MECHANICAL GENERAL NOTES

A. GENERAL CONDITIONS

1. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS (IF PROVIDED AS PART OF THE CONTRACT) ARE A PART OF THIS CONTRACT.
2. THE TERM "CONTRACTOR" SHALL MEAN THE "MECHANICAL CONTRACTOR HIRED TO COMPLETE THE WORK OUTLINED IN THESE PLANS AND SPECIFICATIONS", UNLESS OTHERWISE SPECIFIED.
3. THE CONTRACTOR FOR THIS WORK IS REQUIRED TO REVIEW ALL DRAWINGS FOR ALL OTHER TRADES.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THEIR SUBCONTRACTORS WITH A FULL SET OF BID DOCUMENTS INCLUDING SPECIFICATIONS AND MUST COORDINATE ITS WORK AND INSPECTIONS AND THE WORK AND INSPECTION OF THEIR SUBCONTRACTORS WITH ALL OTHER TRADES ON SITE TO CONFORM WITH THE GENERAL CONTRACTOR'S TIME SCHEDULE.
5. BY SUBMITTING A QUOTATION OR PROPOSAL THE MECHANICAL CONTRACTOR EXPRESSLY STATES AND WARRANTS THAT ALL DRAWINGS AND SPECIFICATIONS HAVE BEEN THOROUGHLY REVIEWED, AND THAT THIS CONTRACTOR HAS BECOME FAMILIARIZED WITH JOB SITE CONDITIONS AND IS TOTALLY QUALIFIED TO PERFORM ALL OF THE WORK REQUIRED.
6. BEFORE SUBMITTING A FINAL PROPOSAL THE CONTRACTOR SHALL EXAMINE THE SITE OF THE PROPOSED WORK TO DETERMINE THE EXISTING CONDITIONS THAT MAY AFFECT THE PROPOSAL. IF DISCREPANCIES ARE NOTED BETWEEN THE DOCUMENTS AND THE EXISTING CONDITIONS THE ARCHITECT SHALL BE NOTIFIED AND THE CONTRACTOR SHALL RECEIVE CLARIFICATION BEFORE SUBMITTING A BID. THE SUBMISSION OF A PROPOSAL SHALL INDICATE THAT ALL CHARGES AND COSTS MADE NECESSARY BY EXISTING CONDITIONS ARE INCLUDED AND THAT THE COMPLETE SYSTEM AS DESCRIBED HEREIN WILL BE FURNISHED AT THE PROPOSED COST.
   A. THE HVAC SUBCONTRACTOR IS REQUIRED TO VISIT THE SITE DURING BIDDING AND VERIFY LOCATION(S) OF WHERE DUCTWORK IS INDICATED TO BE PLACED, THEIR ROUTES AND POSSIBLE INTERSECTION(S) WITH OTHER EQUIPMENT/WORK (PLUMBING, SPRINKLER, ELECTRICAL, ETC.) TO BE INSTALLED AND/OR EXISTING TO REMAIN AND TO VERIFY HEIGHTS TO "BE INSTALLED" TO MAINTAIN DESIGNED CEILING HEIGHTS AND HEAD ROOM. ANY DISCREPANCIES BETWEEN DESIGNED AND ACTUAL ARE TO BE TOLD TO THE GENERAL CONTRACTOR AND BE INDICATED ON THE BID FORM.
7. WHEN USED, THE TERM "PROVIDED BY CONTRACTOR" SHALL BE INTERPRETED AS MEANING "FURNISHED AND INSTALLED BY CONTRACTOR" WITH THE EXCEPTION WHERE ITEMS ARE "PROVIDED BY TENANT" SHALL BE INTERPRETED AS MEANING "FURNISHED BY TENANT (INSTALLED BY CONTRACTOR)", EXCEPT WHERE NOTED OTHERWISE.

B. GENERAL REQUIREMENTS

1. THE MECHANICAL SUBCONTRACTORS QUOTING ON THEIR SPECIFIC SCOPE OF WORK/SERVICES TO CONTACT THE LOCAL BUILDING DEPARTMENT/AGENCY TO DISCUSS CODE ISSUES/IDIOSYNCRASIES REGARDING THEIR SERVICES AND THE QUOTE ASSOCIATED WITH THE SERVICES TO THE GENERAL CONTRACTOR FOR THIS PROJECT. THIS CONTRACTOR TO BE FAMILIAR WITH THE SITE WHERE SUCH SERVICES/WORK WILL BE PERFORMED, THIS SPECIFIC USE AND THE IDIOSYNCRASIES ASSOCIATED WITH THE LIFE, SAFETY AND HEALTH ASSOCIATED WITH THIS WORK AND TO INDICATE ON THE QUOTE ANY ITEMS REQUIRED THAT ARE NOT NECESSARILY SHOWN ON THE DRAWINGS/SPECIFICATIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE COMPLETE AND FULLY FUNCTIONAL MECHANICAL SYSTEMS AS SHOWN ON THE DRAWINGS, AS CALLED FOR IN THE SPECIFICATIONS (IF SUPPLIED) AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE LANDLORD SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH LANDLORD AS REQUIRED. FIELD VERIFY THE EXACT TYPE, SIZE, LOCATION, REQUIREMENTS, ETC. OF EXISTING EQUIPMENT, PIPE AND DUCTS SERVING THE TENANT SPACE PRIOR TO SUBMISSION OF BID.
3. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS NECESSARY TO COMPLETE THE WORK OR WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF THE CONTRACT.
4. WHERE THE DRAWINGS AND / OR SPECIFICATIONS CALL FOR ITEMS THAT EXCEED CODES OR THE LANDLORD'S TENANT CRITERIA, THE CONTRACTOR IS STILL RESPONSIBLE FOR PROVIDING THE SYSTEM AS DESIGNED AND DESCRIBED ON THE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.
5. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH DETAILED REQUIREMENTS OF LEASE EXTRACTS FROM THE LANDLORD AND TENANT.
6. COORDINATE LOCATIONS OF ALL AIR OUTLETS WITH ALL WALLS, LIGHTS, SPRINKLER HEADS, CEILING TILES AND DECORATIVE CEILING FIXTURES PRIOR TO INSTALLATION.
7. ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATION, SERVICE, MAINTENANCE AND REPAIR. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT ACCESS TO ALL EQUIPMENT FOR SERVICE.
8. THE CONTRACTOR SHALL DO ALL CUTTING, CORE DRILLING, CHASING, OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS CONTRACT. CUTTING SHALL HAVE PRIOR APPROVAL BY THE TENANT'S CONSTRUCTION MANAGER AND THE LANDLORD OR LANDLORD'S REPRESENTATIVE. PATCHING SHALL MATCH FINISH OF SURROUNDING AREA.

C. CODES

1. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER USING GOOD CONSTRUCTION PRACTICES. ALL WORK SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE LANDLORD'S CRITERIA; THE STATE, COUNTY AND LOCAL CODES AND ORDINANCES; THE LATEST EDITIONS OF ASHRAE STANDARDS; THE LIFE SAFETY CODE; THE APPLICABLE BUILDING CODE; UNDERWRITERS LABORATORIES; THE NATIONAL ELECTRICAL CODE; NFPA 70, 90A, AND 96; AND ALL OTHER APPLICABLE CODES ENFORCED BY AUTHORITIES HAVING JURISDICTION. THE CHANGES REQUIRED BY ANY APPLICABLE CODES SHALL BE INCLUDED IN THE BID. AFTER THE CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE TENANT TO THE CONTRACTOR.

D. LICENSES, PERMITS, INSPECTIONS AND FEES

1. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS AND FEES REQUIRED OR RELATED TO THIS WORK.
2. FURNISH TO THE TENANT'S CONSTRUCTION MANAGER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

E. DRAWINGS

1. DRAWINGS (PLANS AND SPECIFICATIONS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. BECAUSE OF THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL DUCT AND PIPE OFFSETS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED. THE MECHANICAL CONTRACTOR MUST OBTAIN APPROVED CONSTRUCTION DRAWINGS FROM THE GENERAL CONTRACTOR BEFORE BEGINNING ANY WORK.
2. THE LAYOUT SHOWN ON THE DRAWINGS IS BASED ON A PARTICULAR MAKE OF EQUIPMENT. IF ANOTHER MAKE OF EQUIPMENT IS USED WHICH REQUIRES MODIFICATION OR CHANGE OF ANY DESCRIPTION FROM THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AS PART OF THIS WORK, FOR MAKING ALL SUCH MODIFICATIONS AND CHANGES, INCLUDING THOSE INVOLVING OTHER TRADES WITH THE COST THEREOF INCLUDED IN THE BID. IN SUCH CASE, CONTRACTOR SHALL SUBMIT DRAWINGS AND SPECIFICATIONS PRIOR TO STARTING WORK SHOWING ALL SUCH MODIFICATIONS AND CHANGES. THE PROPOSAL SHALL BE SUBJECT TO THE APPROVAL OF THE TENANT'S CONSTRUCTION MANAGER.

F. EXISTING LEASE SPACE CONDITIONS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING MECHANICAL WORK IN THE SPACE NOT SHOWN TO BE REUSED IN THE NEW TENANT SPACE.
2. THE CONTRACTOR, IN REGARDS TO ANY SAW CUTTING, CORE DRILLING OR ANY PENETRATING OF A CONCRETE SLAB, FLOOR AND/OR ROOF, IS REQUIRED TO SURVEY DURING BIDDING TO DETERMINE ANY ISSUES, INCLUDING BUT NOT LIMITED TO, NECESSITY OF X-RAYING OF A CONCRETE SLAB, WHERE SUCH MATERIAL BEING PENETRATED IS NOT PROJECTED AND/OR ROUTED INTO A SPACE(S) THAT CREATES A NON-CODE COMPLIANT CONDITION, THE NEED FOR WEATHER STRIPPING, WATERPROOFING OR OTHER CONDITION AND TO NOTIFY THE OWNER IF A PROBLEM(S) MAY EXIST AND TO INCLUDE COSTS TO SOLVE THE ISSUE UNCOVERED, IN ADDITION TO, NOTIFYING THE ARCHITECT OF RECORD REGARDING SUCH ISSUE(S).
3. ACTIVE LANDLORD OR OTHER TENANT SERVICES ENCOUNTERED IN WORK SHALL BE PROTECTED AND SUPPORTED. IF EXISTING SERVICES NOT ANTICIPATED REQUIRE RELOCATION, CONTACT THE TENANT'S CONSTRUCTION MANAGER IMMEDIATELY. ALL COSTS FOR REPAIR OF DAMAGES TO ACTIVE LANDLORD OR OTHER TENANT SERVICES DURING CONSTRUCTION SHALL BE PAID FOR BY THE CONTRACTOR CAUSING THE DAMAGE.
4. TIE-INS AND MODIFICATIONS TO EXISTING LANDLORD SERVICES MUST BE DONE WITH MINIMUM INTERRUPTION OF LANDLORD OPERATION AND DURING HOURS SPECIFIED BY THE LANDLORD. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING EXACT WORKING HOURS OF THIS WORK WITH THE LANDLORD PRIOR TO SUBMITTING THEIR BID. THE CONTRACTOR SHALL INCLUDE IN THEIR BID, ALL PREMIUM TIME REQUIRED TO PERFORM MODIFICATIONS DURING OTHER THAN NORMAL WORKING HOURS. ALL SUCH WORK MUST BE COORDINATED WITH THE LANDLORD.
5. EQUIPMENT AND MATERIALS IN TRANSIT SHALL UTILIZE FREIGHT ELEVATOR OR STAIRS. SAID EQUIPMENT OR MATERIALS SHALL BE DISASSEMBLED AS REQUIRED TO MEET THE RESTRICTIONS IMPOSED BY THE BUILDING OR ITS COMPONENT CONSTRAINTS AND THEN REASSEMBLED IN THE NEW WORK AREA.
6. ALL WORK SHALL BE DONE WITH A MINIMUM OF NOISE AND DISTURBANCE TO BUSINESS ROUTINE. ALL WORK SCHEDULES SHALL BE COORDINATED WITH, AND APPROVED BY, THE TENANTS CONSTRUCTION MANAGER.
7. SINCE THESE ARE SECURE FLOORS, ALL DELIVERIES, WORKERS, WORK OPERATORS, ETC., REQUIRED BY THE CONTRACTOR FOR WORK PERFORMED IN ANY AREA OR SITE BUILDING SHALL BE IN STRICT CONFORMANCE TO THE RULES AND REGULATIONS OF THE OWNER.
8. CONTRACTOR SHALL PROTECT THEIR WORK AND EQUIPMENT FROM DAMAGE, VANDALS, ETC. ANY ITEM THAT IS DAMAGED, VANDALIZED OR STOLEN PRIOR TO ACCEPTANCE OF BUILDING BY OWNER AND ARCHITECT SHALL BE REPLACED BY RESPECTIVE CONTRACTOR AT NO CHARGE TO TENANT.
9. IT IS SPECIFICALLY THE INTENTION OF THIS SPECIFICATION TO HOLD THE CONTRACTOR RESPONSIBLE FOR ALL DAMAGE DONE TO ANY EXISTING FACILITIES, EQUIPMENT, PAINTING, OR ARCHITECTURAL AND STRUCTURAL FEATURES OF THE BUILDING, BY EITHER THEIR OWN WORKMEN OR BY ANY OF THEIR SUBCONTRACTORS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY THEIR OWN WORKMEN OR SUBCONTRACTORS AND THE OWNER AT THEIR DISCRETION, MAY WITHHOLD PAYMENTS EQUAL TO THE REASONABLE COST OF THE REPAIRS.
10. THIS CONTRACTOR OR THEIR WORKMEN SHALL NOT BE PERMITTED TO USE ANY PART OF THE EXISTING BUILDING AS A SHOP WITHOUT THE APPROVAL OF THE OWNER AND ARCHITECT.
11. WHERE THE WORK MAKES TEMPORARY SHUTDOWN OF SERVICES UNAVOIDABLE, THEY SHALL BE MADE AT NIGHT OR AT SUCH TIMES AS WILL CAUSE THE LEAST INTERFERENCE WITH THE ESTABLISHED OPERATING ROUTINE.
12. THIS CONTRACTOR SHALL ARRANGE THE WORK SO AS TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTION TO THE EXISTING WORK. THIS CONTRACTOR SHALL GIVE AMPLE WRITTEN NOTICE IN ADVANCE TO THE OWNER OF ANY REQUIRED SHUT DOWN.
13. ALL MOTORS, FANS, CONTROLS, FIXTURES, HVAC UNIT, DUCTWORK AND OTHER EQUIPMENT FOR USE IN THIS CONTRACT SHALL BE PROTECTED BY TARPAULIN OR BY BOXING AS SOON AS DELIVERED TO THE SITE AND SHALL BE KEPT CLEAN AND DRY. THE MOTORS, UNITS, FIXTURES, FANS, DUCTWORK AND MOVING PARTS SHALL BE KEPT COVERED SO AS TO ELIMINATE DIRT, DUST AND OTHER MATERIALS ENTERING THE PARTS DURING ERECTION AND CONSTRUCTION WORK ON THE BUILDING. SHOULD IT BE FOUND THAT ANY PARTS ARE DAMAGED DUE TO CARELESSNESS ON THE PART OF THE CONTRACTOR IN NOT PROVIDING PROPER PROTECTION, SUCH PART OR PARTS SHALL BE REPLACED BY THE CONTRACTOR AT THEIR OWN COST AND EXPENSE. ALL OPENINGS IN DUCTS, PIPING, CONDUITS, ETC., SHALL BE PROPERLY PROTECTED WITH TEMPORARY CAPS OR PLUGS AT ALL TIMES.

G. DISCREPANCIES IN DOCUMENTS

1. DRAWINGS (PLANS, SPECIFICATIONS AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWING, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE GENERAL CONTRACTOR IN WRITING, PRIOR TO SUBMITTAL OF BID. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ADVISE THE TENANT'S CONSTRUCTION MANAGER, IN WRITING, OF VARIATIONS TO THE CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, TENANT'S CONSTRUCTION MANAGER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

H. TRADE NAMES AND MANUFACTURERS

1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM STANDARD FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUIVALENT OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO REVIEW IN WRITING BY THE TENANT'S CONSTRUCTION MANAGER PRIOR TO ACCEPTANCE. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

I. SHOP DRAWINGS

1. SUBMIT THREE COPIES OF MATERIAL LISTS AND SHOP DRAWINGS FOR ALL EQUIPMENT AND DUCT FABRICATION DRAWINGS TO THE TENANT'S CONSTRUCTION MANAGER FOR REVIEW PRIOR TO ORDERING EQUIPMENT. SUBMISSIONS MUST BE EARLY ENOUGH TO ALLOW THE TENANT'S CONSTRUCTION MANAGER EIGHT WORKING DAYS FOR REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BE IN ACCORDANCE WITH THE GENERAL CONDITIONS USING THE MANUFACTURER'S LISTED ON THE DRAWINGS. SHOP DRAWINGS SHALL INCLUDE ALL DATA THAT PERTAINS TO THE REQUIREMENTS SET FORTH ON THE DRAWINGS AND IN THE SPECIFICATIONS. THE SUBMITTAL SHALL INCLUDE BUT NOT BE LIMITED TO CUTS OR CATALOGS INCLUDING DESCRIPTIVE LITERATURE AND CHARACTERISTICS OF EQUIPMENT SHALL SHOW MAJOR DIMENSIONS, ROUGHING-IN DATA, CAPACITY, CURVES, PRESSURE DROPS, CODE COMPLIANCE, MOTOR AND DRIVE DATA AND ELECTRICAL DATA. OBSERVE SPECIAL INSTRUCTIONS WHEN REQUIRED. SUBMITTALS SHALL BEAR THE STAMP OF THE GENERAL AND SUBCONTRACTOR SHOWING THAT HE HAS REVIEWED AND CONFIRMED THAT THEY ARE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS OR INDICATE WHERE EXCEPTIONS TAKE PLACE. LACK OF SUCH CONTRACTOR'S REVIEW WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY TENANT'S CONSTRUCTION MANAGER. ALL SHOP DRAWINGS MUST APPEAR IN THE OPERATION AND MAINTENANCE MANUALS LEFT ON SITE AT JOB COMPLETION.
   A. BY SUBMITTING SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS, THE CONTRACTOR REPRESENTS TO THE CLIENT AND ARCHITECT THAT THE CONTRACTOR HAS (1) REVIEWED AND APPROVED THEM, (2) DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA RELATED THERETO, OR WILL DO SO AND (3) CHECKED AND COORDINATED THE INFORMATION CONTAINED WITHIN SUCH SUBMITTALS WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.
   B. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK FOR WHICH THE CONTRACT DOCUMENTS REQUIRE SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTAL HAS BEEN APPROVED BY THE ARCHITECT.
   C. THE WORK SHALL BE IN ACCORDANCE WITH APPROVED SUBMITTALS EXCEPT THAT THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY ANY APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE CLIENT IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMITTAL AND
      C.1. THE ARCHITECT HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION AS A MINOR CHANGE IN THE WORK, OR
      C.2. A CHANGE ORDER OR CONSTRUCTION CHANGE DIRECTIVE HAS BEEN ISSUED AUTHORIZING THE DEVIATION.
      C.3. THE CONTRACTOR SHALL DIRECT SPECIFIC ATTENTION IN WRITING OR ON RESUBMITTED SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS, TO REVISIONS OTHER THAN THOSE REQUESTED BY THE ARCHITECT ON PREVIOUS SUBMITTALS. IN THE ABSENCE OF SUCH WRITTEN NOTICE, THE ARCHITECT'S APPROVAL OF A RESUBMISSION SHALL NOT APPLY TO SUCH REVISIONS.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND / OR THEIR SUBCONTRACTORS TO FURNISH SHOP DRAWINGS AND SUBMITTALS ON ANY AND ALL EQUIPMENT, DUCT, DAMPERS, CONTROLS ETC. TO THE TENANT'S CONSTRUCTION MANAGER OR ARCHITECT FOR THEIR REVIEW PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS, OMISSIONS OR OTHER DEFICIENCIES OR DEVIATIONS IN SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS BY THE TENANT'S CONSTRUCTION MANAGER'S OR ARCHITECT'S APPROVALS THEREOF.

J. RECORD DRAWINGS

1. THE CONTRACTOR SHALL MAINTAIN ONE COPY OF DRAWINGS AND SPECIFICATIONS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS LOCATIONS OF CONCEALED PIPING VALVES AND DUCTS, REVISIONS, ADDENDUM'S AND CHANGE ORDERS, SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS AND CONTRACTOR'S COORDINATION WITH OTHER TRADES AND EXACT ROUTING OF ALL SANITARY AND DOMESTIC WATER PIPING UNDER FLOOR.
2. AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, THE CONTRACTOR SHALL MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. THE DRAWINGS ARE TO BE TURNED OVER TO THE TENANT.

K. GUARANTEE, WARRANTY

1. THE MECHANICAL CONTRACTOR SHALL INCLUDE IN THE PROPOSAL A ONE YEAR GUARANTEE, WARRANTY ON ALL EQUIPMENT AND MATERIAL INSTALLED OR REFURBISHED, ALL MATERIALS AND WORK UNDER THE CONTRACT AND SHALL MAKE GOOD, REPAIR, OR REPLACE AT THEIR OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF WRITTEN ACCEPTANCE OF THE INSTALLATION BY THE TENANT'S CONSTRUCTION MANAGER. IN CASE OF REPLACEMENT OR REPAIR OF EQUIPMENT DUE TO FAILURE WITHIN THE GUARANTEE PERIOD, THE GUARANTEE ON THAT PORTION OF WORK SHALL BE EXTENDED FOR A PERIOD OF 12 MONTHS FROM THE DATE OF SUCH REPLACEMENT OR REPAIR. THIS GUARANTEE, WARRANTY IS TO INCLUDE ALL LABOR, MATERIAL, PARTS, ETC. NECESSARY TO MAINTAIN THE SYSTEM IN SATISFACTORY OPERATION FOR A PERIOD OF ONE YEAR STARTING FROM THE DATE OF ACCEPTANCE OF THE SYSTEM BY THE TENANT. IT SHALL ALSO INCLUDE ONE SUMMER TO WINTER CHANGEOVER AND ONE WINTER TO SUMMER CHANGEOVER, A NEW SET OF FILTERS AT THE TIME OF STARTUP AND TWELVE (12) MONTHLY FILTER CHANGES DURING THE FIRST YEAR. THE NORMAL PREVENTATIVE MAINTENANCE WORK SHALL BE PERFORMED AT THE TIME OF THE FILTER CHANGES. USE ONLY #40 PLEATED TYPE AIR FILTERS.

L. OPERATIONS MANUALS

1. ONE COPY OF EACH OPERATION AND MAINTENANCE MANUAL FOR ALL EQUIPMENT FURNISHED ON THE JOB SHALL BE PROVIDED TO THE TENANT BOUND TOGETHER IN A 3 INCH, THREE RING BINDER. THE BINDER SHALL INCLUDE BUT NOT BE LIMITED TO INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS, PAMPHLETS OR BROCHURES, REVIEWED SHOP DRAWINGS AND WARRANTIES OBTAINED FROM EACH MANUFACTURER OF PRINCIPAL ITEMS OF EQUIPMENT.

M. SLEEVES

1. THE CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL, OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR.
2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND / OR FLOORS SHALL BE FIRE SEALED WITH APPROVED SEALANTS RATED FOR THE APPLICATION SO AS TO MAINTAIN THE FIRE RATING OF THE ASSEMBLY. CONFORM TO THE U.L. ASSEMBLY RATING OF THE FLOOR OR WALL.
3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE 22 GAUGE GALVANIZED STEEL MINIMUM.
4. DUCT SLEEVES SHALL BE MINIMUM 14 GAUGE STEEL.

N. HANGERS

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC. NECESSARY FOR THE INSTALLATION OF WORK.
2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING OR DUCTWORK. DUCTWORK SHALL NOT BE SUPPORTED FROM ROOF DECKING AND/OR BRIDGING, BUT SHALL BE SUSPENDED FROM THE TOP CHORD OF BAR JOISTS, STEEL OR OTHER STRUCTURE. DUCTWORK SHALL CLEAR ALL SPRINKLERS AND OTHER OBSTACLES AND SHALL BE HUNG AS HIGH AS POSSIBLE IN WORK AND STORAGE AREAS. WHERE INTERFERENCE'S OCCUR, IN ORDER TO SUPPORT DUCTWORK OR PIPING, THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, ACCESS DOORS AND OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES. HANGER TYPES AND INSTALLATION METHODS ARE SUBJECT TO LANDLORD CRITERIA.
3. HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6 INCH LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.
4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED FROM ONE ANOTHER.

O. ACCESS DOORS

1. FURNISH STEEL ACCESS DOORS AND FRAMES, MINIMUM 16 INCHES BY 20 INCHES OR AS REQUIRED FOR ADEQUATE ACCESS TO THE GENERAL CONTRACTOR FOR ALL LOCATIONS WHERE NECESSARY TO PROVIDE ACCESS TO CONCEALED VALVES AND OTHER EQUIPMENT REQUIRING SERVICE OR INSPECTION. LOCATION, TYPE, SIZE AND NUMBER WILL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE TENANT CONSTRUCTION MANAGER TO SUIT EQUIPMENT REQUIREMENTS. GENERAL CONTRACTOR WILL INSTALL ACCESS DOORS AND FRAMES.
2. ACCESS DOORS LOCATED IN FIRE-RATED WALLS, FLOORS, CEILING-FLOOR, OR CEILING-ROOF ASSEMBLIES SHALL BE FIRE RATED, U.L. LISTED AND LABELED.
3. ACCESS DOORS SHALL BE FLUSH TYPE, MANUFACTURED FROM 14 GAUGE STEEL, COMPLETE WITH FLUSH FLANGE TYPE FRAMES MANUFACTURED FROM 16 GAUGE STEEL, PROVIDED WITH ANCHORS. ACCESS DOORS SHALL BE SUITABLE FOR INSTALLATION IN WALL OR CEILING MATERIALS SHOWN IN ROOM FINISH SCHEDULES. PROVIDE ACCESS DOORS FOR ALL CONCEALED VALVES, VENTS, DAMPERS, FIRE DAMPERS, EXPANSION JOINTS, PULL BOXES, SHOCK ABSORBERS, DRAINS, MOTORS, FANS, PUMPS AND ANY OTHER ITEM REQUIRING SERVICE. DOORS IN PLASTER OR CONCRETE SURFACES SHALL HAVE A RECESSED DOOR WITH CONCRETE OR PLASTER FACING. DOORS IN CARPETED OR TILED AREAS SHALL BE RECESSED WITH TILE FACING. NO ACCESS DOORS ARE REQUIRED IN 2' x 2' AND 2' x 4' LAY-IN ACOUSTIC TILE CEILING. PROVIDE COLORED PINS TO DENOTE ACCESS TILES. FURNISH FACTORY MADE METAL ACCESS DOORS, COMPLETELY FLUSH, "ALLAN HEAD" SCREWDRIVER OPERATED, WITH FRAMES AND CAM-TYPE CATCH WITH STAINLESS STEEL STUD. DOORS SHALL BE NOT LESS THAN 1' x 1' FOR HAND ACCESS. DOORS IN WALLS AND CEILING SHALL BE PRIME COATED CARBON STEEL. FURNISH FIRE RATED DOORS FOR FIRE RATED CONSTRUCTION. RATING OF DOOR MUST BE SAME RATING AS CONSTRUCTION.

P. ELECTRIC MOTORS

1. FURNISH, INSTALL AND ALIGN ALL MOTORS REQUIRED FOR THIS EQUIPMENT, UNLESS THEY ARE FACTORY INSTALLED ON THE UNIT. ALL STARTERS AND ASSOCIATED WIRING AND SAFETY SWITCHES FOR SUCH MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS SHALL MEET ALL REQUIREMENTS AS DEFINED IN THE ELECTRICAL SPECIFICATIONS.
2. DESIGN, CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF MOTORS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF LATEST NEMA, ANSI, ISEE STANDARDS FOR ELECTRICAL EQUIPMENT. ALL MOTORS SHALL BE SUITABLE FOR OPERATION ON VOLTAGE VARIATION OF PLUS OR MINUS 10 PERCENT, 40 DEGREES C AMBIENT TEMPERATURE AND HAVE A SERVICE FACTOR OF NOT LESS THAN 1.15.

Q. LOW VOLTAGE (24 VOLT) WIRING

1. THE CONTRACTOR IS TO INSTALL ALL LOW VOLTAGE WIRING REQUIRED FOR THEIR EQUIPMENT. THIS WORK INCLUDES ALL TRANSFORMERS AND DEVICES TO MAKE THIS A COMPLETE FUNCTIONAL SYSTEM.
2. ALL WORK IS TO CONFORM TO THE ELECTRICAL SPECIFICATIONS AND THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
3. ANY CONDUIT REQUIRED BY CODE OR THE LANDLORD WILL BE INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.
4. SMOKE DETECTORS AND REMOTE TEST STATION:
   A. IONIZING TYPE ARE TO BE USED ON THE RETURN SIDE OF THE AHU AND PHOTO-TYPE ARE TO BE USED ON THE SUPPLY SIDE. ON ALL OTHER TYPES OF HVAC UNITS WHERE SMOKE DUCT DETECTORS ARE REQUIRED, USE FIELD INSTALLED IONIZING TYPE IN RETURN DUCTWORK AND PHOTO-TYPE ON THE SUPPLY LOCATED BEFORE THE FIRST TAKEOFF. ONCE ACTIVATED, THE SMOKE DETECTOR WILL SHUT DOWN HVAC UNIT.
   B. SMOKE DETECTORS SHALL HAVE THEIR OWN REMOTE KEY TEST STATION SYSTEM WITH AUDIBLE AND VISUAL ALARM, SIMPLEX MODEL 4098-9842 OR APPROVED EQUIVALENT. ALARM TO HAVE CANDELA SETTING OF 75 AND A HIGH VOLUME HORN TONE SETTING.
   C. ALARM SYSTEM MAY BE DELETED WHERE NOT REQUIRED BY LANDLORD OR BY LOCAL CODE.

--SPECIFIC NOTES --

A. HEATING, VENTILATION AND AIR CONDITIONING

1. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE AND INTEGRATE THE VARIOUS ELEMENTS OF THE HVAC SYSTEM, MATERIALS AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCE'S AND CONFLICTS.

B. HVAC EQUIPMENT (REFER TO PLANS FOR SCHEDULE OF EQUIPMENT)

1. PRIMARY HVAC UNITS ARE TO BE AS SCHEDULED. EQUIVALENTS MAY BE SUBSTITUTED WITH WRITTEN APPROVAL ONLY.
2. ALL EQUIPMENT SHALL BE COMPLETE IN EVERY RESPECT WITH ALL DEVICES, APPURTENANCES AND ACCESSORIES PROVIDED TO MEET THE DESIGN INTENT AND OPERATION OF THE SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED.
3. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL AIR CONDITIONING EQUIPMENT MUST HAVE A CONDENSATE DRAIN AND BE TRAPPED IN ACCORDANCE WITH MANUFACTURER'S DATA. SEE DRAWINGS FOR ADDITIONAL DETAILS.
4. SECONDARY DRAIN PANS ARE REQUIRED TO BE INSTALLED BENEATH ALL INDOOR AIR CONDITIONING EQUIPMENT WITH THE EXCEPTION OF AIR TERMINAL BOXES. SECONDARY PANS ARE TO PROTECT ENTIRE UNIT. PROVIDE CONDENSATE PUMPS AS REQUIRED. CONDENSATE SHALL BE DIRECTED TO MOP SINK, LAVATORY TRAP OR OTHER APPROVED DRAIN.

C. TOILET EXHAUST FANS

1. WHERE SHOWN ON DRAWINGS PROVIDE A TOILET EXHAUST FAN COMPLETE WITH GRAVITY BACKDRAFT DAMPER. ALL DUCTWORK, ROOF OPENINGS AND CAPS NECESSARY TO PROVIDE A COMPLETE EXHAUST SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR. REFER TO PLANS FOR APPLICABILITY.

D. VIBRATION ISOLATION DEVICES

1. VIBRATION ISOLATION DEVICES SHALL BE PROVIDED IN ALL SUPPORTS BETWEEN VIBRATING EQUIPMENT (FANS, ROOFTOP UNITS, WATER SOURCE HEAT PUMPS, AIR HANDLERS, FAN POWERED VAV BOXES, ETC.) AND STRUCTURE.
2. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES. VIBRATING EQUIPMENT SUPPORTED FROM FLOOR OR DECK SHALL BE ISOLATED WITH HOUSED SPRING MOUNT DEVICES.
3. EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES. ADJUST FOR PROPER ALIGNMENT AND LOADING. AVOID "GROUNDING" THE ISOLATOR.
4. CHECK HANGER ROD SIZE FOR ALLOWABLE LOADS AT THE ISOLATING DEVICE AND THE UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC.
5. CONSULT MANUFACTURER FOR APPLICATION DATA.

E. CURBS AND STEEL FRAMING FOR SUPPORT

1. THIS CONTRACTOR WILL PROVIDE ALL NECESSARY CURBS AND STEEL FRAMING REQUIRED TO INSTALL ALL HVAC EQUIPMENT. CURBS SHALL BE A MINIMUM OF 14 INCHES HIGH AND OF THE SAME MANUFACTURER AS THE EQUIPMENT SUPPORTED. INSULATE UNDER THE COMPRESSOR SECTION TO PREVENT CONDENSATION. ALL CURBS MUST BE INSTALLED SO THAT THE TOP OF CURBS ARE "DEAD" LEVEL. ALL PENETRATIONS OF EXISTING STRUCTURE SHALL BE DONE IN ACCORDANCE WITH THE LANDLORD'S GUIDELINES AT THIS CONTRACTOR'S EXPENSE. ALL CONNECTIONS TO ROOFTOP EQUIPMENT SHALL BE INSIDE THE CURB (CONDENSATE DRAIN, POWER WIRING, CONTROL WIRING, ETC.).

F. METAL DUCTWORK - NO FIBERGLASS DUCT ALLOWED

1. NO DUCTWORK SHALL BE FABRICATED PRIOR TO APPROVAL BY THE TENANT'S CONSTRUCTION MANAGER. DEVIATIONS FROM DESIGN MUST BE APPROVED BY TENANT'S CONSTRUCTION MANAGER PRIOR TO FABRICATION OR INSTALLATION. ALL DUCT SHOWN AS ROUND ABOVE A CEILING SHALL BE LONGITUDINAL SEAM DUCT AND SPIRAL WHERE EXPOSED, OR AS SHOWN ON THE DRAWINGS.
2. ALL DUCTWORK SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SMACNA LOW VELOCITY AND "HVAC DUCT CONSTRUCTION STANDARDS MANUAL", LATEST EDITION AND ASHRAE USING PRIME SHEETS OF GALVANIZED STEEL. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS AND JOINT TYPES AND INTERVALS. ALL SQUARE ELBOWS SHALL BE PROVIDED WITH DOUBLE WALLED VANES ON MAXIMUM 3" CENTERS. PROVIDE SEAL CLASS "C" ON ALL TRAVERSE JOINTS UNLESS SUPERSEDED BY MORE STRINGENT LOCAL CODES. ALL DUCT CONNECTIONS ARE TO BE RIGID AND LEAK FREE ASSEMBLIES.
3. DURING THE CONSTRUCTION PHASE OF THE PROJECT, ANY DUCTWORK INSTALLED IS TO BE COMPLETELY SEALED UP OF ANY OPENINGS, EITHER AT THE BEGINNING OR END OF A DUCT RUN OR AT A BRANCH, COLLAR DIFFUSER OR REGISTER TO AVOID DIRT OR OTHER CONTAMINANTS FROM ENTERING THE SYSTEM.
4. EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO 2-INCH WATER GAUGE PRESSURE CLASSIFICATION (VERIFY WHETHER RETURN OR EXHAUST DUCT IS POSITIVE OR NEGATIVE PRESSURE). PRESSURE TEST DUCTS FOR LEAKAGE. REMAKE LEAKING JOINTS AND APPLY SEALANTS AS REQUIRED TO FABRICATE A SYSTEM THAT DOES NOT EXCEED 5 PERCENT LEAKAGE OR LESS AS STATED BY PRESSURE CLASS RATINGS IN SMACNA STANDARDS.
5. AS A MINIMUM, CROSSBREAK ALL FLAT SURFACES OR REINFORCE WITH A BEAD APPROXIMATELY 3/8 INCH WIDE BY 3/16 INCH DEEP ON 12 INCH CENTERS TO PREVENT VIBRATIONS.
6. INSTALL RIGID ROUND AND RECTANGULAR METAL DUCT WITH SUPPORT SYSTEMS INDICATED IN SMACNA STANDARDS. NO WOOD SHALL BE USED TO SUPPORT OR BRACE DUCTS. PROVIDE SWAY AND SEISMIC BRACING AS REQUIRED BY STATE AND LOCAL CODES OR BY LANDLORD.
7. WHERE DUCTS PASS THROUGH ROOFS, FLOORS AND FIRE RATED PARTITIONS, PROVIDE AS MINIMUM 1-1/2 INCH BY 1-1/2 INCH BY 1/8 INCH STEEL ANGLE FRAMES AT EACH SIDE OF OPENING. THE ANNULAR SPACE BETWEEN DUCT AND ANGLE FRAMES SHALL BE CAULKED WITH SILICONE SEALANT OR FIREPROOFED AS REQUIRED BY THE ASSEMBLY FIRE RATING. CONTRACTOR TO PROVIDE FIRE OR COMBINATION FIRE / SMOKE DAMPERS AT EACH PENETRATION WHERE REQUIRED BY CODE.
8. ALL TRAVERSE JOINTS AND SEAMS IN SUPPLY AIR DUCT SHALL BE SEALED AIR-TIGHT WITH DAP CMC DUCT SEALER. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS.
9. SOFT ELASTOMER BUTYL GASKETS WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.
10. DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE.
11. PROVIDE ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, FIRE / SMOKE DAMPERS, CONTROLS AND OTHER ITEMS IN DUCTWORK THAT REQUIRE SERVICE OR INSPECTION. IF THE ACCESS PANEL LOCATION IS EXPOSED TO THE SALES AREA, IT MUST BE APPROVED BY THE TENANT'S CONSTRUCTION MANAGER PRIOR TO INSTALLATION. LAY-IN SUPPLY AND RETURN AIR DIFFUSERS, GRILLES AND REGISTERS WITH PLASTER FRAMES MAY BE USED AS ACCESS LOCATIONS.
12. ALL BRANCHES AND TAKEOFFS SHALL BE EQUIPPED WITH MANUAL VOLUME CONTROLLING DEVICES HAVING AN INDICATING AND LOCKING DEVICE.

G. FLEXIBLE CONNECTIONS

1. FLEXIBLE COLLARS SHALL BE PROVIDED IN ALL CONNECTIONS BETWEEN VIBRATING EQUIPMENT (FANS, ROOFTOP UNITS, WATER SOURCE HEAT PUMPS, AIR HANDLERS, FAN POWERED VAV BOXES, ETC.) AND DUCTS OR CASINGS. ALSO PROVIDE FLEXIBLE CONNECTIONS WHERE DUCTS CROSS BUILDING EXPANSION JOINTS.
2. FLEXIBLE CONNECTIONS SHALL BE CONSTRUCTED OF NEOPRENE-COATED FLAMEPROOF FABRIC. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR MOVEMENT AND PREVENT THE TRANSMISSION OF VIBRATION.
3. FLEXIBLE CONNECTIONS ARE TO BE RATED FOR THE OPERATING PRESSURE OF THE SYSTEM.
4. FINAL CONNECTIONS TO EXHAUST FAN(S) SHALL BE WITH A HEAVY AIRTIGHT ACID RESISTANT FIRE RETARDANT FIBERGLASS NEOPRENE CONNECTOR, A MINIMUM OF SIX (6) INCHES IN LENGTH. THE CONNECTOR SHALL BE FASTENED TO EQUIPMENT AND DUCT WITH TWO FLEXIBLE REMOVABLE BRASS STRAPS OR ALTERNATE APPROVED METHOD.

H. THERMOSTATS

1. MOUNT THERMOSTATS 4'-0" (ADA-COMPLIANT), THERMOSTAT SENSORS 5'-0" ABOVE FINISHED FLOORS, OR AS SHOWN ON THE PLANS, AND SET DATE, TIME, TEMPERATURE, ETC. TURN OVER OPERATING INSTRUCTIONS TO TENANT REPRESENTATIVE.

I. FIRE DAMPERS, SMOKE DAMPERS

1. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL FIRE DAMPERS AS REQUIRED BY LANDLORD AND / OR TENANT CRITERIA AND / OR CODES HAVING JURISDICTION. ALL FIRE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE BOARD OF FIRE UNDERWRITERS, THE LOCAL FIRE MARSHAL AND SHALL BE LABELED AND APPROVED BY UNDERWRITERS LABORATORIES.
2. FIRE DAMPERS SHALL HAVE THE BLADES OUT OF THE AIR STREAM AND A 165- DEGREE 'F' FUSIBLE LINK.
3. PROVIDE ALL NECESSARY FRAMING AND SLEEVES FOR DAMPER MOUNTING PER UL AND CODE REQUIREMENTS.
4. PROVIDE DUCT ACCESS DOORS IN AN ACCESSIBLE LOCATION FOR ALL FIRE DAMPERS. DOOR IS TO BE 20-GAUGE GALVANIZED DOOR WITH QUICK-OPENING LATCH AND PIANO HINGE.
5. WHERE REQUIRED BY LOCAL CODES, LANDLORD AND IF INDICATED ON DRAWINGS, PROVIDE UL555S SMOKE DAMPER WITH FIRE / HEAT / SMOKE SENSOR, REVERSIBLE MOTOR AND INTERLOCK WITH FIRE ALARM SYSTEM.

J. FLEXIBLE AIR DUCT

1. FLEXIBLE DUCT FOR CONNECTIONS SHALL BE A FACTORY FABRICATED ASSEMBLY CONSISTING OF AN INNER SLEEVE, INSULATION AND AN OUTER MOISTURE BARRIER. THE INNER SLEEVE SHALL BE CONSTRUCTED OF A CONTINUOUS VINYL COATED SPRING STEEL WIRE HELIX FUSED TO A CONTINUOUS LAYER OF FIBERGLASS IMPREGNATED AND COATED VINYL. A 1-1/4" THICK LAYER OF INSULATING BLANKET OF FIBERGLASS WOOL SHALL ENCASE THE INNER SLEEVE AND BE SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED VAPOR BARRIER. THE FLEXIBLE DUCT SHALL BE RATED FOR A MAXIMUM WORKING VELOCITY OF 6000 FPM AND SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES UNDER THEIR UL-181 STANDARDS AS A CLASS 1 DUCT AND SHALL COMPLY WITH NFPA STANDARD - 90A. THE FLEXIBLE DUCT SHALL BE THERMAFLEX M-KC OR APPROVED EQUIVALENT. FLEXIBLE DUCT SHALL ROUTE FROM SHEET METAL DUCTWORK TO CEILING DIFFUSERS ONLY. THERE SHALL BE NO EXPOSED FLEXIBLE DUCT.
2. FLEXIBLE AIR DUCT MAY ONLY BE USED IN VERTICAL APPLICATIONS WITH PRIOR APPROVAL FROM THE TENANT'S CONSTRUCTION MANAGER.
3. FLEXIBLE DUCT SHALL NOT EXTEND OVER 5 FEET IN LENGTH AT ANY ONE LOCATION.

K. SUPPLY AND RETURN AIR TAKEOFF FITTINGS

1. RECTANGULAR DUCT
   A. PROVIDE 45-DEGREE RECTANGULAR TAKEOFFS FROM MAIN DUCTWORK TO RECTANGULAR BRANCHES.
2. SPIRAL DUCT
   A. PROVIDE SADDLE OR DIRECT CONNECTION OF A BRANCH DUCT INTO A LARGER DUCT. THE DIAMETER OF THE BRANCH SHALL NOT EXCEED TWO THIRDS OF THE DIAMETER OF THE MAIN. PROTRUSIONS INTO THE MAIN ARE NOT ALLOWED.

L. DAMPERS

1. PROVIDE MANUAL LOCKING QUADRANT VOLUME CONTROL DAMPERS WITH HANDLE OPERATORS IN EACH BRANCH DUCT AND AS SHOWN ON PLANS TO FACILITATE AIR BALANCING.
2. WHERE ACCESS TO BALANCING DAMPER IS RESTRICTED OR IN AREAS WITH SHEET ROCK CEILINGS, YOUNG REGULATORS SHALL BE USED.
3. ALL RECTANGULAR DAMPERS IN OUTSIDE AIR AND RELIEF AIR DUCTS ARE TO BE OPPOSED BLADE TYPE. ALL RECTANGULAR DAMPERS IN RETURN AIR DUCTS TO BE PARALLEL BLADE TYPE. ALL OUTSIDE AIR DUCT DAMPERS MUST ALSO BE OF THE LOW LEAKAGE TYPE.
4. ALL MOTORIZED DAMPERS NOT FURNISHED WITH EQUIPMENT ARE TO BE HONEYWELL DAMPERS.

M. DIFFUSERS, GRILLES AND REGISTERS

1. PROVIDE DIFFUSERS, GRILLES AND REGISTERS AS SCHEDULED. DEVICES TO BE COMPLETE WITH FRAMES AND ALL ACCESSORIES. ALL DIFFUSERS, GRILLES AND REGISTERS IN SHEET ROCK CEILINGS TO BE PROVIDED WITH PLASTER FRAMES. FINISH TO BE COORDINATED WITH INTERIOR FINISHES.
2. INSTALL ALL AIR DEVICES AS LOCATED ON THE ARCHITECTURAL REFLECTED CEILING PLAN OR THE MECHANICAL PLAN.

N. DUCTWORK INSULATION

1. ALL NEW SUPPLY AND RETURN AIR DUCTWORK WITHIN 10' OF HVAC UNIT SHALL BE ACOUSTICALLY LINED. DUCT SIZES SHOWN ON THE DRAWING ARE INTERNAL FREE AREA SIZES. INTERNAL LINER SHALL BE 1-INCH THICK DUCT LINER EQUIVALENT TO JOHNS MANVILLE "PERMACOTE LINACOUSTIC" ("R VALUE" = 6) AND SHALL BE APPLIED TO THE DUCTWORK WITH FIRE RESISTIVE ADHESIVES AND CADMIUM OR COPPER PLATED MECHANICAL FASTENERS.
2. ALL OUTSIDE AIR AND UNEXPOSED DUCTWORK WITHIN BUILDING, EXCEPT WHERE ACOUSTICALLY LINED, SHALL HAVE 2-INCH, FIBERGLASS DUCT WRAP INSULATION WITH FSK FACING EQUIVALENT TO JOHNS MANVILLE "MICROLITE XG TYPE 75" (INSTALLED "R VALUE" = 6).

MINIMUM INSULATION REQUIREMENTS AS PER 2021 OREGON ENERGY EFFICIENCY SPECIALITY CODE ADOPTED FROM ASHRAE 90.1, 2019:

	SUPPLY	RETURN
UNCONDITIONED SPACES WITHIN BUILDING:	R-6	R-6
WITHIN BUILDING ENVELOPE ASSEMBLY:	R-8	R-8
OUTSIDE OF BUILDING:	R-8	R-8

3. LEADING EDGES OF DUCT INSULATION SHALL BE OVERLAPPED BY ADJOINING INSULATION AT LEAST 6 INCHES MINIMUM AND THEN SEALED WITH FOIL VAPOR BARRIER ADHESIVE AND DUCT MASTIC SO THAT NO FIBERGLASS INSULATION IS VISIBLE.
4. ALL INSULATION ON EXISTING PIPING OR DUCTS THAT BECOMES WET, DAMAGED, DISTURBED OR GETS REMOVED SHALL BE REPLACED.
5. INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES. INSULATION MUST COMPLY WITH NFPA 90A.
6. ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NO HIGHER THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM TEST: C411 OR AS REQUIRED BY LOCAL CODES.
7. EXTERIOR SUPPLY AND RETURN DUCT INSULATION:
   A. SERVICE: RECTANGULAR, SUPPLY-AIR AND RETURN-AIR DUCTS.
      A.1. MATERIAL: INSULATION BOARD, 6 PSF MINIMUM AND PLAIN FACING.
      A.2. THICKNESS: 2 INCHES.
      A.3. NUMBER OF LAYERS: TWO.
      A.4. TOTAL THICKNESS = 4".
      A.5. VAPOR RETARDER REQUIRED: YES.
   B. INORGANIC GLASS FIBERS PREFORMED AND BONDED BY THERMOSETTING RESIN. MUST COMPLY WITH ASTM C 612, TYPE 1A & 1B, KNAUF INSULATION OR APPROVED EQUIVALENT.
   C. INSULATION INSTALLED OUTDOORS: FLAME SPREAD RATING OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS.
9. APPLY INSULATION AS FOLLOWS:
   A. APPLY TWO-LAYER INSULATION WITH JOINTS TIGHTLY BUTTED AND STAGGERED AT LEAST 3 INCHES. SECURE LAYERS WITH ADHESIVE, MECHANICAL FASTENERS OR BANDING. FASTENERS SHALL BE LOCATED A MAXIMUM OF 3" FROM EACH EDGE AND NO GREATER THAN 12" APART.
   B. ON EXPOSED APPLICATIONS, FINISH INSULATION WITH A SKIM COAT OF MINERAL-FIBER, HYDRAULIC-SETTING CEMENT TO SURFACE OF INSTALLED INSULATION. WHEN DRY, APPLY FLOOD COAT OF LAGGING ADHESIVE AND PRESS ON ONE LAYER OF GLASS CLOTH OR TAPE. OVERLAP EDGES AT LEAST 1 INCH (25 MM). APPLY FINISH COAT OF LAGGING ADHESIVE OVER GLASS CLOTH OR TAPE. THIN THE FINISH COAT TO ACHIEVE SMOOTH FINISH. OUTDOOR JACKET: POLYGUARD PRODUCTS, INC. 'ALUMAGUARD 60' OR MFM BUILDING PRODUCTS CORP. 'FLEXCLAD 400'.

O. SYSTEM CLEANOUT

8. UPON COMPLETION OF INSTALLATION, CLEAN ENTIRE SYSTEM BEFORE INSTALLING AIR OUTLETS. CONTRACTOR TO PROVIDE A CERTIFICATION THAT CLEANING WAS ACCOMPLISHED PRIOR TO PROJECT CLOSEOUT.
9. FILTERS MUST BE IN UNITS AT ANY TIME FANS ARE OPERATED.

P. SYSTEM TESTING, ADJUSTING AND BALANCING

1. TESTING, ADJUSTING AND BALANCING OF ALL WORK SHALL BE COMPLETED BY AN INDEPENDENT CONTRACTOR WHO IS CURRENTLY LICENSED BY THE ASSOCIATED AIR BALANCING COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). NO OTHER BALANCE REPORTS WILL BE REVIEWED OR ACCEPTED. ALL BALANCING WORK MUST BE COMPLETE AND DONE IN ACCORDANCE WITH THE MOST RECENT STANDARDS OF THEIR SOCIETY. PAYMENT OF ALL COSTS FOR TESTING SHALL BE MADE BY THE HVAC CONTRACTOR.
2. THE CONTRACTOR SHALL INSTALL NEW FILTERS IN ALL UNITS PRIOR TO THE AIR BALANCING. THE COMPLETE AIR BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION.
3. BALANCE AIR AND WATER QUANTITIES TO WITHIN PLUS OR MINUS 5 PERCENT OF THAT INDICATED ON THE DRAWINGS. ANY REQUIRED CHANGES IN SHEAVES, BELTS, PULLEYS OR THE ADDITION OF DAMPERS REQUIRED TO ACHIEVE SPECIFIED FLOW RATES SHALL BE PROVIDED BY THE HVAC CONTRACTOR WITH NO ADDITIONAL COST TO THE TENANT.
4. THE BALANCE REPORT SHALL INCLUDE AS A MINIMUM THE FOLLOWING INFORMATION:
   A. AABC OR NEBB CERTIFICATION NUMBER AND SIGNATURE OF BALANCING CONTRACTOR.
   B. INSTRUMENTATION LIST WITH LAST CALIBRATION DATES.
   C. MAKE AND MODEL NUMBERS OF ALL HVAC EQUIPMENT TESTED.
   D. AIR CFM AND STATIC PRESSURE READINGS (DISCHARGE AND SUCTION) AS MEASURED BY PITOT TUBE DUCT TRAVERSE AT THE UNITS.
   E. MOTOR NAMEPLATE DATA WITH ACTUAL FIELD VOLTAGE AND AMPERAGE READINGS FOR EACH LEG.
   F. MOTOR AND FAN RPM, SHEAVE SIZES AND BELT SIZES AND LENGTHS.
   G. OUTSIDE, RETURN, MIXED AND SUPPLY AIR TEMPERATURES AT FULL COOLING.
   H. MAKE AND MODEL NUMBERS OF ALL AIR DISTRIBUTION EQUIPMENT.
   I. FINAL BALANCED AIR VOLUMES AT ALL OUTLETS (INCLUDING RETURNS WHERE DUCTED).
   J. INDEXED PLAN WITH DIFFUSER AND RETURN LOCATIONS.
5. ALL CONTROL SEQUENCES SHALL BE TESTED AND OPERATING STATUS RECORDED IN THE REPORT.
6. THREE COPIES OF THE BALANCE REPORT SHALL BE SUBMITTED THROUGH THE GENERAL CONTRACTOR TO THE TENANT'S CONSTRUCTION MANAGER FOR REVIEW AND COMMENT.
7. THE BALANCING CONTRACTOR SHALL PERFORM ALL APPLICABLE TESTING AND BALANCING FUNCTIONS REQUIRED FOR THE SYSTEM DESIGNED IN THESE DRAWINGS. THE BALANCING CONTRACTOR SHALL RECHECK ANY ITEMS THAT THE TENANT DEEMS NECESSARY AT NO ADDITIONAL COST TO THE TENANT.
8. FINAL BALANCE REPORT SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.

Q. FINAL HVAC INSPECTIONS

1. ASIDE FROM NORMAL INTERIM INSPECTIONS OF WORK IN PLACE, THE TENANT SHALL HAVE THE RIGHT TO HAVE AN INDEPENDENT HVAC CONTRACTOR INSPECT THE FINISHED HVAC INSTALLATION UPON COMPLETION FOR COMPLIANCE WITH THE PLANS, SPECIFICATIONS AND CODES. THE INSTALLING CONTRACTOR WILL BE RESPONSIBLE TO BRING ALL ITEMS REPORTED BY THE INDEPENDENT HVAC CONTRACTOR UP TO PLANS AND SPECIFICATIONS REQUIREMENTS AT NO ADDITIONAL COST TO THE TENANT.

R. INDOOR AIR QUALITY

1. NO ANALYSIS HAS BEEN MADE WITH REGARD TO SOURCES OR POTENTIAL SOURCES OF INDOOR OR OUTDOOR AIR CONTAMINANTS OR LEVELS OF CONTAMINATION.
2. IT IS THE RESPONSIBILITY OF THE GENERAL AND MECHANICAL CONTRACTOR TO INFORM THE TENANT'S REPRESENTATIVE, LANDLORD AND TENANT'S ARCHITECT IF ANY SOURCE OR POTENTIAL SOURCE OF INDOOR AIR CONTAMINATION IS IDENTIFIED.
3. PRIOR TO ENCLOSING SPACES SUCH AS PLUMBING CHASES, AIR SHAFTS AND RETURN AIR PLENUMS CLEAN ALL AREAS THOROUGHLY. THE CONTRACTOR SHALL GUARANTEE THAT THE PLENUM CHAMBER USED FOR RE-CIRCULATING OF AIR WILL BE OF TIGHT CONSTRUCTION AND THAT ALL SOURCES OF CONTAMINATION FROM TRAPS, SOIL STACKS, DOWNSPOUTS, VENTS, EXHAUST DISCHARGES AND OTHER SOURCES WILL BE ENCLOSED SO THAT NO CONTAMINATED AIR WILL BE RE-CIRCULATED.
4. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES SHUT OFF THE HVAC SYSTEM, BLOCK OFF ALL AIR GRILLS, DIFFUSERS AND OTHER OPENINGS OUTSIDE THE IMMEDIATE CONSTRUCTION AREA. OPENINGS TO ADJACENT TENANT SPACES SHALL BE COVERED WITH FILTER MEDIA TO PREVENT DUST AND OTHER AIRBORNE CONTAMINANTS FROM PASSING TO ADJOINING SPACES.
5. CONTRACTOR TO INSTALL TEMPORARY EXHAUST SYSTEM TO VENTILATE CONSTRUCTION SITE AND KEEP SITE UNDER SLIGHT NEGATIVE PRESSURE DURING ALL HOURS OF CONSTRUCTION, EVEN IF AFTER NORMAL BUSINESS HOURS.
6. CONTRACTOR TO INSTALL TEMPORARY BARRIERS TO PROTECT ADJACENT SPACES FROM DUST, PARTICULATES, VAPORS AND NOISE. WHERE TEMPORARY BARRIERS ARE INSTALLED ALWAYS MAINTAIN FIRE EXITS AND EXITWAYS.

THERMOSTATIC CONTROLS.

6.4.3.1 ZONE THERMOSTATIC CONTROLS

6.4.3.1.1 GENERAL

THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION 6.4.3.1, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.

EXCEPTIONS: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE LOADS SHALL BE PERMITTED TO SERVE ONE OR MORE 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 FOR 50 CONTIGUOUS FEET OR MORE, AND
b. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY A THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

EXTERIOR AND SEMIEXTERIOR WALLS ARE CONSIDERED TO HAVE DIFFERENT ORIENTATIONS IF THE EXPOSURES THEY FACE DIFFER BY MORE THAN 45 DEGREES.

6.4.3.1.2 DEAD BAND

WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

EXCEPTIONS:

a. THERMOSTATS THAT REQUIRE MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.
b. SPECIAL OCCUPANCY OR SPECIAL APPLICATIONS WHERE WIDE TEMPERATURE RANGES ARE NOT ACCEPTABLE (SUCH AS RETIREMENT HOMES, PROCESS APPLICATIONS, MUSEUMS, SOME AREAS OF HOSPITALS) AND ARE APPROVED BY THE AUTHORITY HAVING JURISDICTION.

6.4.3.2 SET POINT OVERLAP RESTRICTION

WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT MINUS ANY APPLICABLE PROPORTIONAL BAND.

6.4.3.3 OFF-HOUR CONTROLS

HVAC SYSTEMS SHALL HAVE THE OFF-HOUR CONTROLS REQUIRED BY SECTIONS 6.4.3.3.1 THROUGH 6.4.3.3.5

EXCEPTIONS:

a. HVAC SYSTEMS INTENDED TO OPERATE CONTINUOUSLY.
b. HVAC SYSTEMS HAVING A DESIGN HEATING CAPACITY AND COOLING CAPACITY LESS THAN 15,000 BTU/H THAT ARE EQUIPPED WITH READILY ACCESSIBLE MANUAL ON/ OFF CONTROLS.

6.4.3.3.1 AUTOMATIC SHUTDOWN

HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING:

a. CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY-TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.
b. AN OCCUPANT SENSOR THAT IS CAPABLE OF SHUTTING THE SYSTEM OFF WHEN NO OCCUPANT IS SENSED FOR A PERIOD OF UP TO 30 MINUTES.
c. A MANUALLY OPERATED TIMER CAPABLE OF BEING ADJUSTED TO OPERATE THE SYSTEM FOR UP TO TWO HOURS.
d. AN INTERLOCK TO A SECURITY SYSTEM THAT SHUTS THE SYSTEM OFF WHEN THE SECURITY SYSTEM IS ACTIVATED.

EXCEPTION: RESIDENTIAL OCCUPANCIES MAY USE CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER TWO DIFFERENT TIME SCHEDULES PER WEEK.

6.4.3.3.2 SETBACK CONTROLS

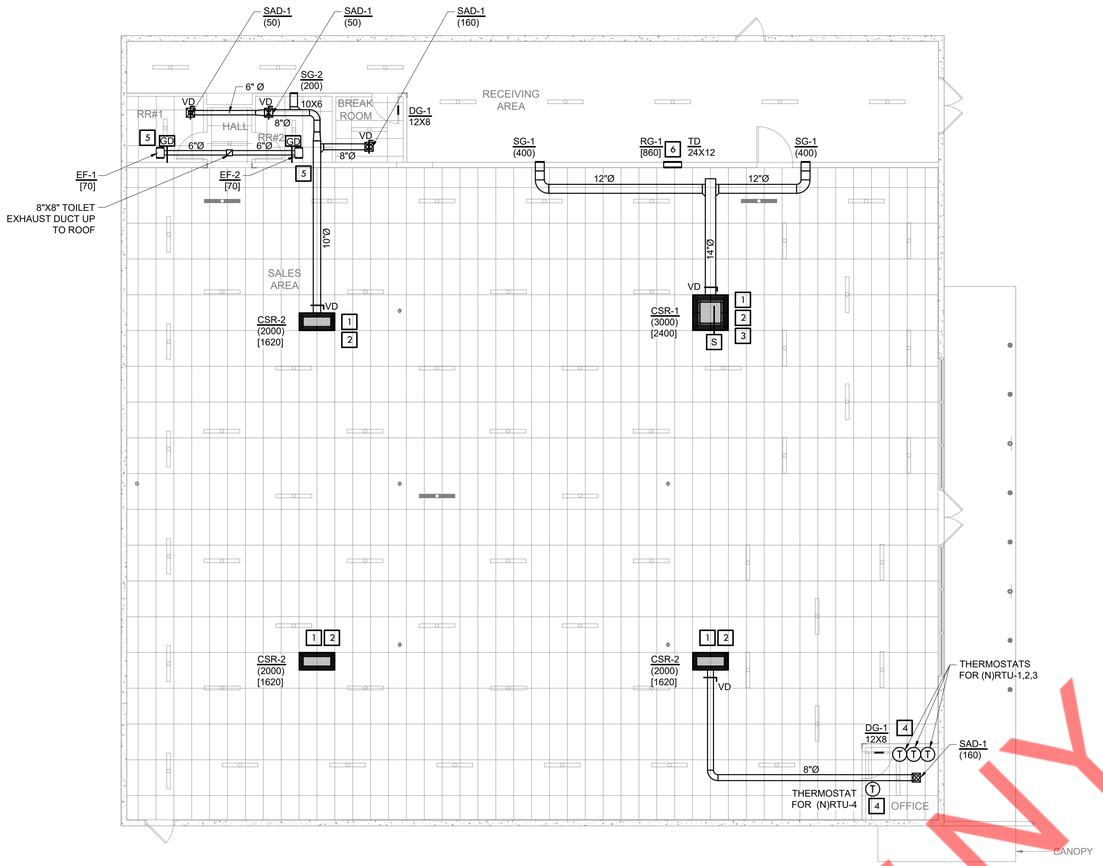
HEATING SYSTEMS LOCATED IN CLIMATE ZONES 2-8 SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE A HEATING SET POINT ADJUSTABLE DOWN TO 55°F OR LOWER. COOLING SYSTEMS LOCATED IN CLIMATE ZONES 1B, 2B, AND 3B SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW A COOLING SET POINT ADJUSTABLE UP TO 90°F OR HIGHER OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

EXCEPTION: RADIANT FLOOR AND CEILING HEATING SYSTEMS.

COTTAGE GROVE, OR BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2022 OREGON BUILDING CODES , AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2022 OREGON MECHANICAL SPECIALITY CODE, CHAPTER 4.
3. AS PER 2021 OREGON ENERGY EFFICIENCY SPECIALITY CODE ADOPTED FROM ASHRAE 90.1, 2019 SECTION 6.7.3.1, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER.
4. AS PER 2021 OREGON ENERGY EFFICIENCY SPECIALITY CODE ADOPTED FROM ASHRAE 90.1, 2019 SECTION 6.7.3.2, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT AN OPERATING MANUAL AND A MAINTAINED MANUAL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
5. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2021 OREGON STRUCTURAL SPECIALITY CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704].
6. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
7. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2022 OREGON MECHANICAL SPECIALITY CODE:
   A. VENTILATION SYSTEM BALANCING 2022 OREGON MECHANICAL SPECIALITY CODE - 403.1
8. SMOKE CONTROL SYSTEMS - 2022 OREGON MECHANICAL SPECIALITY CODE - 513
9. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF 2022 OREGON MECHANICAL SPECIALITY CODE CHAPTER 4:
   MECHANICAL VENTILATION - SECTION 403.
10. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
   A. STANDARDS OF HEATING - 2022 OREGON MECHANICAL SPECIALITY CODE.
   B. DUCT CONSTRUCTION AND INSTALLATION-SECTION 603 OF 2022 OREGON MECHANICAL SPECIALITY CODE.
   C. AIR INTAKES, EXHAUSTS AND RELIEF-SECTION 401 OF 2022 OREGON MECHANICAL SPECIALITY CODE.
   D. AIR FILTERS -SECTION 605 OF 2022 OREGON MECHANICAL SPECIALITY CODE.
   E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS -SECTION 513 OF 2022 OREGON MECHANICAL SPECIALITY CODE.
9. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
10. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2022 OREGON MECHANICAL SPECIALITY CODE CHAPTER 4 SECTION 403.3. HVAC SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS AS REQUIRED BY 2021 OREGON ENERGY EFFICIENCY SPECIALITY CODE ADOPTED FROM ASHRAE 90.1, 2019 SECTION 6.7.3.3.
11. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION 606 2022 OREGON MECHANICAL SPECIALITY CODE, TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
12. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
13. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION 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.



1	SCALE 1/8" = 1'-0"	MECHANICAL FLOOR PLAN

KEY NOTES

1	EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM RTU TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS, PROVIDE VD IN RETURN AIR DUCT.
2	PROVIDE DUCT MOUNTED TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
3	PROVIDE SMOKE DETECTOR IN RETURN AIR DUCT. UPON DETECTION OF SMOKE, RTU WILL SHUTDOWN AND ACTIVATE ALARM. COORDINATE INSTALLATION LOCATION WITH ACCESS REQUIREMENT.
4	PROVIDE PROGRAMMABLE THERMOSTAT WITH LOCKING COVER. COORDINATE LOCATION ON SITE WITH ARCHITECT / OWNER. SEAL WALL OPENINGS WITH CAULK. COORDINATE LOCATION ON SITE WITH GENERAL CONTRACTOR AND EQUIPMENT.
5	PROVIDE NEW TOILET EXHAUST FAN AND CONNECT TO NEW 8X8 EXHAUST DUCTWORK UP THROUGH ROOF AS SHOWN. ENSURE TERMINATION OF THE EXHAUST DUCT AT ROOF PROVIDED WITH GOOSENECK AND INSECT SCREEN AND MINIMUM 10' AWAY FROM ANY FRESH AIR INTAKE.
6	PROVIDE TRANSFER DUCT WITH GRILL ON BOTH SIDES BELOW THE CEILING.

MECHANICAL GENERAL NOTES:

1. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
2. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFEST 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.
3. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
4. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
5. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
6. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
8. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
9. MOUNT DUCTWORK AS HIGH AS POSSIBLE.
10. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
11. PROVIDE R-6 INSULATION FOR SUPPLY AND RETURN DUCT INSIDE THE SPACE AND R-8 INSULATION FOR OUTSIDE DUCTING.
12. COORDINATE ALL EQUIPMENT WITH STRUCTURAL.
13. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/ BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS.
14. PROVIDE CORD-OPERATED DAMPERS IN INACCESSIBLE CEILINGS.
15. PROVIDE INTERNAL INSULATION FOR EXPOSE DUCTING AND EXTERNAL INSULATION FOR DUCTING IN CEILING SPACE.

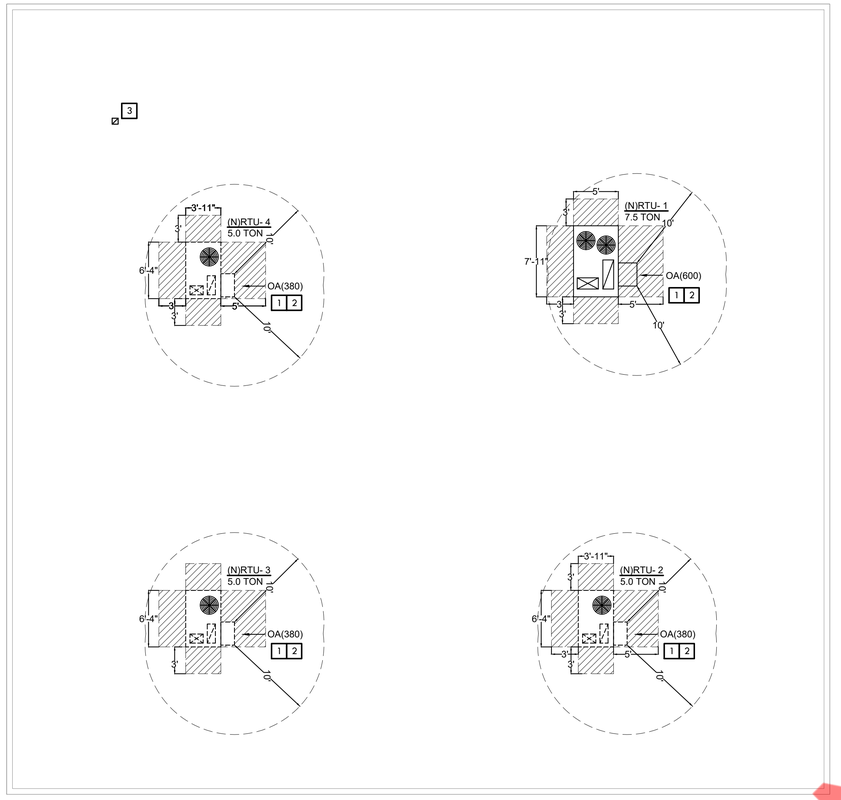
MECHANICAL LEGEND

- SUPPLY & RETURN CONCENTRIC DIFFUSER WITH PLENUM
- T — THERMOSTAT
- S — TEMPERATURE SENSOR
- NEW DUCTWORK
- EXISTING DUCT TO REMAIN
- GD — GRAVITY DAMPER
- VD — VOLUME DAMPER
- SAD / 100 — TYPE OF AIR DEVICE / AIR QUANTITY (CFM)
- Z x Y — X, INCHES, SIDE OF DUCT SHOWING
- S — DUCT MOUNTED SMOKE DETECTOR
- (E) — EXISTING
- (N) — NEW
- FIELD CONNECTION
- U — DOOR UNDER CUT
- SAE — SAME AS EXISTING
- TD — TRANSFER DUCT

NOTE:
SYMBOL LIST SHOWN IS FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.

DEMOLITION NOTE

EXISTING RTU ALONG WITH ALL ASSOCIATED DUCTWORK, AIR TERMINALS TO BE REMOVED AND SCRAPPED. CONTRACTOR TO COORDINATE WITH ARCHITECT PRIOR TO BID.



MECHANICAL LEGEND

SUPPLY & RETURN CONCENTRIC DIFFUSER WITH PLENUM	VD — VOLUME DAMPER
THERMOSTAT	SAD 100 — TYPE OF AIR DEVICE / AIR QUANTITY (CFM)
TEMPERATURE SENSOR	Z x Y — X, INCHES, SIDE OF DUCT SHOWING
NEW DUCTWORK	S — DUCT MOUNTED SMOKE DETECTOR
EXISTING DUCT TO REMAIN	(E) — EXISTING
GRAVITY DAMPER	(N) — NEW
	FIELD CONNECTION
	U — DOOR UNDER CUT
	SAE — SAME AS EXISTING
	TD — TRANSFER DUCT

NOTE:
SYMBOL LIST SHOWN IS FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.

KEY NOTES

1	CONDENSATE DRAIN FROM RTU SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM 1% HORIZONTAL SLOPE IN DIRECTION OF DISCHARGE.
2	EXTEND FULL SIZE SUPPLY & RETURN DUCTWORK FROM RTU TO SPACE. EXTEND AS SHOWN. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
3	TOILET EXHAUSTS ON THE ROOF SHALL TERMINATE NOT LESS THAN 10 FT. FROM ALL MECHANICAL AIR INTAKES AND 3 FEET FROM EXTERIOR WALLS AND ROOFS. BATHROOM EXHAUST SHALL TERMINATE 24" ABOVE ROOF WITH GOOSENECK AND INSECT SCREEN.

1 SCALE 1/8" = 1'-0" — MECHANICAL ROOF PLAN

NEW GAS-FIRED PACKAGED ROOFTOP UNIT

TAG	SERVES	CFM	O.A. CFM	E.S.P.	COOLING						HEATING			ELECTRICAL			WEIGHT (LBS)	MANUFACTURER/MODEL #
					NOM. TONS	TOTAL MBH	SENS. MBH	EER/ IEER	SEER	ENT DB/WB	INPUT MBH	OUTPUT MBH	% EFF.	V/Ø/HZ	MCA	MOCP		
(N)RTU-1	SEE PLANS	3000	600	1.0	7.5	89.7	73.1	11/14.6	-	80/67	130	105	81%	208-230/3/60	58	70	1600	LENNOX #ZGC092S4M (OR EQUIVALENT)
(N)RTU-2,3,4	SEE PLANS	2000	380	1.0	5	58.3	50	11.2/-	14	80/67	65	52	80%	208-230/3/60	27	40	950	LENNOX #ZGB060S4B(OR EQUIVALENT)

NOTES :-
1. PROVIDE ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF AND FDD.
2. PROVIDE 8-WIRE, 24VAC, AUTOMATIC CHANGEOVER, 2 STAGE HEAT/COOL, REMOTELY PROGRAMMABLE THERMOSTAT.
3. PROVIDE 5-MINUTE ANTI-SHORT CYCLE TIMER.
4. PROVIDE THRU THE BASE ELECTRICAL AND SINGLE POINT CONNECTION.
5. PROVIDE WITH 2" MERV 8 FILTERS.
6. PROVIDE WITH 14" ROOB CURB. CONTRACTOR SHALL FIELD INSULATE. SHIP ASAP AHEAD OF UNIT.
7. PROVIDE POWERED CONVENIENCE OUTLET.
8. PROVIDE WITH FACTORY INSTALLED NON-FUSED DISCONNECT.
9. PROVIDE WITH MOTORIZED DAMPER AND OUTSIDE AIR INTAKE HOOD.
10. PROVIDE MANUFACTURER'S MOTOR AND DRIVE PACKAGE AS REQUIRED TO MEET SCHEDULED AIR CAPACITIES AND PRESSURE DROP.
11. PROVIDE WITH RETURN AIR SMOKE DETECTOR.
12. PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTY.
13. PROVIDE HOT GAS REHEAT.
14. PROVIDE LOW AMBIENT CONTROL & CONDENSER COIL HAIL GUARDS.
15. RUN 1" CONDENSATE DRAIN LINE TO NEAREST ROOF DRAIN, SPLASH BLOCK, OR OTHER APPROVED DRAINAGE LOCATION.

VENTILATION CALCULATION

ROOM NAME	AREA (SQFT)	NUMBER OF PEOPLE/1000SQ.FT AS PER 2021 IMC	NUMBER OF PEOPLE 2021 IMC	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER IMC 2021		REQUIRED OA(CFM)	PROVIDED OA(CFM)	EXHAUST (CFM)
					CFM/PERSON	CFM/SQ.FT			
SALES AREA	6574	15	98.6	99	7.5	0.12	1531	1535	
RECEIVING AREA	992	2	2.0	2	10	0.12	139	140	
OFFICE	66	5	0.3	1	5	0.06	9	10	
BREAK AREA	56	100	5.6	6	7.5	0.18	55	55	
RESTROOM-1	64	0	0.0	0	0	0	0	0	70
RESTROOM-2	64	0	0.0	0	0	0	0	0	70
	7816					TOTAL	1734	**1740**	**140**

AIR BALANCE	
OA	1740
EXHAUST	140
BUILDING PRESSURE	1600

FAN SCHEDULE

UNIT TAG	TYPE	LOCATION	MAKE AND MODEL	DESIGN CFM	E.S.P. (IN W.G)	ELEC (V/Hz/Ph.)	MCA (A)	MOP (A)	FAN SPEED (RPM)	INLET dBA	WEIGHT (lb)	OPERATION	REMARK
(N)EF-1	CEILING EXHAUST	SEE PLANS	GREENHECK SP-A90-130-VG	70	0.75	115/60/1	0.4	15	887	41	12	INTERLOCK WITH LIGHT	WITH GRILLE & GRAVITY DAMPER
(N)EF-2	CEILING EXHAUST	SEE PLANS	GREENHECK SP-A90-130-VG	70	0.75	115/60/1	0.4	15	887	41	12	INTERLOCK WITH LIGHT	WITH GRILLE & GRAVITY DAMPER

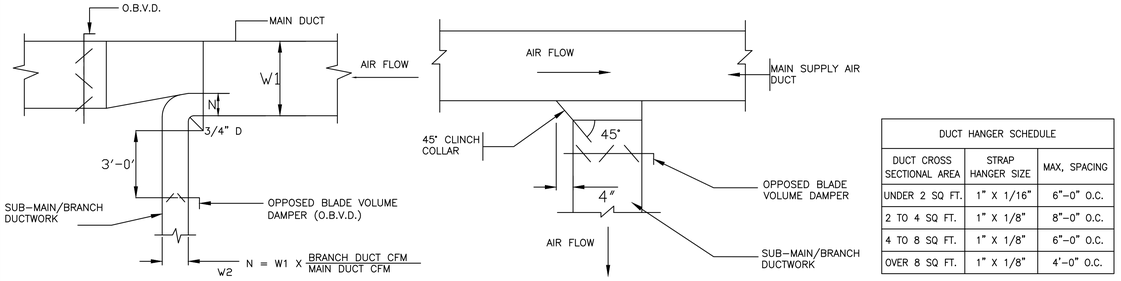
NOTES:
1. INTERLOCK FAN WITH LIGHT.
2. COORDINATE WITH ARCH./G.C. ACCESS DOORS FOR SERVICING ALL FANS WITHIN CEILINGS.
3. FAN SPEED SHALL BE EASILY FIELD ADJUSTABLE.
4. REFER TO DETAILS, FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS.
5. PROVIDE MOTOR STARTERS, DISCONNECTS WITH NEMA-3R (IF NOT FACTORY PROVIDED). ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE POWER REQUIREMENTS.

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

TAG	MAKE & MODEL	DIFFUSER SIZE	NECK SIZE	CFM RANGE	DESCRIPTION
CSR-1	LENNOX FD11-185S	48X48	-	3000-5000	CONCENTRIC SUPPLY & RETURN DIFFUSER: AS PER THE RTU MANUFACTURER SUGGESTIONS.
CSR-2	LENNOX FD9-65-R	48X24	-	1200-2000	CONCENTRIC SUPPLY & RETURN DIFFUSER: AS PER THE RTU MANUFACTURER SUGGESTIONS.
SAD-1	TITUS TMS	12X12	6"Ø 8"Ø	50-130 150-240	SUPPLY AIR DIFFUSER: ALUMINUM CONSTRUCTION SUPPLY DIFFUSER CEILING MOUNTED, PROVIDE OPPOSED BLADE DAMPER.
SG-1	TITUS 300 FL	12X12	-	400-500	SUPPLY GRILLE: ALUMINUM CONSTRUCTION SUPPLY GRILLE WALL MOUNTED, PROVIDE OPPOSED BLADE DAMPER.
SG-2	TITUS 300 FL	10X6	-	170-200	SUPPLY GRILLE: ALUMINUM CONSTRUCTION SUPPLY GRILLE WALL MOUNTED, PROVIDE OPPOSED BLADE DAMPER.
RG-1	TITUS 350 RL	24X12	-	800-1000	RETURN GRILLE:ALUMINUM CONSTRUCTION RETURN GRILLE WALL MOUNTED, PROVIDE OPPOSED BLADE DAMPER.
DG-1	TITUS CT 700	12X8	-	80-160	DOOR GRILLE: ALUMINIUM CONSTRUCTION DOOR GRILLE.

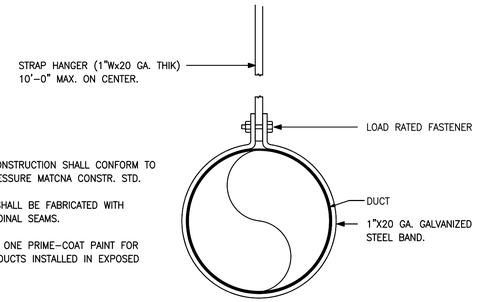
NOTES:
COORDINATE FINAL ACCESSORIES, FINISHES, AND LENGTHS WITH CONSTRUCTION MANAGER & ARCHITECT PRIOR TO PROCUREMENT. PROVIDE AIR DEVICE WITH OPPOSED BLADE VOLUME DAMPER AIR DEVICE RUN-OUT SHALL BE SAME SIZE A DIFFUSER NECK. SELECTION BASED ON TITUS OR APPROVED EQUIVALENT. ALL SUPPLY/RETURN AIR DEVICES SHALL NOT EXCEED 25 NC.

2 SCALE 1/8" = 1'-0" — MECHANICAL SCHEDULE



DUCT HANGER SCHEDULE		
DUCT CROSS SECTIONAL AREA	STRAP HANGER SIZE	MAX. SPACING
UNDER 2 SQ FT.	1" X 1/16"	6"-0" O.C.
2 TO 4 SQ FT.	1" X 1/8"	8"-0" O.C.
4 TO 8 SQ FT.	1" X 1/8"	6"-0" O.C.
OVER 8 SQ FT.	1" X 1/8"	4'-0" O.C.

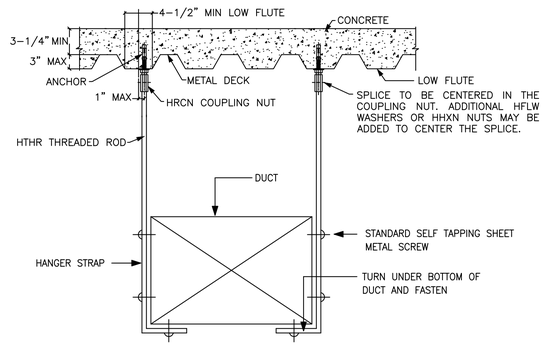
NOTE:
FURNISH THIS TYPE CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS THIS



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.

EXPANSION ANCHORS INSTALLED IN CONCRETE FILLED METAL DECK



DUCT HANGING AND SUB-MAIN/BRANCH DUCT DETAILS — SCALE NTS — 1

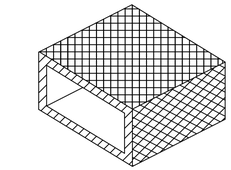


FIG. A

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

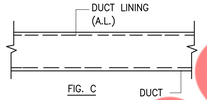


FIG. C

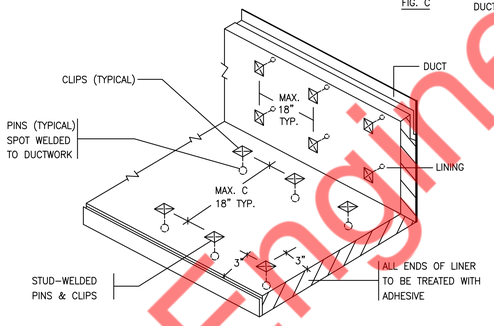
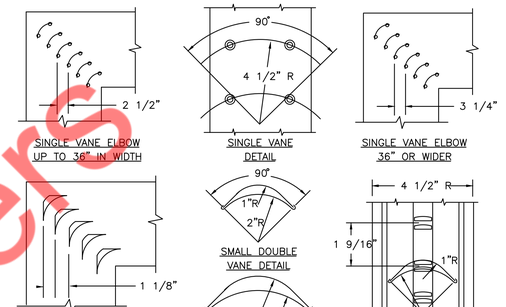
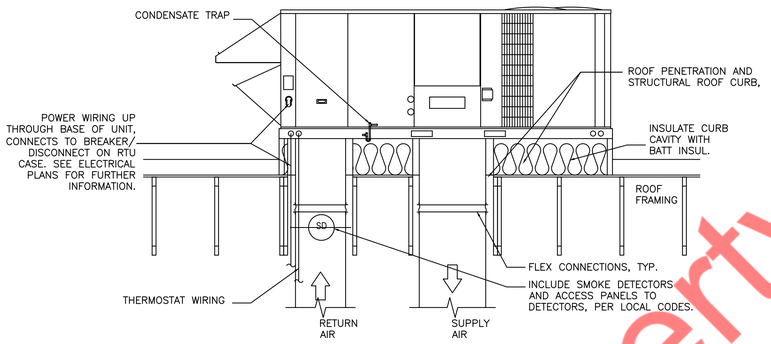


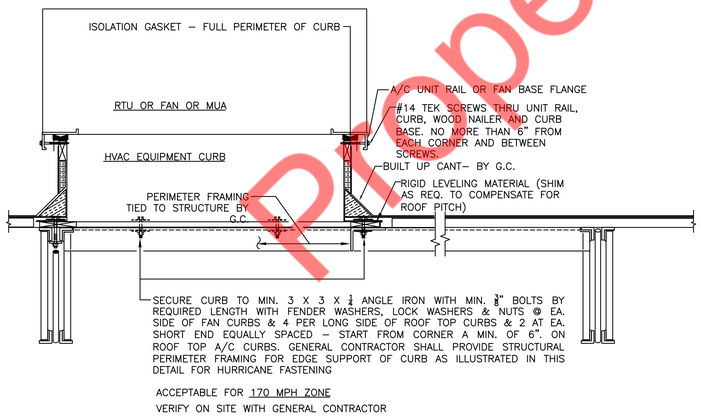
FIG. B

ACOUSTICAL TREATMENT DUCT LINING — SCALE NTS — 2

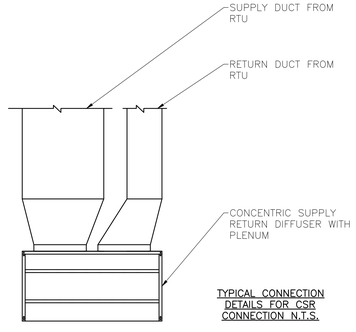


LOW VELOCITY DUCT ELBOW — SCALE NTS — 3



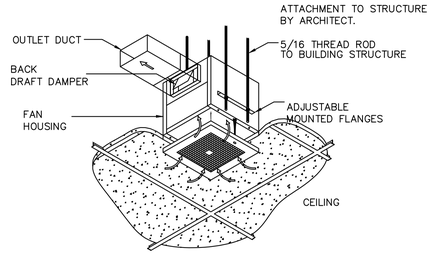


TYPICAL ROOF TOP UNIT DETAIL — SCALE NTS — 4

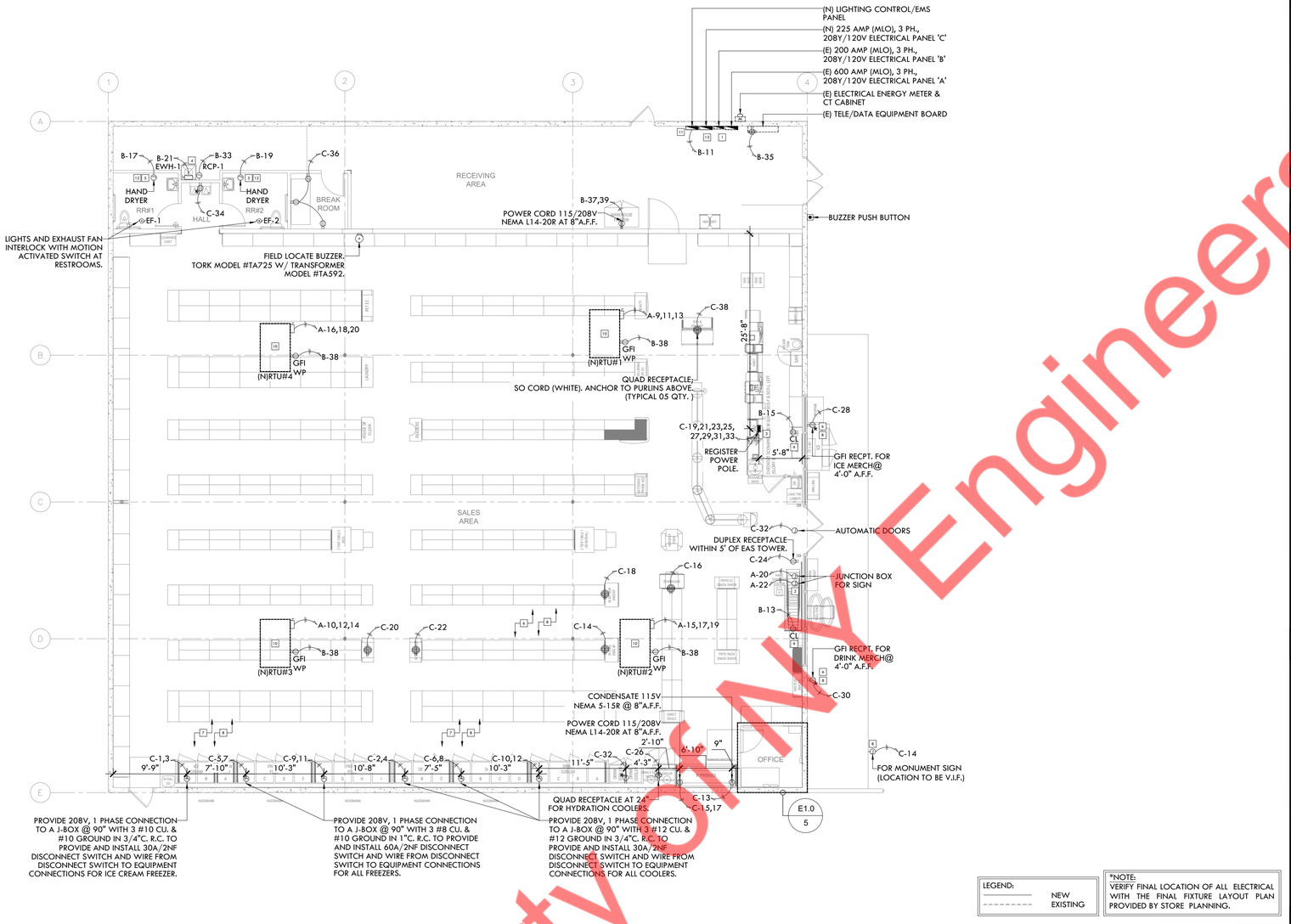


TYPICAL CONNECTION DETAILS FOR CSR CONNECTION N.T.S.

TYPICAL CONNECTION DETAILS FOR CSR DIFFUSER — SCALE NTS — 5



CEILING EXHAUST FAN DETAIL — SCALE NTS — 6



1	SCALE	ELECTRICAL POWER PLAN
	1 / 8" = 1' - 0"	

LEGEND:
NEW
EXISTING

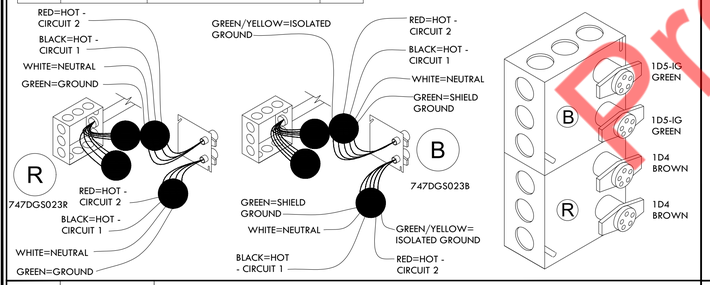
*NOTE:
VERIFY FINAL LOCATION OF ALL ELECTRICAL WITH THE FINAL FIXTURE LAYOUT PLAN PROVIDED BY STORE PLANNING.

REGISTER ELECTRICAL COMPONENTS

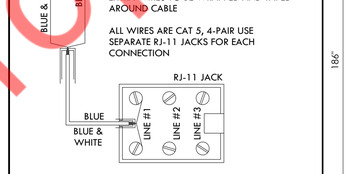
QTY	PART NUMBER	DESCRIPTION	VENDOR
1	747DGS023B	DUAL CIRCUIT POWER KIT WITH ISOLATED GROUND	D & P
1	747DGS023R	DUAL CIRCUIT POWER KIT	D & P
1	747DGS044-12BK	12' 2CH REGULAR POLE W/2-C & 1-D CONNECTOR DRW #2004-12	
1	747DGS032A	10' CABLE KIT (SET OF 4 WHIPS)	

*NOTE: BEFORE ORDERING AND INSTALLATION OF ELECTRICAL COMPONENTS FOR REGISTERS, CONSULT FINAL FIXTURE PLAN FOR NUMBER AND LOCATION.

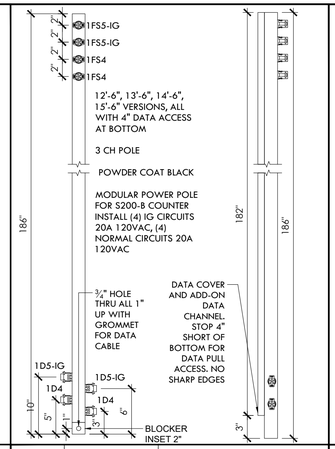
MAXIMUM CIRCUITS FOR REGISTERS:
- CIRCUITS AT MAIN REGISTER - (9) 110V
- CIRCUITS AT ISLAND REGISTER - (3) 110V



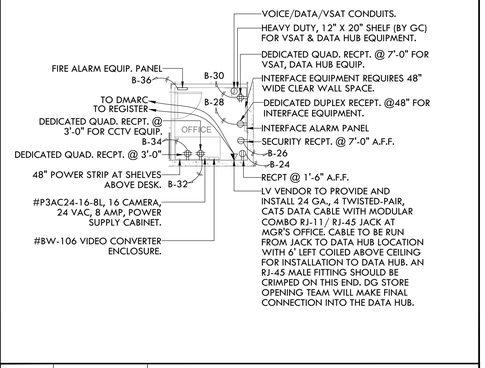
2	SCALE	REGISTER DETAILS
	N.T.S.	



3	SCALE	PHONE WIRING FOR REGISTER
	N.T.S.	



4	SCALE	POWER POLE DETAILS
	NTS	



5	SCALE	ENLARGED OFFICE POWER LAYOUT
	1 / 8" = 1' - 0"	

ELECTRICAL POWER SYMBOLS

SYMBOL	DESCRIPTION
	BUZZER - TORK MODEL #TA725 W/ TRANSFORMER MODEL #TA592.
	COMMERCIAL GRADE PUSH BUTTON
	DUPLEX RECEPTACLE
	125/250V NEMA L14-20-R 4 PRONG TWIST LOCK
	GFI RECEPTACLE
	QUAD RECEPTACLE
CL	CEILING MOUNTED DUPLEX RECEPTACLE
	DISCONNECT
	POWER POLE - WHITE
	PHONE JACK @ REGISTER
	VOICE/DATA PORT = RJ-11, RJ-45 DATA JACK, PHONE COMBO @ OFFICE
OS	PROVIDE OCCUPANCY LIGHT SENSOR
	20 AMP TOGGLE SWITCH
NL	NIGHT LIGHT CIRCUIT
	JUNCTION BOX
(E)	EXISTING

POWER KEYNOTES

1. EXISTING ELECTRICAL PANELS SHALL REMAIN. E.C. SHALL FIELD VERIFY THE EXACT RATING, VOLTAGE, PHASE AND OPERABLE CONDITION. PROVIDE NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY. REFER TO E5.0 - ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM SHEET FOR ADDITIONAL INFORMATION.
2. PROVIDE ACCESSIBLE WEATHERPROOF JUNCTION WITH SERVICE DISCONNECT SWITCH FOR TENANT SIGN. FINAL LOCATION AND NUMBER OF JUNCTION BOX TO BE COORDINATED WITH SIGN VENDOR PRIOR TO START OF WORK.
3. NEW POWER POLE AT SALES CHECKOUT. COORDINATE EXACT REQUIREMENT WITH OWNER. REFER TO POWER POLE DETAILS ON SHEET E1.1 FOR ADDITIONAL INFORMATION.
4. NEW ELECTRICAL WATER HEATER EWH-1. PROVIDE ONE 20A-1P BREAKER IN SOURCE PANEL(2#12, 1#12GRD-3/4"C). COORDINATE EXACT POWER REQUIREMENTS WITH PLUMBING CONTRACTOR/ MANUFACTURER SPECIFICATION.
5. POWER PROVISION FOR HAND DRYER. COORDINATE EXACT POWER REQUIREMENTS IN COORDINATION WITH OWNER IN FIELD.
6. CONTRACTOR SHALL CONFIRM THE FINAL NUMBER AND LOCATION OF OUTLETS IN SALES AREA WITH THE FINAL 'DG' FIXTURE PLAN.
7. MOUNT J-BOX 11" FROM THE RIGHT SIDE OF EACH UNIT. CONFIRM EXACT LOCATION WITH REFRIGERATION VENDER PRIOR TO WORK.
8. E.C. TO COORDINATE WITH EQUIPMENT SUPPLIER FOR THE EXACT POWER REQUIREMENT, MOUNTING HEIGHT. PROVIDE ACCORDINGLY.
9. E.C. SHALL FIELD VERIFY THE OPERABLE CONDITION OF EXISTING SHOW WINDOW RECEPTACLE, REUSE IF POSSIBLE. OTHERWISE, PROVIDE NEW SHOW WINDOW RECEPTACLE AS PER PLANS AND NEC 210.62 IF REQUIRED.
10. 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.
11. NEW EMS PANEL. E.C. SHALL VERIFY THE EXACT LOCATION AND OPERABLE CONDITION OF EXISTING EMS PANEL IN FIELD. PROVIDE NEW IF FOUND INOPERABLE OR REQUIRED NEW PER DOLLAR GENERAL STANDARDS. BASE BID ACCORDINGLY.
12. IF THERE ARE ANY EXISTING OUTLETS/RECEPTACLES IN THE RESTROOMS, COVER THEM WITH BLANK PLATES UNLESS IT IS USED FOR THE HAND DRYER.
13. NEW ELECTRICAL PANEL. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. BASE BID ACCORDINGLY. REFER TO E5.0 - ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM SHEET FOR ADDITIONAL INFORMATION.

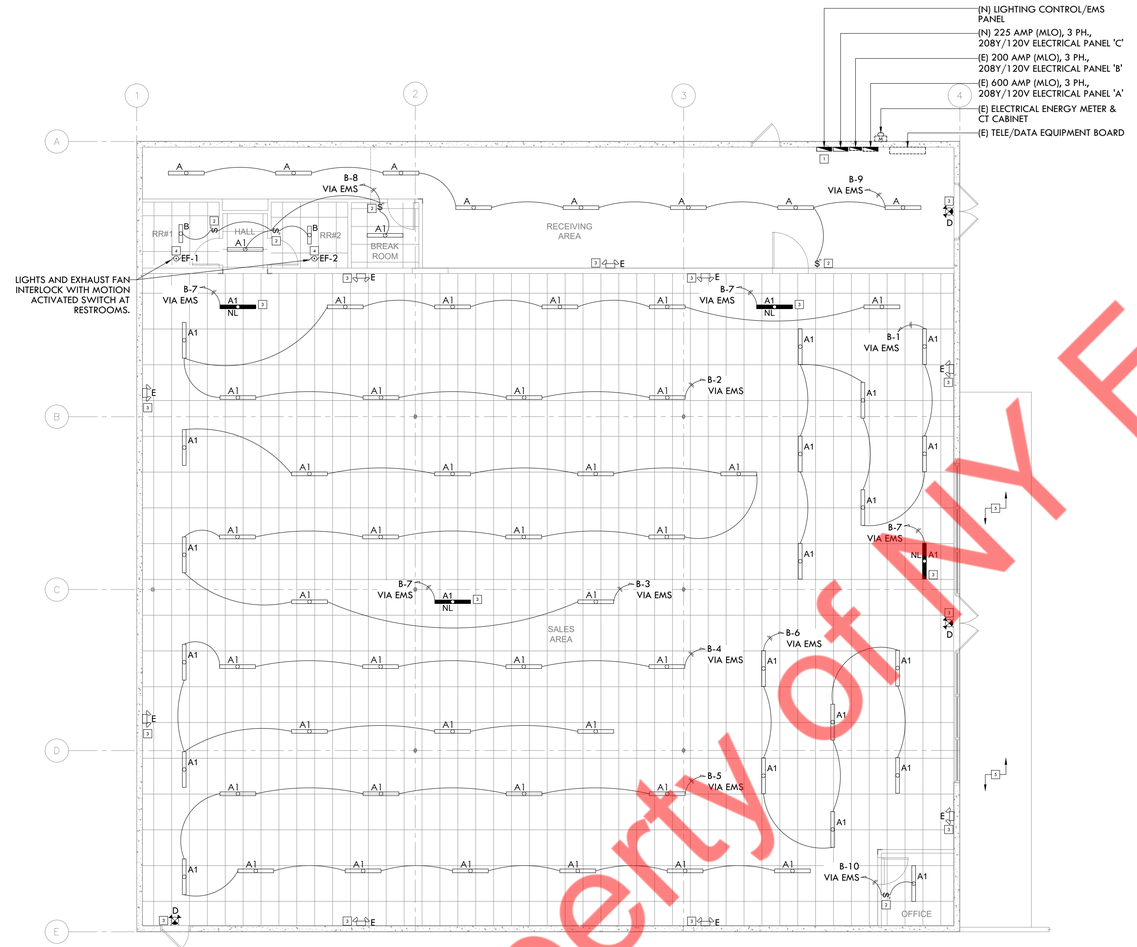
SPECIFICATIONS

ELECTRICAL SPECIFICATIONS:

1. ALL EXPOSED WIRING SHALL BE CONTAINED IN CONDUIT OF PROPER SIZE.
2. ALL WIRING SHALL CONFORM TO LOCAL, STATE, AND FEDERAL CODES.
3. ELECTRICAL SERVICE TO BE MINIMUM 400 AMP, 3-PHASE (PREFERRED) OR 600 AMP, SINGLE PHASE OR LARGER IF REQUIRED BY CODE OR ELECTRICAL LOAD.
4. REGISTER POWER POLES - VERIFY REGISTER CONFIGURATION ON FINAL FIXTURE PLAN BEFORE ORDERING AND INSTALLATION OF ELECTRICAL COMPONENTS. CUSTOM BUILT POWER POLE ASSEMBLY AVAILABLE FROM D&P CUSTOM LIGHTS & PRODUCTS INC. PHONE # (800) 251-2200 OR (615) 350-7800, 7111 COCKRILL BEND INDUSTRIAL ROAD. NASHVILLE, TN 37209.
5. EXTERIOR EXPOSED PHONE LINES TO BE INSTALLED IN RIGID CONDUIT. PROVIDE EMERSON 3/4" x 5-FT. METALLIC CABLE U-GUARD #755 OR EQUAL.
6. ELECTRIC PANELS TO BE LABELED CORRECTLY WITH LEGIBLE PRINT.
7. LOW VOLTAGE VENDOR TO PROVIDE AND INSTALL ONE (1) 24 GA., 4 TWISTED-PAIR, CATEGORY-FIVE (CAT5) DATA CABLE WITH MODULAR COMBO RJ-11/RJ/45 JACK AT MANAGER'S OFFICE. CABLE TO BE RUN FROM JACK TO DATA HUB LOCATION WITH 6'-0" LEFT COILED FOR INSTALLATION TO DATA HUB. A RJ-45 MALE FITTING SHOULD BE CRIMPED ON THIS END. DOLLAR GENERAL STORE OPENING TEAM WILL MAKE FINAL CONNECTION INTO THE DATA HUB.

GENERAL NOTES

1. ALL WORK SHALL BE IN STRICT CONFORMANCE WITH THE LATEST NATIONAL ELECTRIC CODE AND APPLICABLE STATE CODES.
2. OBTAIN AND PAY ALL FEES FOR PERMITS AND OBTAIN APPROVALS FROM AUTHORITIES HAVING JURISDICTION.
3. GUARANTEE ALL MATERIALS AND LABOR FOR ONE YEAR FROM THE FINAL ACCEPTANCE DATE OF THE OWNER.
4. PROVIDE ALL NECESSARY CUTTING, PATCHING, EXCAVATING AND BACK FILL TO ACCOMMODATE ELECTRIC WORK. FIRE SEAL ALL WALL AND FLOOR PENETRATIONS WITH A UL LISTED FOAM SEALANT.
5. UNLESS OTHERWISE NOTED, LOCATE THE FOLLOWING ITEMS AT HEIGHTS LISTED BELOW:
   a) SWITCHES AND CONTROLS +4'-0" AFF TO THE TOP OF DEVICE.
   b) RECEPTACLES: +18" TO CENTERLINE
8. WIRE SHALL BE INSTALLED AS FOLLOWS:
   a) EXPOSED UNFINISHED AREAS (INDOORS): EMT WITH COMPRESSION FITTINGS. USE WIREMOLD IN FINISHED AREAS WHERE IT IS IMPOSSIBLE TO CONCEAL WORK.
   b) CONCEALED ABOVE CEILING OR IN STUD WALL: EMT; TYPE MC CABLE (METAL CLAD).
   c) FINAL CONNECTIONS TO MOTORS (INDOORS): FLEXIBLE METAL
   d) FINAL CONNECTIONS TO MOTORS (OUTDOORS): LIQUID TIGHT FLEX.
   e) EXPOSED OUTDOORS: INTERMEDIATE METAL CONDUIT (IMC).
   f) BURIED IN EARTH: PVC SCHEDULE 40.
   g) UNDERGROUND PRIMARY ELECTRIC SERVICE CONDUITS: PER UTILITY COMPANY REQ'S.
9. GENERALLY ALL WORK IN FINISHED AREAS SHALL BE CONCEALED. CONSULT ARCHITECT FOR DIRECTION WHERE WORK CANNOT BE CONCEALED.
10. PROVIDE ALL LIGHTING FIXTURES AND LAMPS.
11. OUTLET BOXES CONCEALED SHALL BE STAMPED STEEL. OUTLET BOXES EXPOSED TO THE WEATHER SHALL BE CAST ALUMINUM.
12. ALL WIRE SHALL BE TYPE THWN (WET LOCATIONS), THHN (DRY LOCATIONS), #12 GAUGE COPPER, MINIMUM SIZE. USE TYPES THWN, THHN OR XHHW FOR FEEDERS AND TYPES THWN/THHN FOR BRANCH CIRCUITS #10 AND SMALLER.
13. PLATES ON CONCEALED OUTLETS SHALL BE PLASTIC. COLOR TO BE SELECTED BY THE ARCHITECT.
14. GROUNDING SHALL CONFORM TO THE LATEST NATIONAL ELECTRICAL CODE.
15. SAFETY SWITCHES SHALL BE HEAVY DUTY, SQUARE D OR EQUAL BY G.E. OR ITE.
16. PROVIDE PHOTOELECTRIC TYPE DUCT SMOKE DETECTORS WITH REMOTE TEST STATIONS.
17. ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL REQUIREMENTS OF MECHANICAL, PLUMBING AND OWNER SUPPLIED EQUIPMENT PRIOR TO ORDERING AND RUNNING CIRCUITING.
18. CABLE TV, VOICE, DATA, SECURITY, SOUND SYSTEM WORK TO BE DONE UNDER SEPARATE CONTRACTS WITH THE OWNER.
19. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS.
20. ALL ACCESS DOORS REQUIRED IN GENERAL CONSTRUCTION ARE TO BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO IDENTIFY SIZE, TYPE AND LOCATION OF SUCH DOORS FOR PROPER ACCESS TO ALL CONCEALED ELECTRICAL EQUIPMENT, JUNCTION BOXES AND OTHER RELATED ITEMS. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY THESE REQUIREMENTS ON A COORDINATED SHOP DRAWING.



LIGHTING KEYNOTES

1. NEW EMS PANEL BY LANDLORD, ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION .
2. NEW MOTION SENSOR SWITCH MOUNTED AT +46" A.F.F.
3. TIE EMERGENCY LIGHT, NIGHT LIGHT & EXIT SIGN WITH MINIMUM 90-MINUTES BATTERY BACK-UP TO AREA NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF CONTROL AS SHOWN ON PLAN.
4. EXHAUST FAN SHALL BE INTERLINKED WITH MOTION SENSOR.
5. EXISTING LIGHT FIXTURES AND THEIR CONTROLS TO REMAIN UNLESS NEW CONTROLS ARE PROVIDED FOR THE SPACE AS PER THIS PLAN. RETROFIT WITH LED LIGHTS. E.C. TO FIELD VERIFY THE OPERABLE CONDITION OF EXISTING CONTROLS, BRANCH CIRCUITS, PROVIDE NEW IF FOUND INOPERABLE.

LIGHTING SCHEDULE

SYM.	TYPE	MANUF.	PART NUMBER	DESCRIPTION	COUNT
	A	CUMB	VFMS4F/32-850	4' LED FIXTURE AERIAL MOUNT, INCLUDES (2) 8' CABLES.	8
	AE	CUMB	VFMS4F/32-850	4' LED FIXTURE AERIAL MOUNT, INCLUDES (2) 8' CABLES WITH 2HR BATTERY BACKUP.	0
	A1	CUMB	VFMS4F/32-850	4' LED FIXTURE SURFACE MOUNT	62
	A1E	CUMB	VFMS4F/32-850	4' LED FIXTURE SURFACE MOUNT WITH 2HR BATTERY BACKUP	0
	B	CUMB	SL-2FT-25L-5K	2' LED FIXTURE SURFACE MOUNT	2
	C	CUMB	ALEX-U2-R-W-EM	LED EXIT SIGN	PER CODE
	D	CUMB	ALEX-LED-U2-R-W-EM	EMERGENCY LIGHT/EXIT COMBO (2) HEADS	PER CODE
	E	CUMB	ALBE-LED-W	EMERGENCY LIGHT (2) HEADS	PER CODE
	F	CUMB	WLBE-LELW	EMERGENCY EGRESS LIGHT - REMOTE HEAD	PER CODE
	G	CUMB	ILP-WPSC-40W-50K	WALL PACK	0
	T	EH	KS-3/2053/ PAR38-1350-40-MVP	TRACK LIGHTS, MOUNTED TO GRID OR AT 11' AFF IF OPEN CEILING.	0

p1HEAD8

HOOKER HANGER TO BE USED TO MOUNT LIGHT FIXTURES TO CEILING GRID. HUBBELL - CSZT LITHONIA LIGHTING - HRC1J48.

RICHARD MATTHEW | ORDERFORM@CUMBERLANDDIST.COM | AL, DE, FL, GA, IA, IL, IN, KS, KY, MD, MI, MN, MO, MS, NC, ND, NE, OH, SC, SD, TN, VA,WI, WV

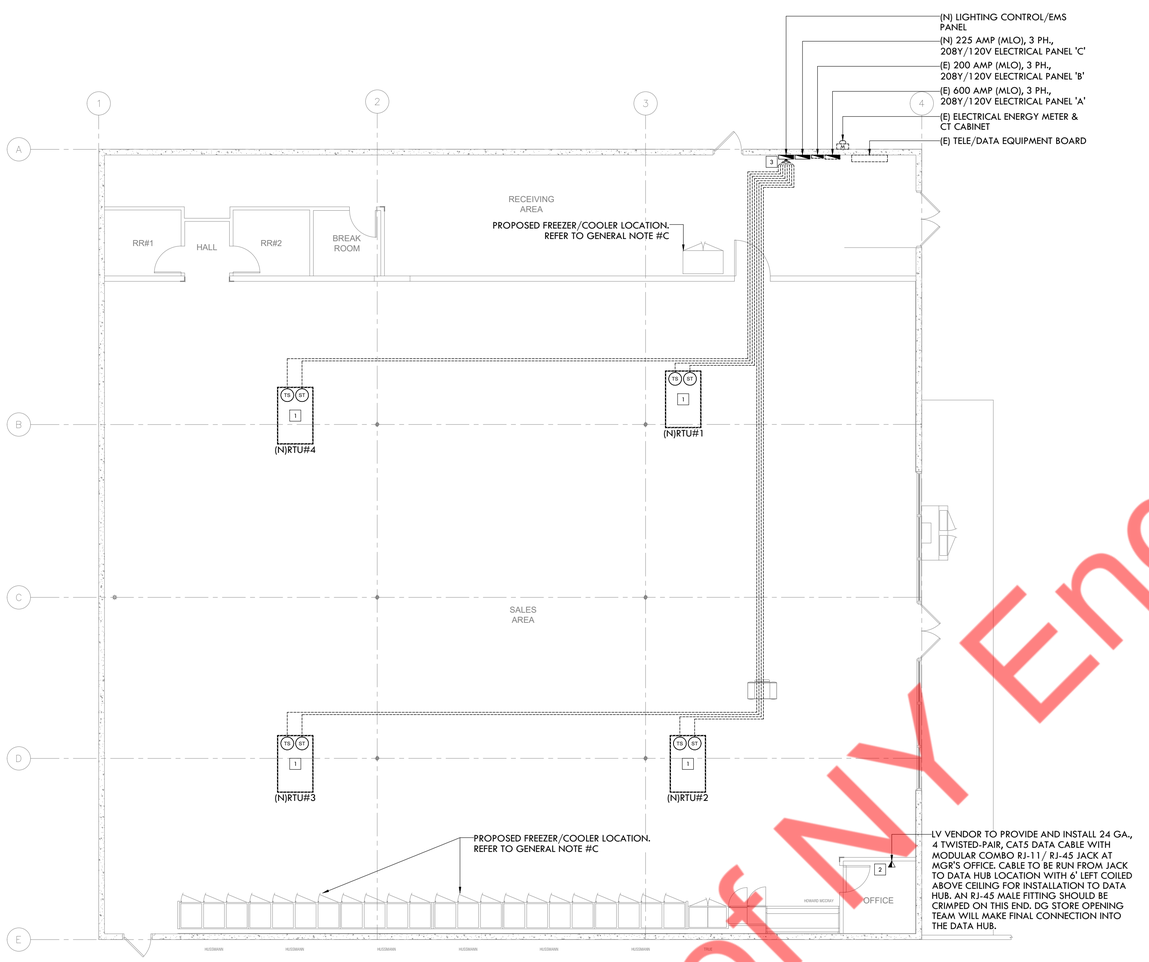
CONTRACTOR SHALL COORDINATE FINAL LIGHTING FIXTURE MAKE, WATTAGE AND MODEL WITH ARCHITECT.

LEGEND:
NEW
EXISTING

S - WALL MOTION OCCUPANCY SENSOR AT +46" A.F.F. CENTER OF SWITCH. SENSOR "ON" SETTING TO BE SET TO AUTOMATIC IN FIELD.

CONTRACTOR TO COORDINATE WITH OWNER FOR THE EXACT LIGHTING CONTROLS. REFER TO PRODUCT SPECIFICATION PRIOR TO INSTALLATION.

1 | SCALE 1 / 8" = 1' - 0" | ELECTRICAL LIGHTING PLAN



*NOTE:
VERIFY FINAL QUANTITIES IN FIELD PRIOR TO ORDERING AND INSTALLATION.

*NOTE:
PLAN IS DIAGRAMIC ONLY!! HOLD CONDUIT TIGHT TO STRUCTURE ABOVE AND RUN AS HIGH AS POSSIBLE ALONG PERIMETER WALLS TO RECEIVING AREA.

1 | SCALE 1 / 8" = 1' - 0" | ELECTRICAL EMS/LOW VOLTAGE PLAN

GENERAL NOTES

A. REFER TO E1 FOR GENERAL CONTRACTOR RESPONSIBILITIES. E.C. MAY USE CABLE TRAY FOR LOW VOLTAGE CABLES, SEE 2/E2.

B. RUN CONDUIT FROM SENSORS TO BOTTOM OF STRUCTURE.

C. REFRIGERATION UNITS TO BE CONNECTED TO EMS PANEL BY DOLLAR GENERAL REFRIGERATION CONTRACTOR.

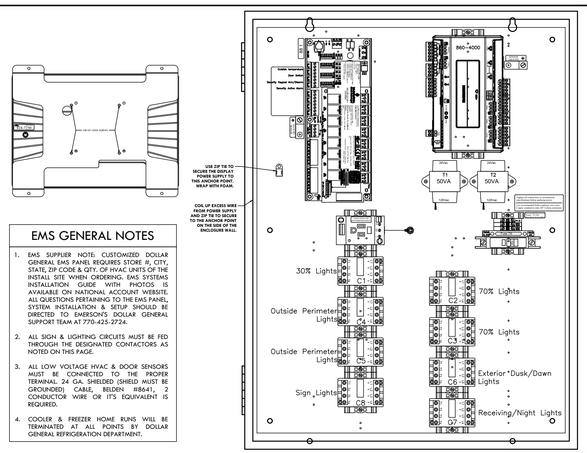
REQUIRED NATIONAL ACCOUNT VENDORS		CONTACT INFORMATION SUBJECT TO CHANGE
COMPANY - PHONE #	CONTACTS	REQUIRED ITEMS
EMERSON CLIMATE TECHNOLOGIES - ALL QUESTIONS PERTAINING TO THE EMS PANEL, SYSTEM INSTALLATION & SETUP SHOULD BE DIRECTED TO EMERSON'S DOLLAR GENERAL SUPPORT TEAM AT 615-855-5960	WEBSITE http://dollargeneralbid.emerson.com USER NAME: dollargeneralbid PASSWORD: $General1	EMS SUPPLIER NOTE: CUSTOMIZED DOLLAR GENERAL EMS PANEL REQUIRES STORE #, CITY, STATE, ZIP CODE & QTY.OF HVAC UNITS FOR THE INSTALL SITE WHEN ORDERING. EMS SYSTEMS INSTALLATION GUIDE WITH PHOTOS IS AVAILABLE ON NATIONAL ACCOUNT WEBSITE.

DEVICE SCHEDULE

SYMB	DESCRIPTION	CABLE TYPE	SUPPLIER	INSTALLER	NOTES
OT	OUTDOOR AIR TEMP (501-1122) MOUNTED 8'-0" A.F.F.	BELDEN 8761 OR EQUIVALENT (22AWG, 2C, STRANDED, SHIELDED)	EMS SUPPLIER	GENERAL CONTRACTOR	(1) PER RECEIVING ENTRY
ST	SUPPLY TEMP (201-0041) IN SUPPLY DUCT	BELDEN 8761 OR EQUIVALENT (22AWG, 2C, STRANDED, SHIELDED)	EMS SUPPLIER	GENERAL CONTRACTOR	(1) PER HVAC UNIT
TS	TOUCHSCREEN THERMOSTAT (810-1600) 8'-0" A.F.F.	8C T-STAT CABLE	EMS SUPPLIER	GENERAL CONTRACTOR	(1) PER HVAC UNIT ZONE
◘	RJ-11/RJ-45 DATA JACK PHONE COMBO	CAT-5 DATA CABLE (24AWG, 4 TWISTED PAIR)	GENERAL CONTRACTOR	GENERAL CONTRACTOR	(1) AT OFFICE COMPUTER CART
$m	MOTION SENSOR SWITCH	LEVITON EZ-FIND ODS-10-IDW	GENERAL CONTRACTOR	GENERAL CONTRACTOR	(1) PER RESTROOM (1) PER BREAK ROOM (1) PER OFFICE

SENSOR KEYNOTES

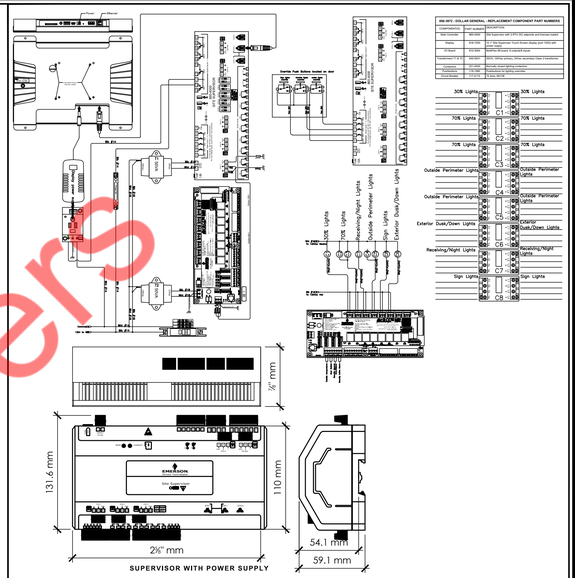
1. INSTALL THERMOSTATS 8'-0" AFF. THE EXACT MOUNTING LOCATION OF THE THERMOSTAT "TS" MAY VARY DEPENDING ON THE STORE LAYOUT AND DUCT CONFIGURATION.
2. PHONE LINE #1 - TWO RJ-11 PORTS. ONE (1) LOCATED IN OFFICE W/RJ-45 DATA JACK COMBO AND ONE (1) AT REGISTER. 24 GA. CAT 5, 4-PAIR TWISTED WIRE ONLY. USE BLUE AND BLUE & WHITE WIRES. HOOK TO LINE #1 TERMINAL IN RJ-11 JACK EACH PHONE JACK TO HAVE DEDICATED, SEPARATE HOME RUN TO DMARC. LABEL AS "PHONE" AT THE DESTINATION AND AT DMARC. PHONE COMPANY PROVIDES FINAL HOOK UP TO DMARC ONLY.PHONE LINE #2 - RJ-11 PHONE JACK SUPPLIED AND WIRED BY CONTRACTOR.
3. NEW EMS PANEL BY LANDLORD. E.C. COORDINATE EXACT LOCATION & ELECTRICAL REQUIREMENTS PRIOR TO ROUGH IN. BASE BID ACCORDINGLY.

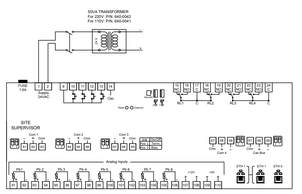


EMS GENERAL NOTES

1. EMS SUPPLIER NOTE: CUSTOMIZED DOLLAR GENERAL EMS PANEL REQUIRES STORE #, CITY, STATE, ZIP CODE & QTY. OF HVAC UNITS OF THE INSTALL SITE WHEN ORDERING. EMS SYSTEMS INSTALLATION GUIDE WITH PHOTOS IS AVAILABLE ON NATIONAL ACCOUNT WEBSITE. ALL QUESTIONS PERTAINING TO THE EMS PANEL, SYSTEM INSTALLATION & SETUP SHOULD BE DIRECTED TO EMERSON'S DOLLAR GENERAL SUPPORT TEAM AT 770-425-2724.
2. ALL SIGN & LIGHTING CIRCUITS MUST BE FED THROUGH THE DESIGNATED CONTACTORS AS NOTED ON THIS PAGE.
3. ALL LOW VOLTAGE HVAC & DOOR SENSORS MUST BE CONNECTED TO THE PROPER TERMINAL 24 GA. SHIELDED (SHIELD MUST BE GROUNDED) CABLE, BELDEN #8641, 2 CONDUCTOR WIRE OR IT'S EQUIVALENT IS REQUIRED.
4. COOLER & FREEZER HOME RUNS WILL BE TERMINATED AT ALL POINTS BY DOLLAR GENERAL REFRIGERATION DEPARTMENT.

3 | SCALE N.T.S. | CPU TERMINAL DIAGRAM

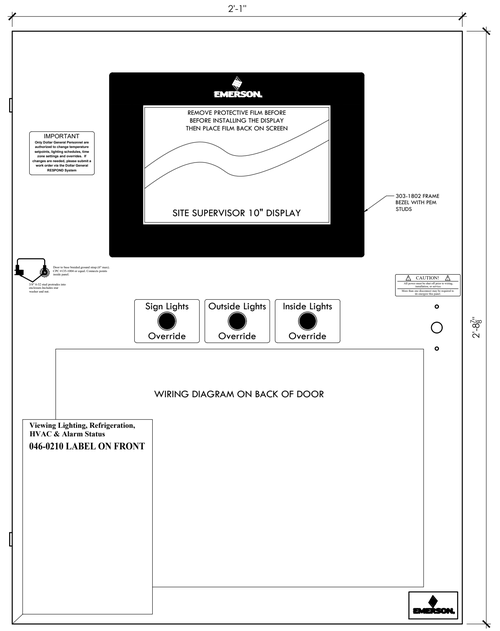




TESTING NOTES

TESTING OF HVAC UNITS THRU EMS PANEL IS ACCOMPLISHED BY SIMPLY WARMING UP OR COOLING DOWN A SPACE TEMPERATURE SENSOR (USING A BLOW DRYER OR ELECTRONIC EQUIPMENT DUSTER AEROSOL) AND WATCH THE FAN, HEAT AND COOL STAGES CYCLE ON AND OFF. THIS REQUIRES TWO PEOPLE AT ALL TIMES. ONE TO WATCH THE SCREEN AND THE OTHER TO WATCH OPERATION OF THE AHU. WHEN COMPLETE, PRESS THE HOME BUTTON TO RETURN TO THE MAIN SCREEN.

2 | SCALE N.T.S. | CONTROL WIRING DIAGRAM



CONTROL PANEL NOTES

1. EMS SYSTEM SHOULD BE TESTED FOR HVAC OPERATION, INTERIOR LIGHTING, EXTERIOR LIGHTING AND SIGN LIGHTING PRIOR TO CONTRACTOR'S ELECTRICAL POSSESSION DATE. USE OUTSIDE LIGHT AND SIGN LIGHT OVERRIDE FOR EXTERIOR TESTING.

4 | SCALE N.T.S. | PROGRAM CONTROLLER DETAIL

ELECTRICAL PANEL SCHEDULE

PANELBOARD	A	VOLTAGE	120 / 208 V	PHASE	3	WIRE	4												
PANEL TYPE	MLO	MAINS	MLO	BUS RATING	600A	AIC RATING	FIELD VERIFY												
NEMA TYPE ENCLOSURE	1	MOUNTING	SURFACE	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			SPACE					A	14,400	200	3/0	2	EXISTING LIGHTING PANEL (B)	(E)		2
3			SPACE					B	14,400							4
5		(E)	SPARE	2		150		C					SPACE			6
7								A					SPACE			8
9							5,760	B	2,880							10
11		(N)	RTU #1	3	4	70	5,760	C	2,880	40	8	3	RTU #3	(N)		12
13							5,760	A	2,880							14
15							2,880	B	2,880							16
17		(N)	RTU #2	3	8	40	2,880	C	2,880	40	8	3	RTU #4	(N)		18
19							2,880	A	2,880							20
21							8,500	B					SPACE			22
23		(N)	NEW PANEL (C)	3	3	100	8,500	C					SPACE			24
25							8,500	A					SPACE			26
27			SPACE					B					SPACE			28
29			SPACE					C					SPACE			30
31			SPACE					A					SPACE			32
33			SPACE					B					SPACE			34
35			SPACE					C					SPACE			36
37			SPACE					A					SPACE			38
39			SPACE					B					SPACE			40
41			SPACE					C					SPACE			42

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 37,300 WATTS
B= 37,300 WATTS
C= 22,900 WATTS

(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

TOTAL CONNECTED LOAD	97,500	WATTS	271	AMPS
TOTAL DEMAND LOAD	105,613	WATTS	294	AMPS

ELECTRICAL PANEL SCHEDULE

PANELBOARD	B	VOLTAGE	120 / 208 V	PHASE	1	WIRE	3												
PANEL TYPE	MLO	MAINS	MLO	BUS RATING	200AMP	AIC RATING	FIELD VERIFY												
NEMA TYPE ENCLOSURE	1	MOUNTING	SURFACE	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		(N)	SALES LIGHTS	1	12	20	300	A	750	20	12	1	SALES LIGHTS	(N)		2
3		(N)	SALES LIGHTS	1	12	20	500	B	50	20	12	1	SALES LIGHTS	(N)		4
5		(N)	SALES LIGHTS	1	12	20	750	A	300	20	12	1	SALES LIGHTS	(N)		6
7		(N)/(C)	SALES NIGHT LIGHTS	1	12	20	300	B	500	20	12	1	RR, BR & HALL LIGHTS, EF	(N)		8
9		(N)/(C)	RECEIVING AREA LIGHTS	1	12	20	750	A	100	20	12	1	OFFICE LIGHTS	(N)/(C)		10
11		(N)/(C)	EMS PANEL	1	12	20	500	B		20		1	SPARE			12
13		(N)	REC_SHOW WINDOW	1	12	20	400	A	1,200	20	12	1	PYLON SIGN	(N)		14
15		(N)	REC_SHOW WINDOW	1	12	20	400	B					SPACE			16
17		(N)	HAND DRYER	1	12	20	1,000	A					SPACE			18
19		(N)	HAND DRYER	1	12	20	1,000	B	1,200	20	12	1	STOREFRONT SIGN	(N)		20
21		(N)/(C)	WATER HEATER (EWH-1)	1	12	20	1,650	A	1,200	20	12	1	STOREFRONT SIGN	(N)		22
23		(E)	SPARE	2		60	0	B	360	20	12	1	OFFICE RECEPT	(N)		24
25							0	A	360	20	12	1	SECURITY RECEPT	(N)/(C)		26
27			SPACE					B	500	20	12	1	INTERFACE EQUIP RECEPT	(N)		28
29			SPACE					A	360	20	12	1	VSAT, DATA EQUIP. QUAD	(N)		30
31			SPACE					B	360	20	12	1	CCTV QUAD	(N)/(C)		32
33		(N)	RCP-1	1	12	20	100	A	360	20	12	1	OFFICE QUAD	(N)/(C)		34
35		(N)/(C)	TELEPHONE BOARD RECEPT	1	12	20	180	B	500	20	12	1	FIRE ALARM	(N)		36
37		(E)	EXISTING CANOPY LIGHTS	1	12	20	1,000	A	720	20	12	1	RTU WP/GFI RECEPT	(N)		38
39			SPARE	1		20		B		20		1	SPARE			40
41			SPARE	1		20		A		20		1	SPARE			42

ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 11,300 WATTS
B= 6,350 WATTS

(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

TOTAL CONNECTED LOAD	17,650	WATTS	148	AMPS
TOTAL DEMAND LOAD	19,875	WATTS	166	AMPS

ELECTRICAL PANEL SCHEDULE

PANELBOARD	C	VOLTAGE	120 / 208 V	PHASE	3	WIRE	4												
PANEL TYPE	MLO	MAINS	MLO	BUS RATING	225	AIC RATING													
NEMA TYPE ENCLOSURE	1	MOUNTING	SURFACE	OPTIONS		NOTE	NEW 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		(N)/(C)	ICE CREAM FREEZER	2	10	25	2,600	A	1,300	20	12	2	REACH-IN COOLER CASE	(N)/(C)		2
3							2,600	B	1,300							4
5		(N)/(C)	REACH-IN FROZEN CASE	2	8	40	2,880	C	1,300	20	12	2	REACH-IN COOLER CASE	(N)/(C)		6
7							2,880	A	1,300							8
9		(N)/(C)	REACH-IN FROZEN CASE	2	8	40	2,880	B	1,300	20	12	2	REACH-IN COOLER CASE	(N)/(C)		10
11							2,880	C	1,300							12
13		(N)/(C)	8' PRODUCE COOLER	1	12	20	1,200	A	1,600	20	12	1	DRINK COOLER (M COKE ENDCAP)	(N)/(C)		14
15		(N)/(C)	8' PRODUCE COOLER	2	6	50	4,100	B	1,600	20	12	1	DRINK COOLER (STARBUCKS)	(N)/(C)		16
17							4,100	C	1,600	20	12	1	DRINK COOLER (M MTN DEW)	(N)/(C)		18
19		(N)/(C)	POWER POLE GREEN	1	12	20	1,200	A	1,200	20	12	1	DRINK COOLER (M COFFEE)	(N)/(C)		20
21		(N)/(C)	POWER POLE BROWN	1	12	20	1,200	B	1,200	20	12	1	DRINK COOLER (M BREAKFAST/SNACK)	(N)/(C)		22
23		(N)/(C)	POWER POLE GREEN	1	12	20	1,200	C	360	20	12	1	EAS TOWER	(N)		24
25		(N)/(C)	POWER POLE BROWN	1	12	20	1,200	A	1,200	20	12	1	HYDRATION COOLERS QUAD REC	(N)/(C)		26
27		(N)/(C)	POWER POLE GREEN	1	12	20	1,200	B	1,200	20	12	1	ICE MERCH	(N)/(C)		28
29		(N)/(C)	POWER POLE BROWN	1	12	20	1,200	C	1,200	20	12	1	DRINK MERCH	(N)/(C)		30
31		(N)/(C)	POWER POLE GREEN	1	12	20	1,200	A	1,000	20	12	1	AUTOMATIC DOORS	(N)/(C)		32
33		(N)/(C)	POWER POLE BROWN	1	12	20	1,200	B	500	20	12	1	REC_DRINKING FOUNTAIN	(N)		34
35		(N)/(C)	DRINK COOLERS	1	12	20	1,200	C	540	20	12	1	REC_BREAK ROOM	(N)		36
37		(N)/(C)	RECEIVING AREA FREEZER	2	12	20	1,300	A	1,600	20	12	1	DRINK COOLER (MTN DEW/PEPSI)	(N)/(C)		38
39							1,300	B					SPARE			40
41			SPARE					C					SPARE			42

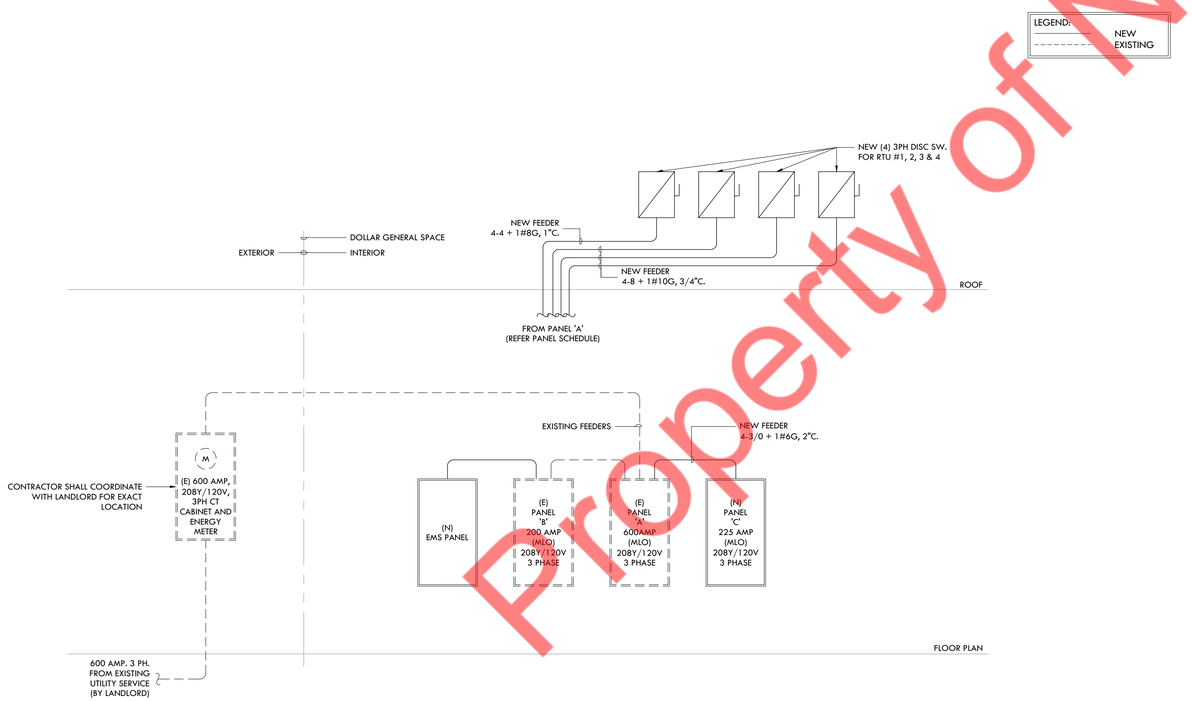
ALL PHASES TO BE BALANCED T0 WITHIN 7%
A= 20,780 WATTS
B= 21,580 WATTS
C= 19,760 WATTS

(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

TOTAL CONNECTED LOAD	60,520	WATTS	168	AMPS
TOTAL DEMAND LOAD	42,538	WATTS	119	AMPS

ELECTRICAL PANEL SCHEDULE

RISER DIAGRAM



RISER NOTES & LOAD SUMMARY

1. ALL CONDITIONS TO BE FIELD VERIFIED BEFORE SUBMITTING BID.
2. CONTRACTOR TO MAINTAIN FIRE RATING OF PARTITION NEW ELECTRICAL EQUIPMENT IS BEING SECURED TO.
3. ALL ELECTRICAL WORK BEING SHOWN IN SCHEMATIC IS EXISTING UNLESS OTHERWISE NOTED.
4. CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL VOLTAGES ON PLANS UPON FIRST VISIT TO THE SITE. THE INCOMING SERVICE SHOULD CORRESPOND TO THE SPECIFICATIONS FOR THE LIGHTING FIXTURES AND THE H.V.A.C EQUIPMENT AND BE PROPERLY NOTED ON THE ELECTRICAL PANEL DIAGRAMS AND RISERS. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT IMMEDIATELY.
5. HVAC CIRCUIT BREAKERS SHALL BE "HACR" TYPE WHERE REQUIRED BY EQUIPMENT NAMEPLATE PER N.E.C.
6. CONTRACTOR SHALL FIELD VERIFY EXACT A.I.C. RATING OF LANDLORDS DISTRIBUTION EQUIPMENT, FURNISH AND INSTALL TENANTS SYSTEM TO MATCH.
7. ELECTRICAL CONTRACTOR SHALL BALANCE ALL PANELS AND + ELECTRICAL EQUIPMENT TO (10%) BETWEEN PHASES: A/B B/C, - A/C REGARDLESS OF CIRCUITING INDICATED.
8. 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.
9. CONTRACTOR SHALL MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM.
10. ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING & REPAIRING.

ELECTRICAL WORK BEING SHOWN IN SCHEMATIC IS EXISTING UNLESS OTHERWISE NOTED.

CONTRACTOR TO VERIFY EXISTING SERVICE WIRE / CONDUIT DURING BIDDING STAGE AND REPORT TO TENANT ARCHITECT ANY DISCREPANCIES THAT IS DIFFERENT THAN SHOWN ON PLANS.

CONTRACTOR TO PROVIDE NEW NAME PLATE ON TENANT'S METER FOR IDENTIFICATION.

ANY PENETRATION THROUGH FIRE-RESISTANT/ RATED WALLS, PARTITIONS, FLOORS AND CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS TO MAIN FIRE RESISTANT RATING. COORDINATE WITH LANDLORD REPRESENTATIVE FOR REQUIREMENTS.

CONTRACTOR TO PROVIDE PHYSICAL LABELS INDICATING PANEL AND CIRCUIT NUMBERS ON ALL EQUIPMENT AND RECEPTACLES CORRESPONDING TO THE PANEL SCHEDULE. IN ADDITION, THE KITCHEN EQUIPMENT SCHEDULE SHOULD BE PLACED INSIDE EACH PANEL.

CONTRACTOR TO VERIFY IN FIELD THE EXACT USE OF THE EXISTING LIGHTING CONTACTORS PRIOR TO BID, REUSE IF POSSIBLE. PROVIDE NEW IF REQUIRED.

ELECTRICAL LOAD SUMMARY

DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
LIGHTING- 120V	5.3	120	1	1.25	6.6
EXTERIOR SIGN	1.2	120	1	1.25	1.5
RECEPTACLES	18.5	120	1	>10kW=10+[0.5*(kW-10)]	14.3
STOREFRONT SIGN	2.4	120	1	1.25	3.0
EXH. FANS	0.5	208	1	1.00	0.5
REF. EQUIPMENT	48.5	208	1	0.65	31.5
ROOFTOP UNITS	43.2	208	3	1.00	43.2
HOT WATER HEATER	1.8	208	3	1.00	1.8
TOTALS	121.4				102.4

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.

MINIMUM FEEDER AMPERAGE

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

102.4 x 1000 = 102,363
208 x 1.732 = 360

284.1 AMPS USE (EXISTING) 600AMP SERVICE.

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

I. GENERAL REQUIREMENTS

1. GENERAL CONDITIONS: ALL CONDITIONS AND REQUIREMENTS UNDER THE "GENERAL CONDITIONS", THE "SUPPLEMENTARY GENERAL CONDITIONS", THE "SPECIAL CONDITIONS" SHALL BECOME A PART OF THIS SPECIFICATION, AND BIDDERS WILL EXAMINE ALL DRAWINGS AND READ ALL PARTS OF THE SPECIFICATIONS TO AVOID OMISSIONS, DUPLICATIONS AND TO INSURE COMPLETE EXECUTION OF ALL WORK FOR ELECTRICAL.

2. GENERAL: THE WORK UNDER THIS SECTION SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT AND INCIDENTAL COSTS NECESSARY TO FURNISH AND INSTALL ALL ELECTRICAL WORK, EQUIPMENT, LAMPS, ETC. INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, OR BOTH.

A. THE ELECTRICAL SUBCONTRACTORS QUOTING ON THEIR SPECIFIC SCOPE OF WORK / SERVICES TO CONTACT THE LOCAL BUILDING DEPARTMENT / AGENCY TO DISCUSS CODE ISSUES / IDIOSYNCRASIES REGARDING THEIR SERVICES AND THE QUOTE ASSOCIATED WITH THE SERVICES TO THE GENERAL CONTRACTOR FOR THIS PROJECT. THIS CONTRACTOR TO BE FAMILIAR WITH THE SITE WHERE SUCH SERVICES / WORK WILL BE PERFORMED, THIS SPECIFIC USE AND THE IDIOSYNCRASIES ASSOCIATED WITH THE LIFE, SAFETY AND HEALTH ASSOCIATED WITH THIS WORK AND TO INDICATE ON THE QUOTE ANY ITEMS REQUIRED THAT ARE NOT NECESSARILY SHOWN ON THE DRAWINGS / SPECIFICATIONS.

3. THE TENANT'S GENERAL CONTRACTOR AND/OR HIS ELECTRICAL SUBCONTRACTOR IS TO VERIFY ALL EQUIPMENT SPECIFICATIONS AND REQUIREMENTS WITH THE TENANT OR THE TENANT'S CONSTRUCTION REPRESENTATIVE PRIOR TO START OF CONSTRUCTION. THIS CONTRACTOR TO VERIFY AMPERAGE AND VOLTAGE SPECIFICATIONS AND REQUIREMENTS (SERVICE AND PANEL SPECIFICATION) WITH THE ELECTRICAL SUBCONTRACTOR IN COORDINATION WITH EQUIPMENT SPECIFICATIONS FOR EQUIPMENT SUPPLIED BY THE TENANT, THE CONTRACTORS OR OTHER SOURCES (AS SPECIFIED BY THE ARCHITECT) AS A DOUBLE CHECK TO ASCERTAIN PROPER INSTALLATION OF EQUIPMENT AT THE CORRECT VOLTAGE/ AMPERAGE.

A. THE ELECTRICAL SUBCONTRACTOR IS REQUIRED TO VISIT THE SITE DURING BIDDING AND VERIFY LOCATION(S) OF WHERE THE ELECTRICAL EQUIPMENT/PIPING IS INDICATED TO BE PLACED, SIZE OF ANY EXISTING SERVICE AND WHAT IS INDICATED TO BE INSTALLED OR "EXISTING TO REMAIN" AND IF NEW SERVICE IS INDICATED, TO VERIFY IF DIFFERENT THAN THE DRAWINGS, SIZE OF FEEDER PIPES, REQUIRED DISTANCES AND POSSIBLE ADDITIONAL WORK REQUIRED AT THE ELECTRICAL DISTRIBUTIONS ROOM. ANY DISCREPANCIES BETWEEN DESIGNED AND ACTUAL TO BE TOLD TO THE GENERAL CONTRACTOR AND BE INDICATED ON THE BID FORM.

4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVAL FROM THE BUILDING AND ELECTRICAL INSPECTORS FOR ALL CONCEALED WORK PRIOR TO CLOSING UP WALLS, FLOORS AND CEILINGS.

5. TENANT'S GENERAL CONTRACTOR SHALL BRING IN ALL ADDITIONAL SERVICES, ADEQUATE FOR TENANT'S NEEDS AS REQUIRED, INCLUDING BUT NOT LIMITED TO ELECTRIC, SPRINKLER, SOIL (WASTE), DOMESTIC WATER LINES, OUTSIDE TOILET EXHAUST AIR, FIRE ALARM, TELEPHONE AND DATA.

6. SCOPE: FURNISH LABOR, MATERIALS, TOOLS, EQUIPMENT, ETC., REQUIRED FOR A COMPLETE INSTALLATION OF ELECTRICAL SYSTEMS AND WORK, IN ACCORDANCE WITH LOCAL CODES AND GOVERNING BODIES HAVING JURISDICTION, AS SHOWN ON DRAWINGS, AND AS SPECIFIED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

A. NEW SERVICE -- TENANT'S CONTRACTOR IS TO REUSE EXISTING ELECTRICAL SERVICE OR CONDUIT ONLY; FURNISH AND INSTALL NEW ELECTRICAL SERVICE WIRE AND EXTEND BOTH CONDUIT AND WIRE TO POINT OF ALL NEW PANELS, TRANSFORMERS, WIREWAYS, TROUGHS, TIME CLOCKS, ETC.. SINCE SPACE MAY OR MAY NOT BE MEASURED OR REVIEWED BY TENANT'S ARCHITECT, THE ACTUAL LOCATION OF SERVICE AND PANEL LOCATIONS MAY NOT BE KNOWN. THE ELECTRICAL SUBCONTRACTOR, IN REVIEW OF THE PREMISES, IS REQUIRED TO INSTALL PANELS IN LOCATION AS NOTED ON DRAWINGS AND MUST INCLUDE IN HIS BID ANY EXTENSION OF CONDUIT AND WIRE, NEW DISCONNECTS, RELOCATION OR INSTALLATION OF PANELS, TROUGHS, WIREWAYS, ETC. TO MAKE THE SYSTEM WHOLE AND TO UPGRADE AS NECESSARY TO MEET CODE REQUIREMENTS. INSTALL NEW SERVICE INCLUDING CONDUIT AND WIRE FROM DEMISED PREMISES TO LANDLORD'S ELECTRICAL ROOM IF THE EXISTING SERVICE NEEDS TO BE UPGRADED FROM WHAT TENANT WAS ORIGINALLY TOLD SERVICE WOULD BE, OR THE SERVICE NEEDS TO BE MOVED BECAUSE IT'S EITHER SHOWN TO BE MOVED OR IS EXISTING NOW IN THE PATH OF FUTURE PARTITION OR OTHER SERVICES.

B. EXISTING SERVICE - TENANT'S CONTRACTOR IS TO REUSE EXISTING ELECTRICAL SERVICE WIRE, CONDUIT AND ELECTRICAL EQUIPMENT; CUT AND EXTEND TO POINT OF NEW ELECTRICAL EQUIPMENT. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS REUSED TO BE BROUGHT UP TO "LIKE NEW" CONDITION AND THE LATEST N.E.C. STANDARD. SINCE SPACE MAY OR MAY NOT BE MEASURED OR REVIEWED BY TENANT'S ARCHITECT, THE ACTUAL LOCATION OF SERVICE AND PANEL LOCATIONS MAY NOT BE KNOWN. THE ELECTRICAL SUBCONTRACTOR, IN REVIEW OF THE PREMISES IS REQUIRED TO INSTALL PANELS IN LOCATION AS NOTED ON DRAWINGS AND MUST INCLUDE IN HIS BID ANY EXTENSION OF CONDUIT AND WIRE, NEW DISCONNECTS, RELOCATION OR INSTALLATION OF PANELS, TROUGHS, WIREWAYS, ETC. TO MAKE SYSTEM WHOLE AND TO UPGRADE AS NECESSARY TO MEET CODE REQUIREMENTS. INSTALL NEW SERVICE INCLUDING CONDUIT AND WIRE FROM DEMISED PREMISES TO LANDLORD'S ELECTRICAL ROOM IF THE EXISTING SERVICE NEEDS TO BE UPGRADED FROM WHAT TENANT WAS ORIGINALLY TOLD SERVICE WOULD BE, OR THE SERVICE NEEDS TO BE MOVED BECAUSE IT'S EITHER SHOWN TO BE MOVED OR IS EXISTING NOW IN THE PATH OF FUTURE PARTITION OR OTHER SERVICES. IF SERVICE IS ADEQUATE BUT MUST BE RELOCATED, CUT AND EXTEND EXISTING WIRE AND CONDUIT TO POINT OF ALL NEW PANELS, DISCONNECTS, TROUGHS, TIME CLOCKS, ETC.

C. POWER DISTRIBUTION SYSTEMS AND TRANSFORMER.

D. LIGHTING SYSTEMS (ALSO SEE REFLECTED CEILING PLAN).

E. ELECTRICAL ENERGIZING -- MISCELLANEOUS FAN AND MOTOR.

F. MOTOR POWER WIRING SYSTEM.

G. TELEPHONE EMPTY CONDUIT SYSTEM (INCLUDING TERMINAL BOXES AND OUTLETS).

H. CONVENIENCE RECEPTACLE SYSTEM, DOOR ALARM/ ENTRY SYSTEM/ SECURITY.

I. SOUND SYSTEM, INTERCOM SYSTEM - FURNISHED AND INSTALLED BY THIS CONTRACTOR IF REQUIRED BY CLIENT; EMERGENCY LIGHT SYSTEM AND BATTERIES FURNISHED BY CLIENT AND INSTALLED BY THIS CONTRACTOR.

J. GROUNDING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND ALL MALL REQUIREMENTS.

K. NIGHT LIGHT CIRCUITING THROUGHOUT PREMISES AS PER CODE WHETHER SHOWN OR NOT ON DRAWINGS.

L. LOCK OUTS FOR EXIT / EMERGENCY LIGHTING, ALARM SYSTEMS, CASH REGISTERS, GRILLE AT ENTRY (IF APPLICABLE) AS REQUIRED. SEE PANEL SCHEDULE FOR CIRCUITS.

M. SMOKE DETECTORS FURNISHED AND INSTALLED WITHIN STORE TO INCLUDE LOCATIONS AND INTERNAL / EXTERNAL WIRING IF REQUIRED BY LANDLORD OR FIRE MARSHAL.

N. ELECTRICAL SUBCONTRACTOR, WHEN BIDDING THIS WORK, TO CHECK TO MAKE SURE THAT SERVICE WIRE, CONDUIT, DISCONNECTS, ETC., ARE ADEQUATE FOR TENANT'S NEEDS. IF ADDITIONAL SERVICE IS REQUIRED, INCLUDE NEW CONDUIT AND SERVICE FEED OR DISCONNECTS, METER BASE AND METER (IF APPLICABLE), ETC., TO BRING SUCH SERVICE UP TO TENANT'S NEEDS.

O. FURNISH AND INSTALL ALL CONDUIT AND WIRING, DISCONNECTS, BREAKERS, BALANCING OF LOADS, ETC. FOR HOOKUP OF ALL H.V.A.C. EQUIPMENT, UNIT(S), OR INLINE HEATERS WHETHER SUCH HEATERS OR EQUIPMENT / UNITS ARE SHOWN OR NOT.

P. FURNISH AND INSTALL A TWENTY FOUR (24) HOUR, SEVEN (7) DAY TIME CLOCK INCLUDING ALL INTEGRAL WIRING AND LOAD BALANCING (PANEL) FOR CONTROLLING THE STOREFRONT SIGN AND SHOW WINDOW LIGHTING, WHETHER SUCH WORK IS OR IS NOT SHOWN ON PLANS / OR SPECIFICATIONS.

Q. ALL ELECTRICAL ROUGH-IN TO BE NEW AND THE ORIGINAL SERVICES TO THE DEMISED PREMISES TO BE REUSED; CUT AND EXTEND TO POINT OF ALL NEW ELECTRICAL EQUIPMENT (IF ANY EQUIPMENT IS REUSED, UPGRADE SAME TO "LIKE NEW" CONDITION AND THE LATEST N.E.C. STANDARDS) BY THE TENANT'S CONTRACTOR UNLESS NOTED OTHERWISE ON DRAWINGS. TENANT'S GENERAL CONTRACTOR TO FIELD VERIFY THAT ALL UTILITY LINES ARE AT OR ADJACENT TO TENANT'S SPACE AS NOTED AND AT THE SIZE SPECIFIED. IF THE UTILITIES ARE NOT IN LOCATIONS AS NOTED ON THE DRAWINGS OR OF A SIZE LARGER OR SMALLER THAN NOTED, THIS CONTRACTOR IS TO NOTIFY THE TENANT'S ARCHITECT IMMEDIATELY.

R. THE TENANT'S ELECTRICAL SUBCONTRACTOR IS TO PROVIDE A NEW CIRCUIT DIRECTORY(IES) WITH PROPER PHASING AND BALANCING, WHICH IS TO CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND UNDERWRITER'S CODE.

S. THE SIGN(S) JUNCTION BOX PERMIT IS TO BE INCLUDED IN THE WORK FOR THE ELECTRICAL SUBCONTRACTOR AND THE BOX IS TO BE SUPPLIED BY THIS CONTRACTOR AND PROPERLY LABELED.

T. FURNISH AND INSTALL NEW (OR REFURBISH IF EXISTING) TOILET EXHAUST WITH ASSOCIATED DUCTWORK, ROOF PENETRATIONS, OR HOOK UP TO COMMON EXHAUST DUCT WITH BACKDRAFT DAMPER ETC., INCLUDING ASSOCIATED ELECTRICAL HOOKUP AND PANEL CONNECTIONS, WHETHER SUCH WORK IS SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.

U. IF A SMOKE EVACUATION AND / OR DETECTION SYSTEM OCCURS FOR THIS SPACE, IT SHALL BE LEFT INTACT DURING CONSTRUCTION AND ANY NEW WORK, MODIFICATIONS AND/ OR REWIRING TO BE COMPLETED DURING CONSTRUCTION PHASE TO POINT OF NEW PANELS, WHETHER SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.

V. ENGINEER, FURNISH AND INSTALL ANY AND ALL REQUIRED SMOKE EVACUATION, SMOKE DETECTION AND FIRE ALARM SYSTEMS, INCLUDING ANY AND ALL PARTS AND LABOR, TO MEET LOCAL CODE, LANDLORD REQUIREMENTS AND FIRE MARSHAL SPECIFICATIONS WHETHER SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.

W. THE ELECTRICAL SUBCONTRACTOR TO COORDINATE WITH OTHER ENGINEERING DRAWINGS AND INCLUDE COSTS (LABOR AND MATERIALS) NECESSARY FOR OTHER ELECTRICAL EQUIPMENT / FIXTURES NOT SHOWN ON THESE ELECTRICAL DRAWINGS, BUT SHOWN ON OTHER ENGINEERING DRAWINGS.

7. THE TENANT'S GENERAL CONTRACTOR AND/ OR ELECTRICAL SUBCONTRACTOR IS TO INSTALL EMERGENCY AND EXIT LIGHTING, AS REQUIRED BY LOCAL CODE OR AGENCIES HAVING JURISDICTION OVER THE PROJECT. THE EXIT/ EMERGENCY LIGHTING SHOULD BE PROPERLY LABELED AND APPROVED TYPE LOCKOUTS INSTALLED.

8. SUBSTITUTIONS: CATALOG AND MANUFACTURER'S NUMBERS IN THIS SECTION AND ON THE DRAWINGS ARE FOR THE PURPOSE OF ESTABLISHING STANDARDS OF QUALITY AND TYPE OF MATERIALS TO BE USED. PRODUCTS OR OTHER MANUFACTURERS MAY BE USED IF SIMILAR AND EQUAL IN QUALITY AND DESIGN IN THE OPINION OF THE OWNER OR OWNER'S ARCHITECT AND ARE SPECIFICALLY APPROVED BY THE OWNER OR OWNER'S ARCHITECT, IN WRITING, PRIOR TO CLOSE OF BIDDING. REQUESTS FOR APPROVAL OF SUBSTITUTIONS SHALL BE IN WRITING, AND SHALL INCLUDE REPORTS OF TESTS, PERFORMANCE DATA OR OTHER PROOF OF EQUALITY TO THE ITEM SPECIFIED.

9. SHOP DRAWINGS & SUBMITTALS: PRIOR TO THE COMMENCEMENT OF WORK, SUBMIT ONE (1) SET OF THE FOLLOWING ITEMS TO THE OWNER'S ARCHITECT IN THE FORM OF SHOP DRAWINGS, DETAILS OR CATALOG CUTS FOR THE RECORD: LIGHTING AND POWER PANELS, WIRING DEVICES, SAFETY SWITCHES, TRANSFORMER, TIME CLOCKS AND ANY OTHER ITEMS AS REQUESTED BY THE OWNER OR THE OWNER'S ARCHITECT.

A. BY SUBMITTING SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS, THE CONTRACTOR REPRESENTS TO THE CLIENT AND ARCHITECT THAT THE CONTRACTOR HAS (1) REVIEWED AND APPROVED THEM, (2) DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA RELATED THERETO, OR WILL DO SO AND (3) CHECKED AND COORDINATED THE INFORMATION CONTAINED WITHIN SUCH SUBMITTALS WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.

B. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK FOR WHICH THE CONTRACT DOCUMENTS REQUIRE SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTAL HAS BEEN APPROVED BY THE ARCHITECT.

C. THE WORK SHALL BE IN ACCORDANCE WITH APPROVED SUBMITTALS EXCEPT THAT THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY ANY APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE CLIENT IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMITTAL AND

C.1. THE ARCHITECT HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION AS A MINOR CHANGE IN THE WORK, OR A CHANGE ORDER OR CONSTRUCTION CHANGE DIRECTIVE HAS BEEN ISSUED AUTHORIZING THE DEVIATION.
C.2. THE CONTRACTOR SHALL DIRECT SPECIFIC ATTENTION IN WRITING OR ON RESUBMITTED SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS, TO REVISIONS OTHER THAN THOSE REQUESTED BY THE ARCHITECT ON PREVIOUS SUBMITTALS. IN THE ABSENCE OF SUCH WRITTEN NOTICE, THE ARCHITECT'S APPROVAL OF A RESUBMISSION SHALL NOT APPLY TO SUCH REVISIONS.

D. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS BY THE ARCHITECT'S APPROVAL THEREOF.

10. WORKMANSHIP:

A. USE EXPERIENCED, WELL-QUALIFIED CRAFTSMEN, IN GOOD STANDING WITH THEIR RESPECTIVE LABOR UNIONS.

B. USE CAPABLE AND EXPERIENCED SUPERINTENDENTS, AUTHORIZED BY THE CONTRACTOR TO INSTRUCT WORK, MAKE JOB DECISIONS AND ACT FOR THE CONTRACTOR IN ALL MATTERS PERTAINING TO THE CONTRACT.

11. PERMITS, TESTS AND INSPECTIONS:

A. APPLY FOR, SECURE AND PAY FOR ALL REQUIRED PERMITS, FEES, LICENSES AND ROYALTIES TO ACCOMPLISH THE WORK.

B. APPLY FOR, SECURE AND PAY FOR ALL REQUIRED TESTS AND INSPECTIONS TO ACCOMPLISH THE WORK IN CONFORMANCE WITH ALL CODES AND JURISDICTIONS.

C. FURNISH SIGNED CERTIFIED AND ACCEPTABLE COPIES OF ALL ITEMS COVERED IN (A) AND (B) ABOVE TO THE OWNER FOR HIS RECORDS.

D. COMPLY WITH RULES AND REGULATIONS OF JURISDICTIONAL AUTHORITIES AND MALL OR LEASE SPECIFICATIONS AND REPORT ANY DEVIATIONS ON DRAWINGS TO OWNER.

12. CODES, RULES AND REGULATIONS: INCLUDE IN ELECTRICAL BID ANY ADDITIONAL MATERIALS AND LABOR, THAT MAY BE REQUIRED FOR COMPLIANCE WITH ALL GOVERNING LAWS, RULES AND REGULATIONS, EVEN THOUGH THE WORK IS NOT MENTIONED IN THESE SPECIFICATIONS OR SHOWN ON THE DRAWINGS. NOTHING IN THE PLANS OR SPECIFICATIONS SHALL BE DEEMED AS AUTHORITY TO VIOLATE ANY GOVERNING CODE.

13. ACCURACY OF DATA:

A. THE DATA GIVEN HEREIN AND ON THE DRAWINGS ARE AS EXACT AS COULD BE SECURED, BUT THEIR ABSOLUTE ACCURACY IS NOT GUARANTEED. THE SPECIFICATIONS AND DRAWINGS ARE FOR THE ASSISTANCE AND GUIDANCE OF THE CONTRACTOR. EXACT LOCATIONS, DISTANCES, LEVELS, ETC., WILL BE GOVERNED BY THE BUILDING AND THE CONTRACTOR SHALL USE THE DATA CONTAINED HEREIN WITH THIS UNDERSTANDING.

B. THE EXACT LOCATION OF EACH AND EVERY OUTLET OF EACH WIRING SYSTEM, NOT DIMENSIONED ON THE DRAWINGS, SHALL BE AS DIRECTED BY THE OWNER, THE OWNER'S ARCHITECT OR HIS SELECTED REPRESENTATIVE.

14. CLEANUP: REMOVE ALL SURPLUS MATERIAL, EQUIPMENT AND DEBRIS INCIDENTAL TO THIS WORK AND LEAVE THE PREMISES IN A CONDITION ACCEPTABLE TO THE OWNER.

15. GUARANTEE: FURNISH A WRITTEN CERTIFIED GUARANTEE, IN ACCEPTABLE FORM TO THE OWNER, AGAINST ANY DEFECTIVE WORKMANSHIP, MATERIAL AND OPERATING EQUIPMENT. THIS GUARANTEE SHALL BE IN FULL FORCE AND EFFECTIVE FOR A PERIOD OF ONE (1) YEAR AFTER ACCEPTANCE OF THE INSTALLATION.

16. TEMPORARY ELECTRIC SERVICE: THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRICAL WIRING FOR CONSTRUCTION USE AS FOLLOWS: THE SERVICE ENTRANCE AND FEEDER SHALL BE 60 AMPS, SINGLE PHASE, 3 WIRE 120/208 VOLT FUSED MAIN DISCONNECT. THE FEEDER TO SERVE THE TEMPORARY DISTRIBUTION WIRING PROVIDING TEMPORARY LIGHTING IN ALL AREAS AS INDICATED ON DRAWINGS AND WHEREVER REQUIRED FOR THE OPERATION OF 120 VOLT SINGLE PHASE PORTABLE TOOLS AND EQUIPMENT NOT TO EXCEED 1 H.P.. THE WIRING SHOULD BE EXTENDED ALSO, SO THERE IS A 120 VOLT SINGLE PHASE OUTLET WITHIN 75 FEET OF ANY PORTION OF THE BUILDING. PROVIDE GROUND FAULT PROTECTION FOR ALL REQUIRED RECEPTACLES NOT TO BECOME A PERMANENT PART OF THE INSTALLATION.

17. STRUCTURAL CONDITIONS: NOTCHING AND BORING OF STRUCTURAL MEMBERS WILL NOT BE PERMITTED. IF CONDUIT, BOXES, ETC. NEED TO BE HUNG FROM STRUCTURAL STEEL, ONLY HANG FROM TOP FLANGE OF BEAMS AND TOP CHORDS AND ONLY AT PANEL POINTS OF JOISTS/ TRUSSES.

18. COOPERATION WITH OTHER CONTRACTORS: THIS CONTRACTOR SHALL COOPERATE WITH ALL OTHER CONTRACTORS FURNISHING LABOR MATERIALS AND ALL WORK, SO THAT THE WORK AS A WHOLE SHALL BE EXECUTED AND COMPLETED WITHOUT CONFLICT OR DELAY. IN THE EVENT OF ANY MECHANICAL OBSTRUCTION, AS PLUMBING OR AIR CONDITIONING DUCTS IN WAY OF ELECTRICAL EQUIPMENT, IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO NOTIFY THE OWNER'S ARCHITECT BEFORE COMMENCING ANY WORK.

II. BASIC MATERIALS AND METHODS

1. RACEWAYS AND BOXES:

A. WHERE SIZES OF RACEWAY OR BOXES ARE NOT INDICATED, THE CONTRACTOR SHALL SIZE THESE ITEMS AS REQUIRED FOR THE INSTALLATION.

B. FLEXIBLE METAL CONDUIT AS ALLOWABLE BY CODE SHALL BE USED FOR FINAL CONNECTION OF LIGHTING FIXTURES AND WIRING DEVICES TO BE INSTALLED IN HUNG CEILINGS.

C. WORK INSTALLED IN METAL PARTITIONS SHALL BE RUN IN CONCEALED ELECTRIC METALLIC TUBING OR FLEXIBLE CONDUIT AS REQUIRED BY GOVERNING CODE AND LANDLORD.

D. BRANCH CIRCUIT WORK CHASED INTO EXISTING CONSTRUCTION FOR CONCEALMENT UNDER PATCHED FINISHES, MAY BE INSTALLED IN RIGID CONDUIT, OR EMT.

E. CONDUITS THAT RUN EXPOSED ON EXTERIOR OF BUILDING SHALL BE RIGID CONDUIT WITH WEATHER TIGHT, CORROSION RESISTANT FITTINGS.

F. FLEXIBLE STEEL CONDUITS SHALL BE USED IN MAKING UP SHORT, FLEXIBLE CONNECTIONS TO ROTATING OR VIBRATING MACHINERY, MINIMUM 12" LENGTH AND FOR CONNECTIONS BETWEEN JUNCTION BOXES IN HUNG OR FURRED CEILING FIXTURES.

G. ALL INTERIOR FEEDERS OR EXPOSED FEEDERS TO THE PUBLIC'S EYE, SHALL BE INSTALLED IN RIGID CONDUIT OR EMT.

H. ALL INTERIOR LOW VOLTAGE WIRING SHALL BE INSTALLED IN RIGID CONDUIT OR EMT WHERE REQUIRED BY CODE.

I. MINIMUM SIZE CONDUIT SHALL BE 3/4" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

J. ALL WORK RUN IN UNEXCAVATED AREAS, CRAWL SPACES, TUNNELS, OR UNDERGROUND SHALL BE INSTALLED IN RIGID CONDUIT.

K. ALL WORK RUN EXPOSED WITHIN THE BUILDING MAY BE INSTALLED IN RIGID STEEL CONDUIT OR ELECTRICAL METALLIC TUBING.

L. ALL WORK RUN CONCEALED WITHIN HUNG OR FURRED CEILINGS, METAL STUD PARTITIONS AND THE LIKE, MAY BE INSTALLED IN RIGID STEEL CONDUIT, ELECTRIC METALLIC TUBING EXCEPT THAT WIRING IN OR THROUGH SLABS SHALL BE IN RIGID CONDUIT.

M. GALVANIZED PRESSED STEEL OUTLET BOXES OF PROPER SIZE AND TYPE AS REQUIRED BY THE BUILDING CONDITIONS SHALL BE PROVIDED FOR ALL INTERIOR OUTLETS FOR LIGHTING, SWITCHES, RECEPTACLES, CLOCKS, SIGNALS, AND THE LIKE.

N. PROVIDE GALVANIZED FITTINGS FOR EXPOSED WORK, THREADED FOR CONDUIT CONNECTIONS AND PROVIDE WITH SUITABLE COVERS.

O. THE OUTLETS FOR LOCAL SWITCHES SHALL BE INSTALLED ADJACENT TO THE TRIM ON THE STRIKING SIDE OF THE DOOR, REGARDLESS OF THE LOCATIONS INDICATED ON THE DRAWINGS; THEREFORE, CHECK ALL DOOR SWINGS BEFORE INSTALLING CONDUIT AND OUTLETS.

2. GROUNDING:

A. ALL MAJOR PARTS NOT CARRYING CURRENT, INCLUDING THE FOLLOWING ITEMS BELOW, SHALL BE PROPERLY GROUNDED:

A.1. SECONDARY FEEDER CONDUIT AND EQUIPMENT ENCLOSURES.
A.2. PANEL BOARD ENCLOSURES, PULL AND JUNCTION BOXES, CABLE TROUGHS.
A.3. ALL CONDUITS, METAL MOLDING AND OUTLET BOXES.
A.4. FAN AND EQUIPMENT HOUSINGS EXPOSED ON THE STRUCTURE OR ON GRADE.

B. ALL CASH REGISTER OUTLETS TO BE ISOLATED AND SEGREGATED.

3. SAFETY SWITCHES: PROVIDE WHERE SHOWN OR AS REQUIRED, HEAVY-DUTY, METAL ENCLOSED, EXTERNALLY OPERATED FUSED, OR UNFUSED, SAFETY SWITCHES, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED. THE OPERATING MECHANISM SHALL BE SO DESIGNED THAT THE SWITCHES MAY BE LOCKED IN THE "ON" OR "OFF" POSITIONS. WHERE "WEATHERPROOF" SAFETY SWITCHES ARE INDICATED OR REQUIRED, THESE SHALL BE AS SPECIFIED ABOVE EXCEPT ENCLOSURES SHALL BE NEMA III, RAINTIGHT.

4. MOTOR AND OTHER WIRING:

A. PROVIDE ALL REQUIRED CONDUIT, WIRING AND SAFETY SWITCHES FOR ALL MOTORS, AND ANY OTHER ELECTRICAL EQUIPMENT INSTALLED OR CONNECTED UNDER THIS DIVISION.

B. ALL MOTORS WILL BE FURNISHED AND SET UNDER OTHER DIVISION, THE WORK OF THIS DIVISION SHALL INCLUDE PROVIDING ALL CONNECTIONS SO AS TO BE COMPLETE.

C. ALL STARTING DEVICES, MOTOR CONTROLLERS, FLOAT SWITCHES, LEVEL SENSORS, ALARM DEVICES, REMOTE CONTROL PUSH BUTTONS, ETC., WILL BE FURNISHED BY THE VARIOUS CONTRACTORS, UNLESS OTHERWISE NOTED HEREIN. BUT THIS CONTRACTOR SHALL SET THESE DEVICES AND PROVIDE ALL CONNECTIONS.

D. FOR EACH THERMOSTAT (BY H.V.A.C.), PROVIDE 4" x 4" OUTLET BOX WITH 3/4" EMPTY CONDUIT STUBBED UP INTO CEILING AND BUSHED. PROVIDE STEEL DRAG WIRE FOR EACH LOCATION.

5. WIRING DEVICES:

A. COMPUTER RECEPTACLES AT CASH WRAP AREA SHALL BE HUBBELL #IG5262, COMPUTER GRADE WITH "ISOLATED" GROUND LUGS.

B. ALL WIRING DEVICES INSTALLED IN THIS BUILDING SHALL BE "SPECIFIED GRADE," MANUFACTURED BY ARROW, HART AND HEGEMAN, HUBBELL, GENERAL ELECTRIC, OR EQUIVALENT.

C. LOCAL SWITCHES SHALL BE TOGGLE TYPE, A.C. RATED 20 AMPERES, 125 VOLTS, QUIET-TYPE WITH SILENT OPERATING MECHANISM, TOTAL CLOSED IN A MOLDED COMPOSITION BASE. SWITCHES SHALL BE SINGLE POLE, THREE OR FOUR-WAY AS INDICATED. WHERE LOCK TYPE LOCAL SWITCHES ARE INDICATED, THESE SHALL BE SIMILAR TO ABOVE SPECIFICATION WITH KEY OPERATOR; PROVIDE TO OWNER TWO (2) KEYS FOR EACH SWITCH INSTALLED.

D. ALL RECEPTACLES INSTALLED IN THIS BUILDING SHALL BE OF THE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION TO CONDUIT SYSTEM.

6. WIRES AND CABLES:

A. ALL WIRE FOR LIGHT AND POWER INSTALLATIONS SHALL BE HIGH CONDUCTIVITY COPPER, 600 VOLT INSULATED IN ACCORDANCE WITH THE NATIONAL BOARD OF FIRE UNDERWRITERS STANDARDS FOR TYPE "THW" WIRES, EXCEPT AS NOTED ON THE DRAWINGS OR OTHERWISE SPECIFIED HEREIN.

B. NO WIRE SHALL BE SMALLER THAN NO. 12 A.W.G.. ALL WIRES NO. 8 AND LARGER SHALL BE STRANDED.

C. WIRES SHALL BE COLOR CODED.

D. ALL WIRES SHALL BE POLARIZED.

E. CIRCUIT WORK BETWEEN OUTLET BOXES AND EACH RECESSED LIGHTING FIXTURE SHALL BE TYPE 'AF' WIRE.

F. HOME RUNS AND BRANCH WIRING FOR 120 VOLT CIRCUITS SHALL BE AS FOLLOWS:

LENGTH	HOME RUN WIRE SIZE	CIRCUIT WIRE SIZE
1' TO 50'	12	12
50' TO 100'	10	12
100' TO 150'	8	12

7. LIGHTING AND POWER PANELS:

A. PANELS SHALL BE CIRCUIT BREAKER TYPE INSTALLED IN CODE GAUGE GALVANIZED SHEET STEEL CABINETS, FLUSH OR SURFACE MOUNTED AS INDICATED ON THE DRAWINGS. THE PANEL SECTIONS SHALL BE MOUNTED AWAY FROM THE BACK OF THE CABINETS IN SUCH A MANNER THAT THERE WILL BE NO SPACE BETWEEN THE CABINET TRIMS AND FRAMES. THE GUTTER SPACES ON ALL SIDES, TOPS AND BOTTOMS SHALL BE OF SUFFICIENT SIZE TO PREVENT OVERCROWDING OF WIRES AND CABLES AND TO PROVIDE SUFFICIENT VENTILATION TO PREVENT OVERHEATING OF THE CIRCUIT BREAKERS. EACH CABINET SHALL BE COMPLETE WITH HINGED DOORS, CYLINDER LOCK, DIRECTORY FRAME AND NEATLY TYPED DIRECTORY CHARTS. ALL PANELS SHALL BE KEYED ALIKE. INSTALL AN ANGLE PIECE ON INSIDE OF EACH TRIM FOR EASE OF INSTALLATION.

B. THE BRANCH CIRCUIT BREAKERS, IN GENERAL, SHALL BE MOLDED CASE, BOLT-ON TYPE, RATED 10,000 AIC ON 120/208V, 100 AMPERE FRAME, THERMAL MAGNETIC TRIP SINGLE, TWO OR THREE POLE AS SHOWN ON THE DRAWINGS. ALL MULTIPLE POLE BREAKERS FOR PANELS WHERE INDICATED ON THE DRAWING SCHEDULES. MAIN BREAKER CHARACTERISTICS SHALL BE AS INDICATED ON THE DRAWINGS. MAIN BUSS WORK OF ALL PANELS SHALL, AS A MINIMUM, BE DESIGNED TO CARRY THE FULL RATING OF THE FEEDER SWITCH SUPPLYING THE PANEL, AT A CIRCUIT DENSITY OF 800 AMPERES PER SQUARE INCH OF CROSS SECTION. BUSS WORK SHALL BE HIGH CONDUCTIVITY COPPER (277 / 480V CIRCUIT BREAKERS SHALL BE RATED AT 14,000 A.I.C.).

C. PANEL SECTIONS SHALL BE SUCH THAT NO LIVE PARTS ARE EXPOSED AFTER INSTALLATION. THEY SHALL BE SO ARRANGED THAT EACH BREAKER IS READILY REMOVABLE FROM THE PANEL WITHOUT DISTURBING ADJACENT BREAKERS. ELECTRICAL CONTRACTOR TO PROVIDE TYPED BREAKER LIST.

D. PHASE LEGS SHALL BE ALTERNATELY BUSSED TO EACH CIRCUIT BREAKER IN A MANNER TO AFFECT BALANCING THE BRANCH CIRCUIT CONNECTIONS AS NEARLY AS POSSIBLE OVER EACH PHASE.

8. DRY TYPE TRANSFORMERS (IF NEW IS REQUIRED):

A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A DRY TYPE AIR COOLED INDOOR POWER TRANSFORMER, AS RATED ON THE DRAWINGS AND HEREINAFTER SPECIFIED.

B. THE TRANSFORMER SHALL BE PROVIDED WITH SUITABLE VIBRATION DAMPERS. SAME TO BE PLACED BETWEEN THE CORE AND THE COILS OF THE ENCLOSURE.

C. THE TRANSFORMER SHALL HAVE CLASS 'H' INSULATION, AND THE WIRING TEMPERATURE RISE SHALL NOT EXCEED 150 DEGREES CELSIUS UNDER FULL LOAD IN AN AMBIENT TEMPERATURE OF 40 DEGREES CELSIUS.

D. THE TRANSFORMER ENCLOSURE SHALL BE PRIMED INSIDE AND OUT WITH A ZINC-COATED CHROMATE IRON OXIDE RUST INHIBITING PRIMER AND FINISHED ASAG1 GRAY ENAMEL.

E. THE MAXIMUM ACCEPTABLE NOISE LEVEL SHALL NOT EXCEED THE FOLLOWING: 0 TO 150 kVA - 42 dB

9. LIGHTING FIXTURES:

A. ALL LIGHTING FIXTURES AND LAMPS SHALL BE SUPPLIED BY THE TENANT AND / OR TENANT'S LIGHT FIXTURE AND LAMP SUPPLIER UNLESS OTHERWISE NOTED, AND SHALL BE DELIVERED HANDLED, ASSEMBLED AND INSTALLED AT THE SITE BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE UNLOADING, STORAGE AND PROTECTION OF ALL ITEMS FOUND TO BE DEFECTIVE AND SHALL BE REPLACED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

B. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL THE NECESSARY LABOR AND MATERIALS FOR THE COMPLETE INSTALLATION OF THE LIGHTING FIXTURES AS INDICATED ON THE DRAWINGS.

C. ALL FLUORESCENT AND INCANDESCENT LAMPS SHALL BE AS NOTED ON PLANS AND SPECIFICATIONS AND SHALL BE PROVIDED BY THE TENANT AND/OR TENANT'S LIGHT FIXTURE AND LAMP SUPPLIER AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

D. SEE ELECTRICAL DRAWING FOR LIGHTING FIXTURE DESCRIPTIONS.

III. SPECIFIC ELECTRICAL SPECIFICATIONS

1. SEE ELECTRICAL DRAWINGS - LANDLORD'S CRITERIA: THE ELECTRICAL CONTRACTOR IS TO BECOME FAMILIARIZED WITH LANDLORD'S CRITERIA FOR THIS LOCATION AND INCLUDE ANY WORK REQUIRED OF THIS CRITERIA, WHICH IS NOT SPECIFICALLY NOTED IN THESE DRAWINGS AND SPECIFICATIONS.

IV. TELEPHONE

1. PROVIDE 3/4" EMT IN WALLS WITH DRAG STRING AT EACH LOCATION.

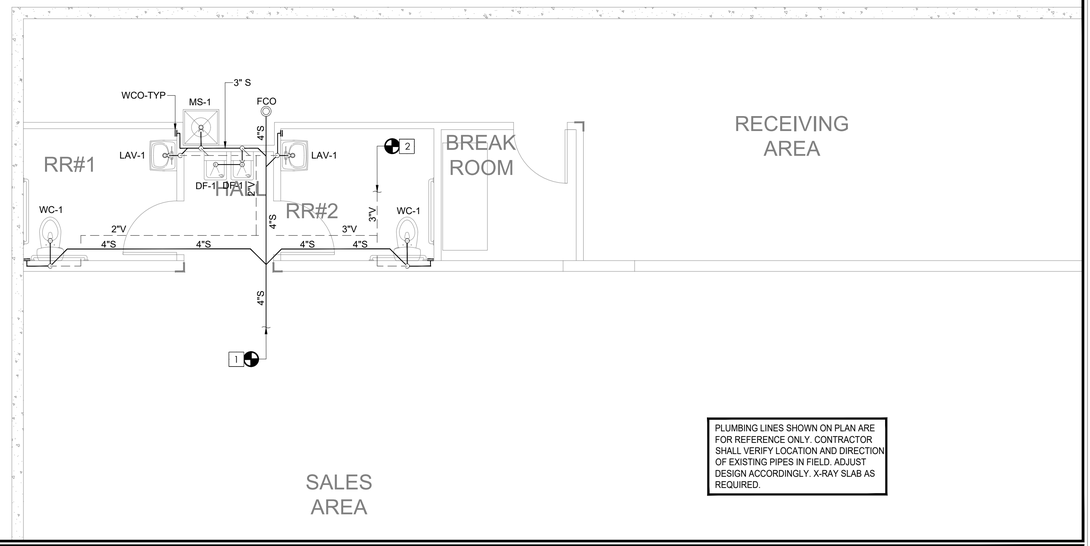
V. MISCELLANEOUS

1. ALUMINUM WIRE IS STRICTLY PROHIBITED FOR THIS PROJECT.

2. DURING DEMOLITION, ANY ELECTRICAL EQUIPMENT, FIXTURE SYSTEMS, CONDUIT AND WIRE ARE TO BE REMOVED AS NOTED AND NOT REUSED. THIS UNUSED EQUIPMENT, FIXTURE SYSTEMS, CONDUIT, AND WIRE MAY NOT BE ABANDONED AND LEFT WITHIN THE SPACE. THEY MUST BE REMOVED TO AN APPROVED DISPOSAL SITE.

HOME RUNS AND BRANCH WIRING FOR 120 VOLT 16 AMP CIRCUITS SHALL BE AS FOLLOWS TO ACCOUNT FOR VOLTAGE DROP:

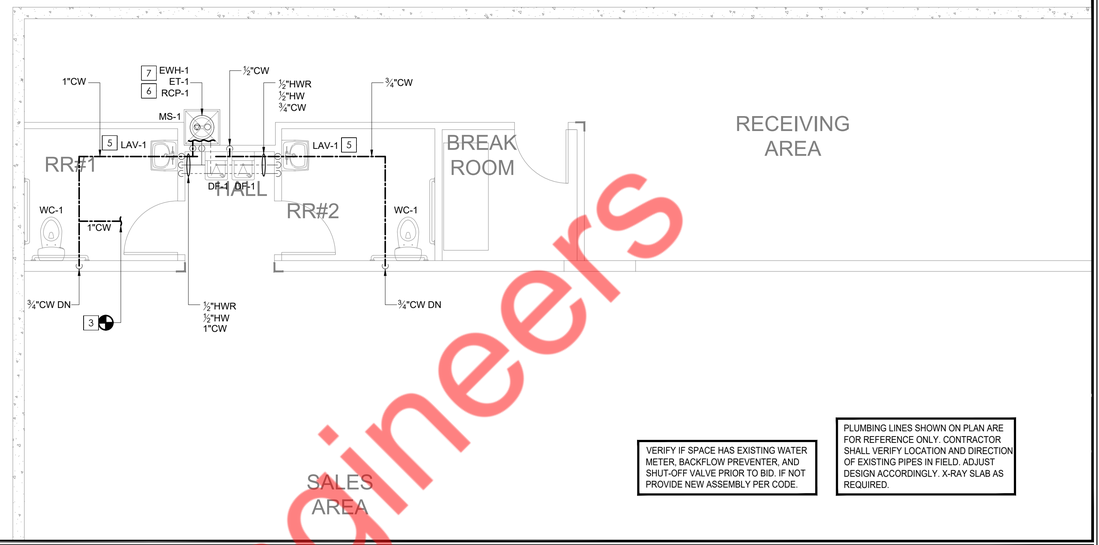
LENGTH	HOME RUN WIRE SIZE	CIRCUIT WIRE SIZE
1' TO 65'	12	12
66' TO 104'	10	12
105' TO 156'	8	12
157' TO 263'	6	12
264' TO 419'	4	12



PLUMBING LINES SHOWN ON PLAN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY LOCATION AND DIRECTION OF EXISTING PIPES IN FIELD. ADJUST DESIGN ACCORDINGLY. X-RAY SLAB AS REQUIRED.

1 SANITARY & VENT PLAN

SCALE: 1/4"=1'-0"

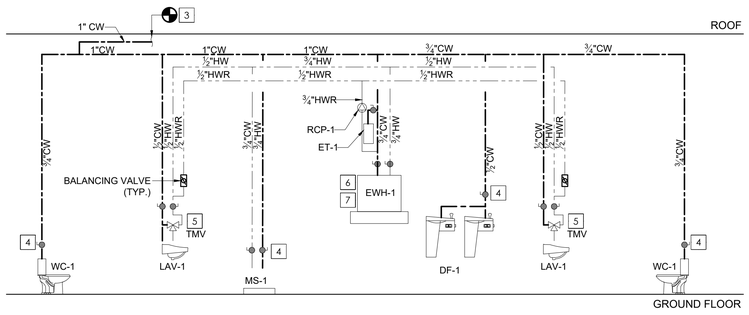


VERIFY IF SPACE HAS EXISTING WATER METER, BACKFLOW PREVENTER, AND SHUT-OFF VALVE PRIOR TO BID. IF NOT PROVIDE NEW ASSEMBLY PER CODE.

PLUMBING LINES SHOWN ON PLAN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY LOCATION AND DIRECTION OF EXISTING PIPES IN FIELD. ADJUST DESIGN ACCORDINGLY. X-RAY SLAB AS REQUIRED.

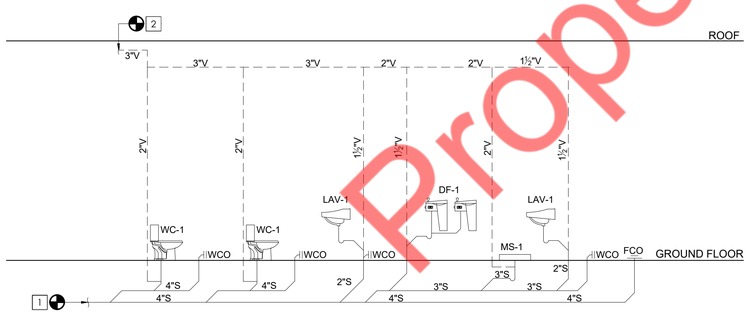
4 DOMESTIC WATER PLAN

SCALE: 1/4"=1'-0"



2 WATER RISER DIAGRAM

SCALE: N.T.S.



3 SANITARY RISER DIAGRAM

SCALE: N.T.S.

1	CONTRACTOR SHALL CONNECT NEW 4" SANITARY LINE TO EXISTING SANITARY LINE FOR SPACE. MODIFY AND EXTEND EXISTING SANITARY LINES AS REQUIRED. PROVIDE REQUIRED PITCH TO EXISTING SANITARY LINE AS REQUIRED. CONTRACTOR TO VERIFY EXACT LOCATION, ROUTING, SIZE, INVERT, DIRECTION OF FLOW AND CONNECTION POINT OF SANITARY LINE PRIOR TO BID. NOTIFY ARCHITECT/ENGINEER WITH ANY DISCREPANCIES PRIOR TO BID.
2	CONTRACTOR SHALL CONNECT NEW 3" VENT LINE TO EXISTING VENT LINE FOR SPACE. MODIFY AND EXTEND EXISTING VENT LINES AS REQUIRED. VERIFY SIZE, ROUTING, LOCATION, & CONNECTION POINT PRIOR TO BID. NOTIFY ARCHITECT/ENGINEER WITH ANY DISCREPANCIES PRIOR TO BID PRIOR.
3	CONTRACTOR SHALL CONNECT NEW 1" COLD WATER LINE TO EXISTING COLD WATER LINE FOR SPACE. MODIFY AND EXTEND EXISTING WATER LINES AS REQUIRED. CONTRACTOR TO VERIFY SIZE, LOCATION, ROUTING & CONNECTION POINT PRIOR TO BID. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.CONTRACTOR SHALL CO-ORDINATE WITH LANDLORD FOR SUB-METER AND BACKFLOW PREVENTER REQUIREMENT FOR OUR SPACE.
4	ALL PLUMBING FIXTURES SHALL BE INSTALLED WITH STOP VALVES TO ISOLATE EACH FIXTURE.
5	PROVIDE THERMOSTATIC MIXING VALVE SET AT 110°F.
6	NEW ELECTRIC HOT WATER HEATER EWH-1, INSTALLED ABOVE MOP-SINK, REFER PLUMBING FIXTURE SCHEDULE
7	CONTRACTOR SHALL DRAIN WATER HEATER, RELIEF VALVE, AND DRAIN PAN INDIRECTLY TO MOP SINK PER LOCAL CODE.

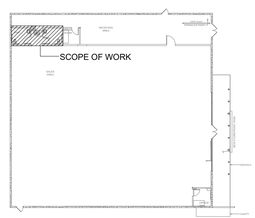
5 PLUMBING KEY NOTES

SCALE: N.T.S.

TAG	MODEL NO	DESCRIPTION	CW	HW	SAN	VENT
WC-1	2002.014	FLOOR MOUNTED ADA VITREOUS CHINA ELONGATED 1.6 FLUSH GALLON CLOSE COUPLED TWO PIECE SIPHON JET WATER CLOSET, FLUSH TANK WITH 12" ROUGH-IN. AMERICAN STANDARD CHAMPION 4 "RIGHT HEIGHT" #2002.014 OR EQUAL. PROVIDE STOP VALVE, FLEXIBLE SUPPLY LINE, OPEN FRONT SEAT (AMERICAN STANDARD #5901.100 OR EQUAL).	3/4"	--	4"	2"
LAV-1	0355.012	20"x18" WALL HUNG ADA LAVATORY WITH FRONT OVERFLOW, CONCEALED HANGERS AND 4" CENTERS. AMERICAN STANDARD LUCERNE NO. 0355.012 OR EQUAL. FAUCET SHALL BE POLISHED CHROME-PLATED CAST BRASS BODY WITH 4" SPOUT, 4" BRASS WRIST BLADE, 0.5 GPM SPRAY AND GRID STRAINER DRAIN. AMERICAN STANDARD MONTERREY NO. 5502.170 WITH WATTS MODEL LFUSG-B-M1 TEMPERING VALVE OR EQUAL. INSULATE EXPOSED DRAIN AND WATER PIPES WITH TRUEBRO LAV GUARD KIT NO. 102 E-Z. PROVIDE SUPPLIES, STOP VALVES AND P-TRAP.	1/2"	1/2"	2"	1-1/2"
DF-1	EZSTLDDLC	ELKAY "WATERSENTRY" BARRIER-FREE SPLIT LEVEL WATER COOLER. CANE FINISH.	3/8"	--	2"	2"
MS-1	MSB-24-24	FIAT 24"x24" MOP SERVICE BASIN WITH NO. 830 AA, 889 CC, 1453 BB AND 832 AA SERVICE FAUCET, WALL GUARD AND MOP HANGER.	3/4"	3/4"	3"	2"
EWH-1	EJC-10	10-GALLON ELECTRIC WATER HEATER. 1.65kW @ 120V. A.O. SMITH NO. EJC-10 OR EQUAL. PROVIDE DRAIN PAN UNDER SHELF-MOUNTED WATER HEATER TERMINATE DRAIN LINE IN MOP SINK. PROVIDE FULL SIZE T&P RELIEF LINE, TERMINATE 2" ABOVE RIM LEVEL OF MOP SINK. INSTALL PER MANUFACTURER'S INSTRUCTIONS.RCP-1, GRUMDFOS ALPHA-2. ET-1, AMTROL ST-5	3/4"	3/4"	--	--

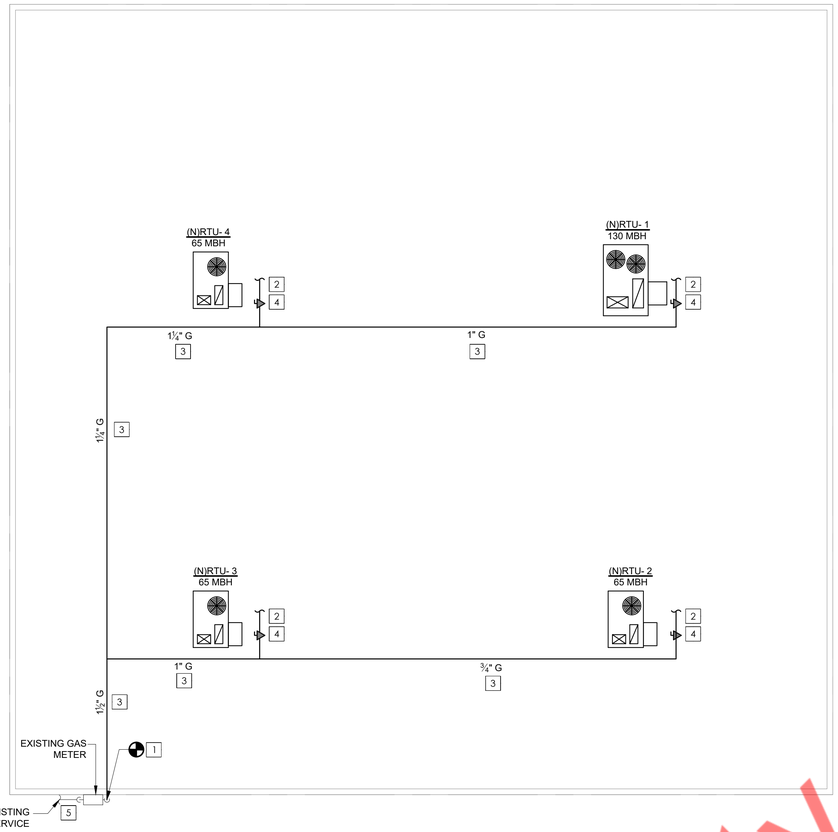
6 PLUMBING FIXTURE SCHEDULE

SCALE: N.T.S.



7 KEY PLAN

SCALE: N.T.S.



1 PLUMBING GAS PLAN

SCALE: 1/8"=1'-0"

1	CONNECT NEW 1½"G LINE FROM THE EXISTING GAS METER SERVING THE SPACE. CONTRACTOR TO COORDINATE EXACT LOCATION OF METER & CONNECTION POINT IN FIELD AND FILED VERIFY THE GAS SERVICE PRESSURE AND LENGTH OF RUN TO FARTHEST EQUIPMENT.
2	CONTRACTOR SHALL PROVIDE AND INSTALL GAS VALVE, DIRT LEG & UNION AS REQUIRED. CONTRACTOR SHALL PROVIDE AND INSTALL PRESSURE REGULATOR VALVE AT INCOMING SERVICE AND/OR BEFORE TIE-IN TO EQUIPMENT.
3	ROUTE NEW GAS PIPING ON EXTERIOR WALL/ROOF, CONTRACTOR TO RUN PIPE AS PER FIELD CONDITION. PROVIDE NEW GAS PIPE SUPPORTS EVERY 8'-0" MAXIMUM DISTANCE. PAINT/COAT AND LABEL PIPING AS REQUIRED BY LOCAL CODE.
4	PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION.
5	CONTRACTOR TO ADJUST SET PRESSURE OF PRESSURE REGULATOR VALVE IF REQUIRED IN CO-ORDINATION WITH UTILITY PROVIDER TO MEET THE MINIMUM GAS PRESSURE REQUIREMENT OF HVAC UNITS.

2 PLUMBING GAS KEY NOTES

SCALE: N.T.S

REFER TO DETAILS FOR ADDITIONAL INFORMATION

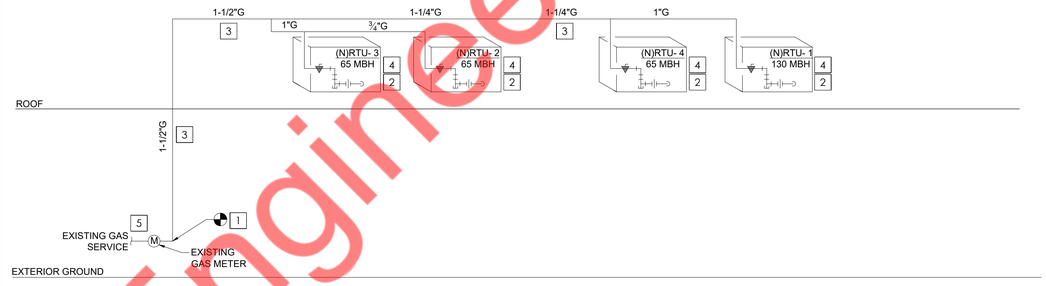
GAS PIPING SIZED PER
OREGON MECHANICAL CODE (APPENDIX C), TABLE #402.4(2):
FOR GAS PRESSURE LESS THAN 2 PSI.
PRESSURE DROP: 0.5" W.C.
SPECIFIC GRAVITY: 0.60
TOTAL NEW GAS LOAD: 325,000 BTU/HR
MAXIMUM DISTANCE: 200'-0" (V.I.F.)

NOTE:
CONTRACTOR SHALL VERIFY EXACT DEVELOPED DISTANCE FROM EXISTING GAS METER TO FARTHEST GAS LINE POINT. ADJUST GAS SIZES AND METER CAPACITY ACCORDINGLY.

CONTRACTOR TO FIELD VERIFY EXISTING GAS METER LOCATION, AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR MECHANICAL EQUIPMENTS.

PROVIDE SHUT-OFF VALVE AN ACCESSIBLE LOCATION.

CONTRACTOR SHALL VERIFY ACTUAL GAS PRESSURE AND LONGEST LENGTH OF RUN FROM METER TO FARTHEST APPLIANCE PRIOR TO INSTALLATION AND NOTIFY ENGINEER IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN.



3 GAS RISER DIAGRAM

SCALE: N.T.S

1. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE A COMPLETE INSTALLATION FOR FINISHED WORK, TESTED AND READY FOR OPERATION. THE WORK THROUGHOUT SHALL BE EXECUTED IN THE BEST AND MOST THOROUGH MANNER UNDER THE DIRECTION OF AND TO THE SATISFACTION OF THE OWNER.

2. ALL MATERIALS REQUIRED FOR THIS WORK SHALL BE NEW, UNUSED, BEST OF ITS RESPECTIVE KINDS, AND FREE FROM DEFECTS AND OF FIRST CLASS QUALITY. BASIS OF QUALITY SHALL BE LATEST STANDARDS OF ASTM, ANSI FEDERAL SPECIFICATIONS OR OTHER ACCEPTABLE STANDARDS.

3. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR WORK UNTIL ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.

4. THE PLUMBING CONTRACTOR SHALL GUARANTEE ALL WORK PERFORMED AND MATERIALS INSTALLED TO BE FREE FROM INHERENT DEFECTS AND SHALL KEEP IN REPAIR AND REPLACE ANY DEFECTIVE MATERIALS OF WORKMANSHIP, FREE OF COST TO THE TENANT (OWNER) FOR A PERIOD OF ONE (1) YEAR AFTER THE OPENING FOR BUSINESS.

5. ALL WORK SHALL BE DONE ACCORDING TO THE REQUIREMENTS OF ALL APPLICABLE CODES AND LEASE CRITERIA (IF APPLICABLE) AND SHALL RECEIVE THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION. PREPARE ALL REQUIRED DOCUMENTS, DRAWINGS AND PERFORM ALL REQUIRED TESTS AND PAY ALL REQUIRED CHARGES TO OBTAIN THESE APPROVALS.

6. CONTRACTOR SHALL BE HELD TO HAVE EXAMINED THE SITE FOR THE WORK BEFORE HAVING SUBMITTED A PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CONDITIONS FOUND DURING THE COURSE OF THE CONTRACT.

7. THIS CONTRACTOR MUST PROVIDE LANDLORD'S CONSTRUCTION REPRESENTATIVE WITH COPIES OF REQUIRED INSURANCE AND COPIES TO BE FURNISHED TO THE OWNER BEFORE COMMENCING WORK.

8. SUBMIT THREE (3) SETS OF SHOP DRAWINGS IDENTIFIED WITH PROJECT NAME OF THE FOLLOWING (1) ELECTRIC HOT WATER HEATER OR INSINKERATOR (2) PLUMBING FIXTURES AND TRIM. CONTRACTOR SHALL SUBMIT SHOP DRAWING OF PIPING LAYOUT TO THE OWNER FOR THEIR FILE.

9. THE PLUMBING SUBCONTRACTOR IS A SUBCONTRACTOR OF THE TENANT'S GENERAL CONTRACTOR.

10. NOTCHING AND BORING OF STRUCTURAL STEEL MEMBERS IS NOT PERMITTED. WHEN HANGING FROM STRUCTURAL STEEL ONLY HANG FROM TOP FLANGE OF BEAMS AND TOP CHORDS ONLY AT PANEL POINTS OF JOISTS / TRUSSES.

I. WORK RESPONSIBILITY

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND CONTRACTORS FOR A COMPLETE, SAFE INSTALLATION OF PLUMBING WORK IN FULL CONFORMITY WITH REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION AS INDICATED ON DRAWINGS AND/OR HEREIN SPECIFIED, INCLUDING IN GENERAL THE FOLLOWING:

2. SANITARY DRAINAGE CONNECTIONS TO PLUMBING FIXTURES AND EQUIPMENT REQUIRING SAME WITH FINAL CONNECTIONS TO EXISTING PREINSTALLED OUTLETS PROVIDED BY PRIOR TENANT(S) OR LANDLORD. PLUMBER SHALL VERIFY EXACT LOCATION OF WASTE PIPE OUTLET BEFORE SUBMITTING BID AND NOTIFY THE ARCHITECT OF ANY LOCATION DISCREPANCIES. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONCRETE SAWCUTTING REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING WASTE PIPING OR CAPPED OUTLET(S). SAWCUTTING, EXCAVATING, BACKFILLING AND NEW CONCRETE MUST MEET WITH THE LANDLORD'S APPROVAL.
A. SNAKE SANITARY FOR A DISTANCE OF 100 FEET AND REPORT ANY BLOCKAGE.
B. TEST WATER PRESSURE TO INSURE MINIMUM OF 50 PSI.

3. COMPLETE VENT SYSTEM, ALL FIXTURES INDIVIDUALLY VENTED WITH FINAL CONNECTION THROUGH ROOF OR TO EXISTING LANDLORD SUPPLIED COMMON VENT. ROOF PENETRATION AND FLASHING TO BE PERFORMED BY LANDLORD'S ROOFER (IF APPLICABLE). COST OF ROOF PENETRATION AND FLASHING TO BE PART OF THIS CONTRACT, UNLESS NOTED OTHERWISE IN BID PROPOSAL (IF APPLICABLE).

4. DOMESTIC WATER SUPPLY SYSTEM INCLUDING CONNECTION TO EXISTING CAPPED OUTLET AND FINAL CONNECTIONS TO PLUMBING FIXTURES AND EQUIPMENT REQUIRING SAME. VERIFY EXACT LOCATION AND SIZE BEFORE SUBMITTING BID.

5. INSULATION OF ALL HOT AND COLD WATER PIPING, INCLUDING UNDER LAVATORY A.D.A. PIPE WRAPPINGS.

6. FURNISH AND INSTALL WATER METER (IF APPLICABLE) ACCESSIBLE TO UTILITY COMPANY OR LANDLORD'S REPRESENTATIVE FOR MONITORING WATER, BUT METER SHOULD IN NO WAY BE IN THE PATH OF THE A.D.A./CABO-ANSI, 5'-0" CIRCULAR PATTERN.

7. COSTS FOR WORKING BELOW TENANT'S SLAB IN ANOTHER TENANT'S SPACE.

II. GENERAL ITEMS

1. SLEEVES: PROVIDE #22 GAGE GALVANIZED IRON PIPE SLEEVES FOR PIPING THROUGH WALLS AND FLOOR, PACK WITH NON-ASBESTOS ROPE AND FILL WITH EXPANDO NON-SHRINKING CEMENT.

2. ESCUTCHEONS: PROVIDE EXPOSED PIPING, BOTH BARE AND COVERED, WITH CP CAST BRASS ESCUTCHEONS WHERE PASSING THROUGH FLOORS, CEILINGS, WALLS OR PARTITIONS.

3. HANGERS AND SUPPORTS: SUPPORT HORIZONTAL DRAINAGE PIPING AT LEAST EVERY 5 FEET OR AT EVERY HUB, COPPER TUBING EVERY 7 FEET AND STEEL PIPE EVERY 10 FEET WITH "CLEVIS" HANGERS AND INSULATION PROTECTION SHIELDS. PIPING SHALL NOT BE SUPPORTED FROM BRIDGING OR OTHER PIPING, ONLY SUPPORT FROM TOP FLANGES OF BEAMS AND TOP CHORDS AT PANELS OF JOIST AND TRUSSES. PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODES.

4. TEST: TEST PIPING AND PROVE TIGHT FOR AT LEAST TWO HOURS IN ACCORDANCE WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND/OR AS SPECIFIED. TEST SHALL BE PERFORMED IN THE PRESENCE OF OWNER'S REPRESENTATIVE AND LOCAL INSPECTOR. TEST SHALL BE REPEATED IF NECESSARY UNTIL FINAL APPROVAL OF SYSTEM IS OBTAINED.
A. TEST DRAINAGE AND VENT PIPING BY FILLING WITH WATER TO OVERFLOWING AT ROOF, WATER LEVEL TO REMAIN.
B. TEST WATER PIPING WITH WATER 1 1/2 TIMES THE WORKING PRESSURE.

5. STERILIZATION OF DOMESTIC WATER SYSTEM: BEFORE BEING PLACED IN SERVICE, ALL WATER LINES SHALL BE CHLORINATED TO THE SATISFACTION OF THE ARCHITECT OR LANDLORD'S REPRESENTATIVE, IN ACCORDANCE WITH A.W.W.A. SPECIFICATION C651-05.

6. SLOPE WASTE LINES 2 INCHES AND SMALLER NOT LESS THAN 1/4 INCH PER FOOT. SLOPE LARGER MAINS NOT LESS THAN 1/8 INCH PER FOOT.

7. INSTALL A CLEANOUT AT BASE OF EACH SOIL STACK, AT EACH CHANGE IN DIRECTION, AT INTERVALS NOT OVER 50 FEET AND ELSEWHERE AS SHOWN ON DRAWINGS OR REQUIRED BY LOCAL CODE. CLEANOUTS SHALL NOT BE INSTALLED IN PUBLIC AREAS WITHOUT SPECIFIC PERMISSION BY TENANT'S CONSTRUCTION MANAGER.

III. MATERIALS
1. DRAINAGE AND VENT PIPING: EXTRA HEAVY HUB AND SPIGOT CAST IRON SOIL CONFORMING ASTM A74, ASTM 888, CIPS301 WITH RUBBER GASKETS CONFORMING TO ASTM C564. NO-HUB CAST IRON TO HAVE HEAVY DUTY, TYPE 304 STAINLESS STEEL COUPLINGS CONFORMING TO ASTM A 666, TYPE 304 STAINLESS STEEL SHIELD, TYPE 304 STAINLESS STEEL BANDS AND SLEEVE.
NPS 1 1/2" TO NPS 4": 3" WIDE SHIELD WITH 4 BANDS;
NPS 5" TO NPS 10": 4" WIDE BAND WITH 6 BANDS.

2. WATER PIPING BELOW SLAB: TYPE K HARD COPPER TUBING, WITH CAST BRONZE OR WROUGHT COPPER SOLDER JOINT FITTINGS USING 95-5 SOLDER. WATER PIPING ABOVE SLAB: TYPE L HARD COPPER TUBING USING SILVER SOLDER. ALL WATER SUPPLY PIPING TO CONFORM TO NSF/ANSI 61 AND ASTM B 75, ASTM B 88, ASTM B 251, OR ASTM B 447. ALL PIPE FITTINGS SHALL CONFORM TO ASSE 1061, ASME B 16.15, ASME B 16.18, ASME B 16.22, ASME B 16.23, ASME B 16.26, AND ASME B 16.29.

3. WATER HAMMER ARRESTERS: PROVIDE ON HOT AND COLD WATER BRANCHES TO FIXTURES, J. R. SMITH HYDROTROL MODEL 5020 FOR UP TO 60 FIXTURE UNITS. WATER HAMMER ARRESTERS SHALL CONFORM TO ASSE 1010.

4. VALVES: GATE VALVE WATTS SERIES B-3000, CHECK VALVE WATTS SERIES B-5000, BALL VALVE WATTS SERIES B6080 OR B6081 FULL PORT. ALL VALVES 1/2" TO 2" BRONZE BODY. VALVES SHALL CONFORM TO NSF/ANSI 61.

5. PRESSURE AND TEMPERATURE RELIEF VALVE: WATTS REGULATING CO. MODEL 10L. T&P RELIEF VALVE SHALL CONFORM TO ANSI Z21.22.

6. PRESSURE REDUCING VALVE: WATTS SERIES 25AUB BRONZE BODY WITH INTEGRAL S/S STRAINER, SEALED CAGE FOR 1/2" TO 2 1/2" DIA. TO 300 PSI. PRESSURE REDUCING VALVE SHALL CONFORM TO ASSE 1003.

7. PRESSURE GAUGE: AMETEK DIV. OF U.S. GAUGE SERIES P-500, UP TO 4-1/2" DIAL, 1/4" STEM, ALUMINUM CASE, BLACK FINISH.

8. AIR VENT: HOFFMAN #79 WATER MAIN VENT VALVE.

9. VACUUM RELIEF VALVE: WATTS MODEL N36-M1 BRASS BODY, 1/2" NPT LINE SIZE. VACUUM RELIEF VALVES SHALL CONFORM TO ANSI Z21.22.

10. TRAP PRIMER: PRECISION PLUMBING PRODUCTS INC. MODEL P1-500 UP TO FOUR CONNECTIONS. OPTIONAL DISTRIBUTION UNIT REQUIRED FOR 2, 3 AND FOUR DRAIN LINES. TRAP PRIMER TO CONFORM TO ASSE 1018 OR ASSE 1044.

11. MIXING VALVE: WATTS SERIES MMV MIXING VALVE, 1/2" LINE SIZE. MIXING VALVE SHALL CONFORM TO ASSE 1017.

IV. INSULATION

1. ALL HOT AND COLD WATER PIPING AND FITTINGS SHALL BE INSULATED WITH 1" THICK RIGID FIBERGLASS WITH VAPOR BARRIER UNIVERSAL JACKET PASTED WITH VAPOR BARRIER CEMENT. VAPOR BARRIER NOT REQUIRED ON HOT WATER PIPING.

2. ALL ADA CONFORMING, WHEELCHAIR ACCESSIBLE LAVATORY P-TRAP AND ANGLE VALVE ASSEMBLIES TO BE COVERED WITH THE MOLDED, ANTIMICROBIAL TRUBRO, INC "LAV-GUARD" UNDERSINK PROTECTIVE PIPE COVER MODEL #103.

V. SPECIFIC PLUMBING SPECIFICATIONS

1. INSTALL NEW ONLY IF EXISTING DOES NOT MEET CURRENT ADA/CABO-ANSI (AS APPLICABLE) STANDARDS, OR IS DAMAGED, NOT IN WORKING ORDER OR NOT EXISTING AS APPLICABLE.

2. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO SUPPLY HANDICAPPED TOILET FIXTURES, IF REQUIRED BY CODE OR NOTED ON THE DRAWINGS. UTILIZING THE SPECIFICATION ABOVE AS A STANDARD AND MEETING CODE REQUIREMENTS. SPACING OF FIXTURES TO BE COORDINATED WITH THE GENERAL CONTRACTOR AS WELL AS THE PLUMBING INSPECTOR'S REQUIREMENTS.

VI. LANDLORD'S CRITERIA

1. THE PLUMBING CONTRACTOR IS TO BECOME FAMILIARIZED WITH LANDLORD'S CRITERIA FOR THIS LOCATION AND INCLUDE ANY WORK REQUIRED OF THIS CRITERIA, WHICH IS NOT SPECIFICALLY NOTED IN THESE DRAWINGS AND SPECIFICATIONS.

FIELD VERIFY ALL CONDITIONS
DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.

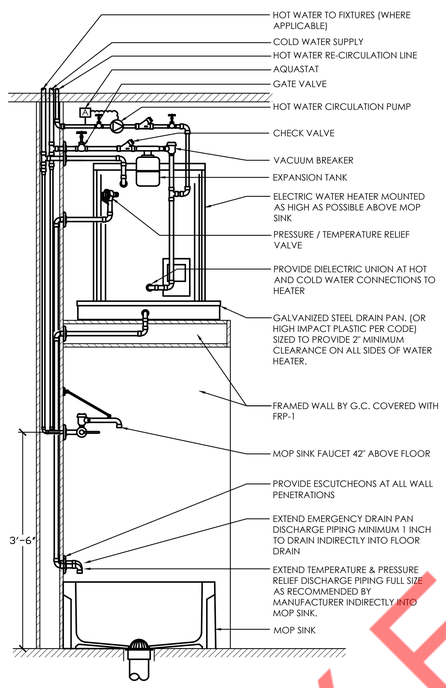
BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

CONTRACTOR TO CO-ORDINATE WITH ARCHITECT AND OWNER FOR FINAL LOCATION OF HOSE BIB. PROVIDE WATER SUPPLY CONNECTION AND ROUTE WITH ADEQUATE SIZE AS PER FILED CONDITIONS.

CONTRACTOR TO VERIFY IN FIELD AND CONNECT CONDENSATE DRAINS NEAR TO THE PLUMBING DRAINS AS PER LOCAL CODE REQUIREMENTS.

EXISTING PLUMBING FIXTURES TO BE DEMOLISHED AS SHOWN IN THE DEMOLITION PLAN AND EXISTING SANITARY,VENT AND WATER TO BE DEMOLISHED AND SAME TO BE CAPPED AT FIXTURE

1 PLUMBING GENERAL NOTES
SCALE: N.T.S.



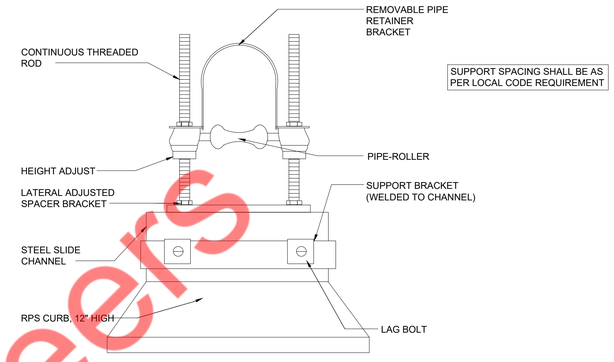
2 WATER HEATER DETAIL
SCALE: N.T.S.

	DOMESTIC COLD WATER PIPING (CW)
	DOMESTIC HOT WATER PIPING (HW)
	SANITARY PIPING (S)
	VENT PIPING (V)
	TOP CONNECTION, 45° OR 90°
	BOTTOM CONNECTION
	PIPE UP
	PIPE DOWN
	FLOOR CLEANOUT (PLAN / RISER VIEW) (FCO)
	BALL / GATE VALVE
	WALL CLEANOUT (PLAN / RISER VIEW) (WCO)
	DOMESTIC HOT WATER PIPING RETURN(HWR)

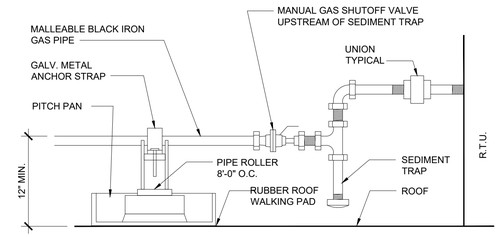
	GAS PIPE
	GAS SHUT-OFF VALVE
	THERMOSTATIC MIXING VALVE (SET TO 110°F)
	BALANCING VALVE
	HOT WATER CIRCULATING PUMP (HWCP)
	FIELD CONNECTION

NOTE:
SYMBOL LIST SHOWN IS FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.

3 PLUMBING LEGENDS
SCALE: N.T.S.



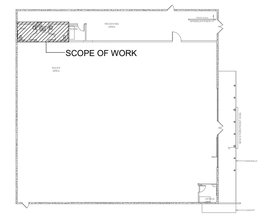
4 ROOF PIPE SUPPORT DETAIL



5 GAS CONNECTION AT RTU DETAIL

IDENTIFIER	DESCRIPTION	V	VENT
CW	COLD WATER	V.I.F.	VERIFY IN FIELD
DN	DOWN	EWH	ELECTRIC WATER HEATER
EQUIP	EQUIPMENT	ET	EXPANSION TANK
EX / E	EXISTING	RCP	RE-CIRCULATION PUMP
GC	GENERAL CONTRACTOR	WC	WATER CLOSET
HW	HOT WATER	LAV	LAVATORY
HWR	HOT WATER RETURN	MS	MOP SINK
(N)	NEW FIXTURE/EQUIPMENT	DF	DRINKING FOUNTAIN
S	SANITARY	G	GAS

6 ABBREVATIONS
SCALE: N.T.S.



7 KEY PLAN
SCALE: N.T.S.