY MSU. SEE ELECTRICAL/OFOI.

GENERAL INTERIOR ELEVATION NOTES:

A. CONTRACTOR TO INSTALL TV WALL MOUNTS, AS PROVIDED BY MSU, AND ENSURE THE BOTTOM OF THE TV IS AT THE SAME ELEVATION AS THE TOP OF THE CHAIR RAIL, TYP. OFCI.



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

**INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY**

RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE

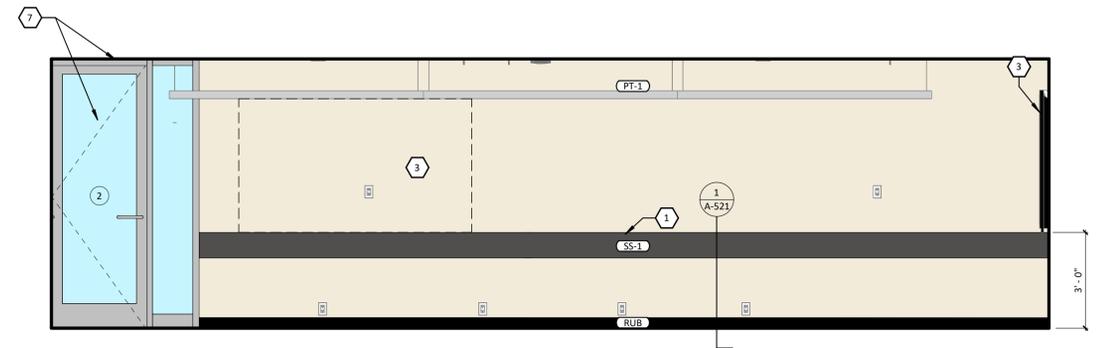
DATE: 03/13/2026

REVISIONS:

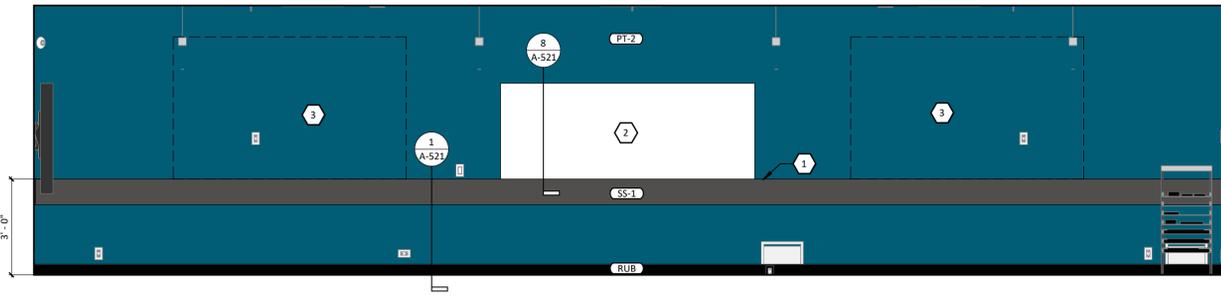
#	REVISIONS:

INTERIOR ELEVATIONS

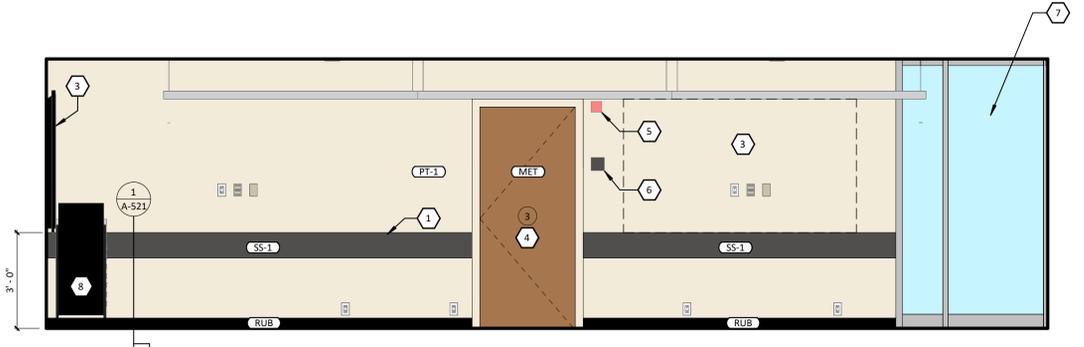
A-211



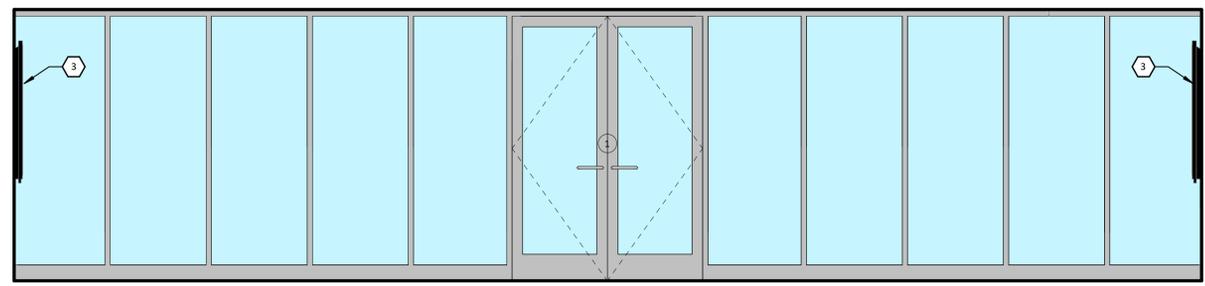
1 INNOVATION LEARNING STUDIO - SOUTH
3/8" = 1'-0"



2 INNOVATION LEARNING STUDIO - WEST
3/8" = 1'-0"



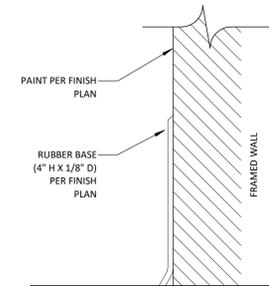
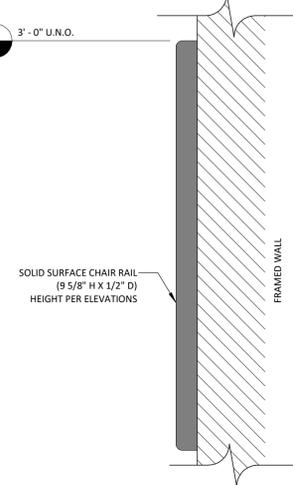
3 INNOVATION LEARNING STUDIO - NORTH
3/8" = 1'-0"



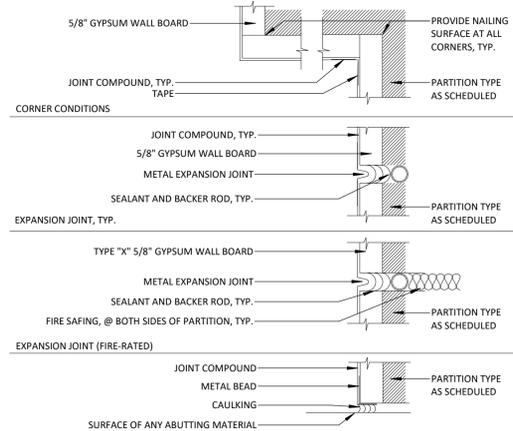
4 INNOVATION LEARNING STUDIO - EAST
3/8" = 1'-0"

PROJECT #250112

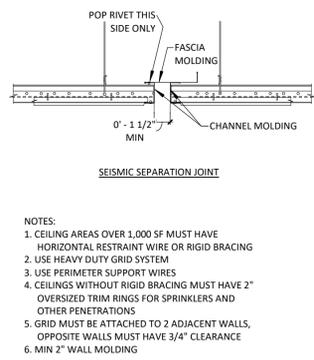
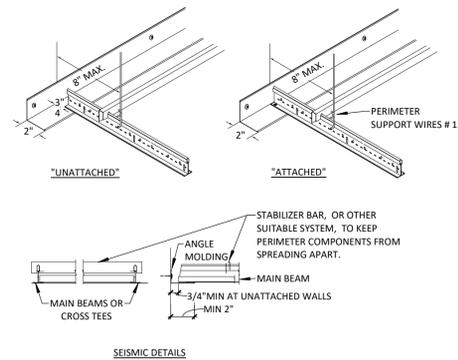
3'-0" U.N.O.



1 BASE & CHAIR RAIL DTL
6" = 1'-0"

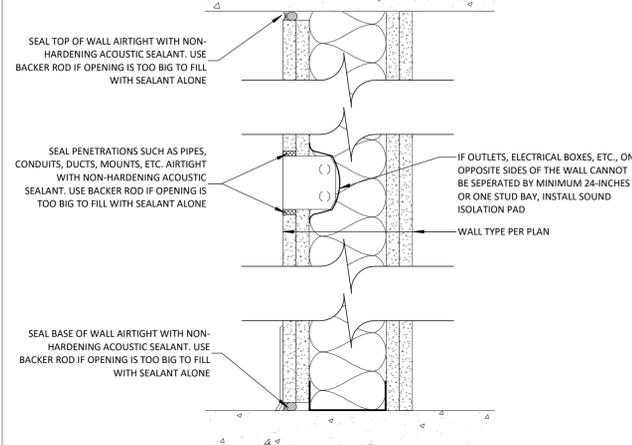


2 GYPSUM WALLBOARD DTL
3" = 1'-0"

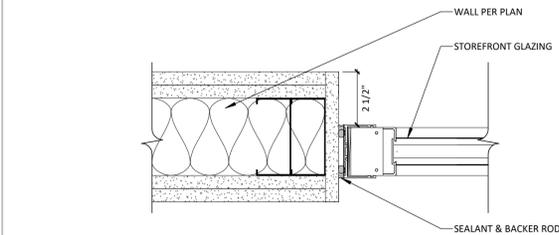


- NOTES:
1. CEILING AREAS OVER 1,000 SF MUST HAVE HORIZONTAL RESTRAINT WIRE OR RIGID BRACING
 2. USE HEAVY DUTY GRID SYSTEM
 3. USE PERIMETER SUPPORT WIRES
 4. CEILINGS WITHOUT RIGID BRACING MUST HAVE 2" OVERSIZED TRIM RINGS FOR SPRINKLERS AND OTHER PENETRATIONS
 5. GRID MUST BE ATTACHED TO 2 ADJACENT WALLS, OPPOSITE WALLS MUST HAVE 3/4" CLEARANCE
 6. MIN 2" WALL MOLDING

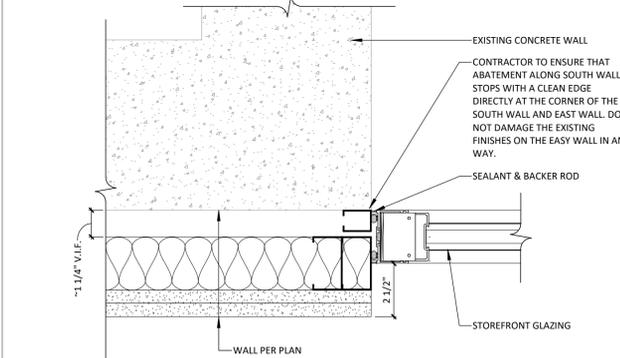
3 HUNG CEILING DETAILS - SEISMIC
1 1/2" = 1'-0"



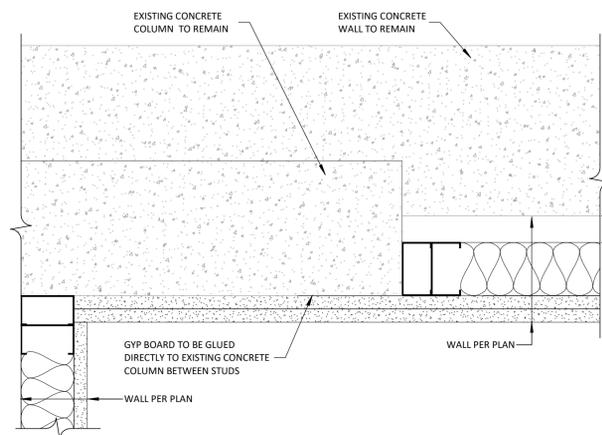
4 TYP. ACOUSTIC WALL PENETRATION
3" = 1'-0"



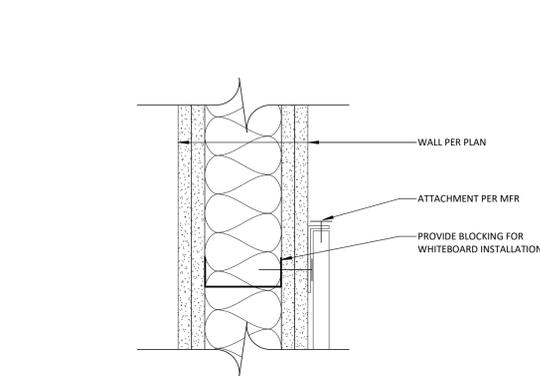
5 STC 40-45 & CURTAIN WALL CONN.
3" = 1'-0"



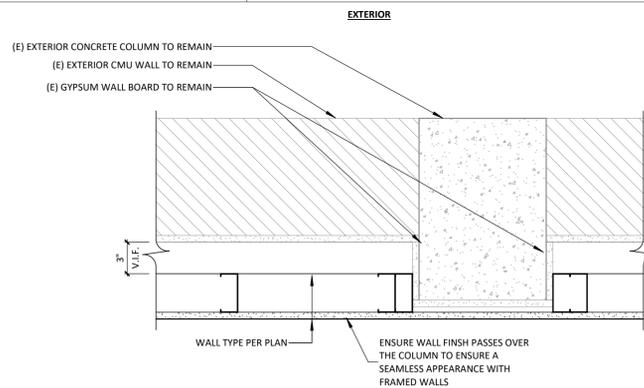
6 STC 40-45 & CURTN. WALL CONN. @ CORNER
3" = 1'-0"



7 STC 40-45 @ CORNER COLUMN
3" = 1'-0"



8 WHITEBOARD DETAIL
3" = 1'-0"



9 FURRED WALL @ COLUMN
1 1/2" = 1'-0"

GENERAL INTERIOR NOTES:

- GC TO COORDINATE WITH OWNER/EQUIPMENT SUPPLIER FOR REQUIRED DIM, CLEARANCES, AND ALL OTHER REQUIREMENTS PRIOR TO CASEWORK CONSTRUCTION/INSTALL.
- ALL PRODUCTS ARE TO BE INSTALLED PER MANUFACTURERS INSTRUCTIONS, USING MANUFACTURERS ADHESIVES, TOOLS AND METHODS.
- GWB TO HAVE SMOOTH TEXTURE. ALL GWB EDGES TO HAVE 3/4" SQUARE EDGE.
- ALL WALL SUPPORTED CABINETS, WHITEBOARDS AND SHELVING TO HAVE BLOCKING.
- PROVIDE TRANSITION STRIPS AT ALL LOCATIONS WHERE DISSIMILAR FLOOR MATERIALS MEET.
- FLOOR THRESHOLDS AND TRANSITION STRIPS MUST BE ADA ACCESSIBLE.
- PROVIDE STAINLESS STEEL TRANSITION STRIPS/REDUCERS AT ALL LOCATIONS WHERE CERAMIC TILE MEETS A DIFFERENT MATERIAL. PROVIDE APPROPRIATE TRANSITION STRIPS/REDUCERS AT ALL OTHER LOCATIONS BETWEEN DIFFERING MATERIALS UNLESS NOTED OTHERWISE. SEE TRANSITION CALL OUTS. ALL TRANSITIONS TO MEET ADA REQUIREMENTS. INSTALLATION TECHNIQUES SHALL CONFORM TO THE COUNCIL OF AMERICA HANDBOOK AND REQUIREMENTS OF ANSI A137.1.
- COORDINATE LOCATIONS OF ELECTRIC SWITCHES, PANELS, WATER SERVICE, TELEPHONE SERVICE, ETC. WITH UTILITIES COMPANIES. COORDINATE ALL WORK WITH THE MECHANICAL, PLUMBING & ELECTRICAL CONTRACTORS.
- ALL INTERIOR FINISHES MUST COMPLY WITH GOVERNING CODES.
- REFER TO SPECIFICATIONS AND FINISH SCHEDULES FOR FURTHER FINISH MATERIAL PRODUCT INFORMATION.
- SEE ELEVATIONS FOR ADDITIONAL FINISHES FOR CEILING HEIGHTS AND ADDITIONAL FINISHES SEE RCP'S.
- FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
- ALL FLOOR TRANSITIONS ARE TO OCCUR DIRECTLY BENEATH DOOR UNLESS NOTED OTHERWISE.
- ALL METAL ACCESS PANELS, COVER PLATES, VENTS AND GRILLES TO BE PAINTED TO MATCH THE SURFACE IT IS LOCATED ON, UNLESS PREFINISHED.



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

**INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY**

RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

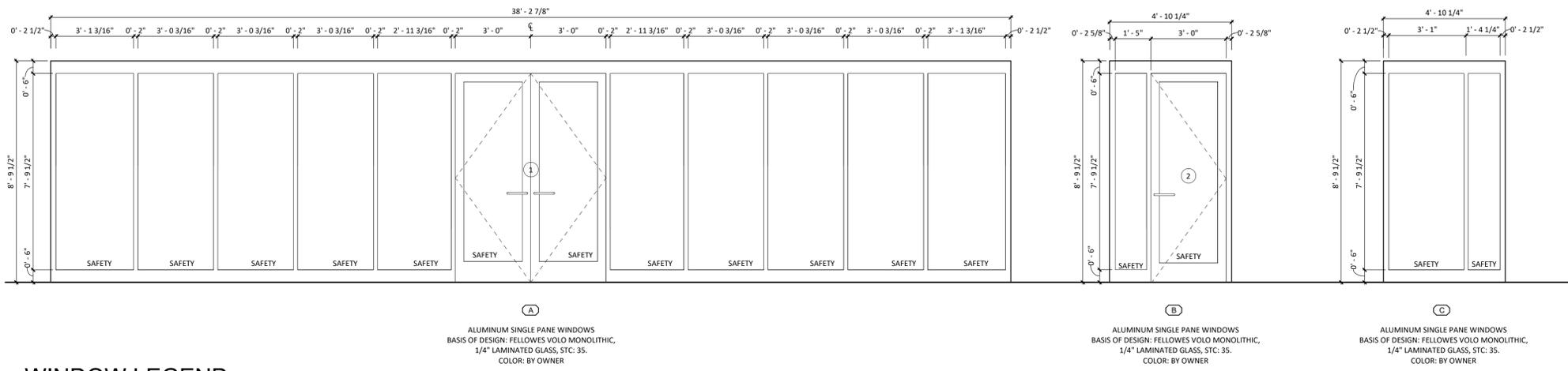
DRAWN: RH, MC CHECKED: CH, KE

DATE: 03/13/2026

REVISIONS:

FINISH DETAILS

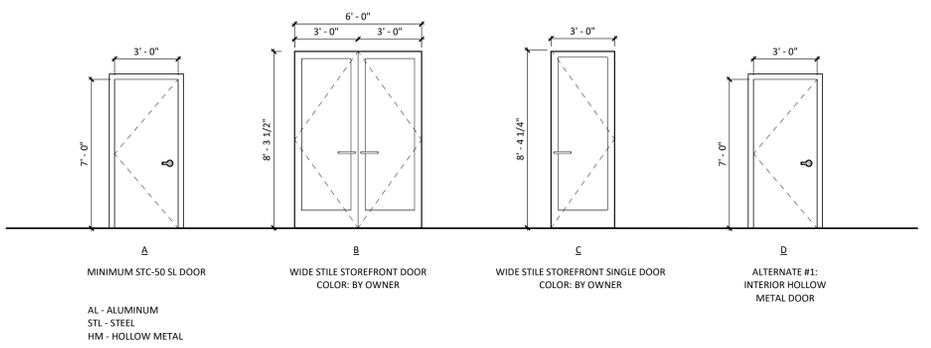
A-521



SAFETY GLAZING REQUIRED LOCATIONS:

- ALL DOORS
- GLAZING IN FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL IS WITHIN 24" ARC OF EITHER VERTICAL EDGE OF DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE WALKING SURFACE.
- GLAZING ADJACENT TO STAIRWAYS, LANDINGS AND RAMPS WITHIN 36" HORIZONTALLY OF WALKING SURFACE WHEN EXPOSED SURFACE OF GLASS IS LESS THAN 60" ABOVE THE WALKING SURFACE (EXCEPTION: IF HANDRAIL OR GUARD IS INSTALLED, POSITIONED BETWEEN 34"-38" ABOVE WALKING SURFACE, CAPABLE OF WITHSTANDING 50 LBS OF FORCE/FT WITHOUT TOUCHING THE GLASS).
- GLAZING ADJACENT TO STAIRWAYS WITHIN 60" HORIZONTALLY OF THE BOTTOM TREAD OF THE STAIRWAY IN ANY DIRECTION WHEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60" ABOVE THE NOSE OF THE TREAD.

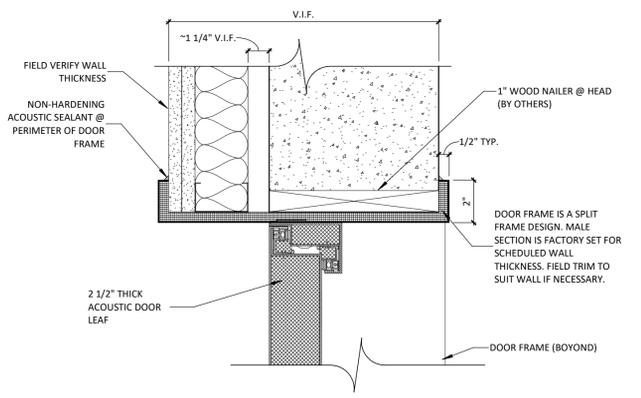
1 WINDOW LEGEND
1/4" = 1'-0"



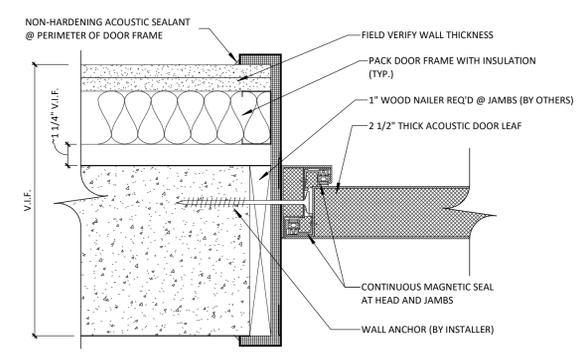
2 DOOR LEGEND
1/4" = 1'-0"

DOOR SCHEDULE										
DOOR NO.	FROM	TO	SIZE	ELEVATION TYPE	DOOR MAT.	FRAME MAT.	LITE	HARDWARE	DOOR STOP (W/WALL, F-FLOOR)	REMARKS
1	STUDY AREA/TUTORING	INNOVATION LEARNING STUDIO	STOREFRONT DOUBLE DOOR	B	AL	AL	FULL	HDW-2 DOUBLE ENTRANCE	N/A	
2	INNOVATION LEARNING STUDIO	STUDY AREA/TUTORING	STOREFRONT SINGLE DOOR	C	AL	AL	FULL	HDW-1 SINGLE ENTRANCE	N/A	
3	MECHANICAL	INNOVATION LEARNING STUDIO	3'-0" x 7'-0" x 1 3/4"	A	STL	AL	N/A	HDW-3 STORAGE	W	BASIS OF DESIGN: MINIMUM STC 50, DOOR ASSEMBLY FROM IAC COLOR-FIRST STAR, APPROVED ALTERNATIVE: NOISE BARRIERS.
4	INNOVATION LEARNING STUDIO	STUDY AREA/TUTORING	3'-0" x 7'-0" x 1 3/4"	D	HM	HM	N/A	HDW-4 SINGLE ENTRANCE (ALT #1)	N/A	ALTERNATE #1, SEE A-113

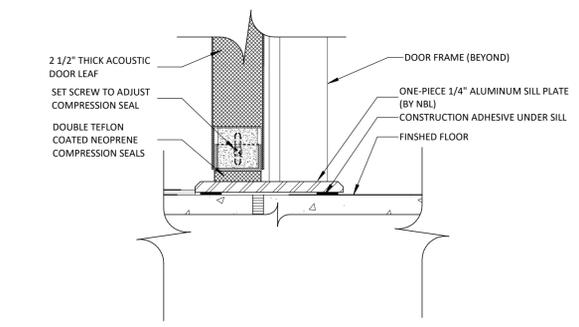
DOOR HARDWARE	
HDW	HARDWARE
HDW-1 SINGLE ENTRANCE	RIM EXIT DEVICE 1 CYLINDER LOCK 1 SET PIVOTS 1 CLOSER PULL HANDLE 1 THRESHOLD WEATHERSTRIPPING PILE WEATHERING
HDW-2 DOUBLE ENTRANCE	2 RIM EXIT DEVICES 1 CYLINDER LOCK 2 SETS PIVOTS 2 CLOSERS PULL HANDLES 1 THRESHOLD WEATHERSTRIPPING 2 PILE WEATHERING
HDW-3 STORAGE	1 1/2 PR BUTTS 1 LOCKSET ANSI F-82/BHMA B 1 WALL STOP 1 SET SILENCERS
HDW-4 SINGLE ENTRANCE (ALT #1)	RIM EXIT DEVICE 1 CYLINDER LOCK 1 SET OF PIVOTS 1 CLOSER PULL HANDLE



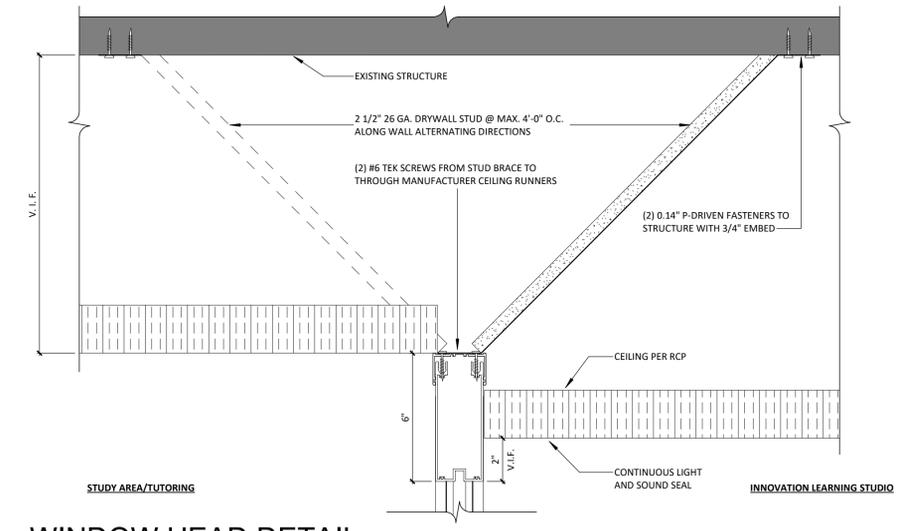
3 STC DOOR HEAD DETAIL
3" = 1'-0"



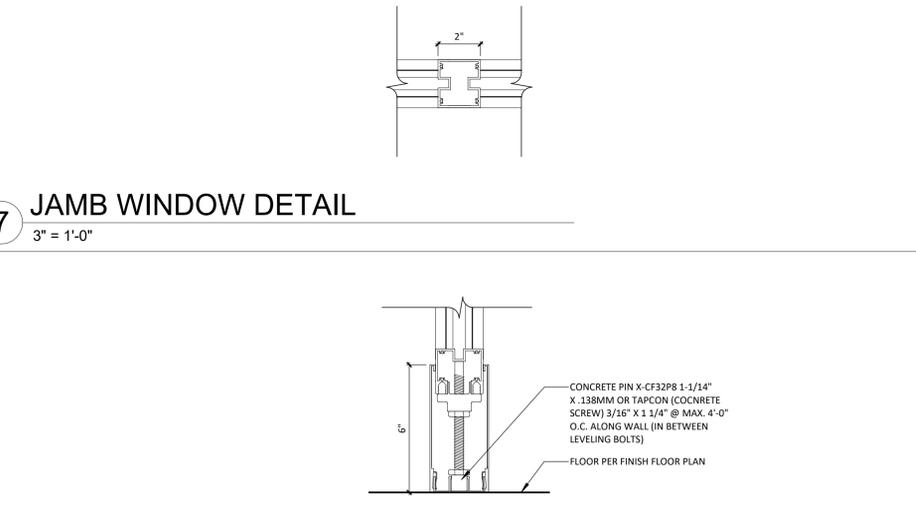
4 STC JAMB DOOR DETAIL
3" = 1'-0"



5 DOOR SILL DETAIL
3" = 1'-0"



6 WINDOW HEAD DETAIL
3" = 1'-0"



7 JAMB WINDOW DETAIL
3" = 1'-0"

8 WINDOW SILL DETAIL
3" = 1'-0"



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

DRAWN: RH, MC CHECKED: CH, KE
DATE: 03/13/2026

REVISIONS:

WINDOW & DOOR SCHEDULES & DETAILS

A-601



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

DRAWN: BJB CHECKED: BJB

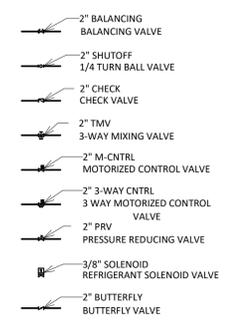
DATE: 03/13/2026

REVISIONS:

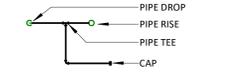
MECHANICAL TITLE SHEET

M-001

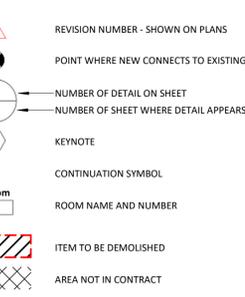
PIPE ACCESSORY TAGS



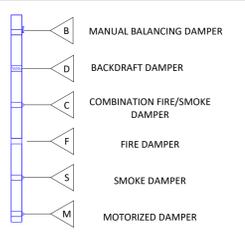
PIPE SYMBOLS



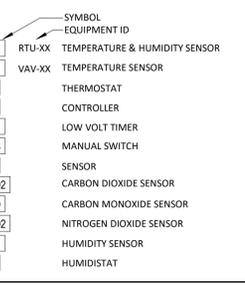
GENERAL DRAWING SYMBOLS



DAMPER TAGS



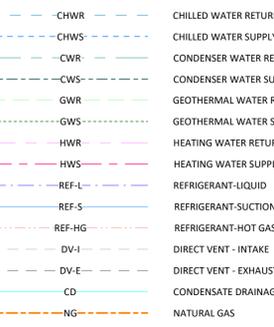
MECHANICAL CONTROL DEVICE TAGS



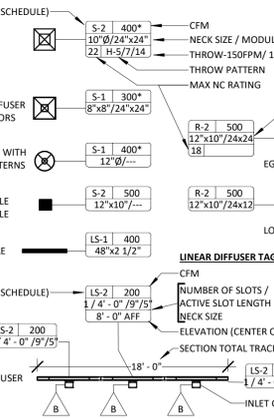
MECHANICAL SHEET INDEX

Table with 2 columns: Sheet Number and Description. Includes M-001 MECHANICAL TITLE SHEET, M-112 LEVEL 2 HVAC PLAN, M-135 ROOF HVAC PLAN, M-601 MECHANICAL SCHEDULES.

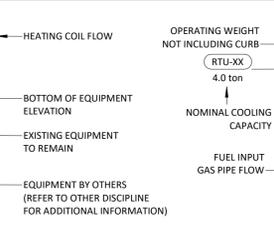
PLUMBING AND PIPING SYMBOLS



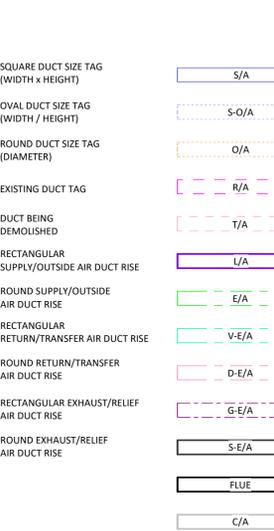
GRILLES, REGISTERS & DIFFUSERS TAG



MECHANICAL EQUIPMENT TAGS



HVAC SYMBOLS



CODE COMPLIANCE
BUILDING MECHANICAL SYSTEMS ARE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
• 2021 INTERNATIONAL MECHANICAL CODE
• 2021 UNIFORM PLUMBING CODE
• 2021 IECC INTERNATIONAL ENERGY CONSERVATION CODE

HVAC DESIGN CRITERIA

BOZEMAN, MONTANA
ANNUAL DESIGN CONDITIONS: ASHRAE FUNDAMENTALS 2021
WEATHER STATION - BOZEMAN YELLOWSTONE, MT WMOH 726797
ELEVATION: 4427' LAT: 45.788N LONG: 111.161W
WINTER: -13.4 (99.6%)
SUMMER: 92.0 DRY BULB (0.4%)
61.2 WET BULB (0.4%)
INDOOR DESIGN CONDITIONS:
WINTER: 70 ± 2° F
SUMMER: 75 ± 2° F

EQUIPMENT ABBREVIATIONS

Table of equipment abbreviations including AC, AHU, AS, B, BP, CC, CH, CT, CU, CWP, CHWP, DBP, DCP, DF, DH, EF, EH, ERV, ET, F, FC, FP, GI, GRV, HP, HS, HWP, HX, HRV, MAU, P, PUMP, RF, RTU, ROOF TOP UNIT, SD, SLIM DUCT, SE, SEWAGE EJECTOR PUMP, SF, SUPPLY FAN, SP, SUMP PUMP, UH, UNIT HEATER, VAV, VARIABLE AIR VOLUME BOX, VAW, WATER HEATER, WM, WALL MOUNT.

PIPING INSULATION SCHEDULE - INTERNATIONAL ENERGY CONSERVATION CODE

Table with 4 columns: Fluid Operating Temperature Range and Usage [F], Insulation Conductivity, Mean Rating Temperature [F], and Nominal Pipe or Tube Size [Inches].

DUCT INSULATION SCHEDULE

Table with 4 columns: Duct System, Outside Building Envelope, Exposed to Environment, Outside Building Envelope, Within Building, and Within the Building Envelope.

REMARKS:
1. ALL DUCT DIMENSIONS INDICATE INSIDE FREE DIMENSIONS AND DO NOT INCLUDE INSULATION THICKNESS.
2. THE 6" OF EXHAUST DUCT NEAREST TO THE EXTERIOR TO BE INSULATED WITH MIN. R-6 INSULATION (1 1/2" THICKNESS, 0.24 K VALUE).

2021 INTERNATIONAL ENERGY CONSERVATION CODE NOTES

- 1. PROVIDE COMMISSIONING PLAN IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408.2.1.
- 2. PROVIDE COMMISSIONING COMPLIANCE REPORT IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C407.3.1 & C407.3.2.
- 3. PROVIDE SYSTEMS TESTING AND BALANCING IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408.2.3.
 - A. PROVIDE TAB REPORT FOR ALL AIR MOVING EQUIPMENT TO ENGINEER OF RECORD. ALL AREAS INDICATED ON PLANS ARE UNDER NORMAL OPERATING CONDITIONS WITH ALL SYSTEMS RUNNING IN OCCUPIED MODE AT MINIMUM OUTSIDE AIR.
- 4. PROVIDE SYSTEMS, EQUIPMENT, AND CONTROLS FUNCTIONAL TESTING IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408.2.3.
- 5. PROVIDE SUPPORTING DOCUMENTATION IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE CHAPTER 1 CHECKLIST, INCLUDING OPERATION AND MAINTENANCE MANUALS, HVAC CONTROL SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, HVAC CONTROL SEQUENCE OF OPERATIONS, COMMISSIONING REPORT, AND RECORD DRAWINGS.
- 6. PROVIDE OWNER SYSTEMS OPERATION TRAINING IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C103.6.
- 7. MOTORS SHALL COMPLY WITH SECTION C403.8 OF THE INTERNATIONAL ENERGY CONSERVATION CODE. FOR ADDITIONAL DETAILS, SEE EQUIPMENT SCHEDULES CONTAINED WITHIN THIS DRAWING SET.
- 8. SYSTEMS SHALL BE INSULATED AS PRESCRIBED IN SECTION C403.12. FOR ADDITIONAL DETAILS, SEE DUCTWORK AND PIPING SPECIFICATION MATRICES CONTAINED WITHIN THIS DRAWING SET.

M-102



* NOTE *
THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

PROJECT GENERAL NOTES

- REMOVE ALL UNUSED PIPING, DUCTWORK AND ACCESSORIES. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING, PRIOR TO FINAL BID, ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS WITHIN TENANT SPACE AND WITHIN CLOSE PROXIMITY OF TENANT SPACE.
- WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSAFE DRAINS AT COMPLETION OF CONSTRUCTION.
- COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, AND EQUIPMENT TO PREVENT CONFLICTS.
- THE CONTRACTOR SHALL BE FAMILIAR WITH ALL THE CONDITIONS BOTH EXISTING AND THOSE ILLUSTRATED BY THESE DOCUMENTS AS WELL AS THOSE WHICH CAN BE REASONABLY ANTICIPATED INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, ELECTRICAL, VENTILATION, PLUMBING, AND OTHER SYSTEMS INVOLVED ON THIS PROJECT.
- FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.
- ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.
- LOCATE DUCTWORK, PIPING AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS, TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.
- FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS. REFER TO SPECIFICATION.
- PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.
- ADJUST PIPING AND DUCTWORK SIZES TO PROPERLY CONNECT TO MECHANICAL EQUIPMENT.
- REFER TO PLUMBING SERIES DRAWINGS FOR GAS AND A.C. CONDENSATE DRAIN PIPING.
- PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
- FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF QUALITY AND WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.
- LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID INTERFERENCE IN THE FIELD.
- INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS U.N.O.

HVAC GENERAL NOTES

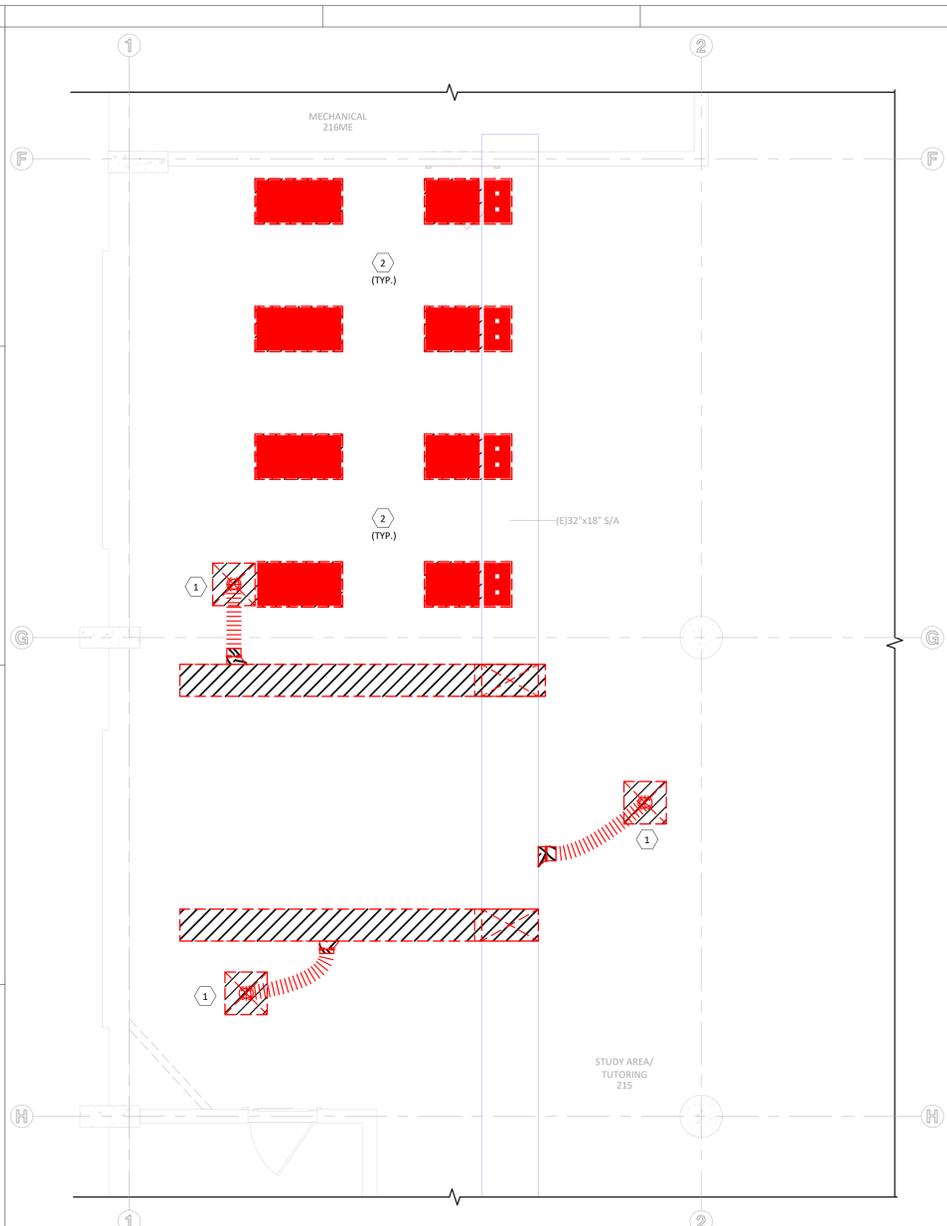
- CONTRACTOR SHALL LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 4'-0" AFF, A MAXIMUM OF 8" FROM LIGHT SWITCH.
- PROVIDE A 4" HOUSEKEEPING PAD FOR EACH PIECE OF MECHANICAL EQUIPMENT. COORDINATE SIZES WITH MECHANICAL EQUIPMENT SELECTED.
- ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE RATED FOR PRESSURE CLASS OF 2" W.G. UNLESS NOTED OTHERWISE.
- THIS CONTRACTOR SHALL BE REQUIRED TO REPLACE FILTERS ON HVAC EQUIPMENT AFTER ALL DUST PRODUCING CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO THE FINAL PUNCH.

GENERAL MECHANICAL NOTES

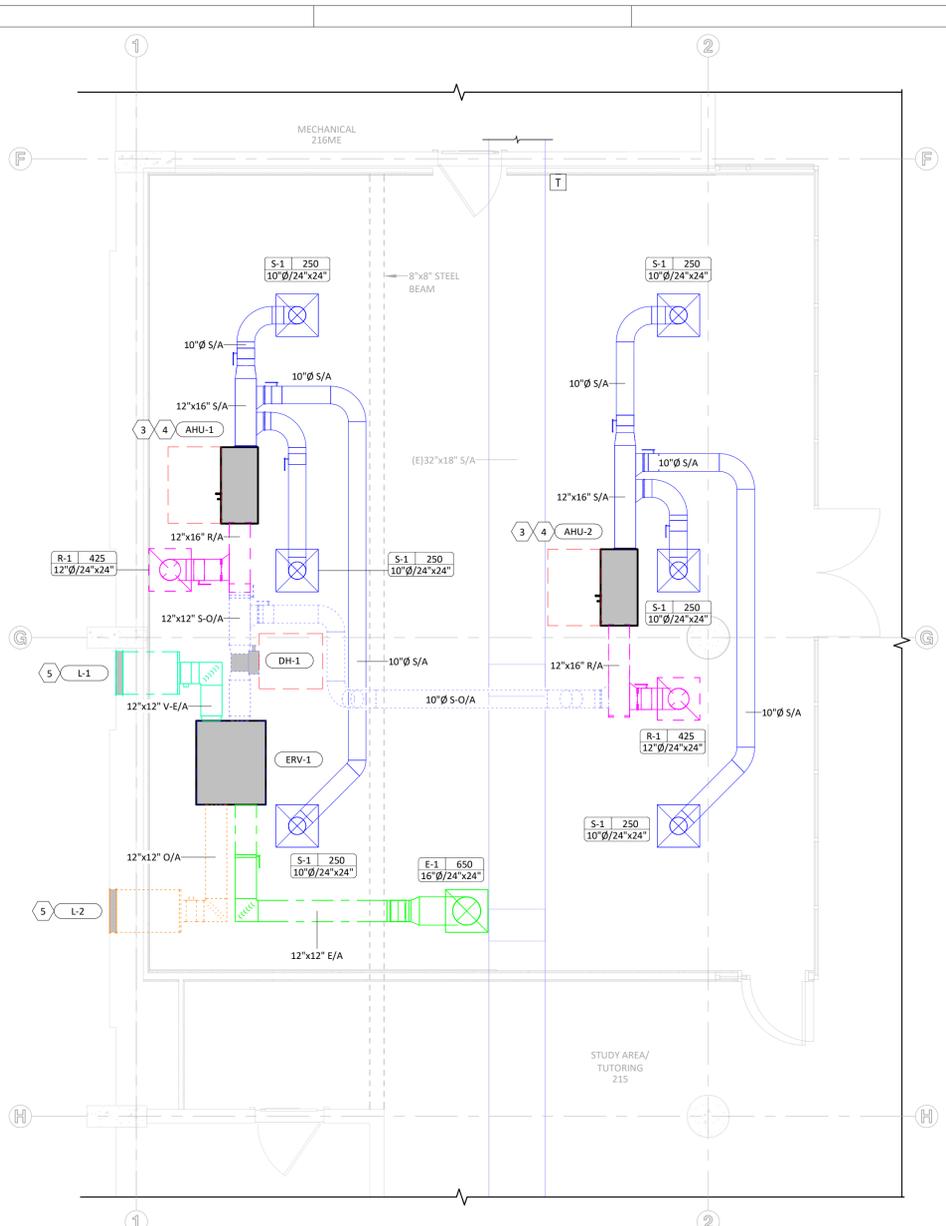
- INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE BY A LICENSED CONTRACTOR PER THE STATE BUILDING, MECHANICAL ENERGY, FIRE, PLUMBING AND HEALTH CODES, AND REGULATIONS AS ADOPTED BY LOCAL JURISDICTIONS.
- ALL EQUIPMENT SHALL BE THE CAPACITY AND TYPE AS SHOWN ON THE EQUIPMENT SCHEDULE AND SHALL BE THE LISTED MANUFACTURER AND MODEL NUMBER OR SHALL BE AN EQUAL APPROVED BY THE OWNER/ENGINEER.
- CONTRACTOR IS TO BRING UP THE DISCREPANCIES AND ITEMS WHICH ARE NOT SPECIFICALLY CALLED FOR OR SHOWN BUT ARE REQUIRED FOR A COMPLETE MECHANICAL SYSTEM. ALL SUCH ITEMS REQUIRED FOR A COMPLETE SYSTEM READY FOR THE OWNER'S BENEFICIAL USE SHALL BE FURNISHED AND INSTALLED INCLUDING ALL SUCH DISCREPANCY ITEMS MENTIONED ABOVE, AT NO ADDITIONAL COST TO THE OWNER AND PER LOCAL CODES. MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE STANDARDS WITH THE ARCHITECT/ENGINEER'S APPROVAL.
- ALL EQUIPMENT SUPPLIED FOR THESE SPECIFICATIONS SHALL BE FREE FROM DEFECTS IN MATERIAL, WORKMANSHIP, AND TITLE, AND SHALL BE OF THE KIND AND QUALITY DESCRIBED HEREIN. IF IT APPEARS WITHIN ONE YEAR FROM DATE OF FINAL ACCEPTANCE THAT EQUIPMENT DOES NOT MEET THE WARRANTIES ABOVE, THE CONTRACTOR SHALL IMMEDIATELY CORRECT ANY DEFECT AND SHALL RESTORE THE SYSTEM TO THE ORIGINAL SATISFACTORY CONDITIONS AT HIS EXPENSE. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED, OR STATUTORY. NO WARRANTY OR MERCHANTABILITY OF FITNESS FOR PURPOSE SHALL APPLY (THE WARRANTY SHALL START FROM THE TIME OF ARCHITECT/ENGINEER'S FINAL ACCEPTANCE).
- COORDINATE THE CONSTRUCTION SCHEDULE WITH THE GC AND PERFORM ALL REQUIRED WORK IN STRICT ACCORDANCE WITH THE OWNER'S SCHEDULE.
- MECHANICAL CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
- HVAC NOTES:
 - A. PROVIDE FLEXIBLE CONNECTION IN ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT AS CLOSE TO FAN AS POSSIBLE. FLEXIBLE CONNECTION SHALL CONSIST OF 6" OR MORE OF AIR TIGHT, FIRE PROOF FLEXIBLE NEOPRENE COATED WOVEN FIBROUS GLASS MATERIAL. VENT FABRICS, INC. OR APPROVED EQUAL.
 - B. ALL MAIN TRUNK AND BRANCH TAKEOFF DUCTWORK SHALL BE SHEET METAL. FLEXIBLE DUCT IS ALLOWED ON LAST 6" SERVING GRDS. FIBERGLASS DUCTWORK SHALL NOT BE USED.
 - C. ALL SUPPLY & RETURN FLEXIBLE DUCTS CONNECTING TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE CONSTRUCTED OF DOUBLE LAMINATION OF POLYESTER ENCAPSULATED STEEL WIRE HELIX FOR INNER CORE HIGH DENSITY FIBERGLASS INSULATION AND GRAY POLYESTER FILM WITH SPIRAL REINFORCEMENTS, EQUAL TO ATCO-70 SERIES (MIN. POS. PRESS. = 6" W.C. NEG. PRESS. = 0.75" W.C. & R=5.79).
 - D. SEAL ALL DUCTWORK JOINTS PER SMACNA CLASS B FOR SYSTEMS UP TO 2 IN W.G. AND SEAL ALL JOINTS AND SEAMS PER SMACNA CLASS B FOR SYSTEMS GREATER THAN 2 IN W.G.
 - E. ALL EQUIPMENT, DUCTWORK AND PIPING SHALL BE STRUCTURALLY SUPPORTED AND SECURELY FASTENED TO BUILDING STRUCTURE IN AN ACCEPTABLE MANNER TO OWNER, ARCHITECT, ENGINEER AND LOCAL JURISDICTION AND SHALL BE SEISMICALLY BRACED PER THE SMACNA AND/OR REQUIRED BY LOCAL JURISDICTIONS.
 - F. PROVIDE LOCKABLE VOLUME DAMPERS IN ALL TAKEOFFS.
 - G. DUCT HANGERS, SUPPORTS AND METHODS OF INSTALLATION SHALL CONFORM TO ASHRAE & SMACNA RECOMMENDATIONS.
 - H. DUCT SIZES SHOWN ON PLANS INDICATE INSIDE FREE AREA BY U.L.-181.
 - J. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.
 - K. DUCT INSULATION SHALL BE PROVIDED PER DUCT INSULATION SCHEDULE ON M0.00.
- ALL FIRE RATED STRUCTURE SHALL BE FIRE DAMPERED AS REQUIRED BY THE JURISDICTION.
- FLEXIBLE DUCTS SHALL HAVE MAXIMUM 6 FEET LENGTH UNLESS SHOWN OTHERWISE AND SHALL NOT PENETRATE THROUGH ANY FIRE RATED WALLS. DO NOT INSTALL FLEXIBLE DUCTS WITHIN 6 FEET OF HEATING ELEMENT.
- HVAC SYSTEM SHALL BE STARTED UP AND FUNCTIONALLY TESTED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL CONFIRM THAT ALL HVAC SYSTEMS ARE READY FOR TESTING, ADJUSTING, AND BALANCING. HVAC SYSTEMS SHALL BE TESTED, ADJUSTED, AND BALANCED (TAB) BY CONTRACTOR CERTIFIED BY THE AABC, NEBB, OR OTHER APPROVED AGENCY. REFRIGERATION PIPING SHALL BE TESTED UNDER PRESSURE AND PROVEN TO BE LEAK FREE. REFRIGERATION SYSTEM SHALL BE STARTED UP AND BROUGHT DOWN TO DESIGN TEMPERATURE.
- MECHANICAL, HVAC, AND PLUMBING ELEMENTS SHALL AT NO TIME COME IN CONTACT WITH CEILING CONSTRUCTION EXCEPT AS NECESSARY PENETRATIONS MAY REQUIRES. ESCUTCHEONS SHALL BE USED ON ALL VISIBLE PENETRATIONS
- ACCESS SHALL BE PROVIDED BY GC AS REQUIRED FOR INSTALLATION AND MAINTENANCE OF MECHANICAL, ELECTRICAL, AND OTHER ELEMENTS WITHIN CEILING SPACE AND AS REQUIRED BY CODE. LOCATIONS FOR SPECIAL ACCESS DOORS, HATCHES, ETC. SHALL BE COORDINATED WITH OTHER TRADES.
- INSPECTIONS, AS REQUIRED BY LOCAL AUTHORITIES, SHALL BE COORDINATED BY GC PRIOR TO CLOSING OF CEILING.
- SHOP DRAWINGS FOR ALL RELATED TRADES (PLUMBING, HVAC) SHALL BE SUBMITTED FOR REVIEW/APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.
- ALL HVAC ELEMENTS SHALL MATCH ADJACENT WALL OR CEILING FINISH COLOR, INSTALLED FLUSH AND TRUE AND CENTERED WITHIN THE CEILING GRID. LOCATIONS SHALL BE PER APPROVED MECHANICAL PLANS.
- INSULATION OF COLD WATER LINES SHALL BY PROVIDED TO PREVENT CONDENSATION DAMAGE AND IN OBSERVANCE OF ENERGY CONSERVATION PRACTICES, HOT WATER HEATING LINES SHALL BE INSULATED - SEE SPECIFICATIONS.
- CONTRACTOR SHALL LOCATE THERMOSTATS AND TEMPERATURE SENSORS IN ACCESSIBLE SPACES AT 4'-0" AND UNITS IN ALL OTHER SPACES AT 5'-0". UNITS AT 5' SHALL BE MOUNTED ALIGNED VERTICALLY WITH LIGHT SWITCHES WHERE APPLICABLE. LOCATIONS PER MECHANICAL PLAN AND TO BE COORDINATED BY GC WITH OTHER TRADES.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION. ALL PRODUCT WARRANTY REGISTRATION CARDS, APPLICATIONS, AND CERTIFICATES SHALL BE COMPLETED AND TURNED OVER TO THE OWNER.
- THIS CONTRACTOR SHALL BE REQUIRED TO REPLACE FILTERS ON HVAC EQUIPMENT AFTER ALL DUST PRODUCING CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO THE FINAL PUNCH.

ABBREVIATIONS

Table of abbreviations including Ø, ABV, AC, AD, ADD, AFF, AFUE, ALT, AP, ARCH, BFF, BELOW, BTU, BRITISH THERMAL UNITS, BTUH, CAPACITY, CB, CATCH BASIN, CFM, CUBIC FEET PER MINUTE, CLG, CLEAN OUT, CW, COLD WATER, D, DEGREE, DB, DRY BULB, DIA, DIAMETER, DN, DOWN, DW, DISTILLED WATER, EA, EACH, EAT, ENTERING AIR TEMPERATURE, ELEC, ELECTRICAL, EQUIP, EQUIPMENT, EWC, ELECTRIC WATER COOLER, EWT, ENTERING WATER TEMPERATURE, E/A, EXHAUST AIR, EXIST, EXISTING, F, DEGREES FAHRENHEIT, FCO, DEGREES FAHRENHEIT, FD, FLOOR DRAIN, FD, FLOOR DAMPER, FDV, FIRE DEPARTMENT VALVE, FL, FLOOR, FO, FUEL OIL, FOV, FUEL OIL VENT, FOR, FUEL OIL RETURN, FOS, FUEL OIL SUPPLY, FPM, FEET PER MINUTE, FS, FLOOR SINK, FT, FOOT/FEET, FTR, FIN TUBE RADIATION, GAL, GALLON, GC, GENERAL CONTRACTOR, GPM, GALLONS PER MINUTE, GREASE WASTE, HB, HOSE BIB, HP, HORSE POWER, HTG, HEATING, HTR, HEATER, HW, HOT WATER, HYD, HYDRANT, ID, INDIRECT, IN, INCH, INV, INVERT, LB, POUND, LB/HR, POUNDS PER HOUR, LAT, LEAVING AIR TEMPERATURE, LP, LOW PRESSURE, LPG, LIQUEFIED PETROLEUM GAS, LVR, LEAVING WATER TEMPERATURE, MIXED AIR, MAX, MAXIMUM, MBH, ONE THOUSAND BTU PER HOUR, MCF, ONE THOUSAND CUBIC FEET, MD, MOTORIZED DAMPER, MCH, MECHANICAL, MFR, MANUFACTURER, MIN, MINIMUM, MISC, MISCELLANEOUS, MTR, MOTOR, MJA/A, MAKE-UP AIR, NC, NOISE CRITERIA, NC, NORMALLY CLOSED, NIC, NOT IN CONTRACT, NO, NUMBER, NO, NORMALLY OPEN, NTS, NOT TO SCALE, O, OXYGEN, O/A, OUTSIDE AIR, ORD, OVERFLOW ROOF DRAIN, PD, PRESSURE DROP, PIV, POST INDICATOR VALVE, PLBG, PLUMBING, PRESS, PRESSURE, PRV, PRESSURE REDUCING VALVE, PSI, POUNDS PER SQUARE INCH, PSIG, POUNDS PER SQUARE INCH GAUGE, PWR, POWER, R, RADIANT CEILING PANEL, R/A, RETURN AIR, RCP, RADIANT CEILING PANEL, RD, ROOF DRAIN, REC, RECESSED, RED, REDUCER, RH, RELATIVE HUMIDITY, RL/A, RELIEF AIR, RM, ROOM, RPM, REVOLUTIONS PER MINUTE, RW, RAIN WATER, SF, SQUARE FOOT, S/A, SUPPLY AIR, SAN, SANITARY, SF, SQUARE FOOT, SMO, SMOKE DAMPER, SM, SURFACE MOUNT, SP, STANDPIPE, SP, STATIC PRESSURE, STM, STEAM, T, THERMOSTAT, TD, TEMPERATURE DROP, TDR, TRENCH DRAIN, TEMP, TEMPERATURE, TYP, TYPICAL, UG, UNDERGROUND, VAC, VACUUM, V, VENT, VAV, VARIABLE AIR VOLUME, VENT, VENTILATION, VTR, VENT THROUGH ROOF, W, WASTE, WB, WET BULB, WCO, WALL CLEAN OUT, WH, WALL HYDRANT.



1 LEVEL 2 HVAC DEMOLITION PLAN
 1/4" = 1'-0"
 0 4 8 16



2 LEVEL 2 HVAC PLAN
 1/4" = 1'-0"
 0 4 8 16

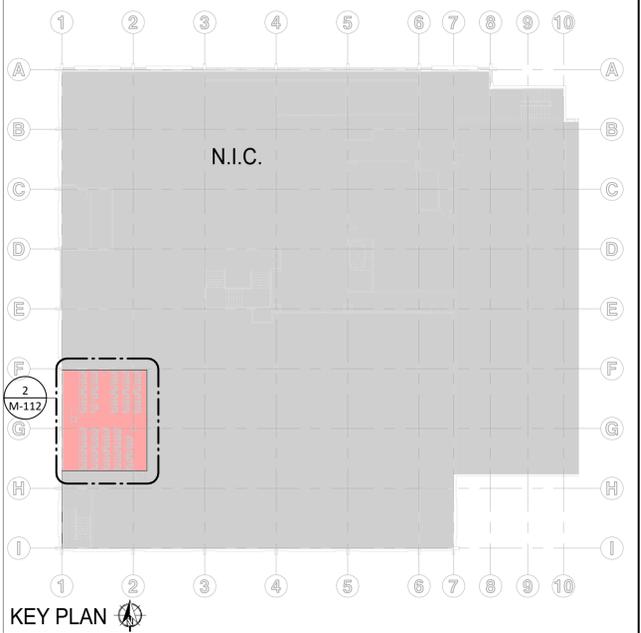
- GENERAL NOTES - HVAC**
- ALL DUCT FITTINGS TO BE LOW STATIC, HIGH EFFICIENCY FITTINGS. ELBOWS TO BE MINIMUM 1.5D WITH MATCHING THROAT OR MITERED WITH TURNING VANES PER DETAIL 4/M-601. ROUND DUCT MAY BE REDUCED TO 1.0D IF REQUIRED BY SPACE CONSTRAINTS.
 - ALL DUCTWORK SHALL BE PROVIDED WITH INTERNAL LINER FOR SOUND ATTENUATION. DUCT SIZES ON DRAWINGS SHOW INTERNAL FREE AREA.
- KEYNOTES**
- DEMOLISH EXISTING DIFFUSER AND ASSOCIATED BRANCH DUCT BACK TO MAIN. CAP AND SEAL AIR TIGHT.
 - RELOCATE EXISTING RETURN GRILLES TO NEW LOCATION OUTSIDE OF NEW CLASSROOM TO MAINTAIN APPROPRIATE RETURN AIR PATH.
 - ROUTE REFRIGERANT LINES FROM AIR HANDLER INTO THE MECHANICAL ROOM AND UP TO HEAT PUMP ON THE ROOF. IT IS ANTICIPATED THAT REFRIGERANT LINES CAN BE ROUTED UP TO THE THIRD FLOOR ALONG SIDE THE COOLING TOWER PIPING.
 - CONDENSATE SHALL BE PUMPED FROM AHU. ROUTE CONDENSATE LINES INTO MECHANICAL ROOM AND PROVIDE HUB DRAIN ON EXISTING CONDENSATE STACK FROM AIR HANDLER UNITS. INSTALL PER MANUFACTURER INSTRUCTIONS.
 - REFER TO DETAIL 2/M-601 FOR FRESH AIR / EXHAUST LOUVER DETAIL.



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257



KEY PLAN

DRAWN: BJB CHECKED: BJB

DATE: 03/13/2026

REVISIONS:

NO.	DESCRIPTION

LEVEL 2 HVAC PLAN

M-112

KEYNOTES

- 1 REFER TO 1/M-601 FOR HEAT PUMP STAND DETAIL.
- 2 REFER TO 3/M-601 FOR REFRIGERANT LINE PENETRATION DETAIL THROUGH THE ROOF.
- 3 HEAT PUMPS SHALL BE MOUNTED TO PROVIDE MINIMUM 4' CLEARANCE FROM COOLING TOWER.



BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

**INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY**
RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPAF#: 25-1257

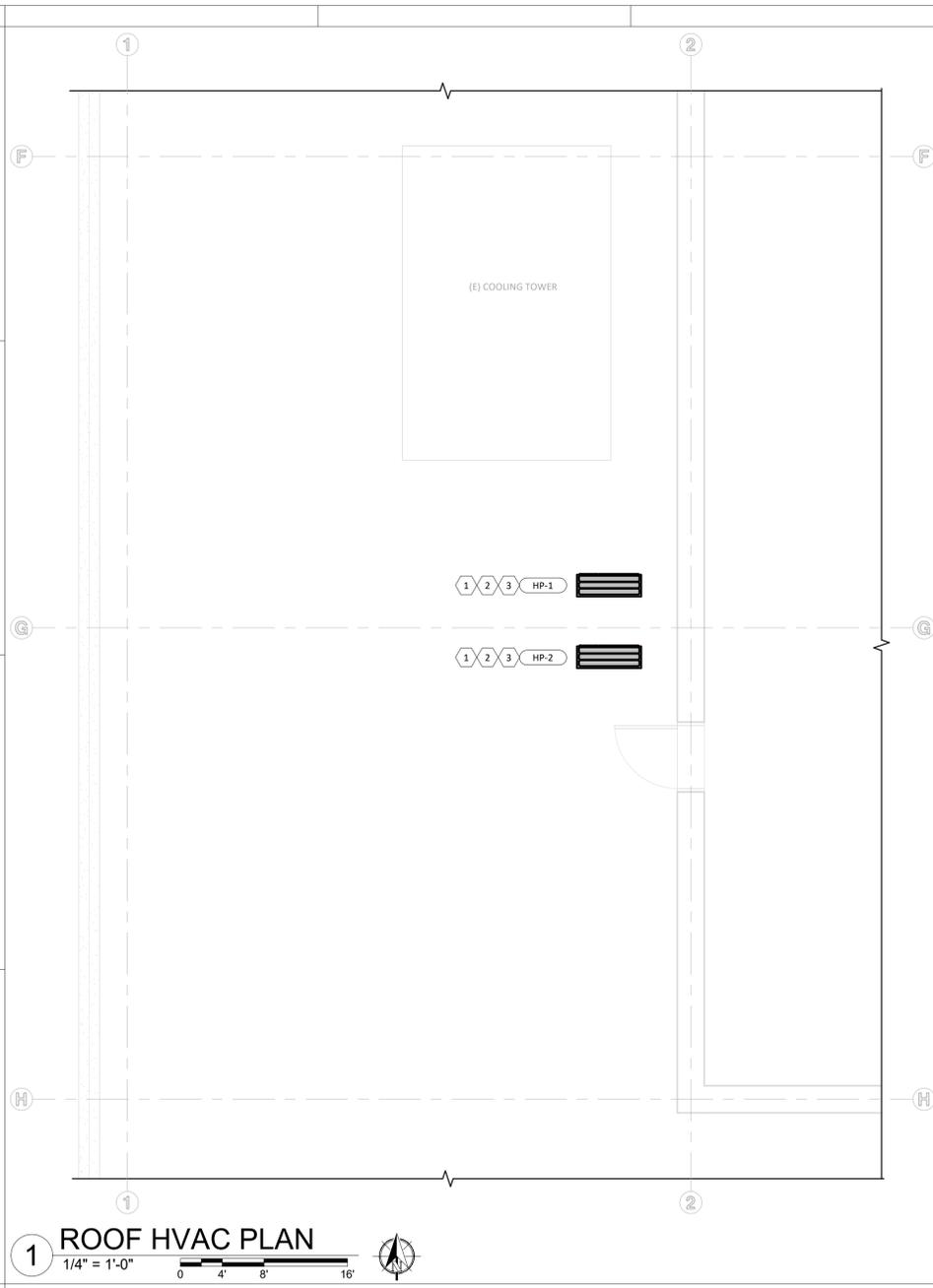
DRAWN: BJB CHECKED: BJB

DATE: 03/13/2026

REVISIONS:

ROOF HVAC PLAN

M-135



PROJECT #/Project Number

MINI-SPLIT AIR HANDLER UNIT SCHEDULE																																
TAG	DESCRIPTION	BASIS OF DESIGN		SYSTEM INTERLOCK	ARRANGEMENT	SUPPLY AIRFLOW	OUTSIDE AIRFLOW	FAN				EVAPORATOR COOLING COIL			CONDENSER HEATING COIL		HEATING ELEMENT		ACCESSORIES			FILTER	ELECTRICAL DATA									
		MANUFACTURER	MODEL NO.					HEAT PUMP	ESP	QTY	POWER	ECM	NOMINAL CAP	CAP @ DESIGN CONDITIONS		NOMINAL CAP	CAP @ DESIGN CONDITIONS	DESCRIPTION	POWER	CONDENSATE			AUXILIARY DRAIN PAN	OVERFLOW SWITCH	PUMP	AHU POWERED BY ODU	UNIT WEIGHT	FLA	VOLT	PH	REMARKS	
														TOTAL	SENSIBLE					AUXILIARY	OVERFLOW											PUMP
AHU-1	MULTI-POSITION AIR HANDLER UNIT	SAMSUNG	AC024BNZDCH/AA	HP-1	HORIZONTAL	750 CFM	325 CFM	0.58 in-wg	1	290.00 W	Yes	2 ton	22300 Btu/h	15800 Btu/h	27000 Btu/h	16200 Btu/h	ELECTRIC HEAT KIT	3 kW	Yes	Yes	Yes	Yes	MERV 8	110 lb	2.1 A	208 V	1	1,2				
AHU-2	MULTI-POSITION AIR HANDLER UNIT	SAMSUNG	AC024BNZDCH/AA	HP-2	HORIZONTAL	750 CFM	325 CFM	0.58 in-wg	1	290.00 W	Yes	2 ton	22300 Btu/h	15800 Btu/h	27000 Btu/h	16200 Btu/h	ELECTRIC HEAT KIT	3 kW	Yes	Yes	Yes	Yes	MERV 8	110 lb	2.1 A	208 V	1	1,2				

REMARKS:
 1. PROVIDE WITH ELECTRIC HEAT KIT, VHK-103A. COORDINATE WITH EC TO PROVIDE POWER FOR HEAT KIT.
 2. PROVIDE WITH INTESIS CONTROLLER WITH BACNET TO FULLY INTERGRATE AHU INTO BMS SYSTEM.
 3. PROVIDE WITH FILTER BOX.

MINI-SPLIT HEAT PUMP SCHEDULE																													
TAG	DESCRIPTION	BASIS OF DESIGN		SYSTEM INTERLOCK	INDOOR UNIT	TYPE	NOMINAL CAP	COOLING			HEATING			COMPRESSOR		RATED OPERATING RANGE			ACCESSORIES			ELECTRICAL DATA							
		MANUFACTURER	MODEL NO.					CAP @ DESIGN CONDITIONS			NOMINAL CAP	CAP @ -13°F	REFRIGERANT		LOW AMBIENT KIT	COOLING			BASEPAN HEATER	SEER2	EER	HSPF2	UNIT WEIGHT	FLA	MCA	MOCPP	VOLT	PH	REMARKS
								TOTAL	SENSIBLE	NOMINAL CAP			TYPE	CHARGE		HEATING	MIN	MAX											
HP-1	HEAT PUMP	SAMSUNG	AC024BKADCH/AA	AHU-1	HEAT PUMP	2 ton	22300 Btu/h	15800 Btu/h	27000 Btu/h	16200 Btu/h	R410A	5.73 lb	Yes	-13.0 °F	0.0 °F	122 °F	Yes	16.9	9.7	7.9	160 lb	17 A	24 A	30 A	208 V	1	1,2		
HP-2	HEAT PUMP	SAMSUNG	AC024BKADCH/AA	AHU-2	HEAT PUMP	2 ton	22300 Btu/h	15800 Btu/h	27000 Btu/h	16200 Btu/h	R410A	5.73 lb	Yes	-13.0 °F	0.0 °F	122 °F	Yes	16.9	9.7	7.9	160 lb	17 A	24 A	30 A	208 V	1	1,2		

REMARKS:
 1. PROVIDE WITH WIND BAFFLES FOR LOW AMBIANT COOLING.
 2. PROVIDE WITH HAIL GAURD.

ENERGY RECOVERY UNIT SUMMARY SCHEDULE																															
TAG	DESCRIPTION	BASIS OF DESIGN		TYPE	SUPPLY FAN				EXHAUST FAN			SUMMER DESIGN ENERGY RECOVERY			WINTER DESIGN ENERGY RECOVERY			EFFICIENCIES	FILTER	ELECTRICAL DATA											
		MANUFACTURER	MODEL NO.		DESIGN	PRESS	AIRFLOW	ESP	DESIGN	PRESS	COOLING CAP	EXHAUST AIR			CAP	OUTSIDE AIR				FROST CONTROL	EXHAUST AIR	EFFECTIVENESS	TOTAL	TYPE	UNIT WEIGHT	FLA	MCA	MOCPP	VOLT	PH	REMARKS
												EAT(dB)	LAT(dB)	EAT(dB)		TYPE	CHARGE														
ERV-1	ENERGY RECOVERY VENTILATOR	GREENHECK	MINICORE-5-VG-P	FIBER CORE	650 CFM	0.50 in-wg	650 CFM	0.50 in-wg	6580 Btu/h	92.0 °F	81.0 °F	86.0 °F	30140 Btu/h	-13.0 °F	37.4 °F	TIMED EXHAUST	25.1 °F	66%	MERV 8	215 lb	6.9 A	8.6 A	15 A	208 V	1						

ELECTRIC DUCT COIL SCHEDULE																			
TAG	DESCRIPTION	BASIS OF DESIGN		HEATING COIL					DUCT SIZE			ELECTRICAL DATA							
		MANUFACTURER	MODEL NO.	DESIGN FLOW	AIRSIDE		HEATING ELEMENT	QTY	POWER	SCR	WIDTH	HEIGHT	DIA.	UNIT WEIGHT	FLA	MOCPP	VOLT	PH	REMARKS
					EAT(dB)	LAT(dB)													
DH-1	ELECTRIC DUCT HEATER	ELECTRO INDUSTRIES	EM-WC1025H	650 CFM	37.4 °F	77.8 °F	1	9.6 kW	Yes	14"	115 lb	40.0 A	50 A	240 V	1				

EXTERIOR AIR INLETS & OUTLETS SCHEDULE																
TAG	DESCRIPTION	BASIS OF DESIGN		MATERIAL	TYPE	DESIGN CRITERIA				DIMENSIONS			DAMPER		INTERLOCK	REMARKS
		MANUFACTURER	MODEL NO.			AIRFLOW	FREE AREA	FREE AREA VELOCITY	PD	WIDTH	HEIGHT	BIRDSCREEN	TYPE	VOLT		
L-1	LOUVER/DAMPER	GREENHECK	ESD-635	ALUMINIUM	FIXED BLADE	650 CFM	1.11 SF	715 FPM	0.08 in-wg	24"	18"	Yes	MOTORIZED	24 V	ERV-1	
L-2	LOUVER/DAMPER	GREENHECK	ESD-635	ALUMINIUM	FIXED BLADE	650 CFM	1.11 SF	715 FPM	0.08 in-wg	24"	18"	Yes	MOTORIZED	24 V	ERV-1	

INTERIOR AIR INLETS & OUTLETS SCHEDULE										
TAG	DESCRIPTION	BASIS OF DESIGN		FINISH	FACE SIZE	NECK SIZE	INSTALLATION			REMARKS
		MANUFACTURER	MODEL NO.				BORDER TYPE	DAMPER		
E-1L	PERFORATED DIFFUSER STEEL	TITUS	PAR	WHITE ENAMEL	24"x24"	16"Ø	TYPE 3 (LAY-IN)	---	---	
R-1L	PERFORATED DIFFUSER STEEL	TITUS	PAR	WHITE ENAMEL	24"x24"	12"Ø	TYPE 3 (LAY-IN)	---	---	
S-1L	PLAQUE FACE DIFFUSER	TITUS	OMNI	WHITE ENAMEL	24"x24"	6"Ø	TYPE 3 (LAY-IN)	---	---	
S-1L	PLAQUE FACE DIFFUSER	TITUS	OMNI	WHITE ENAMEL	24"x24"	10"Ø	TYPE 3 (LAY-IN)	---	---	

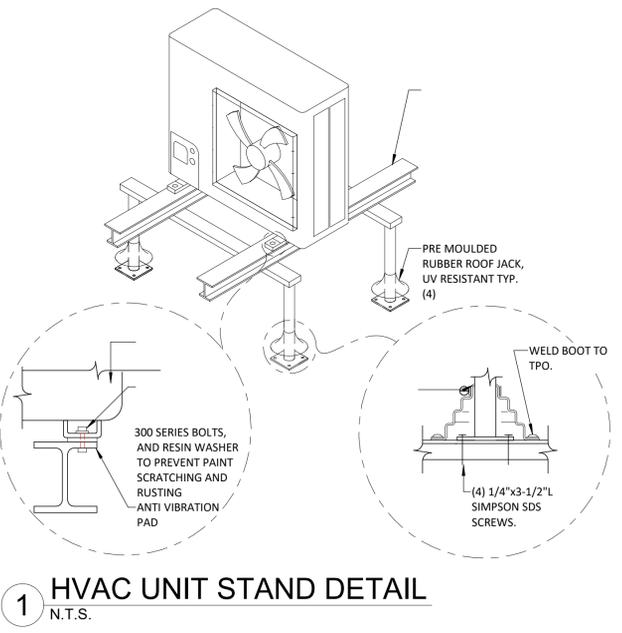
CONTROLS SEQUENCE:
SPLIT SYSTEM FURNACES (AHU-1/HP-1, AHU-2/HP-2)
 A. AIR HANDLING UNIT TO BE INTEGRATED INTO BUILDING MANAGEMENT SYSTEM (BMS) AND CONTROLLED BY BMS.
 B. SYSTEM CAN BE TURNED ON BASED ON OVERRIDE COMMAND FROM RESPECTIVE THERMOSTAT.
 C. DURING OCCUPIED OPERATION THE SPACE TEMPERATURE SETPOINT IN HEATING SHALL BE 70 F AND 75 F IN COOLING.
 D. DURING UNOCCUPIED OPERATION THE SPACE TEMPERATURE SETPOINT IN HEATING SHALL BE 60 F AND 80 F SETPOINT IN COOLING.
 E. SETPOINTS SHALL BE ADJUSTABLE.
TEMPERATURE CONTROL:
 A. THE SPACE TEMPERATURE SENSOR SIGNALS HEATING/COOLING DEMAND.
 B. COOLING MODE:
 a. COOLING IS ENABLED WHEN THE SPACE TEMPERATURE RISES ABOVE THE COOLING SETPOINT. COOLING IS DISABLED WHEN THE MODE ENABLE TEMPERATURE FALLS BELOW THE COOLING SETPOINT. THE SETPOINT IS ADJUSTABLE.
 b. ONCE IN THE COOLING MODE THE UNIT WILL STAGE COOLING TO MAINTAIN THE SPACE TEMPERATURE.
 C. HEATING MODE:
 a. HEATING IS ENABLED WHEN THE SPACE TEMPERATURE FALLS BELOW THE HEATING SETPOINT. HEATING IS DISABLED WHEN THE MODE ENABLE TEMPERATURE RISES ABOVE HEATING SETPOINT. THE SETPOINT IS ADJUSTABLE.
 b. ONCE IN THE HEATING MODE THE UNIT WILL STAGE HEAT TO MAINTAIN THE SPACE TEMPERATURE.
 c. ELECTRIC HEAT KIT TO MODULATE ELECTRIC HEAT TO MAINTAIN THE SPACE TEMPERATURE.
OPTIMAL START:
 A. THE OCCUPANCY SCHEDULE SHALL BE SET TO MEETING SPACE SETPOINT BY THE ACTUAL OCCUPIED TIME.
VENTILATION MODE:
 A. WHEN SPACE TEMPERATURE SETPOINT IS SATISFIED, AND IN OCCUPIED MODE, THE FAN SHALL OPERATE AT DESIGN SPEED TO PROVIDE TEMPERED/UNTEMPERED VENTILATION AIR TO THE SPACE.
CONTROL POINTS:
 A. THE BMS WRITABLE POINTS LIST WOULD INCLUDE OCCUPIES/UNOCCUPIED, EQUIPMENT COMMAND AND TEMPERATURE ADJUSTMENTS. OTHER POINTS WOULD INCLUDE MODE (COOL, HEAT, VENT), ROOM TEMPERATURE, DISCHARGE AIR TEMPERATURE, FAN STATUS, AND ALARM POINTS.
 B. COORDINATE WITH OWNER FOR ANY ADDITIONAL POINTS.
ENERGY RECOVERY VENTILATOR (ERV-1)
 A. ERV SHALL BE CONTROLLED BY OCCUPANCY SCHEDULE.
 B. ERV SHALL RUN CONTINUOUSLY DURING OCCUPIES HOURS TO PROVIDE VENTILATION AIR TO SPACE.
TEMPERATURE CONTROL:
 A. ERV UNIT SHALL HAVE DISCHARGE AIR TEMPERATURE CONTROL BY MEANS OF ELECTRIC DUCT HEATER **DH-1** TO MAINTAIN 60 DEGREE DISCHARGE AIR TEMPERATURE.
 B. PROVIDE AUTO RESET MIN SUPPLY AIR CONTROL DOWNSTREAM OF **DH-1** TO STOP ERV IF DISCHARGE AIR TEMP DROPS BELOW 45 DEGREES. IF UNIT TRIPS 3 TIMES IN 30 MINUTE PERIOD, THEN SHUT OFF ERV AND ALARM DDC. RESET THROUGH DDC.
CONTROL POINTS:
 A. THE BMS WRITABLE POINTS LIST WOULD INCLUDE OCCUPIES/UNOCCUPIED, EQUIPMENT COMMAND AND TEMPERATURE ADJUSTMENTS. OTHER POINTS WOULD INCLUDE SUPPLY AIR TEMPERATURE UP STREAM/DOWN STREAM OF DUT HEATER, AUTO RESET FREEZE CONTROL, FAN STATUS, AND ALARM POINTS.
 B. COORDINATE WITH OWNER FOR ANY ADDITIONAL POINTS.



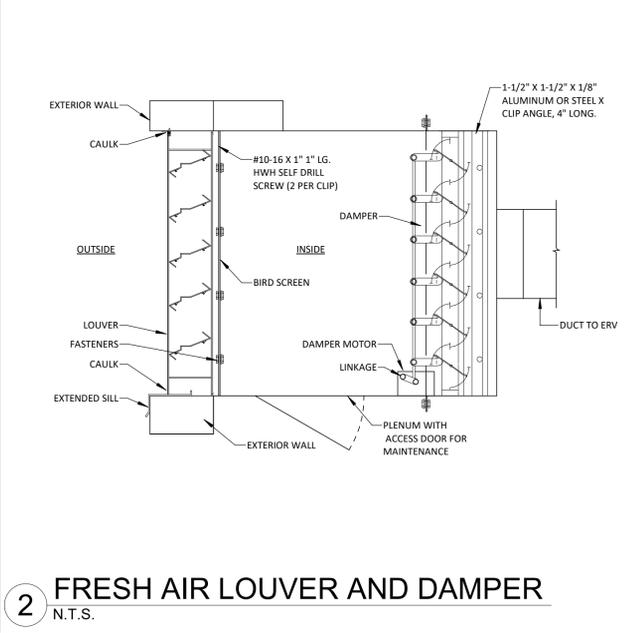
BID SET

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

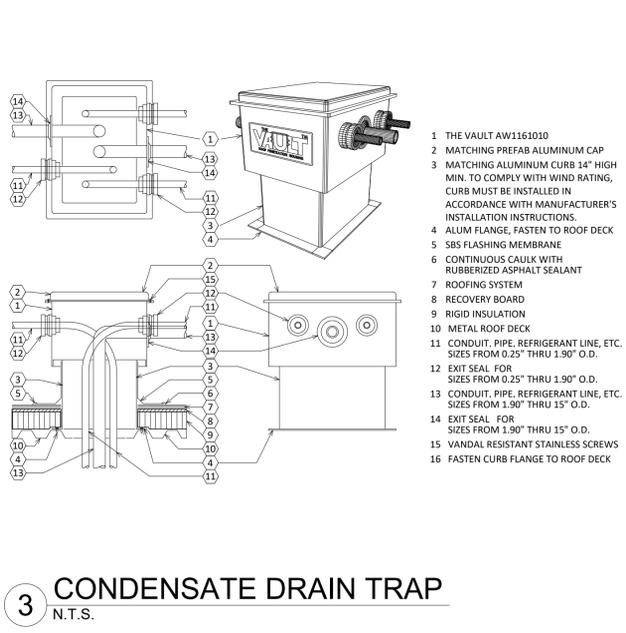
INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257



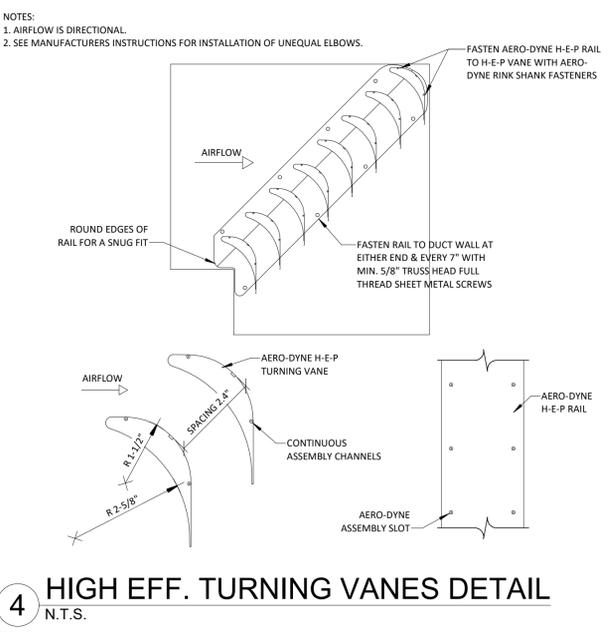
1 HVAC UNIT STAND DETAIL
N.T.S.



2 FRESH AIR LOUVER AND DAMPER
N.T.S.



3 CONDENSATE DRAIN TRAP
N.T.S.



4 HIGH EFF. TURNING VANES DETAIL
N.T.S.

DRAWN: BJB CHECKED: BJB
 DATE: 03/13/2026

REVISIONS:

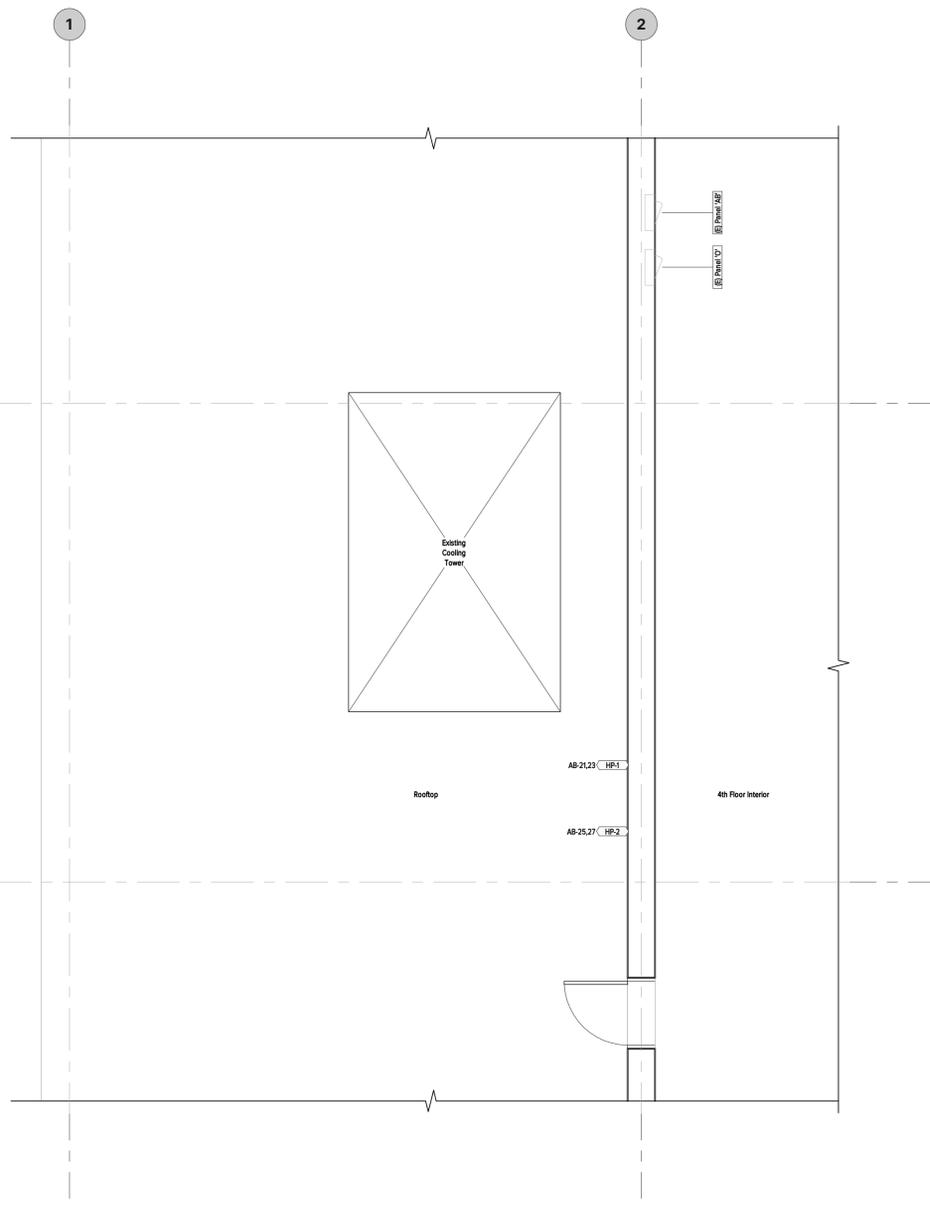
MECHANICAL SCHEDULES

M-601

PROJECT #/Project Number

Reference Keynotes

- Existing strobe box to be extended on new furred wall in the same location.
- EC to demolish and replace existing 208Y/120V electrical panel due to limited breaker space and discontinued equipment.



PROJECT # Project Number

DRAWN: APH CHECKED: ASM

DATE: 03/13/2026

REVISIONS:

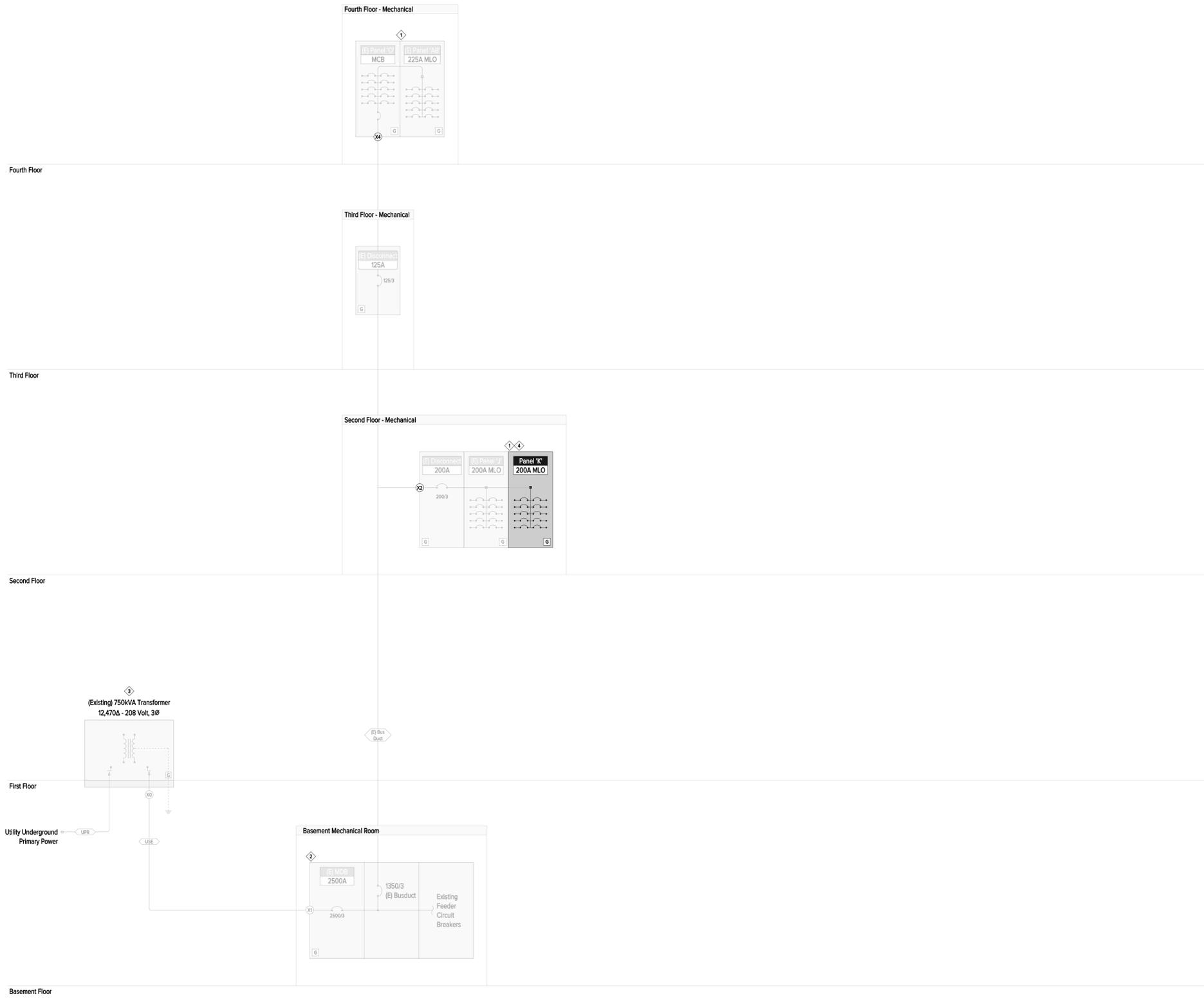
NO.	DESCRIPTION

ELECTRICAL PLANS

E101

One-Line Diagram Notes

- ① EC to conduct 30-day demand study per NEC 220.87 to ensure there is adequate capacity. Provide peak demand data to Engineer upon completion of data logging.
- ② It is assumed that the existing switchgear is 2500A minimum and rated 42,000A SCCR. Lengths of short circuit schedule are best engineering judgement and E.C. shall let Engineer or Record know if anything deviates from what is on plan.
- ③ Transformer size is given and max available fault current at utility transformer is calculated to be 32,163A. Available fault current calculations are based on:
 - 750 kVA, 5.66% Z utility transformer
 - 200-foot service conductor length or longer
 - (6) 600 kcmil copper service conductors per phase, minimum
 EC shall verify these assumptions with the utility. If assumptions are not valid, EC shall request updated available fault currents from engineer in writing.
- ④ Existing Westinghouse panel to be updated to active manufacturer.



Short Circuit Current and Feeder Schedule												
Point	Device	Short Circuit Current			Voltage	Feeder (Cu THWN-2)				Transformer		Fault at Primary
		Fault at Device	AIC Rating			Feeder ID	Phase	Neutral	Ground	Length	kVA	
X0	Library XFMR	32,163			480V					750	5.66	
X1	MDB	22,930	Existing	208V	USE	(6)600kcmil	600kcmil	350kcmil	207'			
X2	200A Disconnect	19,587	Existing	208V	Bus Duct	-	-	-	81'			
X2.1	J	17,347	Existing	208V	200/3	3/0	3/0	#6	12'			
X2.2	K	15,456	22,000 A	208V	200/3	3/0	3/0	#6	12'			
X3	125A Disconnect	19,171	Existing	208V	Bus Duct	-	-	-	93'			
X3.1	O	12,884	Existing	208V	125/3	1/0	1/0	#6	31'			
X3.2	AB	11,196	Existing	208V	125/3	1/0	1/0	#6	13'			

Mechanical Equipment Connections									
Mechanical Details		Electrical Info			Disconnect Details				
ID	Description	Voltage	Poles	Load	Type	Size	Fuse	NEMA	Notes
AHU-1	Mini-Split Air Handler Unit	208 V	2	290 VA	DPST	20 A	-	NEMA 1	1
AHU-1H	Supplemental Heat Kit	208 V	2	3000 VA	DPST	20 A	-	NEMA 1	2
AHU-2	Mini-Split Air Handler Unit	208 V	2	290 VA	DPST	20 A	-	NEMA 1	1
AHU-2H	Supplemental Heat Kit	208 V	2	3000 VA	DPST	20 A	-	NEMA 1	2
DH-1	Duct Heater	208 V	2	9600 VA	BRKR	60 A	-	-	-
ERV-1	Energy Recovery Ventilator	208 V	2	1435 VA	DPST	20 A	-	NEMA 1	-
HP-1	Mini-Split Heat Pump	208 V	2	3536 VA	NFD	30 A	-	NEMA 3R	-
HP-2	Mini-Split Heat Pump	208 V	2	3536 VA	NFD	30 A	-	NEMA 3R	-

Notes

- Mini-split air handling unit is powered from mini-split outdoor unit.
- Dedicated circuit required for air-handler supplemental heater.

Type Abbreviations

- SPST • Single Pole, Single Throw snap switch
- DPST • Double Pole, Single Throw snap switch
- NFD • Non-Fused Disconnect
- FD • Fused Disconnect
- RCPT • Cord-and-Plug connection
- SSU • Fused Switch, Busman SSU, OAE
- BRKR • Lockable Breaker
- CTRL • Motor Controller

Panel 'K'							
PANEL	K	VOLTAGE	120/208 Wye	MAIN BUS RATING	225 A	MAIN BUS FEED LOCATION	
LOCATION	Mechanical 216ME	PHASE	3Ø	MAINS TYPE	MLO	MAIN BUS FEED-THROUGH LOAD	
MOUNTING	Surface	WIRE	4	MAIN CIRCUIT BREAKER	200 A	SUB-FEED #1 BREAKER RATING	
FED FROM	J	ENCLOSURE TYPE	NEMA 1	SHORT CIRCUIT AIC RATING	22,000 A	SUB-FEED #2 BREAKER RATING	

Details:

- Circuit Breaker Protection Types |
- A = Arc-Fault Protection
 - G = Ground-Fault Personnel
 - D = Dual Arc-Fault and Ground-Fault Protection
 - E = Ground-Fault Equipment
 - L = Breaker Lock-Off Device
 - S = Furnish with Standard Breaker
 - ST = Shunt Trip Device

Notes:

- All conductors to be copper unless otherwise noted. Conductors shall be upsized for all runs over 100 feet to keep maximum allowable voltage drop below 3%.
- Where panel schedule and plans indicate GFCI protection for the same circuit, E.C. shall determine whether to install a GFCI receptacle / device or a GFCI circuit breaker but not both.
- Reference Mechanical Equipment Connection Schedule and manufacturer instructions for electrical installations requirements.
- If mechanical equipment is within sight (less than 50-feet) of the load center, a molded case circuit breaker may serve as the disconnecting means. The circuit breaker must be capable of being locked in the open position.
- Provide door-in-door hinged cover per MSU standards.
- EC to perform 30-day demand study prior to beginning work per NEC 220.87.
- Indicated demand load is new load only. Existing peak demand information will be multiplied by 1.25 and added to new demand load per NEC requirements, to confirm adequate capacity.

CKT	CIRCUIT DESCRIPTION	WIRE	TYPE	TRIP	POLES	A	B	C	POLES	TRIP	TYPE	WIRE	CIRCUIT DESCRIPTION	CKT	
1	(E) Receptacles Center Rail	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	(E) SP-3	2	
3	(E) Receptacles Center Rail	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	(E) Receptacles Center	4	
5	(E) Receptacles Center Rail	--	--	20 A	1			0 VA	0 VA	1	20 A	--	(E) Receptacles Center	6	
7	(E) Receptacles Center Rail	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	(E) Atrium Pendants	8	
9	(E) Illegible	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	(E) Floor Receptacles S.W. Center	10	
11	(E) Floor Receptacles W. Center	--	--	20 A	1			0 VA	0 VA	1	20 A	--	(E) Floor Receptacles Corner by Mech Room	12	
13	(E) Receptacles South Wall	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	(E) Floor Receptacles S.W. Corner	14	
15	(E) Receptacles South Wall	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	(E) Floor Receptacles N. Side Center	16	
17	(E) Receptacles South Wall	--	--	20 A	1			0 VA	0 VA	1	20 A	--	(E) Floor Receptacles N. Side W. Wall	18	
19	(E) Receptacles South Wall	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	(E) Floor Receptacles N. Side E. Wall	20	
21	North Convenience Rcpts ILS	3/4"C, 1#12, #12N, #12G	S	20 A	1		1080 VA	1260 VA	1	20 A	S	3/4"C, 1#12, #12N, #12G	South Convenience Rcpts ILS	22	
23	North TVs ILS	3/4"C, 1#12, #12N, #12G	S	20 A	1			540 VA	540 VA	1	20 A	S	3/4"C, 1#12, #12N, #12G	South TVs ILS	24
25	AV Rack ILS	3/4"C, 1#12, #12N, #12G	S	20 A	1	180 VA	718 VA			2	20 A	S	3/4"C, 2#12, #12N, #12G	Energy Recovery Vent. ILS	26
27	AV Rack ILS	3/4"C, 1#12, #12N, #12G	S	20 A	1		180 VA	718 VA		--	--	--	--	28	
29	Duct Heater ILS	1"C, 2#4, #4N, #10G	L	60 A	2			4800 VA	1500 VA	2	20 A	S	3/4"C, 2#12, #12N, #12G	Electric Heat Kit AHU-1H	30
31	--	--	--	--	--	4800 VA	1500 VA			--	--	--	--	32	
33	Provision	--	--	--	1		--	1500 VA		2	20 A	S	3/4"C, 2#12, #12N, #12G	Electric Heat Kit AHU-2H	34
35	Provision	--	--	--	1		--	--	1500 VA	--	--	--	--	36	
37	Provision	--	--	--	1	--	--	--	--	1	--	--	--	38	
39	Provision	--	--	--	1	--	--	--	--	1	--	--	--	40	
Total Apparent Power Phase Loads:						7198 VA	4738 VA	8880 VA							
Total Current Phase Loads:						63 A	39 A	77 A							

CONNECTED LOADS:	LOAD CLASSIFICATION	CONNECTED LOADS (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	PANEL TOTALS
Phase A:	Commercial - Receptacles	3780 VA	100.00%	3780 VA	Total Connected Load: 20815 VA
Phase B:	Commercial - Appliances	11035 VA	100.00%	11035 VA	Total Estimated Demand: 20815 VA
Phase C:	HVAC	6000 VA	100.00%	6000 VA	Total Connected Current: 58 A
Total:		20815 VA			Total Estimated Demand Current: 58 A

Panel 'AB'							
PANEL	AB	VOLTAGE	120/208 Wye	MAIN BUS RATING	225A	MAIN BUS FEED LOCATION	
LOCATION		PHASE	3Ø	MAINS TYPE	MLO	MAIN BUS FEED-THROUGH LOAD	
MOUNTING		WIRE	4	MAIN CIRCUIT BREAKER	125 A	SUB-FEED #1 BREAKER RATING	
FED FROM	O	ENCLOSURE TYPE	NEMA 1	SHORT CIRCUIT AIC RATING	Existing	SUB-FEED #2 BREAKER RATING	

Details:

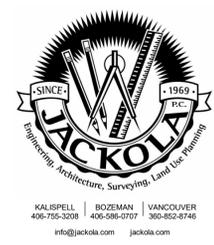
- Circuit Breaker Protection Types |
- A = Arc-Fault Protection
 - G = Ground-Fault Personnel
 - D = Dual Arc-Fault and Ground-Fault Protection
 - E = Ground-Fault Equipment
 - L = Breaker Lock-Off Device
 - S = Furnish with Standard Breaker
 - ST = Shunt Trip Device

Notes:

- All conductors to be copper unless otherwise noted. Conductors shall be upsized for all runs over 100 feet to keep maximum allowable voltage drop below 3%.
- Where panel schedule and plans indicate GFCI protection for the same circuit, E.C. shall determine whether to install a GFCI receptacle / device or a GFCI circuit breaker but not both.
- Reference Mechanical Equipment Connection Schedule and manufacturer instructions for electrical installations requirements.
- If mechanical equipment is within sight (less than 50-feet) of the load center, a molded case circuit breaker may serve as the disconnecting means. The circuit breaker must be capable of being locked in the open position.
- Provide door-in-door hinged cover per MSU standards.
- EC to perform 30-day demand study prior to beginning work per NEC 220.87.
- Indicated demand load is new load only. Existing peak demand information will be multiplied by 1.25 and added to new demand load per NEC requirements, to confirm adequate capacity.

CKT	CIRCUIT DESCRIPTION	WIRE	TYPE	TRIP	POLES	A	B	C	POLES	TRIP	TYPE	WIRE	CIRCUIT DESCRIPTION	CKT
1	Lights Existing	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	Spare Existing	2
3	Lights Existing	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	Lights Existing	4
5	Lights Existing	--	--	20 A	1			0 VA	0 VA	1	20 A	--	Lights Existing	6
7	Lights Existing	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	Lights Existing	8
9	Lights Existing	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	Lights Existing	10
11	Spare Existing	--	--	20 A	1			0 VA	0 VA	1	20 A	--	Lights Existing	12
13	Under Carpet Wireway Recepts Existing	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	Spare Existing	14
15	Spare Existing	--	--	20 A	1		0 VA	0 VA	1	20 A	--	--	Spare Existing	16
17	Spare Existing	--	--	20 A	1			0 VA	0 VA	1	20 A	--	Floor Rcpts South Drop Existing	18
19	Spare Existing	--	--	20 A	1	0 VA	0 VA		1	20 A	--	--	Floor Rcpts East Drop Existing	20
21	Heat Pump HP-1	3/4"C, 2#10, #10N, #10G	S	30 A	2		1913 VA	--	1	--	--	--	Provision	22
23	--	--	--	--	--	--	--	1913 VA	--	1	--	--	Provision	24
25	Heat Pump HP-2	3/4"C, 2#10, #10N, #10G	S	30 A	2	1913 VA	0 VA		3	60 A	--	--	Spare Existing	26
27	--	--	--	--	--	--	1913 VA	0 VA	--	--	--	--	--	28
29	Provision	--	--	--	1	--	--	--	0 VA	--	--	--	--	30
Total Apparent Power Phase Loads:						1913 VA	3826 VA	1913 VA						
Total Current Phase Loads:						16 A	32 A	16 A						

CONNECTED LOADS:	LOAD CLASSIFICATION	CONNECTED LOADS (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	PANEL TOTALS
Phase A:	HVAC	7652 VA	100.00%	7652 VA	Total Connected Load: 7652 VA
Phase B:					Total Estimated Demand: 7652 VA
Phase C:					Total Connected Current: 21 A
Total:		7652 VA			Total Estimated Demand Current: 21 A



BLACK SHEEP

Mechanical | Electrical | Plumbing | Lighting | Technology
602 W. Hancock | Bozeman, MT 59715
Blacksheepengineering | 505.312.5114

CONSTRUCTION DOCUMENTS

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.



Innovation Learning Studio
 Renee Library
 Bozeman, MT 59717

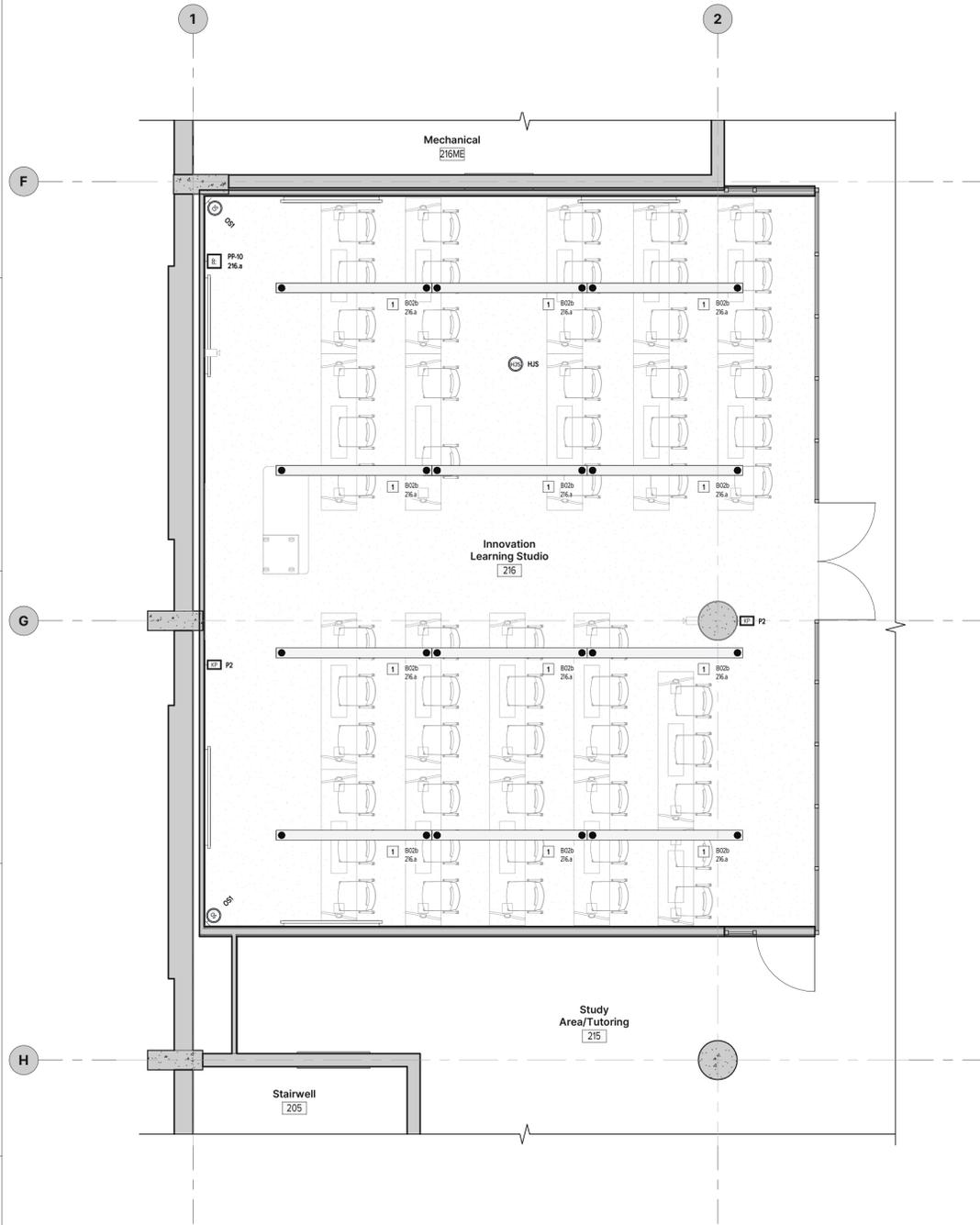
DRAWN: APH CHECKED: ASM

DATE: 03/13/2026

REVISIONS:

ELECTRICAL EQUIPMENT SCHEDULES

E620



1 Innovation Lab Lighting Plan
1/4" = 1'-0"

Luminaires									
Type	Description	Manufacturer	Model	CCT	CRI	Dimming	Load	Lumens	Note
B02b	Suspended Linear 8'	JESCO	LNSL-DI-96-80W-DSW1-LOUWH-WH/LIN-PD-KIT-PF-WH-8FT/LIN-PD-KIT-NF-WH-8FT	3500K	90+	0-10V	80 VA	2904 lm	

Lighting Control Devices				
Type	Description	Manufacturer	Model	Note
HJS	Vive Wireless Hub without BACnet, Up to 75 Devices, Surface Mount.	Lutron	HJS-0-SM	1, 2, 3, 4
P2	Pico Remote - 2-Button with Dimming	Lutron	HRST-W2B-XX	1, 2, 3, 4
OS1	Radio Power Saver Wireless Occupancy Sensor - Corner Mounted	Lutron	LRFX-OCR2B-P	1, 2, 3, 4, 5
PP-10	Vive PowPak 0-10V Dimming Module	Lutron	RMJS-8TN-DV-B	1, 2, 3, 4

- Notes:**
- EC to install a complete working system.
 - EC to provide startup, commissioning, and training services for lighting control system.
 - Refer to specifications for additional control system requirements.
 - EC to install Vive lighting control equipment according to plans to ensure the best connectivity to wireless control devices.
 - Occupancy sensors to be installed in locations according to plans. They are to be installed at levels that allow the sensor to operate properly and are also unobstructed by building infrastructure and luminaires.

- Reference Keynotes**
- Connect to existing 120V, 20A, unswitched normal power lighting circuit serving this area.



BLACK SHEEP

Mechanical | Electrical | Plumbing | Lighting | Technology
602 W. Hancock | Bozeman, MT 59715
Blacksheepengineering | 406.331.2314

CONSTRUCTION DOCUMENTS

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.



Innovation Learning Studio
Renne Library
Bozeman, MT 59717

DRAWN: APH CHECKED: ASM
DATE: 03/13/2026

REVISIONS:

NO.	DESCRIPTION

LIGHTING PLAN

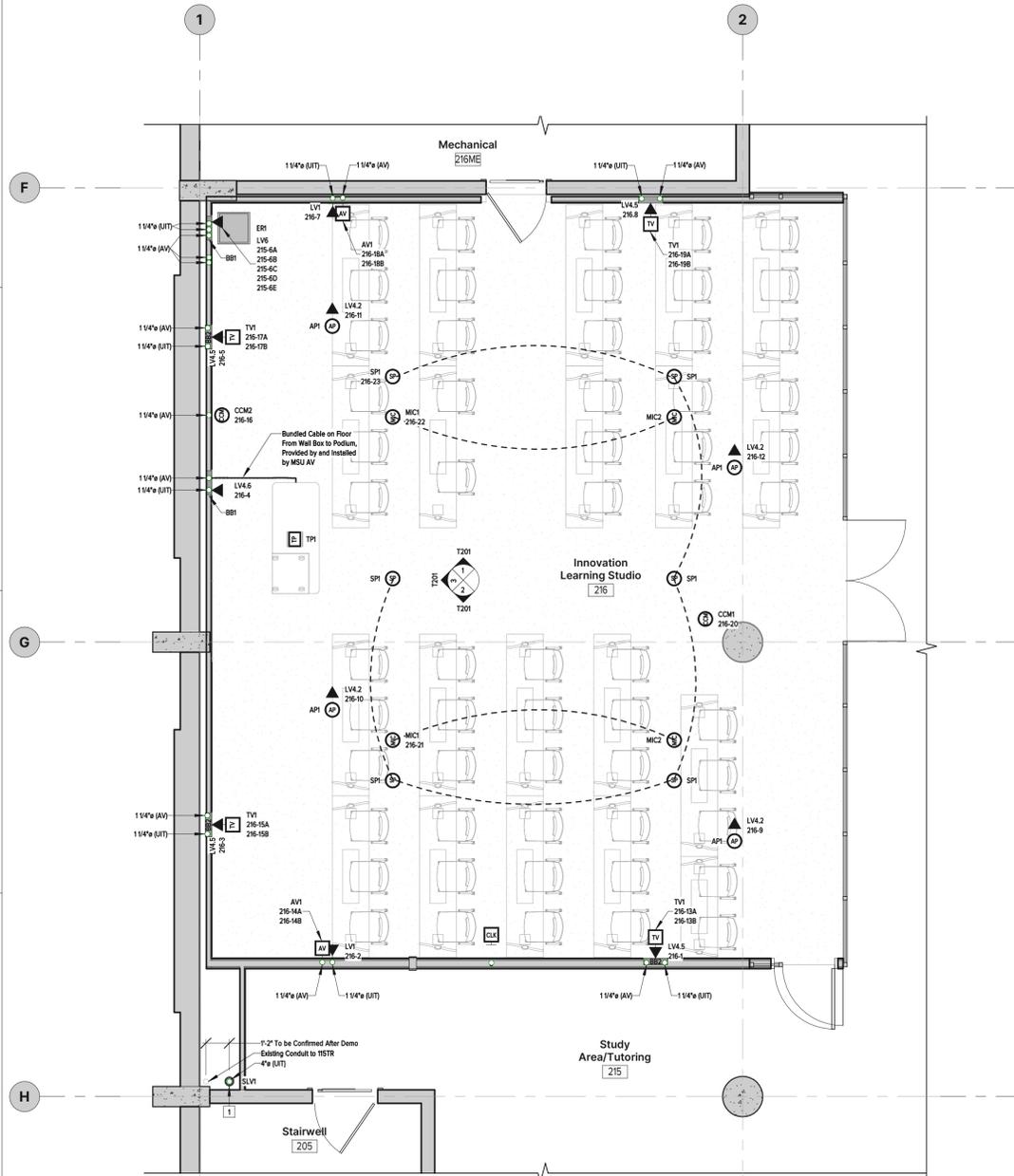
EL101

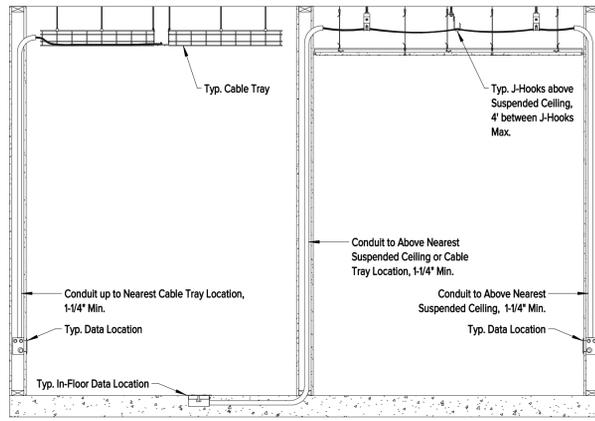
Sheet Notes

- All AV equipment locations to be finalized with MSU AV before installation.

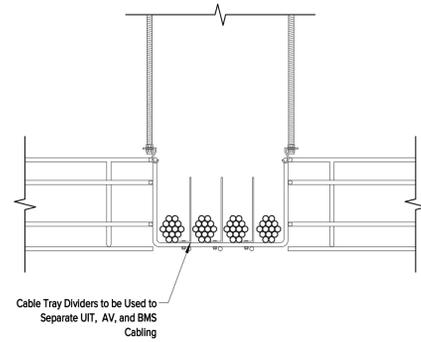
Reference Keynotes

- Contractor shall core drill (Ø) 4" diameter sleeve through existing concrete floor slab at location indicated on drawings. Install 4" conduit from telecommunications room (115TR) below through new floor sleeve to ceiling space above. All floor penetrations through fire-rated assemblies shall be firestopped with a UL-listed assembly to match the fire-resistance rating of the existing slab assembly. Existing cable tray conflicting with work shall be removed or lowered as required to facilitate installation. Cable tray shall be reinstalled to original elevation upon completion of work. All telecommunications equipment within the work area shall be protected from dust, debris, and moisture for the duration of construction. Contractor shall coordinate with UIT prior to commencing work.

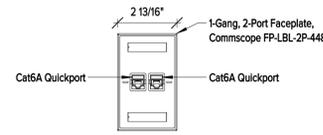




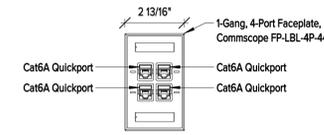
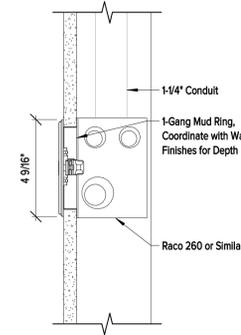
1 Typ. Infrastructure Cabling Support Hardware
1/2" = 1'-0"



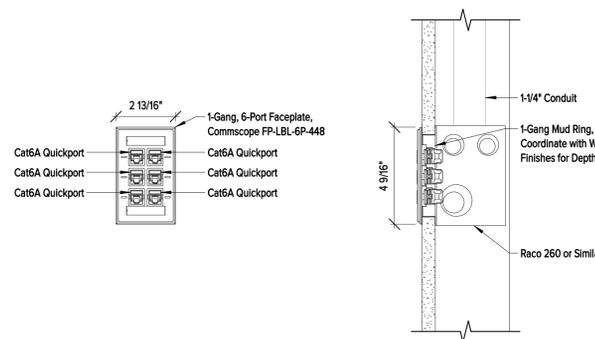
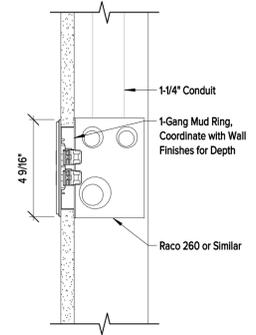
2 Typ. Cable Tray Section
3" = 1'-0"



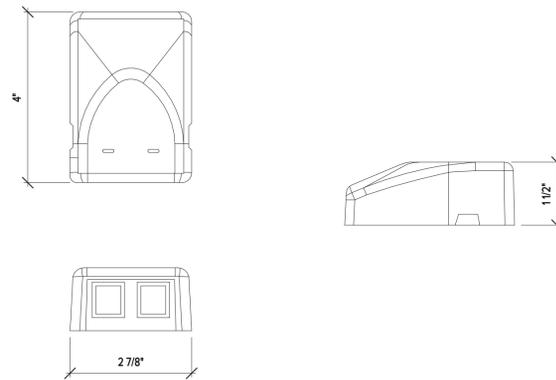
3 Typ. 2-Port Data Trim Plate [LV1]
3" = 1'-0"



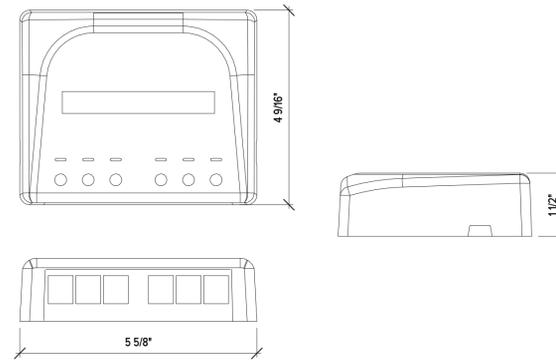
4 Typ. 4-Port Data Trim Plate [LV2]
3" = 1'-0"



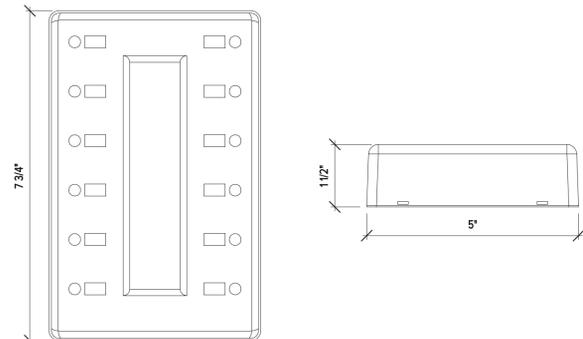
5 Typ. 6-Port Data Trim Plate [LV3.1]
3" = 1'-0"



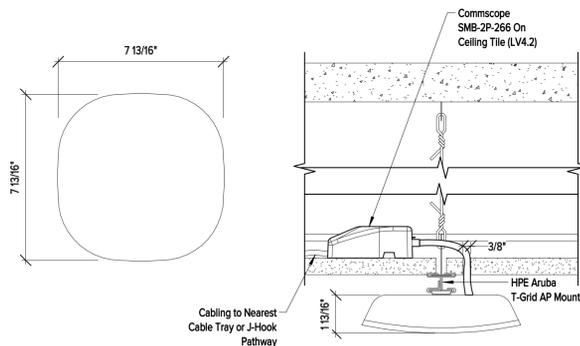
6 Typ. Commscope SMB-2P-266 [LV4.1]
6" = 1'-0"



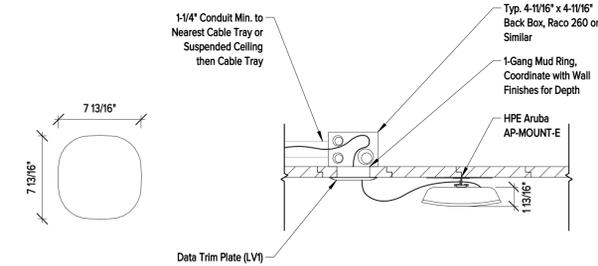
7 Typ. Commscope 1-1933674-3 [LV5]
6" = 1'-0"



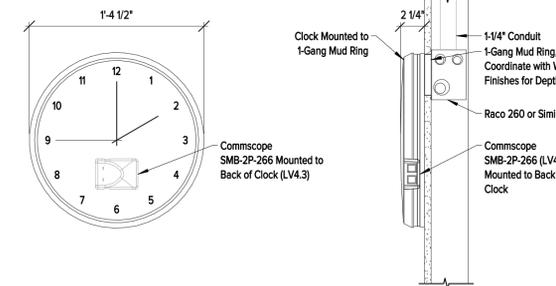
8 Typ. Commscope 1-1479358-3 [LV6]
6" = 1'-0"



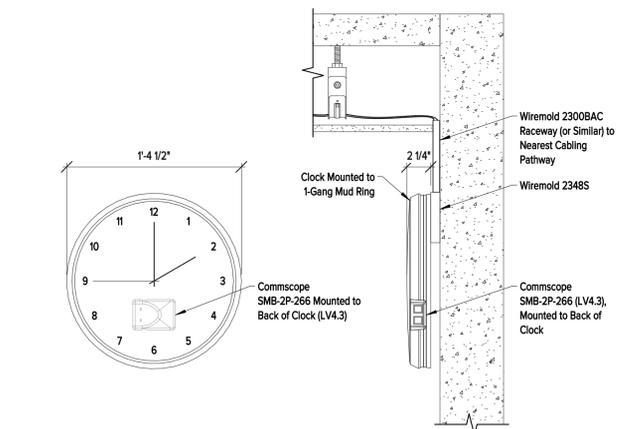
9 Typ. Ceiling Mounted Interior Access Point [AP1 & LV4.2]
3" = 1'-0"



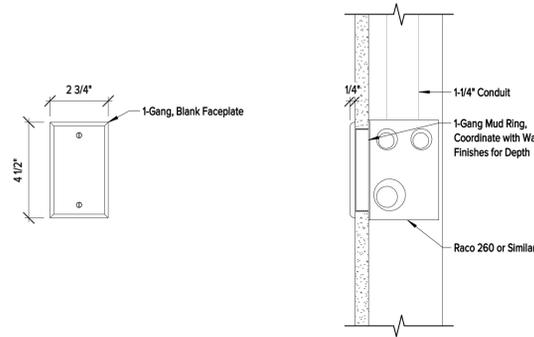
10 Typ. Ceiling Mounted Interior Access Point [AP2]
1 1/2" = 1'-0"



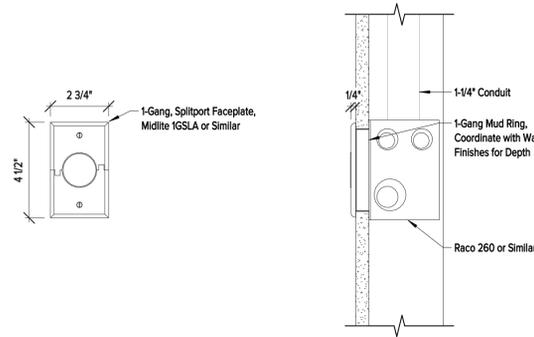
11 Typ. PoE Clock [CLK1.1 & LV4.3]
1 1/2" = 1'-0"



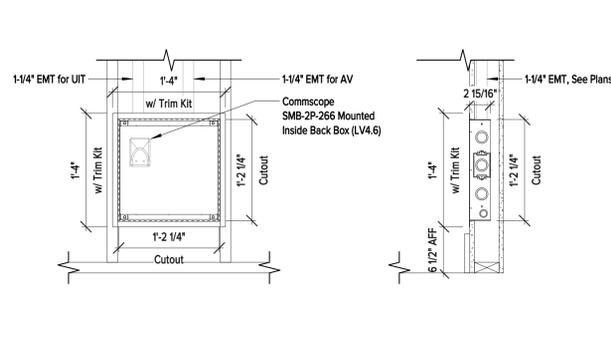
12 Typ. PoE Clock [CLK1.2 & LV4.3]
1 1/2" = 1'-0"



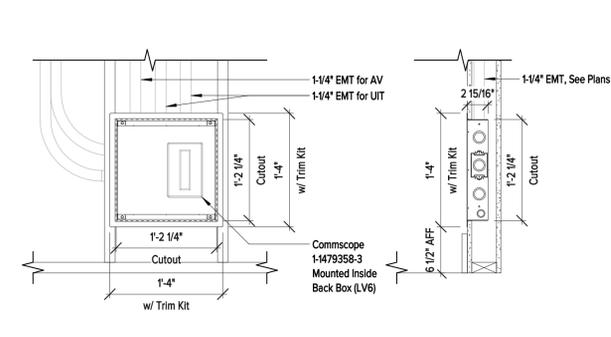
1 Typ. Future AV Wiring Location [AV1]
3\"/>



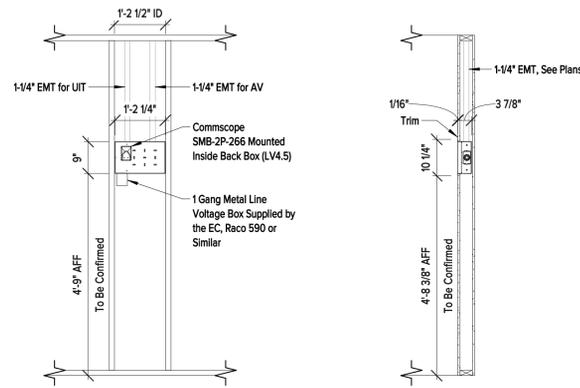
2 Typ. AV Wiring Location w/ Splitport Faceplate [AV2]
3\"/>



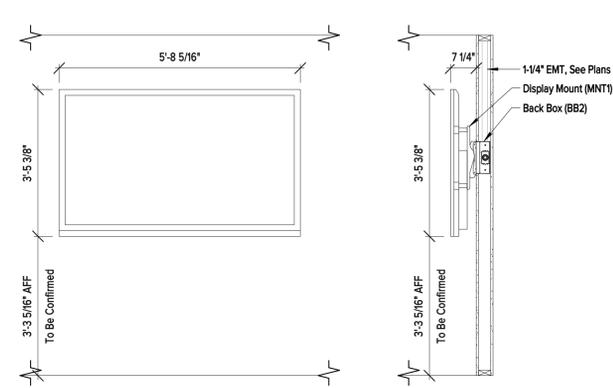
3 Typ. FSR PWB-323-TRK [BB2 & LV4.6]
1\"/>



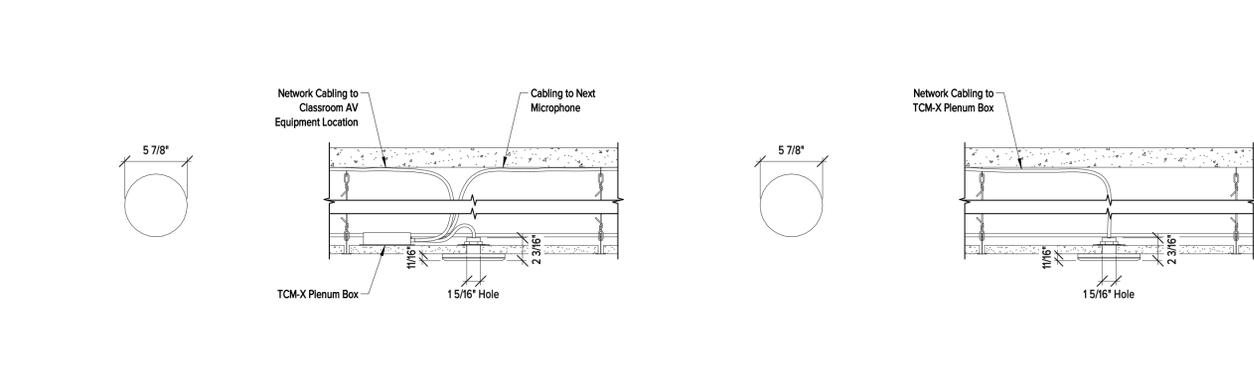
4 Typ. FSR PWB-323-TRK [BB2 & LV6]
1\"/>



5 Typ. Chief PAC525F [BB2 & LV4.5]
1/2\"/>

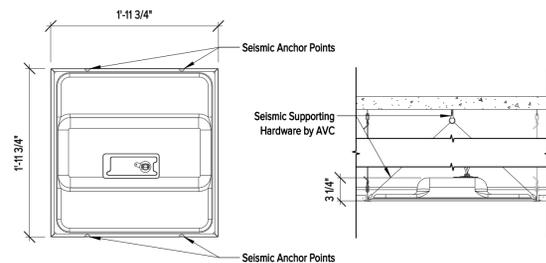


6 Typ. Newline TT-7524QPRO [TV1]
1/2\"/>

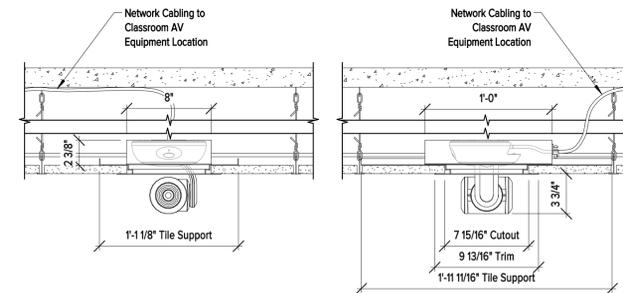


7 Typ. Biamp TCM-X [MIC1]
1 1/2\"/>

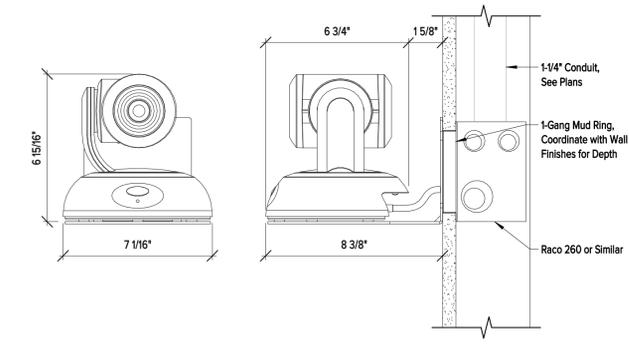
8 Typ. Biamp TCM-XEX [MIC2]
1 1/2\"/>



9 Typ. 2'x2' Drop-In Ceiling Tile Speaker [SP1]
1\"/>



10 Typ. Vaddio RoboSHOT 30E HDBT w/ In-Ceiling Enclosure [CCM1 & CM-MNT1]
1 1/2\"/>



11 Typ. Vaddio RoboSHOT 12E HDBT w/ Wall Mount [CCM2 & CM-MNT2]
3\"/>

One-Line Diagram

Sheet Notes II One-Line Diagram

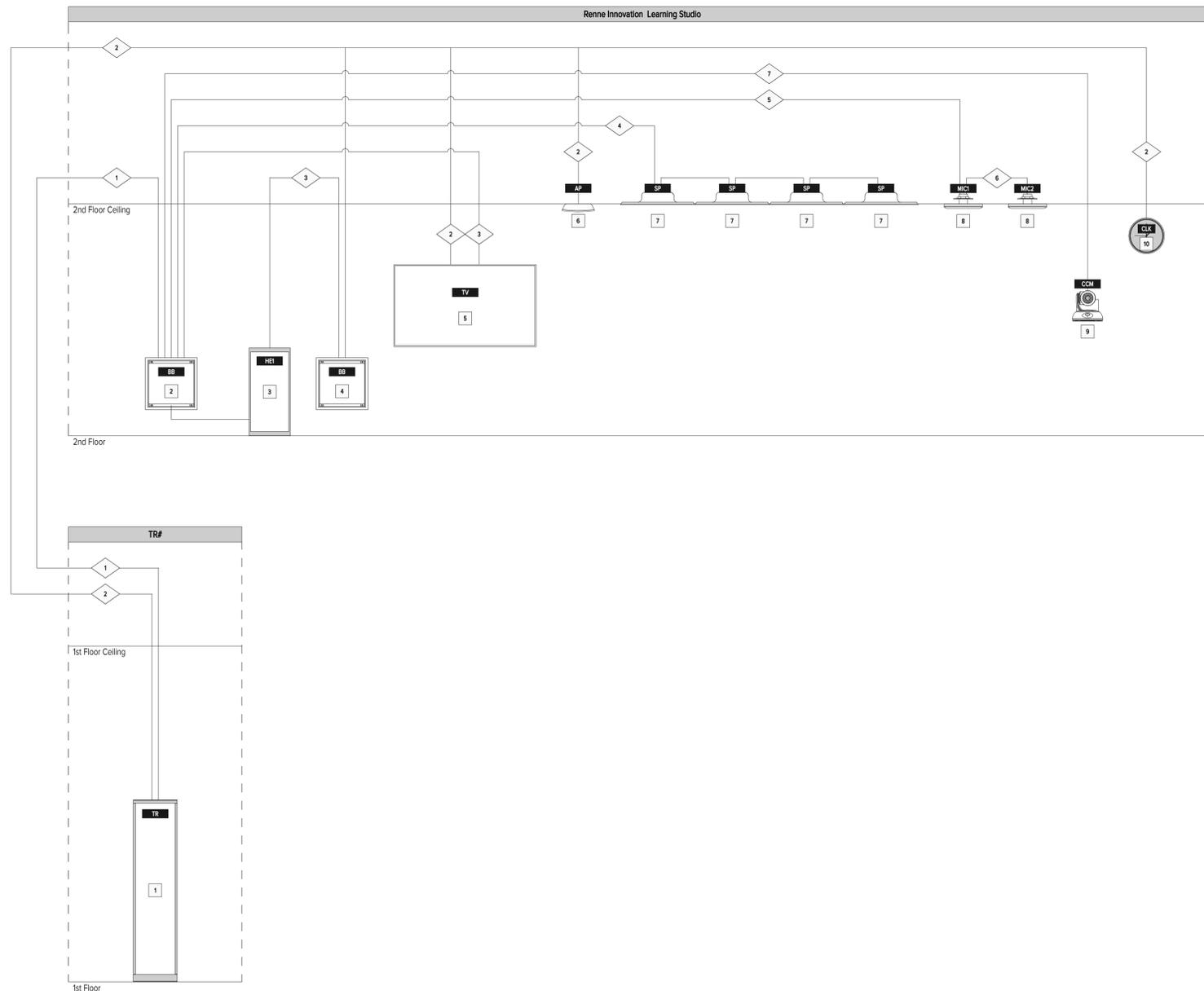
- 1 Existing telecommunications room equipment rack.
- 2 Wall box behind equipment cabinet for AV cabling and 6-port surface mount module.
- 3 AV equipment cabinet.
- 4 Wall box near podium for AV cabling and 2-port surface mount module.
- 5 75" Wall mounted display.
- 6 Wireless access point.
- 7 In-ceiling speaker.
- 8 In-ceiling microphone.
- 9 Conferencing camera.

Notes:

- Bonding to ground to be provided to all equipment racks, cabling ladder racks, panels satellite dish and demarcation.

Sheet Notes II One-Line Cabling

- 1 (10) Comscope UN884019314 cables from TR.
- 2 (2) Comscope UN884019314 cables from TR to each device.
- 3 (2) Shielded category 6 cables to each display.
- 4 (1) 16/4 speaker cable to first speaker and looped to remaining speakers.
- 5 (1) Shielded category 6 cable to each TCM-XA plenum box.
- 6 (1) Shielded category 6 cable from TCM-XA plenum box to next microphone.
- 7 (1) Shielded category 6 cable to each conference camera.



Technology Responsibility Matrix

AV = University Audio/Video Department
 UIT = University IT Department
 GC = General Contractor or Subcontractor

Equipment	Description	Qty.	Furnished By	Installed By
Audio/Visual and Control Equipment, Mounts and Accessories				
Blamp Parle TCM-X - White	AVB Low-Profile Ceiling Microphone, White	2	AV	AV
Blamp Parle TCM-XEX - White	AVB Low-Profile Ceiling Extension Microphone, White	2	AV	AV
Blamp TB-1	Parle Ceiling Microphone Tile Bridge	4	AV	AV
Blamp TesiraCONNECT TC-5	5-Port Expansion Device	1	AV	AV
Blamp TesiraFORTE AVB VT4	Digital Audio Server	1	AV	AV
Extron 42-141-03	Full-Range Flat Field Speaker w/ Low Profile Enclosure & 70/100V Transformer	6	AV	AV
Extron 60-1271-12	DTP Transmitter for HDMI	2	AV	AV
Extron 60-1271-13	DTP Receiver for HDMI	4	AV	AV
Extron 60-1437-01	Four Output DTP Distribution Amplifier	1	AV	AV
Extron 60-1449-01	Mono 70/100V Amplifier, 60W	1	AV	AV
Extron 60-1562-13	7" Tabletop TouchLink Pro Touchpanel, White	1	AV	AV
Extron 60-1663-01	Six Input 4K/60 Seamless Presentation Switcher	1	AV	AV
Extron 60-1678-01	4K/60 HDMI Matrix Switcher with Audio De-Embedding	1	AV	AV
Extron 60-1911-01	iPCP Pro xi Control Processor	2	AV	AV
Newline EPR8A50600-000	Newline Wall Mount	4	AV	GC
Newline TT-7524QP	75" Q Series High Performance Interactive Display	4	AV	AV
Vaddio 535-2000-240W	Thin Profile Wall Mount for RoboSHOT Cameras	1	AV	AV
Vaddio 999-99600-100W	RoboSHOT 12E w/ OneLINK HDMI System	1	AV	AV
Vaddio 999-99630-100W	RoboSHOT 30E HDBT w/ OneLINK HDM System	1	AV	AV

AV Equipment Rack, Accessories and Interconnect Cabling				
Extron 60-604-02	1RU, 9.5" Deep Basic Rack Shelf, Gray	1	AV	AV
Extron 60-604-21	1RU, 3.5" Deep Basic Rack Shelf, Gray	3	AV	AV
Middle Atlantic RFR-2428GE	Equipment Cabinet	1	AV	AV
Vaddio 999-2225-150	In-Ceiling Half Recessed Enclosure for RoboSHOT PTZ Camera	1	AV	AV

Cabling - Classroom AV; Category, Speaker, Line, Video, Etc.				
AV Cabling	AV System Cabling from Device to Device	1	AV	AV

Cabling - IT; Wiring to Telecommunications Rooms				
UIT Cabling	University IT Category Cabling to TR	1	UIT	UIT

Cabling - IT; Wiring within Telecommunication Rooms; Category Cabling, Patch Cables, Power Cables, Etc.				
TR Cabling	Interconnect Cabling within TR	1	UIT	UIT

Instructor's Lecterns				
Lecterns	Lecterns w/ Integrated AV Equipment Storage	1	AV	AV

Network Equipment; Wireless Access Points, Network Switches and Licenses				
Typical Access Point	Indoor Wireless Access Point	4	UIT	UIT

Pathway Equipment; Cable Tray, J-Hooks, and Supporting Hardware				
Cabling Pathways	University IT and System Cabling Pathway Equipment	1	GC	GC

Rough-In Conduit, Junction Boxes, Mud Rings, Floor Boxes, Display Back Boxes and Supporting Hardware				
Chief PAC525FW	In-Wall Storage Box with Flange, White	4	AV	GC
FSR PWB-323-CV	Project Wall Box Decorative Cover	2	AV	AV
FSR PWB-323-TRK	3" Depth Large Open Style Wall Box w/ Trim Ring	2	AV	GC
Raco 260	4-11/16" Square Box, Large Capacity, Welded, 3-1/4" Dpth w/ 12 Knockouts	6	GC	GC
Raco 843	4-11/16" Square Single Device Cover, 5/8" Raised	3	GC	GC
Raco 891	4-11/16" Square Single Device Cover, 1-1/2" Raised	2	GC	GC
Typical 4" Sleeve	Typical 4" Conduit Sleeve for Penetrations	2	GC	GC
Typical EMT 90° Bend	Typical 90° Bend for 1-1/4" EMT	9	GC	GC
Typical EMT - 1-1/4"	Typical 1-1/4" EMT for UIT & AV Cabling	9	GC	GC

Trim - AV; Faceplates, Quickports and Accessories				
Typical 1G Cover Plate	Single Gang Cover Plate for Future AV System Cabling	2	AV	AV
Typical Future AV Location	Future AV/Display Location	2	AV	AV

Trim IT; Faceplates, Quickports and Accessories				
Commscope 11479358-3	12-Port Surface Mount Module for Back Box Locations	1	UIT	UIT
Commscope FP-LBL-2P-448	Faceplate Kit, Labeled, 1-Gang, 2-Port, Light Almond	2	UIT	UIT
Commscope SMB-2P-266	2-Port Universal Surface Mount Jack for Back Box Locations	1	UIT	UIT
Commscope SMB-2P-266	2-Port Universal Surface Mount Jack for Display Locations	4	UIT	UIT
Commscope SMB-2P-266	2-Port Universal Surface Mount Jack for PoE Clocks	1	UIT	UIT
Commscope SMB-2P-266	2-Port Universal Surface Mount Jack for Wireless Access Points	4	UIT	UIT
Commscope USL10G-LAL	SL Series Modular Jack, RJ45, Cat6A Unshielded, Light Almond	4	UIT	UIT

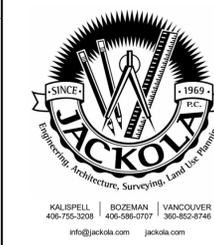
University Informational Systems				
American Time PE64BGP904	15" PoE Round Surface Clock, Black	1	UIT	UIT

Conduit Sizing		
Conduit Size	Maximum Number of Cables	
1-1/4"	(8) Cat6A	
1-1/2"	(11) Cat6A	
2"	(19) Cat6A	
2-1/2"	(21) Cat6A	
3"	(59) Cat6A	
4"	(92) Cat6A	

J-Hook Sizing		
B-Line Series J-Hooks	Maximum Number of Cables	
Part Number	Size	Commscope Cable UN884019304/10 (285' Diam.)
BCH21	1-5/16"	(12) Cat6A
BCH32	2"	(20) Cat6A
BCH64	4"	(92) Cat6A

Cabletray Sizing		
Flextray Series	Maximum Number of Cables	
Part Number	Size	Commscope Cable UN884019304/10 (285' Diam.)
FT4X4	4" x 4"	(100) Cat6A
FT4X8	4" x 8"	(200) Cat6A
FT4X12	4" x 12"	(300) Cat6A
FT4X18	4" x 18"	(451) Cat6A
FT4X24	4" x 24"	(601) Cat6A

Cabletray Load Capacity					
Flextray Series	Support Span / Load Capacity (Lbs/Ft Max)				
Part Number	Size	5'-0"	6'-0"	7'-0"	8'-0"
FT4X4	4" x 4"	58	49	42	36
FT4X8	4" x 8"	94	78	61	47
FT4X12	4" x 12"	119	83	61	47
FT4X18	4" x 18"	119	83	61	47
FT4X24	4" x 24"	128	89	65	50



BLACK SHEEP

Mechanical | Electrical | Plumbing | Lighting | Technology
 602 W. Hancock | Bozeman, MT 59715
 Blacksheepengineering | 506.312.2114

CONSTRUCTION DOCUMENTS

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.



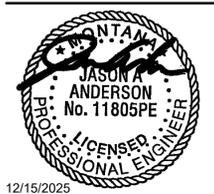
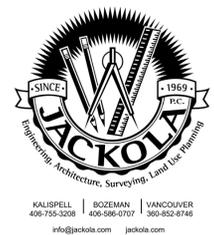
Innovation Learning Studio
 Renne Library
 Bozeman, MT 59717

DRAWN: Author CHECKED: Checker
 DATE: 03/13/2026

REVISIONS:	

TECHNOLOGY INFORMATION & ONE-LINE DIAGRAM

T601



12/15/2025 FOR PERMIT

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCH., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY
 RENNE LIBRARY,
 BOZEMAN, MONTANA 59717
 PPA#: 25-1257

DRAWN: NSB CHECKED: JAA

DATE: 12/15/2025

REVISIONS:

GENERAL NOTES, DETAILS, AND LEGEND

FX001

COFFMAN ENGINEERS
 751 Osterman Drive
 Suite 104
 Bozeman, MT 59715
 ph 406.582.1936
 www.coffman.com

FIRE SPRINKLER LEGEND	
NOTE: ALTERNATE SPRINKLER TEMPERATURES MAY BE NOTED NEXT TO SPRINKLER SYMBOLS (I.E. INT = INTERMEDIATE TEMPERATURE; HIGH = HIGH TEMPERATURE)	
SYMBOL	DESCRIPTION
○	STANDARD SPRAY PENDENT SPRINKLER ON - DROP
○	STANDARD SPRAY UPRIGHT SPRINKLER ON - LINE
◐	STANDARD SPRAY UPRIGHT SPRINKLER ON - SPRIG
◑	STANDARD SPRAY SIDEWALL SPRINKLER
○	EXISTING PENDENT SPRINKLER
○	EXISTING UPRIGHT SPRINKLER
—	LATERAL OR LONGITUDINAL SWAY BRACE
—	COMBINATION LATERAL AND LONGITUDINAL SWAY BRACE
—	FLOW SWITCH
—	TAMPER SWITCH
—	CHECK VALVE (GROOVED OR THREADED)
—	BUTTERFLY VALVE (GROOVED OR THREADED)
—	GLOBE VALVE
—	HOSE VALVE
—	ANGLE HOSE VALVE
—	HORNISTROBE ASSEMBLY
—	FREE STANDING FIRE DEPARTMENT CONNECTION
—	PIPE CENTERLINE FROM FINISHED FLOOR
—	HYDRAULIC NODE POINT
—	CEILING HEIGHT
—	RISER
—	CENTERLINE DISTANCE OF PIPE FROM DECK
—	FLANGE
—	GROOVED ELBOW UP
—	GROOVED ELBOW DOWN
—	GROOVED COUPLING
—	SCREWED ELBOW UP
—	SCREWED ELBOW DOWN
—	HANGER SYMBOL - SEE DETAIL FOR TYPE
—	HANGER SYMBOL - SEE DETAIL FOR TYPE
—	HANGER SYMBOL - SEE DETAIL FOR TYPE
—	HANGER SYMBOL - SEE DETAIL FOR TYPE
—	HANGER SYMBOL - SEE DETAIL FOR TYPE
—	SEISMIC RESTRAINT #1
—	SEISMIC RESTRAINT #2
—	NEW WET SPRINKLER PIPE
—	EXISTING SPRINKLER PIPE
—	DEMO SPRINKLER PIPE
—	EXISTING UNDERGROUND WATER MAIN/FIRE MAIN
—	1-HOUR FIRE BARRIER (SEE ARCHITECTURAL FOR DETAILS)
—	2-HOUR FIRE BARRIER (SEE ARCHITECTURAL FOR DETAILS)
—	ABOVE FINISHED FLOOR
—	ALL THREAD ROD
—	A.S. AUTOMATIC SPRINKLER
—	CIF CUT IN FIELD
—	DN DOWN
—	FG FINISHED GRADE
—	GALV GALVANIZED
—	GBE GROOVE BOTH ENDS
—	GOE GROOVE ONE END
—	GMI GALVANIZED MALLEABLE IRON
—	NTS NOT TO SCALE
—	OS&Y OUTSIDE STEM & YOKE
—	RN RISER NIPPLE
—	TBE THREAD BOTH ENDS
—	TOE THREAD ONE END
—	T&G THREAD AND GROOVE
—	UNON UNLESS OTHERWISE NOTED
—	W/ WITH

SPRINKLER PIPE AND FITTINGS TABLE		
MATERIAL NOTES 1. MATERIALS MAY BE OF DOMESTIC OR IMPORT ORIGIN		
PIPE SIZE	PIPE	FITTINGS AND OUTLETS
1" TO 2"	SCHEDULE 40	BLACK CLASS-125 CAST IRON THREADED FITTINGS (175 PSI RATED)
2½" TO 4"	SCHEDULE 10	WELDED OUTLETS WITH ROLL GROOVED ENDS AND PAINTED DUCTILE IRON GROOVED FITTINGS (300 PSI RATED)

SEISMIC BRACING REQUIREMENTS	
EARTHQUAKE BRACING SHALL CONFORM WITH N.F.P.A. #13, INTERNATIONAL BUILDING CODE, NEHRP, AND ASCE/SEI 7 CRITERIA.	
DESCRIPTION OF SITE CONDITIONS	
MAPPED SPECTRAL ACCELERATION FOR SHORT PERIODS	$S_s = 0.680$
MAPPED SPECTRAL ACCELERATION FOR A 1-SECOND PERIOD	$S_1 = 0.214$
SITE CLASS	D
SEISMIC OCCUPANCY CATEGORY OF BUILDING	II
MAXIMUM SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS	$S_{DS} = 0.569$
MAXIMUM SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIODS	$S_{D1} = 0.569$
SEISMIC DESIGN CATEGORY BASED ON S_{DS}	D
SEISMIC DESIGN CATEGORY BASED ON S_{D1}	D
SEE CALCULATIONS BELOW FOR DETERMINATION OF FORCE FACTOR FOR SEISMIC DESIGN CATEGORY 'C' & 'D'.	
COMPONENT IMPORTANCE FACTOR	$I_p = 1.50$
COMPONENT RESPONSE MODIFICATION FACTOR	$R_p = 4.50$
COMPONENT AMPLIFICATION FACTOR	$A_p = 2.50$
HEIGHT IN STRUCTURE OF POINT OF ATTACHMENT W/ RESPECT TO THE BASE	$Z = 50'$
AVERAGE ROOF HEIGHT OF STRUCTURE WITH RESPECT TO THE BASE	$H = 50'$
$F_p = 0.4 \cdot A_s \cdot S_{DS} \cdot W_p \cdot (1+2 \cdot \frac{Z}{H})$	$F_p = 1.15$ TIMES WEIGHT OF WATER FILLED PIPE
$R_p = C_p \cdot W_p$	$F_p = 0.569 \cdot W_p$
ASCE 7 ALLOWS A REDUCTION FACTOR OF 1.4 FOR STRESS BASED DESIGN:	$F_p = 0.406 \cdot W_p$

BRANCHLINE RESTRAINT REQUIREMENTS	
SEISMIC COEFFICIENT, $C_p = 0.406$	STEEL BRANCH LINE SIZE
SEE SEISMIC CALCULATIONS FOR C_p VALUES	1" 1½" 2"
MAXIMUM SPACING OF BRANCH LINE RESTRAINTS	43" 48" 49" 53"
WHERE NOT REQUIRED: NO RESTRAINT REQUIRED IF HANGER ROD IS LESS THAN 6" LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE.	
WHERE REQUIRED: ON ALL BRANCH LINES (WITH HANGER ROD > 6") AT INTERVALS NOT EXCEEDING THOSE SPECIFIED IN TABLE ABOVE BASED ON BRANCH LINE DIAMETER AND THE VALUE OF C_p . SPRIG-UPS 4" OR LONGER SHALL BE RESTRAINED AGAINST LATERAL MOVEMENT.	
RESTRAINT SHALL BE PROVIDED BY USE OF ONE OF THE FOLLOWING: 1) A LISTED SWAY BRACE ASSEMBLY 2) A WRAPAROUND U-HOOK 3) #12, 440-LB WIRE INSTALLED AT LEAST 45° FROM THE VERTICAL PLANE AND ANCHORED ON BOTH SIDES OF THE PIPE. 4) A HANGER NOT LESS THAN 45° FROM VERTICAL INSTALLED WITHIN 6" OF THE VERTICAL HANGER ARRANGED FOR RESTRAINT AGAINST UPWARD MOVEMENT, PROVIDED IT IS UTILIZED SUCH THAT LIR DOES NOT EXCEED 300, WHERE THE ROD SHALL EXTEND TO THE PIPE OR HAVE A SURGE CLIP RESTRAINT. 5) OTHER APPROVED MEANS	
WIRES USED FOR PIPING RESTRAINTS SHOULD BE ATTACHED TO THE BRANCH LINE WITH TWO TIGHT TURNS AROUND THE PIPE AND FASTENED WITH FOUR TIGHT TURNS WITHIN 1-1/2"(SEE DETAIL), AND ATTACHED TO THE STRUCTURE WITH MEANS APPROVED BY NFPA.	
RESTRAINT SHALL BE LOCATED WITHIN 2 FT OF A HANGER. THE HANGER CLOSEST TO THE RESTRAINT SHALL BE OF A TYPE THAT RESISTS UPWARD MOVEMENT OF A BRANCH LINE SUCH AS SURGE CLIP.	

SEISMIC CLEARANCE REQUIREMENTS	
PROVIDE CLEARANCE AT ALL PIPING EXTENDING THROUGH WALLS, FLOORS, FOUNDATIONS. NO CLEARANCE REQUIRED AT GYPSUM BOARD OR EQUALLY FRANGIBLE CONSTRUCTION THAT IS NOT REQUIRED TO HAVE A FIRE RESISTANCE RATING.	
NOMINAL PIPE SIZE	CORE DRILL HOLE OR PIPE SLEEVE SIZE
INCH	MM
1	25 3 80
1½	32 4 100
2	40 4 100
2½	50 4 100
3	65 6 150
4	80 6 150
6	100 8 200
	150 10 250
AT CONTRACTOR'S OPTION FLEXIBLE COUPLINGS MAY BE INSTALLED WITHIN 12" OF THE WALL SURFACE ON EACH SIDE, OR WITHIN 12" ABOVE FLOOR AND 24" BELOW FLOOR, AND THE CLEARANCES NOTED ARE NOT REQUIRED.	
FIRE CAULK HOLE AND PROVIDE SPLIT CHROME WALL PLATES AT ALL EXPOSED WALL LOCATIONS. (NOTE THAT AT NON-RATED FRANGIBLE GYPSUM BOARD WALLS NO CLEARANCE IS REQUIRED)	

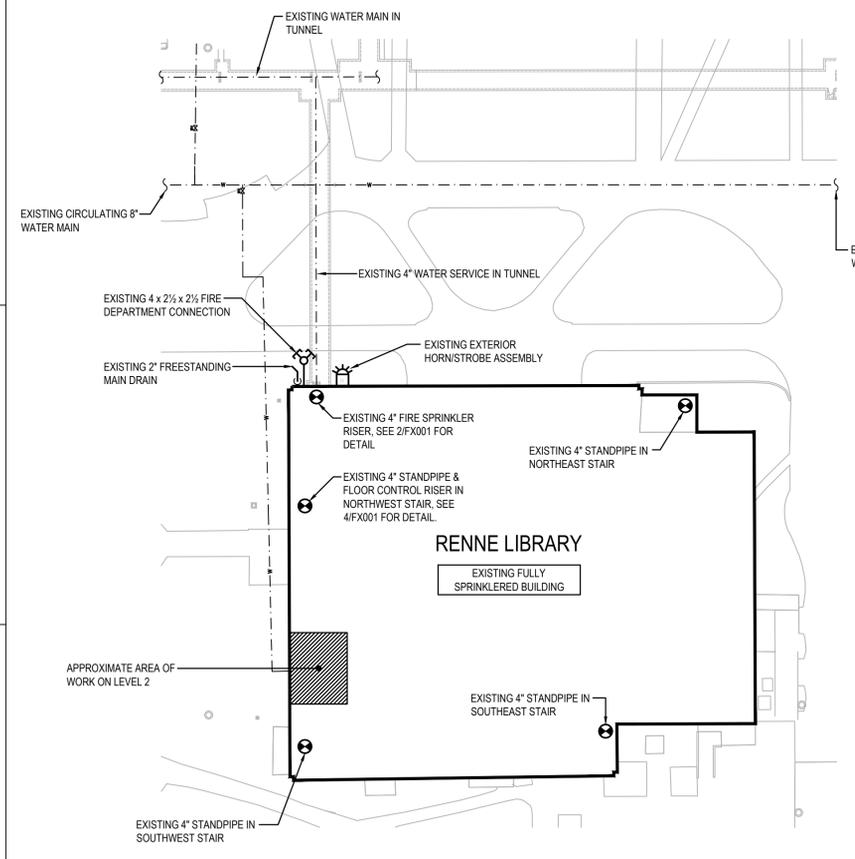
HANGER SPACING REQUIREMENTS	
MAXIMUM DISTANCE BETWEEN HANGERS (FT-IN.) - N.F.P.A. #13	
NOMINAL PIPE SIZE	¾" 1" 1½" 2" 2½" 3" 4" 6" 8"
STEEL PIPE	N/A 12-0 12-0 15-0 15-0 15-0 15-0 15-0 15-0
NOTE: TYPICAL HANGER SYMBOLS AS SHOWN ON PIPING PLAN MAY NOT REFLECT ACTUAL FIELD INSTALLATION. FINAL HANGER INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A. #13.	
DISTANCE FROM SPRINKLER TO HANGER - N.F.P.A. #13 - MAX PRESSURES ≤ 100 PSI (ALL SPRINKLER TYPES)	

GENERAL FIRE SUPPRESSION SYSTEM NOTES

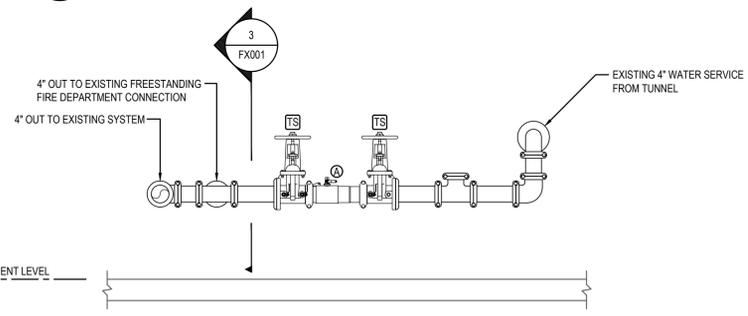
- SCOPE OF WORK: MODIFY THE EXISTING WET PIPE SPRINKLER SYSTEM AS REQUIRED IN THE AREA OF WORK AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR, AND MATERIAL FOR AN ACCEPTED AUTOMATIC SPRINKLER SYSTEM, INCLUDING FIRE PROTECTION PIPING, HANGERS, SPRINKLERS, DRAINS, AND ALL OTHER ASSOCIATED EQUIPMENT INDICATED OR NOT ON THESE DRAWINGS AND THE SPECIFICATIONS, FOR A COMPLETE FIRE SUPPRESSION SYSTEM COMPLYING WITH NFPA 13 AND ANY OTHER LISTED CODES OR REFERENCE.
- THE FIRE PROTECTION SYSTEMS SHALL BE DESIGNED, INSTALLED, TESTED, AND FLUSHED IN ACCORDANCE WITH THE FOLLOWING:
A. INTERNATIONAL BUILDING CODE (IBC) - 2021 EDITION WITH LOCALLY ADOPTED MODIFICATIONS
B. NFPA 13 (STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS) - 2019 EDITION
C. PROJECT SPECIFICATIONS
- THE FIRE SUPPRESSION SYSTEM SHOWN ON THE PLANS IS CONCEPTUAL ONLY AND PROVIDED TO CONVEY DESIGN INTENT. THE CONTRACTOR SHALL PROVIDE A COMPLETE SPRINKLER SYSTEM IN THE AREA(S) OF WORK. COORDINATE FINAL PIPE ROUTING AND SPRINKLER LOCATIONS WITH ALL OTHER TRADES AS REQUIRED. THE CONTRACTOR SHALL INSTALL THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, THE MANUFACTURER'S RECOMMENDATIONS, AND PER THE EQUIPMENT'S LISTING.
- DRAWINGS AND REFLECTED CEILING PLANS ARE PROVIDED FOR REFERENCE ONLY. SEE ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND STRUCTURAL DRAWINGS FOR CEILING TYPES AND HEIGHTS, LIGHTING FIXTURE LOCATIONS, DUCTS, BEAMS, AND OTHER OBSTRUCTIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL JOB CONDITIONS AND DIMENSIONS ON DRAWINGS PRIOR TO EXECUTION OF THIS CONTRACT AND COORDINATE WITH ALL TRADES.
- FIRE SPRINKLER PIPING SHALL COMPLY WITH NFPA 13 AND THE PROJECT SPECIFICATIONS. ALL PIPING IN FINISHED AREAS SHALL BE CONCEALED UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS.
- ALL NEW SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF TILE IN AREAS WITH 2'x2' SUSPENDED CEILING TILES. SPRINKLERS SHALL BE INSTALLED IN QUARTER POINTS OR IN THE CENTER OF CEILING TILE IN AREAS WITH 2'x4' SUSPENDED CEILING TILES.
- ALL SPRINKLERS SHALL BE QUICK RESPONSE UNLESS OTHERWISE NOTED OR REQUIRED BY CODE. IN THE AREAS OF WORK, SPRINKLERS SHALL BE WHITE RECESSED PENDENTS U.O.N.
- IT IS THE INTENT OF THIS DESIGN TO NOT CORE DRILL STRUCTURAL MEMBERS EXCEPT WHERE INDICATED FOR FLOOR SLABS AND CMU WALLS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORE DRILLING. ALL PENETRATIONS IN WALLS SHALL BE SEALED TO THE FULL THICKNESS OF THE PENETRATION WITH APPROVED FIRE STOPPING MATERIAL OF EQUAL OR GREATER FIRE RESISTANCE. SEE ARCHITECTURAL PLANS FOR LOCATION OF SMOKE AND FIRE BARRIER WALLS.
- PROVIDE HANGERS AND BRANCHLINE RESTRAINT THROUGHOUT THE AREA(S) OF WORK IN ACCORDANCE WITH NFPA 13. ADDITIONALLY, PROVIDE PROPER CLEARANCES, SLEEVES, OR FLEXIBLE COUPLINGS AROUND PIPING WHERE REQUIRED IN ACCORDANCE WITH NFPA 13.
- SPARE SPRINKLERS SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13.
- PROVIDE LABEL TAG INDICATING "NORMALLY OPEN" OR "NORMALLY CLOSED" ON ALL VALVES INCLUDING AND NOT LIMITED TO ALL RISER AND TRIM, SECTIONAL VALVES, INSPECTOR'S TEST VALVES, AND DRAINS.
- ALL FIRE PROTECTION DEVICES AND EQUIPMENT SHALL BE UL LISTED OR FM APPROVED AND INSTALLED PER THE LISTING AND MANUFACTURER'S INSTALLATION REQUIREMENTS.
- PROVIDE AUXILIARY LOW POINT DRAINS FOR THE WET PIPE SYSTEM IN ACCORDANCE WITH NFPA 13. WHERE AUXILIARY DRAINS ARE INSTALLED BEHIND A HARD-LID CEILING, PROVIDE AN ACCESS PANEL DIRECTLY BENEATH THE DRAIN. LOCATIONS OF AUXILIARY DRAINS SHALL BE CLEARLY INDICATED ON THE WORKING DRAWINGS.
- THE FIRE SUPPRESSION SYSTEM SHALL BE SUPERVISED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND NFPA 72. ALL FIRE PROTECTION SYSTEM WATER FLOW AND CONTROL VALVE SUPERVISORY SWITCHES SHALL BE MONITORED BY THE BUILDING'S FIRE ALARM SYSTEM. COORDINATE WITH THE FIRE ALARM CONTRACTOR SUCH THAT ELECTRICAL CONNECTIONS CAN BE MADE BETWEEN THESE DEVICES AND THE BUILDING'S FIRE ALARM SYSTEM.
- IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEAT TO PREVENT FREEZING THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND IN ENCLOSURES FOR DRY PIPE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.
- PROVIDE INSPECTION AND TESTING IN ACCORDANCE WITH NFPA 13 AND THE PROJECT SPECIFICATIONS.
- NO INSTALLATION OF ANY PIPING OR EQUIPMENT IS TO BEGIN PRIOR TO APPROVAL OF PLANS BY THE AUTHORITY HAVING JURISDICTION AND THE OWNER'S REPRESENTATIVE.

EXISTING RISER LEGEND

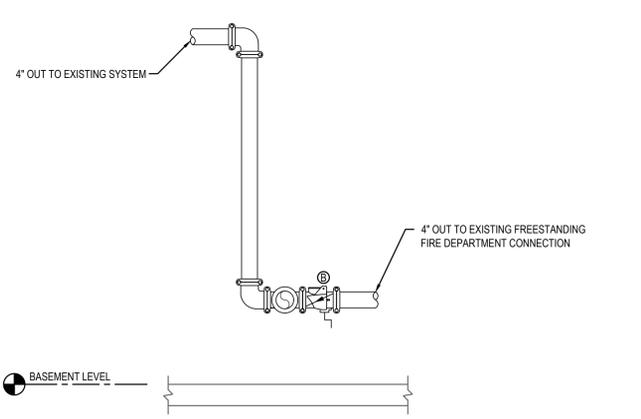
- EXISTING 4" DOUBLE CHECK BACKFLOW PREVENTER WITH FLANGED OS&Y CONTROL VALVES AND TAMPER SWITCHES
- EXISTING 4" GROOVED CHECK VALVE
- EXISTING 4" GROOVED BUTTERFLY VALVE
- EXISTING 4" RISER MANIFOLD WITH TEST AND DRAIN VALVE, WATER FLOW SWITCH, AND PRESSURE GAUGE
- EXISTING 2½" ANGLE HOSE VALVE



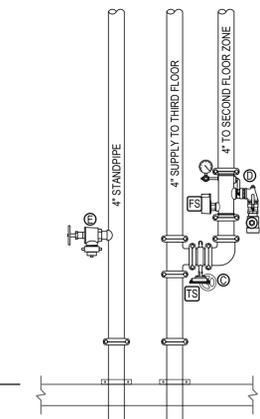
1 EXISTING FIRE SPRINKLER REFERENCE SITE PLAN
SCALE: 1" = 40'



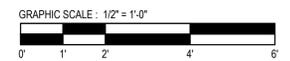
2 FIRE SPRINKLER RISER DETAIL - NORTH
SCALE: 1/2" = 1'



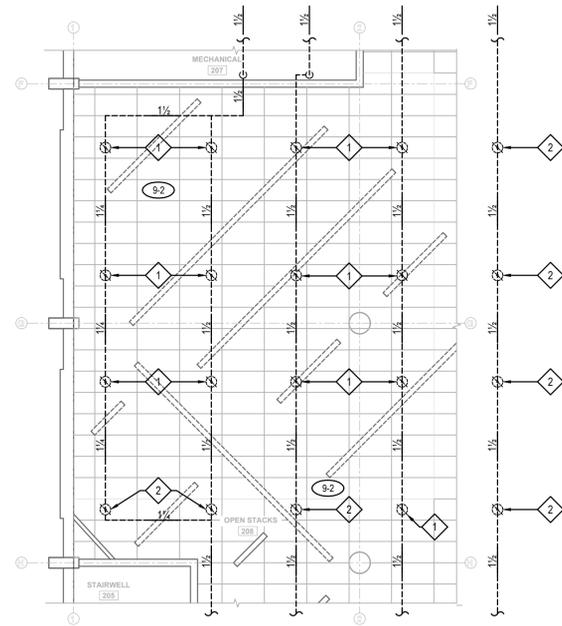
3 FIRE SPRINKLER RISER DETAIL - WEST
SCALE: 1/2" = 1'



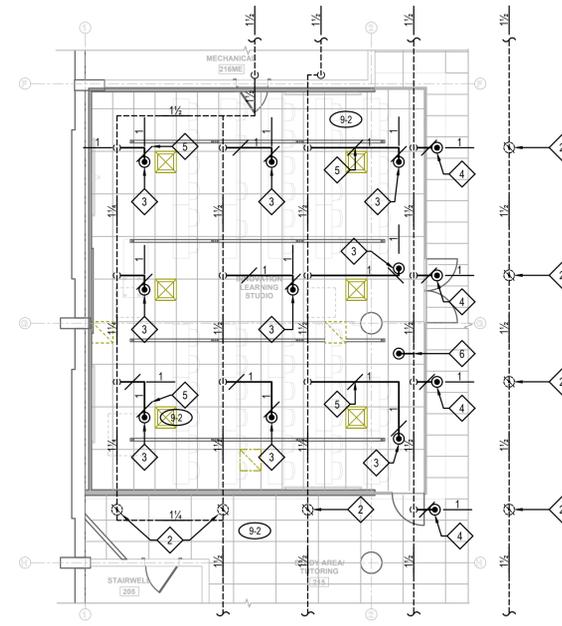
4 STANDPIPE DETAIL - NORTHWEST STAIR
SCALE: 1/2" = 1'



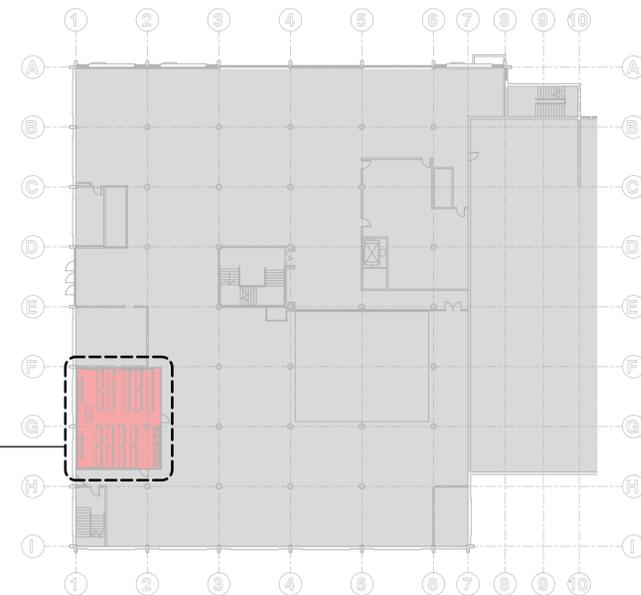
PROJECT #25048



1 FIRE SPRINKLER DEMOLITION PLAN - LEVEL 2
SCALE: 1/8" = 1'



2 FIRE SPRINKLER FLOOR PLAN - LEVEL 2
SCALE: 1/8" = 1'



KEY PLAN
NOT TO SCALE

GENERAL DEMOLITION NOTES

1. THE EXISTING FIRE SPRINKLER SYSTEM SHOWN IS BASED ON AS-BUILT DOCUMENTATION AND A NON-DESTRUCTIVE WALK THROUGH OF THE BUILDING. ALL COMPONENTS OF THE EXISTING FIRE SPRINKLER SYSTEM ARE NOT SHOWN ON THE PLANS. THE EXISTING COMPONENTS SHOWN ON THE PLANS MAY NOT BE SHOWN IN THE EXACT LOCATION OR CORRECT ORIENTATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS.
2. THE REQUIRED DEMOLITION IS NOT LIMITED TO WHAT IS INDICATED ON THE PLANS ALONE, BUT SHALL INCLUDE ALL NECESSARY WORK INDICATED ELSEWHERE IN THE DRAWINGS AND SPECIFICATIONS TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS.
3. THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM OUTSIDE OF THE AREA(S) OF WORK SHALL REMAIN U.O.N.
4. DEMOLISH THE EXISTING WET PIPE SPRINKLER SYSTEM AS INDICATED ON THE DRAWINGS IN THE AREA(S) OF WORK.

GENERAL FIRE SPRINKLER NOTES

1. THE FIRE SPRINKLER SYSTEM SHOWN IS CONCEPTUAL ONLY AND PROVIDED TO CONVEY DESIGN INTENT. THE CONTRACTOR SHALL PROVIDE A COMPLETE SPRINKLER SYSTEM IN THE AREA(S) OF WORK. COORDINATE FINAL PIPE ROUTING AND SPRINKLER LOCATIONS WITH ALL OTHER TRADES AS REQUIRED. THE CONTRACTOR SHALL INSTALL THE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, THE MANUFACTURER'S RECOMMENDATIONS, AND PER THE EQUIPMENT'S LISTING.
2. PREFERRED SPRINKLER LOCATIONS ARE SHOWN ON THE CONTRACT DRAWINGS. THE FIRE SPRINKLER CONTRACTOR MAY DEVIATE FINAL SPRINKLER LOCATIONS FROM PLANS BASED ON ACTUAL FIELD CONDITIONS, FINAL PIPE ROUTING, AND HANGER INSTALLATION, PROVIDED THAT PROPER COVERAGE AND SPACING IS MAINTAINED FOR THE LIGHT HAZARD OCCUPANCIES. CONTRACTOR SHALL RED-LINE THE AS-BUILT DRAWINGS AND PROVIDE TO THE ARCHITECT/ENGINEER AT PROJECT CLOSE-OUT.
3. SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF TILE IN AREAS WITH 2x2' SUSPENDED CEILING TILES. SPRINKLERS SHALL BE INSTALLED IN QUARTER POINTS OR IN THE CENTER OF TILE IN AREAS WITH 2x4' SUSPENDED CEILING TILES.
4. PROVIDE WHITE RECESSED PENDENT SPRINKLERS IN THE AREA OF WORK U.O.N.
5. ALL CEILING HEIGHTS ARE NOTED.
6. ALL GROOVED COUPLINGS SHALL BE ZERO FLEX/RIGID U.O.N AND/OR REQUIRED BY CODE.
7. EXISTING FIRE SPRINKLER SYSTEM PIPING, DENOTED:
8. NEW FIRE SPRINKLER SYSTEM PIPING, DENOTED:
9. ALL ROOMS ARE CLASSIFIED AS LIGHT HAZARD OCCUPANCY (0.10 GPM/SQ FT OVER REMOTE AREA - 100 GPM HOSE) PER NFPA 13.

PLAN KEY NOTES

1. DEMOLISH EXISTING PENDENT SPRINKLER AND ASSOCIATED DROP (TYPICAL).
2. EXISTING PENDENT SPRINKLER TO REMAIN (TYPICAL).
3. PROVIDE NEW PENDENT SPRINKLER IN STUDIO ROOM (TYPICAL).
4. PROVIDE NEW PENDENT SPRINKLER IN EXISTING STUDY AREA TO MAINTAIN COVERAGE FOR A LIGHT HAZARD OCCUPANCY.
5. HANG NEW 1" SPRINKLER PIPING IN ACCORDANCE WITH NFPA 13 (TYPICAL).
6. INSTALL A 1 1/2"x1 MECHANICAL TEE AND PIPE AS SHOWN.



12/15/2025

FOR PERMIT

THE INFORMATION CONTAINED HEREIN IS PROPRIETARY. THIS DOCUMENT MAY NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF JACKOLA ENGR. & ARCHT., P.C.

INNOVATION LEARNING STUDIO
MONTANA STATE UNIVERSITY

RENNE LIBRARY,
BOZEMAN, MONTANA 59717
PPA#: 25-1257

DRAWN: NSB CHECKED: JAA

DATE: 12/15/2025

REVISIONS:

LEVEL 2 FIRE
SPRINKLER PLAN

FX101



751 Osterman Drive
Suite 104
Bozeman, MT 59715
ph 406.582.1936

www.coffman.com

