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REVISIONS		
NO.	DATE	DESCRIPTION

BELTLINE CAMPUS



ROOM 121 IN RICHLAND HALL MTC 22-09

ROOM 121 RENOVATIONS IN RICHLAND HALL BELTLINE CAMPUS

MIDLANDS TECHNICAL COLLEGE COLUMBIA, S.C.

DRAWING INDEX

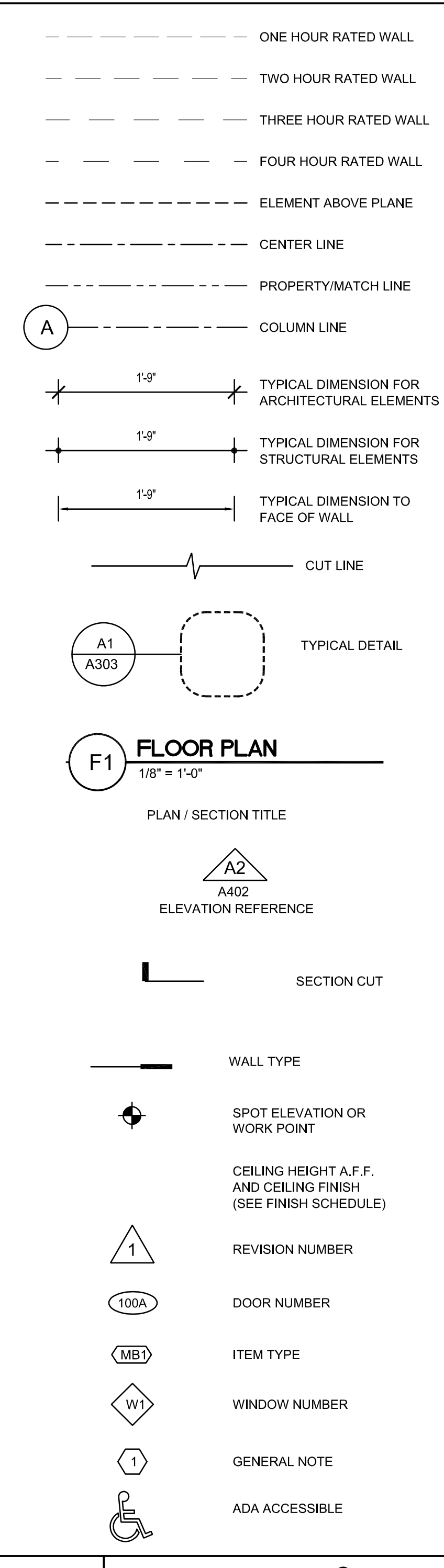
GENERAL COVER AND DATA	
G101	COVER SHEET
ARCHITECTURAL	
A201	DEMOLITION PLAN, RENOVATION PLAN, NOTES, AND DETAILS
MECHANICAL	
M101	HVAC RENOVATION PLAN
ELECTRICAL	
E000	ELECTRICAL LEGEND, NOTES, DETAILS, & SCHEDULES
E001	ELECTRICAL SPECIFICATIONS
E100	ELECTRICAL DEMOLITION PLANS
E200	ELECTRICAL RENOVATION PLANS

COMMON ABBREVIATIONS

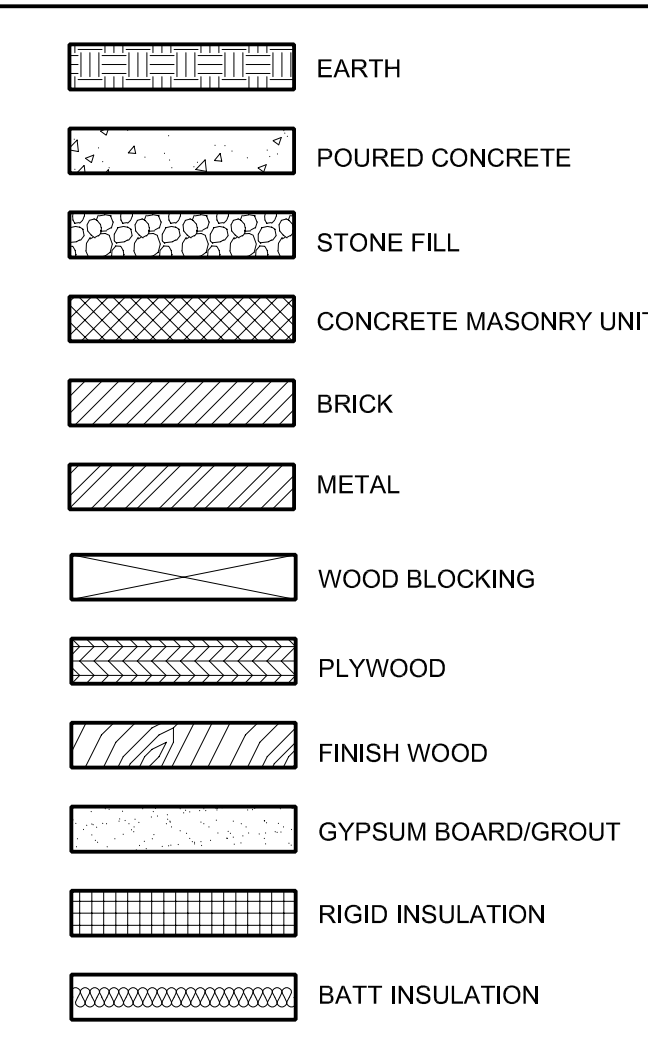
A	ACOUS	ACOUSTICAL
ADJ	ADJ	ADJACENT OR ADJUSTABLE
AFC	AFC	ABOVE FINISHED FLOOR
AIC	AIC	ARCH. JOINT COVER
AISF	AISF	ARCH. JOINT SYS. FLOORS
AISO	AISO	ARCH. JOINT SYS. GYPSUM WALLS, SOFFITS, ETC.
ALSM	ALSM	ARCH. JOINT SYS. MASONRY WALLS
ALT	ALT	ALTERNATE
ALUM	ALUM	ALUMINUM
AMP	AMP	ANCHOR, ANCHORED
AOR	AOR	AREA OF RESCUE ASSISTANCE
ARC	ARC	ACOUSTICAL PANEL CEILING
ARCH	ARCH	ARCHITECT, ARCHITECTURAL ASSISTANT
ASST	ASST	ASSEMBLY
ASST	ASST	ASSEMBLY
AV	AV	AUDIO VISUAL
AWP	AWP	ACOUSTICAL WALL PANEL
B	BLDG	BUILDING
BKHD	BKHD	BULKHEAD
BM	BM	BEAM
BRK	BRK	BREAK
BS	BS	BASKETBALL BACKSTOP
BUR	BUR	BUILT UP ROOF, ROOFING
C	CFS	CONCRETE FLOOR SEALER
CG	CG	CORNER GUARD
CJ	CJ	CONSTRUCTION JOINT
CL	CL	CENTER LINE
CLG, C	CLG, C	CEILING
CMU	CMU	CONCRETE MASONRY UNIT
CONC	CONC	CONCRETE
CONF	CONF	CONFERENCE
CONSTR.	CONSTR.	CONSTRUCTION, CONSTRUCT
CONTR	CONTR	CONTRACTOR
CORR	CORR	CORRIDOR
CPT	CPT	CARPET
CTB	CTB	CERAMIC TILE BASE
CTF	CTF	CERAMIC TILE FLOOR
CTW	CTW	CERAMIC TILE WALL
D	DCS	DRESSER CHANGING STATION
DEFS	DEFS	DESCRIPT EXTERIOR FINISH SYSTEM
DET	DET	DETAIL
DIA, Ø	DIA, Ø	DIAMETER
DS	DS	DOWNSPOUT
DWG(S)	DWG(S)	DRAWING, DRAWINGS
E	EF, EXH FN	EXHAUST FAN, OR EXHAUST
EFIS	EFIS	EXTERIOR INSULATION FINISH SYSTEM
EJ, EXP, JT.	EJ, EXP, JT.	ELECTRIC, ELECTRICAL ELEVATION
ELEC	ELEC	ELECTRIC
EL	EL	EPOXY PAINT
EP	EP	EQUAL
EQ	EQ	EACH WAY
EW, EA, WAY EWC	EW, EA, WAY EWC	ELECTRIC WATER COOLER
EXST	EXST	EXISTING
EXP	EXP	EXPANSION
EXT	EXT	EXTERIOR
F	FC BRK	FACE BRICK
FD	FD	FLOOR DRAIN
FN, F	FN, F	FINISHED, FINISH
FE, EL	FE, EL	FINISHED FLOOR ELEVATION
FEC	FEC	FIRE EXTINGUISHER CABINET
FL, FR	FL, FR	FLOOR
FSW	FSW	FLOOR SOLID CORE WOOD
G	GA	GAUGE
GB	GB	GRAB BAR (LENGTH INDICATED)
GC, GEN CONT	GC, GEN CONT	GENERAL CONTRACTOR
GUID	GUID	GUIDANCE
GWB, GYP BD	GWB, GYP BD	GYPSUM WALL BOARD, SHEET ROCK
GL	GL	GLASS
H	HCP	HANDICAPPED
HD	HD	HAND DRYER
HT	HT	HEIGHT, HIGH
HAL	HAL	HOLLOW METAL
HDRSL	HDRSL	HORIZONTAL
HDRZ	HDRZ	HORIZONTAL
HVAC	HVAC	HEATING VENTILATION AND AIR CONDITIONING
HR	HR	HOUR
I	IG	INSULATING GLASS
IGL	IGL	INSULATING GLASS LOW-E
IGT	IGT	INSULATING GLASS TEMPERED
INSUL	INSUL	INSULATION
IPS	IPS	INTERIOR PANEL SIGN
ITN	ITN	ITINERANT
J	JBE	JOIST BEARING ELEVATION
JT	JT	JOINT
K	KB	KNEE BRACE
KIT	KIT	KITCHEN
KIYV	KIYV	KEYWAY
KOP	KOP	KNOCKOUT PANEL
KPL	KPL	KICKPLATE
L	LAB	LABORATORY
LAM	LAM	LAMINATE
LAW	LAW	LAUNDRY
LAV	LAV	LAVATORIES
LDS	LDS	LANDING
LF, INS	LF, INS	LOOSE-FILL INSULATION

L	LIB	LIBRARY
LRR	LRR	LOCKER ROOM
LL	LL	LEVEL
LT	LT	LIGHT
LTGA	LTGA	LIGHT GAGE
M	MAX	MAXIMUM
MB	MB	MARKER BOARD
MBH	MBH	MORPHOLOGY HOLDER
MCH	MCH	MASONRY CONTROL JOINT
MECH	MECH	MECHANICAL
MEMB	MEMB	MEMBRANE
MEZZ	MEZZ	MEZZANINE
MFR, MFG	MFR, MFG	MANUFACTURED, MANUFACTURER
MG	MG	MONOLITHIC FLOOR GLASS
MGT	MGT	MONOLITHIC FLOOR GLASS, TEMPERED
MN	MN	MINIMUM
MTD	MTD	MOUNTED
MTL, MET	MTL, MET	METAL
N	N	NONE
NA	NA	NOT APPLICABLE
NOM	NOM	NOMINAL SIZE
NTS	NTS	NOT TO SCALE
O	OC	ON CENTER
OFD	OFD	OWNER FURNISH/CONTRACTOR INSTALL
OFI	OFI	OWNER FURNISH/OWNER INSTALL
OPT	OPT	OPTIONAL
P	P	PAINT
P.E.	P.E.	PROFESSIONAL ENGINEER
PLAM	PLAM	PLASTIC LAMINATE
PLYWD	PLYWD	PLYWOOD
PL	PL	PLATE
PLUMB	PLUMB	PLUMBING
PRE-MFG	PRE-MFG	PRE-MANUFACTURED
PRIN, PRINC.	PRIN, PRINC.	PRINCIPAL
PT	PT	PRESSURE TREATED
Q	QTY	QUANTITY
QT	QT	QUARRY TILE
R	RB	RUBBER BASE
REC	REC	REGCREATION
R	R	RADIUS
RD	RD	REQUIRED
REDD	REDD	REQUIRED
REMF.	REMF.	REINFORCING
RH	RH	ROOF HATCH
RL	RL	ROOF LEADER
ROM	ROM	ROOM
RCPN	RCPN	RECEPTION
RWB	RWB	RESILIENT WALL BASE
RFC	RFC	ROUGH FINISH
RO	RO	ROUGH OPENING
S	SB	SPLASH BLOCK
SC	SC	SEALED CONCRETE
SC	SC	SEWER CURTAIN/TRUCK
SCHED	SCHED	SCHEDULE
SE, SQ, FT.	SE, SQ, FT.	SQUARE FOOT
SFH	SFH	SILICANT FLOOR HARDENER
SIL	SIL	SHELF
SIMS	SIMS	STUDENT INFORMATION MANAGEMENT SYSTEM
SND	SND	SANITARY NAPPH DISPOSAL
SNV	SNV	SANITARY NAPPH VENDOR
SPEC	SPEC	SPECIFICATIONS
SPEC. ED.	SPEC. ED.	SPECIAL EDUCATION
SHRS	SHRS	SHOWER CURTAIN/HOOD
SHR	SHR	SHOWER SEAT
STL	STL	STEEL
STR	STR	STRUCTURAL
STRCT	STRCT	SUPPRESSED ACOUSTICAL TILE CEILING
SATC	SATC	STRUCTURE
SY, SQ, YD.	SY, SQ, YD.	SQUARE YARD
T	TA	TOILET ACCESSORY
T	T	TACK BOARD
T	T	TOWEL DISPENSER
TD	TD	TOWEL HOLDER
TH	TH	TOILET
TILT, T	TILT, T	TOILET FOOTING
TOP OF STEEL	TOP OF STEEL	TOP OF STEEL
TOS	TOS	TREATED
TRED	TRED	TREAD
TSP	TSP	TACK STRIP
TYP	TYP	TYPICAL
U	UC	UNDERCUT
ULG	ULG	UNDERLAVATORY GUARDS
UR	UR	URN
V	V	VENT
V	V	VOLLEYBALL FLOOR PLATE
VFC	VFC	VINYL COMPOSITION TILE
VERT	VERT	VERTICAL
VTR	VTR	VENT THROUGH ROOF
VWC	VWC	VINYL WALL COVERING
W	W	WITH
WC	WC	WATERCLOSET
WD	WD	WOOD
WG	WG	WIRE GLASS
WG	WG	WASTE RECEPTACLES
WR	WR	WELDED WIRE MESH OR FABRIC
WWW, WWF	WWW, WWF	WWW, WWF

SYMBOLS



MATERIALS



PROJECT TEAM

ARCHITECTURAL
boomerang DESIGN
 1070 SOUTH LAKE DRIVE, SUITE J
 LEXINGTON, SOUTH CAROLINA 29073
 (803) 356-0507

MECHANICAL
FELKEL & HASTINGS
 2725 CYPRESS STREET
 COLUMBIA, SOUTH CAROLINA 29205
 PH. (803) 492-0677

ELECTRICAL
ETI ENGINEERING, LLC
 5725 BUSH RIVER ROAD
 COLUMBIA, SOUTH CAROLINA 29212
 PH. (803) 233-9396

301 688-0000

TABLE 3E CODE INFORMATION FOR ADDITIONS, ALTERATIONS, OR CHANGE OF OCCUPANCY TO AN EXISTING STRUCTURE

TYPE OF PROJECT: Alteration (IEBC Chap. 7, 8 & 9) Addition (IEBC Chap. 11) Change of Occupancy (IEBC Chap. 10)

METHOD OF COMPLIANCE: Option 1: Prescriptive Compliance Method (IEBC Chapter 5) Option 2: Work Area Compliance Method (IEBC Chapter 6-12) Option 3: Performance Compliance Method (IEBC Chapter 13)

(Check only one Option and all items that apply under that Option)

Sanitary Napkin Disposal: Alteration Level 1, reuse including recycling (IEBC Chap. 7) Alteration Level 2, reconfiguration of space (IEBC Chap. 9) Alteration Level 3, work area exceeds 50% (IEBC Chap. 9)

Sanitary Napkin Vendor: Alteration Level 1, reuse including recycling (IEBC Chap. 7) Alteration Level 2, reconfiguration of space (IEBC Chap. 9) Alteration Level 3, work area exceeds 50% (IEBC Chap. 9)

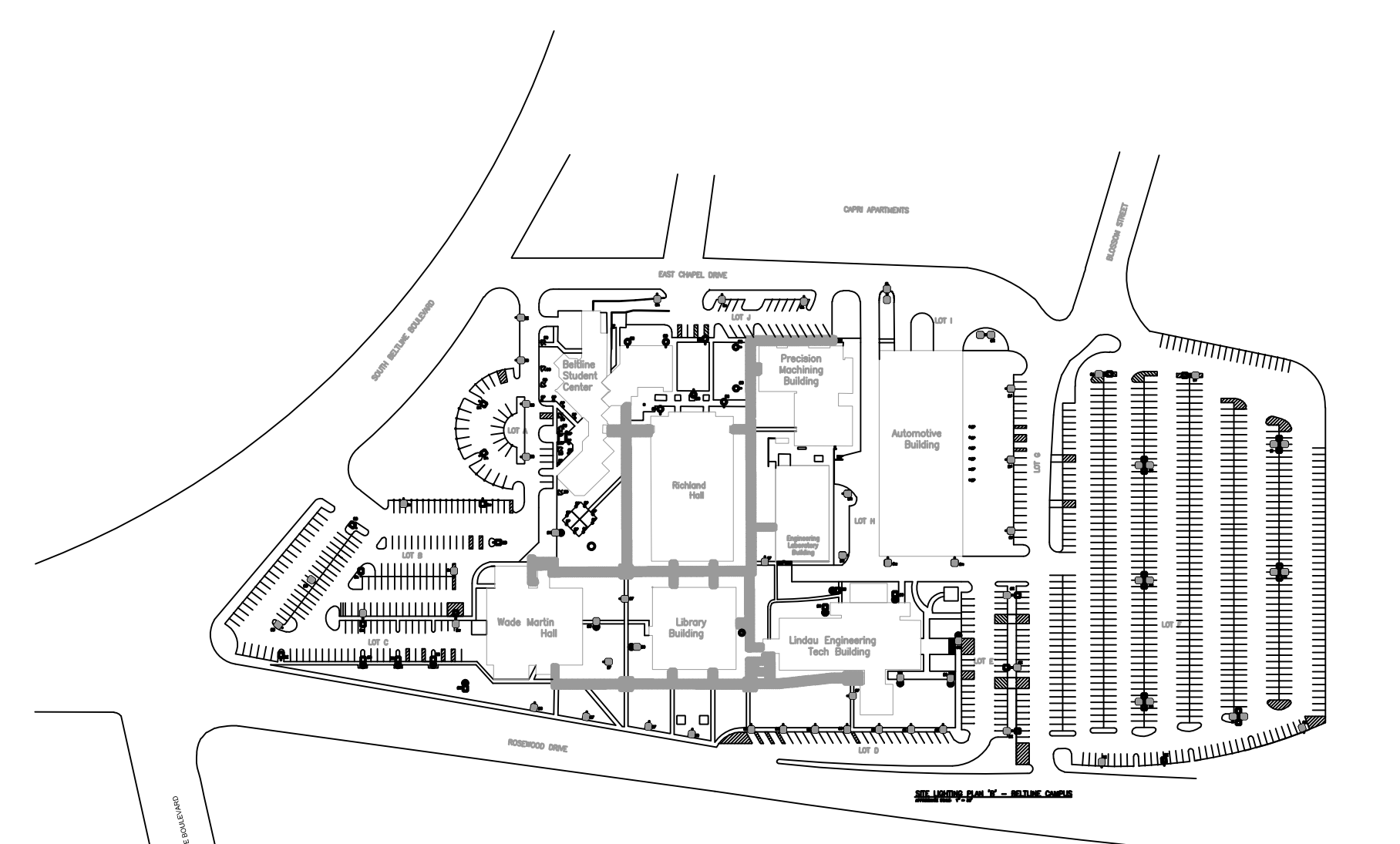
Major Facility Project? (See 604-53-100.1000) Yes No

Change of Occupancy: Yes No

Existing Occupancy Classification: Yes No

New Occupancy Classification: Yes No

Historic Building (IEBC Chapter 12): Preservation Rehabilitation Restoration Reconstruction



CHARLOTTE 1230 WEST MOREHEAD ST. SUITE 214 CHARLOTTE, NC 27609 704/731-7000

SHELBY 201 S. WASHINGTON ST. SUITE 200 SHELBY, NC 27815-2285 704/406-6000

RALEIGH 6131 FALLS OF NEUSE RD. SUITE 204 RALEIGH, NC 27609 919/573-6400

LEXINGTON 1070 S. LAKE DR. SUITE J LEXINGTON, SC 29073 803/356-0507

COVER SHEET

SHEET TITLE
2224
 PROJECT NUMBER
 9-16-2022
 RELEASE DATE

CD
G101
 SHEET OF

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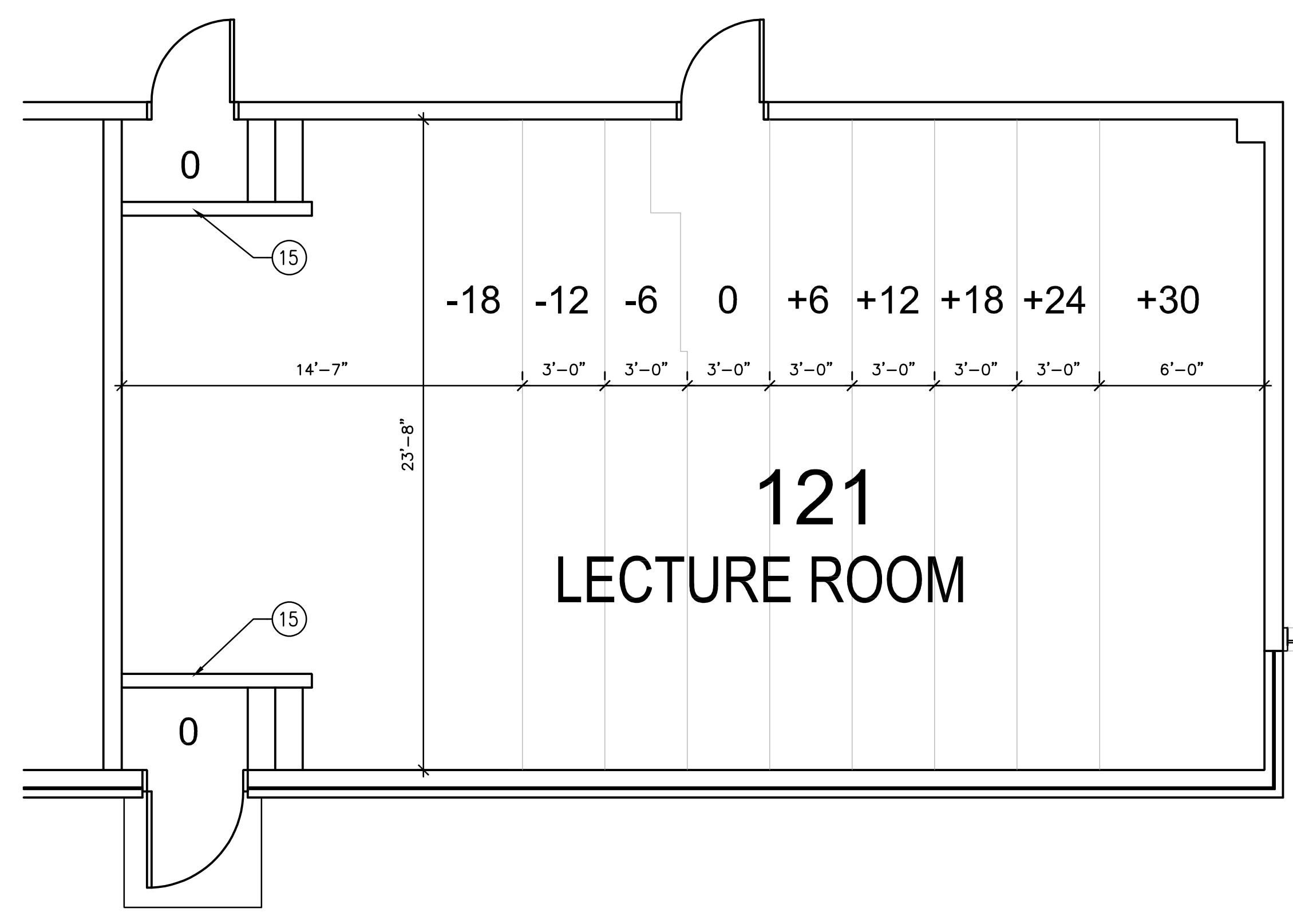
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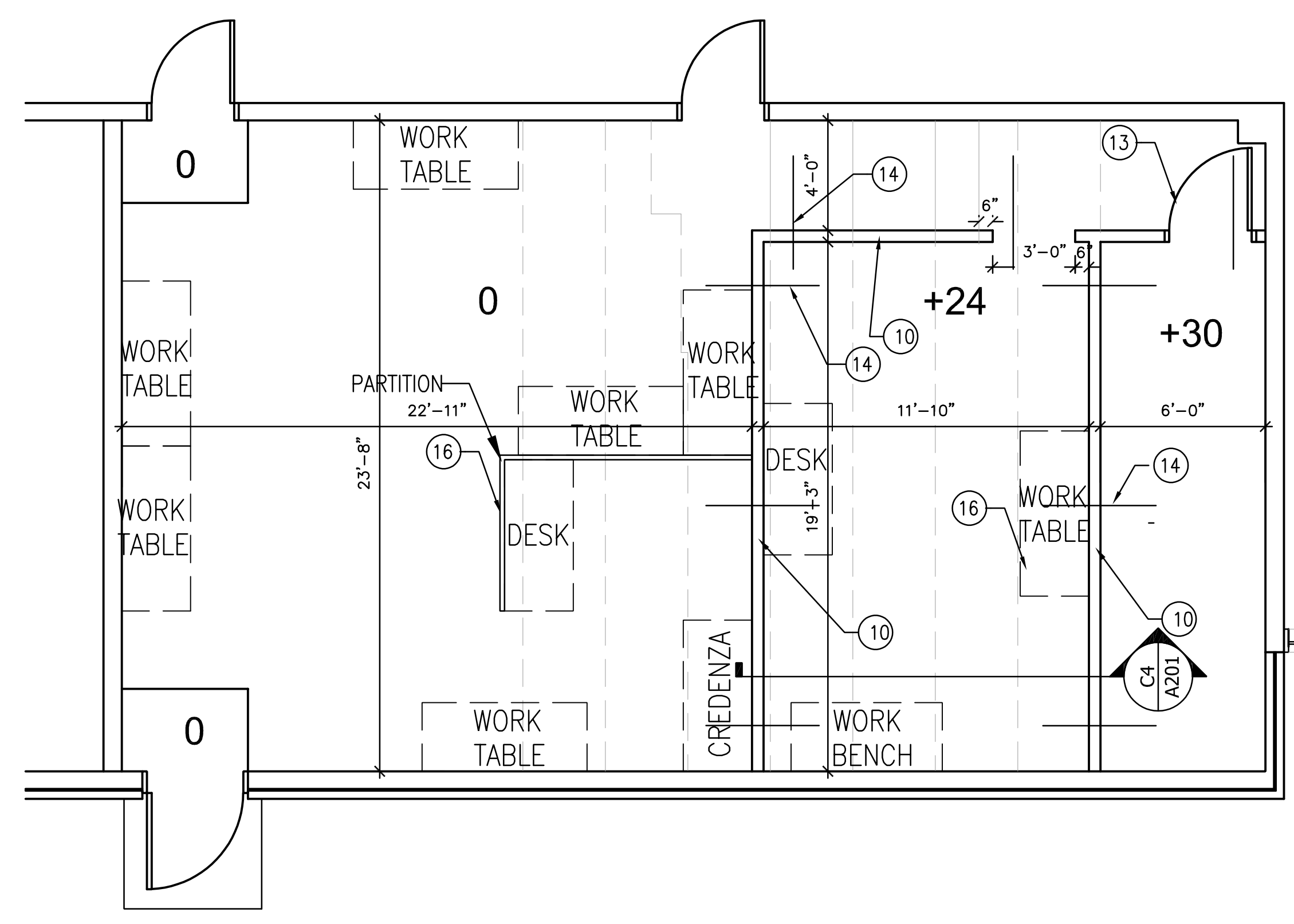
BELTLINE CAMPUS



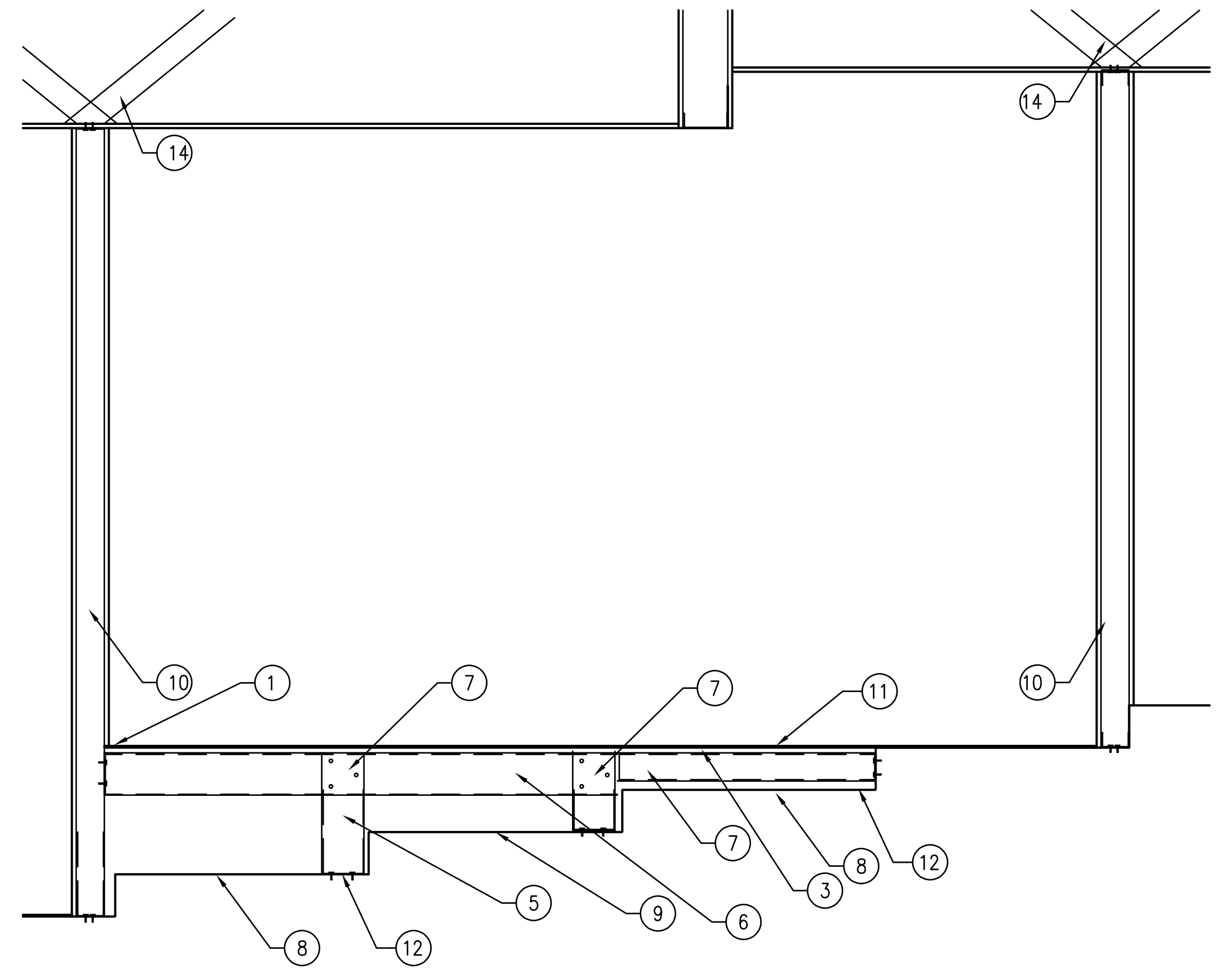
ROOM 121 IN RICHLAND HALL MTC 22-09



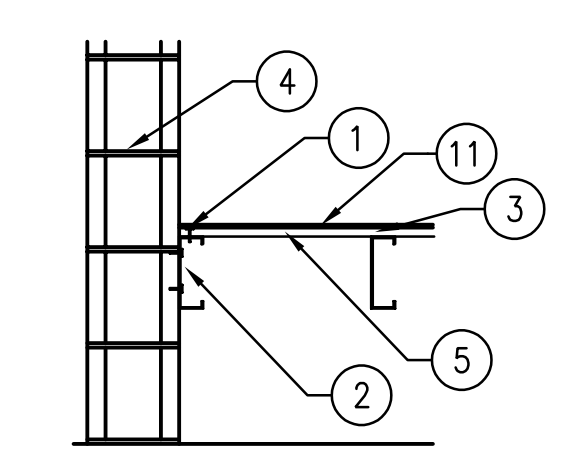
D1 DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



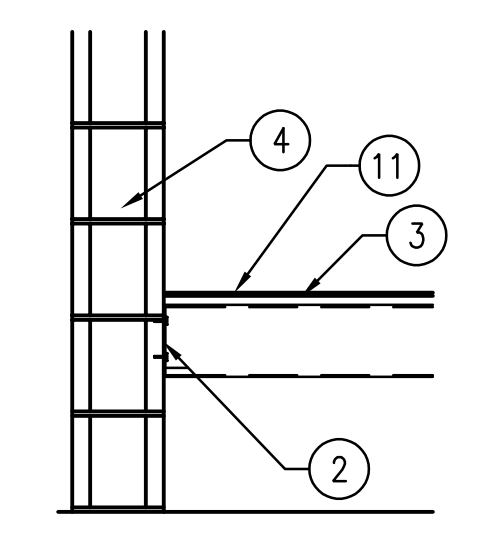
F1 RENOVATION PLAN
SCALE: 1/4" = 1'-0"



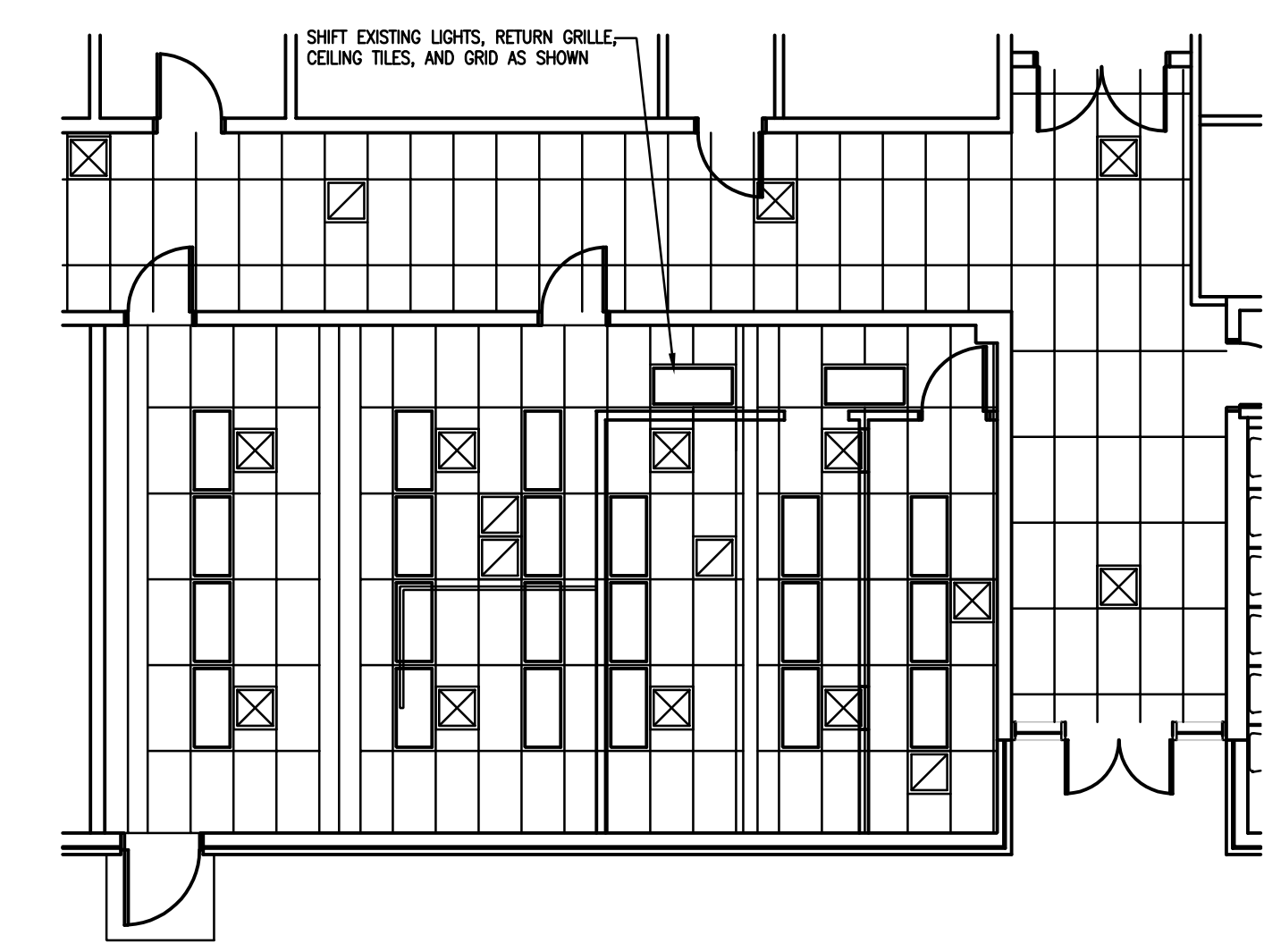
C4 FLOOR FRAMING OVER EXISTING CONCRETE FLOOR
SCALE: 3/4" = 1'-0"



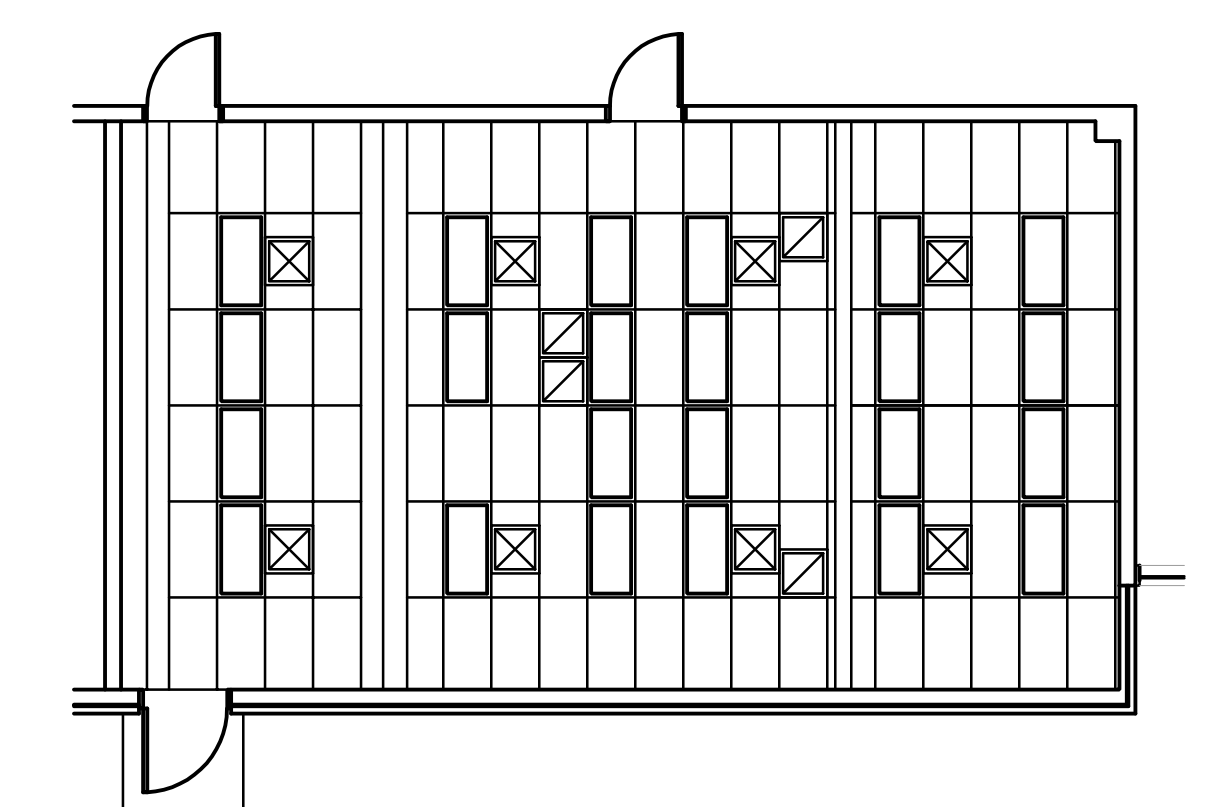
D4 TYPICAL FLOOR FRAMING PERPENDICULAR TO WALL
SCALE: 3/4" = 1'-0"



E4 TYPICAL FLOOR FRAMING PARALLEL TO WALL
SCALE: 3/4" = 1'-0"



E5 NEW CEILING PLAN
SCALE: 1/8" = 1'-0"



F5 EXISTING CEILING PLAN
SCALE: 1/8" = 1'-0"

SCOPE OF WORK

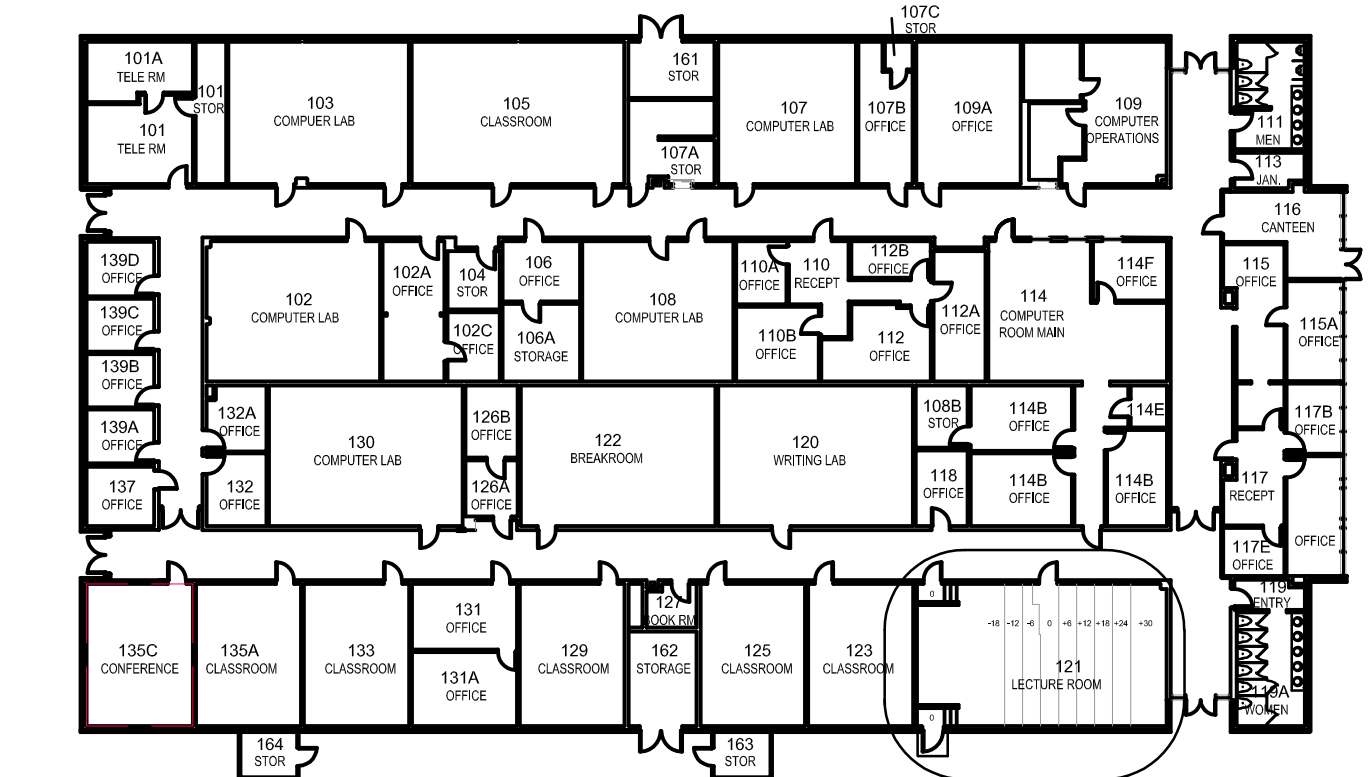
- INSTALL #12 SCREWS AT 6" O.C. AT PERIMETER, TYPICAL.
- 600S200-43 W/ (2) 3/16" TAPCON SCREWS AT 32" ON CENTER (INSTALL ASPHALT ISOLATION STRIP BETWEEN STUD AND CMU AT EXTERIOR WALLS).
- INSTALL 3/4" USG CONCRETE PANEL SHEATHING W/#12 SCREWS AT 6" AT PERIMETERS, 9" AT PANEL EDGES AND 12" IN FIELD OF PANELS. EXISTING MASONRY (CMU) WALL TO REMAIN, TYPICAL.
- 600S200-43 VERTICAL STUDS AND FLOOR JOIST AT 16" ON CENTER.
- 400S200-43 VERTICAL FLOOR JOIST AT 16" ON CENTER.
- ATTACHED FRAMING WITH (3) #12 SCREWS.
- EXISTING CONCRETE SLAB FLOOR.
- EXISTING CONCRETE STEPLEVEL.
- NEW 4" METAL STUD WITH 5/8" GYPSUM BOARD ON EACH SIDE, SOUND BATT INSULATION, TOP TRACK ATTACHED TO CEILING GRID AND BRACED OFF AT STRUCTURE ABOVE WITH 20 GA. STEEL STUDS AT 8'-0" O.C. MAX.
- NEW FLOORING - SEE FINISH SCHEDULE THIS SHEET.
- ATTACH 600T200-43 TRACK TO EXISTING CONCRETE FLOOR (TYPICAL).
- NEW 3'-0" X 7'-0" PAINT GRADE WOOD DOOR AND HARDWARE (STORE ROOM LOCK).
- BRACE WALL TO STRUCTURE ABOVE WITH 20 GA STEEL STUDS AT 8'-0" O.C. MAX.
- REMOVE PORTION OF CONCRETE WING WALL AT STAIRS (EACH SIDE) TO ALLOW FOR NEW FLOOR INSTALLATION.
- PARTITIONS, CRENDENZA, DESKS, WORK BENCHES, AND WORK TABLES ARE BY OWNER (NOT IN CONTRACT).

General Notes

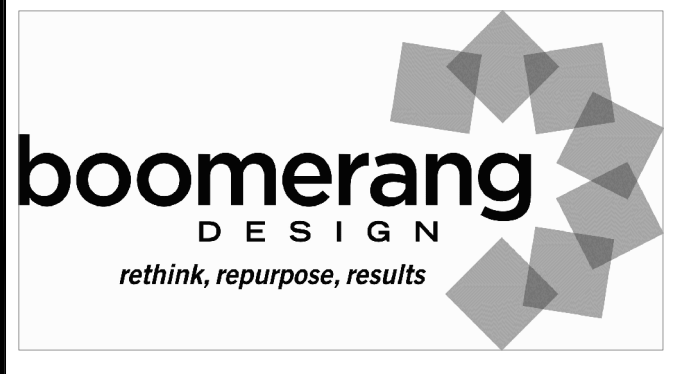
- ALL EXISTING WALLS IN ROOMS TO BE ARE PAINTED, EXISTING WALLS ARE CMU WALLS.
- EXISTING CEILING GRID, TILES, LIGHT FIXTURES, AND HVAC GRILLES WILL REMAIN IN PLACE, EXCEPT FOR THOSE NOTED AS SHIFTED ON NEW CEILING PLAN. PROVIDE A \$2,000 ALLOWANCE TO REPLACE AND INSTALL NEW CEILING TILES AS REQUIRED.
- MAIN CEILING HEIGHT IN ROOM FROM 10" ELEVATION IS 8'-4".
- GENERAL CONTRACTOR TO VERIFY ALL EXISTING DIMENSIONS AND ELEVATIONS BEFORE ANY FABRICATION HAS STARTED.
- PROVIDE AND INSTALL ALL TEMPORARY BRACING AS REQUIRED FOR SAFETY/STABILITY OF THE STRUCTURE UNTIL STRUCTURE IS COMPLETE.

INTERIOR FINISHES LEGEND

- FLOORING
LVT
MFR: SHAW
STYLE: PRIMARY, 5T123
SIZE: 24" X 24"
COLOR: STORM CLOUD 17597
- BASE
RB-1
MFR: JOHNSONITE
SERIES: 4"
COLOR: #40 BLACK
- PAINT:
P 1 - (GENERAL COLOR)
SERIES: SHERWIN WILLIAMS
COLOR: #6196 FROSTY WHITE
FINISH: EGG SHELL
- P 2 - (DOORS AND FRAMES)
MFR: SHERWIN WILLIAMS
COLOR: #6196 FROSTY WHITE
FINISH: SEMI-GLOSS



F7 RICHLAND HALL OVERALL FLOOR PLAN
SCALE: 1/32" = 1'-0"



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SHELBY 201 S. WASHINGTON ST. SUITE 200 SHELBY, NC 28151-2285 704/406-6000

RALEIGH 6131 FALLS OF NEUSE RD. SUITE 204 RALEIGH, NC 27609 919/573-6400

LEXINGTON 1070 S. LAKE DR. SUITE J LEXINGTON, SC 29073 803/356-0507

DEMOLITION PLAN, RENOVATION PLANS, NOTES, AND DETAILS

SHEET TITLE	
2224	CD
PROJECT NUMBER	
9-16-2022	A201
RELEASE DATE	SHEET OF

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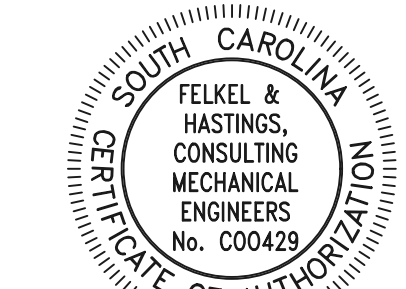
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REVISIONS		
NO.	DATE	DESCRIPTION

BELTLINE STUDENT CENTER



AUDITORIUM RENOVATIONS MTC 22-09



FELKEL & HASTINGS
Mechanical Engineers
2725 Cypress Street
Columbia, S.C. 29205
Comm. No.: 22-45 Date: 09-19-22



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SHELBY 201 S. WASHINGTON ST. SUITE 200
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RALEIGH, NC 27609 919/573-6400

LEXINGTON 1070 S. LAKE DR. SUITE J
LEXINGTON, SC 29073 803/356-0507

HVAC RENOVATION PLAN

SHEET TITLE
2224
PROJECT NUMBER
9-16-2022
RELEASE DATE

CD
M101
SHEET OF

AIR DISTRIBUTION SCHEDULE											
SYMBOL	MOUNTING	PRICE MODEL NO.	METAL-AIRE MODEL NO.	TITUS MODEL NO.	FRAME SIZE (IN)	FACE TYPE	NECK	FINISH (FACE/INT)	USE	MATERIAL	REMARKS
A	LAY-IN	APDC	7000-6	FCS-AA	24X24	PERFORATED	ROUND	WHT/WHT	SUPPLY	ALUMINUM	1
B	LAY-IN	APDDR	7000R-6	PAR-AA	24X24	PERFORATED	SQUARE	WHT/WHT	RET/EXH	ALUMINUM	-

1. FURNISH WITH OPPOSED BLADE DAMPER.

H V A C L E G E N D

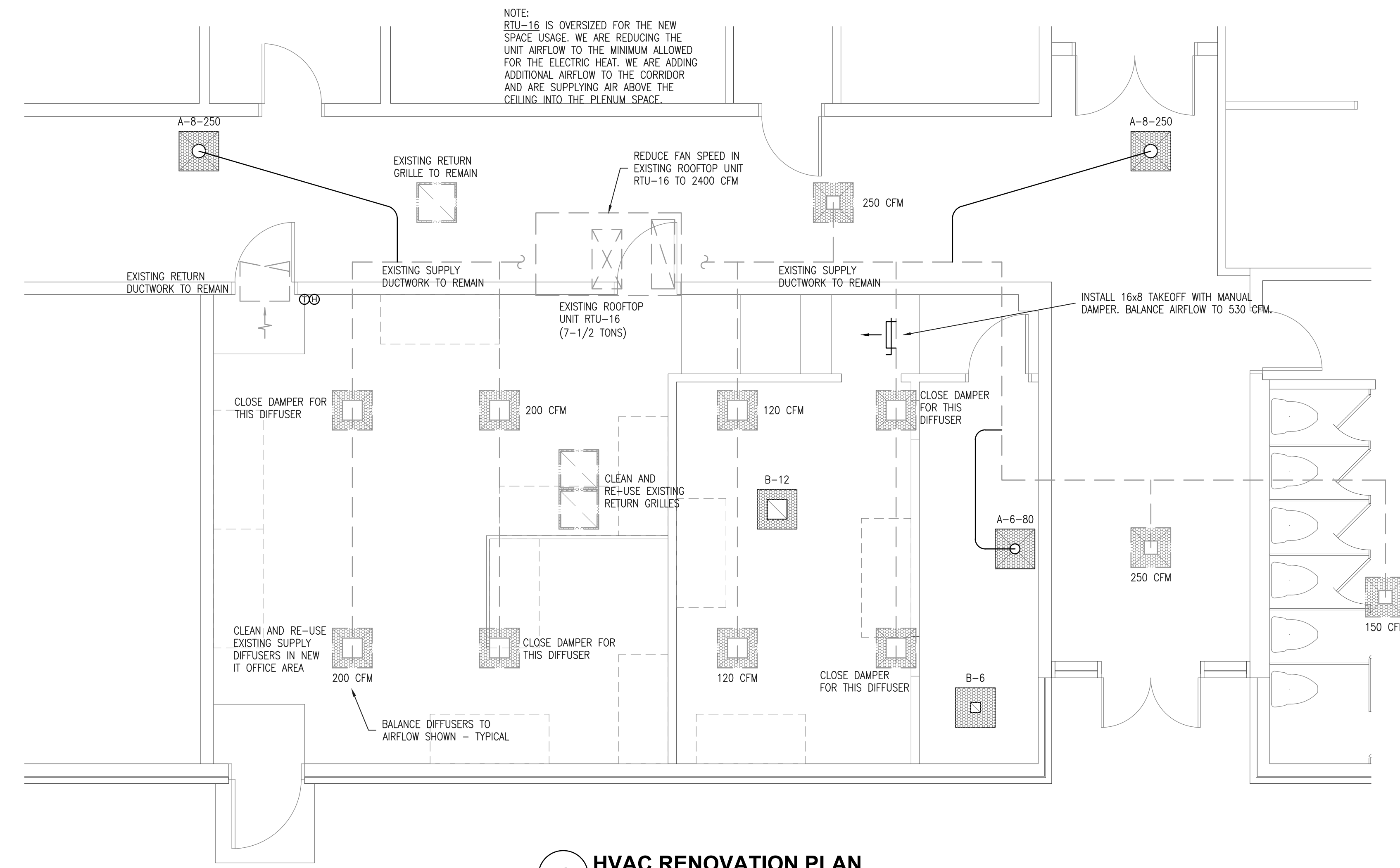
- ⊙ HUMIDITY SENSOR OR HUMIDISTAT
- ⊕ WALL SWITCH
- ⊖ THERMOSTAT
- RTU-1 ROOFTOP UNIT NO. 1
- MANUAL DAMPER (MD)
- ⊖ TYPE "C" GRILLE (SEE SCHEDULE)
- ⊖ 6" ROUND NECK
- C-6-60 60 CFM
- SQUARE TO ROUND TRANSITION
- ROUND FLEXIBLE DUCTWORK
- ⊘ 90 DEGREE ELBOW WITH TURNING VANES
- - - EXISTING DUCTWORK, PIPING OR EQUIPMENT TO REMAIN
- NEW DUCTWORK, PIPING OR EQUIPMENT BY CONTRACTOR

OUTLINE SPECIFICATIONS

- ALL WORK SHALL COMPLY WITH THE 2009 EDITION OF THE INTERNATIONAL ENERGY CONSERVATION CODE, THE 2018 EDITIONS OF THE INTERNATIONAL BUILDING CODE, INTERNATIONAL MECHANICAL CODE, INTERNATIONAL PLUMBING CODE, INTERNATIONAL FUEL GAS CODE AND OTHER REQUIREMENTS OF NFPA, EPA AND ALL OTHER AUTHORITIES HAVING JURISDICTION OVER THIS WORK.
- THE CONTRACTOR SHALL PAY ALL FEES AND SECURE ALL LICENSES AND PERMITS REQUIRED FOR THE WORK INDICATED ON THE MECHANICAL DRAWINGS.
- ALL DUCTWORK SHALL MEET SMACNA STANDARDS AND CONSTRUCTED AND ERECTED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE FOR LOW PRESSURE DUCT SYSTEMS. ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS SHALL BE SECURELY FASTENED AND SEALED WITH GASKETS, MASTICS OR MASTIC-PLUS-EMBEDDED-FABRIC TAPE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- AS-BUILT PRINTS SHALL BE PROVIDED TO THE OWNER AT PROJECT CLOSEOUT.
- CONTRACTOR SHALL PROVIDE 1 YEAR GUARANTEE ON ALL EQUIPMENT AND WORK.

HVAC NOTES:

- EXISTING EQUIPMENT AND DUCTWORK LOCATIONS ARE BASED ON "AS-BUILT" PRINTS; SOME FIELD DISCREPANCIES MAY EXIST.
- REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL BUILDING CONFIGURATION, DIMENSIONS, ETC.
- WHERE AN EXISTING CEILING DIFFUSER OR GRILLE IS IN GOOD REPAIR, CLEAN DIFFUSER OR GRILLE AND RE-USE.
- WHERE AN EXISTING CEILING DIFFUSER OR GRILLE IS IN POOR REPAIR, REPLACE SUPPLY DIFFUSER WITH TYPE "A" 12x12 DIFFUSER OR RETURN GRILLE WITH TYPE "B" 22x22 GRILLE. RE-USE EXISTING RUNOUT OR DUCTWORK IF POSSIBLE. IF EXISTING RUNOUT OR DUCTWORK CAN NOT BE RE-USED, REPLACE WITH NEW DUCTWORK OF SAME TYPE AS EXISTING.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL UNUSED GRILLES, DIFFUSERS, DUCTWORK, ETC. AFTER FIRST ALLOWING THE OWNER THE OPPORTUNITY TO KEEP ANY ITEMS THEY CHOOSE.
- EXAMINE EXISTING DUCTWORK AND INSULATION WITHIN PROJECT FOOTPRINT. REPORT TO THE OWNER ANY AREAS WHERE DAMAGE EXISTS.



1 HVAC RENOVATION PLAN
1/4" = 1'-0"

ELECTRICAL SYMBOL SCHEDULE - GENERAL	
	BRANCH CIRCUIT RACEWAY, RUN CONCEALED IN CEILING OR WALLS. ARROWHEAD DENOTES HOMERUN TO PANEL. CROSSLINES DENOTE NUMBER OF PHASE AND NEUTRAL CONDUCTORS WHEN MORE THAN TWO ARE TO BE INSTALLED. TEXT DENOTES PANEL NAME AND CIRCUIT NUMBERS FOR HOMERUN. INSTALL GROUND WIRE IN ALL RACEWAYS. #12 AWG MINIMUM AND AS PER CODE.
	JUNCTION BOX, FLUSH WALL MOUNTED IN FINISHED WALLS. SURFACE MOUNTED WHERE INDICATED ON DRAWINGS. MINIMUM 4" SQUARE WITH APPROPRIATE REDUCING RING FOR DEVICE BEING INSTALLED. REFER TO TYPICAL MOUNTING HEIGHTS DETAIL WHERE MOUNTING HEIGHT IS NOT INDICATED ON DRAWINGS. SIZE PER NEC.

GENERAL NOTES ALL DRAWINGS:

- DO NOT SCALE DRAWINGS. LOCATE OUTLETS, EQUIPMENT AND OTHER ELECTRICAL DEVICES AS INDICATED AND COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE EXACT LIGHTING FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- MINIMUM SIZE CONDUCTOR FOR POWER SHALL BE #12 AWG. PROVIDE DEDICATED NEUTRAL FOR EACH MULTI-WIRE BRANCH CIRCUIT IN COMPLIANCE WITH NEC.
- ALL FUSES SHALL BE DUAL-ELEMENT TYPE, "FUSETRON" BY BUSSMAN, "ECON" BY ECONOMY, OR FERRAZ SHAWMUT.
- BRANCH CIRCUIT SIZES ARE #12 AWG, 1/2". UNLESS OTHERWISE NOTED IN PANELBOARD SCHEDULES OR ON DRAWINGS.
- ALL BRANCH CIRCUIT LOADS SHALL BE BALANCED ACROSS PANELBOARD BUSES TO OBTAIN MINIMUM NEUTRAL CURRENT.
- ALL FLEXIBLE CONDUIT SHALL CONTAIN A GREEN WIRE BONDED TO RIGID RACEWAY, BOX OR FIXTURE AT EACH END OF FLEX. SIZE GROUND PER NEC TABLE 250-122.
- PROVIDE PULL STRING IN ALL EMPTY RACEWAYS.
- COORDINATE WITH OTHER TRADES TO CONCEAL ELECTRICAL WORK AND PROVIDE OUTLETS IN CORRECT LOCATIONS.
- DO NOT FLUSH MOUNT JUNCTION BOXES BACK TO BACK, OBTAIN TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS.
- CONCEAL OUTLETS FOR ALL EQUIPMENT IN FINISHED AREAS. STAGGER ROUGHING DIAGRAMS FOR ALL EQUIPMENT AND INSTALL ELECTRICAL WORK ACCORDING TO DIAGRAMS.
- SEAL ALL PENETRATIONS TO RATED WALLS AND CEILINGS WITH UL LISTED FIREPROOFING SYSTEM. THIS IS TO INCLUDE BUT IS IN NO WAY LIMITED TO CONDUCTOR, RACEWAY AND DEVICE PENETRATIONS. SUBMIT SYSTEM AND INSTALLATION DETAILS AS PART OF SHOP DRAWING SUBMITTAL.
- WHERE NOT INDICATED OTHERWISE, EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED PER NEC TABLE 250-122.
- ALL METAL CONDUITS 1" AND LARGER SHALL HAVE A GROUNDING BUSHING BONDING CONDUIT TO ENCLOSURE.
- REMOVE DRYWALL DUST AND MUD FROM THE INTERIOR OF BOXES BEFORE INSTALLING DEVICES.
- AT SUBSTANTIAL COMPLETION CLEAN ALL LIGHT FIXTURES AND CLEAN ALL DEVICES IN THE CONSTRUCTION AREAS. REPLACE DAMAGED DEVICES AND DEVICE PLATES AS NEEDED.
- CONCEAL ALL CONDUIT AND RACEWAY. IF CONDITIONS REQUIRE CONDUIT OR RACEWAY TO BE RUN EXPOSED COORDINATE ROUTING WITH ARCHITECT AND PAINT AS REQUIRED BY ARCHITECT.
- ALL RACEWAYS TRANSITIONING BETWEEN CONDITIONED AND UNCONDITIONED SPACES AND RACEWAYS EXITING BUILDING SHALL BE SEALED IN ACCORDANCE WITH NEC. USE POLYWATER FST DUCT SEALANT SYSTEM OR EQUIVALENT.
- ELECTRICAL WORK SHALL COMPLY WITH ALL NATIONAL, STATE AND LOCAL CODES, REQUIREMENTS AND ORDINANCES.
- ALL BACKBOXES SHALL BE MINIMUM 4" SQUARE.
- ALL EMT FITTINGS SHALL BE STEEL COMPRESSION TYPE WITH INSULATED THROAT.
- COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE BLOCKING AT ALL WALL MOUNTED DEVICES (TELEVISIONS, ETC.).
- PROVIDE PLASTIC ENGRAVED NAMEPLATES FOR ALL ELECTRICAL GEAR, INCLUDING DISCONNECT SWITCHES. INDICATE EQUIPMENT NAME, EQUIPMENT SERVED (WHERE APPLICABLE), FEEDER SOURCE AND CIRCUIT, VOLTAGE. LETTERING SHALL BE 3/8" IN HEIGHT, WHITE ON BLACK BACKGROUND.
- PROVIDE LABELS INDICATING CIRCUIT NUMBER AND SOURCE FOR ALL 120V AND GREATER DEVICES. LABELS SHALL BE THERMAL TRANSFER TYPE, 3/8" WITH 1/4" LETTERING. WHITE BACKGROUND FOR BLACK DEVICES, CLEAR BACKGROUND OTHERWISE.
- IF REQUIRED BY THE FIRE CODE OFFICIAL PER 2018 IFC 1103.2, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE IN THE PROPOSAL OR BID THE COST OF AN INITIAL SITE SURVEY AND COST FOR THE COMPLETE DESIGN AND INSTALLATION OF A UL 2524 LISTED NFPA 72, NFPA 1221 AND IFC COMPLIANT BI-DIRECTIONAL AMPLIFIER SYSTEM (BDA) FOR THE FACILITY COMPATIBLE WITH THE REQUIREMENTS OF THE TWO-WAY COMMUNICATIONS SYSTEM(S) UTILIZED BY THE LOCAL JURISDICTION. THE SYSTEM SHALL BE STAND ALONE IN THE ABSENCE OF A BUILDING FIRE ALARM SYSTEM OR SHALL INTEGRATE WITH THE BUILDING FIRE ALARM SYSTEM. THE COST OF THE SYSTEM SHALL BE PROVIDED AS A SEPARATE LINE ITEM SO THAT IF THE SYSTEM IS DETERMINED NOT TO BE REQUIRED AFTER THE PRICE PROPOSAL OR BID HAS BEEN ACCEPTED THE SYSTEM COST CAN BE REMOVED FROM THE PROJECT.
- SLEEVE ALL RACEWAY PENETRATIONS THROUGH SLABS, EXTERIOR WALLS/FOUNDATIONS AND SIMILAR. COORDINATE ALL PROPOSED PENETRATIONS WITH STRUCTURAL ENGINEER AND ARCHITECT.
- PRIOR TO ROUGHING-IN RACEWAYS, ELECTRICAL CONTRACTOR SHALL INSTALL AND LABEL BACKBOXES FOR ALL ELECTRICAL DEVICES (POWER, COMMUNICATIONS, ETC.). ELECTRICAL CONTRACTOR SHALL SCHEDULE A TIME WITH THE GENERAL CONTRACTOR FOR THE ARCHITECT AND OWNER REPRESENTATIVE TO WALK THROUGH AND APPROVE LOCATIONS.

ELECTRICAL SYMBOL SCHEDULE - LIGHTING SYSTEMS AND ACCESSORIES	
	CEILING MOUNTED LIGHT FIXTURE - EXISTING. SEE RECESSED LAY-IN FIXTURE DETAIL FOR LAY-IN FIXTURES MOUNTED IN CEILING GRID.
	LED EXIT SIGN WITH INTEGRAL DUAL REMOTE EGRESS LAMP HEADS. WALL OR CEILING MOUNTED. STEM DENOTES WALL MOUNTED. REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE.
	LED EXIT SIGN WITH INTEGRAL DUAL REMOTE EGRESS LAMP HEADS AND HIGH OUTPUT BATTERY CAPABLE OF POWERING DUAL REMOTE EGRESS HEADS AT BUILDING EXTERIOR. WALL OR CEILING MOUNTED. STEM DENOTES WALL MOUNTED. REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE.
	120-277V, 20A SINGLE POLE LIGHT SWITCH, HEAVY DUTY TYPE. PROVIDE NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS.
	120-277V, 20A 3-WAY LIGHT SWITCH, HEAVY DUTY TYPE. PROVIDE NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS.
	120-277V, 20A DIMMER LIGHT SWITCH, WITH ON-OFF-PRESET FUNCTIONALITY. PROVIDE NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS. COORDINATE WITH LIGHTING VENDOR TO PROVIDE TESTED AND APPROVED DIMMER FOR LIGHT FIXTURE AND SOURCE BEING CONTROLLED. PROVIDE SEPARATE BACKBOX FOR EACH DIMMER SWITCH. SUBSCRIPT "3" DENOTES 3-WAY DIMMER TYPE.
	CEILING MOUNTED LOW VOLTAGE 360° COVERAGE OCCUPANCY SENSOR, DUAL TECHNOLOGY UNLESS OTHERWISE NOTED ON DRAWINGS. WATTSTOPPER DT-300/305 OR EQUIVALENT. "PI" DENOTES PASSIVE INFRARED TYPE (WATTSTOPPER PI-300/305). "UI" DENOTES ULTRASONIC TYPE (WATTSTOPPER UI SERIES). PROVIDE QUANTITY OF POWER PACKS AS REQUIRED TO SUIT LOAD. PROVIDE SIGNAL CABLE AS REQUIRED TO LINK MULTIPLE SENSORS/POWER PACKS SERVING COMMON AREA OR LIGHTING ZONE.

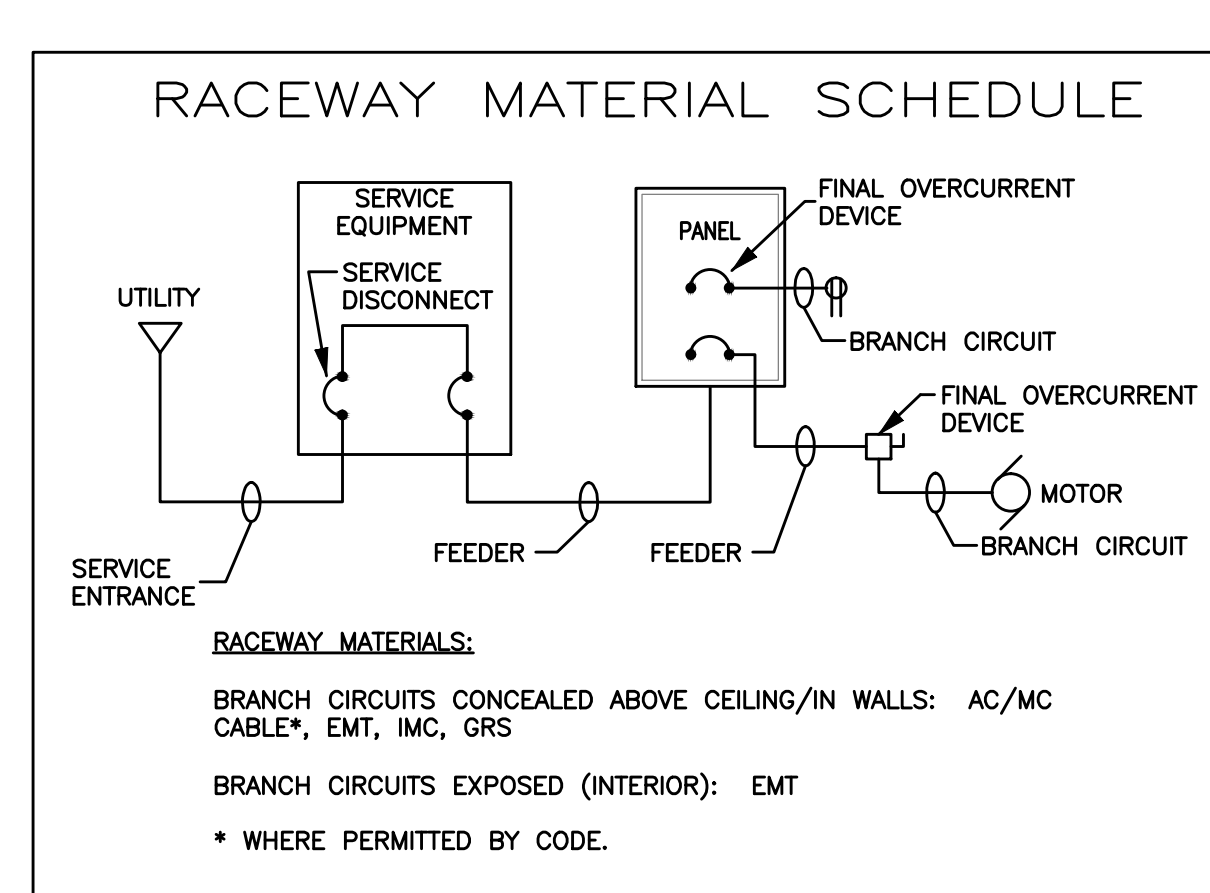
ELECTRICAL SYMBOL SCHEDULE - POWER	
	120V, 20A DUPLEX RECEPTACLE, NEMA 5-20R, WALL MOUNTED. REFER TO TYPICAL MOUNTING HEIGHTS DETAIL. REFER TO ADDITIONAL NOTATIONS BELOW WHERE INDICATED ON DRAWINGS.
	120V, 20A DUPLEX RECEPTACLE, NEMA 5-20R, WALL MOUNTED AT 42" AFF OR MINIMUM 6" ABOVE COUNTERTOP BACKSPLASH UNLESS OTHERWISE NOTED. REFER TO ADDITIONAL NOTATIONS BELOW WHERE INDICATED ON DRAWINGS. "TV" INDICATES MOUNT ADJACENT TO CATV OUTLET.
	MICROPHONE OUTLET - EXISTING
	120V, 20A DUPLEX RECEPTACLE MOUNTED IN FLUSH FLOOR BOX, ASSEMBLY TYPE AS REQUIRED BY INSTALLATION. PROVIDE POKE-THRU TYPE ASSEMBLY WHERE REQUIRED FOR INSTALLATION IN EXISTING LOCATIONS WHERE BRANCH CIRCUIT IS REQUIRED TO BE INSTALLED ABOVE CEILING ON FLOOR BELOW OR IN CRAWL SPACE. PROVIDE CARPET FLANGE/TRIM RING WITH HINGED COVER, FINISH AND TYPE AS DIRECTED BY ARCHITECT AND COMPATIBLE WITH ASSEMBLY.

WIRING DEVICE TYPICAL NOTATIONS	
	POWER OR OTHER CONNECTION TO CEILING MOUNTED PROJECTOR DEVICE - EXISTING
	POWER OR OTHER CONNECTION TO MOTORIZED SCREEN MOTOR OR WALL MOUNTED CONTROL DEVICE - EXISTING.

ELECTRICAL SYMBOL SCHEDULE - COMMUNICATIONS	
	COMBINATION DATA/TELEPHONE OUTLET LOCATION. REFER TO TYPICAL MOUNTING HEIGHTS DETAIL. PROVIDE 1" WITH PULL STRING TO ABOVE ACCESSIBLE CEILING.
	SAME AS ABOVE EXCEPT MOUNTED AT COUNTERTOP HEIGHT. MOUNT AT 42" AFF OR MINIMUM 6" ABOVE COUNTERTOP BACKSPLASH UNLESS OTHERWISE NOTED ON DRAWINGS.
	FLUSH FLOOR MOUNTED DATA/COMMUNICATIONS OUTLET INSTALLED IN FLOOR BOX, WHERE INDICATED ADJACENT TO FLOOR POWER RECEPTACLE, DATA AND POWER MAY BE INSTALLED IN COMMON FLOOR BOX WHERE BOX IS SPECIFICALLY LISTED FOR SUCH PURPOSE AND CONTAINS SEPARATE POWER AND LOW VOLTAGE COMPARTMENTS AND RACEWAY ENTRIES. PROVIDE CARPET FLANGE/TRIM RING WITH HINGED COVER, FINISH AS DIRECTED BY ARCHITECT. PROVIDE 1" WITH PULL STRING TO ABOVE ACCESSIBLE CEILING.

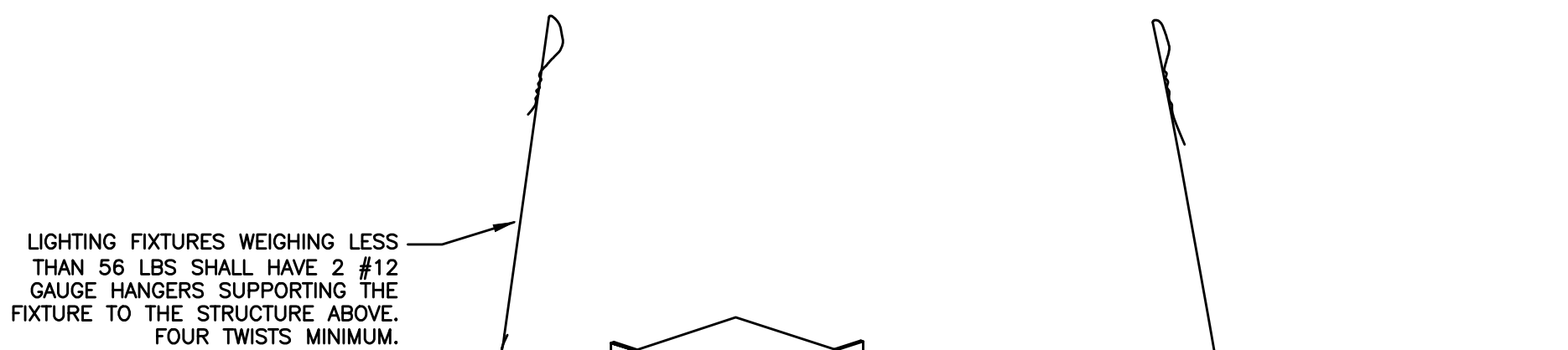
ELECTRICAL SYMBOL SCHEDULE - FIRE ALARM	
	FIRE ALARM HORN/STROBE. NUMBER INDICATES CANDELA RATING. SEE SPECIFICATIONS.
	FIRE ALARM STROBE ONLY. NUMBER INDICATES CANDELA RATING. SEE SPECIFICATIONS.

ABBREVIATIONS	
A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AF	ARC FAULT CIRCUIT INTERRUPTER
BKR	BREAKER
C	CONDUIT
CATV	CABLE TELEVISION
CKT	CIRCUIT
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
FCU	ELECTRICAL METALLIC TUBING
GC	GENERAL CONTRACTOR
GF	GROUND FAULT CIRCUIT INTERRUPTER
GRS	GALVANIZED RIGID STEEL CONDUIT
HID	HIGH INTENSITY DISCHARGE
IG	INTERMEDIATE METALLIC TUBING
IMC	INTERMEDIATE METALLIC CONDUIT
JB or J-BOX	JUNCTION BOX
KVA	KILOVOLT AMPERES
KW	KILOWATT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MDP	MAIN DISTRIBUTION PANEL
MIN	MINIMUM
MFR	MANUFACTURER
NMC	NONMETALLIC-SHEATHED CABLE
V	VOLT
NEC	2017 NATIONAL ELECTRICAL CODE, (NFPA 70)
SWBD	SWITCHBOARD
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
WC	WATER COOLER
XFMR	TRANSFORMER



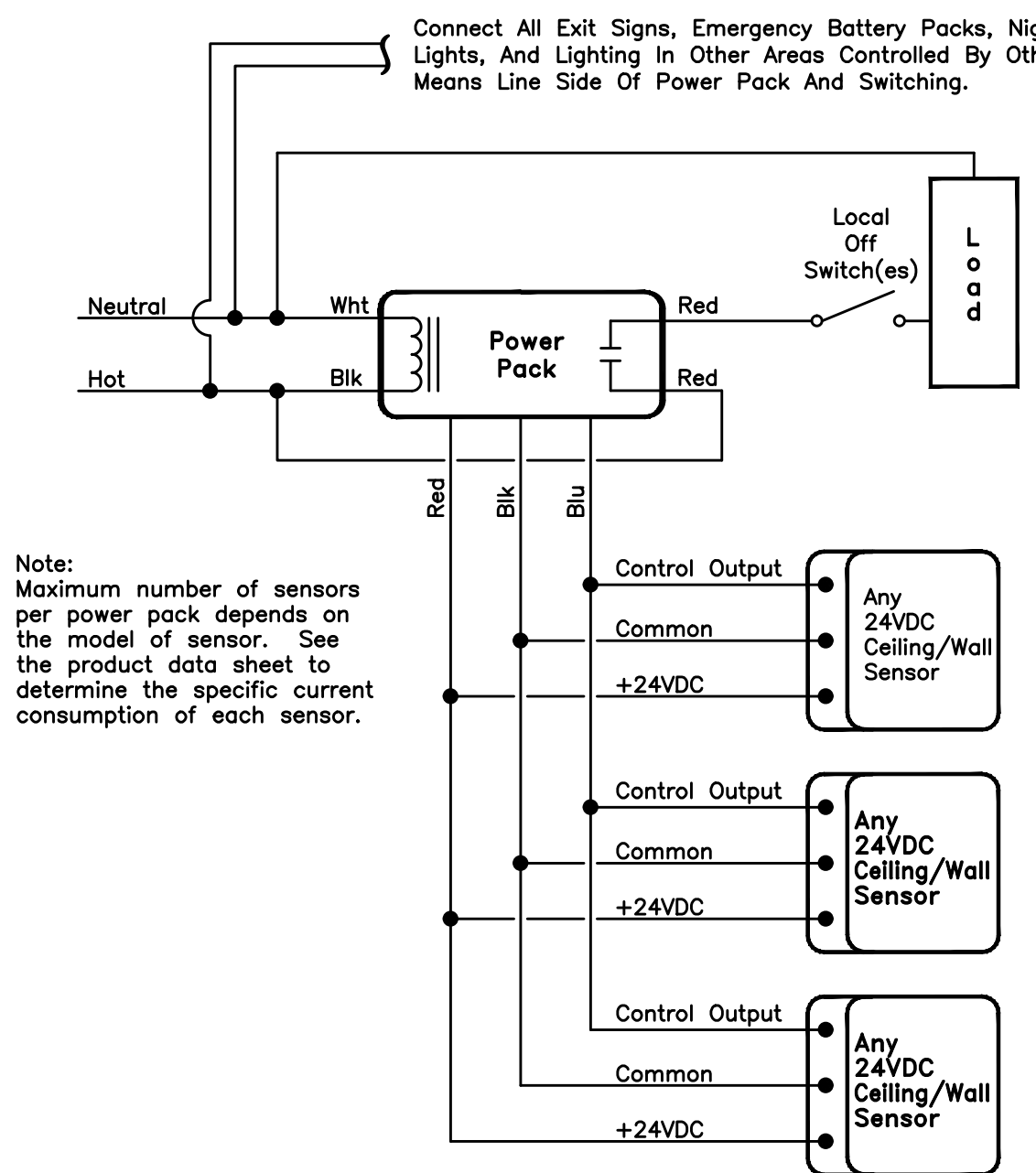
LIGHT FIXTURE SCHEDULE					
TYPE	DESCRIPTION	CATALOG NUMBER	LAMPS	WATTAGE	NOTES
	DUAL LAMP EMERGENCY EGRESS FIXTURE, MOUNT 7"-6" AFF. WHEN SHOWN AS WALL MOUNTED, 30 MINUTE MINIMUM BATTERY BACKUP. ALLOWS FOR 25FT. SPACING.	LITHONIA #ELM2 COOPER #SEL-25	BY MFR.	1.2W	CONNECT TO LINE SIDE OF ANY SWITCHING VIA LIGHTING CIRCUIT SERVING SAME AREA.

1. OTHER MANUFACTURERS ACCEPTABLE WITH PRIOR APPROVAL OF ENGINEER.



RECESSED LAY-IN FIXTURE DETAIL

NO SCALE



CEILING MOUNT OCCUPANCY SENSOR TYPICAL WIRING SCHEMATIC FOR LOW VOLTAGE SENSOR

NO SCALE

- NOTE 1: SCHEMATIC IS REPRESENTATIVE OF WATTSTOPPER DT-300/305. CONNECTION REQUIREMENTS AND LOW VOLTAGE TOPOLOGY MAY DIFFER BETWEEN MANUFACTURERS. FOLLOW MANUFACTURERS INSTALLATION INSTRUCTIONS.
- NOTE 2: WHERE APPLICABLE, CONNECT EXIT SIGNS, BATTERY PACKS FOR EGRESS LIGHTING, AND NIGHT LIGHTS LINE SIDE OF AUTOMATIC WALL SWITCH SENSORS.
- NOTE 3: PROVIDE QUANTITY OF POWER PACKS AS REQUIRED TO SERVE LOADS AS INDICATED ON DRAWINGS. WHERE MULTIPLE BRANCH CIRCUITS SERVE THE SAME AREA, PROVIDE SEPARATE POWER PACKS FOR EACH BRANCH CIRCUIT AND PHASE.

DEVICE DESCRIPTION	DUPLEX RECEPTACLE	DUPLEX RECEPTACLE	DATA/TELEPHONE	DATA/TELEPHONE	FIRE ALARM HORN STROBE/ FIRE ALARM STROBE	DIMMER OR LIGHTING CONTROL DEVICE	LIGHT SWITCH OR OTHER LIGHTING CONTROL DEVICE	LIGHT SWITCHES AND OTHER LIGHTING CONTROL DEVICES SHALL ALWAYS BE LOCATED ON THE STRIKE SIDE OF THE DOORWAY UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
DEVICE SYMBOL								
FINISHED CEILING								
LOCATION OF DEVICES RELATIVE TO FLOOR, CEILING AND DOOR OPENINGS.								
FINISHED FLOOR	16"	42" OR MIN. 6" ABOVE COUNTER BACKSPLASH	16"	42" OR MIN. 6" ABOVE COUNTER BACKSPLASH	ENTIRE LENS SHALL BE NO LESS THAN 80" AND NO MORE THAN 96" AFF.	48"	48"	3" - 1" OUTSIDE EDGE OF DOOR CASING HINGE SIDE DOOR CASING FINISHED FLOOR

NOTE: WHERE WALL BLOCKING INTERFERES WITH EXACT MOUNTING HEIGHTS, CONTRACTOR SHALL COORDINATE WITH ARCHITECT FOR EXACT MOUNTING HEIGHT PRIOR TO ROUGH-IN.

DEVICE MOUNTING HEIGHTS

NO SCALE

1. THIS DRAWING IS THE PROPERTY OF BOOMERANG DESIGN AND IS NOT TO BE REPRODUCED, COPIED IN WHOLE OR IN PART. IT IS NOT TO BE USED ON ANY OTHER PROJECT AND IS TO BE RETURNED ON REQUEST.

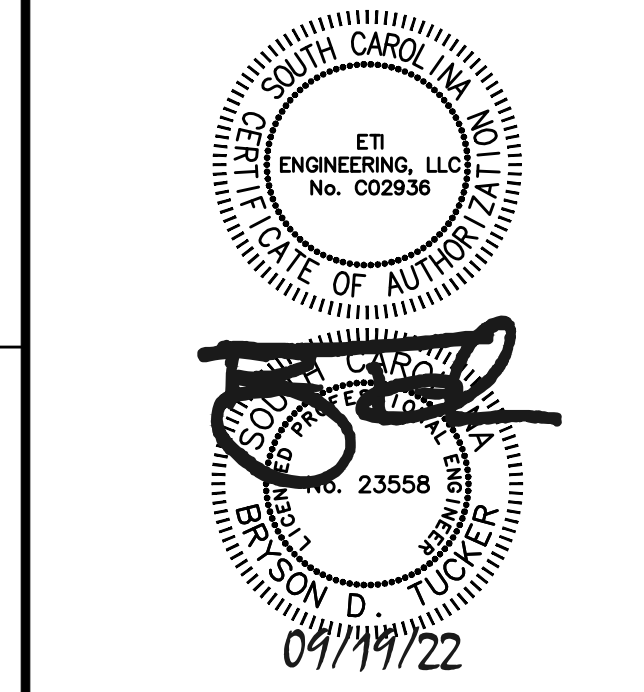
2. MATERIALS, DIMENSIONS AND ALL OTHER CONDITIONS WHICH ARE NOT OTHERWISE DEFINED ON THIS DRAWING SHALL BE CONTROLLED AS SHOWN THE SAME MEANING AS SIMILARLY INDICATED CONDITIONS WHICH ARE MORE FULLY DEFINED ELSEWHERE ON THIS PROJECT OR OTHER DRAWINGS FOR THIS PROJECT.

REVISIONS		
NO.	DATE	DESCRIPTION

BELTLINE CAMPUS



ROOM 121 IN RICHLAND HALL MTC 22-09



eti
ENGINEERING, LLC
5725 Bush River Road
Columbia, SC 29212
803.233.0306 (Phone)
803.233.4371 (Fax)
Project Manager:
Bryon D. Tucker, P.E.
ETI #1336-16304



CHARLOTTE 1230 WEST MOREHEAD ST. SUITE 214 CHARLOTTE, NC 28208 704/731-7000

SHELBY 201 S. WASHINGTON ST. SUITE 200 SHELBY, NC 28151-2285 704/406-6000

RALEIGH 6131 FALLS OF NEUSE RD SUITE 204 RALEIGH, NC 27609 919/573-6400

LEXINGTON 1070 S. LAKE DR. SUITE J LEXINGTON, SC 29073 803/356-0507

ELECTRICAL LEGEND, NOTES, DETAILS + SCHEDULES

SHEET TITLE

2224 PROJECT NUMBER

9-16-2022 RELEASE DATE

CD SHEET OF E000

ELECTRICAL SPECIFICATIONS

1. GENERAL PROVISIONS

A. Work included in these specifications and included on the drawings shall include furnishing all labor, materials, supplies, and equipment to perform all work required including cutting, channelling, chasing, excavating and backfilling, to install a complete and working electrical system(s) in accordance with these sections of the specifications and the accompanying drawings. This shall include all required preparation work, raceways, coordination, etc. required to install the electrical system.

- B. The electrical work shall include, but in no way be limited to the following:
1. Raceways (To include raceways for conductors and cables, but also empty for designated signal systems and future uses.)
2. Interior Lighting Systems.
3. Interior Power Systems.
4. Wiring Devices.
5. Telephone Raceway System.
6. Data Raceway System.
7. Connection and Installation of Equipment Furnished Under Other Divisions of the Specification.
8. Fire Alarm System Extension.
9. Electrical Demolition.

C. The contractor is responsible for including any and all work related to the electrical that is noted in any part of the specifications or any part of the drawings, including Divisions 1, 15 and any other sections. The contractor will supply power to equipment at the voltage indicated on the drawings. The contractor will be held responsible for coordinating the equipment voltages, control equipment, wiring, and locations and type of terminations/connections and/or disconnects required to comply with the National Electrical Code, International Building Code, International Energy Conservation Code, all local codes, and the equipment manufacturer's requirements.

D. Electrical Drawings are diagrammatic in nature except where specific dimensions, or specific details are shown on the electrical, mechanical, or architectural drawings. The contractor shall refer to other drawings for exact locations of equipment, building dimensions, architectural details and conditions affecting the electrical work; however, field measurements take precedence over dimensioned drawings. The Electrical Contractor shall provide all labor and materials and all incidental elements; junction and pull boxes, filters, pull wires, connectors, support materials, fuses, disconnect switches, lamps, and labels, to install, connect, start-up and result in a complete and working system in accordance with the drawings and specifications. The contractor is responsible for coordinating the installation of all electrical work with the work of other contractors and/or trades. The electrical drawings are such that the electrical service to equipment furnished and installed under other sections of the contract documents (except those include but are not limited to: HVAC equipment, water heaters, fans, pumps, motors, etc.) is coordinated for the specified equipment. If the equipment installed under other divisions of the contract documents is not the specified equipment it is the responsibility of the contractor to coordinate the electrical service/interface requirements with the electrical contractor.

E. Provide all wiring, connectors, fittings, connections, and all accessories for the complete installation of, and final connections to, equipment furnished under other divisions of the specifications and where indicated on the drawings or otherwise specified.

F. All safety disconnect switches shall be provided under Division 16 unless specifically noted on drawings. The electrical contractor shall furnish and install fuses that are sized in accordance to the equipment nameplate of the equipment served.

G. The contractor is responsible for obtaining all required permits and complying with all National (NEC, IBC, NFPA), State, County, and Municipal codes and regulations. This shall include, but not be limited to, the following:

- 1. Federal Occupational Safety and Health Act (OSHA)
2. NFPA 70 (National Electrical Code)
3. NFPA 101 (Life Safety Code)
4. Americans with Disabilities Act (ADA).
5. International Building Code (IBC).
6. International Fire Code (IFC).
7. NFPA 72.
8. International Energy Conservation Code (IECC).

H. The contractor shall keep a set of construction drawings during the length of the project on which he shall note any and all changes from the original drawings. This record set of drawings shall be updated daily.

I. Electrical Subcontractor shall submit for review by the Engineer detailed shop drawings of all material listed below. All submittal data shall be submitted at one time through the Architect. No material or equipment for which Engineer's review is required shall be delivered to the job site or installed until the Electrical Contractor has in his possession the reviewed and approved shop drawings for the particular material and/or equipment. The Electrical Contractor shall assemble, organize, prepare and review for correctness shop drawings on all materials, equipment, fixtures and devices to be used. If material submitted is the result of "value engineering" or "prior approval" changes, the submittal must contain supporting documentation of the approved changes, otherwise it will be reviewed against the specified products on these plans. The Electrical contractor shall furnish the number of copies specified by the Architect or one (1) PDF copy of shop drawings if no number is specified by the Architect. Shop drawings that are incorrectly submitted, contain errors or omissions, or not in the form and sequence specified shall be rejected as unapproved.

Shop drawings shall contain as cover page a letter by the supplying Vendor stating that the Vendor has reviewed full contract documents and that to the best of his or her knowledge the submittal is in compliance with the contract documents and design intent including all ancillary parts and pieces required for a complete job.

Review of shop drawings in no way relieves the Contractor of his responsibility of quantity, dimensions, weights, means and methods, safety, or coordination with others.

Failure of the Contractor to submit shop drawings to the Engineer with reasonable time for review shall not entitle the Contractor to an extension of contract time. Reasonable review time is fifteen working days unless otherwise specified.

At minimum shop drawings shall be submitted for:

- 1. Lighting fixtures
2. Lighting control systems including relay panel and automatic switches
3. Fire Alarm System Extension
4. Basic materials; wire, conduit, fittings, wiring devices

J. Requests for Substitution

Submit requests for substitution to Engineer through Architect in PDF format no fewer than ten (10) working days prior to bid time. Requests shall contain cut sheets, catalog numbers, etc. Any approval will be in writing by the Engineer. Prior approval submittals for lighting shall include adequate photometric and energy use documentation for comparison to specified.

Substituted items will not result in an increase in cost to the Owner.

K. Catalog numbers and names that appear in the specifications or on the plans may be incomplete or obsolete and are for descriptive purposes only. As such they may not indicate all of the parts, pieces and systems required for a complete and operating installation. It is the responsibility of the Electrical Contractor, the Vendor and the Supplier to review the plans, specifications and applications to determine the correct item(s) required to include all installation and support materials and systems for a complete and working installation.

2. FIRE SPREAD PREVENTION MATERIAL

A. The work shall include the requirement to install fire spread prevention material wherever the electrical contractor installs or penetrates a material (wall, etc.) to install electrical equipment or materials.

B. Fire Resistance Rating: Whenever a fire rated wall, floor, floor-ceiling or roof-ceiling assembly is shown with through-penetrations, provide materials and application procedures which have been tested and classified by UL and approved by FM for the assembly.

C. Installation shall be in accordance with the printed instructions as supplied by the manufacturer.

3. RACEWAYS/CONDUITS AND ASSOCIATED EQUIPMENT

A. The work shall include all raceways, conduits, fittings, and all other equipment required to install a raceway system. This shall include, but not be limited to the following:

- 1. Rigid metal conduit and fittings.
2. Electrical metallic tubing and fittings.
3. Flexible metal conduit and fittings.
4. Liquid tight flexible metal conduit and fittings.
5. Non-metallic conduit and fittings.

B. Except where otherwise permitted on drawings route all conductors in conduit.

C. All signal systems shall have their wiring installed in conduit/raceways to above accessible ceiling. All cabling exposed above ceiling shall be plenum rated.

Conduit routing and device wiring for signal system components is not shown on the drawings. The contractor shall coordinate with the signal system manufacturer to determine the conduit (size and routing) and wiring requirements to circuit the equipment shown on the drawings.

D. Specified products and their areas of use shall be as described on drawings.

E. Fittings shall be steel compression type, concrete tight for all EMT raceways. For PVC raceways, use slip fittings with glue joints. For rigid galvanized steel and IMC, fittings shall be threaded galvanized iron, heavy steel, concrete tight.

F. Size conduit for conductor type installed; 1/2 inch minimum size.

G. For all empty raceways, furnish and install a nylon pull cord. The nylon pull cord shall be rated for a 200 pound force pull strength.

4. WIRE AND CABLE - 600 VOLTS AND LESS

A. Work shall include the furnishing and installing of all required wire and cable to complete the wiring and electrical system. This shall include, but not be limited to the following:

- 1. Building wire.
2. Wiring connections and terminations.
3. Communications cabling as specified on drawings.
4. Fire alarm system extension cabling.

B. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid conductor. MINIMUM SIZE SHALL BE #12 FOR ALL WIRING ABOVE 48 VOLTS. All conductors in damp or wet locations (including below grade) shall be listed for that use, THWN-2 or equivalent.

C. All cables shall be color coded. Color coding shall be as follows:

Table with 3 columns: Voltage, Phase, Color. Rows include 120/208 Volt (Black, Red, Blue, White, Green) and 277/480 Volt (Brown, Orange, Yellow, Grey, Green).

D. Each wire or cable in a feeder at its terminal points, and in each pull-box, junction box, and panel gutter through which it passes shall be identified to show the circuit number of the breaker that it connects to. Each common wire, common circuit to common loop of a system, sound system, or any signal system conductor, shall be identified.

E. All installation shall be in accordance with the NEC. All splices shall be in junction boxes and shall be electrically and mechanically secure. Where a circuit home run is shown on the plans without any conductor or raceway identification, it shall be a minimum of 2 #12, 1 #12 Ground, 1/2" Conduit. Place an equal number of conductors for each phase of a circuit in some raceway or cable. Splice only in junction or outlet boxes. Neatly train and lace wiring inside boxes, equipment, and panelboards. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

5. WIRING DEVICES

A. The shall include the furnishing and installing of any and all wiring devices required to make a complete and functioning wiring system. See the drawings for symbols and descriptions of devices. Devices specified are to establish a level of quality. All devices shall be best specification grade. Equivalent devices by Pass and Seymore or Leviton are acceptable.

Color of devices shall be per Architect.

B. Duplex receptacle shall be 20 ampere, 120 volt, 2-Pole, 3-Wire, NEMA 5-20R. Unit shall be HBL #5362 or HBL #5362TR (where required).

C. Ground Fault receptacle shall be HBL #GF5362S*.

D. Light switches other than sweep switches and low voltage button stations shall be 20 ampere, 120-277 volt. Unit shall be HBL #1221 for SPST, HBL #1223 for three-way, and HBL #1224 for Four-Way.

E. Installation shall be per NEC. Include ground wire and connection with all receptacle circuits. Quadruplex receptacles shall be two duplex receptacles installed in a two gang box. Install wall switches OFF position down. Install convenience receptacles grounding pole on top. Install devices and wall plates flush and level. Provide GFCI receptacle within 6' of any water source. GFCI receptacles shall not be used to protect non-GFCI receptacles.

F. Wiring Device Plates:

- 1. Provide over-sized Thermostat type cover plates for all flush mounted devices. Color shall match existing or provide at minimum selection of white, ivory or grey.
2. Plates for surface mounted devices in unfinished areas shall be steel, galvanized types with beveled edges.
3. Screws securing the plate shall have flush mounted heads (when installed) with finish to match that of the plate.
4. Weather-proof plates shall be constructed with cast aluminum base plates and covers. Hinge pins, springs and screws shall be constructed of stainless steel. Covers shall comply with appropriate UL and NEC requirements for use in wet locations.

6. SECONDARY GROUNDING

A. Work included shall include power system grounding, communication system grounding, and electrical equipment and raceway grounding and bonding. Ground electrical work in accordance with NEC Article 250, local codes as specified herein, and as shown on the drawings.

B. Install equipment grounding conductors in raceway with feeder and branch circuit conductors. Ground interior lighting fixtures with grounding conductor to rigid metal raceways serving them. Flexible metal conduit shall have a ground wire installed with the power conductors. Where connections are made to motors or equipment with flexible metal conduit, grounding conductor shall be stranded copper conductor within the conduit, bonded to the equipment and to the rigid metal raceway system. At each convenience outlet, install a grounding clip attached to the outlet box and leave a sufficient length of #12 wire with green colored insulation to connect to the grounding terminal of the receptacle.

7. FIRE ALARM SYSTEM EXTENSION

A. Include extension of existing fire alarm detection and notification system as indicated on plans. Provide all required devices, materials, hardware, software, programming, labor, etc for a complete and operable system.

B. Submittals

Provide submittals on battery calculations, voltage drop calculations, decibel level calculations to show horn sound pressure 15 dB above ambient, device layout and point to point wiring diagram on building floor plans, conductor type and sizes, riser showing all devices and connections, interface of fire safety control functions, information on all equipment including model numbers to Engineer and AHJ for approval.

C. Equipment and Material

- 1. All components shall be by manufacturer of and compatible with existing system.
2. Smoke detectors shall be photoelectric type.
3. Signal devices: Condesas as indicated on drawings. All alarm signal devices shall have clear strobe cover and the word "FIRE" lettered on visible portion of device. Minimum 88dB at 10ft. Color as directed by Architect.
4. All conductors, enclosures and devices shall be listed for the purpose in which they are being used.
5. Include in bid any required power extender panels for fire alarm system expansion. Provide dedicated 120V/20A circuit for power extender panel, label and provide locking provisions for circuit breaker per NFPA 72. Install in electrical room, protect panel with smoke detector.
6. Provide document box per NFPA 72 with memory stick containing copy of programming and all record drawings and approved submittals.

D. Execution

- 1. Finished system shall comply with all applicable NFPA, IBC, IFC and local codes as well as requirements of local AHJ.
2. Provide synchronization of strobes including any synchronization hardware as required by the existing system.
3. Include in bid any required power extender panels for fire alarm system expansion. Provide dedicated 120V/20A circuit for power extender panel, label and provide locking provisions for circuit breaker per NFPA 72. Install in electrical room, protect panel with smoke detector.
4. Coordinate with door hardware and access control system (provided by others) and provide necessary provisions to release doors upon activation of the fire alarm system.
5. Provide the service of a factory-trained engineer or technician authorized manufacturer to technically supervise and participate during all adjustments and tests for the system. The manufacturer-trained technician shall demonstrate that the system functions properly in every respect to the Engineer, Owner or Owner's representative prior to final acceptance.
6. Provide Record of Completion to Engineer and Owner described by NFPA 72.

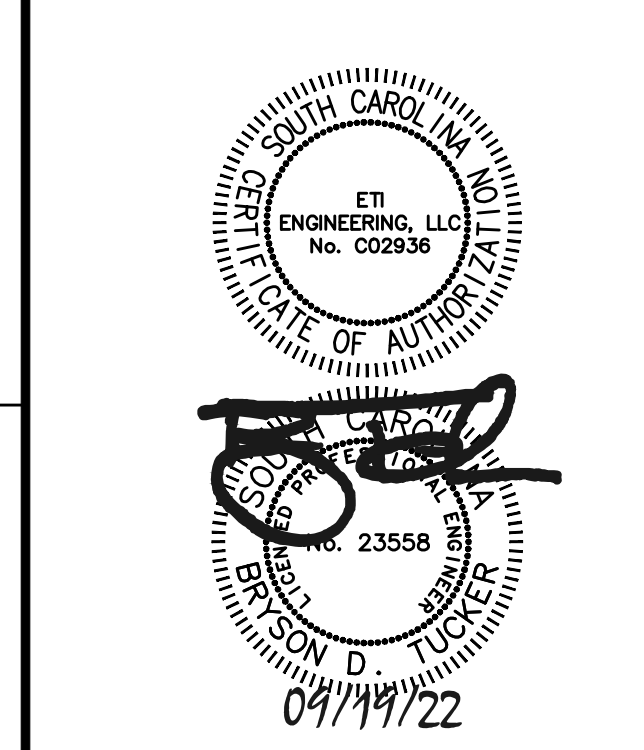
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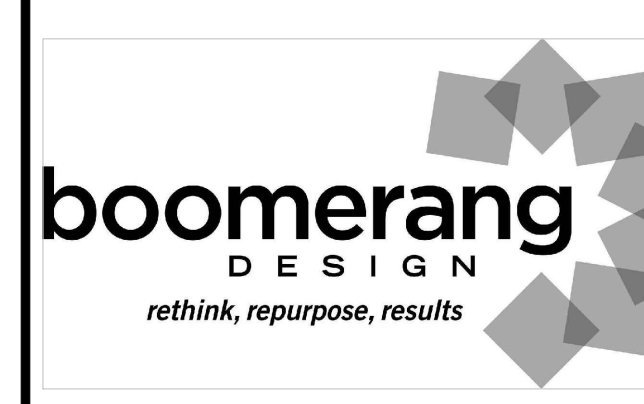
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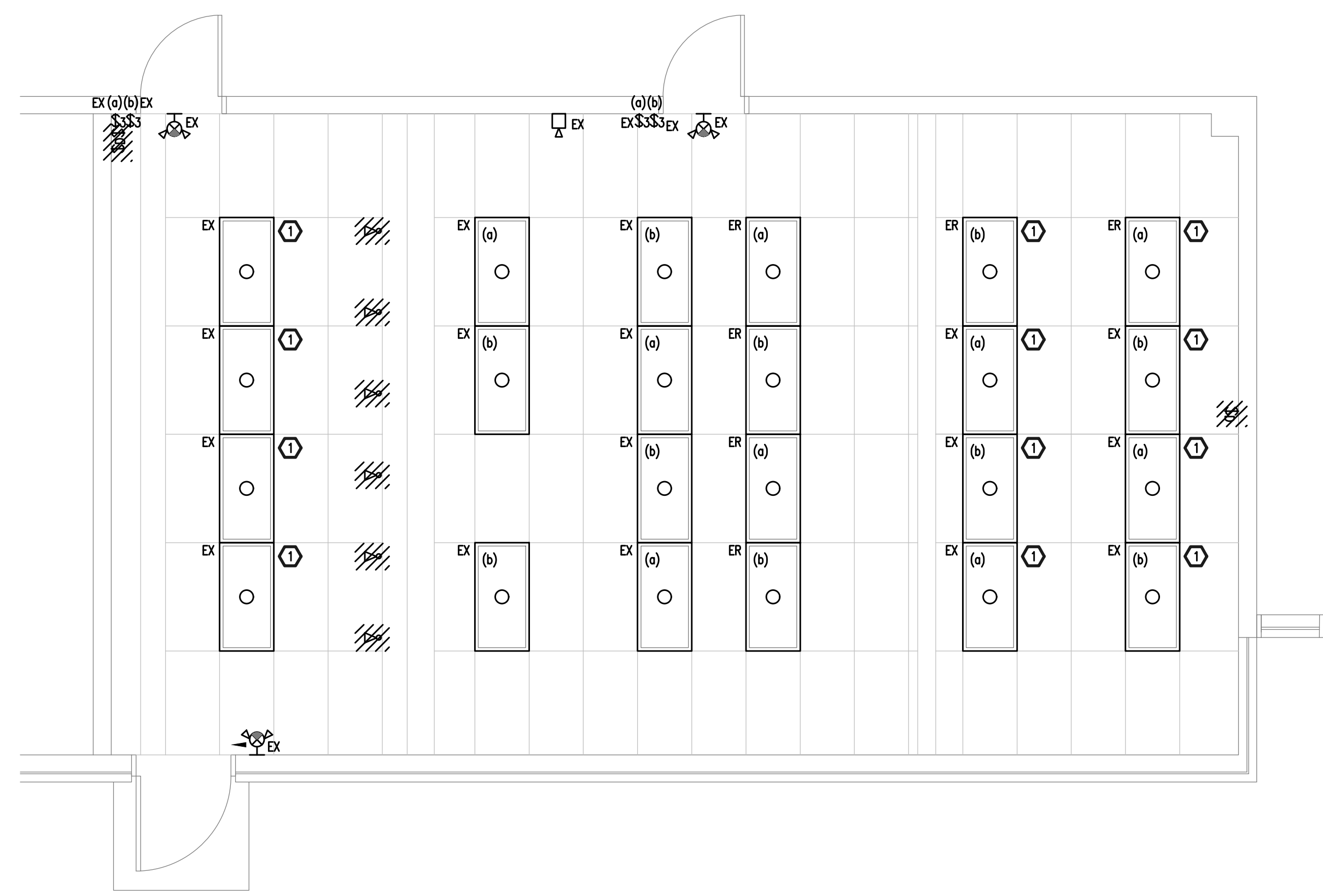
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ELECTRICAL SPECIFICATIONS

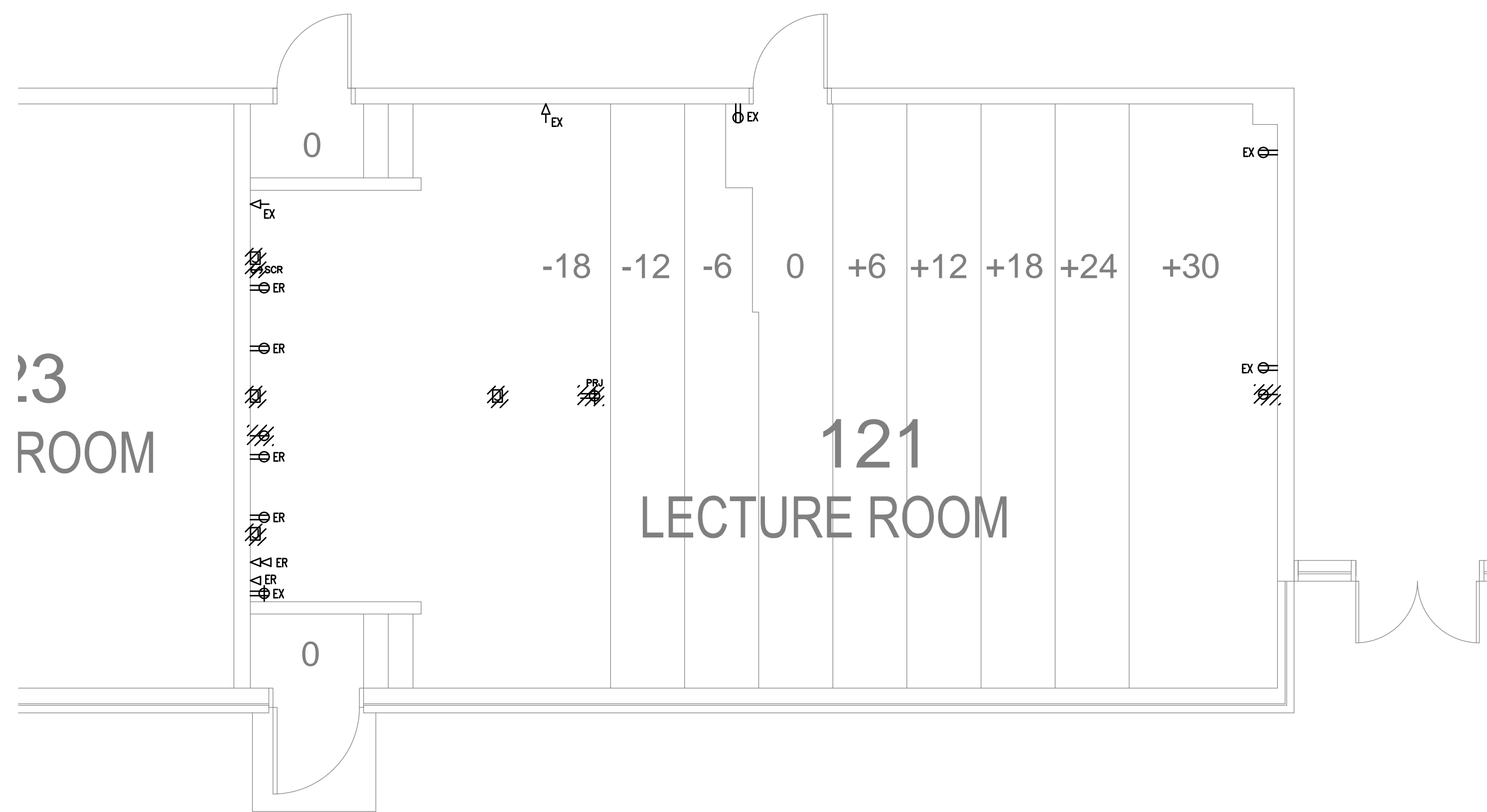
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CD E001 SHEET OF



1 LIGHTING DEMOLITION PLAN
E100 APPROXIMATE SCALE: 1/4" = 1'-0"



2 POWER/COMM. DEMOLITION PLAN
E100 APPROXIMATE SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES:

1. ELECTRICAL DEMOLITION GENERALLY INCLUDES REMOVAL OF EXISTING ELECTRICAL DEVICES FROM WALLS AND CEILINGS BEING DEMOLISHED INCLUDING BACKBOXES, CONDUITS, AND CONDUCTORS BACK TO SOURCE PANEL. WHERE ONLY PART OF A CIRCUIT IS BEING REMOVED, REWORK CIRCUITS BY EXTENSION AND RECONNECTION TO CONTINUE REMAINING CIRCUIT IN SERVICE BEYOND THE DEMOLITION AREA.
2. PROVIDE ALL NEW WORK AND WORK REQUIRED TO MODIFY EXISTING CONDITIONS WHERE TO CONTINUE IN OPERATION.
3. PROVIDE REVISED CIRCUIT DIRECTORIES IN EXISTING PANELBOARDS TO INDICATE ALL LOADS, NEW AND MODIFIED.
4. CAREFULLY REVIEW ARCHITECTURAL DEMOLITION PLANS. EXAMINE WORK TO BE DONE AND PROVIDE ALL ELECTRICAL WORK REQUIRED FOR DEMOLITION, THIS INCLUDES RELOCATION, REROUTING, ETC OF ELECTRICAL CIRCUITS WHETHER SPECIFICALLY INDICATED ON ELECTRICAL PLANS OR NOT. CONTRACTOR IS CAUTIONED TO VISIT SITE PRIOR TO BID AND INCLUDE IN BID RELOCATION OF ALL EXISTING ELECTRICAL WORK AS REQUIRED FOR THE NEW ADDITION.
5. REMOVE ALL ELECTRICAL DEVICES FROM WALLS BEING DEMOLISHED.
6. REMOVE ALL LIGHT FIXTURES IN AREAS WHERE NEW LIGHTING IS PROVIDED INCLUDING CONDUIT, BOXES AND CONDUCTORS.
7. INDICATE ON RECORD DRAWINGS CIRCUITS FOR ALL ELECTRICAL DEVICES (INCLUDING LIGHTS) IN RENOVATION AREA.
8. CONTRACTOR SHALL COORDINATE WITH RENOVATION DRAWINGS FOR IDENTIFICATION OF EXISTING DEVICES AND FIXTURES TO BE RELOCATED. ALL RELOCATED DEVICES AND FIXTURES SHALL BE DENOTED WITH "EX" ON RENOVATION DRAWINGS.

DEMOLITION LEGEND:

- EXISTING ELECTRICAL SYSTEM ELEMENT BEING DEMOLISHED DENOTED BY HATCHING. REMOVE DEVICE, BOX, CONDUCTOR AND CONDUIT TO SOURCE UNLESS FOR SWITCH LOCATIONS RE-USE EXISTING LOCATION FOR NEW SWITCHING INDICATED ON RENOVATION PLANS, WHERE NO NEW SWITCH IS INDICATED PROVIDE BLANK PLATE.
- EX EXISTING TO REMAIN
- ER EXISTING TO BE RELOCATED. SEE RENOVATION PLANS FOR NEW LOCATION (EN)

DEMOLITION KEYNOTES:

- Ⓛ REMOVE EXISTING LIGHTING FROM CURRENT SWITCHING AND REWORK AS SHOWN ON RENOVATION PLAN.

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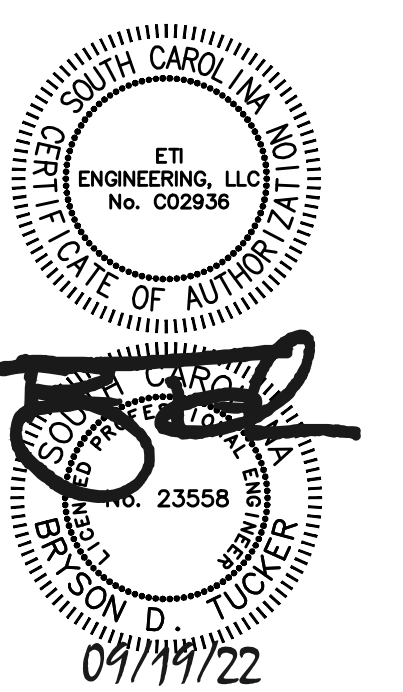
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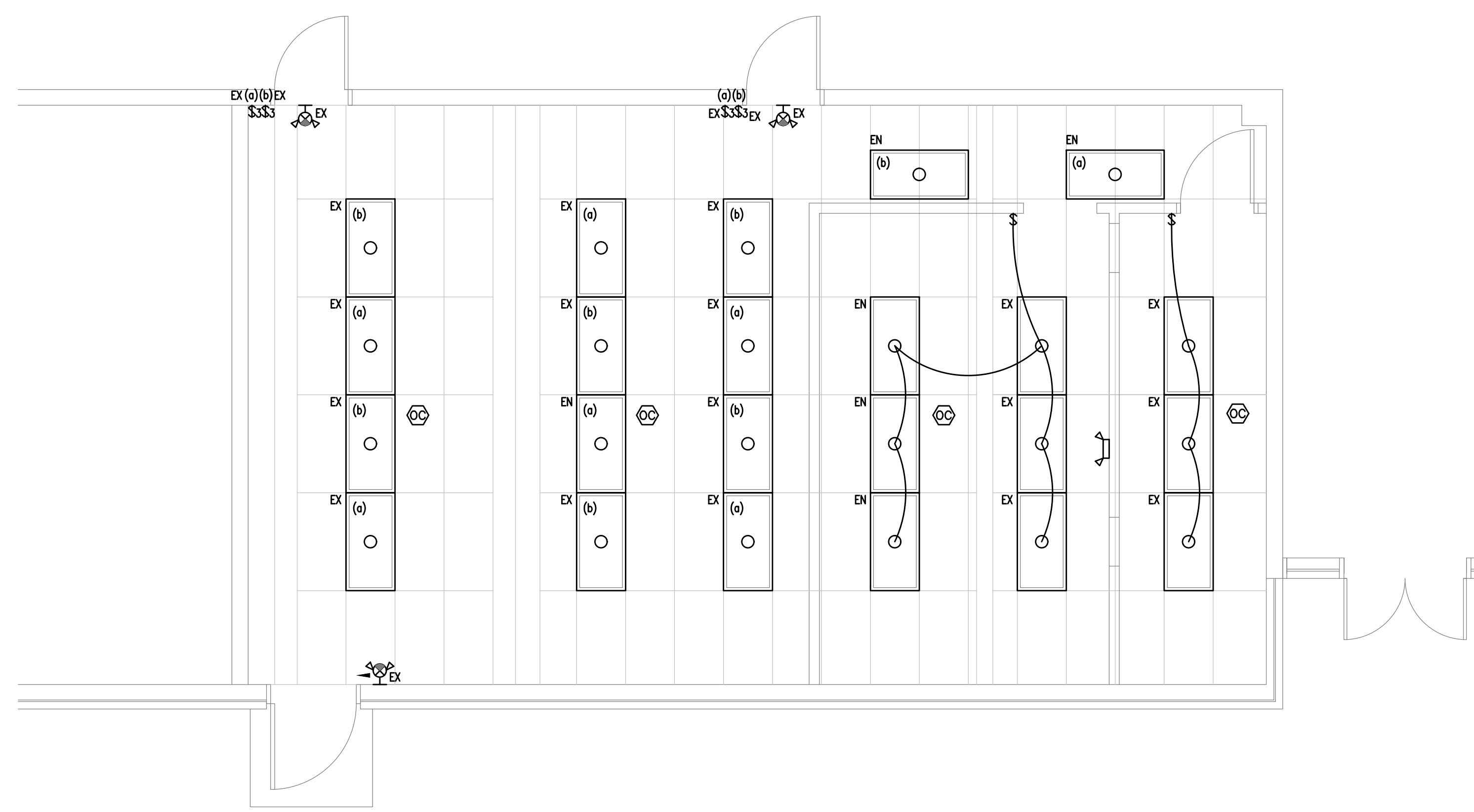
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ELECTRICAL DEMOLITION PLANS

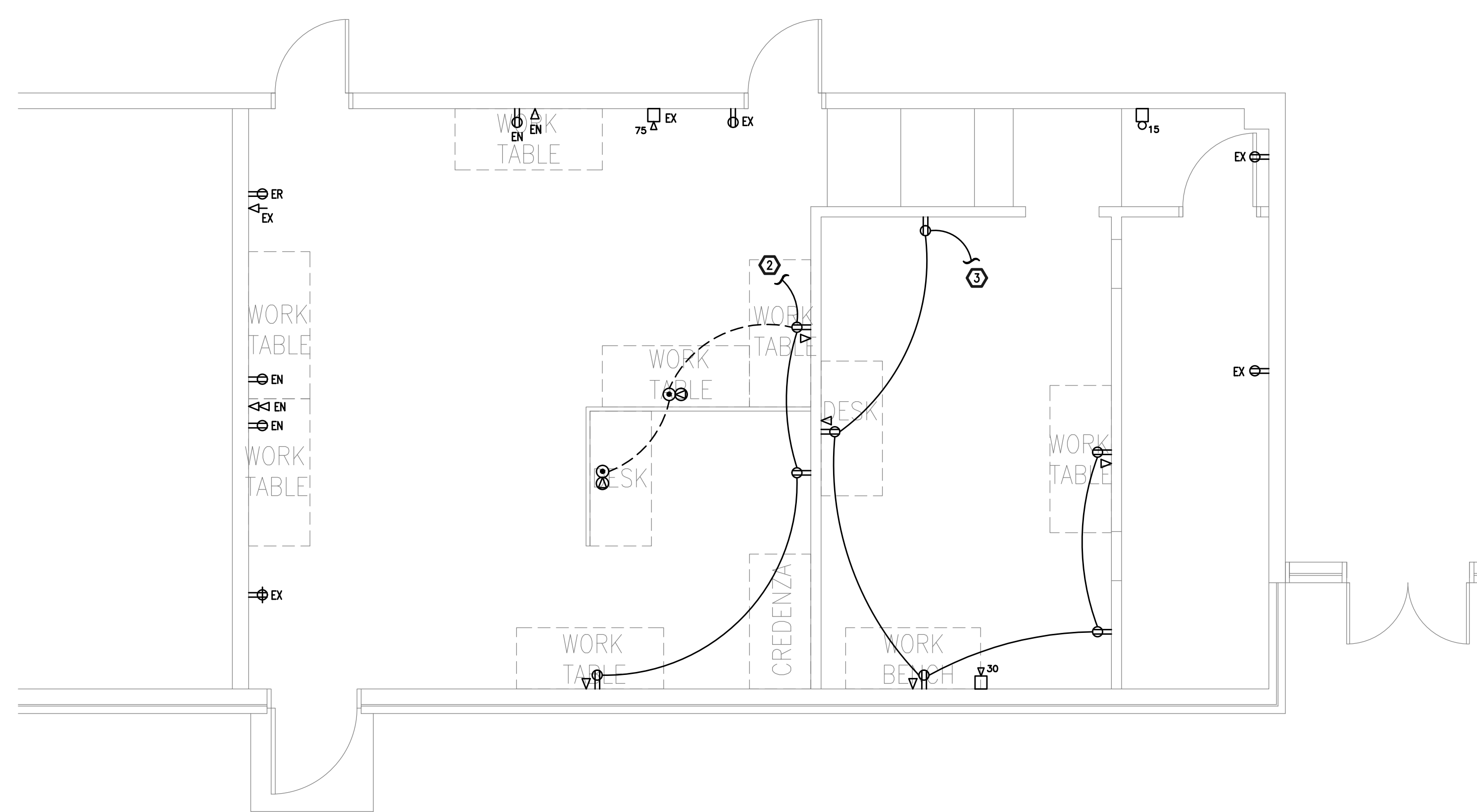
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1 LIGHTING RENOVATION PLAN
E200 APPROXIMATE SCALE: 1/4" = 1'-0"

- RENOVATION LEGEND:**
 EX EXISTING TO REMAIN
 EN EXISTING NEW LOCATION
- RENOVATION NOTES:**
 1. LOWERCASE LETTERING AT FIXTURE DENOTES SWITCHING.
- RENOVATION KEYNOTES:**
 ① EXTEND AND CONNECT TO EXISTING LIGHTING CIRCUIT RECOVERED FROM DEMOLITION.
 ② EXTEND AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER (RP1-30) IN EXISTING PANEL RP1 LOCATED IN MAIN ELECTRICAL ROOM.
 ③ EXTEND AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER (RP1-41) IN EXISTING PANEL RP1 LOCATED IN MAIN ELECTRICAL ROOM.



2 POWER/COMM. RENOVATION PLAN
E200 APPROXIMATE SCALE: 1/4" = 1'-0"

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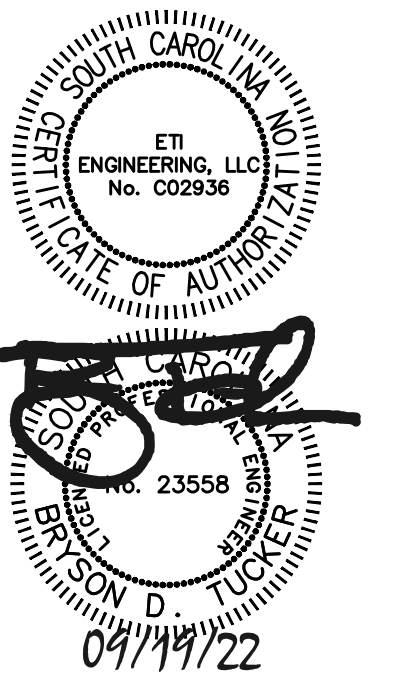
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ELECTRICAL RENOVATION PLANS

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