MECHANICAL GENERAL NOTES

A. GENERAL CONDITIONS

- . 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
- 2. THE TERM "CONTRACTOR" SHALL MEAN THE "MECHANICAL CONTRACTOR HIRED TO COMPLETE THE WORK OUTLINED IN THESE PLANS AND SPECIFICATIONS", UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR FOR THIS WORK IS REQUIRED TO REVIEW ALL DRAWINGS FOR ALL OTHER TRADES.
- 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
- 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 PROPOSA 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
- 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

. GENERAL REQUIREMENTS

- 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.
- 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.
- 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
- 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.
- 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**
- 3. THE CONTRACTOR SHALL DO ALL CUTTING, CORE DRILLING, CHASING, OR CHANNELING AND PATCHING REQUIRED <u>J. RECORD DRAWINGS</u> 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 1. FINISH OF SURROUNDING AREA.

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 2. 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 HE CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE TENANT TO THE CONTRACTOR.

LICENSES, PERMITS, INSPECTIONS AND FEES

- . 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.

- 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
- THE LAYOUT SHOWN ON THE DRAWINGS IS BASED ON A PARTICULAR MAKE OF EQUIPMENT. IF ANOTHER MAKE OF FOLIPMENT 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 M. SLEEVES STARTING WORK SHOWING ALL SUCH MODIFICATIONS AND CHANGES. THE PROPOSAL SHALL BE SUBJECT TO THE APPROVAL OF THE TENANT'S CONSTRUCTION MANAGER.

. EXISTING LEASE SPACE CONDITIONS

- 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.
- 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).
- 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.
- 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.
- 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.
- . 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.
- 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.
- 3. CONTRACTOR SHALL PROTECT THEIR WORK AND EQUIPMENT FROM DAMAGE, VANDALS, ETC. ANY ITEM THAT IS 1. FURNISH STEEL ACCESS DOORS AND FRAMES, MINIMUM 16 INCHES BY 20 INCHES OR AS REQUIRED FOR DAMAGED, VANDALIZED OR STOLEN PRIOR TO ACCEPTANCE OF BUILDING BY OWNER AND ARCHITECT SHALL BE REPLACED BY RESPECTIVE CONTRACTOR AT NO CHARGE TO TENANT
- 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 2. 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 3. ACCESS DOORS SHALL BE FLUSH TYPE, MANUFACTURED FROM 14 GAUGE STEEL, COMPLETE WITH FLUSH FLANGE 4. AS A SHOP WITHOUT THE APPROVAL OF THE OWNER AND ARCHITECT

CONTRACT SHALL BE PROTECTED BY TARPAULIN OR BY BOXING AS SOON AS DELIVERED TO THE SITE AND SHALL

- I. 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.
- 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 FOLLIPMENT FOR USE IN THIS

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 P. ELECTRIC MOTORS 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, 1 PIPING, CONDUITS, ETC., SHALL BE PROPERLY PROTECTED WITH TEMPORARY CAPS OR PLUGS AT ALL TIMES.

G. DISCREPANCIES IN DOCUMENTS

DRAWINGS (PLANS, SPECIFICATIONS AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION 2 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 Q. LOW VOLTAGE (24 VOLT) WIRING CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

H. TRADE NAMES AND MANUFACTURERS

WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE 2. 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 3. EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

- 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 LLACK 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.
- 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 1. PRIMARY HVAC UNITS ARE TO BE AS SCHEDULED. EQUIVALENTS MAY BE SUBSTITUTED WITH WRITTEN REQUIRE SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTAL HAS BEEN APPROVED BY THE ARCHITECT
- 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 DOCLIMENTS 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
- C.3. THE CONTRACTOR SHALL DIRECT SPECIFIC ATTENTION IN WRITING OR ON RESUBMITTED SHOP C. TOILET EXHAUST FANS 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,
- 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.

THE ARCHITECT'S APPROVAL OF A RESUBMISSION SHALL NOT APPLY TO SUCH REVISIONS.

- 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, 3. 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.
- 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 5. DRAWINGS ARE TO BE TURNED OVER TO THE TENANT.

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 F. METAL DUCTWORK - NO FIBERGLASS DUCT ALLO 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.

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.

- THE CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION FACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR WALL OR PARTITION AND SHALL BE CLIT FLUS WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR
- 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
- SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PI 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.

- 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.
- 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
- 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
- 4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED FROM ONE ANOTHER.
- 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
- ACCESS DOORS LOCATED IN FIRE-RATED WALLS, FLOORS, CEILING-FLOOR, OR CEILING-ROOF ASSEMBLIES SHALL BE FIRE RATED, U.L. LISTED AND LABELED.
- 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 ACQUISTIC THE 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 STEE FURNISH FIRE RATED DOORS FOR FIRE RATED CONSTRUCTION. RATING OF DOOR MUST BE SAME RATING AS

- 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 2. FIRE DAMPERS SHALL HAVE THE BLADES OUT OF THE AIR STREAM AND A 165- DEGREE 'F' FUSIBLE LINK. SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS SHALL MEET ALL REQUIREMENTS AS DEFINED IN THE ELECTRICAL SPECIFICATIONS.
- DESIGN. CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF MOTORS SHALL CONFORM TO ALL 4. PROVIDE DUCT ACCESS DOORS IN AN ACCESSIBLE LOCATION FOR ALL FIRE DAMPERS. DOOR IS TO BE 20-GAUGE 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.
- 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.
- ALL WORK IS TO CONFORM TO THE ELECTRICAL SPECIFICATIONS AND THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION
- ANY CONDUIT REQUIRED BY CODE OR THE LANDLORD WILL BE INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.
- 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
- SMOKE DETECTORS SHALL HAVE THEIR OWN REMOTE KEY TEST STATION SYSTEM WITH AUDIBLE AND VISUAL 3. FLEXIBLE DUCT SHALL NOT EXTEND OVER 5 FEET IN LENGTH AT ANY ONE LOCATION ALARM, SIMPLEX MODEL 4098-9842 OR APPROVED EQUIVALENT. ALARM TO HAVE CANDELA SETTING OF 75 AND A HIGH VOLUME HORN TONE SETTING.
- ALARM SYSTEM MAY BE DELETED WHERE NOT REQUIRED BY LANDLORD OR BY LOCAL CODE.

A. HEATING, VENTILATION AND AIR CONDITIONING

4. SMOKE DETECTORS AND REMOTE TEST STATION:

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)

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

- 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 4. ALL MOTORIZED DAMPERS NOT FURNISHED WITH EQUIPMENT ARE TO BE HONEYWELL DAMPERS. MANUFACTURER'S DATA. SEE DRAWINGS FOR ADDITIONAL DETAILS.
- 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 OF OTHER APPROVED DRAIN

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.

- 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
- VIBRATING EQUIPMENT SUPPORTED FROM FLOOR OR DECK SHALL BE ISOLATED WITH HOUSED SPRING MOUNT

2. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES.

- EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES. ADJUST FOR PROPER ALIGNMENT AND LOADING. AVOID "GROUNDING" THE ISOLATOR.
- CHECK HANGER ROD SIZE FOR ALLOWABLE LOADS AT THE ISOLATING DEVICE AND THE UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC. CONSULT MANUFACTURER FOR APPLICATION DATA

E. CURBS AND STEEL FRAMING FOR SUPPORT

NO STEEL EDAMING DECLUDED TO INSTALL ALL 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

- 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 EXPOSE<mark>D, O</mark>R AS SHOWN <mark>ON T</mark>HE 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.
- DURING THE CONSTRUCTION PHASE OF THE PROJECT, ANY DUCTWORK INSTALLED IS TO BE COMPLETELY ALED UP OF ANY OPENINGS, EITHER AT THE BEGINNING OR END OF A DUCT RUN OR AT A BRANCH, COLLAR ER OR REGISTER TO AVOID DIRT OR OTHER CONTAMINANTS FROM ENTERING THE SYSTEM.
- 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). RESSURE TEST DUCTS FOR LEAKAGE. REMAKE LEAKING JOINTS AND APPLY SEALANTS AS REQUIRED TO BRICATE A SYSTEM THAT DOES NOT EXCEED 5 PERCENT LEAKAGE OR LESS AS STATED BY PRESSURE CLASS NGS IN SMACNA STANDARDS.
- 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.
- 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.
- WHERE DUCTS PASS THROUGH ROOFS, FLOORS AND FIRE RATED PARTITIONS, PROVIDE AS MINIMUM 1-1/2 INCH 1 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 THI ASSEMBLY FIRE RATING. CONTRACTOR TO PROVIDE FIRE OR COMBINATION FIRE / SMOKE DAMPERS AT EACH 2. FILTERS MUST BE IN UNITS AT ANY TIME FANS ARE OPERATED. PENETRATION WHERE REQUIRED BY CODE.
- 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.
- SOFT ELASTOMER BUTYL GASKETS WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.
- DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE. PROVIDE ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, FIRE / SMOKE DAMPERS, CONTROLS AND OTHER 2. THE CONTRACTOR SHALL INSTALL NEW FILTERS IN ALL UNITS PRIOR TO THE AIR BALANCING. THE COMPLETE AIR 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 3
- 12. ALL BRANCHES AND TAKEOFFS SHALL BE EQUIPPED WITH MANUAL VOLUME CONTROLLING DEVICES HAVING AN INDICATING AND LOCKING DEVICE.

G. FLEXIBLE CONNECTIONS

ACCESS LOCATIONS.

- 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.
- FLEXIBLE CONNECTIONS SHALL BE CONSTRUCTED OF NEOPRENE-COATED FLAMEPROOF FABRIC. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR MOVEMENT AND PREVENT THE TRANSMISSION OF VIBRATION.
- FLEXIBLE CONNECTIONS ARE TO BE RATED FOR THE OPERATING PRESSURE OF THE SYSTEM.
- 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 5. ALL CONTROL SEQUENCES SHALL BE TESTED AND OPERATING STATUS RECORDED IN THE REPORT.

FINAL CONNECTIONS TO EXHAUST FAN(S) SHALL BE WITH A HEAVY AIRTIGHT ACID RESISTANT FIRE RETARDANT

SHOWN ON THE PLANS, AND SET DATE, TIME, TEMPERATURE, ETC. TURN OVER OPERATING INSTRUCTIONS TO TENANT REPRESENTATIVE.

- 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 Q. FINAL HVAC INSPECTIONS REQUIREMENTS OF THE BOARD OF FIRE UNDERWRITERS, THE LOCAL FIRE MARSHAL AND SHALL BE LABELED AND APPROVED BY UNDERWRITERS LABORATORIES.
- PROVIDE ALL NECESSARY FRAMING AND SLEEVES FOR DAMPER MOUNTING PER UL AND CODE REQUIREMENTS.
- GALVANIZED DOOR WITH QUICK-OPENING LATCH AND PIANO HINGE
- . 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

- FLEXIBLE DUCT FOR CONNECTIONS SHALL BE A FACTORY FABRICATED ASSEMBLY CONSISTING OF AN INNE 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-L 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.
- FLEXIBLE AIR DUCT MAY ONLY BE USED IN VERTICAL APPLICATIONS WITH PRIOR APPROVAL FROM THE TENANT'S CONSTRUCTION MANAGER.

K. SUPPLY AND RETURN AIR TAKEOFF FITTINGS

- RECTANGULAR DUCT
- A. PROVIDE 45-DEGREE RECTANGULAR TAKEOFFS FROM MAIN DUCTWORK TO RECTANGULAR BRANCHES.
- 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 D ETER OF THE MAIN. PROTRUSIONS INTO THE MAIN ARE
- 1. PROVIDE MANUAL LOCKING QUADRANT VOLUME CONTROL DAMPERS WITH HANDLE OPERATORS IN EACH BRANCH DUCT AND AS SHOWN ON PLANS TO FACILITATE AIR BALANCING.
- WHERE ACCESS TO BALANCING DAMPER IS RESTRICTED OR IN AREAS WITH SHEET ROCK CEILINGS, YOUNG
- 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 T
- 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. INSTALL ALL AIR DEVICES AS LOCATED ON THE ARCHITECTURAL REFLECTED CEILING PLAN OR THE MECHANICAL

- 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 R EQUIVALENT TO JOHNS MANVILLE "PERMACOTE LINACOUSTIC" ("R VALUE" = 6) AND SHALL BE APPLIED TO DUCTWORK WITH FIRE RESISTIVE ADHESIVES AND CADMIUM OR COPPER PLATED MECHANICAL FASTENERS.
- 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 INTERNATIONAL ENERGY CONSERVATION CODE 2018

SUPPLY RETURN UNCONDITIONED SPACES WITHIN BUILDING: R-4.2 R-4 2 WITHIN BUILDING ENVELOPE ASSEMBLY: R-6 R-4 2 OUTSIDE OF BUILDING: R-6

- 4. 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.
- 5. ALL INSULATION ON EXISTING PIPING OR DUCTS THAT BECOMES WET, DAMAGED, DISTURBED OR GETS REMOVED INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN
- ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES. INSULATION MUST COMPLY WITH NFPA 90A. 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

- 8. 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

- 8. 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'.

. UPON COMPLETION OF INSTALLATION, CLEAN ENTIRE SYSTEM BEFORE INSTALLING AIR OUTLETS. CONTRACTOR

TO PROVIDE A CERTIFICATION THAT CLEANING WAS ACCOMPLISHED PRIOR TO PROJECT CLOSEOUT.

- 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.
- BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION.

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. MAKE AND MODEL NUMBERS OF ALL HVAC EQUIPMENT TESTED

MOTOR AND FAN RPM, SHEAVE SIZES AND BELT SIZES AND LENGTHS

- . 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
- MAKE AND MODEL NUMBERS OF ALL AIR DISTRIBUTION EQUIPMENT FINAL BALANCED AIR VOLUMES AT ALL OUTLETS (INCLUDING RETURNS WHERE DUCTED). INDEXED PLAN WITH DIFFUSER AND RETURN LOCATIONS.

OUTSIDE, RETURN, MIXED AND SUPPLY AIR TEMPERATURES AT FULL COOLING

6. THREE COPIES OF THE BALANCE REPORT SHALL BE SUBMITTED THROUGH THE GENERAL CONTRACTOR TO THE

- TENANT'S CONSTRUCTION MANAGER FOR REVIEW AND COMMENT. MOUNT THERMOSTATS 4'-0" (ADA-COMPLIANT), THERMOSTAT SENSORS 5'-0" ABOVE FINISHED FLOORS, OR AS 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.

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.
- SLEEVE INSULATION AND AN OUTER MOISTURE BARRIER. THE INNER SLEEVE SHALL BE CONSTRUCTED OF A 3. PRIOR TO ENCLOSING SPACES SUCH AS PLUMBING CHASES, AIR SHAETS AND RETURN AIR PLENUMS CLEAN AL AREAS THOROUGHLY. THE CONTRACTOR SHALL GUARANTEE THAT THE PLENUM CHAMBER USED FOR E-CIRCULATING OF AIR WILL BE OF TIGHT CONSTRUCTION AND THAT ALL SOURCES OF CONTAMINATION FROM APS, SOIL STACKS, DOWNSPOUTS, VENTS, EXHAUST DISCHARGES AND OTHER SOURCES WILL BE ENCLOSED HAT NO CONTAMINATED AIR WILL BE RE-CIRCULATED.
 - 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.
 - CONTRACTOR TO INSTALL TEMPORARY EXHAUST SYSTEM TO VENTIL ATE CONSTRUCTION SITE AND KEEP SITE UNDER SLIGHT NEGATIVE PRESSURE DURING ALL HOURS OF CONSTRUCTION, EVEN IF AFTER NORMAL BUSINESS
 - 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

THERMOSTATIC CONTROLS

A. GENERAL

THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, AT LEAST ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM. EXCEPTION:

INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR

- SYSTEM PROVIDED: 1 THE PERIMETER SYSTEM INCLUDES AT LEAST ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45
- DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM). 2. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM B. DEAD BAND
- CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEAD BAND OF NOT LESS THAN 5°F (2.8°C WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM **EXCEPTIONS**

1. THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.

WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE

2. OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL

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

- AS APPROVED BY THE CODE OFFICIAL C. OFF-HOUR CONTROLS: EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED
- BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM. 1. ZONES THAT WILL BE OPERATED CONTINUOUSLY.
- ACCESSIBLE MANUAL SHUTOFF SWITCH. D. AUTOMATIC SETBACK AND SHUTDOWN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR
- UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS: OR AN OCCUPANCY SENSOR. E. SETPOINT OVERLAP RESTRICTION: WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH
- SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION F. AUTOMATIC AND OPTIMUM START CAPABILITIES: AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL B CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED

OCCUPANCY. INDIVIDUAL HEATING AND COOLING SYSTEMS WITH SETBACK CONTROLS AND DIRECT DIGITAL

CONTROL SHALL HAVE OPTIMUM START CONTROLS. THE CONTROL ALGORITHM SHALL, AS A MINIMUM, BE A

- FUNCTION OF THE DIFFERENCE BETWEEN SPACE TEMPERATURE AND OCCUPIED SET POINT, THE OUTDOOR TEMPERATURE, AND THE AMOUNT OF TIME PRIOR TO SCHEDULED OCCUPANCY. MASS RADIANT FLOOR SLAB SYSTEMS SHALL INCORPORATE FLOOR TEMPERATURE INTO THE OPTIMUM START
- ALGORITHM. G. THERMOSTATIC SETBACK CAPABILITIES: THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY

OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

- FORT PIERCE, FL BUILDING DEPARTMENT NOTES
- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2018 IBC , AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE

ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.

2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 IMC, CHAPTER 4.

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 C408.3.2 OF 2018 - ENERGY CONSERVATION CODE. CONSTRUCTION DOCUMENT SHALL REQUIRE THA AN OPERATING MANUAL AND A MAINTAINED MANUAL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS

3. AS PER C408.2.5 OF 2018 IECC, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER

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 2018 IBC, REQUIREMENTS AS
- 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 2018 IMC CHAPTER 4: MECHANICAL VENTILATION - SECTION 403
- 8. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD: A. STANDARDS OF HEATING - 2018 IMC

OUTLINES IN SECTION

FAHRENHEIT

B. DUCT CONSTRUCTION AND INSTALLATION-SECTION 603 OF 2018 IMC. C. AIR INTAKES, EXHAUSTS AND RELIEF-SECTION 401 OF 2018 IMC.

APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES

D. AIR FILTERS -SECTION 605 OF 2018 IMC. E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS -SECTION 513 OF

9. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG.

WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 IMC CHAPTER 4 SECTION 403.3. HVAC SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS AS REQUIRED BY 2018 IECC SECTION

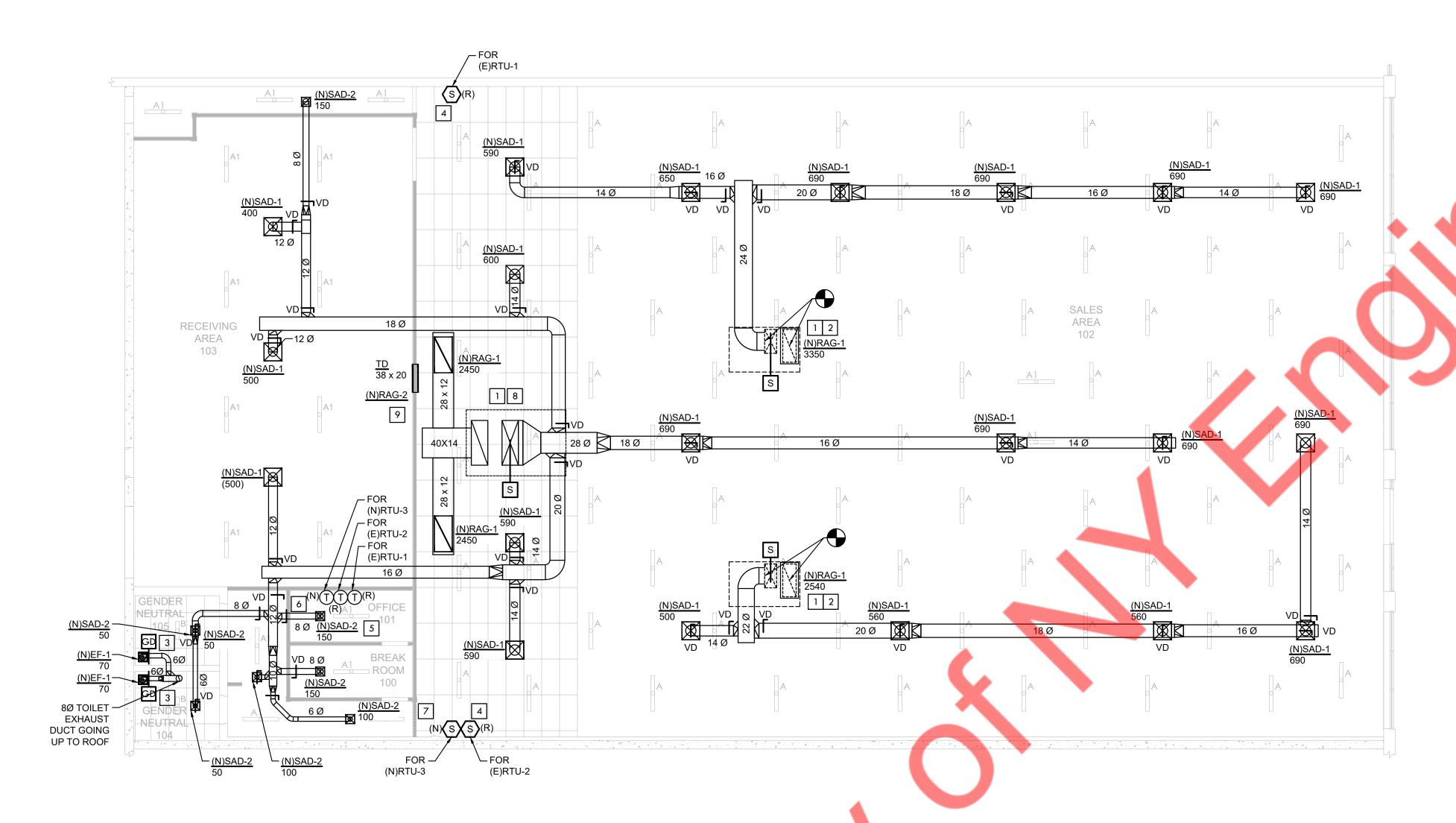
11. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS

ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING

10. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM

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

WITH THE REQUIREMENTS OF SECTION 606 2018 IMC, TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE



MECHANICAL GENERAL NOTES:

- ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND ARRANGE ALL REQUIRED
- T<mark>HE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.</mark>
- THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- EACH UNIT GENERATING CONDENSATE SHALL BE PROVIDED WITH A CONDENSATE DRAIN WITH EXTERNAL, 4" DEEP P-TRAP. EXTEND DRAIN TO A ROOF MOUNTED SPLASH PAD OR AN ACCEPTABLE LOCATION REQUIRED
- DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSION.
- ALL METAL DUCT AND AIR DISTRIBUTION DEVICES SHALL BE INSULATED WITH R-6, (75 DENSITY FOIL-BACKED INSULATION WITH FIRE AND SMOKE RATING 25-50).
- ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.
- 10. ALL FLEX DUCT SHALL BE UL LISTED, R-6. FOIL-BACKED, CLASSIFIED AS A CLASS 1 AIR DUCT. MAXIMUM LENGTH IS TO BE 14'-O" PER DROP OR PER LOCAL CODE.
- 11. THE CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS ON SITE WITH THE MOST RECENT REFLECTED
- 12. THE CONTRACTOR IS TO MAKE ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTRACTOR PANEL.
- 13. THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY ARCHITECT OR ENGINEER.
- 4. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. tHE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- 15. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.
- 16. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TRUSSES AND MODIFY DUCTWORK ACCORDINGLY.
- 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.
- 18. PROVIDE CORD-OPERATED DAMPERS IN INACCESSIBLE CEILINGS.
- 19. INSTALL SPIRAL/ROUND DUCT IN OPEN AREAS AND RECTANGULAR DUCTING IN CEILING AREAS. PROVIDE INTERNAL INSULATION FOR EXPOSE DUCTING AND EXTERNAL INSULATION FOR DUCTING IN CEILING SPACE.
- 20. GC TO PROVIDE WIRING CONNECTION AND SENSORS FROM ALL HVAC EQUIPMENTS TO EMS

SCALE MECHANICAL FLOOR PLAN

KEY NOTES	MECHANICAL LEGEND	DEMOLITION NOTE
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, CONNECT RETURN AIR DUCT WITH NEW GRILLES AS SHOWN. CONTRACTOR SHALL CLEAN AND REFURBISH EXISTING DUCT SMOKE DETECTOR IN SUPPLY DUCTWORK TO "LIKE NEW" CONDITION UPON DETECTION OF SMOKE, RTU WILL SHUTDOWN AND ACTIVATE ALARM. COORDINATE INSTALLAND (LOCATION WITH ACCESS REQUIREMENT. ENSURE SMOKE DETECTOR IS IN GOOD WORKING ORDER. PROVIDE NEW IF REQUIRED. PROVIDE NEW EXHAUST FAN. ROUTE NEW EXHAUST DUCT UP THROUGH ROOF AS SHOWN ON PLAN. TERMINATE EXHAUST DUCT AT ROOP WITH GOOSENECK AND INSECT SCREEN. ENSURE TERMINATION POINT IS MINIMUM 10' AWAR FROM ANY FRESH AIR INTAKE. COORDINATE WITH ARCHITECT OR STRUCTURAL ENGINEER FOR NEW ROOF OPENINGS. EXHAUST FANS TO BE INTERLOCKED WITH MOTION SENSOR EXISTING TEMPERATURE SENSORS FOR (E)RTU-1 & (E)RTU-2 TO BE RE-USED & RELOCATED. CONTRACTOR TO VERIFY IN FIELD, REPLACE IN KINDS IF DAMAGED. COORDINATE WITH EXISTING UNIT MANUFACTURER FOR COMPATIBLE CONTROLS AS REQUIRED. PROVIDE NEW PROGRAMMABLE THERMOSTATS FOR (E)RTU-1 & (E)RTU-2 TO BE RE-USED & RELOCATED. CONTRACTOR TO VERIFY IN FIELD, REPLACE WITH NEW IF DAMAGED. COORDINATE WITH EXISTING UNIT MANUFACTURER FOR COMPATIBLE CONTROLS AS REQUIRED. PROVIDE NEW 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. PROVIDE WALL MOUNTED REMOTE TEMP SENSOR AND WIRE BACK TO T-STAT. MOUNT AT 48" ABOVE THE FLOOR. COORDINATE WITH ARCHITECT FOR FINAL LOCATION. CONTRACTOR SHALL PROVIDE NEW DUCT SMOKE DETECTOR IN SUPPLY DUCTWORK. UPON DETECTION OF SMOKE, RTU WILL SHUTDOWN AND ACTIVATE ALARM. COORDINATE INSTALLATION LOCATION WITH ACCESS REQUIREMENT. PROVIDE TRANSFER DUCT BELOW CEILING OF SIZE 38X20 SIZE WITH RETURN AIR GRILLE ON BOTH SIDES.	CEILING RETURN AIR DIFFUSER (RAD) THERMOSTAT S TEMPERATURE SENSOR NEW DUCTWORK TO AIR QUANTITY (CFM) X, INCHES, SIDE OF DU SHOWING DUCT MOUNTED SMOK DETECTOR (E) EXISTING (N) NEW	

			MECH	ANICAL AIR TERMINAL DEVICES SCHEDULI	E		
TAG	SIZE	NECK SIZE	CFM RANGE	DESCRIPTION	BASIS OF I	DESIGN	NOTES
TAG	SIZL	INLCK SIZE	Crivi KAINGL	DESCRIPTION	MANUFACTURER	MODEL	NOTES
SAD-1	24x24	14 Ø	500-690	SUPPLY AIR DIFFUSER	TITUS	TMS	1-4
JAD-1	12 Ø 300-500		300-500	SOFFEI AIN DITTOSEN	11103	TIVIS	1-4
SAD-2	12x12	8 Ø	120-250	SUPPLY AIR DIFFUSER	TITUS	TMS	1-4
SAD-2	12X12	6 Ø	50-100	SOFFEI AIN DITTOSEN	11103	TIVIS	1-4
RAG-1	50x26	48X24	2450-3350	DOUBLE DEFLECTION DUCT MOUNTED GRILLE	TITUS	350FL	1-4
RAG-2	38x20	36x18	1600-1740	DOUBLE DEFLECTION DUCT MOUNTED GRILLE	TITUS	350FL	1-4

1. PROVIDE STANDARD WHITE FINISH FOR ALL AIR DEVICES UNLESS NOTED OTHERWISE ON PLAN.

2. PROVIDE FRAME FOR MOUNTING AIR DEVICE IN LAY-IN GRID CEILING UNLESS REFLECTED CEILING PLAN INDICATES HARD CEILING. IN AREAS WITH HARD CEILINGS, PROVIDE FRAMES FOR SURFACE MOUNTING.

3. UNLESS OTHERWISE NOTED, BRANCH DUCTS SERVING AIR DEVICES SHALL BE SAME SIZE AS NECK OF AIR DEVICE.

4. AIR DEIVCE SHALL BE OF GALVANIZED FINISH WHEN INSTALLED ON EXPOSED DUCTWORK.

			MECHAN	IICAL FAI	N SCHEDULE	•				
		FLOW RATE	STATIC PRESSURE		ELECTRIC DA	λTA	MAXIMUM	BASIS OF DE	CICN	
TAG	QUANTITY	FLOW RATE	EXTERNAL	SPEED	HP	V/PH/HZ	LOUDNESS	BASIS OF DE	JIGIN	REMARK
		CFM	IN W.G.	RPM	ПР	V/PH/HZ	DBA	MANUFACTURER	MODEL	
(N)EF-1, (N)EF-2	2	70	0.5	900	46(WATT)	115/60/1	48	GREENHECK	SP-A200	1,4,5

1. PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.

2. PROVIDE ACCESS DOOR TO SERVICE UNIT IF IN HARD CEILING.

3. INSTALL AS PER MANUFACTURERS RECOMMENDATION.

7. COORDINATE WITH ELECTRICAL CONTRACTOR.

				VENTIL	ATION CALCULT	ION			
ROOM NAME	AREA	NUMBER OF PEOPLE/1000sq.ft	NUMBER OF PEOPLE 2021	FINAL PEOPLE	CFM AS PER	2018 IMC	CALCULATED	PROVIDED.	TOILET EXHAUST
		AS PER 2018 IMC	IMC	NO.	CFM/PERSON	CFM/SQ.FT	VENT CFM	OAI	CFM
SALES	7905	15	119	120	7.5	0.12	1849	1850	-
RECEIVING	1621	2	4	4	10	0.12	235	235	-
BREAK ROOM	80	100	8	8	7.5	0.18	74	75	-
OFFICE	79	5	1	1	5	0.06	10	20	-
HALL	165	0	0	0	0	0.06	10	15	-
CORRIDOR	111	0	0	0	0	0.06	7	15	-
TOILET -1	74	0	0	0	0	0	0	-	70
TOILET -2	73	0	0	0	0	0	0	-	70
GRAND TOTAL	10108							2210	140

AIR B	ALANCE
OA	+2205
EXHAUST	-140
BUILDING PRESSURE	+2065

										RTU S	CHEDULE										
										FAN [DATA	COOLIN	NG DATA	HEATING DATA		El	ECTRICAL DA	ГА			
UNIT NO.	MANUFACTURER & MODEL NUMBER	LOCATION	NOMINAL TR	SUPPLY CFM	MIN OA CFM	C.O.P.	EER/ IEER	REFRIG. TYPE	ESP (IN. WG)	FAN RPM	MOTOR DATA BHP	CAP. TOTAL (MBH)	CAP. SENS. (MBH)	SUPP. ELECTRICAL HEAT(KW)		MCA (A)	MOCP (A)	VOLT	PH	HZ	OPER. WT. (LBS)
(N)RTU-3	DAIKIN DFC1803D000001S	ROOF	15	6000	1100	0	11 /14.2	R-410A	1.0	1600	3.5	172	123	21.6	Y	114	125	208/230	3	60	1724

ALL EQUIPMENTS MUST BE HIGH EFFICIENT, MEETING OR EXCEEDING THE BRAND MINIMUM REQUIREMENTS.
 ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF AND FDD.

PROVIDE 8-WIRE, 24VAC, AUTOMATIC CHANGEOVER, 2 STAGE HEAT/COOL, REMOTELY PROGRAMMABLE

THERMOSTAT. PROVIDE 5-MINUTE ANTI-SHORT CYCLE TIMER.

PROVIDE WITH FACTORY INSTALLED DISCONNECT.

PROVIDE THRU THE BASE ELECTRICAL AND SINGLE POINT CONNECTION. PROVIDE WITH 14" ROOB CURB. CONTRACTOR SHALL FIELD INSULATE. SHIP ASAP AHEAD OF UNIT.

PROVIDE UN-POWERED CONVENIENCE OUTLET.

9. PROVIDE UNIT WITH HAIL GUARD.10. PROVIDE WITH MOTORIZED DAMPER AND OUTSIDE AIR INTAKE HOOD.

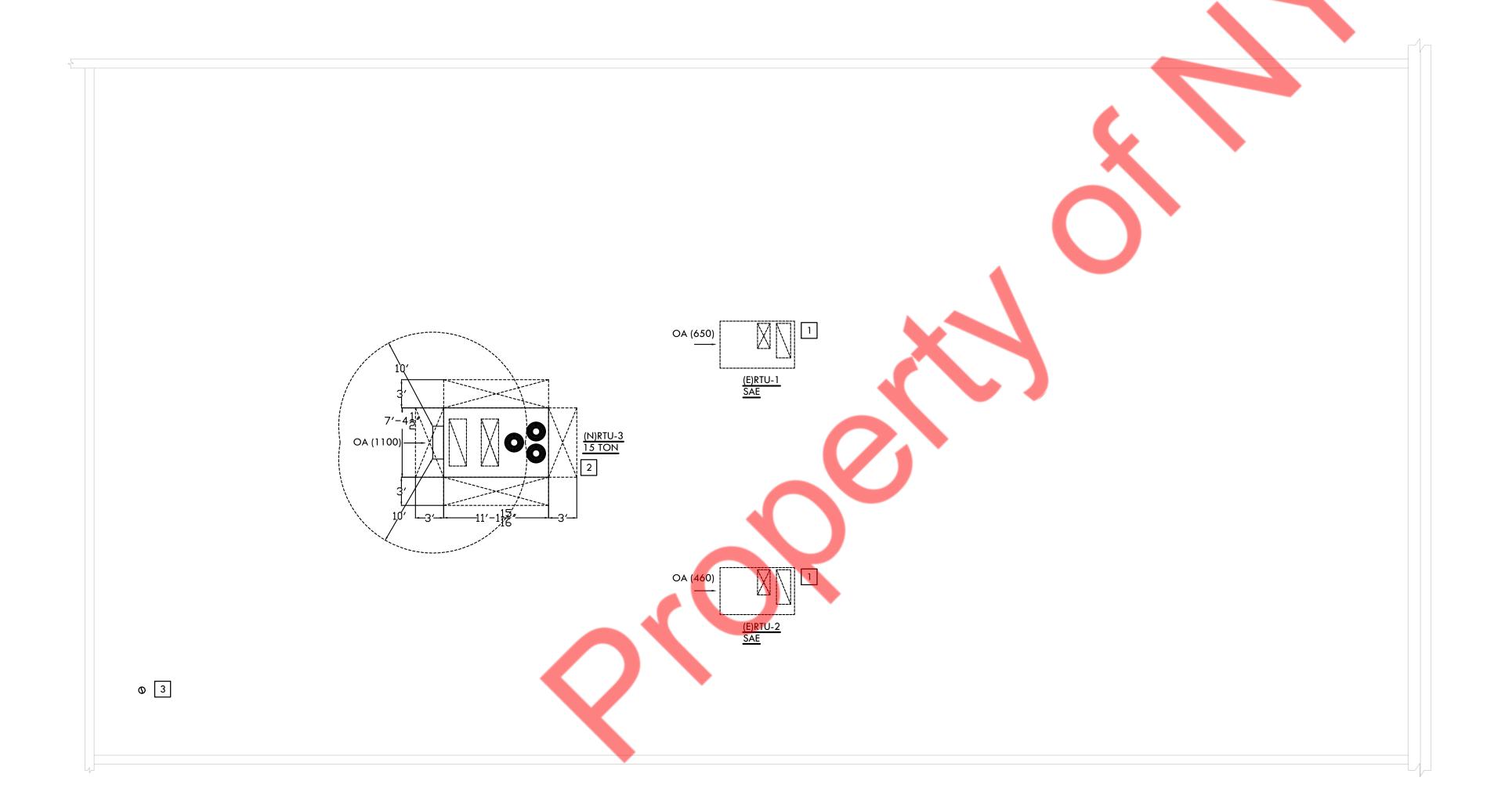
11. PROVIDE MANUFACTURER'S MOTOR AND DRIVE PACKAGE AS REQUIRED TO MEET SCHEDULED AIR CAPACITIES AND PRESSURE DROP.

12. PROVIDE WITH RETURN AIR SMOKE DETECTOR.

13. PROVIDE 2" THROWAWAY FILTERS.

14. PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTY.
15. PROVIDE HOT GAS REHEAT. IT SHOULD BE LIMITED TO <240 MBH AT 50% AND >240 MBH AT 25%.

2 SCHEDULES



KEY NOTES

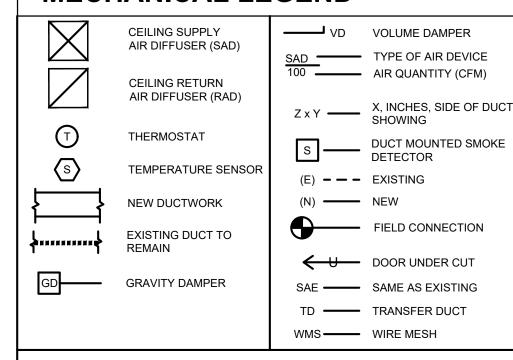
EXISTING MECHANICAL ROOFTOP UNITS TO REMAIN. CLEAN AND REFURBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING. VERIFY IN FIELD PRIOR TO BID. CONTRACTOR TO ENSURE SA & RA CFM OF ALL THE EXISTING RTU'S TO BE BALANCED AS PER THE AS-BUILT CONDITIONS OR AS SHOWN ON THE PLANS. BALANCE OUTSIDE AIR OF EACH RTU TO MATCH TOTAL OA REQUIREMENT OF THE SPACE. ENSURE OA CFM OF EACH RTU SHOULD NOT EXCEED 25% OF THE RTU SA CFM. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO BID. OA INTAKE SHOULD BE 10' AWAY FROM ANY EXHAUST OPENINGS.

CONDENSATE DRAIN FROM RTU SHALL BE CONVEYED TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM 1% HORIZONTAL

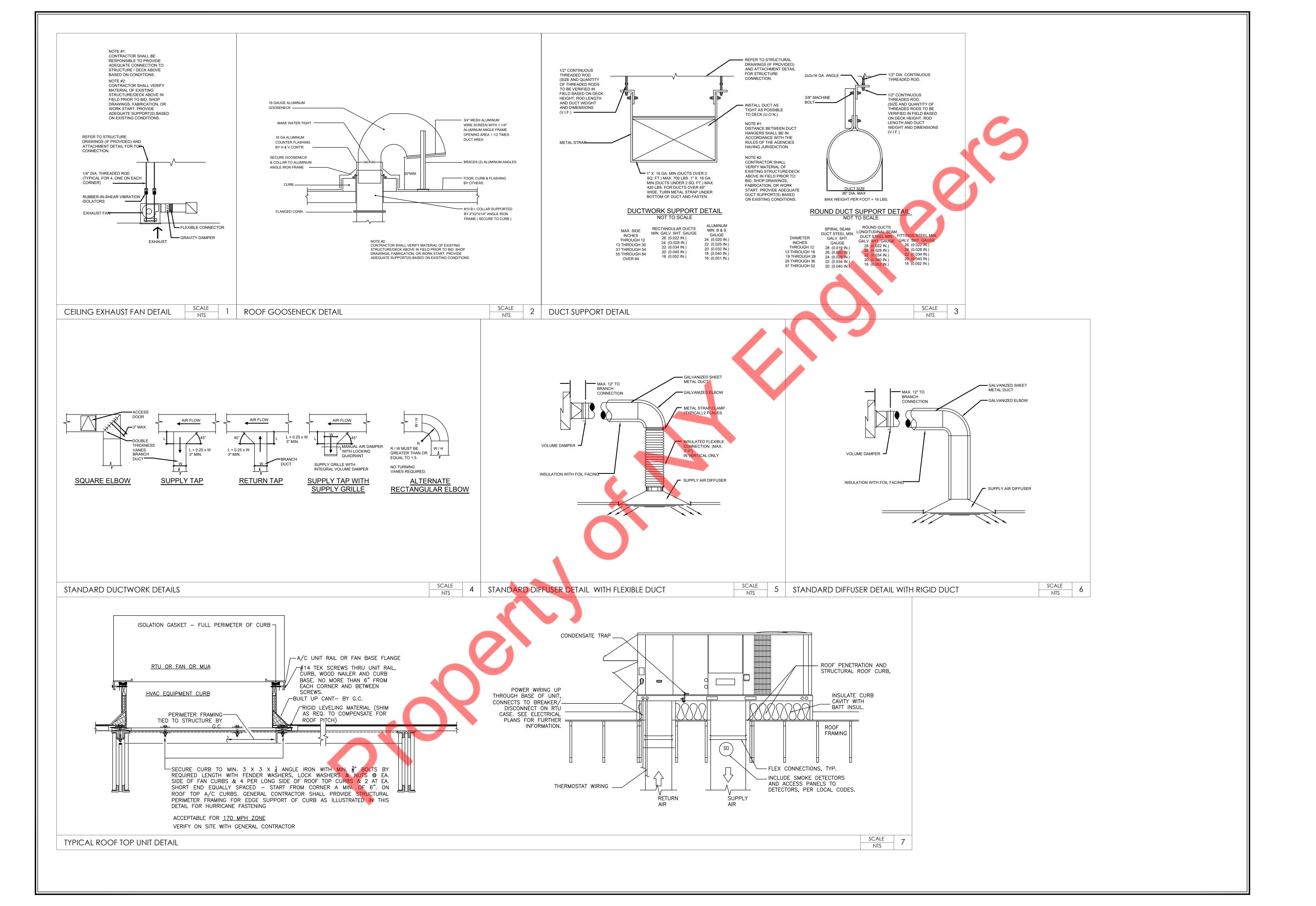
SLOPE IN DIRECTION OF DISCHARGE.

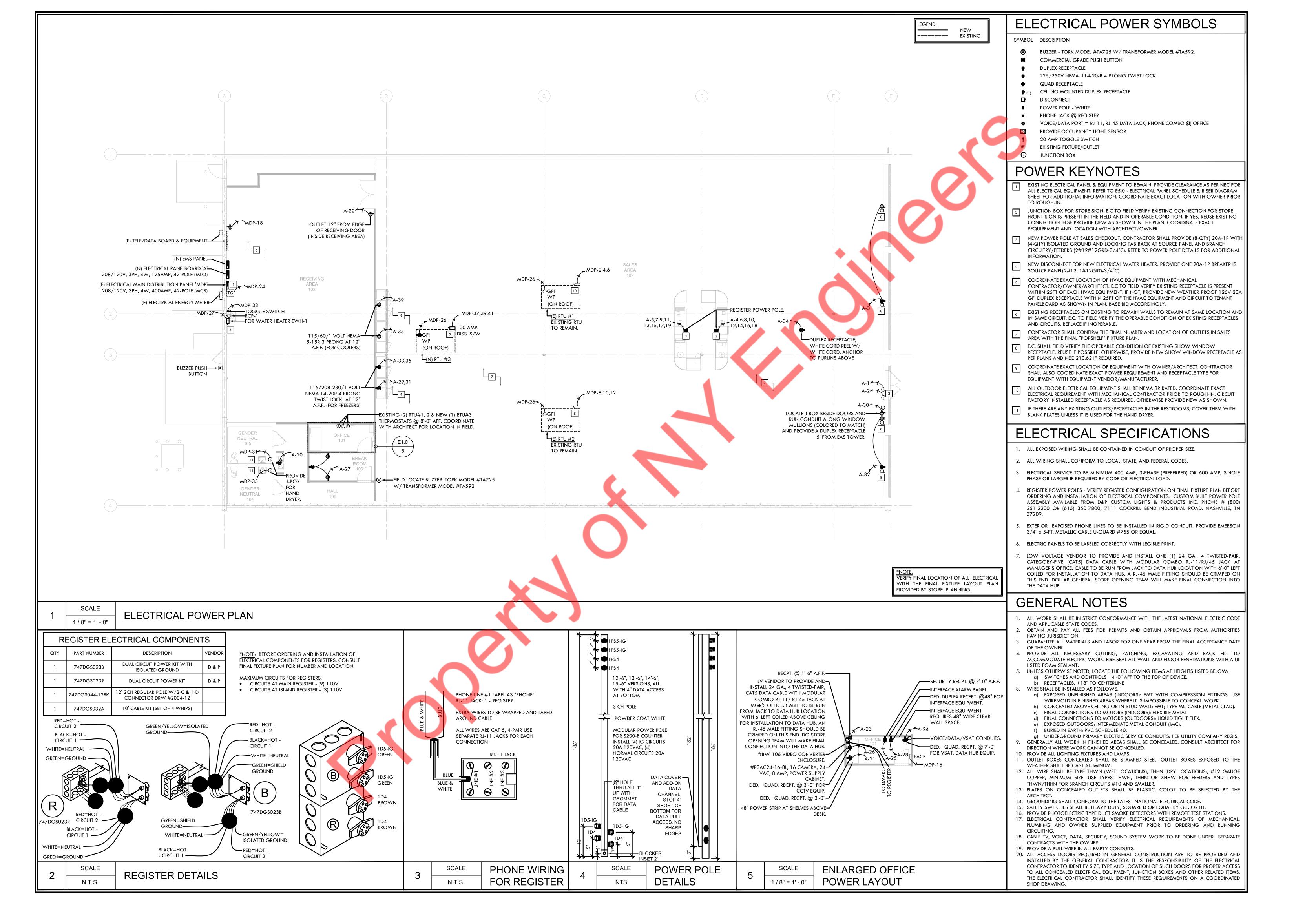
AS PER 2018 IMC ALL EXHAUSTS ON THE ROOF SHALL TERMINATE NOT LESS THAN 10 FT. FROM ALL MECHANICAL AIR INTAKES, 3 FEET FROM EXTERIOR WALLS AND ROOFS. BATHROOM EXHAUST SHALL TERMINATE 24" ABOVE ROOF WITH GOOSENECK AND BIRD SCREEN.

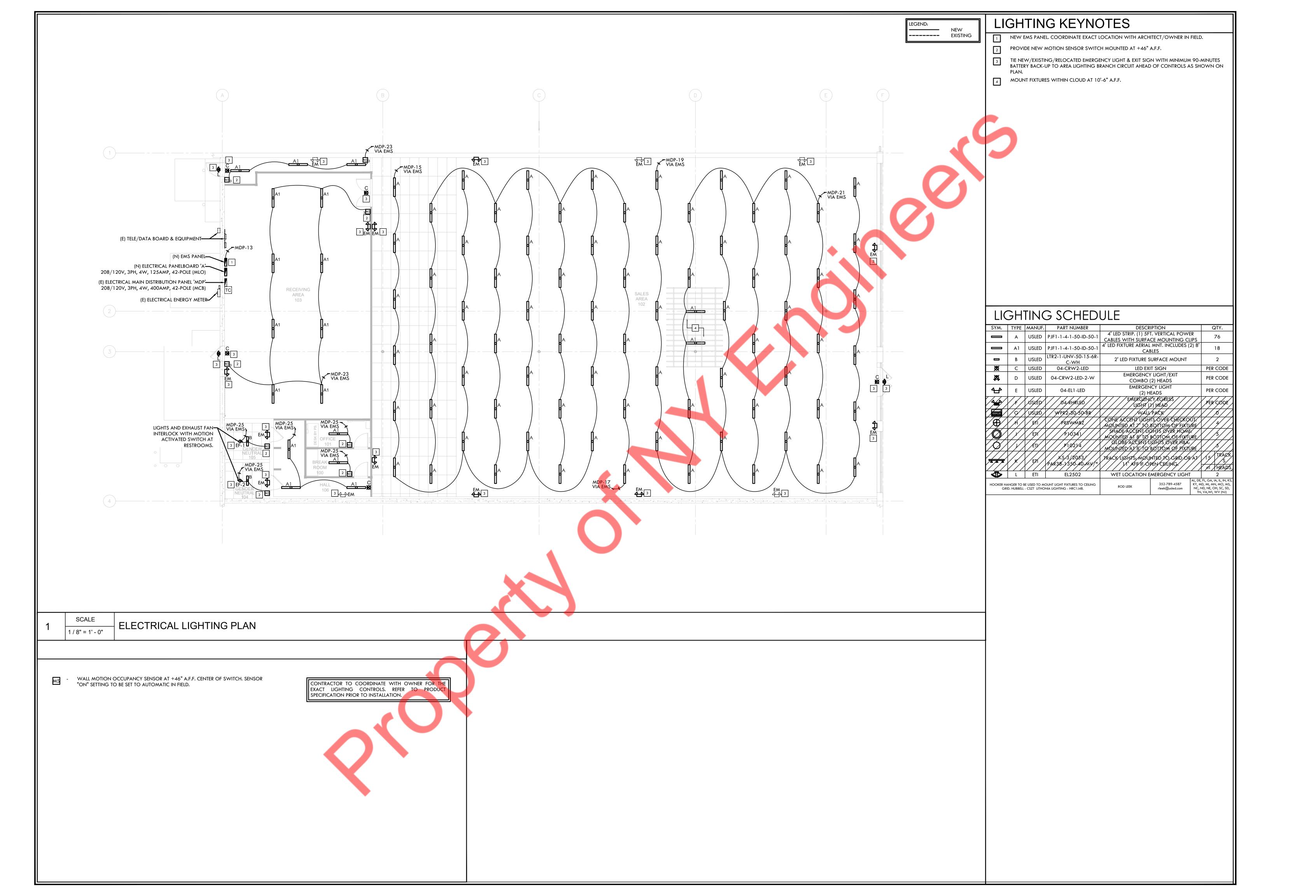
MECHANICAL LEGEND

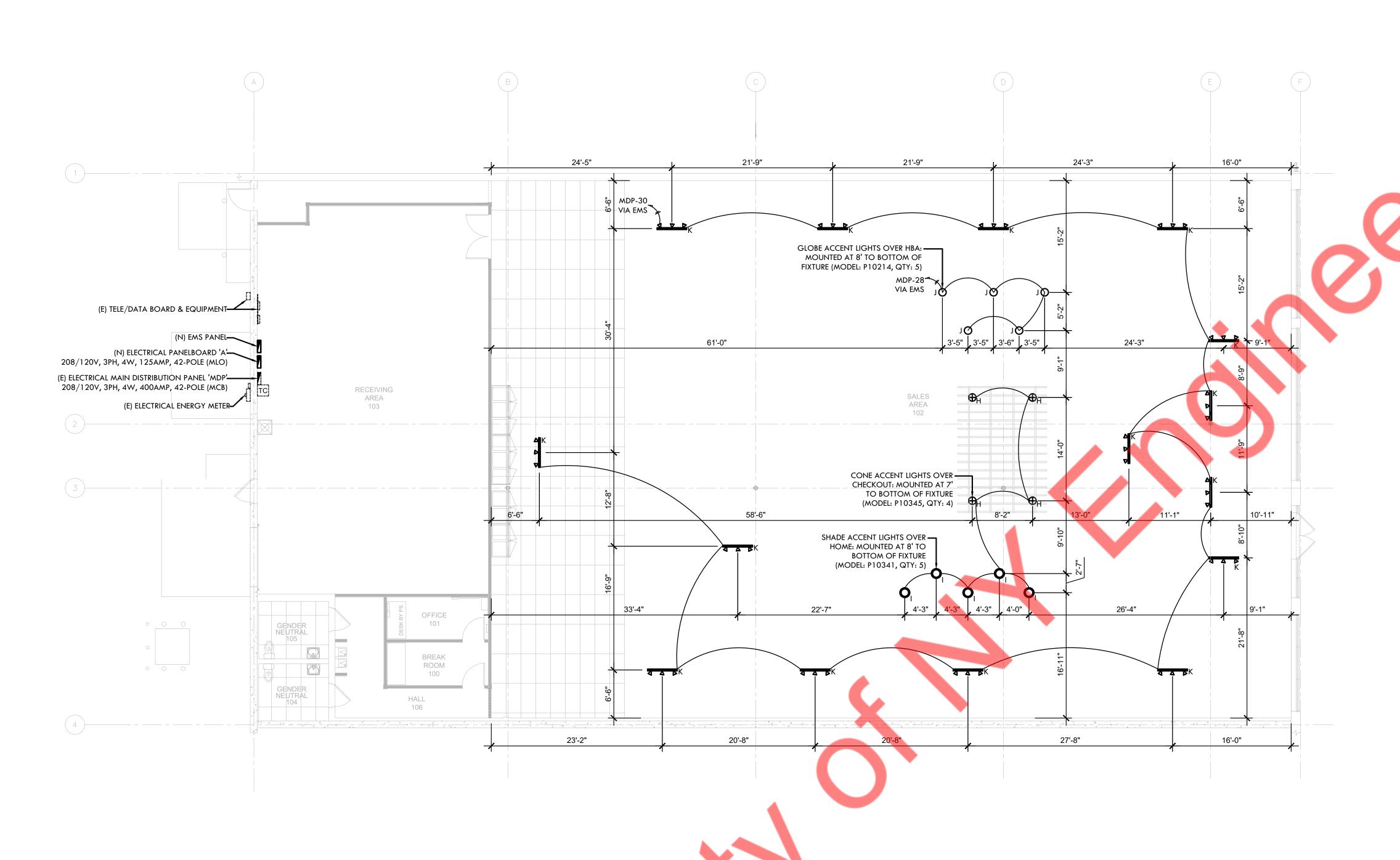


SYMBOL LIST SHOWN IS FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.









1 / 8" = 1' - 0"

ELECTRICAL DECORATIVE LIGHTING PLAN

GENERAL NOTES

LIGHTING SPECIFICATIONS:

- RECEIVING AREA LIGHTS, IF NOT INDICATED ON SHEET 'E2', TO BE SPACED EVENLY FROM FRONT AND REAR WALL OF RECEIVING AREA.
- 2. NIGHT LIGHTING: INCLUDES THREE LIGHT FIXTURES IN CENTER ROW OF SALES AREA AND AT LEAST ONE FIXTURE NEAR ELECTRIC PANELS AND EMERGENCY EXIT DOOR IN RECEIVING AREA. ADDITIONAL LIGHT FIXTURES MAY BE REQUIRED TO PROVIDE MINIMAL LIGHTING FROM ENTRY TO ELECTRICAL BREAKER PANEL. NIGHT LIGHTING TO HAVE ITS OWN DEDICATED
- . EMERGENCY / EXIT SIGNS AND LIGHTS: INSTALL EMERGENCY LIGHTS AND SIGNS THROUGHOUT THE BUILDING IN COMPLIANCE WITH ALL APPLICABLE CODES.

CEILING NOTES:

- 1. PAINT EXISTING AIR DIFFUSERS AND RETURN AIR GRILLS IN THEIR ENTIRETY WHEN THEY ARE RE-USED.
- 2. PROVIDE AND INSTALL NEW CEILING GRID AT SALES AREA IF REQUIRED, RESTROOMS, HALL, BREAK ROOM AND OFFICE.
- 3. PROVIDE AND INSTALL NEW CEILING TILES AT SALES AREA IF REQUIRED, RESTROOMS, HALL, BREAK ROOM AND OFFICE.
- 4. PROVIDE AND INSTALL NEW EMERGENCY LIGHTING AND EXIT LIGHTING AS REQUIRED BY LOCAL CODES.
- 5. PROVIDE AND INSTALL FIRE EXTINGUISHERS AS REQUIRED BY LOCAL CODES.

LIGHTING NOTES:

- 1. OPEN CEILING: AIR CRAFT WIRE SHOULD BE UTILIZED TO SUSPEND LIGHTS TO SPECIFIED HEIGHT.
- 1.1. STRIP LIGHTS MOUNTED AT 11' AFF.1.2. STRIP LIGHTS IN TRELLIS ARE TO BE MOUNTED UNDER THE TRELLIS AT 10'-6" AFF.
- 1.3. TRACK LIGHTS ARE THE BE HUNG FROM UNISTRUT AT 11' AFF. 1.4. PENDANT LIGHTS IN HBA AND HOME ARE TO BE MOUNTED AT 8' AFF.
- 1.5. PENDANT LIGHTS OVER THE REGISTER ARE TO BE HUNG AT 4' ABOVE THE TOP OF THE REGISTER COUNTER.
- ACT CEILING: STRIP LIGHTS AND TRACKS ARE TO BE MOUNTED TO THE GRID. PENDANT LIGHTS ARE TO BE SUSPENDED BY AIR CRAFT WIRE TO ACHIEVE SPECIFIED HEIGHT.
- STRIP LIGHTS IN TRELLIS ARE TO BE MOUNTED UNDER THE TRELLIS AT 10'-6" AFF. USE AIR CRAFT WIRE.
- 2.2. PENDANT LIGHTS IN HBA AND HOME ARE TO BE MOUNTED AT 8' AFF. 2.3. PENDANT LIGHTS OVER THE REGISTER ARE TO BE HUNG AT 4' ABOVE THE TOP OF THE REGISTER COUNTER.

LIGHTING LEGEND TYPE MANUF. DESCRIPTION QTY. EMERGENCY EGRESS

UGHT (1) HEAD

WALL PACK

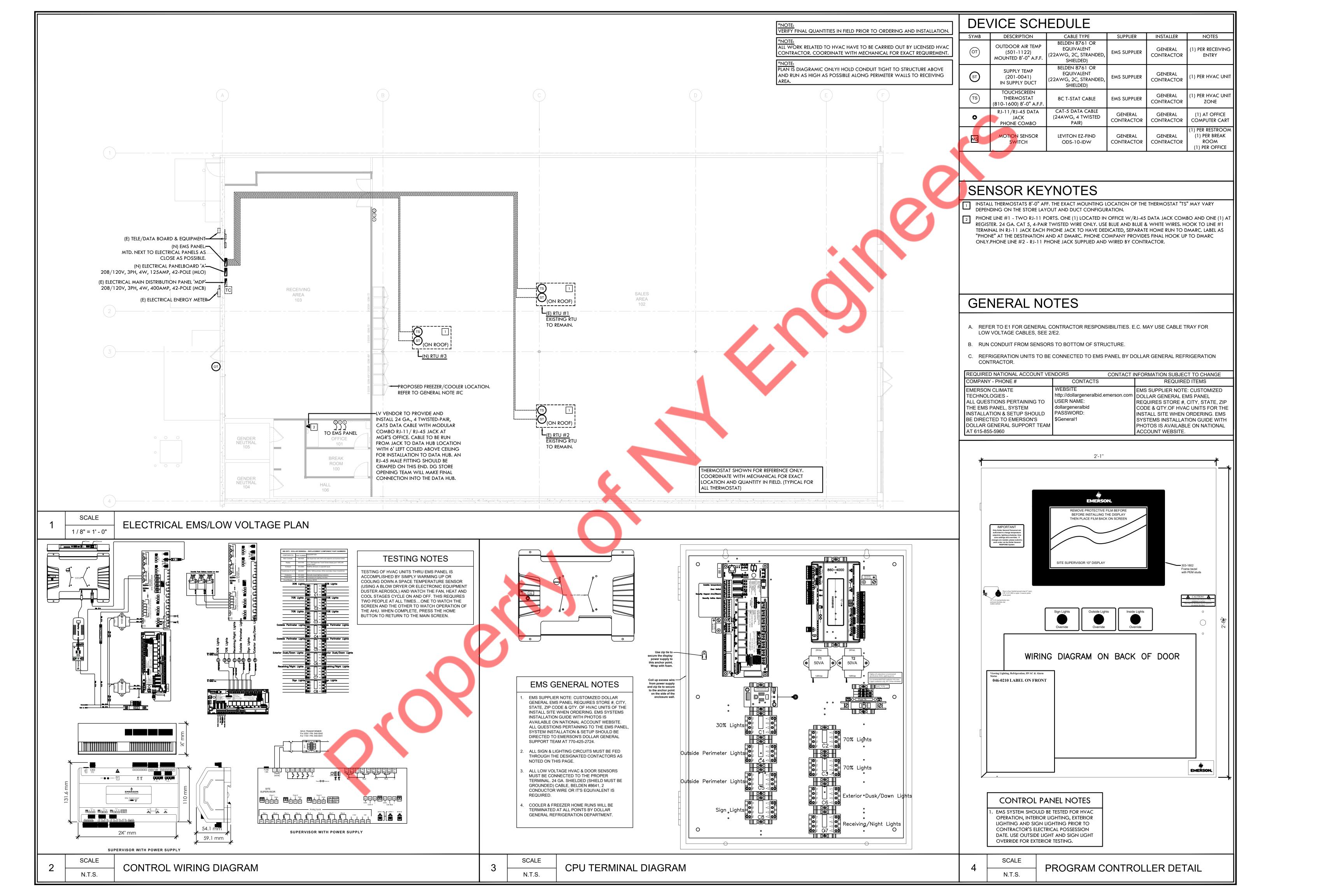
CONE ACCENT LIGHTS OVER CHECKOUT: MOUNTED AT 7' TO BOTTOM OF FIXTURE
SHADE ACCENT LIGHTS OVER HOME: MOUNTED AT P10341 8' TO BOTTOM OF FIXTURE

GLOBE ACCENT LIGHTS OVER HBA: MOUNTED AT 8'

TO BOTTOM OF FIXTURE P10214 K5-3/2053/ 15 TRACKS TRACK LIGHTS: MOUNTED TO GRID OR AT 11' AFF PAR38-1350-40-MV/* IF OPEN CEILING. AL, DE, FL, GA, IA, IL, IN, KS, KY, MD MI, MN, MO, MS, NC, ND, NE, OH, SC, SD, TN, VA,WI, WV (NJ) R HANGER TO BE USED TO MOUNT LIGHT FIXTURES TO CEILING GRID. ROD LEEK

rleek@usled.com

HUBBELL - CSZT LITHONIA LIGHTING - HRC1 J48.



PANE	BOAR	:D		MDP	VOLTA	AGE	120	/ 208 V	PHASE			3	WIRE		4				PANE	LBOAF	RD
PANE	L TYPE			PRL-1a	MAINS	;	400	A MCB	BUS RAT	ING	4	A00A	AIC RAT	TING	35K AMPS	1			PANE	L TYPE	=
NEMA	TYPE	ENCLO	SURE	1	MOUN	TING	SUI	RFACE	OPTIONS	3	POW-	R-LINE C	NOTE		EXISTING PANEL				NEM#	TYPE	ENCLOSUR
CKT.	EQT	CKT	DECCD	UDTION	POLE	WIRE	BKR.	TOTAL	PHASE	TOTAL	BKR.	WIRE	POLE	DECCD	IDTION	СКТ	EQT	CKT.	CKT.	EQT	CKT
NO.	TAG	TAG	DESCR	RIPTION		SIZE	SIZE	WATTS		WATTS	SIZE	SIZE		DESCR	IFTION	TAG	TAG	NO.	NO.	TAG	TAG
1								8,000	Α	5,760								2	1	TC	(N)
3		(N)	NEW P	ANEL-A	3	3	100	8,000	В	5,760	80	4	3	RTI	U-1	(E)		4	3		(N)
5								8,000	С	5,760	1							6	5		(N)(C)
7		(E)	SPA	ARE	1	10	30	2,500	Α	5,760								8	7		(N)(C)
9		. ,			<u>'</u>			2,500	В	5,760	80	4	3	RTI	U-2	(E)		10	9		(N)(C)
11		(E)		ARE	1	10	30	2,000	С	5,760								12	11		(N)(C)
13	TC	(N)	EMS F		1	12	20	500	Α		20		1	SPA		(E)		14	13		(N)(C)
15		(N)	SALES L		1	12	20	1,200	В	500	20	12	1 1	FIRE A		(N)		16	15		(N)(C)
17		(N)	SALES L		1	12	20	1,200	С	180	20	12	1 1	REC_TEL		(E)		18	17		(N)(C)
19		(N)	SALES L SALES L		1	12	20	1,200 1,200	A B		20		1 1	SPA SPA		(E)		20	19	1	(N)(C) (N) REC
21 23		(N) (N)	LIGHTING RR, CO		1	12 12	20	1,200	С	100	20	12	$\frac{1}{1}$	TIME C		(E)		22 24	21		\ /
25		(N)	LIGHTING_RR, CO		1	12	20	500	A	540	20	12	1 1	GFI/WP RTU	= =	(E)		26	25		(N) (N)(C)
27		(N)	EW	-	1	12	20	1,650	В	500	20	12	1 1	SALES DECORA		(N)		28	27		(N)
29		(E)	SP/		1	'-	20	1,000	C	750	20	12	1 1	SALES TRAC		(N)		30	29		
31		(N)	HAND		1	12	20	1,500	A		20		1 1	SPA		(E)		32	31		(N)(C)
33		(E)	RC		1	12	20	180	В		20		1	SPA		(E)		34	33		40.00
35		(N)	HAND	DRYER	1	12	20	1,500	С	1,500								36	35		(N)(C)
37								13,700	Α	1,500	20	12	3	EXISTIN	NG FAN	(E)		38	37		(N)(C)
39		(N)	NEW	RTU-3	3	1	125	13,700	В	1,500								40	39		(N)(C)
41								13,700	С					SPA	ACE			42	41		
ALL F	HASES	то в	BALANCED TO WI	THIN 7%						(E)	EXISTI	NG TO RE	MAIN						ALL F	PHASE	S TO BE BAL
A=	41,460			WATTS						(N)	NEW C	IRCUIT							A=	8,000	
B=	42,450			WATTS						GFCI	GROUN	ID FAULT	CURREN	IT INTERRUPTER					B=	7,460	
C=	41,450			WATTS						IG	CIRCUI	TS WITH	ISOLATE	D GROUND					C=	6,240	
										тс	CIRCUI	TS ON TIM	MECLOCK	K						·	
												NG TO TH		- -							
TOT 4	CONI	VECTE:	DLOAD	118,360	WATT	2		329	AMPS			ER LOCK							TOTA	I CON	NECTED LOA
										_				0.1.101.170							
IUIA	_ DEM	AND LC	PAU	119,198	WATT	>		331	AMPS	a,b,c	SWIIC	HES CON	IKULLIN	G LIGHTS					TOTA	L DEM	AND LOAD

					ELE	CTI	RIC	AL F	PAN	EL S	SCH	ED L	JLE					
PANE	LBOAR	RD		Α	VOLTAC	3E	120	/ 208 V	PHASE		;	3	WIRE		4			
PANE	L TYPE	•		NEW	MAINS		M	ILO	BUS RA	TING	12	25A	AIC RAT	TING	22KA	1		
NEMA	TYPE	ENCLO:	SURE	1	MOUNT	ING	SUR	FACE	OPTION	S			NOTE		NEW PANEL	1		
CKT.	EQT	CKT	DECCE	UDTION	POLE	WIRE	BKR.	TOTAL	PHASE	TOTAL	BKR.	WIRE	POLE	DECO	UDTION	СКТ	EQT	СКТ.
NO.	TAG	TAG	DESCR	RIPTION		SIZE	SIZE	WATTS		WATTS	SIZE	SIZE		DESCR	RIPTION	TAG	TAG	NO.
1	TC	(N)	SIGN	IAGE	1	12	20	1,200	Α	1,200	20	12	1	SIGN	IAGE	(N)	тс	2
3		(N)	REC_SHOW	WINDOW	1	12	20	1,000	В	360	20	12	1	POWER PO	OLE GREEN	(N)(C)		4
5		(N)(C)	POWER PO	DLE GREEN	1	12	20	360	С	360	20	12	1	POWER PO	LE BROWN	(N)(C)		6
7		(N)(C)	POWER PO	LE BROWN	1	12	20	360	Α	360	20	12	1	POWER PO	DLE GREEN	(N)(C)		8
9		(N)(C)	POWER PO	DLE GREEN	1	12	20	360	В	360	20	12	1	POWER PO	LE BROWN	(N)(C)		10
11		(N)(C)	POWER PO	LE BROWN	1	12	20	360	С	360	20	12	1	POWER PO	OLE GREEN	(N)(C)		12
13		(N)(C)	POWER PO	DLE GREEN	1	12	20	360	Α	360	20	12	1	POWER PO	LE BROWN	(N)(C)		14
15		(N)(C)	POWER PO	LE BROWN	1	12	20	360	В	360	20	12	1	POWER PO	OLE GREEN	(N)(C)	_ =	16
17		(N)(C)	POWER PO	OLE GREEN	1	12	20	360	С	360	20	12	1	POWER PO	LE BROWN	(N)(C)	7	18
19		(N)(C)	POWER PO	LE BROWN	1	12	20	360	Α	180	20	12	1	REC_GFI_DRIN	KING FOUNTAIN	(N)		20
21		(N)		FICE MGR DESK	1	12	20	360	В	180	20	12	1	—	VING AREA	(N)		22
23		(N)	_	OFFICE	1	12	20	360	С	360	20	12	1	REC QUAD_OFFIC	E_VSAT/DATA HUB	(N)		24
25		(N)(C)	_	CURITY	1	12	20	360	Α	360	20	12	1		AD_CCTV	(N)(C)		26
27		(N)	REC_BR	REAK RM	1	12	20	1,500	В	360	20	12	1	-	FACE PANEL	(N)(C)		28
29		(N)(C)	FREI	EZER	1	12	20	1,000	С	360	20	12	1		OWER	(N)		30
31		(14)(0)	I IVE	LZLIX	'	12	20	1,000	Α	1,000	20	12	1	-	W WINDOW	(N)		32
33		(N)(C)	FREI	EZER	1	12	20	1,000	В	360	20	12	1		Y/CORD REEL	(N)		34
35		. , , ,			'			1,000	С	1,000	20	12	1		PANEL	(N)		36
37		(N)(C)		DLER	1	12	20	900	Α		20		1		ARE			38
39		(N)(C)		DLER	1	12	20	900	В		20		1		ARE			40
41				ARE	1		20		С		20		1	S _P	ARE			42
ALL P	HASES	TO BE	BALANCED TO V	VITHIN 7%						(E)	EXISTING	G TO REM	IAIN					
Δ =	8,000			WATTS						(N)	NEW CIR	CUIT						
B=	7,460			WATTS						GFCI	GROUND	FAULT C	URRENT	INTERRUPTER				
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IUIA	L COM	NEC I EL	LUAD	21,700	WAIIS			61	AMPS	ا ر	BREAKE	RLUCK						I

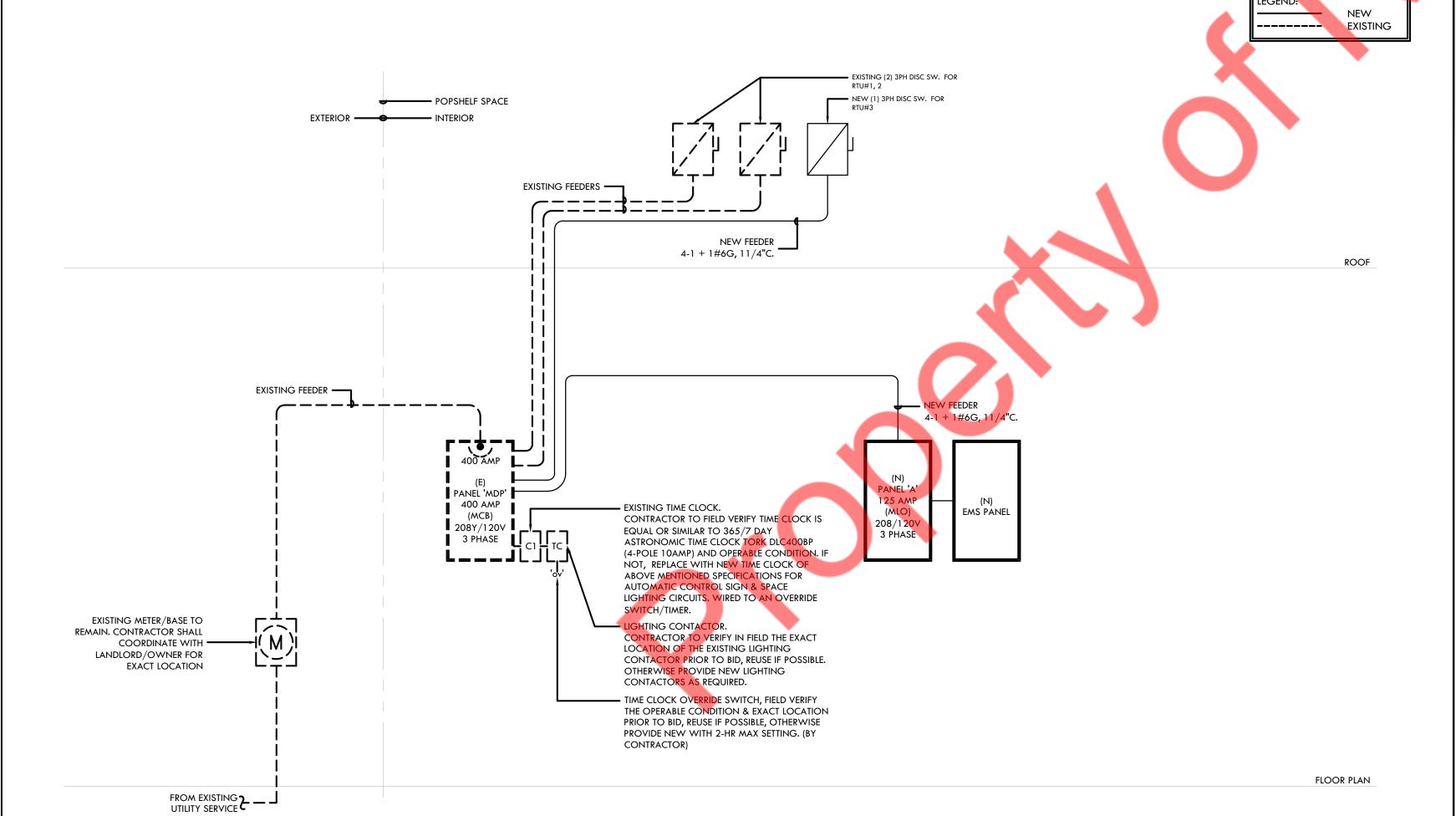
22,800 WATTS

XISTING PANELBOARD KEYED NOTE:

- NEW BREAKERS MAY BE REQUIRED FOR USE IN THE EXISTING PANELBOARD TO MATCH RATING INDICATED IN THE PANEL SCHEDULE. PRIOR TO BID/PRICING, THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING-TO-REMAIN PANELBOARD MANUFACTURER AND MODEL NUMBER TO ENSURE THAT REPLACEMENT BREAKERS ARE AVAILABLE. WHERE BREAKER AVAILABILITY ISSUES ARISE, NOTIFY THE PROJECT MANAGER PRIOR TO BID/PRICING.
- DESIGNATED CIRCUIT NUMBER SHOWN ON THE PANEL SCHEDULE FOR A CERTAIN LOAD, MAY BE DIFFERENT THAN THE ACTUAL CIRCUIT NUMBER IN THE EXISTING PANELBOARD. ALL EXISTING-TO-REMAIN ELECTRICAL LOADS SHALL REMAIN CONNECTED TO THE SAME BREAKER AND CIRCUIT DESIGNATION. AVAILABLE SPARES AND SPACES SHALL BE UTILIZED TO FEED THE NEW LOADS.



RISER DIAGRAM



1. ALL CONDITIONS TO BE FIELD VERIFIED BEFORE SUBMITTING BID.

64 AMPS a,b,c SWITCHES CONTROLLING LIGHTS

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.

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

AVAILABLE IN ELECTRICAL ROOM/AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.

EQUIPMENT PER N.E.C. FIELD VERIFY EXACT MOUNTING SPACE

9. CONTRACTOR SHALL MAKE ALL FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION

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

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

	ELECTRICAL LOAD SUMMARY								
DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW				
LIGHTING- 120V	9.2	120	1	1.25	11.4				
RECEPTACLES	14.9	120	1	>10kW=10+[0.5*(kW-10)]	12.5				
STOREFRONT SIGN	2.4	120	1	1.25	3.0				
S/W OUTLETS	2.0	120	1	1.25	2.5				
EF-1	4.5	208	1	1.00	4.5				
REF. EQUIPMENT	5.8	208	1	1.00	5.8				
ROOFTOP UNITS	75.7	208	3	1.00	75.7				
HOT WATER HEATER	1.7	120	1	1.00	1.7				
TOTALS	116.1				117.0				

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* USE GREATER VALUE OF THE TWO CATEGORIES.

** 125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.

*** N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW) MINUS ACTUAL SHOW WINDOW LIGHTING KVA.

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

MINIMUM FEEDER AMPERAGE

<u>x 1000 =</u> <u>116,998</u>

x 1.732 =

324.8 AMPS USE (EXISTING) 400AMP 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.

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

RISER NOTES & LOAD SUMMARY

I. GENERAL REQUIREMENTS

- . 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. 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.
- B. POWER DISTRIBUTION SYSTEMS AND TRANSFORMER.
- C. LIGHTING SYSTEMS (ALSO SEE REFLECTED CEILING PLAN).
- D. ELECTRICAL ENERGIZING -- MISCELLANEOUS FAN AND MOTOR.
- E. MOTOR POWER WIRING SYSTEM.
- F. TELEPHONE EMPTY CONDUIT SYSTEM (INCLUDING TERMINAL BOXES AND OUTLETS).
- G. CONVENIENCE RECEPTACLE SYSTEM, DOOR ALARM/ ENTRY SYSTEM/ SECURITY.

EXTERNAL WIRING IF REQUIRED BY LANDLORD OR FIRE MARSHAL.

- H. 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.
- I. GROUNDING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND ALL MALL REQUIREMENTS.
- J. NIGHT LIGHT CIRCUITING THROUGHOUT PREMISES AS PER CODE WHETHER SHOWN OR NOT ON DRAWINGS.
- K. LOCK OUTS FOR EXIT / EMERGENCY LIGHTING, ALARM SYSTEMS, CASH REGISTERS, GRILLE AT ENTRY (IF APPLICABLE) AS REQUIRED. SEE PANEL SCHEDULE FOR CIRCUITS.
- L. SMOKE DETECTORS FURNISHED AND INSTALLED WITHIN STORE TO INCLUDE LOCATIONS AND INTERNAL /
- M. 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.
- N. 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.
- O. 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.
- P. 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.
- Q. 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.
- R. 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.
- 5. 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.
- T. 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.
- U. 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.
- V. 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. SUBMITTALS:

- 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.

9. 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

10. 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.
- 11. 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

12. 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.
- 13. <u>CLEANUP</u>: REMOVE ALL SURPLUS MATERIAL, EQUIPMENT AND DEBRIS INCIDENTAL TO THIS WORK AND LEAVE THE PREMISES IN A CONDITION ACCEPTABLE TO THE OWNER.
- 14. <u>GUARANTEE</u>: 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.
- 15. 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.
- 16. 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
- 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.
- 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.

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
- 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

SUFFICIENT VENTILATION TO PREVENT OVERHEATING OF THE CIRCUIT BREAKERS. EACH CABINET SHALL BE

- 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. LIGHTING FIXTURES:

- H. 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.
- I. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL THE NECESSARY LABOR AND MATERIALS FOR THE COMPLETE INSTALLATION OF THE LIGHTING FIXTURES AS INDICATED ON THE DRAWINGS.
- J. 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.
- K. 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

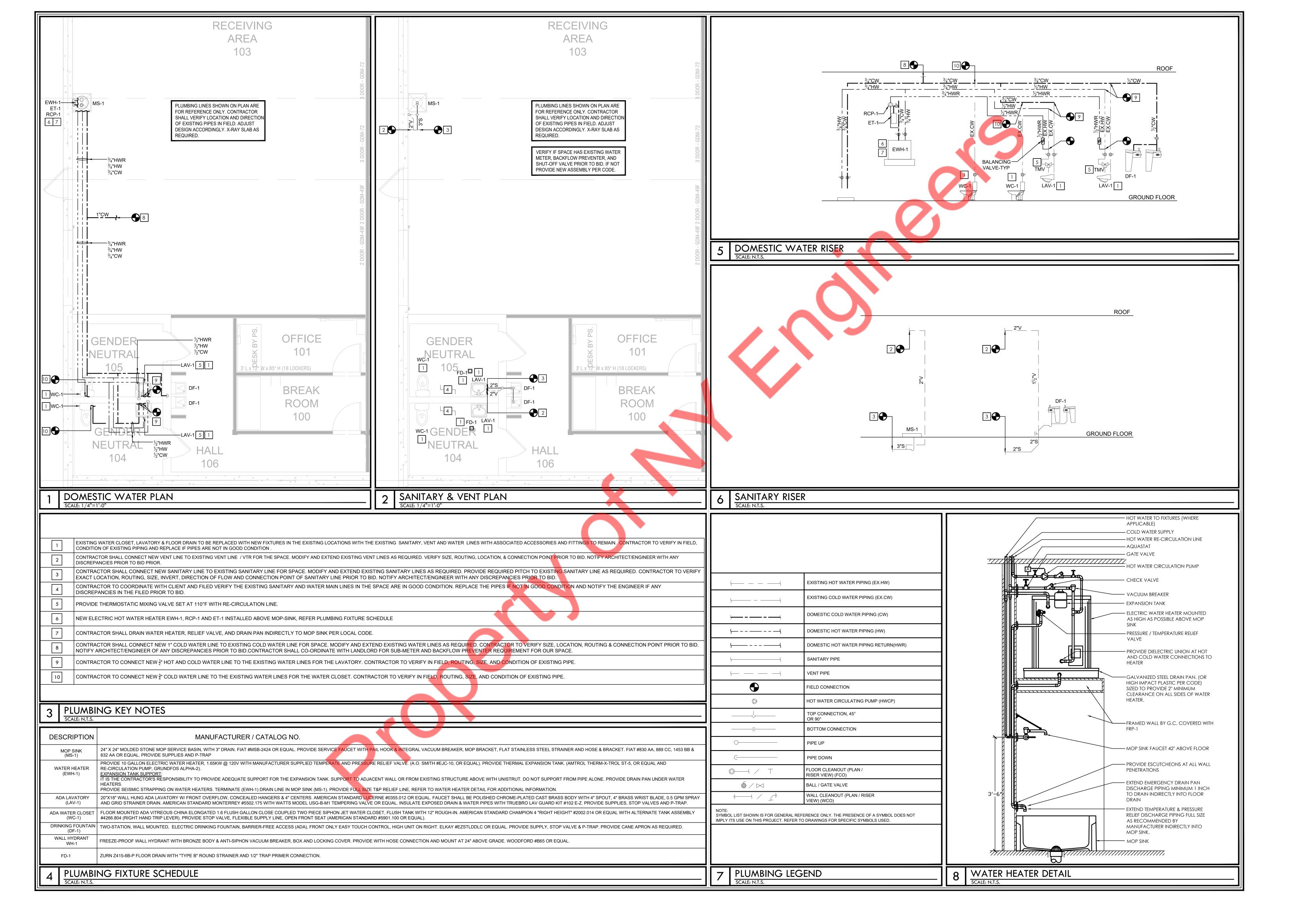
1. PROVIDE 3/4" EMT IN WALLS WITH DRAG STRING AT EACH LOCATION.

CELLANIEOLIS

- 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.



1' TO 65' 12 12 12 12 12 12 157' TO 263' 6 12 12 12 12 157' TO 419' 4 12



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. 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

7. THE PLUMBING SUBCONTRACTOR IS A SUBCONTRACTOR OF THE TENANT'S GENERAL

8. 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.

. 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

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.

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

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.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.

6.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, CIPSI301 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

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

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.

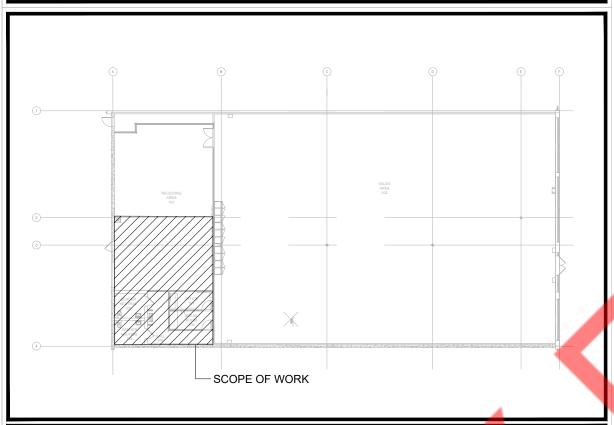
BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT 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 EXACT LOCATION, ROUTING, SIZE, INVERT, DIRECTION OF FLOW OF EXISTING SANITARY LINE AND CONNECTION POINT OF SANITARY LINE PRIOR TO BID

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

ABBREVATIONS SCALE: N.T.S.



3 KEY PLAN

