GENERAL SPECIFICATIONS

1. GENERAL:
   - A. WORK INDICATED ON THESE DRAWINGS IS DIAGRAMMATIC AND SHOULD NOT BE SCALED TO ESTABLISH LOCATION OF WORK. THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENTS OF ENGINEERED SYSTEMS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND MAKE ADJUSTMENTS AS NECESSARY TO COMPLETE THE WORK.
   - B. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SERVICES FOR ALL WORK, IN ACCORDANCE WITH PROVISIONS OF THE CONTRACT DOCUMENTS. ALTHOUGH SUCH WORK IS NOT SPECIFICALLY INDICATED, FURNISH AND INSTALL ALL SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES AND DEVICES INCIDENTAL TO OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION, AT NO ADDITIONAL COST TO THE OWNER.
   - C. ALL EQUIPMENT UNDER THIS CONTRACT SHALL BE TESTED, AT COMPLETION, TO THE SATISFACTION OF THE OWNER. IT IS THE INTENTION OF THESE DRAWINGS TO CALL FOR FINISHED WORK, TESTED, AND READY FOR OPERATION. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN FURNISH AND INSTALL COMPLETE AND READY FOR USE.
   - D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, OF FIRST QUALITY AND COMPATIBLE WITH EXISTING SYSTEMS OR MATERIAL WHERE THEY INTERFACE. INSTALL AS RECOMMENDED BY MANUFACTURER AND BEST ENGINEERING PRACTICE.
   - E. SHOULD THE CONTRACTOR ENCOUNTER ANY EXISTING PIPING, DUCTWORK, CONDUITS, OR OTHER OBSTRUCTIONS IN THE WAY OF NEW WORK, CONTRACTOR SHALL REMOVE, REARRANGE AND/OR RELOCATE SAME TO THE SATISFACTION OF THE ARCHITECT AND AT NO ADDITIONAL COST TO THE OWNER.
   - F. CONTRACTOR SHALL OBTAIN OWNER'S APPROVAL IN WRITING PRIOR TO CUTTING OF ANY SLAB, WALLS, CEILING, ROOF AND SHAFTS FOR PENETRATION OF DUCTWORK AND PIPING. THE CONTRACTOR SHALL REPAIR ALL WALLS, CEILING, FLOORS, ETC., THAT ARE REQUIRED TO BE PENETRATED, OR OTHERWISE DISTURBED. THE REPAIRS SHALL BE WITH MATERIALS AND FINISHES TO MATCH EXISTING. ALL FIRE WALL PENETRATIONS SHALL BE SEALED WITH SUITABLE MATERIALS TO PRESERVE FIRE WALL INTEGRITY.
   - G. CLEAN UP ALL WASTE AND DEBRIS AT THE END OF EACH WORKING DAY AND AS REQUIRED TO KEEP ALL BUILDING AREAS CLEAN, CLEAR AND UNOBSTRUCTED. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIAL AND SCRAP FROM THE JOB SITE AND CLEAN THE ENTIRE JOB SITE TO BE READY FOR OCCUPANCY.
2. COORDINATION AND SCHEDULING:
   - A. COMPLETELY COORDINATE AND SCHEDULE WORK OF ALL TRADES. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SO THAT CONFLICTS IN SCHEDULING AND LOCATION WILL NOT OCCUR.
   - B. CONTRACTOR IS RESPONSIBLE FOR COMPLETE COORDINATION BETWEEN ALL SUB-CONTRACTORS, SUPPLIERS, GOVERNMENT AUTHORITIES HAVING JURISDICTION, BUILDING PERSONNEL, CODE ENFORCEMENT OFFICIALS, ARCHITECT/ENGINEER AND BUILDING OWNER.
   - C. CONTRACTOR SHALL REVIEW AND COORDINATE THE INSTALLATION OF NEW SYSTEM(S) AND EQUIPMENT. NO WORK SHALL BE PERFORMED PRIOR TO THE CONTRACTOR OBTAINING EXACT FIELD DIMENSIONS OF EXISTING BUILDINGS, EXISTING CEILINGS, STRUCTURAL OBSTRUCTIONS, EXISTING BUILDING SYSTEMS TO REMAIN, EXISTING FURNITURE TO REMAIN, ETC., WHICH, MAY AFFECT INSTALLATION OF NEW EQUIPMENT OR SYSTEMS.
   - D. CONTRACTOR SHALL SCHEDULE AND PHASE WORK IN A FASHION SO AS TO CAUSE MINIMUM DISTURBANCE TO ACTIVITIES IN OTHER AREAS OF THE BUILDING, WHICH MAY REMAIN OCCUPIED THROUGHOUT THE DURATION OF THE CONTRACT. CONTRACTOR'S WORK SCHEDULE SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER. PROVIDE BARRIERS (PLASTIC, GYPBOARD, ETC) BETWEEN PROJECT AREA AND ADJACENT SPACES AS NECESSARY.
   - E. NOTIFY THE OWNER, IN WRITING, AT LEAST FOURTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN OF ANY UTILITY. OBTAIN OWNER'S WRITTEN APPROVAL PRIOR TO SHUTDOWN.
   - F. CONTRACTOR SHALL THOROUGHLY EXAMINE PREMISES AND OBSERVE ALL CONDITIONS AND CIRCUMSTANCES UNDER WHICH THE WORK SHALL BE PERFORMED. NO ALLOWANCES WILL BE MADE FOR ERRORS OR NEGLIGENCE IN THIS RESPECT.
3. CODE, PERMITS AND INSPECTIONS:
   - A. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LATEST APPLICABLE CODES, REGULATIONS AND STANDARDS. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.
   - B. APPROVAL AND SIGN-OFF BY ALL AUTHORITIES HAVING JURISDICTION AND THE SECURING OF AN APPROVED OCCUPANCY PERMIT IS REQUIRED AT THE COMPLETION OF PROJECT. SECURE PERMIT AND INSPECTION CERTIFICATES AND TRANSMIT SAME TO THE OWNER AT THE COMPLETION OF THE PROJECT.
   - C. PERFORM ALL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF APPLICABLE CODES AND STANDARDS ENFORCED IN THE PROJECT JURISDICTION.
   - D. CODES AND STANDARDS LISTED ARE MINIMUM STANDARDS. WHERE CONTRACT DOCUMENTS CALL FOR A HIGHER STANDARD, CONTRACT DOCUMENTS WILL TAKE PRECEDENCE OVER ALL REFERENCED CODES AND STANDARDS. IF CONTRACT DOCUMENTS CONFLICT WITH CODES OR STANDARDS, CONTRACTOR SHALL INFORM ARCHITECT/ENGINEER, IN WRITING, PRIOR TO QUOTE.
   - E. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS.
   - F. CONTRACTOR SHALL COMPLY WITH RULES AND REGULATIONS OF ALL AFFECTED UTILITY COMPANIES.
4. WARRANTY:
   - A. ALL WORK SHALL BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS THAT DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND AT NO ADDITIONAL COST TO THE OWNER.
5. SHOP DRAWINGS:
   - A. SHOP DRAWINGS AND PRODUCT DATA: SUBMIT TO ENGINEER, OWNER AND ARCHITECT ELECTRONIC COPIES OF SHOP DRAWINGS AND MANUFACTURER'S CERTIFIED CAPACITY DATA FOR ALL NEW EQUIPMENT.
6. RECORD DRAWINGS/ASBUILTS:
   - A. THE CONTRACTOR SHALL MAINTAIN AT THE SITE, FOR THE OWNER, ONE COPY OF ALL DRAWINGS, ADDENDA, APPROVED SHOP DRAWINGS, REVISIONS, AND OTHER MODIFICATIONS, IN GOOD ORDER AND MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION. THE SET OF DRAWINGS AND OTHER INFORMATION SHALL BE DELIVERED TO THE OWNER UPON COMPLETION OF WORK, AS REQUESTED.

ELECTRICAL CODE NOTES

1. ALL NEW RECEPTACLES SHALL BE TAMPER-RESISTANT TYPE.
2. ALL NEW OR MODIFIED APPLICABLE CIRCUITS SHALL BE AFCI PROTECTED. ALL BRANCH CIRCUITS THAT SUPPLY 120-VOLT, SINGLE-PHASE, 15- AND 20-AMPERE OUTLETS INSTALLED IN FAMILY ROOMS, RECREATION ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, CLOSETS, HALLWAYS, KITCHENS, SUN ROOMS, AND SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A COMBINATION TYPE ARC-FAULT CIRCUIT INTERRUPTER INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.
3. OUTLET BOX HOOD FOR NEW EXTERIOR RECEPTACLES SHALL BE LISTED AND IDENTIFIED AS "EXTRA-DUTY."
4. EXTERIOR RECEPTACLES SHALL BE "WEATHER RESISTANT" TYPE.
5. RECEPTACLES FOR LAUNDRY, UTILITY ROOM, DISHWASHER AND DISPOSAL SHALL BE GFCI TYPE.
6. CLOSET LIGHT SHALL BE COMPLETELY ENCLOSED AND MEET CLEARANCES PER NEC.
7. ALL LIGHTING ABOVE TUBS/SHOWERS SHALL BE LISTED FOR DAMP LOCATIONS.
8. ELECTRICAL SERVICE SHALL BE GROUNDED BY A CONCRETE ENCASED ELECTRODE.

SPECIFICATIONS

G. FUSES
1. INSTALL FUSES IN FUSIBLE DEVICES AS INDICATED.
2. INSTALL TYPEWRITTEN LABELS ON THE INSIDE DOOR OF EACH FUSED SWITCH TO INDICATE FUSE REPLACEMENT INFORMATION.

H. DISCONNECTS AND CIRCUIT BREAKERS
1. ENCLOSED NON-FUSIBLE SWITCH SHALL BE NEMA HEAVY-DUTY TYPE WITH ENCLOSURE CONSISTENT WITH ENVIRONMENT WHERE LOCATED, HANDLE LOCKABLE WITH 2 PADLOCKS, AND INTERLOCKED WITH COVER IN "CLOSED" POSITION.
2. ENCLOSED FUSIBLE SWITCHES SHALL BE NEMA HEAVY-DUTY TYPE WITH CLIPS TO ACCOMMODATE SPECIFIED FUSES, ENCLOSURE CONSISTENT WITH ENVIRONMENT WHERE LOCATED, HANDLE LOCKABLE WITH 2 PADLOCKS AND INTERLOCKED WITH COVER IN "CLOSED" POSITION.
3. ENCLOSED MOLDED-CASE CIRCUIT BREAKER: FRAME SIZE, TRIP RATING, NUMBER OF POLES, AND AUXILIARY DEVICES AS INDICATED; INTERRUPTING CAPACITY RATING TO MEET AVAILABLE FAULT CURRENT, 10,000 SYMMETRICAL RMS AMPERES MINIMUM; WITH APPROPRIATE APPLICATION LISTING WHEN USED FOR SWITCHING FLUORESCENT LIGHTING LOADS OR HEATING, AIR CONDITIONING, AND REFRIGERATION EQUIPMENT.
4. ENCLOSURE: NEMA TYPE 1, UNLESS SPECIFIED OR REQUIRED OTHERWISE TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.
   - a. OUTDOOR LOCATIONS: TYPE 12/3R.
   - b. KITCHEN AREAS: TYPE 4X, STAINLESS STEEL.
   - c. OTHER WET OR DAMP INDOOR LOCATIONS: TYPE 4.
5. PROPERLY SUPPORT DISCONNECT OR ENCLOSED CIRCUIT BREAKER ON WALL WITH METAL FRAMING AS REQUIRED.

I. LIGHTING
1. COORDINATE RECESSED LIGHTING FIXTURES WITH MECHANICAL EQUIPMENT AND ARCHITECTURAL CEILING PLAN. GRID LAYOUT ON PLANS IS APPROXIMATE. ADJUST LIGHTING FIXTURES IN FIELD PER ARCHITECT.
2. PROVIDE FINISHING FRAMES FOR ALL RECESSED LIGHTING FIXTURES, TYPE TO BE COMPATIBLE WITH CEILING. COORDINATE ALL FIXTURE TYPES WITH CEILING SYSTEM BEFORE ORDERING FIXTURES. PROVIDE ALL MOUNTING ATTACHMENTS FOR A COMPLETE INSTALLATION.
3. ALL NEW LIGHTING FIXTURES SHALL BE INSTALLED COMPLETE WITH LAMPS. SEE PLANS FOR SPECIFIC REQUIREMENTS. PROVIDE NEW LAMPS FOR ALL EXISTING LIGHTING FIXTURES.
4. FINISHES OF LIGHTING FIXTURES SHALL BE AS SELECTED BY THE ARCHITECT.

J. EQUIPMENT LOCATION
1. DO NOT INSTALL NEW PANELBOARDS, SWITCHBOARDS AND/OR MOTOR CONTROL CENTERS UNDERNEATH NEW OR EXISTING DUCTWORK AND/OR PIPING. IF SUCH CONDITIONS ARE ENCOUNTERED, NOTIFY THE ENGINEER FOR FURTHER EVALUATION AND DIRECTIVES. INSTALLING THE PANELBOARD IN A DIFFERENT LOCATION AGREED TO BY THE ENGINEER AND OWNER TO AVOID THIS SCENARIO SHALL BE AT SOLE COST TO THE CONTRACTOR.

K. DEMOLITION
1. PROVIDE DEMOLITION AS INDICATED ON DEMOLITION PLANS. CIRCUITRY NOTED FOR REMOVAL SHALL BE REMOVED BACK TO THE SOURCE BUS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMOVAL FROM THE SITE FOR ALL EQUIPMENT AND MATERIAL REMOVED UNDER DEMOLITION WORK, UNLESS OTHERWISE NOTED OR DIRECTED. EXISTING CIRCUITS-TO-REMAIN INTERRUPTED BY DEMOLITION SHALL BE RESTORED FOR OPERATION AS BEFORE. OUTAGES REQUIRED TO PERFORM DEMOLITION SHALL BE COORDINATED WITH THE OWNER AND PROCESSED OUTSIDE OF NORMAL BUSINESS HOURS. REPAIR ALL WALL, CEILING, FLOOR OR ROOF OPENINGS CREATED BY DEMOLITION.
2. LOCATE, IDENTIFY AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

BRANCH CIRCUITRY AND FEEDER

1. USE OF ALUMINUM CONDUIT SHALL NOT BE PERMITTED.
2. ALL BRANCH CIRCUITRY AND FEEDERS SHALL BE RUN CONCEALED.
3. ALL CIRCUITRY RUNS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL DETERMINE IN FIELD THE MOST SUITABLE ROUTES.
4. MINIMUM SIZE EMT OR CONDUIT SHALL BE 3/4". UNLESS MULTIPLE HOMERUN CIRCUITS REQUIRES LARGER SIZE CONDUIT.
5. NO NONMETALLIC CONDUIT SHALL BE USED FOR BRANCH CIRCUIT WORK ABOVE GRADE.
6. BRANCH CIRCUITRY AND FEEDER
   - 6.1. ALL CONDUCTORS SHALL BE COPPER.
   - 6.2. ALL BRANCH CIRCUITRY AND FEEDER SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE (N.E.C. 2002) LOCAL JURISDICTION AND LOCAL STATE CODE REQUIREMENTS. THE FOLLOWING ARE SOME ACCEPTABLE WIRING METHOD REQUIREMENTS.
7. INDOOR USE BRANCH CIRCUITRY
   - 7.1. METAL CLAD CABLE (MC CABLE) IS PERMITTED TO SERVE RECEPTACLES/LIGHTING AND OTHER EQUIPMENT LOAD. IN THE GENERAL AREA PER SYMBOLS LIST, METAL CLAD CABLE (MC) IS PERMITTED TO RUN CONCEALED AREA SUCH AS CEILING SPACE AND FINISHED WALL AREA ONLY. ALL HOMERUN BRANCH CIRCUITRY FOR THE INDOOR EQUIPMENT SHALL BE INSTALLED IN EMT.
   - 7.2. HCF CABLE HOSPITAL GRADE IS CONTAINING A SEPARATE GREEN GROUND CONDUCTOR IS PERMITTED TO SERVE ISOLATED GROUND RECEPTACLES AND OTHER EQUIPMENT LOAD WHERE PERMITTED BY CODE. HCF CABLE (HOSPITAL GRADE) IS PERMITTED TO RUN IN CONCEALED AREA SUCH AS CEILING SPACE AND FINISHED WALL AREA ONLY. ALL HOMERUN BRANCH CIRCUITRY FOR THE INDOOR EQUIPMENT SHALL BE INSTALLED IN EMT.
8. INDOOR FEEDER
   - 8.1. FEEDER CONDUIT INSTALLED INDOORS MAY BE GALVANIZED EMT, HEAVY WALL GALVANIZED RIGID STEEL.
9. OUTDOOR USE BRANCH CIRCUITRY
   - 9.1. ALL LIGHTING, RECEPTACLES, EQUIPMENT LOCATED ON THE EXTERIOR OF THE BUILDING SHALL BE SERVED IN HEAVY WALL GALVANIZED RIGID STEEL CONDUIT.
10. OUTDOOR USE FEEDER CONDUIT
   - 10.1. FEEDER CONDUIT INSTALLED OUTDOORS MAY BE WALL GALVANIZED RIGID STEEL.
   - 10.2. FEEDER FOR THE UNDERGROUND INCOMING ELECTRICAL, TELEPHONE MAY BE PVC SCHEDULE 40.

MISCELLANEOUS ELECTRICAL

1. GROUNDING
   - 1.1. PROVIDE EQUIPMENT GROUND CONDUCTORS SIZE PER NEC REQUIREMENTS.
   - 1.2. PROVIDE GROUND TO ALL DEVICES PER N.E.C. REQUIREMENTS.
   - 1.3. PROVIDE SERVICE GROUND CONDUCTORS SIZE PER NEC REQUIREMENTS.
2. FIRE SEALANT MATERIALS
   - 2.1. ANY PENETRATION TO THE FIRE WALLS. CONTRACTOR SHALL PROVIDE FIRE SEALANT MATERIALS AT EVERY POINT WHERE OCCURRED. FIRE SEALANT MATERIALS MANUFACTURER SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL PRIOR TO APPLICATION.
   - 2.2. WHERE PORTIONS OF A CABLE, RACEWAY, OR SLEEVE ARE KNOWN TO BE SUBJECT TO DIFFERENT TEMPERATURES AND WHERE CONDENSATION IS KNOW TO BE A PROBLEM AS IN COLD STORAGE AREAS OF BUILDINGS, OR WHERE PASSING FROM INTERIOR TO THE EXTERIOR OF A BUILDING, THE RACEWAY OR SLEEVE SHALL BE FILLED WITH AN APPROVED MATERIAL TO PREVENT THE CIRCULATION OF WARM AIR TO A COLDER SECTION OF THE RACEWAY OR SLEEVE. SHALL BE SEALED IN ACCORDANCE WITH 300.5(G). SEALANTS SHALL BE IDENTIFIED FOR USE WITH THE CABLE INSULATION, SHIELD, OR OTHER COMPONENTS AND SHOULD NOT PROMOTE CORROSION OR DETERIORATION OF THE INSULATION PROPERTIES. ELECTRICAL DUCT SEAL CAN SERVE FOR MOST PROJECTS THE MANUFACTURER SHOULD STATE IN WRITING THAT IT IS SUITABLE FOR ELECTRICAL INSTALLATIONS.
3. FINAL TESTING
   - 3.1. AT THE TIME OF FINAL INSPECTION AND TEST, ALL CONNECTIONS AND TERMINATIONS AT PANELBOARDS, DEVICES, EQUIPMENT, AS WELL AS ALL SPLICES, MUST BE ALL COMPLETED. EACH BRANCH CIRCUIT AND ITS RESPECTIVE CONNECTED EQUIPMENT MUST TEST FREE OF SHORT CIRCUITS. UPON COMPLETION OF THE WORK, CLEAN AND POLISH ALL EXPOSED SURFACES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. RACEWAYS AND JUNCTION BOXES LABELING REQUIREMENTS
   - 4.1. ALL FEEDER RACEWAYS SHALL BE CLEARLY LABELED AS TO ITEM SERVED WITH MINIMUM 3/4" HIGH LETTERS.
   - 4.2. ALL JUNCTION BOXES FOR BRANCH CIRCUITRY SHALL BE CLEARLY LABELED WITH PANEL DESIGNATION AND CIRCUIT NUMBERS.

SPECIFICATIONS

A. RACEWAYS, BOXES AND CONDUITS:
1. OUTDOORS WIRING METHODS: USE THE FOLLOWING WIRING METHODS:
   - a. EXPOSED: CONDUCTORS IN RIGID METAL CONDUIT.
   - b. CONCEALED: CONDUCTORS IN RIGID METAL CONDUIT.
   - c. UNDERGROUND: CONDUCTORS IN RIGID NONMETALLIC CONDUIT, UNLESS OTHERWISE NOTED.
   - d. CONNECTION TO VIBRATING EQUIPMENT: CONDUCTORS IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   - e. BOXES AND ENCLOSURES: NEMA TYPE 3R.
2. INDOORS WIRING METHODS: USE THE FOLLOWING METHODS:
   - a. CONNECTION TO VIBRATING EQUIPMENT: CONDUCTORS IN FLEXIBLE METAL CONDUIT, EXCEPT IN WET OR DAMP LOCATIONS USE LIQUID TIGHT FLEXIBLE METAL CONDUIT.
   - b. DAMP OR WET LOCATIONS: CONDUCTORS IN RIGID STEEL CONDUIT.
   - c. EXPOSED: CONDUCTORS IN ELECTRICAL METALLIC TUBING.
   - d. CONCEALED: CONDUCTORS IN ELECTRICAL METALLIC TUBING OR, AS APPROVED, METAL-CLAD (MC) CABLE.
   - e. BOXES AND ENCLOSURES: NEMA TYPE 1, EXCEPT IN DAMP OR WET LOCATIONS USE NEMA TYPE 4, STAINLESS STEEL.
3. ALL CIRCUITRY IN FINISHED AREAS SHALL BE RUN CONCEALED.
4. MINIMUM SIZE CONDUIT SHALL BE 1/2".
5. EMT CONNECTORS AND COUPLINGS SHALL BE OF THE ALL-STEEL, COMPRESSION TYPE WITH INSULATED THROAT.
6. EXPOSED AND CONCEALED CIRCUITRY (WHETHER CONDUIT AND WIRE OR CABLE) SHALL BE RUN TIGHT TO CEILING SLAB (AS HIGH AS POSSIBLE TO MAXIMIZE HEADROOM) IN A NEAT, WORKMANLIKE MANNER. ALL RUNS SHALL BE PARALLEL OR PERPENDICULAR TO BUILDING WALLS.
7. EXPOSED LOW VOLTAGE WIRING SHALL BE INSTALLED IN A RACEWAY, UNLESS OTHERWISE NOTED.
8. OUTLET BOXES SHALL BE A MINIMUM OF 4" SQUARE WITH THE APPROPRIATE PLASTER RING OR TILE COVER.
9. WHERE EXISTING WALLS ARE FURRED OUT AND DEVICES ARE NOT NOTED TO BE REMOVED, PROVIDE EXTENSION BOXES TO BRING FACE OF DEVICES FLUSH WITH NEW FINISH SURFACE AND CONTINUE IN SERVICE.

B. WIRE AND CABLE
1. ALL CONDUCTORS SHALL BE COPPER, MINIMUM #12 TYPE "THHN-THWN" INSULATION.
2. ALL WIRE SIZES SHALL BE AS NOTED AND COMPLY WITH NEC.
3. ALL "MC" CABLE SHALL HAVE AN INTERNAL GREEN INSULATED EQUIPMENT GROUND CONDUCTOR.
4. ALL 120 VOLT CIRCUIT HOME RUNS WHICH ARE OVER 100 LINEAR FEET SHALL BE #10 CONDUCTORS MINIMUM FOR THE ENTIRE CIRCUIT.

C. WIRING DEVICES AND TELEPHONE/CABLE OUTLETS
1. THE LOCATION OF ALL WIRING DEVICES AND TELEPHONE/DATA OUTLETS SHALL BE VERIFIED BEFORE INSTALLATION WITH THE ARCHITECT. THE ARCHITECT MAY RELOCATE ANY DEVICE 5 FEET AT NO CHARGE TO THE OWNER.
2. DEVICE PLATES SHALL BE A FINISH AND COLOR SELECTED BY THE ARCHITECT.
3. COORDINATE WALL MOUNTED TELEPHONE/CABLE OUTLET LOCATIONS WITH THE ARCHITECT. TELEPHONE/CABLE CONDUCTORS SHALL BE INSTALLED BY OTHERS.
4. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC REQUIREMENTS AND ANY ADDITIONAL LOCAL CODES.

D. ELECTRICAL IDENTIFICATION
1. APPLY EQUIPMENT IDENTIFICATION LABELS (MINIMUM 1" HIGH LETTERS) OF ENGRAVED PLASTIC-LAMINATE ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT. APPLY LABELS FOR EACH UNIT OF THE FOLLOWING CATEGORIES OF ELECTRICAL:
   - a. PANELBOARDS AND DISCONNECTS.
   - b. ACCESS DOORS AND PANELS FOR CONCEALED ELECTRICAL ITEMS.

E. GROUNDING
1. GROUND ELECTRICAL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH NEC EXCEPT WHERE GROUNDING IN EXCESS OF NEC REQUIREMENTS IS INDICATED.
2. ALL CIRCUITS SHALL CONTAIN AN INSULATED GROUNDING CONDUCTORS. ALL NEW RECEPTACLE CIRCUITS SHALL CONTAIN A #12 INSULATED GROUNDING CONDUCTOR.
3. SEPARATELY DERIVED SYSTEMS REQUIRED BY NEC TO BE GROUNDED SHALL BE GROUNDED AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

F. PANEL BOARDS
1. IN PANELBOARDS, "EQUIPPED SPACE" OR "SPACE" IS DEFINED TO INCLUDE ALL NECESSARY BUS, DEVICE SUPPORTS AND CONNECTIONS FOR INSERTION OF A FUTURE DEVICE.
2. PANELBOARD CIRCUITING SHALL MATCH THE DRAWINGS. CIRCUITING CHANGES MUST BE APPROVED BY THE ENGINEER.
3. PANELBOARD BUS SHALL BE COPPER WITH BOLT-ON BRANCH CIRCUIT BREAKERS.
4. BEFORE ORDERING PANELBOARDS, COORDINATE ALL MOTOR CIRCUIT BREAKER TRIPS WITH MECHANICAL EQUIPMENT MANUFACTURER'S REQUIREMENTS.
5. SURFACE MOUNTED PANELBOARD CABINETS SHALL BE INSTALLED ON AN APPROVED STEEL SLOTTED SUPPORT SYSTEM TO DISTRIBUTE THE WEIGHT EVENLY TO THE WALL AND FLOOR AND TO PROVIDE A 1-INCH AIR SPACE BETWEEN WALL AND CABINET.
6. FOR RECESSED PANELBOARDS, RUN ONE 3/4" CONDUIT FROM TOP OF PANEL 6" INTO CEILING SPACE FOR EVERY SET OF 3 SPARE CIRCUIT BREAKERS OR SPACES.
7. PANELBOARD SHALL BE EQUAL TO SQUARE D TYPE NEHB, NQOD, OR MANUFACTURED EQUIVALENT BY GENERAL ELECTRIC, EATON/CUTLER HAMMER, OR SIEMENS.
8. PROVIDE FRAMED, TYPED CIRCUIT DIRECTORY WITH EXPLICIT DESCRIPTION AND IDENTIFICATION OF ITEMS CONTROLLED BY EACH INDIVIDUAL BREAKER. PROVIDE NEW PANELBOARD DIRECTORY FOR ALL EXISTING AND NEW PANELBOARDS AFFECTED BY RENOVATION. PANELBOARD DIRECTORY SHALL BE REVISED TO REFLECT ALL REVISED FIELD CONDITIONS.

ELECTRICAL SYMBOLS

DESIGNATION	DESCRIPTION	MTG HGT TO CENTERLINE AFF (UON)
⌖ ○ □	INCANDESCENT, COMPACT FLUORESCENT OR LED LIGHTING FIXTURE "A" (IF SHOWN) INDICATES FIXTURE TYPE AND "a" (IF SHOWN) INDICATES SWITCH CTRL	-
◒	INCANDESCENT, COMPACT FLUORESCENT OR LED WALL WASHER TYPE LIGHTING FIXTURE "A" (IF SHOWN) INDICATES FIXTURE TYPE. "a" (IF SHOWN) INDICATES SWITCH CONTROL	-
S	SINGLE POLE TOGGLE SWITCH. MOUNTING HEIGHT +48" A.F.F., U.O.N. SUBSCRIPTS AT SWITCH SYMBOL INDICATE THE FOLLOWING: 0S - WALL MOUNTED OCCUPANCY SENSOR, SIMILAR TO WATTSTOPPER CAT. # DSW-100, DSW-200(FOR BI-LEVEL SWITCHING) OR EQUAL D - DIMMER, 1000W U.O.N. 3 - 3-WAY SWITCH a,b,c - IDENTIFICATION OF LIGHTS CONTROLLED K - LOCK TYPE	4' - 0"
⊖	DUPLEX RECEPTACLE: 20A-125V-2P, 3W. MOUNTING HEIGHT +18" A.F.F. UNLESS OTHERWISE NOTED. SUBSCRIPTS ADJACENT TO RECEPTACLE SYMBOL INDICATE THE FOLLOWING: WP - WEATHERPROOF GFI - GROUND FAULT INTERRUPTING IG - ISOLATED GROUND DED - DEDICATED CIRCUIT FL - FLOOR MOUNTED - RECESSED.	18"
⊖	DEDICATED DUPLEX RECEPTACLE - NEMA 5-20R - ON SEPARATE CIRCUIT	18"
G ⊖	DUPLEX RECEPTACLE - NEMA 5-20R WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER	18"
⊳	SPECIAL PURPOSE SINGLE RECEPTACLE - SEE DRAWING FOR DESCRIPTION	18"
TV	TELEVISION - PROVIDE 4" SQUARE BOX AND STUB OUT 3/4" EC 6" INTO CEILING SPACE	REFER TO ARCH. UON
EP 1,3	HOMERUN TO PANELBOARD - NUMERALS & LETTERS ADJACENT TO ARROWHEADS INDICATE ASSIGNED PANEL & CKT #	-
▶	TELEPHONE OUTLET STUB OUT 1" EC 6" INTO CEILING SPACE WITH PLASTER RING AND PULL STRING TO ACCESSIBLE CEILING SPACE	REFER TO ARCH. UON
⏚	GROUND	-
▬	PANELBOARD 120/240V SYSTEM	6'-0" TO TOP
Ⓜ	MOTOR CONNECTION	-
30 □	NON-FUSED SAFETY DISCONNECT SWITCH - NUMERAL DENOTES SWITCH SIZE - 3 POLE UON	5'-0" TO TOP
60/40 ⊠	FUSED SAFETY DISCONNECT SWITCH - UPPER NUMERAL DENOTES SWITCH SIZE, LOWER NUMERAL DENOTES FUSE SIZE - 3 POLE UON	5'-0" TO TOP
⬡ 1	KEY NOTE, NEW WORK	
①	KEY NOTE, DEMOLITION	
◑	FACTORY CONNECTION - PROVIDE CIRCUITRY CONNECTION AS NOTED ON PLAN	
M	METER	-
◐	HALF SWITCHED RECEPTACLE, 18" A.F.F.	
Ⓙ	JUNCTION BOX, WALL MOUNTED.	
M	UTILITY METERING.	
Ⓢ	SMOKE DETECTOR W/ BATTERY. CONNECT AHEAD OF AN UNSWITCHED 120V CIRCUIT, DO NOT EXCEED 1500VA.	
CO	CARBON MONOXIDE SENSOR	

ABBREVIATIONS

A	AMP	N	NEUTRAL
AFF	ABOVE FINISHED FLOOR	(N)	NEW ITEMS
AIC	AMPERES INTERRUPTING CAPACITY(MIN)	NEC	NATIONAL ELECTRICAL CODE
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
C	CONDUIT	OEM	ORIGINAL EQUIPMENT MANUFACTURER
CKT	CIRCUIT	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
EC	EMPTY CONDUIT	P	POLE
(E)	EXISTING TO REMAIN. CONT. IN SERVICE	PNL	PANEL
FA	FIRE ALARM	PH,Ø	PHASE
FLA	FULL LOAD AMPS	(R)	REMOVE EXISTING AND RELOCATED
G	GROUND	(RE)	RELOCATED EQUP.
HP	HORSE POWER	RECPTRECEPTACLE	
KVA	KILO-VOLT AMPERE	TBD	TO BE DETERMINED
KW	KILOWATT	UON	UNLESS OTHERWISE NOTED
LTG	LIGHT	V	VOLT
MFR	MANUFACTURER	W	WIRE
MCB	MAIN CIRCUIT BREAKER	W/	WITH
MH	MOUNTING HEIGHT	WP	WEATHERPROOF
MLO	MAIN LUG ONLY	XFMR	TRANSFORMER
		(X)	REMOVE WITH ALL CIRCUITRY THERETO

WIRE & CABLE

1. FEEDERS: FEEDER SHALL BE COPPER. INSULATION SHALL BE THW OR THHN/THWN.
2. COLOR CODE: ALL WIRING SHALL BE COLOR CODED THROUGHOUT AS PER N.E.C. REQUIREMENTS.
3. ALL CONDUCTORS SHALL BE COPPER, MINIMUM #12 AWG.
4. ALL RECEPTACLES, LIGHTING FIXTURES, MOTORS, ETC., SHALL BE GROUNDED PER N.E.C. ALL RECEPTACLE CIRCUITS SHALL CONTAIN A #12 INSULATED GROUND CONDUCTORS.
5. RUN MULTIPLE HOME RUNS TO ALTERNATELY NUMBERED PANELBOARD CIRCUITS (I.E., 1,3,5) SERVING LIGHTING, GENERAL RECEPTACLES, AND MOTORS. ANY CIRCUITS SERVING, ISOLATED GROUND RECEPTACLES OR RECEPTACLES SERVING COMPUTER EQUIPMENT, WHEN THE CONTRACTOR RUN CIRCUITRY IN MULTIPLE HOME RUNS. CONTRACTOR SHALL OVERSIZE THE NEUTRAL CONDUCTOR TO A MINIMUM 200% OF THE CAPACITY OF PHASE CONDUCTORS SIZE THE EMT/CONDUIT ACCORDINGLY WHERE NECESSARY.
6. ALL EMPTY RACEWAYS SHALL CONTAIN A DRAG WIRE. EMPTY RACEWAYS 2" OR LARGER IN SIZE SHALL HAVE A MAXIMUM OR 2 - 90 DEGREES BENDS PER RUN. WHERE REQUIRED, PROVIDE PULL BOXES PER N.E.C. REQUIREMENTS.
7. FINAL CONNECTION TO ALL MOTORS OR VIBRATING EQUIPMENT SHALL BE WITH FLEXIBLE CONDUIT OR LIQUID-TIGHT FLEXIBLE CONDUIT FOR OUTDOOR.
8. ALL 120 VOLT CIRCUIT HOME RUNS WHICH ARE OVER 100 LINEAR FEET SHALL BE A MINIMUM OF #10 CONDUCTORS OR AS SHOWN ON THE PLANS.
9. EXPOSED AND CONCEALED CIRCUITRY SHALL BE RUN TIGHT TO CEILING SLAB IN A NEAT WORKMANLIKE MANNER. ALL RUNS SHALL BE PARALLEL OR PERPENDICULAR TO BUILDING WALL.

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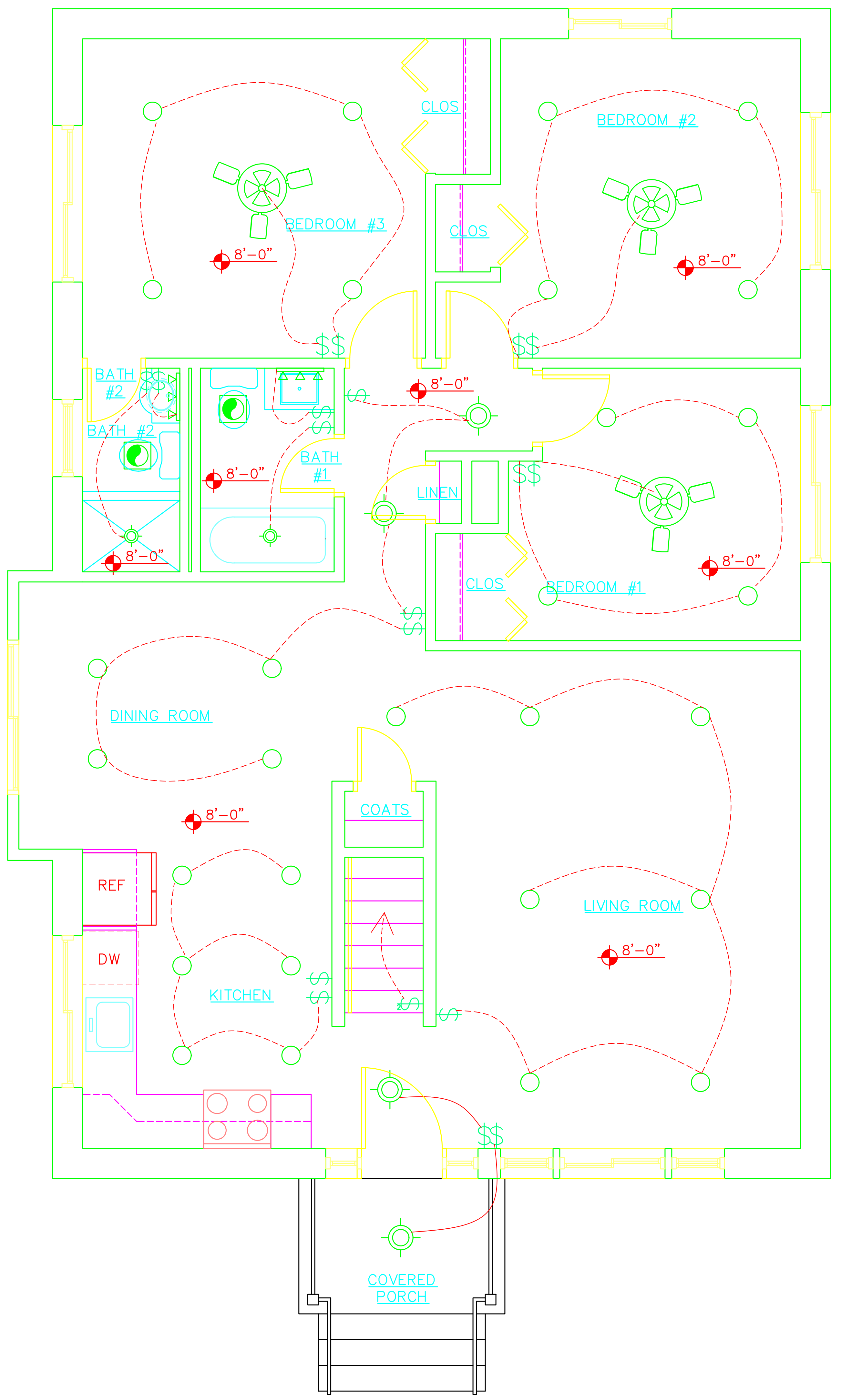
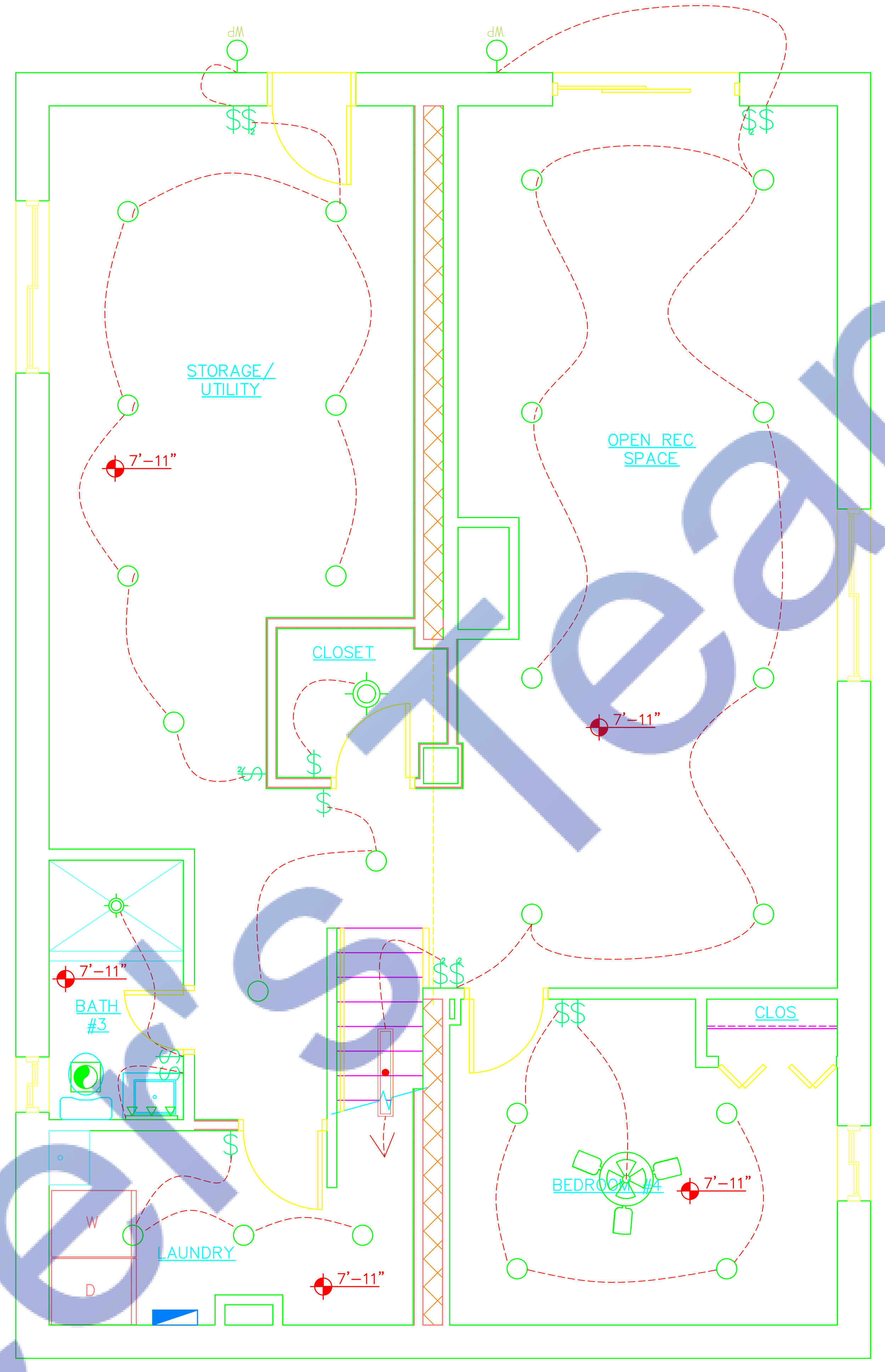
GENERAL NOTE FOR
Electrical PLAN

SHEET NUMBER
E-000





ELECTRICAL LEGEND

▽▽▽	WALL VANITY LIGHT
◙	EXHAUST FAN
○	LED RECESSED DOWNLIGHT, OR WET-LOCATION RECESSED LED DOWNLIGHT IN BATHS
✇	CEILING FAN WITH LED LIGHT
WP ♀	WALL-MOUNTED FIXTURE
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SD	SMOKE DETECTOR, HARDWIRED & INTERCONNECTED
$	SWITCH
φ GFCI	GFCI DUPLEX RECEPTACLE
φ	DUPLEX RECEPTACLE
▽	DISHWASHER/ DRYER RECEPTACLE

Note:

This Electrical Lighting Plan has been developed in strict accordance with the latest codes, standards, and regulatory requirements applicable to the jurisdiction of Washington, DC, USA.

1. District of Columbia Construction Codes (2017 Supplement):
- 12-A1205 – Lighting: Ensures all habitable spaces are provided with adequate natural or artificial lighting.
- 12-I404 – Electrical Power and Lighting Systems: Mandates that not less than 85% of lamps in permanently installed fixtures are high-efficacy.
- 12-K608 – Building Electrical Power and Lighting Systems: Requires exterior lighting to be controlled by time switches with automatic reduction of lighting power by at least 30% within two hours after facility operations conclude.

2. District of Columbia Green Construction Code (2013):
- 12-K409 – Site Lighting: Specifies exterior lighting zones and uplight ratings to minimize light pollution.
- Limits maximum color temperature for lights to 3000 Kelvin or lower.

3. District of Columbia Code:
- § 9-502 – Electric Lamps on Overhead Wires Prohibited: Prohibits the maintenance of public electric lamps by means of overhead wires within the city limits of Washington, DC.

4. Product Approval Codes:
- All lighting fixtures and components specified in this plan are compliant with DC, USA product approval codes, ensuring safety, energy efficiency, and adherence to local regulations.

This plan ensures full compliance with the above codes and standards, reflecting a commitment to safety, energy efficiency, and regulatory adherence.

LIGHTING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER	CATALOG NO.	LAMP NO.	TYPE	FIX. VOLTAGE	COLOR	CRI	LUMENS	FIXTURE WATTAGE	FINISH	MOUNTING	L/W
⊕	4" DIAMETER ROUND RECESSED DOWNLIGHT	PATHWAY LIGHTING	FIXTURE: RMD4LBV1035KS20 TRIM: RM4PLEDSCLPF	1	LED	120V	3500 °K	80	935	9 W	WHITE	RECESSED CEILING	103.88
⊕UC	2-3/4" DIAMETER ROUND RECESSED/SURFACE PUK LIGHT	DALS LIGHTING	FIXTURE: 6001 – 120V PowerLED Puck MODEL: 6001	1	LED	120V	3000 °K	90	350	4.5 W	SATIN NICKEL, WHITE	RECESSED/SURFACE CEILING	77.77
⊗	4" DIAMETER ROUND RECESSED DOWNLIGHT - WET AREA	PATHWAY LIGHTING	FIXTURE: RMD4LBV-20-27K-E1-L-DA TRIM: RM4PLED-L8	1	LED	120V	2700 °K	80	1,866	18 W	WHITE	RECESSED CEILING	103
○	15" DIAMETER ROUND SURFACE MOUNTED	J.D. LIGHTING	FIXTURE: 62-981-20W-LED-27K-90CRI-100-120V	1	LED	120V	2700 °K	80	1,660	20 W	POLISHED NICKEL	SURFACE CEILING	83
◉	6.7" DIAMETER ROUND SUSPENDED	FLOS LIGHTING	FIXTURE: FU009809	1	LED	120V	2700 °K	-	1600	12 W	WHITE	SUSPENDED	133.33
▭	48" LINEAR LIGHT SURFACE MOUNTED	LITHONIA LIGHTING	FIXTURE: BLWP4-20L-ADP-EZ1-LP835-NES7	1	LED	120V	3500 °K	80	2,055	16 W	CLEAR	SURFACE SUSPENDED	128
▭	48" LINEAR LIGHT SURFACE MOUNTED - STAIRCASES	LITHONIA LIGHTING	FIXTURE: WP-LED-450-SLO-35-4-HRW-120-D10-SEN-IN1	1	LED	120V	3500 °K	80	2,172	18 W	CLEAR	SURFACE SUSPENDED	121
◎	PENDANT MOUNTED DINNING AREA	KICHLER	FIXTURE: ZIN1 LIGHT WIDE MINI PENDANT CHROME 84020 CHROME	1	LED	120V	3200 °K	90	200	7 W	CHROME	PENDANT MOUNTED	28.57
⊣	24" LINEAR VANITY LIGHT	LITHONIA LIGHTING	FIXTURE: FMVCSLS-24IN-MVOLT-30K-90CRI-BN	1	LED	120V	3000 °K	80	1,550	18 W	WHITE	SURFACE WALL MOUNTED	86
⊢◉	EXTERIOR WALL SCONCE	LITHONIA LIGHTING	FIXTURE: WST LED-P1-27K-VW-MVOLT-E20WC-DDBXD	1	LED	120V	2700 °K	80	1,500	12 W	BRONZE	SURFACE WALL MOUNTED	125
✇	LED FAN LIGHT	HUNTER FAN	MODEL: ROMULUS WITH LED LIGHT	1	LED	120V	2700 °K	80	-	40 W	SILVER	SURFACE CEILING	
▽▽▽	BATHROOM VANITY LIGHT	KICHLER	MODEL: HENDRIK VANITY LIGHT 3-LIGHT	1	LED	120V	2700 °K	80	1,500	12 W	CHROME	SURFACE WALL MOUNTED	125

NOTES:
1. ALL LIGHTING FIXTURES TO BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING AND INSTALLING.
2. ARCHITECT TO SELECT COLOR OF LIGHTING FIXTURES
3. REFER TO ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT.
4. LISTED FOR INSTALLATION IN RATED FLOOR-CEILING ASSEMBLIES.
5. A MINIMUM OF 90 PERCENT OF THE LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE HIGH -EFFICACY LAMPS.

LAMP	EFFICIENCY
15WATTS	40 LUMENS PER WATTS
15W-40W	50 LUMENS PER WATTS
40W OR MORE	60 LUMENS PER WATTS

6. EXTERIOR LIGHTING SHALL COMPLY WITH THE REQUIREMENTS OF TABLE 4093.2 FOR THE EXTERIOR LIGHTING ZONE (LZ) APPROPRIATE TO THE BUILDING SITE.
7. INTERNALLY ILLUMINATED EXIST SIGNS SHALL NOT EXCEED 5 WATTS PER SIDE.
8. IC RATED RECESSED LIGHTING FIXTURES SEALED AT HOUSING/INTERIOR FINISH AND LABELED TO INDICATE < OR EQUAL TO 2.0 CFM LEAKAGE AT 75 PA.

KEYED NOTES - NEW WORK

1. PROVIDE CONNECTION FOR OUTDOOR UNIT, CU-1, 15.3 MCA, 25 MOCP, 240V/1. PROVIDE NEMA TYPE 3R 1-240V-30A WP DISCONNECT SWITCH (UL CLASS RK5).
2. PROVIDE CONNECTION FOR OUTDOOR UNIT, CU-2, 15.3 MCA, 25 MOCP, 240V/1. PROVIDE NEMA TYPE 3R 1-240V-30A WP DISCONNECT SWITCH (UL CLASS RK5).
3. PROVIDE CONNECTION FOR INDOOR UNIT, AHU-1, 7.8 MCA, 15A MOCP, 120V/1. PROVIDE 120V-30A DISCONNECT SWITCH TO COMPLY WITH CODE REQUIREMENTS.
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5. PROVIDE WP/GFI RECEPTACLE ADJACENT TO THE UNIT TO COMPLY WITH NEC REQUIREMENTS.
6. PROVIDE NEW UNIT PANEL 'A'.
7. PROVIDE NEW UNIT PANEL 'B'.
8. PROVIDE NEW UNIT PANEL 'C'.
9. PROVIDE SECURITY PANEL.
10. LUMINAIRES IN BATROOMS SHALL BE RATED FOR WET LOCATION.
11. SEE MECHANICAL PLANS AND ARCHITECTURAL PLANS FOR INFORMATION REGARDING RADON MITIGATION SYSTEM.

1. ALL NEW RECEPTACLES SHALL BE TAMPER-RESISTANT TYPE.
2. ALL NEW OR MODIFIED APPLICABLE CIRCUITS SHALL BE AFCI PROTECTED. ALL BRANCH CIRCUITS THAT SUPPLY 120-VOLT, SINGLE-PHASE, 15- AND 20-AMPERE OUTLETS INSTALLED IN FAMILY ROOMS, RECREATION ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, CLOSETS, HALLWAYS, KITCHENS, SUN ROOMS, AND SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A COMBINATION TYPE ARC-FAULT CIRCUIT INTERRUPTER INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.
3. OUTLET BOX HOOD FOR NEW EXTERIOR RECEPTACLES SHALL BE LISTED AND IDENTIFIED AS “EXTRA-DUTY.”
4. EXTERIOR RECEPTACLES SHALL BE “WEATHER RESISTANT” TYPE.
5. RECEPTACLES FOR LAUNDRY, UTILITY ROOM, DISHWASHER AND DISPOSAL SHALL BE GFCI TYPE.
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7. ALL LIGHTING ABOVE TUBS/SHOWERS SHALL BE LISTED FOR DAMP LOCATIONS.
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GENERAL ELECTRICAL NOTES

EQUIPMENT	NOTES
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SMOKE DETECTORS	WIRE UNIT SMOKE DETECTORS/CO SENSORS SUCH THAT ACTIVATION OF ONE ALARM WILL ACTIVATE ALL ALARMS IN THE UNIT. PROVIDE HARDWIRED COMBINATION SMOKE DETECTOR/CO SENSOR WITH BATTERY BACKUP. DEVICE SHALL BE LOCATED 3 FT AWAY FROM ALL AIR DEVICES AND BATHROOM OR KITCHEN ENTRANCE. WHERE CO SENSOR IS LOCATED, PROVIDE COMBINATION SMOKE/CO SENSOR.
DRYER	PROVIDE DEDICATED CONNECTION FOR DRYER NEMA RATED 240V/1PH, 30A C/B. COORDINATE WITH OWNER FOR FINAL LOCATION.
WASHER	PROVIDE 120V/1PH, 10A RECEPTACLE FOR WASHER. COORDINATE WITH OWNER FOR FINAL LOCATION.
AFCI PROTECTION	ELECTRICIAN TO INSTALL NEW "AFCI PROTECTION DEVICE" AT ALL REQUIRED LOCATIONS AND AS SPECIFIED BY NFPA.
LIGHTS	LIGHTING: CONTRACTOR SHALL CONNECT LIGHTING CIRCUITS TO DESIGNATED PANEL RUN 2#12 + 1#12G MC CABLE. CONNECT MAXIMUM OF 1800 WATTS PER 1-1P-20A-120V C/B.
GFCI	ALL RECEPTACLES WITHIN 6' OF A WET AREA SHALL BE GROUND FAULT INTERRUPTER TYPE.
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LIGHTING PLAN

SHEET NUMBER
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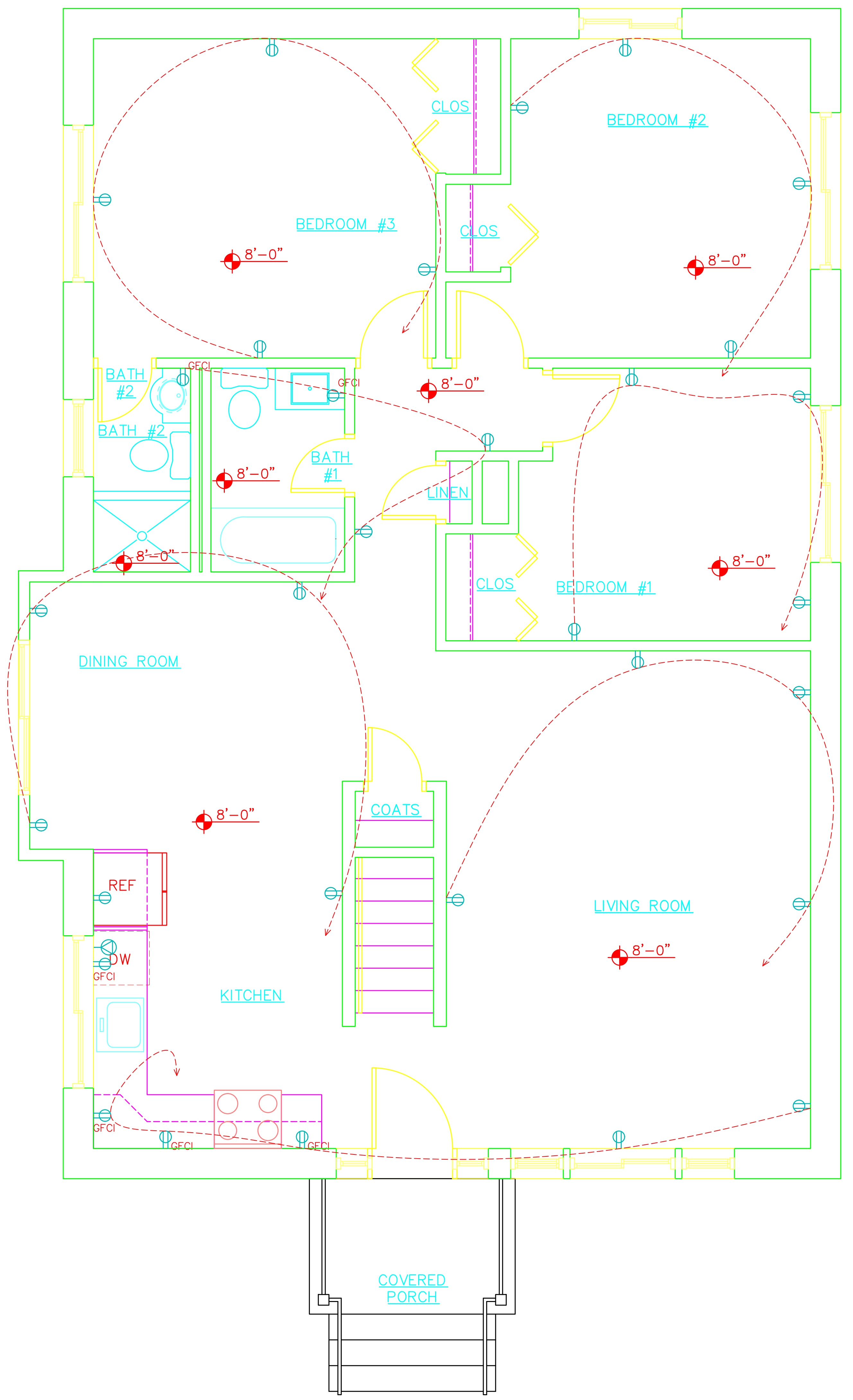

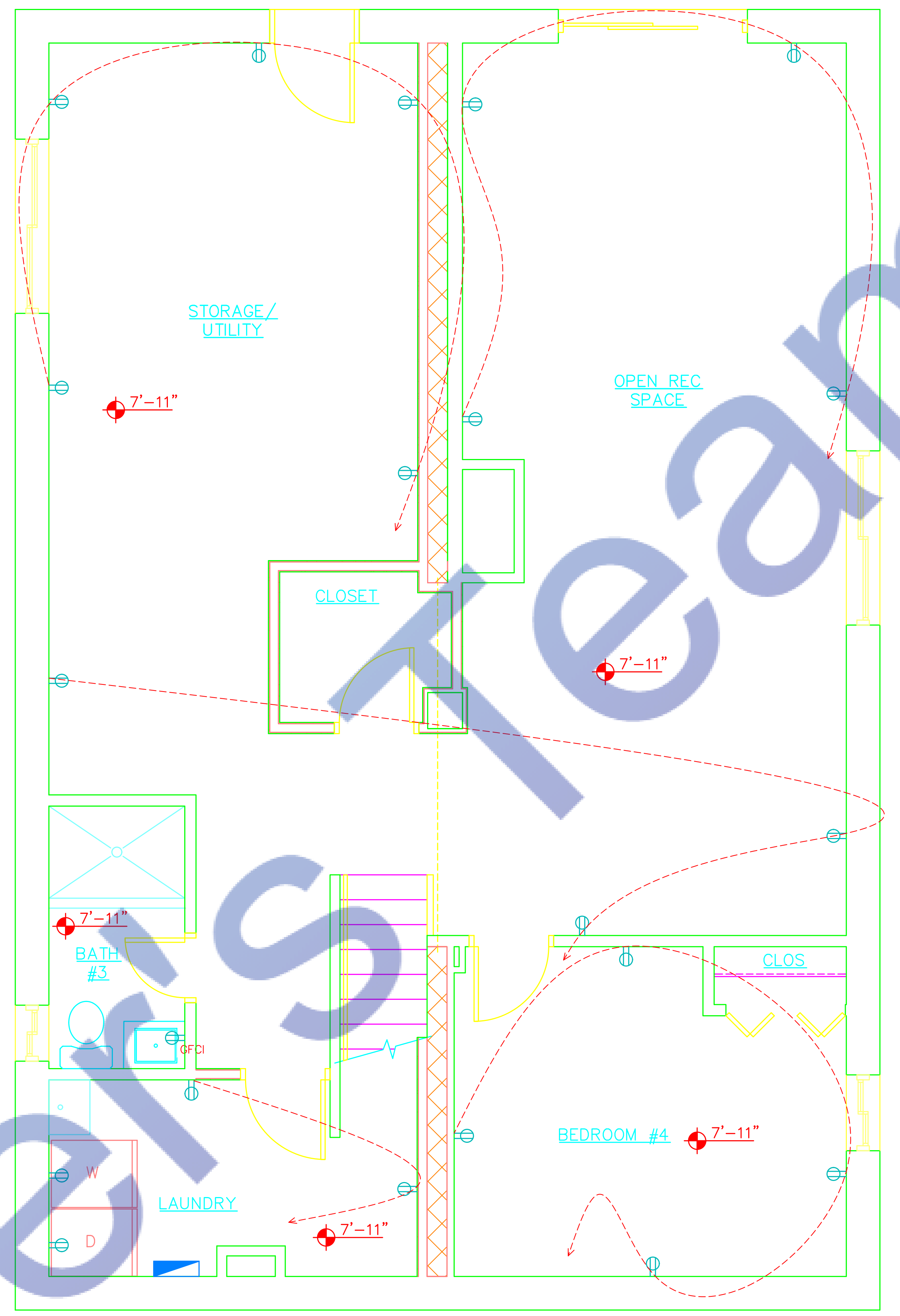

ELECTRICAL LEGEND

▽▽▽	WALL VANITY LIGHT
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⏀ GFCI	GFCI DUPLEX RECEPTACLE
⏀	DUPLEX RECEPTACLE
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Note:

This Electrical Power Layout Plan has been developed in strict accordance with the latest codes, standards, and regulations enforced in Washington, DC. The design ensures full compliance with the following:

1. 2023 National Electrical Code (NEC) – NFPA 70

Incorporates updated provisions for Class 2 power–limited emergency lighting systems, enhanced arc–fault and ground–fault circuit interrupter (AFCI/GFCI) requirements, and revised grounding and bonding practices to ensure system stability.

2. 2017 District of Columbia Construction Codes (Effective May 29, 2020)

Includes the 2014 NEC with DC–specific amendments, as outlined in Title 12 of the District of Columbia Municipal Regulations (DCMR), ensuring alignment with local construction standards.

3. 2017 DC Energy Conservation Code

Based on the 2015 International Energy Conservation Code (IECC) and ASHRAE 90.1–2013, with DC amendments, this code mandates energy–efficient design practices, including reduced lighting power densities and mandatory daylight harvesting in perimeter zones where lighting exceeds 150 Watts.

4. Clean Energy DC Building Code Amendment Act of 2022

Mandates that, by 2026, all new constructions and substantial renovations achieve net–zero energy standards, prohibiting on–site fossil fuel combustion for systems like furnaces and water heaters, except for backup generators in essential facilities.

5. Green Building Act (GBA) – D.C. Code § 6–1451.01 to § 6–1451.11

Establishes high–performance green building standards for public and private construction projects, aligning with the 2017 DC Green Construction Code requirements.

6. Greener Government Buildings Amendment Act of 2022 (GGBA) – D.C. Act 24–306

Imposes net–zero energy standards for public construction projects, reinforcing the commitment to sustainable building practices.

7. Comprehensive Electric Vehicle Infrastructure Access, Readiness, and Sustainability Amendment Act of 2024 – D.C. Law 25–262

Requires that, for building permits issued after January 1, 2025, all new single–family homes with dedicated off–road parking include infrastructure to support at least Level 1 electric vehicle (EV) charging, ensuring future readiness for EV adoption.

8. Automatic Receptacle Control Requirements

Mandates the implementation of automatic receptacle controls in both private offices and open office areas with systems furniture, enhancing energy efficiency by reducing unnecessary power consumption.

9. Energy Metering by Load Type

Requires new buildings and complete electrical system upgrades to include energy metering by load type, facilitating better energy management and compliance with DC's energy conservation goals.

10. Lighting Power Density (LPD) Reductions and Daylight Harvesting

Enforces stricter LPD limits and mandates daylight harvesting in perimeter zones where lighting exceeds 150 Watts, promoting energy–efficient lighting design.

Product Approval Codes – Washington, DC, USA:

All electrical components, devices, and systems specified in this plan are selected based on compliance with the following product approval standards:

- UL (Underwriters Laboratories) Listings

Ensures that all electrical products meet nationally recognized safety standards.

- NRTL (Nationally Recognized Testing Laboratory) Certifications

Confirms that products have been tested and certified by OSHA–recognized laboratories for safety and compliance.

- DC–Specific Approvals

All products and systems comply with the District of Columbia's specific amendments and requirements as outlined in the DCMR Title 12.

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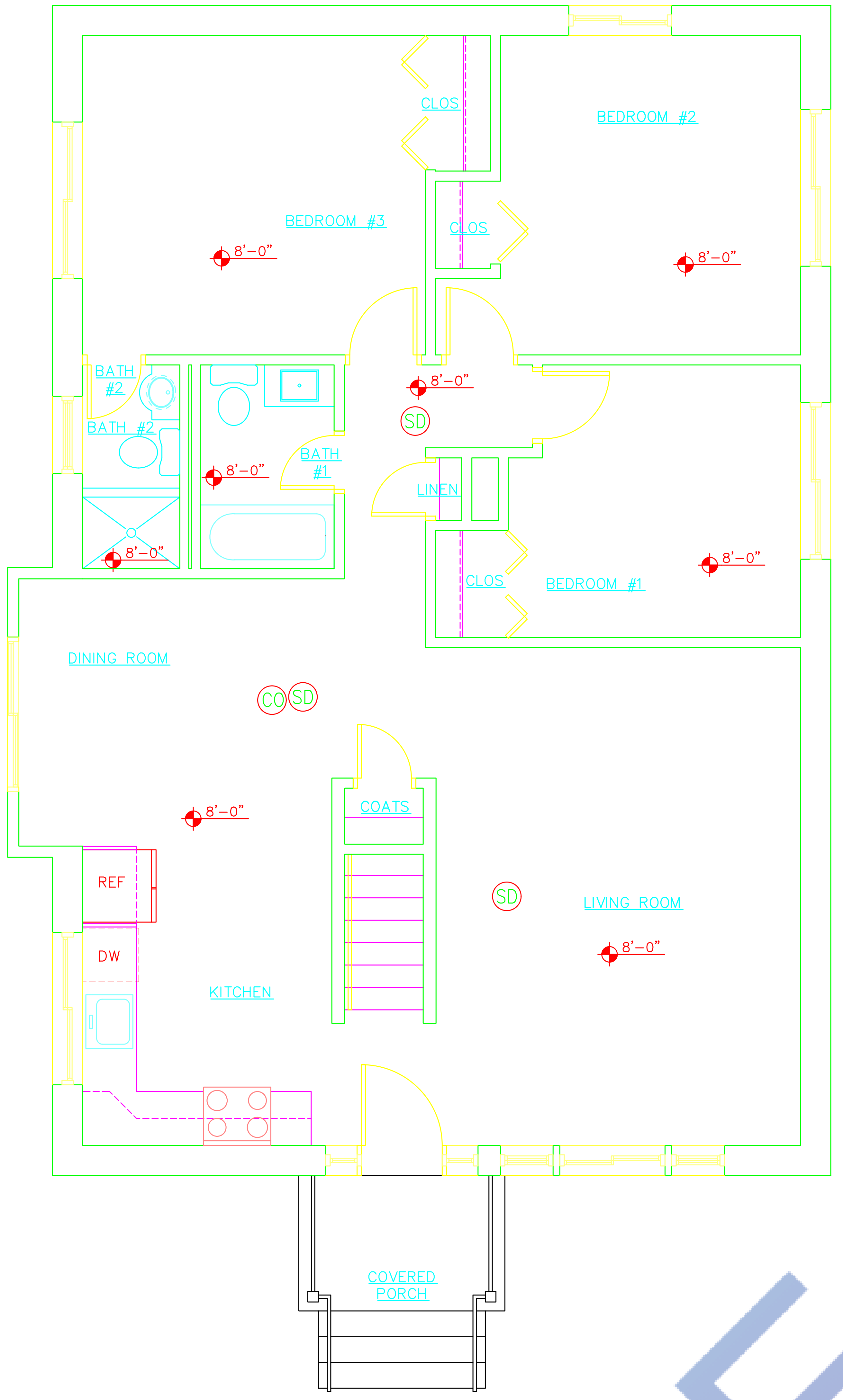

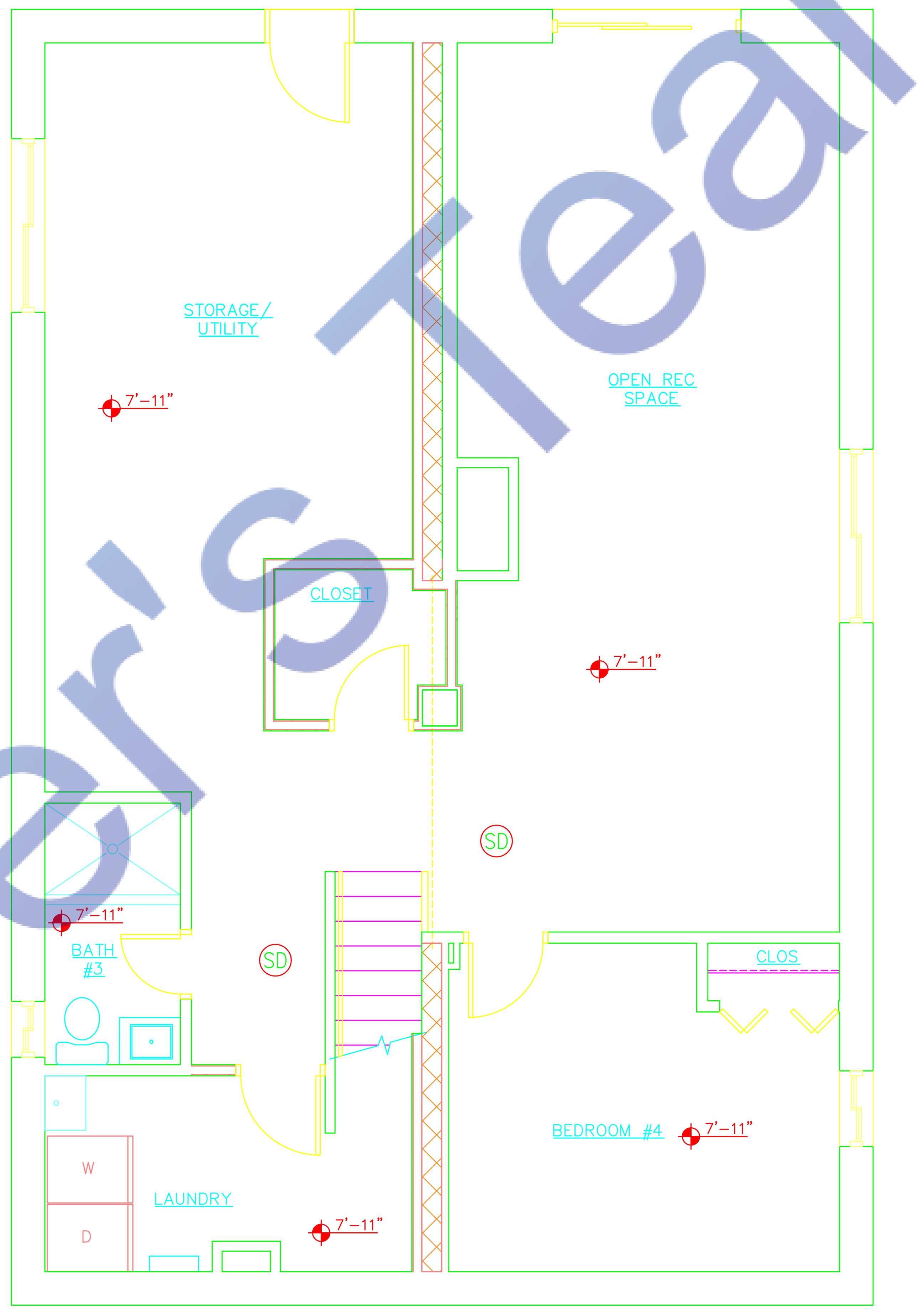

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φ GFCI	GFCI DUPLEX RECEPTACLE
φ	DUPLEX RECEPTACLE
▽	DISHWASHER/ DRYER RECEPTACLE

Note:

1. Code Compliance:

This Fire Alarm Layout Plan has been developed in full compliance with the following codes and standards:

- NFPA 72: National Fire Alarm and Signaling Code, 2025 Edition
- NFPA 70: National Electrical Code (NEC), 2020 Edition
- NFPA 101: Life Safety Code, 2021 Edition
- UL 217 (8th Edition): Smoke Alarms
- UL 268 (7th Edition): Smoke Detectors for Fire Alarm Signaling Systems
- District of Columbia Municipal Regulations (DCMR), Title 12, Building Code

2. Product Approvals:

All fire alarm system components specified in this plan are listed and approved for use in the District of Columbia, USA, and comply with the following standards:

- UL 217 (8th Edition): Smoke Alarms
- UL 268 (7th Edition): Smoke Detectors for Fire Alarm Signaling Systems

3. Design Standards:

The fire alarm system design adheres to the following standards:

- Application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems as per NFPA 72:2025
- Electrical wiring and equipment standards as per NFPA 70:2020
- Life safety provisions as per NFPA 101:2021

4. Smoke Detector Placement:

Smoke detectors have been placed in accordance with NFPA 72:2025 guidelines, ensuring they are not installed within a 10–foot radius of stationary or fixed cooking appliances unless the detectors are listed for resistance to nuisance alarms in accordance with UL 217 or UL 268.

5. New Detection Technologies:

The design incorporates new detection technologies as introduced in NFPA 72:2025, including:

- Acoustic Leak Detectors: Devices that detect gas leaks by sensing the sound produced by a pressurized gas release.
- Thermal Image Fire Detectors: Devices that sense overheated combustible material by imaging in the long–wave infrared wavelengths.

6. Cybersecurity Measures:

In accordance with NFPA 72:2025, expanded requirements have been implemented to protect fire alarm and signaling systems from cyber threats.

7. Smoke Detector Spacing:

Smoke detector spacing remains unchanged on ceilings up to 40 feet in height. For ceilings higher than 40 feet, a performance–based design approach has been used to determine appropriate spacing, as per NFPA 72:2025.

8. Restricted Audible Mode Operation:

A new notification mode, permitting a restricted mode audible operation (RAMO) notification zone, has been added. This allows for private mode audible levels in specific areas, providing flexibility in alarm notification methods.

9. Auxiliary Service Providers (ASP):

The design acknowledges the role of Auxiliary Service Providers (ASP) as defined in NFPA 72:2025, which includes entities that receive signals from a protected premises fire alarm system, modify or manipulate these signals, and direct them to the supervising station.

10. Fuel Gas Detection:

In accordance with NFPA 72:2025 and NFPA 715, definitions and requirements for fuel gas detection have been incorporated, including the use of fuel gas detectors and warning equipment.

This note should be placed on the Fire Alarm Layout Plan sheet to indicate compliance with the latest codes and standards.

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REVISIONS

ISSUE	DATE
ISSUED FOR PERMIT	04.18.2025

PROJECT

RENOVATION OF:

3615 BANGOR ST
WASHINGTON, D.C. 20020

DATE
21 APRIL 2025

PROJECT NUMBER
052025

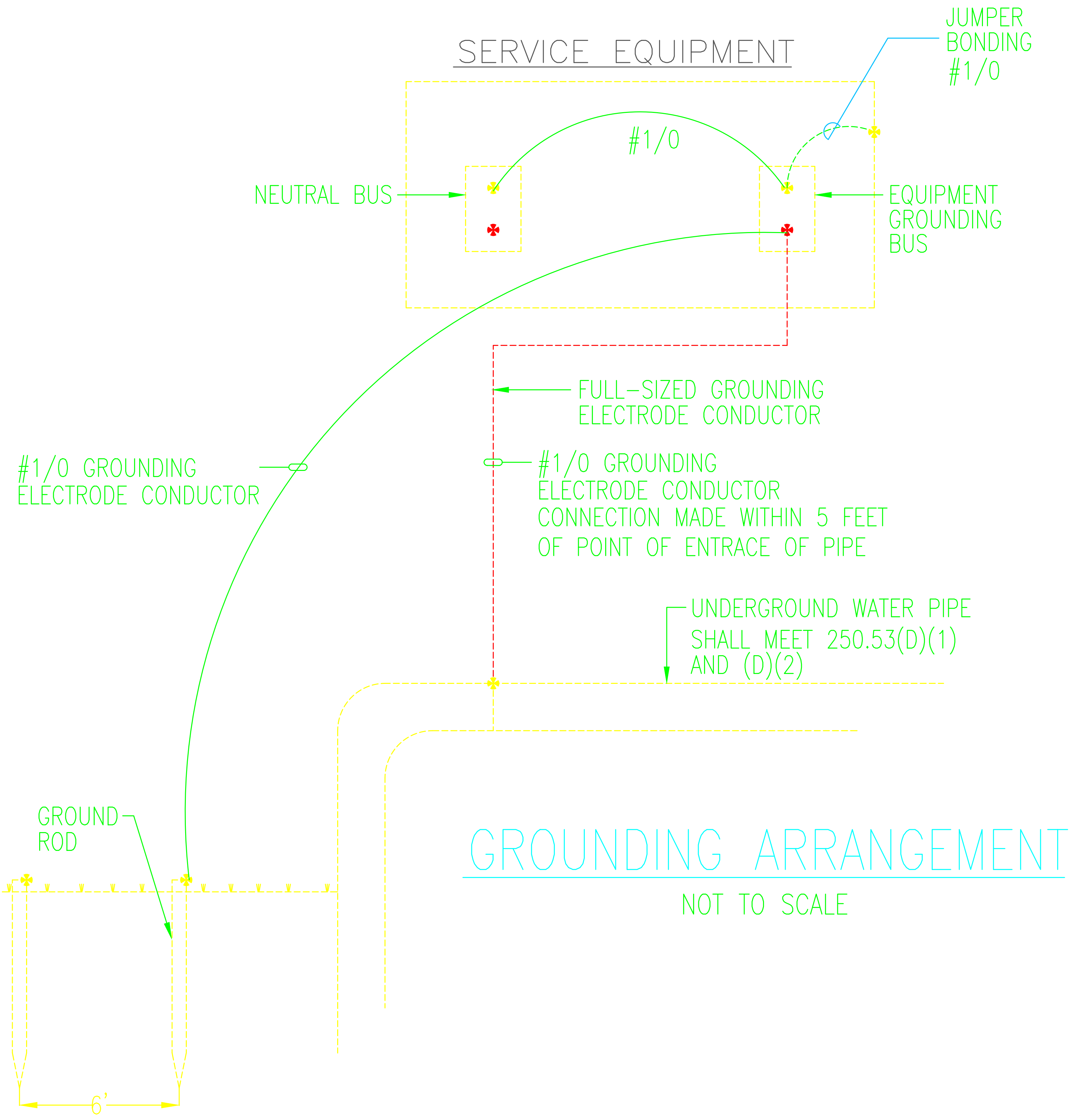
DRAWN BY
TMF/CC

SCALE
AS INDICATED

DRAWING TITLE

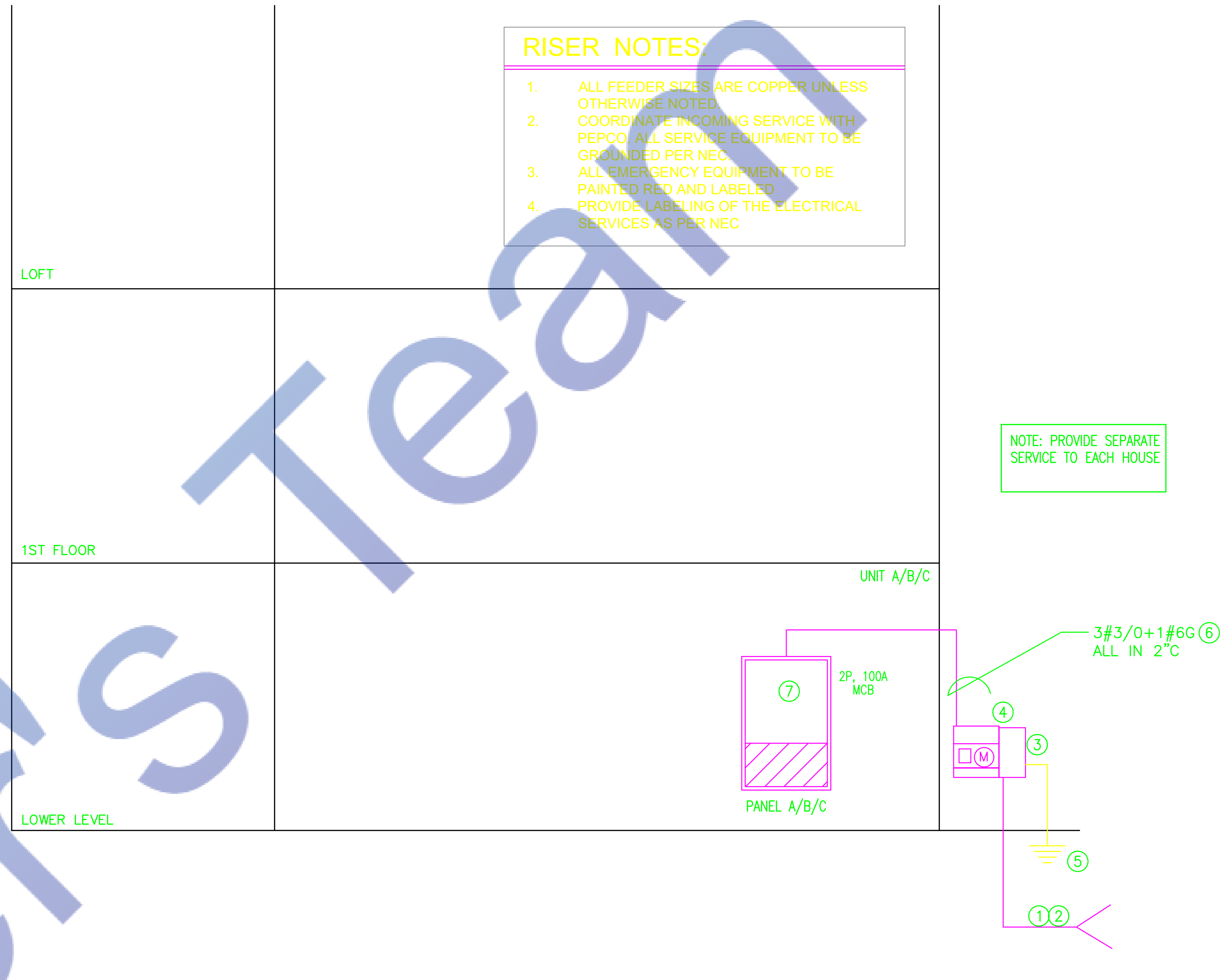
PROPOSED FIRE ALARM PLAN

SHEET NUMBER
E-003



GROUNDING ARRANGEMENT

NOT TO SCALE



RISER NOTES:

1. ALL FEEDER SIZES ARE COPPER UNLESS OTHERWISE NOTED.
2. COORDINATE INCOMING SERVICE WITH PEPCO. ALL SERVICE EQUIPMENT TO BE GROUNDED PER NEC.
3. ALL EMERGENCY EQUIPMENT TO BE PAINTED RED AND LABELED
4. PROVIDE LABELING OF THE ELECTRICAL SERVICES AS PER NEC

NOTE: PROVIDE SEPARATE SERVICE TO EACH HOUSE

ELECTRICAL RISER NOTES:

1. SERVICE ENTRANCE FEEDERS FROM UTILITY COMPANY VAULT. FEEDERS TO BE PROVIDED BY UTILITY CO. SERVICE ENTRANCE CONDUCTORS SHALL BE 2 SETS OF 4#3/0 +1#3 GROUND ALL IN (2) 2-1/2" CONDUIT.

2. COORDINATE WITH UTILITY DWGS FOR EXACT LOCATION AND QUANTITY OF CONDUITS REQUIRED BY UTILITY COMPANY STANDARDS.

3. PROVIDE NEW 200A, 120/240V, 1ϕ, 3W, NEMA 3R, 65AIC, UTILITY COMPANY APPROVED CABINET .

4. PROVIDE COMBINED METER STACK 3R TYPE & CIRCUIT BREAKER 240/120V, 1PH, 3W. (1) 200A CIRCUIT BREAKER. INSTALL PER PEPCO REQUIREMENTS.

5. PROVIDE NEW GROUNDING PER NEC.

6. PROVIDE NEW FEEDER.

7. PROVIDE NEW TENANT UNIT PANEL "x" 200A, MCB, 120/240V, 1ϕ, 3W, – SEE PANEL SCHEDULE.

METER APARTMENT

BASIS OF DESIGN CUTLER HAMMER–3MM
METERING STACKS:
COORDINATE WITH POWER CO. FOR RINGS/TINGLESS
WITH 65,000 AIC RATING
REQUIREMENT. PROVIDE CIRCUIT BREAKERS AS INDICATED ON
METER STACK ELEVATION
MAIN SERVICE MODULE;
WITH 65000 AIC RATING.
PROVIDE 65000 AIR SERIES RATING FOR TENANT CIRCUIT BREAKERS. CUTLER HAMMER POWER LINE–2 WITH UTILITY COMPARTMENT SERVICE PROVIDED FOR PEPCO METERING. MAIN DEVICE TYPE SHALL BE ENTRANCE RATED, RATING AS INDICATED. DISTRIBUTION SECTION DEVICES SHALL BE CIRCUIT BREAKERS.
PROVIDE PAD LOCKABLE COVER

ALL ELECTRICAL WIRING, BOXES, CONDUITS, RACEWAYS, CATV AND TELEPHONE WIRING PENETRATING FIRE RESISTANCE RATED MEMBRANCES MUST BE PROPERLY SEALED TO ASSURE THAT THE REQUIRED FIRE RATED RATING IS NOT REDUCE.
UL 263 FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIAL. SIMILAR TO ASTM E119

UL 1479 FIRE TESTS OF THROUGH–PENETRATION FIRESTOPS. COMPLEMENTARY TO UL 263. SIMILAR TO ASTM E 814

714.3.2 MEMBRANE PENETRATIONS
SHALL COMPLY WITH SECTION 714.3.1. WHERE WALLS OR PARTITIONS ARE REQUIRED TO HAVE A FIRE RESISTANCE RATING, RECESSED FIXTURES SHALL BE INSTALLED THAT THE REQUIRED FIRE RESISTANCE WILL NOT BE REDUCED.

PENETRATIONS OF MEMBRANES THAT ARE PART HO A HORIZONTAL ASSEMBLY SHALL COMPLY WITH SECTION 714.4.1.1 OR 714.4.1.2 WHERE FLOOR/CEILING ARE REQUIRED TO HAVE A FIRE RESISTANCE RATING.

MEMBRANE PENETRATION BY LISTED ELECTRICAL BOXES OF ANY MATERIAL, PROVIDED THAT SUCH BOXES HAVE BEEN TESTED FOR USE IN FIRE RESISTANCE RATED ASSEMBLIES AND ARE INSTALLED PER INSTRUCTIONS.

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ELECTRICAL RISER
& DETAILS
SHEET NUMBER
E-004

MAIN PANEL

Panel Location-			
Voltage (Phase-Ground/Phase-Phase)	120	208	Source of Supply-From Service Disconnect/Meter
Phase-	1	Wire-	3
Rated Amps-	196	AIC-	10k
MCCB	200 Amps	Mounting-	Wall Surface

Circuit	Description	New/ Existing	Load Type	Breaker Size	Poles	Wire Size	A	B	A	B	Wire Size	Poles	Breaker Size	Load Type	New/ Existing	Description	Circuit
1	LIGHTING LOAD	N		10	1	#14	1200		13000		#1/0	1	150		N	HVAC	2
3	WATER HEATER	N		20	1	#12		2000		100	#12	1	20		N	CT-1	4
5	CT-2	N		20	1	#12	200		800		#12	1	20		N	Coffee Maker/Toaster	6
7	CT-4	N		20	1	#12		300		150	#12	1	20		N	CT-3	8
9	CT-6	N		20	1	#12	300		200		#12	1	20		N	CT-5	10
11	CT-8	N		20	1	#12		200		200	#12	1	20		N	CT-7	12
13	CT-10	N		20	1	#12	200		100		#12	1	20		N	CT-9	14
15	CT-12	N		20	1	#12		200		200	#12	1	20		N	CT-11	16
17	Refrigerator	N		20	1	#12	600		600		#12	1	20		N	Microwave Oven	18
19	Clothes Dryer (Electric)	N		20	1	#12		1200		800	#12	1	20		N	Washing Machine	20
21	Dishwasher	N		20	1	#12	1000		--							Space	22
23	Space							--		--		1				Space	24
25	Space				1		--		--			1				Space	26
27	Space				1			--		--		1				Space	28
29	Space				1		--		--			1				Space	30

	A	B	Total
.			
Connected Load (W)	18200	5350	23550
Connected Amps	152	45	196
Main Type and Amps Rating	200 Amps MCCB		

Demand Load Calcultion

Load Classification	Connected Load	Demand Factor	Estimated Demand
Lighting - Dwelling Unit	1200	125%	1500
Water Heater - Dwelling Unit	2000	100%	2000
Receptacle	7350	65%	4777.5
Cooling	13000	100%	13000
Pump	0	125%	0
Other	0	100%	0
Demand Load	23550		21277.5
Demand Amps			177

* PROVIDE ARC FAULT C/B

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DRAWING TITLE
ELECTRICAL LOAD SCHEDULE

SHEET NUMBER
E-005