MECHANICAL SPECIFICATIONS

1. GENERAL
A. THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS, AND ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL BE PART OF THE SPECIFICATIONS.

B. THE WORD "PROVIDE" AS USED HEREIN MEANS TO FURNISH AND INSTALL COMPLETE.

C. THE TERM "CONTRACTOR" AS USED HEREIN MEANS ANY CONTRACTOR OR SUBCONTRACTOR CONTRACTED TO PERFORM WORK INCLUDED IN AND DEFINED BY THIS SECTION.

D. MECHANICAL WORK SHALL BE PROVIDED IN STRICT COMPLIANCE WITH THE 2021 INTERNATIONAL MECHANICAL CODE, AND ALL APPLICABLE LOCAL ORDINANCES, STATE LAWS AND FEDERAL LAWS.

2. PRIOR TO BIDDING:
A. THOROUGHLY REVIEW THE BID INSTRUCTIONS INCLUDING ALL ARCHITECTURAL AND MEP CONSTRUCTION DOCUMENTS. OBTAIN AND THOROUGHLY EXAMINE THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, DETAILS, AND REQUIREMENTS FOR THE SCHEDULED AND SPECIFIED EQUIPMENT AND MATERIALS. FOR AMBIGUOUS, CONTRADICTORY, OR CONFLICTING ITEMS WITH THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL REQUEST CLARIFICATION IN A WRITTEN "REQUEST FOR INFORMATION" (RFI), AT LEAST FIVE (5) WORKING DAYS PRIOR TO BID DATE. RFI NOT CLARIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ARCHITECT (ENGINEER) IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK.

B. EXISTING CONDITIONS: THE CONTRACT DOCUMENTS ARE BASED ON INFORMATION PROVIDED TO CASE ENGINEERING AT THE TIME OF DESIGN. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO: EXISTING HVAC SYSTEM LOCATIONS, EXISTING DUCT LAYOUTS, CLEARANCES, ETC. REPORT IN WRITING ANY DISCREPANCIES TO THE ENGINEER AT LEAST FIVE (5) BUSINESS DAYS PRIOR TO BID. DISCREPANCIES NOT IDENTIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ENGINEER IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK.

C. IF THE CONTRACTOR BELIEVES THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING.

D. NO ALLOWANCES WILL BE MADE DUE TO CONTRACTOR'S UNFAMILIARITY WITH THE CONSTRUCTION DOCUMENTS OR FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.

E. VISIT THE JOB SITE AND THOROUGHLY INVESTIGATE CONDITIONS. THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

F. REFER TO APPLICABLE CODES CITED IN CONSTRUCTION DOCUMENTS. EXAMINE GOVERNING STATE AND LOCAL CODES, AND LOCAL REGULATIONS AND ORDINANCES, AND COORDINATE ALL WORK AND INSTALLATION IN STRICT ACCORDANCE WITH SAME.

G. REFER TO CONSTRUCTION DOCUMENTS FOR SCHEDULED AND SPECIFIED MATERIALS AND EQUIPMENT. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

H. ALL WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE LANDLORD'S CONSTRUCTION CRITERIA AND TENANT/LANDLORD AGREEMENT. THIS CONTRACTOR SHALL EXAMINE THE LANDLORD CRITERIA AND TENANT/LANDLORD AGREEMENT AND THEY SHALL BE PART OF THESE SPECIFICATIONS. NO ALLOWANCES WILL BE MADE DUE TO CONTRACTOR'S UNFAMILIARITY WITH THESE DOCUMENTS.

3. BIDDING
A. SUBMISSION OF A BID ACKNOWLEDGES THAT THE CONTRACTOR HAS REVIEWED THE BID INSTRUCTIONS, HAS VISITED THE SITE, EXAMINED ALL CONSTRUCTION DOCUMENTS, AND AGREES TO ALL ITEMS AND CONDITIONS WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR'S BID SHALL INCLUDE ALL MECHANICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING MECHANICAL WORK RELATED TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS.

4. PERMITS
A. SECURE AND PAY FOR ALL PERMITS, LICENSES, AND INSPECTIONS REQUIRED BY THE AHJ FOR THIS WORK.

5. SUBSTITUTIONS
A. MANUFACTURERS' EQUIPMENT AND MATERIALS SCHEDULED, NOTED, AND SPECIFIED IN THE CONSTRUCTION DOCUMENTS ARE THE DESIGN STANDARD. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT OR ENGINEER. IN BIDDING, DO NOT ASSUME ACCEPTANCE OF SUBSTITUTIONS. CONTRACTOR MUST STATE IN SUBSTITUTION REQUEST: "PROPOSED SUBSTITUTIONS ARE EQUAL OR OF HIGHER QUALITY, EFFICIENCY AND DEPENDABILITY COMPARED TO THE SPECIFIED EQUIPMENT AND MATERIAL. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ADDITIONAL ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS." IF DEEMED NECESSARY BY THE ARCHITECT OR ENGINEER, SUBSTITUTIONS WHICH ARE NOT APPROVED OR NOT EQUAL TO DESIGN STANDARD SHALL BE REMOVED AND THE SCHEDULED, NOTED, AND SPECIFIED EQUIPMENT AND MATERIALS SHALL BE INSTALLED AT CONTRACTOR'S EXPENSE. SUBMITTING CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ADDITIONAL ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS.

6. SCHEDULE
A. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY PHASE OF THE GENERAL CONSTRUCTION, AS SCHEDULED BY THE GC. PROVIDE COMPLETE INFORMATION AND FULL COOPERATION WITH OTHER CONTRACTORS AND TRADES, AS REQUIRED FOR THE TIMELY COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
B. PROVIDE ALL TESTING AND INSPECTIONS REQUIRED BY AHJ.

C.PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION

7. SCOPE
A. PROVIDE PERMIT(S), INSPECTIONS, FINAL CERTIFICATE(S) OF INSPECTION BY AHJ, PERMIT AND INSPECTION FEES, AND ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR A COMPLETE AND FULLY OPERATING HVAC SYSTEM.

B. INSTALL ALL WORK AND EQUIPMENT RIGID, DEAD LEVEL, PLUMB, AND TRUE-TO-LINE. UNLESS NOTED OTHERWISE, SUPPORT AND MOUNTING OF EQUIPMENT, DUCT, PIPING, ETC., ARE THIS CONTRACTOR'S MEANS AND METHODS. THE CONTRACTOR SHALL UNDERSTAND THE SPECIFIED AND SCHEDULED EQUIPMENT AND MATERIALS AND MEANS AND METHODS OF INSTALLATION. THIS CONTRACTOR SHALL PROVIDE ALL ACCESSORIES REQUIRED FOR PROPER SUPPORT WHETHER SHOWN ON THE DRAWINGS OR NOT. IF SUPPORTS ARE REQUIRED, CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ARCHITECT FOR APPROVAL.

C. PROVIDE ACCESSORY MOUNTING HARDWARE INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, STRUT

SYSTEMS, ALL THREAD RODS AND BRACES AS REQUIRED TO MOUNT EQUIPMENT, PROVIDE STEEL SHAPES AND FRAMES TO SUPPORT EQUIPMENT WHERE NEEDED. ALL SYSTEMS SHALL BE SUPPORTED INDEPENDENT OF AND ISOLATED FROM EQUIPMENT VIBRATION.

D. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' PRINTED INSTALLATION AND MAINTENANCE LITERATURE. COMPONENTS REQUIRING PERIODIC MAINTENANCE OR ADJUSTMENTS SHALL BE INSTALLED SO AS TO PERMIT ACCESS WITHOUT DAMAGE TO STRUCTURE, FINISHES, OR OTHER EQUIPMENT.

E. CONTRACTOR SHALL PROVIDE DAILY CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH GENERATED BY THIS WORK.

F. AS-BUILT DRAWINGS: DURING CONSTRUCTION, AS WORK PROCEEDS, MAINTAIN AS-BUILT MARK-UPS OF ACTUAL INSTALLATION. AT CONSTRUCTION COMPLETION AND PRIOR TO TURNOVER TO OWNER, PROVIDE FINAL MARK-UPS IN PDF FORMAT TO ARCHITECT AND ENGINEER.

G. PROVIDE FINAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, AS NOTED.

H. DO NOT ROUTE ANY PIPING OR DUCTWORK ABOVE ELECTRICAL PANELS.

I. UNLESS NOTED OTHERWISE, ALL DUCT AND PIPE SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALLS, BEAMS, OR COLUMNS. PIPE SHALL BE RUN AS DIRECT AS POSSIBLE – AVOID UNNECESSARY OFFSETS AND MAXIMIZE HEADROOM.

J. PRIOR TO ORDERING EQUIPMENT, THIS CONTRACTOR SHALL PROVIDE FINAL COORDINATION OF ELECTRICAL POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.

K. CONTRACTOR SHALL MAINTAIN ACTIVITIES WITHIN AREA APPROVED BY OWNER OR GC. CONTRACTOR'S ACTIVITIES SHALL NOT INTERFERE WITH THE OWNER'S OPERATIONS, EXCEPT AS APPROVED.

L. EXCEPT THOSE COORDINATED AND APPROVED BY THE G.C., CONTINUITY OF ALL BUILDING SERVICES AND UTILITIES SERVING BUILDING FACILITIES SHALL BE MAINTAINED UNINTERRUPTED AT NO ADDITIONAL COST. PROVIDE ALL NECESSARY CROSS CONNECTIONS AND TEMPORARY CONNECTIONS REQUIRED TO PERFORM THE CONSTRUCTION, AS DETERMINED BY THE G.C., AND NEEDED TO MAINTAIN CONTINUITY OF THE BUILDING SERVICE(S). THIS CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY AND ALL CONNECTIONS, AND/OR SHUT-DOWNS OF EXISTING EQUIPMENT, PIPING, ETC., SHALL ASSURE FULL RESUMPTION OF SERVICE(S) AT THE G.C.'S DESIGNATED TIME.

8. CODE REQUIREMENTS
A. ALL WORK SHALL COMPLY WITH THE CONSTRUCTION DOCUMENTS OR, AS DIRECTED BY THE ARCHITECT (ENGINEER), AND SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF THE AHJ, WHETHER SO SHOWN OR NOT. CONTRACTOR SHALL BE FAMILIAR WITH PROVISIONS OF ALL APPLICABLE CODES AND SHALL INSURE THE WORK COMPLIES WITH ALL LOCAL, STATE AND FEDERAL CODES, TRADE STANDARDS AND MANUFACTURER'S RECOMMENDATIONS. IF CONTRACTOR BELIEVES THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE G.C. IN WRITING. DO NOT INSTALL WORK NOT COMPLYING WITH CODE REQUIREMENTS. IN CASE OF CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY. AS A MINIMUM STANDARD, CONTRACTOR SHALL SATISFY CODE REQUIREMENTS. ALL MODIFICATIONS REQUIRED BY AHJ SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. BEFORE COMMENCING WORK NOT SHOWN IN DOCUMENTS BUT REQUIRED TO ACHIEVE FULL COMPLIANCE WITH CODES, CONTRACTOR SHALL NOTIFY ARCHITECT (ENGINEER).

1. 2020 ARKANSAS ELECTRICAL CODE (NFPA 70, 2020)
2. 2021 ARKANSAS BUILDING CODE (2021 IBC WITH AMENDMENTS)
3. 2014 ARKANSAS ENERGY CODE (2009 IECC WITH AMENDMENTS)
4. 2021 ARKANSAS MECHANICAL CODE (2021 IMC WITH AMENDMENTS)
5. 2018 ARKANSAS PLUMBING CODE (2018 IPCWITH AMENDMENTS)
6. ALL OTHER NFPA CODES AND STANDARDS - APPLICABLE EDITIONS

9. CUTTING & PATCHING
A. CORE–DRILL OR SAW–CUT EXISTING FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR EQUIPMENT, PIPE, OR DUCTWORK. PRIOR TO CUTTING, PERFORM NON–DESTRUCTIVE TESTING TO VERIFY LOCATION OF STRUCTURAL COMPONENTS. NOTIFY ARCHITECT (ENGINEER) OF ANY DISCREPANCIES. PATCH SURROUNDING AREAS FLUSH WITH ADJACENT SURFACE AND READY TO RECEIVE FINISH. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING. ALL ROOF WORK SHALL MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING. COORDINATE REQUIRED OPENINGS AND PENETRATIONS WITH THE G.C. AND OTHER TRADES. (OPENINGS INTO FOUNDATIONS, SLABS, FLOORS, WALLS, CEILINGS, AND ROOFS SHALL BE BUILT INTO THE STRUCTURE WITH SLEEVES, CURBS, ETC.)

10. FIRE STOPPING
A. PROVIDE FIRE STOPPING FOR PENETRATIONS OF DUCT, PIPING, AND OTHER MECHANICAL EQUIPMENT THROUGH FIRE–RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES), AND VERTICAL SERVICE SHAFT WALLS AND PARTITIONS. FIRESTOP SYSTEM INSTALLATION MUST MEET REQUIREMENTS OF ASTM E 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF CONSTRUCTION BEING PENETRATED. INSTALL IN STRICT ACCORDANCE WITH UL FIRE RESISTANCE DIRECTORY, AHJ, AND MANUFACTURER'S SPECIFIED REQUIREMENTS. ONLY TESTED FIRESTOP SYSTEMS BY "3M", "HILTI", OR EQUAL SHALL BE USED. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATING.

11. MATERIALS AND WORKMANSHIP
A. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE NEW U.N.O., FREE OF DEFECTS, AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND DETAILS, AND INDEPENDENTLY TESTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY — UNDERWRITERS LABORATORIES (UL) OR INTERTEK (ETL). ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY U.N.O.

B. ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. ALL MATERIALS INSTALLED IN PLENUM SPACES SHALL BE LISTED AND LABELED FOR SUCH APPLICATION.

C. ALL WORK SHALL BE SUPERVISED BY THE INSTALLING CONTRACTOR'S COMPETENT AND SKILLED FOREMAN. ALL WORK SHALL BE PERFORMED BY COMPETENT AND SKILLED WORKERS, ALL OF WHOM SHALL BE NEAT IN APPEARANCE, UNIFORMED, WEAR COMPANY IDENTIFICATION, AND SPEAK ENGLISH. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE BEST QUALITY STANDARDS OF THE TRADE AND IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND STANDARDS, INCLUDING APPLICABLE OSHA REGULATIONS. PROVIDE ADEQUATE WORKING CONSTRUCTION, AT CONSTRUCTION COMPLETION, THOROUGHLY CLEAN WORK AND REMOVE ALL DEBRIS FROM THE PREMISES.

12. PROTECTION OF WORK AND PROPERTY
A. PROTECT ALL WORK FROM DAMAGE AND PROTECT THE OWNER'S PROPERTY FROM DKI, DAMAGE, OR LOSS ARISING FROM CONTRACTOR WORK.

B. COMPLY WITH OSHA REQUIREMENTS AND TAKE ALL NECESSARY PRECAUTIONS FOR EMPLOYEE SAFETY.

C. PROTECT ALL OPEN PIPING, DUCT, AND EQUIPMENT, EXISTING AND NEW, FROM CONSTRUCTION DIRT AND DUST. KEEP EQUIPMENT CLOSED OR COVER AND SEAL. NEW EQUIPMENT OPENINGS WITH TEMPORARY MECHANICAL INSTALLATION. ALL OPENINGS (BE PROTECTED BY COVERING EACH RETURNING AIR DUCT OPENING WITH MERV 8 FILTERS AND INSTALLING MERV 8 FILTER(S) IN EQUIPMENT FILTER RACK. PRIOR TO TESTING AND BALANCING, REMOVE FILTERS FROM FILTER RACKS AND INSTALL NEW MERV 8 FILTERS.

D. AT COMPLETION OF WORK, PRIOR TO EQUIPMENT START-UP, REMOVE COVERS, CAPS, OR PLUGS ON DUCT AND PIPING.

13. DAMAGE BY LEAKS
A. THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL DAMAGES TO THE PROPERTY (GROUNDS, WALKS, ROADS, BUILDING COMPONENTS, FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS, HVAC SYSTEMS, AND THEIR EQUIPMENT AND CONTENT) CAUSED BY LEAKS IN THE SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED AS PART OF THIS WORK. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.

14. DRAWINGS AND SPECIFICATIONS
A. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW GENERAL LOCATIONS OF DUCTS, PIPES, AND EQUIPMENT ARRANGEMENTS. METHODS OF WORK AS SHOWN ARE NOT INTENDED TO BE THE ONLY METHODS OF INSTALLATION. DRAWINGS ARE NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL OR ALL OFFSETS, TRANSITIONS, OR FITTINGS REQUIRED FOR A COMPLETE SYSTEM NOR IS IT IMPLIED THAT ALL CONFLICTS BETWEEN BUILDING ELEMENTS AND/OR OTHER TRADES ARE INDICATED. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATION OF DOORS, WINDOWS, LIGHTS, ETC.

B. THE DRAWINGS AND SPECIFICATIONS ARE MUTUALLY COMPLEMENTARY, AND ANY WORK REQUIRED BY ONE BUT NOT BY THE OTHER SHALL BE REQUIRED BY BOTH.

C. PRIOR TO INSTALLING EQUIPMENT, DUCT, OR PIPE, COORDINATE PROPOSED LOCATION WITH EACH DISCIPLINE'S DRAWINGS FOR CONSTRUCTION DATA, INCLUDING CEILING HEIGHTS, REQUIRED CLEARANCES, AND SPACE CONSTRAINTS. EXAMINATION AND COORDINATION. IMMEDIATELY REPORT INSTALLATION CONFLICTS IN WRITING TO THE GC. RESOLVE ALL CONFLICTS WITH GC AND OTHER TRADES PRIOR TO PROCEEDING. INSTALLING CONTRACTOR IS FULLY RESPONSIBLE FOR CORRECT INTERPRETATION AND APPLICATION OF ALL SIZES AND DIMENSIONS.

D. SIGNIFICANT DEVIATIONS OR CHANGES FROM THE INTENT OF THE CONTRACT DOCUMENTS MUST BE REVIEWED AND APPROVED BY THE ARCHITECT (ENGINEER) BEFORE PROCEEDING. IF THE CONTRACTOR BELIEVES CHANGES TO THE CONTRACT DRAWINGS ARE NECESSARY, SHOP DRAWINGS WITH WRITTEN DESCRIPTIONS OF THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE ARCHITECT (ENGINEER) FOR APPROVAL.
E. ALL PIPE, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED WATERPROOF. PROVIDE ALL FLASHING FOR PIPE AND DUCTWORK AND/OR PIPE SLEEVES AT WALL PENETRATIONS. SEAL ANNULAR SPACE WEATHER TIGHT.

15.CONTROLS
A. PROVIDE COMPLETE EQUIPMENT CONTROLS, INCLUSIVE OF ALL COMPONENTS, VOLTAGES, PROGRAMMING, (PNEUMATIC TUBING), WIRING, ETC. FOR COMPLETE AND OPERATIONAL SYSTEMS. MOUNT THERMOSTATS AND SWITCHES 4'-0" ABOVE FINISHED FLOOR, MOUNT OTHER MANUFACTURER'S RECOMMENDED LOCATIONS) WITH FINAL FIXTURES AND EQUIPMENT. DO NOT MOUNT THERMOSTATS IN DIRECT SUNLIGHT, IN DISCHARGE OF SUPPLY GRILLES), NEAR HEAT PRODUCING APPLIANCES OR EQUIPMENT, ON WALLS WITH INTERIOR HEAT SOURCES (DUCT OR PIPING), OR ON EXTERIOR WALLS. IF EXTERIOR WALL MOUNTING IS NECESSARY, PROVIDE INSULATED MOUNTING BASE WHERE THERMOSTAT LOCATION IS SUBJECT TO DAMAGE. PROVIDE LOCKABLE HIGH-IMPACT GUARD.

16.DUCT MOUNTED SMOKE DETECTORS
A. SUPPLY AIR DUCT MOUNTED SMOKE DETECTORS SHALL BE PROVIDED BY E.C. AND UPON DETECTING SMOKE, SHALL SHUT DOWN PROTECTED AIR SYSTEM.

17. SHOP DRAWINGS.
A. SUBMIT SHOP DRAWINGS ON SCHEDULED AND NOTED EQUIPMENT AND MATERIALS PRIOR TO SUBMITTAL. EACH SHOP DRAWING SHALL BE REVIEWED BY THE CONTRACTOR TO ENSURE THAT THE PROPOSED EQUIPMENT IS CLEARLY MARKED, HIGHLIGHTED, AND NOTED. ALL DIMENSIONS, QUANTITIES, CONNECTIONS, CAPACITIES AND ACCESSORIES SHALL BE CLEARLY SHOWN IN CONFORMANCE WITH THE CONTRACT DOCUMENTS, AND SHALL BE MARKED OR STAMPED TO CONFIRM THAT SUCH REVIEW WAS MADE AND COMPLIANCE WAS CONFIRMED. SHOP DRAWING SUBMITTED WITHOUT BEING MARKED, HIGHLIGHTED, AND NOTED WILL BE REJECTED WITHOUT REVIEW.

B. PROVIDE ADEQUATE TIME FOR REVIEW AND CORRECTIONS, IF ANY, TO PREVENT CONSTRUCTION DELAY.

C. REVIEW OF SHOP DRAWINGS BY THE OWNER, OWNER'S AGENT, ARCHITECT, OR ENGINEER IS FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPLYING WITH THE CONTRACT DOCUMENTS AND FOR PERFORMANCE OF ALL EQUIPMENT AND MATERIALS PURCHASED, FOR QUANTITIES, PROPER FIT, AND OTHER DIMENSIONAL REQUIREMENTS.

18. DUCTWORK
A. REFER TO DUCT INSULATION SCHEDULE FOR ALL CLASSIFICATION OF DUCT DIMENSIONS. PROVIDE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, LATEST EDITION. UNLESS ALL RIGID DUCTWORK SHALL BE GALVANIZED SHEET METAL, NO FIBERGLASS DUCTBOARD WILL BE ALLOWED. ALL EXPOSED DUCTWORK SHALL HAVE MILL-PHOSPHATIZED FINISH FOR PAINT ADHESION. EXPOSED ROUND DUCT SHALL BE SPIRAL SEAM TYPE.

B. REMOVED UNUSED SECTIONS OF DUCTWORK AS DESIGNATED. UNUSED OPENINGS IN EXISTING DUCT SHALL BE SEALED WITH GALVANIZED SHEET METAL OF THE SAME.GAUGE AS THE DUCT. INSULATE AND/OR LINE WITH INSULATION TO MATCH EXISTING. SEAL GALVANIZED SHEET METAL CAP TO EXISTING DUCT WITH APPROVED MASTIC. EXISTING DUCT INSULATION AND/OR INSULATION SCRIM DAMAGED BY THIS WORK SHALL BE REPAIRED. SEAL ALL INSULATION SEAMS AND JOINTS.

C. PROVIDE DAMPERS AT EACH BRANCH DUCT SERVING AIR DEVICES AND AS SHOWN AND DETAILED. ALL FLEXIBLE DUCT SHALL BE THERMAFLEX TYPE MAKE, MAXIMUM 5'-0" LONG. FLEXDUCT SHALL BE INSTALLED IN ACCESSIBLE CONCEALED SPACES ONLY AND WITHOUT SAGS. INSTALLATION ABOVE INACCESSIBLE CEILINGS IS UNACCEPTABLE.

19. DUCT SEALING
A. IN CONDITIONED AREAS, SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS WITH A NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT, WITH VOC CONTENT NO GREATER THAN 250G/L AND RECOMMENDED BY THE MANUFACTURER FOR SEALING SHEET METAL DUCT. SEAL ALL JOINTS, SPIN-IN FITTINGS, AND FASTENING SCREWS WITH MASTIC. HVAC SYSTEM LEAKAGE SHALL NOT EXCEED 5% OF DESIGN FLOW.

20.DUCT INSULATION
MINIMUM INSULATION REQUIREMENTS AS PER 2014 ARKANSAS ENERGY CONSERVATION CODE WITH AMENDMENTS (2009 IECC) :

	SUPPLY	RETURN
UNCONDITIONED SPACES WITHIN BUILDING:	R-5	R-5
INDIRECTLY CONDITIONED SPACES:	R-8	R-8
OUTSIDE OF BUILDING:	R-8	R-8

21. EQUIPMENT
A. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION AND OPERATIONS MANUAL AND IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS.

B. U.N.O. PROVIDE ALL MOTORIZED EQUIPMENT WITH VIBRATION ISOLATION AND FLEXIBLE DUCT AND FLEXIBLE PIPE CONNECTIONS.

C. LABEL EQUIPMENT WITH ENGRAVED PHENOLIC RESIN NAMEPLATES ADHERED TO UNIT CABINET WITH RTV SILICONE. LETTERING SHALL BE 1" HIGH BLACK ON WHITE BACKGROUND.

D. ALL EQUIPMENT, DUCT, PIPE, ETC MOUNTED FROM BOLTED CONNECTION SHALL HAVE DOUBLE NUTS AT ATTACHMENT TO THE STRUCTURE AND HANGER, NO EXCEPTIONS.

22.FIRE AND FIRE-SMOKE DAMPERS
A. PROVIDE FIRE DAMPERS AND/OR FIRE SMOKE DAMPERS AT DUCT PENETRATIONS OF RATED ASSEMBLIES AND AS REQUIRED BY AHJ. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATINGS. INSTALL DAMPERS IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILS AND MAINTAIN MANUFACTURER'S DETAILS ONSITE FOR AHJ REVIEW. PROVIDE ACCESS PANELS OF ADEQUATE SIZE TO FACILITATE SERVICE ACCESS OF DAMPER. IN LIEU OF ACCESS PANELS, A REMOVABLE DUCT SECTION IS ACCEPTABLE.

23. OUTDOOR AIR INTAKES
A. PROVIDE A 10'-0" HORIZONTAL CLEARANCE BETWEEN MECHANICAL EQUIPMENT OUTDOOR AIR INTAKES AND EXHAUST FAN DISCHARGES, COMBUSTION EXHAUST, PLUMBING VENTS, AND ANY OTHER HAZARDOUS OR NOXIOUS CONTAMINANT.

24.AIR FILTERS
A. PROVIDE THREE (3) SETS OF NEW MERV 8 DISPOSABLE AIR FILTERS, PER THE FOLLOWING: FOR HVAC SYSTEMS OPERATED DURING CONSTRUCTION, PROVIDE FILTERS IN EQUIPMENT AND ON RETURN AIR DUCT OPENINGS TO PROTECT DUCT FROM DIRT; IN HVAC EQUIPMENT PRIOR TO AIR TESTING, ADJUSTING, AND BALANCING; AND AT PROJECT COMPLETION – ONE (1) SPARE SET FOR HVAC EQUIPMENT.

25. SEISMIC RESTRAINT
A. PROVIDE SEISMIC RESTRAINT OF SYSTEMS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE BUILDING CODE. SUBMIT ALL REQUIRED DETAILS TO AHJ FOR REVIEW AND APPROVAL. IF REQUIRED BY AHJ, PROVIDE ENGINEERED SEISMIC-RESTRAINT DRAWINGS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE. SUBMIT COPIES INCLUDING CALCULATIONS AND DETAILS, AS REQUIRED BY AHJ TO ARCHITECT (ENGINEER) AND TO AHJ FOR REVIEW AND APPROVAL.

26. COMPLETION OF WORK
A. UPON COMPLETION OF WORK, INSPECT INSTALLATION OF ALL EQUIPMENT AND SYSTEMS. OPEN ALL ACCESS COVERS ON EQUIPMENT. REMOVE ALL SURPLUS MATERIALS AND DEBRIS AND PROPERLY DISPOSE OF SAME.

27. TESTING, ADJUSTING, & BALANCING
A. PRIOR TO EQUIPMENT START-UP, REMOVE COVERS, CAPS, OR PLUGS ON DUCT AND PIPING.

B. UPON COMPLETION OF WORK, MC SHALL PROVIDE HVAC TESTING:

i. AFTER INSTALLING EQUIPMENT AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST UNITS FOR COMPLIANCE WITH REQUIREMENTS.

ii. INSPECT FOR AND REMOVE SHIPPING BOLTS, BLOCKS, AND TIE-DOWN STRAPS.

iii. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION, BELT TENSION, DAMPER FUNCTION, COOLING FUNCTION, HEATING FUNCTION, AND UNIT OPERATION.

iv. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.

v. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS SPECIFIED ABOVE. vi. SUBMIT TESTING REPORT TO ARCHITECT (ENGINEER).

C. UPON COMPLETION OF WORK, PROVIDE AN HVAC TESTING, ADJUSTING, AND BALANCING REPORT PERFORMED BY A CONTRACTOR CERTIFIED BY AABC, NEBB, OR TABB. BALANCE SYSTEMS WITHIN 10% OF DESIGN FLOW. TAB SHALL BE PERFORMED IN STRICT ACCORDANCE WITH SMACNA'S "TAB PROCEDURAL GUIDE", LATEST EDITION. MC SHALL BE PRESENT DURING TAB SHOULD ANY CORRECTIONS BE REQUIRED. (EXISTING HVAC SYSTEMS: PRIOR TO START OF WORK, TEST AND RECORD FLOW OF EXISTING DEVICES AND SYSTEMS. AT COMPLETION OF WORK ADJUST FLOW TO NEW DEVICES, AS INDICATED ON DRAWINGS. RESTORE EXISTING DEVICES NOT IN SCOPE OF WORK TO ORIGINAL VOLUMETRIC FLOW RATES.)

28. CLOSEOUT – AT CONSTRUCTION COMPLETION AND PRIOR TO TURNOVER TO OWNER (TENANT)
A. PROVIDE FINAL MARK-UPS IN PDF (DWG) FORMAT TO ARCHITECT AND ENGINEER.

B. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.

C. PROVIDE THE OWNER WITH A BOUND OWNER'S MANUAL. THE MANUAL SHALL CONSIST OF A THREE-RING LOOSE-LEAF BINDER CONTAINING ALL PRINTED MATERIAL FOR INSTALLED EQUIPMENT INCLUDING BUT NOT LIMITED TO: WARRANTY INFORMATION, SERVICE AND CLEANING INSTRUCTIONS, NOTICES TO OWNER, OPERATING MANUALS, AND MAINTENANCE INSTRUCTIONS.

D. TRAIN THE OWNER IN THE THERMOSTATS FUNCTIONS AND OPERATING THE EQUIPMENT USING THE THERMOSTATS. CONTRACTOR SHALL PROGRAM THE THERMOSTATS PER THE OWNER'S TIME SCHEDULES AND SETPOINTS.

29.WARRANTY
A. ON ALL WORK INCLUDED IN THIS CONTRACT, PROVIDE ONE (1) YEAR UNCONDITIONAL WRITTEN WARRANTY FOR LABOR, EQUIPMENT, AND MATERIALS TO REPLACE ALL FAULTY MATERIALS AND/OR LABOR, AT NO COST TO OWNER, BEGINNING ON DATE OF ACCEPTANCE BY OWNER.

B. WITHIN THE WARRANTY PERIOD, DURING THE OPPOSITE SEASON (HEATING/COOLING) FROM THAT IN WHICH THE INITIAL ADJUSTMENTS WERE MADE, THIS CONTRACTOR SHALL MAKE AN INSPECTION OF THE INSTALLED BUILDING SYSTEMS. AT THIS INSPECTION, WITH SYSTEMS OPERATING, THIS CONTRACTOR SHALL MAKE ANY NECESSARY MODIFICATIONS TO THE INITIAL ADJUSTMENTS REQUIRED TO PRODUCE OPTIMUM OPERATION OF THE SYSTEM COMPONENTS, TO PRODUCE THE PROPER CONDITIONS IN EACH SPACE.

503.2.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, AT LEAST ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.
EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES OR GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED:
a. THE PERIMETER SYSTEM INCLUDES AT LEAST ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN +/- 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15.2 M); AND
b. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY A THERMOSTAT(S) LOCATED WITHIN THE ZONE(S) SERVED BY THE SYSTEM.

B. 503.2.4.1.1 HEAT PUMP SUPPLEMENTARY HEAT
HEAT PUMPS HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL HAVE CONTROLS THAT, EXCEPT DURING DEFROST, PREVENT SUPPLEMENTARY HEAT OPERATION WHEN THE HEAT PUMP CAN MEET THE HEATING LOAD.

503.2.4.2 SET POINT OVERLAP RESTRICTION
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL PROVIDE A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM.

a. EXCEPTION: THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.

503.2.4.3 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

EXCEPTIONS:

a. ZONES THAT WILL BE OPERATED CONTINUOUSLY.

b. ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A READILY ACCESSIBLE MANUAL SHUTOFF SWITCH.

503.2.4.3.1 THERMOSTATIC SETBACK CAPABILITIES
THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

503.2.4.3.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR AT LEAST 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

PIPING INSULATION NOTES:

A. PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH AS PER 2021 IECC TABLE C403.12.3.

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

FLUID	NOMINAL PIPE DIAMETER	
	<=1.5"	>1.5"
STEAM	1 1/2	3
HOT WATER	1 1/2	2
CHILLED WATER, BRINE OR REFRIGERANT	1 1/2	1 1/2

1) LOW TEMPERATURE PIPING SYSTEMS - 0 TO 60 DEG F INCLUDING: CONDENSATE DRAIN PIPING.

INSULATION SCHEDULE - PIPING SIZE

SERVICE	THICKNESS	MATERIAL	FINISH
REFRIGERANT PIPING	1.5"	P-6	
CONDENSER DRAIN PIPING (IF RUNNING THROUGH EXTERIOR WALL)	1.0"	P-6	

2)PROTECTIVE COVERINGS SHALL BE INSTALLED ON AREAS OF INSULATION THAT ARE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL DAMAGE. THE PROTECTIVE COVERING SHALL BE:

a. ARMA-CHEK SILVER" MULTI-LAYER LAMINATE OF ALUMINUM, COATED WITH A UV PROTECTIVE FILM AND BACKED WITH A FLEXIBLE PVC FILM. THE MATERIAL SHOULD BE ADHERED WITH ARMAFLEX 520 ADHESIVE OR EQUIVALENT, AND ALL JOINS AND SEAMS SECURED WITH "ARMA-CHEK SILVER TAPE". INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS.

OR

b. HIGH DENSITY RUBBER CLADDING OF THE "ARMA-CHECK R" TYPE BONDED USING AN APPROPRIATE FULL CONTACT ADHESIVE WITH A MINIMUM 50 MM OVERLAP AT ALL BUTT JOINTS AND LONGITUDINAL SEAMS. A WEATHER-PROOF MASTIC SEALANT SHALL BE APPLIED OVER ALL SEAMS AND JOINTS. ALL MATERIAL SHALL BE OVERLAPPED AND STAGGERED IN SUCH A WAY AS TO ENSURE A WATERSHED IS ALWAYS PROVIDED. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS. ALL EXCESS ADHESIVE VISIBLE ON THE SURFACE OF THE COMPLETED ASSEMBLY SHALL BE REMOVED USING AN APPROPRIATE CLEANING MATERIAL.

OR

c. METAL CLADDING, COMPRISED OF COATED SHEET METAL, WITH ALL EXTERNAL JOINTS AND FIXING MADE WEATHER-PROOF WITH SILICONE SEALANT.

C. MATERIAL:
1) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.
2) TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLUX HAMFAB MOLDED FITTINGS.
3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.
4) TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

D. FINISH:
1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.
2) TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.
3) TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.
4) TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLICK.

E. INSTALLATION:
1) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.
2) ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.
3) ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION AT ALL HANGINGS.
4) INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

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MECHANICAL SPECIFICATIONS

SHEET NUMBER:

M-0.1

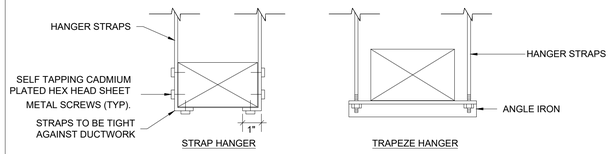
ABBREVIATIONS

A/C	ABOVE CEILING
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AUTO	AUTOMATIC
AC	AIR CONDITIONING
AHU	AIR HANDLING UNIT
AHU	AIR COOLED CONDENSING UNIT
BAL	BALANCING
BDD	BACKDRAFT DAMPER
B/F	BELOW FLOOR
B/G	BELOW GRADE
B'FLY	BUTTERFLY
BHP	BRAKE HORSEPOWER
BCO	BASE CLEANOUT
CFM	CUBIC FEET PER MINUTE
CBCR	CURVED BLADE CEILING REGISTER
CSD	CEILING SUPPLY DIFFUSER
CU	CONDENSING UNIT
CW	COLD WATER (DOMESTIC)
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CON	CONCENTRIC
CO	CLEANOUT
COND	CONDENSATE
db	DRY BLB
DN	DOWN
DR	DRAIN
do	DITTO
dB	DECIBELS
DWG	DRAWING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECC	ECCENTRIC
EF	EXHAUST FAN
EOD	EMERGENCY OVERFLOW DRAIN
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EFF	EFFICIENCY
EG	EXHAUST AIR GRILLE
F	FAHRENHEIT
FCO	FLOOR CLEAN OUT
FCU	FAN COIL UNIT
FSD	FIRE/SMOKE DAMPER
FD	FIRE DAMPER OR FLOOR DRAIN
FL DR	FLOOR DRAIN (only)
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOT	FLAT ON TOP
FPM	FEET PER MINUITE
FPS	FEET PER SECOND
FT	FEET
G	GATE
GA	GAUGE
GPM	GALLONS PER MINUTE
GL	GLOBE
GCO	GRADE CLEANOUT
HD	HUB DRAIN
HP	HORSEPOWER
HTG	HEATING
HW	HOT WATER (DOMESTIC)
HWR	HOT WATER RETURN
HWRR	HOT WATER REVERSE RETURN
HWS	HOT WATER SUPPLY
Hz	HERTZ

ID	INSIDE DIMENSION
IN	INCHES
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LG	LINEAR GRILLE
LRG	LINEAR RETURN GRILLE
LWR	LOOP WATER RETURN
LWS	LOOP WATER SUPPLY
MIN	MINIMUM
MAX	MAXIMUM
MD	MANUAL DAMPER
MOD	MOTOR OPERATED DAMPER
MFR	MANUFACTURER
NC	NORMALLY CLOSED
NG	NATURAL GAS
NFWH	NON-FREEZE WALL HYDRANT
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
OD	OUTSIDE DIMENSION
OBD	OPPOSED BLADE DAMPER
PIU	POWERED INDUCTION UNIT
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RAD	RADIUS
RG	RETURN AIR GRILLE
RED	REDUCER
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION / RETURN SLOTS
RTU	ROOFTOP UNIT
RR	RETURN REGISTER
SP	STATIC PRESSURE
SPS	STATIC PRESSURE SENSOR
SA	SUPPLY AIR
SAN	SANITARY
SD	SMOKE DAMPER / SLOT DIFFUSER
SEN	SENSIBLE
SQ	SQUARE
SR	SUPPLY REGISTER
ST	STORM
SS	SPLIT SYSTEM
SG	SUPPLY AIR GRILLE
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VENT
VA	VALVE
VTR	VENT THRU ROOF
VAV	VARIABLE AIR VOLUME
wb	WET BULB
WC	WATER COLUMN
WHA	WATER HAMMER ARRESTOR
WT	WEIGHT
W	WASTE

LEGEND

	CEILING SUPPLY DIFFUSER
	CEILING RETURN AIR GRILLE
	CEILING EXHAUST GRILLE
	SIDE-WALL OR DUCT MOUNTED REGISTER
	SLOT DIFFUSER
	MANUAL VOLUME DAMPER
	FIRE DAMPER,,FIRE SMOKE DAMPER
T	THERMOSTAT
H	HUMIDSTAT
CO2	CO2 MONITOR
	MOTOR OPERATED DAMPER
	EXISTING WORK
	NEW WORK
	WORK TO BE REMOVED
S	SMOKE DETECTOR
	PRESSURE REGULATOR VALVE 5 PSI TO 7"WATER GAUGE
T	TEMPERATURE SENSOR
BD	BACKDRAFT DAMPER
	POINT OF CONNECTION
	POINT OF DISCONNECTION



STRAP HANGER — TRAPEZE HANGER

NOTE:
NO POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.

HANGER SIZES*

MAX. SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x18" GAUGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROD	1-1/2"x1-1/2"x1/8"	8'-0"
48"	1/4" ROD	2"x2"x1/8"	8'-0"
60"	5/16" ROD	2"x2"x1/8"	8'-0"
84"	3/8" ROD	2"x2"x1/8"	8'-0"

* FOR RECTANGULAR DUCTS

1 M-0.4 DUCT HANGING DETAILS
N.T.S

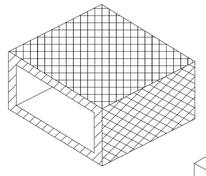


FIG. A

NOTES:
DUCTS TO BE ACOUSTICALLY LINED SHALL BE DESIGNATED BY THE SYMBOL IN FIG. "C" TO THE EXTENT OF LINING. THICKNESS SHALL BE AS SPECIFIED.
DUCTS LINED WITH ACOUSTICAL MATERIAL SHOULD BE FASTENED WITH CLIPS, ADHESIVE, OR PINS

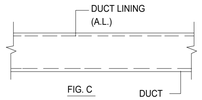


FIG. C

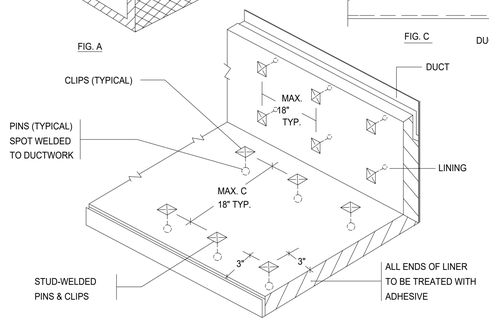
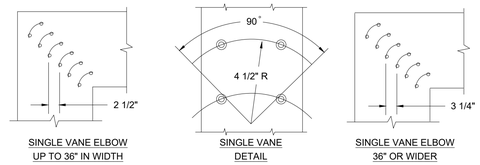
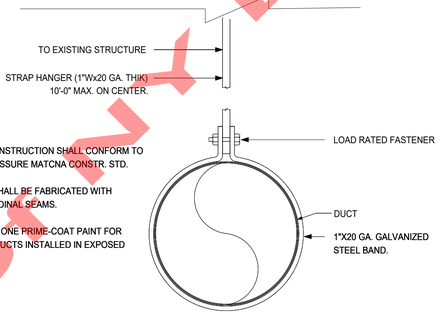


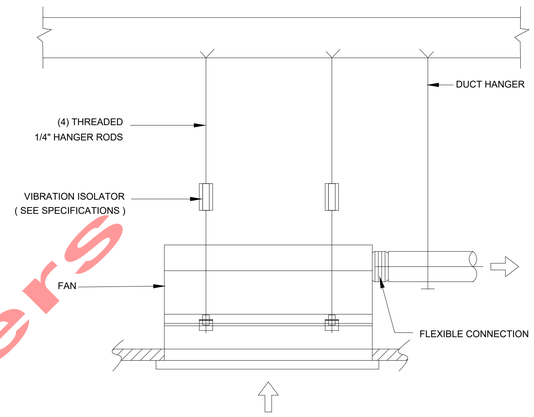
FIG. B



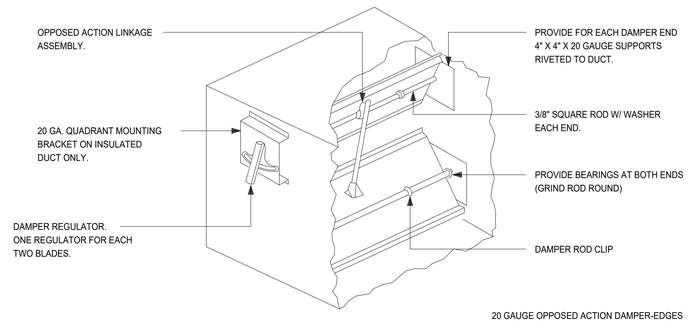
2 M-0.4 LOW VELOCITY DUCTWORK ELBOWS
N.T.S



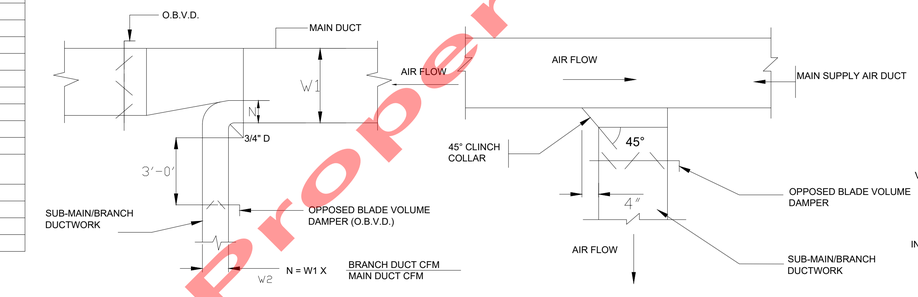
NOTES :
1. DUCT CONSTRUCTION SHALL CONFORM TO LOW PRESSURE MATCNA CONSTR. STD.
2. DUCTS SHALL BE FABRICATED WITH LONGITUDINAL SEAMS.
3. PROVIDE ONE PRIME-COAT PAINT FOR ROUND DUCTS INSTALLED IN EXPOSED AREAS.



3 M-0.4 CEILING FAN HANGING SUPPORT DETAIL
N.T.S

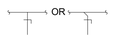


NOTE : 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

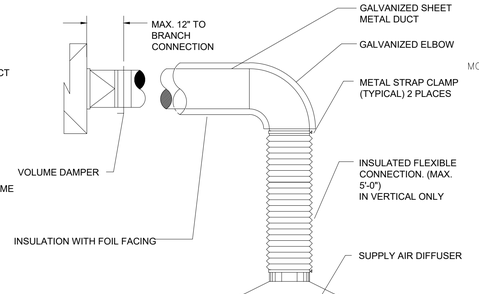


4 M-0.4 ACOUSTICAL TREATMENT DUCT LINING
N.T.S

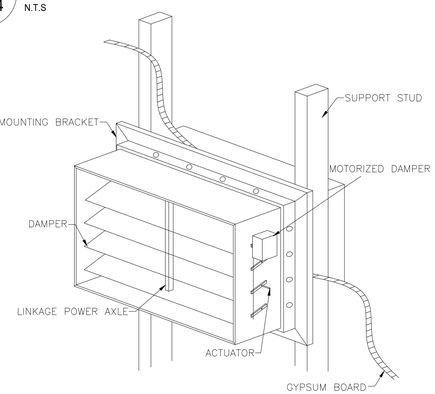
NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS

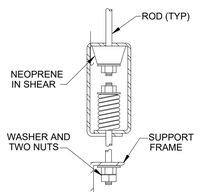


5 M-0.4 ROUND DUCT HANGING DETAIL
N.T.S



6 M-0.4 LOW PRESSURE BALANCING DAMPER
N.T.S





7 M-0.4 VIBRATION ISOLATOR DETAIL
N.T.S

8 M-0.4 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION
N.T.S

9 M-0.4 DIFFUSER DETAILS
N.T.S

10 M-0.4 MOTORIZED DAMPER DETAILS
N.T.S

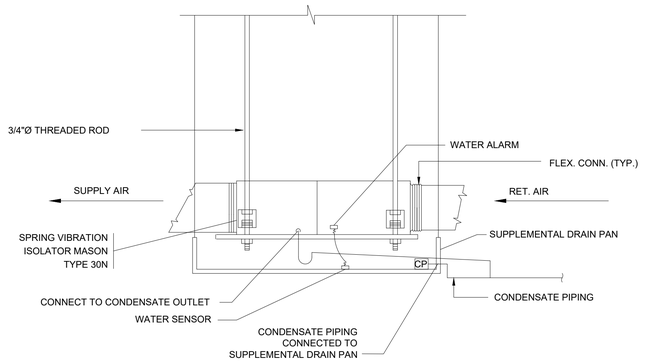
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MECHANICAL ABBREVIATIONS, LEGENDS & DETAILS

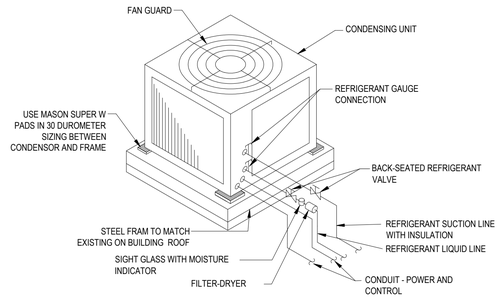
SHEET NUMBER:

M-0.2

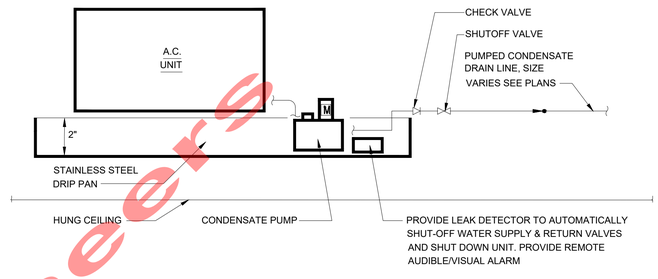


NOTE:-
PROVIDE AUXILIARY DRAIN PAN AS PER UMC 2021, SECTION 310.1

1 / M-0.5 AC INSTALLATION DETAILS
N.T.S



2 / M-0.5 CONDENSING UNIT MOUNTING DETAIL
N.T.S



3 / M-0.5 A.C. UNIT, DRIP PAN DETAIL
N.T.S

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MECHANICAL DETAILS

SHEET NUMBER:

M-0.3

HEAT PUMP OUTDOOR DX SPLIT UNIT SCHEDULE																		BASIS OF DESIGN: TRANE (OR EQUIVALENT)
UNIT TAG	LOCATION	INDOOR UNITS SERVED	CAP.TR	COOLING MBH	HEATING MBH @47 Deg.F	HEATING MBH @17 Deg.F	TYPE	UNIT DIMENSIONS IN.(HXWXD)	WEIGHT (LBS)	PIPING DIMENSION		ELECTRICAL			SOUND LEVEL (DBA)	EER2	SEER2	COP	MODULE NO.
										LIQUID-HI	GAS LOW-	(V/Hz/Ph)	MCA	MOP					
(N) ACCU-1	AS SHOWN	(N)AHU-1	4	45.9	46	28	HEAT PUMP SPLIT	45"X38"34"	300	3/8"	7/8"	208-230/3/60	18	30	74	12	15.2	4.1	5TWA4048A3(OR EQUIVALENT)
NOTES:																			
1) UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.																			
2) PROVIDE COMPRESSOR CYCLE PROTECTOR.																			
3) PROVIDE CONDENSING UNIT MOUNTING PAD.																			
4) CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.																			
5) PROVIDE COMPRESSOR THERMAL PROTECTION , COMPRESSOR OVERCURRENT DETECTION AND FAN MOTOR OVERHEATING/VOLTAGE PROTECTION.																			
6) REFRIGERANT R-454B OR R-32 SHALL BE PROVIDED.																			

HEAT PUMP INDOOR DX SPLIT UNIT SCHEDULE																		BASIS OF DESIGN:TRANE(OR EQUIVALENT)	
UNIT TAG	LOCATION	ODU	AREA SERVED	TYPE	CAP. (TON)	COOLING MBH	HEATING MBH @47 Deg.F	HEATING MBH @17 Deg.F	ELECTRIC HEATING (KW)	TOTAL CFM (MAX.)	MAX. ESP. (IN. WG)	OUTSIDE AIR(CFM)	MAX. SOUND PRESS.(DBA)	ELECTRICAL DATA (AHU)			DIMENTIONS (HXWXD)	PIPE SIZE			WEIGHT (LBS.)	MODEL NO.
														PH/VOLT/HZ	MCA	MOP	UNIT	LIQ.	SUCTION	DRAIN (ID)		
(N)AHU-1	SEE PLAN	(N)ACCU-1	SEE PLAN	AIR HANDLER	4.0	45.9	46	28	7.2 Kw	1575	0.8	300	44	1/208/60	49	50	22X25X52	3/8"	7/8"	1"	200	5TEM6D05AV41 (OR EQUIVALENT)
NOTES:																						
1) SUPPLY AIR CFM BASED ON HIGH STATIC.																						
2) REFRIGERANT R-454B OR R-32 SHALL BE PROVIDED.																						
3) PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.																						
4) ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.																						
5) PROVIDE MERV8 FILTER ON ALL RETURNS TO UNIT.																						
6) INDOOR UNIT ACCESS PANEL FIELD-PROVIDED.																						
7) PROVIDE SPRING MOUNTED VIBRATION ISOLATORS FOR UNITS.																						
8) PROVIDE DRIP PAN , LEAK DETECTOR & CONDENSATE PUMP.																						
9) UNIT SHALL COMPLY WITH REFRIGERANT SYSTEMRDS) AND MITIGATION RESPONSE, PER UL SAFETY STANDARD 60335-2-40 & ASHRAE STANDARD 15-2022																						

FAN SCHEDULE												
TAG	MANUFACTURER	MODEL	LOCATION	FAN PERFORMANCE							WEIGHT	CONTROL
				CFM	ESP	FAN RPM	FLA	VOLTS	PHASE	HZ	LBS	
(N)EF-1	GREENHECK	SP-A250	SUIT RM 102	70	0.5	1000	0.5	115	1	60	25	LIGHT SWITH
(N)EF-2	GREENHECK	SP-A250	SUIT RM 102	70	0.5	1000	0.5	115	1	60	25	WALL SWITCH
NOTES:												
1. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.												
2. COORDINATE EXACT POWER REQUIREMENT WITH ELECTRICAL CONTRACTOR.												
3. PROVIDE FAN WITH A BACKDRAFT DAMPER, AND SPEED CONTROLLER FOR BALANCING PURPOSE.												
4. ALL DIRECT DRIVE FANS TO HAVE ECM MOTORS.												
5. MANUFACTURER TO PROVIDE WITH DECORATIVE GRILLE.												
6. UL LISTED.												

AIR TERMINAL SCHEDULE								
TAG	MANUFACTURER	MODEL	TYPE	CFM RANGE	NECK SIZE	NOMINAL FACE SIZE	REMARKS	NOTES
SG-1	TITUS	300FL	SUPPLY GRILLE	100-320	16"X6"	-	WALL MOUNT	1-4
RG-1		350FL	RETURN GRILLE	300-950	30"X8"	-	WALL MOUNT	1-4
				110-250	8"X8"	24"X24"	CEILING MOUNT	1-4
				250-400	10"X10"	24"X24"	CEILING MOUNT	1-4
CD-1		TMS	SUPPLY DIFFUSER	101-200	8" DIA	24"X24"	CEILING MOUNT	1-4
				201-400	10" DIA	24"X24"	CEILING MOUNT	1-4
NOTES:								
1. BORDER TYPE TO BE COMPATIBLE WITH CEILING/WALL TYPE.								
2. COLOR AND FINISH TO BE REVIEWED AND APPROVED BY THE ARCHITECT.								
3. PROVIDE OPPOSED BLADE DAMPER AS ACCESSARY FOR ALL AIR TERMINAL FOR AIR BALANCING OR ELSE PROVIDE DAMPER IN DUCTS.WHERE LOCATED IN INACCESSIBLE AREAS, PROVIDE CABLE OPERATED DAMPER LOCATED IN THE BRANCH, OPERABLE THROUGH THE FACE OF THE DIFFUSER (KEY OPERATED).								
4. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.								

BUILDING AIR BALANCE				
UNIT TAG	SUPPLY AIR	OUTSIDE AIR	RETURN AIR	EXHAUST AIR
(N)AHU-1	1575	300	1275	-
(N)EF-1	-	-	-	70 CFM
(N)EF-2	-	-	-	70 CFM
TOTAL:	1575 CFM	300 CFM	1275 CFM	140 CFM
BUILDING PRESSURE:			160 CFM	**POSITIVE**

VENTILATION CALCULATION IMC 2021													
SL NO	ROOM NAME	AREA	OCCUPANCY AS PER IMC 2021/1000SQ.FT.	OCCUPANY AS IMC 2021	NO. OF CHAIR	FINAL OCCUPANCY	CFM/SQ.FT	CFM/PERSON	OA CFM	EFFECTIVENESS	REQUIRED OA CFM	PROVIDED OA CFM	EXHAUST AIR FLOW RATE CFM/SQFT OR CFMLUNIT	EXHAUST CFM
1	LOBBY	545	10	6	4	4	0.06	5	53	0.8	66	120	-	-
2	BOH	106	0	0	4	0	0.12	0	13	0.8	16	20	70	70
3	RESTROOM	46	0	0	0	0	0	0	0	0.8	0	0	70	70
4	TREATMETN ROOM 101	117	5	1	1	2	0.06	5	18	0.8	23	40	-	-
5	TREATMETN ROOM 102	106	5	1	1	2	0.06	5	17	0.8	21	40	-	-
6	TREATMETN ROOM 103	118	5	1	1	2	0.06	5	18	0.8	23	40	-	-
7	TREATMETN ROOM 103	106	5	1	1	2	0.06	5	17	0.8	21	40	-	-
TOTAL		**1144**	**-**	**10**	**-**	**12**	-	-	-	-	**170**	**300**	**-**	**-**

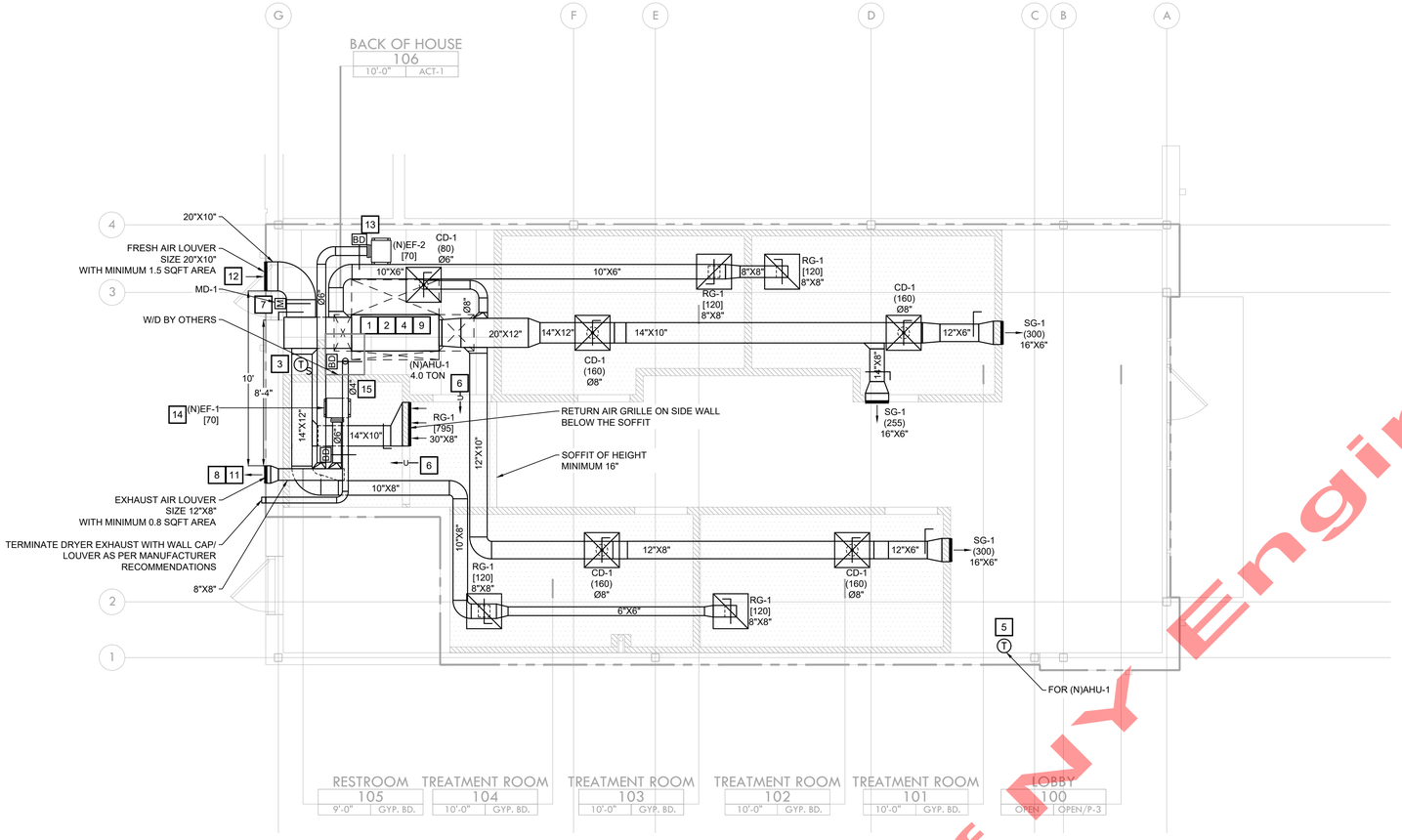
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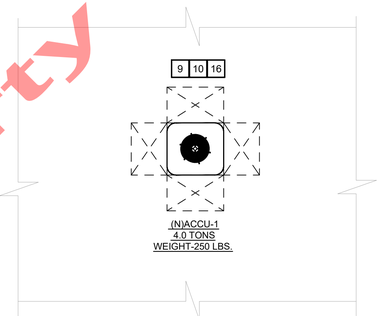
sugaringLA

MECHANICAL SCHEDULES

SHEET NUMBER:

M-0.4





CONDENSER LOCATION ROOF PART PLAN

GENERAL NOTES:

1. ALL AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL RCP & LIGHTING LAYOUT.
2. COORDINATE ALL WORK ON OTHER FLOORS AND IN OTHER TENANT SPACES WITH OWNERS REP. SO THAT WORK DOES NOT INTERFERE WITH OTHER TENANTS.
3. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVE. CONTRACTOR SHALL TIE NEW T-STATS INTO BUILDING EMS AND UPDATE IT ACCORDINGLY.
4. PROVIDE ALL MANUFACTURER AND NEC REQUIRED CLEARANCE FOR ALL EQUIPMENT.
5. ENSURE ALL NEW BUILDING VENTS ARE FITTED WITH ANIMAL SCREENS EXCEPT OTHERWISE NOTED.
6. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
7. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
8. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
9. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
10. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
11. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
12. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
13. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
14. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
15. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS/ROOF PENETRATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS.
16. PROVIDE CABLE OPERATED DAMPER IN INACCESSIBLE CEILINGS.
17. COORDINATE FINAL LOCATION OF ALL HAVC EQUIPMENT WITH STRUCTURAL ENGINEER/ OWNER/ ARCHITECT.
18. PROVIDE ACCESS DOOR FOR HVAC UNITS & FANS)AS PER MANUFACTURER RECOMMENDATIONS.
19. R-6 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT.FROM HVAC UNIT.

KEYED NOTES:

1. EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM HVAC EQUIPMENT AS SHOWN. ACOUSTICALLY LINE THE FIRST 10-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
2. INSTALL AHU AS PER MANUFACTURER SPECIFICATIONS. COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL DRAWINGS. PROVIDE CLEARANCES AS RECOMMENDED BY THE MANUFACTURER. PROVIDE DRIP PAN, LEAK DETECTOR, AND CONDENSATE PUMP. PROVIDE 1" CONDENSATE DRAIN FOR ALL HVAC UNITS AND RUN ALL CONDENSATE LINES TO THE NEAREST PLUMBING FIXTURE APPROVED BY THE LOCAL CODE. COORDINATE FINAL LOCATION OF CONDENSATE TERMINATION WITH THE ARCHITECT. PROVIDE SERVICE ACCESS PANEL.
3. PROVIDE REMOTE TEMPERATURE/HUMIDITY SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
4. COORDINATE FINAL LOCATION OF EQUIPMENT WITH ARCHITECT/ENGINEER.
5. LOCATION OF DIGITAL THERMOSTAT CONTROL FOR AHU. INSTALL AND WIRE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
6. 1" DOOR UNDERCUT FOR AIR PASSAGE. COORDINATE WITH ARCHITECT.
7. INTERLOCK OPERATION OF MD-1 WITH (N)AHU-1.
8. EXHAUST TERMINATION SHALL BE 3 FEET (914 MM) FROM THE PROPERTY LINES; 3 FEET (914 MM) FROM OPERABLE OPENINGS INTO BUILDINGS; 10 FEET (3048 MM) FROM MECHANICAL AIR INTAKES.
9. CONTRACTOR TO FIELD VERIFY THE LOCATION AND SIZES OF THE EXISTING REFRIGERANT PIPE. REUSE AND EXTENT AS REQUIRED. IF THE SIZES ARE NOT MATCHING WITH THE PROPOSED REQUIRED REFRIGERANT PIPE, THEN CONTRACTOR SHALL COORDINATE WITH LL AND PROVIDE/INSTALL NEW REFRIGERANT PIPE FROM INDOOR TO OUTDOOR AS PER MANUFACTURER SPECIFICATIONS. PROVIDE WEATHER PROOF COATING FOR EXPOSED PIPING. PROVIDE PIPING INSULATION AS PER LOCAL CODE. CONTRACTOR TO COORDINATE WALL PENETRATION FOR REFRIGERANT PIPING WITH BASE BUILDING STRUCTURAL ENGINEER.
10. PROVIDE PERMANENT NAMEPLATE PER SCHEDULE/PLAN FOR EACH SYSTEM UNIT, OUTDOOR DISCONNECT & THERMOSTAT.
11. CONNECT THE EXHAUST DUCT TO THE LOUVER. PROVIDE MINIMUM OF 0.8 SQFT FREE AREA.
12. CONNECT THE OUTSIDE AIR DUCT TO THE LOUVER. PROVIDE MINIMUM OF 1.5 SQFT FREE AREA.
13. CEILING MOUNTED EXHAUST FAN, INTERLOCKED WITH WALL SWITCH. PROVIDE BACKDRAFT DAMPER. EXHAUST DUCT SHALL BE GALVANIZED STEEL. FIELD VERIFY ALL ROUTING AND REQUIREMENTS PRIOR TO BID.
14. CEILING MOUNTED EXHAUST FAN, INTERLOCKED WITH SEPERATE LIGHT SWITCH. PROVIDE BACKDRAFT DAMPER. EXHAUST DUCT SHALL BE GALVANIZED STEEL. FIELD VERIFY ALL ROUTING AND REQUIREMENTS PRIOR TO BID.
15. CLOTHES DRYER PROVIDED BY OTHER. MC SHALL PROVIDE "DRYERBOX MODEL 425", RECESS BOX IN WALL BEHIND DRYER. COORDINATE LOCATION WITH APPLIANCE SUPPLIER PRIOR TO INSTALLATION. EXTEND AND CONNECT FULL SIZE DRYER VENT FROM DRYER BOX THROUGH WALL. MC SHALL SEAL ENTIRE LENGTH OF DRYER VENT WATER-TIGHT. TERMINATE THROUGH WALL AS PER MANUFACTURER SPECIFICATION.
16. CONTRACTOR TO COORDINATE WITH THE LL FOR FINAL LOCATION OF THE CONDENSER UNIT. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION OF REFRIGERANT PIPE CONDUITS ALLOTTED FOR THE SPACE. PROVIDE MOUNTING STAND TO MATCH EXISTING.

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MECHANICAL FLOOR PLAN

SHEET NUMBER:

M-1.0

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

ELECTRICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
	POWER AND TELECOMMUNICATION
	CIRCUIT HOMERUN TO PANEL
	SINGLE RECEPTACLE OUTLET - WALL MOUNTED
	DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
AC	ABOVE COUNTER G.F.C.I. DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
IG	ISOLATED GROUND DUPLEX RECEPTACLE OUTLET - WALL MOUNTED
	WALL MOUNTED QUAD RECEPTACLE OUTLET
	SPECIAL PURPOSE RECEPTACLE - WALL MOUNTED (SEE EQUIPMENT SCHEDULE OR NOTES)
	125 / 250V NEMA RECEPTACLE - WALL MOUNTED (SEE EQUIPMENT SCHEDULE OR NOTES)
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	DUPLEX RECEPTACLE - CEILING MOUNTED
J J+1	JUNCTION BOX
	FLOOR BOX DEVICES / POKE-THRU DEVICES WITH POWER AND TELE/DATA PER PLANS (SEE DRAWINGS FOR MODEL)
	TELEPHONE / DATA COMBINATION OUTLET - WALL MOUNTED
	TELEPHONE OUTLET - WALL MOUNTED
	DATA OUTLET - WALL MOUNTED
	PANELBOARD WALL/RECESSED MOUNTED (277/480 VOLT, 120/208Y VOLT AS NOTED ON PLANS)
	TRANSFORMER (RATING AND CONFIGURATIONS AS NOTED ON PLANS)
	DISCONNECT SWITCH (FRAME/POLES/FUSE-IF REQUIRED)
M	MOTOR LOAD
S_M	MOTOR RATED TOGGLE SWITCH
	LIGHTING & CONTROLS
	LIGHT FIXTURE HALF SHADED FIXTURE OR"EM" INDICATES FIXTURES WITH INTEGRAL BATTERY PACK FOR EMERGENCY (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
	CEILING/WALL MOUNTED SELF POWERED EXIT LIGHT FIXTURE WITH DIRECTIONAL ARROWS AS INDICATED. SHADED AREA DENOTES FACE(S) (REFER LIGHTING FIXTURE SCHEDULE ON LIGHTING PLAN)
$_{\#}	LIGHTING SWITCH U.O.N. "A" DENOTES LIGHTING FIXTURE CONTROLLED - WALL MOUNTED (48" AFF) UNO '#' 'BLANK' - S.P.S.T. SWITCH '3' - THREE WAY SWITCH '4' - FOUR WAY SWITCH 'D' - DIMMER SWITCH 'T' - TIMER SWITCH 'OV' - OVERRIDE SWITCH
OS	MOTION DETECTOR SWITCH W/ MANUAL OVERRIDE WALL MOUNTED.
OS	MOTION DETECTOR - CEILING MOUNTED
TC	TIME CLOCK
C	LIGHTING CONTACTORS
	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
S	SMOKE DETECTOR- CEILING MOUNTED
D	DUCT MOUNTED SMOKE DETECTOR
F	FIRE ALARM MANUAL PULL STATION - WALL MOUNTED (48" AFF) UNO
	FIRE ALARM ADA APPROVED VISUAL ALARM - WALL MOUNTED (80" AFF) UNO
F	FIRE ALARM AUDIO/VISUAL ALARM - WALL MOUNTED (80" AFF) UNO
F	FIRE ALARM ADA APPROVED AUDIO/VISUAL ALARM CEILING MOUNTED
	FIRE ALARM ADA APPROVED VISUAL ALARM CEILING MOUNTED
M	MAGNETIC DOOR HOLD DEVICE TO INTERLOCK WITH FIRE ALARM SYSTEM

NOTES:

1. NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.
2. COORDINATE EXACT LOCATION AND SPECIFIC MOUNTING HEIGHT OF OUTLETS WITH ARCHITECT.
3. MOUNTING HEIGHTS SHALL BE 18" AFF FOR THE OUTLETS, 42" AFF FOR THE LIGHTING SWITCHES OR AS INDICATED IN THE LEGEND UNLESS, OTHERWISE NOTED ON THE PLANS.

APPLICABLE CODES:

ALL WORK SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS AND DRAWINGS, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF ALL GOVERNING BODIES INVOLVED. APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

1. BUILDING: ARKANSAS FIRE PREVENTION CODE VOL II 2021 (ADOPTS WITH AMENDMENTS FROM IBC 2021).
2. FIRE PREVENTION: ARKANSAS FIRE ALARM CODE 2019 (NFPA 72-2019) .
3. ELECTRICAL: NATIONAL ELECTRICAL CODE 2020 (NEC, 2020).
4. ENERGY: ARKANSAS ENERGY CODE 2014 (ADOPTS WITH AMENDMENTS FROM IECC 2009).

GENERAL ELECTRICAL NOTES:

ALL WORK THIS DIVISION SHALL COMPLY WITH ALL LOCAL BUILDING CODES, LAWS, REGULATIONS, ORDINANCES; AND THE REQUIREMENTS OF THE ARKANSAS FIRE PREVENTION CODE VOL II 2021 (ADOPTS WITH AMENDMENTS FROM IBC 2021).

A. ALL WORK SHALL COMPLY WITH BASE BUILDING SPECIFICATIONS. OBTAIN A COPY OF SPECIFICATIONS FROM BUILDING MANAGER IF NECESSARY.

B. THE CONTRACTOR SHALL KEEP A RECORD OF THE CHANGES WHICH ARE IN CONFLICT WITH THESE DRAWINGS AND SPECIFICATIONS. AT THE COMPLETION OF HIS WORK HE SHALL SUBMIT "AS BUILT PRINTS TO THE OWNER.

C. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING AND DETAIL. ALL WORK SHALL BE INSTALLED SO THAT JUNCTION BOXES AND COMPONENTS WILL BE ACCESSIBLE FOR SERVICE.

D. ALL SYSTEMS, EQUIPMENT, COMPONENTS, WORK, ETC. PROVIDED UNDER THIS DIVISION SHALL BE COVERED BY A ONE YEAR GUARANTEE STARTING AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ANY DEFECTS IN THE WORK, SYSTEMS, EQUIPMENT, OR COMPONENTS FOUND DURING THIS YEAR SHALL BE CORRECTED AT NO CHARGE. THE GUARANTEE SHALL INCLUDE PROVIDING ALL NECESSARY CUTTING, PATCHWORK, REPAINTING, ETC. TO MAKE THE WORK COMPLETE AND NEW.

E. ALL CONDUIT MUST BE CONCEALED IN THE WALLS OR ABOVE THE CEILING UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE IS 1/2".

F. ALL CONDUCTORS SHALL BE COPPER WITH TYPE "THW" OR "THHN" INSULATION AND THE MINIMUM WIRE SIZE SHALL BE #12 A.W.G. WITH A 167 DEGREE TEMPERATURE RATING.

G. ALL WORK MUST BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO GENERALLY ACCEPTED PRINCIPALS OF FIRST CLASS WORKMANSHIP.

H. FASTEN ALL RECESSED LIGHTING FIXTURES TO STRUCTURE OR GRID PER N.E.C. 410.36.

I. RECESSED INCANDESCENT FIXTURES SHALL BE SUPPORTED IN COMPLIANCE WITH N.E.C. 410.36.

J. ALL PENETRATIONS THRU RATED WALLS, FLOORS AND CEILINGS SHALL BE FIRE STOPPED PER N.E.C. 300.21.

K. PROVIDE ALL GROUNDING AND BONDING AS REQUIRED BY N.E.C.

L. DEVICE MOUNTING HEIGHTS ARE TO BE MEASURED TO THE DEVICE CENTERLINE.

M. ALL SWITCHES FOR FANS, LIGHTS, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL SHARE A MULTI-GANG COVER PLATE AS REQUIRED.

N. ALL CONDUIT SHALL BE 1/2" EMT WITH 2#12,1#12G AWG CONDUCTORS UNLESS OTHERWISE NOTED.

O. PROVIDE #12AWG GND. FOR ALL MECHANICAL EQUIPMENT UNLESS SHOWN OTHERWISE. ALL EQUIPMENT SHALL BE GROUNDED AT THE PANEL WHICH FEEDS THE EQUIPMENT.

P. COORDINATE RECEPTACLE NEMA TYPE AND VOLTAGE WITH COPIERS AND EQUIPMENT.

Q. PROVIDE A NEW DIRECTORY FOR ALL PANELS. CORRECTLY LABEL ALL CIRCUITS, SPARES AND SPACES IN ACCORDANCE WITH N.E.O. 408.4(A).

R. PROVIDE A SEPARATE GREEN, INSULATED, #12AWG EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH THE BRANCH CIRCUIT HOMERUN CONDUCTORS.

S. WHERE WORK BY THE GENERAL CONTRACTOR (WALL REMOVAL, NEW OR RELOCATED WALL OPENING, ETC.) RESULTS IN THE REMOVAL, RELOCATION OF REFEEDING OF ELECTRICAL DEVICES OR LIGHTING FIXTURES, THE ELEC. CONTRACTOR SHALL DISCONNECT OR RECONNECT AS REQUIRED ALL ACTIVE DEVICES REMAINING ON THAT CIRCUIT SYSTEM.

T. DEVICE BOXES IN RATED WALLS SHALL MEET STANDARD BUILDING CODE SECTION 706.4.

U. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABEL LISTED BY A APPROVED THIRD PARTY TESTING AGENCY.

V. DEDICATED RECEPTACLES TO RECEIVE VISUAL DESIGNATION.

W. OUTLET BOX SHALL NOT BE MOUNTED BACK TO BACK.

X. BLANK FACEPLATES ARE NOT ALLOWED, U.N.O.. ANY EXISTING OUTLET OR TELE/DATA LOCATION NOT USED OR SHOWN WITHIN THE SCOPE OF WORK IN THESE PLANS SHOULD BE REMOVED, PATCHED, AND REPAIRED.

Y. MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS PER N.E.C. 210.4(B).

Z. MULTIWIRE BRANCH CIRCUITS SUPPLYING POWER TO PERMANENTLY CONNECTED FREESTANDING PARTITIONS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANEL BOARD WHERE THE BRANCH CIRCUIT ORIGINATES PER N.E.C. 605.8.

AA. ARC-FLASH HAZARD WARNING SHALL BE PROVIDED ON ALL EQUIPMENT IN AFFECTED ELECTRICAL ROOMS PER N.E.C. 110.16.

AB. PROVIDE PLASTIC NAMEPLATE ON ALL PANELS (NEW AND EXISTING) INDICATING PANEL NAME AND SOURCE PER N.E.C 408.4(B).

AC. ALL WIRING TERMINATIONS ARE ASSUMED TO BE 75DEG C RATED, UNLESS NOTED OTHERWISE. ALL WIRING UNDER 100A IS BASED ON A 60DEG C TERMINATION.

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE

PRESCRIPTIVE ____X____ PERFORMANCE _____

LIGHTING SCHEDULE

LAMP TYPE REQUIRED IN FIXTURE	SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-200.0
NUMBER OF LAMPS IN FIXTURE	SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-200.0
BALLAST TYPE USED IN THE FIXTURE	SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-200.0
NUMBER OF BALLASTS IN FIXTURE	SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-200.0
TOTAL WATTAGE PER FIXTURE	SEE LIGHTING FIXTURE SCHEDULE ON SHEET E-200.0

TOTAL INTERIOR WATTAGE SPECIFIED VS. ALLOWED

COMMERCIAL STORE (HEALTH CARE CLINIC 1297 SQ. FT.); GROSS AREA OF 1.5 W/SQ. FT.

PER **INTERNATIONAL ENERGY CONSERVATION CODE 2009** STANDARD:

ALLOWABLE	SPECIFIED

SEE COMCHECK COMPLIANCE FORM ON SHEET E-1.0

TOTAL EXTERIOR WATTAGE SPECIFIED VS. ALLOWED
NOT APPLICABLE (TENANT FIT-UP)

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)

MOTOR HORSEPOWER	NONE
NUMBER OF PHASES	N/A
MINIMUM EFFICIENCY	N/A
MOTOR TYPE	N/A
# OF POLES	N/A

PROVIDE A STANDARD RISER DIAGRAM WHICH INDICATES DESIGNATED POINTS FOR CHECK METERING.

PROVIDE A STANDARD PANEL SCHEDULE DESCRIPTION WHICH IDENTIFIES DIFFERENT END USE LOADS.

STANDARD RISER DIAGRAM IS ON SHEET - E-4.0
STANDARD PANEL SCHEDULES ARE ON - E-4.0

ELECTRICAL DESIGNER STATEMENT

I HEREBY CERTIFY THAT THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE **INTERNATIONAL ENERGY CONSERVATION CODE 2009**

SIGNED_____ DATE 07/10/2025

NAME:
TITLE: PROJECT ENGINEER

STOP AND READ:

THE CONTRACTOR AND SUB-CONTRACTORS **SHALL NOT INITIATE ANY WORK UNTIL EXISTING FIELD CONDITIONS ARE PROPERLY VERIFIED**.

ELECTRICAL DEMOLITION NOTES:

A. PRIOR TO SUBMITTING A PROPOSAL, THE ELECTRICAL CONTRACTOR SHALL VISIT AND CAREFULLY INVESTIGATE THE EXISTING AREAS AFFECTED BY THIS WORK IN ORDER TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. THE CONTRACTOR SHALL BASE HIS BID ACCORDINGLY. SUBMISSION OF PROPOSAL WILL BE CONSTRUED AS CONFIRMATION THAT A THOROUGH EXAMINATION OF THE SITE HAS BEEN MADE BY THE CONTRACTOR. LATER CLAIMS FOR UNFORESEEN EXTRA LABOR, EQUIPMENT OR MATERIALS WILL NOT BE ACCEPTED IF SAID CLAIM(S) COULD HAVE BEEN FORESEEN DURING THE SITE INVESTIGATION.

B. CONTRACTOR'S WORK SHALL COMPLY WITH ALL SAFETY RELATED WORK PRACTICES DETAILED IN THE LATEST EDITION OF NFPA 70E.

C. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL ELECTRICAL FACILITIES RENDERED INACTIVE OR OBSOLETE BY THE SCOPE OF THE ARCHITECTURAL, MECHANICAL AND PLUMBING DEMOLITION WORK. THE CONTRACTOR IS ALERTED THAT SUCH ELECTRICAL FACILITIES MAY NOT BE EXPLICITLY SHOWN ON THE ELECTRICAL DEMOLITION DRAWINGS. THE CONTRACTOR SHALL VISIT THE SITE, REFER TO THE ARCHITECTURAL, MECHANICAL,ELECTRICAL AND PLUMBING DRAWINGS, AND COORDINATE WITH THE GENERAL, MECHANICAL, AND PLUMBING CONTRACTOR(S), AND INCLUDE ALL ELECTRICAL DEMOLITION WORK INCLUDING,HOWEVER NOT NECESSARILY LIMITED TO, THE COMPLETE REMOVAL OF ALL ELECTRICAL AND CONTROL WIRES, CONDUIT,JUNCTION BOXES, ENCLOSURE AND RACEWAY SUPPORT SYSTEMS, DISCONNECT SWITCHES, CIRCUIT BREAKERS ETC. INTENDED FOR REMOVAL AS REQUIRED TO COMPLETE THE WORK.

D. THE INTENT OF THE DEMOLITION WORK REQUIREMENTS INCLUDE ALL LABOR AND EQUIPMENT REQUIRED TO ATTAIN THE FINAL CONDITIONS AS SHOWN ON THE ARCHITECTURAL, MECHANICAL, TEMPERATURE CONTROL, AND PLUMBING, STRUCTURAL, ELECTRICAL NEW WORK PLANS. THE CONTRACTOR SHALL REVIEW ALL OTHER TRADE DRAWINGS, AND COORDINATE WILL ALL OTHER TRADE CONTRACTORS, AND BASE HIS BID ACCORDINGLY.

E. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR SCOPE RELATED TO THE LAYOUT OF WALLS, CEILINGS, ETC... TO BE REMOVED.

F. COORDINATE ALL POWER SHUT-DOWNS AND FIRE ALARM SYSTEM MODIFICATIONS, WHERE APPLICABLE, WITH THE ONSITE FACILITIES MANAGEMENT TEAM.

G. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ASSOCIATED WITH ANY WALLS OR OTHER PARTITIONS IDENTIFIED TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE IN THE APPROPRIATE PANEL SCHEDULES.

H. REMOVE ALL EXISTING DEVICES (RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, SWITCHES, EMPTY JUNCTION BOXES, ETC...) ON EXISTING TO REMAIN WALLS, BOTH INTERIOR AND PERIMETER, UNLESS SPECIFICALLY SHOWN AS EXISTING TO REMAIN ON SHEETS ELSEWHERE IN THIS SET. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

I. NO BLANK COVERPLATES SHALL BE ALLOWED. REFER TO ARCHITECTURAL SET FOR DETAILS CONCERNING PATCHING OF EXISTING OPENINGS BASED ON THE PARTITION TYPE IT CURRENTLY RESIDES.

J. REMOVE ALL EXISTING LIGHT FIXTURES AND EXIT SIGNS FROM THE SCOPE OF WORK AREA UNLESS SPECIFICALLY IDENTIFIED AS 'EXISTING TO REMAIN' (E) OR 'EXISTING TO BE RELOCATED (R). REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO ITS SOURCE. RE-LABEL ALL NEWLY SPARED BREAKERS AS "SPARE" IN THE APPROPRIATE PANEL SCHEDULES.

K. FOR ANY MECHANICAL EQUIPMENT BEING REMOVED, REMOVE ALL WIRING, CONDUIT, AND ASSOCIATED DISCONNECTS BACK TO ITS SOURCE. COORDINATE EXACT UNITS BEING REMOVED WITH DIVISION 22 & 23. RE-LABEL ALL NEW SPARE BREAKERS AS "SPARE IN THE APPROPRIATE PANEL SCHEDULES.

L. REFER TO THE FIRE ALARM FLOOR PLANS FOR EXACT FIRE ALARMS DEVICES TO EITHER BE REMOVED, RELOCATED, OR LEFT IN PLACE.

M. REMOVE ALL ABANDONED EMPTY CONDUIT AND JUNCTION BOXES FROM THE CEILING SPACE.

N. ANY EXISTING FLOOR BOX, ABANDONED CONDUIT PENETRATION, ETC... THROUGH THE SLAB WITHIN THE SCOPE OF WORK AREA NOT SPECIFICALLY IDENTIFIED TO REMAIN SHALL BE REMOVED AND THE FLOOR PATCHED TO A LIKE NEW CONDITION.

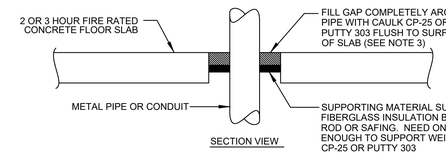
O. COORDINATE WITH THE TENANT AND/OR LANDLORD EXACTLY WHICH DEVICES AND EQUIPMENT ARE REQUIRED TO BE TURNED OVER TO THE OWNER ONCE REMOVED.

P. PROVIDE ADEQUATE PROTECTION OF ANY EXISTING TO REMAIN DEVICE OR FIXTURE SUCH THAT IT IS NOT DAMAGED DURING THE CONSTRUCTION PROCESS.

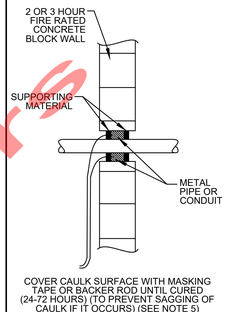
ABBREVIATION:

A	AMPERE	MCB	MAIN CIRCUIT BREAKER
AC	ABOVE COUNTER	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MCCB	MOLDED CASE CIRCUIT BREAKER
AFG	ABOVE FINISHED GRADE	MCP	MOTOR CIRCUIT PROTECTOR
AHJ	AUTHORITY HAVING JURISDICTION	MDP	MAIN DISTRIBUTION PANEL
AFC	AVAILABLE FAULT CURRENT	MFS	MAXIMUM FUSE SIZE
AIC	AMPERE INTERRUPTING CAPACITY	MLO	MAIN LUG ONLY
ATS	AUTOMATIC TRANSFER SWITCH	MOCP	MAXIMUM OVERCURRENT PROTECTION
BC	BELOW CEILING	MTD	MOUNTED
BLDG	BUILDING	MTS	MANUAL TRANSFER SWITCH
BRKR	BREAKER	N	NEW
C	CONDUIT (PROVIDE PULL STRING IN ALL EMPTY CONDUIT)	N.C.	NORMALLY CLOSED
		N.O.	NORMALLY OPEN
CL	CURRENT LIMITER	NTS	NOT TO SCALE
CKT	CIRCUIT	OCPD	OVERCURRENT PROTECTION DEVICE
CLG	CEILING.	OH	OVERHEAD
CT	CURRENT TRANSFORMER	P	POLE
CU	COPPER	PH	PHASE
CTR	CENTER	PNL	PANEL
E	EXISTING	PWR	POWER
EA	EACH	R	RELOCATED
EGC	EQUIPMENT GROUNDING CONDUCTOR	REC	RECEPTACLE
EOL	ELECTRONIC OVERLOAD	RM	ROOM
FBO	FURNISHED BY OTHERS	SW	SWITCH
FDR	FEEDER	SWBR	SWITCHBOARD
FLA	FULL LOAD AMPS	SWGR	SWITCHGEAR
FPMR	FUSE PER MANUFACTURER'S RECOMMENDATION	TBB	TELECOM BACKBOARD
		TELE	TELEPHONE
GEC	GROUNDING ELECTRODE CONDUCTOR	TYP	TYPICAL
GFI	GROUND FAULT INTERRUPTER	UG	UNDERGROUND
GND	GROUND	UNO	UNLESS NOTED OTHERWISE
GRS	GALVANIZED RIGID STEEL	UPS	UNINTERRUPTIBLE POWER SUPPLY
HOA	HAND-OFF-AUTO	V	VOLT
IG	ISOLATED GROUND	VIF	VERIFY IN FIELD
JB	JUNCTION BOX	W/	WITH
KVA	KILOVOLT-AMPERE	W	WIRE
KW	KILOWATT	WP	WEATHER PROOF
L.S.I.G.	LONG, SHORT, INSTANTANEOUS, GROUND FAULT TRIP	XFMR	TRANSFORMER
LTG	LIGHTING		
MCA	MINIMUM CIRCUIT AMPS		

FIRE STOP DETAILS:



SECTION VIEW



SECTION VIEW

NOTES:

1. FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES.
2. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
3. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
4. WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm). A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.
5. OPTIONS TO MASKING TAPE TO PREVENT SAGGING:
   A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.
   B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
6. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:

WET DEPTH	PIPE SIZE	FIRE RATING
1/2" (13mm)	MAX. 8" (203mm)	2 HRS.
" (25mm)	MAX. 6" (152mm)	3 HRS.

1" (25mm) DEPTH CAULK CP-25 OR PUTTY 303 WITHIN WALL

Property of NX Engineers

sugaringLA

ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES

SHEET NUMBER:

E-0.1

SUMMARY

A. GENERAL AND SUPPLEMENTARY CONDITIONS WITHIN THE SPECIFICATIONS ARE HEREBY INCORPORATED AND BECOME PART OF THESE SPECIFICATIONS AND AS SUCH SHALL BE APPLICABLE TO THE WORK OF THE ELECTRICAL CONTRACT.

B. PRIOR TO SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND LIMITATIONS THAT IMPACT THE WORK OF THIS CONTRACT. NO ADDITIONAL COSTS TO THE OWNER SHALL BE PERMITTED FOR CHANGES TO THE WORK AS A RESULT OF THE CONTRACTORS FAILURE TO VISIT THE SITE PRIOR TO BIDDING AND IDENTIFY ITEMS THAT WERE ABLE TO BE VERIFIED DURING A SITE VISIT PRIOR TO THE SUBMISSION OF A BID PROPOSAL.

C. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, RIGGING, AND MISCELLANEOUS ITEMS AS REQUIRED FOR A COMPLETE, OPERATIONAL, FUNCTIONAL AND CODE COMPLIANT ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN THESE SPECIFICATIONS.

LANDLORDS REQUIREMENTS

A. ALL WORK OF THIS CONTRACT SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL APPLICABLE LANDLORD REQUIREMENTS INCLUDING BUT NOT NECESSARILY LIMITED TO; LANDLORD'S WORK LETTER, LANDLORD'S CONSTRUCTION CRITERIA AND/OR THE TENANT/LANDLORD AGREEMENT. THIS CONTRACTOR SHALL EXAMINE THESE DOCUMENTS PRIOR TO THE SUBMISSION OF A BID PROPOSAL.

B. ALL APPLICABLE LANDLORD REQUIREMENTS INCLUDING BUT NOT NECESSARILY LIMITED TO THE LANDLORD'S WORK LETTER, LANDLORDS CONSTRUCTION CRITERIA AND/OR THE TENANT/LANDLORD AGREEMENT DOCUMENTS SHALL BE CONSIDERED PART OF THESE SPECIFICATIONS.

EXISTING CONDITIONS

A. THE CONTRACT DOCUMENTS ARE BASED ON INFORMATION PROVIDED TO THE CONSULTANT AT THE TIME OF DESIGN. THIS CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING A BID PROPOSAL.

BIDS AND SUBSTITUTIONS

A. PRIOR TO SUBMISSION OF A BID PROPOSAL, CONTRACTOR SHALL THOROUGHLY REVIEW THE BID INSTRUCTIONS AND ALL CIVIL, ARCHITECTURAL, STRUCTURAL, FOOD SERVICE AND MEPFP AND TELECOMMUNICATION CONSTRUCTION DOCUMENTS.

B. SHOULD THE CONTRACTOR WISH TO SUBMIT AN ALTERNATE PRODUCT TO THE MANUFACTURERS NAMED IN THESE SPECIFICATIONS OR ON THE DRAWINGS FOR ANY EQUIPMENT, THE CONTRACTOR SHALL SUBMIT A VOLUNTARY ALTERNATIVE A MINIMUM OF SEVEN (7) CALENDAR DAYS PRIOR TO BID, STATING THE MANUFACTURER'S NAME, MODEL NUMBER, WRITTEN, DETAILED PRODUCT DATA.

C. WORK PERFORMED OR CONSTRUCTED WITH UNAPPROVED EQUALS IS AT CONTRACTOR'S RISK AND ANY REQUIRED CORRECTION OF WORK INCORPORATING UNAPPROVED EQUALS SHALL BE AT CONTRACTOR'S SOLE COST AND EXPENSE.

D. NO SUBSTITUTIONS PERMITTED FOR LIGHTING FIXTURES.

QUALITY ASSURANCE

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW.

B. PROVIDE PERMITS, INSPECTIONS, FINAL CERTIFICATES OF INSPECTION BY THE AUTHORITY HAVING JURISDICTION, PERMIT AND INSPECTION FEES AND ALL MATERIALS, EQUIPMENT AND LABOR AS REQUIRED FOR A COMPLETE, FUNCTIONAL, FULLY OPERATIONAL AND CODE COMPLIANT ELECTRICAL SYSTEM.

C. THIS CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND ACCESSORIES FOR A COMPLETE FUNCTIONAL AND CODE COMPLIANT ELECTRICAL INSTALLATION, WHETHER OR NOT SHOWN ON THE DRAWINGS OR SPECIFIED IN THESE SPECIFICATIONS.

D. EC SHALL VERIFY THE VOLTAGE AND AMPERAGE REQUIREMENTS OF ALL EQUIPMENT DELIVERED TO THE SITE PRIOR TO CONNECTION. EC SHALL NOTIFY THE OWNER OF ANY DIFFERENCES.

E. REQUIREMENTS OF REGULATORY AGENCIES:

1. PERMITS: ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND UTILITY CONNECTIONS REQUIRED.
2. PROVIDE ALL TESTS AND INSPECTIONS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
3. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE COMPLETION OF THE PROJECT. INCLUDE IN OPERATION AND MAINTENANCE MANUALS.

F. CODES AND STANDARDS

1. COMPLY WITH SPECIFIED CODES AND STANDARDS. IF CONFLICT EXISTS BETWEEN CODES OR STANDARDS AND DRAWINGS, PROJECT MANUAL OR ADDENDA REQUIREMENTS, REQUEST CLARIFICATION FROM ARCHITECT/ENGINEER.
2. CONFORM TO THE INSTALLATION RULES AND REGULATIONS OF THE CODES AND STANDARDS LISTED INCLUDING ALL SUBSEQUENTLY PUBLISHED AMENDMENTS THERETO ISSUED PRIOR TO THE DATE OF THE BIDDING DOCUMENTS.
3. CONFORM TO THE REQUIREMENTS OF ALL LOCAL, STATE AND FEDERAL AGENCIES WHICH HAVE AUTHORITY OVER THIS PROJECT.
4. COMPLY WITH THE APPLICABLE EDITION OF THE FOLLOWING CODES AND STANDARDS THAT HAVE BEEN ADOPTED BY AND ARE ENFORCED BY THE AUTHORITY HAVING JURISDICTION:
   a. INTERNATIONAL BUILDING CODE.
   b. INTERNATIONAL ENERGY CONSERVATION CODE
   c. INTERNATIONAL MECHANICAL CODE
   d. NATIONAL ELECTRICAL CODE
   e. INTERNATIONAL FIRE CODE
   f. LIFE SAFETY CODE, NFPA 101
   g. AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
   h. ALL LOCAL CODES AND ORDINANCES ADOPTED AND ENFORCED BY THE AUTHORITY HAVING JURISDICTION.

G. REFERENCED STANDARDS:

1. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE RATED, TESTED, FABRICATED AND INSTALLED IN ACCORDANCE WITH THE APPLICABLE INDUSTRY STANDARDS.
2. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE LISTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETL, ETC).

ELECTRICAL CONTRACT DOCUMENTS

A. THE ELECTRICAL DRAWINGS (DRAWINGS) AND THE SPECIFICATIONS SHALL TOGETHER FORM A SET OF CONTRACT DOCUMENTS FOR THE ELECTRICAL WORK. NEITHER THE DRAWINGS OR THE SPECIFICATIONS SHALL BE COMPLETE WITHOUT THE OTHER. ANY ITEM SHOWN ONLY ON THE DRAWINGS OR SPECIFIED ONLY IN THE SPECIFICATIONS SHALL BE CONSIDERED AS IF SHOWN AND SPECIFIED IN BOTH.

B. ELECTRICAL DRAWINGS AND SPECIFICATIONS: COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL DRAWINGS AND SPECIFICATIONS WITHIN THE CONTRACT DOCUMENTS, INCLUDING, BUT NOT NECESSARILY LIMITED TO, GEOTECHNICAL, LANDSCAPE, CIVIL, ARCHITECTURAL, STRUCTURAL, FOOD SERVICE, MECHANICAL, PLUMBING, TELECOMMUNICATION AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS.
2. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO INDICATE APPROXIMATE LOCATION ONLY OF ELECTRICAL WORK. THE ACTUAL LOCATION OF ANY ELECTRICAL WORK SHALL NOT INTERFERE WITH THE LOCATION, CLEARANCES, ETC. REQUIRED BY THE WORK OF OTHER TRADES.
3. PRIOR TO ROUGH-IN, CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS WITH THE ARCHITECTURAL WALL ELEVATIONS, CASEWORK/CABINETRY ELEVATIONS AND DETAILS AND THE FINAL, APPROVED FOOD SERVICE SHOP DRAWINGS.

C. DEFINITIONS: THE FOLLOWING TERMS ARE USED ON THE ELECTRICAL DRAWINGS AND IN THE SPECIFICATIONS AND SHALL BE DEFINED AS FOLLOWS:

1. CONTRACTOR - THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
2. WORK - ALL MATERIAL, LABOR, TRANSPORTATION OF THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
3. FURNISH - PURCHASE, SUBMIT FOR REVIEW AND APPROVAL, COORDINATE WITH THE CONTRACT DOCUMENTS AND DELIVER TO THE PROJECT SITE IN NEW, UNDAMAGED CONDITION, STORE AS DIRECTED, PROTECT FROM DAMAGE DURING STORAGE.
4. INSTALL - INSTALL IN PLACE, MAKE READY FOR CONNECTION TO THE REQUIRED SERVICE.
5. CONNECT - CONNECT TO THE REQUIRED SERVICE AS REQUIRED FOR PROPER OPERATION, TEST FOR PROPER OPERATION AND FUNCTIONALITY IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND REQUIREMENTS SPECIFIED WITHIN THESE SPECIFICATIONS AND TURN OVER TO THE OWNER IN FULL OPERATING CONDITION.
6. PROVIDE - FURNISH, INSTALL AND CONNECT AS DEFINED HEREIN FOR A COMPLETE, FUNCTIONAL AND CODE COMPLIANT INSTALLATION READY FOR INTENDED USE.
7. FINISHED SPACE - SPACES HAVING WALLS PAINTED OR FINISHED WITH WALL COVERING, LAY-IN OR DRYWALL CEILINGS, AND FINISHED FLOORING MATERIALS. EXAMPLES OF FINISHED SPACES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, ALL SPACES IN A DWELLING UNIT, OFFICES, LOBBIES, CORRIDORS, TOILET ROOMS, ETC.
8. UNFINISHED SPACES - SPACES WITH UNFINISHED WALLS AND FLOORS AND TYPICALLY ARE NOT EQUIPPED WITH A CEILING. EXAMPLES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, MECHANICAL ROOMS, ELECTRICAL ROOMS, SERVICE AREAS, ETC.
9. SHALL - ACTION THAT IS REQUIRED WITHOUT OPTION OR QUALIFICATION.
10. REMOVE - DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF SITE UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.
11. REMOVE AND SALVAGE - CAREFULLY DETACH FROM EXISTING CONSTRUCTION IN A MANNER TO PREVENT DAMAGE AND DELIVER TO OWNER READY FOR RE-USE.
12. REMOVE AND REINSTALL - DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE FOR RE-USE, RE-INSTALL AND RECONNECT WHERE INDICATED SUCH THAT THERE-INSTALLED ITEM IS FULLY OPERATIONAL.
13. EXISTING TO REMAIN - EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE PERMANENTLY REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.

SUBMITTALS

A. REVIEW OF THE SHOP DRAWINGS IS RENDERED AS A SERVICE ONLY AND SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR OF BUILDING CONDITIONS; NOR SHALL IT BE CONSTRUED AS RELIEVING THE CONTRACTOR'S OF BASIC RESPONSIBILITIES UNDER HIS CONTRACT. ARCHITECT/ENGINEER WILL REVIEW SHOP DRAWINGS ONLY FOR CONFORMANCE WITH DESIGN CONCEPT OF THE PROJECT. REVIEW BY THE ARCHITECT/ENGINEER SHALL NOT BE CONSTRUED:

1. AS PERMITTING ANY DEPARTURE FROM THE CONTRACT REQUIREMENTS.
2. AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY FOR ANY ERROR IN DETAILS, DIMENSIONS OR OTHERWISE THAT MAY EXIST.
3. AS APPROVED DEPARTURES FROM ADDITIONAL DETAILS OR INSTRUCTIONS PREVIOUSLY FURNISHED BY THE ARCHITECT/ENGINEER.

B. SHOP DRAWINGS:

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESCRIPTIVE LITERATURE OF EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. DRAWINGS SHALL STATE CAPACITIES, SIZES, ETC., OF ALL EQUIPMENT AND SHALL BE CERTIFIED. SEE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE SUBMITTALS FOR LIGHTING FIXTURES, TRANSFORMERS, PANELBOARDS, LIGHTING CONTROL DEVICES, CONTACTORS, WIRING DEVICES, DISCONNECT SWITCHES, POWER SYSTEM STUDY.

C. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK REQUIRING SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTALS HAS BEEN APPROVED BY THE ENGINEER.

ELECTRICAL COORDINATION DRAWINGS

A. PREPARE ELECTRICAL COORDINATION DRAWINGS AS REQUIRED BY THE WORK AND AS DIRECTED BY THE GENERAL CONTRACTOR.

B. MEET WITH REPRESENTATIVES OF THE OTHER DISCIPLINES/TRADES TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF EACH DISCIPLINE AND TO OBTAIN INFORMATION REGARDING THEIR WORK THAT IS TO BE INDICATED ON THE COORDINATION DRAWINGS.

POWER SYSTEM STUDIES - GENERAL

A. PROVIDE COMPUTER-BASED, POWER SYSTEM STUDIES THAT INCLUDES:

1. A SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES;
2. AN ARC-FLASH STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR ELECTRICAL EQUIPMENT.

B. STUDIES SHALL BE PERFORMED UTILIZING COMPUTER PROGRAMS THAT ARE DISTRIBUTED NATIONALLY AND ARE IN WIDE USE. SOFTWARE ALGORITHMS SHALL COMPLY WITH REQUIREMENTS OF STANDARDS AND GUIDES SPECIFIED IN THIS SECTION. MANUAL CALCULATIONS ARE UNACCEPTABLE.

C. SOFTWARE DEVELOPERS: SUBJECT TO COMPLIANCE WITH SPECIFIED REQUIREMENTS, PERFORM STUDIES UTILIZING SOFTWARE PRODUCTS BY ONE OF THE FOLLOWING:

1. EASY POWER
2. POWER ANALYTICS CORPORATION
3. SKM SYSTEMS ANALYSIS

D. ALL STUDIES SHALL BE BASED ON THE DEVICE CHARACTERISTICS OF ACTUAL EXISTING COMPONENTS AND THE NEW COMPONENTS BEING INSTALLED.

E. PROVIDE ALL FIELD LABOR AS REQUIRED TO OBTAIN ALL DATA NECESSARY TO CONDUCT THE STUDIES SPECIFIED HEREIN.

F. SUBMIT STUDIES FOR REVIEW BEFORE SUBMITTING THE SYSTEM OVERCURRENT PROTECTIVE DEVICE AND POWER DISTRIBUTION EQUIPMENT SUBMITTALS. SUBMIT STUDY REPORT FOR REVIEW PRIOR TO RECEIVING FINAL APPROVAL OF THE OVERCURRENT PROTECTIVE DEVICE AND DISTRIBUTION EQUIPMENT SUBMITTALS.

G. WHERE FORMAL COMPLETION OF STUDIES WILL CAUSE A DELAY IN THE ORDERING AND MANUFACTURING OF OVERCURRENT PROTECTIVE DEVICES AND POWER DISTRIBUTION EQUIPMENT, OBTAIN APPROVAL FROM ENGINEER FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT THE SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY AND IN COMPLIANCE WITH THE RESULTS OF THE STUDIES BEING PERFORMED.

H. POWER SYSTEM STUDY SHALL BE SIGNED AND SEALED BY THE PROFESSIONAL ENGINEER RESPONSIBLE FOR PREPARING THE POWER SYSTEM STUDY.

SHORT CIRCUIT STUDY

A. PROVIDE A COMPUTER-BASED, SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES.

B. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.

C. FOR EXISTING RELOCATED EQUIPMENT AND EXISTING EQUIPMENT THAT IS EXISTING TO REMAIN, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS. THE QUALIFICATIONS OF TECHNICIANS AND ENGINEERS SHALL BE QUALIFIED AS DEFINED BY NFPA 70E.

D. GATHER AND TABULATE ALL REQUIRED DATA TO SUPPORT THE SHORT-CIRCUIT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.

E. BEGIN SHORT-CIRCUIT CURRENT ANALYSIS AT THE SERVICE, EXTENDING DOWN TO THE SYSTEM OVERCURRENT PROTECTIVE DEVICES AS FOLLOWS:

1. TO NORMAL SYSTEM LOW-VOLTAGE LOAD BUSES WHERE FAULT CURRENT IS 10 KA OR LESS.

ARC FLASH HAZARD STUDY

A. PROVIDE A COMPUTER-BASED, ARC-FLASH HAZARD STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR EXISTING AND NEW ELECTRICAL EQUIPMENT.

B. ELECTRICAL SURVEY DATA: GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 1584 AND NFPA 70E AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.

C. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.

D. FOR EXISTING EQUIPMENT, WHETHER OR NOT RELOCATED, OBTAIN REQUIRED ELECTRICAL DISTRIBUTION SYSTEM DATA BY FIELD INVESTIGATION AND SURVEYS, CONDUCTED BY QUALIFIED TECHNICIANS AND ENGINEERS.

E. HAZARD LABELS SHALL HAVE AN ORANGE HEADER WITH THE WORDING, "WARNING, ARC-FLASH HAZARD," AND SHALL INCLUDE THE FOLLOWING INFORMATION TAKEN DIRECTLY FROM THE ARC-FLASH HAZARD ANALYSIS:

1. LOCATION DESIGNATION.
2. NOMINAL VOLTAGE.
3. FLASH PROTECTION BOUNDARY.
4. HAZARD RISK CATEGORY.
5. INCIDENT ENERGY.
6. WORKING DISTANCE.
7. ENGINEERING REPORT NUMBER, REVISION NUMBER, AND ISSUE DATE.

F. ARC FLASH HAZARD WARNING LABELS SHALL BE A 3.5-BY-5-INCH THERMAL TRANSFER LABEL OF HIGH-ADHESION POLYESTER FOR EACH WORK LOCATION INCLUDED IN THE ANALYSIS.

G. LABELS SHALL BE MACHINE PRINTED, WITH NO FIELD-APPLIED MARKINGS.

RECORD DOCUMENTS

A. DURING THE PROGRESS OF THE WORK, CONTRACTOR SHALL MAINTAIN A CURRENT (DAILY) AS-BUILT SET OF THE DRAWINGS AND SPECIFICATIONS, INDICATING THEREON ALL WORK INSTALLED AT VARIANCE WITH SUCH CONTRACT DOCUMENTS INCLUDING, WITHOUT LIMITATION, WORK COVERED BY ADDENDA, FIELD WORK ORDERS, CHANGE ORDERS, AND ENGINEERS

B. CONTRACTOR SHALL PROVIDE THE TENANT WITH THE FINAL AS-BUILT SET OF DRAWINGS AT THE COMPLETION OF THE WORK.

COORDINATION WITH LANDLORD AND UTILITY COMPANIES

A. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL COORDINATE THE WORK OF THIS CONTRACT WITH THE LANDLORD'S AUTHORIZED REPRESENTATIVE AND AUTHORIZED REPRESENTATIVES OF EACH SERVING UTILITY THAT WILL PROVIDE SERVICE TO THIS SITE, INCLUDING BUT NOT NECESSARILY LIMITED TO, ELECTRIC, TELEPHONE AND CABLE/SATELLITE TV SERVICE PROVIDERS.

B. CONTRACTOR SHALL MEET WITH AUTHORIZED REPRESENTATIVES OF THE LANDLORD AND EACH UTILITY TO DISCUSS LANDLORD UTILITY COMPANY SCOPE OF WORK, CONTRACTOR SCOPE OF WORK, POINT OF SERVICE PICK-UP, DETAILS REGARDING SYSTEM INTERFACE, UTILITY COMPANY STANDARDS TO BE COMPLIED WITH, ETC.

COORDINATION WITH OTHER TRADES

A. ELECTRICAL WORK SHALL BE INSTALLED SO AS TO NOT CONFLICT WITH THE WORK OF OTHER TRADES.

B. SET ALL SLEEVES AND CUT AND PATCH ALL MISCELLANEOUS HOLES NECESSARY FOR THE CONVENIENT AND PROPER INSTALLATION OF THE WORK.

C. CONFER WITH THE OTHER CONTRACTORS REGARDING THE LOCATION AND SIZE OF PIPES, EQUIPMENT, DUCTS, OPENINGS AND SPECIAL ARCHITECTURAL TREATMENTS IN ORDER THAT THERE MAY BE NO INTERFERENCES BETWEEN THE INSTALLATION OR THE PROGRESS OF THE WORK OF ANY CONTRACTOR ON THE PROJECT.

D. ALL LINE VOLTAGE WIRING AND FINAL CONNECTIONS TO COMPLETE MECHANICAL SYSTEMS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

E. PROVIDE FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, (HVAC EQUIPMENT, PLUMBING EQUIPMENT, COMMERCIAL KITCHEN EQUIPMENT, ETC.

F. COORDINATE THE NEMA CONFIGURATION OF THE RECEPTACLE TO BE PROVIDED WITH THE NEMA PLUG CONFIGURATION OF THE CORD/PLUG ASSEMBLY FURNISHED WITH THE EQUIPMENT TO BE INSTALLED. PROVIDE RECEPTACLES HAVING A NEMA CONFIGURATION THAT MATCHES THE NEMA CONFIGURATION OF THE PLUG ON THE EQUIPMENT.

G. PROVIDE FINAL COORDINATION OF AVAILABLE POWER (VOLTAGE/PHASE) WITH OTHER TRADES PRIOR TO THEIR ORDERING OF EQUIPMENT.

H. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION REGARDING ELECTRICAL WORK TO BE PROVIDED ASSOCIATED WITH MECHANICAL EQUIPMENT.

I. WHERE ELECTRICAL WORK (CONDUIT BOXES, RECEPTACLES, DISCONNECT SWITCHES, ETC.) ARE SECURED DIRECTLY TO THE HOUSING OF MECHANICAL EQUIPMENT, THEY SHALL BE INSTALLED ON A PORTION OF THE EQUIPMENT HOUSING NOT REQUIRED TO BE REMOVED FOR ROUTINE MAINTENANCE. PRIOR TO INSTALLATION, COORDINATE ALL ELECTRICAL WORK AT MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.

TEMPORARY POWER

A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY CONSTRUCTION POWER AND LIGHTING TO ALLOW ALL CONTRACTORS AND SUB-CONTRACTORS TO PERFORM THE WORK OF THEIR CONTRACTS.

B. PRIOR TO THE SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL CONTACT THE GENERAL CONTRACTOR TO COORDINATE THE TYPE OF EQUIPMENT TO BE UTILIZED DURING THE WORK OF THIS CONTRACT

SEQUENCING AND SCHEDULING

A. COORDINATE ELECTRICAL EQUIPMENT INSTALLATION WITH OTHER BUILDING COMPONENTS AND THE PROJECT PHASING PLAN.

UTILITY COMPANY METERING EQUIPMENT

A. PROVIDE ALL EQUIPMENT REQUIRED FOR ELECTRICITY METERING BY UTILITY COMPANY. ALL METERING EQUIPMENT AND THE INSTALLATION OF THE EQUIPMENT SHALL BE IN COMPLIANCE WITH ALL UTILITY COMPANY REQUIREMENTS.

B. ELECTRICAL SERVICE CONNECTIONS: COORDINATE WITH UTILITY COMPANIES AND COMPONENTS THEY FURNISH AS FOLLOWS:

1. COMPLY WITH REQUIREMENTS OF UTILITIES PROVIDING ELECTRICAL POWER SERVICES.
2. COORDINATE INSTALLATION AND CONNECTION OF UTILITIES AND SERVICES, INCLUDING PROVISION FOR ELECTRICITY-METERING COMPONENTS.

C. METERS SHALL BE FURNISHED BY UTILITY COMPANY; INSTALLED BY ELECTRICAL CONTRACTOR.

D. METER SOCKETS: COMPLY WITH REQUIREMENTS OF ELECTRICAL-POWER UTILITY COMPANY.

E. INSTALL ALL CONDUITS AND EQUIPMENT ACCORDING TO UTILITY COMPANY'S WRITTEN REQUIREMENTS. PROVIDE EMPTY CONDUITS FOR METERING LEADS AND EXTEND GROUNDING CONNECTIONS AS REQUIRED BY UTILITY COMPANY.

FIRE STOPPING

A. PROVIDE FIRE STOPPING FOR PENETRATIONS BY CONDUIT OR CABLES AND OTHER EQUIPMENT THROUGH FIRE-RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES) AND VERTICAL SHAFT WALLS AND PARTITIONS.

B. FIRESTOP SYSTEM INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF ASTM 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF THE CONSTRUCTION BEING PENETRATED.

SEISMIC RESTRAINT

A. PROVIDE SEISMIC RESTRAINT FOR ELECTRICAL WORK AND SYSTEMS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE APPLICABLE BUILDING CODE AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

B. SUBMIT ALL REQUIRED DETAILS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL.

CUTTING & PATCHING

A. PRIOR TO CORE DRILLING OR SAW CUTTING OPERATIONS, CONTRACTOR SHALL X-RAY OR GROUND PENETRATING RADAR (GPR) THE EXISTING SLAB TO DETERMINE THE LOCATION OF ANY EXISTING UTILITIES, STRUCTURAL MEMBERS. ETC. COORDINATE ALL SCANNING, CUTTING AND CORE DRILLING OPERATIONS WITH GC AND LANDLORD PRIOR TO COMMENCEMENT OF WORK.

B. CORE-DRILL OR SAW-CUT EXISTING FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL WORK. EXISTING UTILITIES AND STRUCTURAL COMPONENTS, INCLUDING BUT NOT NECESSARILY LIMITED TO, COLUMNS, BEAMS, GIRDERS, PLATES OR JOISTS SHALL NOT BE CUT.

C. PATCH SURROUNDING AREAS FLUSH WITH ADJACENT SURFACES AND PREPARE TO RECEIVE SPECIFIED FINISHES.

D. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING SYSTEM. ALL ROOF WORK SHALL BE PERFORMED TO MEET THE WARRANTY REQUIREMENTS OF THE EXISTING ROOFING SYSTEM.

GROUNDING

A. PROVIDE ELECTRICAL SYSTEM AND EQUIPMENT GROUNDING IN ACCORDANCE WITH APPLICABLE N.E.C. REQUIREMENTS.

B. THE METALLIC CONDUIT SYSTEM SHALL BE GROUNDED AND BONDED TO FORM AN EQUIPMENT GROUNDING CONDUCTOR.

C. PROVIDE AN INSULATED EQUIPMENT GROUND CONDUCTOR WITHIN ALL FEEDERS AND BRANCH CIRCUITS. THIS EQUIPMENT GROUND CONDUCTOR SHALL BE IN ADDITION TO THE EQUIPMENT GROUND CONDUCTOR FORMED BY THE METALLIC CONDUIT SYSTEM.

D. PROVIDE AN ISOLATED GROUND CONDUCTOR IN ADDITION TO THE EQUIPMENT GROUNDING CONDUCTOR IN SELECT BRANCH CIRCUITS AS NOTED ON THE DRAWINGS.

E. PROVIDE A #6 AWG GREEN INSULATED GROUNDING CONDUCTOR FROM THE GROUND BAR AT TELEPHONE TERMINAL BOARD TO THE ELECTRICAL SERVICE GROUND.

F. PROVIDE A COPPER GROUNDING BAR AT THE TELEPHONE TERMINAL BACKBOARD. GROUNDING BAR SHALL BE ¼ INCH X 4 INCHES X 12 INCHES, PRE-DRILLED FOR CONDUCTOR TERMINATIONS, WITH NON-METALLIC STAND-OFF BRACKETS WITH INSULATORS. CHATSWORTH PRODUCTS 10622-012 OR APPROVED EQUAL.

EQUIPMENT IDENTIFICATION

A. PROVIDE EQUIPMENT LABELS ON PANELBOARDS, DISCONNECT SWITCHES, CONTACTORS, TRANSFORMERS, CONTROLS, ETC. EQUIPMENT LABELS SHALL BE ENGRAVED PHENOLIC RESIN NAMEPLATES ATTACHED TO ENCLOSURE WITH MECHANICAL FASTENERS. SELF-ADHESIVE NAMEPLATES ARE NOT ACCEPTABLE. LETTERING SHALL BE 1/2" HIGH, BLACK TEXT ON WHITE BACKGROUND.

B. ENGRAVED NAMEPLATES ATTACHED TO COMPONENTS SHALL IDENTIFY THE EQUIPMENT DESIGNATION, NAME OF THE "UPSTREAM" POWER SOURCE (AS APPLICABLE), VOLTAGE AND PHASE.

C. THE COVERS OF ALL OUTLET AND JUNCTION BOXES INSTALLED ABOVE CEILINGS AND INSTALLED EXPOSED IN UNFINISHED SPACES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL, VOLTAGE, PHASE AND CIRCUIT NUMBERS CONTAINED WITHIN THE BOX. LABEL SHALL BE LEGIBLY HANDWRITTEN WITH BLACK, FELT TIP PERMANENT MARKER.

D. THE COVER PLATES OF ALL WIRING DEVICES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL AND THE CIRCUITS SERVING THE DEVICE. LABELS SHALL BE MACHINE PRINTED, BLACK TEXT ON A CLEAR, SELF ADHESIVE LABEL..

CONDUIT AND FITTINGS

A. ALL INTERIOR AND EXTERIOR CONDUITS SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH N.E.C. REQUIREMENTS.

B. MINIMUM CONDUIT SIZE SHALL BE ¾" TRADE SIZE. SWITCH LEGS SHALL BE ½" TRADE SIZE.

C. WITHIN INTERIOR FINISHED SPACES, ALL CONDUIT SHALL BE INSTALLED CONCEALED WITHIN NEW AND EXISTING WALLS AND ABOVE NEW AND EXISTING CEILINGS.

D. CONDUIT INSTALLED WITHIN THE INTERIOR OF THE BUILDING SHALL BE GALVANIZED ELECTRICAL METALLIC TUBING (EMT). CONDUIT FITTINGS FOR INDOOR EMT CONDUITS SHALL BE CAST METAL, COMPRESSION TYPE.

E. EMT SHALL BE USED FOR INTERIOR FEEDERS AND BRANCH CIRCUITS INSTALLED EXPOSED IN UNFINISHED SPACES, CONCEALED ABOVE NEW OR EXISTING CEILINGS OR CONCEALED WITHIN EXISTING AND NEW INTERIOR PARTITIONS.

F. CONDUITS INSTALLED EXPOSED ON THE EXTERIOR OF THE BUILDING SHALL BE GALVANIZED RIGID STEEL. FITTINGS SHALL BE THREADED TYPE.

G. CONDUITS INSTALLED UNDER SLAB ON GRADE CONSTRUCTION SHALL BE RIGID NON-METALLIC (RNC), SCHEDULE 40 PVC. RNC COMPLYING WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED. FITTINGS FOR RIGID NON-METALLIC CONDUIT SHALL COMPLY WITH NEMA TC 3; MATCH TO CONDUIT TYPE AND MATERIAL.

H. PROVIDE CONDUIT EXPANSION FITTINGS IN ALL CONDUIT RUNS THAT EXTEND ACROSS BUILDING EXPANSION JOINTS AND WHERE MOVEMENT MAY BE ENCOUNTERED.

I. CONDUIT SHALL BE SUPPORTED FROM STRUCTURE ONLY.

J. PVC CONDUIT SHALL ONLY BE USED BELOW GRADE.

K. PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO VIBRATING EQUIPMENT WITHIN INTERIOR DRY LOCATIONS. MAXIMUM CONDUIT LENGTH SHALL BE 36 INCHES.

L. PROVIDE LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO VIBRATING EQUIPMENT IN WET OR OUTDOOR LOCATIONS. MAXIMUM CONDUIT LENGTH SHALL BE 36 INCHES.

M. PROVIDE FLEXIBLE METAL CONDUIT FOR FINAL CONNECTIONS TO RECESSED LIGHT FIXTURES (FIXTURE WHIPS). MAXIMUM CONDUIT LENGTH SHALL BE 72 INCHES.

N. CONDUITS THAT EXTEND UP TO THE ROOF LEVEL TO SERVE ROOF MOUNTED MECHANICAL EQUIPMENT INSTALLED ON A CURB SHALL BE ROUTED WITHIN THE EQUIPMENT CURB. COORDINATE ELECTRICAL WORK WITH MECHANICAL EQUIPMENT INSTALLER.

O. PROVIDE CONDUIT SEALING FITTINGS IN ALL CONDUITS THAT EXTEND FROM NON-CONDITIONED SPACES TO CONDITIONED SPACES PER NEC 300.7(A). PROVIDE EXPANSION JOINTS FOR CONDUIT AS REQUIRED TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION.

P. ACCEPTABLE MANUFACTURERS FOR GALVANIZED RIGID CONDUIT, EMT, FLEXIBLE METAL CONDUITS AND LIQUID-TIGHT FLEXIBLE METAL CONDUITS SHALL BE ALLIED, REPUBLIC, WHEATLAND, ELECTRI-FLEX AND ANACONDA.

Q. ACCEPTABLE MANUFACTURERS FOR CONDUIT FITTINGS SHALL BE THOMAS AND BETTS OR APPROVED EQUAL.

1	SCALE	ELECTRICAL SPECIFICATIONS
	N.T.S.	

CONDUCTORS

A. ALL CONDUCTORS SHALL BE SOFT DRAWN, ANNEALED COPPER, #12 AWG MINIMUM.

B. CONDUCTORS #12 AND #10 AWG SHALL BE SOLID; #8 AWG AND LARGER SHALL BE STRANDED.

C. THE USE OF ALUMINUM CONDUCTORS IS NOT ACCEPTABLE.

D. EXPOSED, INTERIOR FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN CONDUIT.

E. FEEDERS INSTALLED CONCEALED IN CEILINGS, WALLS, PARTITIONS: TYPE THHN-THWN, SINGLE CONDUCTORS IN CONDUIT.

F. FEEDERS INSTALLED CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN PVC CONDUIT.

G. EXPOSED, INTERIOR, BRANCH CIRCUITS: TYPE THHN-THWN, SINGLE CONDUCTORS IN CONDUIT.

H. BRANCH CIRCUITS CONCEALED IN EXISTING AND NEW CEILINGS, WALLS, AND PARTITIONS: TYPE THHN-THWN, SINGLE CONDUCTORS IN CONDUIT.

I. BRANCH CIRCUITS CONCEALED BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN CONDUIT.

J. ACCEPTABLE MANUFACTURERS FOR CONDUCTORS: GENERAL CABLE COMPANY, CAROL, ANACONDA, ROME, SOUTHWIRE.

K. CLASS 1 CONTROL CIRCUITS: TYPE THHN-THWN, IN CONDUIT.

L. CLASS 2 CONTROL CIRCUITS: POWER-LIMITED PLENUM RATED CABLE, CONCEALED IN BUILDING FINISHES.

M. THE USE OF NON-METALLIC-SHEATHED CABLE (TYPE NM) AND ARMORED CABLE (TYPE AC OR BX) IS NOT ACCEPTABLE

N. WIRE CONNECTORS SHALL BE EQUAL TO SCOTCH LOCK FOR #8 AWG AND SMALLER, THOMAS AND BETTS LOCK-TITE FOR #6 AND LARGER.

O. PROVIDE #10 AWG CONDUCTORS FOR BRANCH CIRCUITS HAVING A CONDUCTOR LENGTH LONGER THAN 75 FEET.

P. SIZE OF CONDUCTORS AND CABLES INDICATED OR SPECIFIED ARE IN AMERICAN WIRE GAGE (AWG - BROWN AND SHARPE).

Q. INSTALL ALL WIRING IN APPROVED RACEWAY AND ENCLOSURES, EXCEPT WHERE SPECIFIED OR INDICATED, FOR LOW-VOLTAGE WIRING OR, WHERE TYPE MC CABLE IS INDICATED, SPECIFIED AS ACCEPTABLE, OR BOTH.

R. SUPPORT ALL CONDUCTORS AND CABLES IN VERTICAL INSTALLATIONS, AS REQUIRED BY NFPA-70, BY INSTALLING CABLE SUPPORTS OR PLUG-TYPE CONDUIT RISER SUPPORTS, OR WIRE-MESH SAFETY GRIPS.

S. INSTALL ALL CONDUCTORS AND CABLE IN RACEWAYS CONTINUOUS WITHOUT TAPS OR SPLICES. SPLICE OR TAP ONLY IN APPROVED BOXES AND ENCLOSURES WITH APPROVED SOLDERLESS CONNECTORS, OR CRIMP CONNECTORS AND TERMINAL BLOCKS FOR CONTROL WIRING, AND KEEP TO THE MINIMUM REQUIRED. INSULATE ALL SPLICES, TAPS, AND JOINTS AS REQUIRED BY CODE.

T. ALL MATERIALS USED TO TERMINATE, SPLICE OR TAP CONDUCTORS: DESIGNED, PROPERLY SIZED, AND UL LISTED FOR THE SPECIFIC APPLICATION AND CONDUCTORS INVOLVED, AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, USING THE MANUFACTURER'S RECOMMENDED TOOLS.

U. WHERE WIRING IS INDICATED AS INSTALLED, BUT THE CONNECTION IS INDICATED "FUTURE" OR "BY OTHER DIVISION, TRADES, OR CONTRACTS", LEAVE A MINIMUM OF 3' FOOT "PIGTAIL" AT THE BOX, TAPE THE ENDS OF CONDUCTORS, AND COVER THE BOX.

V. VOLTAGE DROP IN BRANCH CIRCUITS SHALL NOT EXCEED 3 PERCENT.

W. WHEN NEW CONDUCTORS ARE CONNECTED TO EXISTING CONDUCTORS, THE NEW CONDUCTORS SHALL BE OF THE SAME AWG, CONDUCTOR MATERIAL, INSULATION TYPE TEMPERATURE RATING., ETC. AS THE EXISTING CONDUCTORS TO WHICH BEING CONNECTED.

TYPE MC CABLE

A. A.TYPE MC CABLE: 600V, UNJACKETED: ANSI E119 AND E814, UL STANDARDS 44 OR 83 (AS APPLICABLE), AND 1569, NFPA 70 ARTICLE 330; ALUMINUM OR GALVANIZED STEEL INTERLOCKED ARMOR; THHN- OR XHHW-INSULATED CONDUCTORS; COLOR CODE: ICEA METHOD 1, WITH GREEN INSULATED GROUNDING CONDUCTOR.

B. USES PERMITTED

B.1. IN LIEU OF FLEXIBLE CONDUIT AND WIRING FROM LIGHT FIXTURES IN ACCESSIBLE CEILINGS TO JUNCTION BOXES (ATTACHED TO BUILDING STRUCTURE) ABOVE THE CEILING. PROVIDE CABLE WHIPS OF SUFFICIENT LENGTHS TO ALLOW FOR RELOCATING EACH LIGHT FIXTURE WITHIN A 5' FOOT RADIUS OF ITS INSTALLED LOCATION, BUT NOT EXCEEDING 6' FEET IN UNSUPPORTED LENGTHS.

B.2. FOR VERTICAL DROPS IN STUD WALLS.

C. USES NOT PERMITTED:

C.1. HOMERUNS TO PANELSBOARDS.

C.2. WHERE EXPOSED TO VIEW.

C.3. WHERE EXPOSED TO DAMAGE.

C.4. HAZARDOUS LOCATIONS.

C.5. WET LOCATIONS

C.6. INSTALLED HORIZONTALLY WITHIN STUD WALL

C.7. WHEN RESTRICTED OTHERWISE ABOVE, AND WHEN SPECIFICALLY DISALLOWED BY THE LOCAL AHJ, OWNER OR BOTH.

D. PRIOR TO THE SUBMISSION OF A BID PROPOSAL, EC SHALL VERIFY THE PERMISSIBLE USE OF MC CABLE WITH THE AHJ.

CONDUCTOR COLOR CODING

A. PROVIDE COLOR CODING SYSTEM AS LISTED BELOW FOR ALL FEEDERS AND BRANCH CIRCUITS AND USED AS A BASIS FOR BALANCING LOAD ON PANELS, AND TO BE PHASE IDENTIFICATION.

B. COLOR CODING FOR CONDUCTOR #12 AWG THROUGH #6 AWG SHALL CONSIST OF COLOR CODED THERMOPLASTIC INSULATION OF THE COLORS SPECIFIED HEREIN.
C. COLOR CODING FOR CONDUCTORS #8 AWG AND LARGER SHALL BE FIELD APPLIED SELF ADHESIVE TAPE OF THE COLOR SPECIFIED HEREIN FOR THE PARTICULAR PHASE.
D. 120/208V: PHASE A--BLACK, PHASE B--RED, PHASE C--BLUE, NEUTRAL--WHITE, EQUIPMENT GROUND--GREEN, ISOLATED GROUND--GREEN WITH DISTINCTIVE WHITE OR YELLOW MARKINGS.

BOXES AND FITTINGS

A. ALL OUTLET BOXES SHALL BE UL LISTED AND LABELED FOR USE IN THE SPACE THEY OCCUPY AND THE PURPOSE THEY SERVE.

B. SHEET METAL OUTLET AND DEVICE BOXES FOR DRY, INTERIOR APPLICATIONS: COMPLY WITH NEMA OS 1 AND UL 514A.

C. CAST-METAL OUTLET AND DEVICE BOXES FOR EXTERIOR APPLICATIONS: COMPLY WITH NEMA FB 1, FERROUS ALLOY, TYPE FS OR FD, WITH GASKETED COVER.

D. OUTLET BOXES INSTALLED WITHIN FIRE RATED ASSEMBLIES SHALL HAVE A FIRE RATING EQUAL TO OR GREATER THAN THE RATING OF THE WALL IN WHICH IT IS INSTALLED.

E. OUTLET BOXES SHALL BE 4 INCHES SQUARE BY 2 1/8 INCHES DEEP , EXCEPT FOR 2"PARTITIONS SHALL BE AT LEAST 1-1/2" DEEP.

F. OUTLET BOXES FOR VOICE AND DATA DEVICES SHALL BE 4 11/16 INCHES SQUARE BY 2 1/8 INCHES DEEP.

G. ALL PULLBOXES SHALL BE CONSTRUCTED OF GALVANIZED STEEL, OF METAL GAUGE AND PHYSICAL SIZE AS REQUIRED BY THE N.E.C. FOR THE NUMBER AND SIZE OF CONDUITS AND CONDUCTORS ASSOCIATED WITH THE PULLBOX.

H. FIXTURE OUTLET BOXES IN/OR ON CEILINGS SHALL NOT BE LESS THAN 1-1/2" DEEP OR LESS THAN 4" SQUARE. ALL OUTLET BOXES INTENDED TO SUPPORT FIXTURES SHALL BE EQUIPPED WITH 3/8" FIXTURE STUDS FASTENED THROUGH THE BOTTOM OF THE BOX WITH FOUR BOLTS.

I. PULLBOXES AND JUNCTION BOXES THAT ARE CUSTOM FABRICATED FOR THE APPLICATION SHALL BE FABRICATED BY A SHOP/FACILITY THAT IS CERTIFIED BY A NRTL FOR THE FABRICATION OF SUCH ENCLOSURES.

J. NEW OUTLET BOXES INSTALLED WITHIN NEW OR EXISTING STUD WALL CONSTRUCTION SHALL BE MOUNTED TO A STUD OR MOUNTED IN A BRACKET THAT SPANS STUD-TO-STUD, CADDY TSGB BRACKET OR APPROVED EQUAL. THE USE OF "OLD WORK" TYPE BOXES THAT. SECURE ONLY TO THE DRYWALL ARE NOT ACCEPTABLE.

K. ACCEPTABLE MANUFACTURERS FOR BOXES: APPLETON, STEEL CITY, RACO.

PANELBOARDS

A. CIRCUIT BREAKERS SHALL BE MOLDED CASE, BOLT-ON TYPE SUITABLE FOR VOLTAGE AND AMPERE RATINGS INDICATED ON DRAWINGS AND IN PANEL SCHEDULES. REFER TO THE PANEL SCHEDULES ON THE DRAWINGS FOR ADDITIONAL ACCESSORIES TO BE PROVIDED AT SELECT CIRCUIT BREAKERS.

B. CIRCUIT BREAKERS SHALL HAVE A MINIMUM AMPERE INTERRUPTING CAPACITY (AIC) OF 10,000 AMPERES FOR 120/208V SYSTEMS

C. WHERE THE POWER SYSTEM STUDY IDENTIFIES AVAILABLE FAULT CURRENT VALUES AT EXISTING AND NEW PANELS THAT ARE HIGHER THAN THE MINIMUM AIC RATINGS SPECIFIED HEREIN, PROVIDE CIRCUIT BREAKERS IN THE PANELS THAT HAVE AIC RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY.

D. CIRCUIT BREAKERS SERVING LIGHTING CIRCUITS SHALL BE RATED FOR SWITCH DUTY.

E. CIRCUIT BREAKERS SERVING HVAC EQUIPMENT SHALL BE HACR RATED.

F. ALL LUGS SHALL BE OF THE SOLDERLESS TYPE AND RATED AT A MINIMUM OF 75°C.

G. PROVIDE NEW CIRCUIT DIRECTORIES WITHIN EXISTING PANELS TO REFLECT THE WORK OF THIS CONTRACT. DIRECTORY SHALL BE TYPEWRITTEN OR COMPUTER GENERATED. HANDWRITTEN CIRCUIT DIRECTORIES ARE NOT ACCEPTABLE.

H. UTILIZE FINAL, OWNER ASSIGNED ROOM NAMES AND NUMBERS TO IDENTIFY SPACES WITHIN THE CIRCUIT DIRECTORIES. COMPLY WITH NEC 408.4 WHEN IDENTIFYING CIRCUITS IN CIRCUIT DIRECTORIES.

I. PANEL CIRCUITS SHALL BE CONFIGURED SUCH THAT THE LOAD IS DISTRIBUTED EVENLY ACROSS ALL THREE PHASES TO WITHIN 10%.

J. ALL EXISTING PANELBOARDS SHALL BE LABELED TO IDENTIFY THE AMOUNT OF FAULT CURRENT AVAILABLE AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY TO BE PERFORMED. LABEL SHALL BE MACHINE PRINTED, BLACK TEXT ON CLEAR, SELF ADHESIVE TAPE. INSTALL LABEL ADJACENT TO PANELBOARDS ENGRAVED NAMEPLATE.

K. ALL EXISTING PANELBOARDS SHALL BE LABELED TO IDENTIFY THE ARC FLASH HAZARD CHARACTERISTICS AT THE PANEL AS DETERMINED BY THE POWER SYSTEM STUDY TO BE PERFORMED.

L. ALL "SPARE" CIRCUIT BREAKERS SHALL BE SET TO THE "OFF" POSITION.

M. PROVIDE HANDLE TIES ON ALL MULTI-WIRE BRANCH CIRCUITS IN ACCORDANCE WITH NEC 210.4(B)

N. WHEN NEW CIRCUIT BREAKERS ARE ADDED TO AN EXISTING PANEL, THE NEW CIRCUIT BREAKERS SHALL BE OF THE SAME MANUFACTURE AS THE EXISTING PANEL, SHALL BE OF A 'LETTER TYPE' COMPATIBLE WITH THE EXISTING PANEL SUCH THAT THE UL LISTING OF THE EXISTING PANEL IS MAINTAINED AND SHALL HAVE AN AIC RATING EQUAL TO OR GREATER THAN THE AIC RATING OF THE EXISTING OVERCURRENT PROTECTIVE DEVICES WITHIN THE EXISTING PANEL.

SWITCHES

A. TOGGLE SWITCHES SHALL BE SINGLE POLE, 3-WAY OR 4-WAY AS NOTED ON THE DRAWINGS, 20 AMPERES, 120/277 VOLT AC TYPE, SPECIFICATION GRADE WITH SCREW TERMINALS. HUBBELL 1221-X, 1223-X OR 1224-X OR APPROVED EQUIVALENT BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.

B. TOGGLE SWITCHES SHALL BE MOUNTED AT DOORS, INSTALLED ADJACENT TO THE TRIM ON THE STRIKING SIDE OF THE DOOR, REGARDLESS OF THE LOCATION INDICATED ON THE DRAWINGS. VERIFY ALL DOOR SWINGS PRIOR TO INSTALLATION OF OUTLET BOXES FOR SWITCHES.

C. DEVICE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.

D. PROVIDE A NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS

E. SWITCHES SHALL BE INSTALLED SURFACE MOUNTED IN UNFINISHED AREA. FLUSH MOUNTED IN FINISHED SPACES.

F. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR SWITCHES: LEGRAND, LEVITON.

RECEPTACLES

A. RECEPTACLES SHALL BE 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL 5362-W OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.

B. GFCI RECEPTACLES SHALL BE 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, NEMA 5-20R FEED THROUGH TYPE CAPABLE OF PROTECTING DOWNSTREAM RECEPTACLES ON A SINGLE CIRCUIT, SOLID STATE GROUND FAULT SENSING AND SIGNALING, 5 MILLIAMP TRIP LEVEL, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL GF5362-X OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.

C. ISOLATED GROUND RECEPTACLES SHALL BE ORANGE, 20 AMP, 125 VOLT, 2-POLE, 3-WIRE, GROUNDING TYPE, NEMA 5-20R WITH SCREW TERMINALS. HUBBELL IG-5362-W OR APPROVED EQUAL BY ONE OF THE ADDITIONAL MANUFACTURERS SPECIFIED HEREIN.

D. PROVIDE SPECIAL PURPOSE RECEPTACLES HAVING NEMA CONFIGURATIONS THAT MATE AND MATCH THE NEMA PLUG CONFIGURATION PROVIDED WITH THE EQUIPMENT TO BE CONNECTED

E. COVER PLATES FOR EXTERIOR RECEPTACLES SHALL BE RATED FOR "WEATHERPROOF WHILE IN USE".

F. DEVICE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.

G. QUAD RECEPTACLES SHALL CONSIST OF (2) DUPLE3X RECEPTACLES INSTALLED IN A SINGLE BOX UNDER A SINGLE COVER PLATE.

H. RECEPTACLES SHALL BE INSTALLED SURFACE MOUNTED IN UNFINISHED SPACES, FLUSH MOUNTED IN FINISHED SPACES.

I. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR SWITCHES AND RECEPTACLES: LEGRAND, LEVITON.

GFCI PROTECTION:

A. ALL SINGLE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPS OR LESS AND THREE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 100 AMPS OR LESS SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL IN ACCORDANCE WITH NEC 210.8, (B), (1) - (10), OR THE EQUIVALENT REQUIREMENT WITHIN THE APPLICABLE ELECTRICAL CODE.

B. THE "GFCI" NOTATION AT A DEVICE OR CIRCUIT BREAKER INDICATES THAT GFCI PROTECTION SHALL BE PROVIDED FOR THE CIRCUIT OR CIRCUITS INDICATED. GFCI PROTECTION SHALL BE PROVIDED BY ONE OF THE FOLLOWING MEANS:

- INTEGRAL GFCI PROTECTION WITHIN THE DEVICE (NEMA 5-20R RECEPTACLES), WHEN THE DEVICE IS ABLE TO BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED BY THE APPLICABLE ELECTRICAL CODE.
- GFCI CIRCUIT BREAKER INSTALLED WITHIN THE PANEL FOR SERVICE TO THE CIRCUIT OR CIRCUITS.
- GFCI CIRCUIT BREAKER INSTALLED WITHIN AN INDIVIDUAL ENCLOSURE EXTERNAL TO THE PANEL FOR SERVICE TO THE CIRCUIT.
- DEAD-FRONT GFCI DEVICE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED BY THE NEC (APPLICABLE TO 20 AMP, 120 VOLT CIRCUITS).
- AN INDIVIDUALLY MOUNTED EXTERNAL SPECIAL PURPOSE GROUND FAULT CIRCUIT INTERRUPTER (SPGFCI) DEVICE SIMILAR TO "SHOCK BLOCK" PRODUCTS AS MANUFACTURED BY LITTLEFUSE, OR APPROVED EQUAL.
- DEAD FRONT DEVICES SHALL BE BE LABELED TO IDENTIFY THE CIRCUIT AND THE LOAD SERVED BY THE DEVICE.

COVER PLATES FOR TOGGLE SWITCHES AND RECEPTACLES

A. COVER PLATES WITHIN NON-FOOD SERVICE AREAS SHALL BE NYLON, OF CONFIGURATION TO MATCH THE WIRING DEVICE.

B. CONFIGURATION AND COLOR OF COVER PLATE SHALL MATCH THAT OF THE WIRING DEVICE THAT THE PLATE WILL BE INSTALLED ON.

C. COVER PLATE COLOR SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.

D. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR COVER PLATES: LEGRAND, LEVITON.

MOUNTING HEIGHTS FOR ELECTRICAL DEVICES AND EQUIPMENT

A. DEVICES AND EQUIPMENT SHALL BE INSTALLED AT THE MOUNTING HEIGHTS NOTED BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS OR REQUIRED BY APPLICABLE CODES AND STANDARDS:

1. TOGGLE SWITCHES, WALL SWITCH OCCUPANCY SENSORS, VACANCY SENSORS AND DIMMERS FOR LIGHTING CONTROL - TOP OF DEVICE 48" AFF
2. CONVENIENCE RECEPTACLES -TOP OF DEVICE 18" AFF
3. CONVENIENCE RECEPTACLES AT COUNTERTOPS - BOTTOM OF DEVICE 44" AFF OR AS NOTED ON THE DRAWINGS
4. RECEPTACLES AT SERVICE EQUIPMENT - AS INDICATED ON THE FINAL, APPROVED FOOD SERVICE SHOP DRAWINGS.
5. TELEPHONE AND DATA OUTLETS - TOP OF DEVICE 18" AFF, 44" AFF WHEN INSTALLED AT COUNTER TOPS.
6. DISCONNECT SWITCHES - TOP OF ENCLOSURE 66" AFF

DISCONNECT SWITCHES

A. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, UL LISTED AND LABELED, EQUIPPED WITH A LUG FOR TERMINATION OF THE EQUIPMENT GROUNDING CONDUCTOR.

B. DISCONNECT SWITCHES SHALL BE LOCKABLE WITH NEMA 1 ENCLOSURES FOR DRY, INDOOR APPLICATIONS; NEMA 3R ENCLOSURES FOR OUTDOOR OR WET LOCATION APPLICATIONS.

C. TOGGLE DISCONNECTS SHALL BE 20A OR 30A AS REQUIRED, SINGLE POLE, 2-POLE OR 3-POLE AS REQUIRED, SINGLE THROW, MOTOR RATED SWITCH WITHOUT OVERLOAD PROTECTION, NEMA 1, 3R OR 4X STAINLESS STEEL ENCLOSURE AS REQUIRED BY APPLICATION, PADLOCK ATTACHMENT

D. ALL DISCONNECT SWITCHES SHALL BE EQUIPPED WITH AN ENGRAVED NAMEPLATE TO IDENTIFY THE SERVING PANEL, CIRCUIT NUMBERS AND THE LOAD SERVED BY THE SWITCH.

E. ACCEPTABLE MANUFACTURERS FOR DISCONNECT SWITCHES: SCHNEIDER, ABB, SIEMENS OR EATON.

MOTOR CONTROLLERS

A. PROVIDE ENCLOSED MOTOR CONTROLLERS AS SPECIFIED HEREIN FOR CONTROL OF MOTORS RATED FOR 600 VOLTS AND LESS.

B. FRACTIONAL HORSEPOWER MANUAL CONTROLLERS: "QUICK-MAKE, QUICK-BREAK" TOGGLE OR PUSH-BUTTON ACTION; PILOT LIGHT TO INDICATE "MOTOR RUNNING", MARKED TO SHOW WHETHER UNIT IS OFF, ON, OR TRIPPED.

1. CONFIGURATION: NON-REVERSING.
2. OVERLOAD RELAYS: INVERSE-TIME-CURRENT CHARACTERISTICS; NEMA ICS 2, CLASS 10 TRIPPING CHARACTERISTICS; HEATERS MATCHED TO NAMEPLATE FULL-LOAD CURRENT OF ACTUAL PROTECTED MOTOR; EXTERNAL RESET PUSH BUTTON.
3. FLUSH MOUNTED WITHIN FINISHED SPACES; SURFACE MOUNTED WITHIN UNFINISHED SPACES.
4. ACCEPTABLE MANUFACTURERS: SCHNEIDER, ABB, SIEMENS, EATON.

FUSES

A. PROVIDE CARTRIDGE FUSES RATED FOR 250 VAC AND 600 VAC AND LESS FOR USE AS SPECIFIED HEREIN.

B. COORDINATE FUSE RATINGS WITH UTILIZATION EQUIPMENT NAMEPLATE LIMITATIONS OF MAXIMUM FUSE SIZE AND WITH SYSTEM SHORT-CIRCUIT CURRENT LEVELS.

C. CARTRIDGE FUSE APPLICATIONS:

1. CIRCUITS, UP TO AND INCLUDING 600 AMPS: CLASS J, BUSSMANN LPJ.
2. CONTROL POWER TRANSFORMER (CPT) CIRCUITS: CLASS CC, TIME DELAY, CONTROL TRANSFORMER DUTY.
3. BASIS OF DESIGN FOR FUSES SHALL BE BUSSMANN. ADDITIONAL ACCEPTABLE MANUFACTURERS FOR SPECIFIED FUSES SHALL BE LITTLEFUSE AND MERSEN.

LIGHTING FIXTURES

A. ALL LIGHTING FIXTURES AND LIGHT SOURCES SHALL BE FURNISHED, INSTALLED AND CONNECTED BY THE ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.

B. THIS CONTRACTOR SHALL INSTALL LIGHTING FIXTURES AND LIGHT SOURCES AS INDICATED ON THE DRAWINGS AND AS SPECIFIED BELOW. PROVIDE LIGHTING FIXTURES COMPLETE WITH HANGERS, PLASTER FRAMES, AND ALL OTHER NECESSARY ACCESSORIES

C. LED DRIVERS SHALL BE SOLID STATE AND ACCEPT 120 THROUGH 277 VAC AT 60 HZ INPUT.

D. THE LED LIGHT SOURCE SHALL BE FULLY DIMMABLE WITH USE OF COMPATIBLE DIMMER SWITCH DESIGNATED FOR LOW VOLTAGE LOADS.

E. THE CONTRACTOR SHALL PROVIDE LIGHTING CONTROL DEVICES (DIMMERS) THAT ARE COMPATIBLE WITH LED DRIVER BEING PROVIDED WITH THE FIXTURE.

F. EXIT SIGNS INDICATED AS PROVIDING POWER TO REMOTE EXTERIOR EGRESS LIGHTS SHALL BE EQUIPPED WITH THE INCREASED BATTERY CAPACITY TO SERVE THE REMOTE EMERGENCY LIGHT. REMOTE EMERGENCY LIGHT SHALL BE A STANDARD ACCESSORY OF THE INTERIOR EXIT SIGN TO WHICH CONNECTED.

LIGHTING CONTROLS

A. TIME SWITCHES, PHOTOCELLS AND CONTACTORS SHALL BE AS DETAILED ON DRAWINGS.

B. WALL SWITCH OCCUPANCY SENSORS SHALL BE WATT STOPPER WS-250 OR APPROVED EQUAL

C. CEILING MOUNTED OCCUPANCY SENSORS SHALL BE DUAL TECHNOLOGY TYPE WITH POWER PACK. WATT STOPPER DT-300 WITH BZ-200 POWER PACK, OR APPROVED EQUAL.

D. PROVIDE A NEUTRAL CONDUCTOR TO ALL SWITCH LOCATIONS ROUGH-IN SYSTEM FOR VOICE AND DATA

A. PROVIDE A ROUGH-IN SYSTEM AS SPECIFIED HEREIN FOR SERVICE TO THE OWNER'S VOICE AND DATA NETWORK.

B. PROVIDE A PLYWOOD BACKBOARD FOR TERMINATION OF TELEPHONE SERVICE AND DISTRIBUTION COMPONENTS. PLYWOOD BACKBOARD SHALL BE 2' X 3' X 3/4". FIRE RATED, PAINTED WITH TWO (2) COATS OF LIGHT GRAY ENAMEL PAINT. MASK FIRE RATED LABEL TO PREVENT THE LABEL FROM BEING PAINTED OVER.

C. OUTLET BOXES FOR TELEPHONE AND DATA DEVICES SHALL CONSIST OF 4 11/16 IN SQUARE BY 2 1/8 INCH DEEP OUTLET BOXES WITH SINGLE DEVICE COVER.

D. PROVIDE A 3" EMPTY CONDUIT WITH PULLSTRING FROM THE WALL MOUNTED PLYWOOD TELEPHONE TERMINAL BOARD IN THE TENANT SPACE TO THE LANDLORDS TELEPHONE DISTRIBUTION OR POINT OF SERVICE DELIVERY. PROVIDE A NYLON BUSHING ON EACH END OF CONDUIT FOR CABLE PROTECTION.

E. ROUGH-IN FOR WIRING DROPS TO WALL MOUNTED VOICE AND DATA DEVICES SHALL BE INSTALLED WITHIN EMT CONDUIT, 1". PROVIDE A CONDUIT STUB FROM THE DEVICE BOX TO ABOVE ACCESSIBLE CEILING. PROVIDE A PLENUM RATED NYLON BUSHING ON THE END OF THE CONDUIT STUB FOR PROTECTION OF THE WIRING.

F. PRIOR TO BEGINNING WORK, THIS CONTRACTOR SHALL FULLY COORDINATE HIS CONSTRUCTION OPERATIONS AND ALL TERMINATION LOCATIONS WITH AUTHORIZED REPRESENTATIVE OF THE TELEPHONE UTILITY COMPANY AND THE OWNER'S DATA NETWORK PROVIDER BY TIMELY NOTICE OR SCHEDULING OF SERVICE EQUIPMENT DATES, ERVICE MODIFICATION DATES AND NOTIFICATION OF REQUIRED OWNER AUTHORIZATIONS INVOLVING THE UTILITY COMPANY.

DUCT MOUNTED SMOKE DETECTORS

A. PROVIDE A 120 VOLT POWER SOURCE TO ALL DUCT MOUNTED SMOKE DETECTORS INSTALLED WITHIN NEW AND EXISTING MECHANICAL EQUIPMENT

B. PROVIDE A DUCT MOUNTED SMOKE DETECTORS WITHIN NEW AND EXISTING MECHANICAL EQUIPMENT AS REQUIRED BY APPLICABLE CODES. FINAL ELECTRICAL CONNECTION AND ALL INTERLOCK WIRING BY THE ELECTRICAL CONTRACTOR.

C. PROVIDE ALL INTERLOCK WIRING IN CONDUIT BETWEEN ALL DUCT DETECTORS SUCH THAT UPON DETECTING SMOKE IN ANY ONE DETECTOR, ALL ROOF TOP UNITS SHALL BE SHUT DOWN.

D. PROVIDE TEST/RESET SWITCH AND PIEZO ALERT SOUNDER AND REMOTE ANNUNCIATOR ALARM LED MOUNTED AS DIRECTED BY LOCAL AHJ. EC TO PROVIDE ALL REQUIRED INTERLOCK WIRING BETWEEN DUCT DETECTOR AND REMOTE SWITCH.

E. REFER TO DETAILS ON MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

TESTING

A. PROVIDE ALL TESTS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

B. PROVIDE THE TESTS AS OUTLINED HEREINAFTER AND OTHER TESTS REQUIRED TO ESTABLISH THE ADEQUACY, QUALITY, SAFETY, COMPLETED STATUS AND SUITABLE OPERATION OF EACH SYSTEM.

C. PROMPTLY CORRECT ANY FAILURES, DEFICIENCIES AND/OR DEFECTS REVEALED BY THESE TESTS AFTER CORRECTING FAILURES, DEFICIENCIES OF DEFECTS, CONDUCT NEW TESTINGTO VERIFY THAT THE DEFICIENCY HAS BEEN RECTIFIED AND THE SYSTEM IS FUNCTIONING PROPERLY.

D. EXISTING PANELBOARDS SHALL HAVE PHASE CURRENTS BALANCED TO WITHIN +/- 10% VARIATION BETWEEN AVERAGE PHASE CURRENT AND MEASURED INDIVIDUAL PHASE.

E. AN OPERATIONAL TEST OF THE EMERGENCY LIGHTING/EXIT SIGNAGE SYSTEM SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER AND THE AUTHORITY HAVING JURISDICTION TO DEMONSTRATE PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND SPECIFIED REQUIREMENTS.

OPERATION AND MAINTENANCE MANUALS

A. THIRTY (30) DAYS PRIOR TO SUBSTANTIAL COMPLETION, SUBMIT OPERATING AND MAINTENANCE MANUALS FOR EQUIPMENT TO ENGINEER FOR APPROVAL. INCLUDE ONE COPY OF EACH FINAL APPROVED SUBMITTAL FOR RECORD PURPOSES, INDICATING THE ACTUAL PRODUCT INSTALLED. INCLUDE SIGNIFICANT CHANGES IN THE PRODUCT DELIVERED TO PROJECT SITE AND CHANGES IN MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION.

B. PROVIDE COMPREHENSIVE CONTACT LIST INCLUDING CONTRACTOR AND SUBCONTRACTOR'S NAMES, ADDRESSES, TELEPHONE AND CONTACT PERSON FOR OWNER'S USE.

WARRANTY

A. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND THE INSTALLATION TO BE FREE OF DEFECTS THAT MAY DEVELOP IN ANY PART OF THEIR WORK CAUSED BY FAULTY WORKMANSHIP, MATERIAL OR EQUIPMENT FAILURES, FOR A MINIMUM OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OR FOR AS LONG AS NORMAL EQUIPMENT MANUFACTURER WARRANTIES ARE IN EFFECT FROM THE DATE OF OWNER ACCEPTANCE OF THE PROJECT, WHICHEVER IS LATER.

B. DURING THE ONE (1) YEAR WARRANTY PERIOD, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR DEFECTS IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED UNDER THE WORK OF THE ELECTRICAL CONTRACT.

FIRE ALARM SYSTEM

A. FIRE ALARM SYSTEM WORK IS A DELEGATED DESIGN AND IS NOT INCLUDED AS PART OFTHE ELECTRICAL SCOPE OF WORK.

B. FIRE ALARM SYSTEM WORK SHALL BE PROVIDED BY THE GENERAL CONTRACTOR AS A DELEGATED DESIGN.

C. GENERAL CONTRACTOR (GC) SHALL BE RESPONSIBLE FOR RETAINING THE SERVICES OF A FIRE ALARM SYSTEM VENDOR/DESIGN PROFESSIONAL TO PREPARE THE FIRE ALARM SYSTEM DESIGN, DETAILS, CALCULATIONS, ETC. AS REQUIRED BY ALL APPLICABLE CODESAND THE AUTHORITY HAVING JURISDICTION.

D. GC/VENDOR/DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR VERIFYING ALLAPPLICABLE CODE REQUIREMENTS AND ALL LOCAL FIRE ALARM SYSTEM REQUIREMENTSWITH THE LOCAL AUTHORITY HAVING JURISDICTION.

E. GC/VENDOR/DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED SUBMITTAL DRAWINGS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

F. GC/VENDOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR THE FIRE ALARM WORK.

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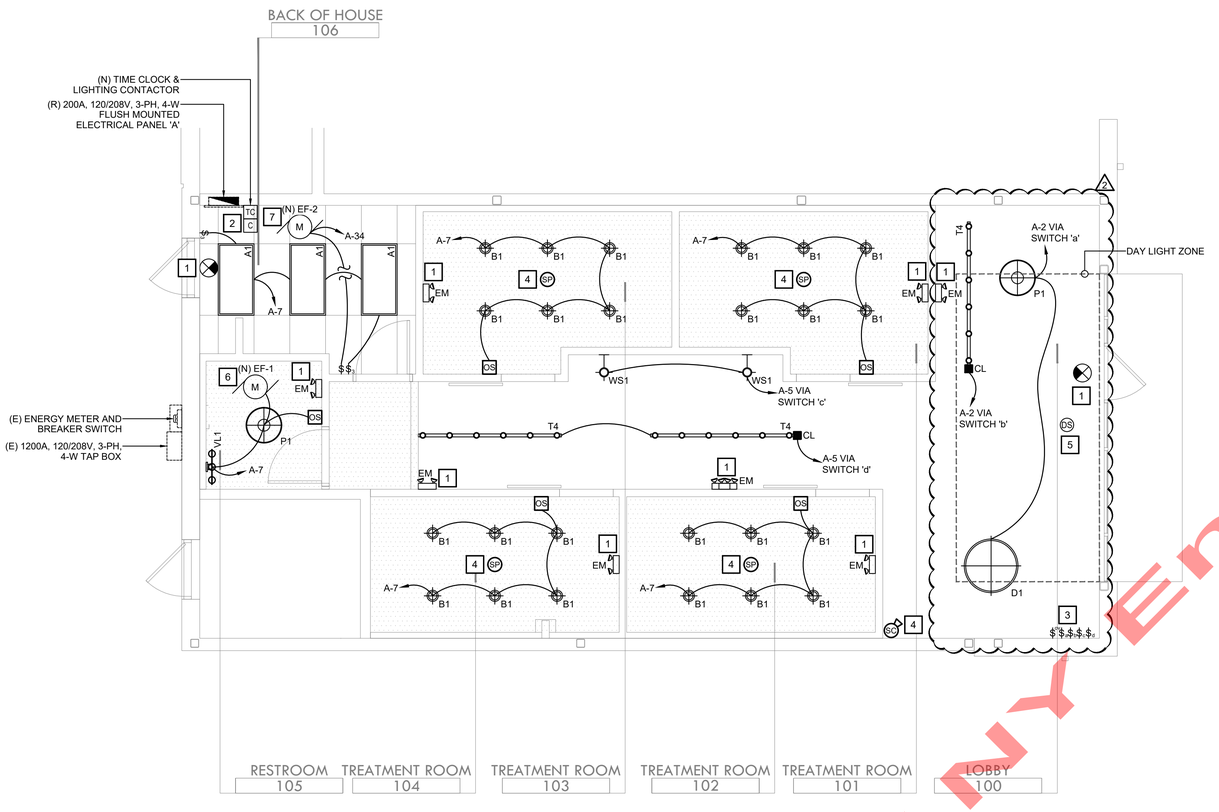
sugaringLA

ELECTRICAL SPECIFICATIONS SHEET 2 OF 2

SHEET NUMBER:

E-0.3

1	SCALE	ELECTRICAL SPECIFICATIONS
	N.T.S.	



LEGEND:
NEW
EXISTING

GENERAL NOTES:

1. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.
2. HATCHED AREA IS NOT IN SCOPE OF WORK.
3. 'E' DENOTES EXISTING FIXTURE/DEVICE TO REMAIN. 'R' DENOTES EXISTING FIXTURE/DEVICE TO BE RELOCATED.
4. SEE LIGHTING FIXTURE SCHEDULE FOR LIGHTING POWER DENSITY INFORMATION.
5. PROVIDE AN UNSWITCHED 'HOT', FROM BUILDING EMERGENCY DISTRIBUTION, TO ALL IDENTIFIED EGRESS FIXTURES SHOWN.
6. ALL SWITCHES FOR LIGHTS, SHADES, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL BE GANGED TOGETHER AND SHARE A MULTI-GANG COVER PLATE WHERE POSSIBLE.
7. REFER TO SHEET E-2.0 & E-4.0 FOR LOCATION OF ELECTRICAL DISTRIBUTION PANELS.
8. ALL EXIT SIGNS ARE TYPE 'E' UNLESS OTHERWISE NOTED.
9. WALL MOUNTED OCCUPANCY SENSORS W/ SINGLE OVERRIDE SHALL BE LUTRON #MS-OPS6M2-DV-WH. WALL MOUNTED OCCUPANCY SENSORS W/ DUAL OVERRIDE SHALL BE LUTRON #MS-OPS6-DDV-WH OR APPROVED EQUAL.
10. THE CEILING MOUNTED OCCUPANCY SENSOR IS TO BE LUTRON LOS-CDT-2000-WH OR APPROVED EQUAL. PROVIDE POWER PACK AS REQUIRED TO COMPLETE SYSTEM. CONNECT TO THE SUPPLY SIDE OF THE SWITCH IN THIS SPACE. DEVICE SHALL CONTROL ALL SWITCHES IN THIS SPACE (I.E. SWITCHES SHALL BE ON THE LOAD SIDE OF THE SENSOR).
11. ALL CONTROL CABLING PROVIDED AS A PART OF ANY LIGHTING CONTROL SYSTEM SHALL BE PLENUM RATED.
12. LOWER CASE LETTERS IN LIGHTING FIXTURES AND ADJACENT TO SWITCHES IN EACH INDIVIDUAL ROOM/AREA INDICATE WHICH LIGHT FIXTURE IS TO BE CONTROLLED FROM EACH CORRESPONDING SWITCH IN THAT ROOM/AREA.
13. CIRCUIT HOMERUN DESIGNATIONS ARE NOTED FOR DESIGN INTENT ONLY BASED ON FIELD OBSERVATIONS OF EXISTING PANEL SCHEDULES, WHERE AVAILABLE. CONTRACTOR TO CONFIRM ALL SPARE CIRCUIT BREAKERS AND THOSE MADE AVAILABLE DUE TO DEMOLITION.
14. DIMMING SWITCHES SHALL BE LUTRON DIVA #DVWCL-153PH-WH OR APPROVED EQUAL WALL MOUNTED DIMMING SWITCHES.
15. COORDINATE FINAL SWITCH LOCATIONS THROUGHOUT THE PROJECT AREA WITH OWNER AND ARCHITECT PRIOR TO ROUGH-IN.
16. PROVIDE CUTOFF CABLING FOR THE SOUND SYSTEM, AS REQUIRED BY FIRE CODE, ALONGSIDE ALL LOW-VOLTAGE CABLING EXITING THE BOX. CABLING SHALL BE LONG ENOUGH TO REACH 2' AFF IF LEFT HANGING FROM THE CEILING.
17. EACH SPEAKER CABLE SHALL BE A SEPARATE HOME RUN; DO NOT CONNECT SPEAKERS IN SERIES. IF FIRE CODE REQUIRES SOUND SYSTEM SHUTDOWN DURING A FIRE ALARM, PROVIDE CUTOFF CABLING WITH LOW-VOLTAGE CABLES, LONG ENOUGH TO REACH 2' AFF IF LEFT HANGING FROM THE CEILING.

KEYED NOTES:

1. EXIT/EMERGENCY LIGHT. CONNECT (ALWAYS HOT) TO LOCAL LIGHTING CIRCUIT AHEAD OF SWITCHING.
2. NEW TIME CLOCK/LIGHTING CONTACTOR FOR AUTOMATIC CONTROL OF SPACE LIGHTING CIRCUITS & WIRED TO AN OVERRIDE SWITCH/TIMER AS REQUIRED. ELECTRICAL CONTRACTOR SHALL COORDINATE ACCORDINGLY AND PROVIDE ALL REQUIRED WIRING FOR LIGHTING BRANCH CIRCUITS.
3. NEW SWITCH BANK LOCATION. SEE DETAIL 1/E-1.0 FOR ADDITIONAL INFORMATION. ELECTRICAL CONTRACTOR TO COORDINATE THE FINAL LOCATION OF SWITCH BANK WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
4. LOW VOLTAGE DEVICES (i.e., SPEAKERS & CAMERAS) ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE THE FINAL LOCATION AND QUANTITY WITH THE ARCHITECT/OWNER AND THE EXACT ELECTRICAL REQUIREMENTS WITH THE SYSTEM VENDOR PRIOR TO ROUGH-IN PER THE SITE CONDITIONS.
5. DAYLIGHT SENSORS IN THE LOBBY SHALL BE INTERCONNECTED TO CONTROL LIGHTING FIXTURES WITHIN THE LOBBY AREA. ELECTRICAL CONTRACTOR TO COORDINATE THE EXACT LOCATION OF DAYLIGHT SENOR PRIOR TO ROUGH-IN.
6. NEW EXHAUST FAN INTERLOCKED WITH LIGHT SWITCH. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION AND SPECIFICATIONS.
7. NEW EXHAUST FAN OPERATED THROUGH MOTOR WALL SWITCH. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION AND SPECIFICATIONS.

LIGHT FIXTURE SCHEDULE

SYMBOL	TAG	DESCRIPTION	TOTAL WATTS	FINISH	LOCATION	MANUFACTURER/MODEL	REMARKS
	T-1(2FT) T-2(4FT) T-3(6FT) T-4(8FT)	INTEGRAL LED CYLINDER TRAC HEAD, 2700K, 80CRI SINGLE CIRCUIT TRACK (2FT-8FT) MINIATURE STRAIGHT CONNECTOR, 1-CIRCUIT END FEED CONNECTOR, 1-CIRCUIT	10.5 W	WHITE	HALLWAY	JUNO/ R605L 27K 80CRI PDIM FL BL JUNO/ T 8FT BL JUNO/ T23 BL JUNO/ T38 BL	
	B-1	RECESSED CAN LIGHT	17.5 W	WHITE TRIM	TREATMENT ROOM	LBR6	
	D1	4' SUSPENDED MOONRING	194 W	WHITE	LOBBY	A|W/ MR1.5-SS-MED/90/3500-0/10V/S-LENS	
	P1	VERVE SHELL PENDANT - LARGE	17 W	WHITE	RESTROOM/ LOBBY	SHADES OF LIGHT/ SKU PE21020 WH	
	WS-1	ECLIPSE PIVOT SCONCE DIAMETER: 19.7"Ø	9.5 W	WHITE	HALLWAY	SHADES OF LIGHT/ SKU SC19005	
	VL-1	23.6IN. 3-LIGHT BLACK VANITY LIGHT W/ WHITE FROSTED GLASS SHADES	40 W	BLACK	RESTROOM ABOVE SINK	ZSMIHDOH MODEL#3LIGHT-Y	
	A1	24"X48" FLAT PANEL	55 W	WHITE	BACK OF HOUSE	CPANL 2X4 ALO6 SWW7	
	EM	EMERGENCY LIGHT	2 W	WHITE		BARON LIGHTING GROUP/QMS-WH	
	EX	EXIT LIGHT	1.5 W	WHITE		BARRON LIGHTING GROUP/QCSS-R-WH	

NOTES:
1. ALL ITEMS LISTED IN THE SCHEDULE ABOVE ARE G.C. SOURCED UNLESS OTHERWISE NOTED.

1 | SCALE N.T.S. | SWITCH BANK DETAILS

2 | SCALE N.T.S. | TIME CLOCK AND LIGHTING CONTACTOR DETAILS

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Interior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title:
Project Type: Alteration
Construction Site: Owner/Agent: Designer/Contractor:

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Retail (Cosmetics)	1297	1.5	1946
		Total Allowed Watts =	1946

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Retail (1297 sq.ft.)				
LED: A1: Other:	1	3	55	165
LED: B-1: Other:	1	24	17.5	420
LED: D1: Other:	1	1	194	194
LED: P1: Other:	1	2	17	34
Track Lighting: T-4: Wattage based on 24 feet of track	0	0	0	720
LED: VL-1: Other:	1	1	40	40
LED: WS-1: Other:	1	2	9.5	19
		Total Proposed Watts =		1592

Section 4: Requirements Checklist

Interior Lighting PASSES

Lighting Wattage:

❑ 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
1946	1592	Passes

Controls, Switching, and Wiring:

❑ 2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.
❑ 3. Daylight zones have individual lighting controls independent from that of the general area lighting.

Exceptions:
❑ Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.
❑ Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.

Project Title: SugaringLA_Rogers, AR Report date: 07/10/25

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

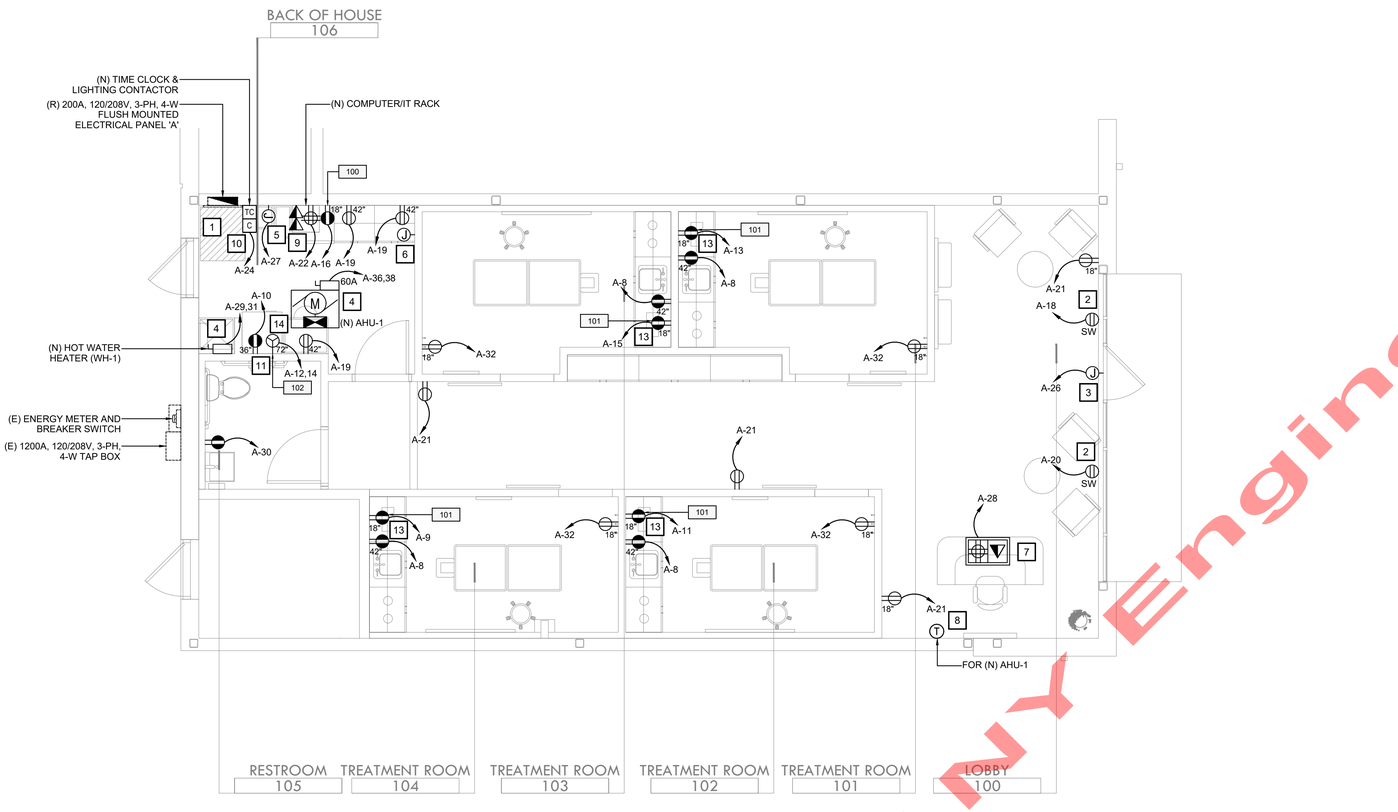
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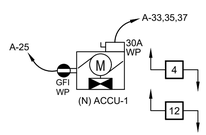
ELECTRICAL LIGHTING PLAN

SHEET NUMBER:

E-1.0

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CONDENSING UNIT PAD - PART PLAN

LEGEND:
NEW
EXISTING

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL VERIFY ALL CONNECTION REQUIREMENTS FOR ALL EQUIPMENT SUPPLIED BY OTHERS PRIOR TO ROUGH-IN. COORDINATE NEMA PLUG CONFIGURATION FOR EQUIPMENT AND PROVIDE MATCHING RECEPTACLE WHERE APPLICABLE.
2. REFER TO DWG. E-0.1 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST & ABBREVIATIONS. REFER TO DWG. E-0.2, E-0.3 FOR ELECTRICAL SPECIFICATION. REFER DWG. E-4.0 FOR ELECTRICAL RISER DIAGRAM.
3. COORDINATE MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS WITH OTHER TRADES.
4. COORDINATE EXACT LOCATION, QUANTITIES, AND INSTALLATION REQUIREMENTS OF EQUIPMENT IN MILLWORK.
5. ALL EXTERIOR DISCONNECTS SHALL BE WEATHERPROOF.
6. PROVIDE GROUNDING IN ACCORDANCE WITH NEC 250. PROVIDE A #6 CU GROUND TO ANY NEW METAL GAS PIPING SYSTEMS. FINAL CONNECTION TO ALL HARD-WIRED EQUIPMENT SHALL BE MADE WITH LIQUID-TITE FLEXIBLE CONDUIT.
7. ALL CIRCUITS SHALL HAVE AN INSULATED GROUND WIRE SIZED PER NEC 250 BUT NOT SMALLER THAN #12 AWG.
8. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL DISCONNECT SWITCHES, CONDUIT, AND WIRE FOR EQUIPMENT. INSTALL UNDER SUPERVISION OF EQUIPMENT SUPPLIER.
9. ALL DEDICATED CIRCUITS TO HAVE ORANGE RECEPTACLES EXCEPT MIRRORS. AND ALL WIRES ARE DIRECT HOME RUNS.
10. ELECTRICAL CONTRACTOR SHALL PROVIDE ROUGH-IN FOR ALL LOW VOLTAGE CABLING. COORDINATE WITH LOW VOLTAGE CONTRACTOR.
11. ELECTRICAL CORES INTO THE CEILING SPACE BELOW THE PREMISES MUST BE PIPED WITH HARD CONDUIT TIGHT TO THE DECK AND J-BOXES OR TRANSFER BOXES AT THE CORE.
12. ALL SLAB AND WALL PENETRATION TO USE FM APPROVED FIRE CAULK.
13. ALL BUILDING CORE ELECTRIC ROOMS AND PANELBOARDS SHALL BE CLEANED OF ALL DUST AND DEBRIS UPON COMPLETION OF WORK.
14. ALL ELECTRICAL OUTLETS WITHIN THE LEASED PREMISE WILL BE PROPERLY LABELED TO REFLECT ELECTRICAL PANEL AND BREAKER NUMBERS FROM ELECTRICAL ROOM.
15. ELECTRICAL AND DATA RUNS UNDER THE TENANT'S SLAB SHALL BE IN HARD CONDUIT, INSTALLED TIGHT TO DECK.
16. ALL CIRCUITS INSIDE ELECTRIC ROOM, MECHANICAL ROOM AND CORE AREAS SHALL BE IN CONDUIT.
17. ELECTRICAL SWITCHES TO MATCH WHITE TO WHITE AND GRAY TO BLUE/GRAY. COORDINATE WITH ARCHITECT
18. CONTRACTOR SHALL COORDINATE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH EQUIPMENT VENDOR/MANUFACTURER.
20. ALL RECEPTACLES IN LOBBY AREA SHALL BE TAMPER RESISTANT AS PER NEC 406.12.
21. OUTLETS' LOCATION SHOWN IN THE DRAWING ARE DIAGRAMMATIC, FOR ACTUAL LOCATION AND MOUNTING HEIGHT REFER ARCHITECTURAL PLAN.
22. ALL SIGNAGE SHALL BE SHALL BE WIRED VIA TIMECLOCK.
23. PROVIDE CUTOFF CABLING FOR THE SOUND SYSTEM, AS REQUIRED BY FIRE CODE, ALONGSIDE ALL LOW-VOLTAGE CABLING EXITING THE BOX. CABLING SHALL BE LONG ENOUGH TO REACH 2' AFF IF LEFT HANGING FROM THE CEILING.
24. EACH SPEAKER CABLE SHALL BE A SEPARATE HOME RUN; DO NOT CONNECT SPEAKERS IN SERIES. IF FIRE CODE REQUIRES SOUND SYSTEM SHUTDOWN DURING A FIRE ALARM, PROVIDE CUTOFF CABLING WITH LOW-VOLTAGE CABLES, LONG ENOUGH TO REACH 2' AFF IF LEFT HANGING FROM THE CEILING.
25. THE CONTRACTOR SHALL COORDINATE WITH THE IT/AV/SOUND EQUIPMENT VENDOR, ARCHITECT, AND OWNER TO CONFIRM THE REQUIREMENTS FOR ASSOCIATED EQUIPMENT AND CONNECTION NEEDS. VERIFY & PROVIDE ALL RELATED CONNECTIONS ACCORDINGLY.

KEYED NOTES:

1. EXISTING RELOCATED 200A (MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL 'A'. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD THE EXACT VOLTAGE RATING, LOCATION & OPERABLE CONDITION OF THE PANEL WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY. CONTRACTOR SHALL MAINTAIN ALL WORKING SPACE CLEARANCES AS REQUIRED PER NEC 110.26 (A) (1). REFER SHEET E-4.0 ELECTRICAL RISER DIAGRAM FOR MORE INFORMATION.
2. PROVIDE NEW SHOW WINDOW CEILING MOUNTED RECEPTACLE AS PER NEC 210.62 AS REQUIRED. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT HEIGHT AND LOCATION PRIOR TO ROUGH-IN
3. JUNCTION BOX FOR EXTERIOR SIGNAGE. PROVIDE WP/NEMA 3R RATED ACCESSIBLE J-BOX WITH SERVICE DISCONNECT SWITCH FOR EXTERIOR SIGN. COORDINATE EXACT LOCATION AND ELECTRICAL CONNECTION REQUIREMENT WITH SIGN VENDOR PRIOR TO ROUGH-IN OF WORK. BASE BID ACCORDINGLY
4. PLUMBING/MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE BEFORE THE COMMENCEMENT OF WORK.
5. JUNCTION BOX FOR SECURITY CAMERA (CCTV HEAD END) MOUNTED AT HEIGHT 60" AFF. CONTRACTOR TO COORDINATE EXACT LOCATION & POWER REQUIREMENT WITH VENDOR PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
6. JUNCTION BOX FOR SPEAKER VOLUME CONTROL MOUNTED AT HEIGHT 60" AFF. CONTRACTOR TO COORDINATE EXACT LOCATION & POWER REQUIREMENT WITH VENDOR PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
7. PROVIDE TWO CAT6 PLENUM-RATED ETHERNET CABLES TO THE FLOATING RECEPTION DESK IN THE LOBBY, TERMINATING IN A SINGLE-GANG BOX ADJACENT TO THE ELECTRICAL OUTLET. INSTALL 3/4" CONDUIT FOR POWER AND 1-1/4" CONDUIT WITH PULL STRING TO THE NEAREST ACCESSIBLE CEILING FOR VOICE/AV CABLING. COORDINATE COVER, DEVICES AND LOCATION WITH OWNER/ARCHITECT PRIOR TO ORDERING.
8. NEW THERMOSTAT. CONTRACTOR TO PROVIDE 3/4" EMPTY CONDUIT WITH PULL STRING EMPTY FROM THERMOSTAT AND SENSOR (WHERE REQUIRED) TO MECHANICAL UNIT. VERIFY LOCATION IN THE FIELD.
9. NEW COMPUTER/IT RACK – PROVIDE 3/4" FIRE-RESISTANT PLYWOOD, 7'-0" HIGH x WALL WIDTH, OR MINIMUM 48" x 48" BOARD FOR DIVISION 16 INTERNET CABLING. PLYWOOD SHALL BE PAINTED WITH TWO COATS OF FIRE-RESISTANT PAINT. BASE BID ACCORDINGLY.
10. NEW TIME CLOCK/LIGHTING CONTACTOR FOR AUTOMATIC CONTROL OF SPACE LIGHTING CIRCUITS & WIRED TO AN OVERRIDE SWITCH/TIMER AS REQUIRED. ELECTRICAL CONTRACTOR SHALL COORDINATE ACCORDINGLY AND PROVIDE ALL REQUIRED WIRING FOR LIGHTING BRANCH CIRCUITS.
11. FOR WASHER/DRYER. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT POWER REQUIREMENTS WITH THE OWNER/ARCHITECT/ MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUTSHEET. BASE BID ACCORDINGLY.
12. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED. COORDINATE EXACT ELECTRICAL REQUIREMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. CIRCUIT FACTORY INSTALLED RECEPTACLE AS REQUIRED. OTHERWISE PROVIDE NEW AS SHOWN.
13. FOR SUGAR WARMER. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT POWER REQUIREMENTS, LOCATION AND MOUNTING HEIGHT WITH THE OWNER/ARCHITECT/ MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUTSHEET. BASE BID ACCORDINGLY.
14. PROVIDE OUTLET NEMA TYPE 10-30R INSTALLED AT 72" AFF FOR DRYER. E.C. TO COORDINATED SPECIFICATIONS WITH MANUFACTURER, VERIFY DRYER 208V OPERATION, IF NO 208V OPERATION, PROVIDE BUCK BOOST TRANSFORMER ACCORDING TO MANUFACTURER SPECIFICATIONS. BASE BID ACCORDINGLY.

EQUIPMENT SCHEDULE:

ELECTRICAL EQUIPMENT SCHEDULE

EQ.TAG	EQUIPMENT NAME	QTY.	ELECRTICAL								MANUFACTURER	MODEL NUMBER
			VOLTS	PHASE	AMPS	KW	HP	DIRECT	PLUG	NEMA		
100	REFRIGERATOR	1	120	1	-	1	-	-	X	NEMA 6-20P	WHIRLPOOL	WH31S1E
101	SUGAR WARMER	4	120	1	-	0.6	-	-	X	NEMA 6-20P	-	-
102	DRYER (ELECTRIC)	1	208	1	-	5	-	-	X	NEMA 5-30P	WHIRLPOOL	-
	WASHER (ELECTRIC)	1	120	1	-	1.5	-	-	X	NEMA 6-20P	WHIRLPOOL	-

EQUIPMENT SCHEDULE GENERAL NOTE:

ELECTRICAL CONTRACTOR SHALL VERIFY EXACT POWER REQUIREMENTS & LOCATION OF ALL EQUIPMENT WITH THE ARCHITECT/MANUFACTURER PRIOR TO ROUGH-IN. PROVIDE THE OUTLET AS PER EQUIPMENT CUTSHEET. BASE BID ACCORDINGLY.

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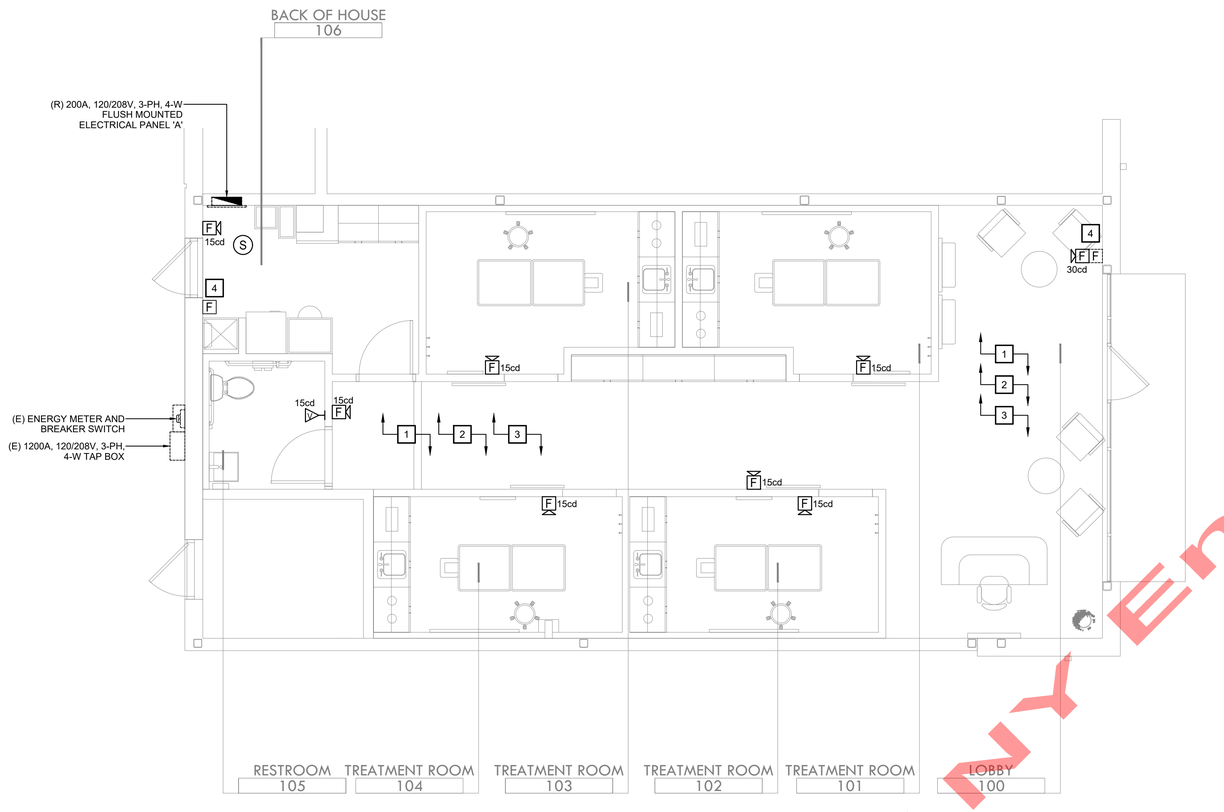
sugaring LA

ELECTRICAL POWER PLAN

SHEET NUMBER:

E-2.0

1	SCALE	ELECTRICAL POWER PLAN
	1 / 4" = 1' - 0"	



LEGEND:
NEW
EXISTING

GENERAL NOTES:

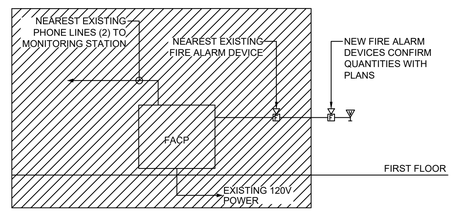
1. ALL WORK TO THE FIRE ALARM SYSTEM SHALL COMPLY WITH ALL LOCAL FIRE CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF ARKANSAS FIRE ALARM CODE 2019 (NFPA 72-2019).
2. ALL NEW FIRE ALARM DEVICES SHALL BE ADA APPROVED. COORDINATE COLOR WITH ARCHITECT AND BASE BUILDING. DEVICES TO MATCH BASE BUILDING SYSTEM MANUFACTURER. PROVIDE ANY ADDITIONAL POWER AMPLIFIERS REQUIRED FOR INSTALLATION OF NEW ADA APPROVED DEVICES.
3. ALL FIRE ALARM DEVICES, INCLUDING SPEAKERS, VISUALS, SMOKE DETECTORS, ETC... SHALL BE CONNECTED TO THE BASE BUILDING FIRE ALARM SYSTEM BY A LICENSED FIRE ALARM CONTRACTOR. COORDINATE CONNECTIONS WITH SYSTEM MANUFACTURER.
4. ALL DEVICES SHALL BE 110 CANDELA, UNLESS OTHERWISE NOTED.
5. THE ENTIRE LENS OF WALL MOUNTED VISUAL FIRE ALARM DEVICES SHALL BE MOUNTED AT LEAST 80" AFF.
6. COORDINATE FIRE ALARM SYSTEM SHUTDOWNS AND REPROGRAMMING WITH LANDLORD.
7. ALL FIRE ALARM DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR REQUIRED.
8. EVACUATION SIGNAL SHALL BE 3 PULSE TEMPORAL.
9. THE FIRE ALARM SYSTEM APPLIANCE LAYOUT INDICATES NEW DEVICE PLACEMENT REQUIREMENTS FOR THIS TENANT UPFIT. NEW DEVICES SHALL BE INSTALLED INTO THE BASE BUILDING FIRE ALARM SYSTEM. PROVIDE ALL PROGRAMMING REQUIRED TO MAKE THE NEW DEVICES FUNCTIONAL AND ANY PROGRAMMING OR NEW EQUIPMENT REQUIRED TO MAKE ALL OF THE VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR FLASH IN SYNCHRONIZATION.
10. FIRE ALARM CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR ALONG WITH REFLECTED CEILING PLAN PRIOR TO INSTALLATION.
11. ALL FIRE ALARM CABLING SHALL BE IN EMT WHERE EXPOSED. ANY FIRE ALARM CABLING ABOVE THE CEILING SHALL BE PLENUM RATED.
12. FOR EXISTING AND/OR RELOCATED DEVICES ADJUST STROBE LEVELS TO APPROPRIATE RATING SHOWN. IF ADJUSTABILITY IS UNAVAILABLE REPLACE WITH NEW.
13. FIRE ALARM SOUND LEVELS AND INTELLIGIBILITY SHALL COMPLY WITH CHAPTER 9 OF THE APPLICABLE STATE BUILDING CODE.
14. VERIFY PROPER FUNCTIONALITY OF ALL EXISTING AND RELOCATED FIRE ALARM DEVICES, INCLUDING THEIR HOUSING, LENSES, ETC.... PROVIDE REPLACEMENTS AS REQUIRED IF ANY ARE NOT OPERATING AS INTENDED OR HAVE ABOVE NORMAL WEAR OR DEFECTS..
15. ALL DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF EXISTING FA SYSTEM.
16. G.C. SHALL FIELD VERIFY EXACT REQUIREMENTS FOR FIRE ALARM SYSTEM PRIOR TO BID. SUPPLY AND INSTALL ALL NECESSARY EQUIPMENT AS REQUIRED.
17. REFER TO DRAWING. E-0.1 FOR FIRE ALARM SYMBOL LIST, ABBREVIATIONS.
18. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
19. CONFIRM REQUIRED DEVICES AND SEQUENCE OF OPERATION WITH FIRE ALARM CONTRACTOR.
20. HATCHED AREA NOT IN THIS SCOPE OF WORK. (IF APPLICABLE)
21. 'E' DENOTES EXISTING DEVICE TO REMAIN. 'R' DENOTES EXISTING DEVICE TO BE RELOCATED.

KEYED NOTES:

1. ALL NEW DEVICES SHALL BE CONNECTED TO BASE BUILDING'S EXISTING FIRE ALARM CONTROL PANEL (FACP). CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND OPERABLE CONDITION IN FIELD IN COORDINATION WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
2. ALL NEW DEVICES SHALL BE COMPATIBLE WITH AND MAINTAIN THE UL LISTING OF THE EXISTING FA SYSTEM. CONNECT ALL NEW FIRE ALARM SYSTEM DEVICES TO EXISTING FIRE ALARM CONTROL PANEL AS REQUIRED. BASE BID ACCORDINGLY.
3. FIRE ALARM CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF TAMPER AND WATER FLOW SWITCHES IN FIELD. COORDINATE THE EXACT QUANTITY OF TAMPER AND WATER FLOW SWITCHES WITH SPRINKLER CONTRACTOR IN FIELD. BASE BID ACCORDINGLY.
4. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND OPERABLE CONDITION OF EXISTING FIRE ALARM DEVICES IN FIELD. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

SEQUENCE OF OPERATION:

- UPON CHANGE IN STATUS OF ANY DEVICE ON THE SYSTEM, THE FIRE ALARM CONTROL PANEL SHALL ACTIVATE AUDIBLE AND VISIBLE CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND MESSAGE ASSOCIATED WITH THE POINT.
- ACTIVATION OF ANY MANUAL STATION, KITCHEN HOOD EXTINGUISHING SYSTEM, WATERFLOW DEVICE, SMOKE DETECTOR, HEAT DETECTOR, SUPERVISORY DEVICE OR OTHER INITIATING DEVICE WILL CAUSE THE FOLLOWING FUNCTIONS TO OCCUR:
- MANUAL STATION OPERATION SHALL:
  a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
  b. TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
  c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
  d. RELEASE THE DOOR LOCKING SYSTEM.
- WATERFLOW SWITCH OPERATION SHALL:
  a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
  b. TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
  c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
- SMOKE DETECTOR OR HEAT DETECTOR OPERATION SHALL:
  a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
  b. TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
  c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
  d. SHUT DOWN AHU'S.
- DUCT SMOKE DETECTOR ACTIVATION SHALL:
  a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
  b. TRANSMIT SUPERVISORY SIGNAL TO A UL LISTED SIGNAL STATION.
  c. SHUT DOWN AHU'S
- SUPERVISORY DEVICE ACTIVATION, INCLUDING VALVE SUPERVISORY DEVICES SHALL:
  a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
  b. TRANSMIT SUPERVISORY SIGNAL TO A UL LISTED SIGNAL STATION, THIS SIGNAL SHALL BE DISTINCTLY DIFFERENT THAN A TROUBLE SIGNAL.
- REMOVAL OF ANY DEVICE, WIRING DISARRANGEMENT, OR SYSTEM COMPONENT FAILURE SHALL DISPLAY ON THE OPERATOR TERMINAL, THE CHANGE OF STATUS, TIME, DATE, POINT DESCRIPTION ON A POINT BY POINT BASIS, AND THE MESSAGE ASSOCIATED WITH THE POINT AND TRANSMIT A TROUBLE SIGNAL TO A UL LISTED CENTRAL STATION.



2 | SCALE: N.T.S. | PARTIAL FIRE ALARM RISER

1 | SCALE: 1 / 4" = 1' - 0" | FIRE ALARM PLAN

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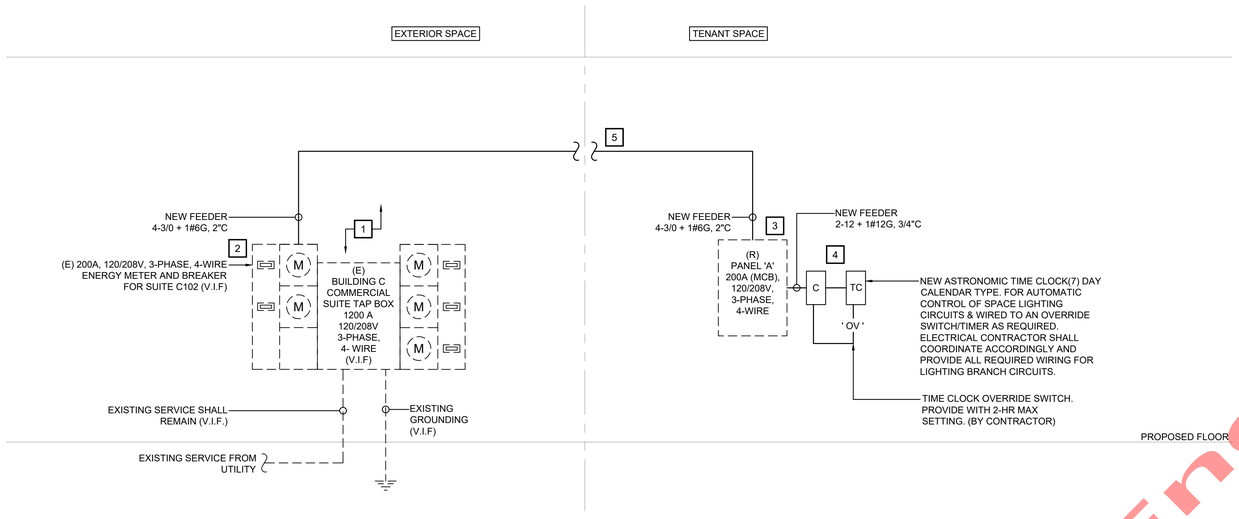
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FIRE ALARM PLAN

SHEET NUMBER:

E-3.0

LEGEND:
NEW
EXISTING



ELECTRICAL PANEL SCHEDULE

PANELBOARD			A	VOLTAGE		120 / 208 V		PHASE		3	WIRE		4				
PANEL TYPE			MCB	MAINS		200 MCB		BUS RATING		225A	AIC RATING		V.I.F.		6	7	
NEMA TYPE ENCLOSURE			1	MOUNTING		FLUSH MOUNTED		OPTIONS			NOTE		EXISTING PANEL				
CKT. NO.	EQT TAG	CKT TAG	DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION	CKT TAG	EQT TAG	CKT. NO.	
1			SPARE	2		20		A	500	20	12	1	LIGHTING	(N)	C/a,b	2	
3								B		20		2	SPARE			4	
5	C/c,d	(N)	LIGHTING	1	12	20	500	C								6	
7		(N)	LIGHTING	1	12	20	500	A	720	20	12	1	TREATMENT AREA GEN. REC	(N)		8	
9		(N)	SUGAR WARMER	1	12	20	600	B	1,800	20	12	1	WASHER	(N)		10	
11		(N)	SUGAR WARMER	1	12	20	600	C	2,500	30	10	2	DRYER	(N)	GFCI	12	
13		(N)	SUGAR WARMER	1	12	20	600	A	2,500							14	
15		(N)	SUGAR WARMER	1	12	20	600	B	1,000	20	12	1	REFRIGERATOR	(N)		16	
17			SPARE	1		20		C	1,500	20	12	1	SHOW WINDOW REC.	(N)	TC	18	
19		(N)	BOH GENERAL RECEPTACLE	1	12	20	540	A	1,500	20	12	1	SHOW WINDOW REC.	(N)	TC	20	
21		(N)	LOBBY/CORRIDOR RECEPTACLE	1	12	20	720	B	360	20	12	1	COMPUTER RACK	(N)		22	
23		(N)	MOTORIZED DAMPERS	1	12	20	100	C	200	20	12	1	TIMECLOCK	(N)		24	
25		(N)	ROOF GFI RECEPTACLE	1	12	20	180	A	1,200	20	12	1	STOREFRONT SIGN	(N)	TC	26	
27		(N)	CCTV HEAD END	1	12	20	180	B	360	20	12	1	RECEPTION DESK	(N)		28	
29		(N)	HOT WATER HEATER (WH-1)	2	8	40	3,000	C	180	20	12	1	RESTROOM GFI RECEPTACLE	(N)		30	
31							3,000	A	720	20	12	1	USB TREATMENT REC.	(N)		32	
33							2,162	B	150	20	12	1	(N) EF-2	(N)		34	
35		(N)	(N) ACCU-1	3	10	30	2,162	C	5,096	50	8	2	(N) AHU-1	(N)		36	
37							2,162	A	5,096							38	
39			SPARE	1		20		B		20		1	SPARE			40	
41			SPARE	1		20		C		20		1	SPARE			42	

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 19,218 WATTS
B= 7,932 WATTS
C= 15,838 WATTS

TOTAL CONNECTED LOAD	42,988	WATTS	120 AMPS
TOTAL DEMAND LOAD	44,413	WATTS	124 AMPS

(E) EXISTING TO REMAIN
(N) NEW CIRCUIT
GFCI GROUND FAULT CURRENT INTERRUPTER
IG CIRCUITS WITH ISOLATED GROUND
TC CIRCUITS ON TIMECLOCK
EMS ROUTING TO THE EMS PANEL
C BREAKER LOCK
a,b,c SWITCHES CONTROLLING LIGHTS

ELECTRICAL LOAD SUMMARY

DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
LIGHTING- 120V	1.5	120	1	1.25	1.9
RECEPTACLES	5.3	120	1	>10kW=10+[0.5*(kW-10)]	5.3
STOREFRONT SIGN	1.2	120	1	1.25	1.5
S/W OUTLETS	3.0	120	1	1.25	3.8
EXH. FANS	0.2	120	1	1.00	0.2
SUGAR WARMER	2.4	120	1	1.00	2.4
AHU	10.2	208	1	1.00	10.2
ACCU	6.5	208	3	1.00	6.5
WAHSER/DRYER	6.8	208	1	1.00	6.8
HOT WATER HEATER	6.0	208	1	1.00	6.0
TOTALS	43.0				44.4

NOTES:
* USE GREATER VALUE OF THE TWO CATEGORIES.
** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
*** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW)
MINUS ACTUAL SHOW WINDOW LIGHTING kVA.

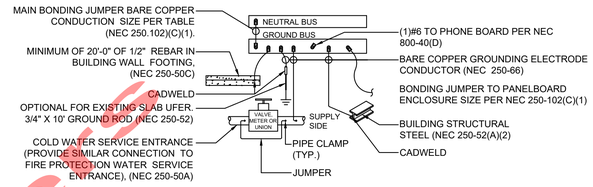
N.E.C. DEMAND kVA x 1,000 / SYSTEM VOLTAGE x 1.732

44.4	x 1000 =	44,413
208	x 1.732 =	360

MINIMUM FEEDER AMPERAGE
2
123.3 AMPS USE 200AMP FEEDER

VERIFY ALL WIRES SHOWN TO MEET LOCAL CODES. ADJUST AS REQUIRED, PER LOCAL CODES.

NOTE: ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 250-50 OF THE NATIONAL ELECTRICAL CODE.



2	SCALE N.T.S.	GROUNDING ELECTRODE SYSTEM DETAILS:

GENERAL NOTES:

1. PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.
2. MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM. ALL CONNECTIONS/DISCONNECTIONS TO LANDLORDS/UTILITIES SERVICE EQUIPMENT SHALL BE AS DIRECTED BY LANDLORDS/UTILITIES SITE REPRESENTATIVE. TENANT GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TERMINATION/DETERMINATION EXPENSES.
3. SYSTEM SHALL BE GROUNDED TO THE MAIN BUILDING'S GROUNDING SYSTEM.
4. DISCONNECT SWITCHES AND PANELS SHALL BE INSTALLED ON PLYWOOD BACKBOARDS.
5. TENANT CONTRACTOR MUST VERIFY ELECTRICAL SERVICE, SUB-FEED WIRING AND PANELS PRIOR TO START OF TENANT'S ELECTRICAL WORK. TENANT GENERAL CONTRACTOR SHALL MAKE APPLICATION TO THE LOCAL UTILITY FOR CONTINUED METERED ELECTRIC SERVICE IN THE TENANT'S NAME. TENANT GENERAL CONTRACTOR SHALL CONFIRM ALL LOCAL UTILITY GUIDELINES AND REQUIREMENTS PRIOR TO BID, SHALL INCLUDE THE COSTS OF THESE REQUIREMENTS IN THE BID, AND SHALL COMPLY WITH THEM DURING CONSTRUCTION. AVAILABLE FAULT CURRENT AT SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER NATIONAL ELECTRICAL CODE (NEC) OF ARTICLE 110.24.
6. CONTRACTOR SHALL COORDINATE SHORT CIRCUIT RATING (Isc) WITH UTILITY & AHJ, PRIOR TO COMMENCING ANY WORK, TYPICAL FOR ALL ELECTRICAL EQUIPMENT
7. CONTRACTOR SHALL VERIFY INCOMING SERVICE AMPERAGE, WIRE SIZING AND DISTRIBUTION.
8. CONTRACTOR SHALL COORDINATE WITH BASE BUILDING FOR THE EXACT LOCATION OF THE EXISTING SWITCH GEAR AND EXACT POWER DISTRIBUTION.
9. CONTRACTOR SHALL VERIFY OPERABLE CONDITION INFIELD OF ALL EXISTING TO REMAIN ELECTRICAL DEVICES/EQUIPMENTS AND REPLACE WITH NEW IF FOUND INOPERABLE.
10. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. ALL CONDUIT ROUTING AND OFFSETS, DROPS AND RISES OF RUNS ARE NOT SHOWN ON THE PLANS AND ARE SHOWN DIAGRAMMATICALLY IN THE RISERS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED. MAINTAIN HEADROOM AND SPACE CONDITIONS.
11. CONTRACTOR SHALL COORDINATE SURGE PROTECTION REQUIREMENTS FOR ELECTRICAL PANEL IN THE FIELD AND PROVIDE SURGE PROTECTION DEVICE AS NEEDED .

KEYED NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/ARCHITECT/OWNER FOR EXACT POWER DISTRIBUTION, LOCATION PRIOR TO COMMENCING ANY WORK. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.
2. EXISTING 200A, 120/208V, 3-PHASE, 4-WIRE ENERGY METER AND BREAKER SWITCH. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD THE EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.
3. EXISTING RELOCATED 200A (MCB), 120/208V, 3-PHASE, 4-WIRE FLUSH MOUNTED ELECTRICAL PANEL 'A'. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD THE EXACT VOLTAGE RATING, LOCATION & OPERABLE CONDITION OF THE PANEL WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. REPLACE IF FOUND INOPERABLE. BASE BID ACCORDINGLY. CONTRACTOR SHALL MAINTAIN ALL WORKING SPACE CLEARANCES AS REQUIRED PER NEC 110.26 (A) (1).
4. NEW TIME CLOCK WITH LIGHTING CONTACTOR. ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND REQUIREMENT WITH ARCHITECT/OWNER PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.
5. ELECTRICAL CONTRACTOR TO VERIFY IF THE EXISTING FEEDER/CONDUIT IS RATED FOR 200AMP, 120/208V, 3-PHASE, 4-WIRE SERVICE AND CONFIRM IF IT CAN BE REUSED/ REROUTED OR EXTENDED TO THE NEW LOCATION OF THE ELECTRICAL PANEL. REUSE IF POSSIBLE OTHERWISE PROVIDE NEW AS SHOWN. BASE BID ACCORDINGLY.
6. NEW BREAKERS MAY BE REQUIRED FOR USE IN THE EXISTING RELOCATED PANELBOARD TO MATCH THE RATING INDICATED IN THE PANEL SCHEDULE. PRIOR TO BIDDING/PRICING, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING-TO-REMAIN PANELBOARD MANUFACTURER AND MODEL NUMBERS TO ENSURE THAT REPLACEMENT BREAKERS ARE AVAILABLE. WHERE BREAKER AVAILABILITY ISSUES ARISE, NOTIFY THE PROJECT MANAGER PRIOR TO BIDDING/PRICING.
7. THE DESIGNATED CIRCUIT NUMBER SHOWN ON THE PANEL SCHEDULE FOR A CERTAIN LOAD MAY BE DIFFERENT THAN THE ACTUAL CIRCUIT NUMBER IN THE EXISTING RELOCATED PANELBOARD. ALL EXISTING-TO-REMAIN ELECTRICAL LOADS SHALL REMAIN CONNECTED TO THE SAME BREAKER AND CIRCUIT DESIGNATION. AVAILABLE SPARES AND SPACES SHALL BE UTILIZED TO FEED THE NEW LOADS.

VERIFY THE FOLLOWING PRIOR TO BID/ PRICING:

- EXISTING CONDUIT AND FEEDERS SIZE BETWEEN TENANT SPACE AND LANDLORD SWITCHBOARD.
- EXISTING MAIN SERVICE DISCONNECT RATING.
- EXISTING METER.

IF THE EXISTING SERVICE DISCONNECT AND FEEDERS ARE RATED FOR LESS THAN THE RATING SHOWN ON THIS RISER. NOTIFY THE PROJECT MANAGER AND ENGINEER IMMEDIATELY PRIOR TO SUBMITTING BID/ PRICING PACKAGE SO DRAWINGS CAN BE REVISED AND UPDATED ACCORDINGLY

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ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES

SHEET NUMBER:

E-4.0

1	SCALE N.T.S.	RISER DIAGRAM AND PANEL SCHEDULES

SPRINKLER GENERAL NOTES

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2019 AND ALL LOCAL AUTHORITIES.
2. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
3. ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
4. GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/ EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.
5. THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
6. PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
7. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
8. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
9. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
10. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
11. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.
12. REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
13. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
14. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
15. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
16. CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
17. FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2019, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2019, AS MODIFIED FOR ROGERS, ARKANSAS ARE NECESSARY.
18. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
19. ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
20. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
21. PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
22. COMPOSITE DRAWINGS
    CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.
23. CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.

SPRINKLER DRAWING LIST

SP-0.1 SPRINKLER NOTES, SYMBOLS & SPECIFICATIONS

SP-1.0 SPRINKLER PLAN

SP-2.0 SPRINKLER DETAILS

SPACING BETWEEN SPRINKLER HEADS

LIGHT HAZARD: 15' MAX.
ORDNIARY HAZARD: 15' MAX

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.

PROTECTION AREA OF SPRINKLER HEADS

LIGHT HAZARD : 225 SQ. FT.
ORDINARY HAZARD : 130 SQ. FT.

GENERAL NOTES:
1. FOR SPRINKLER WORK ONLY.
2. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
3. PROVIDE FREEZE PROTECTION FOR ALL SPRINKLER PIPING AND EQUIPMENTS SUBJECT TO TEMPERATURE BELOW 40 DEGREE F.

BUILDING DEPARTMENT SPRINKLER NOTES

1. THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE ARKANSAS BUILDING CODE 2021(ADOPTS WITH AMENDMENTS IBC 2021)
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER THE ARKANSAS BUILDING CODE 2021, SECTION 104.9.
3. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO THE ARKANSAS BUILDING CODE 2021, SECTION 903.3.5.
4. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER NFPA 13-2019 CHAPTER 8 SECTION 8.6.
5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH THE ARKANSAS BUILDING CODE 2021, SECTION 903.2.
6. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER WITH THE ARKANSAS BUILDING CODE 2021, SECTION 903.
7. STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER NFPA 13-2019 SECTION 16.2.7 (REQUIRED FOR EACH TEMPERATURE RATING).
8. SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH THE ARKANSAS BUILDING CODE 2021, SECTION 907.
9. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER THE ARKANSAS BUILDING CODE 2021, SECTION 903.3.
10. ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
11. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION THE ARKANSAS BUILDING CODE 2021, SECTION 714.
12. THERE IS NO HIGH PILED STORAGE AS DEFINED IN THE ARKANSAS FIRE CODE 2021, SECTION 3201.
13. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER NFPA 13-2019 SECTION 9.4.2.5.
14. THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
15. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA 13-2019, SECTION 16.9.
16. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER NFPA 13-2019 SECTION 16.8.5
17. ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
18. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER NFPA-13-2019 SECTION 16.9.
19. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER NFPA-13-2019 SECTION 17.
20. TEMPERATURE RATING SHALL COMPLY WITH NFPA-13-2019 SECTION 9.4.2.
21. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER NFPA-13-2019 SECTION 9.5.5
22. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
23. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
24. WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH NFPA 13-2019 SECTION 8.1.
25. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER THE ARKANSAS BUILDING CODE 2021, SECTION 904.4.

SPRINKLER LEGENDS AND ABBREVIATIONS

● (N)	NEW CONCEALED PENDENT SPRINKLER HEAD
⊗ (R)	EXISTING UPRIGHT SPRINKLER HEAD TO BE REMOVED
⊙ (E)	EXISTING UPRIGHT SPRINKLER HEAD TO BE REMAIN

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.

SPRINKLER SPECIFICATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE CITY CODE.

B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT-DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT-DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND CITY FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE CITY BUILDING CODE, N.F.P.A. STANDARD 13-2019, ARKANSAS FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.
2. PROVIDE COMPLETE NEW SPRINKLER SYSTEM CONNECTING TO EXISTING SPRINKLER SYSTEM ALARM CHECK VALVE ASSEMBLY.
3. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.
4. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH ARKANSAS BUILDING CODE OR LOCAL AHJ. BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. SPRINKLER PIPING LAYOUT
5. TESTS
6. SPRINKLER HEADS

B. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2019, AND ARKANSAS BUILDING CODE .

C. ADD APPROPRIATE HOSE ALLOWANCE.

D. THE SPRINKLER CONTRACTOR SHALL OBTAIN THE LATEST FIRE PUMP TEST AT THE SITE TO VERIFY THE AVAILABLE WATER SUPPLY.

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING.

A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY BUILDING CODE FIRE DEPARTMENT INSPECTOR.

B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.

C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 - MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE CITY BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40 IN ACCORDANCE WITH NFPA 13. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.

C. AS PER NFPA 13, PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN SECTION 16.3.

D. AS PER NFPA 13, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.3 FITTING SHALL BE UL/FM APPROVED. CONTRACTOR.

E. NONMETALLIC PIPES & FITTINGS USED IN MULTIPURPOSE PIPING SYSTEMS NOT EQUIPPED WITH A FIRE DEPARTMENT CONNECTION SHALL BE DESIGNED TO WITHSTAND A WORKING PRESSURE OF NOT LESS THAN 130PSI AT 120°F.

2.03 CUTTING AND PATCHING

DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.

2.04 CUTTING AND PATCHING

1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.
2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.
3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK, REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.05 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.06 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE CITY BUILDING CODE.

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER-FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1-1/4" SIZES NOR 15' FOR SIZES 1-1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE SAME AS EXISTING SPRINKLER MODEL.
2. CONCEALED SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3531.
3. UPRIGHT SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3121.
4. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13.
5. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.
6. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
7. CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-300 P.S.I. RANGE, 5 P.S.I. INTERVALS.

PART 3 - EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.
2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
3. PIPE SHALL BE REMOVED BY REAMING.
4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	RESPONSE	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
● (N)	CONCEALED PENDENT	STANDARD	LH/OH CEILING	BRASS	155	QUICK	5.6	½"	TYCO	SERIES RF-II TY3531	FM APPROVED

NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.

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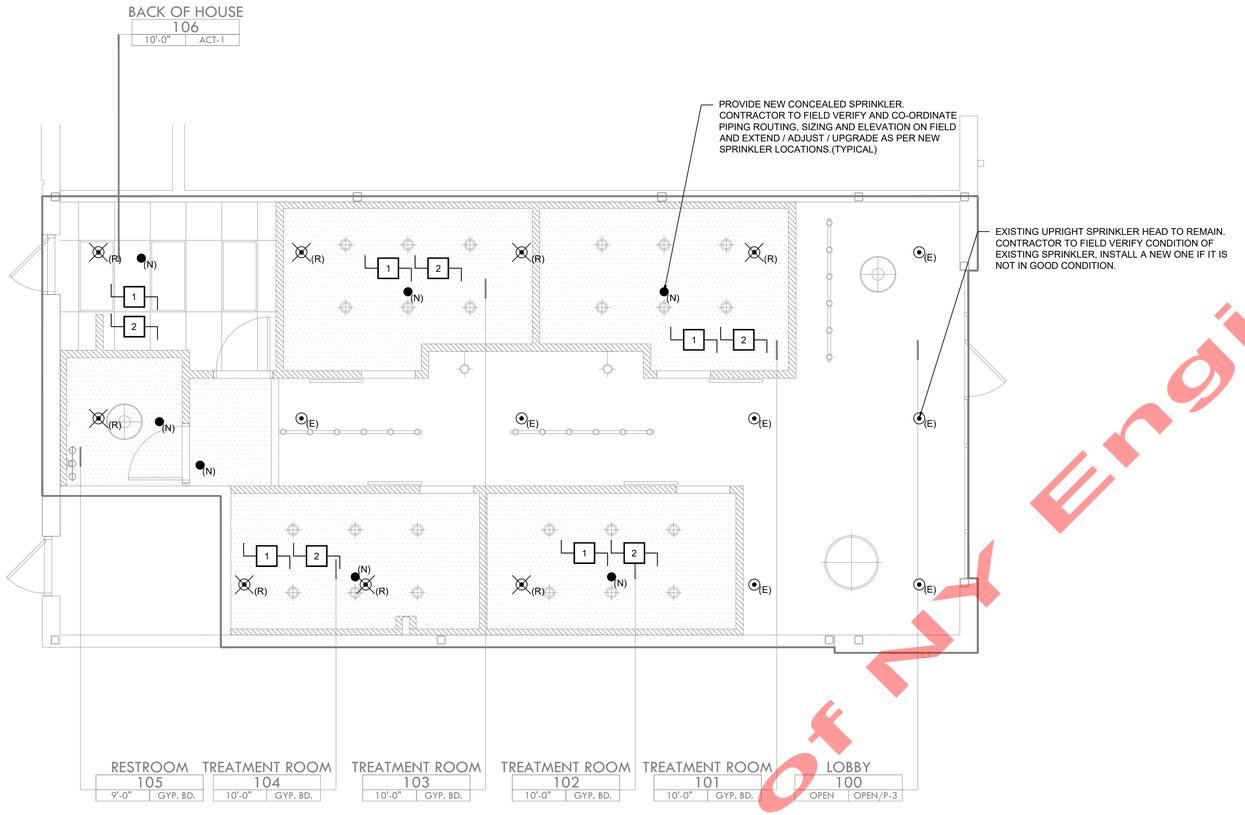
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SPRINKLER NOTES, SYMBOLS AND SPECIFICATIONS

SHEET NUMBER:

SP-0.1

1	SCALE	SPRINKLER NOTES, SYMBOLS AND SPECIFICATIONS
	N.T.S.	



GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
2. ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
3. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED OTHER TRADES.
4. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
5. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWING INDICATE SIZE, CONNECTION POINTS, AND ROUTED OF PIPES. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTIONS, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS.
   ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -

   MAXIMUM 7.5' FROM WALL
   MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
   MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
6. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT FOR LIGHT HAZARD AND 130 SQ.FT. FOR ORDINARY HAZARD.
7. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
8. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
9. FOR SPRINKLER WORK ONLY.
10. ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1".
11. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
12. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING SYSTEM AND RELOCATE HEADS WHEREVER SHOWN.
13. ALL WORK IN OTHER TENANT SPACES/BASE BUILDING SPACES SHALL BE COORDINATED WITH THE LANDLORD FOR ACCESS AND COORDINATED WITH BUILDING STAFF.
14. ALL WORK WITH EXISTING BUILDING RISERS SHALL BE COORDINATED WITH BUILDING STAFF AND ALL TENANTS AFFECTED BY SUCH WORK.
15. COORDINATE ALL SERVICE SHUTDOWNS WITH THE LANDLORD, BUILDING STAFF, AND ALL OTHER TENANTS AFFECTED BY IT.
16. CONTRACTOR TO V.I.F THE CONDITION OF EXISTING SPRINKLER HEAD & PIPING WHICH ARE DAMAGE OR CORRODED NEEDS TO BE REPLACED WITH NEW SPRINKLER HEAD & PIPING. CONTRACTOR HAS TO CONSIDERED ADDITIONAL COST OF NEW SPRINKLER HEADS AND PIPING WHILE BIDDING.

KEYED NOTES:

1. CONTRACTOR TO PROVIDE NEW SPRINKLER PIPING AS PER SPRINKLER HEAD LOCATION SHOWN ON THE PLAN. CONTRACTOR TO MAKE SURE SPRINKLER PIPE SIZING AS PER NFPA13.
2. CONTRACTOR SHALL ENSURE THERE ARE NO COMBUSTIBLE MATERIALS IN THE ABOVE CEILING SPACE TO PREVENT THE NEED FOR SPRINKLERS IN THAT AREA AS PER NFPA 13.

CONTRACTOR'S NOTE:

THE SPRINKLER SUBCONTRACTOR IS REQUIRED TO VISIT THE SITE DURING BIDDING AND VERIFY LOCATION(S) OF WHERE SPRINKLER PIPING/EQUIPMENT IS INDICATED TO BE PLACED, THEIR ROUTE(S) AND POSSIBLE INTERSECTION(S) WITH OTHER EQUIPMENT / WORK / STRUCTURE (I.E. STEEL BEAMS, ETC.) TO BE INSTALLED AND/OR "EXISTING TO REMAIN". THIS SUBCONTRACTOR IS TO VERIFY HEIGHTS "TO BE INSTALLED" TO MAINTAIN DESIGNED CEILING HEIGHTS AND HEAD ROOM. ANY DISCREPANCIES BETWEEN DESIGNED AND ACTUAL TO BE TOLD TO THE GENERAL CONTRACTOR AND INDICATED ON THE BID FORM.

HAZARD CLASSIFICATION AND DESIGN DENSITY

OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.10 GPM/SQ. FT.
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.

SPRINKLER HEAD COUNT

NEW CONCEALED SPRINKLER HEAD	07
EXISTING UPRIGHT SPRINKLER HEAD TO BE REMAIN	07

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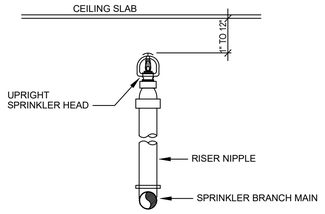
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SPRINKLER PLAN

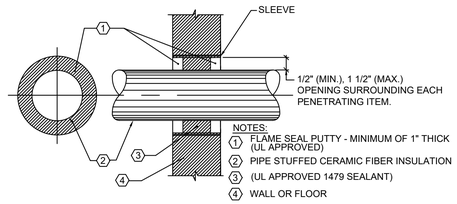
SHEET NUMBER:

SP-1.0

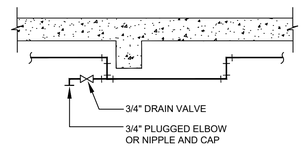
1	SCALE 1 / 4" = 1' - 0"	SPRINKLER PLAN



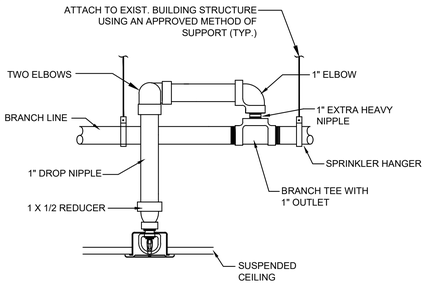
1	SCALE	UPRIGHT SPRINKLER HEAD DETAIL
	N.T.S.	



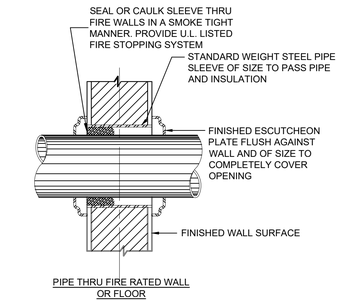
2	SCALE	FIRE STOPPING DETAIL FOR FIRE/ SMOKE RATED WALL/FLOOR OPENINGS
	N.T.S.	



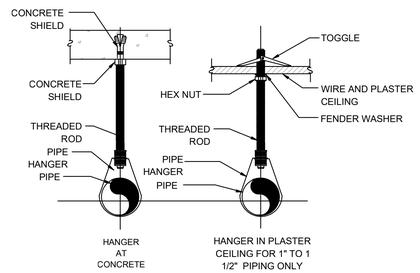
3	SCALE	TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
	N.T.S.	



4	SCALE	NEW CONCEALED PENDENT SPRINKLER HEAD DETAIL
	N.T.S.	



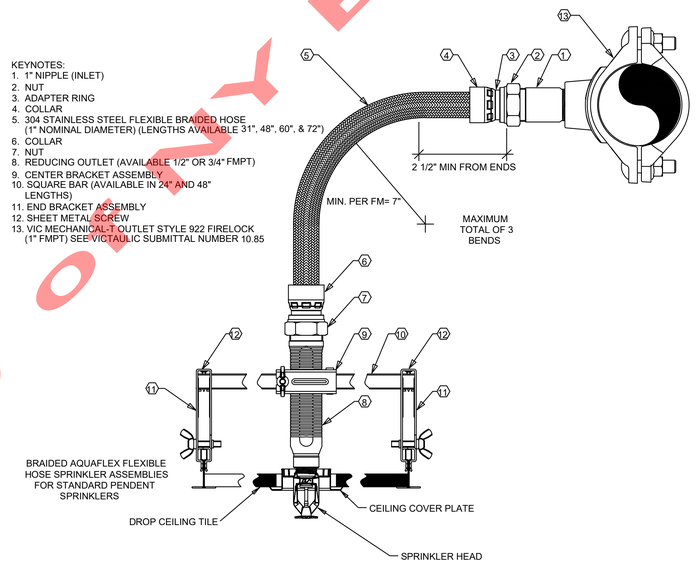
5	SCALE	PIPE SLEEVE THRU WALL SECTION
	N.T.S.	



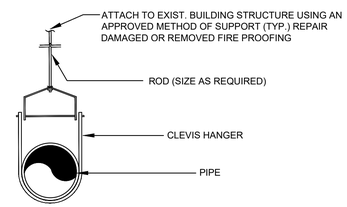
ROD SCHEDULE

PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'
1 1/4"	3/8"	6'-10'
1 1/2"	3/8"	8'-10'
2"	3/8"	10'-12'

6	SCALE	TYPICAL HANGER DETAIL AND ROD SCHEDULE
	N.T.S.	



7	SCALE	FLEXIBLE HOSE SPRINKLER ASSEMBLY DETAIL
	N.T.S.	



8	SCALE	HANGER DETAILS TYPICAL
	N.T.S.	

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SPRINKLER DETAILS

SHEET NUMBER:

SP-2.0

PLUMBING SPECIFICATIONS

1. GENERAL

THE "ARCHITECTURAL GENERAL CONDITIONS" GOVERN WORK UNDER THIS SECTION.

BEFORE SUBMITTING A PROPOSAL, THIS CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND SHALL CAREFULLY EXAMINE THE DRAWINGS AND SPECIFICATIONS. IT IS EXPRESSLY UNDERSTOOD THAT THIS PROPOSAL IS BASED ON THE ABOVE REQUIREMENTS AND THAT IT COVERS EVERYTHING NECESSARY TO DO AND COMPLETE THE WORK.

2. INSPECTION AND COOPERATION

NO DEVIATION FROM THE DRAWINGS AND /OR SPECIFICATIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF ARCHITECT OR ENGINEER. THIS CONTRACTOR SHALL COOPERATE WITH THE OTHER CONTRACTORS TO ALLOW FOR THE INSTALLATION OF THEIR WORK AS WELL AS HIS OWN.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK FITTING IN PLACE WITHOUT CONFLICT WITH THE OTHER TRADES, WHERE PROPER PLANNING COULD AVOID INTERFERENCE.

3. CODES AND PERMITS

NOTHING IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE INTERPRETED TO CONFLICT WITH ANY CITY OR PROVINCIAL LAW, REGULATION, CODE, ORDINANCE, RULING, OR FIRE UNDERWRITER'S REQUIREMENT APPLICABLE TO THIS CLASS OF WORK.

SHOULD THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH SUCH LAWS OR ORDINANCES, THE CONFLICTING PORTION OF THE WORK SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH SUCH LAWS AND ORDINANCES WITHOUT EXTRA COST.

THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED FOR THIS INSTALLATION OF HIS WORK.

4. ACCURACY OF DATA

THE INFORMATION GIVEN HEREIN AND ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED, BUT ITS EXTREME ACCURACY IS NOT GUARANTEED. THIS CONTRACTOR SHALL EXAMINE THE LOCATIONS AND VERIFY ALL MEASUREMENTS, DISTANCES, ELEVATIONS AND EXISTING PIPE SIZES BEFORE STARTING THE WORK.

THIS CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS, RAISED AND DROPS IN PIPING AND DUCTWORK AS REQUIRED BY BUILDING CONDITIONS AT NO ADDITIONAL COST.

PLUMBING DRAWINGS SHALL NOT BE USED FOR GENERAL CONSTRUCTION DIMENSIONS OR FOR TYPE OF MATERIAL USED. FOR EXACT BUILDING LAYOUT, DIMENSIONS AND BUILDING MATERIAL USED, THIS CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS.

5. SHOP DRAWINGS

FIVE (5) COPIES OF ALL SHOP OR INSTALLATION DRAWINGS, FOUNDATION PLANS, EQUIPMENT OR APPARATUS DRAWINGS SHALL BE FURNISHED BY THIS CONTRACTOR. THESE DRAWINGS SHALL BE CLEARLY MARKED INDICATING WHICH ITEMS ARE TO BE SUPPLIED AND SHALL STATE CAPACITIES, SIZES AND GENERAL DESCRIPTION OF ALL EQUIPMENT. ANY CHANGES FROM THE SPECIFIED ITEMS SHALL BE NOTED ON THE SUBMITTALS.

SHOP DRAWINGS OF SPECIAL APPARATUS OR EQUIPMENT WHICH IS TO BE FABRICATED INDIVIDUALLY FOR THIS PROJECT AND IS NOT DESCRIBED BY STANDARD MANUFACTURER'S DRAWINGS OR BULLETINS SHALL BE SUBMITTED FOR PROCESSING BEFORE FABRICATION.

THESE DRAWINGS SHALL BE SUBMITTED IN A TIMELY MANNER.

IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO MAINTAIN LIAISON WITH ALL PARTIES CONCERNED WITH THE MATERIAL SUBMITTED. THIS CONTRACTOR SHALL NOT PURCHASE ANY EQUIPMENT UNTIL SHOP DRAWINGS HAVE BEEN PROCESSED.

THIS CONTRACTOR SHALL SUBMIT NO DRAWINGS WITHOUT NOTATION OF EACH COPY INDICATING DATE OF CONTRACTOR'S REVIEW AND SIGNATURE OF CHECK FOR CONTRACTOR TOGETHER WITH CONTRACTOR'S NAME AND PROJECT IDENTIFICATION.

ARCHITECT'S PROCESSING WILL NOT CONSTITUTE A COMPLETE CHECK BUT WILL INDICATE ONLY THAT GENERAL METHOD OF CONSTRUCTION AND DETAILING IS SATISFACTORY.

ARCHITECT'S PROCESSING WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS SINCE THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR DIMENSIONS AND DESIGNS OF ADEQUATE CONNECTIONS, DETAILS AND SATISFACTORY CONSTRUCTION OF ALL WORK, AS WELL AS FURNISHING MATERIALS AND WORKMANSHIP REQUIRED BY DRAWINGS AND SPECIFICATIONS WHICH MAY NOT BE INDICATED ON THE SUBMITTALS WHEN APPROVED.

6. SUBSTITUTIONS OF EQUIPMENT OR MATERIAL

THE BRAND NAMES OF EQUIPMENT OR MATERIALS SPECIFIED HEREIN SHALL ESTABLISH QUALITY, CAPACITY, TYPE AND DIMENSIONS TO BE INCLUDED IN THE BASE BID.

APPROVAL OF SUBSTITUTED ITEMS WILL BE BASED ON ABILITY AND CAPACITY TO PERFORM FUNCTION SERVED, QUALITY AND AVAILABILITY OF PARTS AND SERVICE, QUALITY OF EQUIPMENT, DELIVERY SCHEDULE, ETC. THE ARCHITECT SHALL REVIEW ALL SUCH REQUESTS BUT RESERVES THE SOLE RIGHT OF JUDGEMENT TO APPROVE OR REJECT THE PROPOSED SUBSTITUTIONS.

ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL NOT CAUSE ADDITIONAL COST. ANY CHANGES OF PIPING, DUCTWORK, ELECTRICAL CONTROLS OR INSTALLATION REQUIRED BECAUSE OF THE SUBSTITUTION OR EQUIPMENT SHALL BE PAID FOR BY THIS CONTRACTOR PROPOSING THE SUBSTITUTION.

7. ERECTION OF APPARATUS

ALL WORK SHALL BE DONE UNDER THE PERSONAL SUPERVISION OF THIS CONTRACTOR WHO SHALL PROVIDE A COMPETENT FOREMAN TO LAY OUT ALL WORK. ALL WORK SHALL BE LAID OUT WITH DUE REGARD FOR THE SPACE REQUIREMENTS OF THE OTHER CONTRACTORS. THIS CONTRACTOR SHALL REPORT ANY CONFLICTS OR DIFFICULTIES IN REGARD TO THE INSTALLATION IMMEDIATELY.

WHERE CROWDED LOCATIONS EXIST OR WHERE THERE IS A POSSIBILITY OF CONFLICT BETWEEN TRADES, THIS CONTRACTOR SHALL MAKE COMPOSITE DRAWINGS SHOWING THE EXACT LOCATIONS OF PIPES, DUCT, CONDUIT AND EQUIPMENT. DRAWINGS SHALL BE BASED ON FIELD MEASUREMENTS AND AFTER CONSULTATION AND AGREEMENT BETWEEN THE TRADES, SHALL BE APPROVED BY ZARA REPRESENTATIVE BEFORE INSTALLATION OF THE WORK.

EQUIPMENT OF A TYPE TO REQUIRE REPLACEMENT, SERVICING, ADJUSTING OR MAINTENANCE SHALL BE LOCATED TO ALLOW EASY ACCESS AND SPACE FOR REMOVAL OF INTERNAL ASSEMBLIES, IT REQUIRED.

8. EQUIPMENT SUPPORTS

ANY STRUCTURAL STEEL MEMBERS REQUIRED TO ADAPT THE EQUIPMENT AND PIPING AS FURNISHED BY THIS CONTRACTOR, TO THE BUILDING STEEL OR STRUCTURE, SHALL BE INCLUDED IN THE BID OF THE CONTRACTOR FURNISHING THE EQUIPMENT OR PIPING. HANGING OF ALL EQUIPMENT AND REQUIRED SUPPORTING STEEL AND BRACING SHALL BE FURNISHED BY THE CONTRACTOR WHO SUPPLIES THE EQUIPMENT.

9. CUTTING AND PATCHING

THIS CONTRACTOR SHALL INCLUDE ALL CUTTING, PATCHING AND PAINTING OF PATCHED AREAS REQUIRED FOR AND RESULTING FROM THE INSTALLATION OF ALL OF THIS CONTRACTOR'S WORK, EXCEPT WHERE NOTED OTHERWISE.

ALL OPENINGS AROUND PIPE PENETRATIONS THROUGH SMOKE OR FIRE-RATED FLOORS, CEILINGS OR WALLS SHALL BE SEALED AIRTIGHT WITH MATERIAL HAVING A RATING EQUAL TO THE MATERIAL OF THE WALL, CEILING AND/OR FLOOR PENETRATED.

ALL PATCHING SHALL BE NEATLY FINISHED TO THE SATISFACTION OF THE ARCHITECT.

10. ACCESS PANELS

THIS CONTRACTOR SHALL LOCATE AND FURNISH FOR INSTALLATION BY THE GENERAL CONTRACTOR, ALL ACCESS PANELS AS REQUIRED FOR ACCESS TO VALVES, AND THE PROPER SERVICING OF EQUIPMENT AND LINES INSTALLED UNDER THE CONTRACT.

ALL PANELS SHALL BE MILCOR, STYLE "M" FOR MASONRY, "A" FOR ACOUSTICAL TILE AND "K" FOR PLASTER; EXCEPT FOR FIRE-RATED UL 1-1/2 HOUR AND "B" LABEL ACCESS PANELS SHALL BE FURNISHED IN FIRE-RATED WALLS AND CEILINGS AS INDICATED ON THE DRAWINGS. ACCESS DOORS SHALL BE 12" X 12" MINIMUM SIZE FOR VALVES.

11. DIELECTRIC UNIONS

FOR THE PREVENTION OF ELECTROLYTIC CORROSION AT CONNECTIONS BETWEEN PIPE OF DISSIMILAR METALS OR BETWEEN PIPE AND EQUIPMENT CONNECTIONS OF DISSIMILAR METALS, PROVIDE DIELECTRIC UNIONS OR FLANGES.

12. JOINTS AND FITTINGS

THREADS ON SCREWED PIPE SHALL BE STANDARD, CLEAN BUTT AND TAPERED. PIPE SHALL BE REAMED OF BURRS AND KEPT CLEAN OF SCALE, DIRT AND SHAVINGS. TREADS SHALL BE MADE WITH FLAKED GRAPHITE AND LUBRICATING OIL OR APPROVED PIPE COMPOUND ON THE MALE THREAD ONLY.

COPPER-TO-STEEL AND COPPER-TO-BRASS JOINTS SHALL BE MADE WITH SILVER SOLDER. ALL OTHER COPPER-TO-COPPER JOINTS ABOVE GROUND SHALL BE MADE WITH LEAD FREE SOLDER. COPPER PIPE SHALL BE CUT SQUARE, BURRS REMOVED AND CARE SHALL BE GIVEN TO KEEP THE LINES FREE OF DIRT AND MOISTURE. ALL TUBING AND FITTINGS SHALL BE THOROUGHLY CLEANED.

WELDED PIPE SHALL HAVE BUTT WELDED SINGLE "V" TYPE JOINTS FOR WHICH PIPE HAS BEEN BEVELED TO 45 DEGREES. WELD SHALL BE ONE-FOURTH GREATER THICKNESS THAN THE PIPE. CONNECTIONS TO EQUIPMENT, ACCESSORIES, ETC. SHALL BE MADE BY MEANS OF FLANGES AND/OR ADAPTERS.

UNIONS SHALL BE PROVIDED AT EACH SCREWED VALVE AND UNIONS OR FLANGES AT EACH EQUIPMENT CONNECTION.

13. EXPANSION JOINTS

FURNISH AND INSTALL FLEXONICS EXPANSION JOINTS IN PIPING SYSTEM WHERE SHOWN OR NECESSARY FOR EXPANSION AND CONTRACTION.

EXPANSION JOINTS IN PIPE 4" AND GREATER SHALL BE THE PACKLESS TYPE WITH STAINLESS STEEL BELLOWS AND HAVE WELDED OR FLANGED END. JOINTS SHALL HAVE TRAVERSE AS INDICATED ON THE PLANS. EXPANSION JOINTS SHALL BE OF THE CONTROLLED FLEXING TYPE.

EXPANSION JOINTS IN COPPER PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL BELLOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

EXPANSION JOINTS IN STEEL PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL ELBOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

PROVIDE GUIDES ON EACH SIDE OF EXPANSION JOINT, AT 4" PIPE DIAMETERS, 14 PIPE DIAMETERS, AND A THIRD GUIDE AS RECOMMENDED BY THE MANUFACTURER.

14. PIPE FLEXIBLE CONNECTIONS

FLEXIBLE PIPE CONNECTIONS SHALL BE RESISTOFLEX #R6904 OR APPROVED EQUAL FLEXIBLE CONNECTIONS MADE FROM TEFLON.

PROVIDE FOR MOVEMENT IN PIPING BY USE OF SWING JOINTS AT CONNECTION OF ALL BRANCHES TO MAINS AND RISERS. ALL BRANCHES FROM MAINS AND RISERS SHALL HAVE 1/4" CLEARANCE BETWEEN PIPE INSULATION AND SLEEVE TO PERMIT PIPE MOVEMENT.

15. VALVES

THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL VALVES OF ONE MANUFACTURER, FIGURE NUMBER AND TYPE THROUGHOUT THE ENTIRE INSTALLATION OF THE WORK, UNLESS OTHERWISE SPECIFIED. THE FOLLOWING NUMBERS ARE FROM THE CRANE CATALOG. EQUAL VALVES OF REPUTABLE MANUFACTURERS, SUCH AS HAMMOND, NIBCO-SCOTT AND/OR JENKINS WILL BE CONSIDERED EQUIVALENT.

ALL VALVES SHALL BE BUILT FOR A MINIMUM OF 125 PSIG WORKING PRESSURE.

GATE VALVES 2-1/2" AND SMALLER SHALL BE #438 (SCREWED ENDS) OR #1320 (SOLDER-JOINT ENDS) WITH BRONZE BODY, BRONZE TRIM AND RISING STEM.

CHECK VALVES 2-1/2" AND SMALLER SHALL BE #36 (SCREWED ENDS) OR #1342 (SOLDER-JOINT ENDS) SWING-TYPE WITH BRONZE BODY AND BRONZE TRIM.

BUTTERFLY VALVES 2" AND LARGER SHALL BE #12F, IRON BODY, CAST-IRON WAFER W/LOCK LEVER.

BALL VALVE UP TO 3" IN SIZE SHALL BE APOLLO SERIES #70 BRONZE VALVE WITH CHROME-PLATED BALL AND TEFLON SEAT.

GAS LINE COCKS UP TO 4" SHALL BE #320.

HOSE END VALVES SHALL BE #438 GATE VALVES WITH HOSE END NIPPLES.

16. PIPE SLEEVES AND COLLARS

THIS CONTRACTOR SHALL LAY OUT ALL HIS WORK AND SET SLEEVES IN NEW CONSTRUCTION AS CONCRETE FORMS AND WALL ARE ERECTED SO AS TO BE ABLE TO INSTALL HIS WORK WITHOUT CUTTING OR BREAKING OF FLOORS OR WALLS. ALL SLEEVES FOR INSULATED PIPING SHALL BE LARGE ENOUGH TO ALLOW INSULATION TO PASS THROUGH SLEEVE.

ALL SLEEVES PASSING THROUGH FLOORS WHICH ARE WATERPROOFED SHALL BE COPPER TUBING SLEEVES EXTENDING 1" ABOVE FINISHED FLOOR. ALL OTHER SLEEVES SHALL BE 24 GAUGE GALVANIZED PIPES AND SLEEVES TO BE THOROUGHLY PACKED WITH OAKUM AND THE REMAINING SPACE FILLED WITH MASTIC AND MUST BE WATERTIGHT.

ALL SLEEVES PASSING THROUGH INNER WALLS SHALL BE STANDARD PIPE THIMBLES EQUAL TO THE THICKNESS OF THE WALL.

SPACES BETWEEN PIPES AND SLEEVES THROUGH OUTSIDE WALLS, ABOVE GRADE, SHALL BE CAULKED WITH CAULKING COMPOUND; THOSE BELOW GRADE SHALL BE MADE WATERTIGHT.

SPACE AROUND ALL PIPING THROUGH FIRE OR SMOKE RATED PARTITIONS OR FLOORS SHALL BE SEALED AIRTIGHT WITH MATERIAL AS SPECIFIED UNDER FIRESTOPPING.

ALL PIPE PENETRATIONS OF SLABS ON GRADE SHALL BE WRAPPED WITH #15 BUILDING FELTS OR FOAM WRAP.

17. HANGERS

A. PIPE HANGER AND SUPPORT PRODUCTS INSTALLATION
- a.VERTICAL PIPING: MSS TYPE 8 OR 42 CLAMPS.
- b.INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS: 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS. LONGER THAN 100 FEET IF INDICATED: MSS TYPE 49, SPRING CUSHION ROLLS.
- c.MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER:MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
- d.BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.

B. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.

C. ROD DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM OF 3/8 INCH

D. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:

- a. NPS 3/4 AND SMALLER: 60 INCHES WITH 3/8-INCH ROD.
- b. NPS 1 AND NPS 1-1/4: 72 INCHES WITH 3/8-INCH ROD.
- c. NPS 1-1/2 AND NPS 2: 96 INCHES WITH 3/8-INCH ROD.
- d. NPS 2-1/2: 108 INCHES WITH 1/2-INCH ROD.
- e. NPS 3 TO NPS 5: 10 FEET WITH 1/2-INCH ROD.

E. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET.

F. INSTALL HANGERS FOR STEEL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:

- a. NPS 1-1/4 AND SMALLER: 84 INCHES WITH 3/8-INCH ROD.
- b. NPS 1-1/2: 108 INCHES WITH 3/8-INCH ROD.
- c. NPS 2: 10 FEET WITH 3/8-INCH ROD.
- d. NPS 2-1/2: 11 FEET WITH 1/2-INCH ROD.
- e. NPS 3 AND NPS 3-1/2: 12 FEET WITH 1/2-INCH ROD.
- f. NPS 4 AND NPS 5: 12 FEET WITH 5/8-INCH ROD.

G. INSTALL SUPPORTS FOR VERTICAL STEEL PIPING EVERY 15 FEET.

H. SUPPORT PIPING AND TUBING NOT LISTED IN THIS ARTICLE ACCORDING TO MSS SP-69 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

18. DAMAGE BY LEAKS

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO THE GROUNDS, WALKS, ROADS, ALL BUILDING COMPONENTS AND FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS AND THEIR EQUIPMENT AND CONTENT, CAUSED BY LEAKS IN THE PIPING SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED HEREIN. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.

19. PIPE MARKERS

FURNISH AND INSTALL BRADY #B-350 THIN FILM OR APPROVED EQUAL PIPE MARKERS. MARKERS SHALL BE 1-1/8" HIGH FOR PIPES 3" AND UNDER AND 2-1/4" HIGH FOR PIPES OVER 3". MARKERS SHALL INDICATE TYPE OF SERVICE AND DIRECTION OF FLOW.

PIPE MARKERS SHALL BE LOCATED:

- AT EQUIPMENT CONNECTIONS
- AT ACCESS DOORS
- AT BRANCH MAINS
- ON ALL ACCESSIBLE PIPE A MAXIMUM OF 75' BETWEEN MARKERS.

20. FLOOR, WALL AND CEILING PLATES

PIPES PASSING THROUGH FLOORS AND FINISHED CEILINGS, FITTED WITH CHROME-PLATED PLATES OR ESCUTCHEONS LARGE ENOUGH TO COMPLETELY CLOSE OPENING AROUND PIPE OR PIPE COVERING AND FLOOR SUPPORT IN THE CASE OF VERTICAL PIPING, SECURELY HELD IN PLACE; CAULK WATERTIGHT AROUND PIPE IN UNFINISHED ROOMS.

21. CLEANUP AND ADJUSTMENT

ALL PARTS WORK LEFT CLEAN: EQUIPMENT, FIXTURES, VALVES, PIPES AND FITTINGS CLEANED OF GREASE AND METAL CUTTINGS. ANY DISCOLORATION OR OTHER DAMAGE TO PORTIONS OF BUILDING, ITS FINISH OR FURNISHING DUE TO THIS CONTRACTORS FAILURE TO PROPERLY CLEAN INTERIOR OF PIPING, REPAIRED AT THIS CONTRACTOR'S EXPENSE. ALL AUTOMATIC CONTROL DEVICES ADJUSTED FOR PROPER OPERATION. ALL SURPLUS MATERIALS AND ANY RUBBISH REMOVED AS IT ACCUMULATES. ALL EQUIPMENT LEFT IN SAFE, PROPER OPERATING CONDITION.

DAMAGE TO ANY PORTIONS MUST BE REPAIRED OF THE PART REPLACED BY THIS CONTRACTOR AND ALL PARTS LEFT WITHOUT DENTS, SCRATCHES, THROUGH THE FINISH PAINT, LOOSE PLASTER, STAINS OR OTHER BLEMISHES.

22. PIPE TESTING AND START-UP

ALL PIPING TO BE TESTED IN ACCORDANCE WITH THE FOLLOWING:

- WATER - 100 PSI WATER PRESSURE

ALL TESTING MUST HOLD FOR AT LEAST 24 HOURS WITHOUT LOSS OF PRESSURE OR VACUUM. ALL CONCEALED PIPING SHALL BE TESTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE PRIOR TO COVERING. BEFORE STARTING ANY SYSTEM, ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE LUBRICATED BY THIS CONTRACTOR. TEST ENTIRE PLANT FOR HEATING, VENTILATING, AND AIR CONDITIONING UNDER FULL LOAD CONDITIONS FOR A PERIOD OF NOT LESS THAT ONE (1) WEEK DURING WHICH TIME THE AARON BROTHERS OPERATING PERSONNEL SHALL BE FULLY INSTRUCTED IN THE OPERATION AND MAINTENANCE OF THE PLANT. AFTER THE PLANT IS IN FULL OPERATION, THIS CONTRACTOR IS TO FURNISH WHATEVER ADDITIONAL SERVICE IS REQUIRED TO RECALIBRATE AND RESET CONTROLS, VALVES, BALANCING COCKS, ETC. TO ENSURE PROPER OPERATION OF THIS SYSTEM.

23. TESTING AND BALANCING

THIS CONTRACTOR SHALL AT THE TIME OF INSTALLATION ENSURE THAT ALL DEVICES TO COMPLETE TESTING AND BALANCING AS DIRECTED HEREIN ARE FURNISHED AND INSTALLED DURING FABRICATION AND INSTALLATION OF WORK.

24. SEISMIC RESTRAINTS ON PLUMBING EQUIPMENT

ALL PLUMBING EQUIPMENT SHALL BE PROVIDED WITH SEISMIC RESTRAINING SERVICES AS REQUIRED BY LOCAL BUILDING CODES. CONTRACTOR SHALL HAVE LOCAL BUILDING OFFICE REVIEW EACH PIECE OF EQUIPMENT WHEN INSTALLED AND THE CONTRACTOR SHALL INSTALL ALL REQUIRED TIE DOWN, ANCHORS, STRAPS OR OTHER DEVICES REQUIRED.

25. GUARANTEE

THIS CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, MATERIALS, AND LABOR FURNISHED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AND SHALL REPAIR OR REPLACE ANY EQUIPMENT OR MATERIAL WHICH IS DEFECTIVE OR IMPROPERLY INSTALLED. IN ADDITION, THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO THE BUILDINGS AND ITS CONTENTS OR OTHER EQUIPMENT, CAUSED BY DEFECTS OR IMPROPER INSTALLATION OF EQUIPMENT OR MATERIALS INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS.

26. TEMPORARY WATER

TEMPORARY WATER SERVICE TO THE BUILDING SHALL BE PROVIDED BY THIS CONTRACTOR TO THE BUILDING FOR CONSTRUCTION PURPOSES. THIS CONTRACTOR TO MAINTAIN WATER SERVICE AS REQUIRED DURING CONSTRUCTION.

27. SANITARY SEWERS

THIS CONTRACTOR SHALL CONNECT SANITARY SEWER AS INDICATED ON THE DRAWINGS. VERIFY DIRECTION OF FLOW PRIOR TO ANY ROUGH-IN WORK.

EACH PIPE SHALL BE LAID TO THE LINE AND GRADE INDICATED ON THE PLANS AND SUCH A MANNER AS TO FORM A CLOSE CONCENTRIC JOINT WITH THE ADJOINING PIPE AND TO PRESENT OFFSETS IN FLOW LINE. ALL PIPE SHALL BE LAID WITH THE BELLS UPHILL.

THE SUB-GRADES SHALL BE KEPT FREE FROM WATER WHILE PIPES ARE BEING LAID. ALL PIPE SHALL BE LAID WITH ENDS ABUTTING AND TRUE TO LINE AND GRADE. THEY SHALL BE FITTED AND MATCHED SO THAT THEY WILL FORM A SEWER WITH A SMOOTH AND UNIFORM INVERT.

EACH JOINT SHALL BE CLEANED AS IT IS LAID AND ALL BELLS SHALL BE CLEANED BEFORE PIPES ARE JOINED.

PVC SEWER PIPE MAY BE USED IN LIEU OF THAT SPECIFIED ABOVE IF ALLOWED BY LOCAL CODES.

28. WASTE, SOIL, DRAIN AND VENT PIPING

THE DRAINS, SOIL WASTE AND VENT PIPE AND FITTINGS INCLUDING EXTENSIONS TO SEWERS SHALL BE OF SAND SPUN SERVICE WEIGHT CAST IRON PIPE OF THE SIZES INDICATED ON THE DRAWINGS. PIPE AND FITTINGS TO BE COATED ON THE INSIDE AND OUTSIDE WITH COAL TAR PITCH, CYLINDRICAL AND FREE FROM CRACKS OR OTHER DEFECTS.

ALL TRENCHES TO BE DUG WITH GRADUAL FALL, THE PIPING TO BE STRAIGHT AND THOROUGHLY YARNED WITH OAKUM AND POURED WITH MOLTEN LEAD AND THOROUGHLY CAULKED WITH CAULKING IRONS.

THE ARRANGEMENT OF THE SYSTEM SHALL BE AS SHOWN ON THE DRAWINGS AND AS DIRECT AS POSSIBLE, AVOIDING ALL UNNECESSARY OFFSETS. THE STACKS SHALL BE FIRMLY SECURED IN POSITION WITH WROUGHT IRON CLAMPS AT EACH FLOOR.

ALL CHANGES IN DIRECTION OF SOIL OR WASTE PIPE SHALL BE MADE BY MEANS OF "Y" BRANCHES AND 1/8 BENDS. NINETY DEGREE SHORT TURN FITTINGS WILL NOT BE PERMITTED EXCEPT TO INDIVIDUAL FIXTURE CONNECTIONS OR WHERE THE FLOW IS FROM THE HORIZONTAL TO THE VERTICAL.

HANDHOLES WITH CAST IRON FERRULES AND HEAVY BRASS SCREWS FOR CLEANOUTS SHALL BE PLACED AT ENDS AND ALL CHANGES IN DIRECTION OF SOIL AND WASTE PIPE WHERE NOT OTHERWISE SHOWN OR WHERE REQUIRED AND BROUGHT UP TO THE FLOOR LINE WHERE PIPING IS CONCEALED BY MEANS OF "Y"S OR SUITABLE BENDS.

ALL TRAP SCREWS MUST BE OF FULL SIZE OF PIPE UP TO 4" AND 4" FOR ALL OVER THIS SIZE. CONNECTIONS BETWEEN OUTLETS OF FIXTURES AND SOIL OR WASTE PIPE SHALL BE MADE WITH "Y" BRANCHES TO "TY" BRANCHES WHEREVER POSSIBLE. ALL HORIZONTAL SOIL WASTE AND VENT PIPE SHALL BE GRADED TOWARD OUTLETS AND PIPE NOT BURIED SHALL BE INSTALLED ABOVE THE CEILING OR CLOSE AS POSSIBLE TO THE CONSTRUCTION ABOVE WHERE THERE IS NO CEILING.

THE STACKS SHALL BE EXTENDED THROUGH ROOF OF BUILDING TO POINTS NOT LESS THAT 12" ABOVE ROOF. EXTENSIONS THROUGH ROOF SHALL BE MADE WATER- TIGHT BY MEANS OF A LEAD FLASHING OF FOUR POINTS SHEET LEAD SPREAD OVER A DISTANCE OF NOT LESS THAN TWELVE INCHES (12") AROUND PIPE. THIMBLE TO BE SOLDERED TO BASE AND EXTENDED OVER AND TURNED DOWN INTO END OF PIPE IN AN APPROVED MANNER.

ALL CLEANOUTS IN FLOORS TO BE JOSAM #8360 OR AMERICAN FOUNDRY #427 ADJUSTABLE CLEANOUT WITH CAST IRON BODY, CAST BRASS SCORIATED COVER WITH LETTERS C.O. CAST IN TOP AND CONCEALED BRASS PLUG.

CLEANOUTS SHALL BE INSTALLED IN BASE OF EACH STACK. CONCEALED CLEANOUTS SHALL HAVE JOSAM #8600 OR AMERICAN FOUNDRY #71-F CAST BRASS CHROMIUM PLATED FLAT ACCESS COVER PLATES.

FERRULES SHALL BE EXTRA HEAVY RED BRASS, EXTRA LONG AND SMOOTH ON THE INSIDE. FOR WASTE, SOIL AND VENT CONNECTION THE LEAD SHALL EXTEND THROUGH THE FERRULES, BE TURNED BACK, WIPED WITH SOLDER AND CAULKED INTO THE HUB.

ALL JOINTS OF CAST IRON PIPE SHALL BE MADE WITH JUTE AND PURE SOFT LEAD BEDDED IN WITH HAMMER AND CAULKING IRON, USING FOR EACH JOINT TWELVE OUNCES OF LEAD TO EACH INCH OF DIAMETER OF PIPE ON WHICH THE JOINT IS MADE. ALL JOINTS SHALL BE FILLED AT ONE POURING, IF IT FAILS TO RUN FULL IT SHALL BE DUG OUT AND RE-POURED AND CAULKED WITH PROPER TOOLS. JOINTS BETWEEN LEAD AND CAST IRON SHALL BE MADE WITH BRASS FERRULES, WIPED TO THE LEAD PIPE AND CAULKED INTO THE HUB OF THE CAST IRON FITTINGS. AT THE CONTRACTOR'S OPTION HE MAY USE NO-HUB PIPE, FITTINGS, COUPLING AND GASKETS IN LIEU OF LEAD JOINTS IF APPROVED BY THE LOCAL CODES AND ORDINANCES.

AT THE CONTRACTOR'S OPTION, DWV COPPER PIPING AND FITTINGS MAY BE USED IF APPROVED BY LOCAL CODES AND ORDINANCES.

IF APPROVED BY THE LOCAL CODES, SCHEDULE 40 PVC PIPE WITH DWV FITTINGS MAY BE USED FOR THE WASTE AND VENT SYSTEM. PVC PIPE AND FITTINGS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL CODES. ENCASEMENT OF PVC PIPES WITHIN RATED SHAFTS SHALL BE THE COST OF THIS CONTRACTOR.

29. VENT FLASHING

EACH VENT FLASHING SHALL BE MADE WATER-TIGHT WITH THE ROOF BY PROPER LEAD FLASHING. FLASHING SHALL BE LEAD FOUR (4) POUNDS PER SQUARE FOOT.

30. PLUMBING FIXTURES AND TRIM

PLUMBING FIXTURES SHALL BE FURNISHED AND INSTALLED IN A NEAT AND WORKMANLIKE MANNER WITH PROPER CONNECTIONS TO SUPPLY AND DRAINAGE PIPING. ALL FIXTURES SHALL BE FREE OF FLAWS AND DEFECTS OF ANY SORT IN MATERIAL AND WORKMANSHIP AND SHALL OPERATE PERFECTLY WHEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S DIRECTION.

MATERIALS: FIXTURES SHALL BE THE STANDARD PRODUCT OF ONE OF THE MANUFACTURER'S LISTED BELOW, OR ANY EQUAL UNIT APPROVED BY THE ENGINEER.

ZURN, KOHLER, CRANE, AMERICAN STANDARD, ELJER, GROHE, DELTA, ELKAY

INSTALLATION: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE PLUMBING FIXTURES AND ACCESSORIES DURING CONSTRUCTION. HE SHALL REPLACE AT HIS EXPENSE ANY MATERIAL THAT IS MARRED, SCRATCHED, DEFACED AND/OR BROKEN. FIXTURES SHALL BE COVERED WITH BUILDING PAPER AND WOODEN CRATES DURING CONSTRUCTION.

CONTRACTOR SHALL PROVIDE ROUGH-IN AND SHALL CONNECT ALL FIXTURES TO THE PLUMBING SYSTEM. ALL FIXTURES TO BE INSTALLED TO DIMENSIONS WITH CHROME-PLATED SUPPLIES WITH STOPS.

ALL FIXTURES INSTALLED TO DIMENSIONS SHOWN ON THE DRAWINGS. ALL WATER CLOSETS SHALL HAVE CAULKING BETWEEN THE FLOOR AND UNDERSIDE OF THE WATER CLOSET.

PLUMBING EQUIPMENT: (REFER TO SCHEDULE ON THE DRAWINGS)

31. INSULATION

ALL INSULATION SHALL HAVE COMPOSITE (INSULATION, JACKET OR FACINGS AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURE ASTM E-84, NFPA 225 UL 723 NOT EXCEEDING:

FLAME SPREAD 25
SMOKE DEVELOPED 50

ALL ACCESSORIES SUCH AS ADHESIVES, MASTICS, CEMENTS, TAPES AND CLOTH FOR FITTINGS SHALL HAVE THE SAME COMPONENTS RATINGS AS LISTED ABOVE.

INSULATION SHALL BE APPLIED ON CLEAN, DRY SURFACES AND AFTER INSPECTION AND RELEASE FOR INSULATION APPLICATION. ALL INSULATION SHALL BE CONTINUOUS THROUGH WALL AND CEILING OPENINGS AND SLEEVES. INSULATION ON ALL COLD SURFACES WHERE VAPOR BARRIER JACKETS ARE USED, WILL BE APPLIED WITH A CONTINUOUS, UNBROKEN VAPOR SEAL, INCLUDING ALL FITTINGS AND VALVES. ALL INSULATION TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S. FITTINGS SHALL BE FINISHED WITH 1/4" COAT OF INSULATING CEMENT AND CANVAS.

INSULATION SCHEDULE:

DOMESTIC COLD WATER - 1" THICK ARMAFLEX (FLAME SPREAD 25/ SMOKE DEVELOPED 50)

DOMESTIC HOT WATER - 1" THICK ARMAFLEX (FLAME SPREAD 25/ SMOKE DEVELOPED 50)

ALL MATERIALS USED SHALL COMPLY WITH SECTION 104.9 OF THE IBC 2021.

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PLUMBING SYMBOLS LIST

PLUMBING LEGENDS

S	SANITARY PIPING
EX.S	EXISTING SANITARY PIPING
	VENT PIPING
	COLD WATER PIPING
	EXISTING COLD WATER PIPING
	HOT WATER PIPING
	RECIRCULATING HOT WATER PIPING
	BALANCING VALVE
	PIPE UP OR DOWN
	PIPE UP
	UNION
	ISOLATION VALVE
FCO	FLOOR CLEANOUT
CO	CLEANOUT
	BACKFLOW PREVENTER
	POINT OFF CONNECTION
	RE-CIRCULATION PUMP
	HUB / FLOOR DRAIN

PLUMBING ABBREVIATIONS

AG	ABOVE GROUND SANITARY
AFF/AFG	ABOVE FINISHED FLOOR/GRADE
AHJ	AUTHORITY HAVING JURISDICTION
BFP	BACKFLOW PREVENTER
CW	COLD WATER
CO	CLEANOUT
ETR	EXISTING TO REMAIN
ET	EXPANSION TANK
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
HD	HUB DRAIN
HW	HOT WATER
HWR	HOT WATER RETURN
IW	INDIRECT WASTE
LAV	LAVATORY
MS	MOP SINK
OC	OWNERS CHOICE
PC	PLUMBING CONTRACTOR
RCP	RECIRCULATION PUMP
S	SANITARY
SK	SINK
TMV	THERMOSTATIC MIXING VALVE
TYP	TYPICAL
V	VENT
VIF	VERIFY IN FIELD
VLL	VERIFY WITH LANDLORD
VTR	VENT THRU ROOF
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WATER HEATER
W/D	WASHER DRYER
CWB	CLOTH WASHER BOX

PLUMBING DRAWING LIST

P-0.1	PLUMBING SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS
P-1.0	PLUMBING FLOOR PLANS, RISERS AND NOTES
P-2.0	PLUMBING DETAILS AND SCHEDULE

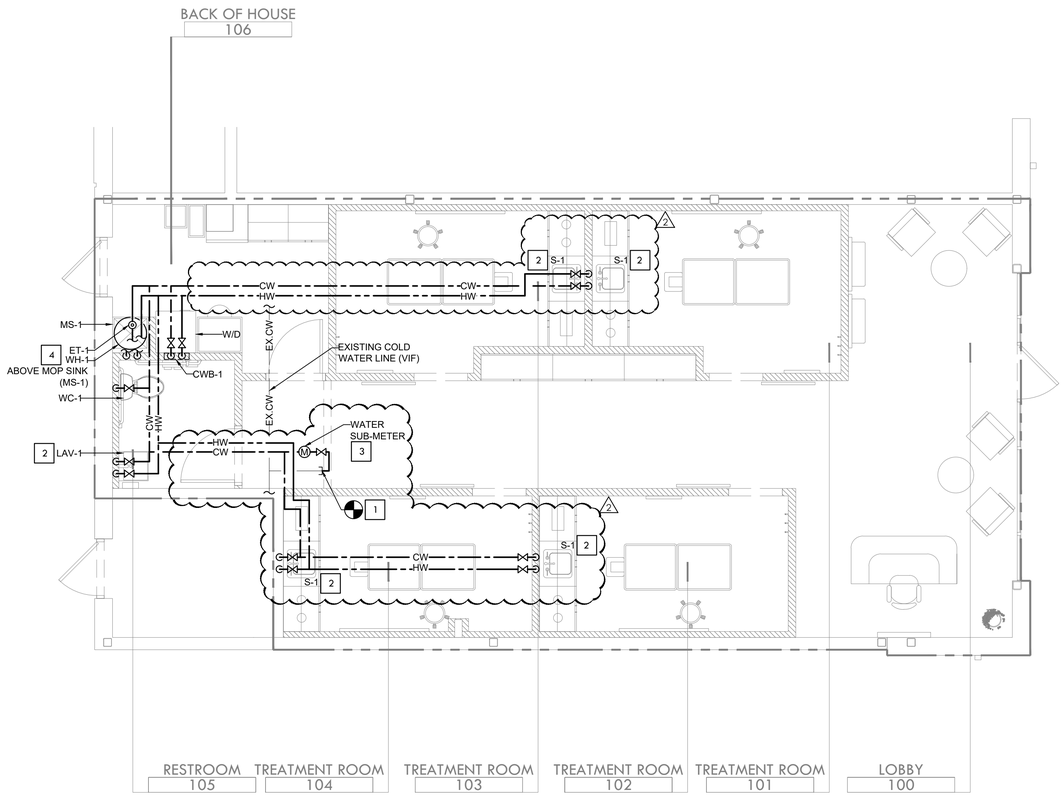
1	SCALE N.T.S.	PLUMBING SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS

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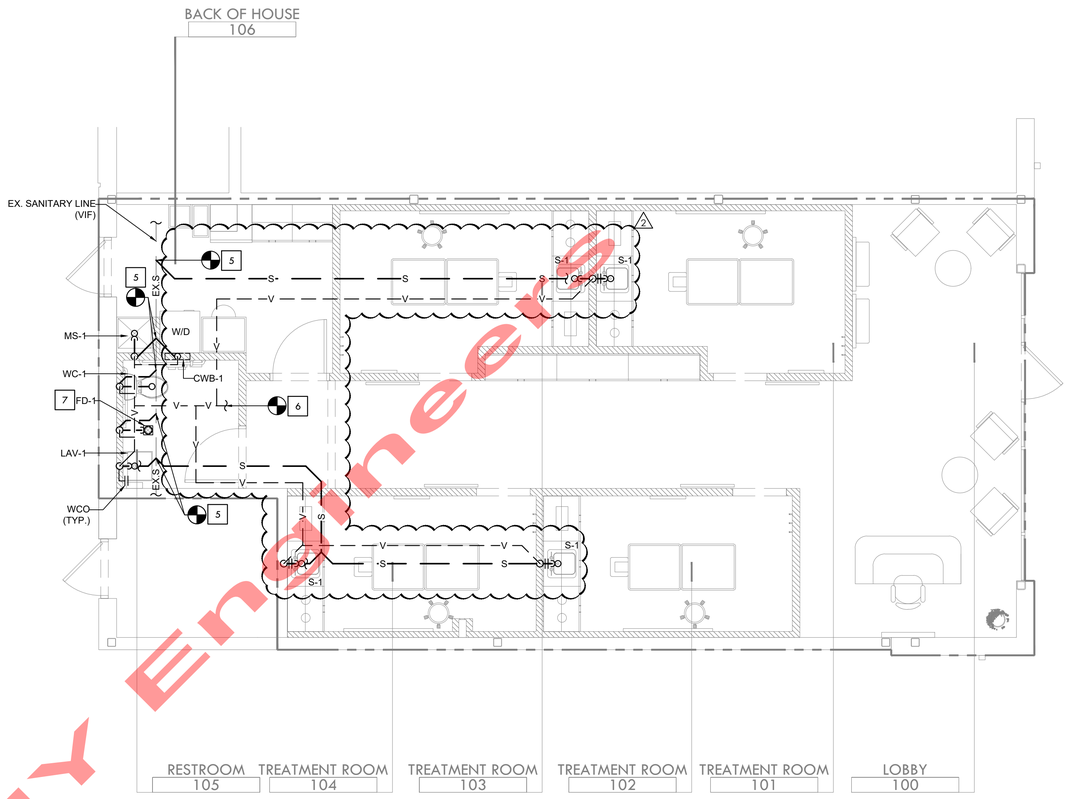
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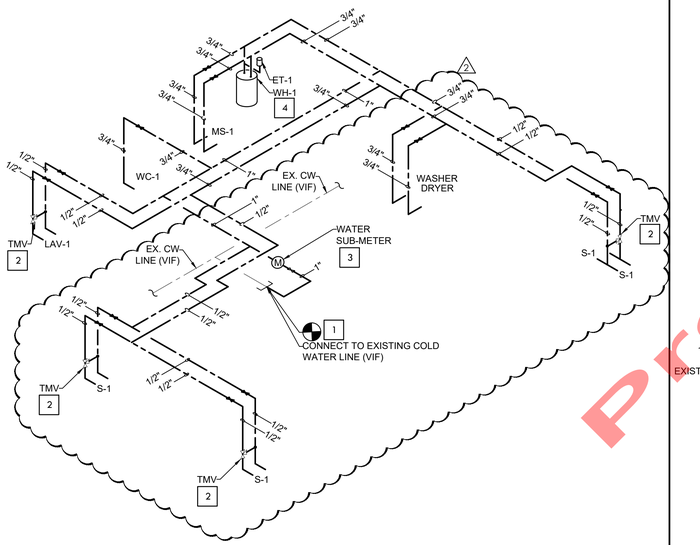
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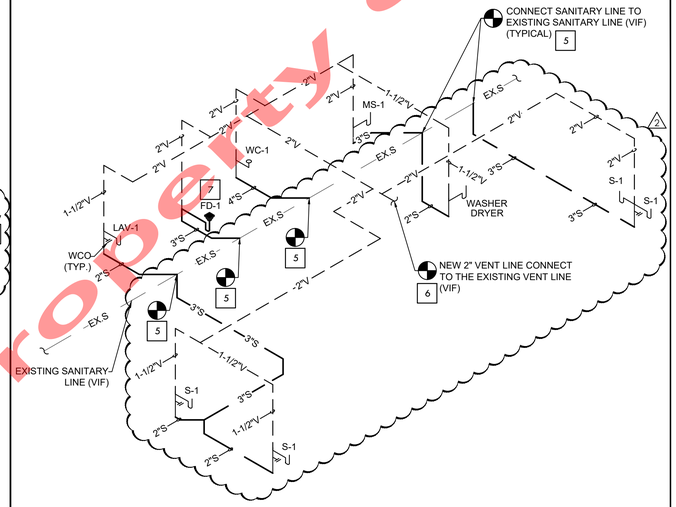
1 | SCALE 1/4" = 1' - 0" | WATER SUPPLY FLOOR PLAN



2 | SCALE 1/4" = 1' - 0" | SANITARY AND VENT FLOOR PLAN



3 | SCALE N.T.S. | WATER SUPPLY ISOMETRIC RISER



4 | SCALE N.T.S. | SANITARY AND VENT ISOMETRIC RISER

GENERAL NOTES

1. ANY CHANGES AND/ OR UPGRADES TO TENANT'S EXISTING PLUMBING SYSTEMS SHALL COMPLY WITH ALL CODES AND MALL CRITERIA. EXISTING SYSTEMS SHALL POSSESS THE CAPACITY TO HANDLE ANY AND ALL CHANGES IN LOAD.
2. ALL WATER LINES SHALL BE COPPER TUBE TYPE-L PERMITTED (OPTIONAL PIPE MATERIAL SHALL BE CPVC / PEX). THERE SHALL BE NO PIPING JOINTS OF FITTINGS INSTALLED IN WATER PIPING BELOW THE FLOOR SLAB.
3. PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS\ NECESSARY.
4. EXHAUST AND PLUMBING VENTS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE, AND 5'-0" FROM ANY DEMISING WALL VERTICAL PLANE.
5. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
6. ANY UNUSED PLUMBING EQUIPMENT, PIPING, ETC., WITHIN OR SERVING THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.
7. IF NOT ALREADY EXISTING, INSTALL A SHUT OFF VALVE ON DOMESTIC WATER LINE INSIDE SPACE.
8. TENANT IS REQUIRED TO INSTALL A WATERPROOF MEMBRANE IN ALL WET AREAS OF THE SPACE. TENANT SHALL USE A 30 MIL POLYETHYLENE CLEAVAGE MEMBRANE (EQUAL TO NOBLESEAL TS) INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND ANSI A108. MEMBRANE MUST BE EXTENDED UP THE WALL A MINIMUM OF 6" OR EQUAL TO THE HEIGHT OF THE FLOOR BASE.
9. NO ROOF PENETRATIONS PERMITTED WITHIN ROOF WATER PLY, REFER TO ROOF PLAN FOR LOCATIONS.
10. REFER TO RISER DIAGRAM FOR ALL WATER, WASTE AND VENT SIZES.
11. VERIFY WITH THE LOCAL BUILDING AUTHORITY THAT CONDENSATE DRAINAGE CAN BE ROUTED TO THE MOP SINK.
12. THE SUSPENSION OF ANY ITEMS FROM BASE BUILDING STRUCTURE BY MEANS OF DRILLING, WELDING, SHOOTING ARE PROHIBITED. CONTRACTOR TO MAKE SURE ALL THE EQUIPMENTS AND PIPES TO BE SUPPORTED BY MEANS OF THE BEAM CLAMPS.
13. ALL SANITARY PIPING CONNECTING TO AND DOWNSTREAM OF TOILETS SHALL BE 4" OR LARGER.
14. NO 90° HORIZONTAL TURNS SHALL BE USED IN THE SANITARY PIPING SYSTEM. ALL HORIZONTAL TURNS SHALL BE MADE WITH 45° ELBOWS WITH PIPE IN BETWEEN THE TWO ELBOWS.
15. COORDINATE OVERALL PIPING DIAMETER (INCLUDING INSULATION) WITH WALL DEPTH.
16. NOTIFY ARCHITECT IF OVER ALL PIPE DIAMETER EXCEEDS WALL DEPTH.
17. ALL UNDERGROUND SANITARY WASTE AND VENT PIPING SHALL BE PVC, DWV SOLID WALL SCHEDULE 40 WITH SOCKET-TYPE, SOLVENT WELDED JOINTS IN SIZES UP TO 12" / 14" AND LARGER PIPING SHALL BE PVC, DWV SOLID WALL SCHEDULE 80 WITH SOCKET TYPE, SOLVENT WELDED JOINT. ALL PVC PIPING SHALL BE INSTALLED IN ACCORDANCE TO ASTM 02321. HUBLESS CAST IRON IS THE APPROVED SUBSTITUE MATERIAL FOR DRAIN. CONTRACTOR TO CO-ORDINATE WITH THE AHJ FOR THE MATERIAL AS PER THE LOCAL AHJ.
18. ALL HORIZONTAL SANITARY AND WASTE PIPING SHALL BE SLOPED AT 1/8" PER FOOT, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, IN DIRECTION OF FLOW.
19. ALL PROPOSED POKE-THRU AND TRENCHING LOCATIONS TO BE REVIEWED AND APPROVED BY LANDLORD'S STRUCTURAL ENGINEER BEFORE CUTTING OR DRILLING IS PERMITTED.
20. PROVIDE QUARTER-TURN ISOLATION VALVES FOR ALL PLUMBING EQUIPMENTS.

PLUMBING KEYED NOTES

1. EXTEND AND CONNECT NEW 1" COLD WATER LINE TO EXISTING COLD WATER STUB-IN LINE IN THE SPACE. CONTRACTOR TO FIELD VERIFY EXISTING COLD WATER STUB-IN LOCATION & SIZE. REROUTE IF REQUIRED. BASE BID ACCORDINGLY.
2. PROVIDE APPROVED ASSE 1070 THERMOSTATIC MIXING VALVE SET TO 110°F AT LAVATORY (LAV-1) AND SINK (S-1).
3. CONTRACTOR TO COORDINATE WITH LANDLORD/AHJ REQUIREMENT OF WATER SUB-METER. PROVIDE A WATER SUB-METER IN AN ACCESSIBLE LOCATION IF REQUIRED. INSTALLED WATER SUB-METER AS PER LOCAL AHJ. BASE BID ACCORDINGLY.
4. PROVIDE STORAGE TANK TYPE ELECTRIC WATER HEATER (WH-1) WITH THERMAL EXPANSION TANK (ET-1) ASSOCIATED ACCESSORIES AND FITTINGS.
5. EXTEND AND CONNECT NEW 2"/3"/4" SANITARY PIPING TO THE EXISTING SANITARY LINE IN THE SPACE. CONTRACTOR SHALL VERIFY THE EXISTING SANITARY LINE PIPE SIZE, LOCATION, INVERT, DIRECTION OF FLOW & TIE-IN CONNECTION PRIOR TO BID.
6. EXTEND AND CONNECT NEW 2" VENT LINE TO EXISTING VENT LINE IN THE SPACE. CONTRACTOR TO FIELD VERIFY EXISTING VENT LOCATION AND SIZE PRIOR TO BID. UPGRADE SIZE IF REQUIRED. PROVIDE NEW VENT IF DOES NOT EXIST.
7. PROVIDE THE TRAP PRIMER FOR THE FLOOR DRAIN (FD-1).

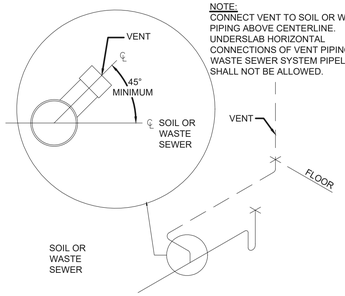
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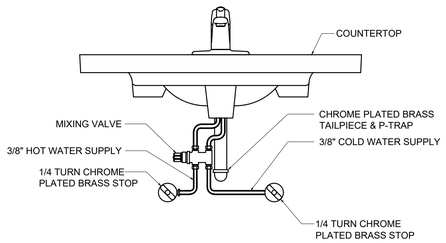
PLUMBING FLOOR PLANS, RISERS AND NOTES

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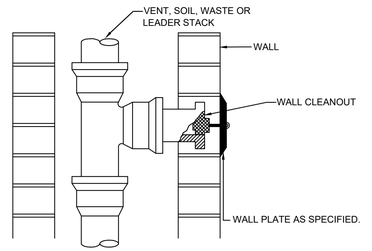
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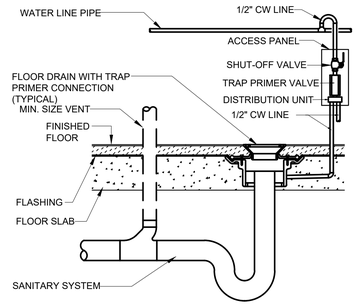
1	SCALE	VENT PIPING INSTALLATION
	N.T.S.	



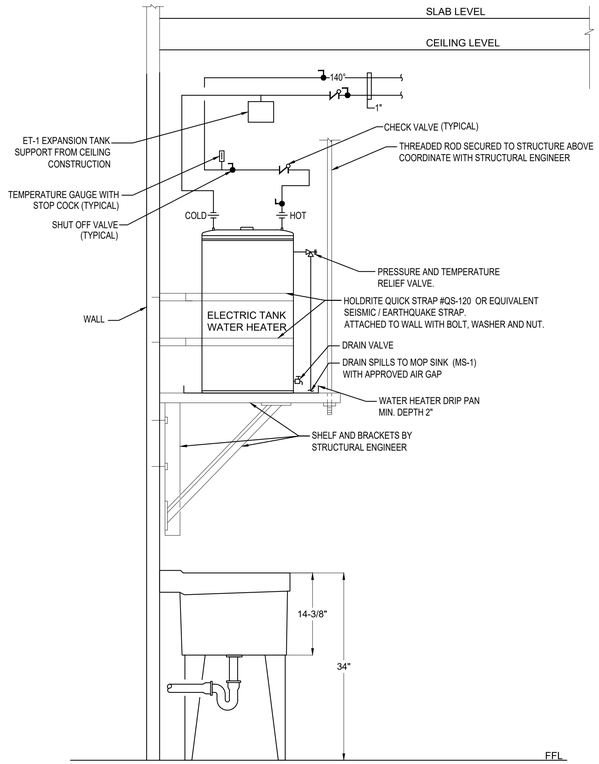
2	SCALE	MIXING VALVE DETAILS
	N.T.S.	



3	SCALE	WALL CLEAN OUT DETAIL
	N.T.S.	



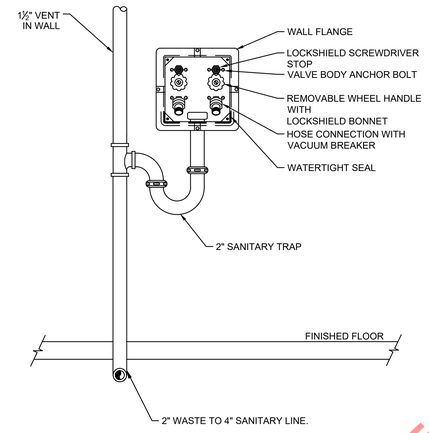
4	SCALE	FLOOR DRAIN WITH TRAP PRIMER
	N.T.S.	



WATER HEATER: AO SMITH DEL-20
DIMENSION : 21.75" D X 22.25" H
SHIPPING WEIGHT= 73.00 LBS.
CAPACITY 20 GALLONS = APPROX. WEIGHT 166 LBS

NOTE:
1. CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER FOR WATER HEATER PLATFORM.
2. WATER HEATER STRAPPING SHALL BE AT POINT WITHIN THE UPPER ONE THIRD LOWER ONE-THIRD IF ITS VERTICAL DIMENSION. AT HE LOWER POINT, A MINIMUM (1/3) AND DISTANCE OF FOUR (4) INCHES SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING.
3. PROVIDE A MINIMUM 2-INCH DEEP, 24-GAUGE MINIMUM THICKNESS GALVANIZED SHEET METAL DRIP PAN UNDER WATER HEATER AND AT ALL LOCATIONS W/ LEAK DETECTION.

5	SCALE	ELECTRIC WATER HEATER DETAILS
	N.T.S.	



6	SCALE	TYPICAL WASHER BOX DETAIL
	N.T.S.	

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE	QUANTITY	SAN / WASTE	VENT	COLD WATER	HOT WATER	HOT WATER RETURN	REMARK
MOP SINK MS-1	MOP SINK W/ LEGS FIAT MODEL FL-1 FAUCET MODEL A1	1	3"	2"	3/4"	3/4"	--	PROVIDE WITH FL1 HARDWARE PACKAGE INCLUDING DRAIN, DRAIN PLUG, LEGS, SCREW BAG, AND INSTALLATION GUIDE.
LAVATORY LAV-1	WALL HUNG LAVATORY WS BATH COLLECTIONS MODEL SIMPLE 50.50A.01	1	2"	1-1/2"	1/2"	1/2"	--	CERAMIC WHITE FINISH, SINGLE-HOLE INSTALLATION, ADA COMPLIANT KOHLER FAUCET TAUT SINGLE-HANDLE BATHROOM SINK FAUCET 1.2 GPM MODEL: K-74013-4 WITH 0.5 GPM AERATOR. 2
SINK S-1	ELKAY STAINLESS STEEL SINGLE BOWL DROP-IN BAR SINK MODEL: D19719 FAUCETS MODEL: 786-E3ABCP	4	2"	1-1/2"	1/2"	1/2"	--	SATIN FINISH, CENTER DRAIN PLACEMENT. PROVIDE ADA-COMPLIANT, DECK-MOUNTED MANUAL SINK FAUCET WITH 8" CENTERS. FAUCET INCLUDES A PRESSURE-COMPENSATING SOFTFLO AERATOR RATED AT 2.2 GPM. CHICAGO FAUCET MODEL: 786-E3ABCP. PROVIDE REQUIRED ACCESSORIES AS PER MANUFACTURER REQUIREMENT.
WATER CLOSET WC-1	FLOOR MOUNTED, KOHLER, MODEL K-20197	1	4"	2"	3/4"	--	--	PROVIDE FLOOR-MOUNTED, FLOOR-OUTLET KOHLER MAKE, MODEL K-20197 BETELLO TWO-PIECE ELONGATED TOILET WITH SKIRTED TRAPWAY. FLOW RATE: 1.28 GPF.
WASHER / DRYER W/D	WHIRLPOOL COMMERCIAL ELECTRIC STACKED WASHER / DRYER (W/D) FINISH:WHITE	1	2"	1-1/2"	3/4"	--	--	CLOTH WASHER BOX (CWB-1): OATEY MODEL 38471 FIRE RATED BOX OUTLET WITH CPVC CONNECTIONS. COORDINATE WITH THE ARCHITECT AND OWNER FOR THE FINAL SELECTION OF THE WASHER / DRYER (W/D).
FLOOR DRAIN (FD-1)	--	1	3"	2"	--	--	--	PROVIDE WITH 1/2" TRAP PRIMER TO FLOOR DRAIN (TP), WATTS TP300 OR EQUIVALENT.

NOTE :
CONTRACTOR TO CROSS REFERENCE ALL LISTED PLUMBING FIXTURES WITH ARCHITECT / OWNER PROVIDED DIP (DESIGN INTENT PACKAGE) TO ENSURE ALL PLUMBING RELATED ITEMS ARE COORDINATED PROPERLY.

EXPANSION TANK SCHEDULE

TAG	QUANTITY	LOCATION	SERVICE	TYPE	CONNECTION SIZE	MAX WORKING PRESSURE(PSI)	SHIPPING WEIGHT(LBS)	TANK VOLUME (GAL)	MAKE	REMARKS
EXPANSION TANK (ET-1)	01	HOT WATER HEATER	HOT WATER	DIAPHRAGM	¾"	150	10	2.0	AMTROL ST-5C-DD	AMTROL- THERMXTROL ASME APPROVED ST-5C-DD DIMENSIONS- 14"(H) x 8"(DIA.)

ELECTRIC TYPE HOT WATER HEATER WITH STORAGE

TAG	TOTAL NO. OF HEATERS	TEMP. SET POINT DEG. F.	RATED STORAGE (GALLONS)	MEASURED STORAGE (GALLONS)	POWER INPUT	ELECTRICAL DATA V/PH/HZ	RECOVERY CAP. (GPM/GPH) @ RISE	STORAGE WATER TEMP.	TYPE	MANUFACTURER & MODEL NO.	EFFICIENCY	REMARKS
WH-1	1	140	20	19	6 KW 2	208V/1Ø/60Hz	27 GPH @ 90°F 2	140°F	ELECTRIC STORAGE TANK TYPE WATER HEATER (ABOVE MOP SINK SHELF MOUNTED)	A.O.SMITH MODEL: DEL-20	--	-DIMENSIONS 21.75"D X 22.25"H -SHELF MOUNTED ELECTRIC WATER HEATER ABOVE MOP SINK -PROVIDE EXPANSION TANK (ET-1). -MAINTAIN CLEARANCE AS PER MANUFACTURER RECOMMENDATION -CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE

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PLUMBING DETAILS AND SCHEDULE

SHEET NUMBER:

P-2.0