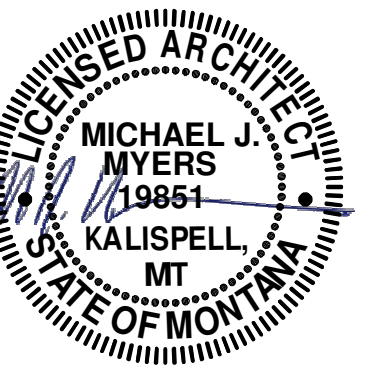
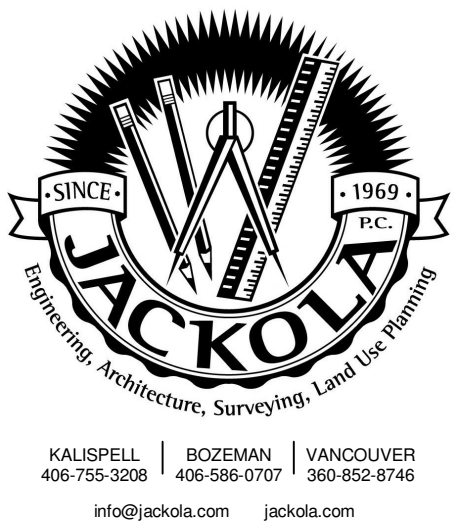


# ROBERTS HALL MONTANA STATE UNIVERSITY

620 WEST GARFIELD STREET, BOZEMAN, MT 59715  
ROOM #101 & LEVEL 1 RESTROOM  
PPA#: 23-0828

## DEFERRED SUBMITTALS



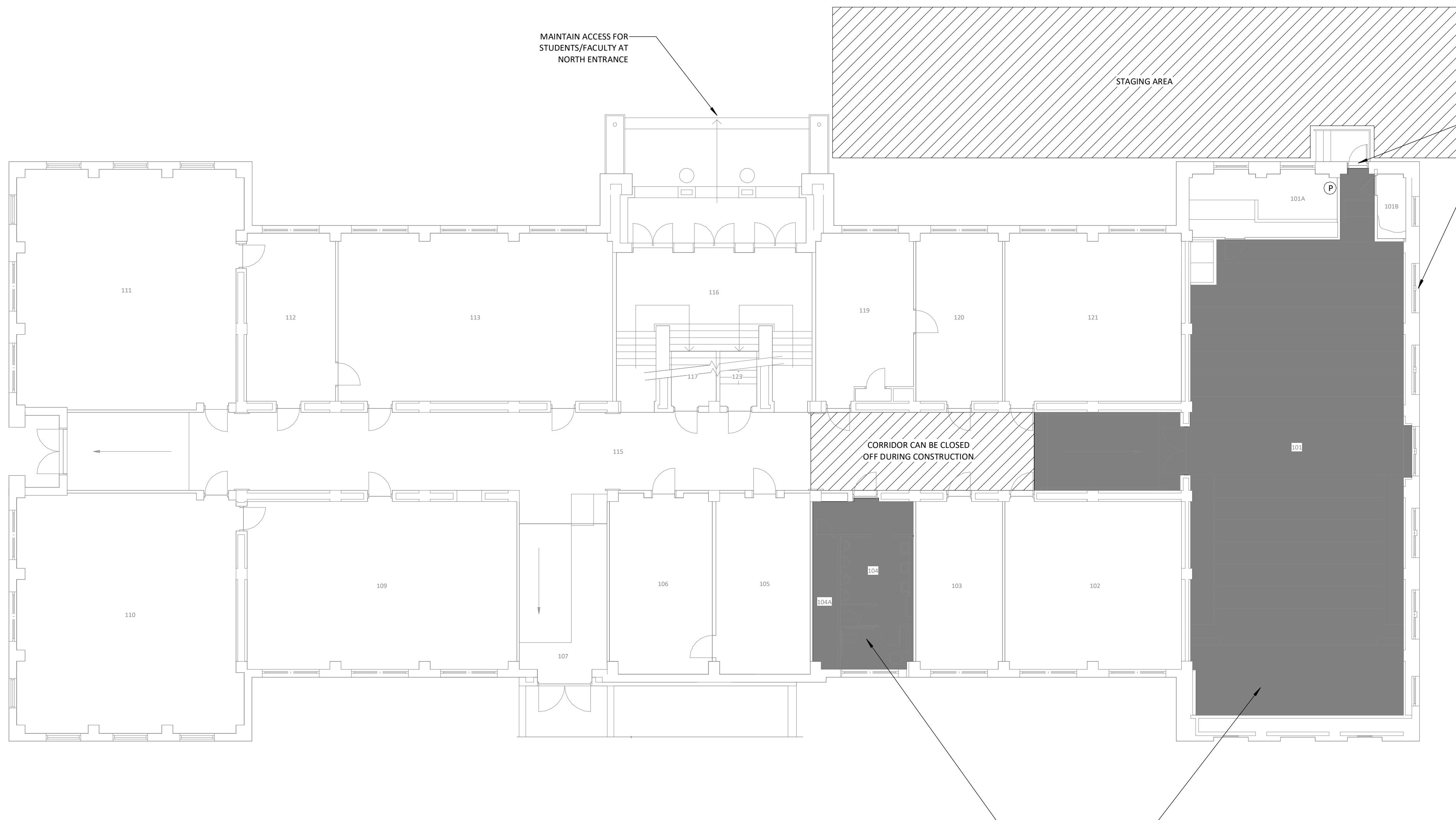
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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
**ROOM #101 & LEVEL 1 RESTROOM**  
**PPA#: 23-0828**



### BUILDING REQUIREMENTS FROM THE INTERNATIONAL EXISTING BUILDING CODE 2021

**ROOM #101:**  
ALTERATION - LEVEL 1: ALTERATIONS INCLUDE THE REMOVAL AND REPLACEMENT OR THE COVERING OF EXISTING MATERIALS, ELEMENTS, EQUIPMENT OR FIXTURES USING NEW MATERIALS, ELEMENTS, OR EQUIPMENT OR FIXTURES THAT SERVE THE SAME PURPOSE.

### COMPLIANCE METHOD:

#### PRESCRIPTIVE - CHAPTER 5

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.

#### LEVEL 1 RESTROOM:

ALTERATION LEVEL 2 - THE ADDITION OR ELIMINATION OF ANY DOOR OR WINDOW, THE RECONFIGURATION OF 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% OF THE BUILDING AREA.

#### SECTION 801.4 COMPLIANCE

NEW CONSTRUCTION ELEMENTS, COMPONENTS, SYSTEMS AND SPACES SHALL COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE.

#### EXCEPTIONS:

- WHERE WINDOWS ARE ADDED THEY ARE NOT REQUIRED TO COMPLY WITH THE LIGHT AND VENTILATION REQUIREMENTS OF THE IBC.
- 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 804.2.
- 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.
- 

#### NOTES:

NOTE: PLUMBING FIXTURE COUNT HAS NOT CHANGED. ADA CLEARANCES ARE SHOWN ON SHEET A-112.

NO CHANGE IS BEING MADE TO OCCUPANCY SIZE OR TYPE.

NO CHANGE TO EXIT DISTANCE OR PATH.

Ⓟ LOCATION OF EXISTING ELECTRICAL PANEL.

## GENERAL CONDITIONS

- THE GENERAL CONTRACTOR IS TO GUARANTEE ALL WORK INCLUDING WORK DONE BY SUBCONTRACTORS FOR A PERIOD OF ONE (1) YEAR COMMENCING WITH THE FINAL ACCEPTANCE AND FULL COMPLETION OF THE PROJECT.
- 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.
- THE GENERAL CONTRACTOR IS TO HAVE A FULL TIME QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED.
- ALL MATERIAL SPECIFIED IS TO BE NEW & INSTALLED IN ACCORDANCE WITH MANUFACTURER'S 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).

## GENERAL NOTES

- CONTRACTOR TO REVIEW AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK. ANY CONDITIONS NOT INDICATED ON CONTRACT DOCUMENTS ARE TO BE REPORTED TO THE ARCHITECT PRIOR TO BEGINNING WORK.
- 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.
- THE CONTRACTOR SHALL REMOVE ALL DEBRIS AS A RESULT OF THIS PROJECT. THE CONTRACTOR WILL REMOVE EXISTING EQUIPMENT, FIXTURES, ETC. IN THE SPACE PRIOR TO CONSTRUCTION AND RELOCATE PER OWNER.
- 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.
- THE CONTRACTOR SHALL PROTECT EXISTING FACILITIES, EQUIPMENT, FIXTURES, ETC. FROM DAMAGE DURING THE COURSE OF CONSTRUCTION.

- ALL SURFACES AND/OR FINISHES DAMAGED AS A RESULT OF AND ADJACENT TO THE WORK SHALL BE REPAIRED AND FINISHED TO THEIR ORIGINAL CONDITION.
- USE DETAILS MARKED "TYPICAL" (TYP) WHEREVER APPLICABLE.
- 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.
- WORDS WHICH HAVE WELL KNOWN TECHNICAL OR TRADEMEANINGS ARE USED IN THE DRAWINGS AND SPECIFICATIONS IN ACCORDANCE WITH SUCH RECOGNIZED MEANINGS.
- WITHIN THE DRAWINGS AND RELATED SPECIFICATIONS THERE SHALL BE THE FOLLOWING PRECEDENCE:
  - ADDENDA OR MODIFICATIONS TO THE DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE OVER THE ORIGINAL, WHEN ISSUED BY THE ARCHITECT.

- SPECIFICATIONS SHALL TAKE PRECEDENCE OVER DRAWINGS.
- WITHIN THE DRAWINGS THE LARGER SCALE TAKES PRECEDENCE OVER THE SMALLER, FIGURED DIMENSIONS OVER SCALED AND NOTED MATERIALS OVER GRAPHIC INDICATIONS.
- 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.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY DURING BUILDING CONSTRUCTION.

- SUBMITTALS AND SAMPLES REQUIRED ON ALL FINISH MATERIALS AND COLORS, AND SHALL BE REVIEWED BY OWNER'S REPRESENTATIVE FOR FINAL APPROVAL PRIOR TO ORDERING. SAMPLES SHALL BE FULL SIZE WITH PAINTS/STAINS APPLIED TO ACTUAL SUBSTRATES. ALL MATERIALS SHALL BE VIEWED ON SITE AT SAME TIME IN SPACES USED, ONE MEETING FOR EXTERIOR FINISHES AND ONE MEETING FOR INTERIOR FINISHES.

## PROJECT INFORMATION:

### OWNER / DEVELOPER

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: JENNISSE WATERS  
EMAIL: JENNISSE.WATERS@MONTANA.EDU  
TEL: (406) 994-5970

### DESIGN PROFESSIONALS

JACKOLA ENGINEERING & ARCHITECTURE, P.C.  
2250 HWY 93 SOUTH  
PO BOX 1134  
KALISPELL, MT 59903  
TEL: (406) 755-3208  
  
ARCHITECT: MIKE J MYERS, AIA  
  
STRUCTURAL ENGINEER: KEOLA JAMIESON, PE  
  
MECHANICAL ENGINEER: TYLER TONIUM, PE  
  
ELECTRICAL ENGINEER: JON RUONAVAARA, PE

### BUILDING DEPARTMENT

CITY OF BOZEMAN  
20 E. OLIVE ST. 1ST FLOOR  
PO BOX 1230  
BOZEMAN, MT 59711  
EMAIL: PLANNINGTECH@BOZEMAN.NET  
TEL: (406) 582-2260

ENTIRE ROBERTS  
DRAWING SET IS ADD  
ALTERNATES #1 & #2

TITLE SHEET

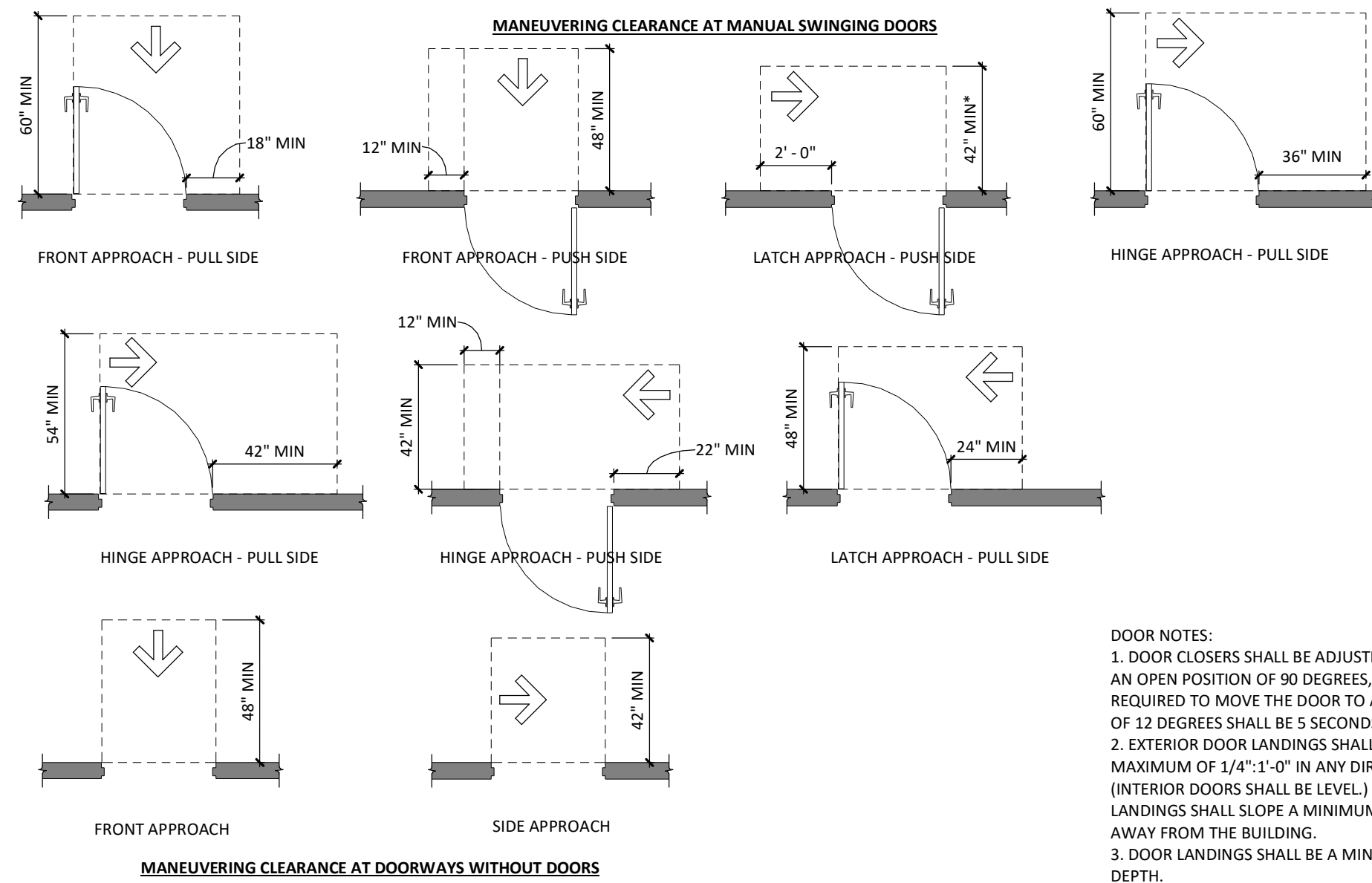
G-001

DRAWN: KCE CHECKED: MJM

DATE: 11/19/2024

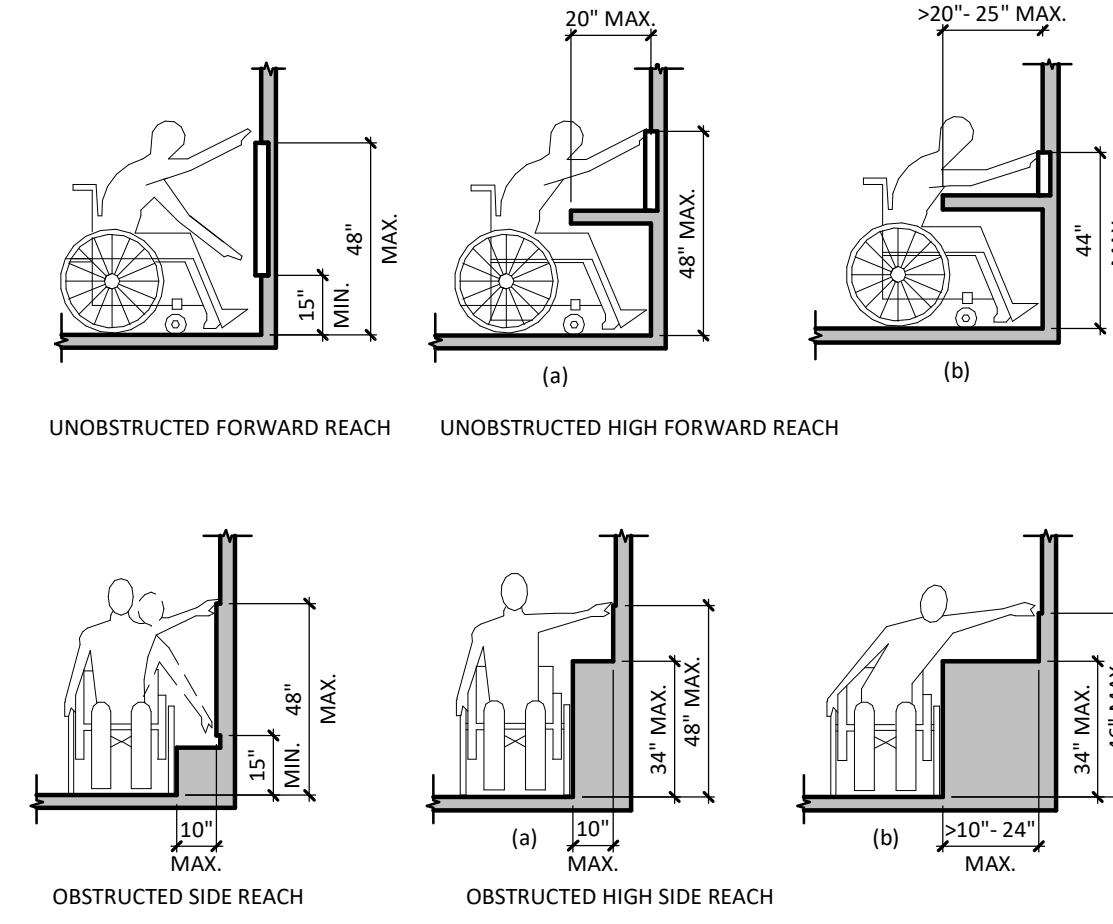
REVISIONS:



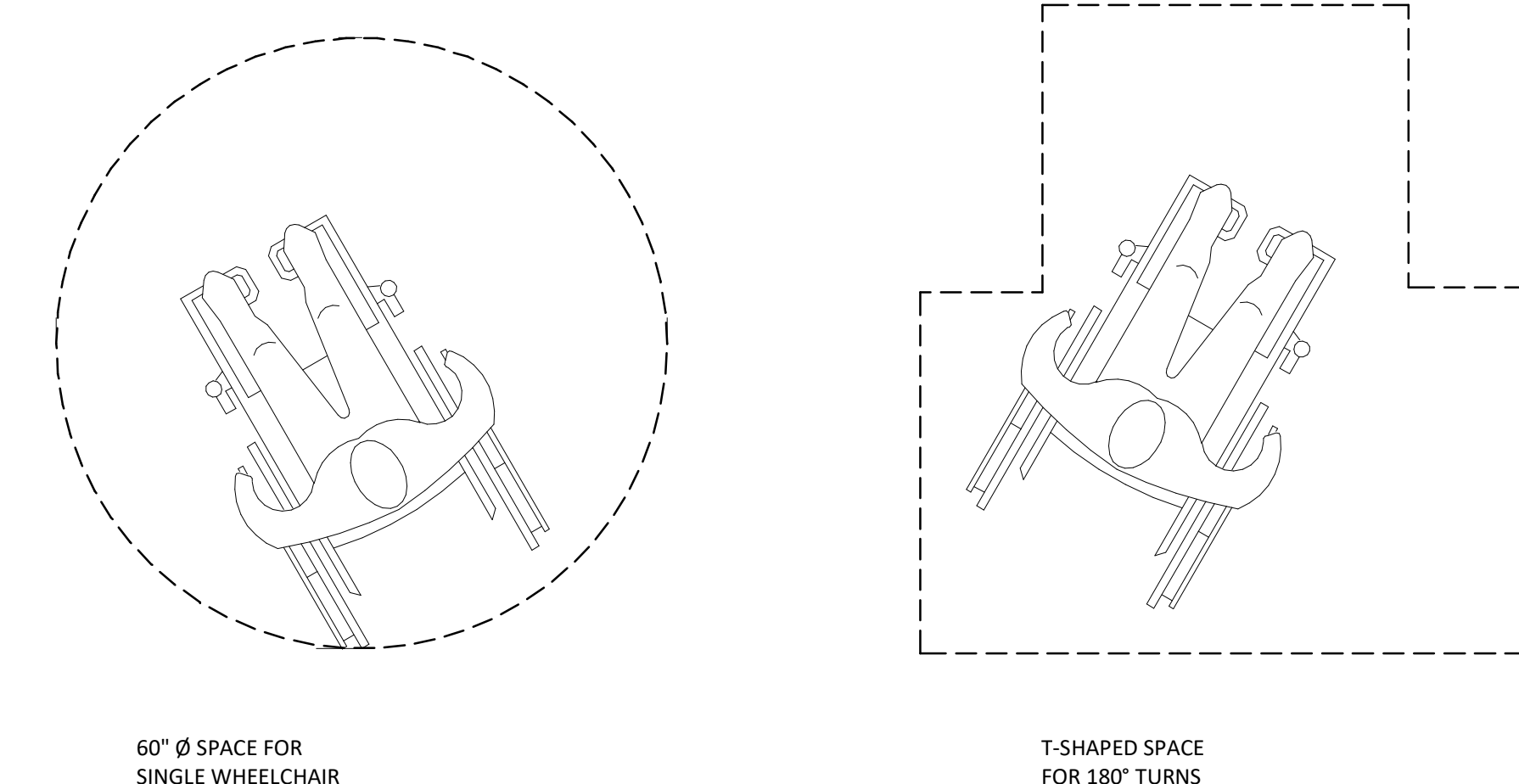


**DOOR NOTES:**  
 1. DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES SHALL BE 5 SECONDS MINIMUM.  
 2. EXTERIOR DOOR LANDINGS SHALL SLOPE A MAXIMUM OF 1/4\"/>

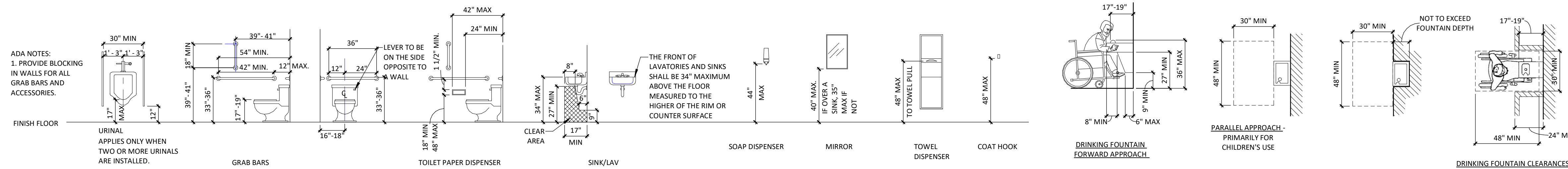
**1 DOOR CLEARANCE AND LANDING REQUIREMENTS**  
 1/4" = 1'-0"



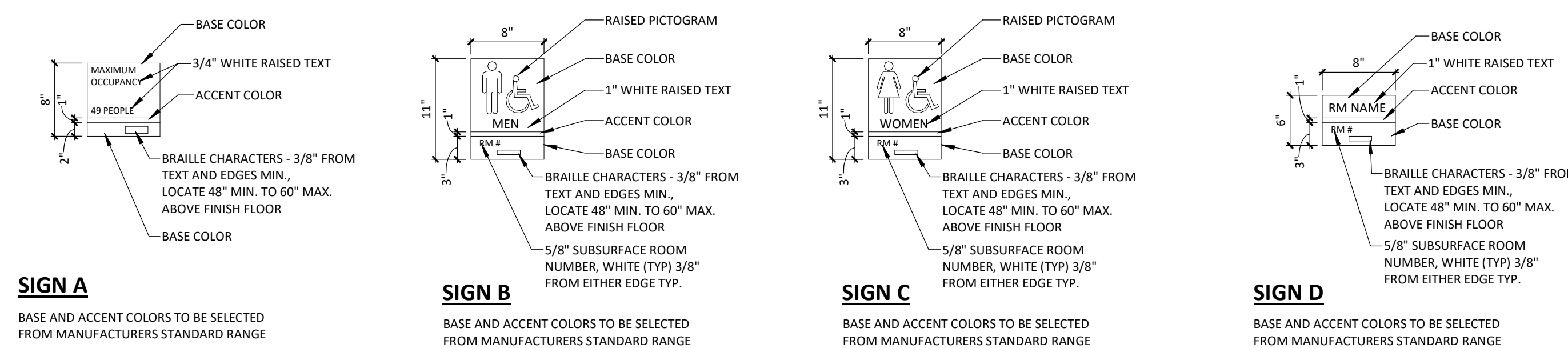
**2 ADA REACH RANGES**  
 1/4" = 1'-0"



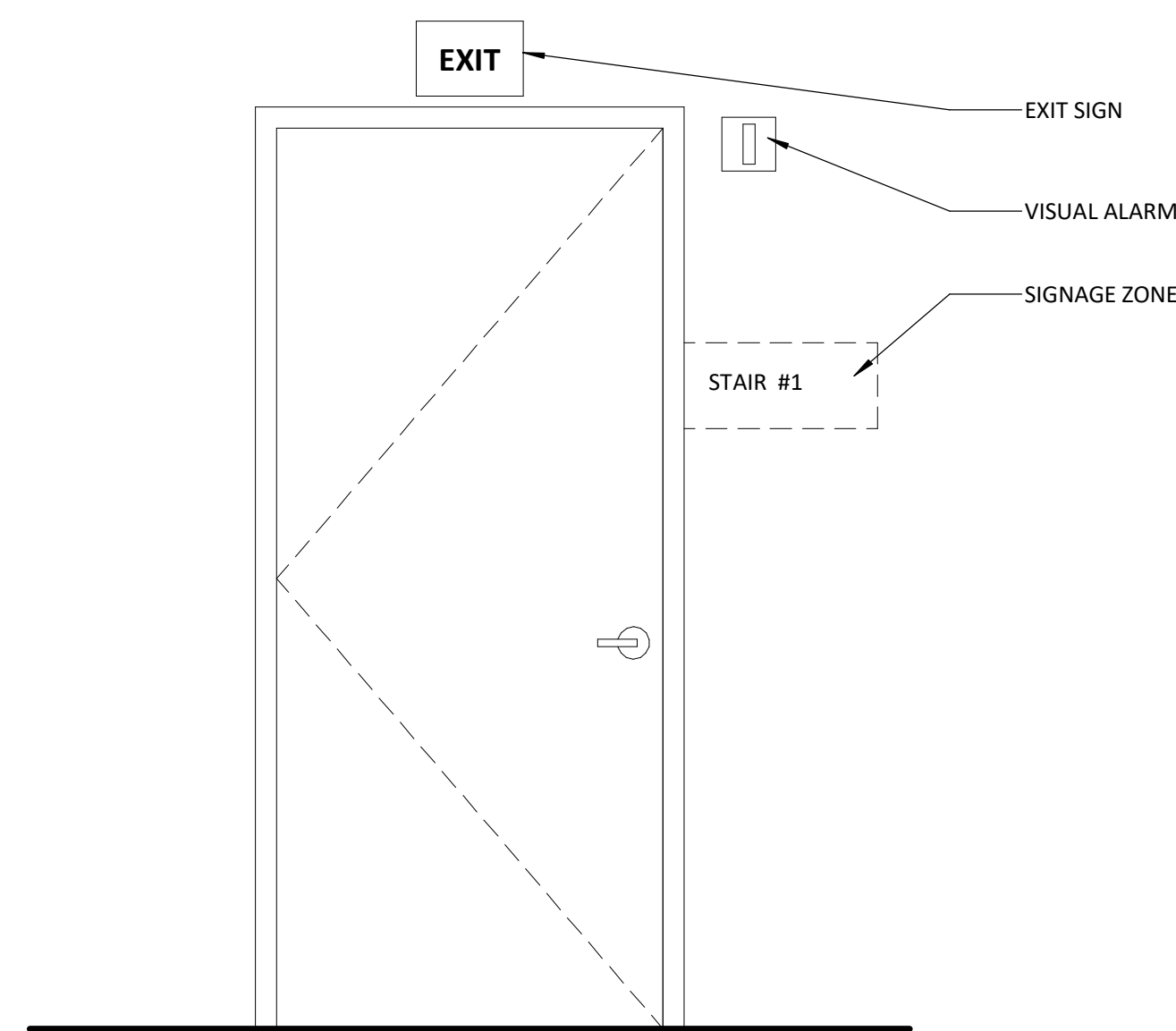
**3 WHEELCHAIR TURNING REQUIREMENTS**  
 NTS



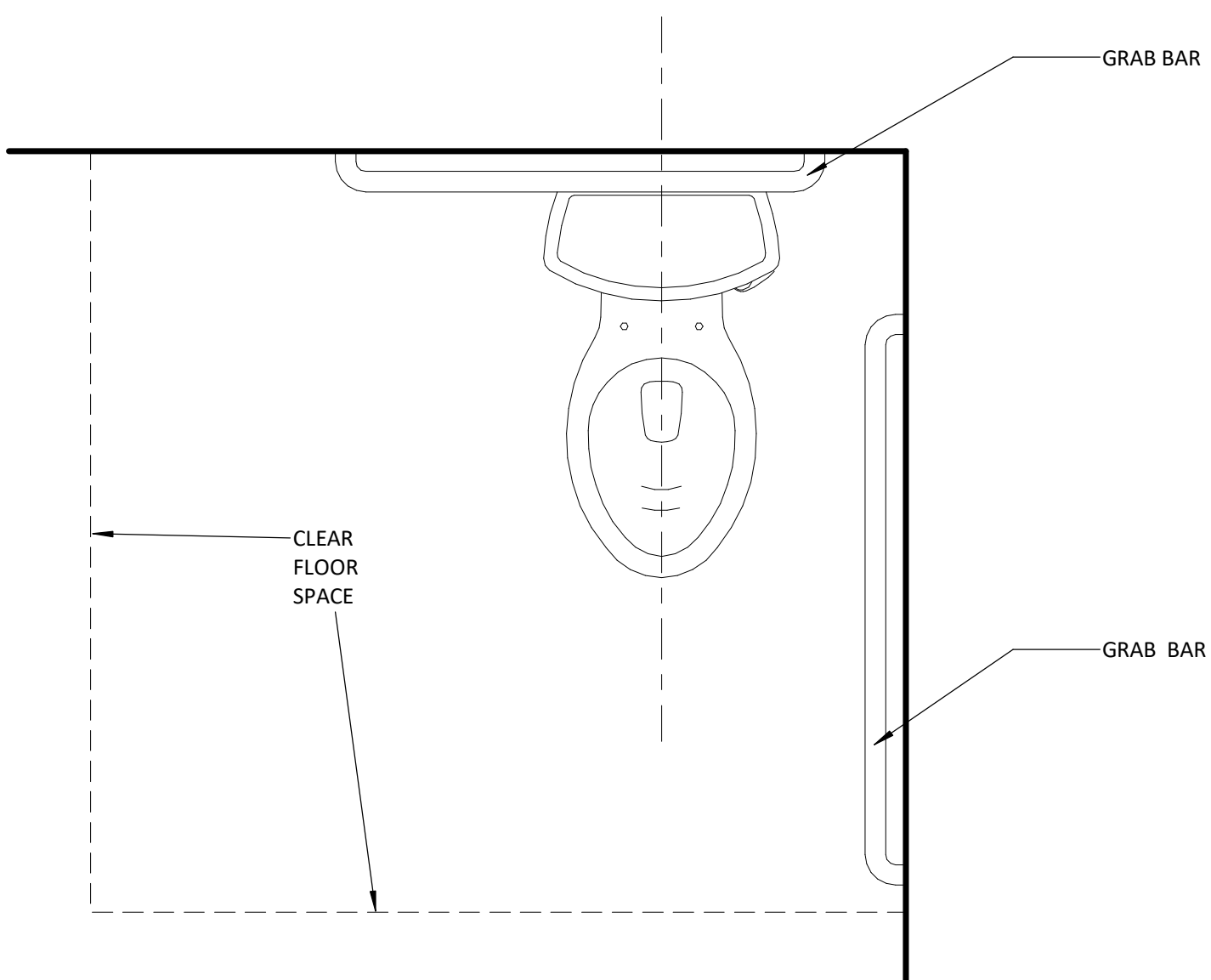
**4 ACCESSIBILITY REQUIREMENTS W/ DF CLEARANCES (ICC A117.1-2009)**  
 1/4" = 1'-0"



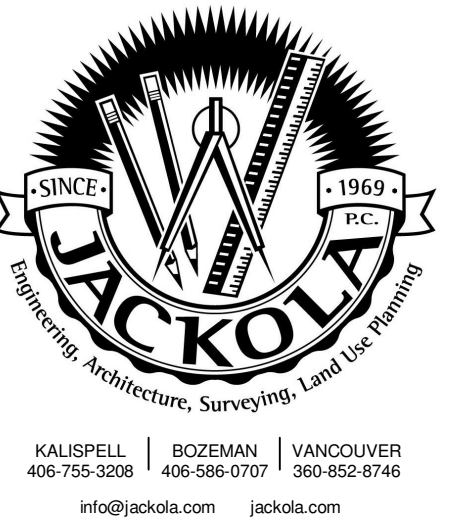
**5 ACCESSIBLE SIGNAGE**  
 1" = 1'-0"



**6 TYP. MOUNTING HTS. @ EXIT DOOR**  
 NTS



**7 TYP. ACCESSIBLE W.C. PLAN**  
 1" = 1'-0"



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DRAWN: KCE CHECKED: MJM

DATE: 11/19/2024

REVISIONS:

ACCESSIBILITY DETAILS

**G-013**



### ABBREVIATIONS

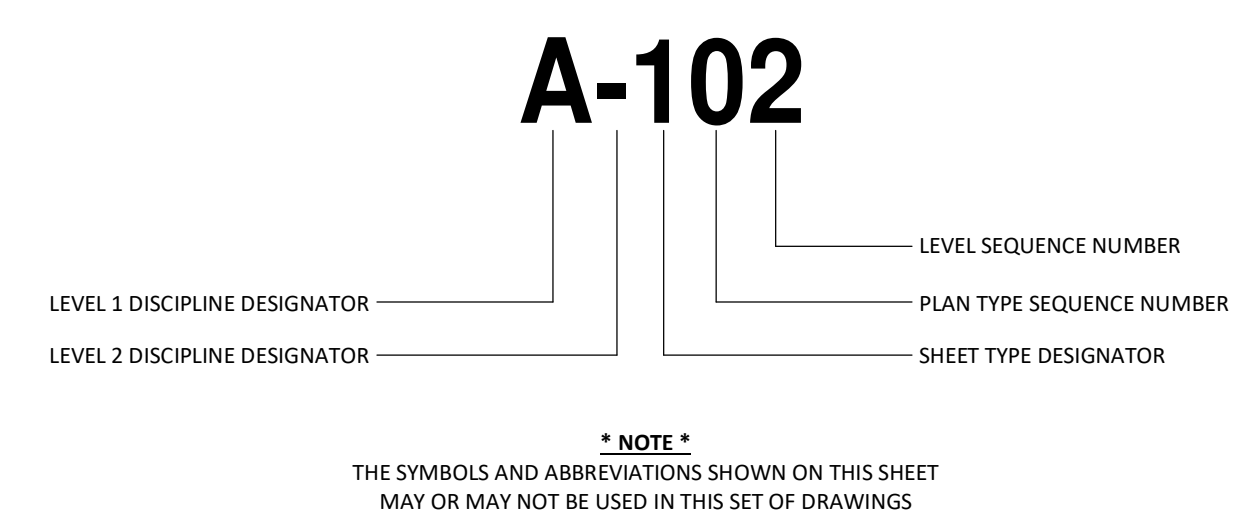
|          |  |
|----------|--|
| <b>A</b> | AFF ABOVE FINISH FLOOR<br>ACT ACOUSTICAL CEILING TILE<br>ADJ ADJUSTABLE<br>AB ANCHOR BOLT<br>ALUM ALUMINUM<br>ALT ALTERNATE<br>ANOD ANODIZED<br>APPROX APPROXIMATE<br>ARCH ARCHITECT<br><br><b>B</b><br>BSMT BASEMENT<br>BATH BATHROOM<br>BM BEAM<br>BRG BEARING<br>BEDRM BEDROOM<br>BET BETWEEN<br>BLDG BUILDING<br>BO BOTTOM OF<br>BOT BOTTOM<br>BN BOUNDARY NAILING<br>BS BOTH SIDES<br><br><b>C</b><br>CFCI CONTRACTOR FURNISHED CONTRACTOR INSTALLED<br>CPT CARPET<br>CLS CEILING<br>CT CERAMIC TILE<br>CLR CLEAR<br>CLST CLOSET<br>COL COLUMN<br>CONC CONCRETE<br>CONST CONSTRUCTION<br>CONT CONTINUOUS<br>CONTR CONTRACT, CONTRACTOR<br>CORR CORRIDOR<br>CJ CONTROL JOINT<br>CMU CONCRETE MASONRY UNIT<br><br><b>D</b><br>DEMO DEMOLISH, DEMOLITION<br>DTL DETAIL<br>DIA DIAMETER<br>DIM DIMENSION<br>DW DISHWASHER<br>DIV DIVISION<br>DL DEAD LOAD<br>DR DOOR<br>DN DOWN<br>DS DOWNSPOUT<br>DWG DRAWING<br>DF DRINKING FOUNTAIN<br>D DRYER<br><br><b>E</b><br>EA EACH<br>E EAST<br>ELEC ELECTRIC<br>ELEV ELEVATION, ELEVATOR<br>EQ EQUAL<br>EQUIP EQUIPMENT<br>EXIST EXISTING<br>EXP EXPANSION<br>EJ EXPANSION JOINT<br>EXT EXTERIOR<br><br><b>F</b><br>FOB FACE OF BRICK<br>FOC FACE OF CONCRETE<br>FOM FACE OF MASONRY<br><br><b>FOS</b> FACE OF STUDS<br><b>FIN</b> FINISH<br><b>FF</b> FINISH FLOOR<br><b>FEC</b> FIRE EXTINGUISHER/AND OR CABINET FLASHING<br><b>FL</b> FLASHING<br><b>FLR</b> FLOOR<br><b>FD</b> FLOOR DRAIN<br><b>FT</b> FOOT, FEET<br><b>FTG</b> FOOTING<br><b>FND</b> FOUNDATION<br><b>FURN</b> FURNITURE<br><b>FUT</b> FUTURE<br><b>FBO</b> FURNISHED BY OTHERS<br><b>FRP</b> FIBER REINFORCED PANEL<br><br><b>G</b><br><b>GA</b> GAUGE<br><b>GALV</b> GALVANIZED<br><b>GEN</b> GENERAL<br><b>GL</b> GLASS<br><b>GWB</b> GYPSUM WALL BOARD<br><b>GYPC</b> GYPCRETE<br><br><b>H</b><br><b>HALL</b> HALLWAY<br><b>HDW</b> HARDWARE<br><b>HVAC</b> HEATING, VENTILATING, & AIR CONDITIONING<br><b>HT</b> HEIGHT<br><b>HM</b> HOLLOW METAL<br><b>HORIZ</b> HORIZONTAL<br><b>HWT</b> HOT WATER TANK<br><b>HR</b> HOUR<br><br><b>I</b><br><b>IBC</b> INTERNATIONAL BUILDING CODE<br><b>INCL</b> INCLUDE, INCLUDED (ING)<br><b>INFO</b> INFORMATION<br><b>ID</b> INSIDE DIAMETER<br><b>INSUL</b> INSULATE, INSULATION<br><b>INT</b> INTERIOR<br><br><b>J</b><br><b>JAN</b> JANITOR<br><b>JC</b> JANITOR'S CLOSET<br><b>JT</b> JOINT<br><br><b>K</b><br><b>KIT</b> KITCHEN<br><b>KO</b> KNOCK OUT<br><br><b>L</b><br><b>LBL</b> LABEL<br><b>LAM</b> LAMINATED<br><b>LNDRY</b> LAUNDRY<br><b>LAV</b> LAVATORY<br><b>LVL</b> LEVEL<br><b>LL</b> LIVE LOAD<br><b>LR</b> LIVING ROOM<br><b>LOC'N</b> LOCATION<br><br><b>M</b><br><b>MFR</b> MANUFACTURER<br><b>MAS</b> MASONRY<br><b>MO</b> MASONRY OPENING<br><br><b>MATL</b> MATERIAL<br><b>MAX</b> MAXIMUM<br><b>MECH</b> MECHANICAL, MECHANICAL ROOM<br><b>MTL</b> METAL<br><b>MIN</b> MINIMUM<br><b>MIRR</b> MIRROR<br><b>MISC</b> MISCELLANEOUS<br><br><b>N</b><br><b>NOM</b> NOMINAL<br><b>N</b> NORTH<br><b>NA</b> NOT APPLICABLE<br><b>NIC</b> NOT IN CONTRACT<br><b>NTS</b> NOT TO SCALE<br><b>NO</b> NUMBER<br><br><b>O</b><br><b>OC</b> ON CENTER<br><b>OFCI</b> OWNER FURNISHED CONTRACTOR INSTALLED<br><b>OFOI</b> OWNER FURNISHED OWNER INSTALLED<br><b>OFF</b> OFFICE<br><b>OPG</b> OPENING<br><b>OPP</b> OPPOSITE<br><b>OD</b> OUTSIDE DIAMETER<br><b>OF</b> OUTSIDE FACE<br><b>O/O</b> OUT TO OUT<br><br><b>P</b><br><b>PNT</b> PAINT, PAINTED<br><b>PNL</b> PANEL<br><b>PH</b> PHASE<br><b>PLAS</b> PLASTIC<br><b>P-LAM</b> PLASTIC LAMINATE<br><b>PL</b> PLATE<br><b>PLYWD</b> PLYWOOD<br><b>PVC</b> POLYVINYL CHLORIDE<br><b>PREFIN</b> PREFINISHED<br><b>PROP</b> PROPERTY<br><br><b>Q</b><br><b>QUAN</b> QUANTITY<br><br><b>R</b><br><b>RAD</b> RADIUS<br><b>RWL</b> RAIN WATER LEADER<br><b>REF</b> REFERENCE<br><b>REINF</b> REINFORCE, REINFORCEMENT<br><b>RCP</b> REFLECTED CEILING PLAN<br><b>REQ'D</b> REQUIRED<br><b>RFI</b> REQUEST FOR INFORMATION<br><b>REV</b> REVISION<br><b>R</b> RISER<br><b>RD</b> ROOF DRAIN<br><b>RM</b> ROOM<br><b>RO</b> ROUGH OPENING<br><br><b>S</b><br><b>SCHED</b> SCHEDULE<br><b>SEC</b> SECTION<br><b>SG</b> SAFETY GLASS<br><b>SHTG</b> SHEATHING<br><b>SIM</b> SIMILAR<br><b>SOG</b> SLAB ON GRADE<br><b>S</b> SOUTH<br><b>SPEC</b> SPECIFICATION<br><b>SQ</b> SQUARE<br><b>STD</b> STANDARD<br><b>STL</b> STEEL<br><b>STOR</b> STORAGE<br><b>STRUCT</b> STRUCTURAL<br><b>SF</b> SQUARE FEET<br><b>SUSP</b> SUSPENDED<br><br><b>I</b><br><b>TEAL</b> TECHNOLOGY ENHANCED ACTIVE LEARNING<br><b>TEL</b> TELEPHONE<br><b>TV</b> TELEVISION<br><b>TEMP</b> TEMPERED, TEMPORARY<br><b>T&amp;G</b> TONGUE AND GROOVE<br><b>TOB</b> TOP OF BRICK<br><b>TOS</b> TOP OF SLAB<br><b>TOW</b> TOP OF WALL<br><b>TOM</b> TOP OF MASONRY<br><b>T</b> TREAD<br><b>TYP</b> TYPICAL<br><br><b>U</b><br><b>UAS</b> UPWARD ACTING SECTIONAL DOOR<br><b>UBC</b> UNIFORM BUILDING CODE<br><b>UNO</b> UNLESS NOTED OTHERWISE<br><b>UTIL</b> UTILITY<br><br><b>V</b><br><b>VB</b> VAPOR BARRIER<br><b>VNR</b> VENEER<br><b>VERT</b> VERTICAL<br><b>VG</b> VERTICAL GRAIN<br><b>VCT</b> VINYL COMPOSITION TILE<br><br><b>W</b><br><b>WSCOT</b> WAINSCOT<br><b>WC</b> WATER CLOSET<br><b>WIN</b> WINDOW<br><b>WP</b> WATERPROOF (ING)<br><b>WRB</b> WEATHER RESISTANT BARRIER<br><b>WWF</b> WELDED WIRE FABRIC<br><b>WWM</b> WELDED WIRE MESH<br><b>WT</b> WEIGHT<br><b>W</b> WEST, WASHER<br><b>W/</b> WITH<br><b>W/D</b> WASHER / DRYER<br><br><b>&amp;</b> AND<br><b>L</b> ANGLE<br><b>@</b> AT<br><b>CL</b> CENTERLINE<br><b>u</b> CHANNEL<br><b>Ø</b> DIAMETER<br><b>PL</b> PLATE |
|----------|--|

### SYMBOLS USED AS ABBREVIATIONS

|              |            |
|--------------|------------|
| <b>&amp;</b> | AND        |
| <b>L</b>     | ANGLE      |
| <b>@</b>     | AT         |
| <b>CL</b>    | CENTERLINE |
| <b>u</b>     | CHANNEL    |
| <b>Ø</b>     | DIAMETER   |
| <b>PL</b>    | PLATE      |

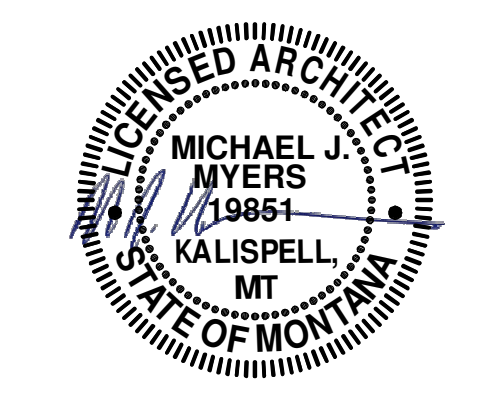
### SYMBOLS & MATERIALS

|  |  |  |                      |
|--|--|--|----------------------|
|  | STRUCTURAL FILL                                |  | FINISHED WOOD        |
|  | UNDISTURBED EARTH                              |  | PLYWOOD              |
|  | DISTURBED EARTH                                |  | RIGID INSULATION     |
|  | GRAVEL   |  | BATT INSULATION      |
|  | POURED CONCRETE                                |  | SPRAYFOAM INSULATION |
|  | CONCRETE BLOCK VENEER                          |  | SAND, PLASTER, GROUT |
|  | BRICK VENEER                                   |  | METAL                |
|  | EIFS   |  | STEEL                |
|  | ROUGH WOOD                                     |  | WINDOW TYPE          |
|  | BLOCKING                                       |  | DOOR NUMBER          |
|  | SECTION  |  | ROOM NUMBER          |
|  | ELEVATION                                      |  | WALL TYPE<br>X'-X"   |
|  | DETAIL   |  | REVISION NUMBER      |
|  | ITEM IDENTIFICATION<br>SHEET WHERE ITEM IS CUT |  | KEY NOTE             |
|  | NORTH ARROW                                    |  | DEMOLITION NOTE      |
|  |  |  | FINISH TAG           |
|  |  |  | EQUIPMENT TAG        |
|  |  |  | ROOM FINISH KEY      |



#### ARCHITECTURAL SHEET INDEX

|       |  |
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| AD101 | CLASSROOM DEMO FLOOR PLAN                    |
| AD121 | CLASSROOM DEMO REFLECTED CEILING PLAN        |
| A-111 | CLASSROOM FLOOR PLAN                         |
| A-112 | RESTROOM FLOOR PLAN & DEMO                   |
| A-121 | CLASSROOM REFLECTED CEILING PLAN             |
| A-122 | RESTROOM RCP & DEMO                          |
| A-131 | CLASSROOM FINISH PLAN                        |
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 PPA#: 23-0828

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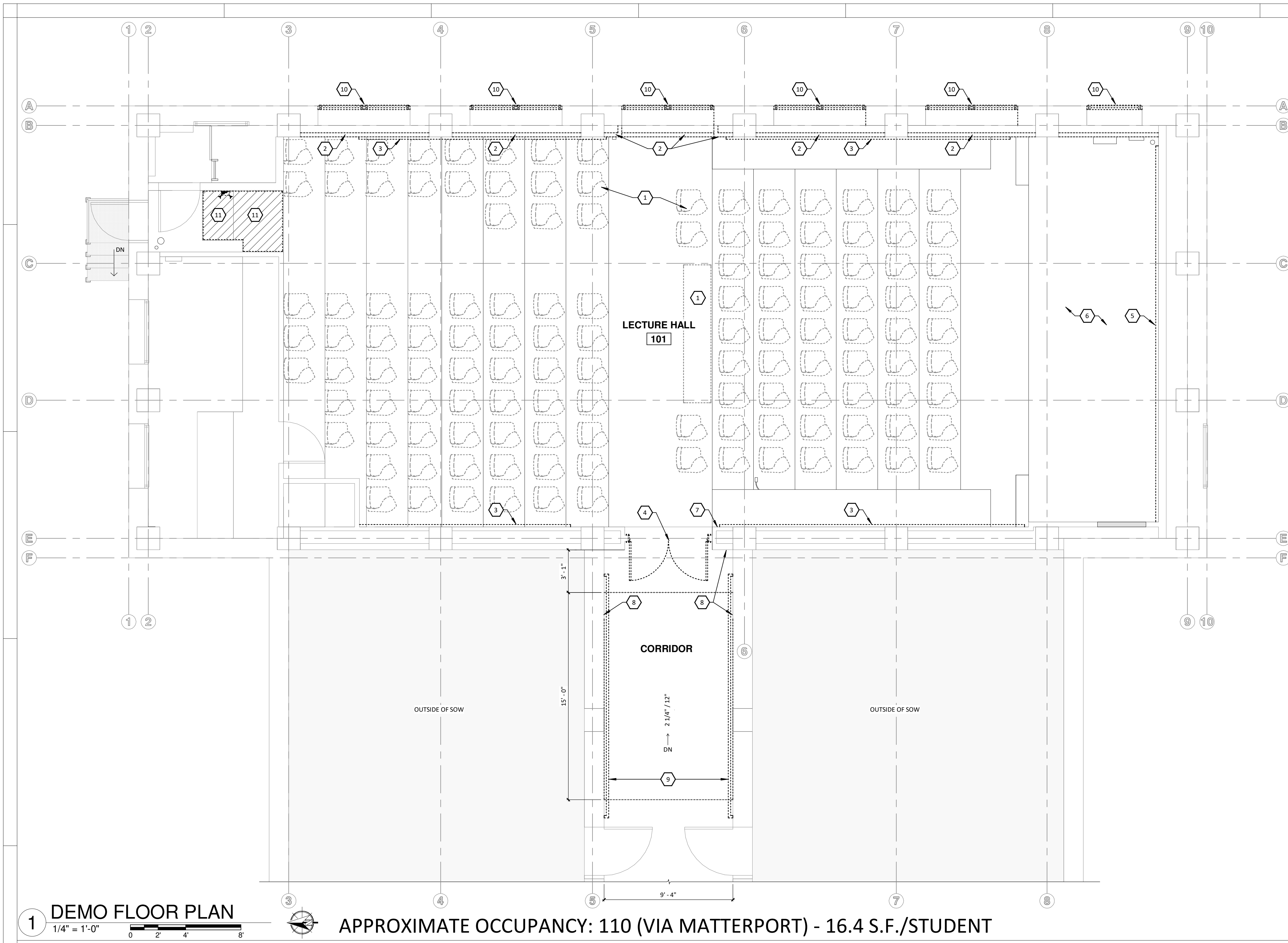
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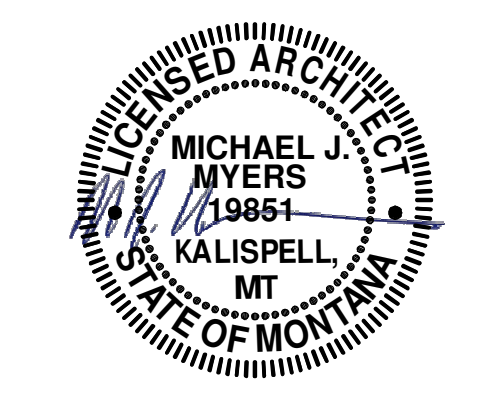
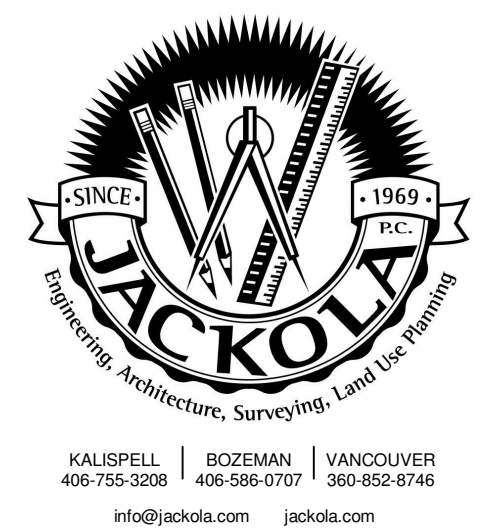
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ARCHITECTURAL NOTES

**A-001**



- LEVEL 1 DEMO KEYNOTES**
- 1 REMOVE ALL EXISTING FURNITURE, TYP. DELIVER TO OWNER'S STORAGE ON CAMPUS
  - 2 REMOVE WALL AT EXISTING WINDOW, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 3 REMOVE ACOUSTICAL WALL TREATMENT, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 4 REMOVE AND REUSE DOOR & FRAME
  - 5 REMOVE WHITE BOARDS AND PROJECTOR SCREEN, DELIVER TO OWNER'S STORAGE ON CAMPUS
  - 6 REMOVE CARPET FLOORING AT STAGE, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 7 REMOVE RUBBER BASE AT ALL WALLS, TYP. RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 8 REMOVE AND REUSE MARBLE BASEBOARD IN COORIDOR
  - 9 REMOVE HANDRAIL AT RAMP, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 10 REMOVE WINDOW, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 11 CUT DOWN STEPS TO PREPARE FOR NEW CONCRETE TOPPING SLAB



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**1 DEMO FLOOR PLAN**  
 1/4" = 1'-0"  
 0 2' 4' 8'

**APPROXIMATE OCCUPANCY: 110 (VIA MATTERPORT) - 16.4 S.F./STUDENT**

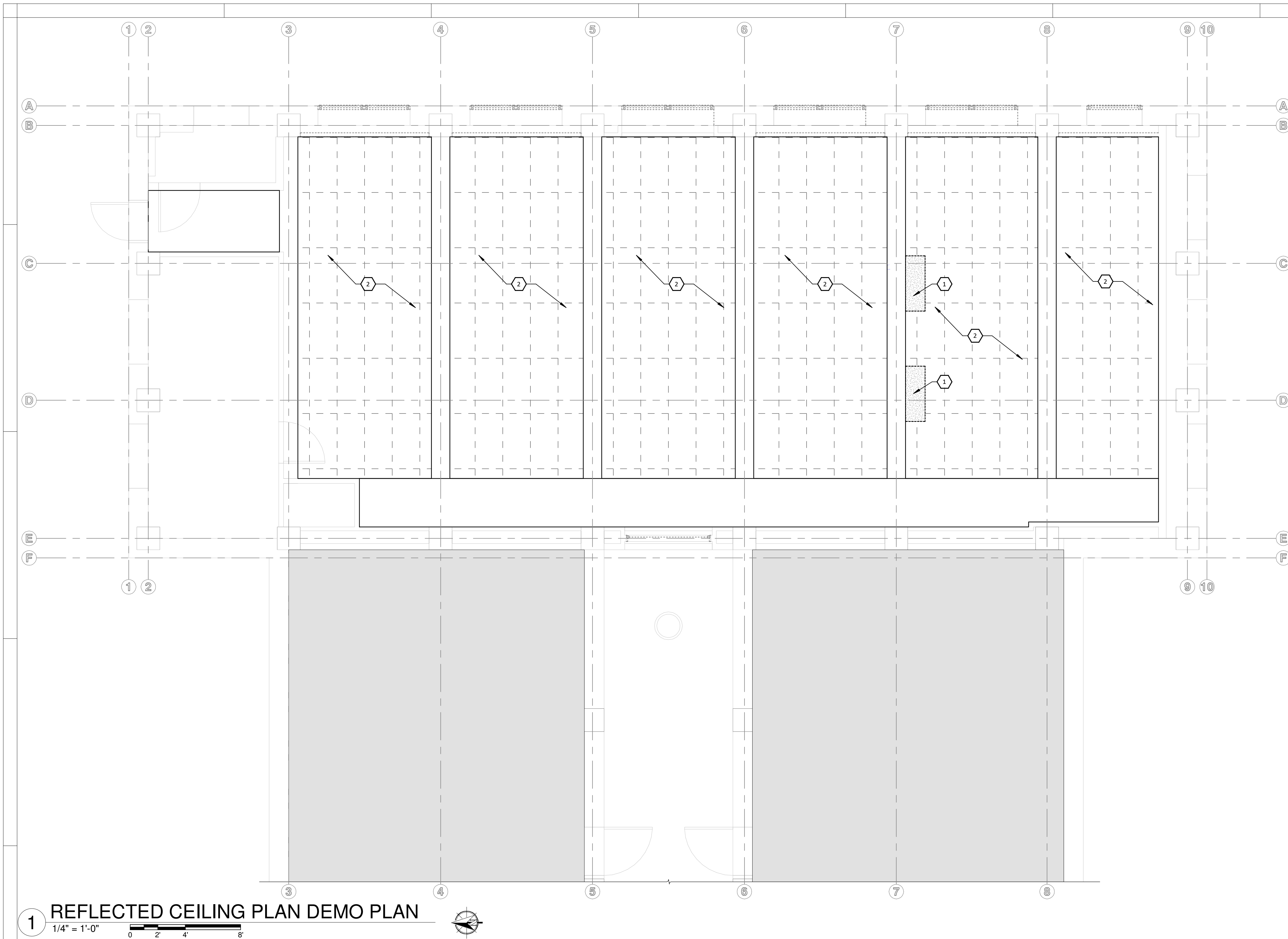
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**CLASSROOM DEMO FLOOR PLAN**

ENTIRE SHEET IS ADD ALTERNATE #1

**AD101**

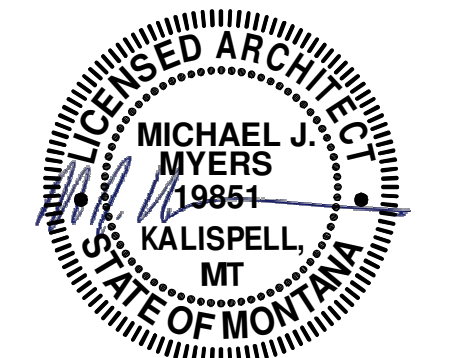
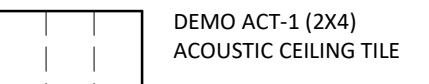




**CLASSROOM DEMO RCP KEYNOTES**

- 1 REMOVE FRAMED GWS SOFFIT AND LIGHTS
- 2 REMOVE ALL EXISTING ACT PANELS AND GRID

**DEMO CEILING PLAN LEGEND**



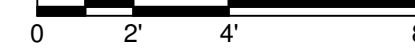
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 PPA#: 23-0828

**1 REFLECTED CEILING PLAN DEMO PLAN**

1/4" = 1'-0"



DRAWN: Author CHECKED: Checker

DATE: 11/19/2024

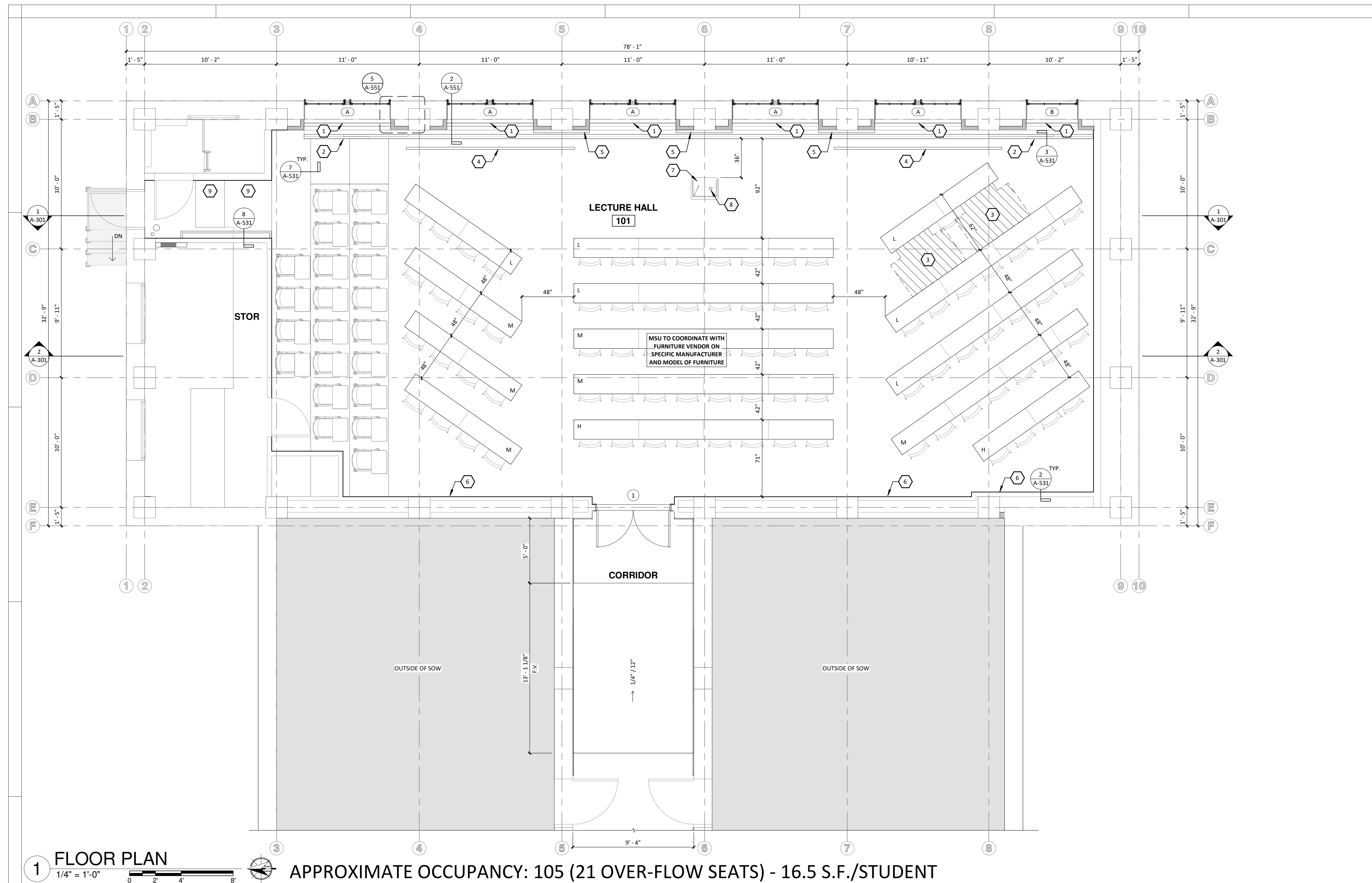
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**CLASSROOM DEMO REFLECTED CEILING PLAN**

ENTIRE SHEET IS ADD ALTERNATE #1

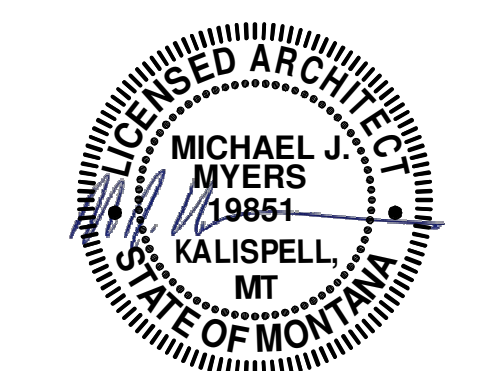
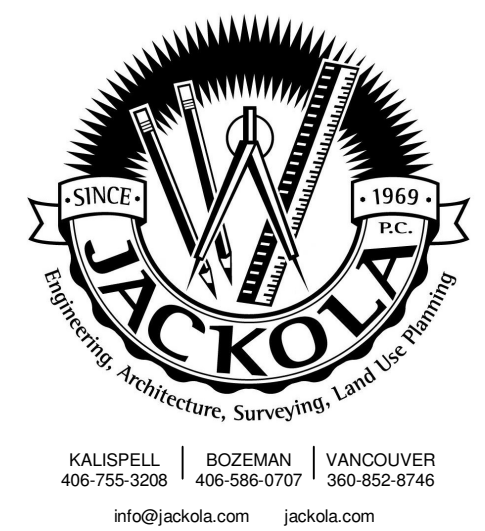
**AD121**



**FLOOR PLAN KEYNOTES**

1. MOTORIZED DUAL SHADES, CONTROLLED AT LECTERN PODIUM. FIELD VERIFY DIMENSIONS (CFCI)
2. SLIDING WALL SYSTEM, B.O.D. RAYDOOR SLIDING BYPASSING, 5 PANELS (SBS-RD). SEE DETAIL 3/A-531, (CFCI) ADD ALTERNATE #3
3. ADA ACCESSIBLE LOCATION
4. MOTORIZED PROJECTOR SCREEN (OFCI)
5. FIXED 4' x 4' WHITEBOARD, NO TRAY (CFCI)
6. ACOUSTICAL WALL TREATMENT, SEE DETAIL 9/A-531 (CFCI)
7. LECTERN PODIUM, B.O.D. LINK LECTERN - MEDIA MANAGER SERIES (OFOI)
8. CONDUIT FOR POWER/DATA AT LECTERN PODIUM
9. RAISE STEPS TO MAKE RISERS EQUAL

- GENERAL NOTES:**
- A. ALL TABLES ON MAIN FLOOR ARE OFCI AND MOUNTED TO THE CONCRETE FLOOR.
  - B. ALL CHAIRS ARE OFOI.
  - C. ALL DESKS ON RAISED PORTION ARE OFOI.

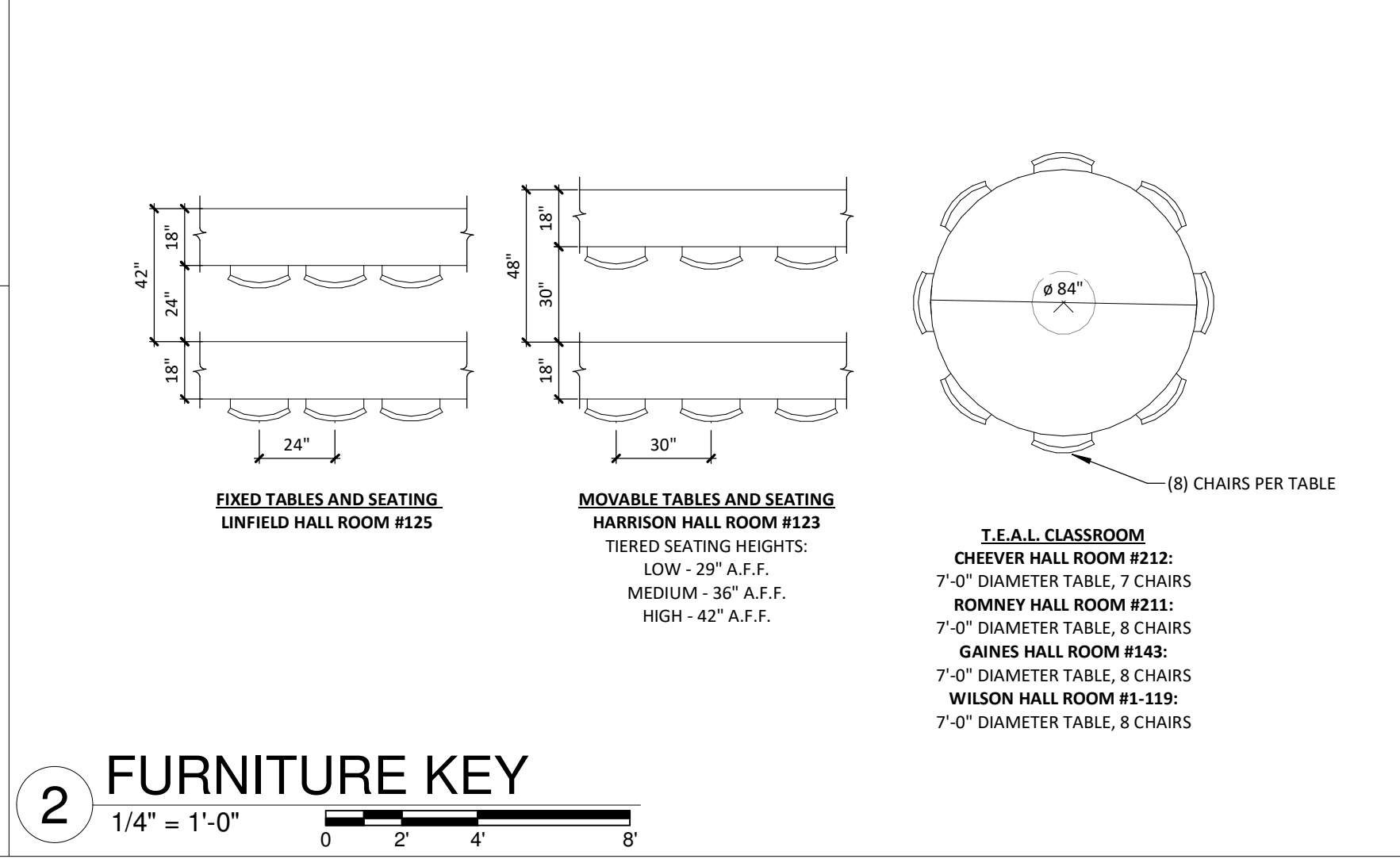


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**1 FLOOR PLAN**  
1/4" = 1'-0" APPROXIMATE OCCUPANCY: 105 (21 OVER-FLOW SEATS) - 16.5 S.F./STUDENT



**2 FURNITURE KEY**  
1/4" = 1'-0"

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REVISIONS:

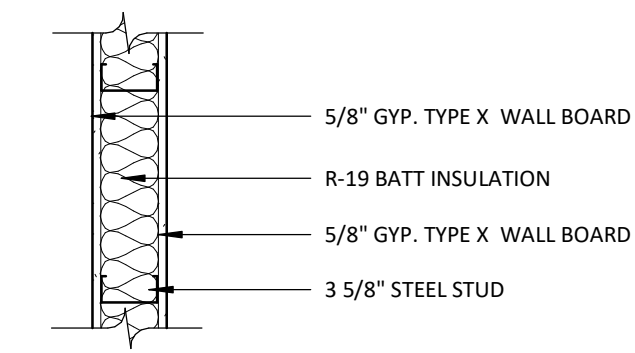
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**CLASSROOM FLOOR PLAN**

ENTIRE SHEET IS  
ADD ALTERNATE #1  
EXCEPT AS NOTED

**A-111**

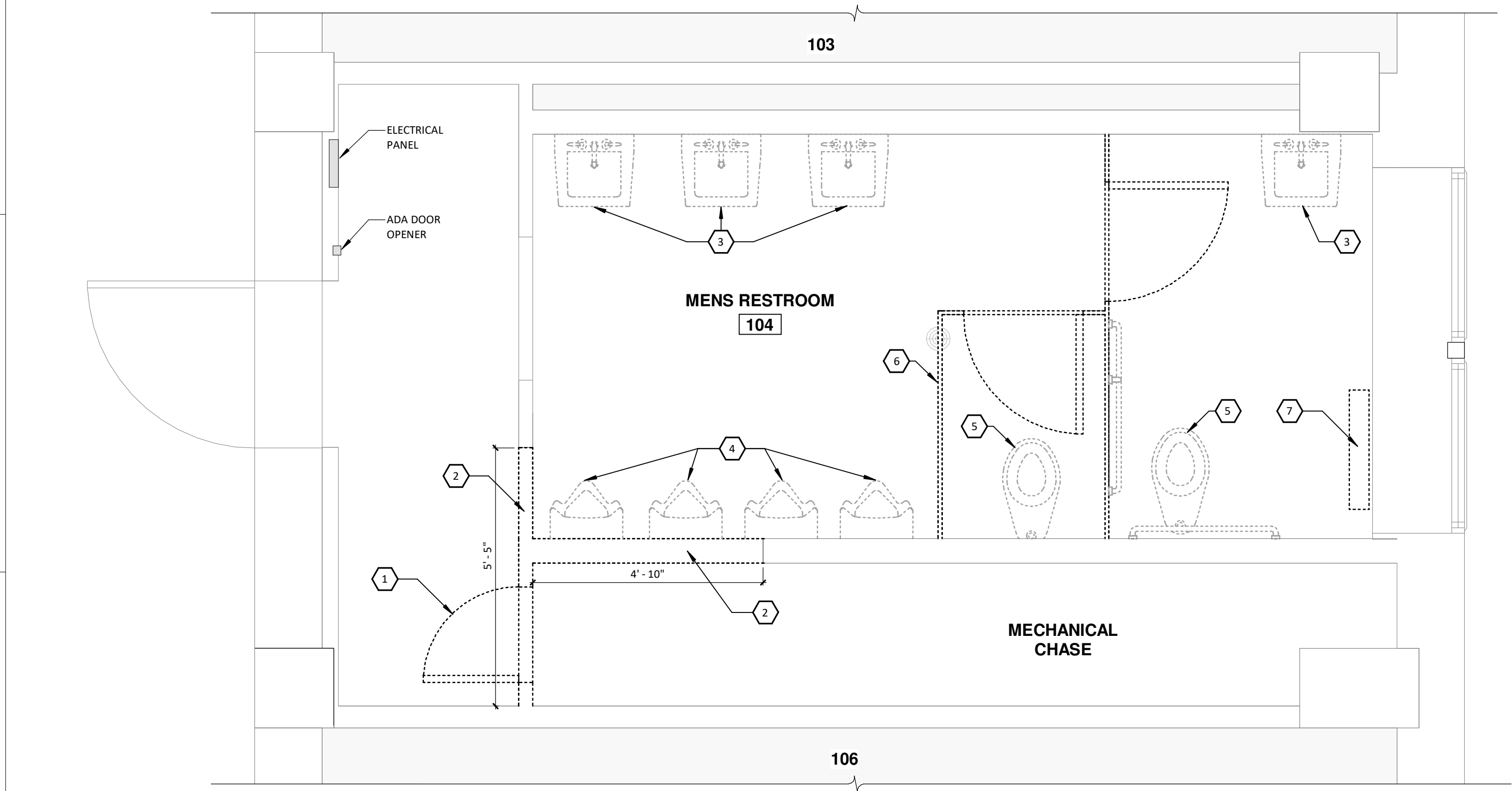
- RESTROOM FLOOR PLAN DEMO...**
- 1 REMOVE DOOR AND FRAME. RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 2 REMOVE WALL, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 3 REMOVE WALL MOUNTED SINK, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 4 REMOVE URINAL, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 5 REMOVE WATER CLOSET, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE
  - 6 REMOVE TOILET PARTITIONS, RECYCLE WHERE POSSIBLE, DISPOSE OTHERWISE, TYP.
  - 7 REMOVE AND REUSE RADIANT HEATER, SEE MECHANICAL



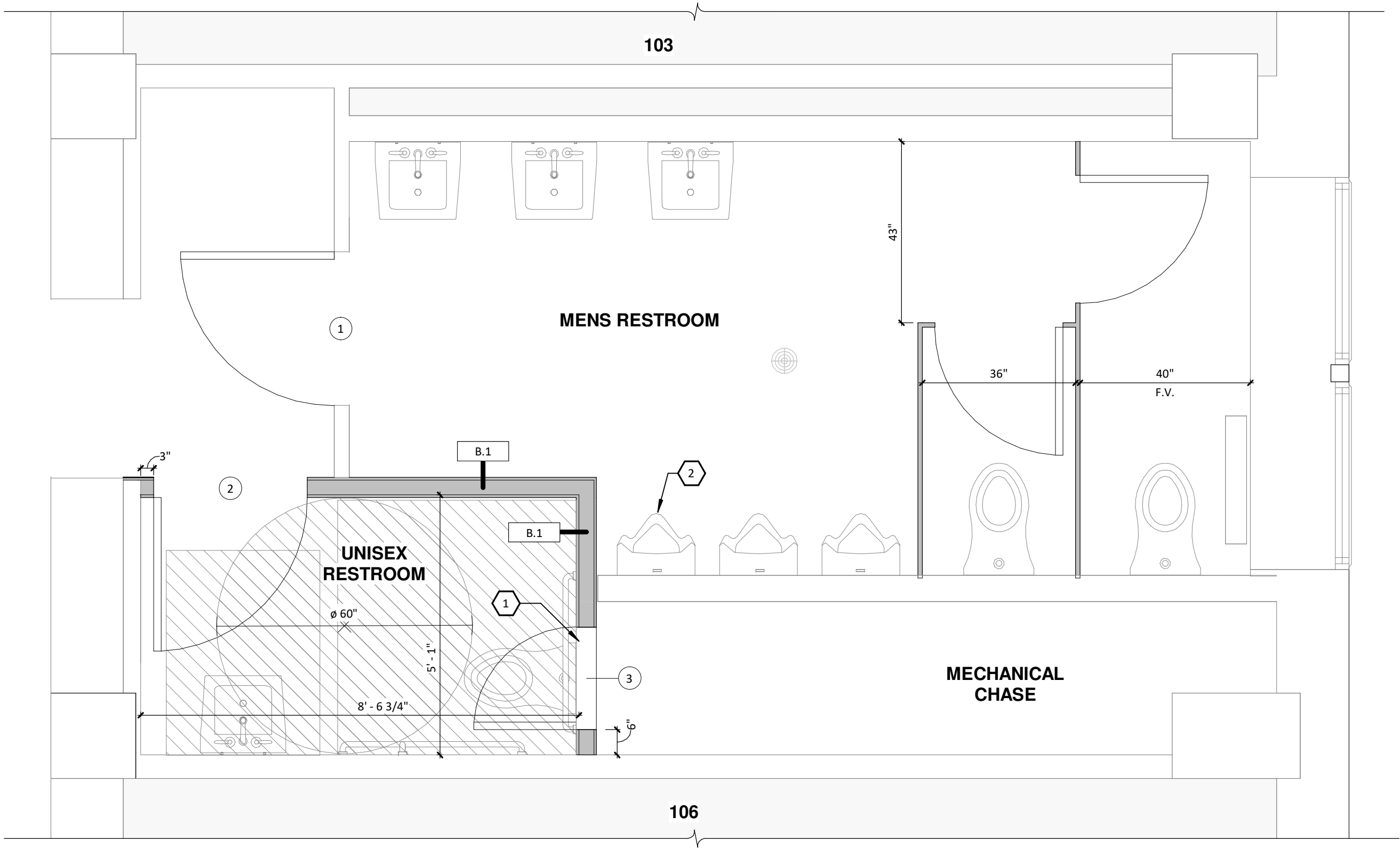
**B.1 3 5/8" INT WALL**  
SCALE: 1 1/2" = 1'

**3 WALL TYPE**  
1" = 1'-0"

- RESTROOM FLOOR PLAN KEYNOTES**
- 1 MECHANICAL CHASE ACCESS DOOR
  - 2 LOW URINAL



**1 EXISTING RESTROOM FLOOR PLAN**  
1/2" = 1'-0"  
0 1 2 4'

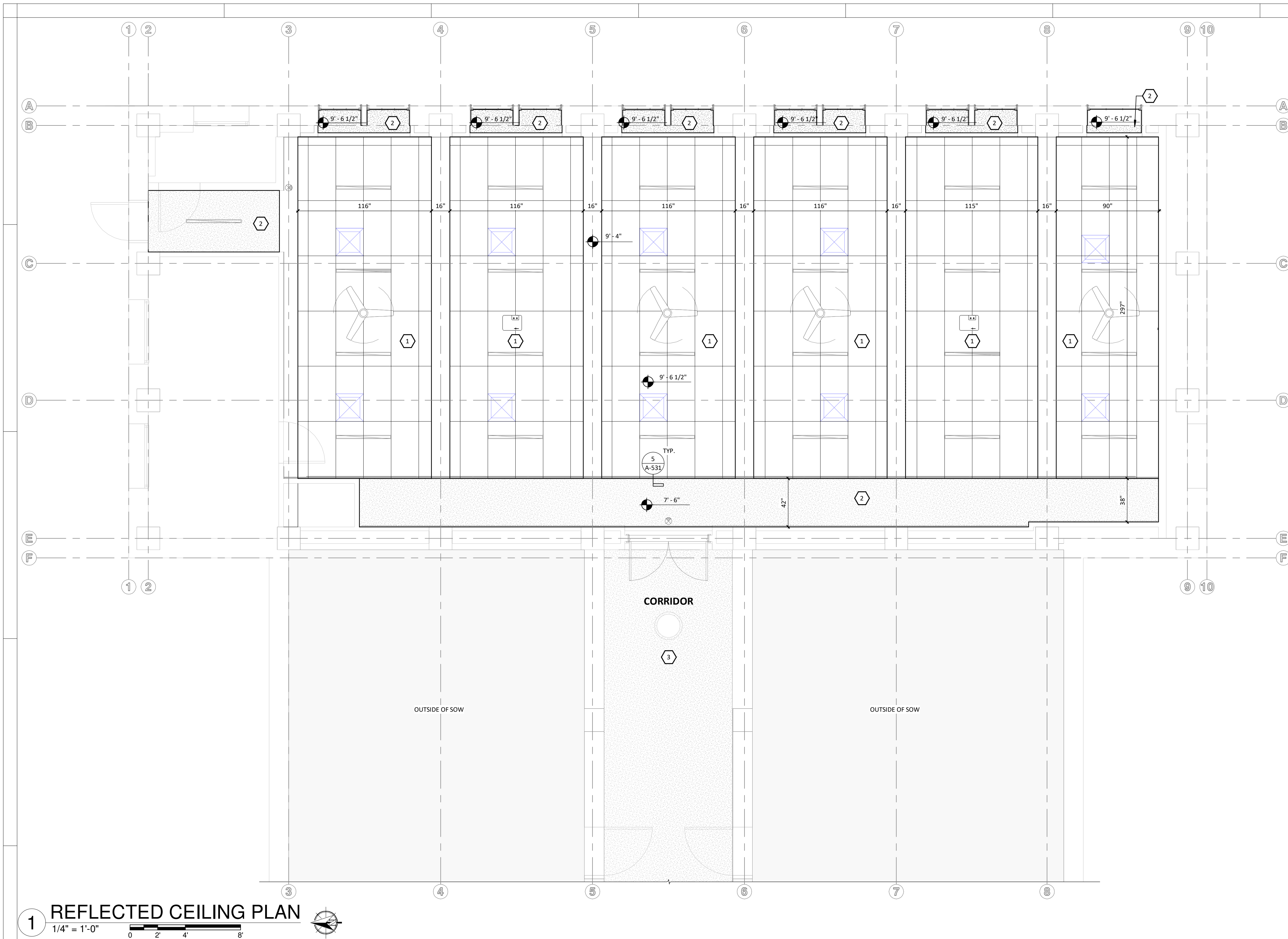


**2 RESTROOM FLOOR PLAN**  
1/2" = 1'-0"  
0 1 2 4'

**NOTE:**  
NEW LAYOUT MAINTAINS FIXTURE COUNT FROM ORIGINAL LAYOUT

ENTIRE SHEET IS  
ADD ALTERNATE #2



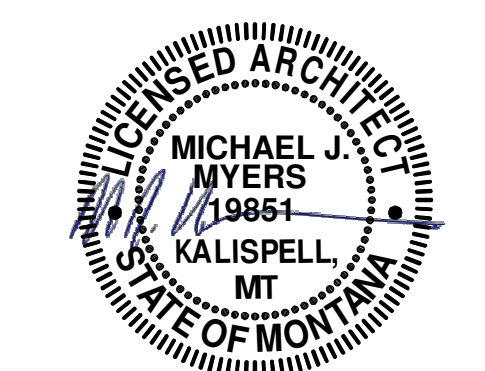


**CLASSROOM RCP KEYNOTES**

- 1 NEW 2X4 ACT AND GRID
- 2 RE-PAINTED GWB PER FINISH PLAN
- 3 CORRIDOR CEILING TO REMAIN CLEAN BUT DO NOT DISTURB

**CEILING PLAN LEGEND**

- ACT-1 (2X4) ACOUSTIC CEILING TILE
- GWB GYPSUM WALL BOARD



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**1 REFLECTED CEILING PLAN**  
 1/4" = 1'-0"  
 0 2 4 8

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DATE: 11/19/2024

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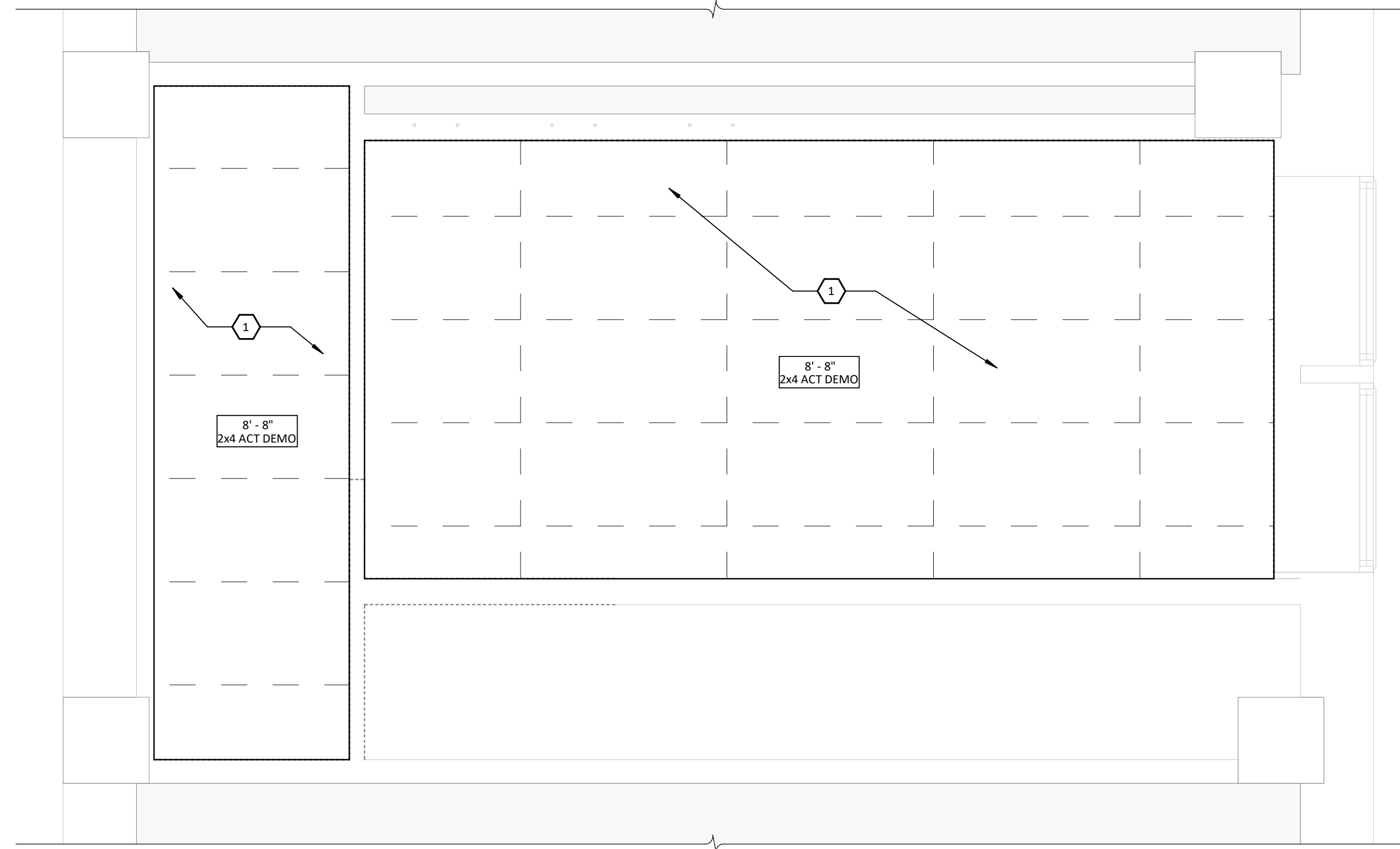
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**CLASSROOM REFLECTED CEILING PLAN**

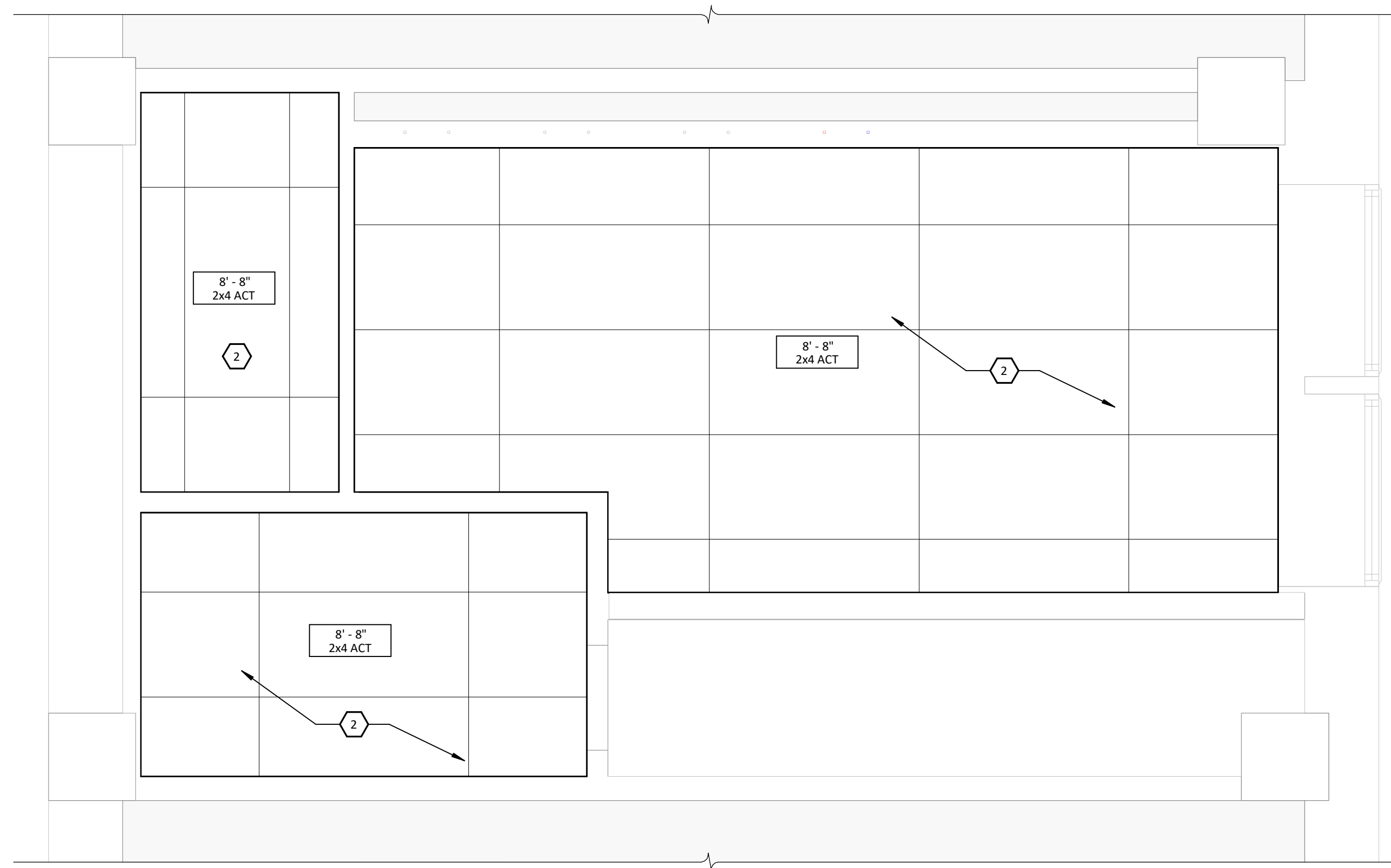
ENTIRE SHEET IS ADD ALTERNATE #1

**A-121**





**1 RESTROOM RCP DEMO PLAN**  
 1/2" = 1'-0" 0 1' 2' 4'

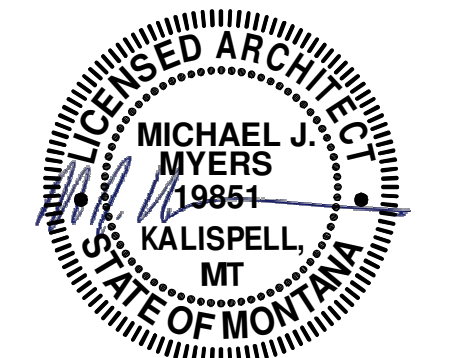


**2 RESTROOM REFLECTIVE CEILING PLAN**  
 1/2" = 1'-0" 0 1' 2' 4'

| RESTROOM RCP KEYNOTES |                              |
|-----------------------|------------------------------|
| 1                     | REMOVE EXISTING ACT AND GRID |
| 2                     | NEW 2x4 ACT CEILING          |

| CEILING PLAN LEGEND |   |
|---------------------|---|
|                     | DEMO ACT (2x4)<br>ACOUSTIC CEILING TILE |
|                     | ACT-1 (2x4)<br>ACOUSTIC CEILING TILE    |



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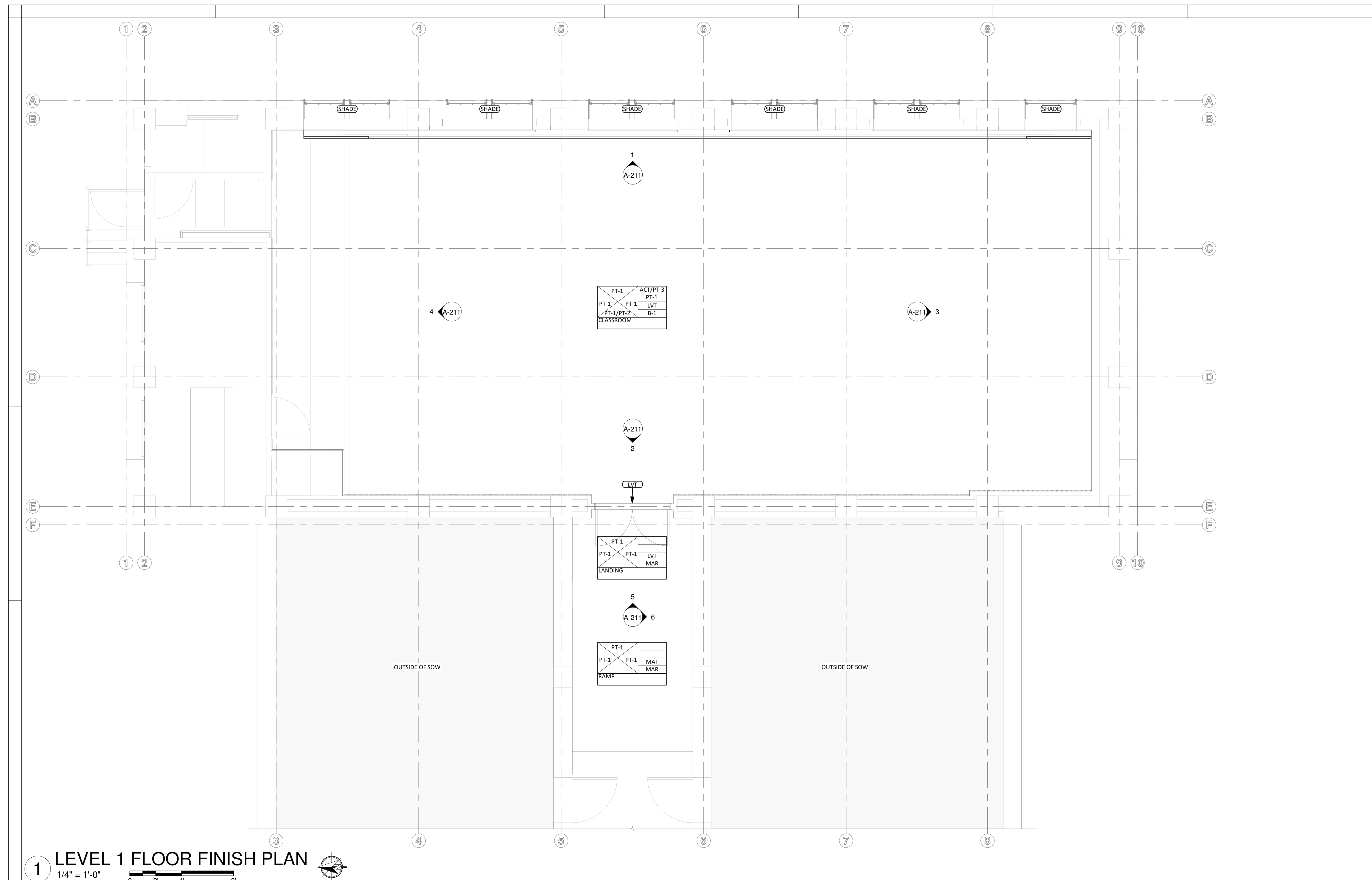
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**RESTROOM RCP & DEMO**

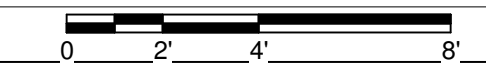
ENTIRE SHEET IS  
 ADD ALTERNATE #2

**A-122**

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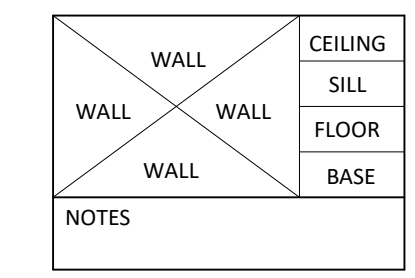
**1** LEVEL 1 FLOOR FINISH PLAN  
1/4" = 1'-0"



**CLASSROOM FINISH SCHEDULE**

| TAG   | KEY                      | COLOR                  | MANUFACTURER        | STYLE                           | NOTE   |
|-------|--------------------------|------------------------|---------------------|---------------------------------|--|
| ACT   | ACOUSTICAL CEILING TILES | WHITE                  | ARMSTRONG           | CIRRUS 584                      | ANGLED TEGULAR EDGE  |
| LVT   | LUXURY VINYL TILE        | IMPLY 43518            | SHAW                | DIALOGUE                        | BRICK INSTALLATION METHOD  |
| MAR   | MARBLE BASEBOARD         |                        |                     |                                 | RE-USE EXISTING MARBLE BASEBOARD   |
| MAT   | WALK-OFF MAT             | CHARCOAL               | AMERICAN FLOOR MATS | SUPER RIBBED RECESSED MATS      | SIZE: 13'-2" x 9'-4", FIELD VERIFY. TRANSITION TO LVT AND EXISTING MARBLE FLOORING     |
| PT-1  | PAINT                    | SW 7011 NATURAL CHOICE | SHERWIN WILLIAMS    | EGGSHELL                        |  |
| PT-2  | PAINT                    | SW 7602 INDIGO BATIK   | SHERWIN WILLIAMS    | EGGSHELL                        |  |
| PT-3  | PAINT                    | SW 7650 ELLIE GRAY     | SHERWIN WILLIAMS    | EGGSHELL                        |  |
| PT-4  | PAINT                    |                        |                     |                                 | BEAMS<br>MATCH EXISTING COLOR IN COORIDOR  |
| SHADE | DUAL SHADE               | WHITE                  | HUNTER DOUGLAS      | RB 500+ AUTOMATED ROLLER SHADES | LIGHT FILTERING: E SCREEN 7503, 3% OPENNESS. BLACK-OUT: GLACIERSCREEN+ RD, 0% OPENNESS |
| WD-1  | WOOD TRIM                | RED OAK                | MOULDINGS ONE       | 8143                            | CHAIR RAIL   |
| WD-2  | WOOD TRIM                | RED OAK                | MOULDINGS ONE       | 2193                            | BASE TRIM  |
| WD-3  | WOOD TRIM                | RED OAK                | MOULDINGS ONE       | 2017                            | SOFFIT TRIM  |

**ROOM FINISH KEY**



ENTIRE SHEET IS  
ADD ALTERNATE #1

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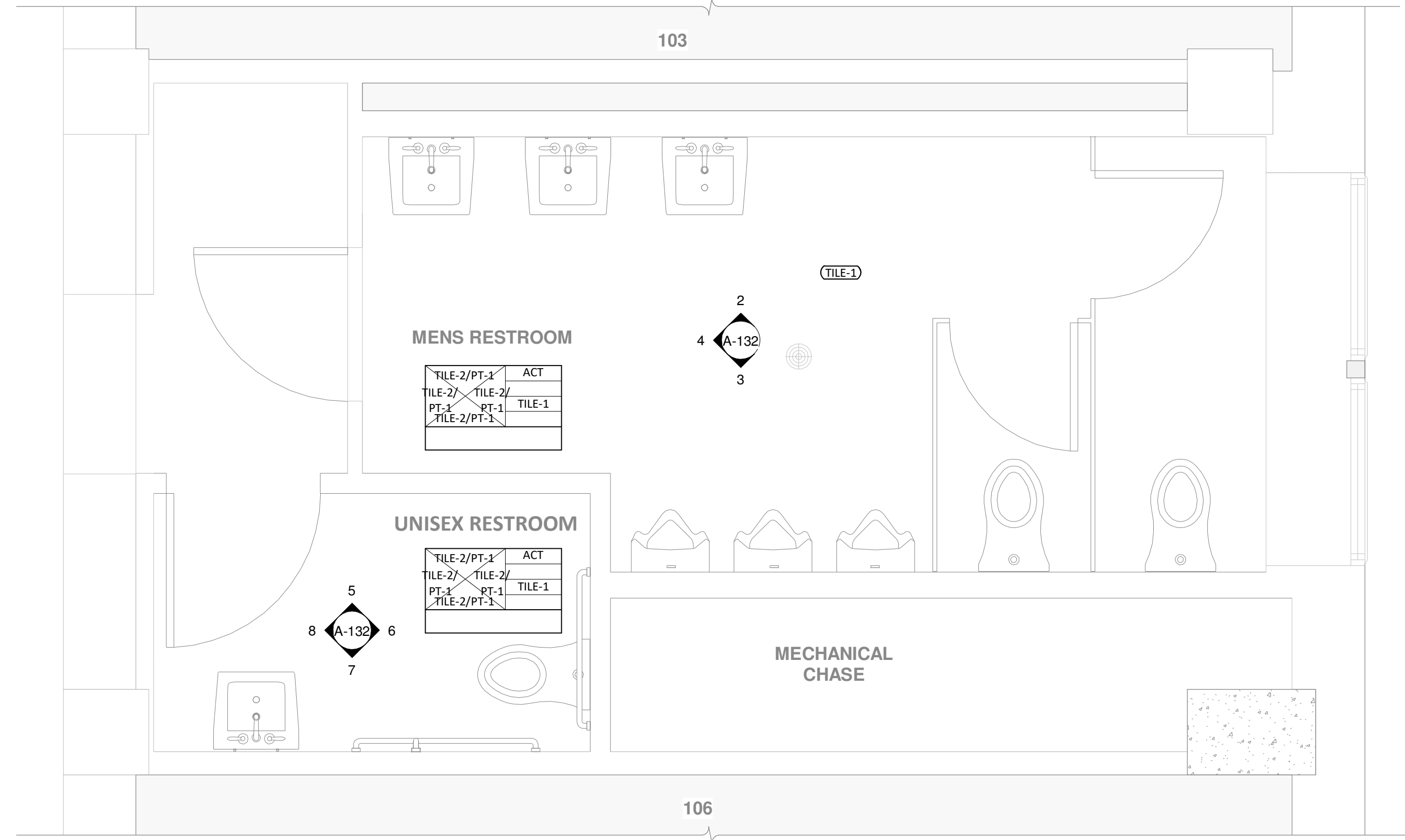
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**CLASSROOM  
FINISH PLAN**

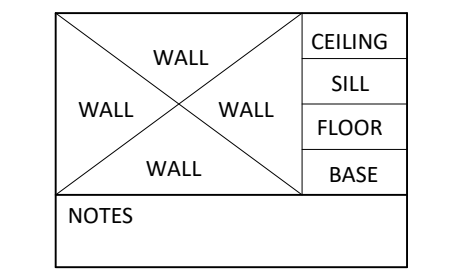
**A-131**





| RESTROOM FINISH SCHEDULE |                          |                            |                  |  |  |
|--------------------------|--------------------------|----------------------------|------------------|--|--|
| TAG                      | KEY                      | COLOR                      | MANUFACTURER     | STYLE  | NOTE   |
| ACT                      | ACOUSTICAL CEILING TILES | WHITE                      | ARMSTRONG        | CIRRUS 584   | ANGLED TEGULAR EDGE                            |
| BASE                     | TILE                     | WHITE                      |                  | 6" CERAMIC COVE BASE                               | COVE BASE CERAMIC TILE                         |
| CAP                      | METAL TRIM               | POLISHED CHROME ANODIZED   | SCHLUTER         | QUADEC SQUARE EDGE TRIM<br>1/4" ALUM POLISH CHROME | FINISHING EDGE AT TOP OF WALL TILE AND CORNERS |
| PT-1                     | PAINT                    | SW 7650 ELLIE GRAY         | SHERWIN WILLIAMS | EGGSHELL   |  |
| TILE-1                   | TILE                     | MATTE BLACK ON MATTE WHITE | MOSAIC           | RETRO ROSETTE, PINNACLE<br>HEXAGON PATTERN         | FLOOR TILE. GROUT COLOR; NATURAL GREY          |
| TILE-2                   | TILE                     | RESTORE BRIGHT WHITE       | DALTILE          | 4-1/4"x4-1/4" SQUARE                               | WALL TILE. GROUT COLOR; NATURAL GREY           |

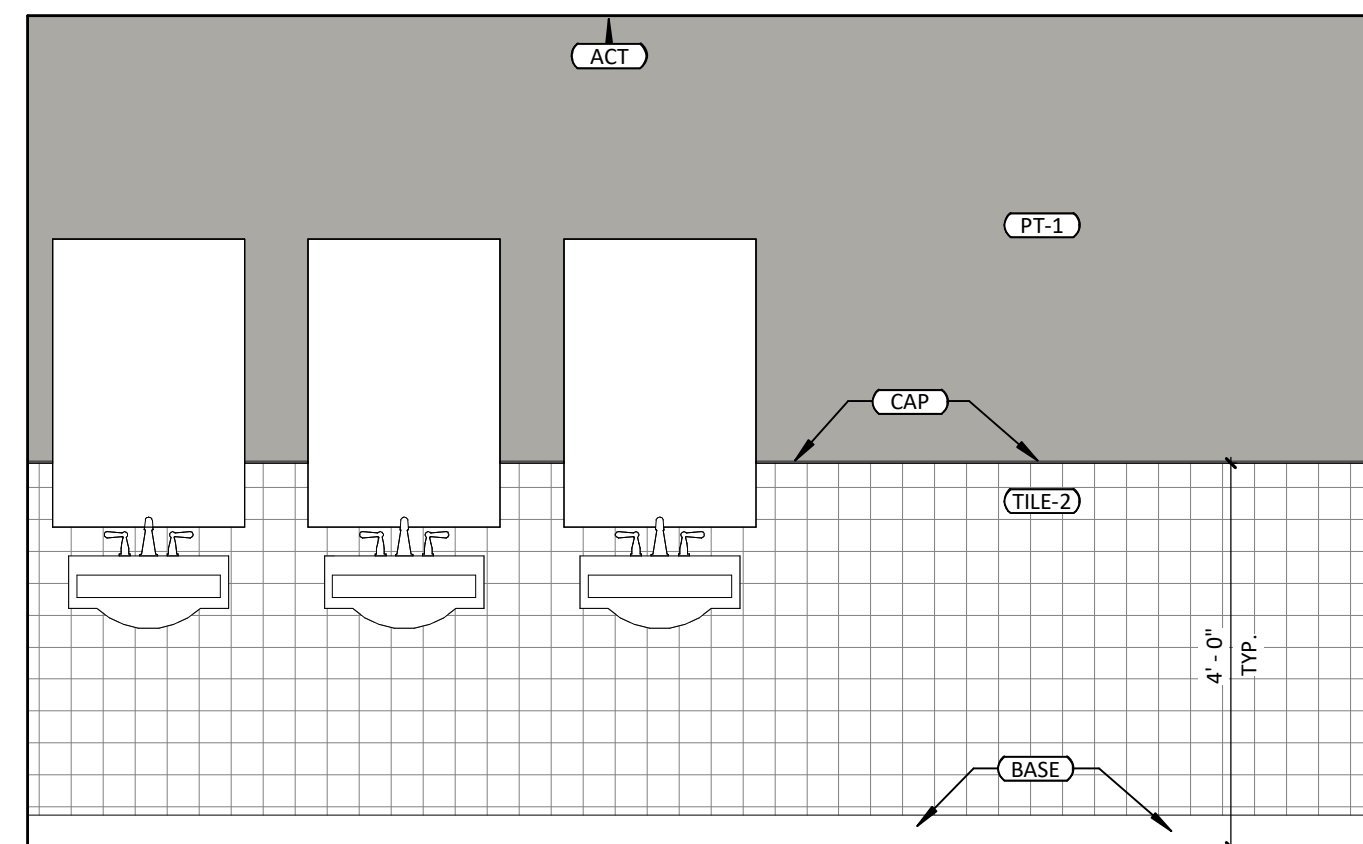
ROOM FINISH KEY



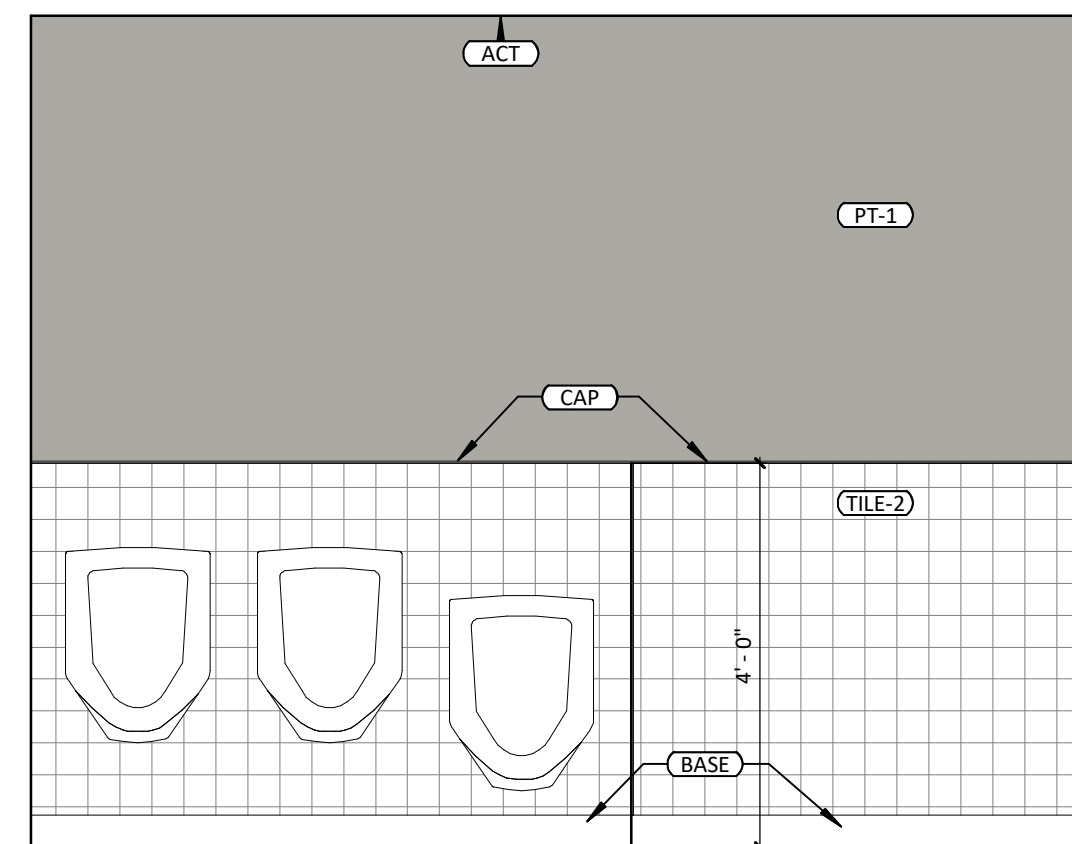
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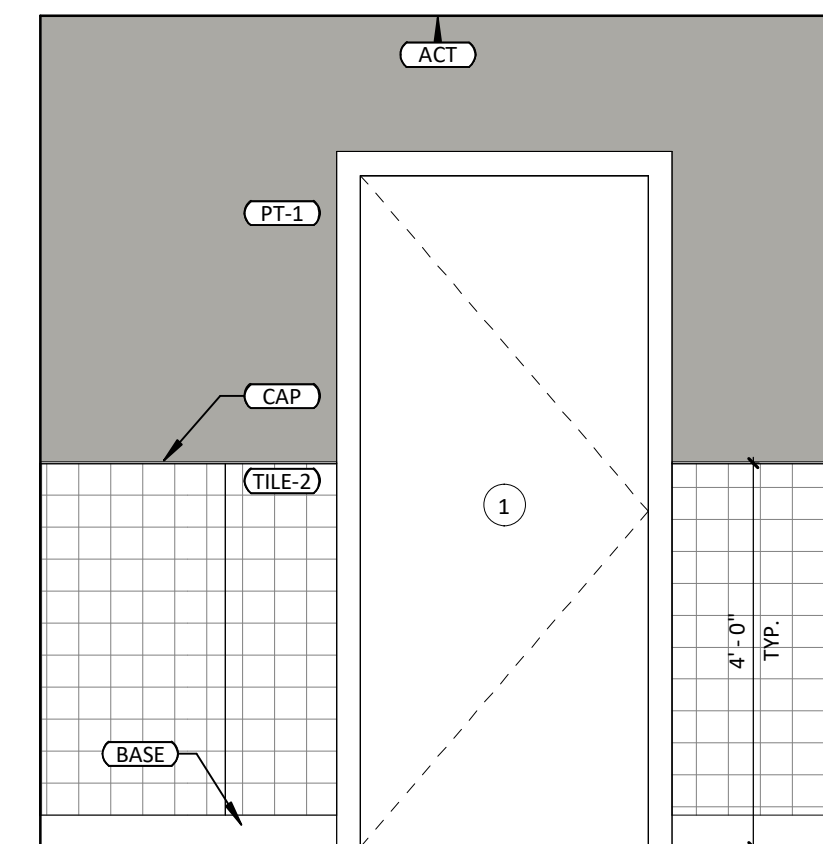
1 RESTROOM FLOOR PLAN  
1/2" = 1'-0"



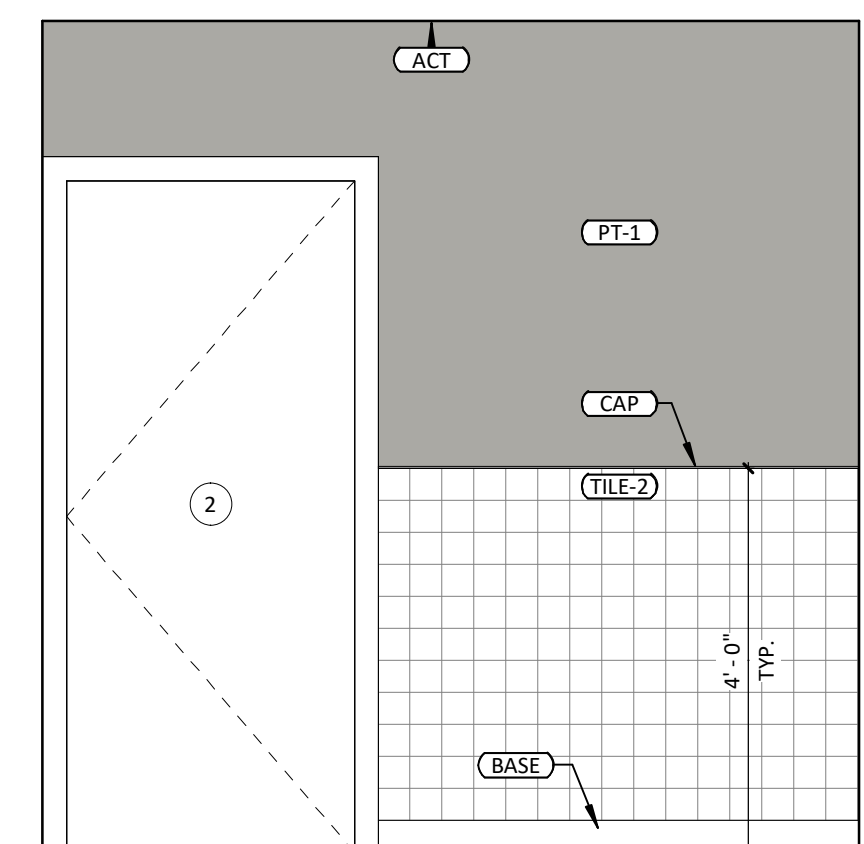
2 MENS RESTROOM EAST  
1/2" = 1'-0"



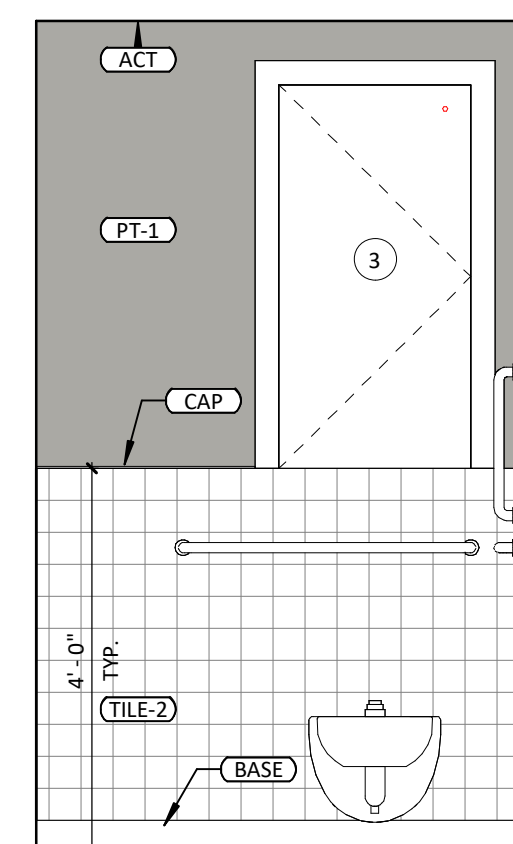
3 MENS RESTROOM WEST  
1/2" = 1'-0"



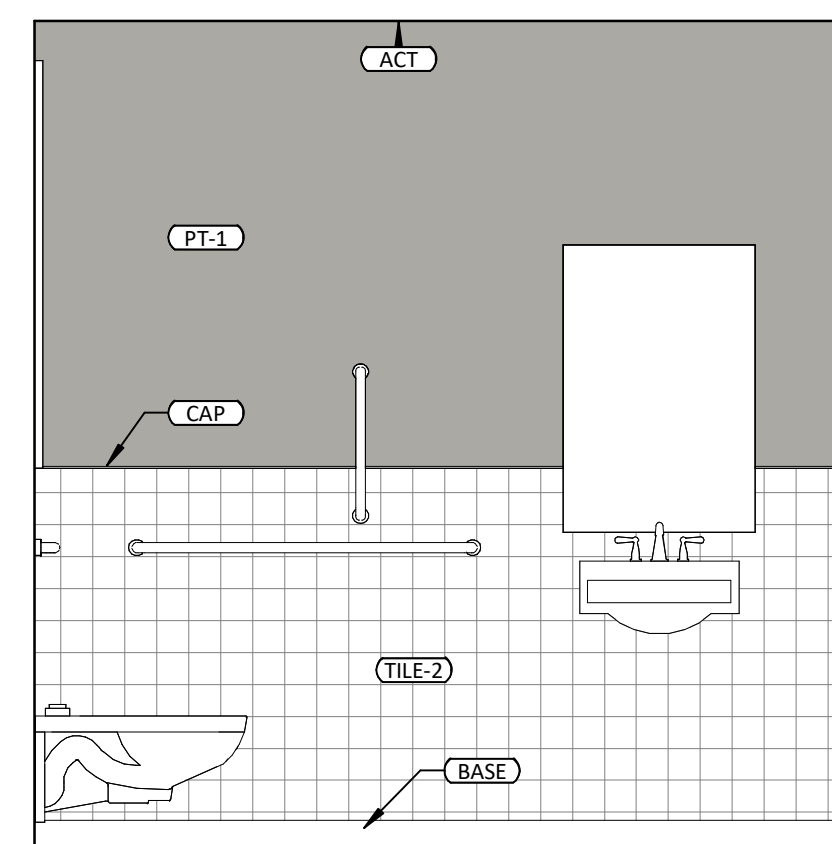
4 MENS RESTROOM NORTH  
1/2" = 1'-0"



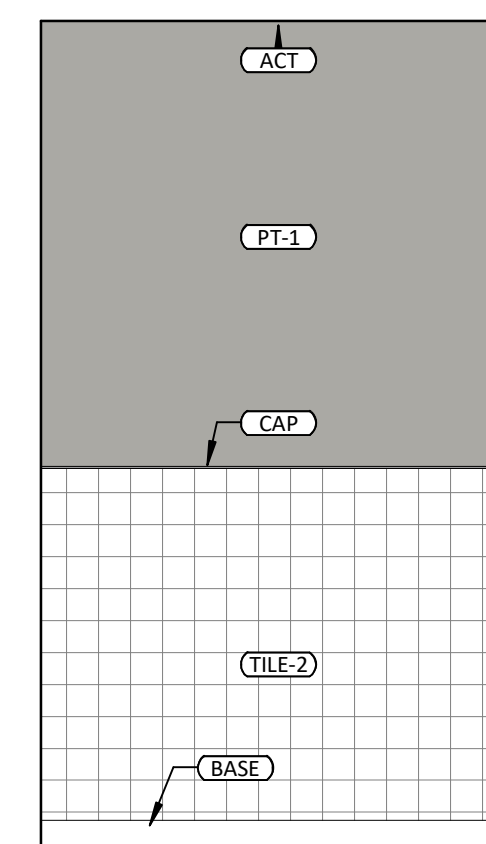
5 UNISEX RESTROOM EAST  
1/2" = 1'-0"



6 UNISEX RESTROOM SOUTH  
1/2" = 1'-0"



7 UNISEX RESTROOM WEST  
1/2" = 1'-0"



8 UNISEX RESTROOM NORTH  
1/2" = 1'-0"

ENTIRE SHEET IS  
ADD ALTERNATE #2

ROBERTS HALL  
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ROOM #101 & LEVEL 1 RESTROOM  
PPA#: 23-0828

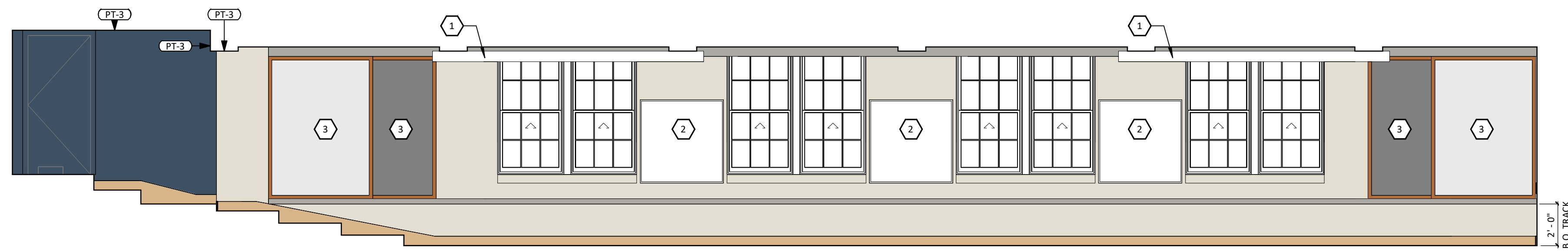
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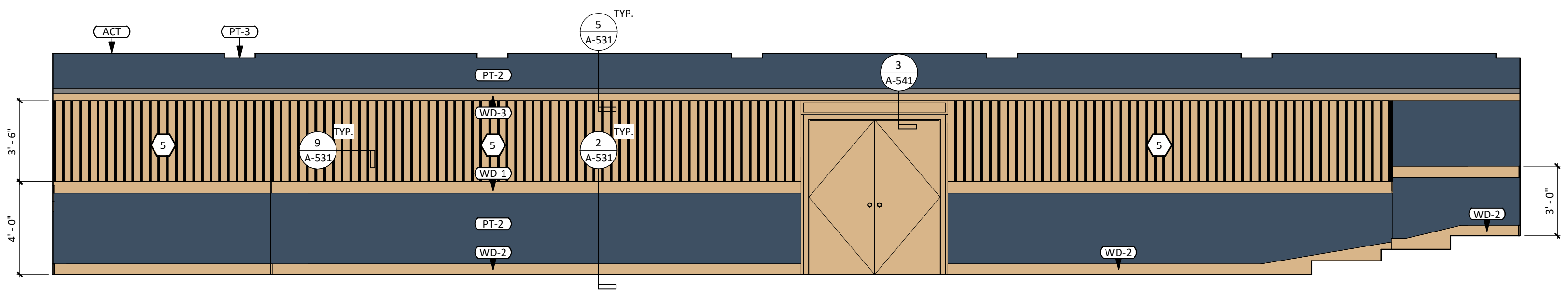
REVISIONS:

RESTROOM  
FINISH PLAN  
AND INTERIOR  
ELEVATIONS

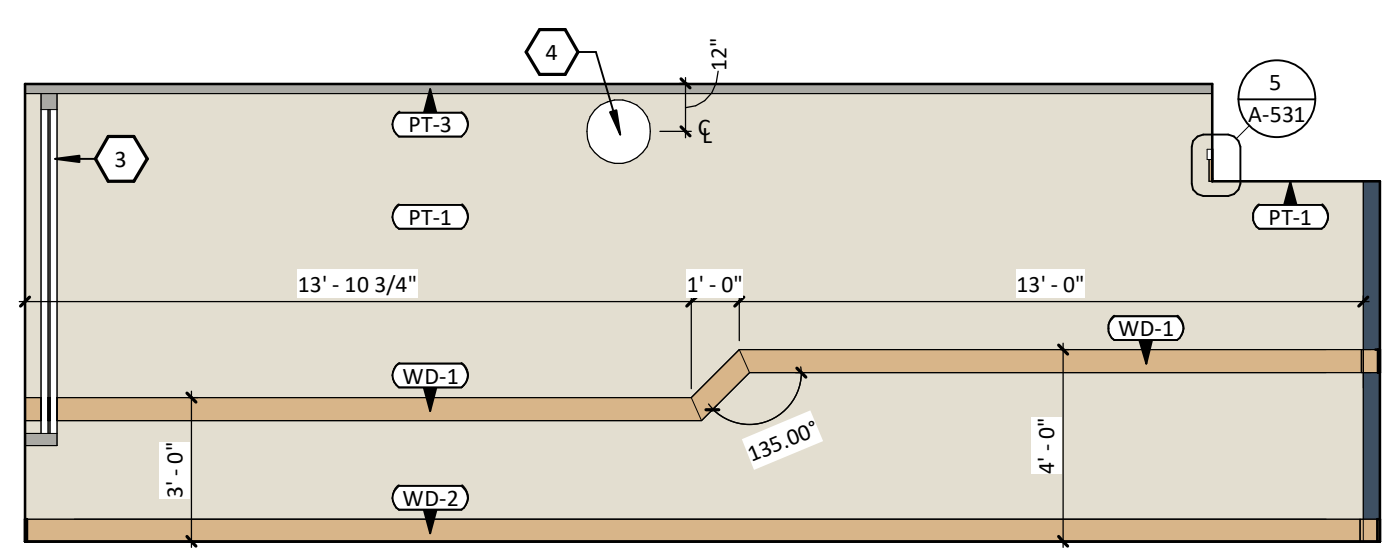
A-132



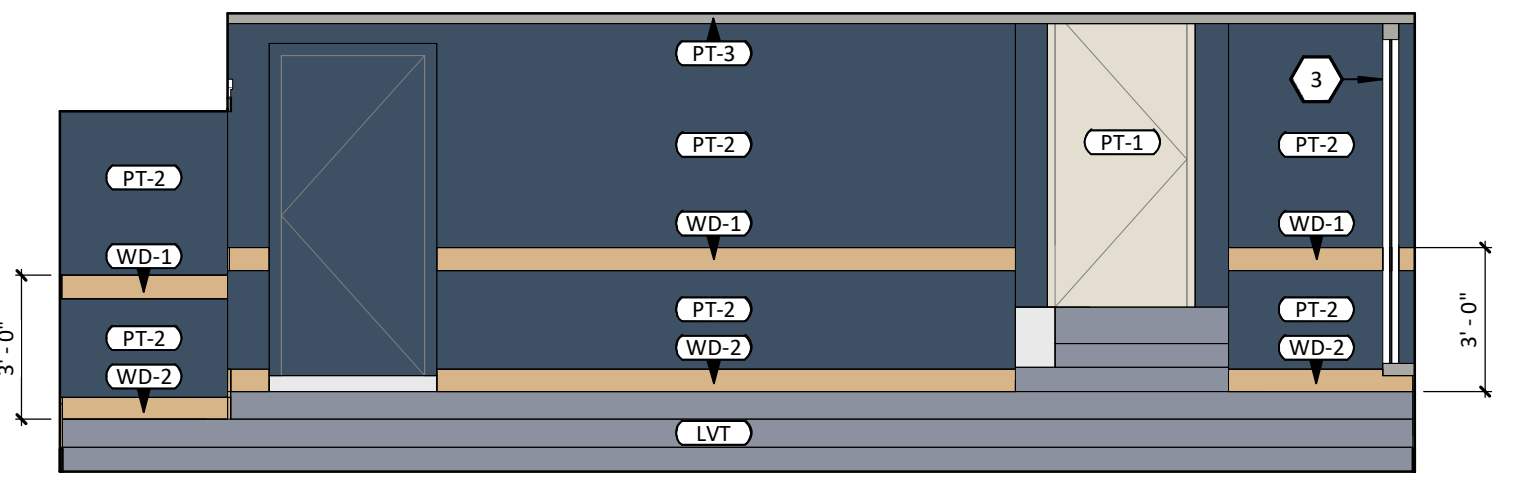
1 EAST INTERIOR ELEVATION  
1/4" = 1'-0"



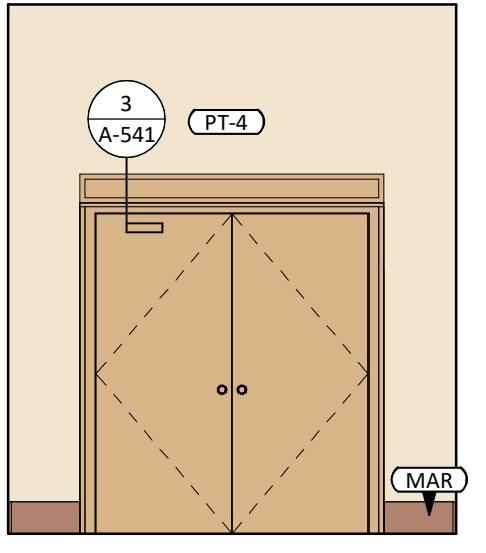
2 WEST INTERIOR ELEVATION  
1/4" = 1'-0"



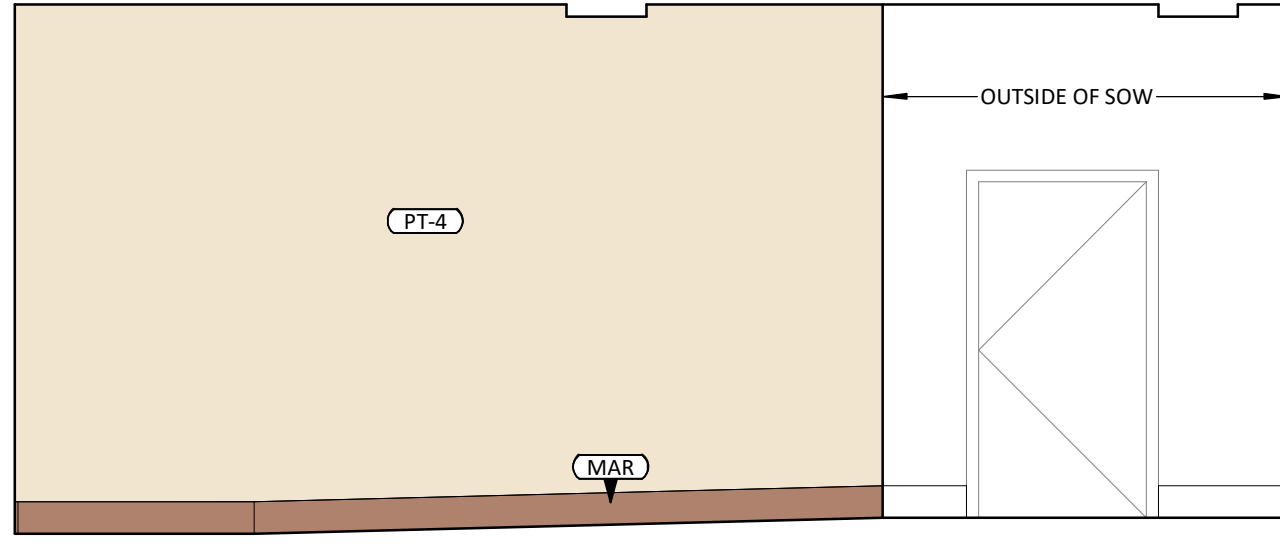
3 SOUTH INTERIOR ELEVATION  
1/4" = 1'-0"



4 NORTH INTERIOR ELEVATION  
1/4" = 1'-0"

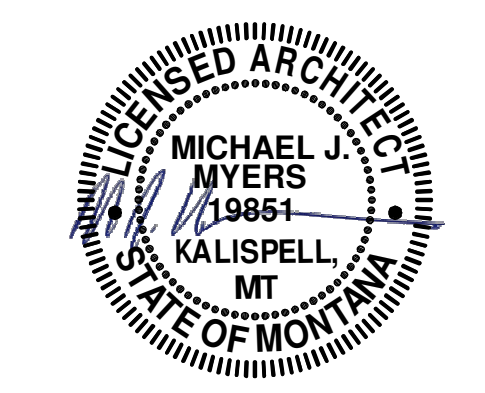
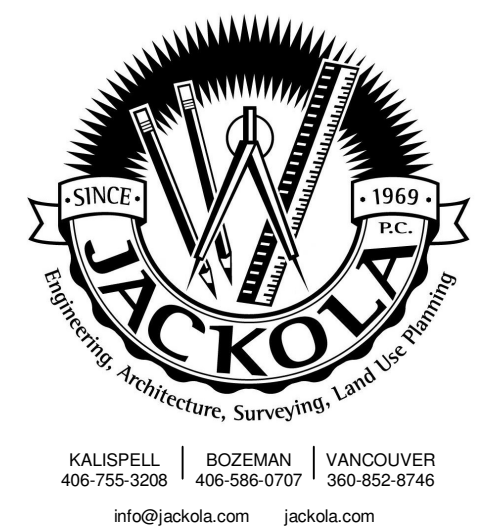


5 CORRIDOR EAST ELEVATION  
1/4" = 1'-0"



6 CORRIDOR SOUTH ELEVATION (NORTH MIRR)  
1/4" = 1'-0"

- INTERIOR ELEVATION KEYNOTES**
- 1 ELECTRIC PROJECTOR SCREEN (OFCI)
  - 2 FIXED 4' x 4' WHITEBOARD, NO TRAY (CFCI)
  - 3 SLIDING WALL SYSTEM, B.O.D. RAYDOOR SLIDING BYPASSING, 5 PANELS (SBS-RD), SEE DETAIL 3/A-531, (CFCI) ADD ALTERNATE #3
  - 4 POE WALL CLOCK (OFCI)
  - 5 ACOUSTICAL WALL TREATMENT, SEE DETAIL 9/A-531 (CFCI)



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**MONTANA STATE UNIVERSITY**  
ROOM #101 & LEVEL 1 RESTROOM  
PPA#: 23-0828

DRAWN: KCE CHECKED: MJM  
DATE: 11/19/2024

REVISIONS:

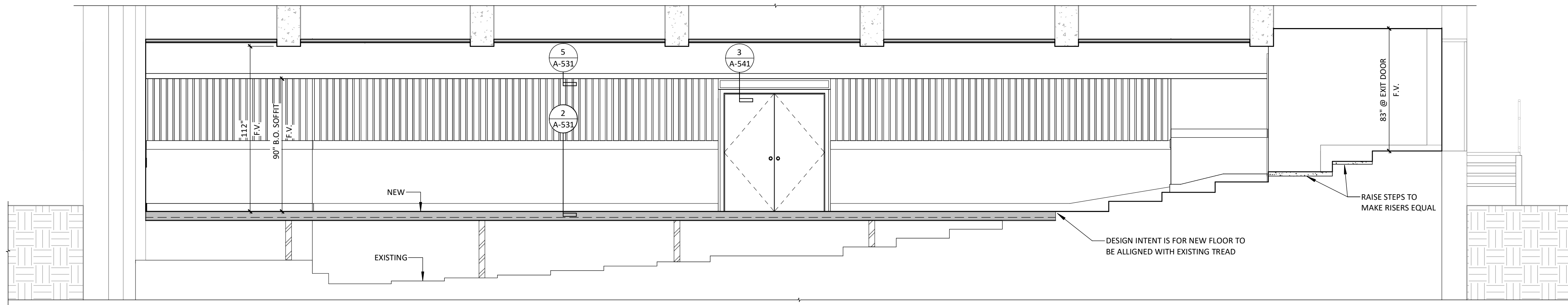
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**INTERIOR ELEVATIONS**

ENTIRE SHEET IS  
ADD ALTERNATE #1  
EXCEPT AS NOTED

**A-211**





1 ROBERTS 101 - LONGITUDINAL SECTION  
1/4" = 1'-0"



2 ROBERTS 101 - LONGITUDINAL SECTION 2  
1/4" = 1'-0"

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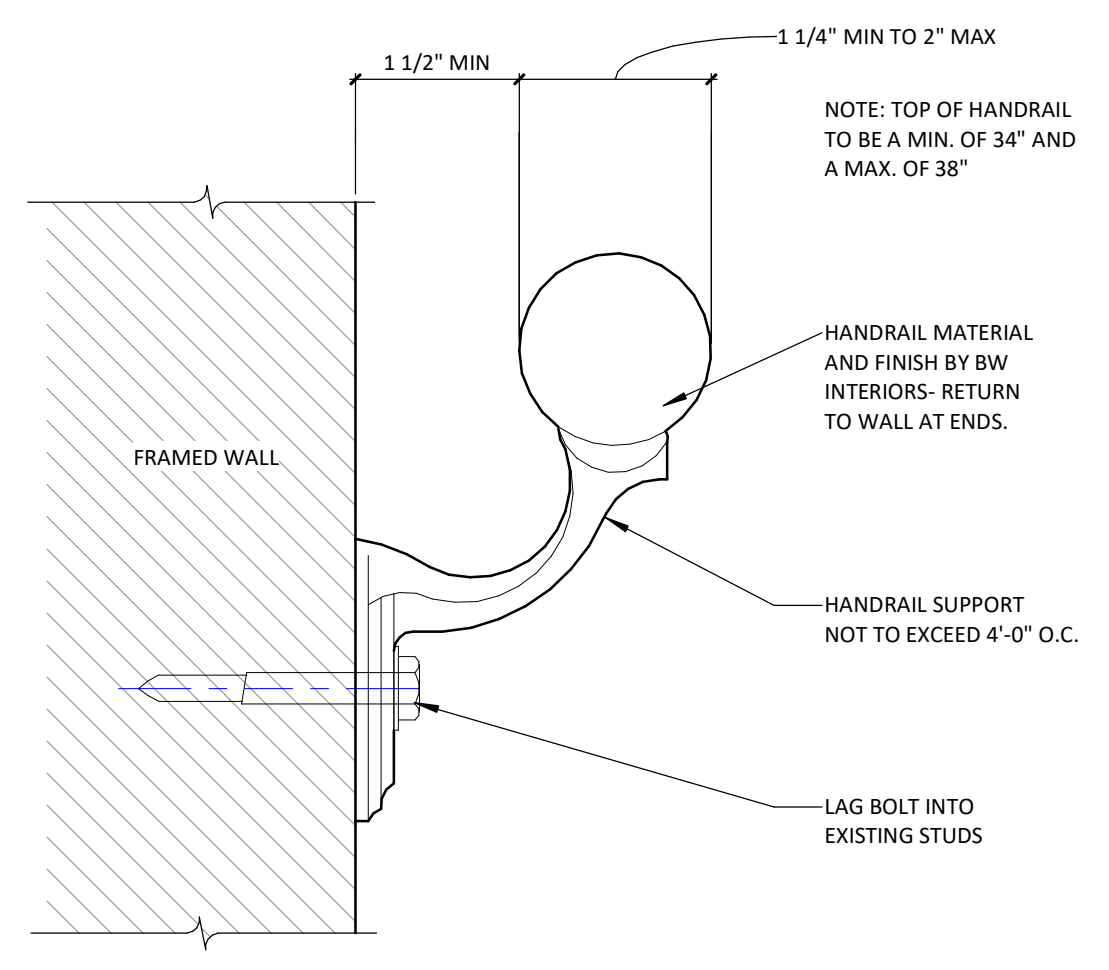
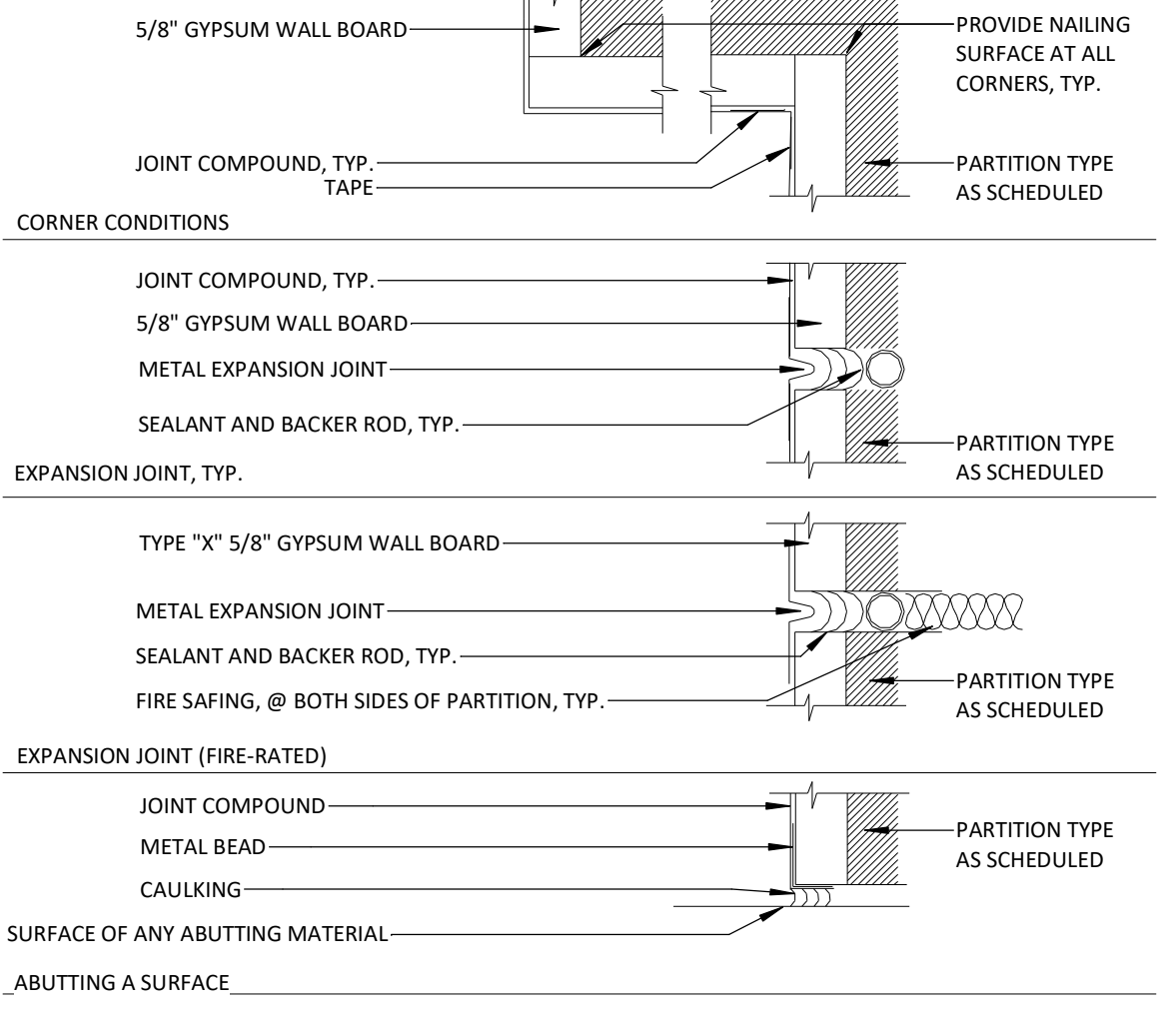
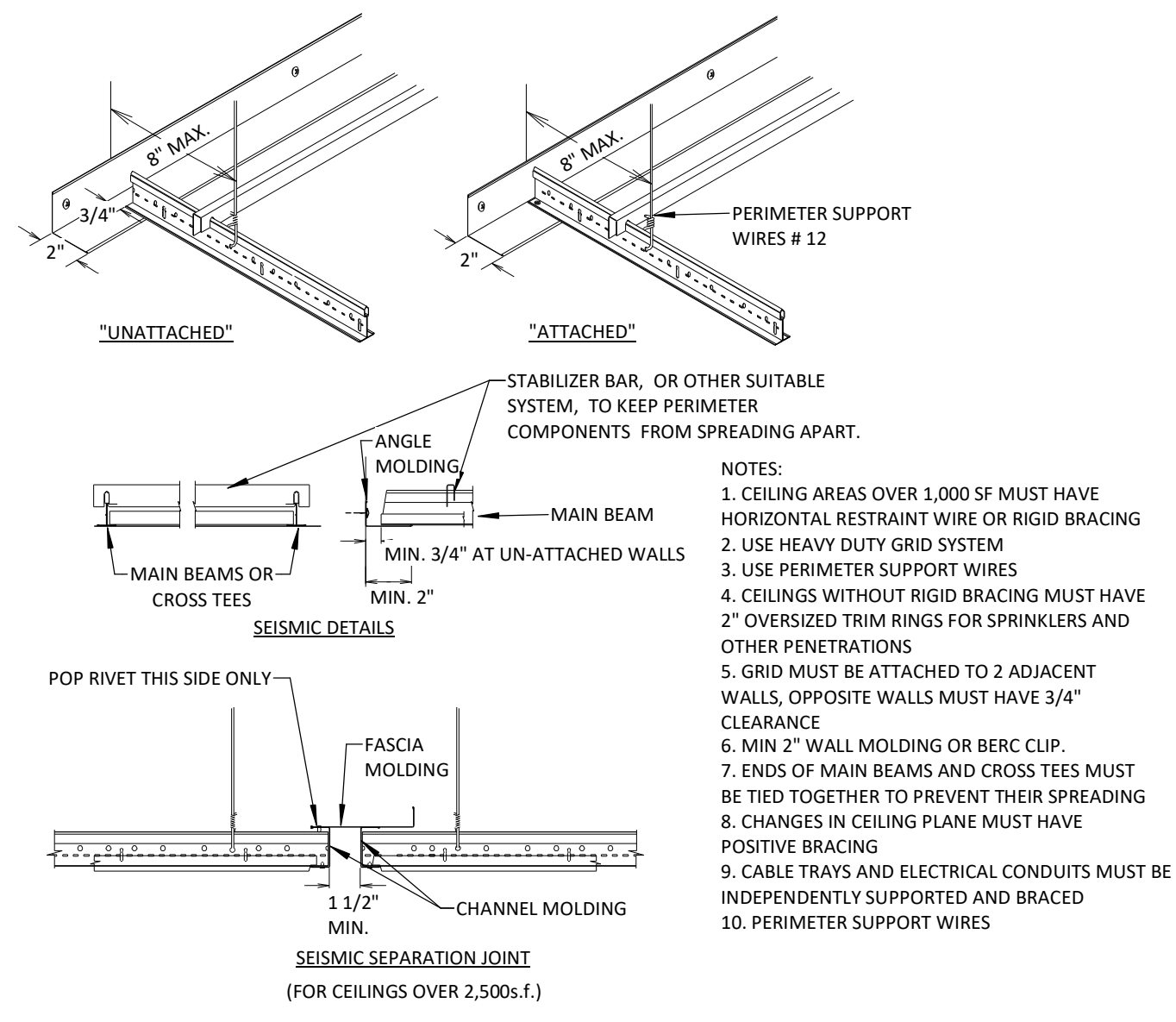
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**BUILDING SECTIONS**

ENTIRE SHEET IS  
ADD ALTERNATE #1

**A-301**

- INTERIOR GENERAL 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 BLOCKING AT GRAB BARS AND BATHROOM FIXTURES AND ACCESSORIES AS NEEDED.
  - PROVIDE TRANSITION STRIPS AT ALL LOCATIONS WHERE DISSIMILAR FLOOR MATERIALS MEET.
  - DOOR 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 TRANSITIONS 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 TILE 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.

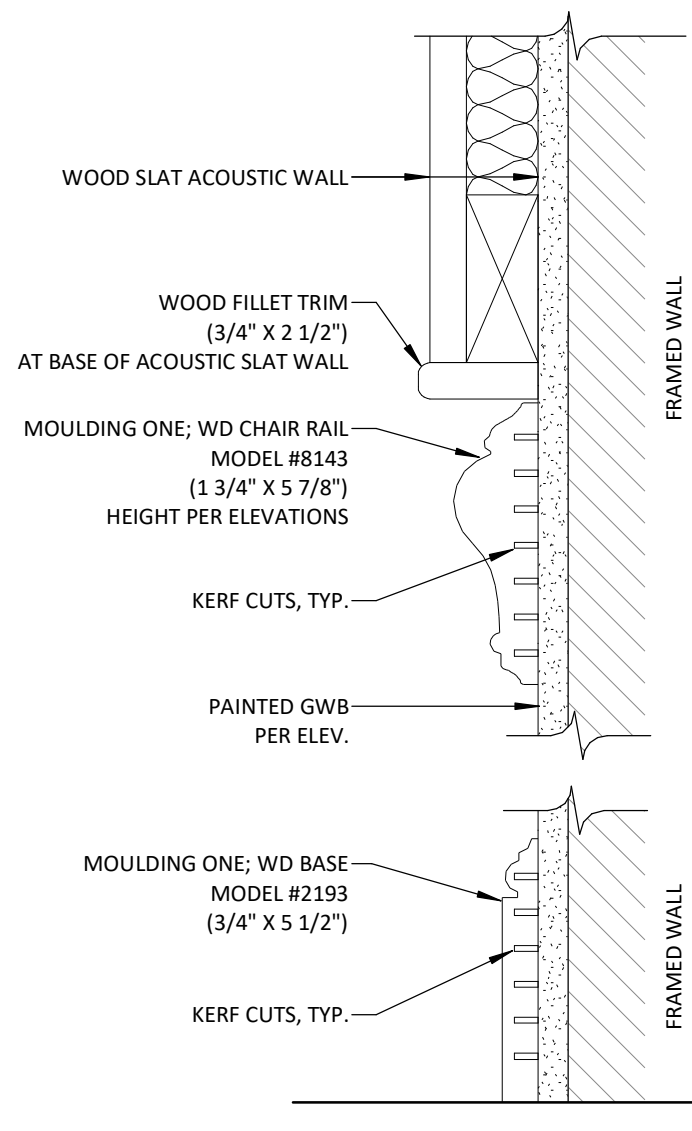


**1** INTERIOR GENERAL NOTES  
1" = 1'-0"

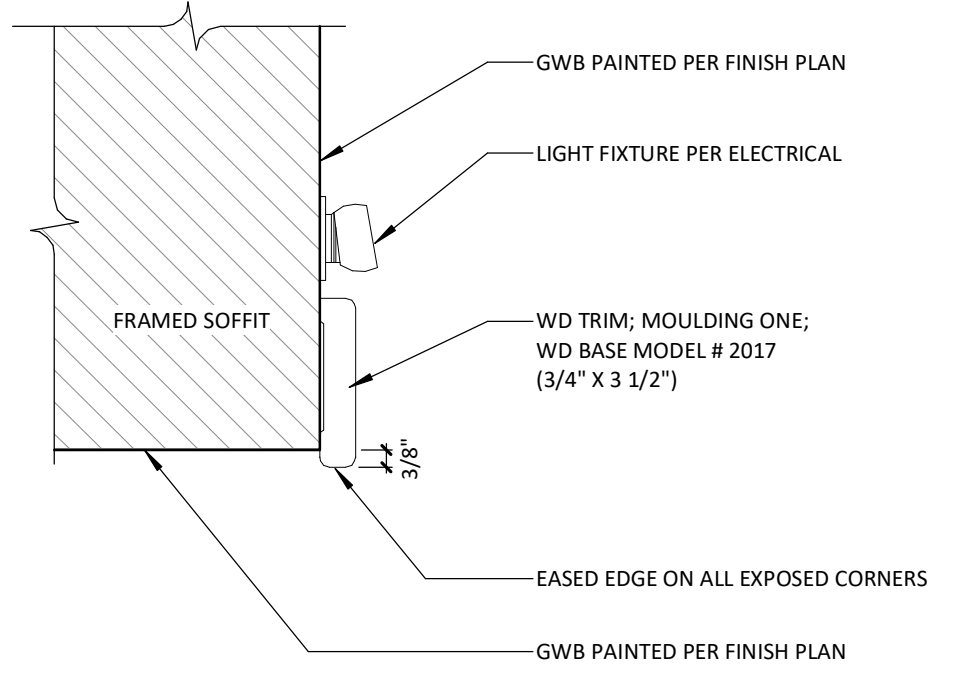
**4** HUNG CEILING  
1 1/2" = 1'-0"

**6** GYPSUM WALLBOARD DET (SQUARE)  
3" = 1'-0"

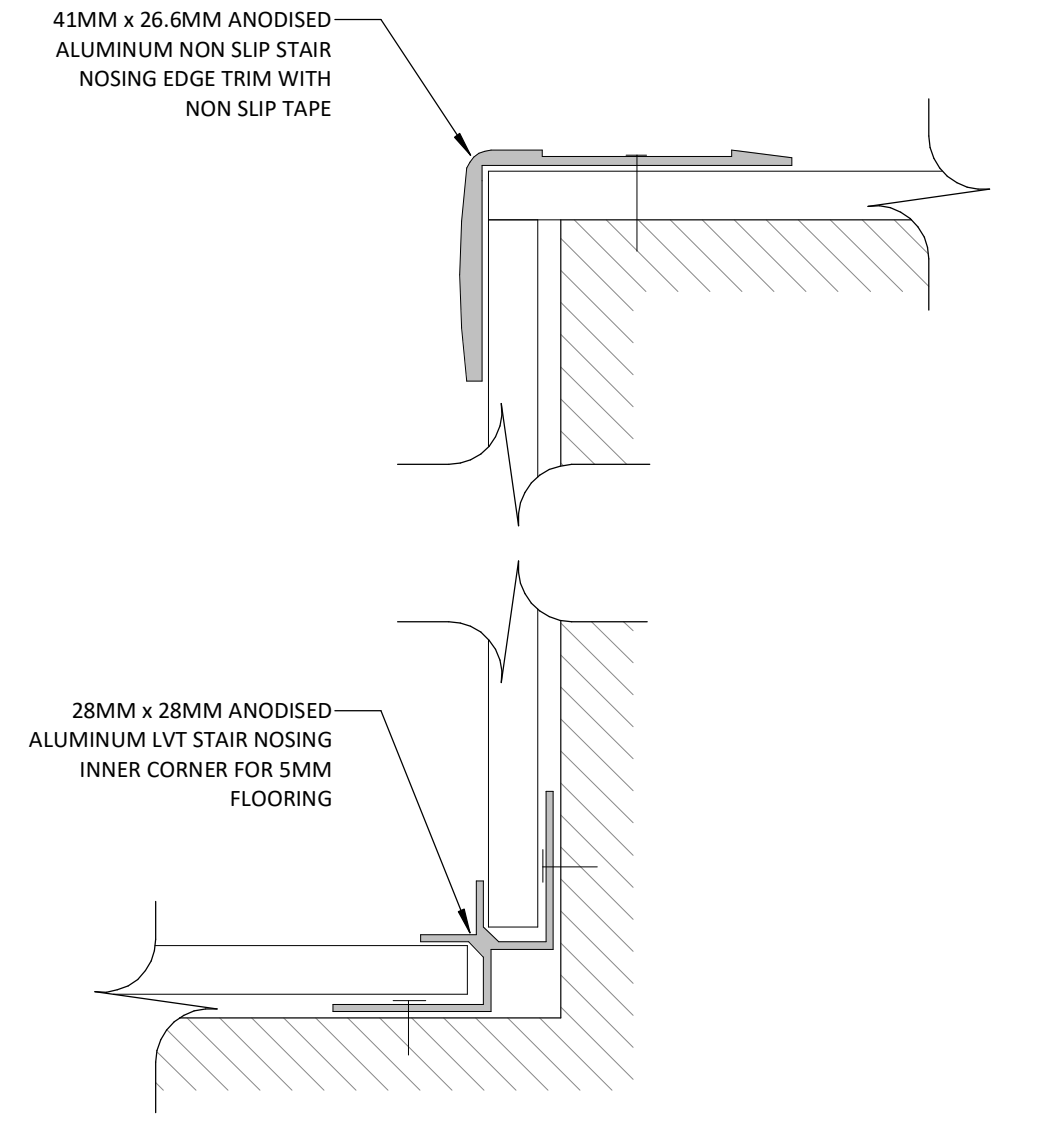
**8** HANDRAIL DETAIL  
1/2" = 1'-0"



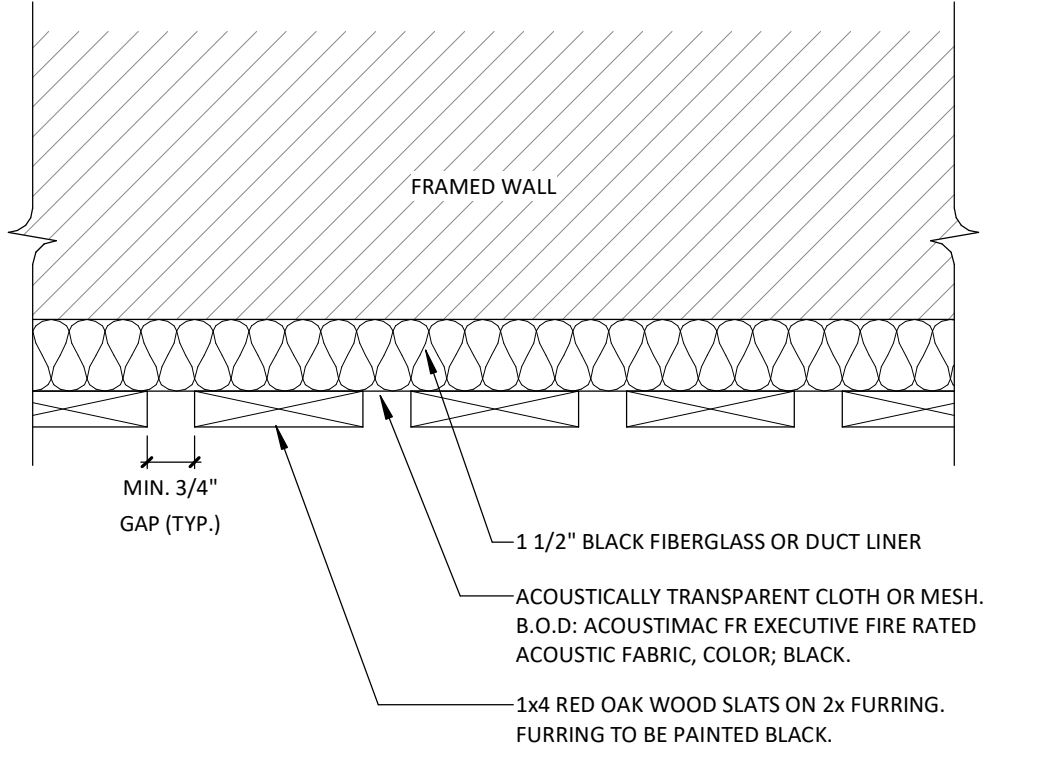
**2** WD BASE & CHAIR RAIL DTL  
3" = 1'-0"



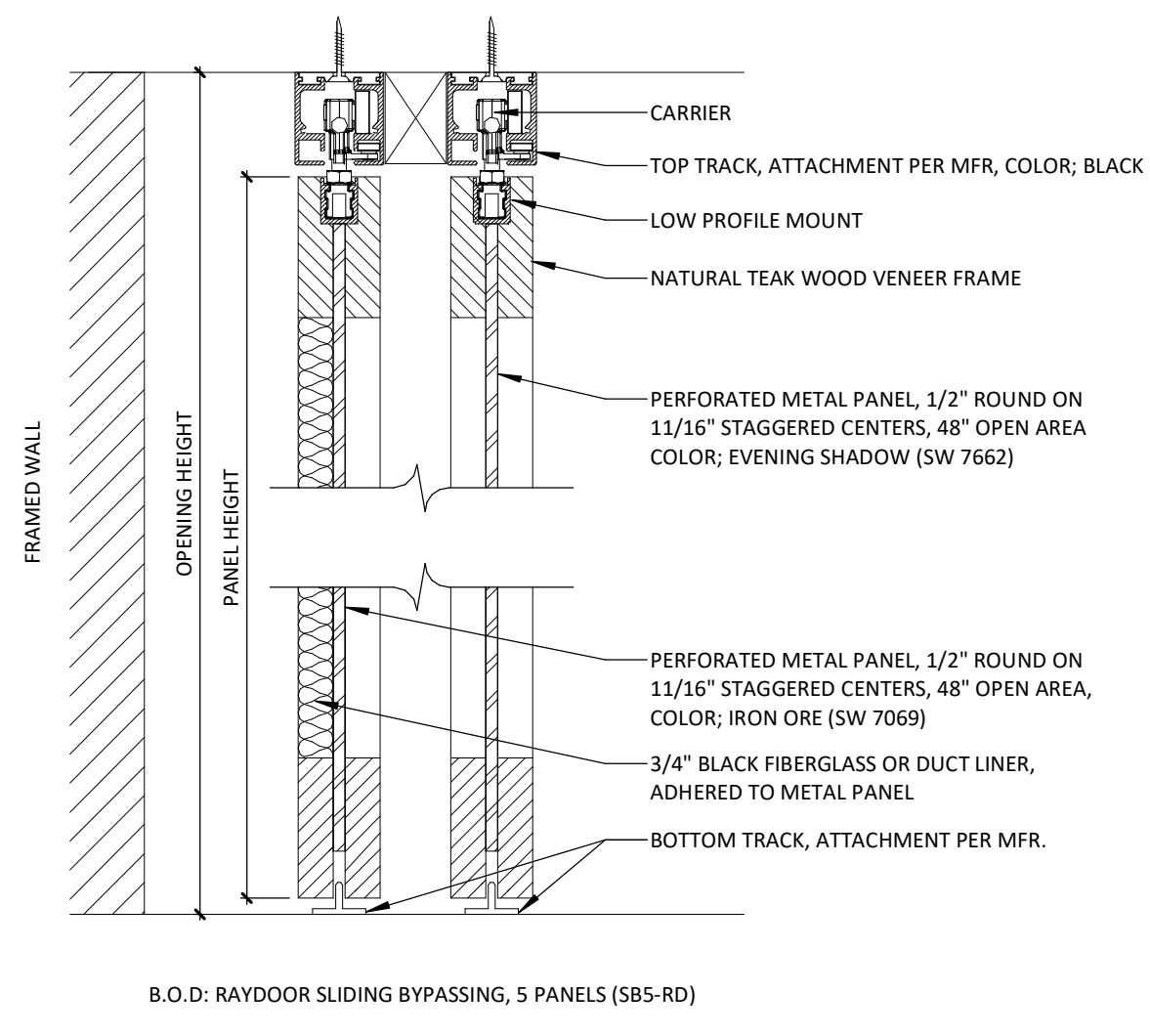
**5** DTL @ LIGHT FIXTURE  
3" = 1'-0"



**7** STAIR TRIM DETAIL  
12" = 1'-0"



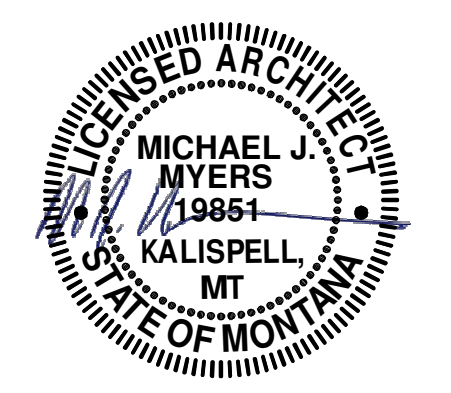
**9** WOOD SLAT ACOUSTIC WALL  
3" = 1'-0"



**3** SLIDING WALL DETAIL  
3" = 1'-0"

SLIDING WALL SYSTEM IS ADD ALTERNATE #3

ENTIRE SHEET IS ADD ALTERNATE #1 EXCEPT AS NOTED



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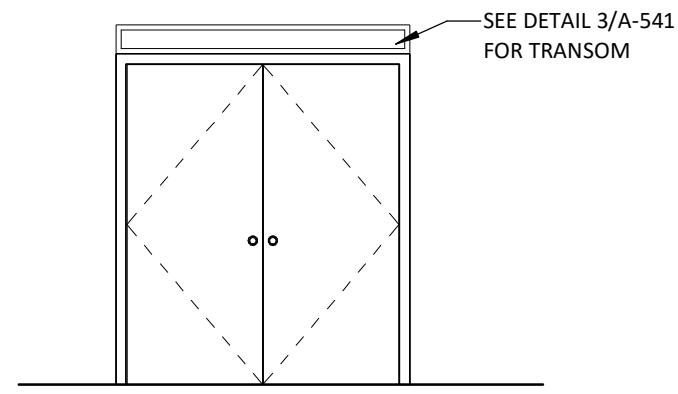
INTERIOR DETAILS

**A-531**



CLASSROOM DOOR SCHEDULE

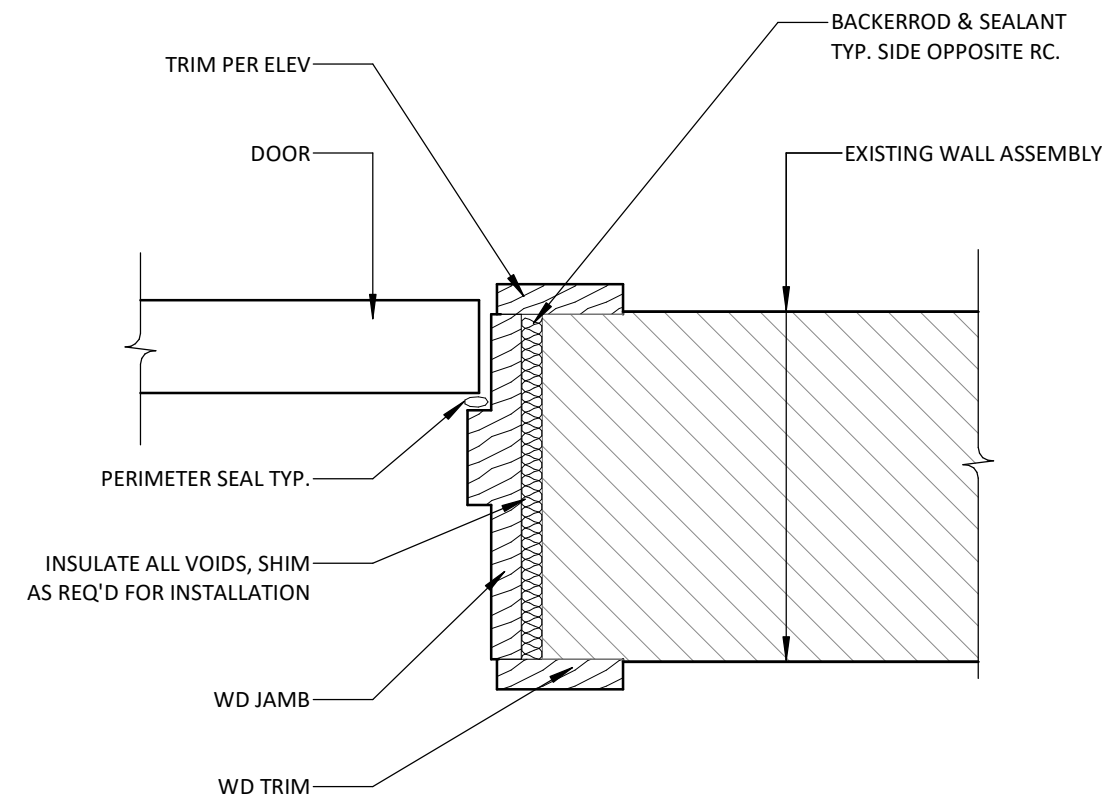
| DOOR NO. | FROM         | TO       | SIZE                        | LABEL | ELEVATION TYPE | DOOR MAT. | FRAME MAT. | LITE | REMARKS  |
|----------|--------------|----------|-----------------------------|-------|----------------|-----------|------------|------|--|
| 1        | LECTURE HALL | CORRIDOR | (2) 2'-10" x 6'-8" x 1 3/8" | #101  | A              | WD        | WD         | N/A  | RE-USE EXISTING DOOR AND FRAME. DO NOT DISTURB EXISTING CAT CARD WIRING. |



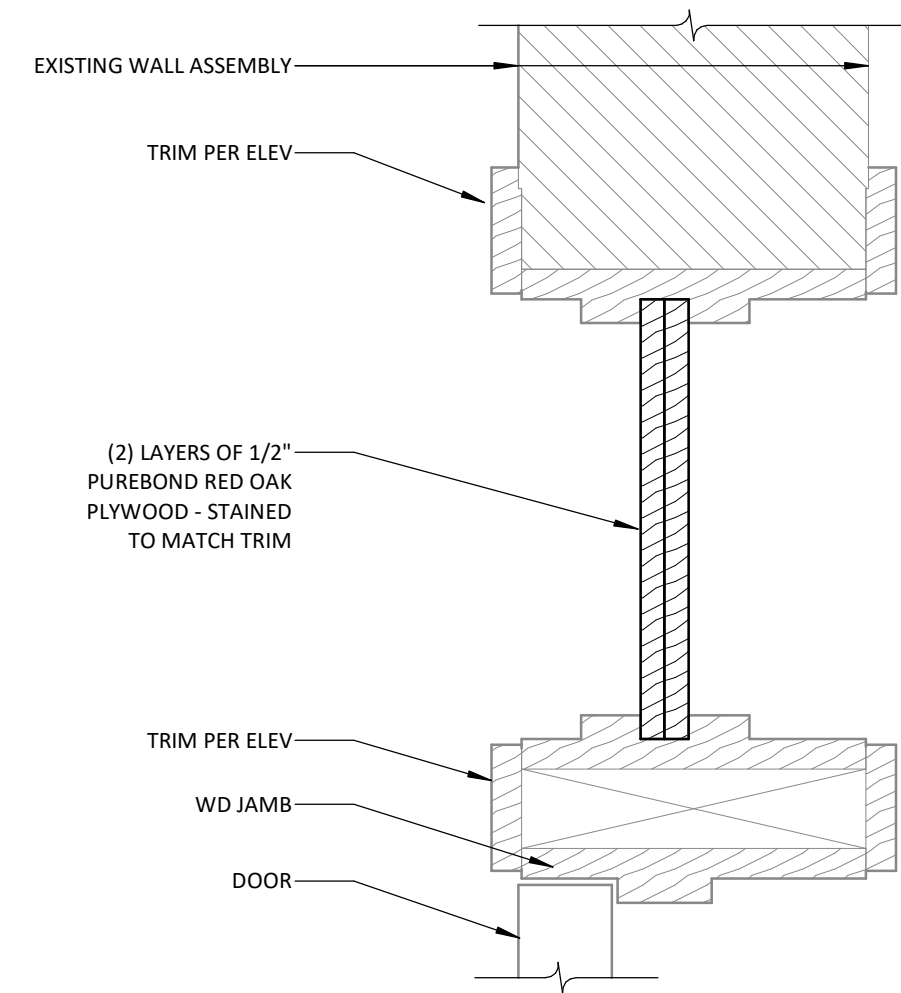
WIDE STILE STOREFRONT DOOR

- WD - WOOD
- GENERAL NOTES:**
- HARDWARE:**  
**HINGES:** BY STANLEY, HAGER OR APPROVED EQUAL.  
**LOCKSETS:** BY SARGENT, ADAMS-RITE, SCHLAGE OR APPROVED EQUAL.  
**CLOSER:** BY LCN, DORMA OR APPROVED EQUAL.  
**WEATHERSTRIPPING, THRESHOLD, AND SWEEP:** BY PEMKO OR APPROVED EQUAL  
**KEY SYSTEM:** - SARGENT (CY-1) CYLINDERS FOR ALUMINUM ENTRANCES.
  - CONTRACTOR RESPONSIBLE TO NOTIFY DESIGNER OF SUBSTITUTIONS FOR NOTED HARDWARE.
  - DOOR & DOOR HARDWARE SUBMITTAL REQUIRED.
  - HOLLOW METAL DOORS: 18 GAUGE METAL. HOLLOW METAL DOOR FRAMES: 16 GAUGE AND WELD UP.

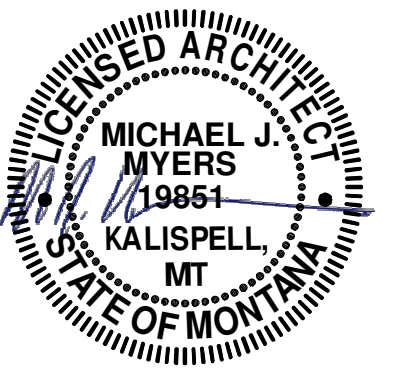
1 DOOR LEGEND  
1/4" = 1'-0"



2 WD DR JAMB DTL-INT  
3" = 1'-0"



3 TRANSOM DETAIL  
3" = 1'-0"



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 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

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**CLASSROOM DOOR SCHEDULE AND DETAILS**

ENTIRE SHEET IS ADD ALTERNATE #1

**A-541**

RESTROOM DOOR SCHEDULE

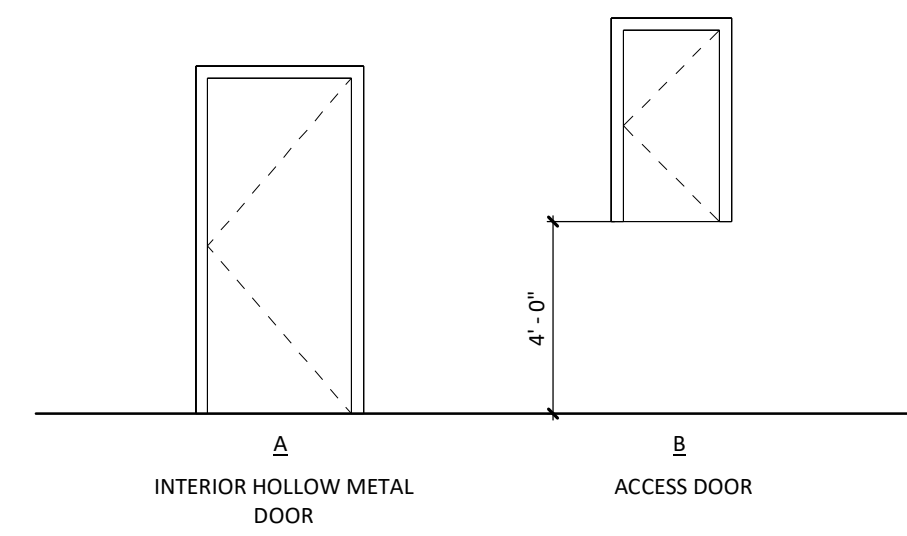
| DOOR NO. | FROM            | TO                  | SIZE                   | LABEL | ELEVATION TYPE | DOOR MAT. | FRAME MAT. | LITE | HARDWARE               | REMARKS |
|----------|-----------------|---------------------|------------------------|-------|----------------|-----------|------------|------|------------------------|---------|
| 1        | CORRIDOR 116    | MENS RESTROOM 104   | 3'-0" x 7'-0" x 1 3/4" |       | A              | HM        | HM         | NONE | HDW-3 PUBLIC RESTROOM  |         |
| 2        | CORRIDOR 116    | UNISEX RESTROOM 115 | 3'-0" x 7'-0" x 1 3/4" |       | A              | HM        | HM         | NONE | HDW-2 PRIVATE RESTROOM |         |
| 3        | UNISEX RESTROOM | MECHANICAL CHASE    | 2'-0" x 4'-0" x 1 3/4" |       | B              | HM        | HM         | NONE | HDW-1 ACCESS DOOR      |         |

DOOR HARDWARE

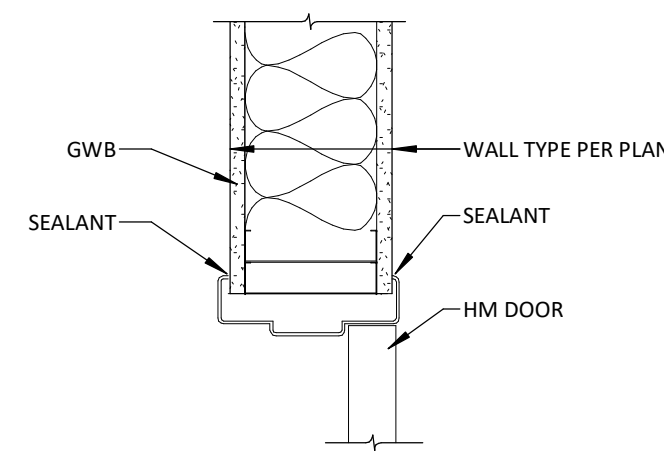
| HDW                    | HARDWARE  |
|------------------------|---|
| HDW-1 ACCESS DOOR      | 1 1/2 PR BUTTS<br>1 LOCKSET F-76<br>1 WALL STOP   |
| HDW-2 PRIVATE RESTROOM | 1 1/2 PR BUTTS<br>1 LOCKSET F-76<br>1 WALL STOP<br>1 SET SILENCERS<br>KICK PLATE        |
| HDW-3 PUBLIC RESTROOM  | 1 1/2 PR BUTTS<br>1 PULL<br>1 PUSHPLATE<br>1 WALL STOP<br>1 SET SILENCERS<br>KICK PLATE |

HM - HOLLOW METAL, WELDED STEEL

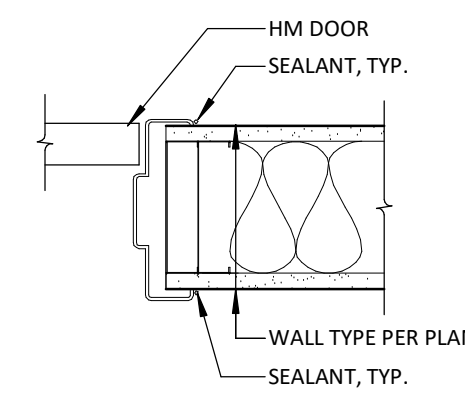
- GENERAL NOTES:**  
**1. HARDWARE:** BY STANLEY, HAGER OR APPROVED EQUAL.  
**HINGES:** BY SARGENT, ADAMS-RITE, SCHLAGE OR APPROVED EQUAL.  
**LOCKSETS:** BY SARGENT, ADAMS-RITE, SCHLAGE OR APPROVED EQUAL.  
**CLOSER:** BY LCN, DORMA OR APPROVED EQUAL.  
**WEATHERSTRIPPING, THRESHOLD, AND SWEEP:** BY PEMKO OR APPROVED EQUAL.  
**KEY SYSTEM:** - SARGENT (CY-1) CYLINDERS FOR ALUMINUM ENTRANCES.  
**2.** CONTRACTOR RESPONSIBLE TO NOTIFY DESIGNER OF SUBSTITUTIONS FOR NOTED HARDWARE.  
**3.** DOOR & DOOR HARDWARE SUBMITTAL REQUIRED.  
**4.** HOLLOW METAL DOORS: 18 GAUGE METAL HOLLOW METAL DOOR FRAMES: 16 GAUGE AND WELD UP.



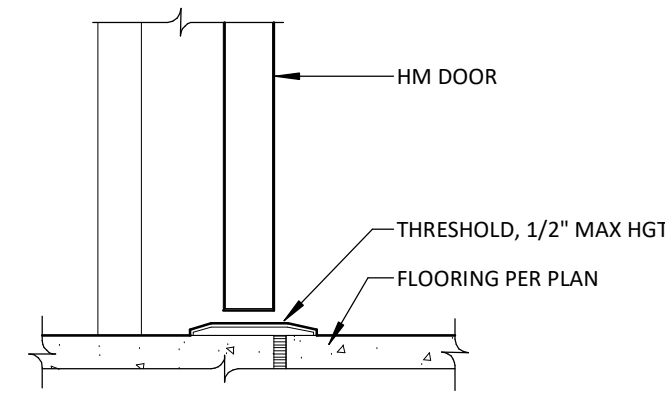
1 DOOR LEGEND  
1/4" = 1'-0"



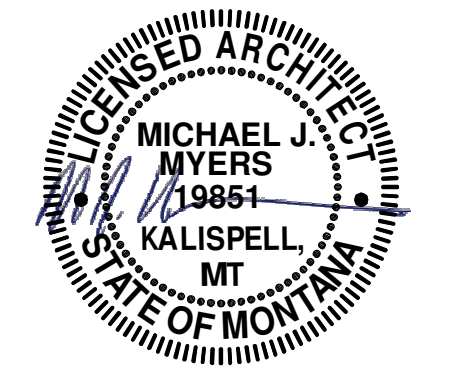
2 INT. HM DR HD DTL  
1 1/2" = 1'-0"



3 INT. HM DR JAMB DTL  
1 1/2" = 1'-0"



4 THRESHOLD AT HM DR  
1 1/2" = 1'-0"



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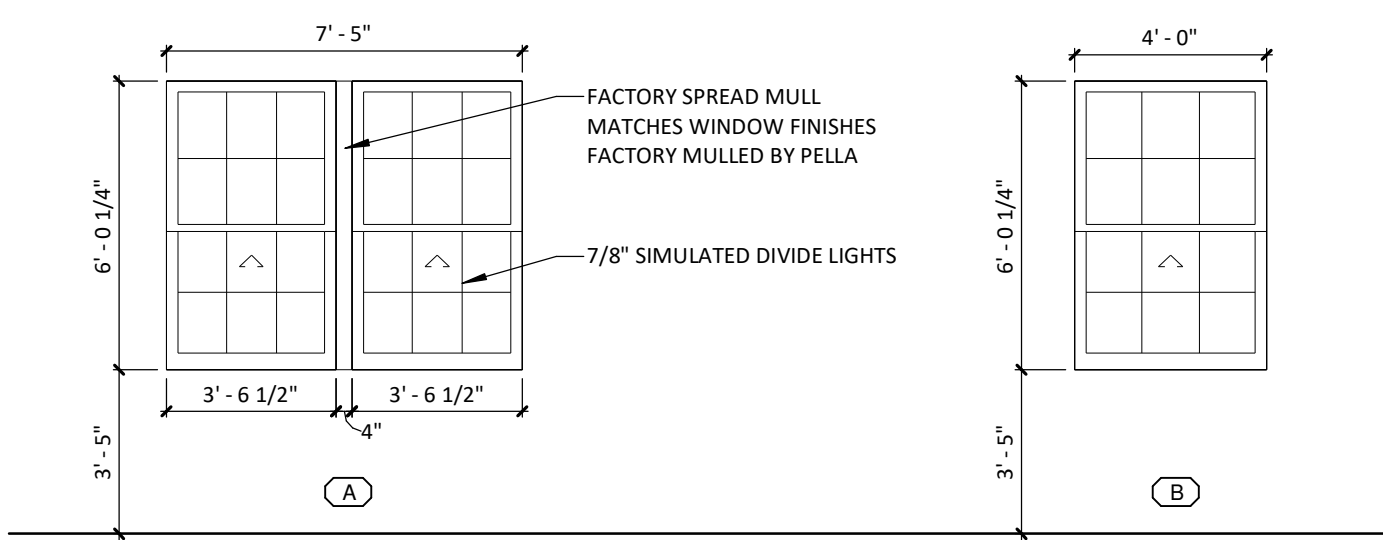
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**RESTROOM DOOR SCHEDULE**

ENTIRE SHEET IS ADD ALTERNATE #2

**A-542**

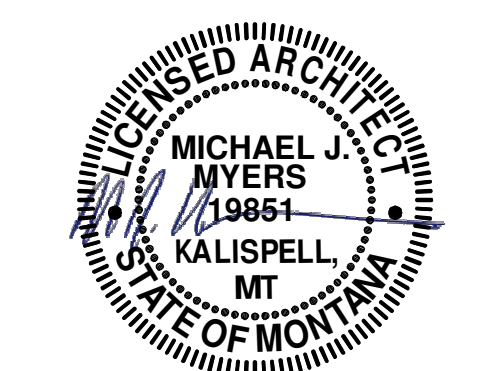
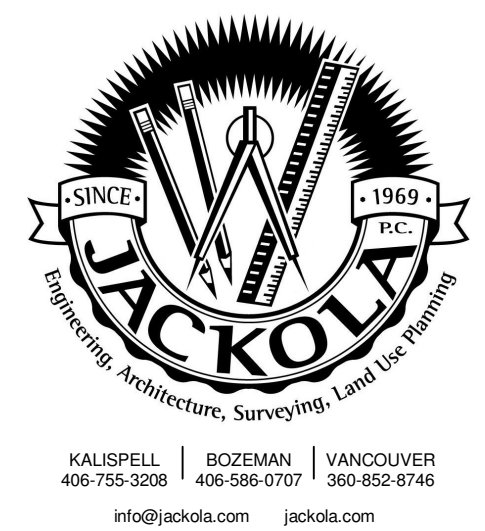




**1 WINDOW LEGEND**  
1/4" = 1'-0"

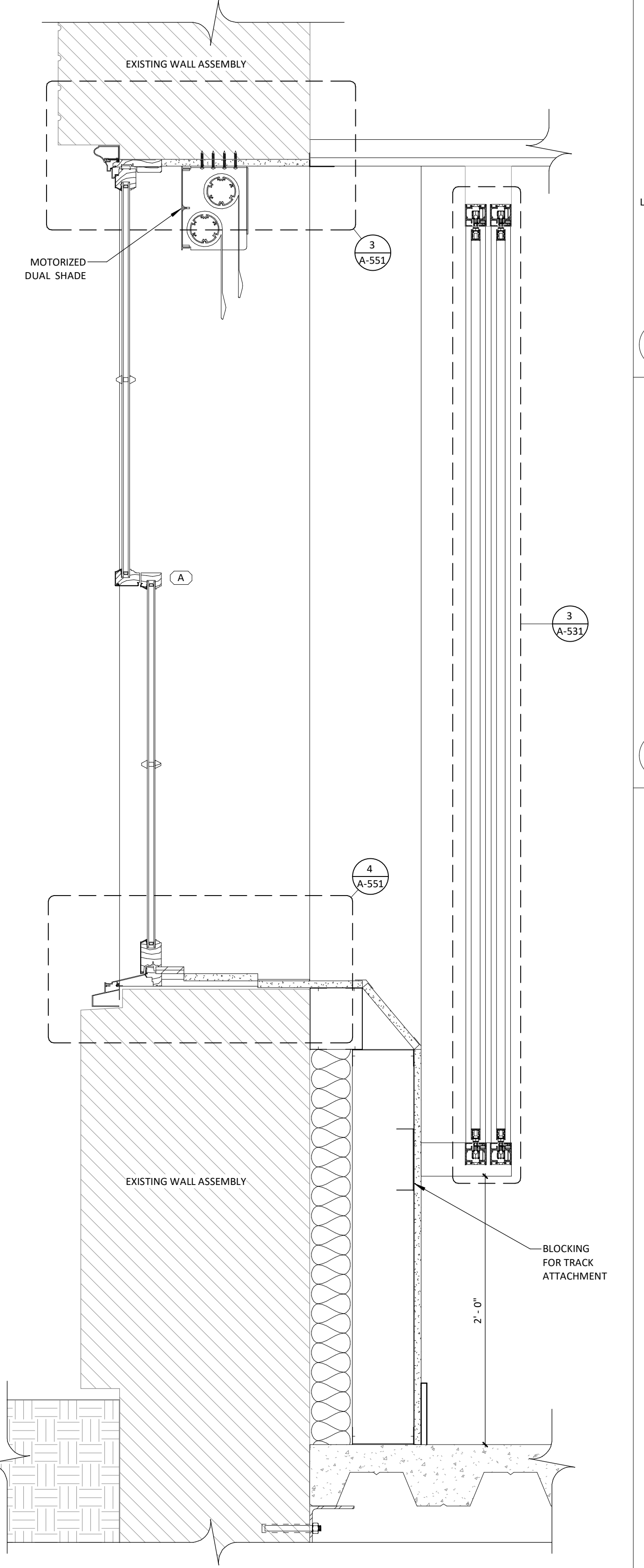
**SAFETY GLAZING REQUIRED LOCATIONS:**  
 -ALL DOORS  
 -GLAZING IN FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL IS WITHIN 24" ARC OF EITHER VERTICAL EDGE OF DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE WALKING SURFACE.  
 -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.  
 IF AN OPERABLE WINDOW IS REQUIRED FOR VENTILATION IN ACCESSIBLE UNITS IT IS REQUIRED THAT OPERABLE PARTS SHALL BE PLACED WITHIN ONE OR MORE OF THE REACH RANGES PER SECTION 308 - ANSIA117.1-2009 (SEE PAGE TO.12). OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5.0 POUNDS MAX. (SECTIONS 309.3 & 309.4 - ANSIA117.1-2009)

| WINDOW SCHEDULE |             |             |             |          |                     |                |                |                 |                                   |   |           |                  |                                  |
|-----------------|-------------|-------------|-------------|----------|---------------------|----------------|----------------|-----------------|-----------------------------------|---|-----------|------------------|----------------------------------|
| TAG             | HEIGHT      | WIDTH       | SILL HEIGHT | QUANTITY | WINDOW SERIES       | EXTERIOR COLOR | INTERIOR STAIN | HARDWARE FINISH | HARDWARE STYLE                    | GRILLS                                    | BRICKMOLD | SCREEN           | GLAZING                          |
| A               | 6' - 0 1/4" | 3' - 6 1/2" | 3' - 5"     | 10       | RESERVE TRADITIONAL | POPLAR WHITE   | EARLY AMERICAN | BLACK           | HISTORIC SPOON LOCK AND SASH LIFT | 7/8" SIMULATED DIVIDE LIGHTS, PUTTY GLAZE | MONROE    | BOTTOM SASH ONLY | DUAL PANE, INSULATED, SUNDEFENSE |
| B               | 6' - 0 1/4" | 4' - 0"     | 3' - 5"     | 1        | RESERVE TRADITIONAL | POPLAR WHITE   | EARLY AMERICAN | BLACK           | HISTORIC SPOON LOCK AND SASH LIFT | 7/8" SIMULATED DIVIDE LIGHTS, PUTTY GLAZE | MONROE    | BOTTOM SASH ONLY | DUAL PANE, INSULATED, SUNDEFENSE |

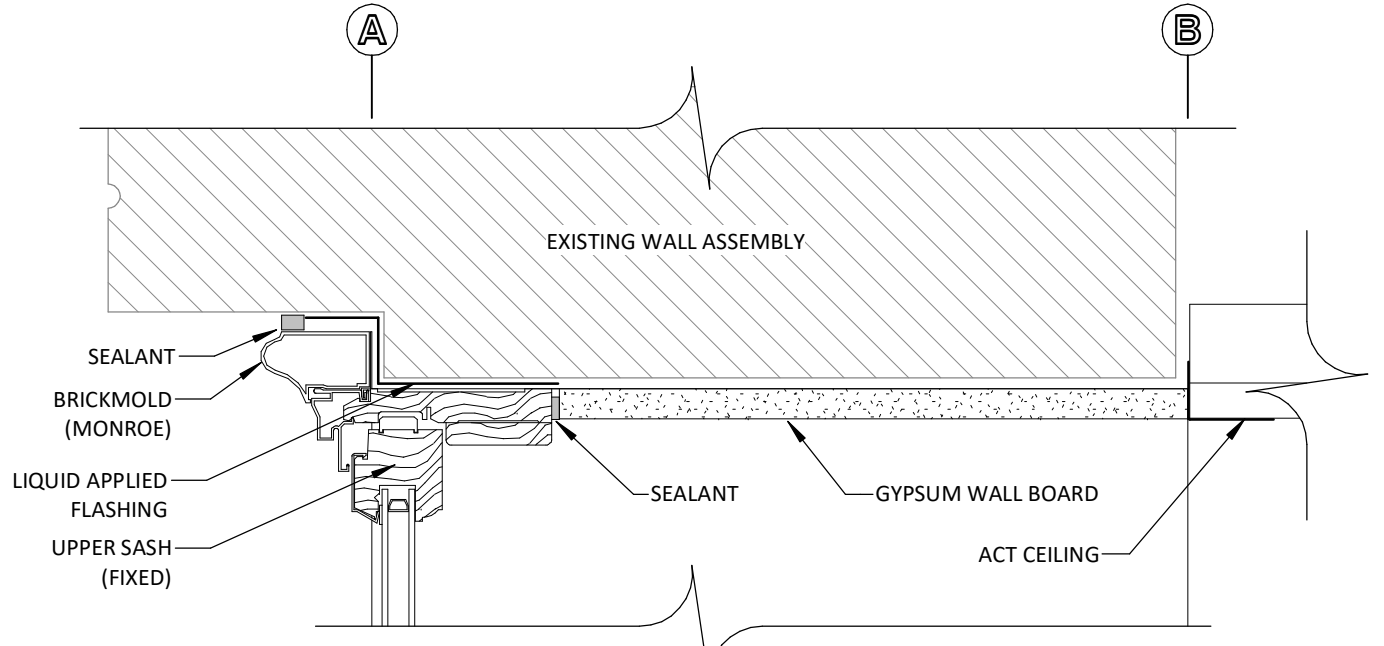


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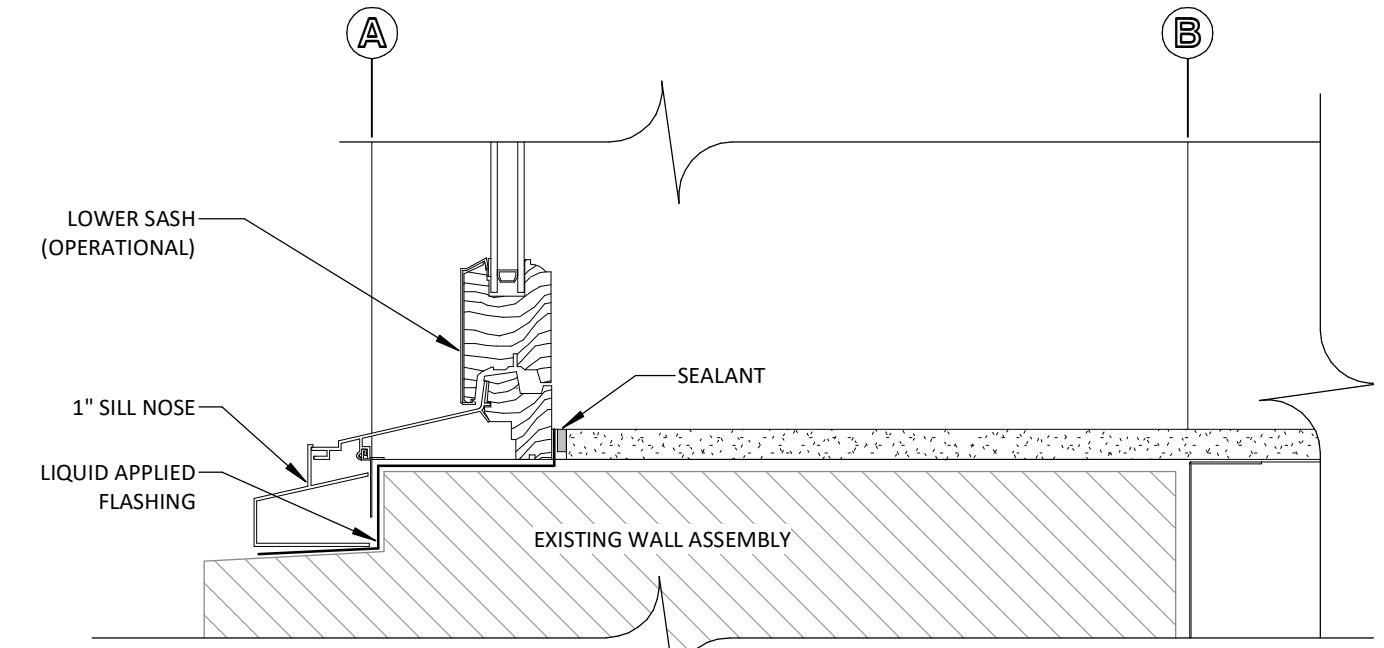
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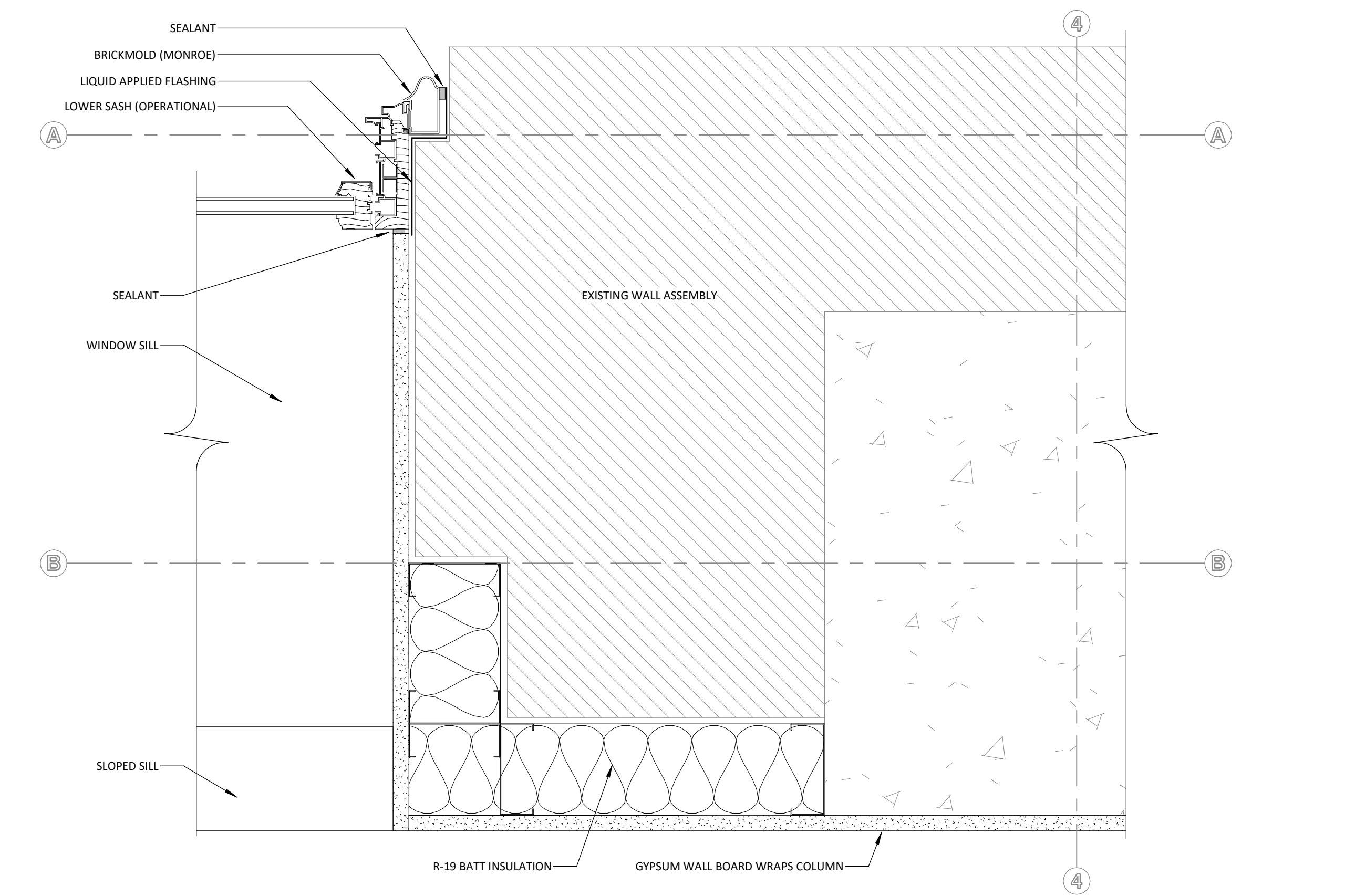
**2 TYP. WINDOW SECTION**  
1 1/2" = 1'-0"



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



**4 WINDOW SILL DETAIL**  
3" = 1'-0"



**5 WINDOW JAMB DETAIL**  
3" = 1'-0"

ENTIRE SHEET IS ADD ALTERNATE #1

**ROBERTS HALL**  
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|------------------|--------------|
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| DATE: 11/19/2024 |              |
| REVISIONS:       |              |
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**WINDOW SCHEDULE & DETAILS**

**A-551**

### ABBREVIATIONS

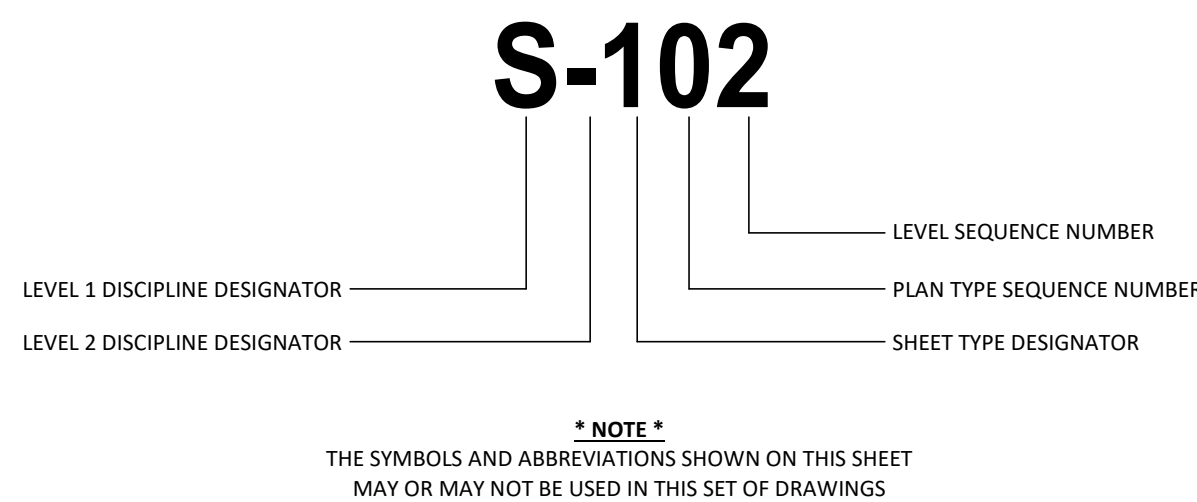
|   |  |  |  |  |
|---|--|--|--|--|
| <b>A</b>  | AFF ABOVE FINISH FLOOR<br>ACT ACOUSTICAL CEILING TILE<br>ADJ ADJUSTABLE<br>AB ANCHOR BOLT<br>ALUM ALUMINUM<br>ALT ALTERNATE<br>ANOD ANODIZED<br>APPROX APPROXIMATE<br>ARCH ARCHITECT<br>AVG AVERAGE  | <b>F.O.S.</b><br>FIN FINISH<br>FF FINISH FLOOR<br>FL FLASHING<br>FLR FLOOR<br>FN FIELD NAILING<br>FD FLOOR DRAIN<br>FT FOOT, FEET<br>FTG FOOTING<br>FDN FOUNDATION<br>FUT FUTURE<br>FBO FURNISHED BY OTHERS<br>FRP FIBER REINFORCED PANEL<br>FS FAR SIDE | <b>MATL</b><br>MAX MAXIMUM<br>MECH MECHANICAL, MECHANICAL ROOM<br>MIN MINIMUM<br>MISC MISCELLANEOUS  | <b>STRUCT</b><br>SF SQUARE FEET<br>SUSP SUSPENDED<br>SQ SQUARE<br>SW SHEAR WALL<br>SYMM SYMMETRY, SYMMETRICAL  |
| <b>B</b>  | BSMT BASEMENT<br>BM BEAM<br>BRG BEARING<br>BET BETWEEN<br>BLDG BUILDING<br>BLKG BLOCKING<br>B.O. BOTTOM OF<br>BOT BOTTOM<br>BN BOUNDARY NAILING<br>BS BOTH SIDES   | <b>G</b><br>GA GAUGE<br>GALV GALVANIZED<br>GEN GENERAL<br>GL GLASS<br>G/L, GLM GLULAM BEAM/COLUMN<br>GWB GYPSUM WALL BOARD<br>GYPC GYPCRETE  | <b>N</b><br>N NORTH<br>(N) NEW<br>NA NOT APPLICABLE<br>NIC NOT IN CONTRACT<br>NTS NOT TO SCALE<br>NO NUMBER<br>NOM NOMINAL<br>NS NEAR SIDE<br>NWC NORMAL WEIGHT CONCRETE   | <b>I</b><br>TBD TO BE DETERMINED/DESIGNED<br>TBU TO BE UPDATED<br>TEL TELEPHONE<br>TEMP TEMPERED, TEMPORARY<br>T&B TOP AND BOTTOM<br>T&G TONGUE AND GROOVE<br>THK THICK<br>THRU THROUGH<br>T.O. TOP OF<br>T.O.B. TOP OF BRICK<br>T.O.C. TOP OF CONCRETE<br>T.O.S. TOP OF SLAB<br>T.O.W. TOP OF WALL<br>T.O.M. TOP OF MASONRY<br>T TREAD<br>TYP TYPICAL |
| <b>C</b>  | CIP CAST-IN-PLACE<br>CLG CEILING<br>CLR CLEAR<br>CLT CROSS LAMINATED TIMBER<br>COL COLUMN<br>CONC CONCRETE<br>CONN CONNECTION<br>CONST CONSTRUCTION<br>CONT CONTINUOUS<br>CONTR CONTRACT, CONTRACTOR<br>CORR CORRIDOR<br>CJ CONTROL JOINT<br>CMU CONCRETE MASONRY UNIT   | <b>H</b><br>HALL HALLWAY<br>HD HOLDOWN, HOLD-DOWN<br>HDR HEADER<br>HDW HARDWARE<br>HVAC HEATING, VENTILATING, & AIR CONDITIONING<br>HT HEIGHT<br>HM HOLLOW METAL<br>HORIZ HORIZONTAL<br>HR HOUR<br>HSS HOLLOW STRUCTURAL SECTION                         | <b>O</b><br>OC ON CENTER<br>OFF OFFICE<br>OPG OPENING<br>OPP OPPOSITE<br>OD OUTSIDE DIAMETER<br>OF OUTSIDE FACE<br>O/O OUT TO OUT<br>OSB ORIENTED STRAND BOARD   | <b>U</b><br>UBC UNIFORM BUILDING CODE<br>UNO UNLESS NOTED OTHERWISE<br>UTIL UTILITY  |
| <b>D</b>  | DBL DOUBLE<br>DBL TP DOUBLE TOP PLATE<br>DEG DEGREE<br>DEMO DEMOLISH, DEMOLITION<br>DTL DETAIL<br>DIA DIAMETER<br>DIM DIMENSION<br>DIST DISTANCE<br>DF/L DOUGLAS/FIR LARCH<br>DIV DIVISION<br>DL DEAD LOAD<br>DR DOOR<br>DN DOWN<br>DS DOWNSPOUT<br>DWG DRAWING  | <b>I</b><br>IBC INTERNATIONAL BUILDING CODE<br>ICC INTERNATIONAL CODE COUNCIL<br>INCL INCLUDE, INCLUDED (ING)<br>INFO INFORMATION<br>ID INSIDE DIAMETER<br>II ISOLATION JOINT<br>INSUL INSULATE, INSULATION<br>INT INTERIOR                              | <b>P</b><br>PERP PERPENDICULAR<br>PNT PAINT, PAINTED<br>PNL PANEL<br>PH PHASE<br>PI PERIMETER ISOLATION JOINT<br>PLAS PLASTIC<br>PL PLATE<br>PLF POUNDS PER LINEAR FOOT<br>PSF POUNDS PER SQUARE FOOT<br>PSI POUNDS PER SQUARE INCH<br>PSL PARALLEL STRAND LUMBER<br>PLYWD PLYWOOD<br>PVC POLYVINYL CHLORIDE<br>PREFIN PREFINISHED<br>PROP PROPERTY<br>PT PRESSURE TREATED | <b>V</b><br>VB VAPOR BARRIER<br>VENEER VENEER<br>VERT VERTICAL<br>VCT VINYL COMPOSITION TILE<br>VIF VERIFY IN FIELD  |
| <b>E</b>  | EA EACH<br>E EAST<br>(E) EXISTING<br>EF EACH FACE<br>EIFS EXTERIOR INSULATION FINISHING SYSTEMS<br>ELEC ELECTRIC<br>EN EDGE/END NAIL<br>ELEV ELEVATION, ELEVATOR<br>EMBED EMBEDMENT<br>EOS EDGE OF SLAB<br>EOR ENGINEER OF RECORD<br>EQ EQUAL<br>EQUIP EQUIPMENT<br>EW EACH WAY<br>EXIST EXISTING<br>EXP EXPANSION<br>EXC EXCAVATION<br>EJ EXPANSION JOINT<br>EXT EXTERIOR | <b>J</b><br>JST JOIST(S)<br>JT JOINT   | <b>Q</b><br>QUAN QUANTITY  | <b>W</b><br>WF WIDE FLANGE<br>WD WOOD<br>WIN WINDOW<br>WP WATERPROOF (ING)<br>WRB WEATHER RESISTANT BARRIER<br>WWF WELDED WIRE FABRIC<br>WWM WELDED WIRE MESH<br>WT WEIGHT<br>W WEST, WASHER<br>W/ WITH<br>W/O WITHOUT   |
| <b>F.O.B.</b><br><b>F.O.C.</b><br><b>F.O.M.</b> | FACE OF BRICK<br>FACE OF CONCRETE<br>FACE OF MASONRY   | <b>K</b><br>KO KNOCK OUT   | <b>R</b><br>RAD RADIUS<br>REB REBAR<br>REF REFERENCE<br>REINF REINFORCE, REINFORCEMENT<br>RCP REFLECTED CEILING PLAN<br>REQ'D REQUIRED<br>RFI REQUEST FOR INFORMATION<br>REV REVISION<br>R RISER<br>RD ROOF DRAIN<br>RM ROOM<br>RO ROUGH OPENING   | <b>X</b><br>XX SECTION<br>XX ELEVATION<br>XX DETAIL<br>XX ITEM IDENTIFICATION SHEET WHERE FOUND<br>XX NORTH ARROW  |
|   | <b>M</b><br>MEP MECHANICAL, ELECTRICAL, AND PLUMBING DOCUMENTS<br>MFR MANUFACTURER<br>MAS MASONRY<br>MO MASONRY OPENING<br>MTL METAL   | <b>L</b><br>LB POUND(S)<br>LBL LABEL<br>LAM LAMINATED<br>LAV LAVATORY<br>LVL LAMINATED VENEER LUMBER<br>LL LIVE LOAD<br>LT LIGHT<br>LOC'N LOCATION<br>LSL LAMINATED STRAND LUMBER<br>LWC LIGHT WEIGHT CONCRETE   | <b>S</b><br>SCHED SCHEDULE<br>SEC SECTION<br>SHTG SHEATHING<br>SIM SIMILAR<br>SOG SLAB ON GRADE<br>S SOUTH<br>(S) SIMPSON<br>SPEC SPECIFICATION<br>SQ SQUARE<br>STAG STAGGERED<br>STD STANDARD<br>STL STEEL<br>STOR STORAGE  | <b>Y</b><br>Y HOLD DOWN<br>Y HANGER<br>Y REVISION NUMBER<br>Y KEY NOTE<br>Y DEMOLITION NOTE  |

### SYMBOLS USED AS ABBREVIATIONS

|    |              |
|----|--------------|
| &  | AND          |
| L  | ANGLE        |
| 2L | DOUBLE ANGLE |
| @  | AT           |
| €  | CENTERLINE   |
| u  | CHANNEL      |
| Ø  | DIAMETER     |
| #  | NUMBER       |

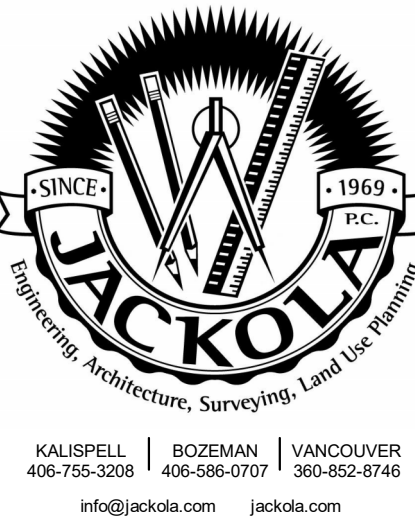
### SYMBOLS & MATERIALS

|  |                       |  |                      |
|--|-----------------------|--|----------------------|
|  | STRUCTURAL FILL       |  | FINISHED WOOD        |
|  | UNDISTURBED EARTH     |  | PLYWOOD              |
|  | DISTURBED EARTH       |  | RIGID INSULATION     |
|  | GRAVEL                |  | BATT INSULATION      |
|  | POURED CONCRETE       |  | SPRAYFOAM INSULATION |
|  | CONCRETE BLOCK VENEER |  | SAND, PLASTER, GROUT |
|  | BRICK VENEER          |  | METAL                |
|  | EIFS                  |  | STEEL                |
|  | ROUGH WOOD            |  | GYPCRETE             |
|  | BLOCKING              |  | FLOOR SHEATHING      |



### STRUCTURAL SHEET INDEX

|       |                             |
|-------|-----------------------------|
| S-001 | STRUCTURAL TITLE SHEET      |
| S-002 | STRUCTURAL NOTES            |
| S-003 | STRUCTURAL NOTES            |
| S-111 | FOUNDATION PLAN             |
| S-112 | EXISTING FLOOR FRAMING PLAN |
| S-113 | NEW FLOOR FRAMING PLAN      |
| S-501 | STRUCTURAL DETAILS          |



FOR PERMIT & BIDDING

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

**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
**ROOM #101 & LEVEL 1 RESTROOM**  
**PPA#: 23-0828**

DRAWN: MES CHECKED: KLJ

DATE: 11/19/2024

REVISIONS:

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STRUCTURAL TITLE SHEET

ENTIRE SHEET IS ADD ALTERNATE #1

**S-001**



STRUCTURAL DESIGN

GOVERNING CODES

- A. INTERNATIONAL BUILDING CODE (IBC) 2021
- B. INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2021
- C. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) - MINIMUM DESIGN LOADS FOR BUILDINGS & OTHER STRUCTURES - ASCE 7-16 WITH SUPPLEMENT 1
- D. AMERICAN CONCRETE INSTITUTE (ACI) - BUILDING CODE & COMMENTARY ACI 318-19
- E. THE MASONRY SOCIETY (TMS) - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES TMS 402-16
- F. AMERICAN INSTITUTE OF STEEL OF CONSTRUCTION (AISC) - STEEL CONSTRUCTION MANUAL FOURTEENTH EDITION AISC 360-16
- G. AMERICAN FOREST & PAPER ASSOCIATION (AF&PA) - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION NDS 2018
- H. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) 9TH EDITION

PROJECT SCOPE

- A. THE SCOPE OF THIS DESIGN AND PLANS IS LIMITED TO THE SUPPORT OF A NEW FLOOR OVER PORTIONS OF ROBERTS HALL ROOM 101. NO ANALYSIS OF THE EXISTING BUILDING'S ENTIRE GRAVITY OR LATERAL SYSTEMS WAS PERFORMED AND NO ENDORSEMENT OF THE ADEQUACY OF THE EXISTING BUILDING'S ENTIRE GRAVITY OR LATERAL SYSTEMS IS EXPRESSED OR IMPLIED.

DESIGN LOADS

- A. RISK CATEGORY - III
- B. GRAVITY LOADS
  - 1. FLOOR LOADS
    - a. EXISTING FLOOR DEAD LOAD - 130 PSF
    - b. NEW FLOOR DEAD LOAD - 60 PSF
    - c. FLOOR LIVE LOAD - 100 PSF
- C. LATERAL LOADS
  - 1. THE NEW GROUND LEVEL FLOOR DOES NOT IMPOSE NEW WIND OR SEISMIC LOADS ON THE BUILDING.

1 STRUCTURAL DESIGN INFORMATION

CONCRETE

- A. SEE SOILS AND GEOTECHNICAL NOTES ON THIS SHEET FOR SITE PREP, STRUCTURAL FILL REQUIREMENTS, AND SUBGRADE PREP.
- B. MATERIALS:
  - 1. ALL CEMENT IN CONCRETE SHALL BE TYPE I/IIA AND CONFORM TO ASTM C150 SPECIFICATION FOR PORTLAND CEMENT.
  - 2. ALL AGGREGATE TO CONFORM TO ASTM C33 SPECIFICATION FOR CONCRETE AGGREGATES.
  - 3. CONCRETE SUPPLIER TO MIX BASED ON TESTING TO ASSURE THE MINIMUM COMPRESSIVE STRENGTH PER ACI 318 26.4.4.1 (a). IN THE ABSENCE OF SUFFICIENT TEST DATA, CONCRETE PROPORTIONING SHALL BE DONE IN ACCORDANCE WITH ACI 318 26.4.4.1 (c).
  - 4. THE MAXIMUM NOMINAL AGGREGATE SIZE SHALL BE THE SMALLEST OF:
    - a. ONE FIFTH THE NARROWEST DIMENSION BETWEEN THE FORMS.
    - b. ONE THIRD THE DEPTH OF THE SLAB.
    - c. THREE-FOURTHS THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES.
    - d. THESE PROVISIONS ARE TO ASSURE CONCRETE PLACEMENT WITHOUT VOIDS OR HONEYCOMBS AND MAY BE WAIVED ONLY BY THE BUILDING OFFICIAL IF THEY JUDGE THAT LARGER SIZES ARE ADEQUATE BECAUSE OF WORKABILITY AND METHODS OF CONSOLIDATION.
- C. INSTALLATION:
  - 1. CONCRETE CURING (OTHER THAN HIGH-EARLY) SHALL BE MAINTAINED ABOVE A TEMPERATURE OF 50°F AND IN A MOIST CONDITION FOR AT LEAST THE FIRST SEVEN DAYS AFTER PLACEMENT.
  - 2. HIGH EARLY CONCRETE SHALL BE CURED ABOVE 50°F AND IN A MOIST CONDITION FOR AT LEAST THE FIRST THREE DAYS. ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING FREEZING OR NEAR-FREEZING WEATHER.
  - 3. FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.
  - 4. ALL CONCRETE MATERIALS, REINFORCEMENT, FORMS, FILLERS, AND GROUND WHICH THE CONCRETE IS TO BE IN CONTACT WITH IS TO BE FREE OF FROST.
  - 5. DURING HOT WEATHER, PROPER ATTENTION SHALL BE GIVEN TO INGREDIENTS, PRODUCTION METHODS, HANDLING, PLACING, PROTECTION, AND CURING TO PREVENT EXCESSIVE CONCRETE TEMPERATURES AND EVAPORATION THAT MAY IMPAIR REQUIRED STRENGTH OR SERVICEABILITY OF THE MATERIAL.
  - 6. ALL WALLS & FOUNDATIONS SHALL BE MECHANICALLY CONSOLIDATED.
  - 7. VIBRATORS SHALL BE INSERTED IN PREVIOUS POURED FRESH CONCRETE TO PREVENT COLD JOINTS WHEN MULTIPLE LAYER OF CONCRETE ARE PLACED IN A WALL.
  - 8. CONDUITS, PIPES, AND SLEEVES SHALL BE ALLOWED ONLY WHERE NOTED ON THE PLANS.
  - 9. ANY ADDITIONAL ALTERATIONS ARE NOT PERMITTED WITHOUT ENGINEER APPROVAL THAT IT WILL NOT COMPROMISE STRUCTURAL INTEGRITY.
  - 10. CONSTRUCTION JOINTS:
    - a. THE SURFACE OF ALL CONSTRUCTION JOINTS SHALL BE CLEANED AND LAITANCE REMOVED.
    - b. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.
    - c. PROVISIONS SHALL BE MADE TO TRANSFER SHEAR FORCES THROUGH CONSTRUCTION JOINTS.
  - D. SLABS:
    - 1. INTERIOR SLAB ON GRADE SHALL BE CLASS 1 W/ A NORMAL STEEL TROWELED FINISH.
    - 2. FLOOR SHALL BE WITHIN 1/8" PER 10 FT FOR FLATNESS REQUIREMENTS.
    - 3. WHERE EXPOSED, SLAB SHALL BE SEALED WITH A HIGH SOLID CONTENT SOLVENT BASED CURE & SEAL, EUCLID SUPER DIAMOND OR APPROVED EQUAL.
    - 4. CONCRETE IN SIDEWALKS OR EXTERIOR SLABS THAT WILL BE EXPOSED TO FREEZING/THAWING OR DEICING CHEMICALS SHALL HAVE A MAXIMUM 0.45 WATER/CEMENTITIOUS RATIO BY WEIGHT FOR NORMAL WEIGHT AGGREGATE CONCRETE AND BE 4500 PSI MINIMUM.
  - E. REINFORCEMENT:
    - 1. ALL REINFORCING BARS SPECIFIED SHALL BE DEFORMED BARS AT LEAST GRADE 60.
    - 2. ALL BENDING OF REINFORCING MATERIAL SHALL BE DONE COLD AND MINIMUM BEND DIAMETER SHALL BE 6 TIMES THE NOMINAL BAR DIAMETER FOR #3-#8 BAR AND 8 TIMES THE NOMINAL BAR DIAMETER FOR #9-#11 BARS.
    - 3. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE MAY NOT BE FIELD BENT WITHOUT PRIOR APPROVAL FROM EOR.
    - 4. REINFORCEMENT, ANCHORS AND EMBEDDED ITEMS SHALL BE ACCURATELY PLACED AND SUPPORTED BEFORE CONCRETE IS PLACED AND SHALL BE SECURED AGAINST DISPLACEMENT WITHIN TOLERANCES OF SECTION 1901.7 OF THE CURRENT VERSION OF THE IBC.
    - 5. STANDARD HOOK ON REINFORCING BAR SHALL BE:
      - a. 180° BEND PLUS 4d EXTENSION, BUT NOT LESS THAN 2 1/2" AT FREE END OF BAR.
      - b. 90° BEND PLUS 12d EXTENSION AT FREE END OF BAR.
      - c. FOR STIRRUP AND TIE HOOKS: SEE DETAILS.
    - 6. MINIMUM REBAR LAPS - PER SCHEDULE
      - a. CLEAR SPACING OF NOT LESS THAN 2d AND CLEAR COVER OF NOT LESS THAN d.
      - b. ALL OTHER SPLICES CONDITIONS SHALL BE BY THE EOR AND ILLUSTRATED ON FOUNDATION PLAN & DETAIL SHEETS.
  - F. GYPCRETE:
    - 1. GYPCRETE SHALL BE MAXON GYP-CRETE MULTIFAMILY 2,000 FLOOR UNDERLAYMENT OR APPROVED EQUAL.
  - G. REFER TO TABLE BELOW FOR MINIMUM COVER AND TOTAL AIR CONTENT FOR CONCRETE IN DIFFERENT SERVICE CONDITIONS.

CONCRETE PROTECTION FOR REINFORCEMENT

(CAST-IN-PLACE CONCRETE (NON-PRESTRESSED))

| DESCRIPTION  | MINIMUM COVER (IN) |
|--|--------------------|
| CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO EARTH   | 3                  |
| CONCRETE EXPOSED TO EARTH OR WEATHER:<br>No. 6 THRU No. 18 BAR   | 2                  |
| No. 5 BAR, W31 OR D31 WIRE AND SMALLER   | 1-1/2              |
| CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND:<br>SLABS, WALLS, AND JOISTS                         |                    |
| No. 14 AND No. 18 BAR  | 1-1/2              |
| No. 11 BAR AND SMALLER   | 3/4                |
| CONCRETE TILT-UP PANELS CAST AGAINST A RIGID HORIZONTAL SURFACE<br>SUCH AS A CONCRETE SLAB EXPOSED TO THE WEATHER: |                    |
| No. 8 BAR AND SMALLER  | 1                  |
| No. 9 THRU No. 18 BAR  | 2                  |

|                  | 28 DAY COMPRESSIVE STRENGTH | SLUMP (IN) MAX/MIN | MAX W/C RATIO | AIR CONTENT (%) |
|------------------|-----------------------------|--------------------|---------------|-----------------|
| FOOTINGS         | 3000 PSI                    | 5/3                | .5            | 6 +/- 1.5%      |
| FOUNDATION WALLS | 3000 PSI                    | 5/3                | .5            | 6 +/- 1.5%      |
| INTERIOR SLAB    | 4000 PSI                    | 5/3                | .45           | 3 MAX           |
| EXTERIOR SLAB    | 4500 PSI                    | 5/3                | .45           | 6 +/- 1.5%      |

NOTE: SLABS WITH SUPER PLASTICIZER SHALL HAVE A MAXIMUM SLUMP OF 6 1/2".

2 CONCRETE NOTES

STRUCTURAL STEEL

- A. DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE AISC SPECIFICATIONS AND CODES, LATEST EDITION
- B. PROVIDE MATERIAL CONFORMING TO THE FOLLOWING REQUIREMENTS FOR ALL STRUCTURAL STEEL:
  - 1. SHAPES (EXCEPT WIDE FLANGE) AND PLATES: ASTM A36, Fy=36KSI
  - 2. WIDE FLANGE SHAPES: ASTM A992, Fy=50 KSI MIN. (65 KSI MAX.)
  - 3. STRUCTURAL TUBING: RECT. ASTM A500, GRADE C, Fy=50 KSI, HDND; ASTM A500, GRADE C, Fy=46 KSI
  - 4. ANCHOR BOLTS: ASTM F1554 GR 36/ OR ASTM A36 THREADED ROD - UNLESS NOTED OTHERWISE
  - 5. THREADED ROD: ASTM A36
  - 6. WELDING ELECTRODE: E70XX
- C. FABRICATOR SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION. MEMBERS SHALL BE FABRICATED PER AISC WITH "STANDARD" HOLES 1/16" LARGER THAN BOLT DIAMETER UNLESS SPECIFICALLY DETAILED OR APPROVED OTHERWISE. HOLES FOR ANCHOR BOLTS MAY BE 5/16" MAX LARGER THEN BOLT UNLESS NOTED OTHERWISE. (PROVIDE WASHERS AT ALL ANCHOR BOLTS.)
- D. USE NON-SHRINK GROUT/DRYPACK BELOW STEEL BASE PLATES AND BEARING PLATES.
- E. SHOP WELDING SHALL BE DONE IN A CERTIFIED FABRICATOR'S SHOP APPROVED BY THE BUILDING OFFICIAL (IBC 1704.2) OR SHALL BE PERFORMED UNDER SPECIAL INSPECTION WITH SUCH INSPECTION AT THE FABRICATOR'S EXPENSE. SUBMIT EVIDENCE OF CERTIFICATION PRIOR TO COMMENCING FABRICATION.
- F. STEEL TO STEEL CONNECTIONS - A325 BOLTS SHALL BE INSTALLED "SNUG-TIGHT" PER RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS" AND COMMENTARY WITH PERIODIC INSPECTION PER SECTION 1704.3.3. STEEL TO WOOD CONNECTIONS - ASTM A307 BOLTS TO BE USED.
- H. MAXIMUM FILLET WELDS SIZE SHALL BE 1/16" LESS THAN MATERIAL THICKNESS IF THICKNESS IS 1/4" OR LARGER, 3/16" SHALL BE USED ON MATERIAL 3/16" THICK
- I. FABRICATOR TO HAND CLEAN THE STEEL OF LOOSE RUST, LOOSE MILL SCALE, DIRT, AND OTHER FOREIGN MATTER PRIOR TO PAINTING BY MEANS OF WIRE BRUSHING, OR OTHER MEANS TO MEET REQUIREMENTS OF SSPC-SP2.
- J. ALL STEEL SHALL BE SHOP PRIMED PRIOR TO SHIPMENT TO SITE. CONNECTIONS SHALL BE FIELD PRIMED AFTER WELDING AND/OR BOLTING. UNLESS OTHERWISE NOTED, PAINT IS TO BE APPLIED BY BRUSH, SPRAY, ROLLER COATING, FLOW COATING, OR DIPPING WITH STANDARD PRIMER.
- K. CONTRACTORS RESPONSIBILITY TO PROVIDE TOUCH-UP OF ABRASIONS CAUSED BY FIELD HANDLING.
- L. PAINT IS NOT REQUIRED ON EMBEDDED STEEL
- M. NO CUTTING, DRILLING, OR OTHER ALTERATION OF STEEL FRAMEWORK IS PERMITTED EITHER TO ACCOMMODATE OTHER TRADES OR TO REPAIR MISALIGNMENTS. CONTACT ENGINEERS FOR ANY FIELD REVISIONS OR REPAIRS.

METAL DECK

- A. REFERENCE STANDARDS (CURRENT EDITION)
  - 1. SDI "SPECIFICATIONS AND COMMENTARY FOR STEEL DECK" AND "SPECIFICATIONS AND COMMENTARY FOR COMPOSITE STEEL DECK".
  - 2. SDI "CODE OF RECOMMENDED STANDARD PRACTICE".
  - 3. AISI "SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".
  - 4. AWS D1.3 "STRUCTURAL WELDING CODE-SHEET STEEL".
- B. DECK STRUCTURAL PROPERTIES
  - 1. FLOOR DECK: VULCRAF 3VL-36 18GA
    - a. YIELD STRENGTH = 50 KSI MIN
    - b. I<sub>y</sub> = 1.253 IN<sup>4</sup>/FT MIN
    - c. I<sub>x</sub> = 2.529 IN<sup>4</sup>/FT MIN
    - d. S<sub>xx</sub> = 0.761 IN<sup>3</sup>/FT MIN
    - e. S<sub>yy</sub> = 0.794 IN<sup>3</sup>/FT MIN
- C. ALL DECK TO BE GALVANIZED IN ACCORDANCE WITH ASTM A653 COATING CLASS G60. REPAIR DAMAGED COATING.
- D. WHERE POSSIBLE, LAYOUT METAL DECK TO SPAN AT LEAST THREE SPANS CONTINUOUSLY. TERMINATE ENDS OVER SUPPORTS EXCEPT AT OPENINGS OR BUILDING EDGES WHERE METAL DECKS MAY BE CANTILEVERED AS SHOWN IN THE STRUCTURAL DRAWINGS.
- E. PROVIDE 2 INCH MINIMUM BEARING AT ALL SUPPORTS. END LAPS OF METAL DECK SHALL ONLY OCCUR OVER SUPPORTS AND BE A MINIMUM OF 2 INCHES. DECK SHALL BE LAID OUT SUCH THAT A LOW FLUTE FALLS ON EACH PARALLEL SUPPORT.
- F. SECURE FLOOR METAL DECK TO THE STEEL FRAMEWORK AND TOGETHER AS SHOWN ON THE STRUCTURAL DRAWINGS.
- G. ALTERNATIVES TO TYPES OF DECK AND FASTENING MAY BE USED WITH THE APPROVAL OF THE EOR. DECK PROPERTIES SHALL BE EQUAL TO OR GREATER THAN THOSE SHOWN ABOVE. ANY DECK OR METHOD OF FASTENING SHALL HAVE AN EVALUATION REPORT APPROVING THE DECK FOR THE APPLICATION.

4 METAL DECK NOTES

COLD-FORMED STRUCTURAL FRAMING

- A. QUALITY ASSURANCE:
  - 1. THE STRUCTURAL FRAMING AND ITS INSTALLATION SHALL MEET THE FOLLOWING STANDARDS: AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
  - 2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARD C-955- STANDARD SPECIFICATION FOR LOAD BEARING (TRANSVERSE AND AXIAL) STEEL STUDS, RUNNERS (TRACKS), AND BRACING OR BRIDGING FOR SCREW APPLICATION OF GYPSUM BOARD AND METAL PLASTER BASES.
  - 3. ASTM STANDARD C-1007 - STANDARD SPECIFICATION FOR INSTALLATION OF LOAD BEARING (TRANSVERSE AND AXIAL) STEEL STUDS AND RELATED ACCESSORIES.
- B. STRUCTURAL PROPERTIES:
  - 1. STRUCTURAL FRAMING STUD, JOIST AND TRACK PROPERTIES SHALL BE AS PUBLISHED BY CLARK STEEL FRAMING.
  - 2. EQUIVALENCY SHALL BE DETERMINED BY PUBLISHED DIMENSIONAL AND STRUCTURAL PROPERTIES INCLUDING, BUT NOT LIMITED TO, SECTION DEPTH, FLANGE SIZE, LIP SIZE, UNCOATED STEEL THICKNESS, GROSS AREA, GROSS I<sub>x</sub>, AND GROSS S<sub>x</sub>.
- C. MATERIALS:
  - 1. THE COLD-FORMED STRUCTURAL FRAMING SHALL BE MANUFACTURED FROM STRUCTURAL QUALITY STEEL HAVING MINIMUM YIELD STRENGTH OF 33 KSI (230 MPa), FOR ALL GAUGES, OR OPTIONAL 50 KSI (345 MPa) FOR 54 MIL AND HEAVIER AND HAVE MINIMUM PROTECTIVE COATING EQUAL TO G-60 GALVANIZED FINISH.
  - 2. THE STEEL SHALL CONFORM TO ONE OF THE FOLLOWING ASTM STANDARDS: ASTM A-653, ASTM A-875, ASTM A- 792 OR ASTM A-463, 2.3.2
  - 3. THE STRUCTURAL FRAMING SHALL MEET ASTM C-955, HAVE ENGINEERING PROPERTIES CALCULATED IN CONFORMANCE WITH THE AISI "SPECIFICATION FOR THE DESIGN OF COLDFORMED STRUCTURAL STEEL MEMBERS" AND HAVE MINIMUM PROPERTIES AS PUBLISHED BY CLARK STEEL FRAMING.
  - 4. ALL STRUCTURAL FRAMING ACCESSORIES SHALL BE FORMED FROM STRUCTURAL QUALITY STEEL WITH MINIMUM YIELD STRENGTH OF 33 KSI (230 MPa) AND HAVE MINIMUM PROTECTIVE COATING EQUAL TO G-60 GALVANIZED FINISH.
- D. FASTENING:
  - 1. FASTENING OF THE COLD-FORMED STRUCTURAL FRAMING SYSTEM SHALL BE ACCOMPLISHED BY SCREWING, POWER FASTENED FASTENERS, WELDING OR A COMBINATION OF METHODS. THE TYPE, SIZE AND SPACING OF THE FASTENERS SHALL BE AS REQUIRED BY THE CONTRACT DOCUMENTS OR APPROVED CONNECTION DETAILS.
  - 2. SLIP CONNECTIONS, ALLOWING FOR VERTICAL MOVEMENT OF THE STRUCTURE WITHOUT APPLYING AXIAL LOAD TO THE STRUCTURAL FRAMING, SHALL BE AS REQUIRED PER THE CONTRACT DOCUMENTS OR APPROVED CONNECTION DETAILS.
- E. WALL FRAMING:
  - 1. THE STRUCTURAL FRAMING MEMBERS SHALL BE SIZED, SPACED AND ERECTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR APPROVED SHOP DRAWINGS.
  - 2. THE STRUCTURAL FRAMING SHALL HAVE ENDS SQUARELY CUT BY SHEARING OR SAWING, BE INSTALLED PLUMB, SQUARE, TRUE TO LINE AND SECURELY FASTENED PER THE CONTRACT DOCUMENTS OR APPROVED CONNECTION DETAILS.
  - 3. COLD-FORMED TRACKS, WHEN SET TO ADJACENT STRUCTURES, SHALL HAVE WEB CONTACT WITH A UNIFORM AND LEVEL BEARING SURFACE AND BE SECURELY ANCHORED WITH FASTENERS, SIZED AND SPACED PER THE CONTRACT DOCUMENTS OR APPROVED CONNECTION DETAILS.
  - 4. BRACING OF STRUCTURAL FRAMING RESISTING WIND (TRANSVERSE) LOADING ONLY, (NON-AXIAL LOADED):
    - a. ATTACH WALL SHEATHING TO BOTH SIDES OF THE STUDS.
    - b. COLD ROLLED CHANNEL, RUN HORIZONTALLY THROUGH THE STUD PUNCHOUTS AND ATTACHED AT EACH STUD SPACED AT A MAXIMUM OF 6'-0" O.C. THROUGHOUT THE HEIGHT OF THE STUDS.
    - c. A 2" WIDE STEEL STRAP, RUN HORIZONTALLY ON THE EXPOSED FLANGES AND ATTACHED TO EACH SIDE OF EACH STUD SPACED AT A MAXIMUM OF 6'-0" O.C., THROUGHOUT THE HEIGHT OF THE STUDS.
  - 5. BRACING OF AXIAL LOADED STRUCTURAL FRAMING:
    - a. ATTACH WALL SHEATHING TO BOTH SIDES OF THE STUDS.
    - b. COLD ROLLED CHANNEL, RUN HORIZONTALLY THROUGH THE STUD PUNCHOUTS AND ATTACHED AT EACH STUD SPACED AT A MAXIMUM OF 4'-0" O.C. THROUGHOUT THE HEIGHT OF THE STUDS.
    - c. A 2" WIDE STEEL STRAP, RUN HORIZONTALLY ON THE EXPOSED FLANGES AND ATTACHED TO EACH SIDE OF EACH STUD SPACED AT A MAXIMUM OF 4'-0" O.C., THROUGHOUT THE HEIGHT OF THE STUDS.
  - 6. AXIAL LOADED STUDS ARE NOT PERMITTED TO HAVE SPLICES OR CUTOUTS IN THE FLANGES.
  - 7. FRAMING OF WALL OPENINGS SHALL INCLUDE JACK STUDS, HEADERS, CRIPPLES, SILL PLATES AND JAMB STUDS AS PER THE CONTRACT DOCUMENTS OR APPROVED SHOP DRAWINGS.
  - 8. TEMPORARY BRACING OF THE STRUCTURAL FRAMING SHALL BE PROVIDED AS REQUIRED AND REMOVED ONLY AFTER THE FRAMING HAS BEEN SECURED WITH PERMANENT SUPPORT.
  - 9. WHEN STRUCTURAL FRAMING WILL BE USED IN AN INSULATED WALL AND BE FASTENED INTO BOXED JAMB STUDS, BOX HEADERS OR OTHER ASSEMBLIES WHICH FORM VOIDS THAT WILL BE INACCESSIBLE TO THE INSULATION CONTRACTOR THE FRAMING CONTRACTOR SHALL BE RESPONSIBLE FOR FILLING THESE VOIDS, WITH A SUITABLE INSULATION, PRIOR TO ASSEMBLY.

5 COLD-FORMED STEEL FRAMING NOTES

SOILS AND FOUNDATIONS

SOIL CONDITIONS FOR FOUNDATION DESIGN ARE BASED ON ALLIED ENGINEERING'S GEOTECHNICAL MEMO FOR THIS SITE (OPTION 1), DATED OCTOBER 16, 2024. THE INFORMATION BELOW IS PROVIDED AS GENERAL GUIDELINES. THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL MEMO PRIOR TO COMMENCING CONSTRUCTION TO ENSURE THAT ITS RECOMMENDATIONS ARE UNDERSTOOD AND MET.

- A. FILL REQUIREMENTS:
  - 1. USE STRUCTURAL FILL APPROVED BY GEOTECHNICAL ENGINEER.
- B. CONSTRUCTION MATERIALS:
  - 1. VAPOR BARRIER:
    - a. 15 MIL WR MEADOWS PERMINATOR, STEGO INDUSTRIES STEGO WRAP CLASS A OR APPROVED EQUAL.
    - b. ALL SEAMS SHALL BE OVERLAPPED & SEALED WITH MANUFACTURER APPROVED TAPE. ALL PROTRUSIONS & PENETRATIONS SHALL BE SEALED. HOLES SHALL BE REPAIRED.
    - c. SEAL THE VAPOR BARRIER TO THE VERTICAL FACE OF THE STEM WALL WITH THE MANUFACTURER RECOMMENDED ATTACHMENT DETAIL.
    - d. INSTALLATION SHALL MEET ASTM E 1643-C STANDARD PRACTICE FOR INSTALLATION OF VAPOR RETARDER USED IN CONTACT WITH EARTH OR FILL UNDER CONCRETE SLAB.
    - e. SUBSTITUTIONS SHALL BE SUBMITTED FOR APPROVAL.
  - 2. DAMPROOFING:
    - a. BASF MASTERSEAL 615 COLD APPLIED WATER BASED REINFORCED EMULSIFIED ASPHALTIC DAMPROOFING OR APPROVED EQUAL.
    - b. DAMPROOFING SHALL BE APPLIED BY BRUSH, ROLLER, OR SPRAY WITH THE PROPER EQUIPMENT PER MANUFACTURER RECOMMENDATIONS.
    - c. MATERIALS AND INSTALLATION SHALL MEET ASTM D 1227, TYPE 2, CLASS 1, AND ASTM D 1187, TYPE 1
  - 3. FOUNDATION & SLAB INSULATION:
    - a. USE DOW CHEMICAL BUILDING PRODUCT OR APPROVED EQUAL
    - b. VERTICAL SLAB INSULATION
      - EXTERIOR APPLICATION - STYROFOAM BRAND PERIMATE INSULATION WITH A MINIMUM COMPRESSIVE STRENGTH OF 30 PSI. EXPOSED INSULATION SHALL BE PROTECTED DURING CONSTRUCTION AND COVERED WITH METAL FLASHING AS SHOWN.
      - (i) INTERIOR APPLICATION - STYROFOAM BRAND EXTRUDED POLYSTYRENE FOAM SQUARE EDGE INSULATION
    - c. HORIZONTAL INSULATION
      - SUB SLABS NOT SUBJECT TO VEHICLE TRAFFIC STYROFOAM BRAND EXTRUDED POLYSTYRENE FOAM SQUARE EDGE INSULATION W/ MIN COMPRESSIVE STRENGTH OF 25 PSI.
- C. SITE PREPARATION:
  - 1. SITE PREPARATION SHALL BE PER THE GEOTECHNICAL REPORT.
  - 2. THE STABILITY OF CONSTRUCTION EXCAVATIONS AND ASSOCIATED WORKER SAFETY ARE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH CURRENT OSHA REGULATIONS.
    - a. THIS RESPONSIBILITY MAY REQUIRE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER BASED ON THE PREDOMINANT SOIL TYPES ENCOUNTERED.
    - b. ACTUAL SUBSURFACE CONDITIONS AT THE TIME OF EXCAVATION SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO DETERMINE WHETHER SLOPE FLATTENING, BRACING OR OTHER STABILIZATION IS NECESSARY DUE TO SEEPAGE OR OTHER UNEXPECTED CONDITIONS.
- D. FOUNDATION & SLAB PREPARATION:
  - 1. CONTINUOUS WALL AND SPREAD FOOTING FOUNDATIONS SHALL BE ESTABLISHED ON SOILS AS OUTLINED PER THE GEOTECHNICAL REPORT.
  - 2. FROST PROTECTION:
    - a. ALL INTERIOR FOOTINGS SHALL BE EMBEDDED A MINIMUM OF 1.0 FEET BELOW FINISHED INTERIOR SURFACES.
  - 3. INTERIOR SLAB PREPARATION:
    - a. INTERIOR SLABS SHALL BE ESTABLISHED ON FILL AS OUTLINED PER THE GEOTECHNICAL REPORT.

6 SOILS & GEOTECHNICAL NOTES

HELICAL PILE

- A. HELICAL PILE SHALL BE DESIGNED IN ACCORDANCE WITH THE HELICAL PILE PROVISIONS OF THE 2021 INTERNATIONAL BUILDING CODE FOR THE FOLLOWING ASD LOADS LISTED ON PROJECT DRAWINGS.
- B. LATERAL DEFLECTION OF PILES AT THE PILE HEAD SHALL NOT EXCEED 1/2".
- C. THE HELICAL PILE DESIGN ENGINEER SHALL SUBMIT A SIGNED AND SEALED CALCULATION PACKAGE INDICATING THE CAPACITY OF HELICAL PILES. THE CALCULATION PACKAGE SHALL INCLUDE SHOP DRAWINGS INDICATING THE MATERIALS, LEAD CONFIGURATION, AND CAP DETAILS FOR THE PILES.
- D. PILES SHALL BE INSTALLED TO A MINIMUM TORQUE VALUE PROVIDED BY THE HELICAL PILE DESIGN ENGINEER, BUT NOT LESS THAN 3,000 FT LBS.
- E. HELICAL PILES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
- F. PILE DESIGN SHALL ACCOUNT FOR POTENTIAL CORROSION OF THE PILE SHAFT BASED ON THE SOIL PROPERTIES IN THE PROJECT GEOTECHNICAL ENGINEERING REPORT.
- G. AN INSTALLATION LOG SHALL BE KEPT INDICATING THE PILE MATERIAL INSTALLED, FINAL BEARING DEPTH, AND FINAL INSTALLATION TORQUE FOR EACH PILE. UPON COMPLETION OF INSTALLATION, THE LOG SHALL BE SUBMITTED TO THE ENGINEER OF RECORD.

7 HELICAL PILE NOTES

1" = 1'-0"

NON SHRINK GROUT

- A. A. NON-SHRINK CEMENTITIOUS GROUT SHALL BE A FLOWABLE, PRE-PACKAGED, CEMENT-BASED GROUT REQUIRING ONLY THE ADDITION OF POTABLE WATER. THE GROUT SHALL NOT CONTAIN METALLIC AGGREGATE, EXPANSIVE CEMENT, OR GAS GENERATING ADDITIVES SUCH AS ALUMINUM POWDER. THE GROUT SHALL CONTAIN AN AIR RELEASE AGGREGATE TO GENERATE POSITIVE EXPANSION.
- B. THE GROUT MATERIAL SHALL MEET ALL THE FOLLOWING TYPICAL PERFORMANCE CRITERIA WHEN CURED AT 70°F (21°C):
  - 1. COMPRESSIVE STRENGTH, ASTM C942 (C109 RESTRAINED)
    - a. 1 DAY 2,500 PSI
    - b. 28 DAYS 6500PSI
  - 2. Early Height Change, ASTM C827 0.0 - 4.0%
  - 3. Hardened Height Change, ASTM C1090 0.0 - 0.3%
  - 4. Effective Bearing Area (EBA), ASTM C1339 95%
  - 5. Bond Strength, ASTM C882, 28 days 2,000 psi (13.8 MPa)
  - 6. Working Time 45 minutes
  - 7. Heat Placement Depth 3 inch – 6 inches (25 mm – 150 mm)
  - 8. Application Temperature 40°F - 95°F (4°C - 35°C)
  - 9. Meet performance requirements of ASTM C1107-02, Grades A, B and C, ASTM C1107/C1107M-20, CRD-C 621-93
- D. An acceptable product which meets these criteria is: Five Star® Grout as manufactured by Five Star Products, Inc., Shelton, CT (203-336-7900).
- E. D. The grout shall be installed in accordance with the grout manufacturer's installation instructions. Any deviations to the grout manufacturer's handling, mixing, and/or installation instructions that are required shall be approved in advance by the project engineer and/or the project manager.
- F.
- G.

8 NON-SHRINK GROUT NOTES

1" = 1'-0"

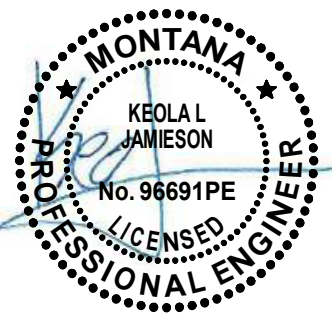
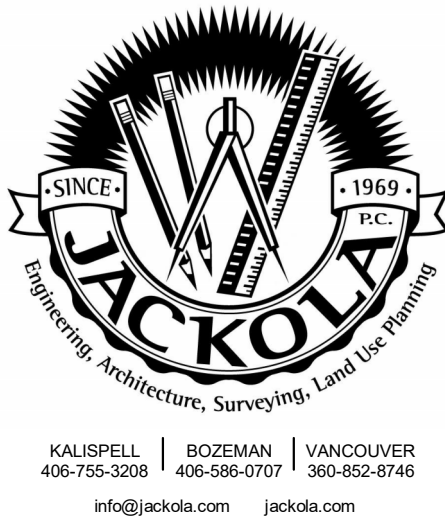
SUBMITTALS

SUBMITTALS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD (EOR) FOR REVIEW. ALLOW 7-14 DAYS FOR REVIEW BY THE EOR.

- A. SUBMIT MIX DESIGNS FOR:
  - 1. CAST-IN-PLACE CONCRETE
- B. SUBMIT SHOP DRAWINGS FOR:
  - 1. STRUCTURAL STEEL
  - 2. METAL DECK
  - 3. HELICAL PILES
- C. DEFERRED SUBMITTALS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AND FORWARDED TO THE BUILDING OFFICIAL FOR REVIEW PRIOR TO FABRICATION IN ACCORDANCE WITH IBC 107.3.4.1. SUBMIT SHOP DRAWINGS AND CALCULATIONS, STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MONTANA, FOR:
  - 1. HELICAL PILES

9 LIST OF SUBMITTALS

ENTIRE SHEET IS ADD ALTERNATE #1



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ROBERTS HALL  
MONTANA STATE UNIVERSITY  
ROOM #101 & LEVEL 1 RESTROOM  
PPA#: 23-0828

DRAWN: MES CHECKED: KLJ

DATE: 11/19/2024

REVISIONS:

STRUCTURAL NOTES

S-002



**STATEMENT OF SPECIAL INSPECTIONS & STRUCTURAL OBSERVATIONS**

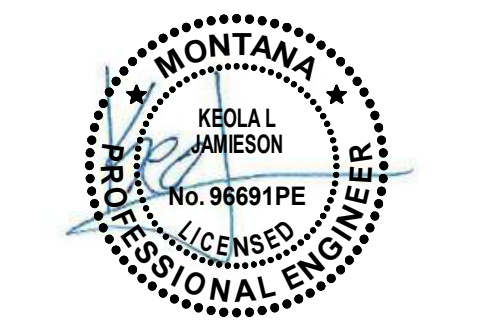
- A. SPECIAL INSPECTIONS SHALL BE COMPLETED BY AN APPROVED INDEPENDENT AGENCY EMPLOYED BY THE OWNER. THE STRUCTURAL OBSERVATIONS SHALL BE COMPLETED BY THE ENGINEER OF RECORD (EOR) OR A REGISTERED DESIGN PROFESSIONAL AS OUTLINED BELOW.
- B. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE SITE & MANLIFTS &/OR SAFETY EQUIPMENT REQUIRED FOR ACCESS TO THE PARTICULAR INSPECTION LOCATION. THE CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE IN ADVANCE FOR THE INSPECTIONS AND OBSERVATIONS TO BE COMPLETED.
- C. SPECIAL INSPECTIONS SHALL BE COMPLETED TO SECTION 1705 OF THE 2021 INTERNATIONAL BUILDING CODE.
- D. SPECIAL INSPECTORS SHALL SUBMIT A STATEMENT OF THEIR ACCREDITATION TO THE ARCHITECT AND THE BUILDING OFFICIAL.
- E. THE APPROVED SPECIAL INSPECTORS AND STRUCTURAL OBSERVERS SHALL COMPLETE A STATEMENT OF SPECIAL INSPECTIONS FOR THEIR SCOPE OF WORK.
- F. PRIOR TO COMMENCEMENT OF THE CONSTRUCTION A MEETING WITH THE BUILDING OFFICIAL, OWNER, ARCHITECT, EOR, CONTRACTOR AND SPECIAL INSPECTOR AGENCY(IES) SHALL BE COMPLETED TO REVIEW THE SCOPE AND THE STATEMENT(S) OF SPECIAL INSPECTIONS.
- G. SPECIAL INSPECTOR DUTIES
  1. OBSERVE AND OR TEST THE WORK FOR COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
  2. NOTIFY THE CONTRACTOR OF ALL DISCREPANCIES AND NOTED IN THE INSPECTION REPORTS.
  3. INSPECTION AND OBSERVATION REPORTS SHALL BE COMPLETED & SUBMITTED TO THE BUILDING OFFICIAL, ARCHITECT, ENGINEER AND CONTRACTOR. INSPECTION AGENCY SHALL SUBMIT A REPORT THAT ALL WORK REQUIRING SPECIAL INSPECTIONS WAS INSPECTED AND IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL DISCREPANCIES NOTED IN THE INSPECTION REPORTS HAVE BEEN CORRECTED.
- H. SPECIAL INSPECTIONS OF POST INSTALLED ANCHORS SHALL MEET THE REQUIREMENT OF THE APPROVED ICC-ES REPORT FOR THE PRODUCT.

| ITEM | FREQUENCY  | BY                    | NOTES   |
|------|------------|-----------------------|---|
| 1    | CONTINUOUS | GEOTECHNICAL ENGINEER | VERIFY INSTALLATION EQUIPMENT USED, PILE DIMENSIONS, TIP ELEVATIONS, FINAL DEPTH, AND FINAL INSTALLATION TORQUE |

| ITEM | FREQUENCY  | BY                | NOTES   |
|------|------------|-------------------|---|
| 1    | PERIODIC   | SPECIAL INSPECTOR | INSPECTION OF REINFORCEMENT AND VERIFY PLACEMENT.   |
| 2    | PERIODIC   | SPECIAL INSPECTOR | INSPECTION OF ANCHORS CAST IN CONCRETE.   |
| 3    | CONTINUOUS | SPECIAL INSPECTOR | INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE.  |
| 4    | PERIODIC   | SPECIAL INSPECTOR | VERIFY USE OF REQUIRED MIX DESIGN.  |
| 5A   | CONTINUOUS | SPECIAL INSPECTOR | PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.  |
| 5B   | CONTINUOUS | SPECIAL INSPECTOR | A. A MINIMUM OF (5) STRENGTH TESTS SHALL BE COMPLETED FOR EACH PROJECT. STRENGTH TESTS ARE NOT REQUIRED IF TOTAL QUANTITY OF CONCRETE IS LESS THAN 50 YDS. PROVIDED EVIDENCE OF SATISFACTORY STRENGTH IS PROVIDED TO THE EOR & BUILDING OFFICIAL.<br>B. NOT LESS THAN ONE FOR EACH 150 YDS PLACED EACH DAY.<br>C. NOT LESS THAN ONE FOR EACH 5,000 SF OF SLAB OR WALL PLACED EACH DAY.<br>IF THE TOTAL REQUIRED TESTS PER 2 & 3 WILL RESULT IN LESS THAN (5) TESTS, ADDITIONAL BATCHES OF CONCRETE SHALL BE SAMPLED TO ENSURE THE MINIMUM IS MET. |
| 6    | PERIODIC   | SPECIAL INSPECTOR | INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.  |
| 7    | PERIODIC   | SPECIAL INSPECTOR | INSPECTION OF FORMWORK FOR SHAPE, LOCATIONS AND DIMENSIONS  |

| ITEM | NOTES  |   |
|------|--|---|
| 1    | FABRICATOR QUALITY CONTROL   | FABRICATOR QUALITY CONTROL SHALL BE COMPLETED BASED ON THE MINIMUM REQUIREMENT OF CHAPTER N OF AISC 360. FABRICATED STEEL SHALL BE INSPECTED TO VERIFY COMPLIANCE WITH THE DETAILS ON THE SHOP DRAWINGS |
| 2    | VISUAL INSPECTION TASKS PRIOR TO WELDING   | ERECTOR'S QUALITY CONTROL      QUALITY ASSURANCE  |
| A    | MATERIAL IDENTIFICATION (TYPE/GRADE)   | OBSERVE      OBSERVE  |
| B    | WELDER IDENTIFICATION SYSTEM   | OBSERVE      OBSERVE  |
| C    | FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)  |   |
| 1    | JOINT PREPARATION  | PERFORM & OBSERVE      OBSERVE  |
| 2    | DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)   | PERFORM & OBSERVE      OBSERVE  |
| 3    | CLEANLINESS (CONDITION OF STEEL SURFACES)  | PERFORM & OBSERVE      OBSERVE  |
| 4    | TACKING (TACK WELD QUALITY AND LOCATION)   | PERFORM & OBSERVE      OBSERVE  |
| 5    | BACKING TYPE AND FIT (IF APPLICABLE)   | PERFORM & OBSERVE      OBSERVE  |
| D    | CONFIGURATION AND FINISH OF ACCESS HOLES   | OBSERVE      OBSERVE  |
| E    | FIT-UP OF FILLET WELDS   |   |
| 1    | DIMENSIONS (ALIGNMENT, GAPS AT ROOT)   | PERFORM & OBSERVE      OBSERVE  |
| 2    | CLEANLINESS (CONDITION OF STEEL SURFACES)  | PERFORM & OBSERVE      OBSERVE  |
| 3    | TACKING (TACK WELD QUALITY AND LOCATION)   | PERFORM & OBSERVE      OBSERVE  |
| 3    | VISUAL INSPECTION TASKS DURING WELDING   |   |
| A    | WPS FOLLOWED   |   |
| 1    | SETTINGS ON WELDING EQUIPMENT  | OBSERVE      OBSERVE  |
| 2    | TRAVEL SPEED   | OBSERVE      OBSERVE  |
| 3    | SELECTED WELDING MATERIALS   | OBSERVE      OBSERVE  |
| 4    | SHIELDING GAS TYPE/FLOW RATE   | OBSERVE      OBSERVE  |
| 5    | PREHEAT APPLIED  | OBSERVE      OBSERVE  |
| 6    | INTERPASS TEMPERATURE MAINTAINED (MIN/MAX)   | OBSERVE      OBSERVE  |
| 7    | PROPER POSITION (F, V, H, OH)  | OBSERVE      OBSERVE  |
| 8    | INTERMIX OF FILLER METALS AVOIDED UNLESS APPROVED  | OBSERVE      OBSERVE  |
| B    | USE OF QUALIFIED WELDERS   | OBSERVE      OBSERVE  |
| C    | CONTROL AND HANDLING OF WELDING CONSUMABLES  |   |
| 1    | PACKAGING  | OBSERVE      OBSERVE  |
| 2    | EXPOSURE CONTROL   | OBSERVE      OBSERVE  |
| D    | ENVIRONMENTAL CONDITIONS   |   |
| 1    | WIND SPEED WITHIN LIMITS   | OBSERVE      OBSERVE  |
| 2    | PRECIPITATION AND TEMPERATURE  | OBSERVE      OBSERVE  |
| E    | WELDING TECHNIQUES   |   |
| 1    | INTERPASS AND FINAL CLEANING   | OBSERVE      OBSERVE  |
| 2    | EACH PASS WITHIN PROFILE LIMITATIONS   | OBSERVE      OBSERVE  |
| 3    | EACH PASS MEETS QUALITY REQUIREMENTS   | OBSERVE      OBSERVE  |
| F    | NO WELDING OVER CRACKED TACKS  | OBSERVE      OBSERVE  |
| 4    | VISUAL INSPECTION TASKS AFTER WELDING  |   |
| A    | WELDS CLEANED  | OBSERVE      OBSERVE  |
| B    | SIZE, LENGTH, AND LOCATION OF WELDS  | PERFORM      PERFORM  |
| C    | WELDS MEET VISUAL ACCEPTANCE CRITERIA  | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 1    | CRACK PROHIBITION  | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 2    | WELD/BASE-METAL FUSION   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 3    | CRATER CROSS SECTION   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 4    | WELD PROFILES AND SIZE   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 5    | UNDERCUT   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| 6    | POROSITY   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| D    | PLACEMENT OF REINFORCING OR CONTOURING FILLET WELDS (IF REQUIRED)  | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| E    | BACKING REMOVED, WELD TABS REMOVED AND FINISHED, AND FILLET WELDS ADDED (IF REQUIRED)  | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |
| F    | REPAIR ACTIVITIES  | PERFORM      PERFORM & DOCUMENT   |
| 5    | INSPECTION TASKS PRIOR TO BOLTING  | ERECTOR'S QUALITY CONTROL      QUALITY ASSURANCE  |
| A    | PROPER FASTENERS SELECTED FOR THE JOINT DETAIL   | OBSERVE      OBSERVE  |
| B    | PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL   | OBSERVE      OBSERVE  |
| C    | CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLA PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS | OBSERVE      OBSERVE  |
| D    | PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED FOR FASTENER ASSEMBLIES AND METHODS USED                        | PERFORM & DOCUMENT      OBSERVE & DOCUMENT  |
| E    | PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS  | OBSERVE      OBSERVE  |
| 6    | INSPECTION TASKS DURING BOLTING  |   |
| A    | FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED   | OBSERVE      OBSERVE  |
| B    | JOINT BROUGHT TO THE SNUG TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION   | OBSERVE      OBSERVE  |
| C    | FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING  | OBSERVE      OBSERVE  |
| D    | BOLTS ARE PRETENSIONED PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES  | OBSERVE      OBSERVE  |
| 7    | INSPECTION TASKS AFTER BOLTING   |   |
| A    | DOCUMENT ACCEPTED AND REJECTED CONNECTIONS   | PERFORM & DOCUMENT      PERFORM & DOCUMENT  |

ON THIS PROJECT THE QUALITY ASSURANCE SHALL BE COMPLETED BY THE SPECIAL INSPECTORS. PERFORM MEANS THESE ITEMS NEED TO BE COMPLETED PRIOR TO FINAL ACCEPTANCE. OBSERVE MEANS THESE ITEMS NEED TO BE PERFORMED ON A RANDOM, DAILY BASIS.



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

DRAWN: MES      CHECKED: KLJ

DATE: 11/19/2024

REVISIONS:

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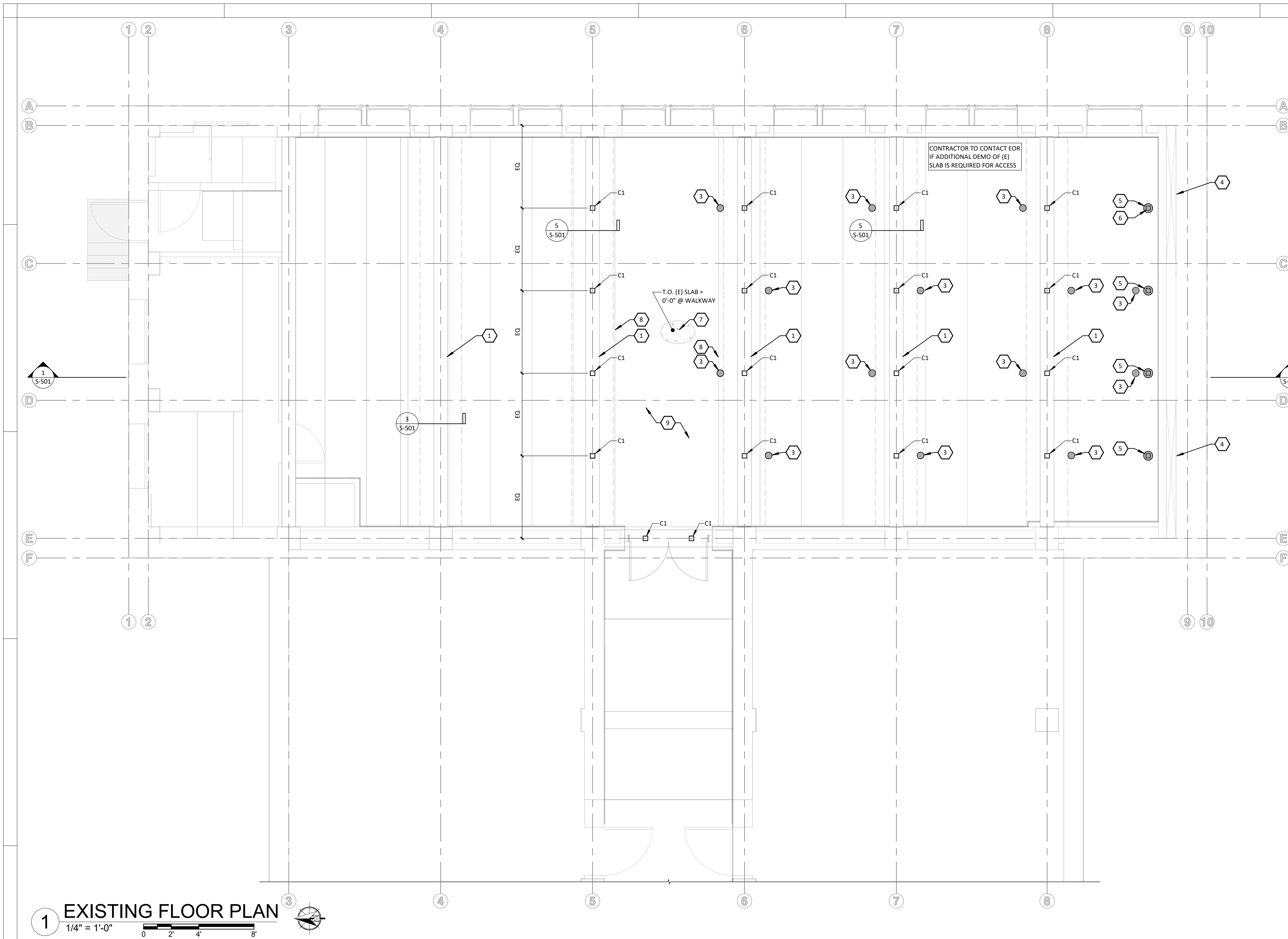
**STRUCTURAL NOTES**

ENTIRE SHEET IS ADD ALTERNATE #1

**S-003**







**1** EXISTING FLOOR PLAN  
 1/4" = 1'-0"  
 0 2 4 8'

**EXISTING FLOOR LEGEND**

|  |   |
|--|---|
|  | EXISTING CONC. "T" BEAM. FLANGES SHOWN AS DASHED LINE |
|  | NEW HOLE IN EXISTING CONC SLAB                        |

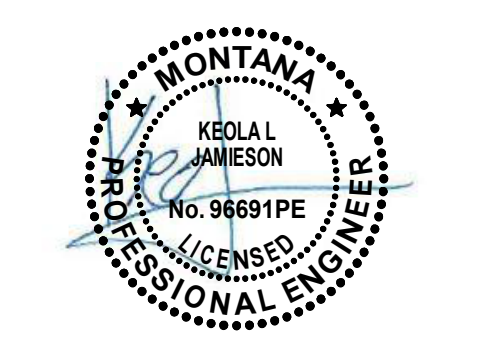
- GENERAL FOUNDATION NOTES:**
- SEE S-001-S-003 FOR DESIGN CRITERIA AND GENERAL STRUCTURAL NOTES.
  - DIMENSIONS ARE SHOWN FOR INFORMATION ONLY. LAYOUT SHOULD BE COORDINATED WITH ARCHITECTURAL PLANS.
  - DIMENSIONS ARE SHOWN TO OUTSIDE OF FRAMING AND OUTSIDE OF CONCRETE UNLESS NOTED OTHERWISE.
  - VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND ROOFS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING OR HAVING LOCATED THE BUILDING ON THE SITE AND VERIFYING ALL FOUNDATION DIMENSIONS, AND SETBACK REQUIREMENTS FROM EASEMENTS AND PROPERTY LINES WITH THE ARCHITECT PRIOR TO CONSTRUCTION.
  - COORDINATE GROUNDING ELECTRODE REQUIREMENTS WITH ELECTRICAL DRAWINGS AND CONTRACTOR.

**EXISTING FLOOR PLAN KEYNOTES**

- EXISTING CONCRETE "T" BEAM
- CUT MAX 6" DIA. HOLE IN EXISTING FLOOR SLAB FOR DRILL ACCESS. DO NOT CUT THROUGH "T" BEAM FLANGES OR CONCRETE JOISTS
- USE EXISTING OPENING FOR DRILL ACCESS IF POSSIBLE
- CUT MAX 8" DIA. HOLE IN EXISTING FLOOR SLAB FOR DRILL ACCESS. DO NOT CUT THROUGH "T" BEAM FLANGES OR CONCRETE JOISTS
- COL. CONT. FROM BLW.
- EXISTING CONC. FLOOR SLAB TO REMAIN
- EXISTING CONC. FLOOR STEP TYP.
- WHERE EXISTING CONCRETE HAS EXPOSED REBAR, REPAIR WITH FIVE STAR STRUCTURAL CONCRETE V/O (OR APPROVED EQUAL)

**COLUMN SCHEDULE**

| TAG | SIZE       | MATERIAL | NOTES |
|-----|------------|----------|-------|
| C1  | HSS4X4X1/4 | STEEL    |       |



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

DRAWN: MES CHECKED: KLJ

DATE: 11/19/2024

REVISIONS:

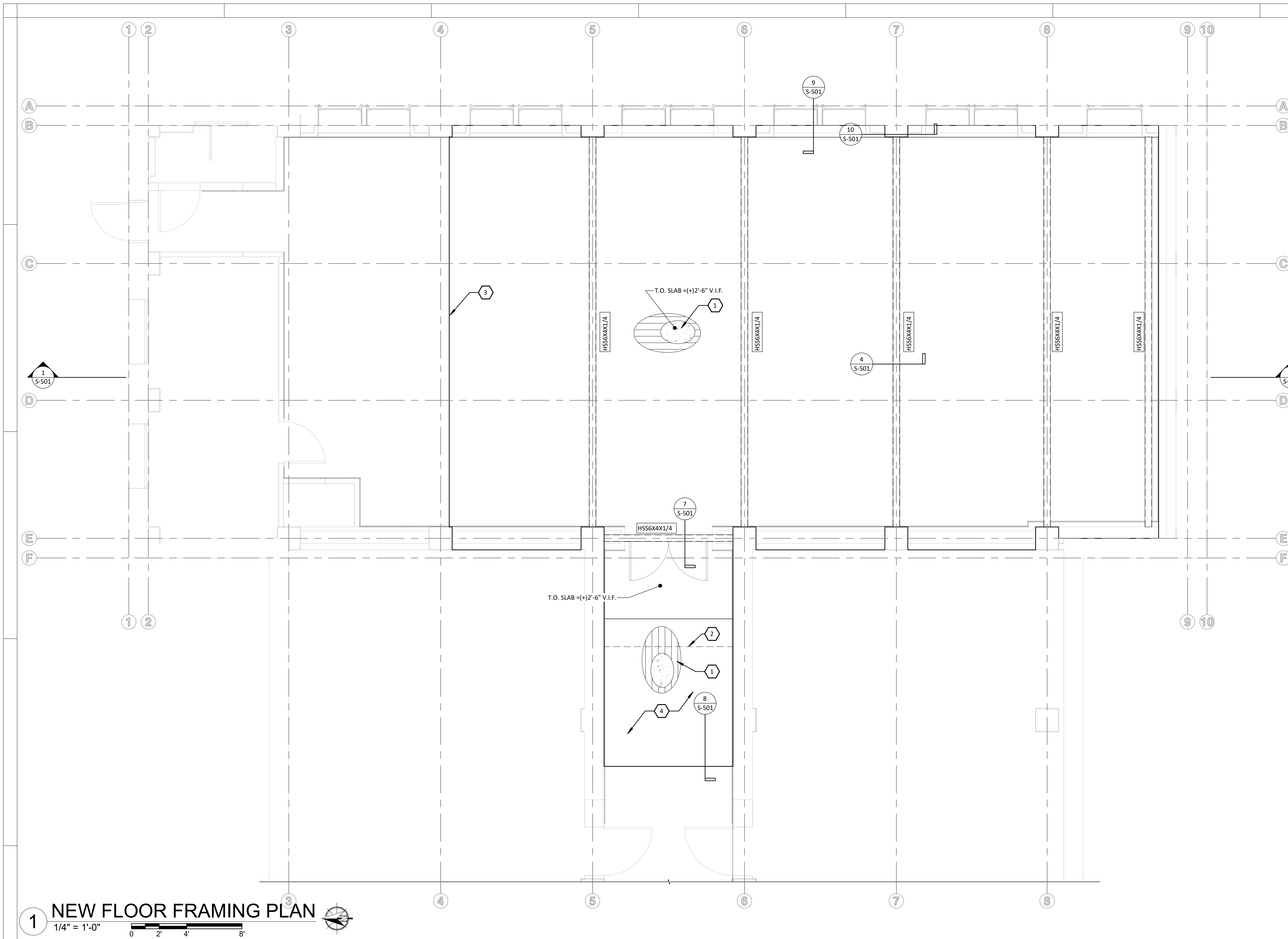
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**EXISTING FLOOR FRAMING PLAN**

ENTIRE SHEET IS ADD ALTERNATE #1

**S-112**



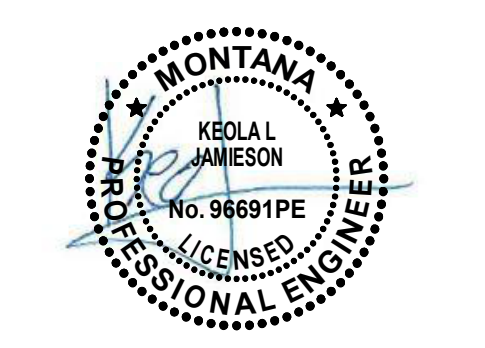
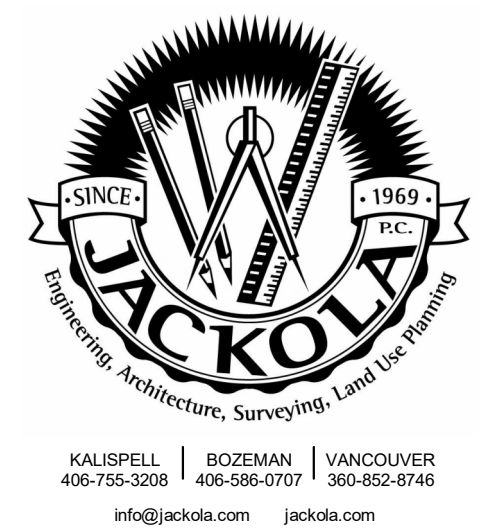


**1 NEW FLOOR FRAMING PLAN**  
 1/4" = 1'-0"  
 0 2 4 8

| FLOOR FRAMING LEGEND |               |
|----------------------|---------------|
|                      | JOIST         |
|                      | BEAM/HEADER   |
|                      | HANGER        |
|                      | INT. BRG WALL |
|                      | SHEATHING     |

**GENERAL FRAMING PLAN NOTES:**  
 A. SEE S4.10-S4.20 FOR TYPICAL WOOD FRAMING DETAILS.  
 B. SEE S0.01-S0.04 FOR DESIGN CRITERIA AND GENERAL STRUCTURAL NOTES.  
 C. SEE SHEAR PLANS FOR ADDITIONAL STRAPPING AND BLOCKING REQUIREMENTS.  
 D. DIMENSIONS ARE AS SHOWN FOR INFORMATION ONLY. LAYOUT SHOULD BE COORDINATED WITH ARCHITECTURAL PLANS.  
 E. DIMENSIONS ARE SHOWN TO OUTSIDE OF FRAMING AND OUTSIDE OF CONCRETE UNLESS NOTED OTHERWISE.  
 F. VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, FLOORS AND ROOFS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.

- FLOOR FRAMING PLAN KEYNOTES**
- 5.5" CONC SLAB ON VULCRAFT 3V1-36 18 GA METAL DECK W/ #4 @ 24" OC
  - SHORE MIDSPAN DURING CONSTRUCTION
  - EDGE OF NEW CONCRETE FLOOR SLAB
  - FLAT OR SLIGHT SLOPE. FIELD VERIFY FLOOR ELEVATIONS



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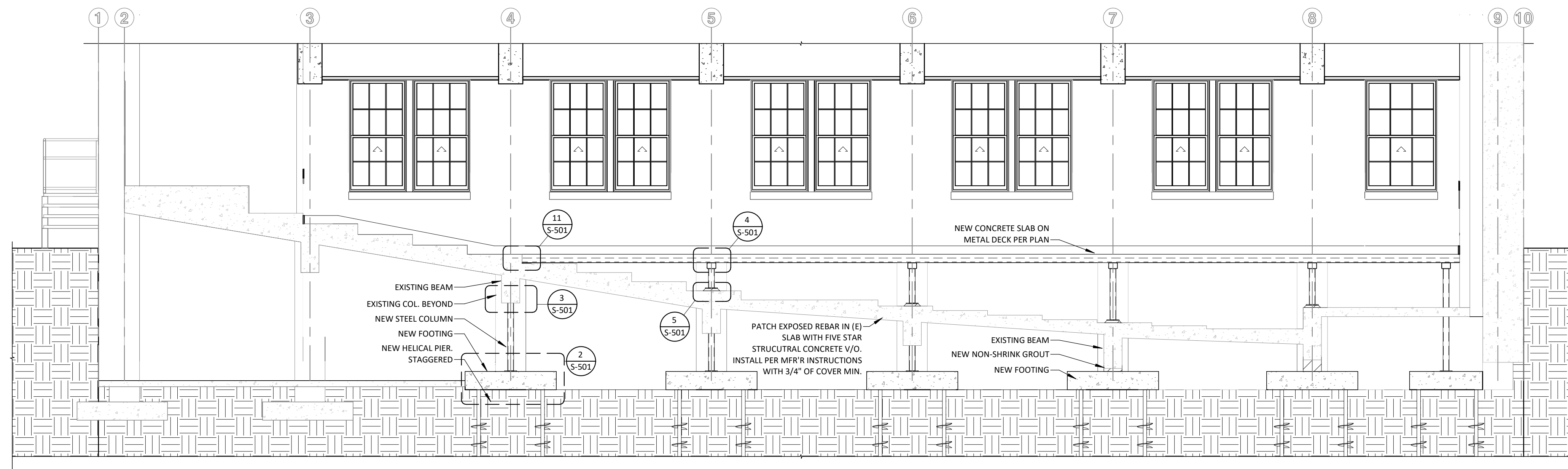
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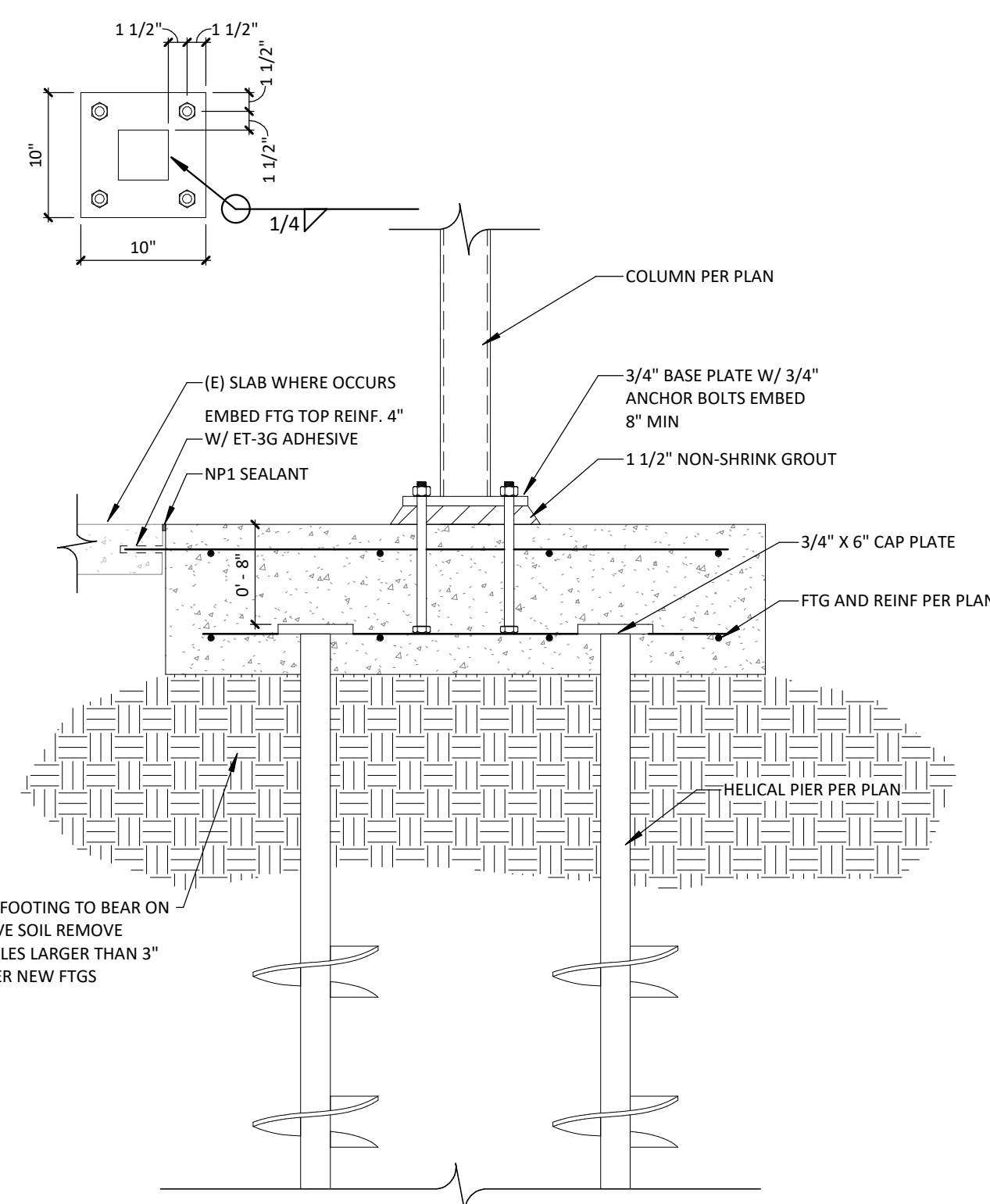
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**NEW FLOOR FRAMING PLAN**

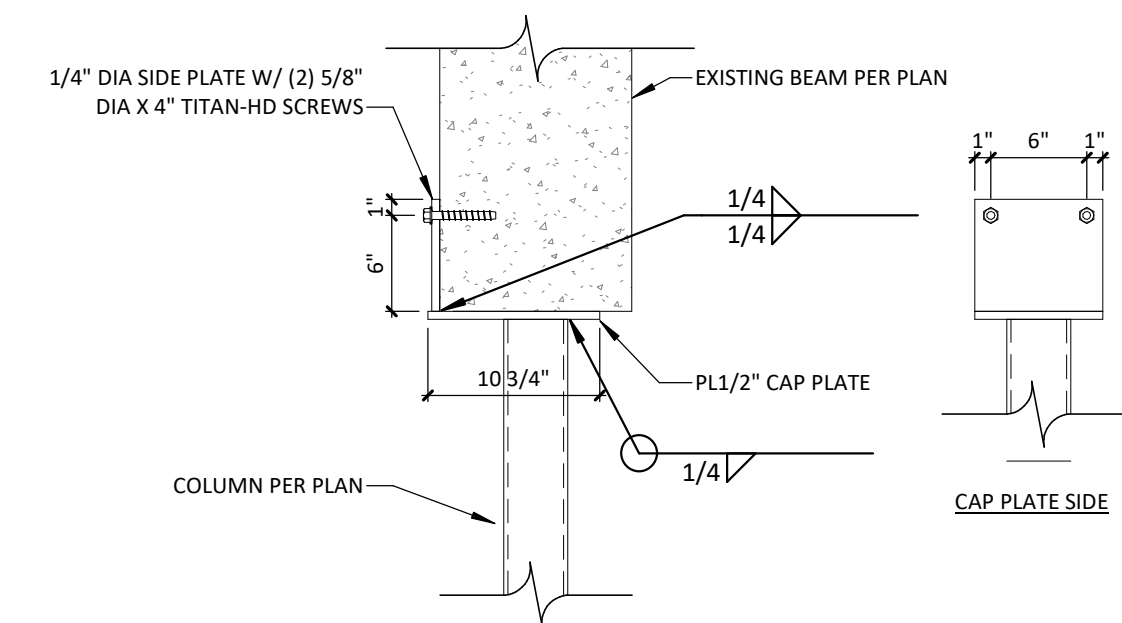
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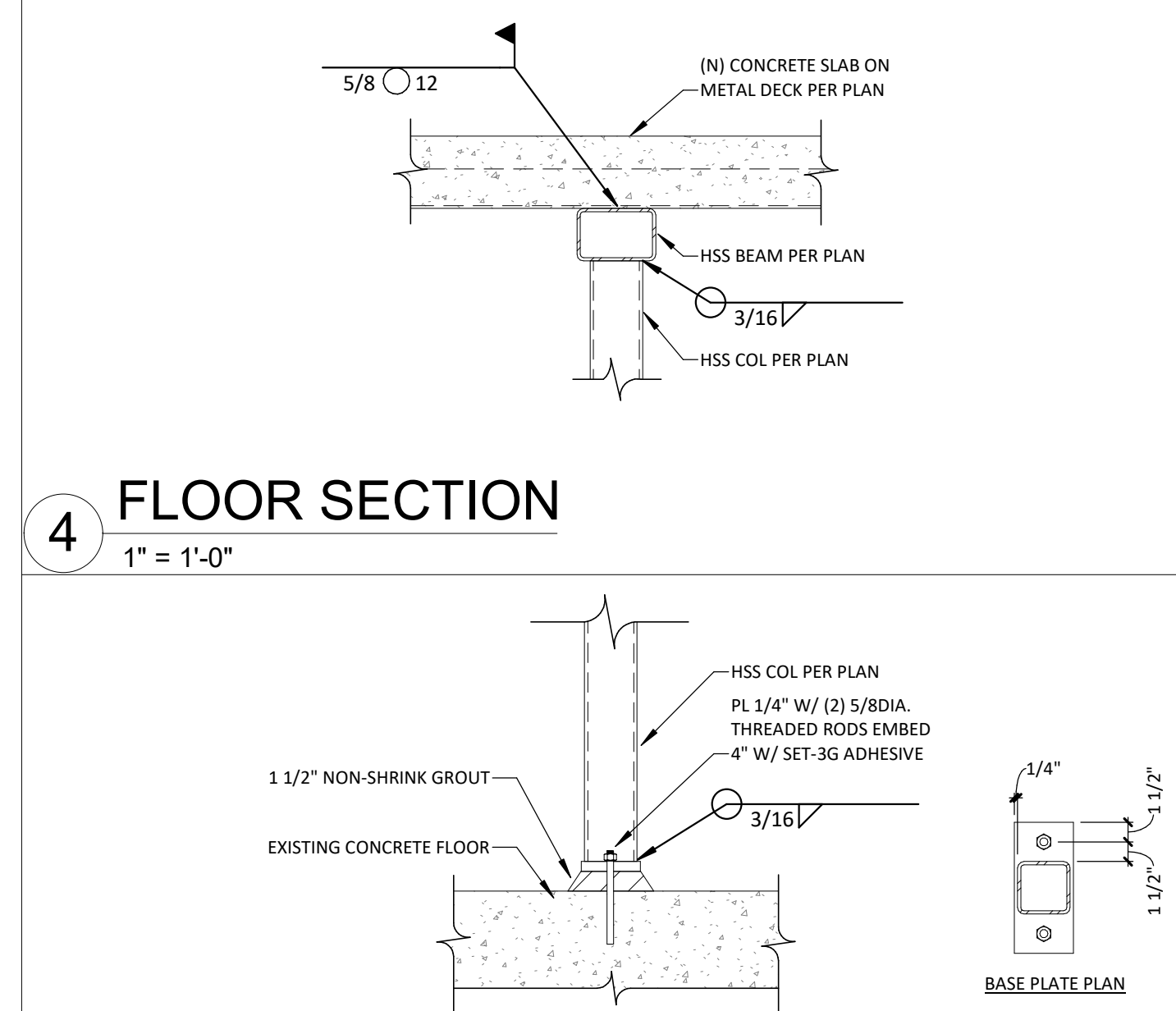
**1** STRUCTURAL SECTION  
1/4" = 1'-0"



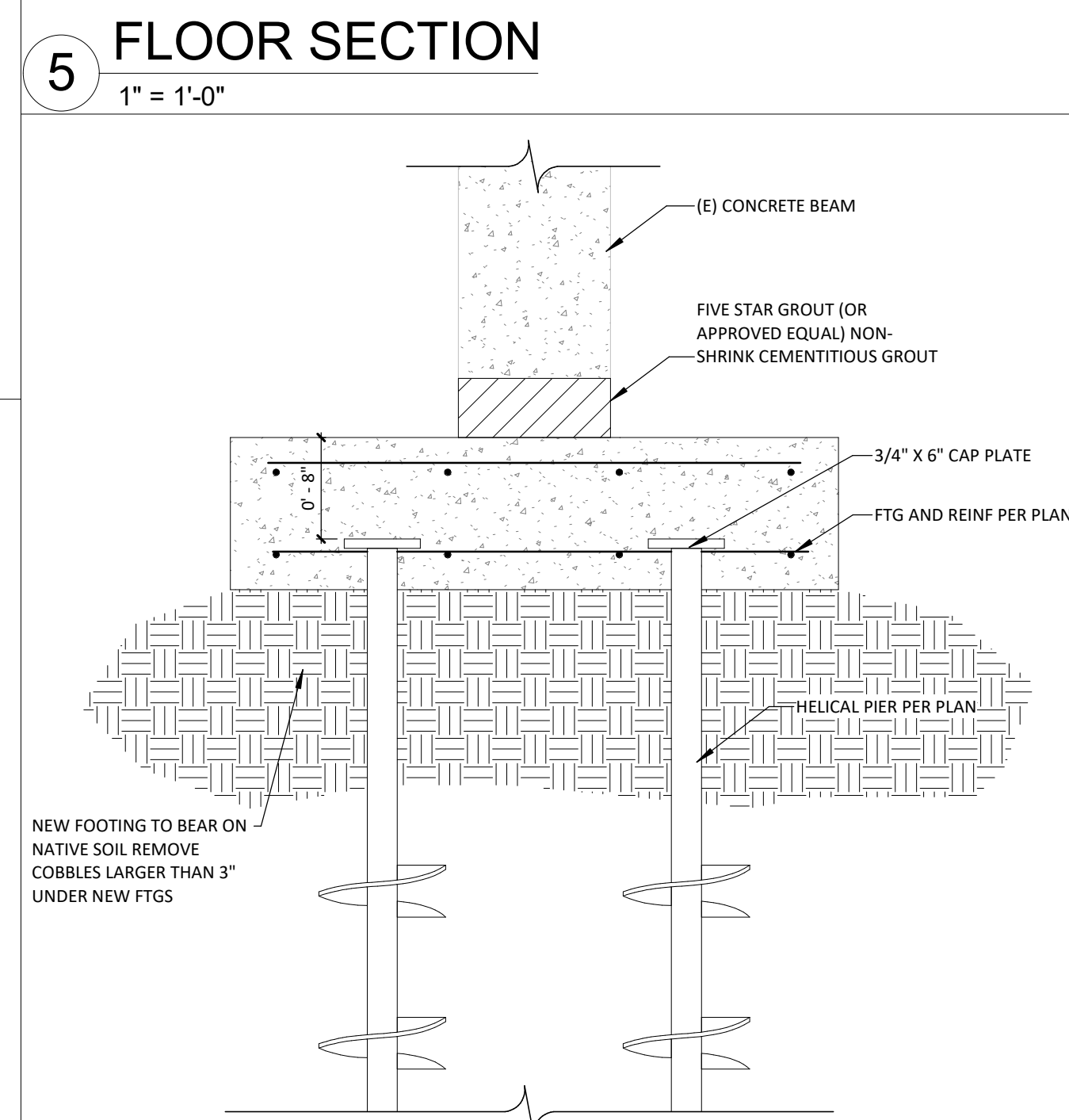
**2** FOUNDATION SECTION  
1" = 1'-0"



**3** FLOOR SECTION  
1" = 1'-0"

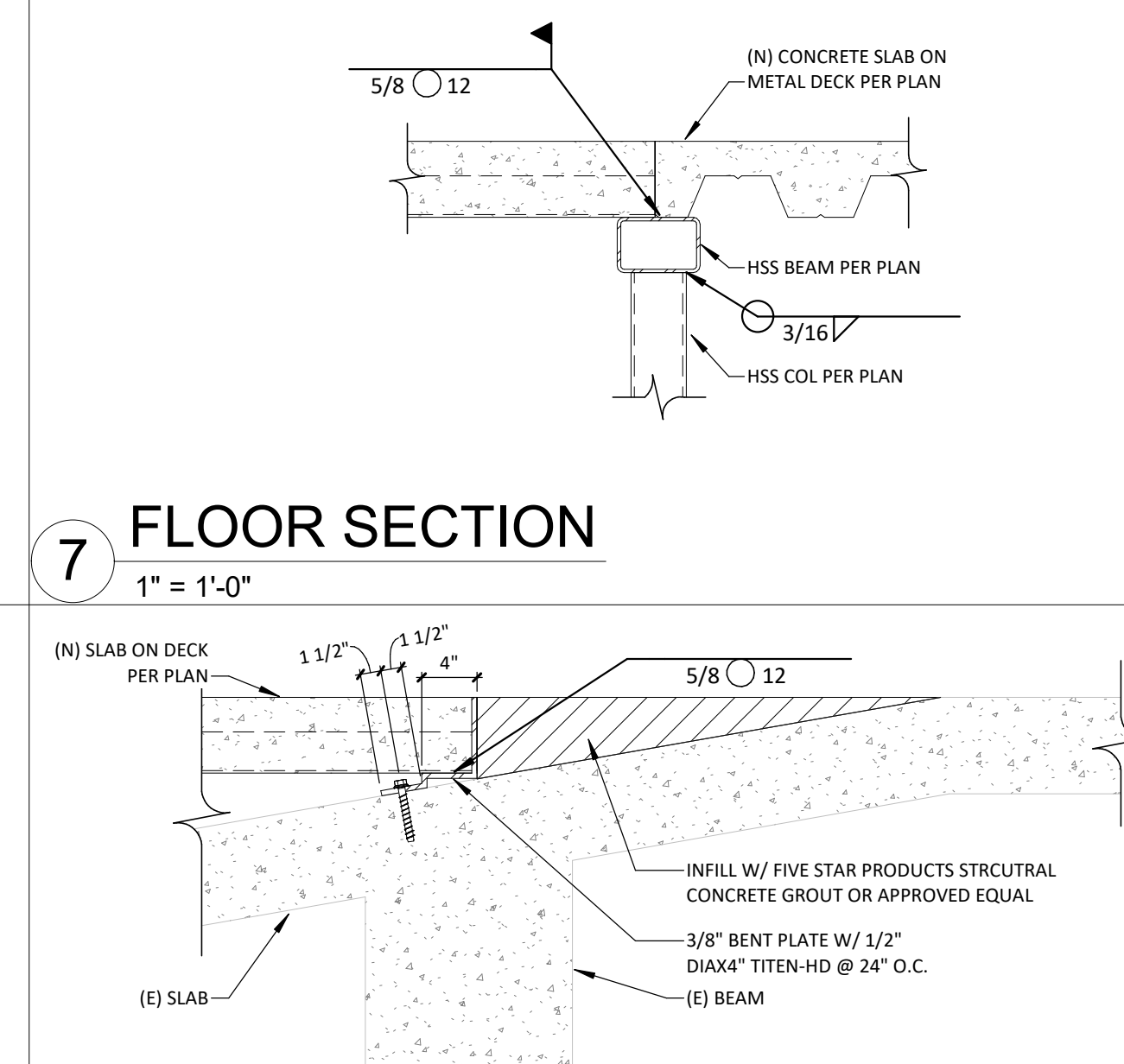


**4** FLOOR SECTION  
1" = 1'-0"

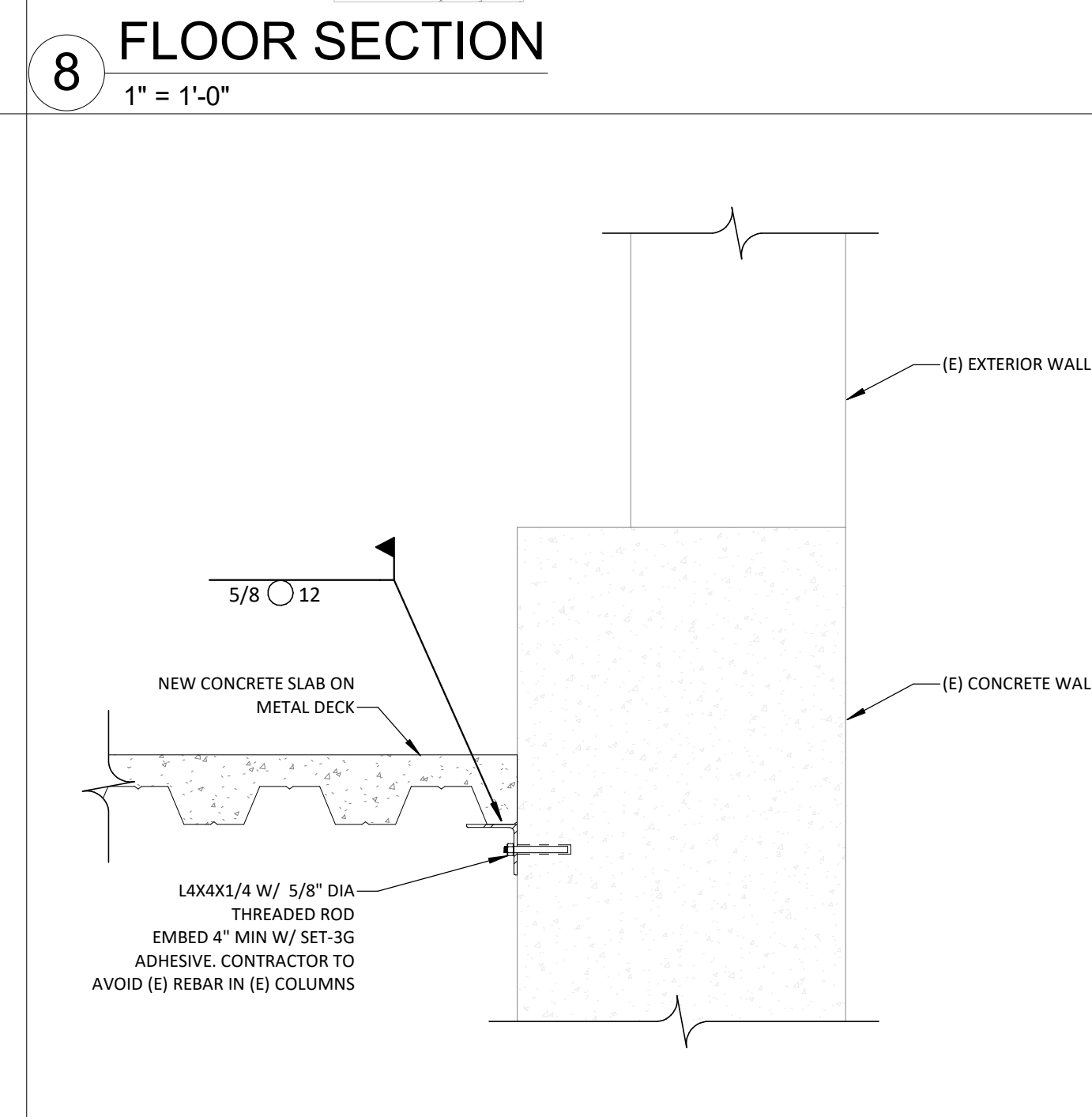


**5** FOUNDATION SECTION  
1" = 1'-0"

**6** FOUNDATION SECTION  
1" = 1'-0"

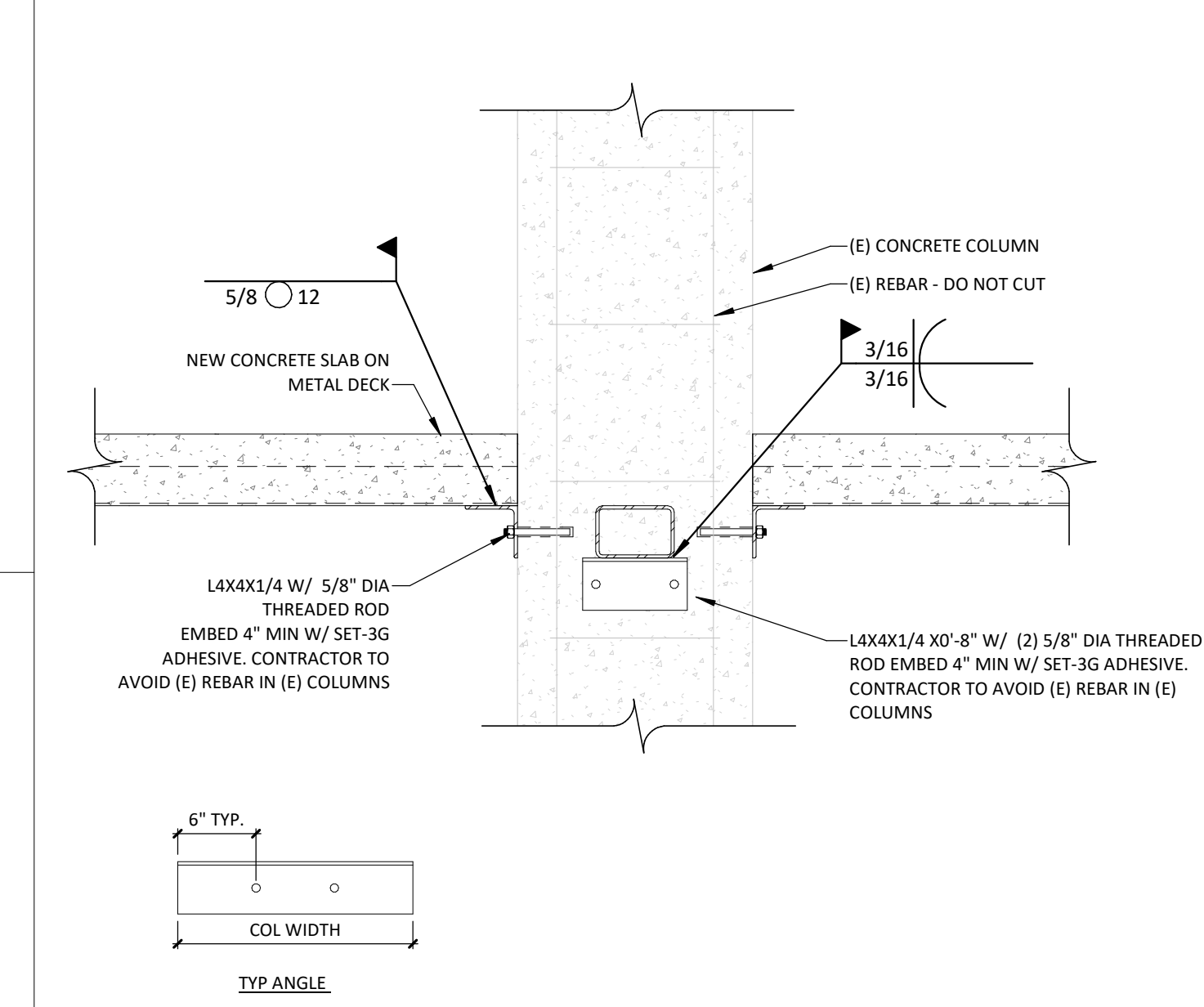


**7** FLOOR SECTION  
1" = 1'-0"

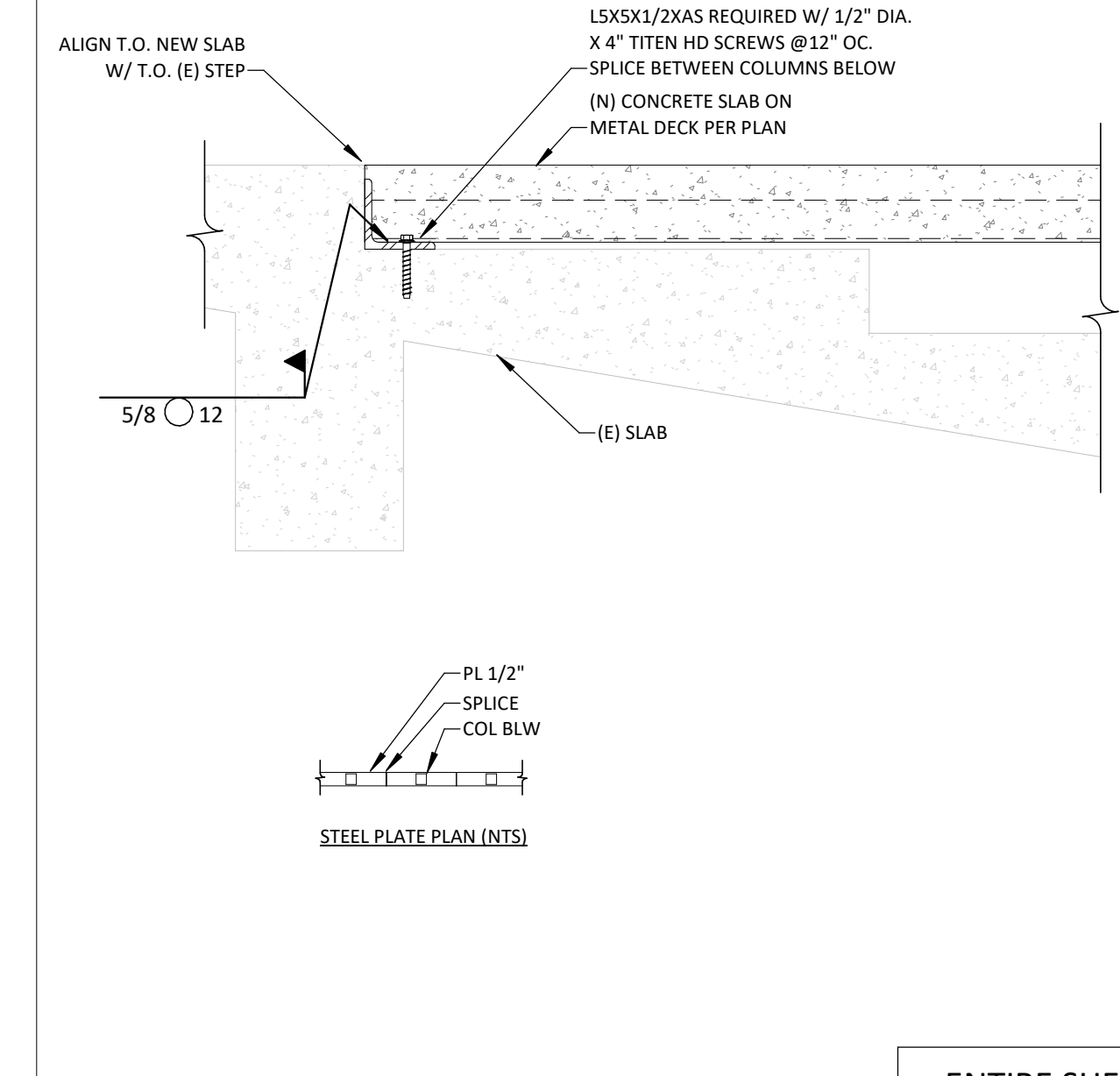


**8** FLOOR SECTION  
1" = 1'-0"

**9** FLOOR SECTION  
1" = 1'-0"

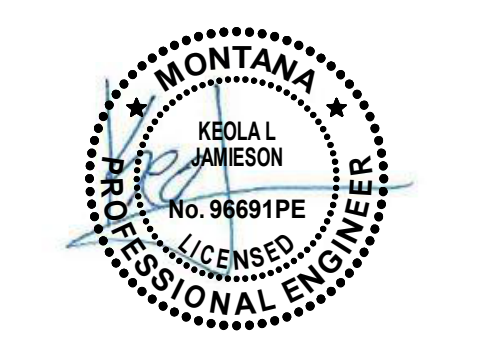
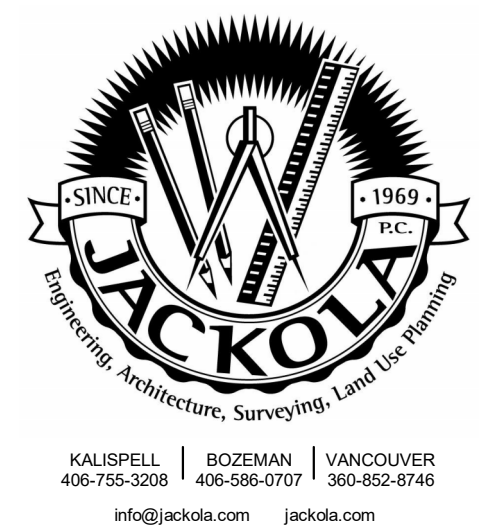


**10** FLOOR SECTION  
1" = 1'-0"



**11** FLOOR SECTION  
1" = 1'-0"

ENTIRE SHEET IS  
ADD ALTERNATE #1



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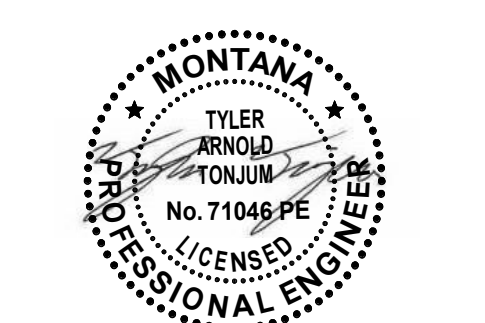
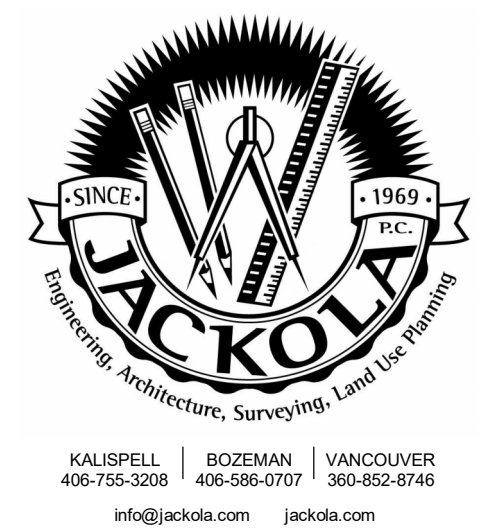
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STRUCTURAL  
DETAILS

**S-501**





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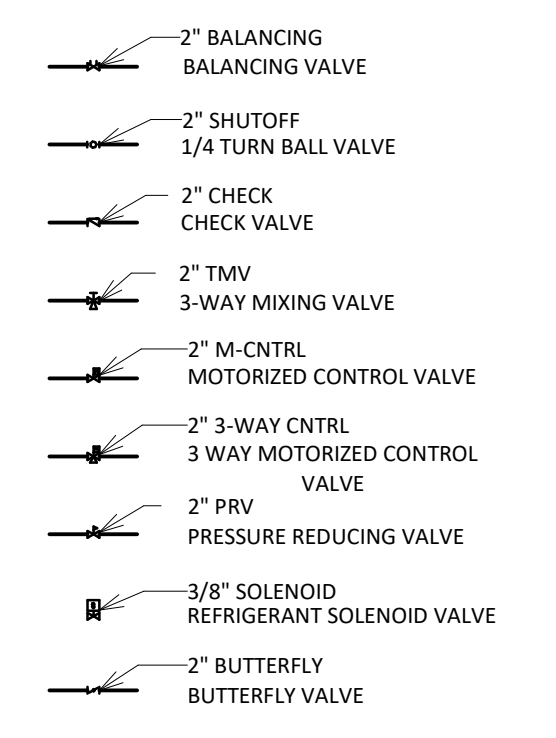
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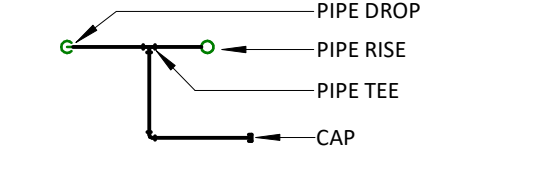
MECHANICAL TITLE SHEET

M-001

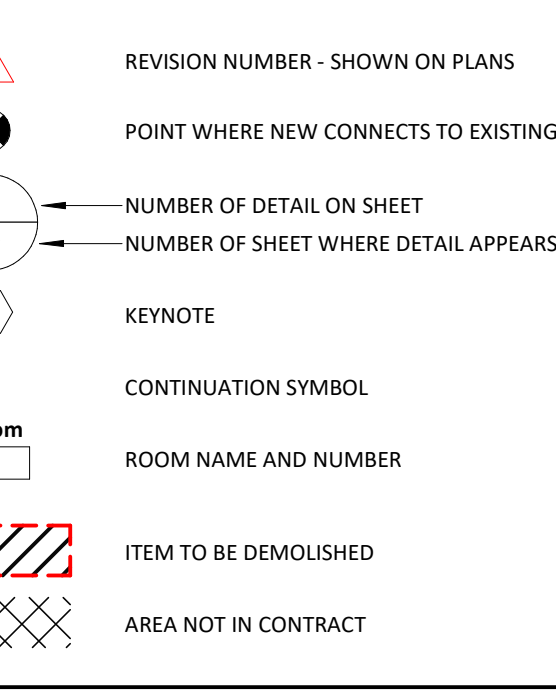
PIPE ACCESSORY TAGS



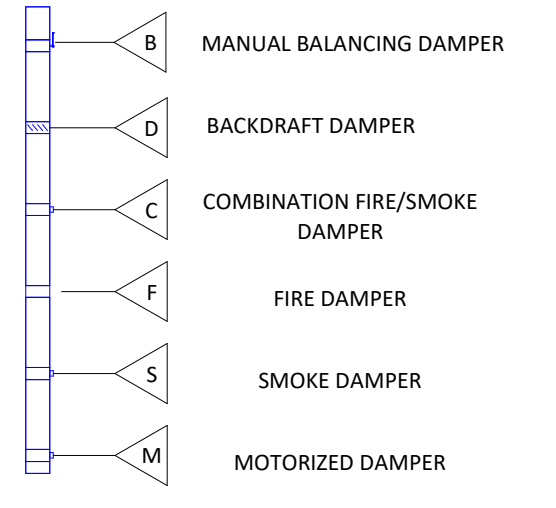
PIPE SYMBOLS



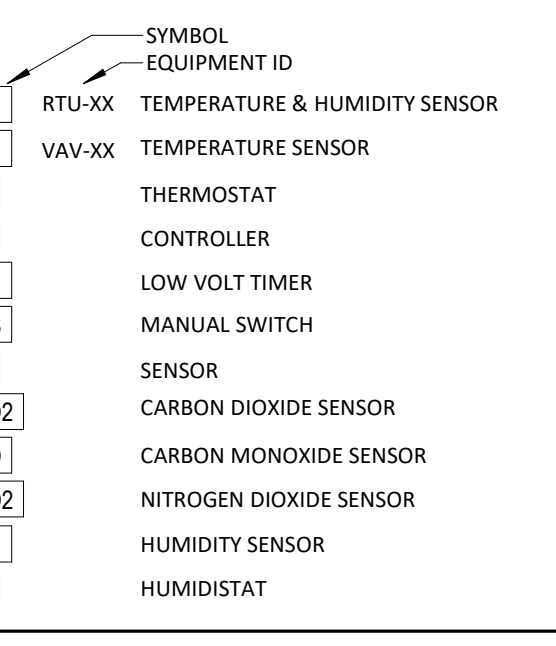
GENERAL DRAWING SYMBOLS



DAMPER TAGS



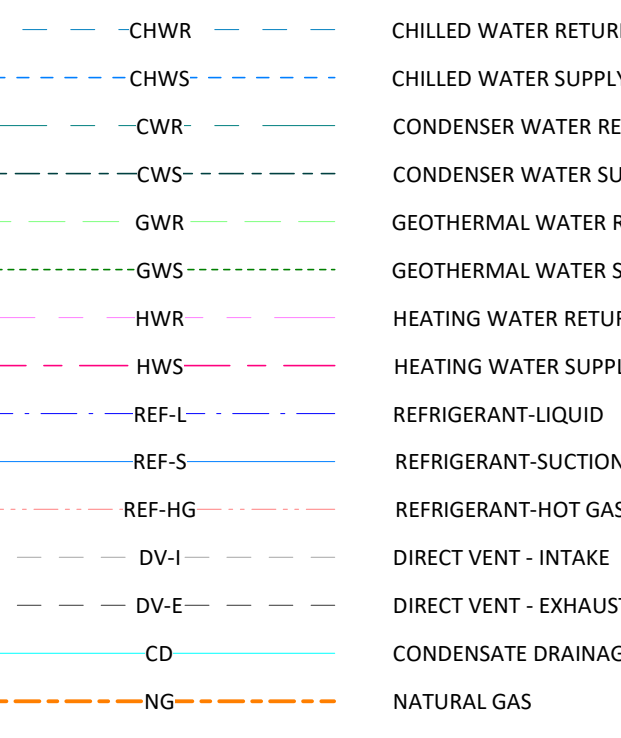
MECHANICAL CONTROL DEVICE TAGS



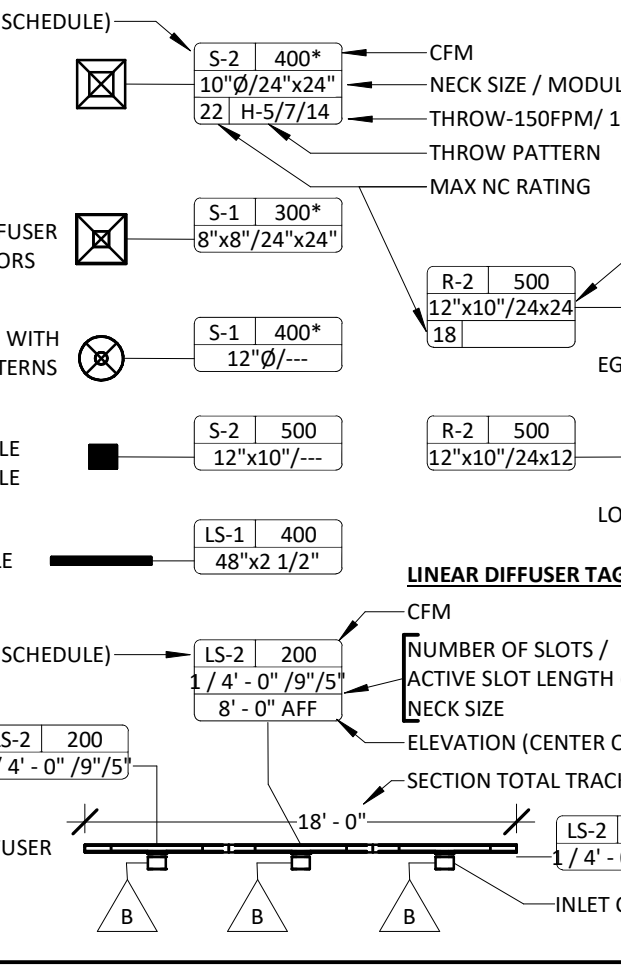
MECHANICAL SHEET INDEX

Table with 2 columns: Sheet Number, Sheet Description. Includes M-001 MECHANICAL TITLE SHEET, M-111 HVAC PLAN, M-121 RESTROOM HVAC PLAN, M-131 HVAC RCP.

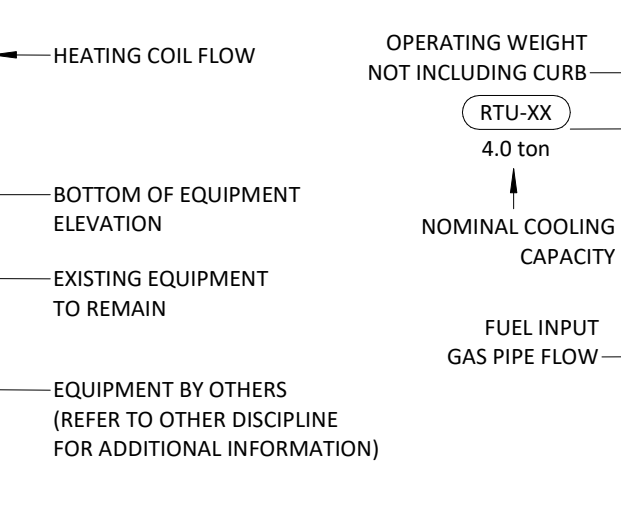
PLUMBING AND PIPING SYMBOLS



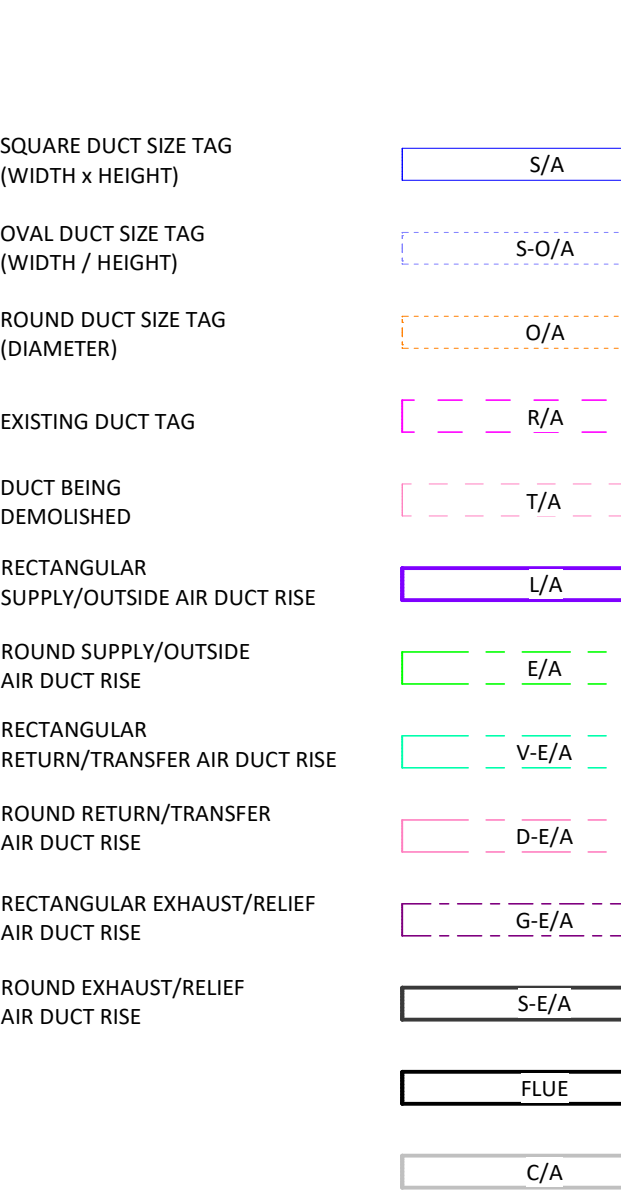
GRILLES, REGISTERS & DIFFUSERS TAG



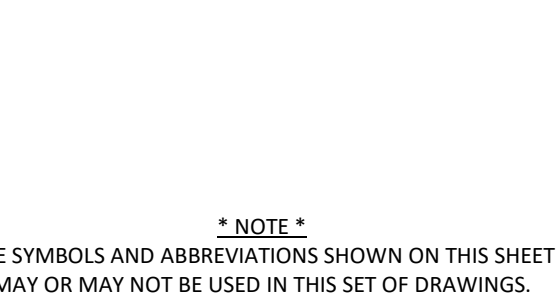
MECHANICAL EQUIPMENT TAGS



HVAC SYMBOLS



MECHANICAL CONTROL DEVICE TAGS



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  
• ANSI/ASHRAE/IESNA STANDARD 90.1-2019 ENERGY STANDARD FOR BUILDINGS EXCEPT FOR LOW-RISE RESIDENTIAL BUILDINGS  
• ANSI/ASHRAE STANDARD 62.2-2019 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY

HVAC DESIGN CRITERIA

BOZEMAN, MONTANA  
ANNUAL DESIGN CONDITIONS: ASHRAE FUNDAMENTALS 2017  
WEATHER STATION - BOZEMAN, MT WMO# 726797  
ELEVATION: 4427' LAT: 45.788N LONG: 111.161W  
WINTER: -13.4 (99.6%)  
SUMMER: 98.1 DRY BULB (0.4%) 62.5 WET BULB (0.4%)  
INDOOR DESIGN CONDITIONS:  
WINTER: 70 ± 2° F  
SUMMER: 75 ± 2° F

EQUIPMENT ABBREVIATIONS

Table of equipment abbreviations: AC AIR CONDITIONING UNIT, AHU AIR HANDLING UNIT, AS AIR SEPARATOR, B BOILER, BP BOILER PUMP, CC COOLING COIL, CH CHILLER, CT COOLING TOWER, CU CONDENSING UNIT, CWP CONDENSER WATER PUMP, etc.

DUCT INSULATION SCHEDULE

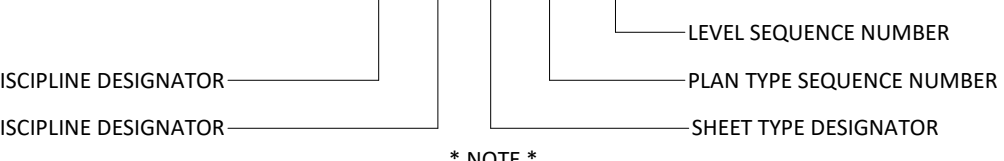
Table with 4 columns: DUCT SYSTEM, OUTSIDE BUILDING ENVELOPE, EXPOSED TO ENVIRONMENT, OUTSIDE BUILDING ENVELOPE, WITHIN BUILDING, WITHIN THE BUILDING ENVELOPE. Includes rows for SUPPLY AIR, RETURN AIR, PLENUMS @ GRILLES, GREASE EXHAUST AIR.

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 C408.2.2.  
4. 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.  
5. PROVIDE SYSTEMS, EQUIPMENT, AND CONTROLS FUNCTIONAL TESTING IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408.2.3.  
6. 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.  
7. PROVIDE OWNER SYSTEMS OPERATION TRAINING IN ACCORDANCE WITH INTERNATIONAL ENERGY CONSERVATION CODE SECTION C103.6.  
8. MOTORS SHALL COMPLY WITH SECTION C403.8 OF THE INTERNATIONAL ENERGY CONSERVATION CODE. FOR ADDITIONAL DETAILS, SEE EQUIPMENT SCHEDULES 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 OPENINGS PRIOR TO START OF WORK. UNSEAL 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.
- 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.
- PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
- 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 DRAWINGS, 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

- 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.
1. 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.
2. 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.
3. 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.
4. 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).
5. COORDINATE THE CONSTRUCTION SCHEDULE WITH THE GC AND PERFORM ALL REQUIRED WORK IN STRICT ACCORDANCE WITH THE OWNER'S SCHEDULE.
6. MECHANICAL CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND CERTIFICATES REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
7. HVAC NOTES:  
A. PROVIDE FLEXIBLE JOINT IN ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT AS CLOSE TO FAN AS POSSIBLE. FLEXIBLE JOINTING 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. 5" W.G. & 0.75" W.C. & 15.79").  
D. SEAL ALL DUCTWORK JOINTS PER SMACNA CLASS F 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.  
I. ALL DUCTWORK SHALL BE CLASS-1 AIR DUCT AS APPROVED BY UL-181.  
J. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.  
K. DUCT INSULATION SHALL BE PROVIDED PER DUCT INSULATION SCHEDULE ON M0.00.
8. ALL FIRE RATED STRUCTURE SHALL BE FIRE DAMPERED AS REQUIRED BY THE JURISDICTION.
9. 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.
10. 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.
11. MECHANICAL, HVAC, AND PLUMBING ELEMENTS SHALL AT NO TIME COME IN CONTACT WITH CEILING CONSTRUCTION EXCEPT AS NECESSARY PENETRATIONS MAY REQUIRE. ESCUTCHEONS SHALL BE USED ON ALL VISIBLE PENETRATIONS.
12. 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.
13. INSPECTIONS, AS REQUIRED BY LOCAL AUTHORITIES, SHALL BE COORDINATED BY GC PRIOR TO CLOSING OF CEILING.
14. SHOP DRAWINGS FOR ALL RELATED TRADES (PLUMBING, HVAC) SHALL BE SUBMITTED FOR REVIEW/APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.
15. 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.
16. 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.

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 JOINT IN ALL DUCTS CONNECTING TO AIR MOVING EQUIPMENT AS CLOSE TO FAN AS POSSIBLE. FLEXIBLE JOINTING 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. 5" W.G. & 0.75" W.C. & 15.79").  
D. SEAL ALL DUCTWORK JOINTS PER SMACNA CLASS F 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.  
I. ALL DUCTWORK SHALL BE CLASS-1 AIR DUCT AS APPROVED BY UL-181.  
J. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.  
K. DUCT INSULATION SHALL BE PROVIDED PER DUCT INSULATION SCHEDULE ON M0.00.

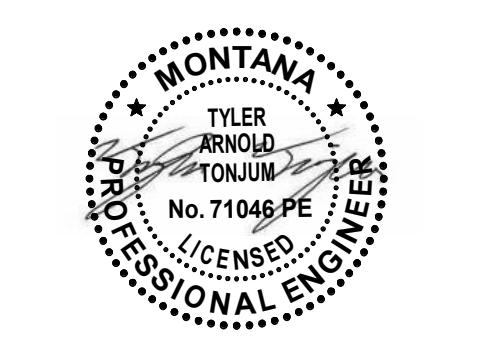
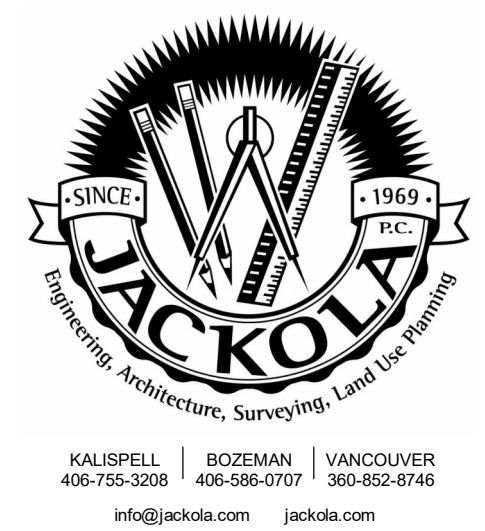
ABBREVIATIONS

Table of abbreviations: Ø ROUND, ABV ABOVE, AC AIR CONDITIONING, AD AREA DRAIN, ADD ADDENDUM, AFF ABOVE FINISHED FLOOR, AFUE ANNUAL FUEL UTILIZATION EFFICIENCY, ALT ALTERNATE, AP ACCESS PANEL, ARCH ARCHITECT/ARCHITECTURAL, BFF BELOW FINISHED FLOOR, BLW BELOW, BTU BRITISH THERMAL UNITS, BTUH BRITISH THERMAL UNITS PER HOUR, CAP CAPACITY, CB CATCH BASIN, CFM CUBIC FEET PER MINUTE, CLG CEILING, CO 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 ENTERING WATER COOLER, EWT ENTERING WATER TEMPERATURE, E/A EXHAUST AIR, EXIST EXISTING, F FLOOR CLEAN OUT, FCO FLOOR CLEAN OUT, FD FLOOR DRAIN, FD FIRE 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, GW 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 LOUVER, LWT LEAVING WATER TEMPERATURE, M/A MIXED AIR, MAX MAXIMUM, MBH ONE THOUSAND BTU PER HOUR, MCF ONE THOUSAND CUBIC FEET, MD MOTORIZED DAMPER, MECH MECHANICAL, MFR MANUFACTURER, MIN MINIMUM, MISC MISCELLANEOUS, MTR MOTOR, MUA 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 DUCT RISER, R/A RETURN AIR, RCP RADIANT CEILING PANEL, RD ROOF DRAIN, REC RECESSED, RED REDUCER, REL RELATIVE HUMIDITY, RH RELIEF AIR, RUA ROOM, RPM REVOLUTIONS PER MINUTE, RW RAIN WATER, RW 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, TOR TRENCH DRAIN, TEMP TEMPERATURE, TYP TYPICAL, UG UNDERGROUND, VACUUM 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

PROJECT #24002



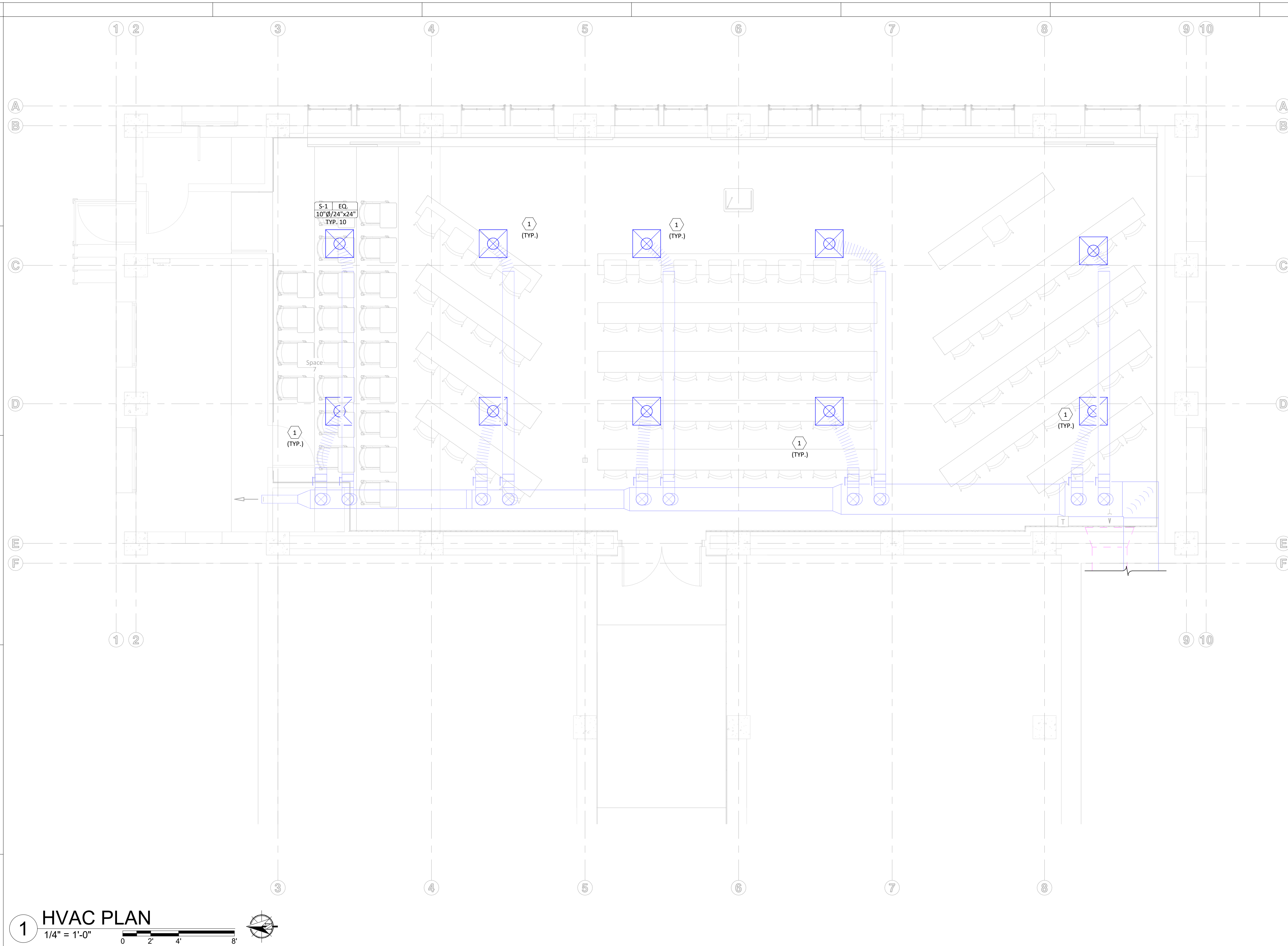
**KEYNOTES**  
 1 REMOVE EXISTING DIFFUSERS AND REPLACE WITH NEW. REUSE FLEX DUCT AND DUCTWORK WHEREVER POSSIBLE.



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828



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

**GRILLES, REGISTERS AND DIFFUSERS SCHEDULE**

| TAG | DESCRIPTION          | BASIS OF DESIGN |           | FACE SIZE |       |        | NECK        |        |                 | INSTALLATION |  | REMARKS |
|-----|----------------------|-----------------|-----------|-----------|-------|--------|-------------|--------|-----------------|--------------|--|---------|
|     |                      | MANUFACTURER    | MODEL NO. | SIZE      | WIDTH | HEIGHT | BORDER TYPE | DAMPER |                 |              |  |         |
| S-1 | PLAQUE FACE DIFFUSER | TITUS           | OMNI      | 24"x24"   | 10"   |        |             |        | TYPE 3 (LAY-IN) | ---          |  |         |

ENTIRE SHEET IS  
 ADD ALTERNATE #1

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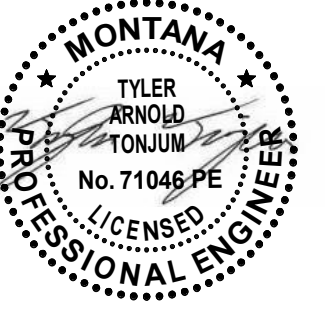
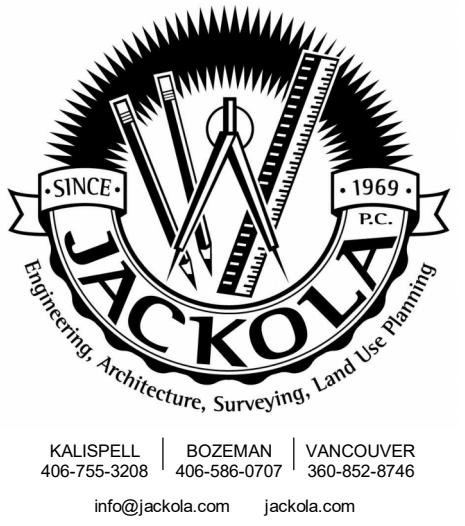
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**HVAC PLAN**

**M-111**

PROJECT #240802





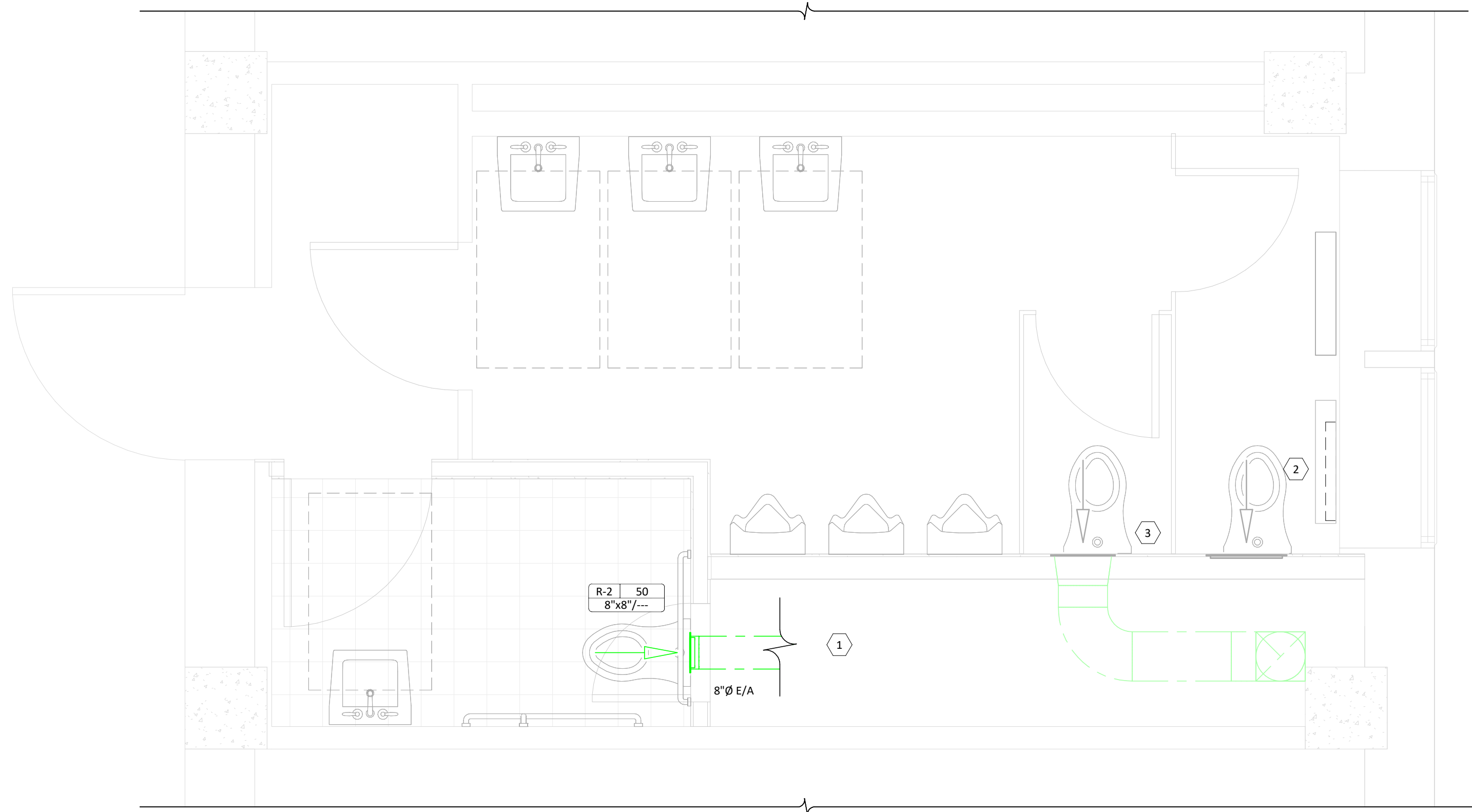
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 PPA#: 23-0828

**KEYNOTES**

- 1 ROUTE DUCT FROM NEW EXHAUST DIFFUSER TO NEAREST EXHAUST DUCT LARGER THAN 8" ROUND. REBALANCE FAN AND EXHAUST SYSTEM TO PROVIDE PREVIOUS AIR FLOWS AND ADDITIONAL FLOW FOR NEW DIFFUSER.
- 2 EXISTING RADIATOR TO BE CLEANED AND LEFT IN PLACE.
- 3 CLEAN ALL DIFFUSERS AND REINSTALL IN NEW WALLS.



**1 RESTROOM HVAC PLAN**  
 1/2" = 1'-0"  
 0 1' 2' 4'

ENTIRE SHEET IS  
 ADD ALTERNATE #2

**INTERIOR AIR INLETS & OUTLETS SCHEDULE**

| TAG  | DESCRIPTION            | BASIS OF DESIGN |           |              | FACE SIZE | NECK SIZE | INSTALLATION     |        | REMARKS |
|------|------------------------|-----------------|-----------|--------------|-----------|-----------|------------------|--------|---------|
|      |                        | MANUFACTURER    | MODEL NO. | FINISH       |           |           | BORDER TYPE      | DAMPER |         |
| R-2S | LOUVERED FILTER GRILLE | TITUS           | 355RS     | WHITE ENAMEL | ---       | 8"x8"     | TYPE 1 (SURFACE) | ---    |         |

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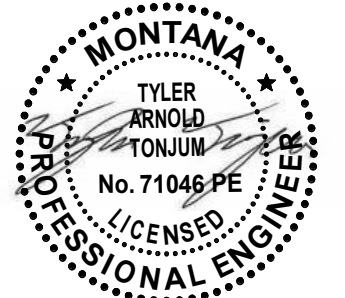
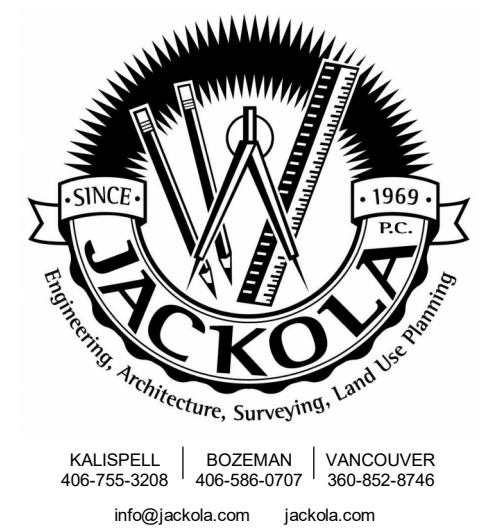
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**RESTROOM HVAC PLAN**

**M-121**

**KEYNOTES**  
 1 REUSE AND RELOCATE EXISTING DIFFUSERS, REUSE FLEX DUCT AND DUCTWORK WHEREVER POSSIBLE.



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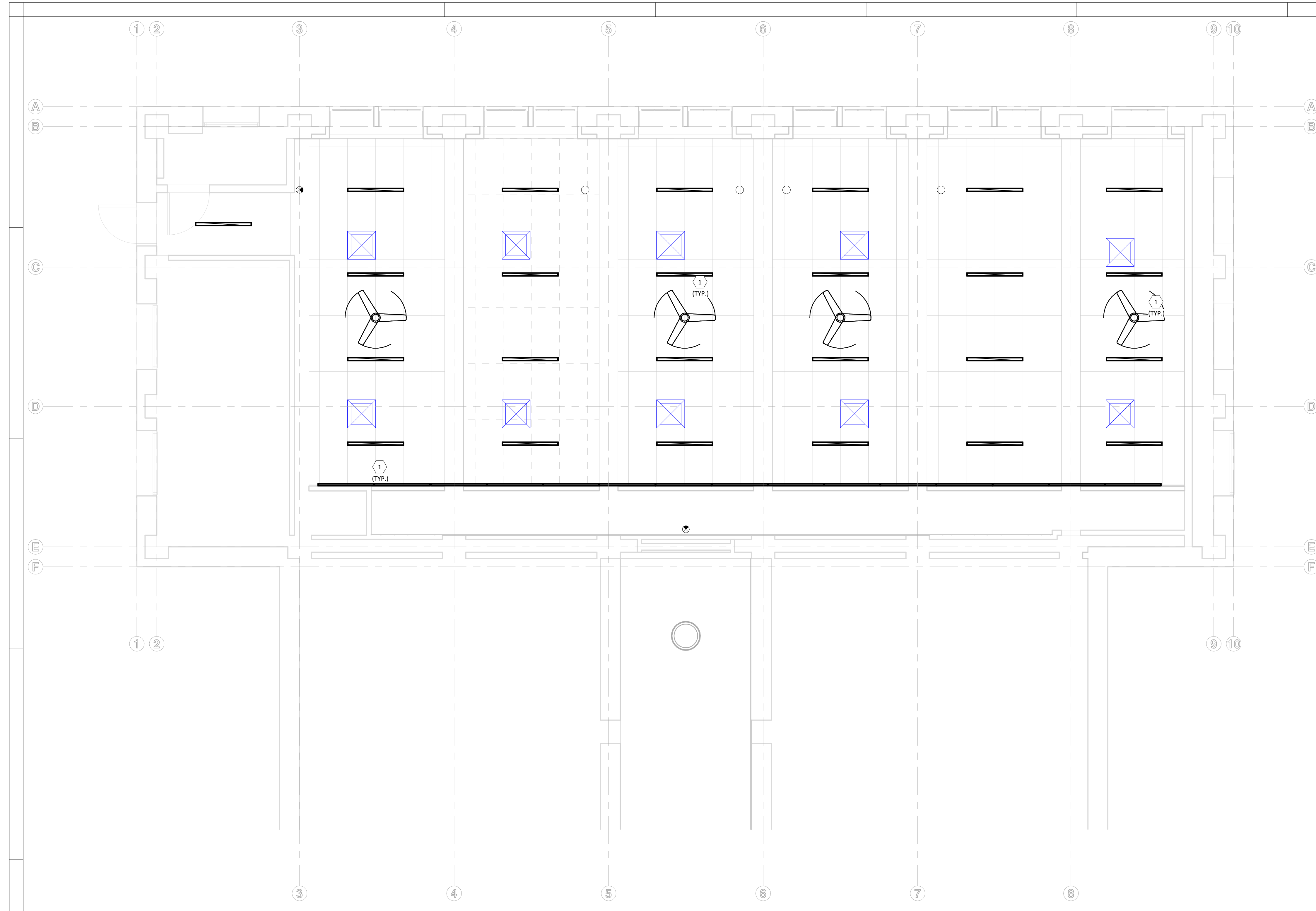
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HVAC RCP

ENTIRE SHEET IS  
 ADD ALTERNATE #1

**M-131**



**1 HVAC RCP**  
 1/4" = 1'-0"  
 0 2' 4' 8'

PROJECT #24002



**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. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.
- COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUNIT, 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 PRODUCTS 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.
- 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.
- PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.
- 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.

**PLUMBING GENERAL NOTES**

- FIELD VERIFY ALL NEW WATER, WASTE, AND VENT PIPING CONNECTIONS AND PROVIDE NEW CONNECTIONS AS REQUIRED FOR PROPERLY OPERATING SYSTEMS.
- PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.
- PITCH UNDERFLOOR STORM PIPING 3" AND GREATER AT 1/8" PER FOOT, UNLESS NOTED OTHERWISE. PITCH ALL OTHER STORM PIPING AT 1/4" PER FOOT UNLESS OTHERWISE NOTED.
- WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.

**GENERAL PLUMBING NOTES**

**WASTE AND VENT PIPING NOTES:**

- RUN ALL WASTE AND VENT PIPING WITH 1/4 IN/FT MINIMUM GRADE UNLESS OTHERWISE NOTED. WASTE AND VENT PIPING SHALL BE GRADED TO DRIP BACK TO THE SOIL OR WASTE PIPE BY GRAVITY.
- ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO THE CENTERLINE OF ALL PRESSURE PIPING, AND TO THE INVERT OF ALL GRAVITY PIPING.
- ALL DRAIN PIPING, VENT PIPING, AND RELATED FITTINGS TO BE SCHEDULE 40 PVC AND CONFORM TO ASTM D-1785.
- UNLESS OTHERWISE NOTED, ALL PIPING IS TIGHT TO UNDERSIDE OF SLAB, WITH SPACE FOR INSULATION IF REQUIRED.
- ALL FIXTURES TO HAVE P-TRAPS & WATER STOP VALVES OF ADEQUATE SIZE PROVIDED.
- UNLESS OTHERWISE NOTED, DRAINS SHALL BE INSTALLED AT THE LOW POINT OF ROOFS, AREAWAYS, FLOORS, ETC.
- ALL FLOOR DRAINS SHALL HAVE AUTOMATIC TRAP PRIMING DEVICES.
- PROVIDE CLEANOUTS IN SANITARY AND STORM DRAINAGE SYSTEMS AT ENDS OF RUNS, AT CHANGES IN DIRECTION, NEAR THE BASE OF STACKS, EACH HORIZONTAL DRAINAGE PIPE SHALL BE PROVIDED WITH A CLEANOUT AT ITS UPPER TERMINAL AND EACH RUN OF PIPING, WHICH IS MORE THAN FIFTY (50) FEET IN TOTAL DEVELOPED LENGTH, SHALL BE PROVIDED WITH A CLEANOUT FOR EACH FIFTY (50) FEET, OR FRACTION THEREOF, IN LENGTH OF SUCH PIPING.
- ALL CLEANOUTS SHALL BE FULL SIZE OF PIPE FOR PIPE SIZES 6 INCHES AND SMALLER, AND SHALL BE 6 INCHES FOR PIPE SIZES LARGER THAN 6 INCHES.
- ALL VTR'S AS SPECIFIED ARE MIN. SIZE TO ROOF. ALL ROOF PENETRATIONS TO BE 3" MIN.
- ALL ROOF PENETRATIONS TO PROTRUDE 16" MIN.
- FITTINGS ON SCREWED PIPE SHALL BE OF THE RECESSED DRAINAGE TYPE. BURRED ENDS SHALL BE REAMED TO THE FULL BORE OF THE PIPE.
- THE THREADS OF DRAINAGE FITTINGS SHALL BE TAPPED SO AS TO ALLOW ONE-QUARTER (1/4) INCH PER FOOT GRADE.
- FITTINGS USED FOR DRAINAGE SHALL BE OF THE DRAINAGE TYPE, HAVE A SMOOTH INTERIOR WATERWAY, AND BE CONSTRUCTED SO AS TO ALLOW ONE FOURTH (1/4) INCH PER FOOT GRADE.
- CLEANOUTS SHALL BE DESIGNED TO BE GAS AND WATER TIGHT WITHOUT THE USE OF ANY GASKET, PACKING, OR WASHER.
- EACH PLUMBING FIXTURE TRAP, EXCEPT AS OTHERWISE PROVIDED IN THE UPC, SHALL BE PROTECTED AGAINST SIPHONAGE AND BACK PRESSURE, AND AIR CIRCULATION SHALL BE ASSURED THROUGHOUT ALL PARTS OF THE DRAINAGE SYSTEM BY MEANS OF VENT PIPES.
- CHANGES IN DIRECTION OF VENT PIPING SHALL BE MADE BY THE APPROPRIATE USE OF APPROVED FITTINGS AND NO SUCH PIPE SHALL BE STRAINED OR BENT. BURRED ENDS SHALL BE REAMED TO THE FULL BORE OF THE PIPE.
- INDIRECT WASTE PIPES EXCLUDING 5' BUT LESS THAN 15' IN LENGTH SHALL BE DIRECTLY TRAPPED, BUT SHALL NOT BE VENTED. TRAPS REQUIRING VENTING SHALL EXTEND SEPARATELY TO THE OUTSIDE AIR.
- NO MORE THAN 1/3 OF TOTAL PERMITTED VENT LENGTH PER TABLE 703.2 OF CURRENT U.P.C. CAN BE INSTALLED IN HORIZONTAL POSITION UNLESS SIZE IS INCREASED BY ONE PIPE SIZE.

**TRAPS AND INTERCEPTOR NOTES:**

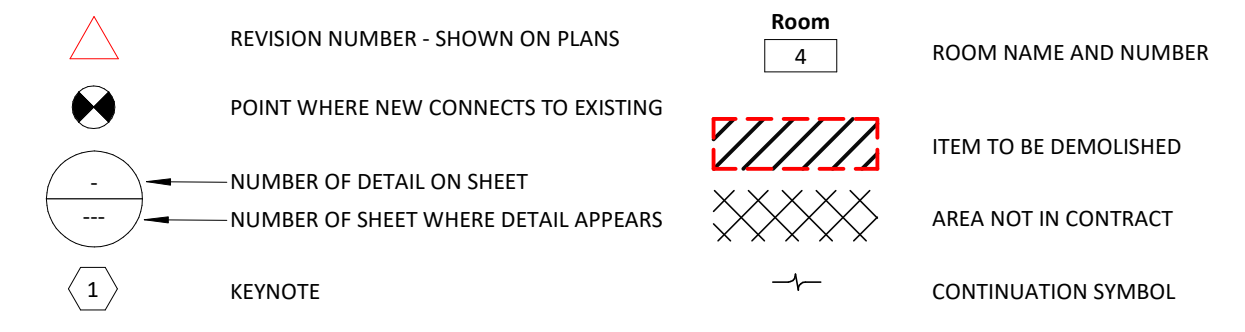
- EACH PLUMBING FIXTURE, EXCEPT THOSE HAVING INTEGRAL TRAPS, SHALL BE SEPARATELY TRAPPED BY AN APPROVED TYPE WATERSHED TRAP. NOT MORE THAN ONE (1) TRAP SHALL BE PERMITTED ON A TRAP ARM.
- THE VERTICAL DISTANCE BETWEEN A FIXTURE OUTLET AND THE TRAP WEIR SHALL BE AS SHORT AS PRACTICABLE, BUT IN NO CASE SHALL THE TAILPIECE FROM ANY FIXTURE EXCEED TWENTY-FOUR (24) INCHES IN LENGTH.
- EACH PLUMBING FIXTURE TRAP, EXCEPT AS OTHERWISE PROVIDED IN THE UPC, SHALL BE PROTECTED AGAINST SIPHONAGE AND BACK PRESSURE, AND AIR CIRCULATION ASSURED THROUGHOUT ALL PARTS OF THE DRAINAGE SYSTEM BY MEANS OF A VENT PIPE.
- THE VENT PIPE OPENING FROM A SOIL OR WASTE PIPE, EXCEPT FOR WATER CLOSETS AND SIMILAR FIXTURES, SHALL NOT BE BELOW THE WEIR OF THE TRAP.
- EACH TRAP SHALL HAVE THE MANUFACTURER'S NAME STAMPED LEGIBLY IN THE METAL OF THE TRAP AND EACH TUBING TRAP SHALL HAVE THE GAUGE OF THE TUBING IN ADDITION TO THE MANUFACTURER'S NAME.
- EVERY TRAP SHALL HAVE A SMOOTH AND UNIFORM INTERIOR WATERWAY.
- THE TRAP SHALL BE THE SAME SIZE AS THE TRAP ARM TO WHICH IT IS CONNECTED.

**SUPPLY PIPING NOTES:**

- PROVIDE SHUTOFF VALVES IN ALL DOMESTIC WATER PIPING SYSTEM BRANCHES IN WHICH BRANCH PIPING SERVES TWO OR MORE FIXTURES.
- ALL WATER SUPPLY LINES SHALL BE TYPE L COPPER MIN.
- ALL WATER LINES (HOT & COLD) SHALL HAVE 3/4" MIN. INSULATION, OR AS SCHEDULED IN PLUMBING SPECS.
- UNLESS OTHERWISE NOTED, ALL DOMESTIC COLD AND HOT WATER PIPING SHALL BE 1/2" SIZE.
- ALL STOPS, RISERS, ESCUTCHEON, P-TRAPS, OR OTHER ACCESSORIES TO BE STAINLESS STEEL OR CHROME PLATED.
- INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
- WHERE DOMESTIC COLD AND HOT WATER PIPING DROPS INTO A PIPE CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FITTING.
- ALL JOINTS AND FITTINGS IN WATER LINES SHALL BE SOLDERED TO MEET CURRENT REGULATIONS.
- UNIONS AND/OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT, IN BYPASSES, AND IN LONG PIPING RUNS (100 FEET OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.
- ALL VALVES IN THE WATER LINES TO BE BRASS.
- ALL VALVES SHALL BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
- ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
- PROVIDE ALL PLUMBING FIXTURES AND EQUIPMENT WITH ACCESSIBLE STOPS.
- ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS.
- ALL VALVES SHALL BE INSTALLED SO THAT VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
- PROVIDE FLEXIBLE CONNECTIONS IN ALL PIPING SYSTEMS CONNECTED TO PUMPS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE, OR AS INDICATED ON THE DRAWINGS.
- IN ALL BUILDINGS WHERE POTABLE WATER AND NONPOTABLE WATER SYSTEMS ARE INSTALLED, EACH SYSTEM SHALL BE CLEARLY IDENTIFIED. EACH SYSTEM SHALL BE COLOR CODED AS FOLLOWS:

POTABLE WATER: GREEN BACKGROUND WITH WHITE LETTERING  
NONPOTABLE WATER: YELLOW BACKGROUND WITH BLACK LETTERING, WITH THE WORDS "CAUTION: NONPOTABLE WATER, DO NOT DRINK"

**GENERAL PLUMBING SYMBOLS**



**ABBREVIATIONS**

|       |                                    |       |                           |      |                              |
|-------|------------------------------------|-------|---------------------------|------|------------------------------|
| Ø     | ROUND                              | FS    | FLOOR SINK                | PLBG | PLUMBING PRESSURE            |
| ABV   | ABOVE                              | FT    | FOOT/FEET                 | PRV  | PRESSURE REDUCING VALVE      |
| AC    | AIR CONDITIONING                   | FTR   | FIN TUBE RADIATION        | PSI  | POUNDS PER SQUARE INCH       |
| ADD   | AREA DRAIN                         | GAL   | GALLON                    | PSIG | POUNDS PER SQUARE INCH GAUGE |
| ADD   | ADDENDUM                           | GC    | GENERAL CONTRACTOR        | PWR  | POWER                        |
| APF   | ABOVE FINISHED FLOOR               | GPM   | GALLONS PER MINUTE        | R    | DUCT RISER                   |
| APUE  | ANNUAL FUEL UTILIZATION EFFICIENCY | GW    | GREASE WASTE              | R/A  | RETURN AIR                   |
| ALT   | ALTERNATE                          | HB    | HOSE BIB                  | RD   | RADIANT CEILING PANEL        |
| AP    | ACCESS PANEL                       | HP    | HORSE POWER               | RO   | ROOF DRAIN                   |
| ARCH  | ARCHITECTURAL                      | HTG   | HEATING                   | REC  | RECESSED                     |
| BFF   | BELOW FINISHED FLOOR               | HTR   | HEATER                    | RED  | REDUCER                      |
| BLW   | BELOW                              | HW    | HOT WATER                 | REH  | RELATIVE HUMIDITY            |
| BTU   | BRITISH THERMAL UNITS              | HYD   | HYDRANT                   | R/LA | RELIEF AIR                   |
| BTUH  | BRITISH THERMAL UNITS PER HOUR     | ID    | INDIRECT                  | RM   | ROOM                         |
| CAP   | CAPACITY                           | IN    | INCH                      | RPM  | REVOLUTIONS PER MINUTE       |
| CB    | CATCH BASIN                        | INV   | INVERT                    | RW   | RAIN WATER                   |
| CFM   | CUBIC FEET PER MINUTE              | LB    | POUND                     | RF   | RAIN FLOOR                   |
| CFM   | CUBIC FEET PER MINUTE              | LB/HR | POUNDS PER HOUR           | SF   | SQUARE FOOT                  |
| CO    | CLEAN OUT                          | LAT   | LEAVING AIR TEMPERATURE   | S/A  | SUPPLY AIR                   |
| CW    | COLD WATER                         | LP    | LOW PRESSURE              | SAN  | SANITARY                     |
| D     | DEGREE                             | LPG   | LIQUEFIED PETROLEUM GAS   | SFA  | SQUARE FOOT                  |
| DB    | DRY BULB                           | LVR   | LOUVER                    | S/F  | SUPPLY AIR                   |
| DIA   | DIAMETER                           | LWT   | LEAVING WATER TEMPERATURE | SM   | STANDPIPE                    |
| DN    | DOWN                               | M/A   | MIXED AIR                 | SP   | STATIC PRESSURE              |
| DW    | DISTILLED WATER                    | MAX   | MAXIMUM                   | ST   | STEAM                        |
| EA    | EACH                               | MCH   | ONE THOUSAND BTU PER HOUR | STM  | STERILIZATION                |
| EAT   | ENTERING AIR TEMPERATURE           | MCF   | ONE THOUSAND CUBIC FEET   | TM   | THERMOSTAT                   |
| ELCC  | ELECTRICAL EQUIPMENT               | MD    | MOTORIZED DAMPER          | TP   | TYPICAL                      |
| EQUIP | EQUIPMENT                          | MCH   | MECHANICAL                | TR   | TRENCH DRAIN                 |
| EWC   | ELECTRIC WATER COOLER              | MFR   | MANUFACTURER              | TD   | TEMPERATURE DROP             |
| EWT   | ENTERING WATER TEMPERATURE         | MIN   | MINIMUM                   | TD   | TEMPERATURE                  |
| E/A   | EXHAUST AIR                        | MISC  | MISCELLANEOUS             | TOT  | TOTAL                        |
| EXIST | EXISTING                           | MTR   | MOTOR                     | TEMP | TEMPERATURE                  |
| F     | DEGREES FAHRENHEIT                 | MU/A  | MAKE UP AIR               | TR   | TRENCH DRAIN                 |
| FCO   | FLOOR CLEAN OUT                    | NC    | NOISE CRITERIA            | UG   | UNDERGROUND                  |
| FD    | FLOOR DRAIN                        | NC    | NORMALLY CLOSED           | VAC  | VACUUM                       |
| FD    | FIRE DAMPER                        | NIC   | NOT IN CONTRACT           | V    | VENT                         |
| FDV   | FIRE DEPARTMENT VALVE              | NO    | NUMBER                    | VAV  | VARIABLE AIR VOLUME          |
| FL    | FLOOR                              | NO    | NORMALLY OPEN             | VENT | VENTILATION                  |
| FO    | FUEL OIL                           | NTS   | NOT TO SCALE              | VTR  | VENT THROUGH ROOF            |
| FOV   | FUEL OIL VENT                      | O     | OXYGEN                    | W    | WASTE                        |
| FOR   | FUEL OIL RETURN                    | O/A   | OUTSIDE AIR               | WB   | WET BULB                     |
| FOS   | FUEL OIL SUPPLY                    | PD    | PRESSURE DROP             | WCO  | WALL CLEAN OUT               |
| FPM   | FEET PER MINUTE                    | PV    | POST INDICATOR VALVE      | WH   | WALL HYDRANT                 |

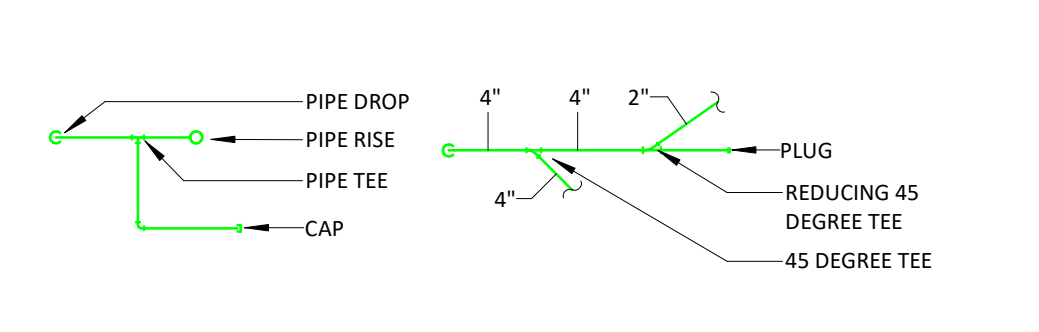
**CODE COMPLIANCE**

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

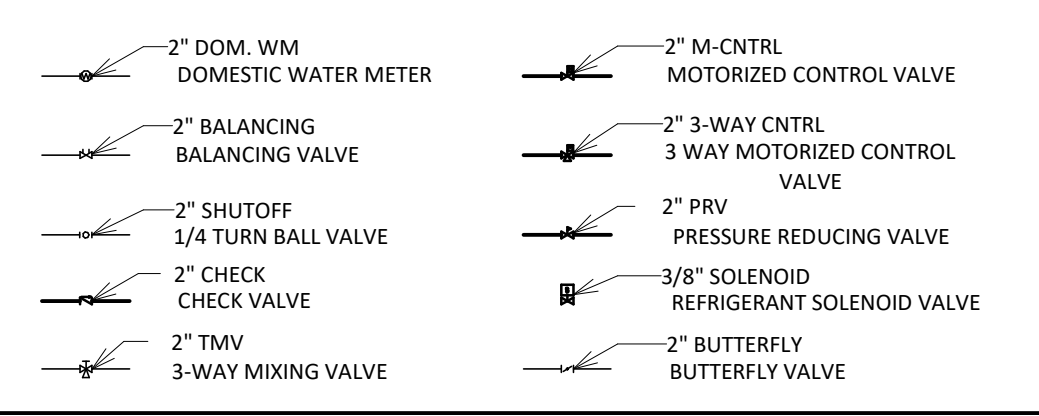
**PLUMBING AND PIPING SYMBOLS**

|          |                               |
|----------|-------------------------------|
| CD       | CONDENSATE DRAINAGE           |
| NG       | NATURAL GAS                   |
| LP       | PROPANE GAS                   |
| WV       | COMBINATION WASTE & VENT      |
| CA       | COMPRESSED AIR                |
| CW       | COLD WATER                    |
| H-CW     | HARD COLD WATER               |
| S-CW     | SOFT COLD WATER               |
| F-CW     | FILTERED COLD WATER           |
| RO       | REVERSE OSMOSIS WATER         |
| IRR      | IRRIGATION                    |
| HW       | HOT WATER                     |
| HW 140°  | HOT WATER 140°                |
| HWC      | HOT WATER RECIRC              |
| HWC 140° | HOT WATER RECIRC 140°         |
| TR-P     | TRAP PRIMER - FLOOR DRAIN     |
| GV       | GREASE VENT                   |
| GW       | GREASE WASTE                  |
| IW       | INDIRECT WASTE                |
| OV       | SAND/OIL VENT                 |
| OW       | SAND/OIL WASTE                |
| V        | SANITARY VENT                 |
| W        | SANITARY SEWER                |
| RW       | RAIN WATER                    |
| RWO      | RAIN WATER OVERFLOW           |
| DV-I     | DIRECT VENT - INTAKE          |
| DV-E     | DIRECT VENT - EXHAUST         |
| OXY      | OXYGEN                        |
| NO2      | NITROUS OXIDE                 |
| VAC      | VACUUM                        |
| WAGD     | WASTE ANESTHETIC GAS DISPOSAL |

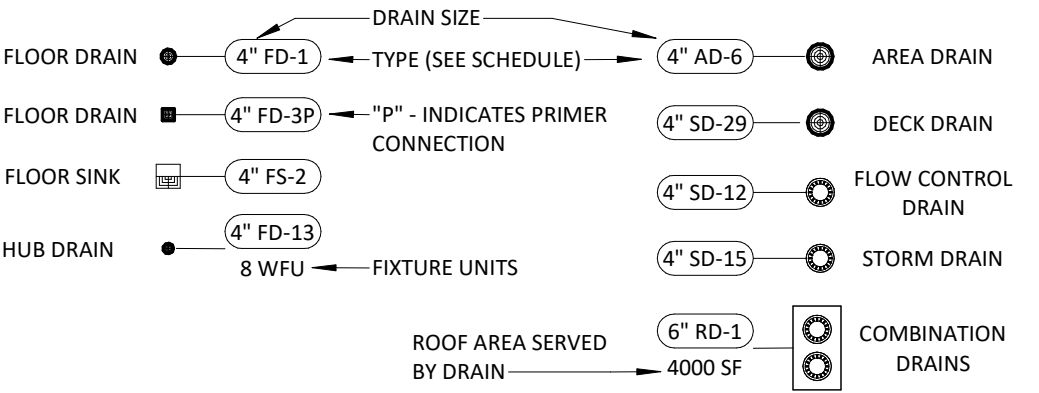
**PIPING SYMBOLS**



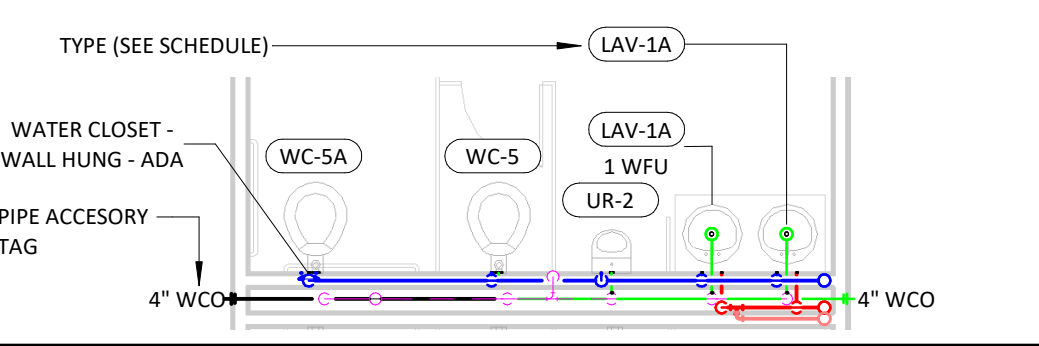
**PIPE ACCESSORY TAGS**



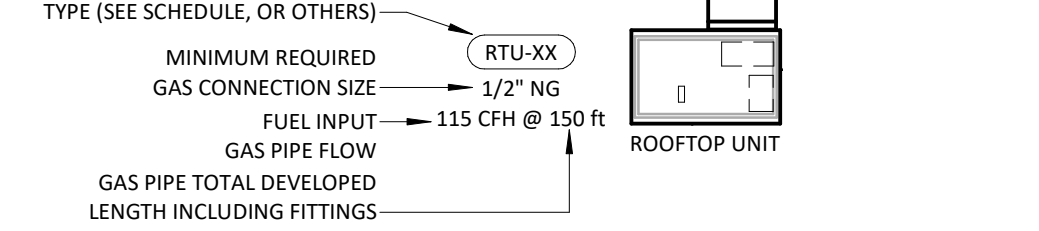
**DRAIN TAGS**



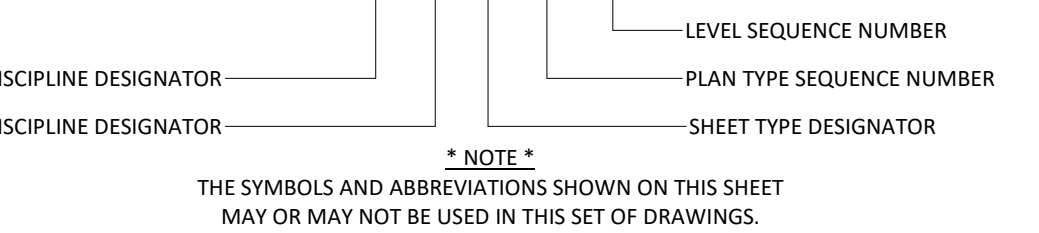
**PLUMBING FIXTURE TAGS**



**MECHANICAL EQUIPMENT TAGS**

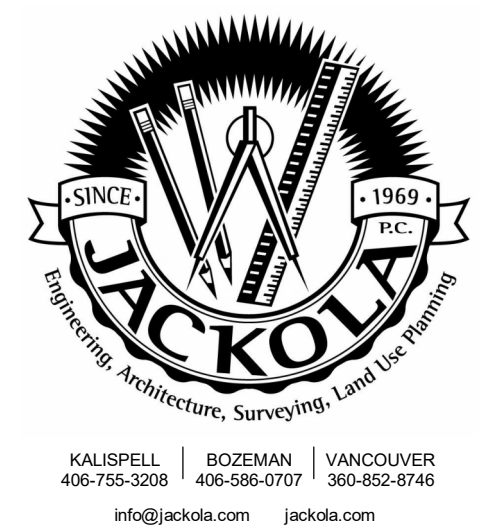


**P-102**



**PLUMBING SHEET INDEX**

|       |                                  |
|-------|----------------------------------|
| P-001 | PLUMBING TITLE SHEET             |
| P-111 | RESTROOM PLUMBING PLAN           |
| P-121 | RESTROOM PLUMBING WASTE AND VENT |



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
**ROOM #101 & LEVEL 1 RESTROOM**  
**PPA#: 23-0828**

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DATE: 11/19/2024

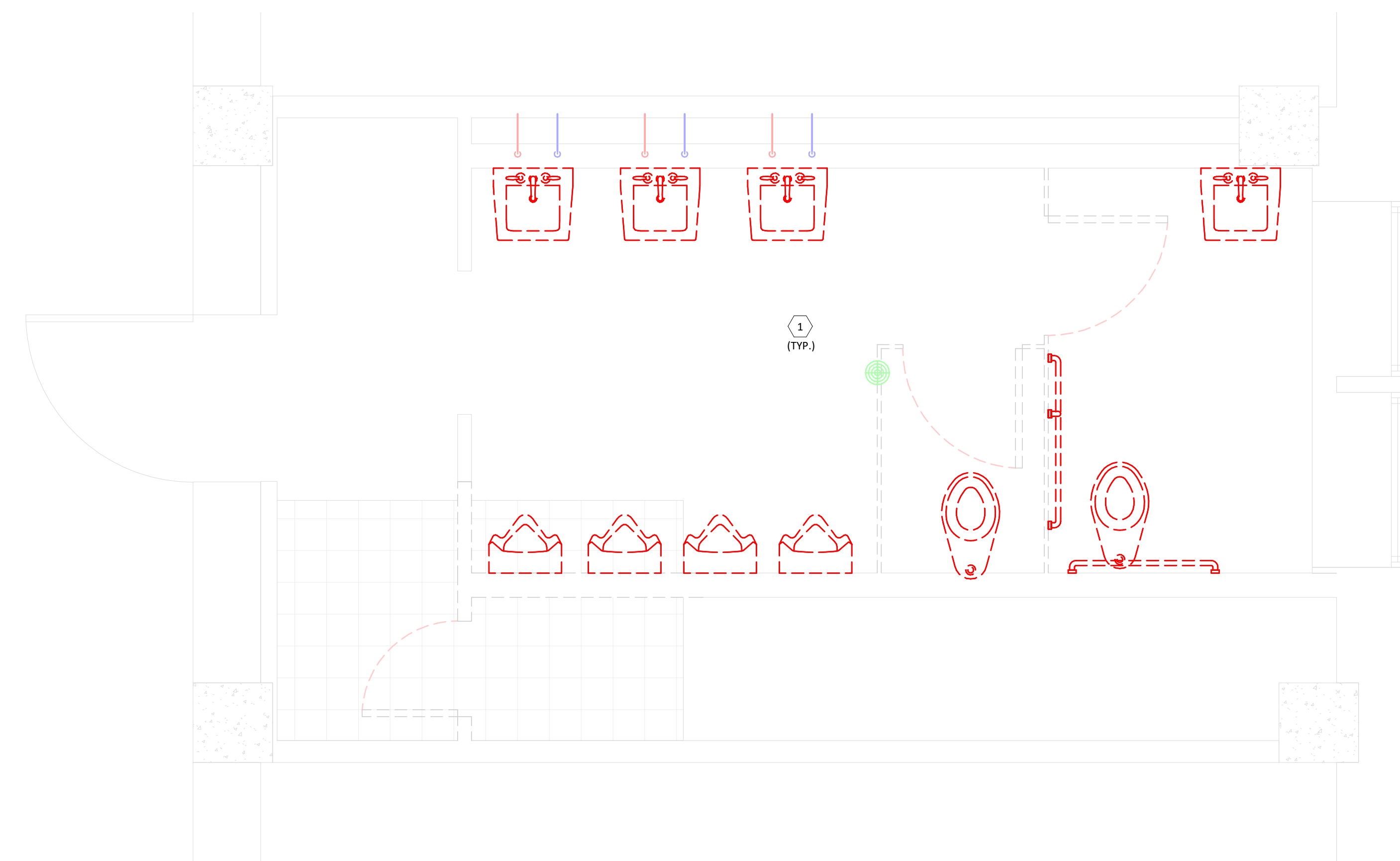
REVISIONS:

**PLUMBING TITLE SHEET**

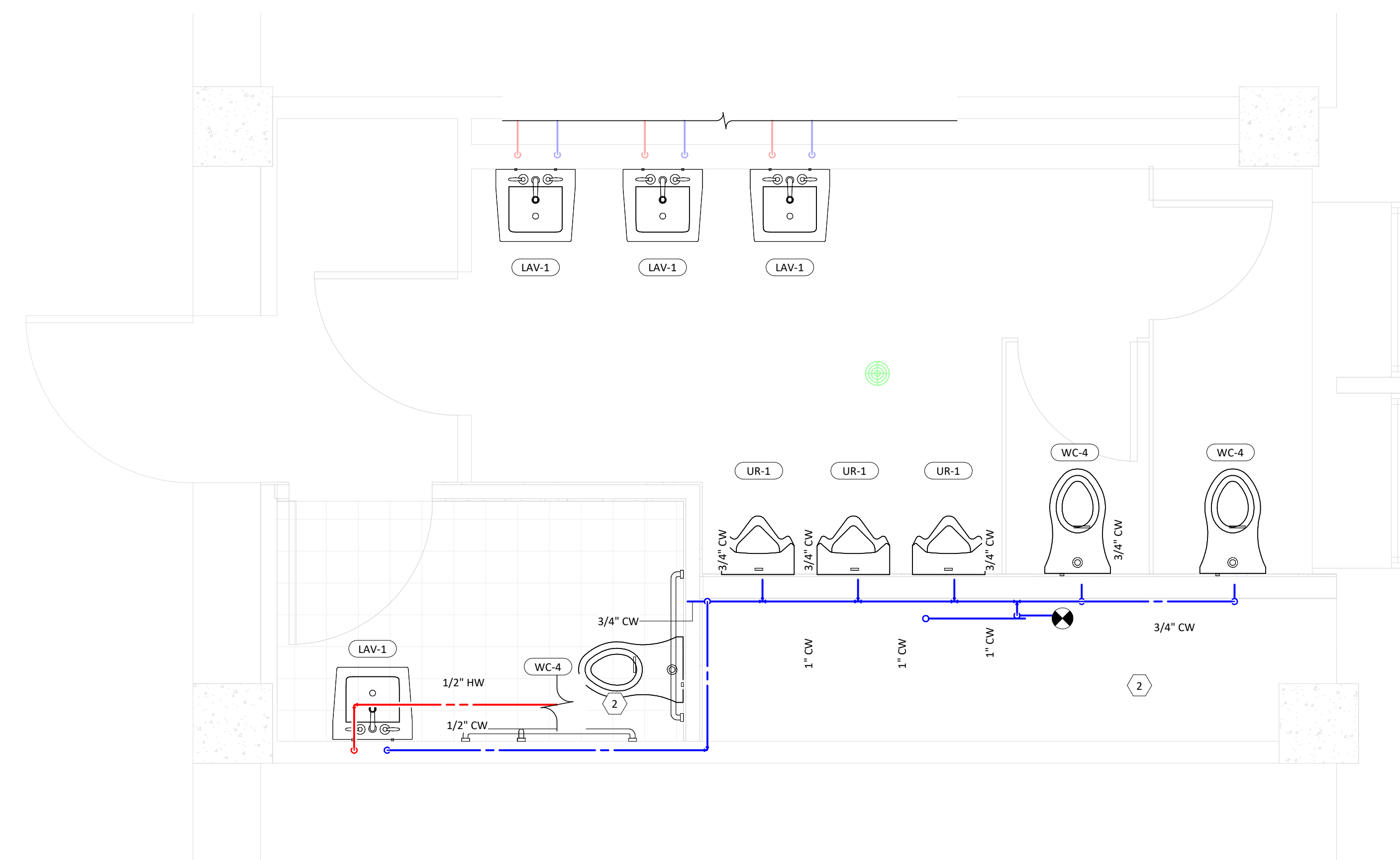
**P-001**

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





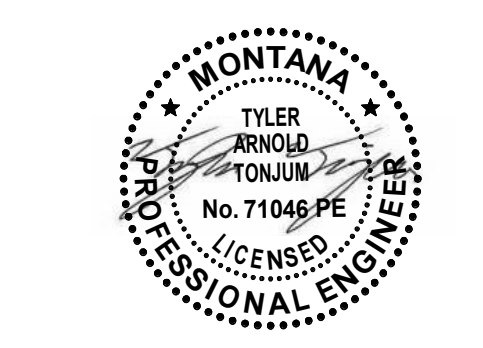
**1 PLUMBING DEMOLITION PLAN**  
 1/2" = 1'-0"



**3 PLUMBING SUPPLY PLAN**  
 1/2" = 1'-0"

**KEYNOTES**

- 1 DEMOLISH EXISTING FIXTURES AND PIPING. PREP WALLS FOR NEW FIXTURE LOCATIONS.
- 2 VERIFY HOT AND COLD WATER ROUTING. REROUTE EXISTING PIPE TO TIE INTO NEW FIXTURE LOCATIONS WHERE NECESSARY.
- 3 ROUTE NEW WASTE PIPE FROM NEW FIXTURES TO EXISTING PIPE LOCATIONS.
- 4 CONTRACTOR TO VERIFY UNDERSLAB PIPE ROUTING.
- 5 ROUTE NEW LAV TAILPIECE INTO EXISTING LAV TAILPIECE IN WALL. NEW 1 1/4" VENT UP TO CEILING, CONNECT TO EXISTING VENT PIPING.
- 6 ROUTE VENT FROM LAV TO NEAREST VENT PIPING, 2" OR LARGER.



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 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

ENTIRE SHEET IS  
 ADD ALTERNATE #2

| DOMESTIC FIXTURE SCHEDULE |                          |                 |           |              |         |  |
|---------------------------|--------------------------|-----------------|-----------|--------------|---------|--|
| TAG                       | DESCRIPTION              | BASIS OF DESIGN |           | TRIM         |         | SPECIFICATION  |
|                           |                          | MANUFACTURER    | MODEL     | MANUFACTURER | MODEL   |  |
| LAV-1                     | LAVATORY - WALL HUNG     | KOHLER          | K-1728    | MOEN         | 8430F05 | WALL HUNG LAVATORY WITH BACKSPASH, FAUCET HOLES ON 4" CENTERS. MANUAL DECK-MOUNTED FAUCET, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. INSULATE WATER AND WASTE WITH INSULATION KIT. |
| UR-1                      | URINAL                   | KOHLER          | K-4991-ET | KOHLER       | K-13520 | WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. MANUAL ACTIVATED FLUSHOMETER.  |
| WC-4                      | WATER CLOSET - WALL HUNG | KOHLER          | K-4325    | KOHLER       | K-76322 | ELONGATED WALL HUNG WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. MANUAL ACTIVATED FLUSHOMETER.  |

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DATE: 11/19/2024

REVISIONS:

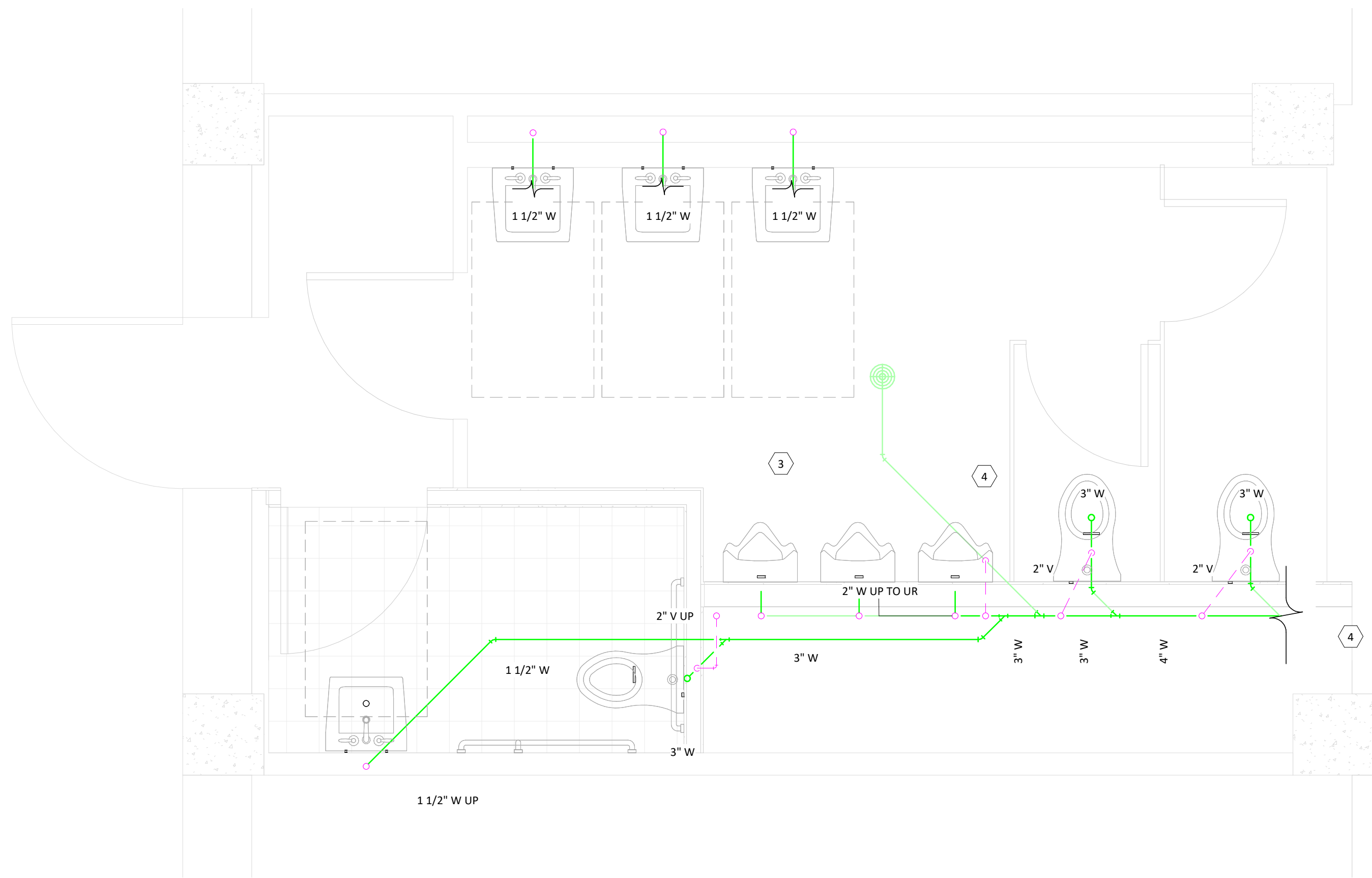
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**RESTROOM PLUMBING PLAN**

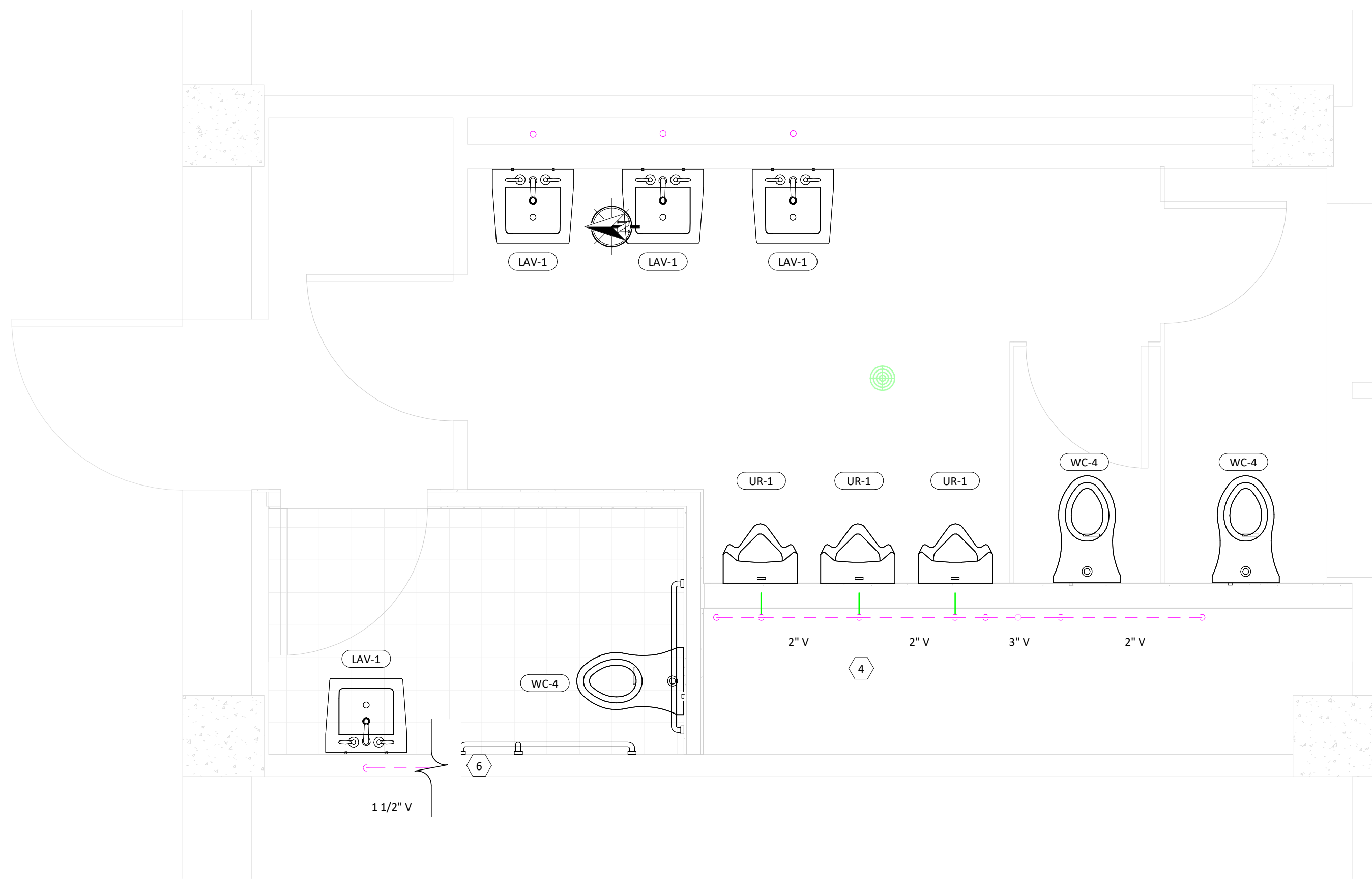
**P-111**

PROJECT #240802



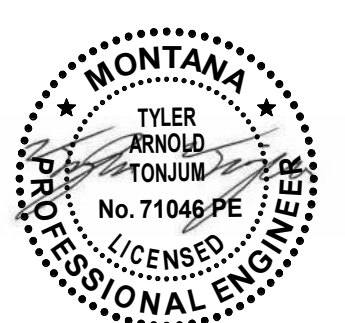
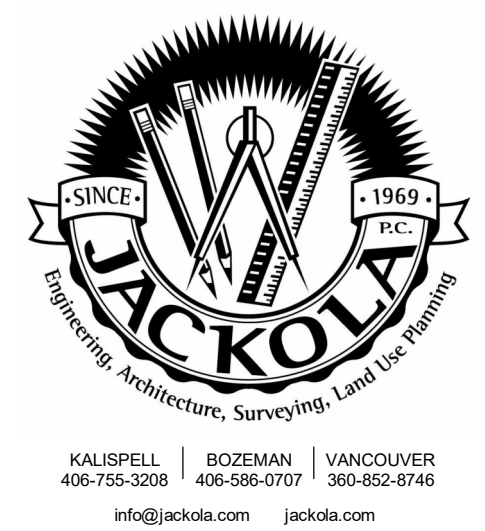


**1 UNDERFLOOR PLUMBING PLAN**  
 1/2" = 1'-0"



**2 PLUMBING WASTE & VENT PLAN**  
 1/2" = 1'-0"

- KEYNOTES**
- 1 DEMOLISH EXISTING FIXTURES AND PIPING. PREP WALLS FOR NEW FIXTURE LOCATIONS.
  - 2 VERIFY HOT AND COLD WATER ROUTING. REROUTE EXISTING PIPE TO TIE INTO NEW FIXTURE LOCATIONS WHERE NECESSARY.
  - 3 ROUTE NEW WASTE PIPE FROM NEW FIXTURES TO EXISTING PIPE LARGER THAN 3". CONTRACTOR TO VERIFY EXISTING PIPE LOCATIONS.
  - 4 CONTRACTOR TO VERIFY UNDERSLAB PIPE ROUTING.
  - 5 ROUTE NEW LAV TAILPIECE INTO EXISTING LAV TAILPIECE IN WALL. NEW 1 1/4" VENT UP TO CEILING, CONNECT TO EXISTING VENT PIPING.
  - 6 ROUTE VENT FROM LAV TO NEAREST VENT PIPING, 2" OR LARGER.



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**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

ENTIRE SHEET IS  
 ADD ALTERNATE #2

| TAG   | DESCRIPTION              | BASIS OF DESIGN |           | TRIM         |         | SPECIFICATION  |
|-------|--------------------------|-----------------|-----------|--------------|---------|--|
|       |                          | MANUFACTURER    | MODEL     | MANUFACTURER | MODEL   |  |
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**RESTROOM  
 PLUMBING  
 WASTE AND  
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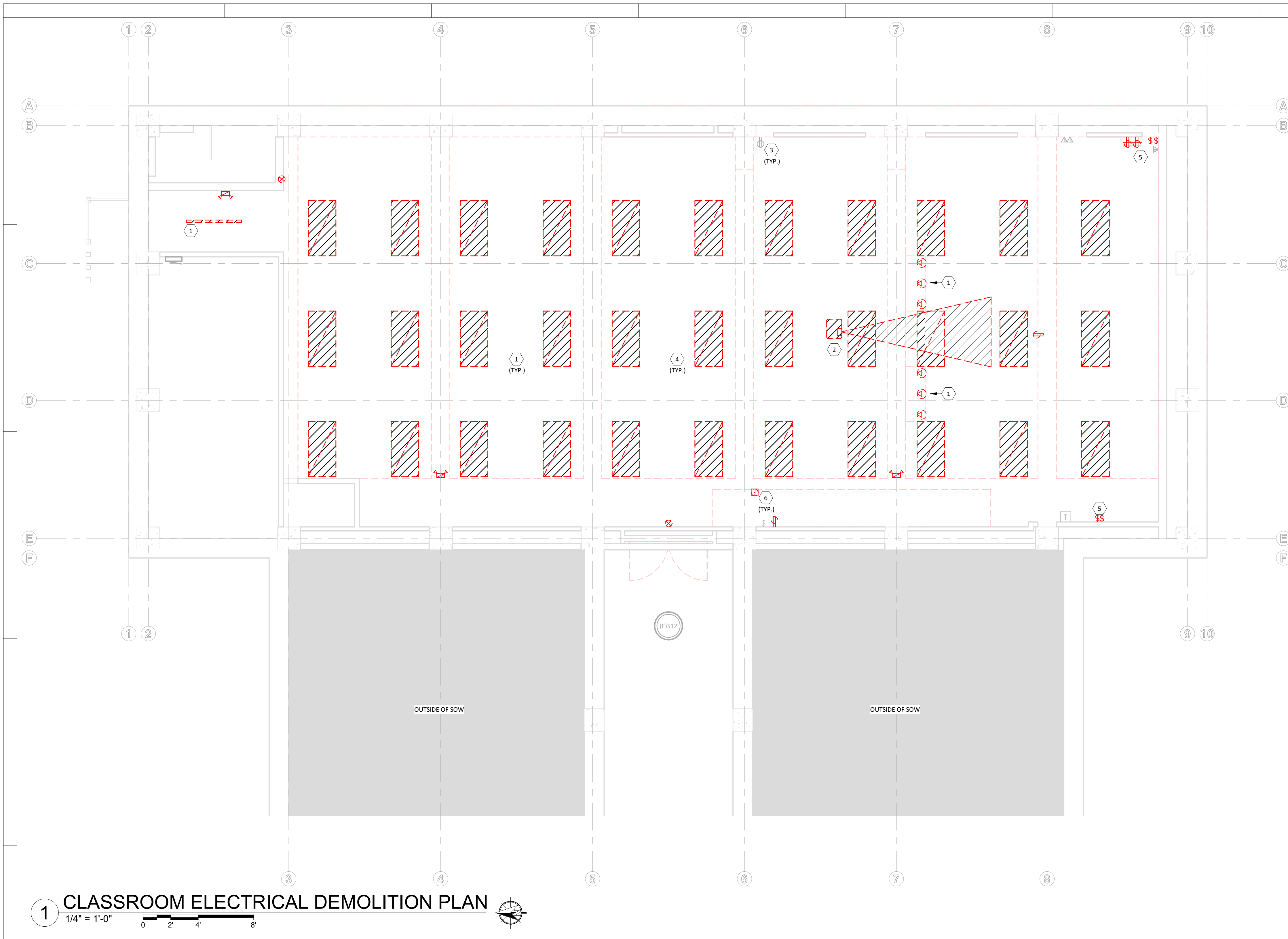
**P-121**

PROJECT #24002

| ELECTRICAL SYMBOL LEGEND |                    |                    |
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| ELECTRICAL ABBREVIATIONS LIST |  |        |   |
|-------------------------------|--|--------|---|
| 1P                            | 1 POLE (2P, 3P, 4P, ETC.)                  | ELEC   | ELECTRIC, ELECTRICAL                      |
| A                             | AMPERE                                     | ELEV   | ELEVATOR                                  |
| AC                            | ABOVE COUNTER OR AIR CONDITIONER           | EM     | EMERGENCY                                 |
| ACLG                          | ABOVE CEILING                              | EMS    | ENERGY MANAGEMENT SYSTEM                  |
| ADO                           | AUTOMATIC DOOR OPENER                      | EMT    | ELECTRICAL METALLIC TUBING                |
| AF                            | AMP FRAME                                  | EP     | ELECTRIC PNEUMATIC                        |
| AFF                           | ABOVE FINISHED FLOOR                       | EQUIP  | EQUIPMENT                                 |
| AFG                           | ABOVE FINISHED GRADE                       | EW     | ELECTRIC WATER COOLER                     |
| AFI                           | ARC FAULT CIRCUIT INTERRUPTER              | EXIST  | EXISTING                                  |
| AHU                           | AIR HANDLING UNIT                          | EXH    | EXHAUST                                   |
| AL                            | ALUMINUM                                   | EXP    | EXPLOSION PROOF                           |
| ALT                           | ALTERNATE                                  | FA     | FIRE ALARM                                |
| AMP                           | AMPERE                                     | FABP   | FIRE ALARM BOOSTER POWER SUPPLY PANEL     |
| AMPL                          | AMPLIFIER                                  | FACP   | FIRE ALARM CONTROL PANEL                  |
| ANNU                          | ANNUNCIATOR                                | FCU    | FAN COIL UNIT                             |
| APPROX                        | APPROXIMATELY                              | FIX    | FIXTURE                                   |
| AQ                            | AQUASTAT                                   | FLOOR  | FLOOR                                     |
| ARCH                          | ARCHITECT, ARCHITECTURAL                   | FLUOR  | FLUORESCENT                               |
| AS                            | AMP SWITCH                                 | FU     | FUSE                                      |
| AT                            | AMP TRIP                                   | FUJDS  | FUSED SAFETY DISCONNECT SWITCH            |
| ATS                           | AUTOMATIC TRANSFER SWITCH                  | GA     | GAUGE                                     |
| AUTO                          | AUTOMATIC                                  | GAL    | GALLON                                    |
| AUX                           | AUXILIARY                                  | GEN    | GENERATOR                                 |
| AV                            | AUDIO VISUAL                               | GENI   | GENERAL CONTRACTOR                        |
| AWG                           | AMERICAN WIRE GAUGE                        | GFI    | GROUND FAULT CIRCUIT INTERRUPTER          |
| BATT                          | BATTERY                                    | GFP    | GROUND FAULT PROTECTOR                    |
| BOARD                         | BOARD                                      | GND    | GROUND                                    |
| BG                            | BUILDING                                   | GRS    | GALVANIZED RIGID STEEL (CONDUIT)          |
| BMS                           | BUILDING MANAGEMENT SYSTEM                 | GYB    | GYPSUM BOARD                              |
| C                             | CONDUIT                                    | HOA    | HANDS-OFF-AUTOMATIC SWITCH                |
| CAB                           | CABINET                                    | HORIZ  | HORIZONTAL                                |
| CAT                           | CATALOG                                    | HP     | HORSEPOWER                                |
| CATV                          | CABLE TELEVISION                           | HVAC   | HEATING, VENTILATING AND AIR CONDITIONING |
| CB                            | CIRCUIT BREAKER                            | HTG    | HEATING                                   |
| CCTV                          | CLOSED CIRCUIT TELEVISION                  | HTR    | HEATER                                    |
| CF                            | CONTRACTOR FURNISHED, CONTRACTOR INSTALLED | HV     | HIGH VOLTAGE                              |
| CFI                           | CONTRACTOR INSTALLED                       | IC     | INTERMITTING CAPACITY                     |
| CLG                           | CEILING                                    | IG     | ISOLATED GROUND                           |
| CMFR                          | COMPRESSOR                                 | IMC    | INTERMEDIATE METAL CONDUIT                |
| COMB                          | COMBINATION                                | INCAND | INCANDESCENT                              |
| CONN                          | CONNECTION                                 | INFR   | INFRARED                                  |
| CONSTR                        | CONSTRUCTION                               | I/W    | INTERLOCK WITH                            |
| CONT                          | CONTINUATION OR CONTINUOUS                 | J-BOX  | JUNCTION BOX                              |
| CONTR                         | CONTRACTOR                                 | KV     | KILOVOLT                                  |
| CONV                          | CONVECTOR                                  | KVA    | KILOVOLT-AMPERE                           |
| CP                            | CIRCULATING PUMP                           | KVAR   | KILOVOLT-AMPERE REACTIVE                  |
| CR                            | CATHODE-RAY TUBE                           | KW     | KILOWATT                                  |
| CT                            | CURRENT TRANSFORMER                        | KWH    | KILOWATT HOUR                             |
| CTR                           | CENTER                                     | LOC    | LOCATE OR LOCATION                        |
| CU                            | COPPER                                     | L      | LIGHTS, LIGHTING                          |
| DCP                           | DOMESTIC WATER CIRCULATING PUMP            | LITG   | LIGHTING                                  |
| DEPT                          | DEPARTMENT                                 | LV     | LOW VOLTAGE                               |
| DET                           | DETECT                                     | M      | MOTOR, MOTORIZED                          |
| DWH                           | DOMESTIC WATER HEATER                      | MAX    | MAXIMUM                                   |
| DIA                           | DIAMETER                                   | MAG.S  | MAGNETIC STARTER                          |
| DISC                          | DISCONNECT                                 | M/C    | MOMENTARY CONTACT                         |
| DIST                          | DISTRIBUTION                               | M/CB   | MECHANICAL CONTRACTOR                     |
| DN                            | DOWN                                       | MCB    | MAIN CIRCUIT BREAKER                      |
| DS                            | SAFETY DISCONNECT SWITCH                   | MC     | MECHANICAL CONTRACTOR                     |
| DT                            | DOUBLE THROW                               | MCB    | MAIN CIRCUIT BREAKER                      |
| DWG                           | DRAWING                                    | M      | MOTOR                                     |
| (E)                           | EXISTING                                   | MTR    | MOTOR, MOTORIZED                          |
| EC                            | ELECTRICAL CONTRACTOR                      | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
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|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
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|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT                         |
|                               |  | M/CB   | MECHANICAL CONTRACTOR                     |
|                               |  | MCB    | MAIN CIRCUIT BREAKER                      |
|                               |  | M      | MOTOR                                     |
|                               |  | MTR    | MOTOR, MOTORIZED                          |
|                               |  | MAX    | MAXIMUM                                   |
|                               |  | MAG.S  | MAGNETIC STARTER                          |
|                               |  | M/C    | MOMENTARY CONTACT</                       |





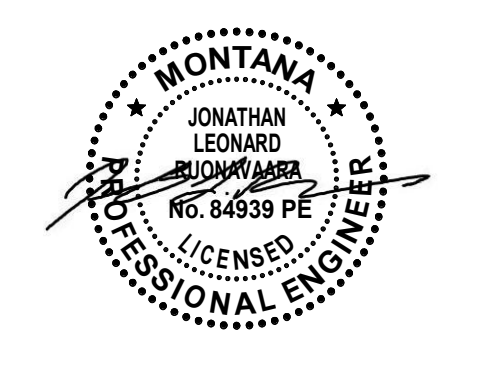
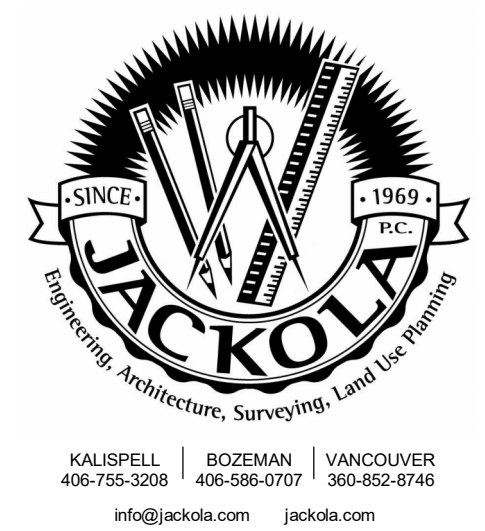
**1** CLASSROOM ELECTRICAL DEMOLITION PLAN  
 1/4" = 1'-0"  
 0 2' 4' 8'

**DEMOLITION GENERAL NOTES**

- SAVE CIRCUITS FROM DEMOLISHED ELECTRICAL COMPONENTS FOR REUSE. COORDINATE ELECTRICAL DEMOLITION WORK WITH GENERAL CONTRACTOR.
- FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.
- NOT ALL EXISTING DEVICES/EQUIP ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DEMOLITION WORK WITH EXISTING CONDITIONS.
- REROUTE/REINSTALL DEMOLISHED ELECTRICAL AS NOTED. DISPOSE OF ALL OTHER DEMOLISHED ELECTRICAL MATERIALS IN A SAFE AND LEGAL MANNER.

**KEYNOTES**

- 1 DEMOLISH ALL LIGHT FIXTURES IN ROOM. SAFE OFF EXISTING CIRCUITING FOR RECONNECTION OF NEW FIXTURES, SEE KEYNOTE 1/E-111.
- 2 DEMOLISH EXISTING PROJECTOR. REMOVE WIRING BACK TO NEAREST JUNCTION BOX.
- 3 UNLESS NOTED OTHERWISE, REPLACE HALFTONED EXISTING RECEPTACLE AND PHONE DATA DEVICES AND COLORS. REUSE EXISTING BOXES, CONDUIT, AND WIRING. SEE KEYNOTE 4/E-121.
- 4 DEMOLISH DEVICE, WIRING, AND RACEWAY WHERE SHOWN IN DASHED BOLD.
- 5 DEMOLISH EXISTING SURFACE RACEWAY, POWER, AND DATA WIRING BACK TO CEILING. REROUTE DATA TO NEW LECTURN, SEE KEYNOTE 2/E-121.
- 6 FLOOR HEIGHT INCREASED, SEE A-301. COORDINATE ALL DEVICES AND CONDUIT WITH ACOUSTICAL WALL TREATMENT AND INCREASE IN FLOOR HEIGHT. EXTEND/RELOCATE DEVICES AS REQUIRED.



FOR PERMIT & BIDDING

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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

DRAWN: CDH CHECKED: JLR

DATE: 11/19/2024

REVISIONS:

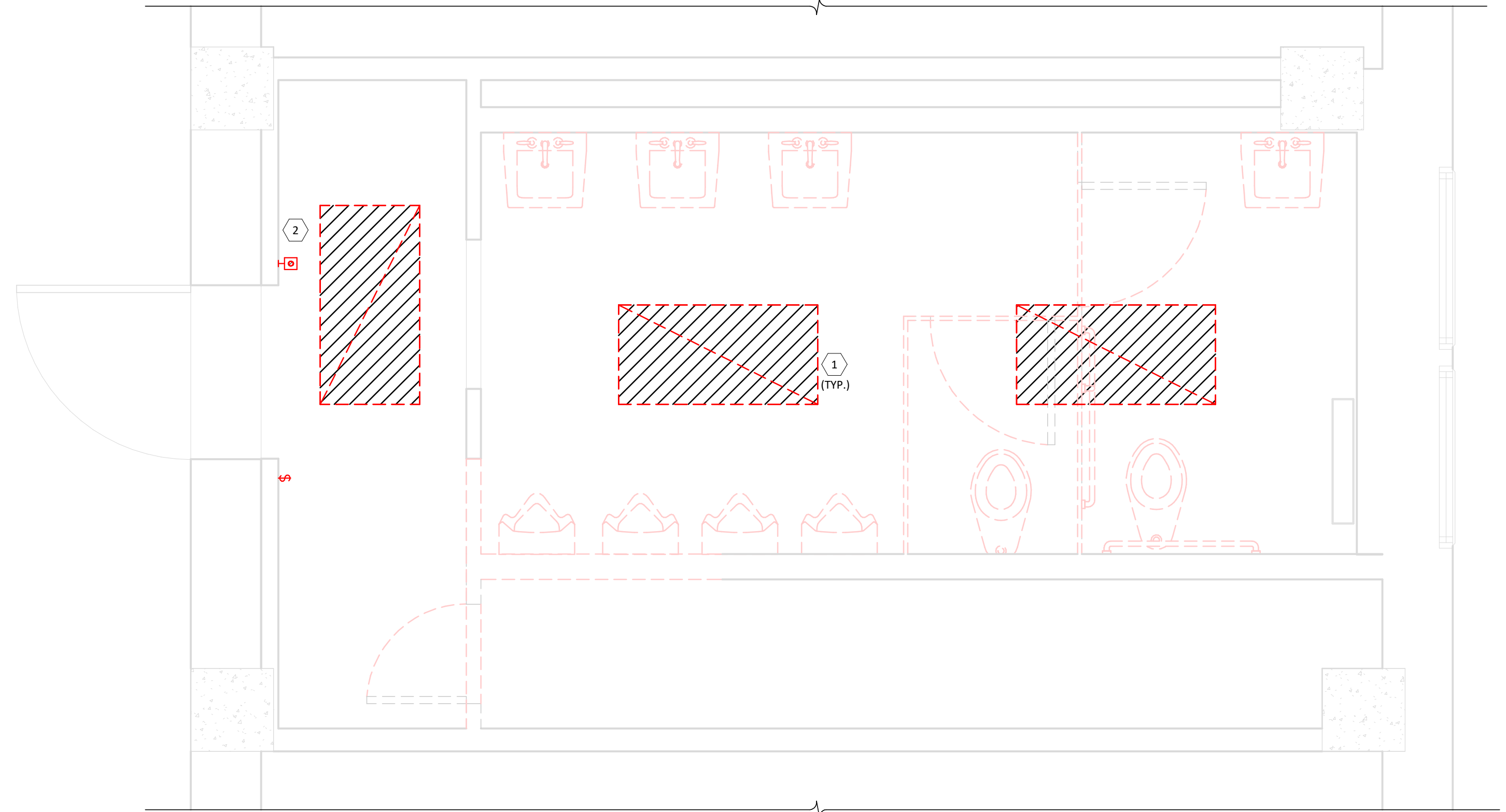
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**CLASSROOM ELECTRICAL DEMOLITION PLAN**

ENTIRE SHEET IS ADD ALTERNATE #1

**ED111**

PROJECT #24082



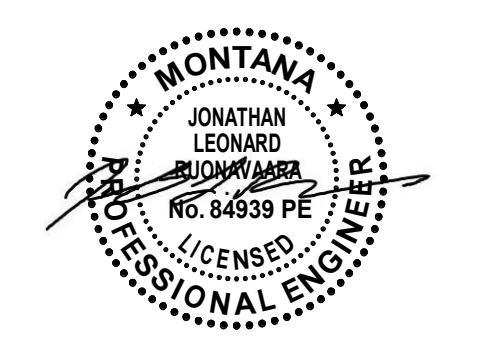
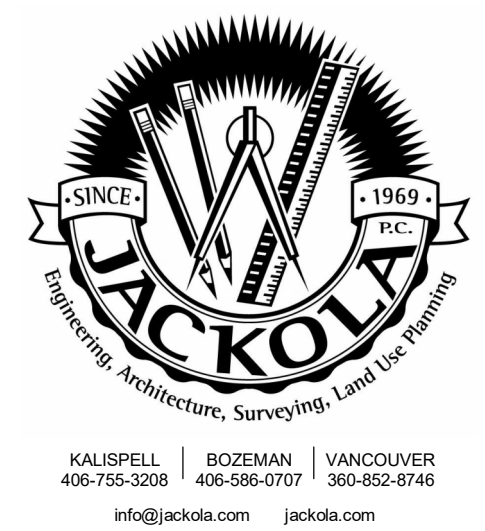
**1 RESTROOM ELECTRICAL DEMOLITION PLAN**  
 1/2" = 1'-0"

**DEMOLITION GENERAL NOTES**

- COORDINATE ELECTRICAL DEMOLITION WORK WITH GENERAL CONTRACTOR.
- FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.
- NOT ALL EXISTING DEVICES/EQUIP ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DEMOLITION WORK WITH EXISTING CONDITIONS.
- REROUTE/REINSTALL DEMOLISHED ELECTRICAL AS NOTED. DISPOSE OF ALL OTHER DEMOLISHED ELECTRICAL MATERIALS IN A SAFE AND LEGAL MANNER.

**KEYNOTES**

- 1 DEMOLISH ALL TROFFER LIGHT FIXTURES IN ROOM. SAFE OFF EXISTING CIRCUITING FOR RECONNECTION OF NEW FIXTURES. SEE KEYNOTE 1/E-112.
- 2 RELOCATE EXISTING ADA PUSH BUTTON SYSTEM TO NEW ADA RESTROOM DOOR. SEE KEYNOTE 2/E-112. VERIFY ALL ELECTRICAL REQUIREMENTS PRIOR TO INSTALL.



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 MONTANA STATE UNIVERSITY  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828**

DRAWN: CDH CHECKED: JLR

DATE: 11/19/2024

**REVISIONS:**

| # | DESCRIPTION |
|---|-------------|
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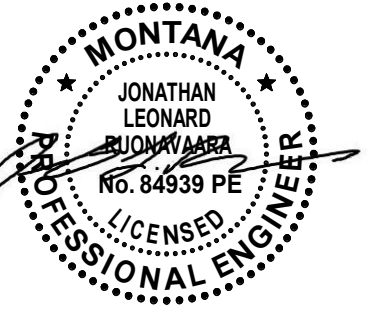
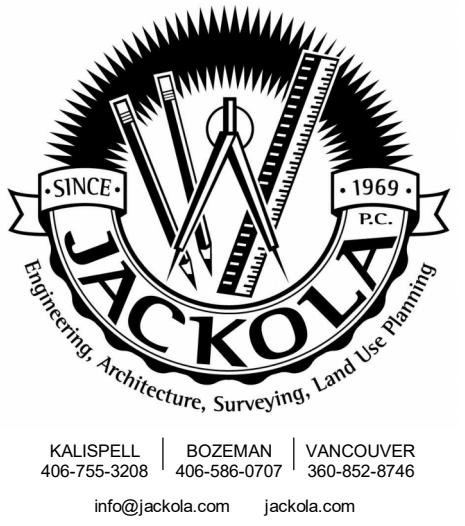
**RESTROOM  
 ELECTRICAL  
 DEMOLITION  
 PLAN**

ENTIRE SHEET IS  
 ADD ALTERNATE #2

**ED112**

PROJECT #240802





FOR PERMIT & BIDDING

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 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

**LIGHTING GENERAL NOTES**

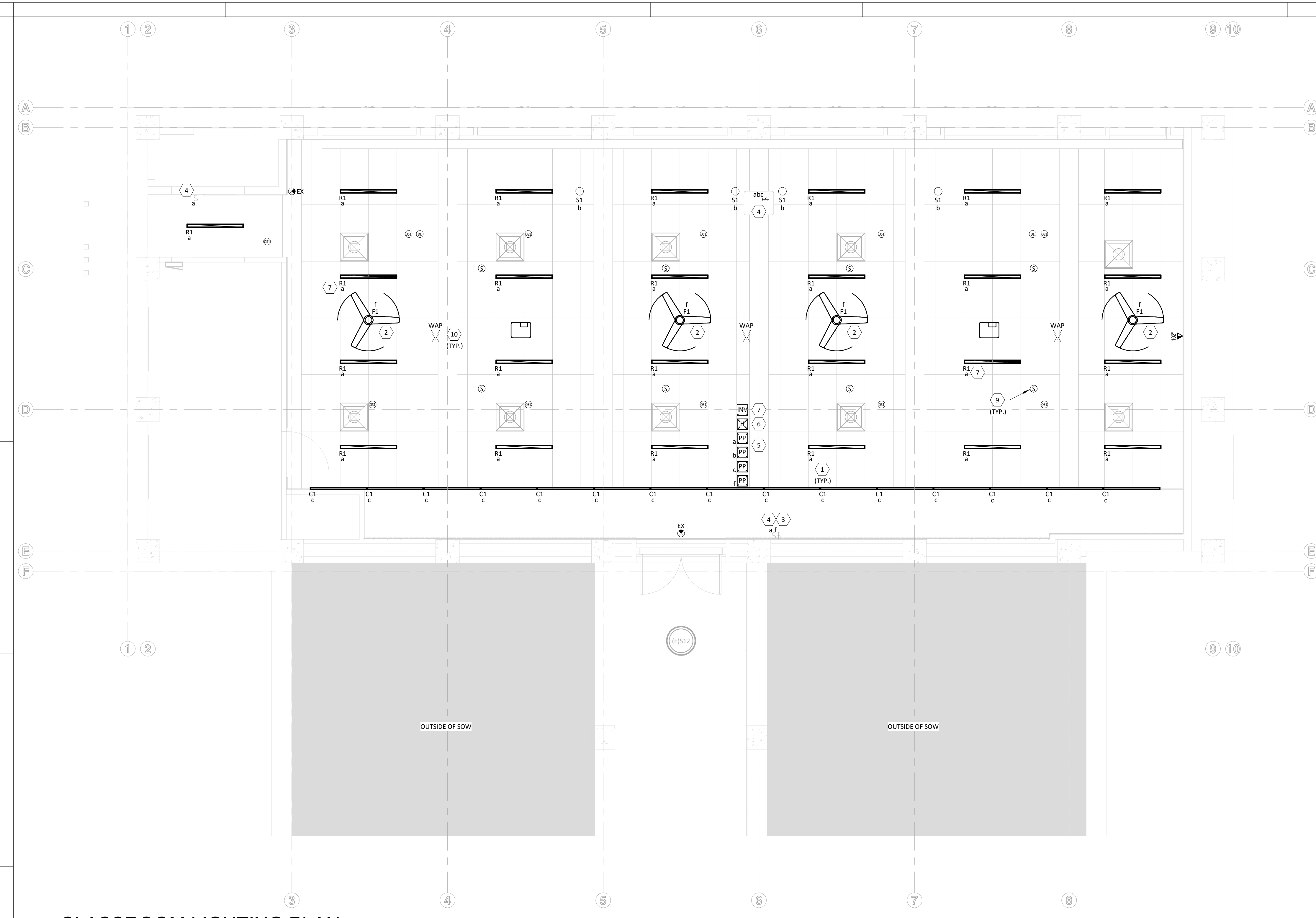
- LIGHTING LAYOUT AND PLACEMENT IS SCHEMATIC ONLY. COORDINATE EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLAN TO AVOID INTERFERENCE WITH MECHANICAL, PLUMBING, AND STRUCTURAL SYSTEMS.
- EXIT AND EMERGENCY EGRESS LIGHTING SHALL BE NON-SWITCHED AND CIRCUITED TO THE NEAREST INTERIOR LIGHTING CIRCUIT. EMERGENCY FIXTURES SHALL HAVE A 90 MINUTE MINIMUM BATTERY BACKUP. WHERE EMERGENCY FIXTURES HAVE AN ADJUSTABLE HEAD, DIRECT LIGHT TOWARDS PATH OF EGRESS.
- CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
- SEE ELECTRICAL SYMBOL NOTES ON TITLE SHEET E-001 FOR SWITCHING NOMENCLATURE. SWITCHES DESIGNATED WITH LOWER CASE LETTERS TO CONTROL FIXTURES WITH MATCHING DESIGNATIONS.
- ALL LAY-IN LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENT OF GRID CEILINGS FROM THE STRUCTURE ABOVE FROM AT LEAST TWO CORNERS. ATTACH WITH GRID CLIPS OR TABS RATED FOR LAY-IN CEILINGS.

**KEYNOTES**

- RECONNECT/REUSE EXISTING CIRCUITING FOR NEW FIXTURES AS POSSIBLE, SEE KEYNOTE 1/ED111. REWIRE AS NECESSARY, CONFORM TO NEC ARTICLE 300 FOR WIRING METHODS.
- COORDINATE EXACT FAN LOCATION AND MOUNTING WITH GC ON-SITE. ROUTE FAN POWER TO LUTRON VIVE CONTROLLER, SEE KEYNOTE 5/E-111.
- COORDINATE DEVICES WITH ACOUSTICAL WALL TREATMENT AND INCREASE IN FLOOR HEIGHT, EXTEND/RELOCATE DEVICE AS REQUIRED.
- LUTRON VIVE SWITCHING WITH DIMMING, PROVIDED BY OWNER'S AV DEPARTMENT.
- LUTRON VIVE POWERPACK, PROVIDED BY OWNER'S AV DEPARTMENT. MOUNT POWER PACK WITHIN 30' OF ALL CONTROLS, SENSORS, AND DEVICES. ROUTE FIXTURE AND FAN POWER AND CONTROLS BACK TO APPROPRIATE POWERPACK.
- LUTRON VIVE HUB, PROVIDED BY OWNER'S AV DEPARTMENT. ROUTE 1-1/2" DATA CABLE PATHWAY FROM HUB TO 521A TELECOMM ROOM.
- PROVIDE AND INSTALL 100VA BATTERY BACKUP INVERTER, BASIS OF DESIGN: BODINE ELI-5-100 OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATION. FEED EMERGENCY FIXTURE FROM INVERTER.
- CEILING SPEAKER PROVIDED AND INSTALLED BY MSU AV DEPARTMENT TO RUN CABLE TO PODIUM LOCATION.
- REINSTALL ALL DEVICES AFTER NEW CEILING IS REPLACED, SEE DIVISION OF RESPONSIBILITY.

**DIVISION OF RESPONSIBILITY:**

- CONTRACTOR FURNISHED, CONTRACTOR INSTALLED (CFG):**  
 JUNCTION BOXES, CONDUIT, & HOOKS  
 SHADES  
 BACKING FOR ALL MOUNTS
- OWNER FURNISHED, CONTRACTOR INSTALLED (OFCI):**  
 CENTER PEDESTAL FOR THE WIRED DESKS (ADD ALTERNATE #4)  
 MOUNTS FOR TVS, PROJECTORS, & CAMERAS  
 PROJECTOR SCREENS  
 SPEAKERS  
 FANS
- OWNER FURNISHED, OWNER INSTALLED (OFOI):**  
 LECTURNS  
 AV CONTROLS, INCLUDING LIGHTING CONTROLS  
 AV EQUIPMENT, INCLUDING TVS, PROJECTORS, WAP, SWITCHES, & COVER PLATES  
 AV EQUIPMENT CABINETS  
 ALL AV CABLES & WIRING  
 WALL CLOCKS



**1 CLASSROOM LIGHTING PLAN**  
 1/4" = 1'-0"  
 0 2' 4' 8'

**LIGHTING FIXTURE SCHEDULE**

| TAG | DESCRIPTION                 | MFR           | BASIS OF DESIGN   |  | MOUNTING     | VOLT  | WATTS | LED LAMP   |         |     | NOTE   |
|-----|-----------------------------|---------------|---|--|--------------|-------|-------|------------|---------|-----|--|
|     |                             |               | CATALOG SERIES  |  |              |       |       | COLOR TEMP | LUMENS  | CRI |  |
| C1  | COVE INTERIOR - 4'          | MODA LIGHTING | MNCL-HO-Sx-W-120V-E-35K-95-4                                      |  | SURFACE      | 120 V | 24 W  | 3500K      | 2118 lm | 95  | MOUNT BOTTOM OF COVE LIGHTS ABOVE TRIM, SEE ARCHITECTURAL ELEVATIONS |
| EX  | EXIT - WALL MOUNT           | LITHONIA      | EDG 1 R EL SD   |  | WALL/SURFACE | 120 V | 5 W   | NA         | 0 lm    | NA  | MOUNT BOTTOM OF SIGN 12" ABOVE DOOR                                  |
| F1  | FAN - 48"                   | AIRMAX        | 48201   |  | PENDANT      | 120 V | 75 W  | NA         | 0 lm    | NA  |  |
| R1  | RECESSED LINEAR - 4'        | LUMENWERX     | SQUR-D-MR035-BK-SW-90CRI-750LMF-35K-6FT0IN-UNV-D1-1C-NA-DTR-W-FWC |  | RECESSED     | 120 V | 41 W  | 3500K      | 4500 lm | 90  |  |
| S1  | SURFACE CYLINDER - 4" ROUND | LUMENWERX     | BOX2-4IN-TMB-SDB-TMB-SW-WFL-90CRI-1260LM-35K-UNV-RD1-FH-DM-TMB    |  | SURFACE      | 120 V | 18 W  | 3500K      | 1071 lm | 90  |  |

ENTIRE SHEET IS  
 ADD ALTERNATE #1

DRAWN: CDH CHECKED: JLR

DATE: 11/19/2024

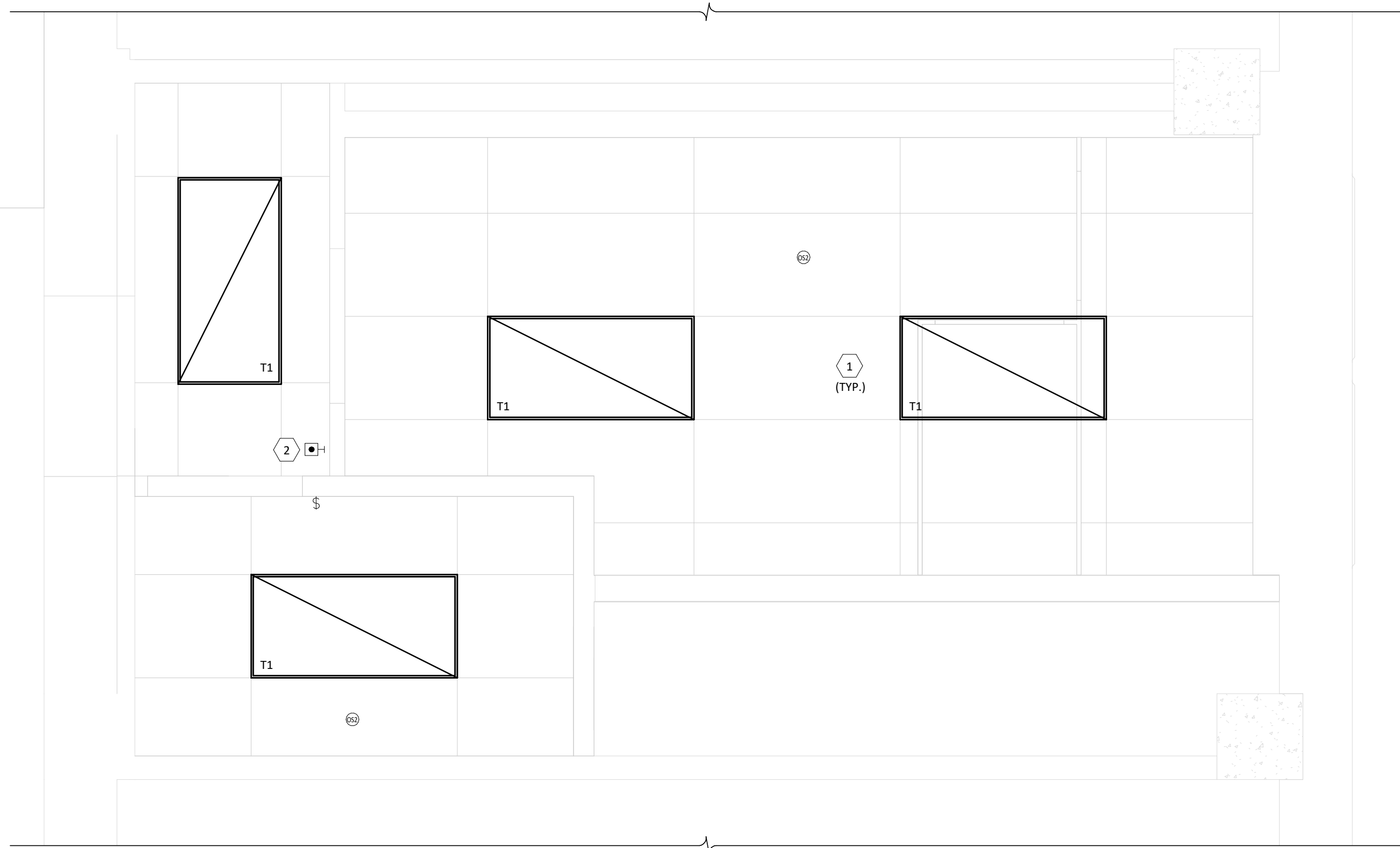
REVISIONS:

**CLASSROOM  
 LIGHTING PLAN**

**E-111**

PROJECT #240802

| LIGHTING FIXTURE SCHEDULE |                        |                 |                     |          |          |       |            |         |     |  |      |
|---------------------------|------------------------|-----------------|---------------------|----------|----------|-------|------------|---------|-----|--|------|
| TAG                       | DESCRIPTION            | BASIS OF DESIGN |                     |          | LED LAMP |       |            |         |     |  | NOTE |
|                           |                        | MFR             | CATALOG SERIES      | MOUNTING | VOLT     | WATTS | COLOR TEMP | LUMENS  | CRI |  |      |
| T1                        | 2'X4' RECESSED TROFFER | RAB             | EZPAN 2X4-S0-YN/D10 | RECESSED | 120 V    | 49 W  | 3500K      | 5569 lm | 84  |  |      |



**1 RESTROOM LIGHTING PLAN**  
1/2" = 1'-0"  
0 1' 2' 4'

**LIGHTING GENERAL NOTES**

- LIGHTING LAYOUT AND PLACEMENT IS SCHEMATIC ONLY. COORDINATE EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLAN TO AVOID INTERFERENCE WITH MECHANICAL, PLUMBING, AND STRUCTURAL SYSTEMS.
- EXIT AND EMERGENCY EGRESS LIGHTING SHALL BE NON-SWITCHED AND CIRCUITED TO THE NEAREST INTERIOR LIGHTING CIRCUIT. EMERGENCY FIXTURES SHALL HAVE A 90 MINUTE MINIMUM BATTERY BACKUP. WHERE EMERGENCY FIXTURES HAVE AN ADJUSTABLE HEAD, DIRECT LIGHT TOWARDS PATH OF EGRESS.
- CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
- SEE ELECTRICAL SYMBOL NOTES ON TITLE SHEET E-001 FOR SWITCHING NOMENCLATURE. SWITCHES DESIGNATED WITH LOWER CASE LETTERS TO CONTROL FIXTURES WITH MATCHING DESIGNATIONS.
- ALL LAY-IN LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENT OF GRID CEILINGS FROM THE STRUCTURE ABOVE FROM AT LEAST TWO CORNERS. ATTACH WITH GRID CLIPS OR TABS RATED FOR LAY-IN CEILINGS.

**KEYNOTES**

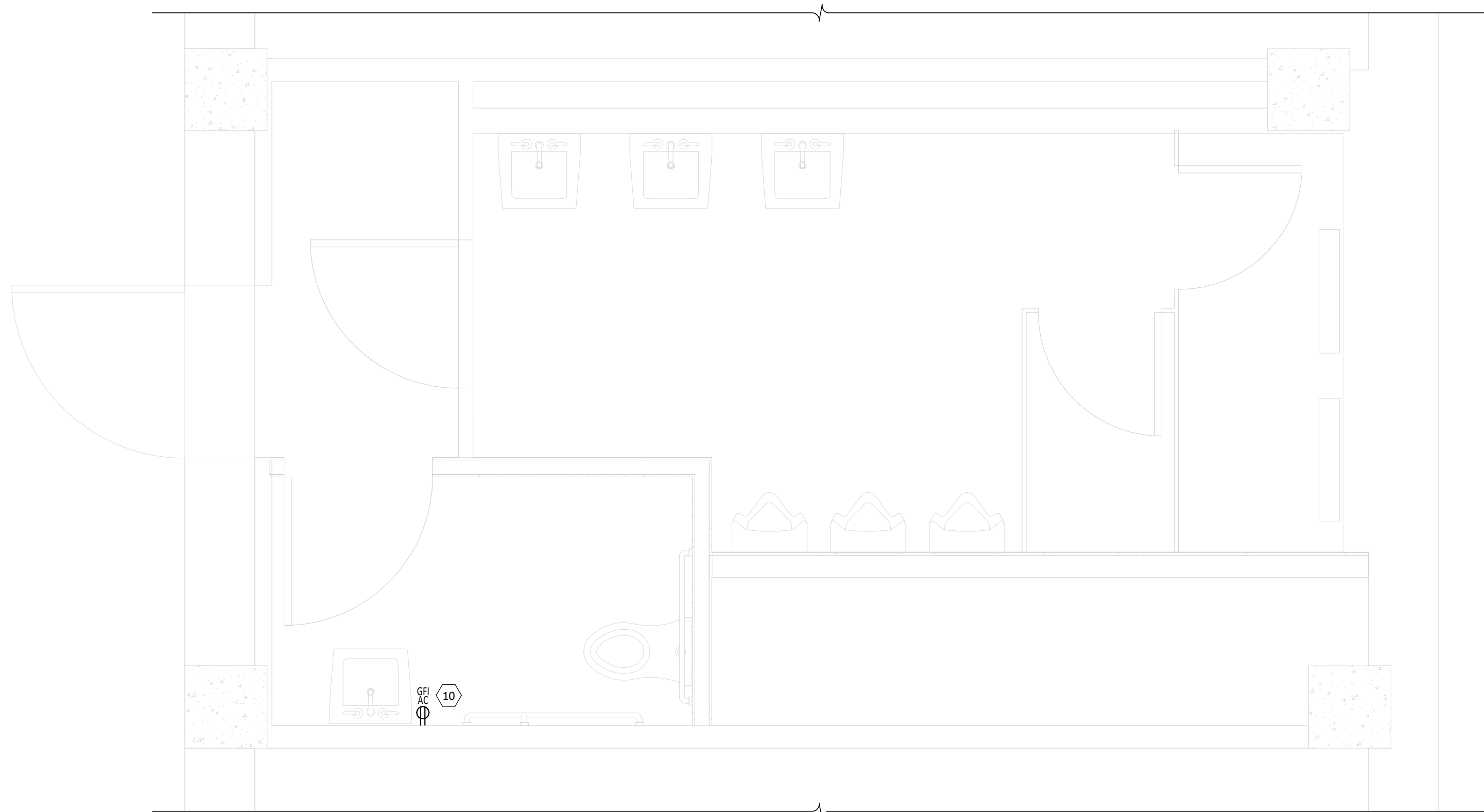
- RECONNECT/REUSE EXISTING CIRCUITING FOR NEW FIXTURES AS POSSIBLE. SEE KEYNOTE 1/ED112. REWIRE AS NECESSARY. CONFORM TO NEC ARTICLE 300 FOR WIRING METHODS.
- REINSTALL RELOCATED EXISTING ADA PUSH BUTTON SYSTEM TO NEW ADA RESTROOM DOOR. SEE KEYNOTE 2/ED111. VERIFY ALL ELECTRICAL REQUIREMENTS PRIOR TO INSTALL.

**POWER GENERAL NOTES**

- PRIOR TO ROUGH-IN AND INSTALLATION, ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND REQUIREMENTS OF ALL ELECTRICAL ITEMS. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATIONS OF HVAC EQUIPMENT.
- CONDUIT IS REQUIRED, PROVIDE 3/4" EMT (MINIMUM) HOMERUNS FOR ALL BRANCH CIRCUITS.
- WHERE POSSIBLE, CONCEAL ALL CONDUITS AND RACEWAYS EXCEPT ABOVE ACT CEILINGS.
- FIRE SEAL ALL PENETRATIONS IN FIRE RATED ASSEMBLIES. SEE FIRE PROTECTION NOTES ON E-001.
- CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
- ROUTE ALL DATA CABLE PATHWAYS TO BASEMENT TELECOMM ROOM. SEE DETAIL 2/E-121.
- LIMIT LENGTHS OF EXPOSED RACEWAYS WHERE POSSIBLE, MATCH EXISTING INSTALLATION/ROUTING METHODS.
- ROUTE NEW CIRCUITS TO ELECTRICAL PANEL IN ROOM 101A, SEE G-001 FOR LOCATION.

**KEYNOTES**

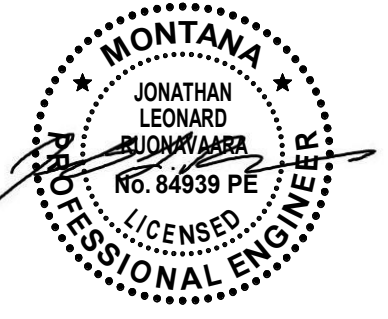
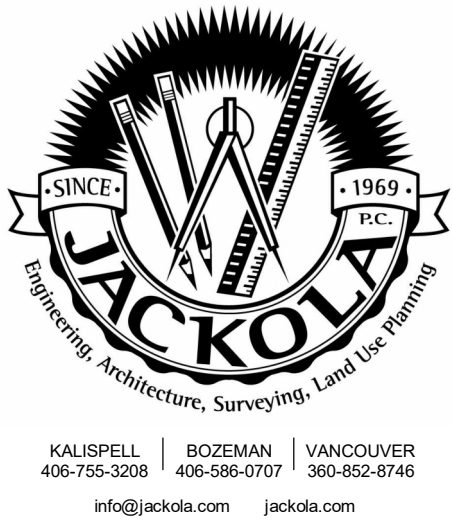
- CONNECT RECEPTACLE TO EXISTING CIRCUIT. VERIFY LOADS AND CIRCUIT CAPACITY ONSITE. COORDINATE LOCATION AND FEEDER CIRCUITRY ROUTING WITH OWNER PRIOR TO ROUGH-IN.



**2 RESTROOM POWER PLAN**  
1/2" = 1'-0"  
0 1' 2' 4'

**DIVISION OF RESPONSIBILITY:**

- CONTRACTOR FURNISHED, CONTRACTOR INSTALLED (CFCI):**  
JUNCTION BOXES, CONDUIT, & HOOKS  
SHADES  
BACKING FOR ALL MOUNTS
- OWNER FURNISHED, CONTRACTOR INSTALLED (OFCI):**  
CENTER PEDESTAL FOR THE WIRED DESKS (ADD ALTERNATE #4)  
MOUNTS FOR TVS, PROJECTORS, & CAMERAS  
PROJECTOR SCREENS  
SPEAKERS  
FANS
- OWNER FURNISHED, OWNER INSTALLED (OFOI):**  
LECTURNS  
AV CONTROLS, INCLUDING LIGHTING CONTROLS  
AV EQUIPMENT, INCLUDING TVS, PROJECTORS, WAP, SWITCHES,  
& COVER PLATES  
AV EQUIPMENT CABINETS  
ALL AV CABLES & WIRING  
WALL CLOCKS



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
ROOM #101 & LEVEL 1 RESTROOM  
PPA#: 23-0828

DRAWN: CDH CHECKED: JLR

DATE: 11/19/2024

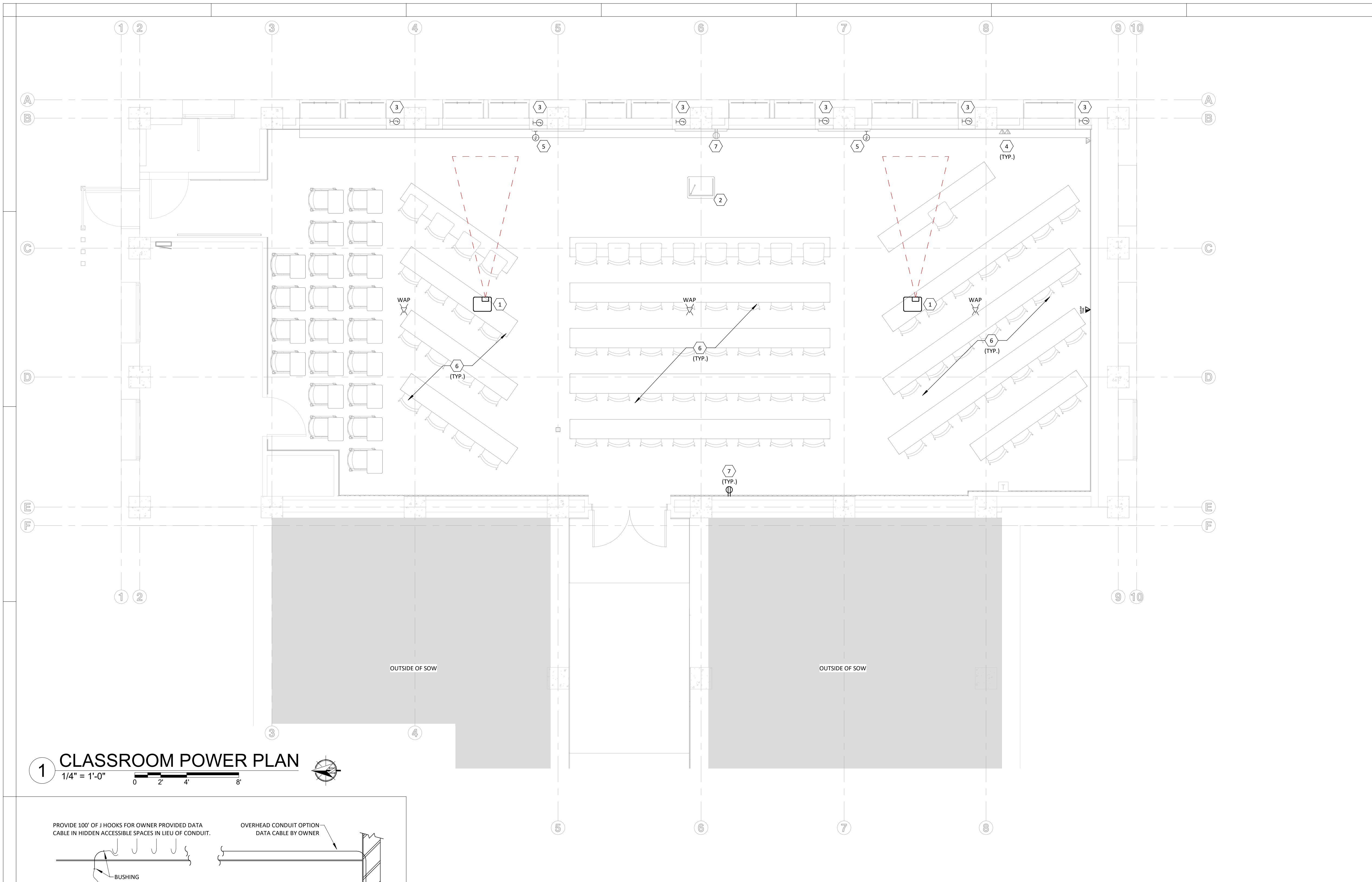
REVISIONS:

**RESTROOM ELECTRICAL PLANS**

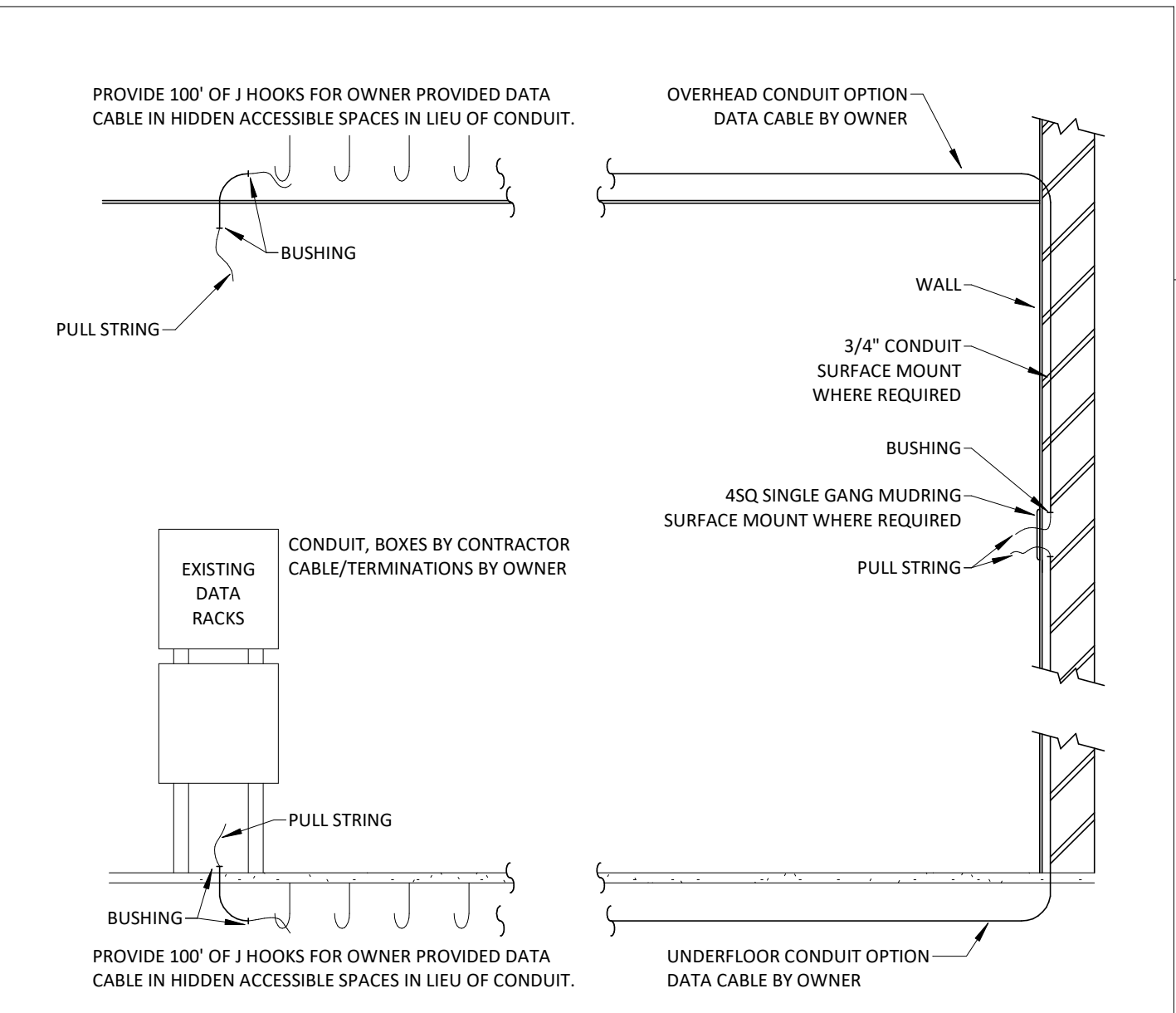
ENTIRE SHEET IS ADD ALTERNATE #2

**E-112**





**1 CLASSROOM POWER PLAN**  
 1/4" = 1'-0"  
 0 2 4 8



**2 DATA DETAIL**  
 N.T.S.

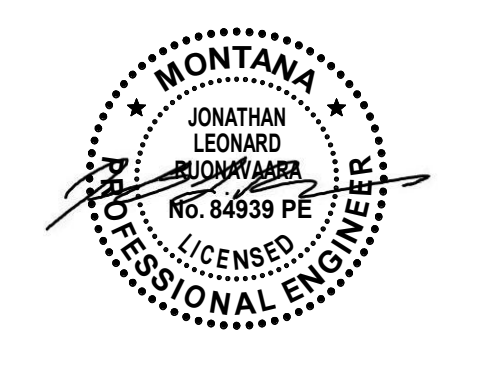
**POWER GENERAL NOTES**

- PRIOR TO ROUGH-IN AND INSTALLATION, ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND REQUIREMENTS OF ALL ELECTRICAL ITEMS. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATIONS OF HVAC EQUIPMENT.
- CONDUIT IS REQUIRED, PROVIDE 3/4" EMT (MINIMUM) HOMERUNS FOR ALL BRANCH CIRCUITS.
- WHERE POSSIBLE, CONCEAL ALL CONDUITS AND RACEWAYS EXCEPT ABOVE ACT CEILINGS.
- FIRE SEAL ALL PENETRATIONS IN FIRE RATED ASSEMBLIES, SEE FIRE PROTECTION NOTES ON E-001.
- CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUITING AND SWITCHING SHOWN.
- ROUTE ALL DATA CABLE PATHWAYS TO BASEMENT TELECOMM ROOM, SEE DETAIL 2/E-123.
- LIMIT LENGTHS OF EXPOSED RACEWAYS WHERE POSSIBLE, MATCH EXISTING INSTALLATION/ROUTING METHODS.
- ROUTE NEW CIRCUITS TO ELECTRICAL PANEL IN ROOM 101A, SEE G-001 FOR LOCATION.

**KEYNOTES**

- 1 NEW PROJECTOR OFOI, COORDINATE DATA AND POWER REQUIREMENTS WITH OWNER'S IT DEPARTMENT. VERIFY INSTALL LOCATION ON-SITE. REROUTE EXISTING WIRING TO NEW LOCATION AND EXTEND AS NECESSARY, SEE KEYNOTE 2/ED111.
- 2 REROUTE EXISTING POWER UNDER FLOOR TO NEW LECTURN AND PROVIDE (2) 1-1/2" C SLEEVES FOR DATA, SEE KEYNOTE 3/ED111. COORDINATE EXACT LOCATIONS ON-SITE WITH GC. COORDINATE ALL CONTROLS REQUIREMENTS WITH OWNER'S IT DEPARTMENT PRIOR TO INSTALL.
- 3 WINDOW SHADE BY CONTRACTOR, VERIFY ELECTRICAL REQUIREMENTS AND MOUNTING WITH GC ON-SITE.
- 4 REPLACE HALF TONE EXISTING RECEPTACLE AND PHONE DATA DEVICES AND COVERS. REUSE EXISTING BOXES, CONDUIT, AND WIRING. SEE DEMO KEYNOTE 3/ED111.
- 5 SUSPENDED POWERED PROJECTOR SCREEN BY CONTRACTOR, COORDINATE ELECTRICAL REQUIREMENTS AND MOUNTING WITH GC ON-SITE. PROVIDE CONTROL WIRING BACK TO LECTURN FOR REMOTE CONTROL.
- 6 ADD ALTERNATE #4: PROVIDE AND INSTALL POWER IN EACH ROW OF TABLES. INSTALL (1) DUPLEX FOR EVERY (4) CHAIRS OR FRACTION THEREOF. ROUTE CONDUIT UNDER NEW FLOOR. MOUNT RECEPTACLE(S) TO SURFACE OF TABLE.
- 7 FLOOR HEIGHT INCREASED, SEE A-301. COORDINATE ALL DEVICES AND CONDUIT WITH ACOUSTICAL WALL TREATMENT AND INCREASE IN FLOOR HEIGHT. EXTEND/RELOCATE DEVICES AS REQUIRED.

- DIVISION OF RESPONSIBILITY:**
- CONTRACTOR FURNISHED, CONTRACTOR INSTALLED (CFCI):**  
 JUNCTION BOXES, CONDUIT, & HOOKS  
 SHADES  
 BACKING FOR ALL MOUNTS
- OWNER FURNISHED, CONTRACTOR INSTALLED (OFCI):**  
 CENTER PEDESTAL FOR THE WIRED DESKS (ADD ALTERNATE #4)  
 MOUNTS FOR TVS, PROJECTORS, & CAMERAS  
 PROJECTOR SCREENS  
 SPEAKERS  
 FANS
- OWNER FURNISHED, OWNER INSTALLED (OFOI):**  
 LECTURNS  
 AV CONTROLS, INCLUDING LIGHTING CONTROLS  
 AV EQUIPMENT, INCLUDING TVS, PROJECTORS, WAP, SWITCHES, & COVER PLATES  
 AV EQUIPMENT CABINETS  
 ALL AV CABLES & WIRING  
 WALL CLOCKS



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**ROBERTS HALL**  
**MONTANA STATE UNIVERSITY**  
 ROOM #101 & LEVEL 1 RESTROOM  
 PPA#: 23-0828

DRAWN: CDH CHECKED: JLR

DATE: 11/19/2024

REVISIONS:

| NO. | DESCRIPTION |
|-----|-------------|
|     |             |
|     |             |
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|     |             |
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**CLASSROOM POWER PLAN**

ENTIRE SHEET IS  
 ADD ALTERNATE #1

**E-121**

PROJECT #240902