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PROJECT

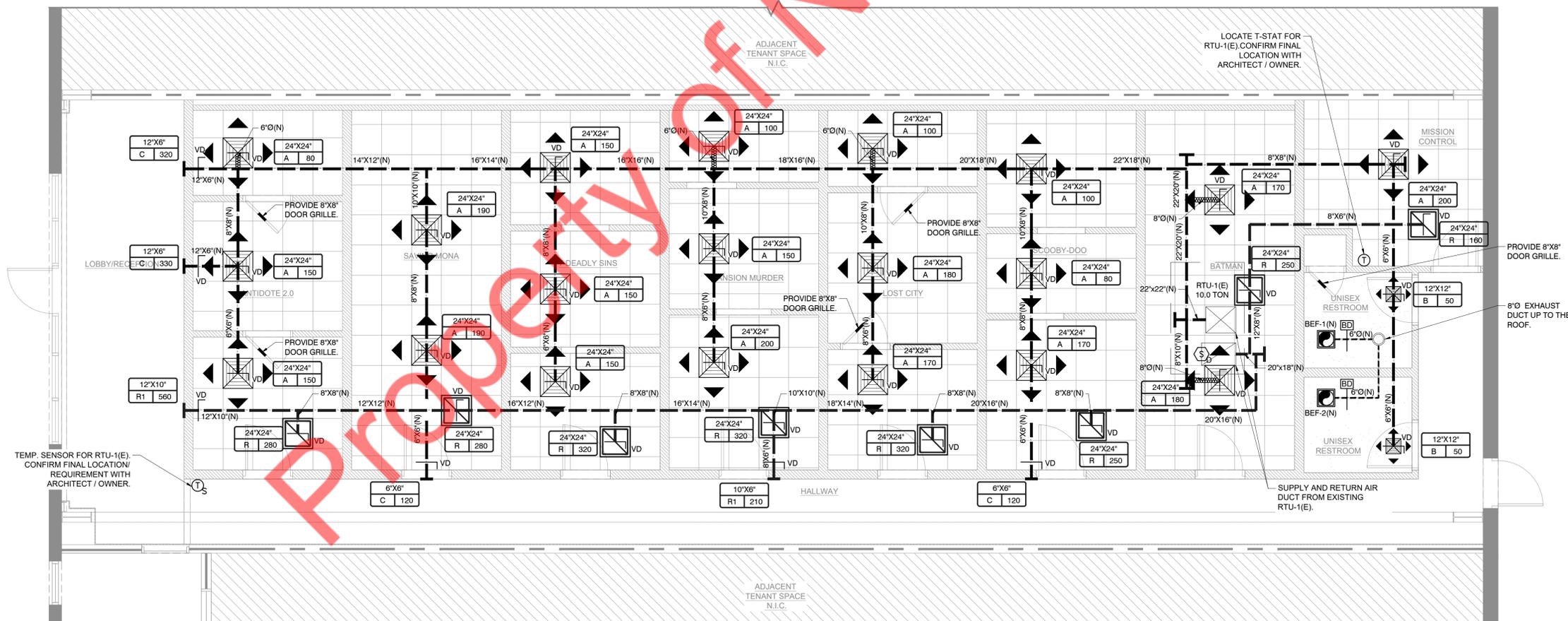
ESCAPOLOGY

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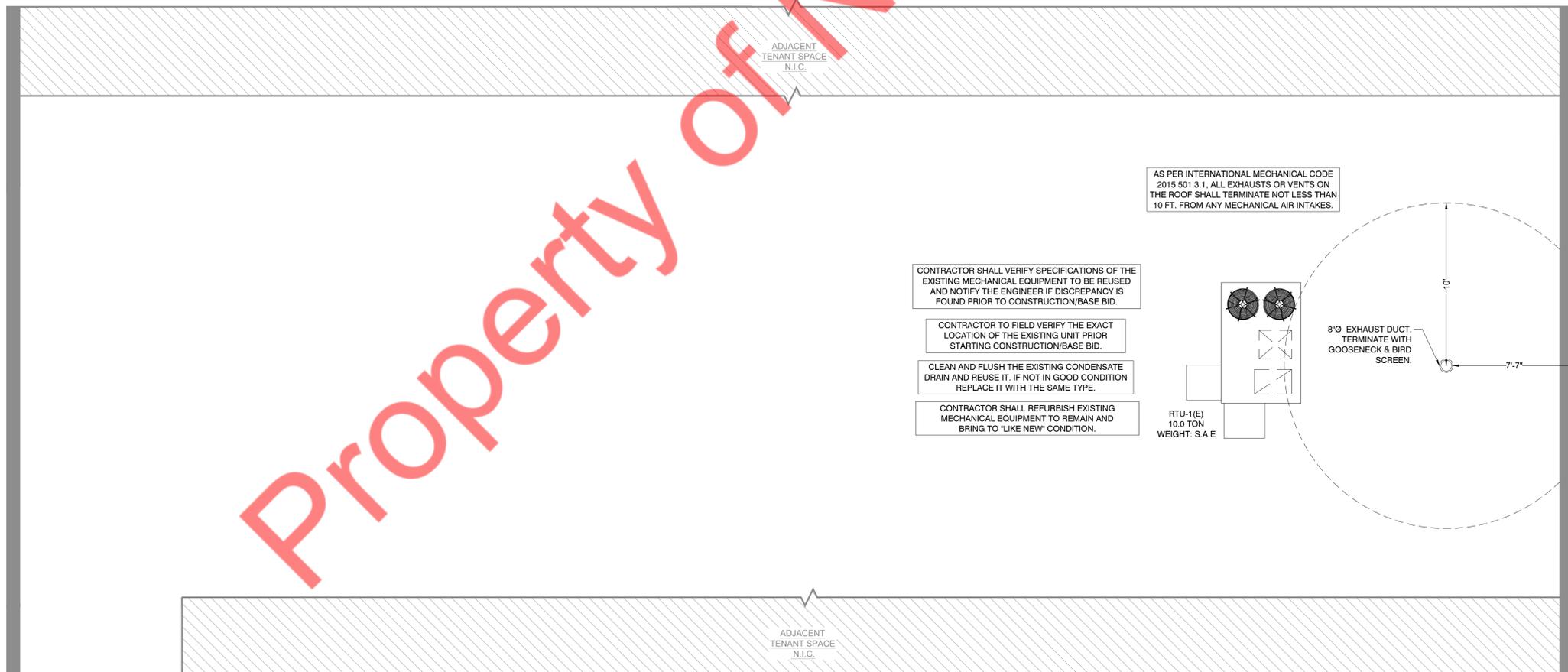
HVAC FLOOR PLAN

M-2



HVAC FLOOR PLAN SCALE 1/4" = 1'-0" 1

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HVAC ROOF PLAN

SCALE
1/4" = 1'-0"

1

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HVAC ROOF PLAN

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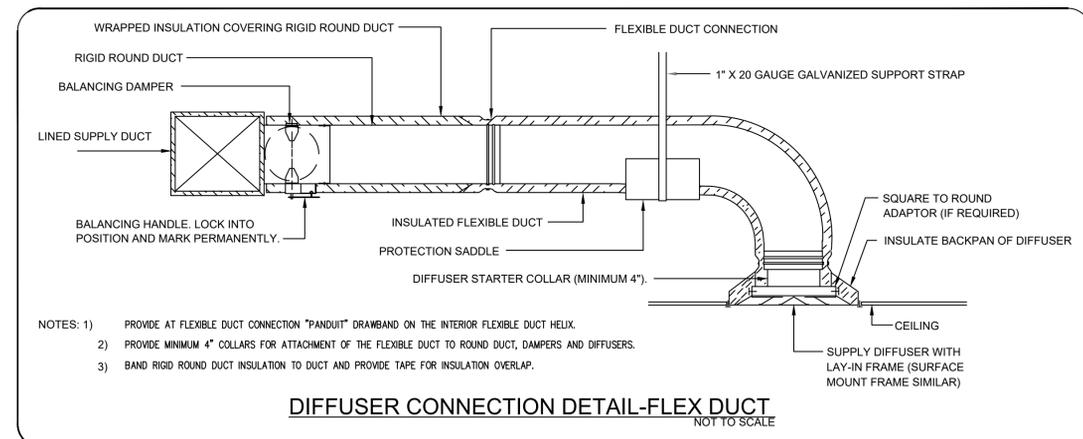
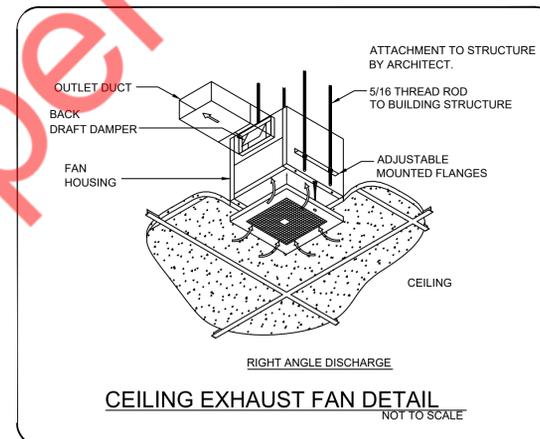
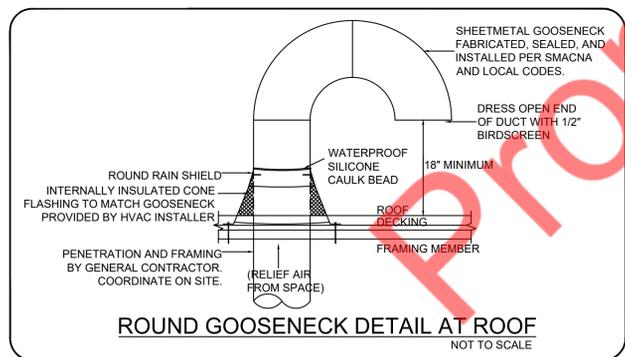
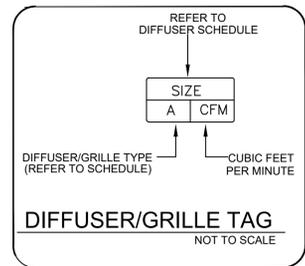
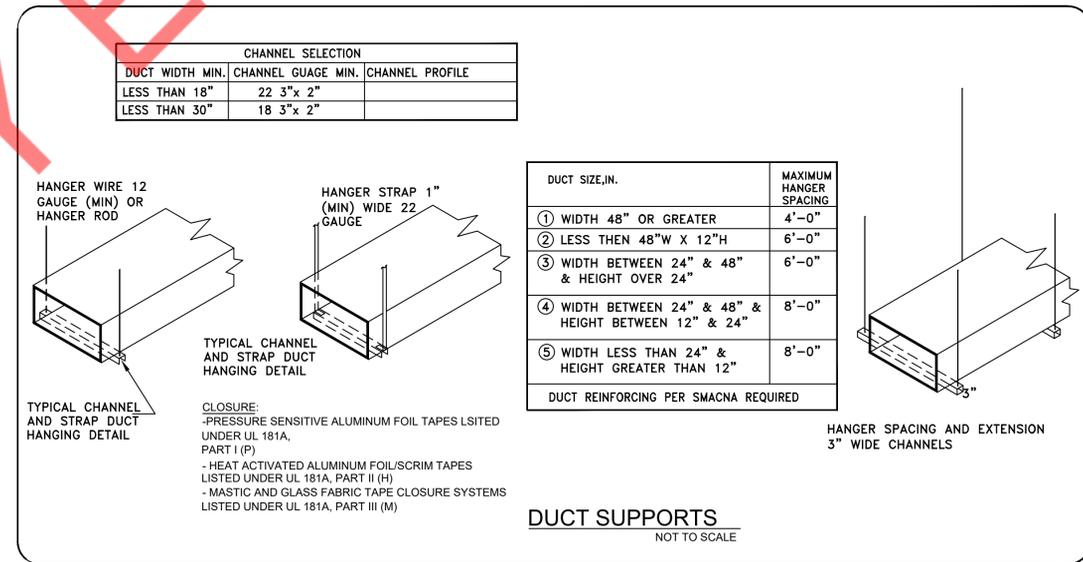
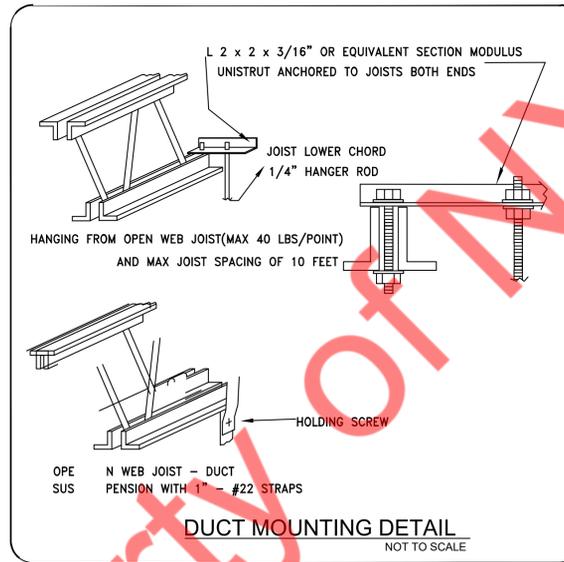
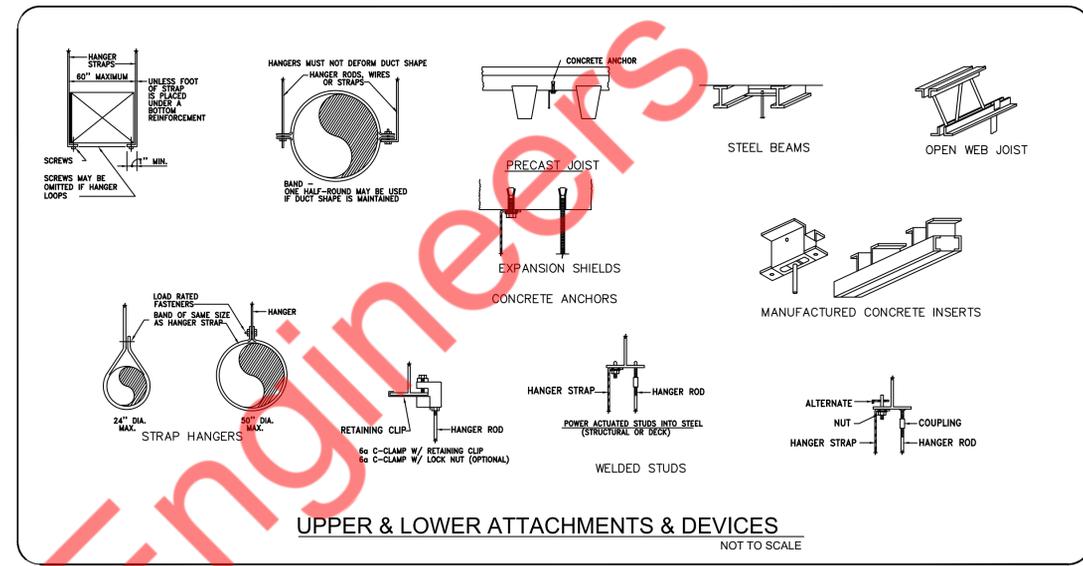
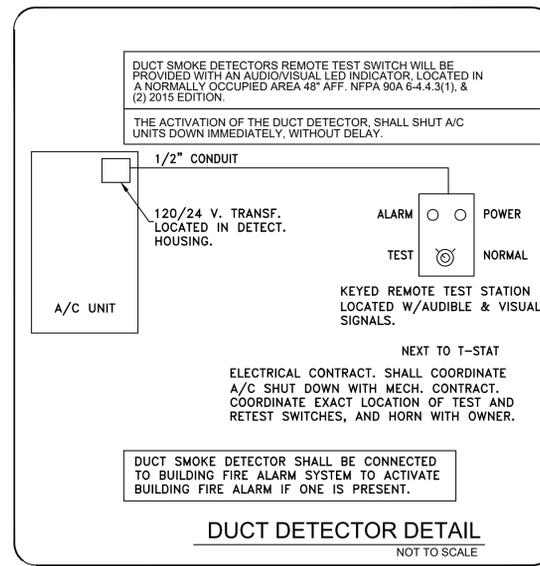
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MECHANICAL DETAILS



SCOPE OF WORK

- NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL SERVICE FROM THE BASE BUILDING DISTRIBUTION FOR THE PROJECT SPACE.
- NEW (1) 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL METER & DISCONNECT SWITCH FOR THE PROJECT SPACE.
- PROVIDE NEW (1) 200A(M.C.B), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A" FOR THE PROJECT SPACE.
- PROVIDE NEW (1) 100A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE.
- PROVIDE ALL NECESSARY EQUIPMENT, WIRING AND LIGHTING FOR THE PROJECT SPACE INCLUDING WIRING FOR VENTILATION EQUIPMENT. COORDINATE WITH G.C FOR LOW VOLTAGE WIRING.
- ELECTRICAL CONTRACTOR TO COORDINATE WITH THE MECHANICAL AND PLUMBING CONTRACTOR FOR THE POWER REQUIREMENTS OF THE RESPECTIVE DEVICES/EQUIPMENT.

ELECTRICAL NOTES

- ELECTRICAL CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET.
- CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT, NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING, OR PROCEEDING WITH WORK.
- ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED. CONSTRUCTION SHALL BE IN ACCORDANCE WITH DRAWINGS AND APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, CONTRACTOR SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL OWNER HAS DIRECTED CORRECTIVE ACTION TO BE TAKEN.
- ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATIONS INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SUBMITTING HIS BID.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2017 EDITION OF THE NATIONAL ELECTRIC CODE AND ALL CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION.
- DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION FOR ALL EQUIPMENT. CONFIRM WITH OWNER'S REPRESENTATIVE.
- ALL ELECTRICAL NOT BEING REUSED MUST BE REMOVED IN ITS ENTIRETY.
- ALL CONDUIT IN OR UNDERGROUND OR IN CONCRETE MUST BE RIGID GALVANIZED STEEL.
- CIRCUIT BREAKERS AND PANELS TO BE BOLT ON TYPE.
- ALL EQUIPMENT SHALL BE APPROVED BY UL OR OTHER NATIONALLY RECOGNIZED TESTING COMPANY.
- ALL RECEPTACLES SHALL BE GROUNDED AS REQUIRED BY NEC.
- SUBMIT SERVICE ENTRANCE EQUIPMENT FOR SEPARATE APPROVAL.
- ALL LOW VOLTAGE MUST BE IN CONDUIT TO ABOVE THE DROP CEILING. BRIDAL RINGS OR "J" HOOKS REQUIRED.
- SEPARATE PERMITS ARE REQUIRED FOR ALL LOW VOLTAGE SUCH AS TELEPHONE, DATA, THERMOSTAT, MUSIC, ALARMS ETC.
- SEPARATE PERMIT REQUIRED FOR SIGNAGE.
- PRIOR TO ANY CONSTRUCTION WORK BEGINNING AN ON-SITE MEETING WITH GENERAL CONTRACTORS IS REQUIRED.
- ELECTRICIAN MUST BE ON SITE FOR ALL INSPECTIONS.
- MINIMUM WIRE SIZE SHALL BE #12 A.W.G. EXCLUDING CONTROL WIRING. ALL CONDUCTORS SHALL BE COPPER AND UNLESS OTHERWISE NOTED THIN INSULATION.
- OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, PLASTIC AND CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.
- IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
- ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED AS REQUIRED BY THE N.E.C. OR LOCAL CODES.
- ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.
- ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/ARCHITECT.
- ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
- ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE THAT CERTIFICATE OF OCCUPANCY IS ISSUED. WARRANTY SHALL BE PROVIDED IN WRITING. PROVIDE COPY TO LL.
- CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.
- ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
- CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT.
- THE ELECTRICAL INSTALLATION SHALL MEET ALL STANDARD REQUIREMENTS OF POWER AND TELEPHONE COMPANIES.
- CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS AND PROVIDE ALL NECESSARY CONTROL WIRING.
- ALL CIRCUIT BREAKERS FEEDING MECHANICAL EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
- PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES, DEVICES, ETC. FOR ALL OUTLETS AS INDICATED.
- MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UL LIST OF APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF N.E.C., NEMA, AND IEC.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR CUT SHEETS OF LIGHTING FIXTURES, SWITCHES, AND OTHER ELECTRICAL ITEMS FOR APPROVAL BY ENGINEER/ARCHITECT.
- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, PATCHING AND FIRED CAULKING REQUIRED OF HIS WORK.
- ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS W/TYPE WRITTEN DIRECTORIES.
- ALL ELECTRICAL OUTLETS SHALL BE AT 18" A.F.F., UNLESS NOTED OTHERWISE, AND VERTICALLY MOUNTED.
- ALL LIGHT SWITCHES TO BE AT 48" A.F.F.
- ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL ELECTRICAL WIRING FOR HVAC SYSTEM INCLUDING CONTROLS, THERMOSTATS, POWER, ETC. SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- BREAKER AND PANELS - ALL CURRENT CARRYING BUSSES SHALL BE COPPER. ALL GROUND BUS BARS SHALL BE COPPER. PANEL BOARD ENCLOSURES SHALL BE FURNISHED WITHOUT PRE-PUNCHED CONCENTRIC HOLES. A.I.C. RATINGS SHALL BE AS INDICATED ON PANEL BOARD SCHEDULES.
- DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK ENCLOSURES AS REQUIRED BY EXPOSURE.
- MOTOR STARTERS SHALL BE MANUAL OR MAGNETIC, WITH OVERLOAD RELAYS IN EACH HOT LEG.
- THE TERM "PROVIDE" USED IN THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS INDICATES THE CONTRACT SHALL FURNISH AND INSTALL.
- CONTRACTOR SHALL CONFIRM WITH ANY AND ALL REQUIREMENTS SUCH AS LUG SIZE RESTRICTIONS, CONDUIT ENTRY, TRANSFORMER SIZE, SCHEDULED DOWN TIME FOR OWNERS CONFIRMATION, ETC. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.
- VOLTAGE DROP FOR ALL BRANCH CONDUCTORS SHALL NOT EXCEED 3%, WHERE VOLTAGE DROP EXCEEDS 3%, CONTRACTOR SHALL INCREASE SIZE OF CONDUCTORS.
- CONTRACTOR SHALL PROVIDE GFI TYPE BREAKER FOR ALL EXTERIOR 120V CIRCUITS OR GFI PROTECTION - FOR THE WHOLE CIRCUIT.
- GAS PIPING SHALL BE BONDED.
- ALL OUTDOOR EQUIPMENT SHALL BE WEATHERPROOF.
- CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
- OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER.
- ABSOLUTELY NO FLEXIBLE CONDUIT IS PERMITTED IN DEMISING WALLS. FLEXIBLE CONDUIT IS PERMITTED FOR SHORT FINAL CONNECTIONS ONLY (6'-0" OR LESS).
- EXPOSED CONDUIT SHALL BE INSTALLED IN STRAIGHT LINES, PARALLEL OR IN RIGHT ANGLES TO THE BUILDING STRUCTURE. DO NOT LOOP EXCESS FLEXIBLE CONDUIT IN CEILING SPACE OR WALL CAVITY. NO CONDUIT TO BE SUPPORTED FROM THE ROOF DECK.
- CABLE TYPES AC AND NM CABLES ARE NOT ACCEPTABLE. TYPE MC CABLE, ELECTRIC METALLIC TUBING (EMT) AND RIGID GALVANIZED CONDUIT ARE PERMITTED.
- ALL EQUIPMENT, DEVICES AND FIXTURES SHALL BE GROUNDED IN COMPLIANCE WITH NEC AND UL REQUIREMENTS.
- ALL NEW PANELS TO BE UL LABELED WITH BOLT-ON TYPE CIRCUIT BREAKERS.
- 7-DAY 24-HOUR TIME CLOCK IS REQUIRED TO CONTROL STOREFRONT ENTRY LIGHTS, SHOW WINDOW LIGHTS, SHOW WINDOW RECEPTACLES AND STOREFRONT SIGNAGE. ILLUMINATED STOREFRONT SIGNS MUST REMAIN LIT DURING ALL MALL BUSINESS HOURS.
- TENANT IS REQUIRED TO MAKE A FIELD SURVEY OF THE EXISTING ELECTRICAL SERVICE TO ENSURE THAT THE TOTAL CONNECTED LOAD DOES NOT EXCEED THE ELECTRIC SERVICE. ANYALL MODIFICATIONS OR UPGRADES NEEDED ARE SUBJECT TO LANDLORD'S PRIOR APPROVAL AND WILL BE COMPLETED BY TENANT/TENANTS GC AT TENANT'S SOLE EXPENSE.
- ALL ELECTRICAL PANELS TO BE MOUNTED ON PLYWOOD BACKER BOARD.
- PANEL PHASE LOADS TO BE BALANCED WITHIN 10%.
- ELECTRICAL PANELS MAY NOT BE RECESSED IN DEMISING PARTITIONS. SURFACE MOUNT OR FULL FUR OUT WALL TO ACHIEVE FLUSH FINAL APPEARANCE.
- COORDINATE ALL CONCRETE TRENCHING/CORING TO ENSURE THAT ANY UNDER SLAB UTILITIES, ETC. ARE NOT DAMAGED DURING FLOOR CUT. ANY DAMAGE TO BE REPAIRED AT TENANT'S EXPENSE. PRIOR APPROVAL AND COORDINATION WITH PROPERTY MANAGEMENT IS REQUIRED FOR ALL CONCRETE CUTTING.

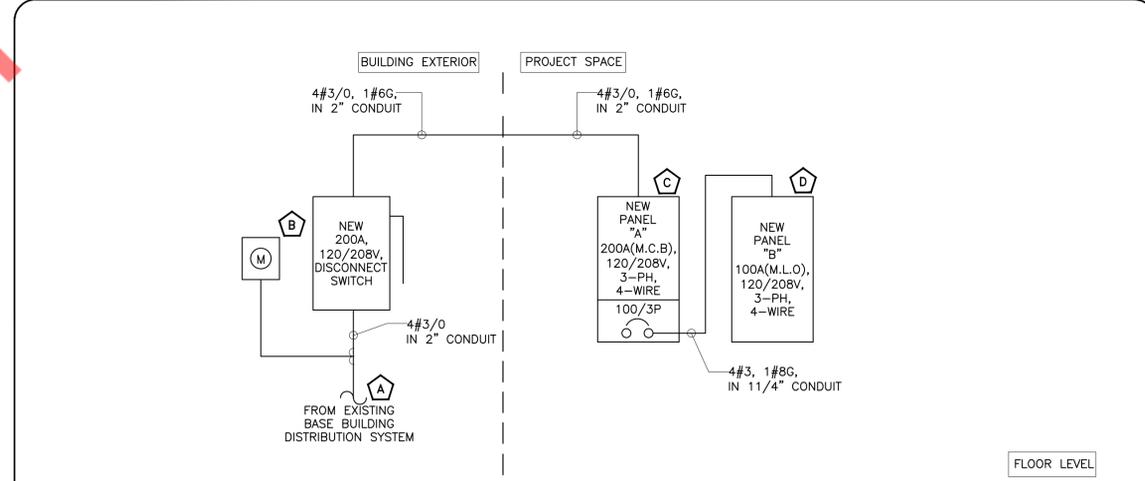
ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EXHAUST FAN		230V RECEPTACLE
	JUNCTION BOX		ELECTRICAL PANEL
	BATTERY BACK UP EXIT LIGHT		DISCONNECT SWITCH
	BATTERY BACK UP EMERGENCY LIGHT		CEILING MOUNTED OCCUPANCY SENSOR
	WALL SWITCH (SINGLE)		CAMERA
	WALL SWITCH (TIMER)		TELEVISION OUTLET
	OCCUPANCY SENSOR WALL		TELEPHONE/DATA OUTLET
	DUPLEX RECEPTACLE		DATA OUTLET
	DUPLEX RECEPTACLE, 42" TO AFF OR 6" AFF ABOVE COUNTER		CEILING MOUNTED DATA OUTLET
	QUADRUPLEX RECEPTACLE		FLOOR MOUNTED DATA OUTLET
	CEILING MOUNTED DUPLEX RECEPTACLE		MOTORISED DAMPER
	FLOOR MOUNTED DUPLEX RECEPTACLE		30A/240V NON FUSED DISCONNECT SWITCH
			60A/240V NON FUSED DISCONNECT SWITCH

ABBREVIATIONS:
 ABOVE FINISH FLOOR= A.F.F.
 COUNTER TOP LEVEL= C
 GROUND FAULT INTERRUPTER= GFCI
 VERIFY PRIOR TO INSTALL= VH
 WEATHER PROOF= WP
 EXHAUST FAN= EF
 WATER HEATER= WH
 AUTHORITY HAVING JURISDICTION= A.H.J.
 BELOW COUNTER= BC
 PUSH BUTTON= PB
 UNDER CABINET= UC
 VAPOR PROOF= VP
 ELECTRICAL CONTRACTOR=E.C.
 BATHROOM EXHAUST FAN=BEF
 RECIRCULATION PUMP=RCP
 ROOF TOP UNIT= RTU

EXISTING CONDITIONS NOTES

STOP AND READ
 THE CONTRACTOR AND SUB-CONTRACTORS SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED.
 THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL, ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/QT OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS OR CONDITIONS OF GREASE INTERCEPTORS AND ETC.



ELECTRICAL RISER KEYED WORK NOTES:

- NEW 200A, 120/208V, 3-PHASE, 4-WIRE ELECTRICAL INCOMING SERVICE FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH OWNER/BASE BUILDING/LAND LOARD FOR EXACT DETAILS ABOUT THE PROVISION OF THE SERVICE.
- PROVIDE NEW 200A, 120/208, 3-PHASE, 4-WIRE ELECTRICAL METER & THE DISCONNECT SWITCH FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH OWNER /BASE BUILDING FOR LOCATION. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OWNER/LANDLORD/BASE BUILDING FOR THE EXACT SCOPE OF WORK/LIABILITIES.
- PROVIDE NEW 200A(M.C.B), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A". E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
- PROVIDE NEW 100A(M.L.O), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B". E.C. SHALL COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.

ELECTRICAL RISER SYMBOLS

	NEW
	EXISTING ITEM/FEEDER TO REMAIN
	EXISTING ITEM/FEEDER TO BE DISCONNECTED & REMOVED

ELECTRICAL RISER DIAGRAM GENERAL NOTES:

- ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSES ONLY. E.C. SHALL VERIFY EXACT POWER DISTRIBUTION IN FIELD AND INFORM ENGINEER ON RECORD FOR ANY DISCREPANCY.
- E.C. SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
- ELECTRICAL CONTRACTOR TO COORDINATE FAULT CURRENT (Isc) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OWNER/LANDLORD/BASE BUILDING FOR THE EXACT SCOPE OF WORK/LIABILITIES.

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ELECTRICAL PLAN NOTES, RISER, & LEGEND

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ELECTRICAL LIGHTING SCHEDULE AND CONTROL SEQUENCE

LIGHTING CONTROL SEQUENCE OF OPERATIONS

A. HOURS OF OPERATION

GENERAL NOTE: CONFIRM ALL TIMECLOCK SCHEDULES AND SENSOR TIME DELAYS WITH TENANT PRIOR TO FINAL PROGRAMMING.

OCCUPIED HOURS: COORDINATE WITH TENANT
 BUSINESS HOURS: COORDINATE WITH TENANT

B. GENERAL REQUIREMENTS

1. EMERGENCY LIGHTING: EMERGENCY EGRESS LIGHTING IS POWERED FROM EMERGENCY BATTERY BALLASTS AND DRIVERS INTEGRAL TO FIXTURES DESIGNATED AS EMERGENCY. UPON LOSS OF POWER, ALL LIGHTS DESIGNATED AS EMERGENCY SHALL TURN ON AT FULL EMERGENCY BATTERY BACK-UP OUTPUT.

C. ENTRY/EXIT, RECEPTION, WAITING LOUNGE

1. TIMECLOCK: SPACE IS NETWORKED TO A CENTRAL TIMECLOCK.
 2. DAYLIGHTING: GENERAL LIGHTING WITHIN THE DAYLIGHT ZONE IS EXEMPT PER EXEMPTION IECC 2015.
 3. MANUAL CONTROL: OCCUPANT CAN MANUALLY CONTROL LIGHTS VIA REMOTELY-LOCATED SWITCH(ES). SWITCH(ES) CAN ALSO OVERRIDE TIMECLOCK SETTING FOR 2 HOURS MAXIMUM.
 4. OCCUPANCY: LIGHTS SHALL OPERATE AS INDICATED BELOW:
 A. GENERAL LIGHTING SHALL AUTOMATICALLY TURN ON TO 50% DURING OCCUPIED HOURS, AND THE OCCUPANT MAY MANUALLY ADJUST THE DIMMING LEVEL VIA SWITCH.
 SHOW WINDOW CONTROLLED LOADS SHALL OPERATE AUTOMATICALLY ON AN INDEPENDENT TIME SCHEDULE. CONFIRM TIMES WITH TENANT AND LANDLORD.
 B. ALL DECORATIVE LIGHTING ZONES SHALL OPERATE AUTOMATICALLY DURING BUSINESS HOURS.
 C. EXTERIOR SIGNAGE ZONE(S) SHALL OPERATE ASTRONOMICALLY (DUSK TO DAWN).
 ALL OTHER ZONES SCHEDULED BY THE TIMECLOCK SHALL OPERATE AUTOMATICALLY DURING OCCUPIED HOURS.

5. VACANCY: LIGHTS SHALL TURN OFF AUTOMATICALLY BASED ON TIMECLOCK SCHEDULE. REFER TO OCCUPANCY SECTION ABOVE FOR OPERATION SCHEDULE. LIGHTS SHALL FLICKER-WARN 5 MINUTES PRIOR TO TURNING OFF.

6. THIRD PARTY INTERFACE:

A. SECURITY SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.
 B. FIRE ALARM SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.

E. GAME ROOM HALLWAY

1. TIMECLOCK: SPACE IS NETWORKED TO A CENTRAL TIMECLOCK.
 2. MANUAL CONTROL: OCCUPANT CAN MANUALLY CONTROL LIGHTS VIA LOCAL SWITCH(ES). SWITCH(ES) CAN ALSO OVERRIDE TIMECLOCK SETTING FOR 2 HOURS MAXIMUM.
 3. OCCUPANCY: LIGHTS SHALL OPERATE AS INDICATED BELOW:
 A. GENERAL LIGHTING SHALL AUTOMATICALLY TURN ON TO 50% DURING OCCUPIED HOURS, AND THE OCCUPANT MAY MANUALLY ADJUST THE LEVEL VIA SWITCHES.
 B. ALL DECORATIVE LIGHTING ZONES SHALL OPERATE AUTOMATICALLY DURING BUSINESS HOURS.

4. VACANCY: LIGHTS SHALL TURN OFF AUTOMATICALLY BASED ON TIMECLOCK SCHEDULE. REFER TO OCCUPANCY SECTION ABOVE FOR OPERATION SCHEDULE. LIGHTS SHALL FLICKER-WARN 5 MINUTES PRIOR TO TURNING OFF.

5. THIRD PARTY INTERFACE:

A. SECURITY SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.
 B. FIRE ALARM SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.

F. GAME ROOMS

1. TIMECLOCK: SPACE IS NETWORKED TO A CENTRAL TIMECLOCK.
 2. MANUAL CONTROL: OCCUPANT CAN MANUALLY TURN LIGHTS ON/OFF VIA LOCAL SWITCH(ES).
 3. OCCUPANCY: GENERAL LIGHTING SHALL AUTOMATICALLY TURN ON TO 100% DURING OCCUPIED HOURS.
 4. VACANCY: LIGHTS SHALL TURN OFF AUTOMATICALLY BASED ON TIMECLOCK SCHEDULE. REFER TO OCCUPANCY SECTION ABOVE FOR OPERATION SCHEDULE. LIGHTS SHALL FLICKER-WARN 5 MINUTES PRIOR TO TURNING OFF.

5. THIRD PARTY INTERFACE:

A. SECURITY SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.
 B. FIRE ALARM SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, AUTOMATIC LOAD CONTROL RELAY TO BYPASS THE LOCAL LIGHT SWITCH AND TURN ON DESIGNATED EMERGENCY LIGHTS. REGARDLESS OF SWITCH POSITION. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.

G. STORAGE / MULTIPURPOSE (NOT IN SCOPE)

H. REAR HALLWAY

1. TIMECLOCK: SPACE IS NETWORKED TO A CENTRAL TIMECLOCK BUT IS CONTROLLED LOCALLY.
 2. MANUAL CONTROL: OCCUPANT CAN MANUALLY TURN LIGHTS ON/OFF VIA LOCAL SWITCH(ES).
 3. OCCUPANCY: LIGHTS SHALL AUTOMATICALLY TURN ON.
 4. VACANCY: DURING OCCUPIED HOURS, AFTER 20 MINUTES LIGHTS SHALL REDUCE TO 50% MINIMUM. DURING UNOCCUPIED HOURS, AFTER 20 MINUTES ALL CONTROLLED LOADS SHALL TURN OFF.

5. THIRD PARTY INTERFACE:

E. SECURITY SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.
 F. FIRE ALARM SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.

I. RESTROOMS

1. TIMECLOCK: SPACE IS STAND-ALONE (NOT NETWORKED).
 2. MANUAL CONTROL: OCCUPANT CAN MANUALLY TURN LIGHTS ON/OFF VIA LOCAL SWITCH(ES).
 3. OCCUPANCY: LIGHTS SHALL AUTOMATICALLY TURN ON TO 100%. OCCUPANT CAN THEN MANUALLY OPERATE LOCAL SWITCH.
 4. VACANCY: AFTER 20 MINUTES, ALL CONTROLLED LOADS SHALL TURN OFF.

5. THIRD PARTY INTERFACE:

C. SECURITY SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.
 D. FIRE ALARM SYSTEM: CONTACT-CLOSURE TYPE INTERFACE. WHEN ALARM SIGNAL IS RECEIVED, ALL CONNECTED LIGHTS SHALL TURN ON. WHEN ALARM SIGNAL IS REMOVED, LIGHTS SHALL STAY ON UNTIL NEXT TIMECLOCK EVENT OR UNTIL OCCUPANT MANUALLY OPERATES SWITCH.

J. MISSION CONTROL ROOM

1. TIMECLOCK: SPACE IS STAND-ALONE (NOT NETWORKED).
 2. MANUAL CONTROL: OCCUPANT CAN MANUALLY TURN LIGHTS ON/OFF VIA LOCAL SWITCH(ES).
 3. OCCUPANCY: LIGHTS SHALL AUTOMATICALLY TURN ON TO 50%. OCCUPANT CAN THEN MANUALLY OPERATE LOCAL SWITCH TO ADJUST DIMMING LEVEL OF FIXTURES.
 4. VACANCY: AFTER 20 MINUTES, ALL CONTROLLED LOADS SHALL TURN OFF.

GENERAL LIGHTING NOTES

- A. UPPER CASE LETTER NEXT TO LIGHT FIXTURE DENOTES FIXTURE TYPE AND LOWER CASE LETTER DENOTES SWITCHING SCHEME.
- B. ALL EMERGENCY FIXTURES SHALL BE CONNECTED TO AN UNSWITCHED HOT CONDUCTOR, SO THAT THEY ARE ENERGIZED ALL THE TIME.

LIGHTING FIXTURE SCHEDULE

SYMBOL	TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLT	NUMBER OF FIXTURES	LAMP TYPE	TOTAL WATTS	MOUNTING
⊙	A	RECESSED DOWNLIGHT	AMERLUX	TBD	120	2	LED	26 WATTS	RECESSED
✱	B	DECORATIVE CHANDELIER	KUZCO LIGHTING	TBD	120	1	LED	800 WATTS	SUSPENDED
—○—	C1	TRACK LIGHT	AMERLUX	TBD	120	1	LED	9 WATTS	TRACK MOUNTED
—○—	C2	TRACK LIGHT	AMERLUX	TBD	120	29	LED	261 WATTS	TRACK MOUNTED
—○—	C3	TRACK LIGHT	AMERLUX	TBD	120	10	LED	90 WATTS	TRACK MOUNTED
⊕	D	DECORATIVE PENDANT	SHADES OF LIGHT	TBD	120	10	LED	600 WATTS	SUSPENDED
⊕	F	WALL SCONE FIXTURE	SHADES OF LIGHT	TBD	120	9	INCANDESCENT	360 WATTS	WALL MOUNTED
⊗	G	2' X 2' LED LAY-IN	CORONET	TBD	120	5	LED	100 WATTS	RECESSED
⊗	G-EM	2' X 2' LED LAY-IN - EMERGENCY	CORONET	TBD	120	18	LED	360 WATTS	RECESSED
⊗	EX1	EXIT SIGN	COOPER LIGHTING	TBD	120	7	LED	28 WATTS	WALL MOUNTED
⊗	X2	EXIT SIGN/EMERGENCY LIGHT COMBO	COOPER LIGHTING	TBD	120	3	LED	12 WATTS	WALL MOUNTED
⊗	EM1	WALL MOUNTED EMERGENCY LIGHTS	TBD	TBD	120	2		6 WATTS	WALL
⊗	—	SINGLE POLE SWITCH	LUTRON	CLARO, 15A	120	—	—	—	WALL
⊗	—	WALL MOUNTED OCCUPANCY SWITCH	LEGRAND/EQUIVALENT	PW-100/EQUIVALENT	120	—	—	—	WALL
⊗	—	CEILING MOUNTED OCCUPANCY SWITCH	LEGRAND/EQUIVALENT	LMPC-100/EQUIVALENT	120	—	—	—	CEILING
⊗	—	DIMMER SWITCH	LEGRAND/EQUIVALENT	LMDM101/EQUIVALENT	120	—	—	—	WALL
⊗	—	RELAY PANEL	LEGRAND/EQUIVALENT	LMCP48-10V/EQUIVALENT	120	—	—	—	WALL
⊗	—	CURRENT LIMITING PANEL	ACUITY/EQUIVALENT	SILVER BULLET/EQUIVALENT	120	—	—	—	WALL
(E)	—	EXISTING TO REMAIN	—	—	—	—	—	—	—

NOTE:
 1. E.C. SHALL COORDINATE WITH ARCHITECT FOR FINAL FIXTURE COUNT, TYPE AND LOCATION.
 2. COORDINATE EXACT CONTROL REQUIREMENTS WITH OWNER.
 3. E.C SHALL PROVIDE REQUIRED POWER PACKS AND RELAYS SUITABLE FOR THE ABOVE LIGHT FIXTURES IN COORDINATION WITH THE LIGHTING VENDOR. BASE BID ACCORDINGLY.

CURRENT LIMITING PANEL SCHEDULE					
PANEL NAME: CL		MOUNTING: SURFACE		VOLTAGE: 120V	
LOCATION:	MISSION CONTROL ROOM	LOAD CONTROLLED	AMPS	RATED WATTS	ALLOWED WATTS
CL	CIRCUIT				
1	B-1	RECEPTION/LOUNGE TRACK LIGHTING 1	2.00	240	86.00
2	B-3	RECEPTION/LOUNGE TRACK LIGHTING 2	2.00	240	86.00
3	B-5	HALLWAY TRACK LIGHTING 1	2.00	240	96.00
4	B-7	HALLWAY TRACK LIGHTING 2	2.00	240	96.00
5		SPARE			
6		SPARE			
7		SPARE			
8		SPARE			

RELAY PANEL SCHEDULE					
PANEL NAME: RP		MOUNTING: SURFACE		VOLTAGE: 120	
LOCATION:	MISSION CONTROL ROOM	LOAD CONTROLLED	MODULE TYPE	LOAD (WATTS)	ZONE
RELAY	CIRCUIT				
1	A-5	BLADE SIGN	NON DIM	1200	EXT SIGN
2	A-2	BUILDING SIGNAGE	NON DIM	1200	EXT SIGN
3	A-1	SHOW WINDOW RECEPTACLE	NON DIM	1200	SW RECEPTACLE
4	A-3	SHOW WINDOW RECEPTACLE	NON DIM	1200	SW RECEPTACLE
5	B-1	RECEPTION/LOUNGE TRACK LIGHTING 1	ELV	86	GNRL TRACK
6	B-3	RECEPTION/LOUNGE TRACK LIGHTING 2	ELV	86	GNRL TRACK
7	B-5	HALLWAY TRACK LIGHTING 1	ELV	96	GNRL TRACK
8	B-7	HALLWAY TRACK LIGHTING 2	ELV	96	GNRL TRACK
9	B-15	HALLWAY SCONE LIGHTING	0-10V	280	GAME SCONES
10	B-17	HALLWAY DÉCOR LIGHTING	0-10V	81	HALL WAYS
11	B-13	GAME ROOM LIGHTING 1	0-10V	60	GAME ROOM
12	B-14	GAME ROOM LIGHTING 2	0-10V	60	GAME ROOM
13	B-15	GAME ROOM LIGHTING 3	0-10V	60	GAME ROOM
14	B-16	GAME ROOM LIGHTING 4	0-10V	60	GAME ROOM
15	B-17	GAME ROOM LIGHTING 5	0-10V	60	GAME ROOM
16	B-18	GAME ROOM LIGHTING 6	0-10V	60	GAME ROOM
17	B-19	GAME ROOM LIGHTING 7	0-10V	60	GAME ROOM
18	B-20	GAME ROOM LIGHTING 8	0-10V	60	GAME ROOM
19	B-9	RECEPTION CHANDELIER	0-10V	800	RECEPTION CHAND.
20	A-21	LIT POSTERS	NON DIM	600	LIT POST.
21	B-11	MISSION CONTROL ROOM LIGHTING	0-10V	40	OFFICE LIGHTING
22		SPARE			
23		SPARE			
24		SPARE			
25		SPARE			
26		SPARE			
27		SPARE			
28		SPARE			
29		SPARE			

NOTES: RELAY NUMBERING ON SCHEDULE IS INTENDED TO COMMUNICATE DESIGN INTENT AND IS FOR INFORMATIONAL PURPOSE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL RELAY CONFIGURATION WITH LIGHTING CONTROL VENDOR AND FIELD CONDITIONS.

SPECIFICATIONS - DIVISION 26 - ELECTRICAL

SECTION 26 00 01 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF DIVISION 26 SECTIONS.
- B. E-SERIES DRAWINGS APPLY TO WORK OF DIVISION 26 SECTIONS AND VICE VERSA.

1.2 GENERAL STANDARDS

- A. PROVIDE WORK IN COMPLIANCE WITH APPLICABLE PROVISIONS OF THE FOLLOWING STANDARDS. PROVIDE UL LISTING AND UL LABEL FOR ALL ELECTRICAL MATERIALS, EQUIPMENT, LUMINAIRES, DEVICES, ETC. IN CASES WHERE UL LISTING AND/OR LABELING IS NOT AVAILABLE FOR A PARTICULAR PRODUCT, PROVIDE EQUIVALENT LISTING AND LABELING FROM ANOTHER THIRD PARTY NATIONALLY RECOGNIZED CERTIFICATION LABORATORY, SUBJECT TO APPROVAL BY LOCAL ELECTRICAL INSPECTOR AND AUTHORITIES HAVING JURISDICTION.
- B. PROVIDE WORK IN STRICT ACCORDANCE WITH THE LATEST EDITION OF APPLICABLE CODES INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING CODES AND STANDARDS.
 - 1. NATIONAL ELECTRICAL CODE (NEC), NFPA 70.
 - 2. LIFE SAFETY CODE, NFPA 101.
 - 3. OTHER PROVISIONS OF NFPA AS APPLICABLE.
 - 4. LOCAL ELECTRICAL CODES.
 - 5. LOCAL UTILITY COMPANY REQUIREMENTS.
 - 6. ADA/ADAA REQUIREMENTS.
 - 7. ASME.
 - 8. INTERNATIONAL BUILDING CODE.
 - 9. INTERNATIONAL ENERGY CONSERVATION CODE.

1.3 MATERIALS AND EQUIPMENT

- A. UNLESS SPECIFICALLY INDICATED OTHERWISE PROVIDE (FURNISH AND INSTALL) ALL SPECIFIED AND DRAWN EQUIPMENT, RACEWAY, BOXES, LUMINAIRES, CONTROLS, WIRING, CABLING, SUPPORTS AND OTHER MATERIALS AS REQUIRED TO RENDER ALL ELECTRICAL AND ELECTRICALLY OPERATED EQUIPMENT, LUMINAIRES, DEVICES, ETC. FULLY OPERATIONAL. UNLESS SPECIFICALLY INDICATED OTHERWISE PROVIDE (FURNISH AND INSTALL) ALL MATERIALS THAT ARE SPECIFIED UNDER DIVISION 26. DISCREPANCIES OR UNCERTAINTIES PERCEIVED BY A BIDDER, OR OTHER QUESTIONABLE INTERPRETATIONS BY A BIDDER, ARE SUBJECT TO FINAL INTERPRETATIONS AND DECISIONS BY THE OWNER'S REPRESENTATIVE UNLESS ADDRESSED BEFORE BIDDING BY ADDENDUM OR UNLESS QUALIFIED OR EXCEPTED WITHIN BIDS.
- B. PROVIDE MATERIALS THAT ARE NEW, FULL WEIGHT, OF THE BEST QUALITY. PROVIDE SIMILAR MATERIALS THAT ARE OF THE SAME TYPE AND MANUFACTURER. PROVIDE MATERIALS, APPARATUS AND EQUIPMENT WITH UNDERWRITER'S LABORATORY, INC. LABEL WHERE REGULARLY SUPPLIED.
- C. MAINTAIN SAFETY AND GOOD CONDITION OF THE MATERIALS AND EQUIPMENT INSTALLED UNTIL FINAL ACCEPTANCE BY THE OWNER. STORE MATERIALS TO PREVENT DAMAGE AND WEATHERING PRIOR TO INSTALLATION.
- D. WHEN SEVERAL MATERIALS, PRODUCTS OR ITEMS OF EQUIPMENT ARE SPECIFIED BY NAME FOR ONE USE, SELECT ONE OF THOSE SPECIFIED.

END OF SECTION

SECTION 26 00 02 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 GENERAL

- A. FURNISH AND INSTALL ALL LABOR AND MATERIAL, TOOLS AND EQUIPMENT NECESSARY TO RENDER ALL SYSTEMS COMPLETE AND OPERATIONAL, AND READY FOR TURNOVER TO OWNER.

1.2 HEIGHT OF BOXES

- A. OUTLET MOUNTING HEIGHTS AS INDICATED ON THE PLANS ARE APPROXIMATE. DETERMINE THE EXACT MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS IN THE FIELD WITH RELATION TO ARCHITECTURAL DETAIL AND EQUIPMENT BEING SERVED. COORDINATE OUTLET LOCATION WITH EQUIPMENT, WITH FURNITURE PLANS AND WITH ARCHITECTURAL ELEVATION PLANS. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, CONTACT THE OWNER'S REPRESENTATIVE FOR DIRECTION.
- B. PRIOR TO ROUGH-IN, COORDINATE FINAL MOUNTING HEIGHTS OF SYSTEM OUTLET BOXES IN FIELD WITH OWNER'S REPRESENTATIVE. INSTALL BOXES AT HEIGHTS AS FOLLOWS, TO CENTER OF BOX, UNLESS DIRECTED OTHERWISE IN FIELD OR OTHERWISE NOTED ON E-SERIES DRAWINGS OR ARCHITECTURAL PLANS. HEIGHT OF BOXES DIMENSIONED FROM CEILING APPLY TO ROOMS HAVING CEILINGS 9' OR LESS; IN ROOMS HAVING HIGHER CEILINGS, LOCATE THESE AS DIRECTED IN THE FIELD.

SWITCHES - COUNTERS	44" (FIELD VERIFY & MATCH COUNTER RECEPT. HEIGHTS)
SWITCHES - ELSEWHERE	54" TO TOP OF OUTLET BOX
OCCUPANCY SENSORS - WALLBOX SWITCHES	54" TO TOP OF OUTLET BOX
OCCUPANCY SENSORS - ELSEWHERE	AS RECOMMENDED BY MANUFACTURER
RECEPTACLES - COUNTERS	44" (FIELD VERIFY)
RECEPTACLES - ELSEWHERE	18"
DISCONNECTS	46"
PANELBOARDS	72" TO TOP OF PANEL UNLESS SPECIAL CIRCUMSTANCES ARE INDICATED OR OTHERWISE APPLY AS NOTED ON PLANS OR AS DIRECTED BY ARCHITECT
WALL MOUNTED LUMINAIRES	
CONTROL STATIONS	46"
FIRE ALARM MANUAL PULL STATIONS	46" TO TOP OF OPERATING HANDLE
FIRE ALARM AUDIO/VISUAL ANNUNCIATORS	80" TO BOTTOM OF OUTLET BOX
TELEPHONE OUTLETS - DESK PHONE	18"
TELEPHONE OUTLETS - WALL PHONE	46"
DATA OUTLETS	18" TO TOP OF OUTLET BOX.

1.3 ELECTRICAL INSTALLATIONS

- A. INSTALL WORK CONDUIT, WIRING, OUTLET BOX TYPE WORK IN FINISHED AREAS CONCEALED. SUCH WORK INSTALLED IN UNFINISHED AREAS MAY BE EXPOSED AT THE DISCRETION OF THE OWNER'S REPRESENTATIVE.
- B. VERIFY DIMENSIONS BY FIELD MEASUREMENTS. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF OPENINGS REQUIRED FOR THE INSTALLATION OF WORK. FIGURED DIMENSIONS ARE REASONABLY ACCURATE AND SHOULD GOVERN IN SETTING OUT WORK. WHERE DETAILED METHOD OF INSTALLATION IS NOT INDICATED OR WHERE VARIATIONS EXIST BETWEEN DESCRIBED WORK AND APPROVED PRACTICE, FOLLOW DIRECTION OF THE OWNER'S REPRESENTATIVE.
- C. PROVIDE BRANCH SUBFEEDER CIRCUITS AS SHOWN ON THE PLANS. THE SYMBOLS USED TO INDICATE THE PURPOSE OF WHICH THE VARIOUS OUTLETS ARE INTENDED ARE IDENTIFIED IN THE ELECTRIC LEGEND. WHERE OUTLETS ARE INDICATED BY LETTERS ON PLANS, PROVIDE CORRESPONDING SWITCHES TO CONTROL THEM.
- D. PROVIDE NO WIRE SIZE SMALLER THAN NO. 12 FOR BRANCH CIRCUITS UNLESS OTHERWISE NOTED ON PLANS FOR CONTROL CIRCUITS. PROVIDE LARGER SIZES WHERE REQUIRED BY PREVAILING CODES OR INDICATED ON CONTRACT DOCUMENTS. PROVIDE NEUTRAL CONDUCTOR FOR ALL MULTI-POLE FEEDERS. PROVIDE NEUTRAL CONDUCTOR(S) FOR ALL MULTI-POLE FEEDERS AND BRANCH CIRCUITS UNLESS THIS CONTRACTOR DETERMINES IN FIELD THAT THE AFFECTED LOAD(S) WILL NEVER HAVE NEED FOR A NEUTRAL CONDUCTOR AND NEC DOES NOT MANDATE OTHERWISE.

1.4 COORDINATION

- A. PLANS ARE DIAGRAMMATIC INDICATING DESIGN INTENT AND INDICATING REQUIRED SIZE, POINTS OF TERMINATION AND, IN SOME CASES, SUGGESTED ROUTES OF RACEWAYS, ETC. HOWEVER, IT IS NOT INTENDED THAT DRAWINGS INDICATE FULLY COORDINATED CONDUIT ROUTING, NECESSARY OFFSETS, ETC. THE DRAWINGS ARE AN OUTLINE TO INDICATE THE APPROXIMATE LOCATION AND ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, OUTLETS, RACEWAYS, CABLES, ETC. INSTALL PIPING, CONDUIT, RACEWAYS, CABLE ASSEMBLIES, ETC. AS STRAIGHT AS POSSIBLE AND SYMMETRICAL (PERPENDICULAR TO OR PARALLEL WITH) ARCHITECTURAL ITEMS. WORK IN AND ON THE BUILDING INSTALLED DIAGONAL TO BUILDING MEMBERS IS PROHIBITED.

- B. CONSULT THE PLANS OF OTHER TRADES BEFORE INSTALLING WORK SO THAT WORK WILL NOT INTERFERE WITH THOSE.
- C. PARTICIPATE IN COORDINATION EFFORTS AND IN PREPARATION OF COORDINATION DRAWINGS PRIOR TO FABRICATION OR INSTALLATION OF EQUIPMENT, MATERIALS, ETC. COORDINATE ACTUAL CLEARANCES OF INSTALLED EQUIPMENT. COORDINATE EXACT LOCATION OF ELECTRICAL OUTLETS, LIGHTING FIXTURES, CONDUITS, RACEWAYS, EQUIPMENT, CABLE ASSEMBLIES, APPLICABLE DEVICES, ETC. WELL IN ADVANCE OF INSTALLATION SO THERE WILL BE NO INTERFERENCES AT INSTALLATION BETWEEN THE VARIOUS TRADES.
- D. ENSURE THAT WORK AND WORKING CLEARANCES IN ELECTRICAL ROOMS AND SIMILAR SPACES COMPLIES WITH NEC ARTICLE 110. THIS ALSO APPLIES TO FINALIZING LOCATIONS OF DISCONNECTS, STARTERS, CONTACTORS AND OTHER ELECTRICALLY OPERATED EQUIPMENT THAT MAY REQUIRE TESTING OR MAINTENANCE WHILE ENERGIZED.
- E. COORDINATE AND CORRECT CONFLICTS IN EQUIPMENT AND MATERIALS PRIOR TO INSTALLATION. IF A CONFLICT CANNOT BE RESOLVED, REFER THE MATTER TO THE OWNER'S REPRESENTATIVE FOR A FINAL DECISION AS TO METHOD AND MATERIAL.

1.5 IDENTIFICATION

- A. GENERAL
 - 1. SUBMIT MANUFACTURER'S DATA ON ELECTRICAL IDENTIFICATION MATERIALS AND PRODUCTS. SUBMIT DETAILED NAMEPLATE SCHEDULE INDICATING PROPOSED NOMENCLATURE, COLORS, TEXT HEIGHTS, FASTENING METHODS, ETC.
 - 2. CABLE AND CONDUCTOR IDENTIFICATION
 - 1. PROVIDE MANUFACTURER'S STANDARD VINYL-CLOTH SELF-ADHESIVE CONDUCTOR MARKERS OF WRAP-AROUND TYPE, EITHER PRE-NUMBERED PLASTIC COATED TYPE, OR WRITE-ON TYPE WITH CLEAR PLASTIC SELF-ADHESIVE COVER FLAP, NUMBERED TO SHOW CIRCUIT IDENTIFICATION. PROVIDE ON CONDUCTORS. PROVIDE COLOR CODED INSULATION FOR CONDUCTORS. PROVIDE COLOR CODED JACKETS FOR CABLES. MATCH COLOR SCHEMES WITH MARKING SYSTEM USED IN SUBMITTALS, CONTRACT DOCUMENTS, INDUSTRY STANDARDS, ETC. APPLY CABLE/CONDUCTOR IDENTIFICATION ON EACH CABLE IN EACH BOX/ENCLOSURE/CABINET FOR CABLES THAT ARE NOT AVAILABLE WITH COLOR CODED INSULATION OR JACKETS.
 - 2. USE THE FOLLOWING INSULATION COLOR CODE FOR POWER SYSTEM AND VOLTAGE IDENTIFICATION. THIS APPLIES TO BOTH FEEDER AND BRANCH CIRCUIT WIRING. DO NOT INTERCHANGE COLORS. THE USE OF SCOTCH COLOR CODING TAPES FOR PHASE IDENTIFICATION MAY BE USED ON FEEDER CABLES ONLY (#4 AWG AND LARGER).
 - a. 480/277V SYSTEM: BROWN, ORANGE, YELLOW & GRAY (NEUTRAL)
 - b. 208Y/120V SYSTEM: BLACK, RED, BLUE & WHITE (NEUTRAL)
 - c. ELECTRONIC GROUND: GREEN WITH YELLOW TRACER (NEUTRAL)
 - d. EQUIPMENT GROUNDING: GREEN

C. RACEWAY IDENTIFICATION

- 1. PROVIDE MANUFACTURER'S STANDARD SELF-ADHESIVE VINYL TAPE NOT LESS THAN 3 MILS THICK BY 1-1/2" WIDE. UNLESS OTHERWISE INDICATED OR REQUIRED BY GOVERNING REGULATIONS PROVIDE BLACK LETTERING ON ORANGE BASE WITH MINIMUM 1/2" HIGH LETTERING. AS A MINIMUM, NEATLY INSTALL MARKERS AT EACH AND EVERY ENTRY POINT TO ROOMS, JUNCTION BOXES, PULL BOXES, EQUIPMENT CONNECTIONS, ETC. DO NOT INSTALL THESE MARKERS ON EXPOSED RACEWAYS IN FINISHED AREAS THAT WILL BE OCCUPIED.

END OF SECTION

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

- D. PROVIDE WIRE AND CABLE SUITABLE FOR THE TEMPERATURE, CONDITIONS, AND LOCATION WHERE INSTALLED.

1.2 CONDUCTORS

- A. PROVIDE COPPER CONDUCTOR MATERIAL FOR WIRES AND CABLES UNLESS SPECIFICALLY INDICATED OTHERWISE ON SINGLE-LINE DIAGRAM ON DRAWINGS.
- B. CONDUCTOR SIZES INDICATED ARE BASED ON COPPER UNLESS SPECIFICALLY INDICATED OTHERWISE ON SINGLE-LINE DIAGRAM ON DRAWINGS.
- C. PROVIDE MINIMUM #12 AWG CONDUCTOR SIZE.
- D. STRANDED OR SOLID CONDUCTORS MAY BE USED FOR TYPE MC CABLE CONDUCTORS THAT ARE #10 AWG OR LESS WHERE PERMITTED BY PREVAILING CODES AND AUTHORITIES HAVING JURISDICTION. PROVIDE STRANDED CONDUCTORS FOR ALL OTHER APPLICATIONS.
- E. PROVIDE THE FOLLOWING MINIMUM WIRE SIZES BASED ON DISTANCES FROM PANEL TO FIRST DEVICE OF A 15 OR 20 AMPERE GENERAL LIGHTING OR RECEPTACLE BRANCH CIRCUIT. IN ADDITION TO UPSIZING CONDUCTORS AS REQUIRED FOR VOLTAGE DROP, PROVIDE MINIMUM #10 AWG CONDUCTORS TO THE LAST DEVICE FOR BRANCH CIRCUITS MORE THAN 150 FEET IN LENGTH.

DISTANCE	AWG WIRE SIZES
UP TO 60 FEET	#12
61 TO 90 FEET	#10
91 TO 150 FEET	#8
151 TO 240 FEET	#6
- F. PROVIDE THE FOLLOWING MINIMUM AWG CONDUCTOR SIZES FOR GENERAL BRANCH CIRCUITING, BASED ON USING COPPER CONDUCTORS. WHERE APPLICABLE INCREASE AS REQUIRED TO ACCOMMODATE VOLTAGE DROP AND TO ACCOMMODATE SPECIAL CONDITIONS. DO NOT DERATE ANY GROUNDED (NEUTRAL) CONDUCTORS.

EQUIPMENT GROUNDING

SOURCE BREAKER/FUSE	AWG WIRE SIZE	AWG WIRE SIZE
15 AMPERE	#14	#14
20 AMPERE	#12	#12
25 AMPERE	#10	#10
30 AMPERE	#10	#10
35 AMPERE	#8	#10
40 AMPERE	#8	#10
45 AMPERE	#8	#10
50 AMPERE	#6	#10
60 AMPERE	#6	#10
70 AMPERE	#4	#8
80 AMPERE	#4	#8
90 AMPERE	#2	#8
100 AMPERE	#2	#8

- G. PROVIDE CONDUCTOR INSULATION RATED AT 600VAC AND 90 DEGREES C. PROVIDE THHN/THWN INSULATION FOR CONDUCTORS SIZE 500 KCMIL AND LARGER, AND FOR CONDUCTORS # 8 AWG AND SMALLER. PROVIDE THW OR THHN/THWN INSULATION FOR OTHER SIZES AS APPROPRIATE FOR THE LOCATIONS WHERE INSTALLED.
- H. PROVIDE XHHW-2 INSULATION FOR WIRING BELOW GRADE AND FOR WIRING SUBJECT TO MOISTURE CONDITIONS.
- I. PROVIDE DEDICATED PARITY SIZED GROUNDED (NEUTRAL) CONDUCTOR FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR FED FROM 15 AMPERE AND 20 AMPERE BRANCH CIRCUIT BREAKERS.
- J. PROVIDE GROUNDED (NEUTRAL) CONDUCTOR(S) FOR ALL MULTI-POLE FEEDERS UNLESS INDICATED OTHERWISE ON POWER DISTRIBUTION SINGLE-LINE DIAGRAM.
- K. PROVIDE GROUNDED (NEUTRAL) CONDUCTOR(S) FOR ALL MULTI-POLE BRANCH CIRCUITS.

1.3 TYPE AC/MC CABLES

- A. PROVIDE TYPE AC/MC CABLES THAT ARE MINIMUM 90 DEGREES C RATED, WITH COMPONENTS AND FITTINGS LISTED FOR GROUNDING, AND COMPLIANT WITH THE FOLLOWING.
 - 1. UL STD. 4 AND UL STD. 83.
 - 2. ANSI E119 AND E814.
 - 3. NEC ARTICLES 250 AND 333.
- B. PROVIDE CABLE FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE & OUTSIDE) STRIP STEEL. PROVIDE CABLES WITH FULL PARITY SIZED GREEN INSULATED EQUIPMENT GROUND CONDUCTOR.
- C. PROVIDE COMPATIBLE STEEL FITTINGS WITH INTEGRAL RED PLASTIC INSULATED THROAT BUSHINGS, COMPLIANT WITH NEC 350-5.
- D. TYPE AC/MC CABLE MAY BE UTILIZED ONLY IF NEC APPROVED AND IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION AND IF INCLUDED IN THE LIMITED APPLICATIONS DEFINED BELOW.
 - 1. PROVIDE FOR NEW 15 THROUGH 20 AMPERE BRANCH CIRCUIT WORK. THIS APPLIES ONLY UNDER ALL OF THE FOLLOWING CIRCUMSTANCES AND CONDITIONS.
 - a. PROVIDE ONLY WHERE CONCEALED (INSTALL WIRING FOR EXPOSED APPLICATIONS IN RACEWAY).
 - b. ROUTE CABLES PERPENDICULAR AND PARALLEL TO THE BUILDING ARCHITECTURAL LINES, SURFACES, AND STRUCTURAL MEMBERS, KEEPING OFFSETS TO A MINIMUM AND FOLLOWING SURFACE CONTOURS WHERE POSSIBLE. MAINTAIN A UNIFORM ELEVATION FOR CABLE RUNS WHEREVER POSSIBLE. SUPPORT AND ANCHOR CABLES AT MAXIMUM 4 FOOT INTERVALS AND WITHIN 12" OF BOX OR OUTLET IN A MANNER THAT PREVENTS SAGGING. INSTALL CABLES IN A MANNER THAT PREVENTS OVERHEATING. FASTEN CABLES DIRECTLY TO THE STRUCTURE USING FACTORY CLAMPS AND CLIPS SPECIFICALLY DESIGNED FOR THE RESPECTIVE CABLE (CADDY OR EQUAL).
 - c. FOR EXPOSED RUNS OF CABLES DOWN WALLS TO SURFACE MOUNTED PANELBOARDS, PROVIDE PARTITION CHASE WALLS (CONSTRUCTED IN A MANNER APPROVED BY ARCHITECT), OR WITHIN APPROPRIATELY SIZED STEEL WIREWAY(S), OR WITHIN A CUSTOM FABRICATED HEAVY-GAGE PAINTED SHEETMETAL CHASE APPROVED IN ADVANCE BY THE ENGINEER. INSTALL IN A MANNER THAT FULLY CONCEALS CABLES, PREVENTS OVERHEATING OF CABLES, AND IS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
 - d. PROVIDE ONLY WHERE INSTALLED FOR NORMAL UTILITY CIRCUITS. INSTALL WIRING FOR EMERGENCY SYSTEM CIRCUITS IN STEEL CONDUIT, NO EXCEPTIONS.

PART 2 - EXECUTION

2.1 INSTALLATION

- A. PROVIDE GROUNDED ("NEUTRAL") CONDUCTOR IN ALL LIGHTING CONTROL DEVICE (SWITCH, DIMMER, OCCUPANCY SENSOR, ETC.) WALL OUTLET BOXES, EVEN IF NOT IMMEDIATELY USED.
- B. CONNECT WIRES #6 AWG AND LARGER TO PANELS AND APPARATUS BY MEANS OF APPROVED LUGS OR CONNECTORS LARGE ENOUGH TO ENCLOSE ALL STRANDS OF THE CONDUCTORS. PROVIDE SOLDERLESS TYPE CONNECTORS.
- C. PROVIDE FACTORY SPLICE KITS (U.L. APPROVED FOR SUBMERSION IN WATER AND DIRECT BURIAL) FOR WIRE SPLICING IN OUTDOOR GRADE, OR SLAB ON GRADE, JUNCTION BOXES.

END OF SECTION

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. THIS SECTION INCLUDES GROUNDING AND BONDING REQUIREMENTS FOR ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS, CIRCUITS, AND EQUIPMENT.
- B. PROVIDE THE FOLLOWING MINIMUM REQUIREMENTS FOR GROUNDING.
 - 1. NFPA: - COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70, "NATIONAL ELECTRICAL CODE" (NEC).
 - 2. UL - COMPLY WITH UL 467, "GROUNDING AND BONDING EQUIPMENT."
 - 3. ANSI/TIA/EIA-607, "COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE GROUNDING AND BONDING PRODUCT MANUFACTURERS OF THE INSTALLER'S CHOICE UNLESS NOTED OTHERWISE.
- B. EXCEPT AS OTHERWISE INDICATED, PROVIDE COPPER ELECTRICAL GROUNDING AND BONDING SYSTEMS AND MATERIALS WITH ASSEMBLY OF MATERIALS INCLUDING BUT NOT LIMITED TO CABLES/WIRES, CONNECTORS, SOLDERLESS LUG TERMINALS, GROUNDING ELECTRODES AND PLATE ELECTRODES, BONDING JUMPER BRAID, AND ADDITIONAL ACCESSORIES NEEDED FOR A COMPLETE INSTALLATION. WHERE MATERIALS OR COMPONENTS ARE NOT INDICATED, PROVIDE PRODUCTS THAT COMPLY WITH NEC, UL, AND IEEE REQUIREMENTS, AND WITH ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED. UTILIZE COMPATIBLE METALLIC MATERIALS THROUGHOUT SYSTEM TO ELIMINATE GALVANIC ACTION.
- C. PROVIDE STEEL GROUNDING ELECTRODES WITH COPPER WELDED EXTERIOR, AND 3/4" DIAMETER BY 10 FEET LENGTH. PROVIDE SHEET COPPER PLATE ELECTRODES THAT ARE 20-GAGE BY 36" BY 36", WITH CABLE ATTACHMENTS (MINIMUM QUANTITY OF 2), SIZED FOR CABLES AS NECESSARY TO FULFILL PROJECT GROUNDING REQUIREMENTS. PROVIDE COPPER GROUND PLATES WHERE GROUND RODS CANNOT BE USED. PROVIDE CONNECTIONS TO GROUND ELECTRODES AT A POINT NOT LESS THAN 1 FOOT BELOW GRADE LEVEL, AND NOT LESS THAN 2 FEET AWAY FROM FOOTINGS AND FOUNDATIONS. WELD GROUNDING CONDUCTORS TO UNDERGROUND GROUNDING ELECTRODES WHERE MECHANICAL CONNECTIONS CAN NOT, OR SHOULD NOT, BE UTILIZED.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. TERMINATE FEEDER AND BRANCH CIRCUIT INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH GROUNDING LUG, BUS, OR BUSHING. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND AND PROTECTIVE DEVICES IN SHORTEST AND STRAIGHTEST PATHS AS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
- B. INSTALL CLAMP-ON CONNECTORS ON CLEAN METAL CONTACT SURFACES, TO ENSURE ELECTRICAL CONDUCTIVITY AND CIRCUIT INTEGRITY.
- C. PROVIDE CORROSION-RESISTANT FINISH TO BURIED METALLIC GROUNDING AND BONDING PRODUCTS.
- D. TERMINATE GROUND ELECTRODE CONDUCTORS WITH TWO-HOLE COMPRESSION LUGS. TERMINATE BONDING JUMPER CONDUCTORS WITH ONE-HOLE COMPRESSION LUGS.
- E. INSTALL BRAIDED TYPE BONDING JUMPERS WITH GROUND CLAMPS ON VALVED WATER PIPING WHERE SUCH PIPING PENETRATES EXTERIOR WALLS AND FIRE WALLS. INSTALL WATER PIPE CONNECTOR FITTINGS SO THAT THEY MAKE CONTACT WITH THE WATER PIPE FOR A MINIMUM DISTANCE OF 1-1/2 INCHES (MEASURED ALONG THE AXIS), AND HAVE A MINIMUM CONTACT SURFACE AREA OF 3 SQUARE INCHES.
- F. PROVIDE AND TEST A COMPLETE EARTHING (EARTH GROUND) SYSTEM FOR THE ENTIRE ELECTRICAL AND TELECOMMUNICATIONS INFRASTRUCTURE.
- G. EQUALIZE (BOND TOGETHER) GROUND POTENTIALS ASSOCIATED WITH THE ELECTRICAL DISTRIBUTION SYSTEM, SEPARATELY DERIVED SYSTEMS, STEEL STRUCTURAL SYSTEMS, AND WATER SERVICES PER NEC AND AS APPLICABLE.
- H. PROVIDE CORROSION-RESISTANT FINISH TO FIELD-CONNECTIONS, TO PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DAMAGED, AND WHERE SUBJECT TO CORROSIVE ACTION.
- I. ROUTE GROUND CONDUCTORS USED FOR BONDING IN PROTECTIVE CONDUIT SLEEVES. PROVIDE BOTH ENDS OF THESE CONDUIT SLEEVES WITH GROUND BUSHINGS, AND BOND GROUND BUSHINGS TO ENCLOSURES AND GROUND TERMINATIONS AT BOTH ENDS USING JUMPERS. SIZE GROUND JUMPER

CONDUCTORS THE SAME AS THE RESPECTIVE GROUND CONDUCTOR THAT IS BEING PROTECTED WITHIN THE RESPECTIVE CONDUIT.

- J. PROVIDE CORROSION-RESISTANT FINISH TO BURIED METALLIC GROUNDING AND BONDING PRODUCTS.
- K. TERMINATE GROUND ELECTRODE CONDUCTORS WITH TWO-HOLE COMPRESSION LUGS. TERMINATE BONDING JUMPER CONDUCTORS WITH ONE-HOLE COMPRESSION LUGS.

END OF SECTION

SECTION 26 05 33 - RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED WORK

- A. INSTALL WIRE IN RACEWAY/CONDUIT (SIZED PER NEC) UNLESS SPECIFICALLY PERMITTED OTHERWISE ELSEWHERE IN DIVISION 26 SECTIONS, OR ON DRAWINGS.
- B. INSTALL WIRING FOR DIFFERENT POWER VOLTAGES IN RACEWAY SYSTEMS SEPARATE FROM EACH OTHER (I.E. 24V SEPARATE FROM 208Y/120V, SEPARATE FROM 480V/277V, ETC.).
- C. INSTALL WIRING, WITH THE EXCEPTION OF VOICE AND DATA, FOR THE VARIOUS ELECTRICAL SYSTEMS IN RACEWAY SYSTEMS, WHICH ARE SEPARATE FROM EACH OTHER (I.E. FIRE ALARM SEPARATE FROM VOICE/DATA SEPARATE FROM ETC.).
- D. DO NOT INSTALL CONDUITS WITHIN SLABS UNLESS SPECIFICALLY NOTED ON DRAWINGS, OR UNLESS PART OF AN UNDERFLOOR DUCT RACEWAY SYSTEM.
- E. DO NOT INSTALL CONDUITS BENEATH SLABS ON GRADE, EXCEPT IF WHERE SPECIFICALLY INDICATED OTHERWISE ON DRAWINGS, OR UNLESS SPECIAL CASE BY CASE PERMISSION IS OBTAINED FROM OWNER'S REPRESENTATIVE IN THE FIELD.
- F. PROVIDE STEEL CONDUIT AND STEEL FITTINGS FOR INDOOR ABOVE-SLAB APPLICATIONS, AS SPECIFIED IN THIS SECTION.
- G. PROVIDE CONDUIT FITTINGS WITH INSULATED THROATS, OR PLASTIC BUSHINGS FOR CONDUITS 2" AND LARGER WHERE INSULATED THROATS ARE NOT READILY AVAILABLE.
- H. PROVIDE MAXIMUM OF 40 PERCENT FILL FOR RACEWAYS, OR A THRESHOLD OF LESS IF REQUIRED BY NEC.

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PROJECT

ESCAPOLOGY

REVISIONS DATES:

ISSUE DATE: 07.30.24

PROJECT #:

DRAWN BY: NYE

CHECKED BY: NYE

ELECTRICAL SPECIFICATIONS
1 OF 3

E-1.3

SPECIFICATIONS - DIVISION 26 - ELECTRICAL (CONTINUED)

SECTION 26 05 33 - RACEWAYS FOR ELECTRICAL SYSTEMS (CONTINUED)

PART 2 - PRODUCTS

2.1 ELECTRICAL METALLIC TUBING (EMT)

- A. PROVIDE GALVANIZED OR ZINC COATED STEEL EMT COMPLIANT WITH FS WW-C-563, ANSI C80.3 AND UL 797.
- B. PROVIDE EMT FOR ABOVE-GRADE CONDUIT, EXCEPT WHERE INDICATED OTHERWISE HEREIN, UNDER OTHER DIVISION 26 SECTIONS, OR ON DRAWINGS.

2.2 STEEL RIGID METAL CONDUIT (RMC)

- A. PROVIDE RIGID STEEL, HEAVY WALL, FULL WEIGHT, ZINC-COATED, THREADED TYPE (GALVANIZED AFTER CUTTING/THREADING) CONDUIT CONFORMING TO ANSI C80.1 AND UL 6. PROVIDE ZINC COATING FUSED TO INSIDE AND OUTSIDE WALLS OF CONDUIT.
- B. PROVIDE GALVANIZED OR ZINC COATED STEEL THREADED FITTINGS.
- C. PROVIDE FOR THE FOLLOWING APPLICATIONS.
 - 1. CONDUIT INSTALLED EMBEDDED IN CONCRETE, OR MASONRY.
 - 2. CONDUITS (GROUNDED) THAT TURN UP FROM BELOW GRADE OR BELOW SLAB, EXCLUDING THE 90 DEGREE FITTINGS THAT CONNECT TO HORIZONTAL CONDUITS BELOW GRADE OR SLAB.
 - 3. OTHER APPLICATIONS AS INDICATED IN PROJECT MANUAL OR ON DRAWINGS, AS REQUIRED BY NEC, OR AS OTHERWISE REQUIRED FOR SPECIAL PHYSICAL PROTECTION (I.E. NEARBY VEHICULAR/EQUIPMENT TRAFFIC, SITE MAINTENANCE EQUIPMENT, ETC.).

2.3 PVC COATED STEEL RIGID METAL CONDUIT (PVC/RMC)

- A. PROVIDE RIGID STEEL, HEAVY WALL, FULL WEIGHT, THREADED TYPE (GALVANIZED AFTER CUTTING/THREADING INSIDE AND OUT) PVC COATED CONDUIT CONFORMING TO UL 6 STANDARD FOR SAFETY, RIGID METAL CONDUIT, AND UL514B STANDARD FOR SAFETY, FITTINGS FOR CONDUIT AND OUTLET BOXES
- B. THE PVC COATED GALVANIZED RIGID CONDUIT MUST BE ETL VERIFIED TO THE INTERTEK ETL SEMKO HIGH TEMPERATURE H20 PVC COATING ADHESION TEST PROCEDURE FOR 200 HOURS. THE PVC COATED GALVANIZED RIGID CONDUIT MUST BEAR THE ETL VERIFIED PVC-001 LABEL TO SIGNIFY COMPLIANCE TO THE ADHESION
- C. PROVIDE FOR APPLICATIONS SPECIFICALLY DESIGNATED ON DRAWINGS.

2.4 FLEXIBLE METAL CONDUIT (FMC)

- A. PROVIDE FLEXIBLE METAL CONDUIT COMPLIANT WITH FS WW-C-566 AND UL 1, AND FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE & OUTSIDE) STRIP STEEL. PROVIDE CONDUIT FITTINGS FOR USE WITH FLEXIBLE METAL CONDUIT OF THREADED HINGED CLAMP TYPE, WITH INSULATED THROATS. PROVIDE STRAIGHT TERMINAL CONNECTORS CONSISTING OF ONE PIECE BODY, FEMALE END WITH CLAMP AND DEEP SLOTTED MACHINE SCREW FOR SECURING CONDUIT, AND MALE THREADED END WITH LOCKNUT. DO NOT USE 45 DEGREE OR 90 DEGREE TERMINAL ANGLE CONNECTORS FOR FLEXIBLE OR WATER-TIGHT FLEXIBLE METAL CONDUIT IN LOCATIONS THAT WILL NOT BE FULLY ACCESSIBLE AFTER COMPLETION OF CONSTRUCTION. PROVIDE FULL SIZE GREEN INSULATED GROUND WIRE FOR ALL APPLICATIONS, REGARDLESS OF LENGTH. PROVIDE FLEXIBLE METAL CONDUIT FOR THE FOLLOWING CONDITIONS AS APPLICABLE.
 - 1. PROVIDE FOR FINAL 72 INCHES FROM OUTLET/JUNCTION BOXES TO RECESSED LUMINAIRES THAT ARE LOCATED IN ACCESSIBLE CEILING SYSTEMS. OPTIONALLY, TYPE AC/MC CABLE MAY BE USED FOR "FIXTURE WHIPS" (REFER TO SECTION 26 05 19).
 - 2. PROVIDE FOR FINAL 24-72 INCHES OF CONNECTION TO INDOOR EQUIPMENT THAT IS SUBJECT TO MOVEMENT OR VIBRATION. LEAVE SUFFICIENT SLACK IN FLEXIBLE CONDUIT TO PERMIT MOVEMENT FROM VIBRATION WITHOUT ADVERSELY AFFECTING CONDUITS AND CONNECTIONS.

PART 3 - EXECUTION

A. GENERAL

- 1. PROVIDE CONDUIT, TUBING AND FITTINGS OF TYPES, GRADES, SIZES AND WEIGHTS (WALL THICKNESSES) FOR APPLICATIONS AS NEEDED TO RENDER ELECTRICAL WORK FULLY OPERATIONAL.
- 2. PROPERLY SUPPORT AND ANCHOR RACEWAYS FOR THEIR ENTIRE LENGTH USING STRUCTURAL MATERIALS. DO NOT SPAN ANY SPACE UNSUPPORTED.

SECTION 26 05 34 - BOXES AND FITTINGS FOR ELECTRICAL SYSTEMS

END OF SECTION

PART 1 - PRODUCTS

1.1 INDOOR BOXES

- A. PROVIDE MINIMUM SIZE OF 4 INCHES SQUARE BY 1-1/2 INCHES DEEP FOR OUTLET BOXES AND JUNCTION BOXES. PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING BOX SUPPORTS, MOUNTING EARS AND BRACKETS, WALLBOARD HANGERS, BOX EXTENSION RINGS, FIXTURE STUDS, CABLE CLAMPS, AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, WHICH ARE COMPATIBLE WITH OUTLET BOXES BEING USED TO FULFILL INSTALLATION REQUIREMENTS FOR INDIVIDUAL WIRING SITUATIONS. PROVIDE WITH STAINLESS STEEL NUTS, BOLTS, SCREWS AND WASHERS.

1.2 DAMP AND WET LOCATION OUTLET BOXES AND COVERS

- A. PROVIDE CORROSION-RESISTANT WEATHERTIGHT/RAINTIGHT OUTLET WIRING BOXES, OF TYPES, SHAPES AND SIZES, INCLUDING DEPTH OF BOXES, WITH THREADED CONDUIT HOLES FOR FASTENING ELECTRICAL CONDUIT, SUITABLY CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKETS AND CORROSION-RESISTANT PLUGS AND FASTENERS. PROVIDE WEATHERTIGHT OUTLETS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR MOISTURE, I.E. IN DAMP OR WET LOCATIONS.
- B. PROVIDE MINIMAL PROFILE ASSEMBLIES THAT ARE RATED NEMA 3R WHILE IN USE AND THAT EMPLOY RECESSED BOX AND COVER DESIGN, EQUAL TO THOMAS & BETTS "RED DOT" SERIES. PROVIDE TRIM COLOR(S) AS DIRECTED BY ARCHITECT.

PART 2 - EXECUTION

2.1 INSTALLATION

- A. INSTALL ELECTRICAL BOXES IN THOSE LOCATIONS THAT ENSURE ACCESSIBILITY TO ENCLOSED ELECTRICAL WIRING.
- B. DO NOT INSTALL ALUMINUM PRODUCTS IN CONCRETE.
- C. CONSIDER THE OUTLET, JUNCTION, AND PULL BOX LOCATIONS INDICATED ON DRAWINGS APPROXIMATE. STUDY THE GENERAL CONSTRUCTION WITH RELATION TO SPACES AND EQUIPMENT SURROUNDING EACH OUTLET, AND NEATLY INSTALL OUTLETS ACCORDINGLY.

END OF SECTION

SECTION 26 05 80 - MECHANICAL EQUIPMENT

PART 1 - GENERAL

1.1 RELATED WORK

- A. PROVIDE ALL NECESSARY ELECTRICALLY RELATED WORK AS REQUIRED TO RENDER ALL MECHANICAL EQUIPMENT (INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT) FULLY OPERATIONAL AND FULLY COMPLIANT WITH NEC. THIS INCLUDES, PRIOR TO ORDERING MATERIALS OR COMMENCING WITH ROUGH-IN, REVIEWING EQUIPMENT SUBMITTAL DATA AND COORDINATING WITH INSTALLING CONTRACTORS TO ENSURE THE CORRECT SIZE, RATING AND QUANTITY OF CONDUCTORS ARE PROVIDED.

PART 2 - EXECUTION

2.1 INSTALLATION

A. GENERAL

- 1. PROVIDE DISCONNECT SWITCH AHEAD OF ALL EQUIPMENT, INCLUDING CONTROLS, UNLESS THE MECHANICAL EQUIPMENT COMES WITH INTEGRAL NEC-COMPLIANT DISCONNECT(S). PROVIDE NEMA 3R ENCLOSURES WHERE INSTALLED OUTDOORS AND WHERE INSTALLED INDOORS IN AREAS SUBJECT TO MOISTURE. GROUND METAL FRAMES OF EQUIPMENT BY CONNECTING FRAMES TO THE GROUNDED METAL RACEWAY OR TO A FULL SIZE GREEN GROUND CONDUCTOR OR BOTH. PROVIDE THE NECESSARY ELECTRICAL CONNECTIONS BETWEEN THE SPECIFIED EQUIPMENT AND THE JUNCTION BOX NEAR EQUIPMENT WITH FLEXIBLE METALLIC CONDUIT (LIQUID-TIGHT OUTDOORS) AND MATCHED CONNECTORS (SEE SECTION 26 05 33). WHERE MECHANICAL EQUIPMENT LUGS CANNOT ACCOMMODATE CONDUCTOR SIZES SHOWN ON DRAWINGS, PROVIDE LISCO CLEAR TAP INSULATED MULTI-TAP CONNECTORS.
- 2. SIZES, ELECTRICAL RATINGS, ETC. OF EQUIPMENT AND WIRING SHOWN ON DRAWINGS ARE BASED ON THE RESPECTIVE EQUIPMENT DESIGN BASE MANUFACTURERS. IF DIFFERENT MANUFACTURER(S) OR MODEL(S) ARE ACTUALLY SUPPLIED, PROVIDE NECESSARY COORDINATION IN FIELD (PRIOR TO ORDERING MATERIALS AND PRIOR TO ROUGH-IN) AND PROVIDE THE NECESSARY SIZE OF RELATED ELECTRICAL EQUIPMENT, WIRING, CONDUIT, ETC.
- 3. PRIOR TO FURNISHING SUBMITTALS AND PRIOR TO ROUGH-IN, DETERMINE EXACT ELECTRICALLY RELATED CHARACTERISTICS, LOADS, VOLTAGES, DISCONNECT AND STARTER REQUIREMENTS, LOCATIONS, MOUNTING HEIGHTS, CONNECTION POINTS, ETC. OF MECHANICAL EQUIPMENT.

B. DISCONNECT SWITCH AND STARTER LOCATIONS

- 1. LOCATIONS OF DISCONNECTS AND STARTERS SHOWN ON DRAWINGS ARE INDICATED FOR SCHEMATIC PURPOSES ONLY. DETERMINE EXACT LOCATIONS IN FIELD SO THAT THEY ARE COMPLIANT WITH NEC ARTICLE 110 REQUIREMENTS FOR PANELBOARDS.
- 2. SEE DETAILS ON DRAWINGS.
 - a. REFER TO FOOD SERVICE DRAWINGS, FOOD SERVICE SPECIFICATIONS AND MANUFACTURER'S SUBMITTALS FOR SPECIFIC INFORMATION. FIELD COORDINATE WORK WITH AFFECTED ENTITIES.
 - b. PROVIDE INTERLOCK WIRING AND CONNECTIONS TO AND FROM THE VARIOUS EQUIPMENT AND CONTROLS.
 - c. PROVIDE CONTROL WIRING FROM THE FAN UNITS TO RESPECTIVE REMOTE DUCT STATS.
 - d. PROVIDE AUXILIARY CONTROL CIRCUIT WIRING FROM THE FACTORY MICRO-SWITCH IN THE HOOD FIRE SUPPRESSION SYSTEMS TO RESPECTIVE DEDICATED FIRE ALARM SYSTEM MONITOR MODULES TO INITIATE ALARM SIGNAL WHEN RESPECTIVE HOOD FIRE PROTECTION SYSTEM IS ACTIVATED.
 - e. PROVIDE AUXILIARY CONTROL CIRCUIT WIRING FROM THE FACTORY MICRO-SWITCH IN THE HOOD FIRE SUPPRESSION SYSTEM TO CONTACTOR CONTROL COIL(S).

END OF SECTION

SECTION 26 05 90 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 RELATED WORK

A. TIME BASED CONTROL - MULTI-PURPOSE TIME CLOCK (365 DAY)

- 1. PROVIDE INTERMATIC #ET90415CR SERIES MULTI-PURPOSE TIME CLOCK (OR EQUAL BY YORK), WHICH IS PROGRAMMABLE 365-DAY/24-HOUR WITH OVERRIDE CONTROLS. PROVIDE FOUR CHANNEL UNIT. PROVIDE REQUIRED EXTERNAL CONTACTORS, RELAYS, ETC. TO RENDER THE CONTROL SYSTEMS FULLY OPERATIONAL. VERIFY ZONE CONTROL REQUIREMENTS IN FIELD PRIOR TO ROUGH-IN. PROVIDE 100-HOUR CARRYOVER.
- 2. REFER TO SECTION 26 27 40 FOR DEFINITION OF LIGHTING CONTACTORS. NOTE THAT ANY GIVEN LIGHTING CONTACTOR DESIGNATION MAY ACTUALLY INCLUDE MULTIPLE CONTACTORS DEPENDING ON HOW MANY CIRCUITS ARE CONTROLLED BY THE RESPECTIVE CONTACTOR DESIGNATION.

END OF SECTION

SECTION 26 09 23 - OCCUPANCY SENSORS

PART 1 - GENERAL

1.1 RELATED WORK

- A. PROVIDE LABOR, MATERIALS, TOOLS, APPLIANCES, CONTROL HARDWARE, SENSOR, WIRE, JUNCTION BOXES AND EQUIPMENT NECESSARY FOR AND INCIDENTAL TO THE DELIVERY, INSTALLATION AND FURNISHING OF COMPLETELY OPERATIONAL OCCUPANCY SENSOR LIGHTING CONTROLS, AS DESCRIBED HEREIN.
- B. PROVIDE PRODUCTS SUPPLIED FROM A SINGLE MANUFACTURER THAT HAS BEEN CONTINUOUSLY INVOLVED IN MANUFACTURING OF OCCUPANCY SENSORS FOR A MINIMUM OF FIVE (5) YEARS.
- C. PROVIDE OCCUPANCY SENSORS FOR ENTIRE PROJECT THAT ARE ALL MADE BY THE SAME MANUFACTURER, REGARDLESS OF WHERE THE MATERIALS ARE SPECIFIED IN DIVISION 26 DOCUMENTS. PROVIDE COMPONENTS THAT ARE ALL MADE BY THE SAME MANUFACTURER IN CASES WHERE OCCUPANCY SENSOR COMPONENTS ARE ALSO CONNECTED TO A BUILDING LIGHTING CONTROL SYSTEM, REGARDLESS OF WHERE THE MATERIALS ARE SPECIFIED IN DIVISION 26 DOCUMENTS.
- D. PROVIDE COMPONENTS THAT ARE U.L. LISTED, OFFER A FIVE (5) YEAR WARRANTY AND MEET STATE AND LOCAL APPLICABLE CODE REQUIREMENTS.
- E. PROVIDE PRODUCTS MANUFACTURED BY AN ISO 9002 CERTIFIED MANUFACTURING FACILITY WITH A DEFECT RATE OF LESS THAN ONE-THIRD OF ONE PERCENT.

PART 2 - SPECIFIC REQUIREMENTS

2.1 ACCEPTABLE MANUFACTURERS

- A. BASIS OF DESIGN MANUFACTURER IS WATTSTOPPER. OTHER ACCEPTABLE MANUFACTURERS ARE HUBBELL, SENSOR SWITCH, LEVITON, LUTRON, LC&D AND COOPER GREENGATE CA IN AS MUCH AS THE SYSTEMS MEET THE INTENT AND FUNCTIONALITY AND SUSTAINABILITY OF THE DESIGN.

2.2 PRODUCTS

- A. CEILING SENSORS
 - 1. PROVIDE STANDARD OF QUALITY EQUAL TO WATTSTOPPER: WT-605, WT-600, WT-1105, WT-1100, WT-2205, WT-2200, WT-2250, WT-2255, WP-605, WP-1105, WP-2255, WP-2205, W-500A, W-1000A, W-2000A, W-2000H, UT-300, UT-305, UT-355, WPIR, HB-100, HB-150, DT-200, DT-205, DT-300, DT-305, DT-355, CX-100, CX-105, CI-200, CI-205, CI-300, CI-305, CI-355, CI-12 OR CI-24 SERIES.
- B. POWER AND AUXILIARY PACKS
 - 1. PROVIDE STANDARD OF QUALITY EQUAL TO WATTSTOPPER: B120E-P, B277E-P, BZ-100, LC-100, C120E-P, C277E-P, S120/277-P, AT-120 OR AT-277 SERIES.
- C. DUAL TECHNOLOGY SENSORS
 - 1. PROVIDE SENSORS THAT ARE EITHER WALL MOUNTED, CORNER MOUNTED OR CEILING MOUNTED IN SUCH A WAY AS TO MINIMIZE COVERAGE IN UNWANTED AREAS. PROVIDE PASSIVE INFRARED AND ULTRASONIC TECHNOLOGIES FOR OCCUPANCY DETECTION.
- D. GENERAL STANDARDS
 - 1. PROVIDE SENSORS CAPABLE OF OPERATING NORMALLY WITH ELECTRONIC BALLASTS, PL LAMP SYSTEMS AND RATED MOTOR LOADS.
 - 2. PROVIDE SENSORS WITH COVERAGE THAT REMAINS CONSTANT AFTER SENSITIVITY CONTROL HAS BEEN SET. AUTOMATIC REDUCTION IN COVERAGE DUE TO THE CYCLING OF AIR CONDITIONER OR HEATING FANS IS NOT PERMITTED.
 - 3. PROVIDE SENSORS WITH READILY ACCESSIBLE, USER ADJUSTABLE SETTINGS FOR TIME DELAY AND SENSITIVITY. LOCATE SETTINGS ON THE SENSOR (NOT THE CONTROL UNIT) AND ACCESS TO LIMIT TAMPERING.
 - 4. PROVIDE BYPASS MANUAL OVERRIDE ON EACH SENSOR TO ACCOMMODATE FAILURES. CONFIGURE SO THAT WHEN BYPASS IS UTILIZED, LIGHTING REMAINS ON CONSTANTLY OR CONTROL DIVERTS TO A WALL SWITCH UNTIL SENSOR IS REPLACED. RECESS THIS CONTROL TO PREVENT TAMPERING.
 - 5. PROVIDE SENSORS WITH AN LED AS A VISUAL MEANS OF INDICATION AT ALL TIMES TO VERIFY THAT MOTION IS BEING DETECTED DURING BOTH TESTING AND NORMAL OPERATION.
 - 6. WHERE SPECIFIED, PROVIDE SENSOR WITH INTERNAL ADDITIONAL ISOLATED RELAY WITH NORMALLY OPEN, NORMALLY CLOSED AND COMMON OUTPUTS FOR USE WITH HVAC CONTROL, DATA LOGGING AND OTHER CONTROL OPTIONS. DO NOT USE SENSORS THAT UTILIZE SEPARATE COMPONENTS OR SPECIALLY

- MODIFIED UNITS TO ACHIEVE THIS FUNCTION.
- 7. PROVIDE SENSORS WITH UL RATED, 94V-0 PLASTIC ENCLOSURES.

END OF SECTION

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED WORK

- A. TYPES OF PANELBOARDS AND ENCLOSURES REQUIRED FOR THE PROJECT INCLUDE THE FOLLOWING.
 - 1. POWER-DISTRIBUTION PANELBOARDS.
 - 2. GENERAL USE PANELBOARDS.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PANELBOARD PRODUCTS OF ONE OF THE FOLLOWING (FOR EACH TYPE AND RATING OF PANELBOARD AND ENCLOSURE):
 - 1. SQUARE D COMPANY.
 - 2. GENERAL ELECTRIC COMPANY.
 - 3. SIEMENS/ITE.
 - 4. EATON.

2.2 GENERAL REQUIREMENTS

- A. EXCEPT AS OTHERWISE INDICATED, PROVIDE PANELBOARDS, ENCLOSURES AND ANCILLARY COMPONENTS, OF TYPES, SIZES, AND RATINGS INDICATED, WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS; WITH THE DESIGN AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION.
- B. PROVIDE PANELBOARDS WITH PROPER NUMBER OF UNIT PANELBOARD DEVICES AS REQUIRED FOR COMPLETE INSTALLATION. WHERE TYPES, SIZES, OR RATINGS ARE NOT INDICATED, COMPLY WITH NEC, UL AND ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED.
- C. PROVIDE PANELBOARDS THAT ARE NEW AND MANUFACTURER'S LATEST STANDARD CATALOG DESIGN.
- D. PROVIDE PANELBOARDS THAT BEAR UL LABELS FOR THEIR SPECIFIC APPLICATIONS.
- E. PROVIDE PANELBOARDS SUITABLE FOR SERVICE VOLTAGE WITH NUMBER OF BRANCH CIRCUITS OF CAPACITY SCHEDULED.
- F. PROVIDE PANELBOARDS, AND SECTIONS THEREOF IF APPLICABLE, WITH MAIN LUGS ONLY OF CAPACITY EQUAL TO, OR GREATER THAN, THE RATING OR SETTING OF THE OVERCURRENT PROTECTIVE DEVICE NEXT BACK ON THE LINE.
- G. PROVIDE PANELBOARD BRANCHES AS SCHEDULED ON THE DRAWINGS.
- H. PROVIDE CIRCUIT BREAKER PANELBOARD BUS ASSEMBLIES WITH DISTRIBUTED (SEQUENCE) TYPE BUSSING THROUGHOUT, SO THAT ANY TWO ADJACENT SINGLE-POLE BREAKERS, OR SPACES, ARE REPLACEABLE BY A TWO-POLE INTERNAL COMMON TRIP BREAKER AND SO THAT ANY THREE ADJACENT SINGLE-POLE BREAKERS, OR SPACES, ARE REPLACEABLE BY A THREE-POLE INTERNAL COMMON TRIP BREAKER. THIS APPLIES FOR BRANCH BREAKERS SIZED 15 AMP THROUGH 70 AMP INCLUSIVE, WITHOUT DISTURBING ANY OTHER BREAKER.
- J. PROVIDE DEAD-FRONT SAFETY TYPE PANELBOARDS AS INDICATED, WITH PANELBOARD SWITCHING AND PROTECTIVE DEVICES IN QUANTITIES, RATINGS, TYPES, AND WITH ARRANGEMENT SHOWN. PROVIDE WITH ANTI-TURN SOLDERLESS PRESSURE TYPE MAIN LUG CONNECTORS APPROVED FOR USE WITH COPPER OR ALUMINUM CONDUCTORS.
- K. PROVIDE FULL-SIZED (100 PERCENT) NEUTRAL BUS. PROVIDE SUITABLE LUGS ON NEUTRAL BUS FOR OUTGOING FEEDERS REQUIRING NEUTRAL CONNECTIONS.
- L. PROVIDE PANELBOARDS WITH BARE UNINSULATED GROUNDING BARS SUITABLE FOR BOLTING TO ENCLOSURES.

2.3 GENERAL USE CIRCUIT BREAKER PANELBOARDS

- A. PROVIDE 208Y/120V THREE-PHASE GENERAL USE PANELBOARDS EQUAL TO SQUARE D NQDD WITH BOLT-ON BRANCH BREAKERS.

2.4 BUSSING

- A. PROVIDE COPPER BUSSING.

2.5 CIRCUIT BREAKER PANELBOARD ENCLOSURES

- A. PROVIDE GALVANIZED SHEET STEEL CABINET TYPE ENCLOSURES, IN SIZES AND NEMA TYPES AS INDICATED, CODE-GAGE, MINIMUM 16-GAGE THICKNESS.
- B. PROVIDE BOXES WITH CODE-COMPLIANT SIDE AND END GUTTERS (MINIMUM 4 INCHES), AND OF CODE GAGE GALVANIZED STEEL. PROVIDE BOXES THAT ARE 20 INCHES WIDE MINIMUM, AND 5-3/4 INCHES DEEP MINIMUM. PROVIDE BOXES WITH MULTIPLE KNOCKOUTS AND WIRING GUTTERS.
- C. PROVIDE PANELBOARD TRIMS THAT ARE FLUSH OR SURFACE AS REQUIRED FOR RESPECTIVE APPLICATION. THAT ARE CONSTRUCTED OF CODE GAUGE STEEL THAT ARE FINISHED WITH RUST INHIBITING PRIME COAT AND THEN FACTORY APPLIED HOT SPRAY LACQUER OR BAKED-ON ENAMEL, AND THAT ARE FACTORY PAINTED MANUFACTURER'S STANDARD LIGHT GRAY. PROVIDE TRIMS COMPLETE WITH CONCEALED HINGES AND CONCEALED TRIM CLAMPS. PROVIDE DOORS WITH FLUSH CHROMIUM PLATED COMBINATION CYLINDER LOCK AND CATCH, AND WITH DIRECTORY SUITABLE FOR CLEAR PLASTIC. PROVIDE LOCKS THAT ARE KEYED ALIKE.
- D. PROVIDE ENCLOSURES THAT ARE FABRICATED BY SAME MANUFACTURER AS PANELBOARDS, WHICH MATE AND MATCH PROPERLY WITH PANELBOARDS TO BE ENCLOSED.

2.6 MOLDED CASE CIRCUIT BREAKERS

- A. PROVIDE FACTORY-ASSEMBLED, MOLDED-CASE CIRCUIT BREAKERS OF FRAME SIZES, CHARACTERISTICS, AND RATINGS INCLUDING RMS SYMMETRICAL INTERRUPTING RATINGS REQUIRED FOR EACH APPLICATION. PROVIDE BREAKERS WITH PERMANENT THERMAL AND INSTANTANEOUS MAGNETIC TRIP, WITH FAULT-CURRENT LIMITING PROTECTION, AND WITH AMPERE RATINGS AS INDICATED.

- B. PROVIDE COORDINATED SERIES-RATED CIRCUIT BREAKERS AS APPLICABLE THROUGHOUT, ACCOMMODATING RESPECTIVE AVAILABLE FAULT CURRENT.
- C. PROVIDE BREAKERS THAT ARE DESIGNED TO BE MOUNTED AND OPERATED IN ANY PHYSICAL POSITION, AND TO BE OPERATED IN A MINIMUM AMBIENT TEMPERATURE OF 40 DEGREES C. PROVIDE BREAKERS WITH MECHANICAL SCREW TYPE REMOVABLE CONNECTOR LUGS, AL/CU RATED.

- D. PROVIDE BRANCH CIRCUIT BREAKERS THAT ARE FULL AMBIENT COMPENSATED THERMAL MAGNETIC MOLDED CASE TYPE, WITH QUICK-MAKE AND QUICK-BREAK ACTION, AND WITH POSITIVE HANDLE TRIP INDICATION (ON BOTH MANUAL AND AUTOMATIC OPERATION). PROVIDE BREAKERS OF THE OVER-CENTER TOGGLE OPERATING TYPE WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC TRIPPING.

- E. PROVIDE BOLT-ON BRANCH BREAKERS. PROVIDE FULL SIZE CIRCUIT BREAKERS. DO NOT PROVIDE "TANDEM" OR "SPLIT" BREAKERS

2.7 FAULT CURRENT RATINGS

- A. PROVIDE ELECTRICAL DISTRIBUTION RELATED EQUIPMENT WITH APPROPRIATELY BRACED BUSSING AND PROPERLY RATED BREAKERS, FUSES, ETC. FOR THE AVAILABLE FAULT CURRENTS.
- B. IN EXISTING BUILDINGS WHERE FAULT CURRENT VALUES ARE NOT INDICATED ON DRAWINGS, COORDINATE WITH EXISTING "UPSTREAM" DISTRIBUTION EQUIPMENT, AND PROVIDE EQUIPMENT AIC RATINGS THAT MEET OR EXCEED SAME.

2.8 SERIES COORDINATION

- A. PROVIDE FACTORY SERIES COORDINATION FOR ALL CIRCUIT BREAKERS (INCLUDING BRANCH BREAKERS), RELATIVE TO UPSTREAM BREAKERS, SO THAT ONLY THE BREAKER CLOSEST IN THE CIRCUIT TO THE LOAD TRIPS UPON AN OVERLOAD OR FAULT CONDITION.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. PROVIDE ENCLOSURES FASTENED FIRMLY TO WALLS AND STRUCTURAL SURFACES, ENSURING THAT THEY ARE PERMANENTLY AND MECHANICALLY ANCHORED.

- B. PROVIDE NEATLY TYPED CIRCUIT DIRECTORY CARD FOR EACH PANELBOARD UPON COMPLETION OF INSTALLATION WORK. INCLUDE THE ACTUAL ROOM NAMES/NUMBERS THAT ARE SELECTED FOR INTERIOR SIGNAGE/DESIGNATION.

- C. SCHEDULING SHOWN ON DRAWINGS IS SHOWN TO INDICATE FEEDER AND BRANCH CIRCUITING REQUIREMENTS. DETERMINE EXACT NUMBERING SEQUENCE OF CIRCUITS IN FIELD AFTER PERFORMING FINAL BALANCING

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. PROVIDE WIRING DEVICES, IN TYPES, CHARACTERISTICS, GRADES, COLORS, AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED WHICH ARE UL LISTED AND WHICH COMPLY WITH NEMA WD 1 AND OTHER APPLICABLE UL AND NEMA STANDARDS. VERIFY COLOR SELECTIONS WITH OWNER'S REPRESENTATIVE.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING.

- SWITCHES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER
- DIMMERS: LUTRON
- RECEPTACLES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER
- WALL PLATES: LEVITON, HUBBELL, BRYANT, PASS & SEYMOUR, COOPER

2.2 WIRING DEVICE COLORS

- A. UNLESS SPECIFICALLY INDICATED OTHERWISE, OR DIRECTED OTHERWISE IN FIELD, PROVIDE WHITE COLOR FOR NORMAL UTILITY WIRING DEVICES.

2.3 SPECIFICATION GRADE RECEPTACLES

- A. STANDARD SPECIFICATION GRADE DUPLEX/SINGLE RECEPTACLES
 - 1. PROVIDE DUPLEX RECEPTACLES EQUAL TO LEVITON #5362 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS. PROVIDE RECEPTACLES EQUAL TO LEVITON #5361 SERIES FOR SIMPLEX (SINGLE) APPLICATIONS.
- B. GROUND-FAULT INTERRUPTER SPECIFICATION GRADE RECEPTACLES
 - 1. PROVIDE GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLES EQUAL TO LEVITON #8898 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS.
 - 2. RECEPTACLES INDICATED AS GFI MAY BE GFI-PROTECTED BY AN UPSTREAM GFI RECEPTACLE ON THE SAME CIRCUIT ONLY IF LOCATED IN THE SAME ROOM. OTHERWISE PROVIDE A SEPARATE GFI RECEPTACLE FOR EACH ONE SHOWN.
- C. ISOLATED GROUND SPECIFICATION GRADE RECEPTACLES
 - 1. PROVIDE DUPLEX ISOLATED GROUND RECEPTACLES EQUAL TO LEVITON #5362-IG. PROVIDE SIMPLEX (SINGLE) ISOLATED GROUND RECEPTACLES EQUAL TO LEVITON #5361-IG. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS. PROVIDE DEDICATED INSULATED ISOLATED GROUND CONDUCTORS (GREEN WITH YELLOW TRACER) FOR EACH APPLICATION.
- D. WEATHER RESISTANT GFCI RECEPTACLES
 - 1. PROVIDE DUPLEX WEATHER RESISTANT RECEPTACLES EQUAL TO LEVITON # W7899 SERIES. FOR RECEPTACLE CIRCUITS PROTECTED WITH 15A BREAKERS, PROVIDE NEMA 5-15R EQUIVALENTS.

2.4 WIRING DEVICE ACCESSORIES

A. WALL PLATES

- 1. PROVIDE SINGLE AND COMBINATION, OF TYPES, SIZES, AND WITH GANGING AND CUTOUTS AS REQUIRED TO ACCOMMODATE EACH APPLICATION. PROVIDE PLATES WHICH MATE AND MATCH WITH WIRING DEVICES TO WHICH ATTACHED. PROVIDE METAL SCREWS FOR SECURING PLATES TO DEVICES WITH SCREW HEADS COLORED TO MATCH FINISH OF PLATES. PROVIDE WALL PLATE COLOR TO MATCH WIRING DEVICES UNLESS SPECIFICALLY INDICATED OTHERWISE.
- 2. PROVIDE STANDARD SIZE WALL PLATES. DO NOT PROVIDE "MIDWAY", "OVERSIZED" ("JUMBO") OR "EXTRA DEEP" WALL PLATES.
- 3. PROVIDE GALVANIZED STEEL WALL PLATES IN UNFINISHED EXPOSED-CONDUIT AREAS.
- 4. PROVIDE COMMERCIAL GRADE, SATIN FINISH STAINLESS STEEL WALL PLATES IN FINISHED AREAS, WITH BEVELED EDGES, EQUAL TO LEVITON TYPE 302 SERIES.
- 5. PROVIDE COMMERCIAL SPECIFICATION GRADE THERMOPLASTIC WALL PLATES IN FINISHED AREAS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. PROVIDE GROUNDED ("NEUTRAL") CONDUCTOR IN ALL LIGHTING CONTROL DEVICE (SWITCH, DIMMER, OCCUPANCY SENSOR, ETC.) WALL OUTLET BOXES, EVEN IF NOT IMMEDIATELY USED.
- B. INSTALL RECEPTACLES SO THAT THE GROUND PIN IS ORIENTED IN A CONSISTENT MANNER THROUGHOUT THE FACILITY, SO THAT THE ORIENTATION IS COMPLIANT WITH ALL PREVAILING CODES AND REGULATIONS, AND SO THAT THE ORIENTATION IS ACCEPTABLE TO THE ELECTRICAL INSPECTOR.

END OF SECTION

SPECIFICATIONS - DIVISION 26 - ELECTRICAL (CONTINUED)

SECTION 26 27 40 - DISCONNECTS, STARTERS, CONTACTORS

PART 1 - GENERAL

1.1 RELATED WORK

- A. PROVIDE NEMA STANDARD EQUIPMENT, INCLUDING THOSE INCORPORATED AS AN INTEGRAL PART OF A FACTORYSHOP PRE-FABRICATED PIECE OF EQUIPMENT. DO NOT USE IEC STANDARDS FOR EQUIPMENT.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE EQUIPMENT OF ONE OF THE FOLLOWING (FOR EACH TYPE AND RATING):
 1. ALLEN-BRADLEY CO.
 2. GENERAL ELECTRIC CO.
 3. SIEMANSITE
 4. SQUARE D CO.
 5. EATON

2.2 MATERIALS

- A. DISCONNECT SWITCHES
 1. PROVIDE DISCONNECT SWITCHES EQUAL TO SQUARE D TYPE HD, HEAVY DUTY, SAFETY TYPE, QUICK MAKE AND QUICK BREAK AND EXTERNALLY OPERATED.
 2. PROVIDE FUSIBLE DISCONNECTS UNLESS NOTED OTHERWISE ON DRAWINGS OR DIRECTED OTHERWISE IN FIELD.
 3. PROVIDE DISCONNECT SWITCHES BRACED FOR 200,000 A.I.C.
 4. PROVIDE UNITS WITH FUSES OF CLASSES AND CURRENT RATINGS INDICATED, AND UL LISTED FOR USE AS SERVICE EQUIPMENT UNDER UL STANDARD 98 OR 865. SEE SECTION "FUSES" FOR FUSE SPECIFICATIONS. WHERE CURRENT LIMITING FUSES ARE INDICATED, PROVIDE SWITCHES WITH NON-INTERCHANGEABLE FEATURE SUITABLE ONLY FOR CURRENT LIMITING TYPE FUSES.
 5. INSTALL DISCONNECT SWITCHES WITHIN SIGHT OF CONTROLLER POSITION UNLESS OTHERWISE INDICATED.
- B. CONTACTORS
 1. PROVIDE CONTACTORS EQUIPPED WITH EXTERNAL PILOT LIGHTS IN COVER, AND EXTERNAL HOA SELECTOR SWITCHES IN COVER.
 2. WIRE CONTACTORS FOR LIGHTING APPLICATIONS SO THAT THE "AUTO" POSITION IS THE NORMAL ACTIVATED CONDITION (I.E. PHOTOCELL CONTROLLED, PHOTOCELLTIME-CLOCK CONTROLLED, REMOTE SWITCH CONTROLLED, BAS CONTROLLED, ETC.); SO THAT THE "OFF" POSITION IS MANUAL OVERRIDE TO TURN LIGHTING OFF; AND SO THAT THE "HAND" POSITION IS MANUAL OVERRIDE TO TURN LIGHTING ON.
 3. PROVIDE CONTACTORS WITH FIELD CONVERTIBLE N.O.N.C. CONTACTS AND DESCRIPTIVE NAMEPLATES.
 4. PROVIDE CONTACTORS EQUAL TO SQUARE D CLASS 8903 (OR ALLEN-BRADLEY BUL. 500L-BA*94 SERIES) FOR TUNGSTEN LIGHTING LOADS, BALLAST LIGHTING LOADS, AND SMALL RESISTANCE HEATING LOADS. PROVIDE CONTACTORS THAT ARE ELECTRICALLY OPERATED AND ELECTRICALLY HELD (EOEH). PROVIDE CONTACTORS IN FACTORY NEMA 1 ENCLOSURES, WITH 120V COILS (UNLESS INDICATED OTHERWISE ELSEWHERE OR OTHERWISE REQUIRED TO RENDER CONTROLS FULLY OPERABLE).
 5. PROVIDE "DRY" CONTACTS RATED AT 30A, MINIMUM 250V (600V IF REQUIRED BY APPLICATION). PROVIDE NUMBER OF POLES (MINIMUM OF THREE POLES) AND NUMBER OF CONTACTORS AS REQUIRED FOR EACH APPLICATION. FIELD VERIFY COIL VOLTAGE RATINGS.
 6. PROVIDE MAGNETIC (MECHANICALLY LATCHED) CONTACTORS EQUAL TO SQUARE D CLASS 8502 (OR ALLEN-BRADLEY BUL. 500-BA*930 SERIES) FOR HEATING LOADS, CAPACITOR LOADS, TRANSFORMER LOADS, MOTOR LOADS, AND SIMILAR LOADS. PROVIDE CONTACTORS WITH FACTORY NEMA ENCLOSURES, WITH 120V COILS (UNLESS INDICATED OTHERWISE ELSEWHERE OR OTHERWISE REQUIRED TO RENDER CONTROLS FULLY OPERABLE). PROVIDE STARTERS WITH HOLDING CIRCUIT CONTACTS (PROVIDE RELATED INTERLOCK WIRING). PROVIDE MAGNETIC CONTACTORS THAT ARE NEMA SIZE 1 MINIMUM. PROVIDE "DRY" CONTACTS RATED AT 30A, MINIMUM 250V (600V IF REQUIRED BY APPLICATION). PROVIDE NUMBER OF POLES (MINIMUM OF THREE POLES) AND NUMBER OF CONTACTORS AS REQUIRED FOR EACH APPLICATION. FIELD VERIFY COIL VOLTAGE RATINGS.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. PROVIDE UNITS WITH HORSEPOWER RATINGS SUITABLE TO THE LOADS. SIZE UNITS ACCORDING TO LOAD BEING SERVED OR AS NOTED ON DRAWINGS, WHICHEVER REQUIREMENT IS LARGER. INSTALL OVERLOADS AND FUSES AS NECESSARY TO FULFILL REQUIREMENTS OF EACH APPLICATION.
- B. FURNISH ADDITIONAL FUSEOVERLOADS AMOUNTING TO 10 PERCENT OF FUSES PROVIDED, BUT NOT LESS THAN ONE SET OF 3 OF EACH KIND, FOR REQUIRED TYPES AND RATINGS.
- C. PROVIDE NEMA 3R ENCLOSURES FOR UNITS THAT ARE INSTALLED OUTDOORS, IN MOIST AREAS, AND IN OTHER ATMOSPHERES SUBJECT TO SIMILAR MOISTURE OR EXPOSURE.
- D. INSPECT OPERATING MECHANISMS FOR MALFUNCTIONING AND, WHERE NECESSARY, ADJUST UNITS FOR FREE MECHANICAL MOVEMENT. SUBSEQUENT TO COMPLETION OF INSTALLATION OF EQUIPMENT, ENERGIZE CIRCUITS AND DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. BEGIN BY DEMONSTRATING SWITCH OPERATION THROUGH SIX OPENINGCLOSING CYCLES WITH CIRCUIT UNLOADED. OPEN EACH SWITCH ENCLOSURE AND INSPECT INTERIORS, INSPECT MECHANICAL AND ELECTRICAL CONNECTIONS, INSPECT FUSEOVERLOAD INSTALLATIONS, AND VERIFY ACCURACY OF TYPE AND RATING OF FUSEOVERLOADS INSTALLED. CORRECT DEFICIENCIES THEN RETEST TO DEMONSTRATE COMPLIANCE. REMOVE AND REPLACE DEFECTIVE UNITS WITH NEW UNITS AND RETEST.

END OF SECTION

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ELECTRICAL SPECIFICATIONS
3 OF 3

E-1.5

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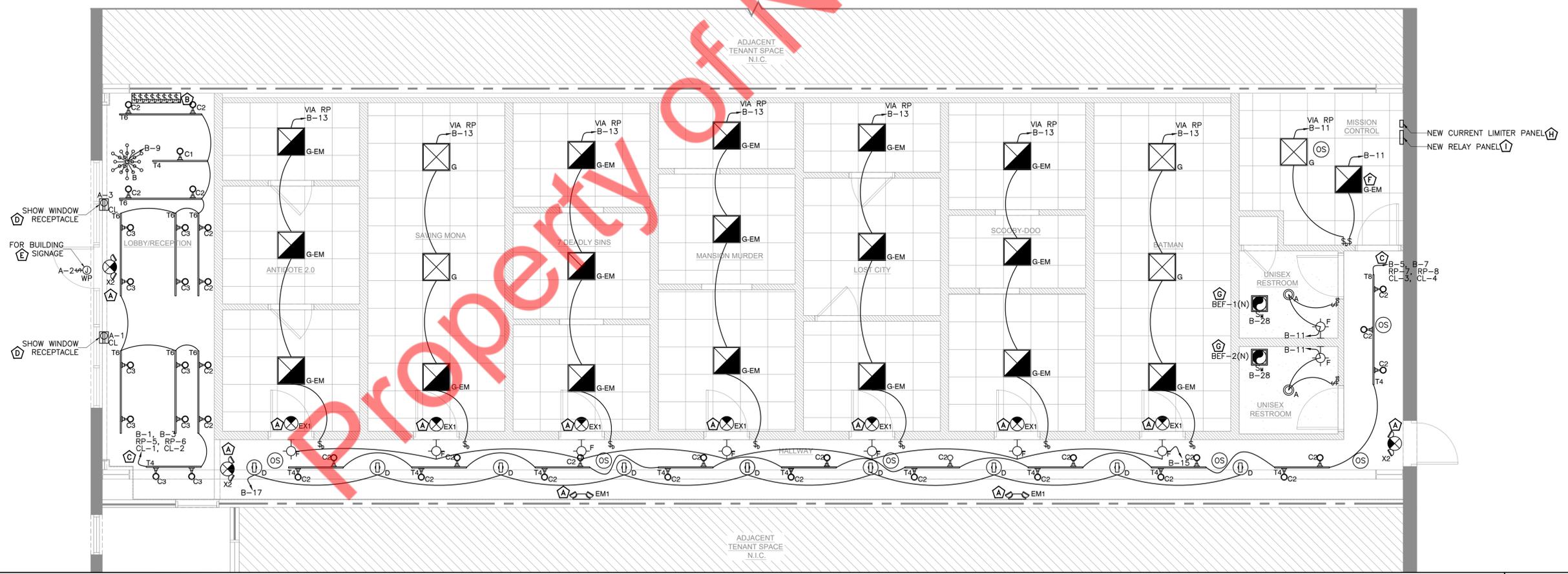
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LIGHTING PLAN

- ELECTRICAL LIGHTING PLAN GENERAL NOTES:**
1. THE EMERGENCY LIGHTING SYSTEM HAS BEEN DESIGNED TO PROVIDE AN INITIAL FLOOR ILLUMINANCE LEVEL OF 1 FC AVERAGE, 0.1 FC MINIMUM AND NO MORE THAN A 40:1 MAX/MIN RATIO ALONG THE EMERGENCY EGRESS PATHS. WHERE APPLICABLE, ADJUST AIMING OF EMERGENCY LIGHTS AS REQUIRED TO PROVIDE PROPER ILLUMINATION AT FLOOR AVOIDING OBSTACLES AND SHADOWS AFTER STORE SET-UP IS COMPLETE.
 2. WALL MOUNTED EXITS SIGNS SHALL BE MOUNTED 12" ABOVE DOOR FRAME AND CENTERED ABOVE DOOR OPENING, UNLESS NOTED OTHERWISE. CEILING/PENDANT MOUNTED EXIT SIGNS SHALL BE SUSPENDED TO 12'-0" AFF IN CUSTOMER AREAS OPEN TO STRUCTURE, AT BOTTOM OF BAR JOISTS IN BACKROOM AREAS AND ON FINISHED CEILING WHERE APPLICABLE, UNLESS NOTED OTHERWISE. EXIT SIGNS SHALL BE READILY VISIBLE FROM DIRECTION OF EGRESS TRAVEL. COORDINATE FINAL EXIT SIGN LOCATIONS WITH AHJ AND TENANT.
 3. PROVIDE LABEL AT EACH MANUAL LIGHT SWITCH INDICATING THE LIGHT FIXTURE(S) THAT THE SWITCH CONTROLS AND THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. A SINGLE LIGHT SWITCH FOR A SMALL ROOM DOES NOT NEED TO INDICATE THE SPACE CONTROLLED SINCE IT IS INTUITIVELY OBVIOUS. COORDINATE LABEL REQUIREMENTS WITH THE TENANT PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
 4. ALL REMOTELY LOCATED LIGHT FIXTURE POWER SUPPLIES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITH PROPER VENTILATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONCEAL DEVICES AND RELATED WIRING FROM CUSTOMER/PUBLIC VIEW. PROVIDE ENCLOSURE IF REQUIRED. COORDINATE LOCATION AND ENCLOSURE TYPE WITH ARCHITECT AND TENANT PRIOR TO INSTALLATION.

- ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:**
- (A) CONNECT ALL EMERGENCY EGRESS FIXTURE AND EXIT SIGNS TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS AS PER STATE AND LOCAL CODES.
 - (B) COORDINATE EXACT LOCATION OF THE SWITCH BANK WITH OWNER/ARCHITECT.
 - (C) ALTERNATE CIRCUIT FOR EVERY OTHER TRACK LIGHTING FIXTURE IN AN EVEN PATTERN FOR LIGHT LEVEL REDUCTION PURPOSES.
 - (D) PROVIDE SHOW WINDOW RECEPTACLE AS PER N.E.C. 2020 ARTICLE 210.62. VERIFY EXACT LOCATION WITH ARCHITECT.
 - (E) ELECTRICAL CONTRACTOR SHALL COORDINATE WITH EXTERIOR SIGNAGE VENDOR FOR EXACT LOCATION, POWER REQUIREMENTS, CONTROL AND MAKE PROVISIONS ACCORDINGLY. BASE BID ACCORDINGLY.
 - (F) LIGHTING NEAR ELECTRICAL PANELS SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).
 - (G) INTERCONNECT EXHAUST FANS BEF-1(N), BEF-2(N) WITH TIMER FOR CONTINUOUS OPERATION. COORDINATE WITH MECHANICAL DRAWINGS.
 - (H) NEW RELAY PANEL "RP". E.C SHALL COORDINATE EXACT LOCATION WITH VENDOR/ ARCHITECT/OWNER. BASE BID ACCORDINGLY.
 - (I) NEW CURRENT LIMITING PANEL "CL". E.C SHALL COORDINATE EXACT LOCATION WITH VENDOR/ ARCHITECT/OWNER. BASE BID ACCORDINGLY.

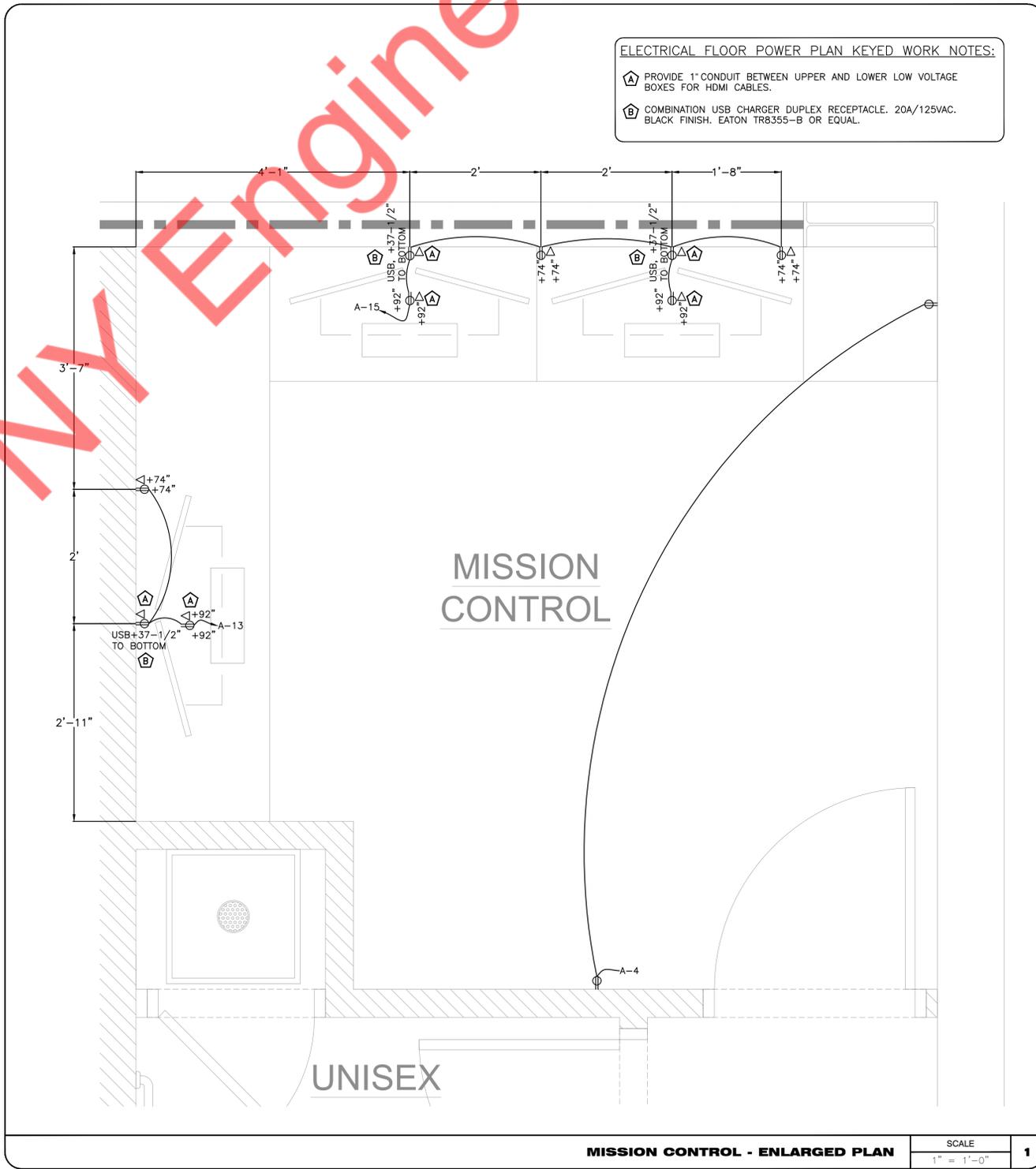


LIGHTING PLAN SCALE 1/4" = 1'-0" 1

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ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:

- Ⓐ PROVIDE 1" CONDUIT BETWEEN UPPER AND LOWER LOW VOLTAGE BOXES FOR HDMI CABLES.
- Ⓑ COMBINATION USB CHARGER DUPLEX RECEPTACLE. 20A/125VAC. BLACK FINISH. EATON TR6355-B OR EQUAL.



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MISSION CONTROL - ENLARGED PLAN

E-3.1

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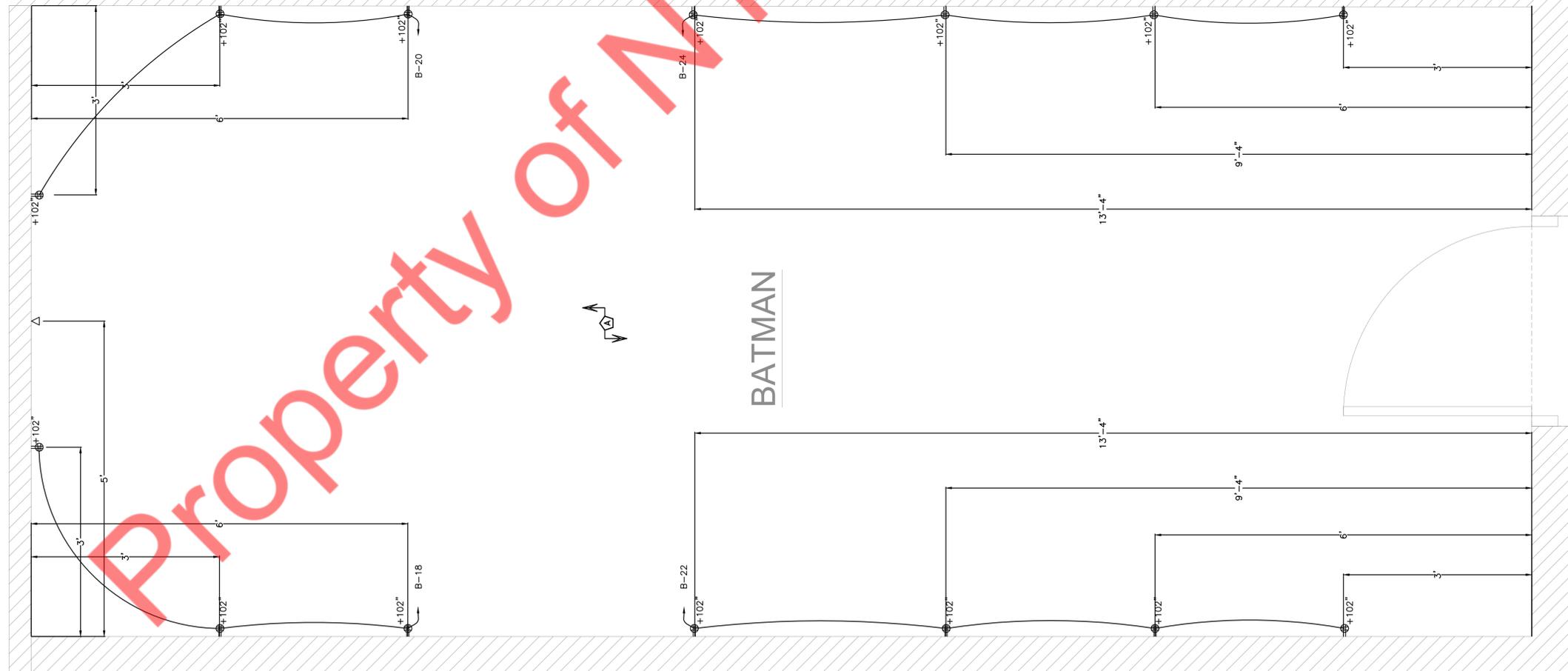
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BAT MAN - ENLARGED PLAN

E-3.2

ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:

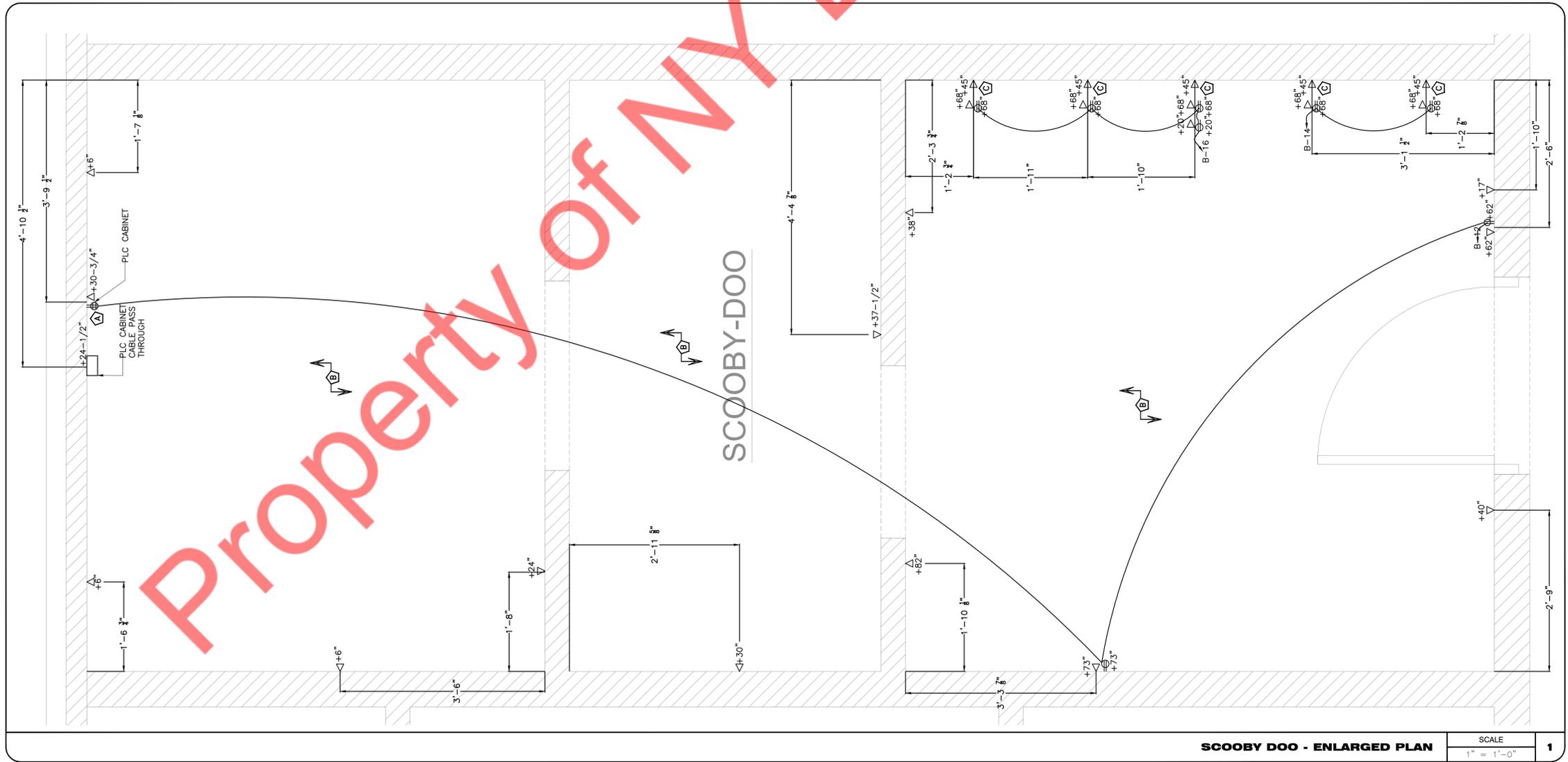
⚠ ALL RECEPTACLE AND LOW VOLTAGE COVERS MOUNTED ABOVE 8'-0" AFF IN THIS ROOM SHALL BE BLACK.



BAT MAN - ENLARGED PLAN

SCALE
 1" = 1'-0"

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- ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:**
- A** INSTALL DOUBLE DUPLEX RECEPTACLE AND LOW VOLTAGE BACKBOX NEXT TO EACH OTHER FOR PLC CABINET. PROVIDE A UL LISTED FIRE RELAY TO INTERFACE DOOR CONTROLS WITH FIRE ALARM PANEL. DOORS TO BE UNLOCKED TO ALLOW FREE EGRESS UPON FIRE ALARM ACTIVATION OR LOSS OF POWER. CABINETS TO BE FURNISHED BY TENANT, INSTALLED BY CONTRACTOR. CONTRACTOR TO INSTALL TENANT FURNISHED, WALL MOUNTED GARAGE BOX IN BLACK FINISH TO CONCEAL PLC AND DMX CONTROLLERS.
 - B** ALL RECEPTACLE AND LOW VOLTAGE COVERS MOUNTED ABOVE 8'-0" AFF IN THIS ROOM SHALL BE BLACK.
 - C** MOUNT DATA OUTLET HORIZONTALLY.

SCOOPY DOO - ENLARGED PLAN SCALE 1" = 1'-0" 1

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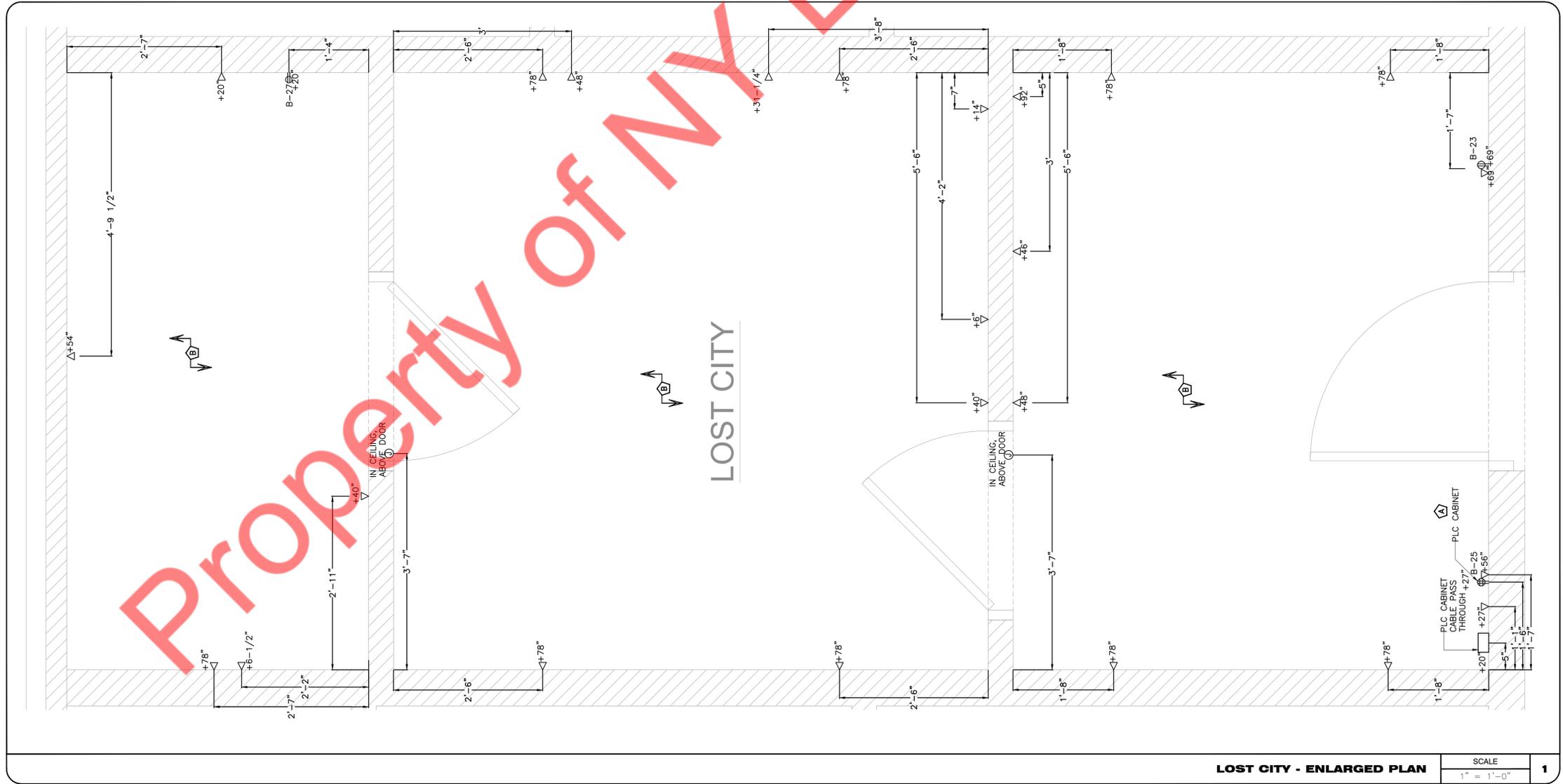
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SCOOPY DOO - ENLARGED PLAN

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ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:

Ⓐ INSTALL DOUBLE DUPLEX RECEPTACLE AND LOW VOLTAGE BACKBOX NEXT TO EACH OTHER FOR PLC CABINET. PROVIDE A UL LISTED FIRE RELAY TO INTERFACE DOOR CONTROLS WITH FIRE ALARM PANEL. DOORS TO BE UNLOCKED TO ALLOW FREE EGRESS UPON FIRE ALARM ACTIVATION OR LOSS OF POWER. CABINETS TO BE FURNISHED BY TENANT, INSTALLED BY CONTRACTOR. CONTRACTOR TO INSTALL TENANT FURNISHED, WALL MOUNTED GARAGE BOX IN BLACK FINISH TO CONCEAL PLC AND DMX CONTROLLERS.

Ⓑ ALL RECEPTACLE AND LOW VOLTAGE COVERS MOUNTED ABOVE 8'-0" AFF IN THIS ROOM SHALL BE BLACK.

LOST CITY - ENLARGED PLAN SCALE 1" = 1'-0" 1

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LOST CITY - ENLARGED PLAN

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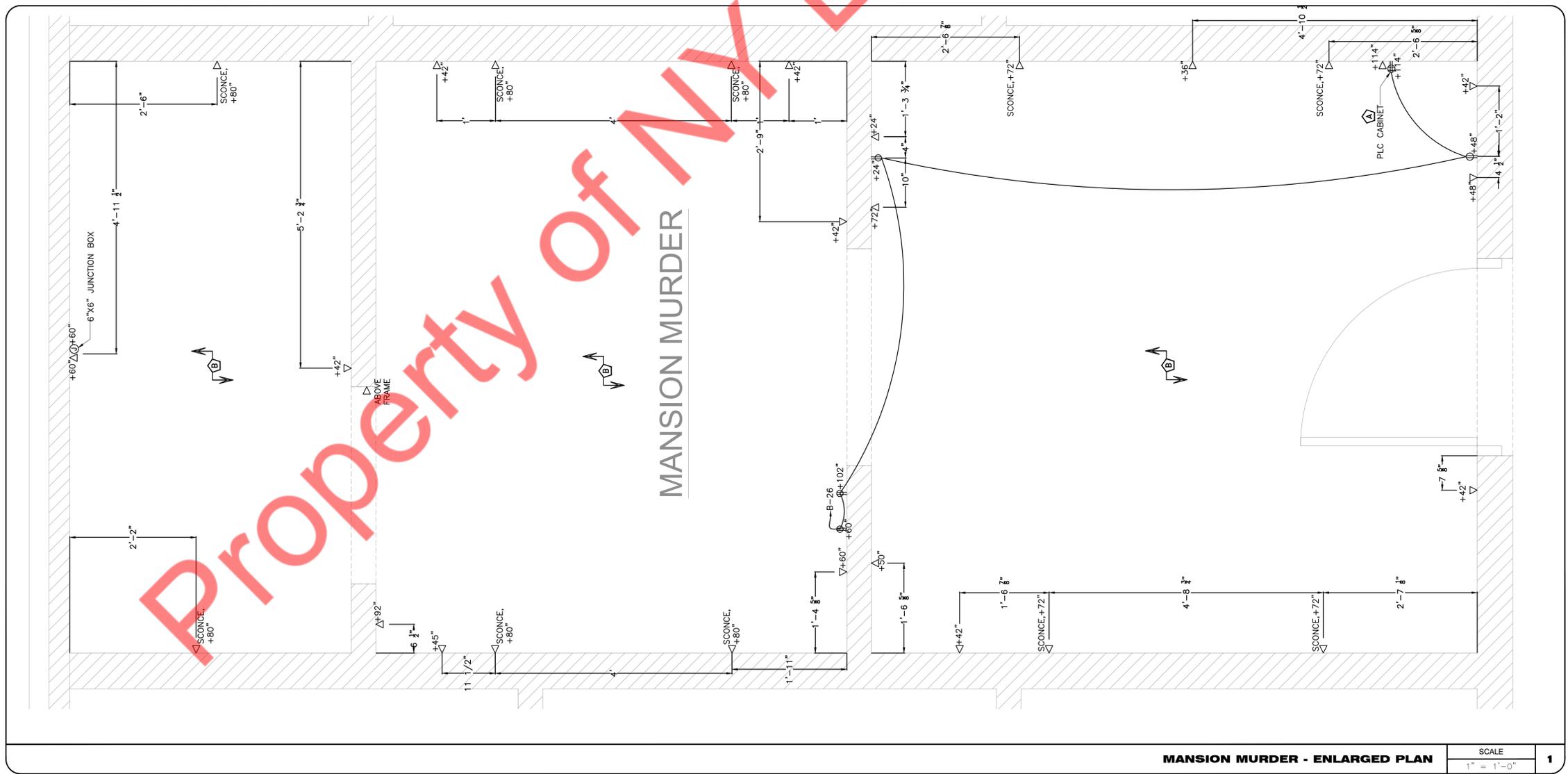
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MANSION MURDER - ENLARGED PLAN

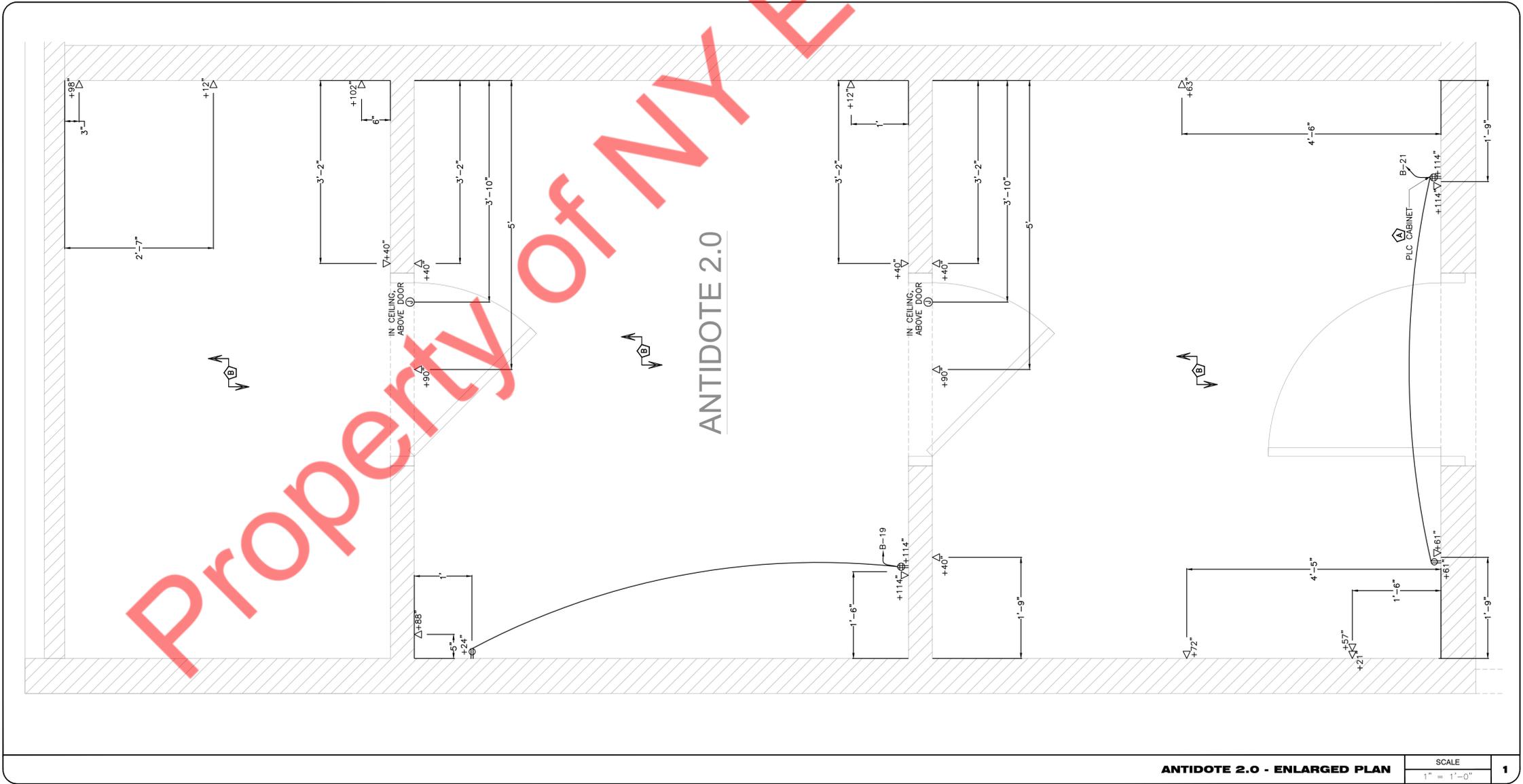
E-3.5

ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:

- A INSTALL DOUBLE DUPLEX RECEPTACLE AND LOW VOLTAGE BACKBOX NEXT TO EACH OTHER FOR PLC CABINET. PROVIDE A UL LISTED FIRE RELAY TO INTERFACE DOOR CONTROLS WITH FIRE ALARM PANEL. DOORS TO BE UNLOCKED TO ALLOW FREE EGRESS UPON FIRE ALARM ACTIVATION OR LOSS OF POWER. CABINETS TO BE FURNISHED BY TENANT, INSTALLED BY CONTRACTOR. CONTRACTOR TO INSTALL TENANT FURNISHED, WALL MOUNTED GARAGE BOX IN BLACK FINISH TO CONCEAL PLC AND DMX CONTROLLERS.
- B ALL RECEPTACLE AND LOW VOLTAGE COVERS MOUNTED ABOVE 8'-0" AFF IN THIS ROOM SHALL BE BLACK.



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- ELECTRICAL FLOOR POWER PLAN KEYED WORK NOTES:**
- A** INSTALL DOUBLE DUPLEX RECEPTACLE AND LOW VOLTAGE BACKBOX NEXT TO EACH OTHER FOR PLC CABINET. PROVIDE A UL LISTED FIRE RELY TO INTERFACE DOOR CONTROLS WITH FIRE ALARM PANEL. DOORS TO BE UNLOCKED TO ALLOW FREE EGRESS UPON FIRE ALARM ACTIVATION OR LOSS OF POWER. CABINETS TO BE FURNISHED BY TENANT, INSTALLED BY CONTRACTOR. CONTRACTOR TO INSTALL TENANT FURNISHED, WALL MOUNTED GARAGE BOX IN BLACK FINISH TO CONCEAL PLC AND DMX CONTROLLERS.
 - B** ALL RECEPTACLE AND LOW VOLTAGE COVERS MOUNTED ABOVE 8'-0" AFF IN THIS ROOM SHALL BE BLACK.

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ANTIDOTE 2.0 - ENLARGED PLAN

E-3.7

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ELECTRICAL ROOF POWER PLAN KEYED WORK NOTES:
▲ EXISTING MECHANICAL EQUIPMENT ALONG WITH ITS ELECTRICAL FIXTURE TO BE REMAIN AND RE-CIRCUITED TO NEW PANEL "A" AS SHOWN IN PLAN. E.C. SHALL VERIFY OPERABLE CONDITION OF ELECTRICAL ELECTRICAL FIXTURE ON FIELD. REPLACE IF INOPERABLE. BASE BID ACCORDINGLY. E.C. SHALL COORDINATE WITH LANDLORD FOR THE EXACT LOCATION OF RTU AND ITS ELECTRICAL CONNECTIONS ON FIELD.



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ROOF POWER PLAN

E-4

EXISTING CONTIDITONS NOTES

STOP AND READ

THE CONTRACTOR AND SUB-CONTRACTORS SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED. THIS SHALL HOLD TRUE FOR FIRST GENERATION AND 2ND GENERATION SPACES. WHEN DEMOLITION IS REQUIRED, THAT WILL BE PERMITTED TO EXPOSE CONDITIONS. THESE VERIFICATIONS SHALL INCLUDE BUT NOT LIMITED TO: DIMENSIONS BOTH HORIZONTALLY AND VERTICAL, ELECTRICAL SERVICE /PANELS LOCATION AND VOLTS/PHASE, LOCATION/ITY OF ROOF MOUNTED HVAC EQUIPMENT, CONFIRM THAT INTERIOR HVAC HUNG UNITS HAVE PROPER SUPPORT CONNECTIONS FOR EXISTING STRUCTURE, FIRE SPRINKLER MAIN RUNS, TOILET ROOM DIMENSIONS, DOOR SWING FOR DOORS TO REMAIN AND ETC. IF NOT VERIFIED AND DISCOVERED AT A LATER TIME, THE CONTRACTOR SHALL REIMBURSE THE ARCHITECT FOR THE REDESIGN FEE. THIS DOES NOT INCLUDE HIDDEN WORK I.E. PITCH OF SANITARY LINES, ACTUAL CONDITIONS OF EXISTING HVAC EQUIPMENT, STRUCTURAL COLUMNS/BEARING WALLS AND ETC.

SCOPE OF WORK

PROVIDE ALL PLUMBING FOR NEW ESCAPE ROOMS INCLUDING ALL WATER, SANITARY AND VENT LINES AND CONNECT TO EXISTING UTILITIES. PROVIDE ONE NEW ELECTRIC STORAGE WATER HEATER.

COORDINATE WITH GC AND MECH CONTRACTOR FOR ANY REQUIRED CONDENSING WATER LINES.

PLUMBING NOTES

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
- PLUMBING CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THIS SET. CONTRACTOR TO VERIFY THAT ALL EQUIPMENT SHOWN AS EXISTING MATCHES THE DESCRIPTIONS AND SPECIFICATIONS SHOWN ON DRAWINGS AND SCHEDULES. IF DIFFERENT NOTIFY ARCHITECT/ENGINEER BEFORE BIDDING, ORDERING OR PRECEDING WITH WORK.
- ALL EQUIPMENT WHICH IS TO REMAIN MUST BE REFURBISHED TO A LIKE NEW CONDITION.
- PLUMBING CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS.
- ALL MATERIALS SHALL BE NEW.
- ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE. ALL EXCAVATION AND BACKFILL AS REQUIRED FOR THIS PHASE OF CONSTRUCTION SHALL BE A PART OF THIS CONTRACT.
- REQUIRED INSURANCE SHALL BE PROVIDED BY THE PLUMBING CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
- PLUMBING CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, INSPECTION AND TESTS. PLUMBING CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT. PLUMBING CONTRACTOR MUST BE PRESENT FOR ALL INSPECTIONS OF HIS WORK BY REGULATORY AUTHORITIES.
- DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE FOR THE EXACT LOCATION OF FIXTURES, PIPING, EQUIPMENT, ETC.
- ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION. REPORT ANY DISCREPANCY TO ENGINEER/ARCHITECT PRIOR TO BEGINNING CONSTRUCTION.
- VERIFY LOCATION, SIZE, DIRECTION OF FLOW AND INVERTS OF ALL EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION. ADVISE ENGINEER OF ANY DISCREPANCIES.
- EXPOSED WATER PIPING SHALL BE TYPE "L" COPPER FOR 2" AND UNDER. WATER PIPING IN WALLS AND UNDERGROUND MAY BE "PEX" TYPE PIPING THAT MEETS ANS/ISF STANDARD 61.
- SOIL, WASTE, VENT AND RAINWATER PIPING SHALL BE PVC BUT MAY NOT RUN THRU RATED ASSEMBLIES OR IN PLENUMS.
- ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND APPROPRIATELY MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
- FURNISH AND INSTALL APPROVED AIR CHAMBERS AT EACH PLUMBING FIXTURE GROUP AS PER CODE AND WITH GOOD ENGINEERING PRACTICE.
- DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS; EXCEPT AT WATER HEATER AS PER CODE.
- ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD.
- ALL FIRE RATED FLOOR AND WALL PENETRATIONS SHALL BE PROPERLY PROTECTED FROM FIRE, SMOKE AND WATER PENETRATION BY FILLING VOIDS BETWEEN PIPE AND WALL/FLOOR SLEEVES WITH FIRE RATED FOAM TO ACHIEVE THE SAME RATING AS WALLS OR FLOORS AS PART OF THE PLUMBER'S WORK.
- PLUMBING CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF CERTIFICATE OF OCCUPANCY. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE WITHIN 72 HOURS OF NOTIFICATION AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED. PROVIDE COPY TO LL.
- STUDOR MINIMAXI AIR ADMITTANCE VALVES MAY NOT BE USED AS AN ALTERNATE TO VENT PIPING THRU ROOF.
- PROVIDE CHROME PLATED COMBINATION COVER PLATE AND CLEAN OUT PLUG OR ACCESS PANEL FOR ALL CLEANOUTS.
- NO COMBUSTIBLE MATERIAL TO BE USED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUMS.
- NO WATER, SANITARY OR DRAINAGE PIPING PERMITTED IN ELECTRICAL OR ELEVATOR EQUIPMENT ROOMS.
- WATER PIPING INSULATION SHALL BE 1" THICK ARMAFLEX INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR ALL HOT WATER PIPING. WHERE DOMESTIC WATER TEMPERATURES CAN CAUSE SWEATING, ALL COLD WATER PIPING SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX INSULATION.
- CONDENSATE DRAIN LINES TO BE RUN UNDER SLAB IN PVC SCH40 PIPE AND STUBBED OUT OF WALL TO UNIT. TIE-IN OF A/C TO BE BY OTHERS. PVC PIPING WITH 1/2" THICK ARMAFLEX INSULATION MAY BE USED IN LOCATIONS WHERE ALLOWED BY LOCAL CODES. SEE PLUMBING DRAWINGS FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40 FOR SIZE AND LOCATION OF PIPING. PVC WILL BE MIN. SCHEDULE 40.
- PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
- NO JOINTS UNDERGROUND FOR COPPER.
- PLUMBING FIXTURES SHALL COMPLY WITH WISCONSIN PLUMBING CODE.
- WATER HAMMER ARRESTORS AS PER WISCONSIN PLUMBING CODE.
- PLUMBING CONTRACTOR SHALL REVIEW ALL BID DOCUMENTATION.
- PLUMBING CONTRACTOR SHALL REVIEW WALL FINISHES @ LOCATION REQUIRING BARRIER-FREE COMPLIANCE (EXAMPLE: CENTER LINE TO TOILET).
- CONSTRUCTION "AS BUILT" DRAWINGS AND DOCUMENTS SHALL BE PROVIDED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF ACCEPTANCE. PROVIDE A COPY TO LL.
- OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER. PROVIDE A COPY TO LL.

FIXTURE BRANCH SCHEDULES

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET	3/4"	-	4"	2"
LAVATORY	1/2"	1/2"	2"	1-1/2"
MOP SINK	1/2"	1/2"	3"	2"

PLUMBING LEGEND

	SANITARY SEWER PIPING
	VENT PIPING
	COLD WATER PIPING
	HOT WATER PIPING
	HOT WATER RETURN PIPING
	PIPE RISE
	PIPE DROP
	WALL CLEAN OUT
	FLOOR CLEAN OUT
	RECIRCULATION PUMP
	P-TRAP
	SHUT-OFF VALVE
	BALANCING VALVE
	COLD WATER
	HOT WATER
	HOT WATER RETURN
	GATE VALVE
	WATER HAMMER ARRESTOR
	POINT OF CONNECTION
	THERMOSTATIC MIXING VALVE

PLUMBING FIXTURE SCHEDULE

Item No.	Qty.	Description	MANUFACTURER	MODEL	WATER		WASTE
					Hot	Cold	Direct
A1	2	WATER CLOSET	AMERICAN STANDARD	2386.010	-	3/4"	4"
A2	2	LAVATORY***	TBD		-	-	2"
A3	2	FAUCET	TBD	TBD	1/2"	1/2"	-
A4	1	WATER HEATER	REFER SCHEDULE	REFER SCHEDULE	-	-	-
A5	1	MOP SINK***	MUSTEE	63M	1/2"	1/2"	3"
TMV	3	THERMAL MIXING VALVE	WATTS	LFMMV	1/2"	1/2"	-
FD	2	FLOOR DRAIN*	ZURN	ZS415 W/ TYPE BS STRAINER	1/2"	1/2"	3"

*PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS, ***PROVIDE TMV AS PER SCHEDULE

ENERGY CONSERVATION NOTES

- AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE OF MINIMUM PIPE INSULATION THICKNESS C403.2.10

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)		
	CONDUCTIVITY (BTU-IN/ (H-FT ² · °F))	MEAN RATING TEMPERATURE, °F	<1	1 to <1½	1½ to <4
141-200	0.25-0.29	125	1.5	1.5	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0

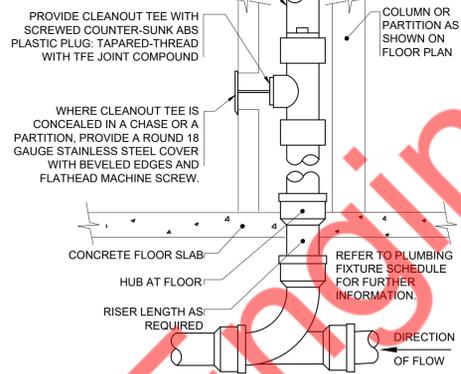
- HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE C404.5.1. THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.

NOMINAL PIPE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
3/8"	3'	50'
1/2"	2'	43'
3/4"	0.5'	21'
1"	0.5'	13'
1 1/4"	0.5'	8'
1 1/2"	0.5'	6'
2" OR LARGER	0.5'	4'

- AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE C404.6.1, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RECIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.

- AS PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
 - A. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
 - B. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

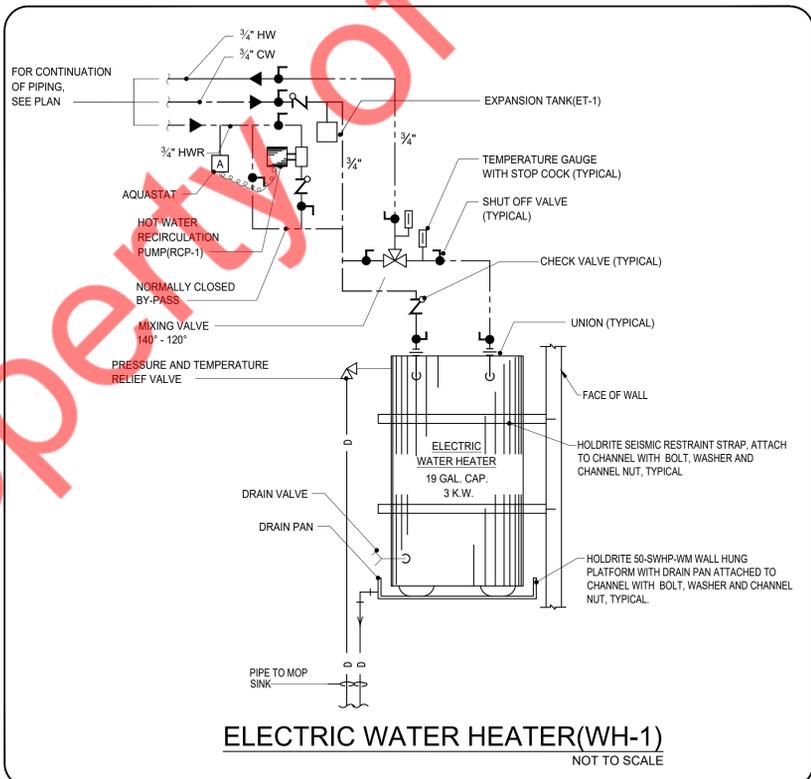
PIPE MAY EXTEND AS WASTE OR VENT.



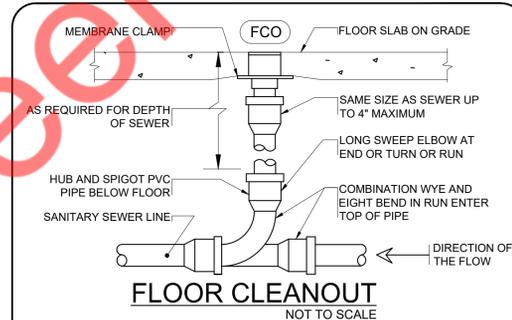
WALL CLEANOUT
NOT TO SCALE

WALL CLEANOUT DETAIL NOTES

- PROVIDE WCO WHERE SHOWN ON PLANE, AND ON SANITARY WASTE BRANCHES NOT SERVED WITH A FLOOR CLEANOUT.
- LOCATE ABOVE FIXTURE FLOOR RIM WITHIN 4" OF FLOOR.
- CONSULT LOCAL CODES FOR OTHER WCO REQUIREMENTS.
- LONG SWEEP AT END OF LINE OR COMBINATION WYE AND EIGHT BEND IN RUN OF LINE.
- CLEAN OUT FACE SHALL BE WITHIN 4" OF WALL SURFACE. PROVIDE A PIPE EXTENSION IF REQUIRED.



ELECTRIC WATER HEATER(WH-1)
NOT TO SCALE

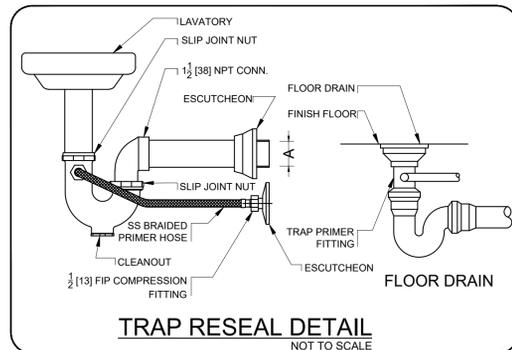


FLOOR CLEANOUT
NOT TO SCALE

*NOTE- COORDINATE WITH ARCHITECT FOR PATCHING/TRENCHING THE SLAB.

FLOOR CLEANOUT DETAIL NOTES

- LOCATE CLEANOUT AT THIS LOCATIONS:
 - A) BUILDING EXIT
 - B) AT TURNS OF PIPES GREATER THAN 45 DEGREES
 - C) AT 90° INTERVALS ON STRAIGHT RUNS
 - D) WHERE IS SHOWN ON PLANS
 - E) WHERE IS 18" CLEAR AROUND



TRAP RESEAL DETAIL
NOT TO SCALE

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GENERAL NOTES, SCHEDULES & DETAILS

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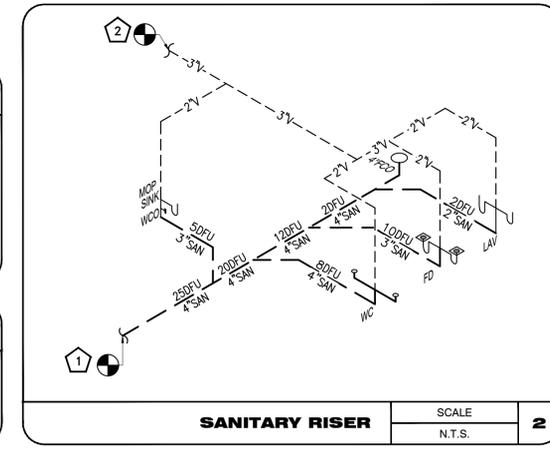
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SANITARY PLAN & RISER

P-2

- GENERAL NOTES**
- UNLESS OTHERWISE NOTED, SLOPE OF DRAINAGE SYSTEM TO BE 1/16" PER FOOT OF RUN FOR PIPE 8" AND OVER, 1/8" PER FOOT FOR PIPE 3" TO 6" AND 1/4" PER FOOT FOR PIPE 2-1/2" AND SMALLER.
 - CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
 - ALL MATERIAL INDICATED AND IMPLIED ON THESE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
 - PROVIDE ACCESS PANELS FOR CLEANOUTS AS REQUIRED.
 - CONTRACTOR TO VERIFY THE EXISTING SANITARY AND VENT LOCATION AND ROUTING. MAKE NECESSARY CHANGES TO NEW PIPING AS PER THE EXISTING SITE CONDITION.

- SANITARY PLAN KEY NOTE**
- CONNECT NEW 4" SANITARY WASTE PIPING TO EXISTING SANITARY PIPE OF ADEQUATE SIZE IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, ROUTING AND INVERT ON SITE AND MAKE NECESSARY CHANGES IF REQUIRED.
 - CONNECT NEW 3" VENT PIPING TO EXISTING VENT PIPING OF ADEQUATE SIZE IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING VENT PIPING AND MAKE NECESSARY CHANGES / UPGRADE IF REQUIRED.



SANITARY RISER SCALE N.T.S. **2**



SANITARY PLAN SCALE 1/4" = 1'-0" **1**

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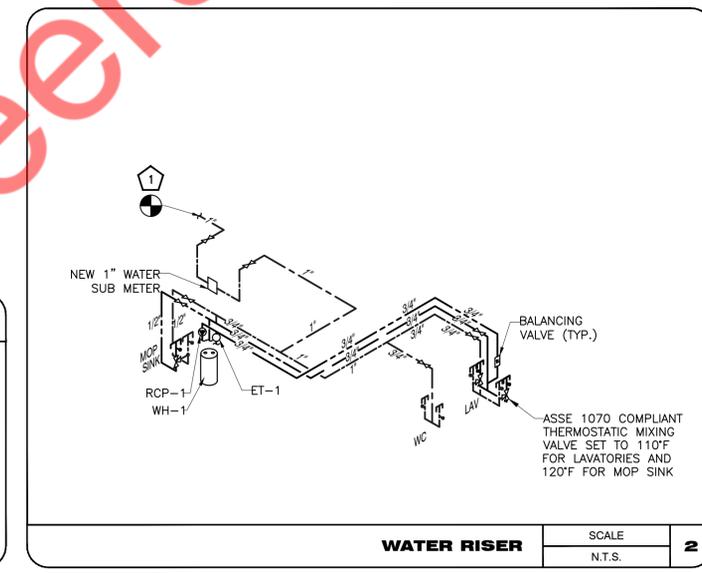
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WATER PLAN & RISER

P-3



- GENERAL NOTES**
1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
 2. ALL MATERIAL INDICATED AND IMPLIED ON THESE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
 3. CONTRACTOR TO FIELD VERIFY THE EXISTING WATER PIPING SIZE AND LOCATION.
 4. ALL WATER PIPES ARE RUNNING ABOVE THE CEILING UNLESS UNTIL SPECIFIED.
 5. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
 6. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTORS, BALANCING VALVES AND SHUT-OFF VALVES AS REQUIRED.
 7. NEW WATER HEATERS DRAIN SPILLS TO MOP SINK.

NEW STORAGE WATER HEATER SCHEDULE

MANUFACTURER	AO SMITH
MODEL	DEL-20
EQUIPMENT TAG	WH-1
STATUS	NEW
CAPACITY	19 GALLONS
QUANTITY	1
KW	3
FLOW RATE	12 GPH*
ENERGY FACTOR	-
VOLTAGE	208/1/60
AMPERAGE	14.42
WEIGHT	73 LBS

NOTE:
 1. *NON-SIMULTANEOUS ELEMENT OPERATION @ 100° F TEMPERATURE RISE.
 2. INSTALL NEW EXPANSION TANK AMTROL MODEL THERM-X-TROL ST-5C-DD, 2.0(ET-1) GAL PER LOCAL CODE REQUIREMENTS

RECIRCULATION PUMP SCHEDULE

MANUFACTURER & MODEL	GRUNDFOS UP-15-18 B5
EQUIPMENT TAG	RCP-1
STATUS	NEW
GPM	2
WATER TEMP.(°F)	140
PUMP TYPE	INLINE
MHP	85 WATTS
V/PH/Hz	115/1/60
RPM	2280
SERVICE FACTOR	1.0

NOTE:
 PROVIDE AQUA STAT WITH AUTOMATIC TIMER KIT FOR THE TEMPERATURE CONTROL OF HOT WATER SYSTEM. COORDINATE ELECTRICAL REQUIREMENTS FOR TIMER WITH ELECTRICAL CONTRACTOR.

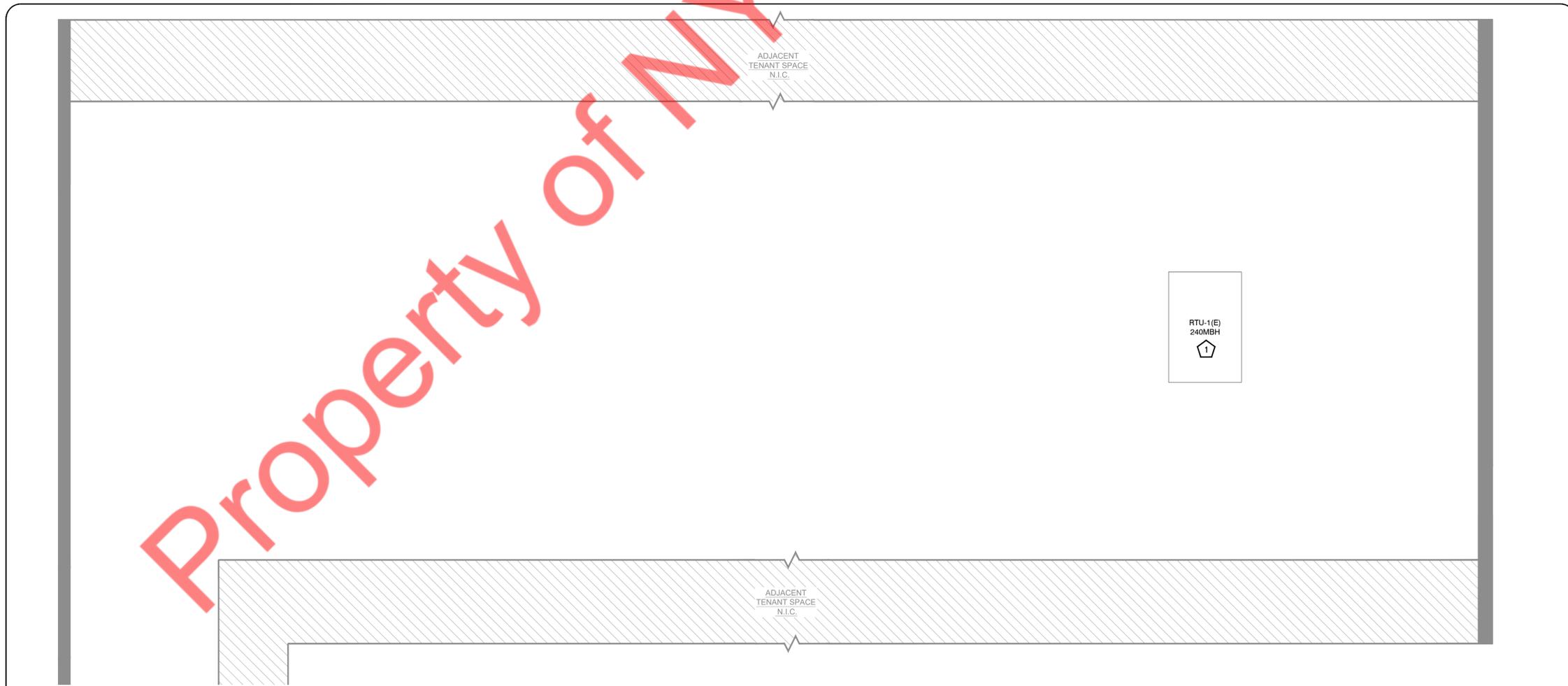
WATER PIPING KEY NOTE

1. CONNECT NEW 1" CW LINE TO EXISTING CW LINE OF ADEQUATE SIZE IN SPACE WITH NEW WATER SUB METER. PROVIDE NEW SHUTOFF VALVE AFTER AND BEFORE METER AS SHOWN IN PLAN. CONTRACTOR TO FIELD VERIFY THE SIZE AND LOCATION OF THE EXISTING WATER MAIN LINE AND MAKE NECESSARY CHANGES IF REQUIRED. CONTRACTOR TO COORDINATE WITH LL FOR WATER SUB METER REQUIREMENTS.



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GAS PLAN KEY NOTE
EXISTING RTU-1(E) TO REMAIN WITH EXISTING GAS PIPING, GAS METER, RELATED ACCESSORIES AND FITTINGS. CONTRACTOR TO FILED VERIFY CONDITION OF EXISTING PIPING AND REPLACE IF REQUIRED.



GAS ROOF PLAN SCALE 1/4" = 1'-0" 1

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GAS ROOF PLAN

P-4