# LEGEND



Wall Type (see wall type schedule)

**Door Type (see door schedule)** 

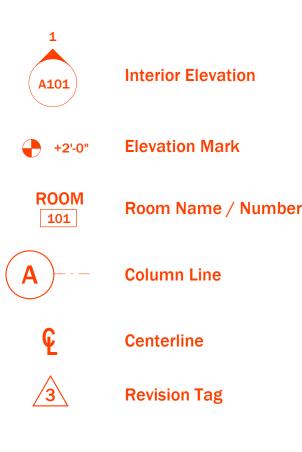
Window Type (see window schedule)

**Building Section** 

Wall Section

**Detail Number** 

**Building Elevation** 



# ABBREVIATIONS

А		Е				Р
AB	ANCHOR BOLT	EA	EACH	IGU	INSULATED GLASS UNIT	PART'N
ACI	AMERICAN CONCRETE INSTITUTE	EF	EXHAUST FAN	INCL	INCLUDE, INCLUDING	PC
ACP	ACOUSTIC CEILING PANEL	EIFS	EXTERIOR INSULATION FINISH SYSTEM	INDIC.	INDICATE(D)	PERF
AD		ELEC		INSUL	INSULATION	PERP
ADDT'L ADJ	ADDITIONAL ADJUSTABLE	ELEV OF EL	ELEVATION ENCLOSURE	INT	INTERIOR	PL P-LAM
AFF	ABOVE FINISHED FLOOR	EPS	EXPANDED POLYSTYRENE INSUL BD			
AFG	ABOVE FINAL GRADE	EQ	EQUAL	J		PMR
AHU	AIR HANDLING UNIT	EQUIP	EQUIPMENT			PTG/PTD
ALT	ALTERNATE	EXIST or (E		JC JST	JANITOR CLOSET JOIST	PNL
ALUM		EXT	EXTERIOR	121	30131	PREFAB
ARCH ASPH	ARCHITECT, ARCHITECTURAL ASPHALT					PREFIN PT
ASSY	ASSEMBLY	F		K		PVC
ASTM	AMERICAN SOCIETY OF TESTING	-				PORC. TIL
	& MATERIALS	FD FDN/FDTN	FLOOR DRAIN FOUNDATION	KP	KEY PAD	
		FDN/FDTN FE	FIRE EXTINGUISHER			
В		FEC	FIRE EXTINGUISHER CABINET			R
		FF	FINISHED FLOOR			RA
BD	BOARD	FIN	FINISHED			RAD
BG	BELOW GRADE	FJP	FINGER JOINTED PINE	LAV LOC	LAVATORY LOCATION/S	RD
BLDG BLKG	BUILDING BLOCKING			LUC	LIGHT	REF
BLKG	BEAM	FLRG F.O.	FLOORING FACE OF			REFL
B.O.	BOTTOM OF	FOS	FACE OF STUD	N /		REFR REINF
BOT	BOTTOM	FR	FIRE RATED	Μ		REQD
BRK	BRICK	FRM	FRAME/FRAMED	MAS	MASONRY	REQMT
BSMT	BASEMENT	FRMG	FRAMING	MAX	MAXIMUM	RESIL
BTWN	BETWEEN	FRP	FIBERGLASS REINFORCED PLASTIC	MECH	MECHANICAL	RET
		FT FTG	FOOT/FEET FOOTING	MEZZ MFR		REV
C		FTN	FOUNTAIN	MH	MANUFACTURER MANHOLE	RFG RI
				MIN	MINIMUM	RM
CAB/S CT	CABINET/S CERAMIC TILE	$\mathbf{C}$		MISC	MISCELLANEOUS	RO
CIP	CAST-IN-PLACE	G		MLWK	MILLWORK	-
C/L or CL		GA	GAUGE	MNFR	MANUFACTURER	
CJ	CONTROL JOINT	GALV.	GALVANIZED	MO		S
CLG	CEILING	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	MTD MTL	MOUNTED METAL	
CLR		GL	GLUE LAMINATED	M.WAVE	MICROWAVE	SAM SCHED
CMU C.O.	CONCRETE MASONRY UNIT CLEANOUT	GLB GLZ	GLULAM BEAM GLASS/GLAZING			SCR
COL	COLUMN	GWB	GYPSUM WALL BOARD	NI		SECT
СОММ	COMMUNICATIONS	GWB-P	GYPSUM WALL BOARD PAINTED	Ν		SF
CONC	CONCRETE			(N)	NEW	SG
CONFIG	CONFIGURATION			NÓ or #	NUMBER	SHLVS
CONST	CONSTRUCTION	Н		NIC	NOT IN CONTRACT	SHT SHWR
CONT CONTR	CONTINUOUS CONTRACTOR	Н	HIGH	NTS	NOT TO SCALE	SIM
COORD	COORDINATE	HB	HOSE BIB	-		SJ
CORR	CORRIDOR	HC	HANDICAPPED ACCESSIBLE	$\mathbf{O}$		SM
СРТ	CARPET	HDWRE	HARDWARE			SMD
CVG	CLEAR VERTICAL GRAIN	HDR HM	HEADER HOLLOW METAL	00	ON CENTER	SPEC SQ
		HORIZ	HORIZONTAL	O.D. OH	OUTER DIMENSION OVERHEAD	SS
D		HR	HANDRAIL	OP	OPERABLE	SSD
		HS	HOLLOW STEEL	OWSJ	OPEN WEB STEEL JOIST	STL
DBL	DOUBLE	HT	HEIGHT			STD
DN DET	DOWN DETAIL	HVAC	HEATING, VENTILATION, & AIR COND.			STST
DF		HVY HWH	HEAVY HOT WATER HEATER			STOR STRS
DIA	DIAMETER	11441				STRUCT
DIM	DIMENSION					SURF
DP	DAMPPROOFING					SUSP
DR DS	DOOR DOWNSPOUT					SUBFLR
DS DTL	DETAIL					SV
DW	DISHWASHER					
DWG	DRAWING					

# **BID DOCUMENTS** MARCH 7, 2024

# **PROJECT TEAM**

## **OWNER:**

MONTANA STATE UNIVERSITY CAMPUS PLANNING, DESIGN, & CONSTRUCTION

CONTACT: DONNY BEEBE

(406) 994-4547 (donald.beebe@montana.edu) **ARCHITECT:** 

**UPSHOT ARCHITECTURE** PO BOX 313 BOZEMAN, MT 59771

CONTACT: STEN WITMER

**GENERAL NOTES** 

- 1. General Conditions of the Contract (AIA Document A-201) apply to this project
- 2. All work shall comply with State and local Building Codes, fire department regulations, utility company standards, and the best trade practices
- 3. The General Contractor shall arrange all inspections and tests as specified or required by the building department and shall pay all costs and fees for same. The Contractor shall secure all building permits and upon completion of the project (prior to final payment) deliver to the Owner a Certificate of Occupancy or Use from the building department.
- 4. All plumbing and electrical work shall be performed by State licensed contractors. Contractors shall submit all required permits, certificates, and sign-offs to Owner and Architect for their records.
- 5. The General Contractor shall verify all dimensions, be familiar with the existing conditions, and bring any discrepancies to the attention of the Architect prior to submission of construction proposal and before beginning work. The Drawings reflect conditions reasonably inferred from the existing visible conditions but cannot guaranteed by the Architect. Drawings may be scaled for estimating purposes and for general reference only. For all other dimensions or locations consult the Architect or refer to dimensions on Drawings. Verify all dimensions in the field.
- 6. The General Contractor shall lay out all work and be responsible for all dimensions and conditions for trades such as electrical, plumbing, etc.
- 7. The General Contractor shall provide and maintain access to the premises at all times.
- 8. The Construction Manager shall make the premises secure from the elements and trespass on a daily basis.
- 9. The General Contractor shall keep the construction site free and clear of all debris and keep out all unauthorized persons. Upon completion of Work, the entire construction area is to be thoroughly cleaned and prepared for occupancy by Owner. All materials and debris resulting from the Contractor's work shall be removed from the site and disposed of properly. Care shall be taken during construction that no debris or materials are deposited in any Right of Way area.
- 10. The General Contractor shall be responsible for protecting all existing and new conditions and materials on the site. Any damage caused by or during the execution of the Work is the Contractor's responsibility and shall be repaired to the Owner's satisfaction at the Contractor's expense.

PARTITION PRECAST PERFORATED PERPENDICULAR PLATE/PROPERTY LIN PLASTIC LAMINATE PLYWOOD PER MNFR. RECOMMENDATION PAINTING / PAINTED AB PREFABRICATED PREFINISHED

PRESSURE TREATED POLYVINYL CHLORIDE RC. TILE PORCELAIN TILE

> **RETURN AIR** ROOF DRAIN REFERENCE REFLECTIVE REFRIGERATO REINFORCING REQUIRED REQUIREMENT RESILIENT RETAINING REVISION

RADIUS

ROOFING **RIGID INSULATION** 

ROOM

SHEET SHOWER

STEEL

ROUGH OPENING

SCHEDULE SCREEN SECTION SQUARE FOOT SAFETY GLAZING SHELVES

SELF-ADHERING MEMBRANE

SIMILAR SEISMIC JOINT SHEET METAL SEE MECHANICAL DRAWINGS SPECIFICATION

SQUARE SOLID SURFACE SEE STRUCTURAL DRAWINGS

STANDARD STAINLESS STEEL STORAGE STAIRS STRUCTURE/STRUCTURAL

SURFACE SUSPENDED, SUSPENSION SUBFLOOR SHEET VINYL

**TONGUE & GROOVE** TILE BASE TELEPHONE TERRAZZO TEMPERED GLASS THICK TOP OF TREAD TUBULAR STEEL TEXTURED TYPICAL

UNFIN UNFINISHED UNO

T&G

TΒ

TEL

TG

тΟ

TYP

U

UTIL

VB

VCT

VCB

VFY

VG

VIF

VR

w

W/

WB

WC

WD

W/D

WDW

WP

WRB

WSP

WΤ

WWF

YD

W

TFRR

VAPOR BARRIER VINYL COMPOSITE TILE VINYL COVE BASE V/VERT VERTICAL VERIFY VERTICAL GRAIN VERIFY IN FIELD

VAPOR RETARDER

WIDE WITH WOOD BASE WATER CLOSET WOOD WASHER / DRYER WINDOW WIDE FLANGE WATERPROOF, WATER PROOFING WATER RESISTANT BARRIER WET STANDPIPE WEIGHT WELDED WIRE FABRIC

YARD

UNLESS NOTED OTHERWISE UTILITY

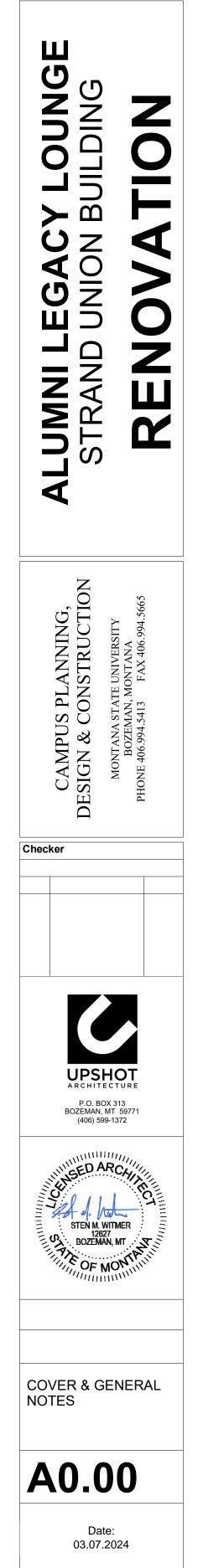


A0.00	COVER & GENERAL NOTES
A2.10	FLOOR PLANS
A3.10	REFLECTED CEILING PLANS
A8.10	INTERIOR ELEVATIONS

(406) 599-1372 (sten@upshotarch.com)

- 11. No cutting or damage to building structural components will be allowed without written authorization from the Architect.
- 12. All utilities shall be connected to provide gas, electric, and water to all equipment whether said equipment is in Contract or not. Equipment shall be guaranteed to function properly upon completion.
- 13. Manufacturer's standard specifications and materials approved for project use are hereby made part of these Notes with same force and effect as if written out in full herein. All appliances, fixtures, equipment, hardware, etc. shall be installed in accordance with Manufacturer's specifications and procedures.
- 14. Written words take precedence over drawn lines. Large-scale details and plans take precedence over smaller details and plans. Should a conflict arrive between the Specifications and Drawings, the requirements deemed most stringent shall be used.
- 15. Minor details not usually shown or specified but necessary for proper and acceptable construction, installation, or operation of any part of the Work as determined by the Architect shall be included in the Work as if it were specified or indicated on the Drawings.
- 16. All architectural drawings and construction notes are complimentary. What is indicated and called for by one shall be binding as though called for by all.
- 17. No deviation from the Drawings or Specifications or intent of same shall be made without the Architect's written authorization.
- 18. All Work shall be guaranteed for one year after final approval. The General Contractor shall sign the written guarantee as provided by the Owner. The guarantee shall cover all general and subcontractor work. All defects discovered during this period shall be repaired to the Owner's satisfaction at the Contractor's expense.
- 19. All dimensions are to face of stud or centerline of structure unless otherwise noted (UON).
- 20. Door and window details are indicated on the Door and Window Schedules.
- 21. Door and window dimensions are to centerlines of units UNO.





## DEMOLITION NOTES

1. COORDINATE W/ OWNER REGARDING DISPOSAL OF SALVAGE ITEMS 2.

# FLOOR PLAN NOTES

2.

DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE. 1.

## TYPICAL WALL ASSEMBLIES LISTED FROM INTERIOR TO EXTERIOR WHEN APPLICABLE

í i1 )

FINISH, SEE SCHEDULE 5/8" GWB 3 5/8" MTL STUD @ 16" O.C. SPRAY-APPLIED URETHANE INSULATION BLACK PAINT @ INTERIOR SIDE OF GLAZING COVER INTERIOR SIDE OF WINDOW:

•

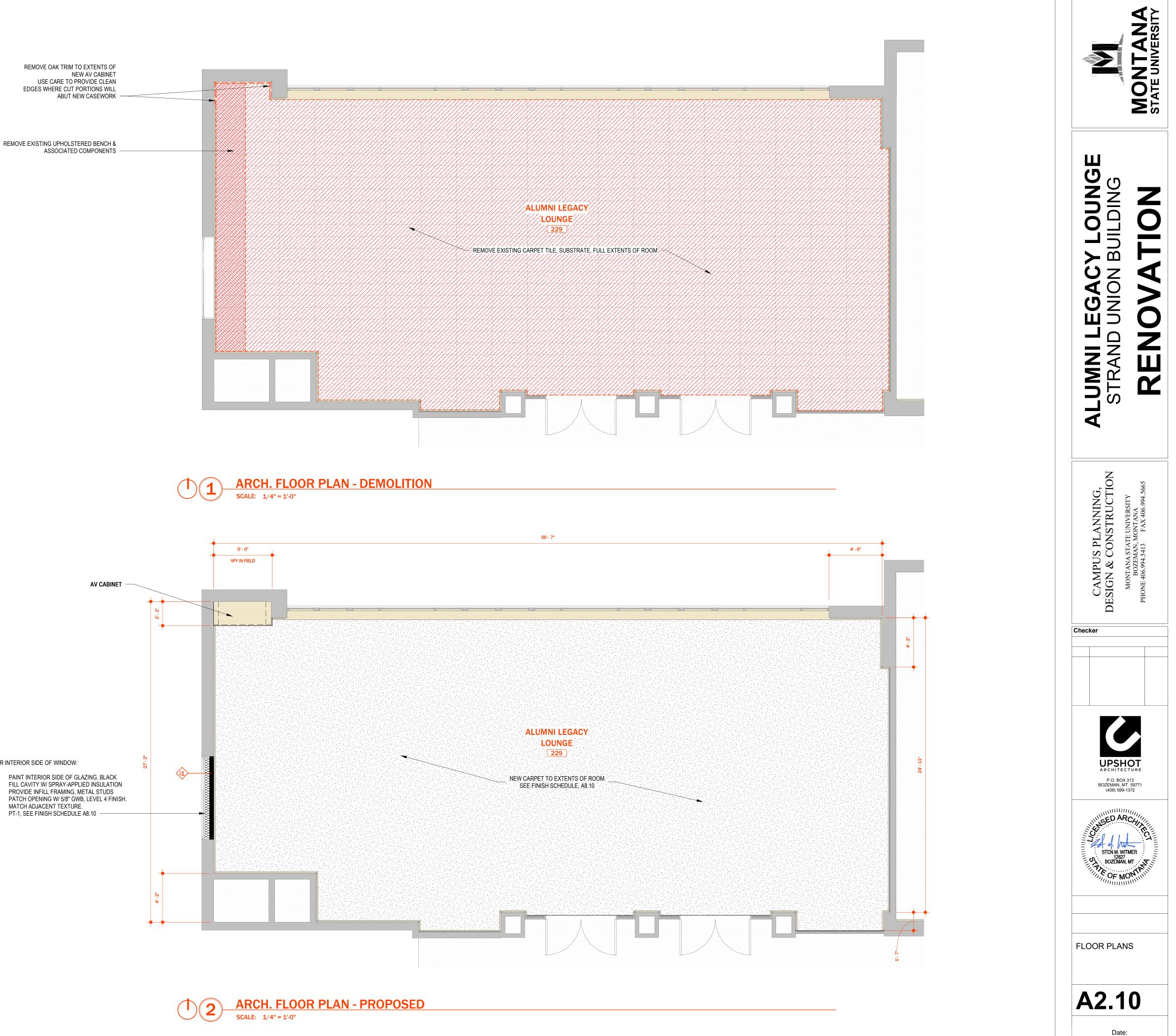
•

•

•

•

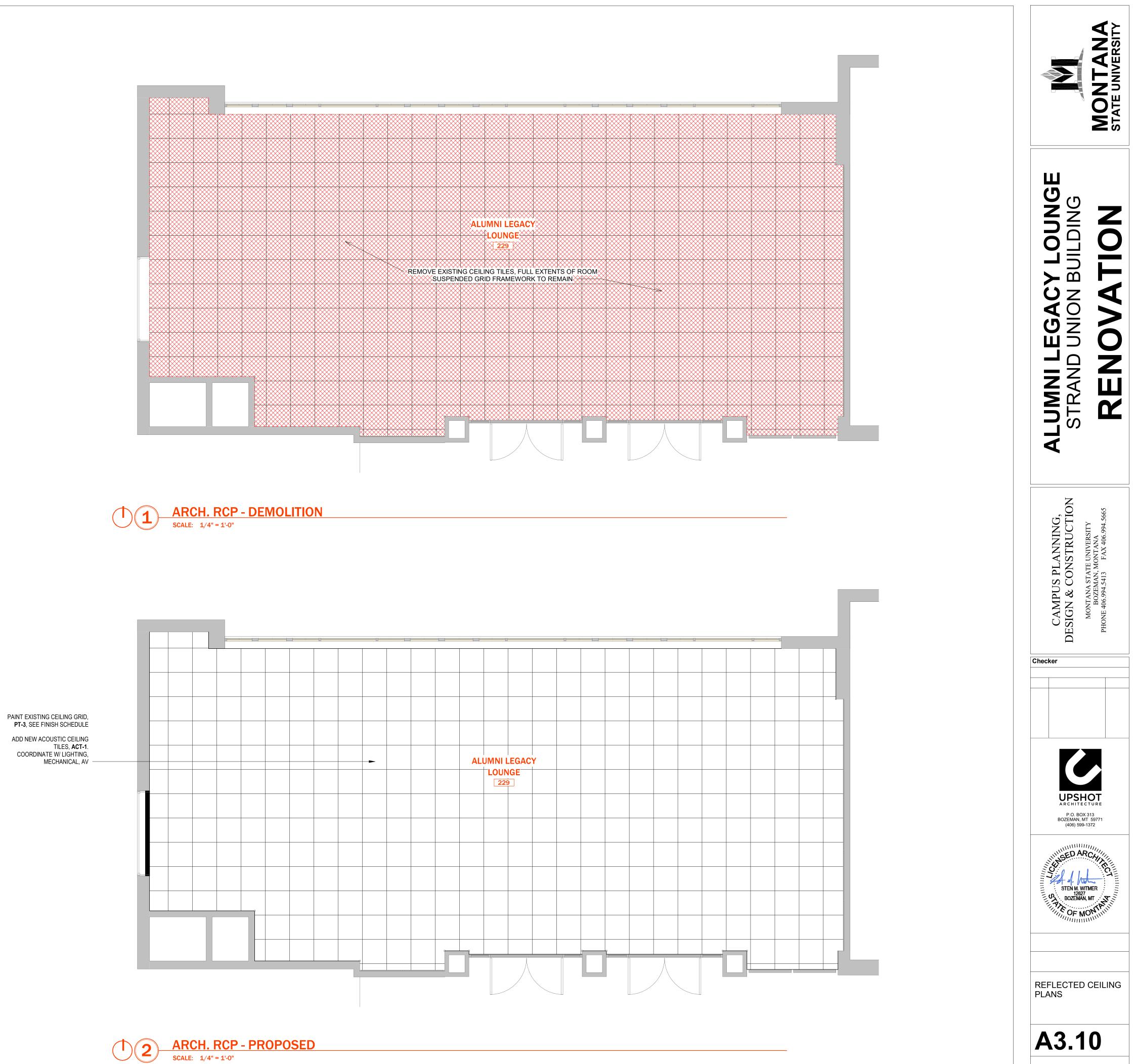
PATCH OPENING W/ 5/8" GWB, LEVEL 4 FINISH. MATCH ADJACENT TEXTURE. PT-1, SEE FINISH SCHEDULE A8.10



03.07.2024

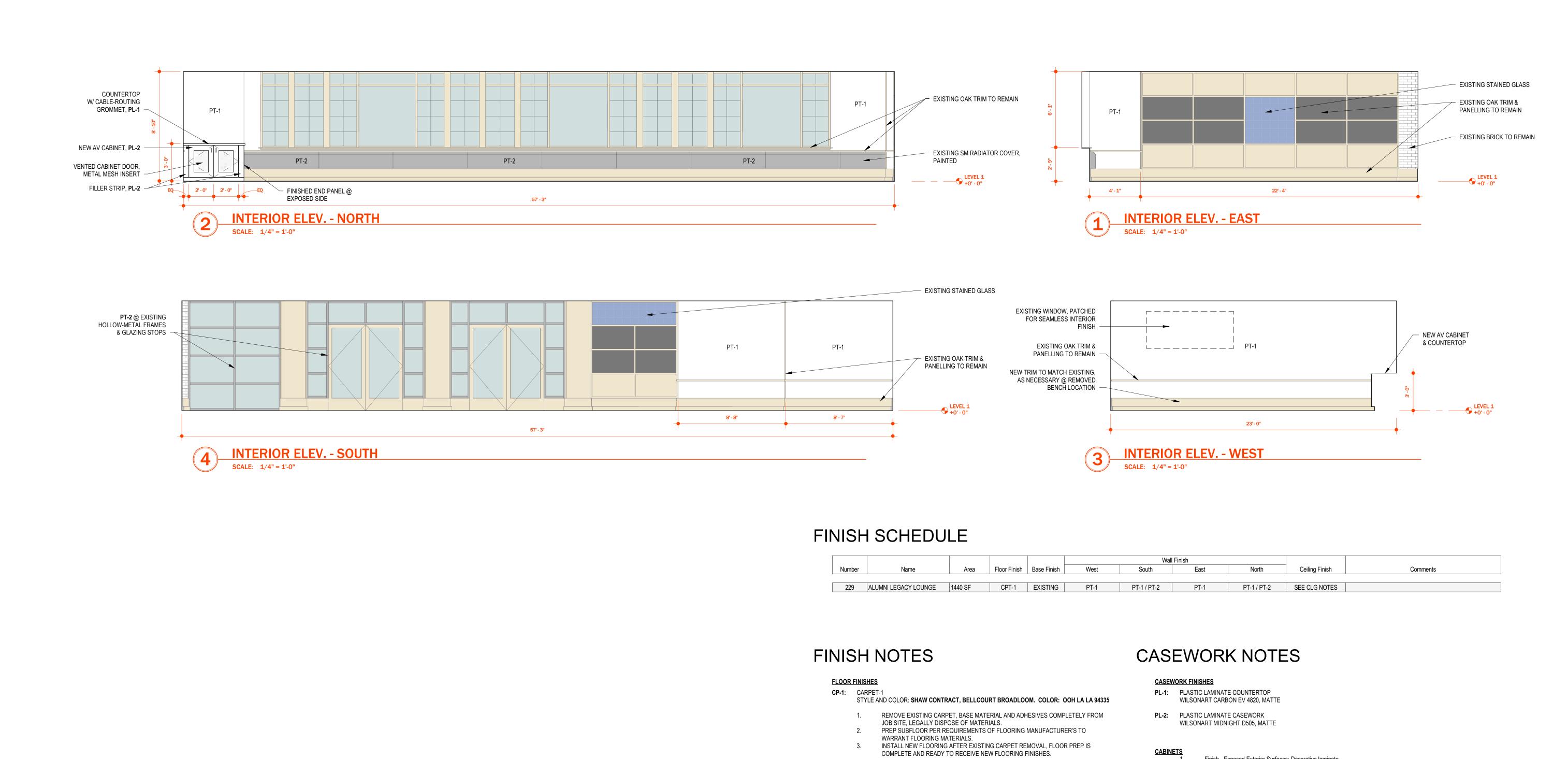
# **REFLECTED CEILING PLAN NOTES**

- 1. COORDINATE W/ OTHER DISCIPLINES FOR LOCATIONS & LAYOUT
- 2. PAINT EXSITING CEILING GRID IN ENTIRETY. PT-3 (PURE WHITE), SEE FINISH SCHEDULE, SHEET A8.10
- 3. ACT-1: ARMSTRONG CEILING SOLUTIONS. CANYON 15/16" SQUARE LAY-IN TILES. 24" X 24" X 5/8", WHITE.
- 4. FIELD-CUTTING OF TILES MAY BE REQUIRED, FOLLOW MANUFACTURER'S SPECIFICATIONS & RECOMMENDATIONS





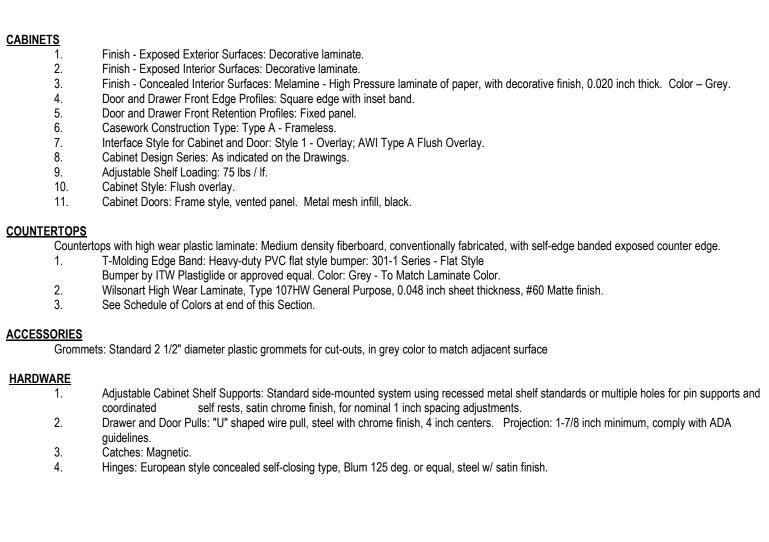
Date: 03.07.2024

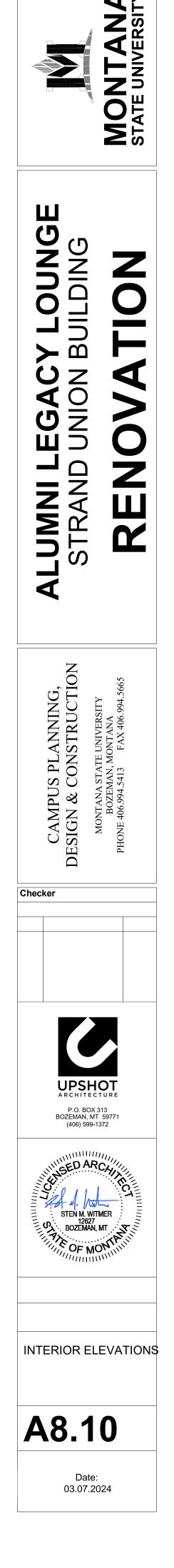


						Wa	ll Fi
Number	Name	Area	Floor Finish	Base Finish	West	South	
229	ALUMNI LEGACY LOUNGE	1440 SF	CPT-1	EXISTING	PT-1	PT-1 / PT-2	

FLOOR	FINISHES	CASEWO
CP-1:	CARPET-1 Style and color: <b>Shaw Contract, Bellcourt Broadloom. Color: Ooh la la 94335</b>	PL-1:
	<ol> <li>REMOVE EXISTING CARPET, BASE MATERIAL AND ADHESIVES COMPLETELY FROM JOB SITE, LEGALLY DISPOSE OF MATERIALS.</li> <li>PREP SUBFLOOR PER REQUIREMENTS OF FLOORING MANUFACTURER'S TO WARRANT FLOORING MATERIALS.</li> <li>INSTALL NEW FLOORING AFTER EXISTING CARPET REMOVAL, FLOOR PREP IS COMPLETE AND READY TO RECEIVE NEW FLOORING FINISHES.</li> </ol>	PL-2: CABINET
<u>PAINT</u> PT-1:	PAINT-1 @ WALLS COLOR: <b>BENJAMIN MOORE, SYMPHONY BLUE: 2060-10, EGGSHELL</b> (1) COAT PRIMER, (2) COATS FINISH PAINT	
PT-2:	PAINT-2 @ HOLLOW-METAL FRAMES, RADIATOR COVER COLOR: <b>SHERWIN WILLIAMS, ENDURING BRONZE: SW 7055, SATIN</b> (1) COAT PRIMER, (2) COATS FINISH PAINT	
PT-3:	PAINT-3 @ EXISTING CEILING GRID COLOR: <b>SHERWIN WILLIAMS, EXTRA WHITE: SW 7006, FLAT</b> (1) COAT PRIMER, (2) COATS FINISH PAINT	COUNTER

ACCESSORIES





# ALUMNI LEGACY LOUNGE | MECHANICAL

Montana State University, Bozeman MT

Mechanical Design - Review of existing in-room ducting, grilles, and radiator. General details provided for removal, cleaning, repair, and replacement.

- The symbols and abbreviations list on this sheet is a comprehensive standard guide intended for general use on all projects. Therefore, not all symbols and abbreviations contained in this list are necessarily used on this particular project and should be used for clarification only.
- 1. Codes and standards listed in specifications and drawings are minimum standards. Where requirements on the drawings or specifications exceed the minimum code requirements, the drawings or specifications shall govern.
- 2. The power rating of motors and other mechanical equipment and the electrical characteristics of electrical systems serving them have been established as minimums which allow that equipment to function properly to produce the required capacities. Power ratings include reasonable safety factors to accommodate common differences between design parameters and field construction practices. Equipment with power ratings less than those indicated on the drawings shall not be permitted.
- Reasonable efforts have been made to coordinate electrical requirements of mechanical equipment with the electrical systems serving that equipment. Differences among manufacturers of mechanical equipment make it impossible to produce a single electrical design which will satisfy the varying electrical requirements of those manufacturers. Consequently, the contractor shall coordinate the electrical requirements of the mechanical equipment furnished on this project and provide electrical systems required by that equipment. This coordination effort shall be completed prior to the installation of either the mechanical equipment or the electrical systems serving that equipment. Electrical system revisions required to coordinate with the mechanical equipment furnished shall be provided at no additional cost to the owner.
- 4. Drawings indicate general locations of fixtures, apparatus, equipment, piping, and ductwork. Changes on location shall be made to accommodate existing or new building conditions and coordination with other trades, including HVAC, plumbing, electrical, fire protection, structural, and architectural, shall be made without additional cost to the owner.
- 5. Provide access to equipment and portions of building systems requiring service.
- 6. Do not install ductwork, piping, or equipment in electrical rooms, elevator rooms, or elevator shafts, unless explicitly indicated on the drawings. Piping, ductwork, and equipment (switchgear, switchboards, panels, motor control centers, variable frequency drives, transformers, or starters) shall not be installed directly above or 42" in front of electrical equipment from the floor to the structure above.
- 7. Unless indicated otherwise, equipment and materials shall be new and of the customary standard and quality furnished by the designated manufacturer for that catalog number.
- 8. Air systems shall operate without aerodynamic noise generated from faulty installation of ductwork, diffusers, or any portion of the air distribution system.
- 9. Support piping independently of equipment. Hangar rods shall be suspended from the structure. Do not suspend from other piping, conduit, equipment, or ductwork.
- 10. All work referenced under division 23 shall be done by the mechanical contractor.
- 11. <u>Unauthorized changes</u>: in the event the client, the client's contractors or subcontractors, or anyone for whom the client is legally liable makes or permits to be made any changes to any reports, plans, specifications or other documents prepared by blacksheep engineering without obtaining without obtaining blacksheep engineering's prior written consent, the client shall assume full responsibility for the results of such changes. Therefore, the client agrees to waive any claim against blacksheep engineering and to release blacksheep engineering from any liability arising directly or indirectly from such changes. In addition, the client agrees to identify, defend, and hold harmless blacksheep engineering from any damages, liabilities or costs, including reasonable attorneys' fees and costs of defense, arising from such changes.

				-
AFF ACFM	ABOVE FINISHED FLOOR ACTUAL CFM	LWT LF	LEAVING WATER TEMPERATURE LINEAR FEET	
AC FIMI AHU	AIR HANDLING UNIT	MAX	MAXIMUM	
AMP	AMPERE (AMP, AMPS)	MAX M.C.	MECHANICAL CONTRACTOR	
AMP APD	AIR PRESSURE DROP	MIN	MINIMUM	
APPROX	APPROXIMATE	N/A	NOT APPLICABLE	
3HP	BRAKE HORSEPOWER	NTS	NOT TO SCALE	
BTU	BRITISH THERMAL UNIT	NO	NUMBER	
ИВН	BTU PER HOUR (THOUSAND)	OBD	OPPOSED BLADE DAMPER	
CU FT	CUBIC FEET	OBD	OUTSIDE AIR	
CU IN	CUBIC INCH	0A %	PERCENT	
CFM	CUBIC FEET PER MINUTE	PH	PHASE (ELECTRICAL)	
SCFM	CFM, STANDARD CONDITIONS	LBS	POUNDS	
DB	DECIBEL	PSI	POUNDS PER SQUARE INCH	
DIA, Ø	DIAMETER	PSIA	PSI ABSOLUTE	
DIA, Ø DN	DOWN	PD	PRESSURE DROP OR DIFFERENCE	
D	DIAMETER, INSIDE	PSIG	PSI GAUGE	
	DIAMETER, NUTSIDE	RH	RELATIVE HUMIDITY	
DBT	DRY BULB TEMPERATURE	RA	RETURN AIR	
	EXISTING	RPM	REVOLUTIONS PER MINUTE	
E) EAT	ENTERING AIR TEMPERATURE	SH	SENSIBLE HEAT	
E.C.	ELECTRICAL CONTRACTOR	SPEC		
EWT	ENTERING WATER TEMPERATURE		STANDARD	
-	FAHRENHEIT	SP	STATIC PRESSURE	
Ā	FROM ABOVE	SA	SUPPLY AIR	
B	FROM BELOW	TEMP		
-PM	FEET PER MINUTE	TD	TEMPERATURE DIFFERENCE	
-T	FOOT OR FEET	T STAT		
ΗZ	FREQUENCY	TONS		
GAL	GALLONS	T.C.	TEMPERATURE CONTROL	
G.C.	GENERAL CONTRACTOR	VEL	VELOCITY	
SPM	GALLONS PER MINUTE	V	VOLT	
HD	HEAD	VOL	VOLUME	
HP	HORSEPOWER	VFD		
	KILOWATT	WPD	WATER PRESSURE DROP	
.AT	LEAVING AIR TEMPERATURE	W/	WITH	
				1

Rev. Description

XXXX Elevation Tag

Date

### New - Solid Black

\_\_\_\_\_ Demolish - Bold Dashed

Existing to Remain (E) - Halftone

Sheet # Sheet Name

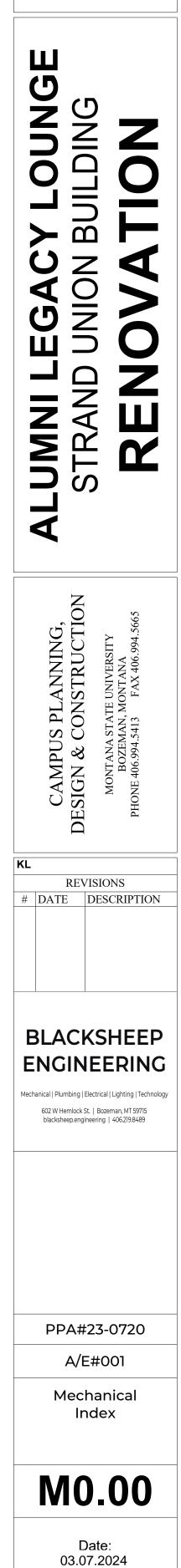
Sheet Index & Revision Summary

M0.00 Mechanical Index M1.10 Mechanical Plan

# **Bid Documents**

REV

Ш MONT.

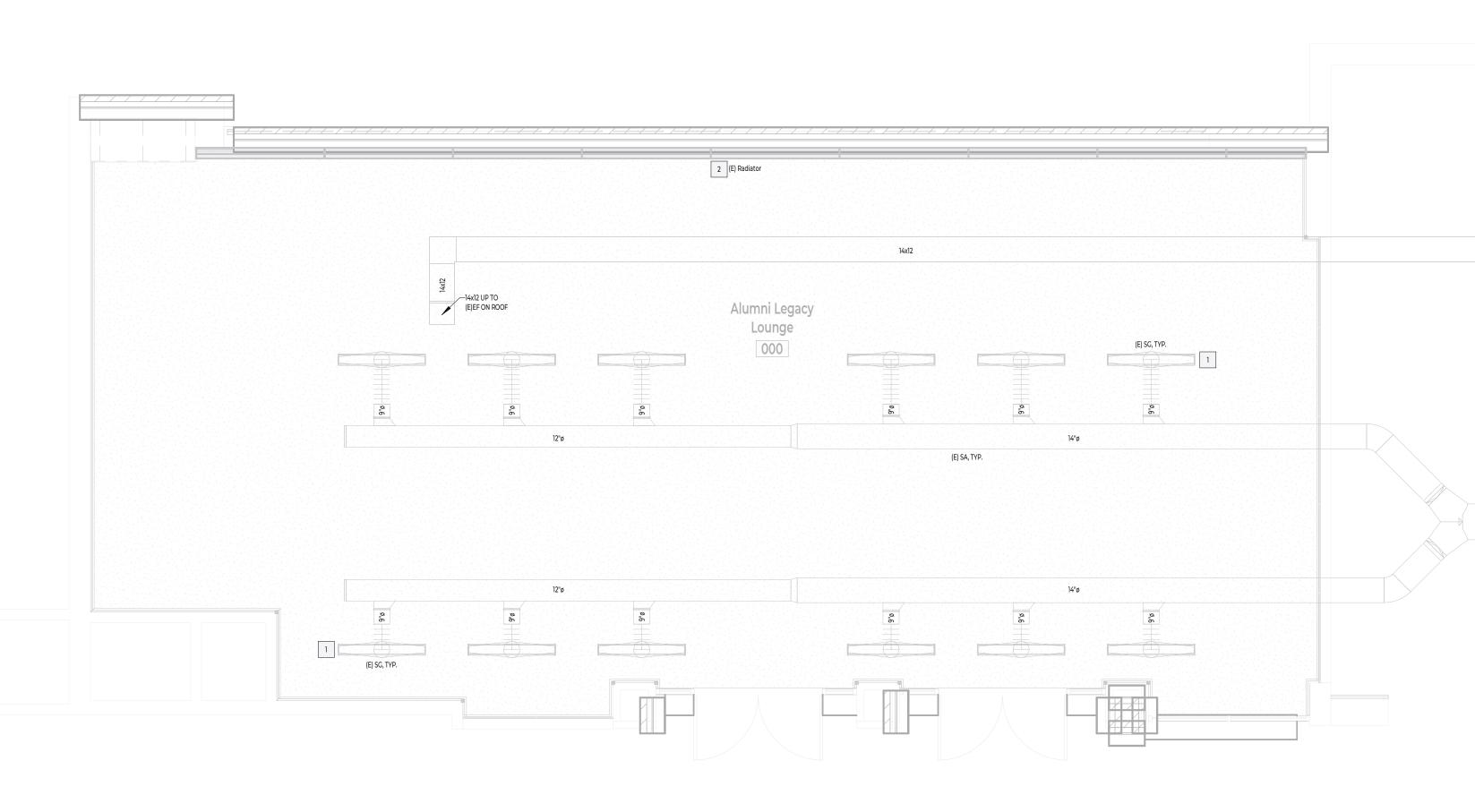


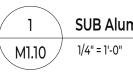
	rence and for the use in understanding the design intent. Not only; All devices need to be assessed on an individual basis.	all symbols listed below are nec	cessarily used elsewhere in the construction documents.
	Mechanical		Plumbing
SWS	Source Water Supply	CW	Domestic Cold Water
HWS	ESource Water Return	———— HW	Domestic Hot Water
HWR	Hot Water Supply		Domestic Hot Water Recirculation
SWR	Hot Water Return	HWS	— Hot Water Supply
	Ball Valve	HWR	Hot Water Return
	Swing Check Valve	SWS	— Source Water Supply
	Strainer		Waste
	Flex Connector	GW	Grease Waste
`	Hose End Drain Valve		– Vent
	Safety Relief Valve	LPG	Propane
	Union	RL	Rain Water Leader
O	Tee Up	OL	- Overflow Leader
	Tee Down	IRR	Irrigation
O	Elbow Up	FC0 ()	— Floor Clean Out
	Elbow Down	WCO	— Wall Clean Out
	Pipe Size Change		— Ball Valve
M	Manual Flow Balancing Valve (Circuit Setter)		— Backflow Preventor
	Pressure/Temp. Test Plug		Hose End Drain Vlave
P	Pressure Gauge w./ Snubber	· · · · · · · · · · · · · · · · · · ·	– Pressure Reducing VA
<b>(T</b> )	Dial Thermometer		Temp. & Pressure Relief Valve
T	Electric Thermostat		— Dielectric Waterway
(S)	In-Slab Sensor		— Union
[;	Manual Balancing Damper	Ţ	— Dial Thermometer
	Flex Connector		— Pressure Gauge
AD _ }	Access Doors	()	— Tee Up
AD	Turning Vave Ell		— Tee Down
	45° Low-Loss Take-Off Fitting w/ Damper & Flex Duct		Elbow Up
┶╱┶ Ţ╱─₽	45° Low-Loss Take-Off Fitting w/ Damper & Rigid Round		Elbow Down
	Duct		Mechanical Air Flow Legend
>	90° Tee Take-Off Fitting	S.A.	Supply Air
-	Conical 90° Tee Take-Off Fitting	R.A.	Return Air
	45° Tee Take-Off Fitting	E.A.	Exhaust Air
		0.A.	Outside Air
	45-90° Tee Take-Off Fitting		
-	Diffuser, Register, or Grille (Throw Pattern Shown on Plans)		

? Keynote Tag

PPI-12 WH-1 Mechanical Equipment Tag w/ Circuit ID

Callout Veiw Tag



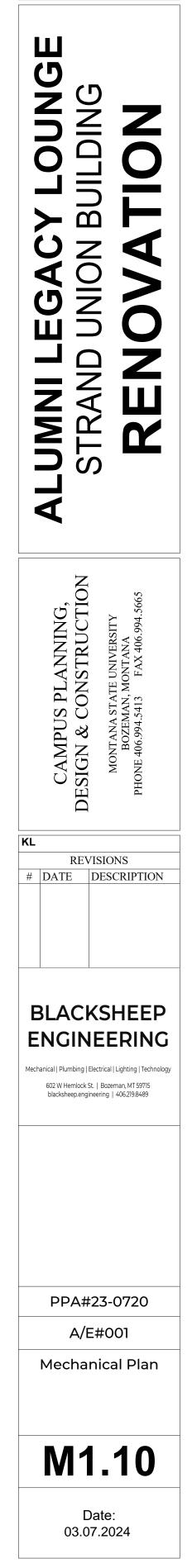


SUB Alumni Legacy Lounge - Mechanical Plan

General Sheet Notes

- Do not run any ductwork or piping over electrical panels. From panel to structure above and from panel access space to 80" above floor.
- Provide seismic bracing on all piping, ductwork, and equipment as required by 2021 IBC.
- Building in general has limited space and is congested. Contractor shall coordinate location of piping, ductwork, and equipment w/ other trades prior to installation.
- Route all ductwork tight to structure or ceiling unless otherwise noted.
- Provide volume balance dampers at each branch duct unless noted to be at grille.
  - Reference Keynotes
- Contractor to remove and clean existing supply grilles and duct plenums. Inspect existing flex duct and clean or replace. Include allowance for painting or replacing grille as directed by architect. Contractor to balance all grilles in room to approximate equivalent airflow. Typ.
- 2. Remove existing radiator cover and repair existing dents. Contractor to paint cover as recommended by the manufacturer, and coordinate the paint color with architectural. Reinstall the existing cover as directed by the manufacturer and replace any damaged mounting equipment as required. Approximate radiator dimensions (LxWxH) are as follows: 51'8"x2'4"x0'6".

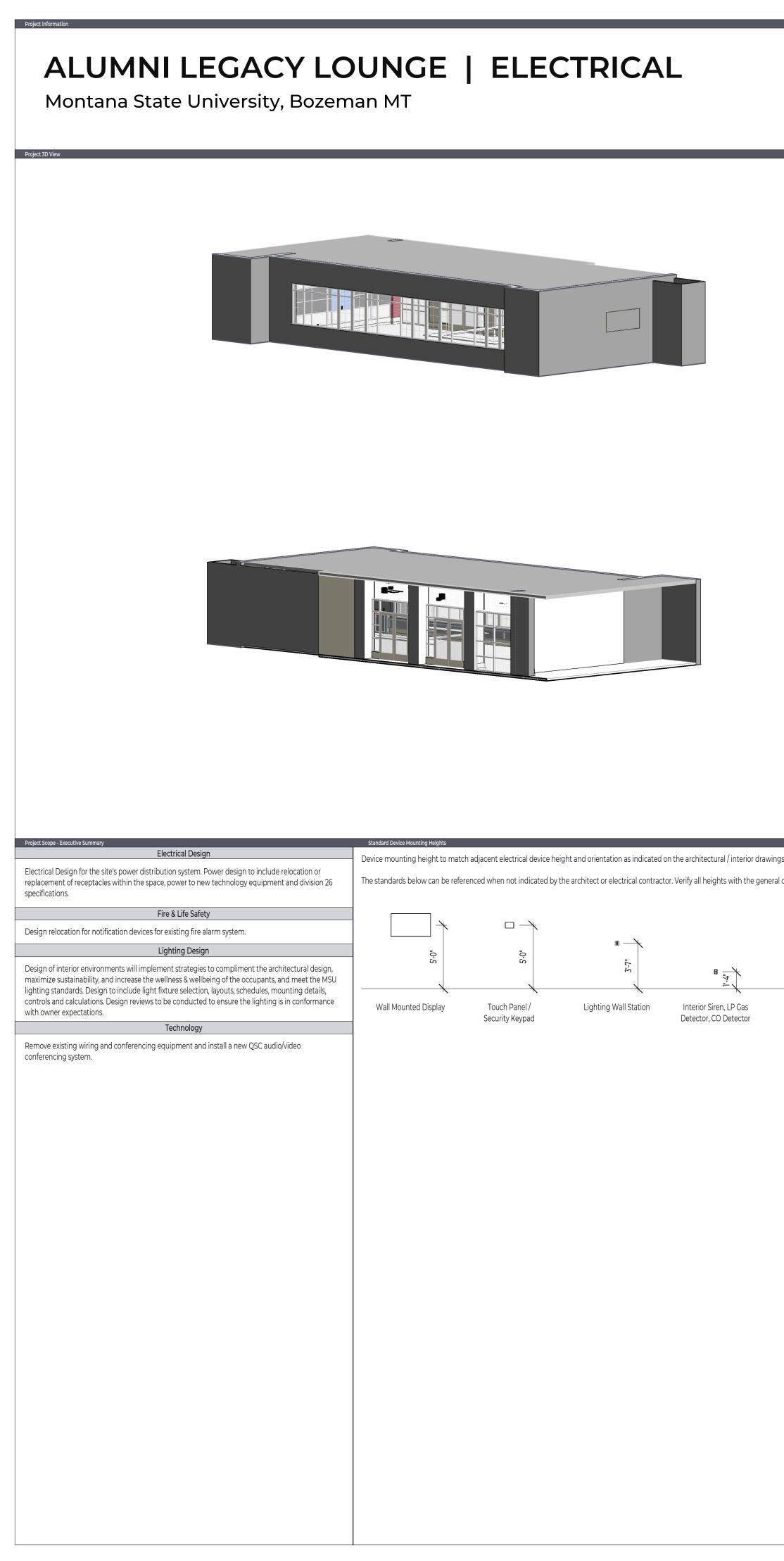




TO EXISTING SYSTEM -OUTSIDE PROJECT SCOPE

TO EXISTING SYSTEM -OUTSIDE PROJECT SCOPE

 $\bigcirc$ 



	Ceneral Notes	Abbreviatio	ns		
	<ul> <li>Ceneral Notes</li> <li>The symbols and abbreviations list on this sheet is a comprehensive standard guide intended for general use on all projects. Therefore, not all symbols and abbreviations contained in this list are necessarily used on this particular project and should be used for clarification only.</li> <li>1. All work shall be installed in accordance with the latest National Electrical Code (NEC) and all local codes having jurisdiction. General work practices for construction shall be in accordance with NECA 1 standard for good workmanship in electrical construction (ANSI).</li> <li>2. Bidders shall take into account the full scope of the drawings and specifications herein, as well as field conditions during the bid process. Change orders for failure to review construction documents or attend pre-bid walkthrough will not be approved by the engineer or university.</li> <li>3. Work in building areas will require scheduling with Montana State University to ensure areas are not being utilized during demolition and replacement.</li> <li>4. The majority of construction work shall be accomplished between academic calendar dates. Additional work during the calendar year should occur in portions of building scheduled with the University, typically during Holidays or Block Breaks.</li> <li>5. All materials provided by the contractor shall be new and free of defects, listed / labeled for the intended purpose by Underwriters (UL) or other organization that is acceptable to the AHJ.</li> <li>6. Contractor is responsible for providing all equipment required to complete the project. Any bill of materials referenced in this plan set is for reference only to illustrate design intent.</li> <li>7. Drawings are diagrammatic and indicate general arrangement only. These drawings and accompanying specifications are intended to describe and illustrate systems which will not interfere with the structure of the building and which will fit into the available spaces. The contractor is responsible for laying out all work t</li></ul>	Abbreviatio A, AMP AIC AFCI AFF AFG ATS AV AWG BAS BTU C, CDT CB CKT CL CLG CO C, CDT CB CKT CL CLG CO CO C.O. CT CU DDC DWG (E) E.C. ELEC EM EMT EQ FA FACP FBO FLA FSD G, GND G, C. GEN GFCI HP	Ampere Amps Interrupting Capacity Alternating Current Arc-Fault Circuit Interrupter Above Finished Floor Above Finished Grade Automatic Transfer Switch Audio Visual American Wire Gauge Building Automation System British Thermal Units Conduit Circuit Breaker Circuit Centerline Ceiling Carbon Monoxide Conduit Only Current Transformer Copper Digital Data Control Drawing Existing Electrical Contractor Electric / Electrical Emergency Electrical Metallic Tubing Equal Fire Alarm Fire Alarm Fire Alarm Fire Smoke Damper Ground General Contractor Ground-Fault Circuit Interrupter Horse Power	NEMA N.C. NO. NTS OCPD P PB PH PNL POE PWR RECPT RS SD SHT SOH SP SPEC SPD SS SW SWBD SWGR TEMP	Low Voltage Low Voltage Relay Main Circuit Breaker Main Distribution Panel Manufacturer Minimum Main Lug Only Main Switchboard Medium Voltage Neutral New Not Applicable National Electrical Manufacturer Association Normally Closed Normally Open Not to Scale Overcurrent Protective Device Poles Pullbox Phase Panelboard Power Over Ethernet Power Receptacle Rigid Steel Smoke Detector Sheet Standard Outlet Height Spare Specification Surge Protective Device Surge Supression Switch Switchboard Switchboard Switchgear Temporary Transient Voltage Surge Suppressor Typical
	<ol> <li>Electrical contractor to verify actual installed equipment electrical name plate data before energizing the circuit. Confirm electrical design values and actual equipment being installed are in compliance with electrical code and manufacturer installation requirements.</li> <li>Conduit runs when shown are diagrammatic. Final location and routing shall be established by the contractor based on the installation conditions and shall be verified in the field. All conduit types and installation requirements shall be in accordance with the specifications. Where conductor and cable routing is not shown on the plans, contractor shall determine routing and lengths required.</li> </ol>	IIF IBEC IG J, JB KV KVA KW KWH LCP LTG Phasing Leg	Installed by Electrical Contractor Isolated Ground Junction Box Kilovolt Kilovolt Ampere Kilowatt Kilowatt Hour Lighting Control Panel Lighting	UG UON UPS V VA W WD WP XFMR	Underground Unless Otherwise Noted Uninterruptible Power Supply Voltage Volt Amperes Watt Warm Dim or Water Detector Weatherproof Transformer
	<ol> <li>The use of flexible conduit from luminaires to junction box is permitted only when a separate ground wire is installed with the conductors inside flexible conduit. The ground wire must bond the fixture housing to the junction box. Maximum length shall be 6'-0".</li> <li>Provide conduit expansion fittings with bonding jumpers to allow for thermal expansion and</li> </ol>		New - Solid Black		
	<ol> <li>Provide conduit expansion fittings with bonding jumpers to allow for thermal expansion and contraction where necessary, per NEC 300.7(B).</li> <li>Provide supports for conductors in vertical conduits per NEC 300.19. Support conduit using steel pipe straps, lay-in adjustable hangers, clevis hangers, or split hangers. Hanger spacing shall be installed per NEC requirements for the type of conduit being installed.</li> <li>Provide pull or junction boxes where required to facilitate the installation of conductors. Bends in conduit between pull boxes shall not exceed a total of 360-degrees.</li> </ol>	Sheet # E0.00 E1.10 E1.11	Existing to Remain (E) - Halftone & Revision Summary Sheet Name Electrical Index Electrical Demolition Plan Electrical Power & Lighting		
s unless otherwise noted. contractor.	<ul> <li>15. Provide branch circuit wiring to all items requiring electrical connections. Where branch circuit wiring is not shown, connect items to circuits indicated. Unless indicated otherwise, all branch circuits shall be minimum #12 AWG.</li> <li>16. Contractor shall provide signage to all electrical boxes, junction boxes, disconnects, conduit runs,</li> </ul>	E1.12 E2.00 E5.01 E5.02 E6.00	Technology Plan Technology Elevations Technology Details Technology Details Technology Scope & One-Li	ine Diagran	n
■ ➡ Receptacle	<ul> <li>subpanels, and main service equipment.</li> <li>17. Grounding system: Permanently and effectively ground all metallic conduit, supports, cabinets, panelboards, and system neutral conductors. Maintain continuity of equipment ground throughout the system. Ground clamps shall be approved type, specifically designed for grounding. Where grounding conductor is enclosed in conduit, ground clamp shall be of a type which grounds both conductor and conduit. All circuits in flexible metal or plastic conduit shall include a ground wire sized in accordance with NEC.</li> <li>18. Conductors: Copper with color coding, #10 AWG and smaller to be solid or stranded, #8 AWG and</li> </ul>	E6.10	Technology Equipment Sch	nedules	
Receptucie	<ul> <li>larger to be stranded. Minimum #12 AWG unless otherwise indicated. Conductors must be installed in accordance with NEC and cannot be supported from ceiling support wires. All power conductors in conduit shall be THWN-2, XHHN-2, RHW-2, PVWIRE, or XLPE.</li> <li>19. The EC may submit substitution requests for prior approval no less than 10 days prior to bid date.</li> </ul>				
	<ul> <li>Blacksheep separates prior approval packages for luminaires &amp; controls. The EC shall break out separate line items for each to prevent 'lockout' of pricing respective to this project.</li> <li>20. Submittals shall be provided by the installer for Blacksheep review and approved prior to ordering.</li> </ul>				
	<ol> <li>It is the responsibility of the Electrical Contractor to schedule a pre-construction meeting with McKinstry, Blacksheep Engineering, and Montana State University upon Bid award.</li> <li>Coordination of Lighting Control System commissioning. O&amp;M Manuals, and owner training is the</li> </ol>				
	<ol> <li>Coordination of Lighting Control System commissioning, O&amp;M Manuals, and owner training is the responsibility of the contractor. Refer to the specifications for additional requirements.</li> <li>It is the responsibility of the EC &amp; GC to schedule the following milestones with the lighting designer, no less than 1 week prior to the requested date.</li> </ol>				
	<ul> <li>designer, no less than 1 week prior to the requested date.</li> <li>24. Rough-in inspection - prior to drywall/finish work.</li> <li>25. Punch list/aiming - once artwork and furniture is installed. If a punch list is required prior to the</li> </ul>				
	25. Punch list/aiming - once artwork and furniture is installed. If a punch list is required prior to the site being ready for aiming, additional construction administration cost (an additional site visit) will be incurred to the project.				
	<ul> <li>26. Programming to be scheduled first with the factory authorized representative, and then coordinated with Blacksheep for oversight &amp; design intent.</li> <li>27. Where directional (aimable) luminaires are present in the design, EC shall include time for aiming luminaires with lighting designer oversight. Pre-aiming diagrams have been provided on the construction documents and these initial settings will save time during the final aiming visit. EC may request an estimate of time per project for bidding aiming time, based on products utilized and scale of project. Minimum one (1) day of on-site coordination.</li> </ul>				
	28. All demolished luminaires shall be disposed of in accordance with campus and state environmental requirements (for ballasts containing PCBs and lamps containing mercury). Montana State DEQ has a tube crusher that may be used if desired by contractor.				
	<ol> <li>29. Contractor to repair and paint walls and ceilings where luminaires are demolished and not replaced with new luminaires.</li> <li>30. Electrical Contractor to install Vive Lighting Control equipment according to placement on</li> </ol>				
	manufacturers shop drawings. Electrical Contractor to install occupancy sensors (wall/ceiling mount) at optimum sensing height that is also unobstructed be ceiling infrastructure and luminaires.				

# **Bid Documents**

Date Issued | 03.07.2024 Project Engineer | Andrew Moore REV 0



0

OUNGE

U

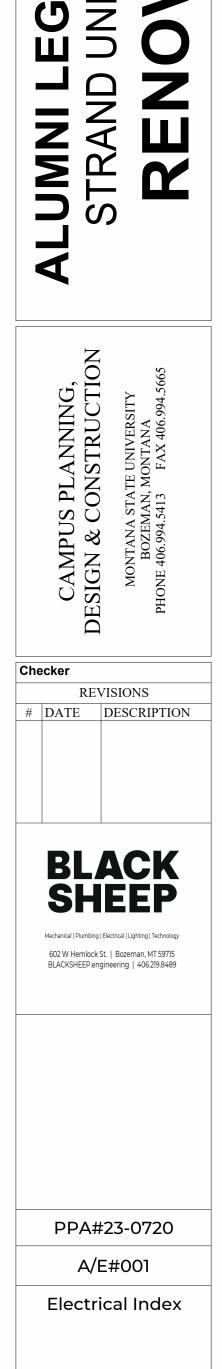
 $\bigcap$ 

	Symbol Legend Symbols listed below are for reference and for the use in understanding the design intent. Not all symbols listed below are necessarily used elsewhere in the construction documents. Cabling information is reference only; All devices need to be assessed on an individual basis.					
	Electrical		Communications   Audio   Video			
$   \Phi \Phi $	NEMA 5-15R / 5-20R, Mounted Vertically, Non-Essential Power	PN	Cable Enclosure (Requires 1 Dedicated 20A Circuit)			
	NEMA 5-15R / 5-20R, Mounted Horizontally, Non-Essential Power	V	2-Port Phone/Data Outlet   (2) CAT6A			
₽	NEMA 5-15R Quadruplex, '+_' Indicates Height AFF	<sup>2</sup>	4-Port Phone/Data Outlet   (4) CAT6A			
•	NEMA 5-15R / 5-20R, Essential Power	3	6-Port Phone/Data Outlet   (6) CAT6A			
	NEMA 5-15R / 5-20R, Optional Standby Power		Wireless Access Point			
	NEMA 5-15R / 5-20R, GFCI-Protected Receptacle	TP	Touch Panel   (1) HDMI, (1) USB-C, (1) CAT6A Patch Cable			
	NEMA 5-15R / 5-20R, GFCI Receptacle	MC	Microphone			
	NEMA 5-15R / 5-20R, Weatherproof Receptacle		Conference Camera			
	NEMA 5-15R / 5-20R, Weatherproof Receptacle, In-Use		Display			
2	NEMA 6-X0R, 250V, 2-Pole; Number Indicates Amperage (i.e., 2 = 20A)	PJ	Projector			
3	NEMA 14-X0R, 250/125V, 2-Pole w/ Neutral; Number Indicates Amperage	AUX	Auxiliary Input Location			
3	NEMA 15-X0R, 250V, 3-Pole; Number Indicates Amperage		Display Backbox			
2_0	NEMA L6-X0R, 250V, 2-Pole; Number Indicates Amperage	(SP) SP	Speaker   (1) 16/4 Per Pair			
3_0	NEMA L14-X0R, 250/125V, 2-Pole w/ Neutral; Number Indicates Amperage	(SW) SW	Subwoofer   (1) 14/4			
3_0		SB	Soundbar - LR / LCR / Center   (2) 16/4			
	NEMA L15-X0R, 250V, 3-Pole; Number Indicates Amperage					
	Electrical Provision or Equipment Connection Provision	Ĕ	Remote Control			
FLR	Electrical Floor Receptacle, Flush Mounted		Equipment Rack			
	Junction Box, Mounted Above Accessible Ceiling					
	Junction Box, Recessed Wall Mounted					
J	Junction Box, Flush Floor Mounted	_	Lighting Control   Shades   Environmental			
0 A   NF A	Wiremold Power Outlet Strip	PN	Lighting Control Panel (Requires 1 Dedicated 20A Circuit)   (3) CAT6			
0 4 1 0 4	Non-Fused Disconnect Switch, Surface Mounted		Lighting Control Dimming Panel   (1) QSC			
	Fused Disconnect Switch, Surface Mounted		Lighting Repeater   (1) QSC			
	Panelboard, Flush Mounted	LKP	Lighting Keypad   (1) QSC			
	Panelboard, Surface Mounted	OS	Occupancy Sensor   (1) QSC			
0	Push Button   EPO = Emergency Power Off	TS	Thermostat   (1) 18/6, (1) CAT6			
	Solar Photovoltaic Panel / Array	RT	Thermostat Sensor   (1) CAT6			
<u>~</u>	Inverter		Oxygen Control   (1) 18/6, (1) CAT6			
	Security   Life Safety   Surveillance   Access	FP	Fireplace Control   (1) 18/6, (1) CAT6			
	Security Panel (Requires Dedicated 20A Circuit)   (4) CAT6	\$ <sup>HKP</sup>	Wireless Hybrid Keypad			
SKP	Security Keypad   (1) 22/4, (1) CAT6	\$ <sup>KP</sup>	Wireless Keypad			
SCC	Cellular Communicator   (1) 22/4, (1) 18/4 FPLR, (2) CAT6	\$ <sup>D</sup>	Wireless Dimmer			
SRF	RF Receiver   (1) 22/4	\$ <sup>RD</sup>	Remote Dimmer - 3-Way			
SA	RF Repeater   (1) 18/4 FPLR	\$ <sup>s</sup>	Wireless Switch			
	Door / Window Contact Sensor   (1) 22/4	\$ <sup>RS</sup>	Remote Switch - 3-Way			
	Overhead Door Contact   (1) 22/4	\$	Standard Switch (Provided by the EC)			
	Motion Detector   (1) 22/4	PN	Shade Panel (Requires 2 Dedicated 20A Circuits)			
	Glass Break Sensor   (1) 22/4	MS	Single Roller Motorized Shade   (1) QSC			
L V	Interior Siren   (1) 18/4 FPLR	DS	Dual Roller Motorized Shade   (2) QSC			
	Horn / Strobe   (1) 18/4 FPLR	D	Motorized Drape   (1) QSC			
	Sewage Ejector Interface   (1) 22/4	SC	Electronic Smart Glass   (1) 18/4			
	Surveillance Camera   (2) CAT6					
	Water / Flood Sensor   (1) 22/4		Lighting Luminaires			
	Low Temperature Sensor   (1) 22/4	X	Bollard			
	Wireless Flood / Low Temp Sensor		Ceiling Mounted			
		$\oslash$	Recessed Downlight   Round or Square			
	Water Shutoff Valve (Requires Dedicated 20A Circuit)   (1) CAT6 Carbon Monoxide Sensor   (1) 22/4		Recessed Multiple Downlight   4 Light Sources			
		+	Pendant   Round or Square			
	Gas Detector   (1) 22/4		Wall Mounted			
(HD) (SD)	Heat Detector   (1) 22/4	Ŷ	Wall Mounted Exterior			
	Smoke Detector   (1) 18/4_FPLR	$\langle X \rangle$	Table Lamp			
	Sprinkler Flow / Tamper Valve   (1) 18/4 FPLR		Linear LED			
	Access Control Panel (Requires 20A Dedicated Circuit)   (3) CAT6		Recessed Linear			
AC	Access Control Interface   (1) CAT6, (1) Access Composite		Surface Mounted Linear			
	Access Control Lock   (1) 22/4, (1) 18/4 FPLR		Step Light			
	Conoral Dro	wing Symbols				
	Callout View Tag	?	Keynote Tag			
		PP1-12 WH-1	Mechanical Equipment Tag w/ Circuit ID			
X2.XX	Elevation Tag		Electrical Equipment Tag W/ Circuit ID			
$\left  \begin{array}{c} \widehat{\mathbf{x}} \\ \widehat{\mathbf{x}} \\ \mathbf{x} \\ $	LIEVALION TAY					
	Section Head & Tail		Lighting Luminaires Tag w/ Circuit ID			
		TVI 101.01	Technology Device Tag w/ Wire Tag			

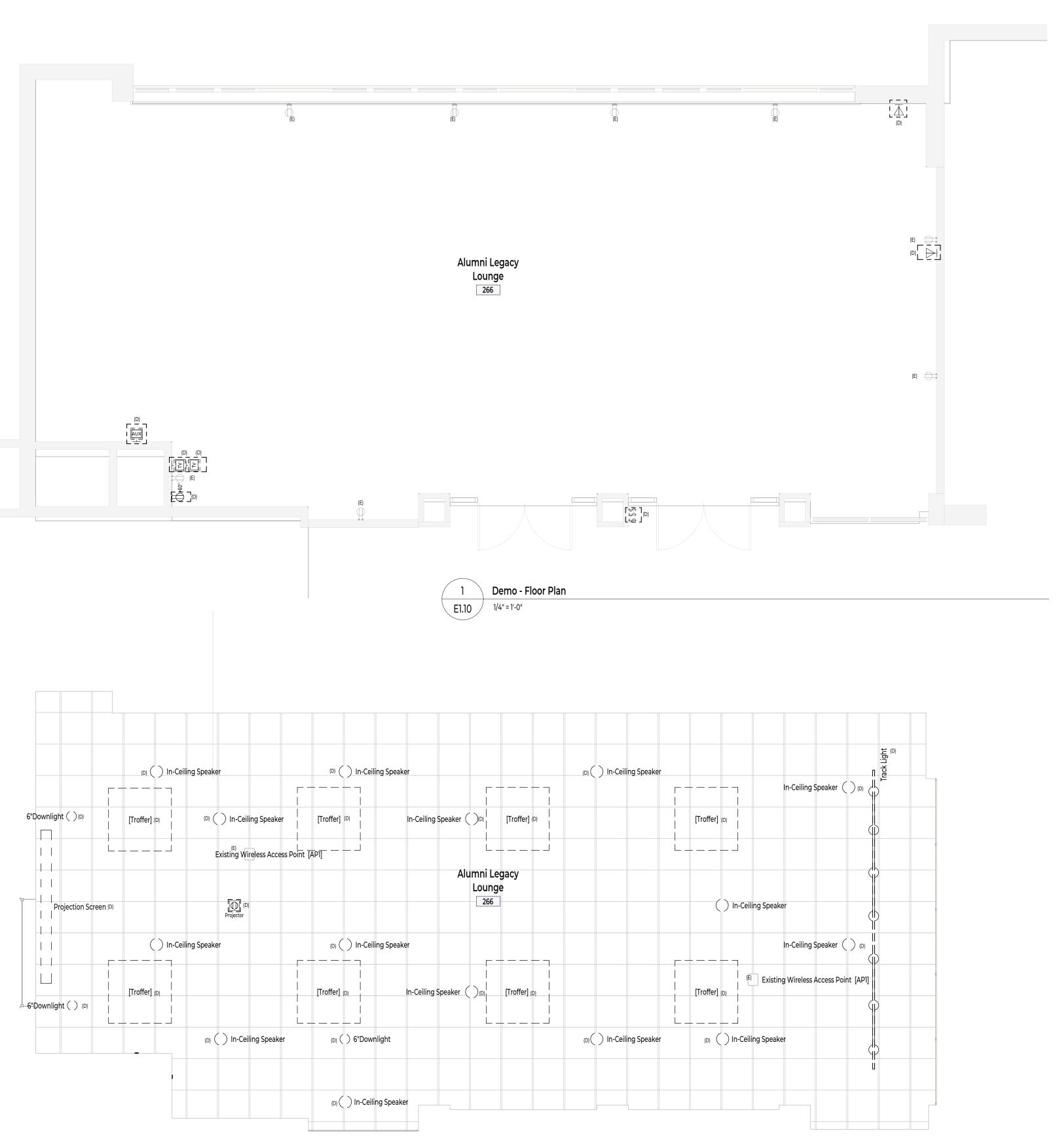
	Communications   Audio   Video
PN	Cable Enclosure (Requires 1 Dedicated 20A Circuit)
$\mathbf{V}$	2-Port Phone/Data Outlet   (2) CAT6A
<sup>2</sup>	4-Port Phone/Data Outlet   (4) CAT6A
<sup>3</sup>	6-Port Phone/Data Outlet   (6) CAT6A
AP	Wireless Access Point
TP	Touch Panel   (1) HDMI, (1) USB-C, (1) CAT6A Patch Cable
MIC	Microphone
CCM	Conference Camera
TV	Display
PJ	Projector
AUX	Auxiliary Input Location
	Display Backbox
SP SP	Speaker   (1) 16/4 Per Pair
sw) sw	Subwoofer   (1) 14/4
SB	Soundbar - LR / LCR / Center   (2) 16/4
RC	Remote Control
	Equipment Rack
	Lighting Control   Shades   Environmental
PN	Lighting Control Panel (Requires 1 Dedicated 20A Circuit)   (3) CAT6
	Lighting Control Dimming Panel   (1) QSC
	Lighting Repeater   (1) QSC
LKP	Lighting Keypad   (1) QSC
	Occupancy Sensor   (1) QSC
	Thermostat   (1) 18/6, (1) CAT6
R	Thermostat Sensor   (1) CAT6
00	Oxygen Control   (1) 18/6, (1) CAT6
FP	Fireplace Control   (1) 18/6, (1) CAT6
$^{HKP}$	Wireless Hybrid Keypad
\$ <sup>KP</sup>	Wireless Keypad
\$ <sup>D</sup>	Wireless Dimmer
$\mathbf{s}^{RD}$	Remote Dimmer - 3-Way
\$ <sup>s</sup>	Wireless Switch
$\mathbf{s}^{RS}$	Remote Switch - 3-Way
\$	Standard Switch (Provided by the EC)
PN	Shade Panel (Requires 2 Dedicated 20A Circuits)
MS	Single Roller Motorized Shade   (1) QSC
DS	Dual Roller Motorized Shade   (2) QSC
D	
	Motorized Drape   (1) QSC
SC	Motorized Drape   (1) QSC Electronic Smart Glass   (1) 18/4

	Lighting Luminaires
Q	Bollard
$\rightarrow$ -	Ceiling Mounted
$\square$	Recessed Downlight   Round or Square
	Recessed Multiple Downlight   4 Light Sources
· -	Pendant   Round or Square
<b>\</b> -	Wall Mounted
$\mathcal{Q}$	Wall Mounted Exterior
Ø	Table Lamp
	Linear LED
	Recessed Linear
	Surface Mounted Linear
	Step Light
mbols	
?	Keynote Tag
VH-1	Mechanical Equipment Tag w/ Circuit ID

r   (2) 16/4			







2 Demo - F E1.10 1/4" = 1'-0"

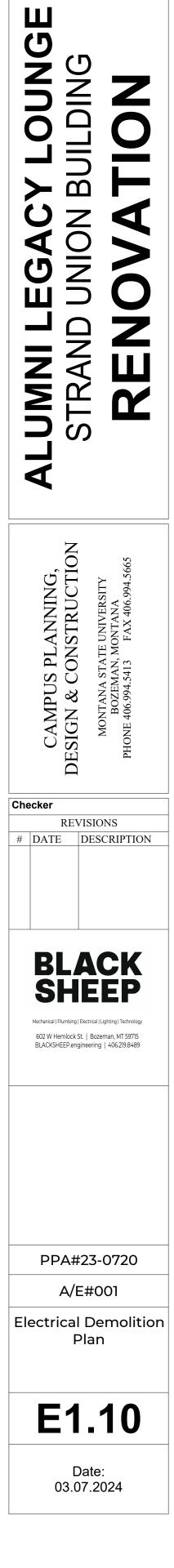
Demo - Reflected Ceiling Plan

### General Sheet Notes

- Installation of all work shall be in accordance with all local codes and ordinances and the edition of the National Electric Code NFPA 70 (NEC) in effect.
- 2. The electrical plans are diagrammatic only. Coordinate the electrical equipment location and installation with equipment being served.
- 3. Exact location of mechanical and plumbing equipment that require electrical connections are shown on the mechanical and plumbing drawings. Coordinate with mechanical and plumbing contractors.
- 4. All conductors shall be copper, unless otherwise noted. Minimum size shall be #12 AWG. Aluminum conductors are permitted above 100A.
- 5. Refer to the mechanical equipment connection schedule for disconnect requirements.
- All smoke detectors to be listed and installed in accordance with the latest edition of NFPA 72. Smoke detectors to be wired together and receive primary power from the buildings wiring.
- Refer to the architectural drawings for exact mounting height of receptacles.
- The lighting control plans are diagrammatic only. Coordinate equipment location and installation with manufacturer shop drawings.
- Luminaire compatibility must be confirmed before connecting to lighting control equipment.

Reference Keynotes





Luminaire Schedu	ıle							
Туре	Description	Manufacturer	Model	Dimming	Load	Voltage	Qty.	Notes
B01	Stellr Surface Mount Up & Down Light	Lucifer Lighting	S2C-AU-AU-9030-9030-55-S-2-SG-J	0-10V	21 VA	120 V	15	
B02	Wall Arm Mounted Art Lighting	Elliptar	S121-2-HSD-99-M-935-ZX	0-10V	15 VA	120 V	4	1
B03	2" Recessed Downlight - Adjustable Round	Lucifer Lighting	ASRS-F-1-WH-WH-AD-IC-9014D-30-AZ-4	0-10V	15 VA	120 V	2	

Provide custom finish #99 in Metallic Gold; Lighting designer to coordinate color sample with factory.
 Install dimming cable GECA30H20-OO-03B per manufacturer's requirements.

3. EC to confirm mounting condition prior to ordering for proper mounting accessory.

4. EC to confirm voltage on site for luminaire installation.

Туре	Description	Manufacture	er Model	Qty.	Notes
HUB-FM	Vive Wireless Hub without BACnet, Up to 75 Devices, Flush Mount.	Lutron	HJS-0-FM	1	1,2,3
OS1	Vive Wireless Ceiling Occupancy Sensor	Lutron	LRF2-OCR2B-P	1	1,2,3,6
OS4	Vive Wireless Occupancy Sensor, Wall Mounted	Lutron	LRF2-OWLB-P	1	1,2,3,6
P3	PICO Keypad, 3 Button with Raise/Lower and Light Icon, 1 Column	Lutron	PJ2-3BRL-GWH-L01	1	1,2,3
PED	PICO Pedestal, Single	Lutron	L-PEDX-XX	1	1,2,3
PICO-WB	PICO Wireless Control Wallbox Adapter Kit	Lutron	PICO-WBX-ADAPT	1	1,2,3
PP-10	Vive PowPak Dimming Module with 0-10v Control	Lutron	RMJS-8T-DV-B	6	1,2,3,4
VLW	Commercial Systems 2-Year Limited Warranty	Lutron	LSC-B2	1	1,2,3
VSTART	Vive Onsite Startup	Lutron	LSC-OS-SU-VIVE	1	1,2,3

1. EC to install a complete working system.

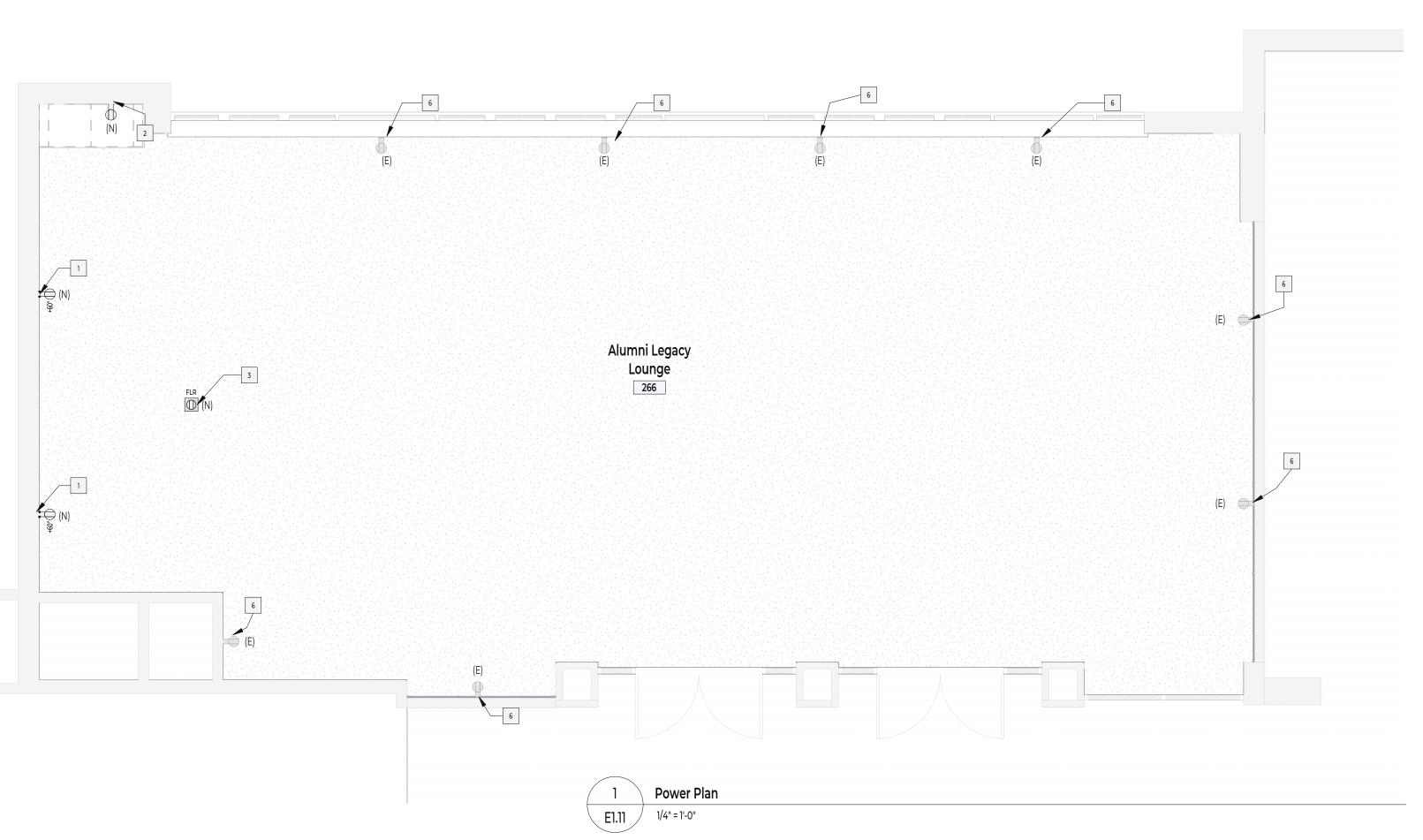
Notes:

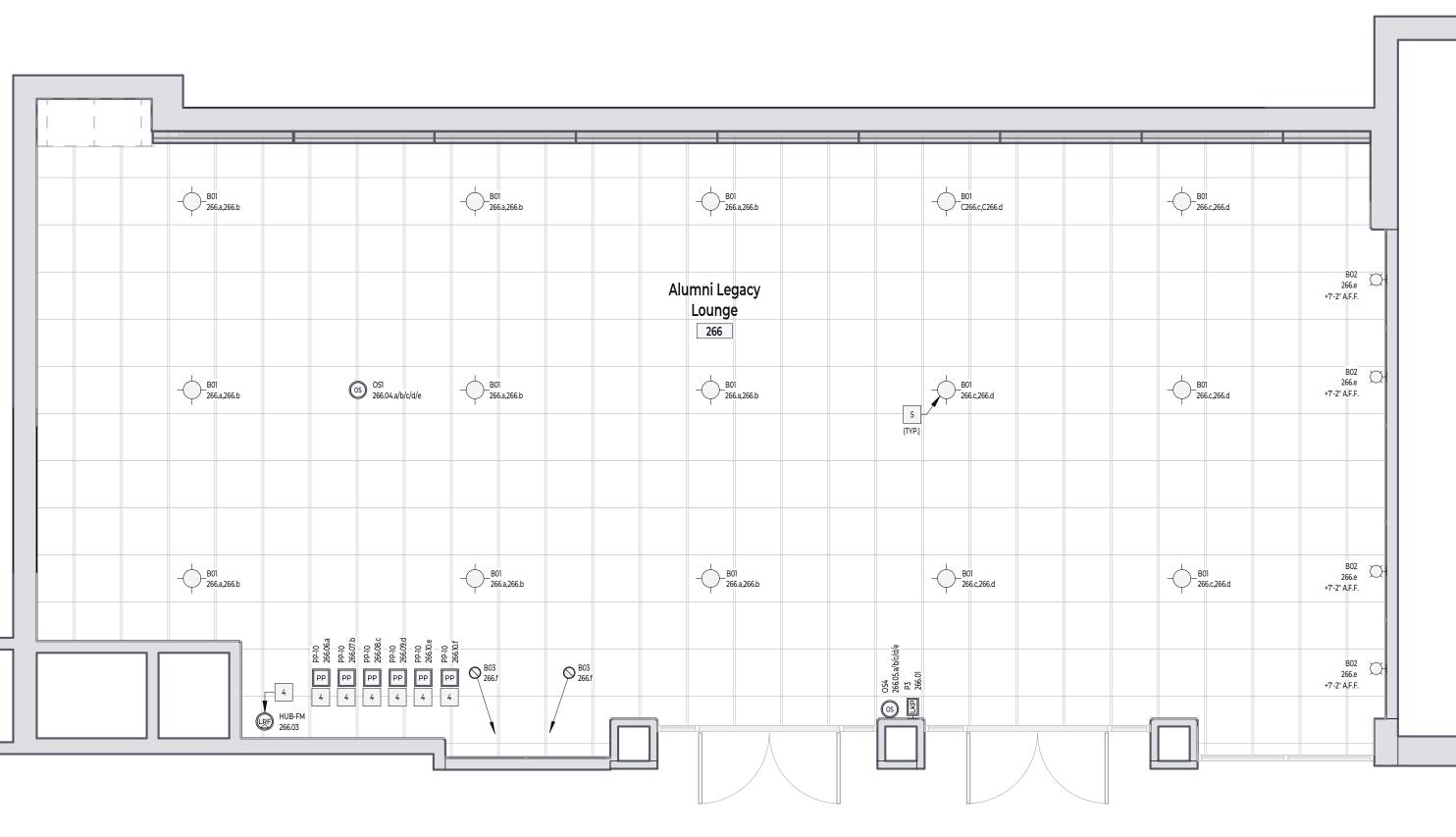
Notes:

EC to provide startup, commissioning, and training services for Lighting Control System.
 Refer to specifications for additional control system requirements.

EC to include an additional 5% of 0-10v PowPaks (RMJS-8T-DV-B) to cover unforeseen existing zoning.
 EC to install Vive Lighting Control equipment according to placement on manufacturer shop drawings to ensure the best connectivity to wireless control devices.

6. Occupancy Sensors to be installed in locations accodring to plans. They are to be installed at levels that allow the sensors to operate properly and are also unobstructed by building infrastructure and luminaires.





2 Lighting Ceiling Plan E1.11 1/4" = 1'-0"

### General Sheet Notes

- 1. Installation of all work shall be in accordance with all local codes and ordinances and the edition of the National Electric Code NFPA 70 (NEC) in effect.
- 2. The electrical plans are diagrammatic only. Coordinate the electrical equipment location and installation with equipment being served.
- 3. Exact location of mechanical and plumbing equipment that require electrical connections are shown on the mechanical and plumbing drawings. Coordinate with mechanical and plumbing contractors.
- 4. All conductors shall be copper, unless otherwise noted. Minimum size shall be #12 AWG. Aluminum conductors are permitted above 100A.
- 5. Refer to the mechanical equipment connection schedule for disconnect requirements.
- 6. All smoke detectors to be listed and installed in accordance with the latest edition of NFPA 72. Smoke detectors to be wired together and receive primary power from the buildings wiring.
- 7. Refer to the architectural drawings for exact mounting height of receptacles.
- 8. The lighting control plans are diagrammatic only. Coordinate equipment location and installation with manufacturer shop drawings.
- 9. Luminaire compatibility must be confirmed before connecting to lighting control equipment.

### Reference Keynotes

- 1. Connect all new receptacles on the same circuit to the nearest power panel.
- 2. AV rack shall have a dedicated 20A circuit connected to the nearest power panel.
- 3. Confrence table and podium yet to be finalized as of 01.16.2024. E.C. to determine necesarry power requirments and provide power accordingly.
- 4. Connect new vibe hub and power packs to existing unswitched lighting circuit(s) serving this area. Extend wiring from power pack to all luminaires in zone as required.
- 5. Luminaire has two control circuits. Connect to associated power packs as shown. Typical of all luminaires of this type.
- 6. Replace with new device to match new style.





602 W Hemlock St. | Bozeman, MT 59715 BLACKSHEEP.engineering | 406.219.8489

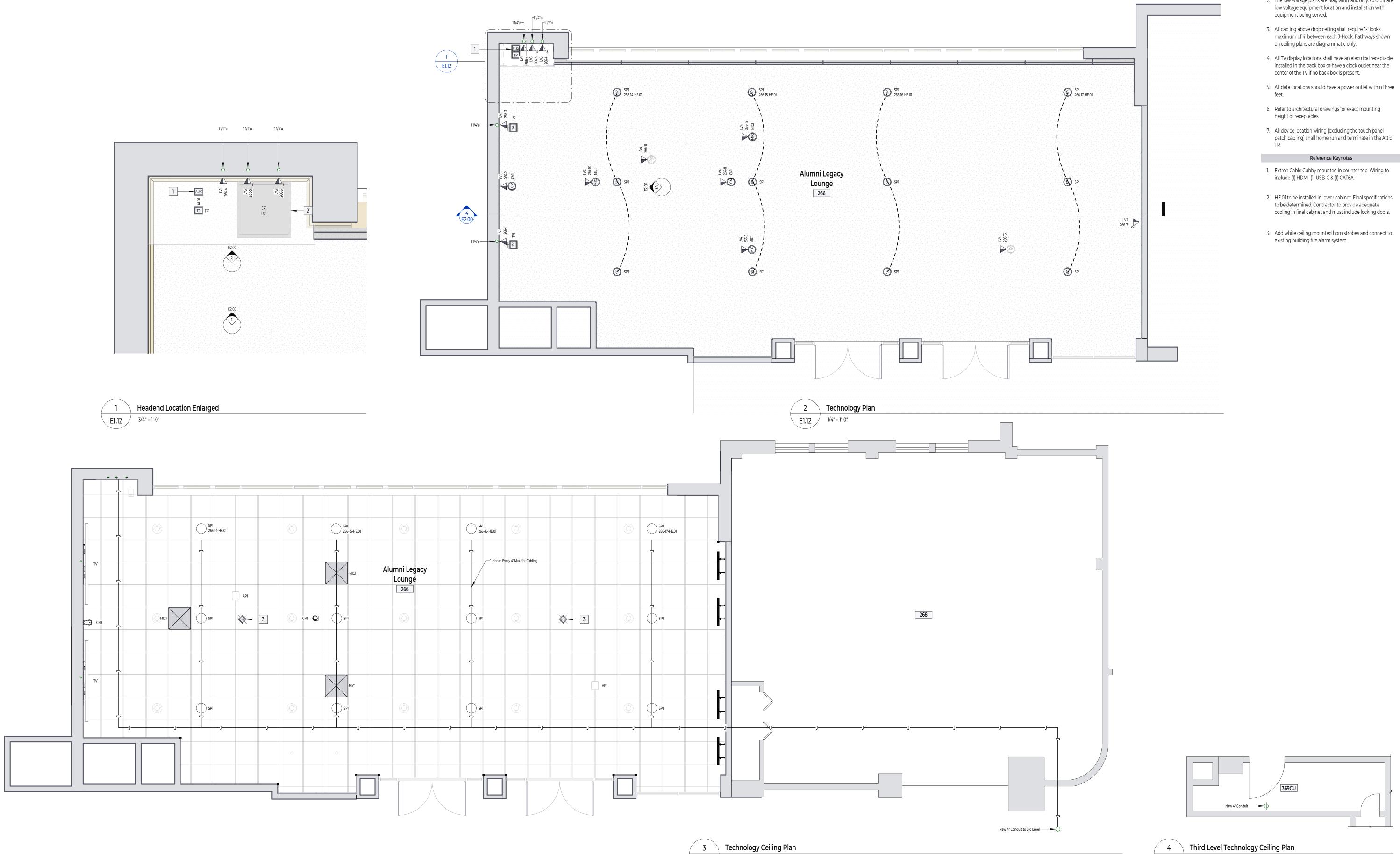
## PPA#23-0720

A/E#001

Electrical Power & Lighting Plan

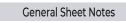


Date: 03.07.2024



 3
 Technolo

 E1.12
 1/4" = 1'-0"

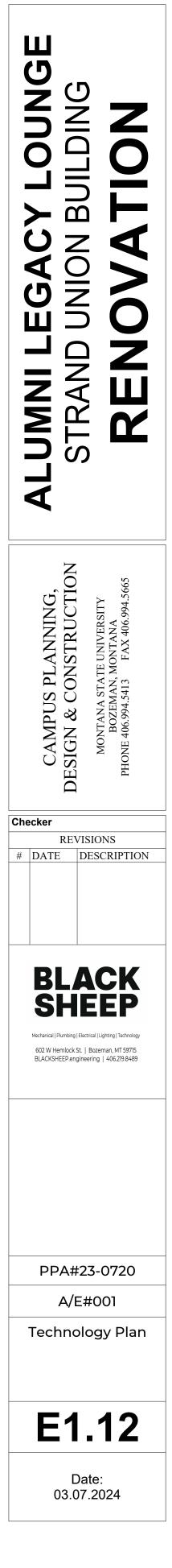


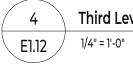
- Installation of all work shall be in accordance with all local codes and ordinances and the edition of the National Electric Code NFPA 70 (NEC) in effect.
- 2. The low voltage plans are diagrammatic only. Coordinate
- maximum of 4' between each J-Hook. Pathways shown
- 4. All TV display locations shall have an electrical receptacle installed in the back box or have a clock outlet near the

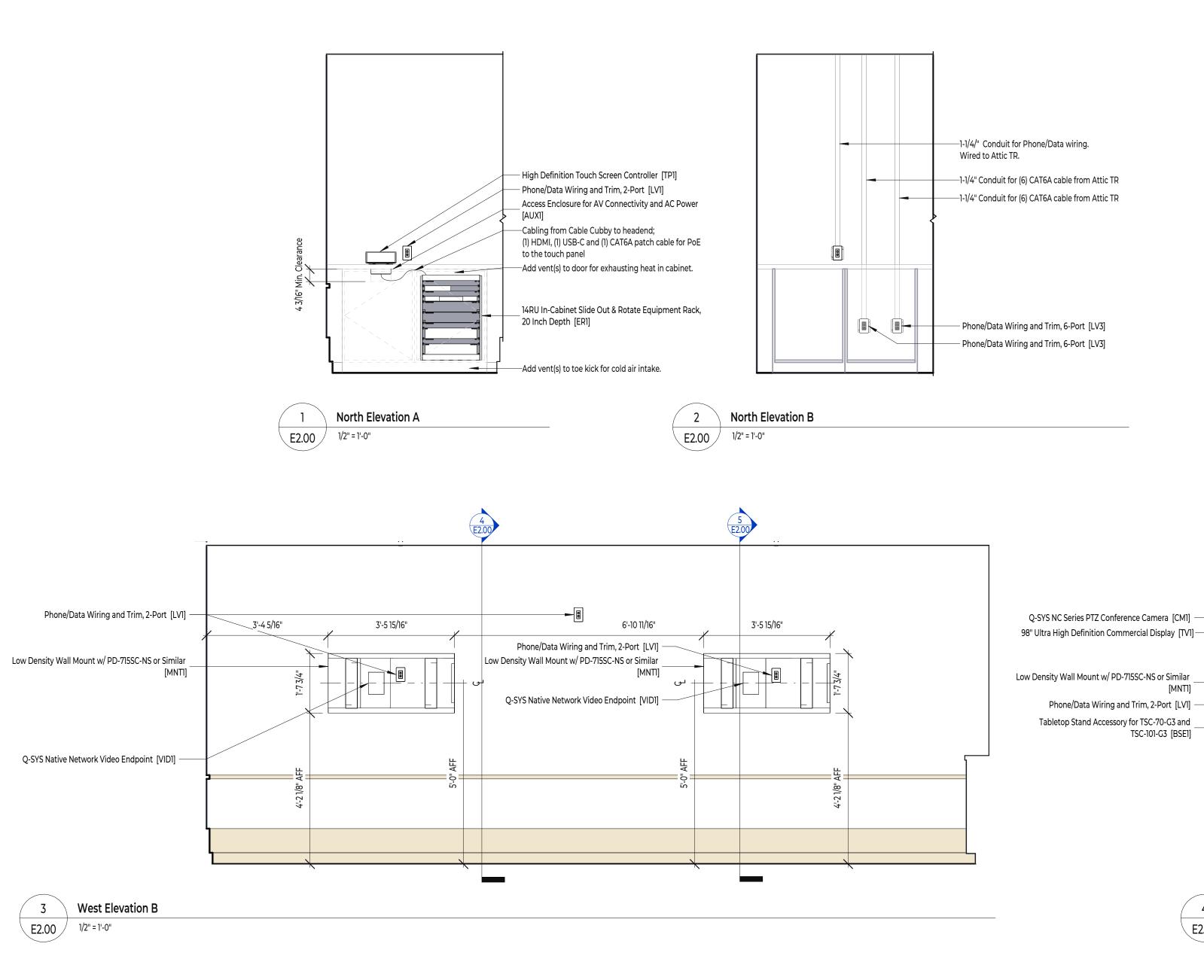
- patch cabling) shall home run and terminate in the Attic

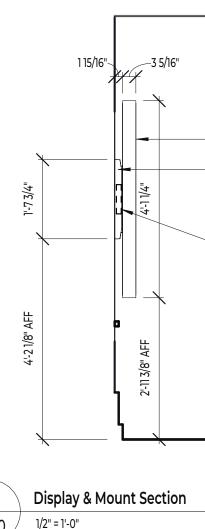
- 2. HE.01 to be installed in lower cabinet. Final specifications cooling in final cabinet and must include locking doors.
- Add white ceiling mounted horn strobes and connect to existing building fire alarm system.







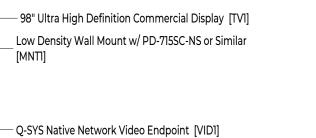


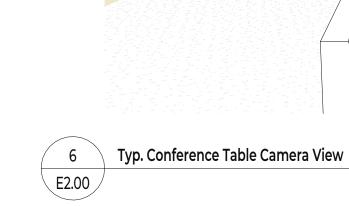


\_ Low Density Wall Mount w/ PD-715SC-NS or Similar [MNT1]

 5
 Display & Mount Section

 E2.00
 1/2" = 1'-0"

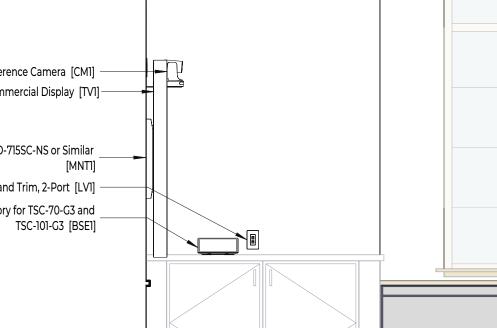






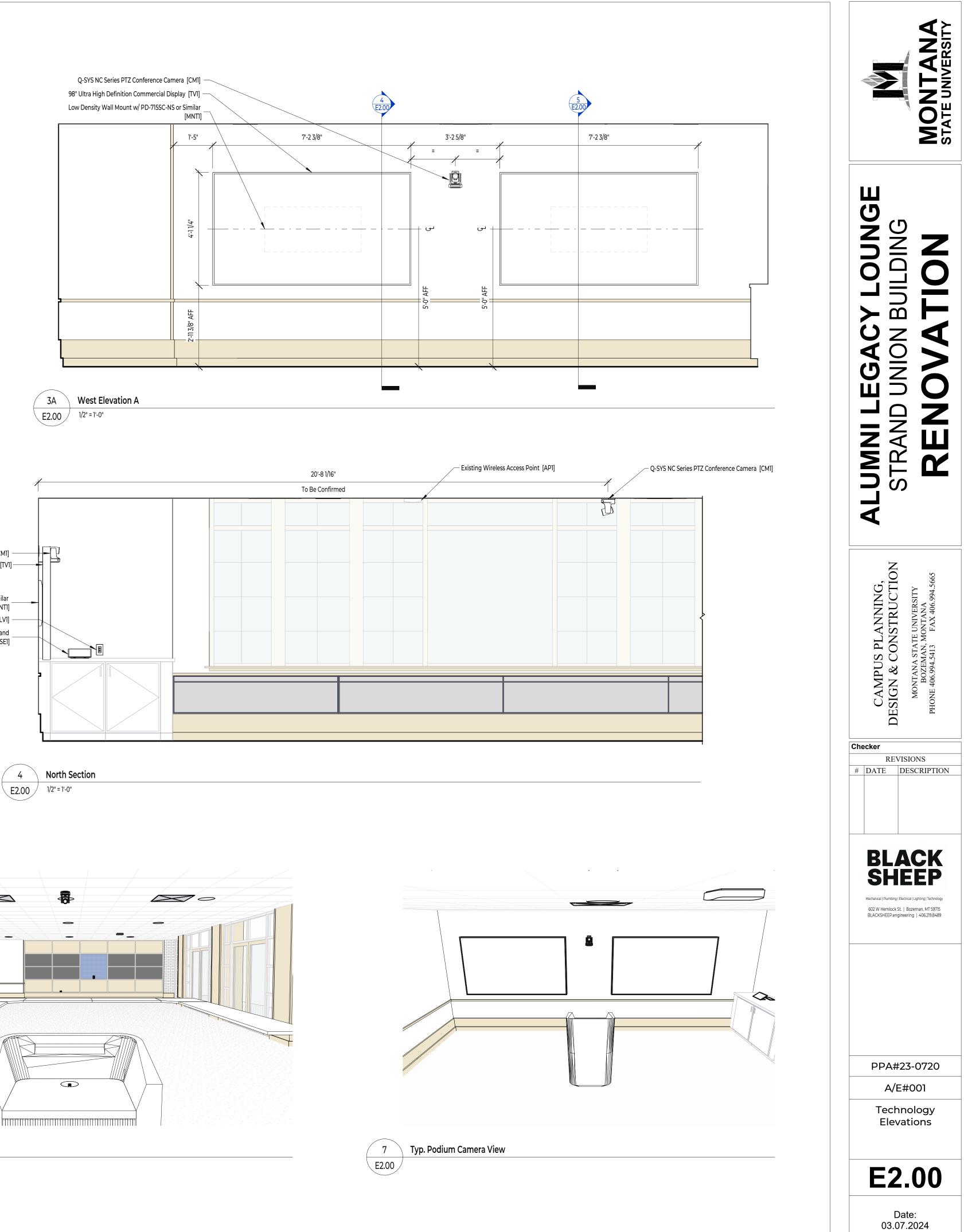
4

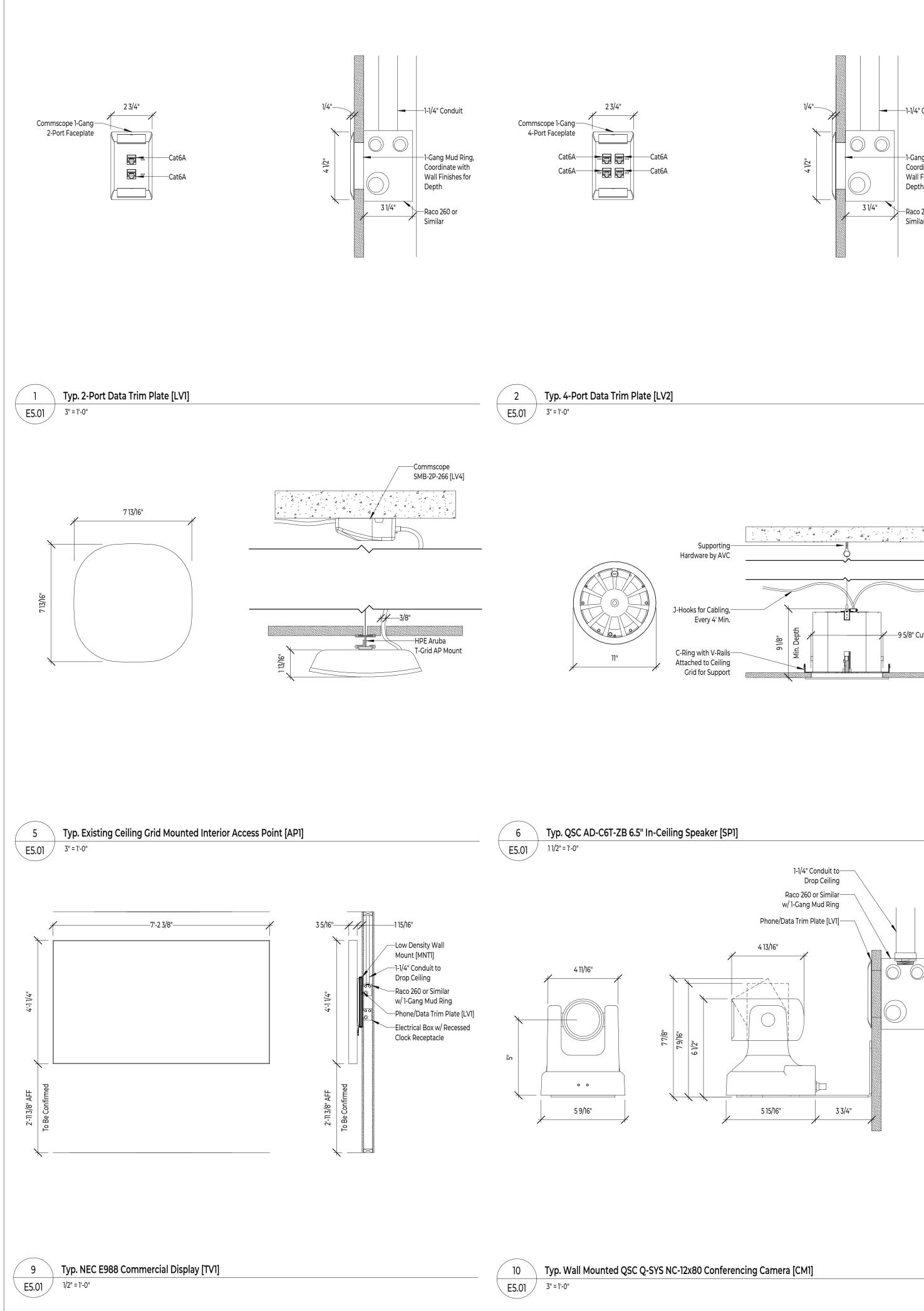


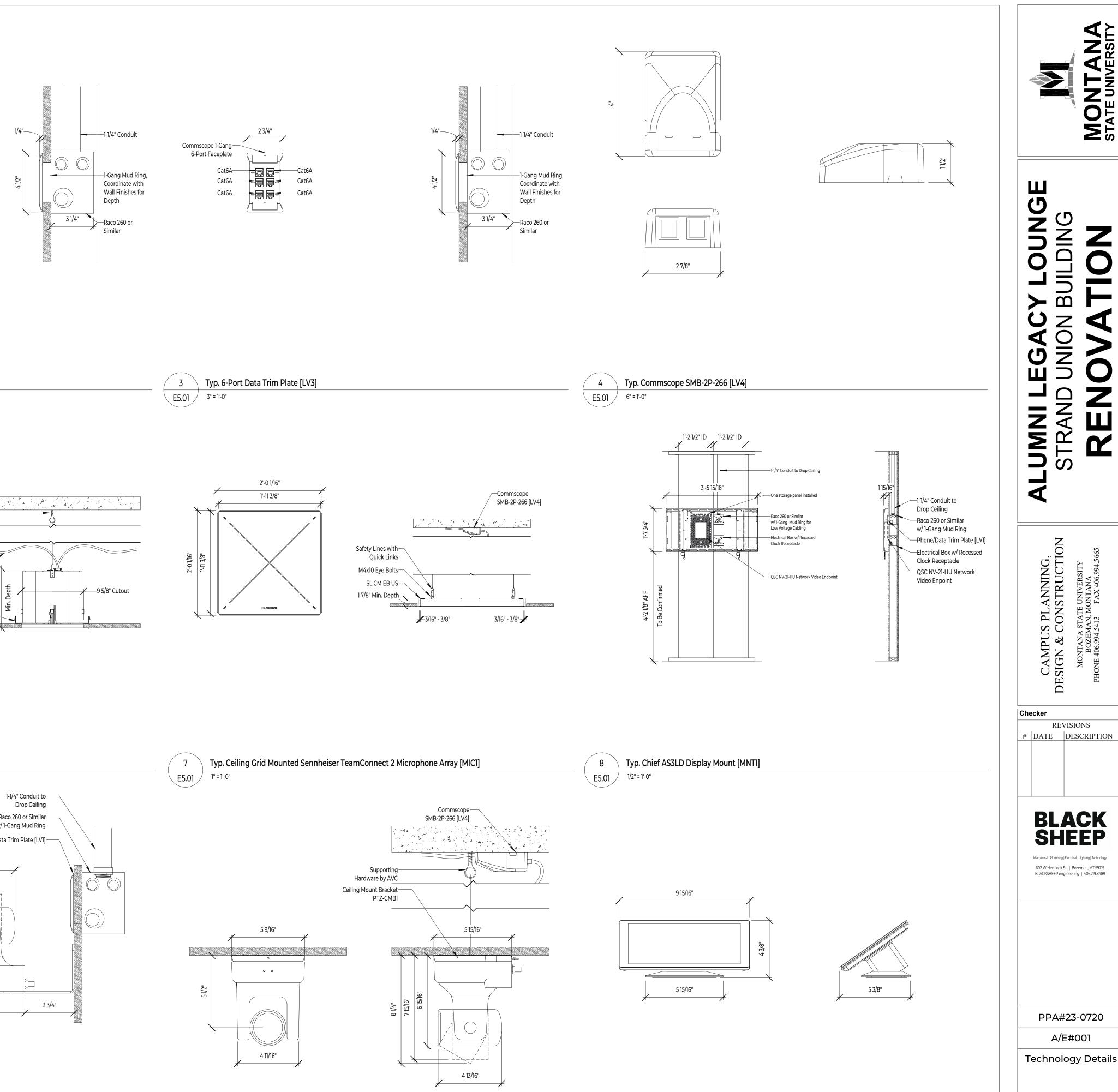


3A 🔿

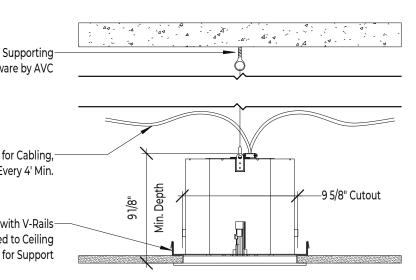
Q-SYS NC Series PTZ Conference Camera [CM1] -98" Ultra High Definition Commercial Display [TVI] -Low Density Wall Mount w/ PD-715SC-NS or Similar [MNTI]

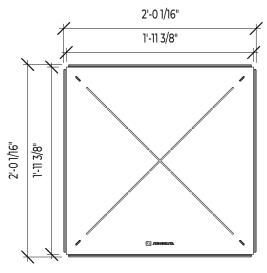


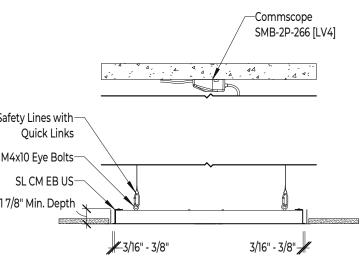


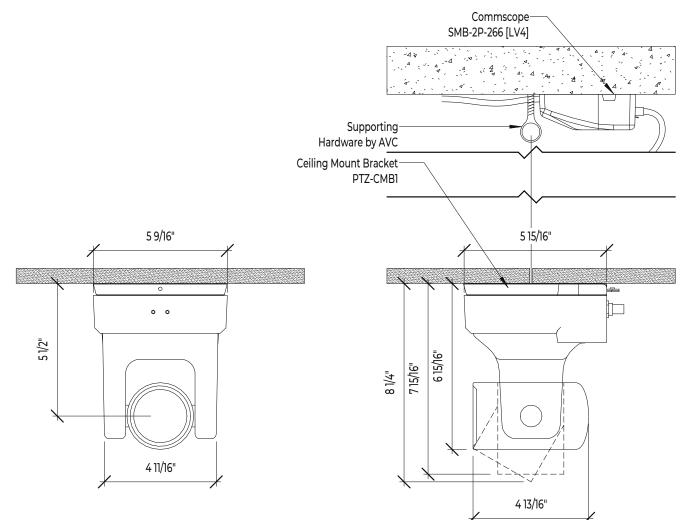


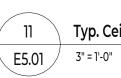












E5.01 3" = 1'-0"

Date: 03.07.2024

E5.01

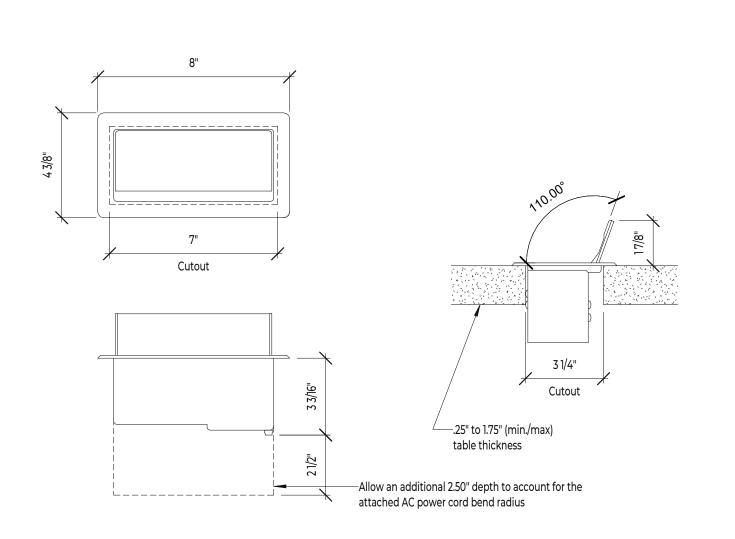
≤≥

MONTA STATE UNIVER

<u>NOI</u>

20

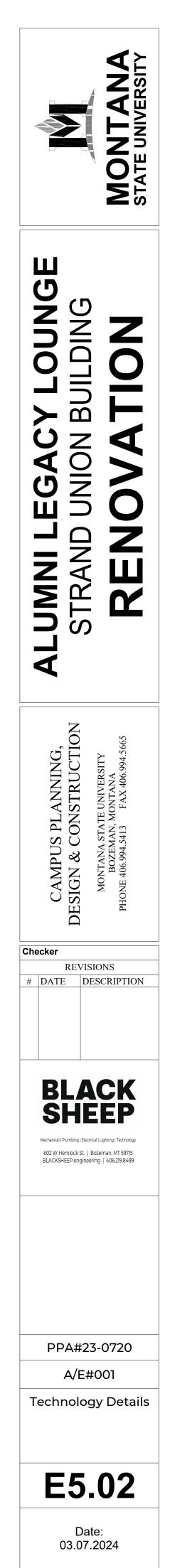
REN





 1
 Typ. Extron Cable Cubby [AUX1]

 E5.02
 3" = 1'-0"



#### Responsibilities

Contractor: Provide and install all Audio & Video equipment including any software licenses, all audio & video cabling and terminations and all cabling support relate to the AV systems. Contractor to provide and install all conduits, fittings and boxes. Contractor to configure and set up all Audio & Video and supporting equipment.

#### The University IT:

echnology Scope of Work

Supply and support all connections to the campus enterprise network. University IT to provide and install all Cat6A cabling, supports and trim for the data cabling running to the Student Union Building Telecommunications Room only. This includes all data jacks shown on plan. University IT to uninstall and reinstall Aruba access points and cabling. University IT to remove existing data locations.

#### All termination hardware, patch panels, connecting cable, wire management hardware, cable trays, equipment racks and any other hardware necessary for system implementation should be detailed in the bid package.

Headend

The current proposed headend location is within the northeast cabinet. Further coordination with the architect will be required to finalize the headend location as well as internal cabinet space requirements.

#### Termination

- $\cdot$  At the headend, all cables shall be terminated (if home run) on Category 6A compliant patch panel(s).
- Power Management Project shall include cloud-based IP power management and surge protection for all equipment. Uninterruptible power supplies (UPS) shall be used to support critical
- equipment in a loss power event.
- Equipment Rack • A structured equipment rack that can be pulled out of the cabinet for service. Includes adequate wiring management, power distribution, cooling and ventilation shall be used.

#### Network & Wi-Fi System

University IT to provide active data ports for all data locations and all equipment in the local headend from the campus enterprise network located in the Attic TR.

University IT to provide all necessary licenses for the Dante and Q-SYS components.

#### All network AV devices shall have static IP addresses provided by the university. Contractor to provide the university with all device login credentials and configuration files upon completion.

The following table identifies the intended network system device locations shown on plan.	
Network Devices	Qty.
Phone/Data Wiring and Trim, 2-Port	4
Phone/Data Wiring and Trim, 2-Port Biscuit	6
Phone/Data Wiring and Trim, 4-Port	1
Phone/Data Wiring and Trim, 6-Port	2

#### Audio/Video System Scope

This scope is to provide guidance to the contractor and should not be considered all inclusive of the university's needs. The contractor should implement best practices for configuration of the devices and software for conferencing and presentation needs. Contractor to consult with the university team prior to programming and configuration and confirm all system operational needs.

QSC Q-SYS system to be set up and fully configured and programming by the contractor. The contractor will provide the university all programming and configuration files for all devices. Upon completion of the project the contractor is to train one university staff member on QSC Q-SYS software and explain the final configuration files so that continued maintenance of the system can be completed by the university.

University staff to test and sign off on all user interfaces and control functions prior to completion of the project. Contractor to provide minimum 2 training sessions for the university staff in system use.

Q-SYS user interfaces are to be as simple as possible on primary screens and require minimal button presses to initiate room "scenes." Additional advanced user screens can be made available to end users as needed to accomplish the university's needs. The following scenes are assumed however, final needs and naming are to be determined by the university.

#### "Presentation"

Microphone array to be focused to the front of the room and podium. Audio voice lift and timing to be configured appropriately increasing in volume to the back of the room.

University staff to determine the default input source/s.

#### "Meeting"

Microphone array to be focused to the front of the room and podium. Audio voice lift and timing to be configured appropriately increasing in volume to the back of the room. Default active camera to be the one facing the podium in a preset position.

University staff to determine the default input source/s.

Microphone input and presentation input audio to mix to the conferencing USB and Clickshare outputs for remote conferencing attendees to hear the full in-room presentation. Microphone input and presentation input audio to mix to then in-ceiling speakers. The user interface should have independent volume control and muting for in-room microphones/voice lift and connected sources.

#### The users should be able to select from any of the AV input sources USB, HDMI, Clickshare(x2) to display on either of the screens or mirror a single input. Users should be able to connect a local computer as a Bring Your Own Device (BYOD) and bridge to all in-room audio, microphone and video equipment via USB/HDMI and Clickshare to use in conferencing or presentation scenarios.

The user should be able to select the active camera and control the pan tilt and zoom if needed with advanced user interface screens. Cameras should default to a "home" position when the system is turned off. Cameras use voice tracking from the microphones if determined reliable. Audio Echo Cancellation (AEC) to be implemented on all microphone channels. Contractor to consult with the university and implement a SIP softphone option into the conferencing system if desired. The university would provide the SIP server and SIP line/s.

#### The audio system shall allow independent control of power, volume and source selection for up to 4 zones through the intuitive control interface. The following sources shall be provided:

- Audio from Q-SYS video endpoints.
- (3) ceiling grid mounted microphone array panels.
- Amplifiers with built-in DSP.
- Zero Bezel in-ceiling speakers.
- The proceeding table identifies the video com

#### Audio Devices

6.5" 2-Way In-Ceiling Speaker with Zero Bezel 4-Channel Network Amplifier, 700W per Char TeamConnect 2 Microphone Array, Ceiling G

## The video system shall allow independent control of power, volume and source selection for the

- (4) Q-SYS Video of IP endpoints.

#### Video Devices

Access Enclosure for AV Connectivity and AC Hi-End Wireless Conferencing for Large Mee 98" Ultra High Definition Commercial Display Q-SYS NC Series PTZ Conference Camera Q-SYS Native Network Video Endpoint

### Audio System

mponents proposed for the space.	
	Qty.
el	12
annel	1
rid Mounted	3

### # Sheet Notes || One-Line Diagram

1	Existing UIT equipment rack.
2	6-Port phone/data jack.
3	In-cabinet 14 space equipment rack.
4	In-Ceiling Speakers.
5	98" Display
6	Ceiling mounted microphone array.
7	Conference camera.
8	Existing wireless access points.
9	2-Port phone/data jack.
3       4       5       6       7       8	In-cabinet 14 space equipment rack. In-Ceiling Speakers. 98" Display Ceiling mounted microphone array. Conference camera. Existing wireless access points.

## 10 4-Port phone/data jack.

Notes:

• Bonding to ground to be provided to all equipment racks, cabling ladder racks, and panels.

~	
	(6) CAT6A cables from existing Attic TR equipme
2	CAT6A patch cables for local equipment networ

space through the intuitive control interface. The following sources shall be provided:

• (2) Pan, Tilt & Zoom conference cameras.

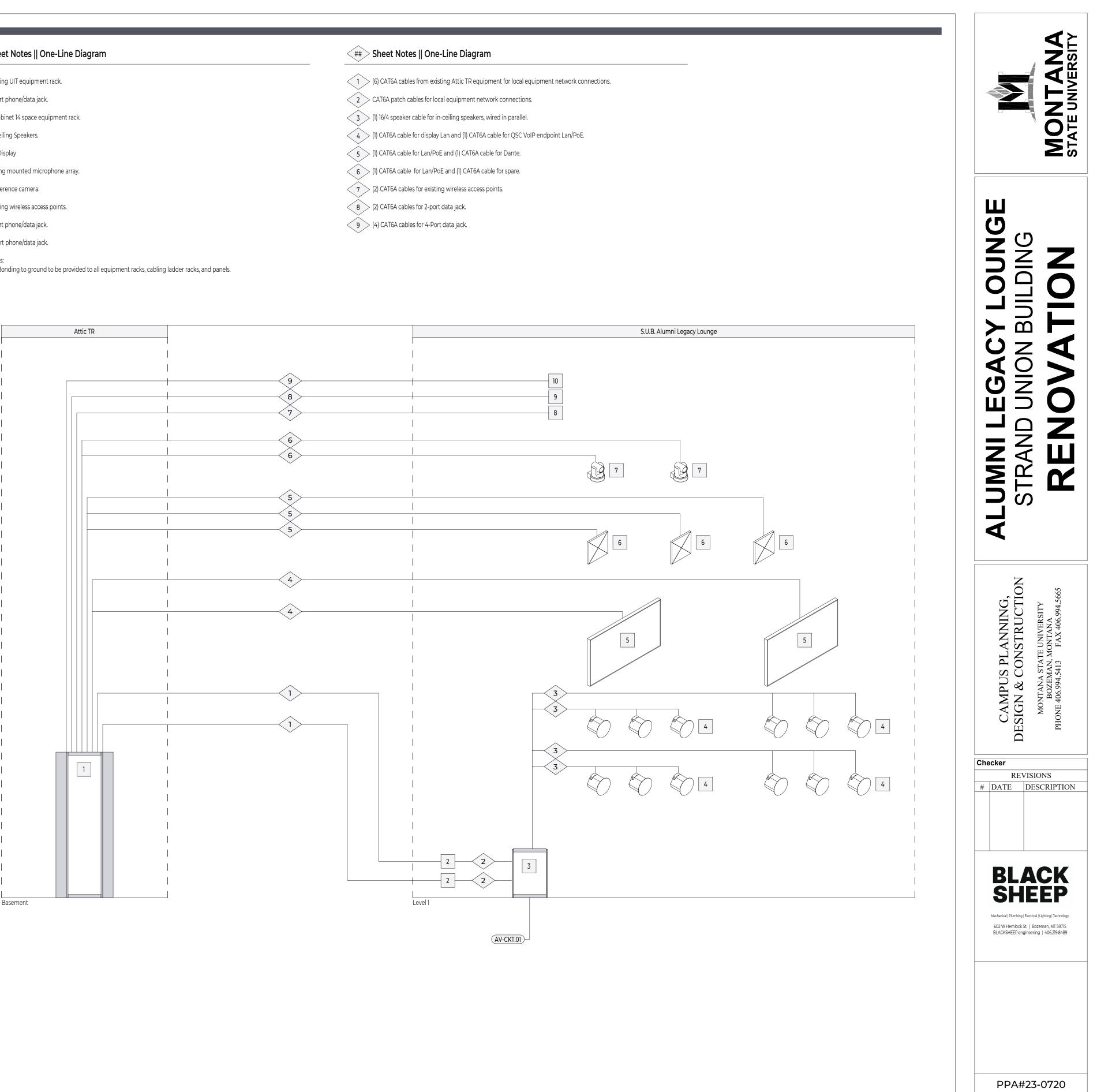
Video System

• Wireless conferencing system with dual display outputs.

### • (1) Local connection at the counter with (1) HDMI and (1) USB-C connection.

### The proceeding table identifies the video components proposed for the space.

	Qty.
C Power	1
eting Spaces	1
ay .	2
	2



A/E#001

Technology Scope & One-Line Diagram



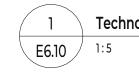
	Model	Descripti	on			
Audio						
QSC	CX-Q 2K4	4-Channe	el Network Amplifier, 700W per Channel			
Sennheiser	SL CM EB US	TeamCor	nect 2 Microphone Array, Ceiling Grid Moun	ted		
QSC	AD-C6T-ZB	6.5" 2-Wa	y In-Ceiling Speaker with Zero Bezel			
Control						
QSC	TSC-710t-G3	Tabletop	Stand Accessory for TSC-70-G3 and TSC-101-0	G3		
QSC	Core 8 Flex	Q-SYS AL	dio, Video & Control Processor			
QSC	TSC-101-G3	High Def	nition Touch Screen Controller			
Data						
Data Typical	PD-2	Phone/D	ata Wiring and Trim, 2-Port			
Typical	PD-4		ata Wiring and Trim, 4-Port			
Typical	PD-6		ata Wiring and Trim, 6-Port			
Typical	PD-2B		ata Wiring and Trim, 2-Port Biscuit			
Headend						
Middle Atlantic	BL1	1RU Spac	e Blank Panel, Anodized Aluminum & Flange	ed		
Typical	14RU	14RU In-C	abinet Slide Out & Rotate Equipment Rack, I	20 Inch Depth		
Middle Atlantic	UFAF-2A	2RU Ano	lized UFA Faceplate			
Middle Atlantic	UIV	1RU Vent	ed Rackshelf, 14.75" Depth			
Middle Atlantic	UFA-14.5		Rackshelf, 14.5" Depth			
Typical	UPS-1100VA	UPS Batt	ery Pack, 1100VA			
Video						
Extron	60-1399-02		nclosure for AV Connectivity and AC Power			
QSC	PTZ-CMB1		Ceiling Mount Bracket Set			
QSC	PTZ-WMB1		Vall Mount Bracket Set			
QSC	NC-12x80	-	Series PTZ Conference Camera			
Barco Chief	ClickShare CX-50 AS3LDP7		ireless Conferencing for Large Meeting Spac sity Wall Mount w/ PD-715SC-NS or Similar	Ces		
NEC	E988		High Definition Commercial Display			
QSC	NV-21-HU		tive Network Video Endpoint			
Technology Headen Manufacturer	d Devices Model	Descripti	n			
Manalactarer	model	Descripti				
HE.01						
Middle Atlantic	BL1		e Blank Panel, Anodized Aluminum & Flange			
Barco	ClickShare CX-50		ireless Conferencing for Large Meeting Space	Ces		
QSC	Core 8 Flex CX-Q 2K4	-	dio, Video & Control Processor			
QSC QSC	NV-21-HU		el Network Amplifier, 700W per Channel tive Network Video Endpoint			
Middle Atlantic	UIV	-	ed Rackshelf, 14.75" Depth			
Middle Atlantic	UFA-14.5		Rackshelf, 14.5" Depth			
Middle Atlantic	UFAF-2A		lized UFA Faceplate			
Typical	UPS-1100VA	UPS Batt	ery Pack, 1100VA			
Technology Devices	Cabling Information					
Manufacturer	Model	Descripti	on		Cable Types	
Audio						
QSC	AD-C6T-ZB	6.5" 2-Wa	y In-Ceiling Speaker with Zero Bezel		(1) 16/4	
	AD-C6T-ZB	6.5" 2-Wa	y In-Ceiling Speaker with Zero Bezel		(1) 16/4	
Data						
Data Typical	PD-2	Phone/D	ata Wiring and Trim, 2-Port		(2) CAT6A Gray	
Data Typical Typical		Phone/D Phone/D				
Data Typical Typical Typical	PD-2 PD-2B	Phone/D Phone/D Phone/D	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit		(2) CAT6A Gray (2) CAT6A Gray	
Typical Typical Typical	PD-2 PD-2B PD-4 PD-6	Phone/D Phone/D Phone/D	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port		(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device (	PD-2 PD-2B PD-4 PD-6	Phone/D Phone/D Phone/D	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port	Description	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room #	PD-2 PD-2B PD-4 PD-6 Cabling Numbers	Phone/D Phone/D Phone/D Phone/D	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port	Description	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room #	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name	Phone/D Phone/D Phone/D Phone/D Manufacturer	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model		(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2	Phone/Data Wiring and Trim, 2-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Manufacturer Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2	Phone/Data Wiring and Trim, 2-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Technology Device ( Room # Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-4	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-6 PD-4 PD-2B PD-2B PD-2B PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-4 PD-2B PD-2B PD-2B PD-2B PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-6 PD-4 PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-4 PD-2B PD-2B PD-2B PD-2B PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-6 PD-4 PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	
Data Typical Typical Typical Typical Typical <b>Technology Device (</b> <b>Room #</b> Level 1 C204 C204 C204 C204 C204 C204 C204 C204	PD-2 PD-2B PD-4 PD-6 Cabling Numbers Room Name Alumni Legacy Lounge Alumni Legacy Lounge	Phone/D Phone/D Phone/D Phone/D Manufacturer Typical	ata Wiring and Trim, 2-Port ata Wiring and Trim, 2-Port Biscuit ata Wiring and Trim, 4-Port ata Wiring and Trim, 6-Port Model PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-2 PD-6 PD-6 PD-6 PD-6 PD-6 PD-6 PD-6 PD-2 PD-2B	Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 2-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 6-Port Phone/Data Wiring and Trim, 4-Port Phone/Data Wiring and Trim, 2-Port Bisc Phone/Data Wiring and Trim, 2-Port Bisc	(2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray (2) CAT6A Gray	

			l Power Consumption & Thermal Load								
Qty.	Туре	Manufacturer	Model	Description				Qty.	Wattage	BTU/h	Ту
		AV-CKT.01									
1	AMP1	Barco	ClickShare CX-50	Hi-End Wireless Conferencing for Large Me	eting Spaces			1	50.00 W	170.6 Btu/h	CS
3	MIC1	QSC	Core 8 Flex	Q-SYS Audio, Video & Control Processor				1	40.00 W	110.0 Btu/h	PR
12	SP1	QSC	CX-Q 2K4	4-Channel Network Amplifier, 700W per Ch	annel			1	492.00 W	340.0 Btu/h	A
12	JFI	QSC	NV-21-HU	Q-SYS Native Network Video Endpoint				1	432.00 W	612.0 Btu/h	V
								4			
-	DOFI	Typical	UPS-1100VA	UPS Battery Pack, 1100VA				I	5.00 W	17.0 Btu/h	U
	BSE1								767.00 W	1249.6 Btu/h	
1	PROC1 TP1	Toursingtion									
I	IPI	Termination S	Schedule    C204-5								
		Manufacturer	• •								
4	LVI	Model	PD-6								
1	LV2	Location Headend	Alumni Legacy Lounge C204 HE.01								
2	LV3	neauenu	HE.U								
6	LV4	Notes:									
5	LVT										
		Quickport	Connected Wiring	Cable Type	Cable ID	Quickport	Connected Device			Cable Type	Cable
4	BL1	1	Attic TR / Network Feed	CAT6A Gray	C204-5-1	1	Touch Panel Lan/PoE			CAT6A	TI
1	ER1	2	Attic TR / Network Feed	CAT6A Gray	C204-5-2	2	Core 8 Flex Lan A			CAT6A	CORI
2	FP1	3	Attic TR / Network Feed	CAT6A Gray	C204-5-3	3	Core 8 Flex Lan B			CAT6A Patch	COR
1	SHLF1	4	Attic TR / Network Feed	CAT6A Gray	C204-5-4	4	ClickShare Lan			CAT6A	CLK
2	SHLF2	5	Attic TR / Network Feed	CAT6A Gray	C204-5-5	5	NV-21 (1) Lan/PoE			CAT6A	NV2
1	UPS1	6	Attic TR / Network Feed	CAT6A Gray	C204-5-6	6	NV-21 (2) Lan/PoE			CAT6A	NV2
·	0101	Termination S	Schedule    C204-6								
		Manufacturer	Typical								
1	AUX1	Model	PD-6								
		Neder									
1	BRKTI	Location	Alumni Legacy Lounge C204								
1 1											
1 1 2	BRKTI BRKT2	Location Headend	Alumni Legacy Lounge C204								
1 1 2 1	BRKTI BRKT2 CM1	Location	Alumni Legacy Lounge C204								
1 1 2 1	BRKTI BRKT2 CM1 CS1	Location Headend	Alumni Legacy Lounge C204								
1 1 2 1 2	BRKTI BRKT2 CM1 CS1 MNTI	Location Headend Notes:	Alumni Legacy Lounge C204 HE.01	Cable Type	Cable ID	Quickport	Connected Device			Cable Type	Cabl
1 1 2 1 2 2	BRKTI BRKT2 CM1 CS1 MNT1 TV1	Location Headend	Alumni Legacy Lounge C204 HE.01 Connected Wiring	Cable Type	Cable ID	Quickport	Connected Device			Cable Type	
1 2 1 2 2 6	BRKTI BRKT2 CM1 CS1 MNTI	Location Headend Notes: Quickport 1	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed	CAT6A Gray	C204-6-1	1	NV-21 (3) Lan/PoE			CAT6A	NV2
1 2 1 2 2 6	BRKTI BRKT2 CM1 CS1 MNT1 TV1	Location Headend Notes: Quickport 1 2	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2	1 2	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE			CAT6A CAT6A	NV2 NV2
1 2 1 2 2 6	BRKTI BRKT2 CM1 CS1 MNT1 TV1	Location Headend Notes: Quickport 1 2 3	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3	1 2 3	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A			CAT6A CAT6A CAT6A	NV2 NV2 AMF
1 2 1 2 6 Qty.	BRKTI BRKT2 CM1 CS1 MNT1 TV1	Location Headend Notes: Quickport 1 2 3 3 4	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4	1 2 3 4	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMF
1 2 1 2 6 Qty.	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1	Location Headend Notes: Quickport 1 2 3	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3	1 2 3	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A			CAT6A CAT6A CAT6A	NV2 NV2 AMF AMF
1 2 1 2 6 Qty.	BRKTI BRKT2 CM1 CS1 MNTI TV1 VID1	Location Headend Notes: Quickport 1 2 3 4 5 5 6	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMF
1 2 1 2 2 6 <b>Qty.</b>	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1	Location Headend Notes: Quickport 1 2 3 4 5 5 6	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP AMP
1 1 2 1 2 6 Qty. 4 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1	Location Headend Notes: Quickport 1 2 3 4 5 6 Amplifier Terr	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	Cable NV2 NV2 AMP AMP UF
1 1 2 2 6 Qty. 4 1 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1	Location Headend Notes: Quickport 1 2 3 4 5 5 6	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP AMP
1 1 2 1 2 6 Qty. 4 1 1 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 TV1 VID1 BL1 CS1 PROC1 AMP1	Location Headend Notes: Quickport 1 2 3 4 5 6 Amplifier Terr Manufacturer	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP AMP
1 1 2 2 6 Qty. 4 1 1 1 4 2	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1	Location Headend Notes: Quickport 1 2 3 4 5 6 Amplifier Terr Manufacturer Model	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP AMP
1 1 2 2 6 Qty. 4 1 1 1 4 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1 SHLF1	Location Headend Notes: Quickport 1 2 3 4 5 6 <b>Amplifier Terr</b> Manufacturer Model Location Headend	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP AMP
1 1 2 2 6 <b>Qty.</b> 4 1 1 4 1 2	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 VID1 BL1 CS1 PROC1 AMP1 VID1 SHLF1 SHLF2	Location Headend Notes: Quickport 1 2 3 4 4 5 6 <b>Amplifier Terr</b> Manufacturer Model Location	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP
1 1 2 2 6 Qty. 4 1 1 4 1 2 2 2 2 2 2 2 4 1 2 2 2 4 1 2 2 4 1 2 2 4 1 2 2 4 2 2 4 2 2 4 2 4 2 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1 SHLF1	Location Headend Notes: Quickport 1 2 3 4 5 6 <b>Amplifier Terr</b> Manufacturer Model Location Headend	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMP
1 1 2 1 2 6 <b>Qty.</b> 4 1 1 4 1 2 2 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 VID1 BL1 CS1 PROC1 AMP1 VID1 SHLF1 SHLF2	Location Headend Notes: Quickport 1 2 3 4 5 6 <b>Amplifier Terr</b> Manufacturer Model Location Headend	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B	Cable Type		CAT6A CAT6A CAT6A CAT6A CAT6A	NV2 NV2 AMF UF
1 1 2 2 6 Qty. 4 1 1 4 1 2 2 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1 SHLF1 SHLF1 SHLF2 FP1	Location Headend Notes: Quickport 1 2 3 4 5 6 Amplifier Terr Manufacturer Model Location Headend Notes:	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01 QSC CX-Q 2K4 Alumni Legacy Lo HE.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B	Cable Type		CAT6A CAT6A CAT6A CAT6A CAT6A	NV2 AMP UF
1 1 2 2 6 Qty. 4 1 1 4 1 2 2 1 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1 SHLF1 SHLF1 SHLF2 FP1	Location Headend Notes: Quickport 1 2 3 4 5 6 Manufacturer Model Location Headend Notes:	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01 QSC CX-Q 2K4 Alumni Legacy Lo HE.01	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B			CAT6A CAT6A CAT6A CAT6A CAT6A	NV2 AMP UF
1 1 2 2 6 Qty. 4 1 1 4 1 2 1 1 2 1	BRKTI BRKT2 CM1 CS1 MNT1 TV1 VID1 Type BL1 CS1 PROC1 AMP1 VID1 SHLF1 SHLF1 SHLF2 FP1	Location Headend Notes: Quickport 1 2 3 4 4 5 6 Manufacturer Model Location Headend Notes: Notes:	Alumni Legacy Lounge C204 HE.01 Connected Wiring Attic TR / Network Feed Attic TR / Network Feed Mination Schedule    AMP1.01 QSC CX-Q 2K4 Alumni Legacy Lounge C204 / In	CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray CAT6A Gray	C204-6-1 C204-6-2 C204-6-3 C204-6-4 C204-6-5	1 2 3 4 5	NV-21 (3) Lan/PoE NV-21 (4) Lan/PoE Amp Lan A Amp Lan B	16/4		CAT6A CAT6A CAT6A CAT6A CAT6A CAT6A CAT6A	NV2 AMP AMP UF

Cabling Headend	Туре
HE.01	SPI
Attic TR	LVI
Attic TR	LV4
Attic TR	LV2
Attic TR	LV3

Туре	Wire Label
LVI	266-1
LVI	266-2
LVI	266-3
LVI	266-4
LV3	266-5
LV3	266-6
LV2	266-7
LV4	266-8
LV4	266-9
LV4	266-10
LV4	266-11
LV4	266-12
LV4	266-13
SP1	266-14
SP1	266-15
SP1	266-16
SP1	266-17

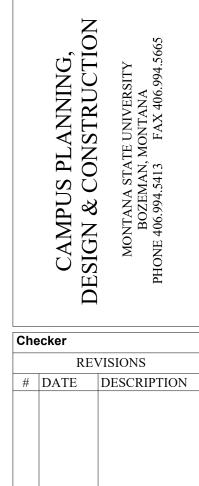
O Middle Atlanti	1			1
		BL1		
8	PROC1			
O Middle Aflantin	6	BL1		
8		CS1 SHLF1		
O Middle Allerbi	<u> </u>	JHLFI		UFAF-2A
		FP1		
O Middle Atlants	VIDI	SHLF2	VID1	UFAF-2A
		FPI		
	VID1	SHLF2	VID1	
O Middle Aflanti		BL1		
				CKQ2KA
		AMP1		
O Middle Allanti				
	8	BL1		
				UPS-1100VA
		UPSI		



Technology Equipment Rack Plan









602 W Hemlock St. | Bozeman, MT 59715 BLACKSHEEP.engineering | 406.219.8489

PPA#23-0720

A/E#001

Technology Equipment Schedules



Date: 03.07.2024

### General Sheet Notes

- Installation of all work shall be in accordance with all local codes and ordinances and the edition of the National Electric Code NFPA 70 (NEC) in effect.
- The schedules on this sheet may not includes all necessary items and/or licenses needed for a fully functional system. Integrator shall be responsible for including all necessary items.
- Installing contractor to provide adequate cooling system (not shown in schedules) for cooling cabinet and equipment rack. Coordinate final selection of equipment with build team.

Reference Keynotes