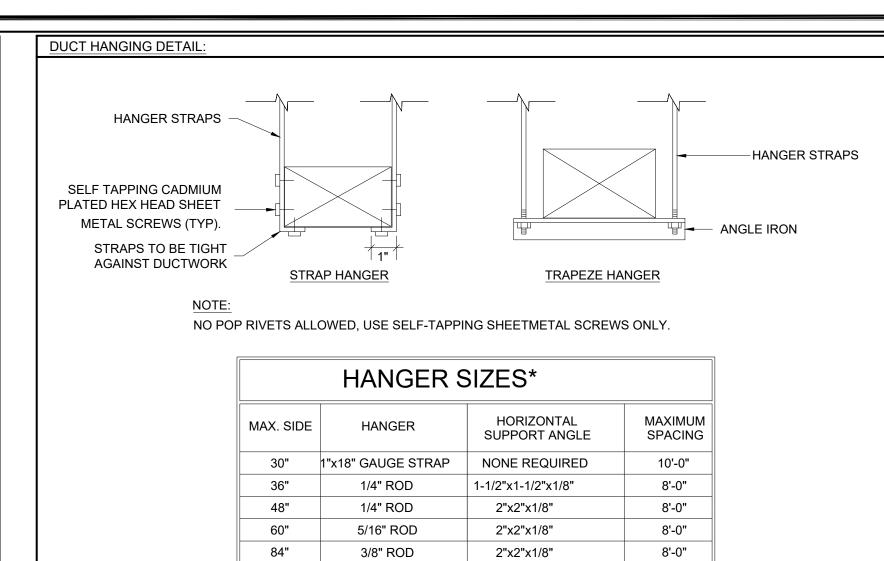
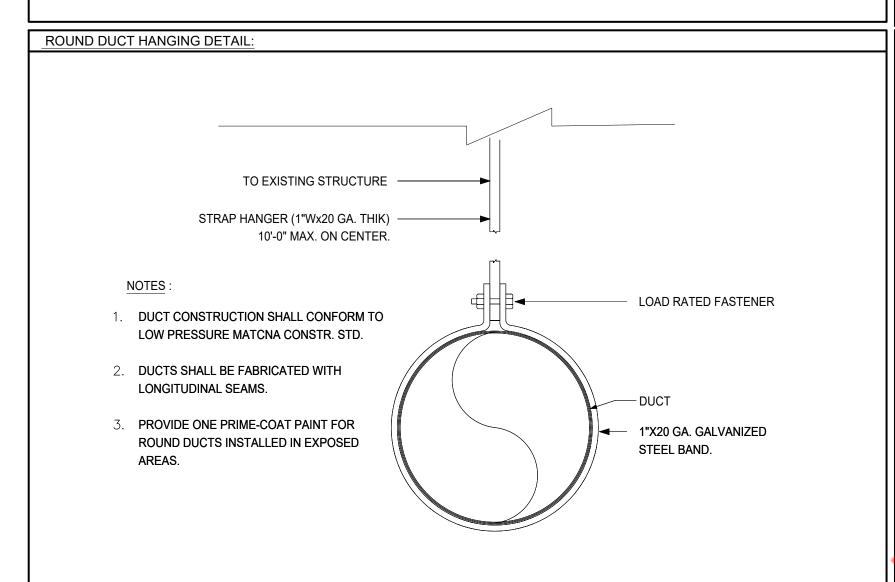


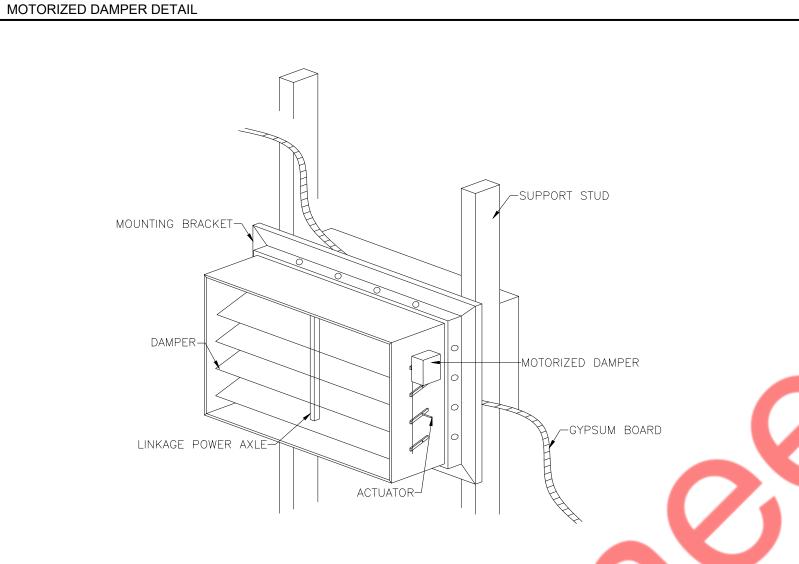
	LEGEND
	SIDE-WALL OR DUCT MOUNTED REGISTER
	MANUAL VOLUME DAMPER
$\Box$	THERMOSTAT
	EXISTING WORK
	NEW WORK
BD ——	BACKDRAFT DAMPER
м	MOTORIZED DAMPER
•—	FIRE DAMPER

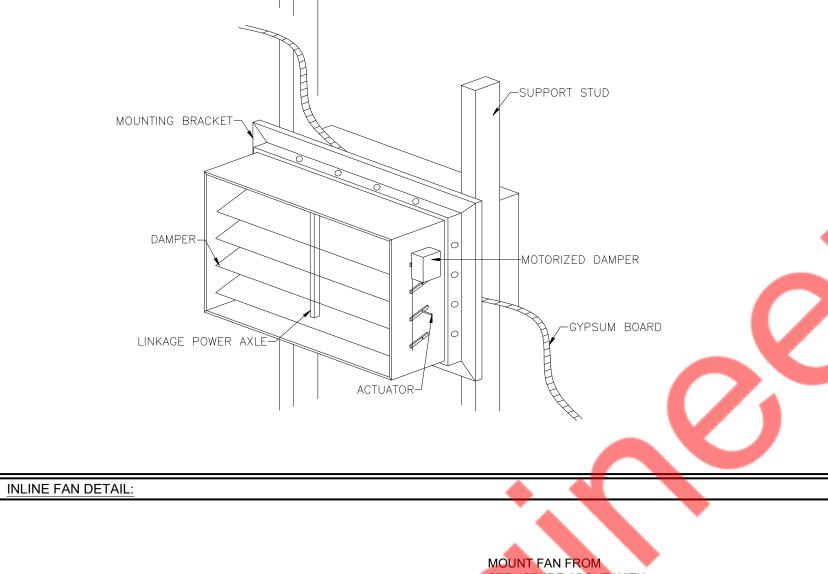
HOT WATER SUPPLY



\* FOR RECTANGULAR DUCTS







VIBRATION ISOLATOR DETAIL:

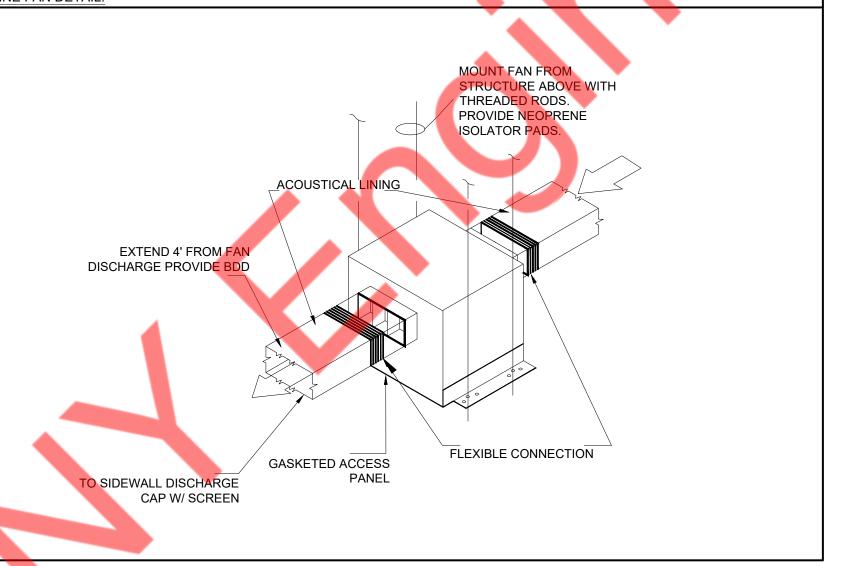
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FRAME





NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGINEERS.COM

PROFESSIONAL SEAL:

CONTRACTOR'S NOTES: WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY CHATIME CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

DATE

ISSUE

12.06.24 | CLIENT REVIEW SET

DATE REVISION

LOCATION:

PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE AREA: 465 SQ. FT.

MECHANICAL ABBREVIATION, LEGENDS & DETAILS

SHEET NUMBER:

N.T.S.

MECHANICAL ABBREVIATION, LEGENDS & DETAILS

#### 1.01 GENERAL: A. RELATED WORK SPECIFIED ELSEWHERE:

- 1. THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS, INSTRUCTIONS TO BIDDERS AND GENERAL REQUIREMENTS, APPLY TO THE WORK SPECIFIED IN THIS DIVISION.
- 2. THIS SECTION APPLIES TO ALL ASPECTS OF DIVISION 15 AND IS INTENDED TO BE COMPLEMENTARY TO THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND GENERAL REQUIREMENTS.
- 3. FURNISH ALL LABOR, MATERIALS, SERVICES, EQUIPMENT AND APPLIANCES REQUIRED FOR THE COMPLETE FURNISHING AND INSTALLATION OF THE MECHANICAL SYSTEMS, INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING AND FIRE PROTECTION.
- 4. THE USE OF THE WORDS "PROVIDE", "FURNISH", OR "INSTALL" MEANS THAT THE ITEM OR FACILITY IS TO BE BOTH FURNISHED AND INSTALLED UNLESS EXPRESSLY STATED OTHERWISE.
- 5. THE TERM "CONTRACTOR" USED IN THIS DIVISION OF THE SPECIFICATIONS SHALL MEAN THE "MECHANICAL SUB-CONTRACTOR", "PLUMBING SUBCONTRACTOR", OR "FIRE PROTECTION SUBCONTRACTOR".

## 1. REFER TO ARCHITECTURAL SUPPLEMENTS FOR THE SCOPE OF THE PROJECT.

- 2. THE CONTRACT DOCUMENTS AND COMPLETE SCOPE OF WORK ARE ILLUSTRATED ON THE COMBINED ARCHITECTURAL; STRUCTURAL; PLUMBING; HEATING, VENTILATING AND AIR CONDITIONING; AND ELECTRICAL DRAWINGS. REVIEW AND EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS
- 3. REFER DISCREPANCIES, ERRORS, OMISSIONS AND AMBIGUITIES IN THE CONTRACT DOCUMENTS TO THE ARCHITECT. OTHERWISE, PROVIDE MATERIALS AND LABOR TO RESOLVE SAME IN A MANNER APPROVED BY THE ARCHITECT AT NO ADDITIONAL COSTS TO THE OWNER.
- 4. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO PROVIDE COMPLETE SYSTEMS. ITEMS INCLUDED IN ONE AND NOT THE OTHER ARE OF LIKE EFFECT AS IF INCLUDED IN BOTH. PROVIDE MISCELLANEOUS ITEMS
- AND ACCESSORIES REQUIRED FOR COMPLETE SYSTEMS 5. ITEMS INDICATED BY ONE DISCIPLINE AND NOT INCLUDED IN ANOTHER DISCIPLINE IN THE DRAWINGS AND SPECIFICATIONS SHALL BE PROVIDED AS IF INCLUDED, AT NO ADDITIONAL COSTS TO THE OWNER.
- C. DESCRIPTION OF SYSTEM: 1. FACILITIES AND SYSTEMS OF MECHANICAL WORK IN GENERAL INCLUDE, BUT ARE NOT LIMITED TO, THE
  - FOLLOWING:
- a. BASIC MATERIALS AND METHODS. b. PLUMBING SYSTEM.
- c. HEATING, AIR CONDITIONING AND VENTILATING SYSTEM.
- d. FIRE PROTECTION SYSTEM
- 2. PROVIDE LABOR, MATERIALS, EQUIPMENT AND ACCESSORIES FOR COMPLETE SYSTEMS WHETHER OR NOT
- SPECIFICALLY INCLUDED IN THE CONTRACT DOCUMENTS. 3. DRAWINGS ARE DIAGRAMMATIC AND CONTAIN GRAPHIC REPRESENTATIONS, SCHEDULES AND NOTATIONS SHOWING MECHANICAL WORK. FOLLOW DRAWINGS AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT. MAKE DEVIATIONS FROM DRAWINGS FOR CONFORMANCE TO ACTUAL CONSTRUCTION AT NO ADDITIONAL COSTS TO THE OWNER. REFER ITEMS REQUIRING CLARIFICATIONS AND INTERPRETATIONS TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION; PROVIDE WORK AS RESOLVED AT NO ADDITIONAL COSTS TO THE
- OWNER. DEVIATIONS FOR REASONS OTHER THAN DESCRIBED ABOVE, IF DEEMED NECESSARY, SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL. DO NOT MAKE DEVIATIONS WITHOUT WRITTEN APPROVAL D. DEFINITIONS:
- 1. THE CONTRACTOR IS RESPONSIBLE FOR THE WORK OF SUB-CONTRACTORS.
- FURNISH SUPPLY MATERIALS.
- 3. INSTALL INSTALL MATERIALS.
- 4. PROVIDE FURNISH AND INSTALL MATERIALS.
- 5. APPROVAL WRITTEN AUTHORITY TO PROCEED FROM THE ARCHITECT. 1.02 QUALITY ASSURANCE

### A. WORKMEN QUALIFICATIONS: SKILLED MECHANICS COMPETENT IN THEIR TRADES, LICENSED WHERE

- B. REQUIRED BY AUTHORITIES HAVING JURISDICTION. REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION:
- 1. DETERMINE AUTHORITIES HAVING JURISDICTION AND THE APPLICABLE CODES, RULES AND REGULATIONS OF THOSE AUTHORITIES
- 2. PERFORM WORK IN CONFORMANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION 3. OBTAIN ALL PERMITS, LICENSES AND INSPECTIONS AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION.
- GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND CONTRACT
- 4. IN CASES OF DIFFERENCES BETWEEN REQUIREMENTS OF THE VARIOUS AUTHORITIES HAVING JURISDICTION, EXCEED THE LESSER REQUIREMENTS AND MEET THE GREATER, MORE STRINGENT REQUIREMENTS.
- 5. ALL FEES AND COSTS FOR PERMITS, LICENSES, OR INSPECTIONS SHALL BE PAID BY THIS CONTRACTOR UNLESS EXPRESSLY STATED OTHERWISE.
- 1. THE INSTALLATION OF THE MECHANICAL SYSTEMS SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL FIRE PREVENTION ASSOCIATION LOCAL AND STATE CODES HAVING JURISDICTION, AND THE
- REQUIREMENTS OF THE UTILITY COMPANIES WHOSE SERVICES ARE USED. 2. CODES AND ORDINANCES HAVING JURISDICTION OVER THE WORK SHALL SERVE AS MINIMUM REQUIREMENTS; BUT, IF THE CONTRACT DOCUMENTS INDICATE REQUIREMENTS WHICH ARE IN EXCESS OF THOSE MINIMUM REQUIREMENTS, THEN THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE FOLLOWED. SHOULD THERE BE ANY CONFLICTS BETWEEN THE CONTRACT DOCUMENTS AND CODES OR ANY ORDINANCES HAVING JURISDICTION, REPORT THESE TO THE ARCHITECT.
- D. REFERENCE STANDARDS: ALL SYSTEMS INSTALLED BY THIS CONTRACTOR SHALL BE UPDATED AND MODIFIED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS, BUT IN NO INSTANCE SHALL THE STANDARDS BE LESS THAN THE REQUIREMENTS OF OTHER PARAGRAPHS OF THESE CONTRACT DOCUMENTS.
- 1. SPECIFIED MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. 2. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE).
- 3. SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION. (SMACNA).
- 4. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
- 5. UNDERWRITERS' LABORATORIES (UL). AMERICANS WITH DISABILITIES ACT (ADA)
- 7. LOCAL CODE AUTHORITIES.

## 1.03 SHOP DRAWINGS AND SUBMITTAL DATA:

- A. BEFORE SUBMITTAL OF THE DATA, THE CONTRACTOR SHALL CHECK EACH PIECE OF APPARATUS, EQUIPMENT AND ACCESSORY TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS AND SHALL CLEARLY MARK EACH SUBMITTAL WITH HIS SIGNATURE TO INDICATE THAT THEY ARE IN FULL COMPLIANCE WITH THE SPECIFICATIONS AND PLANS. THE CONTRACTOR SHALL VERIFY THAT ALL ASSOCIATED TRADES ARE AWARE OF THEIR WORK CONCERNING THE EQUIPMENT SUBMITTED. ANY SUBMITTALS RECEIVED WITHOUT THE CONTRACTOR'S SIGNATURE MAY BE RETURNED WITHOUT BEING CHECKED BY THE ARCHITECT'S OFFICE.
- **B. CERTIFICATES:** 1. PROVIDE CERTIFICATES REQUIRED BY CONTRACT DOCUMENTS AND BY AUTHORITIES HAVING JURISDICTION.
- 2. PROVIDE UNDERWRITERS' LABORATORIES SEALS AFFIXED TO MATERIALS. C. TEST REPORTS: PROVIDE COPIES OF TEST REPORTS REQUIRED BY CONTRACT DOCUMENTS AND BY AUTHORITIES
- HAVING JURISDICTION. D. APPROVAL, DISAPPROVAL, OR COMMENTS ON SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE SPECIFICATIONS OR THE DRAWINGS.
- 1.04 PRODUCT DELIVERY, STORAGE AND HANDLING: A. DELIVERY: DELIVER EQUIPMENT AND MATERIALS IN UNOPENED MANUFACTURER'S STANDARD PACKAGING. ANY PIECE OF EQUIPMENT PLACED ON THE JOB SITE WITHOUT PRIOR WRITTEN REVIEW SHALL BE SUBJECTED TO
- B. STORAGE: STORE EQUIPMENT AND MATERIALS WHERE NOT SUBJECT TO DAMAGE FROM PERSONNEL AND THE
- ELEMENTS
- C. HANDLING: AVOID DAMAGE TO MATERIALS AND SURROUNDING SURFACES AND FINISHES BEFORE AND DURING 3.03 CONSTRUCTION REQUIREMENTS: INSTALLATION.
- 1.05 EXAMINATION OF PREMISES A. THIS CONTRACTOR SHALL VISIT THE SITE TO BECOME FULLY ACQUAINTED WITH THE IMMEDIATE AND SURROUNDING PREMISES AND THE CONDITIONS UNDER WHICH THE WORK WILL BE EXECUTED.
- 1.06 SUBCONTRACT AND LABOR: A. ALL PROVISIONS OF THIS SECTION SHALL APPLY TO ALL

## SUBCONTRACTS TO THE EXTENT THAT THEY ARE

## APPLICABLE TO SUCH SUBCONTRACTOR.

- A. THE WORK, WHEN COMPLETED, WILL BE ACCEPTED IN A FINISHED, PERFECT AND UNDAMAGED STATE ONLY. THIS CONTRACTOR SHALL PROVIDE FOR PROTECTION OF THE WORK DURING ITS PROGRESS AND, IF DAMAGED, ALL PATCHING OR REPLACING NECESSARY TO ITS FULL AND SATISFACTORY COMPLETION. 1.08 FINALLY:
- A. IT IS THE INTENTION THAT THIS SPECIFICATION SHALL PROVIDE A COMPLETE INSTALLATION. ALL AUXILIARY CONSTRUCTION EQUIPMENT AND APPARATUS NECESSARY OR ADVANTAGEOUS TO THE OPERATION AND TESTING OF THE WORK SHALL BE INCLUDED. THE OMISSION OF SPECIFIC REFERENCE TO ANY PART OF THE WORK NECESSARY FOR SUCH COMPLETE INSTALLATION SHALL NOT BE INTERPRETED AS RELIEVING THIS CONTRACTOR FROM FURNISHING AND INSTALLING SUCH PARTS.

## 1.09 WARRANTY:

1.07 ACCEPTANCE OF WORK:

- A. WARRANT THE WORK FOR ONE YEAR FROM AND AFTER DATE OF BENEFICIAL OCCUPANCY TO INCLUDE FREEDOM FROM DEFECTS FOR MATERIALS, EQUIPMENT AND LABOR. REPLACE DEFECTIVE WORK DURING THE WARRANTY PERIOD. ALL COMPRESSORS SHALL BE FIVE YEAR NON-PRORATED WARRANTY.
- B. THE ONE YEAR WARRANTY PROVIDED IN THE GENERAL CONDITIONS SHALL BE IN ADDITION TO AND NOT IN LIMITATION OF ANY GUARANTEES OR WARRANTIES OF LONGER DURATION OR OTHER REMEDIES PROVIDED BY LAW OF THE CONTRACT DOCUMENTS.
- C. THE WARRANTY SHALL INCLUDE SUPERVISION AND ADJUSTMENT. ANY MAINTENANCE RECOMMENDED BY THE EQUIPMENT MANUFACTURER OR CONTRACTOR OR INSPECTIONS. ALSO INCLUDED IN THE WARRANTY IS ANY REFRIGERANT LOST OR LEAKED IN NORMAL OPERATION OR IN SERVICE OF EQUIPMENT. PROVIDE FOUR FILTER CHANGES AT APPROPRIATE INTERVALS DURING THE WARRANTY PERIOD.

## **PART 2 - PRODUCTS**

## 2.01 MATERIALS:

- A. NEW, FREE FROM DEFECTS, OF QUALITY COMMERCIAL GRADE STANDARD PRODUCT BY REPUTABLE MANUFACTURERS.
- C. IN COMPLIANCE WITH CONTRACT DOCUMENTS IN REGARD TO QUALITY; DIMENSIONS, APPEARANCE, DESIGN AND
- D. SIMILAR MATERIALS OF SAME MANUFACTURE.
- E. FIRST NAMED UNDER "ACCEPTABLE MANUFACTURERS" IS THE MANUFACTURER WHOSE PRODUCT WAS USED FOR 2.02 SUBSTITUTIONS
- A. SUBSTITUTE MATERIALS WILL BE CONSIDERED FOR APPROVAL AFTER CONTRACT HAS BEEN AWARDED B. APPROVAL OF SUBSTITUTIONS IS SPECIFICALLY EXCLUDED FROM THIS DIVISION PRIOR TO SIGNING OF

#### CONTRACT C. REQUESTS FOR SUBSTITUTIONS:

- IN WRITING. 2. REQUIRED DATA NECESSARY FOR EVALUATION.
- 3. DIFFERENCE IN CONTRACT AMOUNT FOR EACH ITEM.

B. LISTED BY UNDERWRITERS' LABORATORIES FOR WHICH STANDARDS APPLY.

- 4. IN ACCORDANCE WITH SUBMITTALS PROCEDURE. D. REQUESTS FOR SUBSTITUTION IMPLY NO OBLIGATION ON THE OWNER AND HIS REPRESENTATIVES.
- E. IF APPROVED SUBSTITUTIONS CAUSE CHANGES IN THE WORK REQUIRED, INCLUDING WORK BY OTHER TRADES, PAY ALL COSTS INVOLVED AND EFFECT ALL NECESSARY CHANGES TO ACCOMMODATE SUBSTITUTIONS AT NO ADDITIONAL COST TO THE OWNER.

## **PART 3 - EXECUTION**

## A. EXAMINE MATERIALS UPON RECEIPT FOR DAMAGES. REPLACE DAMAGED MATERIALS.

B. EXAMINE BUILDING STRUCTURE TO WHICH MATERIALS ARE TO BE SECURED FOR DEFECTS ADVERSELY AFFECTING THE QUALITY AND EXECUTION OF WORK. DO NOT START WORK UNTIL DEFECTS ARE CORRECTED.

- 1. REFER CONFLICTS TO THE ARCHITECT FOR REVIEW. RESOLVE CONFLICTS IN ACCORDANCE WITH THE
- ARCHITECT'S WRITTEN DIRECTION AT NO ADDITIONAL COSTS TO THE OWNER. 2. COORDINATE LOCATIONS OF MATERIALS WITH OTHER TRADES BY REFERENCE TO CONTRACT DOCUMENTS AND BY CONFERENCE WITH OTHER TRADES. IF WORK IS LATER FOUND TO INTERFERE WITH WORK OF OTHER

TRADES, MAKE NECESSARY CHANGES TO ELIMINATE INTERFERENCE AT NO ADDITIONAL COST TO THE

- B. PREPARATION OF SURFACES: CLEAN AND OTHERWISE MODIFY SURFACES TO WHICH MATERIALS ARE TO BE APPLIED AND SECURED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ARCHITECTS
- C. VERIFY PROPER TYPE MATERIALS BEING INSTALLED FOR ENVIRONMENTAL CONDITIONS.
- A. INSTALL MATERIALS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE MANUFACTURER'S RECOMMENDATIONS. ALL HEIGHTS AND CLEARANCES OF EQUIPMENT TO BE INSTALLED IS TO BE AS DETAILED ON THE ARCHITECTURAL PLANS AND AS REQUIRED BY THE ADA. NOTIFY THE ARCHITECT OF ALL DISCREPANCIES IN WRITING PRIOR TO ROUGH-IN.
- 1. MAINTAIN FULL SET OF CONTRACT DOCUMENTS AT PROJECT. NOTE DAILY CHANGES MADE IN CONNECTION
- WITH FINAL INSTALLATION. 2. PROVIDE A COMPLETE SET OF "AS-BUILT" REPRODUCIBLE DRAWINGS TO THE OWNER SHOWING EXACT LOCATIONS OF ALL EQUIPMENT, VALVES, PIPING, DUCTS, ETC. THESE DRAWINGS SHALL REFLECT ANY CHANGES FROM CONTRACT DOCUMENTS AND SHALL BE DRAFTED BY COMPETENT PERSONNEL TO PROVIDE THE OWNER WITH QUALITY DOCUMENTS OF FACILITIES AT PROJECT COMPLETION.

## BASIC MATERIALS AND METHODS

A. WORK INCLUDED IN THIS SECTION: THE FOLLOWING SPECIFICATION APPLIES TO ALL WORK OF THE MECHANICAL AND PLUMBING CONTRACTORS. PART 2 - PRODUCTS

### 2.01 STANDARDS FOR MATERIALS:

- A. ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THEY SHALL BE NEW, FREE FROM DEFECTS, AND THEY SHALL CONFORM TO THE FOLLOWING STANDARDS WHERE THESE ORGANIZATIONS HAVE SET STANDARDS. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED AND LABELED
- 1. UNDERWRITERS LABORATORIES, INC. (UL).

- USED ON THE JOB. OTHER NAMED MANUFACTURERS, ALTHOUGH ACCEPTABLE AS MANUFACTURERS, MUST PROVE THEIR PRODUCT WILL CONFORM SATISFACTORILY AND WILL MEET SPACE AND CAPACITY REQUIREMENTS, ETC., OF THE FIRST NAMED MANUFACTURER.
- C. THE USE OF ONE NAMED MANUFACTURER IN THE SCHEDULES ON THE DRAWINGS IS FOR GUIDE PURPOSES. THE PROVISIONS OF THE ABOVE PARAGRAPH WILL GOVERN IN THE SELECTION OF PRODUCTS TO BE USED.
- D. WHERE THE "OR APPROVED EQUAL" CLAUSE IS USED IN THESE SPECIFICATIONS, THE NAME, OR NAMES, CONSIDERED AS SUBSTITUTIONS AND SHALL NOT BE USED AS A BASIS FOR PRICING.
- MATERIAL, APPEARANCES, CAPACITY, PERFORMANCE, ETC. F. MANUFACTURER'S REPRESENTATION AS TO AVAILABILITY OF EQUIPMENT PARTS AND REPLACEMENT AND PART 2 - PRODUCTS SERVICE PERSONNEL IN THE AREA WILL BE A FACTOR IN CONSIDERATION OF SUBSTITUTIONS.
- 2.02 FLAME SPREAD PROPERTIES OF MATERIALS: A. MATERIALS AND ADHESIVES USED THROUGHOUT THE MECHANICAL SYSTEM FOR FILTERS, ACOUSTICAL LININ THERMAL (PIPE) INSULATION, FLEXIBLE CONNECTIONS, DUCT TAPE, PNEUMATIC TUBING, ETC., EXPOSED PLENUMS, SHALL CONFORM TO THE FEDERAL STANDARD FLAME SPREAD PROPERTIES OF MATERIALS. UNDE THIS REQUIREMENT. THE CLASSIFICATION SHALL NOT EXCEED NO. 11. WITH THE RANGE OF INDEX BETWEEN 0 AND

25 FOR THE BASIC MATERIALS, THEIR INDEX OF 50 IN ITS CLASSIFICATION NO. 111 AS LISTED IN THE FEDERAL

SPECIFICATION. B. ONLY MATERIALS AND ADHESIVES MEETING THESE REQUIREMENTS WILL BE ACCEPTABLE.

## **PART 3 - EXECUTION**

- REQUIREMENTS.
- 3.02 ROUGHING-IN AND FINAL CONNECTIONS: A. THE MECHANICAL SUB-CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF ROUGH-IN FOR AND ASSEMBLY OF
- UNDER SECTIONS OF THESE SPECIFICATIONS.
- MECHANICAL DRAWINGS. C. THE CONTRACTOR SHALL BE AWARE THAT VARIOUS EQUIPMENT, VALVES, STRAINERS, UNIONS, ETC., SHOWN ON 2.03 CONDENSING UNIT THE PLANS FURNISHED BY OTHERS SHALL BE COORDINATED AND ASSEMBLED BEFORE INSTALLATION UNDER
- A. WHERE EQUIPMENT IS BEING FURNISHED UNDER ANOTHER DIVISION, REQUEST FROM THE ARCHITECT AN ACCEPTED DRAWING THAT WILL SHOW EXACT DIMENSIONS OF REQUIRED LOCATIONS OF CONNECTIONS. INSTALL
- THE REQUIRED FACILITIES TO THE EXACT REQUIREMENTS OF THE APPROVED DRAWING. B. ASSUME RESPONSIBILITY FOR ALL COSTS OR CHANGES REQUIRED THAT MAY BE INCURRED IF THIS SPECIFICATION IS NOT FOLLOWED.
- 3.04 CLEAN-UP: RESULT OF THE WORK
- B. REMOVE ALL DIRT, PAINT, GREASE AND STAINS FROM ALL EXPOSED EQUIPMENT. UPON COMPLETION OF WORK, CLEAN ALL EQUIPMENT AND THE ENTIRE INSTALLATION SO AS TO PRESENT A FIRST CLASS JOB SUITABLE FOR OCCUPANCY. NO LOOSE PARTS OR SCRAPS OF EQUIPMENT SHALL BE LEFT ON THE PREMISES.
- A. ON COMPLETION OF THE INSTALLATION, TEST AND ADJUST ALL NEW EQUIPMENT INSTALLED OR EXISTING
- B. PAY ALL COSTS FOR LABOR, MATERIALS, EQUIPMENT, AS REQUIRED FOR TESTING AND ADJUSTING OF THE SYSTEMS. PROVIDE ALL APPARATUS, TEMPORARY PIPING CONNECTION OR ANY OTHER REQUIREMENTS FOR ALL ESTS. TAKE DUE PRECAUTIONS TO PREVENT DAMAGE TO THE BUILDING OR ITS CONTENTS INCURRED BY SUCH
- E OWNER-RETAINED TESTING AND BALANCING FIRM SHALL BE REPAIRED AND TEST SHALL BE REPEATED UNTIL T REQUIREMENTS ARE FULLY COMPLETED. D. WHEN PRACTICAL, ALL PIPING TESTS SHALL BE MADE BEFORE PIPE IS COVERED OR CONCEALED.
- E. IT IS THE INTENTION OF THIS SECTION OF THE SPECIFICATIONS TO PROVIDE NECESSARY TESTS DURING AND AT COMPLETION OF THE JOB TO ENSURE TIGHT PIPING AND DUCTWORK AND A CORRECTLY ADJUSTED SYSTEM, AND THE CONTRACTOR SHALL DO EVERYTHING NECESSARY TO ACCOMPLISH THIS.
- F. ALL MOTORS, BEARINGS, ETC., ON ALL EQUIPMENT SHALL BE CORRECTLY OILED AND GREASED BEFORE THE EQUIPMENT IS OPERATED AND AGAIN AT THE COMPLETION OF THE JOB. PROVIDE COMPLETE OILING AND GREASING INSTRUCTIONS FOR OWNER'S DESIGNATED PERSONNEL. GREASE FITTINGS SHALL BE INSTALLED ON

### PART 1 - GENERAL 1.01 SCOPE: A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE

INSTALLATION OF INSULATION AS INDICATED BY THE CONTRACT DOCUMENTS. ALL PIPING INSULATION VALUES (R-VALUES) MUST MEET THAT REQUIRED BY THE APPLICABLE ENERGY CODES REGARDLESS OF THE THICKNESS

### 1.02 QUALITY ASSURANCE:

- A. APPLICATOR: COMPANY SPECIALIZING IN PIPING INSULATION APPLICATION WITH THREE YEARS MINIMUM
- B. MATERIALS: FLAME SPREAD/FUEL CONTRIBUTED/SMOKE DEVELOPED RATING OF 25/50 IN ACCORDANCE WITH
- ASTM E84, NFPA 255, UL 723. C. UNDER NO CIRCUMSTANCES WILL MATERIALS CONTAINING ASBESTOS BE ALLOWED ON THIS PROJECT SITE.
- 1.03 SUBMITTALS: A. SUBMIT PRODUCT DATA PRIOR TO ORDERING.

EQUIPMENT THAT REQUIRES PERIODIC GREASING.

B. INCLUDE PRODUCT DESCRIPTION, LIST OF MATERIALSAND THICKNESS FOR EACH SERVICE, AND LOCATIONS. C. SUBMIT MANUFACTURER'S INSTALLATION INSTRUCTIONS.

#### PART 2 - PRODUCTS 2.01 ACCEPTABLE MANUFACTURERS

2.02 GENERAL

3.02 INSTALLATION:

## A. MANVILLE., KNAUF, OWENS-CORNING.

- A. ALL MATERIALS USED SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 WITHOUT EVIDENCE OF CONTINUOUS PROGRESSIVE COMBUSTION, AND WITH A SMOKE DEVELOPED RATING OF NOT HIGHER THAN SHOP DRAWING SUBMITTALS SHALL SHOW THIS INFORMATION
- 2.03 A/C UNIT CONDENSATE DRAIN PIPING: USE 1/2" THICK "ARMAFLEX" OR EQUAL PIPE INSULATION. THE INSULATION SHALL BE THREADED ON THE PIPE, PULLED BACK, THEN THE CONNECTION SHOULD BE MADE. ALL SEAMS WILL BE BUTT JOINT CONNECTION.
- 2.04 REFRIGERANT PIPING A. USE 1/2" THICK "ARMAFLEX" OF APPROVED EQUAL PIPE INSULATION ON THE SUCTION LINE. THE INSULATION SHALL BE THREADED ON THE PIPE, PULLED BACK, THEN THE CONNECTION SHOULD BE MADE. ALL SEAMS WILL BE BUTT JOINT CONNECTION.
- A. INSULATION BANDS: 3/4 INCH WIDE; 0.015 INCH THICK GALVANIZED STEEL. B. METAL JACKET BANDS: 3/8 INCH WIDE; 0.015 INCH THICK ALUMINUM.
- C. INSULATING CEMENT: ANSI/ASTM C195; HYDRAULIC SETTING MINERAL WOOL. D. FINISHING CEMENT: ASTM C449.
- E. FIBROUS GLASS CLOTH: UNTREATED; 9 OZ/SQ. YD. (305 G/SQ. M) WEIGHT. F. ADHESIVES: COMPATIBLE WITH INSULATION AND SUITABLE FOR RETURN AIR USE IF USED IN THOSE SPACES.

# **PART 3 - EXECUTION**

- A. DO NOT APPLY ANY INSULATION UNTIL PIPING HAS BEEN INSPECTED, PRESSURE TESTED AND FOUND TIGHT. ALL SURFACES TO BE INSULATED SHALL BE CLEANED AND DRIED BEFORE APPLYING INSULATION
- A. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION. B. CONTINUE INSULATION WITH VAPOR BARRIER THROUGH PENETRATIONS
- C. IN EXPOSED PIPING, LOCATE INSULATION AND COVER SEAMS IN LEASE VISIBLE LOCATIONS. D. ON INSULATED PIPING WITH VAPOR BARRIER, INSULATE FITTINGS, VALVES, UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS.
- E. ON INSULATED PIPING WITHOUT VAPOR BARRIER AND PIPING CONVEYING FLUIDS 140 DEGREES F (60 DEGREES C) OR LESS, DO NOT INSULATE FLANGES AND UNIONS AT EQUIPMENT, BUT BEVEL AND SEAL ENDS OF INSULATION AT
- F. PROVIDE AN INSERT, NOT LESS THAN 6 INCHES (150 LONG, OF SAME THICKNESS AND CONTOUR AS ADJOINING INSULATION, BETWEEN SUPPORT SHIELD AND PIPING, BUT UNDER THE FINISH JACKET, ON PIPING 2 INCHES (50 MM) DIAMETER OR LARGER, TO PREVENT INSULATION FROM SAGGING AT SUPPORT INSERTS SHALL BE CORK OR OTHER HEAVY DENSITY INSULATING MATERIAL SUITABLE FOR THE PLANNED TEMPERATURE RANGE. FACTORY FABRICATED INSERTS MAY BE USED.
- G. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS.

### 3.03 A/C UNIT CONDENSATE DRAIN PIPING INSULATION INSTALLATION:

- A. INSULATE ALL CONDENSATE DRAIN PIPING AND
- B. FITTINGS WITHIN THE BUILDING. INSTALL INSULATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTION. SEAL ALL JOINTS AND SEAMS WITH MANUFACTURER'S RECOMMENDED ADHESIVE TO PROVIDE CONTINUOUS VAPOR SEAL.

## AIR CONDITIONING EQUIPMENT

- FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF AIR INDITIONING EQUIPMENT AS INDICATED BY THE CONTRACT DOCUMENTS 1.02 WARRANTY:
- A. PROVIDE FIVE YEAR UNCONDITIONAL WARRANTY ON COMPRESSOR UNITS.
- B. PROVIDE A TEN (10) YEAR UNCONDITIONAL WARRANTY FOR ALL HEAT EXCHANGERS FROM THE MANUFACTURER. 1.03 QUALITY ASSURANCE:

# B. TEST AND RATE COOLING SYSTEMS TO AIR-CONDITIONING AND REFRIGERATION INSTITUTE STANDARD 210.

- 2.01 SPLIT SYSTEM UNITS: A. UNIT SHALL BE QUIET OPERATING AND DESIGNED TO MOUNT HORIZONTAL OR VERTICAL. SUSPENDED OR PAD MOUNTED AS INDICATED ON THE DRAWINGS. INDOOR FURNACE COIL UNIT AND CONDENSING UNITS SHALL BE
- MATCHED SYSTEMS PROVIDED BY THE SAME MANUFACTURER. B. BLOWER(S) SHALL BE FORWARD CURVED COMPLETE WITH MOTOR AND ADJUSTABLE SPEED DRIVE. C. HEAT EXCHANGER SHALL BE WELDED HEAVY GAUGE STEEL AND DESIGNED FOR EVEN HEAT DISTRIBUTION WITHOUT CRACKING OF SNAPPING ON START-UP. GAS BURNERS SHALL BE DESIGNED FOR HIGH COMBUSTION EFFICIENCY AND LONG LIFE. HEATING SECTION SHALL BE COMPLETE WITH SHUT-OFF VALVE, FAN AND LIMIT CONTROL, 24-VOLT GAS VALVE AND PRESSURE REGULATOR, ALL FACTORY MOUNTED. HEATER SHALL BE
- D. DIRECT EXPANSION REFRIGERANT COOLING COILS SHALL BE NON-FERROUS TUBES MECHANICALLY BONDED TO NON-FERROUS FINS. UNITS SHALL BE FURNISHED WITH EXPANSION VALVES. E. CASINGS SHALL BE BONDERIZED OR PHOSPHATIZED AND FINISHED WITH A BAKED ENAMEL COATING. CASINGS SHALL BE INSULATED INTERNALLY. SHALL BE COMPLETE WITH DRAIN PAN AND CONNECTION AND SHALL BE

LOCATED UPSTREAM OF COOLING COIL. UNIT SHALL BE SUPPLIED WITH NATURAL DRAFT COMBUSTION SYSTEM.

- ARRANGED TO PROVIDE ACCESS TO ALL INTERNAL PARTS BY THE CONVENIENT REMOVAL OF PANELS, ACCESS
- DOORS, ETC. UNIT SHALL INCORPORATE STANDARD SIZE FILTERS. F. UNITS SHALL BE MOUNTED ON OR SUSPENDED WITH APPROVED VIBRATION ISOLATORS.

A. MEET THE REQUIREMENTS OF UL AND APPLICABLE CODES.

- G. UNITS SHALL BE COMPLETE WITH FILTER SECTION. H. UNITS SHALL HAVE CONDENSATE DRAIN PANS INTERNALLY. WHERE REQUIRED BY LOCAL AUTHORITIES FABRICATE SECONDARY DRAIN PANS FROM A PIECE OF SINGLE GALVANIZED STEEL WITH WELDED CORNERS. PROVIDE DRAIN
- PANS UNDER COILS. COORDINATE DRAIN PAN AND CONDENSATE DRAIN WITH PLUMBING INSTALLER. A. UNIT SHALL BE AIR COOLED DESIGNED FOR INSTALLATION OUTDOORS. UNIT SHALL BE SELF-CONTAINED.
- FACTORY WIRED AND REQUIRING NO FIELD ASSEMBLY. UNIT SHALL OPERATE PROPERLY FROM 40°F TO 150°F AMBIENT TEMPERATURE UNLESS LOW-AMBIENT CONTROLS ARE INDICATED ON THE DRAWINGS. B. UNITS SHALL BE PROVIDED WITH ALL OPERATING AND SAFETY CONTROLS INCLUDING UNLOADERS, WHEN PART 3 - EXECUTION AVAILABLE FOR THE SIZE UNIT PROVIDED, HIGH AND LOW PRESSURE CONTROL, STARTER, OVERCURRENT PROTECTION DEVICES, CRANKCASE HEATER, SHORT-CYCLE PREVENTION CONTROL, LUBRICATION SYSTEM,
- CHARGING VALVES AND WHERE NORMALLY AVAILABLE, FILTER-DRYER, SIGHT GLASS AND MOISTURE INDICATOR. C. UNITS SHALL BE FACTORY CHARGED AND TESTED.
- D. CONDENSER COIL CONSTRUCTION SHALL BE COPPER TUBE AND ALUMINUM FIN. E. CONDENSER FAN SHALL BE AXIAL FLOW PROPELLOR TYPE WITH WEATHER-PROOF MOTOR.

## PART 3 - EXECUTION

BRACING, ETC.

- 3.01 INSTALLATION: A. THE DESIGN ON THE DRAWINGS (ELECTRICAL, STRUCTURAL, ETC.) IS BASED ON THE MANUFACTURER IF THE UNIT IS FURNISHED BY ONE OF THE OTHER LISTED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE OR ANY MODIFICATIONS REQUIRED TO INSTALL SUCH MANUFACTURERS UNIT. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, INCREASES IN UNIT ELECTRICAL FEEDER SIZES, SWITCH AND FUSE OR BREAKER SIZES, STRUCTURAL
- B. AIR UNIT TO BE SUPPLIED WITH FILTERS DURING THE CONSTRUCTION PHASE OF THE PROJECT. AFTER PROJECT COMPLETION, ALL FILTERS TO BE CHANGED. PROVIDE ONE ADDITIONAL COMPLETE SET OF FILTERS. C. ALL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
- PROTECT DUCTWORK AND UTILITY SERVICES. MOUNT UNITS LEVEL E. ROOF TOP UNIT SHALL BE LOCATED WHERE SHOWN ON THE DRAWINGS. ALL EQUIPMENT IS TO BE INSTALLED WITH SERVICE CLEARANCE AS RECOMMENDED BY THE MANUFACTURE OR AS REQUIRED BY APPLICABLE CODES. INSTALL ROOFTOP EQUIPMENTS SUFFICIENTLY AWAY FROM UNPROTECTED EDGES OF THE ROOF AS REQUIRED

D. MOUNT UNITS LEVEL ON FACTORY BUILT ROOF MOUNTING FRAME PROVIDING WATERTIGHT ENCLOSURE TO

BY OSHA. INSTALL ALL FRESH AIR INTAKES AT LEAST TEN FEET FROM EXHAUST OUTLETS OR PLUMBING VENTS. F. IF IN THE OPINION OF THE ROOF TOP MANUFACTURER ADDITIONAL EXTERNAL SPRING ISOLATION IS REQUIRED TO INSURE NC LEVELS DO NOT EXCEED 35 (MAX). SAID MANUFACTURE SHALL INCLUDE EXTERNAL SPRING WHEN PRICING ROOF TOP UNIT TO CONTRACTOR. ARCHITECT AND ENGINEER SHALL BE NOTIFIED BEFORE BIDDING IF ADDITIONAL SPRING ISOLATION IS REQUIRED, IN WRITING FROM THE MANUFACTURER.

### 3.02 SEQUENCE OF OPERATIONS

- A. COOLING
- THE ROOM THERMOSTAT SHALL CONTROL THE COOLING CYCLE. 2. THE FAN MAY EITHER RUN CONTINUOUSLY OR BE CYCLED BY THE THERMOSTAT. THIS FUNCTION SHALL BE SET AT THE THERMOSTAT.
- B. HEATING
- 1. THE FURNACE SHALL BE CONTROLLED BY THE ROOM THERMOSTAT.
- 2. IN THE 'AUTO' POSITION, THE FAN SHALL BE CONTROLLED BY A BONNET SWITCH OF TIMER. 3. THE FAN MAY EITHER RUN CONTINUOUSLY OR BE CYCLED BY THE THERMOSTAT. THIS FUNCTION SHALL BE
- SET AT THE THERMOSTAT. 4. MINIMUM OUTSIDE AIR DAMPER: OPEN ON FAN START AND CLOSE ON FAN STOP

PART 2 PRODUCTS:

A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF DUCTWORK AS INDICATED BY THE CONTRACT DOCUMENTS.

2.01 MATERIALS: A. GENERAL: NON-COMBUSTIBLE OR CONFORMING TO REQUIREMENTS FOR CLASS 1 AIR DUCT MATERIALS, OR UL

#### B. STEEL DUCTS: GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING ZINC COATING OF 1.25 OZ PER SQ. FT. 82 G/SQ M) FOR EACH SIDE IN CONFORMANCE WITH ASTM A90. FLEXIBLE DUCTS: INTERLOCKING SPIRAL OF GALVANIZED STEEL OR ALUMINUM CONSTRUCTION; RATED TO 2

INSULATED FLEXIBLE DUCTS: FLEXIBLE DUCT WRAPPED WITH FLEXIBLE GLASS FIBER INSULATION, ENCLOSED BY

SEAMLESS ALUMINUM PIGMENTED PLASTIC VAPOR BARRIER JACKET, MAXIMUM 0.23 K VALUE AT 75 DEGREES F 0.034 KSI AT 24 DEGREES C).

INCHES WG (500 PA) POSITIVE AND 1.5 INCHES WG (375 PA) NEGATIVE.

- ASTENERS: RIVETS, BOLTS, OR SHEET METAL SCREWS. SEALANT: NON-HARDENING, WEATHER RESISTANT, FIRE RESISTIVE, COMPATIBLE WITH MATING MATERIALS; LIQUID
- USED ALONE OR WITH TAPE, OR HEAVY MASTIC. HANGER ROD: STEEL, GALVANIZED; THREADED BOTH ENDS, THREADED ONE END, OR CONTINUOUSLY THREADED. H. PLUMBER'S STRAP IS NOT AN ACCEPTABLE DUCT HANGER.
- DUCT LONGITUDINAL SEAMS SHALL BE DOUBLE LOCKED AND HAMMERED FLAT. . FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS
- AND ASHRAE HANDBOOKS, EXCEPT AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR OPERATING PRESSURES INDICATED. K. SIZE ROUND DUCTS INSTALLED IN PLACE OF RECTANGULAR DUCTS IN ACCORDANCE WITH ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT
- L. CONSTRUCT TEE'S, BENDS, AND ELBOWS WITHRADIUS OF NOT LESS THAN 1-1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER
- M. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE. DIVERGENCE UPSTREAM OF EQUIPMENT SHALL NOT EXCEED 30 DEGREES; CONVERGENCE DOWNSTREAM SHALL
- N. PROVIDE EASEMENTS WHERE LOW PRESSURE DUCTWORK CONFLICTS WITH PIPING AND STRUCTURE. WHERE EASEMENTS EXCEED 10 PERCENT DUCT AREA, SPLIT INTO TWO DUCTS MAINTAINING ORIGINAL DUCT AREA.
- O. USE DOUBLE NUTS AND LOCK WASHERS ON THREAD ROD SUPPORTS. 2.03 LOW PRESSURE FLEXIBLE DUCTWORK: A. LOW PRESSURE FLEXIBLE DUCT SHALL CONFORM TO THE CLASS 1 REQUIREMENTS OF THE NFPA. A NOMINAL 1"
- B. INSULATED FLEXIBLE DUCT SHALL BE TYPE SLR-181 GENFLEX AS MANUFACTURED BY THE GENERAL ENVIRONMENT CORPORATION OR EQUAL BY WIREMOLD OR THERMOFLEX.

THICKNESS OF FIBERGLASS INSULATION SHALL BE ENCLOSED IN A FACTORY APPLIED AND SEALED VAPOR

C. ALL FLEXIBLE DUCT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS D. ALL JOINTS AND CONNECTIONS SHALL BE MADE WITH POSITIVE LOCKING STEEL, STRAPS AND APPROVED MASTIC TAPE INSULATION JOINTS.

#### PART 3 EXECUTION 3.01 INSTALLATION:

BOXES TO MAIN DUCTS SHALL BE MADE WITH LOW LOSS FITTINGS.

A. PROVIDE OPENINGS IN DUCTWORK WHERE REQUIRED TO ACCOMMODATE THERMOMETERS AND CONTROLLERS. PROVIDE PITOT TUBE OPENINGS WHERE REQUIRED FOR TESTING OF SYSTEMS, COMPLETE WITH METAL CAN WITH SPRING DEVICE OR SCREW TO ENSURE AGAINST AIR LEAKAGE. WHERE OPENINGS ARE PROVIDED IN INSULATED DUCTWORK INSTALL INSULATION MATERIAL INSIDE A METAL RING.

B. LOCATE DUCTS WITH SUFFICIENT SPACE AROUND EQUIPMENT TO ALLOW NORMAL OPERATING AND MAINTENANCE

C. CONNECT DIFFUSERS OR TROFFER BOOTS TO LOW PRESSURE DUCTS WITH 5 FEET (1.5 M) MAXIMUM LENGTH OF FLEXIBLE DUCT. HOLD IN PLACE WITH STRAP OR CLAMP. D. FLASH AND COUNTER FLASH AROUND ALL DUCTS PASSING THROUGH THE ROOF USING GALVANIZED SHEET

SECURELY BUILT INTO ROOFING IN ACCORDANCE WITH THE INSTRUCTIONS OF THE ROOFING CONTRACTOR

- PROVIDE ROOF CURB FOR ALL PENETRATIONS. E. FLAT DUCT SURFACES SHALL BE CRIMPED DIAGONALLY REGARDLESS OF SIZE. LONGITUDINAL JOINTS IN ALL DUCT SIZES MAY BE FLAT LOCK JOINTS. TRANSVERSE JOINTS AND INTERMEDIATE BRACING SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL OR GALVANIZED STRUCTURAL ANGLES.
- SURFACE TO FLOW OF AIR. G. TURNS SHALL BE MADE WITH A THROAT RADIUS OF NOT LESS THAN THE DUCT WIDTH. DUCT TAP FROM MIXING

F. LOCK JOINTS SHALL BE HAMMERED TO MAKE THEM AIRTIGHT. INSIDE OF DUCT SHALL PRESENT A SMOOTH

## H. TRANSFORMATIONS SHALL HAVE A RATIO OF NOT MORE THAN 1" IN TRANSFORMATION TO EACH 7" OF LENGTH.

1.01 SCOPE: A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF DUCTWORK INSULATION AS INDICATED BY THE CONTRACT DOCUMENTS. ALL PIPING INSULATION VALUES (R-VALUES) MUST MEET THAT REQUIRED BY THE APPLICABLE ENERGY CODES REGARDLESS OF THE

**DUCTWORK INSULATION** 

## THICKNESS LISTED.

WITH NFPA 90A REQUIREMENTS

PART 2 - PRODUCTS 2.01 ACCEPTABLE MANUFACTURERS:

A. FIBERGLASS INSULATION: OWENS-CORNING FIBERGLASS, MANVILLE, KNAUF, CERTAINTEED

- B. MASTICS: BENJAMIN FOSTER, INSUL-COUSTIC, CHICAGO MASTIC, CHILDERS PRODUCTS, ST. CLAIR RUBBER CO. 2.02 MATERIALS: A. OWENS-CORNING FIBERGLASS ED-100 FRK 25 DUCT WRAP OR APPROVED EQUAL, 3/4# DENSITY WITH .0025# ALUMINUM FOIL EXTERIOR.
- B. DUCTLINER: A NEOPRENE COATED FIBERGLASS BOARD HAVING A DENSITY OF NOT LESS THAN 1-1/2 PCF, IN CONFORMANCE WITH FED. SPEC. HH-I-545B, TYPE 1. OWENS-CORNING FIBERGLASS AEROFLEX DUCT LINER OR APPROVED EQUAL

#### E. AT CONTRACTOR'S OPTION, CONCEALED COLD SUPPLY AIR DUCTS AND PLENUMS, AND ELSEWHERE AS INDICATED, SHALL BE LINED WITH 1" THICK FIBERGLASS 1-1/2 POUND DENSITY COATED DUCT LINER COMPLYING

C. OWENS-CORNING FIBERGLASS DUCT LINER BOARD OR APPROVED EQUAL.

POUND DENSITY COATED DUCT LINER, APPLIED AS SPECIFIED ABOVE.

D. BENJAMIN FOSTER 85-15 INSULATION BONDING ADHESIVE OR APPROVED EQUAL

F. SOUND DUCT INSULATION - WHERE INDICATED, SOUND INSULATE AIR DUCTS WITH 1" THICK FIBERGLASS 1-1/2

A. EXAMINE SURFACES TO BE COVERED WITH INSULATION TO INSURE WORK OF PRECEDING TRADES IS COMPLETED. B. CHECK THAT AVAILABLE SPACE IS OF SUFFICIENT DEPTH FOR REQUIRED INSULATION THICKNESS.

#### C. VERIFY THAT SUBSTRATE IS CLEAN AND DRY. DO NOT PROCEED WITH APPLICATION UNTIL CONDITIONS ARE SATISFACTORY.

3.02 THICKNESS: A. SUPPLY DUCTWORK:

1. CONCEALED IN ATTICS OR ANY UNCONDITIONED SPACE - 2 INCH THICK DUCTWRAP.

4. EXPOSED IN UNCONDITIONED SPACES AND EQUIPMENT ROOMS - 2 INCH THICK LINER.

- 2. CONCEALED IN RETURN AIR PLENUMS OR CONDITIONED SPACES 1 INCH THICK DUCTWRAP. EXPOSED IN CONDITIONED SPACES - 1 INCH THICK LINER.
- 5. WHERE ALSO INDICATED ON DRAWINGS TO BE LINED 1 INCH THICK LINER 6. ALL DUCTWORK FROM AIR HANDLING UNIT OR FAN CONNECTION PAST FIRST ELBOW OR FIRST FIFTEEN FEET -

INDIRECTLY CONDITIONED SPACES:

OUTSIDE OF BUILDING:

- 1 INCH THICK LINER. B. RETURN AIR DUCTWORK: 1 INCH THICK LINER.
- C. OUTSIDE AIR AND MIXED RETURN AND OUTSIDE AIR DUCTWORK: 1 INCH THICK LINER. D. DUCTWORK EXPOSED TO WEATHER EXCEPT EXHAUST DUCTWORK: 2 INCH THICK LINER. E. GENERAL KITCHEN EXHAUST DUCTWORK: 1 INCH (MINIMUM) DUCTWRAP (LINER NOT ACCEPTABLE).

R-1.9

R-8

R-1.9

R-8

F. MINIMUM INSULATION REQUIREMENTS AS PER ASHRAE 90.1 2019: SUPPLY RETURN UNCONDITIONED SPACES WITHIN BUILDING: R-6 R-6

**NEARBY ENGINEERS** 

CONSULTANT (ENGINEER)

382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455

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PROFESSIONAL SEAL:

## ONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE

OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **CHATIME** CONSTRUCTION MANAGER FOR SSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| DATE |

12.06.24 | CLIENT REVIEW SET

.| DATE | REVISION

PROJECT INFORMATION:

OCATION:

AREA: 465 SQ. FT.

DRAWN BY: NYE

REVIEWED BY: NYE

**NOTES & SPECIFICATIONS** (1 OF 2)

MECHANICAL GENERAL

SHEET NUMBER:

MECHANICAL GENERAL NOTES & SPECIFICATIONS

N.T.S.

PART 1 - GENERAL

- 2. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA). 3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). B. MANUFACTURER'S NAMES AND CATALOG NUMBERS ARE USED AS A MEANS OF ESTABLISHING PRODUCT GRADE AND QUALITY. WHERE SEVERAL MANUFACTURERS ARE NAMED. ONLY THESE NAMED MANUFACTURERS' ARE TO BE
- MENTIONED ARE TO BE USED AS A BASIS OF QUALITY. OTHER MANUFACTURER'S PRODUCTS WILL, HOWEVER, B E. BASIS OF QUALITY SHALL BE INTERPRETED TO INCLUDE MATERIAL, WORKMANSHIP, WEIGHT, FINISH, GAUGES (
- 3.01 FIREPROOFING PENETRATIONS: A. PROVIDE FIRE SEALING FOR PENETRATIONS THROUGH FIRE RATED CONSTRUCTION TO MAINTAIN THE FIRE RATING OF THE WALLS, FLOORS, PARTITIONS OR ROOFS PER LOCAL JURISDICTION AND LANDLORD'S
- VARIOUS EQUIPMENT AND TO MAKE FINAL CONNECTION TO ALL EQUIPMENT FURNISHED BY OWNER AND/OR B. ROUGHING-IN AND ASSEMBLING OF THIS EQUIPMENT SHALL BE DETERMINED FROM THE MANUFACTURER'S SHOP DRAWINGS OR AS DIRECTED AND IN NO CASE SHALL THE LOCATION BE SCALED FROM THE ARCHITECTURAL OR
- THIS CONTRACT.
- A. DURING THE EXECUTION OF THE WORK REMOVE ALL RUBBISH AND EXCESS MATERIALS ACCUMULATED AS A
- . EQUIPMENT PAINT SCARS SHALL BE REPAIRED WITH PAINT KITS SUPPLIED BY THE EQUIPMENT MANUFACTURER. TESTS, ADJUSTMENTS AND INSPECTIONS: EQUIPMENT CONNECTED.
- TESTS. REPAIR AND MAKE GOOD ANY DAMAGE SO CAUSED AT NO ADDITIONAL COST TO OWNER. ANY LEAKS, DEFECTS OR DEFICIENCIES DISCOVERED AS A RESULT OF THESE TESTS OR TESTS PERFORMED BY

## 3.03 APPLICATION:

- A. DUCT TO BE INSULATED INCLUDES ALL SUPPLY AIR DUCTWORK, ALL OUTSIDE AIR DUCTWORK, MIXED RETURN AND OUTSIDE AIR DUCTWORK, ALL RETURN AIR DUCTWORK, AND WHERE INDICATED ON DRAWINGS, EXHAUST AIR
- B. ALL PLENUMS SHALL BE INSULATED AS REQUIRED FOR DUCTWORK. C. JOINTS SHALL BE LAPPED 6 INCHES IN BOTH DIRECTIONS, SEALED WITH APPROVED MASTIC APPLIED OVER EACH
- JOINT AND SECURED IN PLACE. WHEN WRAPPED INSULATION MEETS LINED DUCTS OVERLAP THE INSULATION D. INSULATION SHALL BE INSTALLED IN A VAPOR-TIGHT MANNER AND MAY BE FASTENED WITH THE USE OF STAPLES
- OR OTHER FASTENING MATERIAL AS RECOMMENDED BY INSULATION MANUFACTURER PROVIDED THE FASTENERS ARE COVERED WITH MASTIC OR SMACNA TAPE. E. WHERE RECTANGULAR DUCTS ARE 24" IN WIDTH OR GREATER, DUCT WRAP INSULATION SHALL BE ADDITIONALLY
- SECURED TO THE BOTTOM OF THE DUCT WITH MECHANICAL FASTENERS SUCH AS PINS AND SPEED CLIP WASHERS, SPACED 18" ON CENTERS (MAXIMUM) TO PREVENT SAGGING OF INSULATION.
- F. SEAL ALL TEARS, PUNCTURES AND OTHER PENETRATIONS OF THE DUCT WRAP INSULATION FACING WITH TAPE OR
- MASTIC TO PROVIDE A VAPOR TIGHT SEAL. G. WHERE INDICATED TO BE LINED, DUCTWORK SHALL BE INSULATED INTERNALLY, RATHER THAN EXTERNALLY.
- H. FOR INTERNAL INSULATION, APPLY INSULATION TO INSIDE OF DUCTS AND PLENUMS WITH FIRE RETARDANT ADHESIVE WITH FACED SIDE EXPOSED TO AIR FORM LONGITUDINAL JOINTS IN CORNERS OF DUCT OR PLENUM ONLY. TIGHTLY BUTT JOINTS TOGETHER AND SIZE WITH FIRE-RETARDANT ADHESIVE TO PROVIDE A SMOOTH SURFACE, IN DUCTS AND PLENUMS WITH ONE SIDE MORE THAN 24", SECURE INSULATION WITH ADHERED WITH WELDED MECHANICAL FASTENERS IN ADDITION TO ADHESIVE, FASTENERS SPACED AT 14" CENTERS IN BOTH DIRECTIONS.

### 3.04 FIELD QUALITY CONTROL:

- A. WORK WILL NOT BE CONSIDERED COMPLETE UNTIL INSPECTED OR APPROVED BY THE ARCHITECT-ENGINEER FOR
- B. NO INSULATION SHALL BE INSTALLED ON ANY DUCT BEFORE BUILDING IS ADEQUATELY CLOSED IN. WHERE NECESSARY TO INSTALL ANY INSULATION BEFORE IT IS PROTECTED BY BUILDING ENCLOSURES, PERMISSION SHALL BE SECURED FROM THE ARCHITECT; AND WHERE PERMISSION IS GRANTED, THE COVERING MUST BE EFFECTIVELY PROTECTED BY ROOFING FELT. WIRED ON COVERING TO MAKE AN ABSOLUTE WATERPROOF PROTECTION FOR COVERING.
- C. GRAY DUCT TAPE IS NOT AN APPROVED MATERIAL.

### **DUCTWORK ACCESSORIES**

- A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF DUCTS AND ALL DEVICES FOR PROPER AIR FLOW AS INDICATED BY THE CONTRACT DOCUMENTS OR AS REQUIRED FOR GOOD PRACTICE.
- B. SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS. C. UL 33 - HEAT RESPONSIVE LINKS FOR FIRE-PROTECTION SERVICE.
- D. UL 555S FIRE DAMPERS AND CEILING DAMPERS.

### **PART 2 PRODUCTS**

## 2.01 GENERAL:

- A. IN EACH SQUARE ELBOW, PROVIDE AIRFOIL PATTERN DOUBLE THICKNESS TURNING VANES. TURNING VANES SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA MANUAL. TURNING VANES SHALL BE EQUAL TO BARBER-COLEMAN, "AIR-TURNS", TUTTLE AND BAILEY "DUCT-TURNS".
- B. AT EACH LOW PRESSURE DUCTWORK BRANCH FROM A LOW PRESSURE DUCT AND AT EACH SWEEPING ELBOW TAKE-OFF TO A GRILLE, PROVIDE A SPLITTER DAMPER CONSISTING OF BLADE ON A SQUARE OPERATING ROD FITTED WITH AN ADJUSTING DEVICE EXCEPT AT FLEXIBLE DUCT TAKE-OFF. UNLESS OTHERWISE INDICATED ON PLANS, THE ADJUSTING DEVICES SHALL CONSIST OF A CONTROL ROD AND VENTFABRIC, INC. NO 603 BALL JOINT
- C. PROVIDE WHERE INDICATED A MODEL SM-2DE SPIN-IN FITTING WITH EXTRACTOR AND DAMPER OPERATOR AS MANUFACTURED BY GENERAL ENVIRONMENT CORPORATION, OR APPROVED EQUAL, FOR LOW PRESSURE TAPS
- D. EACH INDIVIDUAL AIR SUPPLY OR RETURN UNIT, WHETHER SIDEWALL OR CEILING DIFFUSER SHALL BE FITTED WITH A DEVICE TO PERMIT THE ADJUSTMENT OF THE AMOUNT OF AIR SUPPLIED TO THE UNIT INDEPENDENTLY OF ANY OTHER OUTLET. THESE DEVICES MAY TAKE THE FORM OF OUTLET BOOTS WITH SANTROLS, OR OF BRANCH DUCT WITH SPLITTER DAMPERS, AS INSTALLATION CONDITIONS DICTATE, BUT IN ANY CASE, EACH SHALL BE FITTED WITH A MEANS OF MANUAL ADJUSTMENT OF THE AMOUNT OF AIR DELIVERED TO THE OUTLET.
- E. FLASH AND COUNTER FLASH AROUND ALL DUCTS PASSING THROUGH THE ROOF USING GALVANIZED SHEET SECURELY BUILT INTO THE ROOFING IN ACCORDANCE WITH THE INSTRUCTIONS OF THE ROOFING CONTRACTOR. PROVIDE ROOF CURB FOR ALL PENETRATIONS.
- F. DUCTWORK WHERE REQUIRED SHALL HAVE 1", 1 🗦 JOHNS-MANVILLE "MICRO-BAR" DUCT LINER. G. FLEXIBLE DUCTWORK SHALL BE INSTALLED TO SUPPLY DIFFUSERS, WITH LENGTH NOT TO EXCEED FIVE FEET

## 2.02 FIRE DAMPERS, SMOKE DAMPERS, AND COMBINATION FIRE AND SMOKE DAMPERS:

## A. FIRE DAMPERS

- 1. FABRICATE IN ACCORDANCE WITH NFPA 90A AND UL 555S REQUIREMENTS AND SHALL CARRY THE CORRESPONDING LABEL AND SHALL BE IN ACCORDANCE, ALSO WITH PERTINENT REGULATIONS OF THE LOCAL GOVERNING AUTHORITIES.
- 2. FIRE DAMPERS SHALL BE OF SOLID STEEL CURTAIN TYPE WITH CORROSION RESISTANT STEEL BLADES AND WITH FRAMES WHICH SHALL BE CONTINUOUS ONE-PIECE ROLL FORMED CONSTRUCTION WITH MOUNTING FLANGES. IN CLOSED POSITION THE BLADES SHALL INTERLOCK COMPLETELY. HORIZONTALLY MOUNTED SHALL BE ACCOMPLISHED BY USE OF ACCESS PANELS WHICH SHALL BE FURNISHED AND INSTALLED.
- 3. FIRE DAMPERS FOR LOW PRESSURE RECTANGULAR DUCTS SHALL BE TYPE B WITH 95% OR GREATER FREE AREA. FIRE DAMPERS FOR ROUND OR OVAL DUCTS SHALL BE TYPE C WITH 100% FREE AREA. FIRE DAMPERS FOR MEDIUM PRESSURE RECTANGULAR DUCTS SHALL BE TYPE C WITH 100% FREE AREA.
- FOR ROUND FLAPS, WITH LOCKING CLIP.
- 5. FABRICATE CEILING DAMPERS OF GALVANIZED STEEL, 22 GAGE (0.76 MM) FRAME, STAINLESS STEEL CLOSURE
- SPRING, AND LIGHT WEIGHT, HEAT RETARDANT NON-ASBESTOS FABRIC BLANKET CLOSURE. 6. FABRICATE CURTAIN TYPE DAMPERS OF GALVANIZED STEEL WITH INTERLOCKING BLADES. PROVIDE STAINLESS STEEL CLOSURE SPRINGS AND LATCHES FOR HORIZONTAL INSTALLATIONS. CONFIGURE WITH
- OIL-IMPREGNATED BRONZE OR STAINLESS STEEL SLEEVE BEARINGS AND PLATED STEEL AXLES. 1/8 X 1/2 INCH (3.2 X 12.7 MM) PLATED STEEL CONCEALED LINKAGE, STAINLESS STEEL CLOSURE SPRING, BLADE STOPS, AND
- 8. FUSIBLE LINKS, UL 33, SHALL SEPARATE AT 160 DEGREES F. PROVIDE ADJUSTABLE LINK STRAPS FOR COMBINATION FIRE/BALANCING DAMPERS.
- B. COMBINATION FIRE AND SMOKE DAMPERS: 1. FABRICATE IN ACCORDANCE WITH NFPA 90A AND UL 555S, AND AS INDICATED.
- 2. PROVIDE FACTORY SLEEVE FOR EACH DAMPER. INSTALL DAMPER OPERATOR ON EXTERIOR OF SLEEVE AND
- 3. FABRICATE WITH MULTIPLE BLADES WITH 16 GAGE (1.5 MM) GALVANIZED STEEL FRAME AND BLADES, OIL-IMPREGNATED BRONZE OR STAINLESS STEEL SLEEVE BEARINGS AND PLATED STEEL AXLES, STAINLESS STEEL JAMB SEALS, 1/8 X 1/2 INCH (3.2 X 12.7 MM) PLATED STEEL CONCEALED LINKAGE, STAINLESS STEEL CLOSURE SPRING, BLADE STOPS, AND LOCK, AND 1/2 INCH (12.7 MM) ACTUATOR SHAFT
- 4. OPERATORS SHALL BE SPRING RETURN ELECTRIC TYPE SUITABLE TO OPERATE ON 120 V AC, 60 OPERATORS SHALL BE UL LISTED AND LABELLED. PROVIDE END SWITCHES TO INDICATE DAMPER POSITION.
- C. SMOKE DAMPERS:
- 3. NORMALLY OPEN SMOKE DAMPER: CURTAIN TYPE, CLOSING UPON ACTUATION OF ELECTRO THERMAL LINK, FLEXIBLE STAINLESS STEEL BLADE EDGE SEALS TO PROVIDE CONSTANT SEALING PRESSURE, STAINLESS STEEL SPRINGS WITH LOCKING DEVICES ENSURE POSITIVE CLOSURE FOR UNITS MOUNTED HORIZONTALLY.

## PART 3 EXECUTION

- A. INSTALL ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- INDICATED, WHERE DUCTS AND OUTLETS PASS THROUGH FIRE RATED COMPONENTS AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION. INSTALL WITH REQUIRED PERIMETER MOUNTING ANGLES, SLEEVES, BREAKAWAY DUCT CONNECTIONS, CORROSION RESISTANT SPRINGS, BEARINGS, BUSHINGS AND HINGES. INSTALL
- REPRESENTATIVE. E. PROVIDE BACKDRAFT DAMPERS ON ALL EXHAUST FANS OR EXHAUST DUCTS NEAREST TO OUTSIDE AND WHERE
- F. PROVIDE FLEXIBLE CONNECTIONS IMMEDIATELY ADJACENT TO EQUIPMENT IN DUCTS ASSOCIATED WITH FANS AND MOTORIZED EQUIPMENT.
- AND AS INDICATED

#### **HVAC TESTING AND BALANCING**

#### PART 1 - GENERAL

### 1.01 SCOPE:

- A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF THE FURNISHING OF ALL LABOR, INSTRUMENTS, TOOLS AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THEREFROM.
- B. THE TAB FIRM IS RESPONSIBLE TO AND SHALL SUBMIT ALL REPORTS DIRECTLY TO THE ARCHITECT/ENGINEER AND/OR OWNER.
- C. TAB SERVICES SHALL RESULT IN THE OPTIMUM TEMPERATURE, AIRFLOW AND NOISE LEVELS IN THE CONDITIONED SPACES OF THE PROJECT.
- D. THE FOLLOWING BASIC COMPONENTS OF THE HVAC SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED:
- 1. AIR DISTRIBUTION SYSTEMS 2. AIR MOVING EQUIPMENT
- 3. HEATING SYSTEMS (HVAC)
- 4. CONTROL SYSTEMS VERIFICATION

#### E. DOCUMENT REVIEW 1. THE TAB FIRM SHALL BE RESPONSIBLE FOR REVIEWING THE HVAC PLANS AND SPECIFICATIONS RELATING TO THE TAB SERVICES FOR PROPER ARRANGEMENT AND ADEQUATE PROVISIONS OF DEVICES FOR TESTING,

- ADJUSTING AND BALANCING. 2. TAB FIRM SHALL REVIEW HVAC MANUFACTURER'S SUBMITTAL DATA RELATIVE TO BALANCEABILITY.
- 3. TAB FIRM SHALL REVIEW SUBMITTED HVAC AUTOMATIC TEMPERATURE CONTROL SEQUENCES FOR CONFORMITY TO THE SPECIFICATIONS.
- 1.02 QUALIFICATIONS: A. ALL WORK IS TO BE PERFORMED BY AN INDEPENDEN TEST AND BALANCE AGENCY (TAB AGENCY) THAT SPECIALIZES IN, AND WHOSE BUSINESS IS LIMITED TO THE TESTING AND BALANCING OF AIR AND HYDRONIC SYSTEMS. THE TAB AGENCY SHALL BE FULLY CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC). ALL THE TAB AGENCY SHALL PROVIDE PROOF OF HAVING SUCCESSFULLY COMPLETED AT LEAST FIVE PROJECTS OF SIMILAR SIZE AND SCOPE DURING THE PAST FIVE YEARS. THE TAB AGENCY SHALL BE APPROVED BY THE
- B. ALL PERSONNEL USED ON THE JOB SITE SHALL BE EITHER TAB ENGINEERS OR TAB TECHNICIANS, WHO SHALL HAVE BEEN PERMANENT, FULL-TIME EMPLOYEES OF THE FIRM FOR A MINIMUM OF SIX (6) MONTHS PRIOR TO

#### WORKING ON THIS SPECIFIC PROJECT. 1.03 SERVICES OF CONTRACTOR TO PREPARE FOR THE TAB:

- A. FOR THE PURPOSES OF THIS SECTION OF THE SPECIFICATIONS THE TERM "CONTRACTOR" REFERS TO THE JOINT COMBINATION OF GENERAL CONTRACTOR, MECHANICAL CONTRACTOR AND ELECTRICAL CONTRACTOR. THE TERM TAB AGENCY REFERS TO THE COMPANY PERFORMING THE TESTS AND ADJUSTMENTS.
- B. THE CONTRACTOR SHALL START UP AND TEST ALL MATERIALS AND EQUIPMENT WHICH NORMALLY REQUIRE TESTING. ALL EQUIPMENT SHALL OPERATE A SUFFICIENT LENGTH OF TIME AT THE CONTRACTOR'S EXPENSE TO PROVE TO THE ARCHITECT/ENGINEER AND/OR OWNER THAT THE EQUIPMENT IS FREE FROM MECHANICAL DEFECTS, RUNS SMOOTHLY AND QUIETLY AND PERFORMS SATISFACTORILY TO MEET THE REQUIREMENTS SET FORTH IN THE MECHANICAL PLANS AND SPECIFICATIONS.
- C. IN ORDER THAT ALL HVAC SYSTEMS CAN BE PROPERLY TESTED, ADJUSTED AND BALANCED, THE CONTRACTOR SHALL OPERATE THE HVAC SYSTEMS AT HIS EXPENSE FOR THE LENGTH OF TIME NECESSARY TO PROPERLY VERIFY THEIR COMPLETION AND READINESS FOR TAB, AND SHALL FURTHER OPERATE AND PAY ALL COSTS OF OPERATION DURING THE TAB PERIOD. OPERATING EXPENSES TO BE PAID FOR BY THE CONTRACTOR WILL
- INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, THE FOLLOWING: 1. UTILITY COSTS; ELECTRICAL, WATER, GAS, ETC.
- 2. PERSONNEL COSTS TO START, OPERATE AND STOP ALL HVAC EQUIPMENT.
- 3. ALL START-UP LABOR AND MATERIAL COSTS.
- 4. ALL MAINTENANCE COSTS.
- D. THE PLANS AND SPECIFICATIONS HAVE INDICATED VALVES, DAMPERS AND MISCELLANEOUS ADJUSTMENT DEVICES FOR THE PURPOSE OF TESTING, ADJUSTING AND BALANCING THE HVAC SYSTEMS TO OBTAIN OPTIMUM OPERATING CONDITIONS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL THESE DEVICES IN A MANNER THAT WILL LEAVE THEM ACCESSIBLE AND READILY ADJUSTABLE. THE TAB FIRM SHALL BE CONSULTED IF THERE IS A QUESTIONABLE ARRANGEMENT OF A CONTROL OR ADJUSTABLE DEVICE. SHOULD ANY SUCH DEVICE
- NOT BE READILY ACCESSIBLE, THE CONTRACTOR SHALL PROVIDE ACCESS AS REQUIRED BY THE TAB FIRM. E. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE SERVICES OF QUALIFIED. RESPONSIBLE SUB-CONTRACTORS, SUPPLIERS, AND PERSONNEL AS REQUIRED TO CORRECT, REPAIR OR REPLACE ANY AND ALL DEFICIENT ITEMS OR CONDITIONS FOUND BEFORE AND DURING THE TAB PERIOD
- F. AS A PART OF THIS PROJECT CONTRACT, THE CONTRACTOR SHALL MAKE ANY CHANGES IN THE SHEAVES, BELTS, MOTORS, DAMPERS OR THE ADDITION OF DAMPERS AND/OR VALVES AS REQUIRED TO CORRECTLY BALANCE THE
- HVAC SYSTEMS AS REQUIRED BY THE TAB FIRM AT NO ADDITIONAL COST G. PROVIDE SUFFICIENT TIME IN PROJECT CONTRACT COMPLETION SCHEDULE TO PERMIT THE COMPLETION OF TAB
- SERVICES PRIOR TO OWNER OCCUPANCY OF THE PROJECT. H. THE CONTRACTOR SHALL FURNISH WITHOUT CHARGE TO THE TAB FIRM:
- 1. ONE SET OF MECHANICAL SPECIFICATIONS AND ALL ADDENDA.
- 2. ALL PERTINENT CHANGE ORDERS TWO COMPLETE SETS OF MECHANICAL PLANS WITH LATEST REVISIONS.
- 4. "AS-INSTALLED" DRAWINGS.
- 5. APPROVED CONTROL DIAGRAMS AND SUBMITTALS.
- 6. APPROVED MANUFACTURER'S SUBMITTALS FOR ALL HVAC EQUIPMENT
- I HAVE ALL HVAC SYSTEMS COMPLETE AND IN OPERATIONAL READINESS PRIOR TO NOTIFYING THE TAB FIRM THAT THE PROJECT IS READY FOR TAB SERVICES. SO CERTIFY IN WRITING TO THE ARCHITECT/ENGINEER AND/OR OWNER THAT SUCH A CONDITION EXISTS. COMPLETE OPERATIONAL READINESS PRIOR TO COMMENCEMENT OF TAB SERVICES SHALL INCLUDE THE FOLLOWING:
- 1. CONSTRUCTION STATUS OF BUILDING SHALL PERMIT THE CLOSING OF DOORS AND WINDOWS, CEILINGS INSTALLED, ETC., TO PERMIT THE OBTAINING OF PROJECTED ACTUAL OPERATING CONDITIONS.
- 2. AIR DISTRIBUTION SYSTEMS: a. VERIFY INSTALLATION FOR CONFORMITY TO DESIGN OF ALL SUPPLY, RETURN AND EXHAUST DUCTS.
- DOCUMENT AND CERTIFY THAT ALL DUCT LEAKAGE TESTS AS REQUIRED BY THE MECHANICAL SPECIFICATIONS HAVE BEEN PERFORMED AND THE TEST RESULTS ARE WITHIN SPECIFIED LIMITS. b. VERIFY THAT ALL VOLUME DAMPERS, SMOKE DAMPERS AND FIRE DAMPERS ARE PROPERLY LOCATE
- FUNCTIONAL AND OPEN. c. VERIFY THAT MINIMUM OUTSIDE AIR, MAXIMUM OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPE PROVIDE TIGHT CLOSURE, OPEN FULLY AND HAVE SMOOTH AND FREE OPERATION.
- d. VERIFY THAT ALL SUPPLY, RETURN, EXHAUST AND TRANSFER DIFFUSERS, GRILLES AND REGISTERS ARE INSTALLED AS INDICATED ON THE MECHANICAL PLANS. e. VERIFY THAT THE CORRECT SIZE AND TYPE OF TERMINAL BOXES ARE INSTALLED AS INDICATED ON THE
- MECHANICAL PLANS, AND THAT THEY ARE OPERATIONAL. f. INSTALL CLEAN FILTERS AT EACH AIR HANDLING UNIT AND MAINTAIN THESE FILTERS FOR THE COMPLETE PERIOD THAT THE SUBJECT SYSTEM IS BEING TESTED, ADJUSTED, AND BALANCED
- g. VERIFY THAT ALL (SUPPLY, RETURN, RELIEF AND EXHAUST) FANS ARE OPERATIONAL INCLUDING: PROPER FAN ROTATION, FREE FROM VIBRATIONS AND PROPER BELT TENSION
- h. VERIFY THAT ALL MOTOR STARTER OVERLOAD HEATER ELEMENTS ARE OF PROPER SIZE AND RATING. i. MAKE A RECORD OF ACTUAL MOTOR AMPERAGE AND VOLTAGE AND VERIFY THAT THEY DO NOT EXCEED NAMEPLATE RATINGS.
- 3. AUTOMATIC CONTROLS: a. VERIFY THAT ALL CONTROL COMPONENTS ARE INSTALLED IN ACCORDANCE WITH PROJECT REQUIREMENTS AND ARE FUNCTIONAL, INCLUDING ALL ELECTRICAL INTERLOCKS, DAMPER SEQUENCES, AIR RESETS, FIRESTAT, FREEZESTAT, SAFETIES, ETC.
- b. VERIFY THAT ALL CONTROLLING INSTRUMENTS ARE CALIBRATED AND SET FOR DESIGNED OPERATING CONDITIONS WITH THE EXCEPTION OF ROOM THERMOSTATS OR SENSORS WHICH SHALL BE CALIBRATED AT THE COMPLETION OF TAB SERVICES WITH COOPERATION BETWEEN TAB FIRM AND CONTROLS CONTRACTOR.
- J. THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR AND/OR ENERGY MANAGEMENT SYSTEM CONTRACTOR SHALL THOROUGHLY CHECK ALL CONTROLS, SENSORS, OPERATORS, SEQUENCES, ETC. BEFORE NOTIFYING THE TAB AGENCY THAT THE AUTOMATIC TEMPERATURE CONTROLS AND ENERGY MANAGEMENT SYSTEM ARE OPERATIONAL. THE AUTOMATIC TEMPERATURE CONTROL CONTRACTOR AND/OR ENERGY MANAGEMENT SYSTEM CONTRACTOR SHALL PROVIDE TECHNICAL SUPPORT (TECHNICIANS AND NECESSARY COMPUTERS) TO THE TAB AGENCY FOR A COMPLETE CHECK OF THESE SYSTEMS.
- K. THE MECHANICAL AND/OR SHEET METAL CONTRACTOR SHALL CORRECT ANY DEFICIENCIES AT NO ADDITIONAL COST TO THE OWNE
- L. THE SCOPE OF THE TAB WORK AS DEFINED HEREIN IS INDICATED IN ORDER THAT THE CONTRACTOR WILL BE APPRISED OF HIS RESPONSIBILITY REGARDING THE COORDINATION AND ASSISTANCE REQUIRED TO COMPLETE THE PROJECT REQUIREMENTS FOR FINAL THE TAB FIRM WILL BE RESPONSIBLE TO THE ARCHITECT/ENGINEER AND/OR OWNER FOR THE SATISFACTORY EXECUTION OF THE TAB SERVICES. **SERVICES REQUIRED OF THE TAB AGENCY:**
- A. LIA<mark>ISON: THE TAB PERSONNEL ON THE JOB SHALL ACT AS LIAISON BETWEEN THE ARCHITECT/ENGINEER, OWNER</mark> AND CONTRACTOR.
- B. EARLY INSPECTION: INSPECT THE INSTALLATION OF SHEET METAL WORK, TEMPERATURE CONTROLS AND OTHER COMPONENT PARTS OF THE HVAC SYSTEMS DURING THE CONSTRUCTION STAGE FOR THE PURPOSE OF REVIEWING THAT PART OF THE WORK RELATING TO PROPER ARRANGEMENT AND ADEQUATE PROVISIONS FOR
  - THE TAB PERSONNEL SHALL TEST, ADJUST AND BALANCE THE HVAC SYSTEMS TO PROVIDE OPTIMUM TEMPERATURE, AIRFLOW AND NOISE CONDITIONS IN THE CONDITIONED SPACES IN THE BUILDING WHILE THE HVAC EQUIPMENT IS OPERATING EFFICIENTLY. 2. THE FIRM SHALL BE RESPONSIBLE FOR TESTING, ADJUSTING, BALANCING AND LOGGING ACTUAL DATA ON ALL
- OPERATING CONDITIONS OF ALL MOTORS, ETC. AS INDICATED IN THIS SPECIFICATION. D. UPON COMPLETION OF THE INSTALLATION AND START-UP OF THE SYSTEMS. THE TAB AGENCY SHALL BE RESPONSIBLE TO INSPECT, CHECK, TEST, ADJUST, BALANCE AND RECORD DATA ON THE PERFORMANCE OF THE AIR SYSTEMS AND COMPONENTS THEREOF IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION AND OTHER STANDARDS AS PUBLISHED BY THE AABC.

AIR DISTRIBUTION AND AIR MOVING EQUIPMENT, PUMPS, HEATING AND COOLING EQUIPMENT AND THE

- E. IN ALL FAN SYSTEMS, THE AIR QUANTITIES SHOWN ON THE PLANS MAY BE VARIED AS REQUIRED, BUT THE TOTAL AIR QUANTITY INDICATED FOR EACH ZONE MUST BE OBTAINED. 1.05 GUARANTEE
- A. PROVIDE EXTENDED WARRANTY OF TWELVE (12) MONTHS AFTER OCCUPANCY DURING WHICH TIME THE ARCHITECT/ENGINEER AND/OR OWNER MAY, AT HIS DISCRETION, REQUEST CHECK OF THE BALANCE OF ANY HVAC EQUIPMENT. PROVIDE TAB TECHNICIANS TO ASSIST AS REQUIRED IN MAKING SUCH TESTS. WHEN ANY DEVICE IS FOUND NOT BALANCED IN ACCORDANCE WITH THE MECHANICAL PLANS AND SPECIFICATIONS. THAT HVAC SYSTEM SHALL BE COMPLETELY REBALANCED AS DIRECTED BY THE ARCHITECT/ENGINEER AND/OR OWNER AT THE TAB FIRM'S EXPENSE
- B. SUBMIT SIX (6) COPIES OF A WRITTEN REPORT TO THE ENGINEER WITHIN 30 DAYS AFTER INSPECTION IS COMPLETE. LIST ALL COMPLAINTS AND MALFUNCTIONS ENCOUNTERED AND INDICATE STEPS TAKEN OR NEEDED TO BE TAKEN TO CORRECT.

#### THERMOSTATIC CONTROLS

#### 6.4.3.1 ZONE THERMOSTATIC CONTROLS

MINUS ANY APPLICABLE PROPORTIONAL BAND.

OPTIMUM START ALGORITHM.

#### 6.4.3.1.1 GENERAL

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

EXCEPTIONS: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE LOADS SHALL BE PERMITTED TO SERVE ONE OR MORE ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED

- a. THE PERIMETER SYSTEM INCLUDES AT LEAST ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION FOR 50 CONTIGUOUS FEET OR MORE,
- b. THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY A THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

FACE DIFFER BY MORE THAN 45 DEGREES. 6.4.3.1.2 DEAD BAND WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND

EXTERIOR AND SEMIEXTERIOR WALLS ARE CONSIDERED TO HAVE DIFFERENT ORIENTATIONS IF THE EXPOSURES THE

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

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

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

- **EXCEPTIONS:** a. HVAC SYSTEMS INTENDED TO OPERATE CONTINUOUSLY
- b. HVAC SYSTEMS HAVING A DESIGN HEATING CAPACITY AND COOLING CAPACITY LESS THAN 15,000 BTU/H THAT ARE EQUIPPED WITH READILY ACCESSIBLE MANUAL ON/ OFF CONTROLS. 6.4.3.3.1 AUTOMATIC SHUTDOWN

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

COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

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

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

6.4.3.3.3 OPTIMUM START CONTROLS INDIVIDUAL HEATING AND COOLING SYSTEMS WITH SETBACK CONTROLS AND DDC 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

## JERSEY CITY, NJ BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF THE 2021 INTERNATIONAL BUILDING CODE, AND ALL AMENDMENTS AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- 1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- 2. VENTILATION FOR ALL AREA SHALL COMPLY WITH 2021 INTERNATIONAL MECHANICAL CODE CHAPTER 4.
- 3. AS PER ASHRAE 90.1, 2019 SECTION 6.7.3.1, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER.
- 4. AS PER ASHRAE 90.1, 2019 SECTION 6.7.3.2, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT AN OPERATING MANUAL AND A MAINTAINED MANUAL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS. 5. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER
- MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2021 INTERNATIONAL BUILDING CODE REQUIREMENTS AS OUTLINES IN SECTION [BC 1704]. 6. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL

PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH

DOCUMENTS AND APPLICABLE LAWS. 7. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2021 INTERNATIONAL MECHANICAL CODE:

FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION

- B. SMOKE CONTROL SYSTEMS IMC 2021 513
- 8. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
- A. STANDARDS OF HEATING -IMC 2021 309.1

A. VENTILATION SYSTEM BALANCING IMC 2021 - 403.1

B. DUCT CONSTRUCTION AND INSTALLATION-IMC 2021 - 603 C. AIR INTAKES, EXHAUSTS AND RELIEF - IMC 2021 - 401.5 & 501.3 D. AIR FILTERS - IMC 2021 - 605

ACCORDANCE WITH APPLICABLE CODES

- E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS IMC 2021 513 F. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG.
- 9. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS
- REQUIRED BY IMC 2021 403.3 10. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION IMC 2021 - 606 TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
- 11.REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION & PROVIDE FIRE DAMPER FOR DUCT PENETRATING THOSE WALLS. 12. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN

CONSULTANT (ENGINEER)

**NEARBY ENGINEERS** 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGINEERS.COM

PROFESSIONAL SEAL:

CONTRACTOR'S NOTES: WRITTEN DIMENSIONS HOLD PREFERENCE

OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **CHATIME** CONSTRUCTION MANAGER FOR SSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

| DATE | 12.06.24 | CLIENT REVIEW SET



. DATE REVISION

OCATION:

PROJECT INFORMATION:

DRAWN BY: NYE

REVIEWED BY: NYE

AREA: 465 SQ. FT.

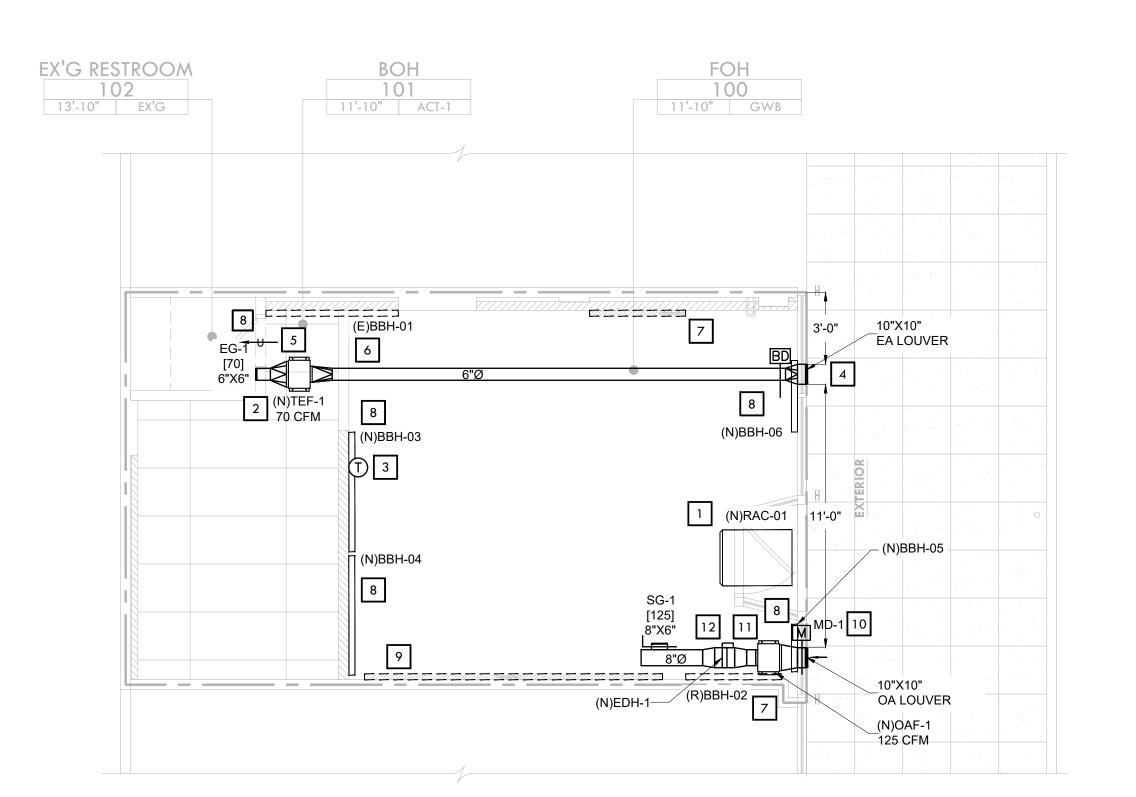
MECHANICAL GENERAL **NOTES & SPECIFICATIONS** (2 OF 2)

SHEET NUMBER:

PART 1 GENERAL 1.01 SCOPE:

1.02 REFERENCES: A. NFPA 90A - INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS.

- DAMPERS SHALL CLOSE AND SHALL BE LOCKED BY THE USE OF STAINLESS STEEL SPRINGS. DAMPER RESET
- 4. FABRICATE CEILING FIRESTOP FLAPS OF GALVANIZED STEEL, 22 GAUGE (0.76 MM) FRAME AND 16 GAGE (1.5 MM) FLAP. TWO LAYERS 0.125 INCH (3.2 MM) CERAMIC FIBER ON TOP SIDE AND ONE LAYER ON BOTTOM SIDE
- BLADES OUT OF AIR STREAM EXCEPT FOR LOW PRESSURE DUCTS UP TO 12 INCHES (300 MM) IN HEIGHT. 7. FABRICATE MULTIPLE BLADE FIRE DAMPERS WITH 16 GAGE (1.5 MM) GALVANIZED STEEL FRAME AND BLADES.
- LINK TO DAMPER OPERATING SHAFT.
- 1. FABRICATE IN ACCORDANCE WITH NFPA 90A AND UL 555S, AND AS INDICATED 2. NORMALLY CLOSED SMOKE VENT DAMPERS: CURTAIN TYPE, OPENING BY GRAVITY UPON ACTUATION OF ELECTRO THERMAL LINK, FLEXIBLE STAINLESS STEEL BLADE EDGE SEALS TO PROVIDE CONSTANT SEALING
- 3.01 INSTALLATION:
- B. PROVIDE BALANCING DAMPERS AT POINTS ON LOW PRESSURE SUPPLY, RETURN, AND EXHAUST SYSTEMS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS AS REQUIRED FOR AIR BALANCING. USE SPLITTER DAMPERS ONLY C. PROVIDE FIRE DAMPERS, COMBINATION FIRE AND SMOKE DAMPERS AND SMOKE DAMPERS AT LOCATIONS
- FIRE DAMPERS OF EQUAL OR GREATER FIRE RATING AS THE WALL OR CEILING PENETRATED. D. DEMONSTRATE RE-SETTING OF FIRE DAMPERS TO AUTHORITIES HAVING JURISDICTION AND OWNER'S
- G. PROVIDE DUCT ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, AT FIRE DAMPERS, ADJUSTMENT OF BACKDRAFT DAMPERS AND ELSEWHERE AS INDICATED. PROVIDE MINIMUM 8 X 8 INCH SIZE FOR HAND ACCESS, 18 X 18 INCH SIZE FOR SHOULDER ACCESS,



- A. EXACT LOCATION OF ALL AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL RCP & LIGHTING LAYOUT.
- B. IF PLENUM IS USED FOR RETURN AIR. MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR OTHER APPROPRIATE STANDARDS. COORDINATE ALL WORK ON OTHER FLOORS AND IN OTHER TENANT SPACES WITH OWNERS REP. SO THAT WORK DOES
- NOT INTERFERE WITH OTHER TENANTS. D. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVE. CONTRACTOR SHALL TIE NEW T-STATS INTO BUILDING EMS AND UPDATE IT
- PROVIDE ALL MANUFACTURER AND NEC REQUIRED CLEARANCE FOR ALL EQUIPMENT. ENSURE ALL NEW BUILDING VENTS ARE FITTED WITH ANIMAL SCREENS EXCEPT OTHERWISE NOTED.
- CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE
- COORDINATE LOCATIONS AND SIZES OF ALL OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- M. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.

DUCTS. PROVIDE ACOUSTIC INSULATION ON MAIN SUPPLY AND RETURN DUCTS UP TO 10 FT. FROM HVAC UNIT.

N. MOUNT DUCTWORK AS HIGH AS POSSIBLE. O. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.

PROVIDE CABLE OPERATED DAMPER IN INACCESSIBLE CEILINGS.

NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA. Q. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS/ROOF PENETRATIONS, COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATINGS OF THE WALLS. R-6 INSULATION (INTERNAL FOR EXPOSED DUCTS AND EXTERNAL FOR CONCEALED DUCTS) FOR SUPPLY & RETURN AIR

# KEYED NOTES: #

- REPLACE EXISTING WINDOW AC UNIT WITH NEW ONE (N)RAC-01 AS PER MECHANICAL SCHEDULE AND INSTALL AS PER MANUFACTURER RECOMMENDATIONS. VERIFY EXISTING DRAIN POINT TERMINATION ON FILED, CLEAN AND REFURBISH TO "LIKE-NEW" CONDITION. REPAIR AS REQUIRED AND REPLACE IN KIND IF DAMAGED. NOTIFY ARCHITECT/ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
- PROVIDE NEW TOILET EXHAUST FAN AS SHOWN, COORDINATE FINAL LOCATION OF EQUIPMENT WITH OWNER/ARCHITECT.
- PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
- EXHAUST AIR TERMINATIONS SHALL BE MINIMUM 10 FEET AWAY OR 3FT ABOVE FROM ANY OUTSIDE AIR INATKE SOURCE, 3 FEET FROM PROPERTY LINES, 3 FEET FROM OPERABLE OPENINGS.
- PROVIDE 1" DOOR UNDERCUT FOR TRANSFER AIR.
- EXISTING HYDRONIC PERIMETER BASEBOARD HEATERS AND ASSOCIATED ACCESSORIES TO REMAIN. CLEAN AND REFURBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT, REPLACE IN KIND IF DAMAGED. NOTIFY ARCHITECT/ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
- EXISTING HYDRONIC PERIMETER BASEBOARD HEATERS AND ASSOCIATED ACCESSORIES TO BE RELOCATED AS SHOWN ON PLAN. CLEAN AND REFURBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT, REPLACE IN KIND IF DAMAGED. NOTIFY ARCHITECT/ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
- PROVIDE NEW HYDRONIC PERIMETER BASEBOARD HEATERS AS PER MECHANICAL SCHEDULE, COORDINATE FINAL LOCATION WITH ARCHITECT. PIPING SHALL BE PROVIDE AS PER BOILER FLOW RATE AVAILABLE ON SITE, FINAL ROUTING AND QUANTITY SHALL BE CONFIRMED WITH ENGINEERS PRIOR TO BASE BID. NOTIFY ARCHITECT/ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
- DEMOLISH AND SCRAP EXISTING HYDRONIC PERIMETER BASEBOARD HEATERS ALONG WITH ASSOCIATED ACCESSORIES.
- PROVIDE NEW MOTORIZED DAMPER (MD-1) AND INTERLOCK WITH (N)OAF-1.
- PROVIDE NEW OUTDOOR AIR INLINE FAN (N)OAF-1 AS PER MECHANICAL SCHEDULE AND INSTALL AS PER MANUFACTURER RECOMMENDATIONS. INTERLOCK WITH TIMECLOCK.
- PROVIDE NEW SLIP IN TYPE DUCT HEATER AS PER MECHANICAL SCHEDULE AND INSTALL AS PER MANUFACTURER
- RECOMMENDATIONS. INTERLOCK WITH FAN (N)OAF-1 OPERATION AND SHALL BE OPERATED DURING LOW AMBIENT

1 / 4" = 1' - 0"

MECHANICAL FLOOR PLAN

	VALUE   VALU														
			COOLING			LINIT DIMENSIONS		ELECTRICAL							
	UNIT TAG	LOCATION	CAP.TR		CFM	TYPE		WEIGHT (LBS)	(V/Hz/Ph)	MOP(A)	EER	CEER	REFRIGERANT	MODULE NO.	
	(N)RAC-1	SEE PLAN	2.3	28	640	INVERTER DRIVEN COMPRESSOR	28X36X20	200	230/60/1	20	10.7	10.7	R-32	KCL28B30A	

1) UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.

2) PROVIDE COMPRESSOR CYCLE PROTECTOR.

3) PROVIDE UNIT MOUNTING AS PER MANUFACTURER RECOMMENDATIONS.

4) PROVIDE COMPRESSOR THERMAL PROTECTION, COMPRESSOR OVERCURRENT DETECTION AND FAN MOTOR OVERHEATING/VOLTAGE PROTECTION.

5) PROVIDE CIRCUIT RATING/BREAKER/POWER CORD AS PER INSTALLATION MANUAL/MANUFACTURER RECOMMENDATIONS.

				MECHAI	NICAL F	AN SCH	EDULE						BASIS OF D	ESI	GN: GREENHECK
TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	FAN	PERFORM	ANCE	FLA	INPUT WATTS				WEIGHT		CONTROL
IAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	CFM	ESP	FAN RPM	FLA	W	VOLTS	PHASE	HZ	LBS		CONTROL
(N)TEF-1	GREENHECK	CSP-A390-VG	SEE PLAN	SEE PLAN	70	0.5	2120	1.5	26	115	1	60	30		LIGHT SWITCH
(N)OAF-1	GREENHECK	CSP-A390-VG	SEE PLAN	SEE PLAN	125	0.5	1217	1.5	28	115	1	60	30		TIME CLOCK
NOTEC.		•													

.) PROVIDE FACTORY MOUNTED AND INSTALLED DISCONNECT.

2) ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE EXACT POWER REQUIREMENT WITH ELECTRICAL CONTRACTOR.

3) PROVIDE FAN WITH A BACKDRAFT DAMPER FOR TEF-1. 4) ALL DIRECT DRIVE FANS TO HAVE ECM MOTORS.

			AIR TERMIN	IAL SCHED	ULE			
TAG	MANUFACTURER	MODEL	TYPE	CFM RANGE	NECK SIZE	NOMINAL FACE SIZE	R	EMARKS
EG-1	TITUS	350RL	EXHAUST GRILLE	60-140	6"X6"	-	WA	LL MOUNT
SG-1	TITUS	S300FL	SUPPLY GRILLE	60-130	8"X6"	-	DU	CT MOUNT
NOTES	<b>:</b>							
TAGMANUFACTURERMODELTYPECFM RANGENECK SIZENOMINAL FACE SIZEREMARKSEG-1TITUS350RLEXHAUST GRILLE60-1406"X6"-WALL MOUNT								

					EATER					
TAG	MAKE	LOCATION	DIMENSIONS	Kw	AMPS	V/PH/Hz	HEATER CONTROL	MODEL	TYPE	REMARKS
(N)EDH-1 GR	REENHECK	SEE PLAN	10Wx6Dx10H	2	9.615	208/1/60	SCR	IDH	SLIP IN	-
NOTES:										

1) INSTALL ELECTRIC DUCT HEATER AS PER MANUFACTURER RECOMMENDATIONS.

2) COLOR AND FINISH TO BE REVIEWED AND APPROVED BY THE ARCHITECT.

3) INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.

2) PROVIDE T-STAT ANS WIRE BACK TO DUCT HEATER.

3) PROVIDE SCR CONTROL, DISCONNECT SWITCH, VAPOR BARRIER, DUST TIGHT BOX, AUTOMATIC THERMAL CUTOUT, AIR FLOW SWITCH & FAN INTERLOCK SWITCH.

)	SCALE	MECHANICAL SCHEDULES
_	N.T.S.	MILOTANICAL SCHILDULLS

	VENTILATION CALCULATION SCHEDULE														
		NUMBER OF	NUMBER OF	FINAL	CFM AS PER	2021 IMC									
ROOM NAME	AREA	PEOPLE/1000sq.ft AS PER 2021 IMC	PEOPLE 2021	NUMBER OF PEOPLE	CFM/PERSON		CALCULATED OA CFM	PROVIDED OA CFM	PROVIDED EXHAUST CFM						
H SALES	132	15	2	5	7.5	0.12	53	55	-						
H SERVICE	145	20	3	3	7.5	0.12	40	40	-						
Н	109	20	3	2	7.5	0.12	28	30	-						
STROOM	21	0	0	0	0	0	0	0	70						
GRAND TOTAL	407	-	-	10	-	-	121	125	70						
	•	•			•										

	HYDRONIC PERIMETER BASEBOARD HEATER SCHEDULE													
Sr No	HEATER TAG	HEATER LENGTH IN	Max. HEAT IN	BOILER TEMP	TUBING MATERIAL	DIMENSIONS								
31 110	HEATER TAG	FEET	Btu/Hr/LINEAR FEET	ASSUMED	TOBING WATERIAL	(LxHxD IN INCH)								
1	(E)BBH-01	5.6 (V.I.F)	4500 (V.I.F)	180°F (V.I.F)	S.A.E	S.A.E								
2	(R)BBH-02	4.0 (V.I.F)	3413 (V.I.F)	180°F (V.I.F)	S.A.E	S.A.E								
3	(N)BBH-03	5	4250	180°F	SS	3x8.5x60								
4	(N)BBH-04	5	4250	180°F	SS	3x8.5x60								
5	(N)BBH-05	2	1275	180°F	SS	3x8.5x24								
6	(N)BBH-06	3	2040	180°F	SS	3x8.5x36								
MAJO	R ASSUMPTIONS & REMA	ARKS:												
	C A E CANAE ACEVICEINI	0 0 1/1 E 1/EDIE//IN E	IELD											

- 3 GRAINGER IS THE BASIS OF DESIGN AND THE STANDARD FOR COMPARISION FOR NEW BASEBOARD HEATER SELECTION.

- PRESSURE DROP ACROSS THE SYSTEM TO BE CHECKED AGAINST THE BOILER HANDLING PRESSURE.
- 9 ANY DISCREPANCIES IN EXISTING UNIT VERIFICATION OR NEWLY SELECTED UNIT, CONTRACTOR TO INFORM THE ENGINEERS IMMEDIATELY.

1 | S.A.E - SAME AS EXISTING & V.I.F - VERIFY IN FIELD

2 EXISTING HEATER (R)BBH-02 TO BE RELOCATED AND REUSED AS SHOWN MECHANICAL FLOOR PLAN.

5 | THE BOILER TEMPERATURE ASSUMED TO BE AS 180°F FOR NEW BASEBOARD HEATER SELECTION.

6 WATER FLOW RATE ASSUMED TO BE AS 1 G.P.M FOR THE SELECTION OF NEW BASEBOARD HEATERS.

8 PROVIDE THERMOSTATIC CONTROL WITH REMOTE MOUNTED SENSOR.

CONTRACTOR TO VERIFY THE EXISTING BASEBOARD HEATER PHYSICAL CONDITION & PERFORMANCE. REPLACE IN KIND IF DAMAGED OR NOT SUITABLE FOR REUSABILITY

CONSULTANT (ENGINEER)

**NEARBY ENGINEERS** 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGINEERS.COM

PROFESSIONAL SEAL:

CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS, REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **CHATIME** CONSTRUCTION MANAGER FOR SSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

DATE ISSUE 12.06.24 CLIENT REVIEW SET

DATE | REVISION

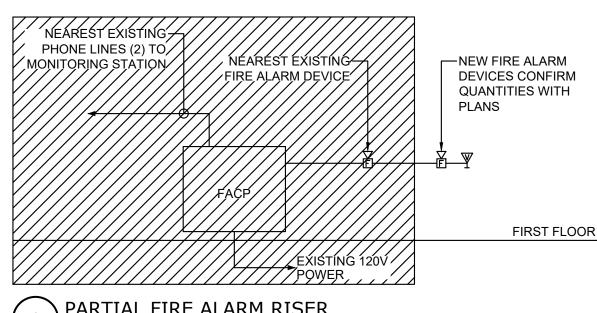
OCATION:

PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE AREA: 465 SQ. FT.

MECHANICAL FLOOR PLAN & SCHEDULES

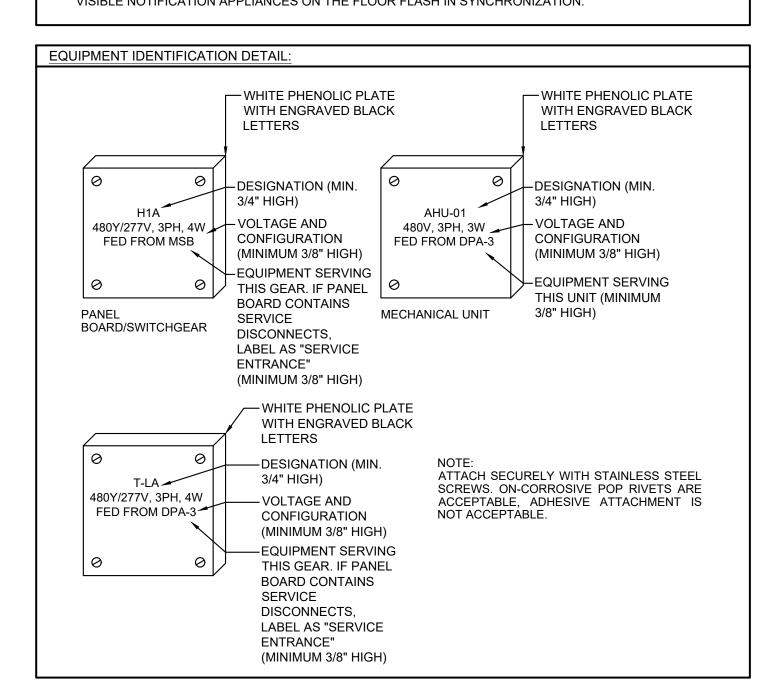
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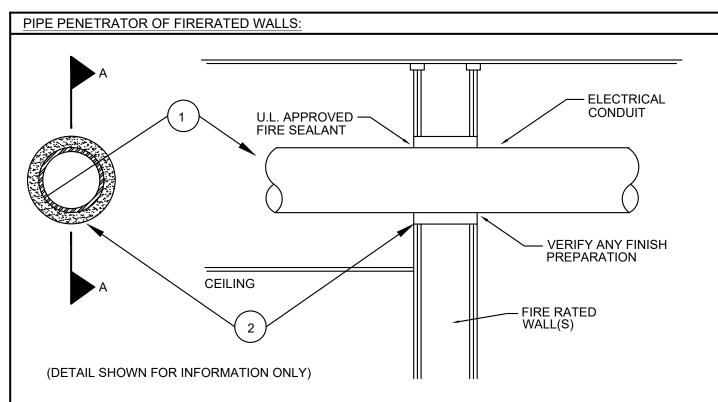


\ PARTIAL FIRE ALARM RISER

### FIRE ALARM GENERAL NOTES:

- ALL WORK TO THE FIRE ALARM SYSTEM SHALL COMPLY WITH ALL LOCAL FIRE CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF NFPA 72-2019 EDITION.
- ALL NEW FIRE ALARM DEVICES SHALL BE ADA APPROVED. COORDINATE COLOR WITH ARCHITECT AND BASE BUILDING. DEVICES TO MATCH BASE BUILDING SYSTEM MANUFACTURER. PROVIDE ANY ADDITIONAL POWER AMPLIFIERS REQUIRED FOR INSTALLATION OF NEW ADA APPROVED DEVICES.
- ALL FIRE ALARM DEVICES, INCLUDING SPEAKERS, VISUALS, SMOKE DETECTORS, ETC... SHALL BE CONNECTED TO THE BASE BUILDING FIRE ALARM SYSTEM BY A LICENSED FIRE ALARM CONTRACTOR. COORDINATE CONNECTIONS WITH SYSTEM MANUFACTURER.
- 4. ALL DEVICES SHALL BE 110 CANDELA, UNLESS OTHERWISE NOTED
- THE ENTIRE LENS OF WALL MOUNTED VISUAL FIRE ALARM DEVICES SHALL BE MOUNTED AT LEAST 80"
- COORDINATE FIRE ALARM SYSTEM SHUTDOWNS AND REPROGRAMMING WITH LANDLORD.
- ALL FIRE ALARM DEVICES SHALL BE WHITE UNLESS OTHERWISE NOTED OR REQUIRED.
- 8. EVACUATION SIGNAL SHALL BE 3 PULSE TEMPORAL
- THE FIRE ALARM SYSTEM APPLIANCE LAYOUT INDICATED ON SHEET E-3.0 INDICATES NEW DEVICE PLACEMENT REQUIREMENTS FOR THIS TENANT UPFIT. NEW DEVICES SHALL BE INSTALLED INTO THE BASE BUILDING FIRE ALARM SYSTEM. PROVIDE ALL PROGRAMMING REQUIRED TO MAKE THE NEW DEVICES FUNCTIONAL AND ANY PROGRAMMING OR NEW EQUIPMENT REQUIRED TO MAKE ALL OF THE VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR FLASH IN SYNCHRONIZATION.





- THROUGH PENETRANTS ONE METALLIC PIPE. CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. TH FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
  - A. STEEL PIPE NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
- B. CONDUIT NOM 4 IN. DIAM. (OR SMALLER) ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.
- C. COPPER TUBING NOM 4 IN. DIAM. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
- D. COPPER PIPE NOM 4 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- . FILL, VOID OR CAVITY MATERIAL SHALL BE OF NO LESS QUALITY THAN HILTI CONSTRUCTION CHEMICALS, INC #FS601 SEALANT BEARING THE U.L. CLASSIFICATION MARKING. SEALANT SHALL BE APPLIED A MINIMUM OF 5/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.

### **ELECTRICAL GENERAL NOTES:**

LARGER IF NOTED.

- DRAWINGS ARE SCHEMATIC IN NATURE AND MAY NOT BE DRAWN EXACTLY TO SCALE. CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXACT ROUTING OF ALL SERVICES WITH EXISTING CONDITIONS AND WITH ALL OTHER TRADES.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES AND EXACT LOCATION OF ALL FIXTURES. VERIFY CEILING TYPES WITH ARCHITECT PRIOR TO ORDERING LIGHT FIXTURES TO ENSURE COMPATIBLE FIXTURE TRIMS AND MOUNTING HARDWARE.
- ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL AND STATE CODES.
- ). ALL CIRCUITS SHALL INCLUDE A GREEN GROUND CONDUCTOR SIZED IN ACCORDANCE WITH 250-95, OR
- ALL PENETRATIONS OF FIRE RATED PARTITIONS DUE TO THE INSTALLATION OF ELECTRICAL SYSTEMS SHALL BE SEALED TO MAINTAIN THE FIRE RATING OF THE WALL.
- ALL CONDUITS EXPOSED TO PUBLIC VIEW SHALL BE PAINTED. VERIFY COLOR WITH OWNER AND

NO MORE THAN (9) CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED IN ANY CONDUIT.

- 3. CONTRACTOR SHALL CONNECT ALL LIGHTS AND POWER FOR ALL OWNER FURNISHED CASEWORK.
- REFER TO OWNER'S FURNITURE AND FIXTURE LAYOUT FOR EXACT HEIGHTS AND LOCATIONS.
- ALL CONDUIT PENETRATIONS OF THE ROOF SHALL OCCUR WITHIN THE MECHANICAL CURBS, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE.
- NO CONDUIT SHALL BE ROUTED IN ANY PARTITION WITH A TILE FINISH
- UNDERGROUND PVC CONDUITS SHALL CONVERT TO RIGID GALVANIZED STEEL ELBOW AND CONTINUE AS RIGID GALVANIZED STEEL CONDUIT UNTIL EMERGENCE FROM SLAB OR CONCRETE ENCASEMENT. PROVIDE THREADED CAPS AT BOTH ENDS OF SPARE OR UNUSED CONDUITS. EXCEPTION: ALL PARTS OF UNDERGROUND LIGHTING BRANCH CIRCUIT CONDUITS MAY BE PVC WITH
- ALL WALL LIGHT SWITCHES SHALL BE RATED AT 20A. ALL DEDICATED RECEPTACLES SHALL BE RATED
- M. ALL JUNCTION BOXES MOUNTED ABOVE CEILING SHALL BE MOUNTED 1'-0" AFC.
- I.  $\,$  ALL EXIT/EMERGENCY SHALL BE ON SAME BRANCH CIRCUIT AS THAT SERVING NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY SWITCH, UNLESS NOTED OTHERWISE.
- O. ALL WIRING TO BE 2#12, 1#12, 3/4"C UNLESS NOTED OTHERWISE. CONTRACTOR SHALL USE #10 WIRING FOR OVER 100FT (10AMPS)
- EXIT SIGNS AND EMERGENCY EGRESS LIGHTS MUST BE APPROVED BY FIELD INSPECTOR. ADDITIONAL
- FIXTURES MAY BE REQUIRED BY FIELD INSPECTOR.
- ). REFER TO MECHANICAL DRAWINGS AND COORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF MECHANICAL EQUIPMENT.
- REFER TO PLUMBING DRAWINGS AND COORDINATE WITH PLUMBING CONTRACTOR FOR THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF PLUMBING EQUIPMENT.
- ALL RECEPTACLES IN BATHROOM AND KITCHEN SHALL BE GFI RATED.
- ALL RECEPTACLES ON ROOF AND EXTERIOR SHALL BE WEATHERPROOF AND GFI RATED.
- REFER TO OWNER EQUIPMENT MANUALS AND COORDINATE WITH SUPPLIER FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF EQUIPMENT.

### SEQUENCE OF OPERATION:

- UPON CHANGE IN STATUS OF ANY DEVICE ON THE SYSTEM, THE FIRE ALARM CONTROL PANEL SHALI ACTIVATE AUDIBLE AND VISIBLE CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND MESSAGE ASSOCIATED WITH THE POINT.
- ACTIVATION OF ANY MANUAL STATION, KITCHEN HOOD EXTINGUISHING SYSTEM, WATERFLOW DEVICE SMOKE DETECTOR, HEAT DETECTOR, SUPERVISORY DEVICE OR OTHER INITIATING DEVICE WILL CAUSE THE FOLLOWING FUNCTIONS TO OCCUR:
- MANUAL STATION OPERATION SHALL:
- a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
- b. TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
- c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
- d. RELEASE THE DOOR LOCKING SYSTEM.
- WATERFLOW SWITCH OPERATION SHALL
- ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM P NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.

TIME CLOCK

LIGHTING CONTACTORS

FIRE ALARM ADA APPROVED VISUAL ALARM - WALL MOUNTED

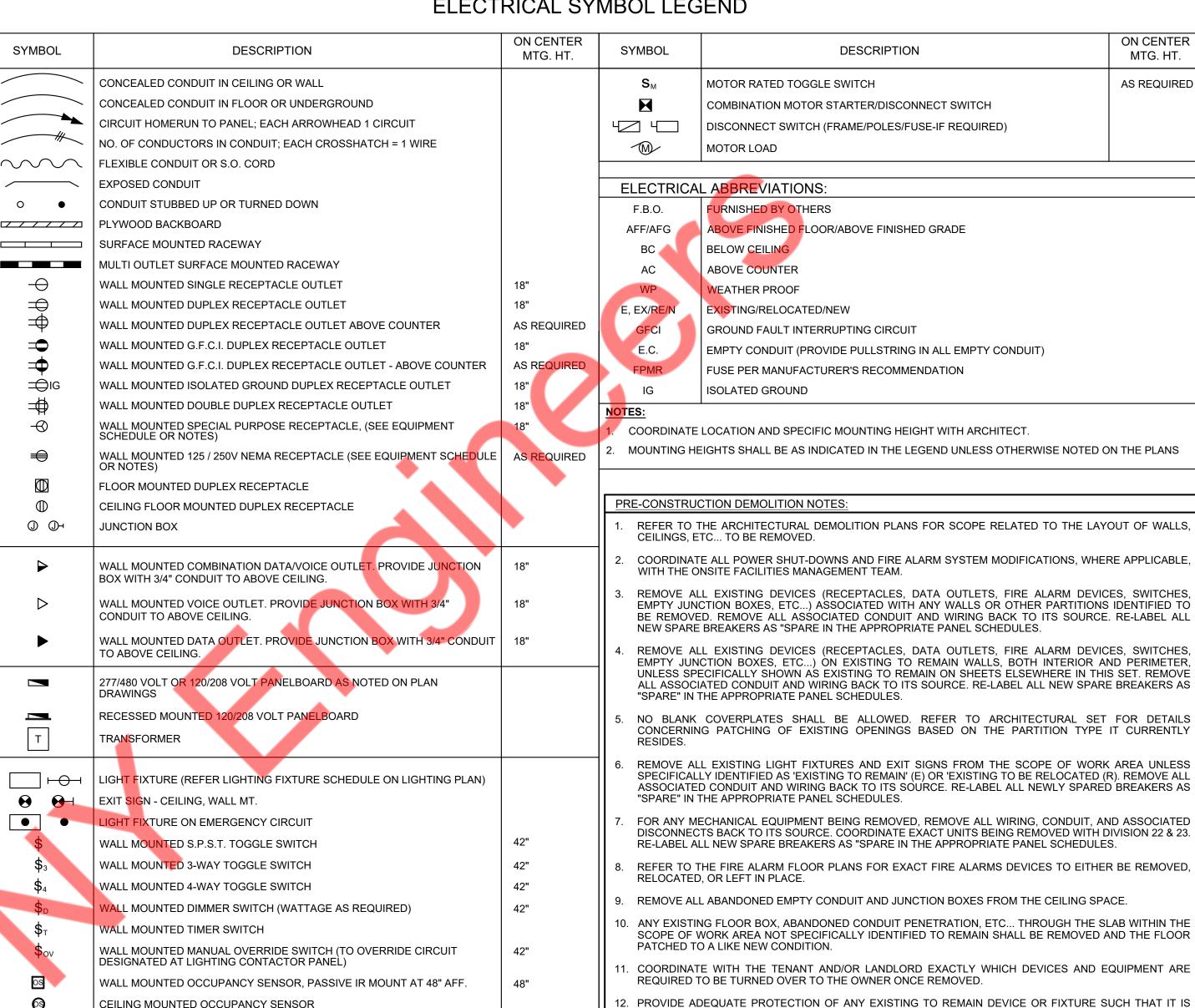
DAYLIGHT SENSOR

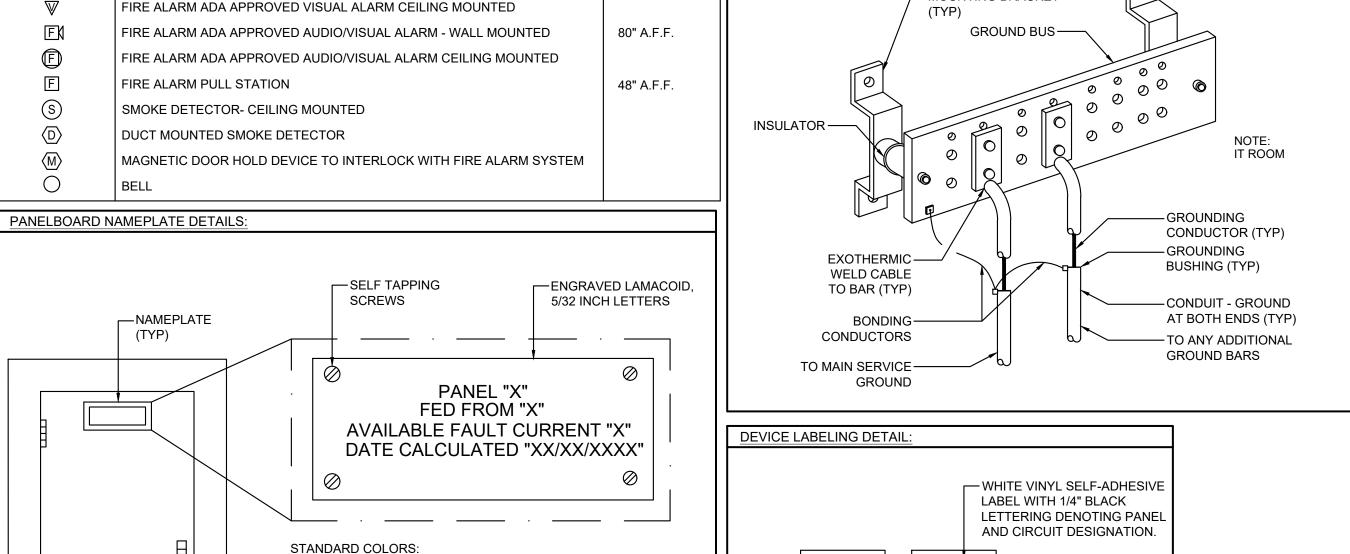
- TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
- c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
- SMOKE DETECTOR OR HEAT DETECTOR OPERATION SHALL:
  - a. ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL
- b. TRANSMIT AN ALARM SIGNAL TO A UL LISTED SIGNAL STATION.
- c. ACTIVATE THE AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES ON THE FLOOR.
- d. SHUT DOWN AHU'S.
- DUCT SMOKE DETECTOR ACTIVATION SHALL:
- ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
- TRANSMIT SUPERVISORY SIGNAL TO A UL LISTED SIGNAL STATION.
- c. SHUT DOWN AHU'S

UL LISTED CENTRAL STATION

- SUPERVISORY DEVICE ACTIVATION, INCLUDING VALVE SUPERVISORY DEVICES SHALL:
- ACTIVATE AUDIBLE AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER. POINT DESCRIPTION. AND ANY MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.
- TRANSMIT SUPERVISORY SIGNAL TO A UL LISTED SIGNAL STATION, THIS SIGNAL SHALL BE DISTINCTLY DIFFERENT THAN A TROUBLE SIGNAL.
- REMOVAL OF ANY DEVICE, WIRING DISARRANGEMENT, OR SYSTEM COMPONENT FAILURE SHALL DISPLAY ON THE OPERATOR TERMINAL, THE CHANGE OF STATUS, TIME, DATE, POINT DESCRIPTION ON A POINT BY POINT BASIS, AND THE MESSAGE ASSOCIATED WITH THE POINT AND TRANSMIT A TROUBLE SIGNAL TO A

# ELECTRICAL SYMBOL LEGEND





1. NORMAL POWER - BLACK BACKGROUND, WHITE LETTERS.

LETTERS TO BE NO LESS THAN 1 INCH IN HEIGHT.

INCLUDE THE DATE OF THE CALCULATION.

2. ENGRAVED NAMEPLATES ARE REQUIRED ON ALL

3. IN LIEU OF THE MAXIMUM AVAILABLE FAULT CURRENT

PANELBOARDS, AND MOTOR CONTROL CENTERS. LABEL

SHALL INCLUDE PANEL NAME, AVAILABLE FAULT CURRENT

MARKING AS REQUIRED BY 110.24, A PERMANENTLY AFFIXED

LABEL SHALL BE APPLIED WITH THE FAULT CURRENT AT THE

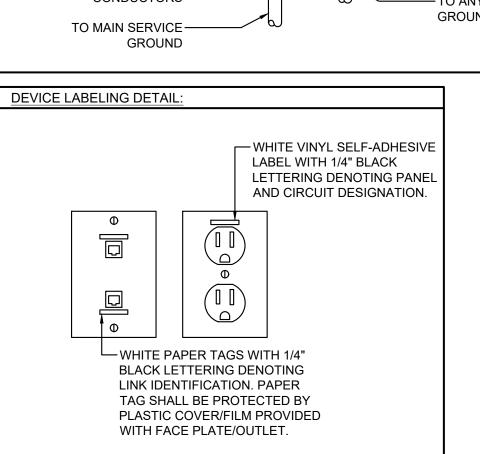
TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL

BE 2"X3" IN SIZE AND SHALL BE BLUE LETTERING ON A

CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO

RATING AND 'FED FROM' INFORMATION PER THIS DETAIL.

80" A.F.F.



NOT DAMAGED DURING THE CONSTRUCTION PROCESS.

—MOUNTING BRACKET

IT COMMUNICATION GROUND BUS DETAIL

CONSULTANT (ENGINEER) **NEARBY ENGINEERS** 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179

ON CENTER

MTG. HT.

AS REQUIRED

PROFESSIONAL SEAL:

PH-914.257.3455

WWW.NY-ENGINEERS.COM

CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE HE DRAWINGS. THE CONTRACTORS MUST ISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY CHATIME CONSTRUCTION MANAGER FOR SSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

	DATE	1330L
	12.06.24	CLIENT REVIEW SET

ICCLIE

DATE

REVISION DATE

.OCATION:

PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE AREA: 465 SQ. FT.

**ELECTRICAL** SYMBOL LIST **ABBREVIATIONS & GENERAL NOTES** SHEET NUMBER:

### <u>I. GENERAL REQUIREMENTS</u>

- 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.
- 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.
- 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.
- SCOPE: FURNISH LABOR, MATERIALS, TOOLS, EQUIPMENT, ETC., REQUIRED FOR A COMPLETE INSTALLATION OF ELECTRICAL SYSTEMS AND WORK, IN ACCORDANCE WITH LOCAL CODES AND GOVERNING BODIES HAVING JURISDICTION, AS SHOWN ON DRAWINGS, AND AS SPECIFIED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- A. NEW SERVICE -- TENANT'S CONTRACTOR IS TO REUSE EXISTING ELECTRICAL SERVICE OR CONDUIT ONLY; FURNISH AND INSTALL NEW ELECTRICAL SERVICE WIRE AND EXTEND BOTH CONDUIT AND WIRE TO POINT OF ALL NEW PANELS, TRANSFORMERS, WIREWAYS, TROUGHS, TIME CLOCKS, ETC.. SINCE SPACE MAY OR MAY NOT BE MEASURED OR REVIEWED BY TENANT'S ARCHITECT. THE ACTUAL LOCATION OF SERVICE AND PANEL LOCATIONS MAY NOT BE KNOWN. THE ELECTRICAL SUBCONTRACTOR, IN REVIEW OF THE PREMISES, IS REQUIRED TO INSTALL PANELS IN LOCATION AS NOTED ON DRAWINGS AND MUST INCLUDE IN HIS BID ANY EXTENSION OF CONDUIT AND WIRE, NEW DISCONNECTS, RELOCATION OR INSTALLATION OF PANELS, TROUGHS, WIREWAYS, ETC. TO MAKE THE SYSTEM WHOLE AND TO UPGRADE AS NECESSARY TO MEET CODE REQUIREMENTS. INSTALL NEW SERVICE INCLUDING CONDUIT AND WIRE FROM DEMISED PREMISES TO LANDLORD'S ELECTRICAL ROOM IF THE EXISTING SERVICE NEEDS TO BE UPGRADED FROM WHAT TENANT WAS ORIGINALLY TOLD SERVICE WOULD BE, OR THE SERVICE NEEDS TO BE MOVED BECAUSE IT'S EITHER SHOWN TO BE MOVED OR IS EXISTING NOW IN THE PATH OF FUTURE PARTITION OR OTHER SERVICES.
- B. EXISTING SERVICE -- TENANT'S CONTRACTOR IS TO REUSE EXISTING ELECTRICAL SERVICE WIRE, CONDUIT AND ELECTRICAL EQUIPMENT; CUT AND EXTEND TO POINT OF NEW ELECTRICAL EQUIPMENT. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS REUSED TO BE BROUGHT UP TO "LIKE NEW" CONDITION AND THE LATEST N.E.C. STANDARD. SINCE SPACE MAY OR MAY NOT BE MEASURED OR REVIEWED BY TENANT'S ARCHITECT, THE ACTUAL LOCATION OF SERVICE AND PANEL LOCATIONS MAY NOT BE KNOWN. THE ELECTRICAL SUBCONTRACTOR, IN REVIEW OF THE PREMISES IS REQUIRED TO INSTALL PANELS IN LOCATION AS NOTED ON DRAWINGS AND MUST INCLUDE IN HIS BID ANY EXTENSION OF CONDUIT AND WIRE, NEW DISCONNECTS, RELOCATION OR INSTALLATION OF PANELS, TROUGHS, WIREWAYS, ETC. TO MAKE SYSTEM WHOLE AND TO UPGRADE AS NECESSARY TO MEET CODE REQUIREMENTS. INSTALL NEW SERVICE INCLUDING CONDUIT AND WIRE FROM DEMISED PREMISES TO LANDLORD'S ELECTRICAL ROOM IF THE EXISTING SERVICE NEEDS TO BE UPGRADED FROM WHAT TENANT WAS ORIGINALLY TOLD SERVICE WOULD BE. OR THE SERVICE NEEDS TO BE MOVED BECAUSE IT'S EITHER SHOWN TO BE MOVED OR IS EXISTING NOW IN THE PATH OF FUTURE PARTITION OR OTHER SERVICES. IF SERVICE IS ADEQUATE BUT MUST BE RELOCATED, CUT AND EXTEND EXISTING WIRE AND CONDUIT TO POINT OF ALL NEW PANELS, DISCONNECTS, TROUGHS, TIME CLOCKS, ETC.
- C. POWER DISTRIBUTION SYSTEMS AND TRANSFORMER
- D. LIGHTING SYSTEMS (ALSO SEE REFLECTED CEILING PLAN).
- E. ELECTRICAL ENERGIZING -- MISCELLANEOUS FAN AND MOTOR.
- F. MOTOR POWER WIRING SYSTEM.
- G. TELEPHONE EMPTY CONDUIT SYSTEM (INCLUDING TERMINAL BOXES AND OUTLETS).
- H. CONVENIENCE RECEPTACLE SYSTEM, DOOR ALARM/ ENTRY SYSTEM/ SECURITY.
- I. SOUND SYSTEM, INTERCOM SYSTEM -- FURNISHED AND INSTALLED BY THIS CONTRACTOR IF REQUIRED BY CLIENT; EMERGENCY LIGHT SYSTEM AND BATTERIES FURNISHED BY CLIENT AND INSTALLED BY THIS
- J. GROUNDING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND ALL MALL REQUIREMENTS.
- K. NIGHT LIGHT CIRCUITING THROUGHOUT PREMISES AS PER CODE WHETHER SHOWN OR NOT ON DRAWINGS.
- L. LOCK OUTS FOR EXIT / EMERGENCY LIGHTING, ALARM SYSTEMS, CASH REGISTERS, GRILLE AT ENTRY (IF APPLICABLE) AS REQUIRED. SEE PANEL SCHEDULE FOR CIRCUITS.
- M. SMOKE DETECTORS FURNISHED AND INSTALLED WITHIN STORE TO INCLUDE LOCATIONS AND INTERNAL / EXTERNAL WIRING IF REQUIRED BY LANDLORD OR FIRE MARSHAL
- N. ELECTRICAL SUBCONTRACTOR, WHEN BIDDING THIS WORK, TO CHECK TO MAKE SURE THAT SERVICE WIRE. CONDUIT, DISCONNECTS, ETC., ARE ADEQUATE FOR TENANT'S NEEDS. IF ADDITIONAL SERVICE IS REQUIRED. INCLUDE NEW CONDUIT AND SERVICE FEED OR DISCONNECTS, METER BASE AND METER (IF APPLICABLE), ETC., TO BRING SUCH SERVICE UP TO TENANT'S NEEDS.
- O. FURNISH AND INSTALL ALL CONDUIT AND WIRING, DISCONNECTS, BREAKERS, BALANCING OF LOADS, ETC. FOR HOOKUP OF ALL H.V.A.C. EQUIPMENT, UNIT(S), OR INLINE HEATERS WHETHER SUCH HEATERS OR EQUIPMENT UNITS ARE SHOWN OR NOT.
- P. FURNISH AND INSTALL A TWENTY FOUR (24) HOUR, SEVEN (7) DAY TIME CLOCK INCLUDING ALL INTEGRAL WIRING AND LOAD BALANCING (PANEL) FOR CONTROLLING THE STOREFRONT SIGN AND SHOW WINDOW LIGHTING, WHETHER SUCH WORK IS OR IS NOT SHOWN ON PLANS / OR SPECIFICATIONS.
- Q. ALL ELECTRICAL ROUGH-IN TO BE NEW AND THE ORIGINAL SERVICES TO THE DEMISED PREMISES TO BE REUSED; CUT AND EXTEND TO POINT OF ALL NEW ELECTRICAL EQUIPMENT (IF ANY EQUIPMENT IS REUSED UPGRADE SAME TO "LIKE NEW" CONDITION AND THE LATEST N.E.C. STANDARDS) BY THE TENANT'S CONTRACTOR UNLESS NOTED OTHERWISE ON DRAWINGS. TENANT'S GENERAL CONTRACTOR TO FIELD VERIFY THAT ALL UTILITY LINES ARE AT OR ADJACENT TO TENANT'S SPACE AS NOTED AND AT THE SIZE SPECIFIED. IF THE UTILITIES ARE NOT IN LOCATIONS AS NOTED ON THE DRAWINGS OR OF A SIZE LARGER OR SMALLER THAN NOTED, THIS CONTRACTOR IS TO NOTIFY THE TENANT'S ARCHITECT IMMEDIATELY.
- R. THE TENANT'S ELECTRICAL SUBCONTRACTOR IS TO PROVIDE A NEW CIRCUIT DIRECTORY(IES) WITH PROPER PHASING AND BALANCING, WHICH IS TO CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND UNDERWRITER'S CODE.
- S. THE SIGN(S) JUNCTION BOX PERMIT IS TO BE INCLUDED IN THE WORK FOR THE ELECTRICAL SUBCONTRACTOR AND THE BOX IS TO BE SUPPLIED BY THIS CONTRACTOR AND PROPERLY LABELED.
- T. FURNISH AND INSTALL NEW (OR REFURBISH IF EXISTING) TOILET EXHAUST WITH ASSOCIATED DUCTWORK, ROOF PENETRATIONS, OR HOOK UP TO COMMON EXHAUST DUCT WITH BACKDRAFT DAMPER ETC., INCLUDING ASSOCIATED ELECTRICAL HOOKUP AND PANEL CONNECTIONS, WHETHER SUCH WORK IS SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.
- U. IF A SMOKE EVACUATION AND / OR DETECTION SYSTEM OCCURS FOR THIS SPACE, IT SHALL BE LEFT INTACT DURING CONSTRUCTION AND ANY NEW WORK, MODIFICATIONS AND/ OR REWIRING TO BE COMPLETED DURING CONSTRUCTION PHASE TO POINT OF NEW PANELS, WHETHER SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.
- V. ENGINEER, FURNISH AND INSTALL ANY AND ALL REQUIRED SMOKE EVACUATION, SMOKE DETECTION AND FIRE ALARM SYSTEMS, INCLUDING ANY AND ALL PARTS AND LABOR, TO MEET LOCAL CODE, LANDLORD REQUIREMENTS AND FIRE MARSHAL SPECIFICATIONS WHETHER SHOWN OR NOT SHOWN ON PLANS AND SPECIFICATIONS.
- W. THE ELECTRICAL SUBCONTRACTOR TO COORDINATE WITH OTHER ENGINEERING DRAWINGS AND INCLUDE COSTS (LABOR AND MATERIALS) NECESSARY FOR OTHER ELECTRICAL EQUIPMENT / FIXTURES NOT SHOWN ON THESE ELECTRICAL DRAWINGS. BUT SHOWN ON OTHER ENGINEERING DRAWINGS.

- 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.
- SUBSTITUTIONS: CATALOG AND MANUFACTURER'S NUMBERS IN THIS SECTION AND ON THE DRAWINGS ARE FOR HE PURPOSE OF ESTABLISHING STANDARDS OF QUALITY AND TYPE OF MATERIALS TO BE USED. PRODUCTS OR OTHER MANUFACTURERS MAY BE USED IF SIMILAR AND EQUAL IN QUALITY AND DESIGN IN THE OPINION OF THE OWNER OR OWNER'S ARCHITECT AND ARE SPECIFICALLY APPROVED BY THE OWNER OR OWNER'S ARCHITECT, IN WRITING, PRIOR TO CLOSE OF BIDDING. REQUESTS FOR APPROVAL OF SUBSTITUTIONS SHALL BE IN WRITING, AND SHALL INCLUDE REPORTS OF TESTS, PERFORMANCE DATA OR OTHER PROOF OF EQUALITY TO THE ITEM
- SHOP DRAWINGS: PRIOR TO THE COMMENCEMENT OF WORK, SUBMIT ONE (1) SET OF THE FOLLOWING ITEMS TO THE OWNER'S ARCHITECT IN THE FORM OF SHOP DRAWINGS, DETAILS OR CATALOG CUTS FOR THE RECORD: LIGHTING AND POWER PANELS. WIRING DEVICES, SAFETY SWITCHES, TRANSFORMER, TIME CLOCKS AND ANY OTHER ITEMS AS REQUESTED BY THE OWNER OR THE OWNER'S ARCHITECT.

- A. USE EXPERIENCED, WELL-QUALIFIED CRAFTSMEN, IN GOOD STANDING WITH THEIR RESPECTIVE LABOR
- B. USE CAPABLE AND EXPERIENCED SUPERINTENDENTS, AUTHORIZED BY THE CONTRACTOR TO INSTRUCT WORK, MAKE JOB DECISIONS AND ACT FOR THE CONTRACTOR IN ALL MATTERS PERTAINING TO THE CONTRACT.
- 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
- D. COMPLY WITH RULES AND REGULATIONS OF JURISDICTIONAL AUTHORITIES AND MALL OR LEASE SPECIFICATIONS AND REPORT ANY DEVIATIONS ON DRAWINGS TO OWNER.
- 12. CODES, RULES AND REGULATIONS: INCLUDE IN ELECTRICAL BID ANY ADDITIONAL MATERIALS AND LABOR, THAT MAY BE REQUIRED FOR COMPLIANCE WITH ALL GOVERNING LAWS, RULES AND REGULATIONS, EVEN THOUGH THE WORK IS NOT MENTIONED IN THESE SPECIFICATIONS OR SHOWN ON THE DRAWINGS. NOTHING IN THE PLANS OR SPECIFICATIONS SHALL BE DEEMED AS AUTHORITY TO VIOLATE ANY GOVERNING CODE.
- A. THE DATA GIVEN HEREIN AND ON THE DRAWINGS ARE AS EXACT AS COULD BE SECURED, BUT THEIR ABSOLUTE ACCURACY IS NOT GUARANTEED. THE SPECIFICATIONS AND DRAWINGS ARE FOR THE ASSISTANCE AND GUIDANCE OF THE CONTRACTOR. EXACT LOCATIONS, DISTANCES, LEVELS, ETC., WILL BE GOVERNED BY THE BUILDING AND THE CONTRACTOR SHALL USE THE DATA CONTAINED HEREIN WITH THIS UNDERSTANDING.
- B. THE EXACT LOCATION OF EACH AND EVERY OUTLET OF EACH WIRING SYSTEM, NOT DIMENSIONED ON THE DRAWINGS, SHALL BE AS DIRECTED BY THE OWNER, THE OWNER'S ARCHITECT OR HIS SELECTED REPRESENTATIVE.
- 14. <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.
- . GUARANTEE: FURNISH A WRITTEN CERTIFIED GUARANTEE, IN ACCEPTABLE FORM TO THE OWNER, AGAINST ANY DEFECTIVE WORKMANSHIP, MATERIAL AND OPERATING EQUIPMENT. THIS GUARANTEE SHALL BE IN FULL FORCE AND EFFECTIVE FOR A PERIOD OF ONE (1) YEAR AFTER ACCEPTANCE OF THE INSTALLATION.
- TEMPORARY ELECTRIC SERVICE: THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRICAL WIRING FOR CONSTRUCTION USE AS FOLLOWS: THE SERVICE ENTRANCE AND FEEDER SHALL BE 60 AMPS. SINGLE PHASE, 3 WIRE 120/208 VOLT FUSED MAIN DISCONNECT. THE FEEDER TO SERVE THE TEMPORARY DISTRIBUTION WIRING PROVIDING TEMPORARY LIGHTING IN ALL AREAS AS INDICATED ON DRAWINGS AND WHEREVER REQUIRED FOR THE OPERATION OF 120 VOLT SINGLE PHASE PORTABLE TOOLS AND EQUIPMENT NOT TO EXCEED 1 H.P.. THE WIRING SHOULD BE EXTENDED ALSO, SO THERE IS A 120 VOLT SINGLE PHASE OUTLET WITHIN 75 FEET OF ANY PORTION OF THE BUILDING. PROVIDE GROUND FAULT PROTECTION FOR ALL REQUIRED RECEPTACLES NOT TO BECOME A PERMANENT PART OF THE INSTALLATION.
- 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.
- 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

CORROSION RESISTANT FITTINGS.

SLABS SHALL BE IN RIGID CONDUIT.

- 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 CONNEC<mark>TION OF LIGHTI</mark>
- FIXTURES AND WIRING DEVICES TO BE INSTALLED IN HUNG CEILINGS. C. WORK INSTALLED IN METAL PARTITIONS SHALL BE RUN IN CONCEALED ELECTRIC METALLIC TUBING
- 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,
- 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
- 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.
- IN RIGID CONDUIT.

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

METALLIC TUBING. 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

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

- M. GALVAN<mark>IZED PRESS</mark>ED 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.
- HE 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.

- 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.
- 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.

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

## 6. <u>WIRES AND CABLES</u>:

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

- LIGHTING AND POWER PANELS
- A. PANELS SHALL BE CIRCUIT BREAKER TYPE INSTALLED IN CODE GAUGE GALVANIZED SHEET STEEL CABINETS FLUSH OR SURFACE MOUNTED AS INDICATED ON THE DRAWINGS. THE PANEL SECTIONS SHALL BE MOUNTED AWAY FROM THE BACK OF THE CABINETS IN SUCH A MANNER THAT THERE WILL BE NO SPACE BETWEEN THE CABINET TRIMS AND FRAMES. THE GUTTER SPACES ON ALL SIDES, TOPS AND BOTTOMS SHALL BE OF SUFFICIENT SIZE TO PREVENT OVERCROWDING OF WIRES AND CABLES AND TO PROVIDE SUFFICIENT VENTILATION TO PREVENT OVERHEATING OF THE CIRCUIT BREAKERS. EACH CABINET SHALL BE COMPLETE WITH HINGED DOORS, CYLINDER LOCK, DIRECTORY FRAME AND NEATLY TYPED DIRECTORY CHARTS. ALL PANELS SHALL BE KEYED ALIKE. INSTALL AN ANGLE PIECE ON INSIDE OF EACH TRIM FOR EASE OF INSTALLATION.
- THE BRANCH CIRCUIT BREAKERS, IN GENERAL, SHALL BE MOLDED CASE, BOLT-ON TYPE, RATED 10,000 AIC ON 120/208V, 100 AMPERE FRAME, THERMAL MAGNETIC TRIP SINGLE, TWO OR THREE POLE AS SHOWN ON THE DRAWINGS. ALL MULTIPLE POLE BREAKERS FOR PANELS WHERE INDICATED ON THE DRAWING SCHEDULES. MAIN BREAKER CHARACTERISTICS SHALL BE AS INDICATED ON THE DRAWINGS. MAIN BUSS WORK OF ALL PANELS SHALL, AS A MINIMUM, BE DESIGNED TO CARRY THE FULL RATING OF THE FEEDER SWITCH SUPPLYING PANEL, AT A CIRCUIT DENSITY OF 800 AMPERES PER SQUARE INCH OF CROSS SECTION. BUSS WORK ALL 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 FACH BREAKER IS READILY REMOVABLE FROM THE PANEL WITHOUT DISTURBING ADJACENT BREAKERS. ELECTRICAL CONTRACTOR TO PROVIDE TYPED BREAKER LIST.
- 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.
- DRY TYPE TRANSFORMERS (IF NEW IS REQUIRED):
- A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A DRY TYPE AIR COOLED INDOOR POWER TRANSFORMER, AS RATED ON THE DRAWINGS AND HEREINAFTER SPECIFIED.
- THE TRANSFORMER SHALL BE PROVIDED WITH SUITABLE VIBRATION DAMPERS. SAME TO BE PLACED BETWEEN THE CORE AND THE COILS OF THE ENCLOSURE.
- C. THE TRANSFORMER SHALL HAVE CLASS 'H' INSULATION, AND THE WIRING TEMPERATURE RISE SHALL NOT EXCEED 150 DEGREES CELSIUS UNDER FULL LOAD IN AN AMBIENT TEMPERATURE OF 40 DEGREES CELSIUS.
- D. THE TRANSFORMER ENCLOSURE SHALL BE PRIMED INSIDE AND OUT WITH A ZINC-COATED CHROMATE IRON OXIDE RUST INHIBITING PRIMER AND FINISHED ASAG1 GRAY ENAMEL.
- E. THE MAXIMUM ACCEPTABLE NOISE LEVEL SHALL NOT EXCEED THE FOLLOWING: 0 TO 150 kVA 42 dB
- 9. LIGHTING FIXTURES:
- A. ALL LIGHTING FIXTURES AND LAMPS SHALL BE SUPPLIED BY THE TENANT AND / OR TENANT'S LIGHT FIXTURE AND LAMP SUPPLIER UNLESS OTHERWISE NOTED, AND SHALL BE DELIVERED HANDLED, ASSEMBLED AND INSTALLED AT THE SITE BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE UNLOADING, STORAGE AND PROTECTION OF ALL ITEMS FOUND TO BE DEFECTIVE AND SHALL BE REPLACED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- B. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL THE NECESSARY LABOR AND MATERIALS FOR THE COMPLETE INSTALLATION OF THE LIGHTING FIXTURES AS INDICATED ON THE DRAWINGS.
- C. ALL FLUORESCENT AND INCANDESCENT LAMPS SHALL BE AS NOTED ON PLANS AND SPECIFICATIONS AND SHALL BE PROVIDED BY THE TENANT AND/OR TENANT'S LIGHT FIXTURE AND LAMP SUPPLIER AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- D. SEE ELECTRICAL DRAWING FOR LIGHTING FIXTURE DESCRIPTIONS.

## III. SPECIFIC ELECTRICAL SPECIFICATIONS

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.

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

# V. MISCELLANEOUS

- 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.

VI."GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL CHANGES TO APPLICATIONS NOT CONSISTENT WITH CONTRACT OCUMENTS IN ALL CASES, INCLUDING "SELF-CERTIFICATION" BY THE ARCHITECT."

CONSULTANT (ENGINEER)

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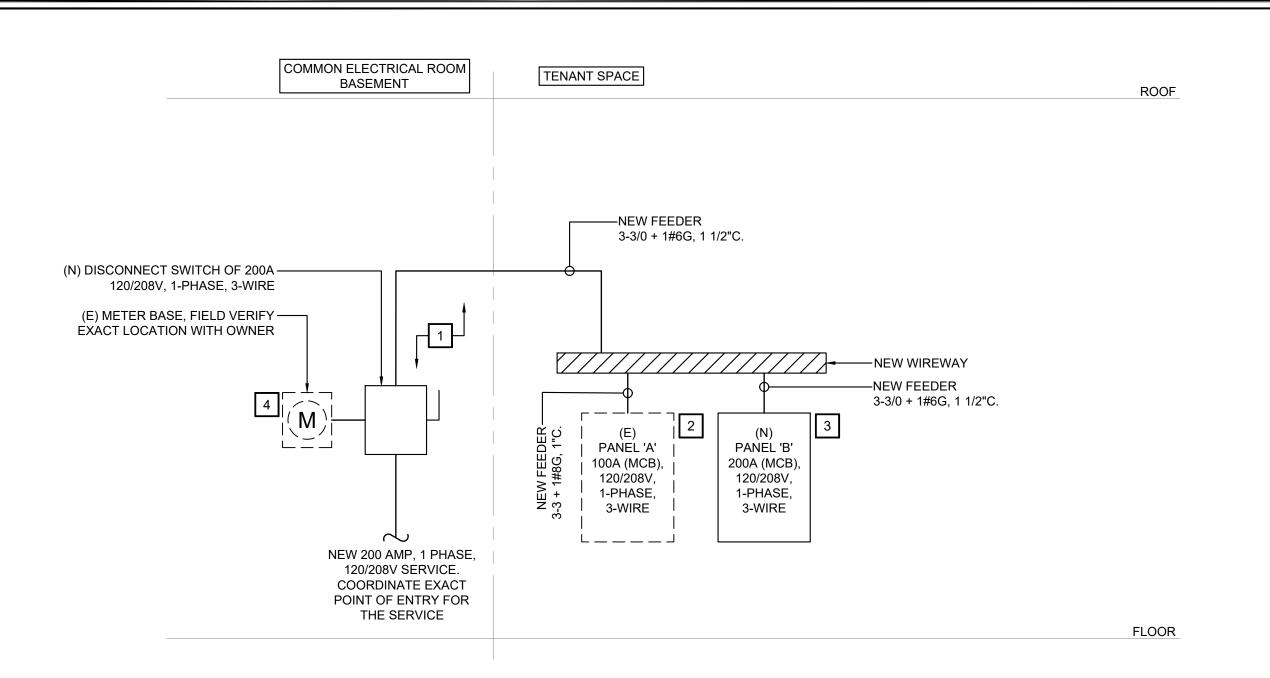
AREA: 465 SQ. FT.

DRAWN BY: NYE

**REVIEWED BY: NYE** 

**ELECTRICAL SPECIFICATIONS** SHEET

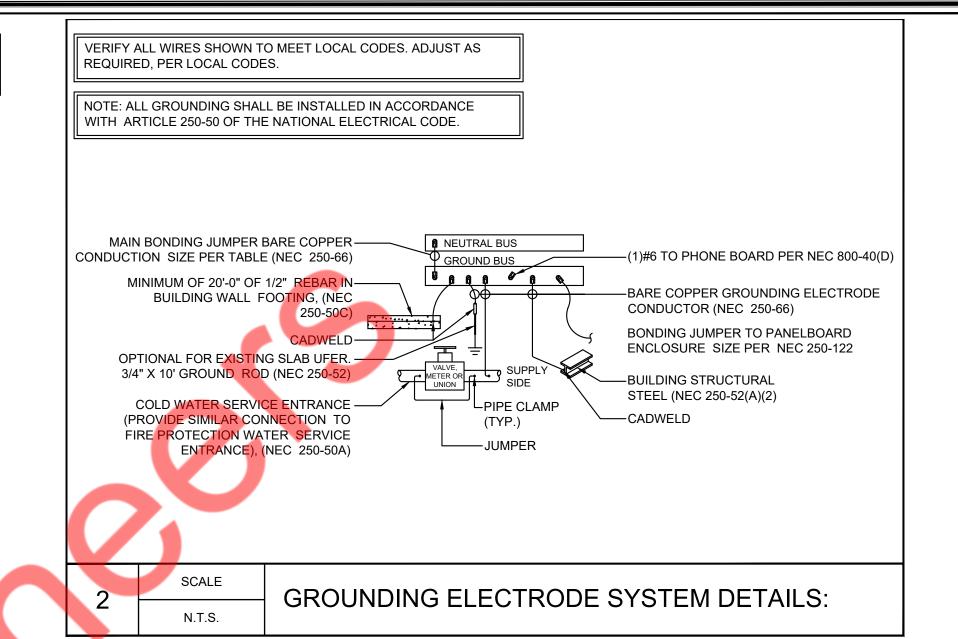
HEET NUMBER:



					EL	EC	TRI	CAL	PAN	EL SO	CHE	DUL	.E										
PANE	LBOAR	D		Α	VOLTAG	GE	208	/ 120 V	PHASE		•	1	WIRE		3								
PANE	L TYPE			MCB	MAINS			100A	BUS RAT	NG	12	:5A	AIC RATI	NG	V.I.F.	]							
NEMA	TYPE	ENCLO	SURE	1	MOUNT	ING	REC	CESSED	OPTIONS				NOTE		EXISTING PANEL								
CKT.	EQT	СКТ	DESCRI	DTION	POLE	WIRE	BKR.	TOTAL	PHASE	TOTAL	BKR.	WIRE	POLE	DES	CRIPTION	СКТ	EQT	СКТ.					
NO.	TAG	TAG	DESCRI	FIION		SIZE	SIZE	WATTS		WATTS	SIZE	SIZE		DES	CRIFTION	TAG	TAG	NO.					
1	E02	(N)	CUP SEALING	G MACHINE	1	12	20	350	Α		20		2		SPARE			2					
3	TC/c	(E)	LIGH <sup>-</sup>	TING	1	12	20	100	В		20				PRANE			4					
5	E19	(N)	BENCH MILK		1	12	20	1,300	Α	180	20	12	1	RESTROC	M GFI RECEPT	(N) (N)		6					
7	E07	(N)	BLEN		1	12	20	1,560	В	180	20	12	1					ORDER SCREEN		ORDER SCREEN			8
9	E07	(N)	BLEN	DER	1	12	20	1,560	Α	200	20	12	1		DOCKET PRINTER			10					
11	E10	(N)	INDUCTION	COOKER	2	12	20	1,300	В	360	20	12	1		POS/ TILL DRAWER			12					
13			11120011011	- COUNTER	_			1,300	Α	270	20	12	1	MEGA TOP PREP. BECH U/B FRIDGE		(N)	E12	14					
15	E01	(N)	UNDER COUNTER		1	12	20	270	В	800	20	12	1		KIOSK	(N)	E31	16					
17	E03	(N)	FRUCTOSE		1	12	20	300	Α	800	20	12	1		KIOSK	(N)	E31	18					
19			SPA	CE					В	350	20	12	1	CUP SEA	LING MACHINE	(N)	E02	20					
ALL P	HASES	TO B	E BALANCED T0 WI	THIN 7%						(E)	EXISTING	G TO REM	IAIN										
A=	6,260			WATTS						(N)	<b>NEW CIR</b>	CUIT											
B=	4,920			WATTS						GFCI	GROUND	FAULT C	URRENT I	NTERRUPTER									
	ĺ									IG	CIRCUITS	s with is	SOLATED (	GROUND									
										тс	CIRCUITS	S ON TIM	ECLOCK										
										EMS	ROUTING	TO THE	EMS PAN	EL									
ТОТА	L CONN	IECTE	D LOAD	11,180	WATTS			54	AMPS	С	BREAKER	R LOCK											
ТОТА	L DEMA	ND LC	DAD	7,649	WATTS			37	AMPS	a,b,c	SWITCHE	ES CONTI	ROLLING I	LIGHTS									

										EL S	し H	ΕU	UL					
PANE	LBOARD	)		В	VOLT	AGE	208	/ 120 V	PHASE		•	1	WIRE		3			
PANE	L TYPE			MCB	MAIN:	S		200A	BUS RATI	NG	22	25A	AIC RA	ATING	V.I.F.			
NEMA	TYPE E	NCLOS	URE		MOUN	ITING	SI	JRFACE	OPTIONS				NOTE		NEW PANEL			
CKT.	EQT	CKT	DESCRI	DTION	POLE	WIRE	BKR.	TOTAL	PHASE	TOTAL	BKR.	WIRE	POLE	DESCRIP	TION	CKT	EQT	CKT
NO.	TAG	TAG	DESCRI	PTION		SIZE	SIZE	WATTS		WATTS	SIZE	SIZE		DESCRIP	TION	TAG	TAG	NO.
1	E06A	/NI)	ICE MA	AVED		12	20	957	Α	360	20	12	1	IT RAC	CK	(N)		2
3	EUGA	(N)	ICE IVIA	ANEK	2	12	20	957	В	360	20	12	1	KITCHEN DISPL	AY SCREEN	(N)		4
5	E04	(N)	TEA BR	EWER	1	12	20	1,700	Α	360	20	12	1	KITCHEN DISPL	AY SCREEN	(N)		6
7	E04	(N)	TEA BR	REWER	1	12	20	1,700	В	1,200	20	12	1	SIGNA	GE	(N)		8
9		(N)	RAC	3-1	2	12	20	960	Α	1,200	20	12	1	SIGNA	GE	(N)		10
11		(.,,	1040			- '-		960	В	6,000	70	4	2	WATER HEATER		(N)		12
13		(E)	EDH	<del>1</del> -1	2	12	20	580	Α	6,000						,	14	
15								580	В	100	20	12	1	RCF	(N)		16	
17	TC/a,b	(N)	LIGHT		1	12	20	800	A	1,200	20	12	1	SIGNA		(N)		18
19	E33	(N)	REACH IN RE		1	12	20	260	В	1,600	20	12	1	SHOW WINDOW		(N)		20
21		(N)	TEF		1	12	20	180	A	180	20	12	1	ACCU_GFI_RE		(N)		22
23		(N)	OAF		1	12	20	180	В	80	20	12	1	MOTORISED		(N)		24
25 27			SPA SPA		1 1		20		A B		20		1	SPAR SPAR				26 28
29			SPA		+ +		20		A		20		1	SPAR				30
	HASES	TO BE F	BALANCED TO WIT		'		20		<b>A</b>	/E)	EXIST	ING TO	) REMA					1 30
A=	14,477	IO DE I	DALANOLD TO WIT	WATTS						` '	NEW (			AllY		1		
д- В=	•			WATTS						` '	·			IDDENT INTERDURTE				
<b>D</b> -	13,977			WAIIS										JRRENT INTERRUPTER				
														OLATED GROUND				
														CLOCK				
										EMS	ROUT	ING TO	THE F	EMS PANEL				
TOTA	L CONN	ECTED I	LOAD	28,454	WAT1	rs		137	AMPS	С	BREA	KER LO	ock 1					
TOTA	L DEMA	ND LOA	D	28,003	WAT1	rs		135	AMPS	a.b.c	SWIT	CHES (	CONTR	OLLING LIGHTS				

		ELECTRICAL LO	AD S	UMN	<b>MARY</b>	
	DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
	LIGHTING- 120V	0.9	120	1	1.25	1.1
	RECEPTACLES	2.4	120	1	>10kW=10+[0.5*(kW-10)]	2.4
	INTERIOR SIGN	3.6	120	1	1.25	4.5
	S/W OUTLETS	1.6	120	1	1.25	2.0
	EXH. FANS	0.2	120	1	1.00	0.2
	DUCT HEATER	1.2	208	1	1.00	1.2
	RAC	1.9	208	1	1.00	1.9
₹	KITCHEN EQUIPMENT	15.7	120	1	0.65	10.2
	FRESH AIR FAN	0.2	120	1	1.00	0.2
	HOT WATER HEATER	12.0	208	1	1.00	12.0
	TOTALS	39.6				35.7
	* USE GREATER VALUE OF THE T  ** 125% OF THE LARGEST MOTOF  *** N.E.C. ARTICLE 220-12 REQUIR  MINUS ACTUAL SHOW WINDO  N.E.C. DEMAND kVA x 1,000  SYSTEM VOLTAGE x 1.000	R OR COMPRESSOR IN SYSTE EMENT (200 VA PER FOOT O	F SHOW	WINDOW	-	
	35.7 x 1000 = 35,655 208 x 1.000 = 206	-	I AMPS	USE (NE	W) 200AMP SERVICE	



LEGEND:

---- EXISTING

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

# KEYED NOTES: [#]

- ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/LANDLORD/OWNER FOR EXACT POWER DISTRIBUTION PRIOR TO COMMENCING ANY WORK. INFORM ENGINEER ON RECORD FOR ANY DISCREPANCIES. BASE BID ACCORDINGLY.
- EXISTING 100A (MCB), 120/208V, 1 PHASE, 3-WIRE ELECTRICAL PANEL 'A'. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE OPERABLE CONDITION. PROVIDE NEW IF FOUND INOPERABLE.
- NEW 200A (MCB), 120/208V, 1 PHASE, 3-WIRE ELECTRICAL PANEL 'B'. ELECTRICAL CONTRACTOR SHALL VERIFY IN FIELD THE EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH IN.
- 4 ELECTRICAL CONTRACTOR TO FIELD VERIFY THE OPERABLE CONDITION OF THE EXISTING ENERGY METER IF FOUND INOPERABLE PROVIDE NEW ENERGY METER IN COORDINATION WITH LANDLORD/UTILITY. BASE BID ACCORDINGLY.

## VERIFY THE FOLLOWING PRIOR TO BID/ PRICING:

- EXISTING CONDUIT AND FEEDERS SIZE BETWEEN TENANT SPACE AND LANDLORD SWITCHBOARD.
- EXISTING MAIN SERVICE DISCONNECT RATING.
  EXISTING METER.
- IF THE EXISTING SERVICE DISCONNECT AND FEEDERS ARE RATED FOR LESS THAN THE RATING SHOWN ON THIS RISER. NOTIFY
  THE PROJECT MANAGER AND ENGINEER IMMEDIATELY PRIOR TO SUBMITTING BID/ PRICING PACKAGE SO DRAWINGS CAN BE
  REVISED AND UPDATED ACCORDINGLY

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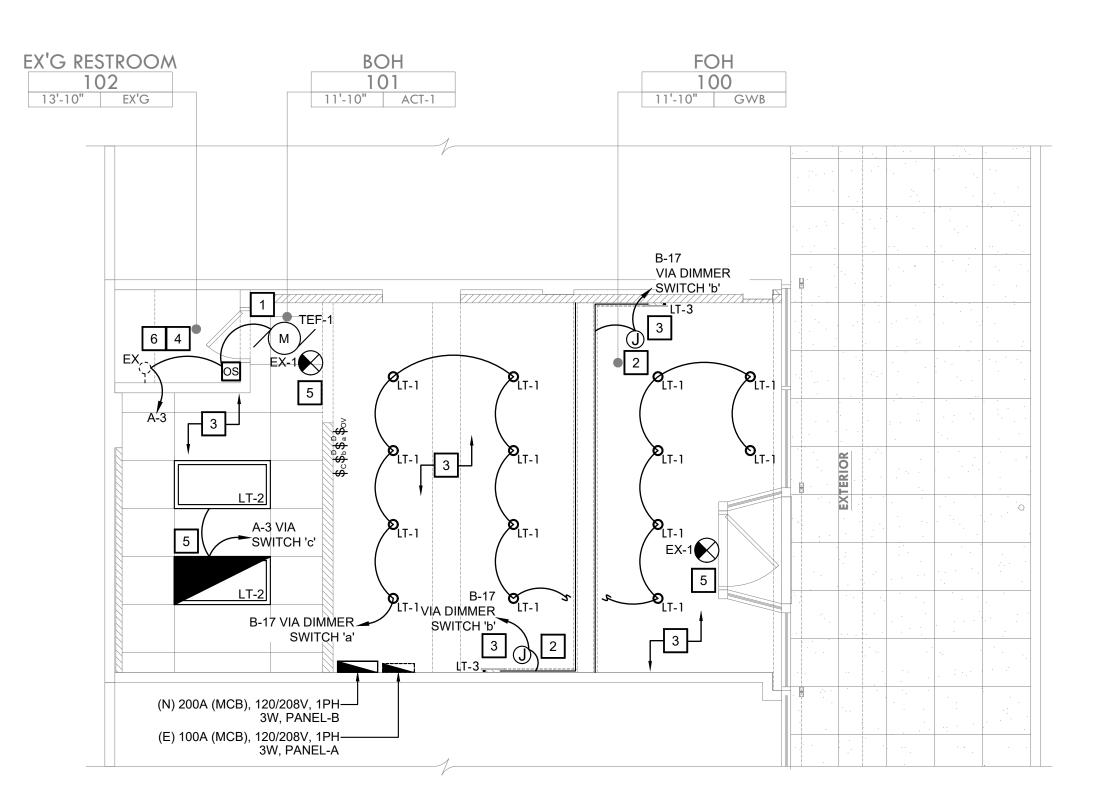
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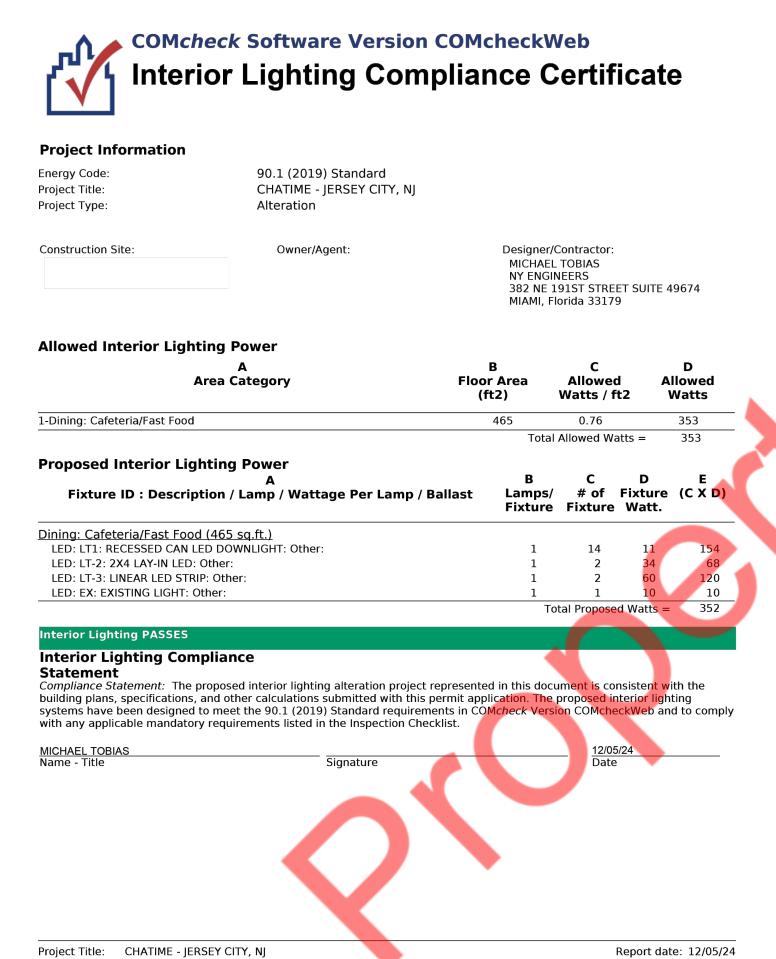
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ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES

 $\Gamma \wedge \Lambda$ 





- A. LIGHTING SHALL BE CIRCUITED EXACTLY AS SHOWN ON PLANS.
- B. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION AND QUANTITY OF LIGHTING FIXTURES.
- C. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST NATIONAL ELECTRIC CODE AND ALL LOCAL CODES UNSWITCHED AHEAD OF ALL LIGHTING CONTROLS. ALL EMERGENCY AND EXIT FIXTURES SHALL BE DUAL VOLTAGE (120/277 VOLT INPUT) WITH 90 MINUTE BATTERY BACK UP.
- D. ELECTRICAL SUBCONTRACTOR IS RESPONSIBLE FOR ALL REFLECTED CEILING PLAN NOTES ON ARCHITECTURAL DRAWINGS.

## KEYED NOTES: #

- EXHAUST FANS TO BE ON SAME BRANCH CIRCUIT AS RESTROOM LIGHT, INTERLOCK EXHAUST FANS WITH LIGHTING CONTROLS.
- PROVIDE AND INSTALL DRIVER/POWER SUPPLY FOR 24V LED STRIP.
- LIGHTS TO BE CONTROLLED VIA TIMECLOCK. PROGRAM CONTROLS TO AUTOMATICALLY TURN LIGHTS ON AT START TIME, AUTOMATICALLY TURN ALL LIGHTS OFF AFTER BUSINESS HOURS, WITH MANUAL OVERRIDE SWITCH FOR NOT MORE THAN 2 HOURS. DINING AREA TO HAVE DIMMING CONTROL.
- E.C TO FIELD VERIFY THE OPERABLE CONDITION OF EXISTING LIGHTING CONTROL, REUSE IF POSSIBLE OTHERWISE PROVIDE NEW WALL MOUNTED OCCUPANCY SENSOR SWITCH. PROGRAM CONTROLS TO AUTOMATICALLY TURN OFF ALL LIGHTS AFTER 20 MINUTES. AUTOMATIC ON TO FULL POWER IN RESTROOM.
- FIXTURE SHALL BE PROVIDED WITH INTEGRAL 90-MINUTE MINIMUM BATTERY BACKUP. WIRE ALL EMERGENCY, EXIT AND NIGHT LIGHT TO LIGHTING CIRCUIT AHEAD OF ALL CONTROL & SWITCHING FOR CONTINUOUS OPERATIONS.
- E.C. TO FIELD VERIFY THE OPERABLE CONDITION OF EXISTING LIGHT FIXTURE. PROVIDE NEW IF FOUND INOPERABLE.

  BASE BID ACCORDINGLY.

# LIGHT FIXTURE SCHEDULE

SYMBOL	TAG	MANUF.	DESCRIPTION	MODEL	COLOR TEMP	PROV. By	INSTA LL BY	REMARKS
0	LT-1	LITHONIA	RECESSED CAN LED DOWNLIGHT	L3LEDT24-40PA-30K90CRI	3000K	GC	GC	PAINTED TO MATCH ADJACENT CEILING
	LT-2	LITHONIA	2X4 LAY-IN LED	2BLT2-72L-ADP-MVOLT-SLD-LP840	120V 34W LED 3500K	GC	GC	
	LT-2E	LITHONIA	2X4 LAY-IN LED	2BLT2-72L-ADP-MVOLT-SLD-LP840	120V 34W LED 3500K	GC	GC	WITH 90 MIN BATTERY BACKUP
	LT-3	OPTIC ARTS	LINEAR LED STRIP	LINELED LL SERIES, 24 VDC	3500K	GC	GC	WITHIN THE ENTIRE DECORATIVE ARCH
Ŷ	EX	-	EXISTING LIGHT	-	-	-	-	-
€	EX-1	TBD	LED EMERGENCY EXIT SIGN	RELZXTE 1/2 R MA EM		GC	GC	

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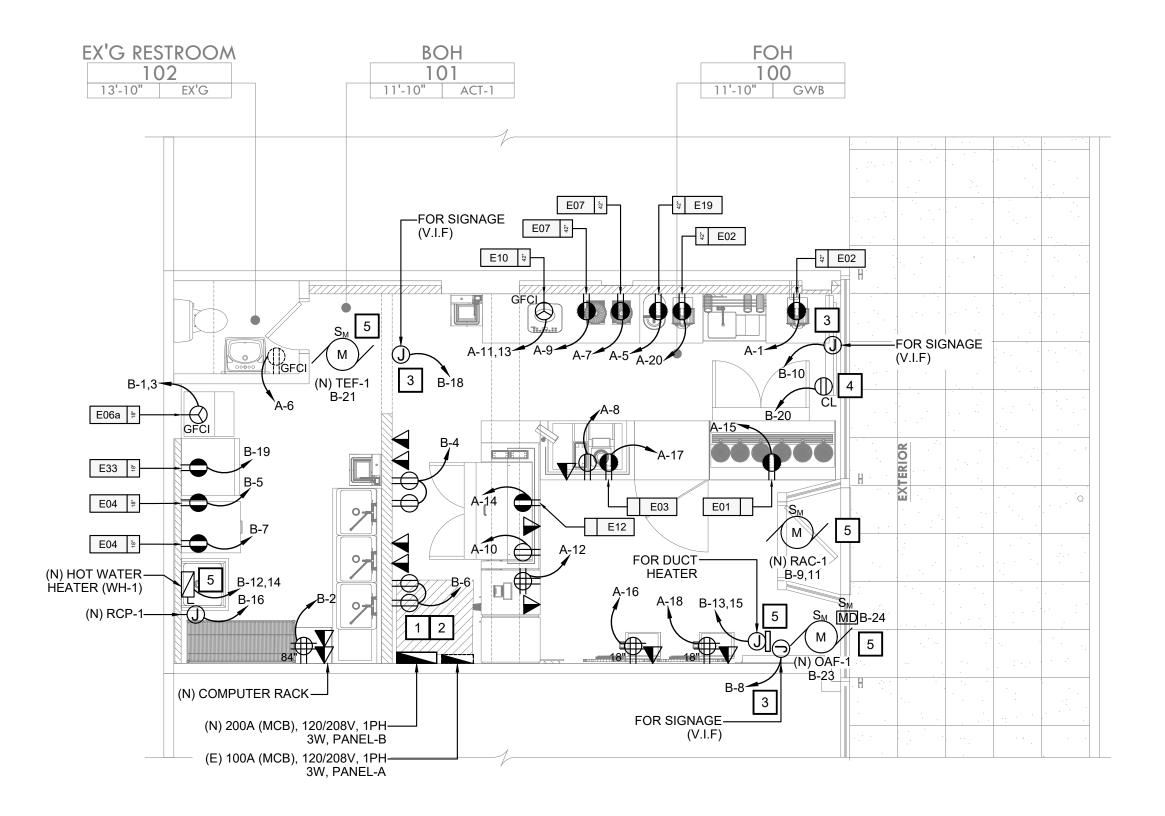
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TITLE

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LIGHTING PLAN



- A. CONTRACTOR SHALL PROVIDE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL FOR ALL 120V -250V RECEPTACLES SUPPLIED BY 120V SINGLE-PHASE BRANCH CIRCUITS 50 AMPS OR LESS, 208V SINGLE-PHASE BRANCH CIRCUITS 50 AMPS OR LESS.
- B. CONFIRM LOCATION OF ALL EQUIPMENT WITH ARCHITECT AND KITCHEN CONSULTANT.
- C. VERIFY KITCHEN EQUIPMENT ELECTRICAL & INSTALLATION REQUIREMENTS WITH EQUIPMENT PROVIDER.
- D. COORDINATE MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS WITH OTHER TRADES.
- E. COORDINATE EXACT LOCATION, QUANTITIES, AND INSTALLATION REQUIREMENTS OF EQUIPMENT IN MILLWORK.
- F. ALL EXTERIOR DISCONNECTS SHALL BE WEATHERPROOF.
- G. ALL CIRCUITS SHALL HAVE AN INSULATED GROUND WIRE SIZED PER NEC 250 BUT NOT SMALLER THAN #12 AWG.
- H. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL DISCONNECT SWITCHES, CONDUIT, AND WIRE FOR EQUIPMENT. INSTALL UNDER SUPERVISION OF EQUIPMENT SUPPLIER.
- ELECTRICAL CONTRACTOR SHALL PROVIDE ROUGH-IN FOR ALL LOW VOLTAGE CABLING. COORDINATE WITH LOW VOLTAGE CONTRACTOR. REFER TO DETAIL ON THIS SHEET.
- J. ALL BUILDING CORE ELECTRIC ROOMS AND PANELBOARDS SHALL BE CLEANED OF ALL DUST AND DEBRIS UPON COMPLETION OF WORK.
- K. ALL ELECTRICAL OUTLETS WITHIN THE LEASED PREMISE WILL BE PROPERLY LABELED TO REFLECT ELECTRICAL PANEL AND BREAKER NUMBERS FROM ELECTRICAL ROOM.

# KEYED NOTES: [#]

- EXISTING ELECTRICAL PANEL SHALL REMAIN. E.C. SHALL COORDINATE WITH LANDLORD IN FIELD & VERIFY EXACT LOCATION, RATING, VOLTAGE, PHASE, OPERABLE CONDITION IN FIELD. REPLACE WITH NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY. E.C. SHALL MAINTAIN CLEARANCE FOR ELECTRICAL PANEL PER NEC 110.26 (A) (1). REFER SHEET E0.3 ELECTRICAL RISER DIAGRAM FOR MORE INFORMATION
- NEW 200AMP (MCB),120/208V,1PHASE, 3-WIRE ELECTRICAL PANEL. E.C. SHALL COORDINATE WITH ARCHITECT/LANDLORD IN FIELD FOR EXACT LOCATION. BASE BID ACCORDINGLY. E.C. SHALL MAINTAIN CLEARANCE FOR ELECTRICAL PANEL PER NEC 110.26 (A) (1). REFER SHEET E0.3 ELECTRICAL RISER DIAGRAM FOR MORE
- J-BOX FOR SIGNAGE. SIGN PROVIDED AND INSTALLED BY SIGN VENDOR. G.C TO PROVIDE POWER BACK TO TIME
- ELECTRICAL CONTRACTOR SHALL FIELD VERIFY THE OPERABLE CONDITION OF EXISTING SHOW WINDOW RECEPTACLE REUSE IF POSSIBLE OTHERWISE PROVIDE NEW SHOW WINDOW RECEPTACLE AS PER NEC 210.62 AS REQUIRED. ELECTRICAL CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT HEIGHT AND LOCATION PRIOR TO
- ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE BEFORE THE COMMENCEMENT OF WORK.
- ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED. COORDINATE EXACT ELECTRICAL REQUIREMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. CIRCUIT FACTORY INSTALLED RECEPTACLE AS REQUIRED. OTHERWISE PROVIDE NEW AS SHOWN.
- E.C. TO PROVIDE RECEPTACLE AND DATA CENTER TO THE EACH TV. COORDINATE WITH EQUIPMENT SUPPLIER/OWNER FOR THE EXACT LOCATION, POWER REQUIREMENT & MOUNTING HEIGHT. PROVIDE ACCORDINGLY.

# **EQUIPMENT SCHEDULE:**

							Е	LEC	RTIC	CAL			
ITEM NO.	QTY.	EQUIPMENT DISCRIPTION	VOLTS	PHASE	AMPS	KW	Η	DIRECT	PLUG	NEMA	CIRCUIT BREAKER & POLES	MANUFACTURER	MODEL NUMBER
E01	1	UNDER COUNTER 2 DOOR FRIDGE	115	1	2.3	0.27	1/7		Х	NEMA 5-15P	20A/1P	DEACON	MGF8402GR
E02	2	CUP SEALING MACHINE	120	1	-	-				-	20A/1P		
E03	1	FRUCTOSE MACHINE	120	1	-	-				-	20A/1P		
E04	2	TEA BREWER	120	1	15	1.70			Х	NEMA 5-15P	20A/1P	DEACON	52300.01
E06a	1	ICE MAKER	208	1	9.2	1.90			Х	-	20A/2P	DEACON	CIM066FA
E07	2	BLENDER	120	1	15	-				NEMA 5-15P	20A/1P	DEACON	036019-ABAB
E10	1	INDUCTION COOCKER	208	1	10.8	2.60			Х	NEMA 6-20P	20A/2P	DEACON	HPI4-2600
E12	1	MEGA TOP PREP. BENCH U/B FRIDGE	115	1	2.3	0.27			Х	NEMA 5-15P	20A/1P	DEACON	MSF8306GR
E19	1	BENCH MILK STEAMER	110	1	-	1.30			Х	NEMA 5-20P	20A/1P	DEACON	STA1300
E33	1	REACH IN REFRIGERATOR	115	1	2.1	-			Х	NEMA 5-15P	20A/1P	DEACON	MBF8004GR
NOTES:			•		•	•	-	•			•	•	

1 THE CONTRACTOR SHALL COORDINATE THE EXACT RECEPTACLE TYPE FOR EQUIPMENT WITH THE VENDOR/MANUFACTURER AND THE EXACT MOUNTING

ALL EQUIPMENT SHALL BE PROVIDED WITH THE REQUIRED ROUGH-INS, MOCP, AND WIRE SIZE REQUIREMENTS. THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE MANUFACTURER FOR THE EXACT TYPE OF ROUGH-INS AND WIRE SIZE FOR THE WORK COMMENCEMENT.

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PROFESSIONAL SEAL:

CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE. REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY CHATIME CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

DATE	ISSUE
12.06.24	CLIENT REVIEW SET

△ DATE REVISION



LOCATION:

PROJECT INFORMATION:

DRAWN BY: NYE
REVIEWED BY: NYE
AREA: 465 SQ. FT.

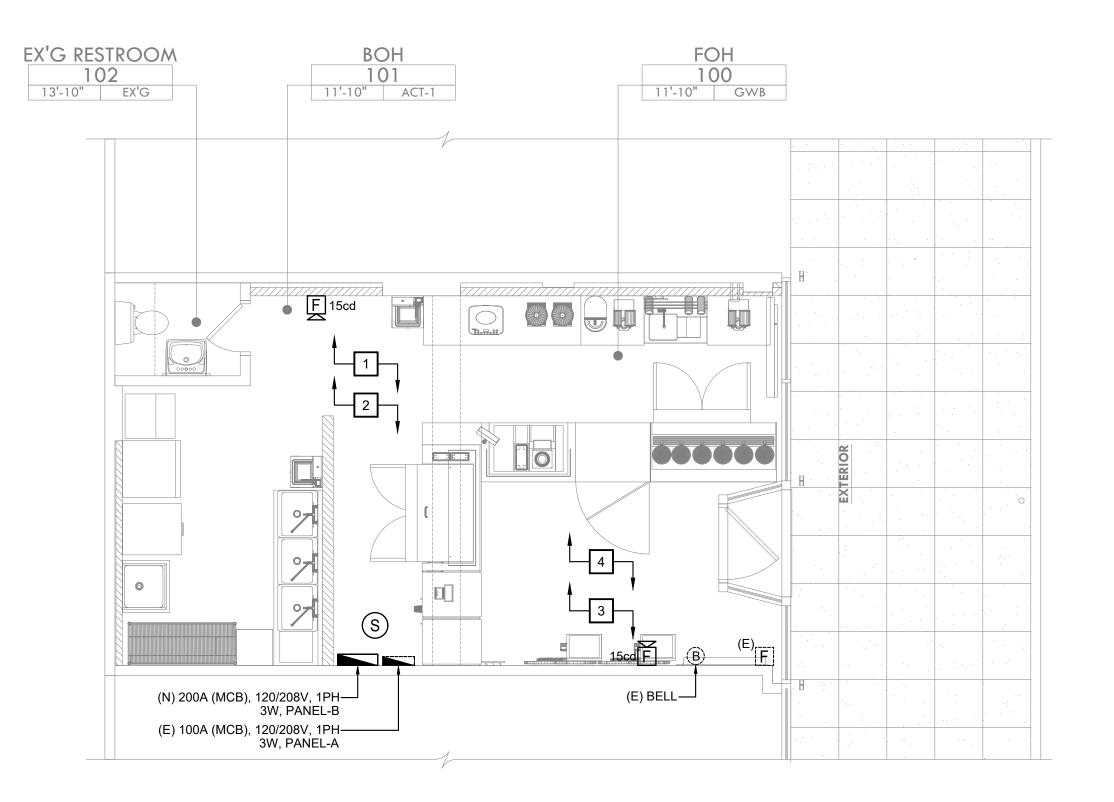
TITLE

ELECTRICAL POWER PLAN

SHEET NUMBER:

E-2.0

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



- 1. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR PRIOR TO INSTALLATION.
- 2. HATCHED AREA NOT IN THIS SCOPE OF WORK.
- 3. 'E' DENOTES EXISTING DEVICE TO REMAIN. 'R' DENOTES EXISTING DEVICE TO BE RELOCATED.
- 4. ALL FIRE ALARM CABLING SHALL BE IN EMT WHERE EXPOSED. ANY FIRE ALARM CABLING ABOVE THE CEILING SHALL BE PLENUM RATED.
- 5. FOR EXISTING AND/OR RELOCATED DEVICES ADJUST STROBE LEVELS TO APPROPRIATE RATING SHOWN. IF ADJUSTABILITY IS UNAVAILABLE REPLACE WITH NEW.
- 6. FIRE ALARM SOUND LEVELS AND INTELLIGIBILITY SHALL COMPLY WITH CHAPTER 9 OF THE APPLICABLE STATE BUILDING CODE.
- 7. VERIFY PROPER FUNCTIONALITY OF ALL EXISTING AND RELOCATED FIRE ALARM DEVICES, INCLUDING THEIR HOUSING, LENSES, ETC.... PROVIDE REPLACEMENTS AS REQUIRED IF ANY ARE NOT OPERATING AS INTENDED OR HAVE ABOVE NORMAL WEAR OR DEFECTS..
- 8. FIRE ALARM CONTRACTOR SHALL COORDINATE ALL THE FIRE ALARM DEVICE LOCATION WITH THE REFLECTED CEILING PLAN AND CONFIRM IN THE FIELD WITH ARCHITECT/OWNER.
- 9. ALL DE<mark>VICES SHALL BE C</mark>OMPATIBLE WITH AND MAINTAIN THE UL LISTING OF EXISTING FA SYSTEM.
- 10. G.C. SHALL FIELD VERIFY EXACT REQUIREMENTS FOR FIRE ALARM SYSTEM PRIOR TO BID. SUPPLY AND INSTALL ALL NECESSARY EQUIPMENT AS REQUIRED.
- 11. REFER TO DRAWING. E-0.1 FOR FIRE ALARM NOTES, SYMBOL LIST, ABBREVIATIONS.
- 12. FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE OWNER.
- 13. CONFIRM REQUIRED DEVICES AND SEQUENCE OF OPERATION WITH FIRE ALARM CONTRACTOR.

# KEYED NOTES: #

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

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DATE	ISSUE
12.06.24	CLIENT REVIEW SET

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LOCATION:

PROJECT INFORMATION:

PROJECT NUMBER:

DRAWN BY: NYE

REVIEWED BY: NYE

AREA: 465 SQ. FT.

TITLE:

FIRE ALARM PLAN

SHEET NUMBER:

E-3.0

SCALE

1 / 4" = 1' - 0"

FIRE ALARM PLAN

### RELATED WORK SPECIFIED ELSEWHERE:

- 1. THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS, INSTRUCTIONS TO BIDDERS AND GENERAL REQUIREMENTS, APPLY TO THE WORK SPECIFIED IN THIS DIVISION. THIS SECTION APPLIES TO ALL ASPECTS OF DIVISION 15 AND IS INTENDED TO BE COMPLEMENTARY TO THE
- GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS AND GENERAL REQUIREMENTS. FURNISH ALL LABOR, MATERIALS, SERVICES, COMPLETE FURNISHING AND INSTALLATION OF THE MECHANICAL SYSTEMS, INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING AND FIRE PROTECTION.
- 4. THE USE OF THE WORDS "PROVIDE", "FURNISH", OR "INSTALL" MEANS THAT THE ITEM OR FACILITY IS TO BE
- BOTH FURNISHED AND INSTALLED UNLESS EXPRESSLY STATED OTHERWISE. 5. THE TERM "CONTRACTOR" USED IN THIS DIVISION OF THE SPECIFICATIONS SHALL MEAN THE "MECHANICAL SUB-CONTRACTOR", "PLUMBING SUBCONTRACTOR", OR "FIRE PROTECTION SUBCONTRACTOR".

### SCOPE:

REFER TO ARCHITECTURAL SUPPLEMENTS FOR THE SCOPE OF THE PROJECT. THE CONTRACT DOCUMENTS AND COMPLETE SCOPE OF WORK ARE ILLUSTRATED ON THE COMBINED

- ARCHITECTURAL; STRUCTURAL; PLUMBING; HEATING, VENTILATING AND AIR CONDITIONING; AND ELECTRICAL DRAWINGS. REVIEW AND EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS REFER DISCREPANCIES, ERRORS, OMISSIONS AND AMBIGUITIES IN THE CONTRACT DOCUMENTS TO THE
- ARCHITECT. OTHERWISE, PROVIDE MATERIALS AND LABOR TO RESOLVE SAME IN A MANNER APPROVED BY THE ARCHITECT AT NO ADDITIONAL COSTS TO THE OWNER. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO PROVIDE COMPLETE SYSTEMS. ITEMS INCLUDED IN
- ONE AND NOT THE OTHER ARE OF LIKE EFFECT AS IF INCLUDED IN BOTH. PROVIDE MISCELLANEOUS ITEMS AND ACCESSORIES REQUIRED FOR COMPLETE SYSTEMS.
- ITEMS INDICATED BY ONE DISCIPLINE AND NOT INCLUDED IN ANOTHER DISCIPLINE IN THE DRAWINGS AND SPECIFICATIONS SHALL BE PROVIDED AS IF INCLUDED, AT NO ADDITIONAL COSTS TO THE OWNER.

### DESCRIPTION OF SYSTEM:

- FACILITIES AND SYSTEMS OF MECHANICAL WORK IN GENERAL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: A.BASIC MATERIALS AND METHODS. B.PLUMBING SYSTEM. C.HEATING, AIR CONDITIONING AND VENTILATING SYSTEM. D.FIRE PROTECTION SYSTEM E.SYSTEM CONTROLS. PROVIDE LABOR, MATERIALS, EQUIPMENT AND ACCESSORIES FOR COMPLETE SYSTEMS WHETHER OR NOT
- DRAWINGS ARE DIAGRAMMATIC AND CONTAIN GRAPHIC REPRESENTATIONS, SCHEDULES AND NOTATIONS SHOWING MECHANICAL WORK. FOLLOW DRAWINGS AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT. MAKE DEVIATIONS FROM DRAWINGS FOR CONFORMANCE TO ACTUAL CONSTRUCTION AT NO ADDITIONAL COSTS TO THE OWNER. REFER ITEMS REQUIRING CLARIFICATIONS AND INTERPRETATIONS TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION; PROVIDE WORK AS RESOLVED AT NO ADDITIONAL COSTS TO THE OWNER. DEVIATIONS FOR REASONS OTHER THAN DESCRIBED ABOVE, IF DEEMED NECESSARY, SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL. DO NOT MAKE DEVIATIONS WITHOUT WRITTEN APPROVAL.
- DEFINITIONS: THE CONTRACTOR IS RESPONSIBLE FOR THE WORK OF SUB-CONTRACTORS.

SPECIFICALLY INCLUDED IN THE CONTRACT DOCUMENTS.

- FURNISH SUPPLY MATERIALS.
- 3. INSTALL INSTALL MATERIALS.
- PROVIDE FURNISH AND INSTALL MATERIALS. 5. APPROVAL - WRITTEN AUTHORITY TO PROCEED FROM THE ARCHITECT. 1.02 QUALITY ASSURANCE:
- WORKMEN QUALIFICATIONS: SKILLED MECHANICS COMPETENT IN THEIR TRADES, LICENSED WHERE REQUIRED BY
- AUTHORITIES HAVING JURISDICTION. REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION:
- DETERMINE AUTHORITIES HAVING JURISDICTION AND THE APPLICABLE CODES, RULES AND REGULATIONS OF THOSE AUTHORITIES.
- . PERFORM WORK IN CONFORMANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION. OBTAIN ALL PERMITS, LICENSES AND INSPECTIONS AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION. GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND CONTRACT BEARING
- 4. IN CASES OF DIFFERENCES BETWEEN REQUIREMENTS OF THE VARIOUS AUTHORITIES HAVING JURISDICTION,
- EXCEED THE LESSER REQUIREMENTS AND MEET THE GREATER, MORE STRINGENT REQUIREMENTS. ALL FEES AND COSTS FOR PERMITS, LICENSES, OR INSPECTIONS SHALL BE PAID BY THIS CONTRACTOR UNLESS EXPRESSLY STATED OTHERWISE.

1. THE INSTALLATION OF THE MECHANICAL SYSTEMS SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL FIRE PREVENTION ASSOCIATION (NFPA), LOCAL AND STATE CODES HAVING JURISDICTION, AND THE REQUIREMENTS OF THE UTILITY COMPANIES WHOSE SERVICES ARE USED.

- CODES AND ORDINANCES HAVING JURISDICTION OVER THE WORK SHALL SERVE AS MINIMUM REQUIREMENTS; BUT, IF THE CONTRACT DOCUMENTS INDICATE REQUIREMENTS WHICH ARE IN EXCESS OF THOSE MINIMUM REQUIREMENTS, THEN THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE FOLLOWED. SHOULD THERE BE ANY CONFLICTS BETWEEN THE CONTRACT DOCUMENTS AND CODES OR ANY ORDINANCES HAVING JURISDICTION, REPORT THESE TO THE ARCHITECT.
- REFERENCE STANDARDS: ALL SYSTEMS INSTALLED BY THIS CONTRACTOR SHALL BE UPDATED AND MODIFIED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS, BUT IN NO INSTANCE SHALL THE STANDARDS BE LESS THAN THE REQUIREMENTS OF OTHER PARAGRAPHS OF THESE CONTRACT DOCUMENTS. SPECIFIED MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- 3. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE). 4. SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION. (SMACNA).
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- UNDERWRITERS' LABORATORIES (UL). AMERICANS WITH DISABILITIES ACT (ADA).

## LOCAL CODE AUTHORITIES.

- 1.03 SHOP DRAWINGS AND SUBMITTAL DATA: A. BEFORE SUBMITTAL OF THE DATA, THE CONTRACTOR SHALL CHECK EACH PIECE OF APPARATUS, EQUIPMENT AND ACCESSORY TO ENSURE COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS AND SHALL CLEARLY MARK EACH SUBMITTAL WITH HIS SIGNATURE TO INDICATE THAT THEY ARE IN FULL COMPLIANCE WITH THE SPECIFICATIONS AND PLANS. THE CONTRACTOR SHALL VERIFY THAT ALL ASSOCIATED TRADES ARE AWARE
- OF THEIR WORK CONCERNING THE EQUIPMENT SUBMITTED. ANY SUBMITTALS RECEIVED WITHOUT THE CONTRACTOR'S SIGNATURE MAY BE RETURNED WITHOUT BEING CHECKED BY THE ARCHITECT'S OFFICE. CERTIFICATES:
- PROVIDE CERTIFICATES REQUIRED BY CONTRACT DOCUMENTS AND BY AUTHORITIES HAVING JURISDICTION. PROVIDE UNDERWRITERS' LABORATORIES SEALS AFFIXED TO MATERIALS. TEST REPORTS: PROVIDE COPIES OF TEST REPORTS REQUIRED BY CONTRACT DOCUMENTS AND BY AUTHORITIES
- HAVING JURISDICTION APPROVAL, DISAPPROVAL, OR COMMENTS ON SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF THE REQUIREMENTS OF THE SPECIFICATIONS OR THE DRAWINGS.

## 1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. DELIVERY: DELIVER EQUIPMENT AND MATERIALS IN UNOPENED MANUFACTURER'S STANDARD PACKAGING. ANY PIECE OF EQUIPMENT PLACED ON THE JOB SITE WITHOUT PRIOR WRITTEN REVIEW SHALL BE SUBJECTED TO RFMOVAI
- STORAGE: STORE EQUIPMENT AND MATERIALS WHERE NOT SUBJECT TO DAMAGE FROM PERSONNEL AND THE ELEMENTS.
- HANDLING: AVOID DAMAGE TO MATERIALS AND SURROUNDING SURFACES AND FINISHES BEFORE AND DURING INSTALLATION.

## 1.05 EXAMINATION OF PREMISES:

THIS CONTRACTOR SHALL VISIT THE SITE TO BECOME FULLY ACQUAINTED WITH THE IMMEDIATE AND SURROUNDING PREMISES AND THE CONDITIONS UNDER WHICH THE WORK WILL BE EXECUTED.

## 1.06 SUBCONTRACT AND LABOR:

A. ALL PROVISIONS OF THIS SECTION SHALL APPLY TO ALL SUBCONTRACTS TO THE EXTENT THAT THEY ARE APPLICABLE TO SUCH SUBCONTRACTOR.

## 1.07 ACCEPTANCE OF WORK:

THE WORK, WHEN COMPLETED, WILL BE ACCEPTED IN A FINISHED, PERFECT AND UNDAMAGED STATE ONLY. THIS CONTRACTOR SHALL PROVIDE FOR PROTECTION OF THE WORK DURING ITS PROGRESS AND, IF DAMAGED, ALL PATCHING OR REPLACING NECESSARY TO ITS FULL AND SATISFACTORY COMPLETION.

A. IT IS THE INTENTION THAT THIS SPECIFICATION SHALL PROVIDE A COMPLETE INSTALLATION. ALL AUXILIARY CONSTRUCTION EQUIPMENT AND APPARATUS NECESSARY OR ADVANTAGEOUS TO THE OPERATION AND TESTING OF THE WORK SHALL BE INCLUDED. THE OMISSION OF SPECIFIC REFERENCE TO ANY PART OF THE WORK NECESSARY FOR SUCH COMPLETE INSTALLATION SHALL NOT BE INTERPRETED AS RELIEVING THIS CONTRACTOR FROM FURNISHING AND INSTALLING SUCH PARTS.

- WARRANT THE WORK FOR ONE YEAR FROM AND AFTER DATE OF BENEFICIAL OCCUPANCY TO INCLUDE FREEDOM FROM DEFECTS FOR MATERIALS, EQUIPMENT AND LABOR. REPLACE DEFECTIVE WORK DURING THE WARRANTY
- PERIOD. ALL COMPRESSORS SHALL BE FIVE YEAR NON-PRORATED WARRANTY THE ONE YEAR WARRANTY PROVIDED IN THE GENERAL CONDITIONS SHALL BE IN ADDITION TO AND NOT IN LIMITATION OF ANY GUARANTEES OR WARRANTIES OF LONGER DURATION OR OTHER REMEDIES PROVIDED BY
- LAW OF THE CONTRACT DOCUMENTS. THE WARRANTY SHALL INCLUDE SUPERVISION AND ADJUSTMENT, ANY MAINTENANCE RECOMMENDED BY THE EQUIPMENT MANUFACTURER OR CONTRACTOR OR INSPECTIONS. ALSO INCLUDED IN THE WARRANTY IS ANY REFRIGERANT LOST OR LEAKED IN NORMAL OPERATION OR IN SERVICE OF EQUIPMENT. PROVIDE FOUR FILTER

### CHANGES AT APPROPRIATE INTERVALS DURING THE WARRANTY PERIOD.

#### PART 2 - PRODUCTS

### 2.01 MATERIALS:

MANUFACTURERS

A. NEW, FREE FROM DEFECTS, OF QUALITY COMMERCIAL GRADE STANDARD PRODUCT BY REPUTABLE

- B. LISTED BY UNDERWRITERS' LABORATORIES FOR WHICH STANDARDS APPLY.
- IN COMPLIANCE WITH CONTRACT DOCUMENTS IN REGARD TO QUALITY; DIMENSIONS, APPEARANCE, DESIGN AND PERFORMANCE.
- SIMILAR MATERIALS OF SAME MANUFACTURE.
- E. FIRST NAMED UNDER "ACCEPTABLE MANUFACTURERS" IS THE MANUFACTURER WHOSE PRODUCT WAS USED FOR

## 2.02 SUBSTITUTIONS:

- A. SUBSTITUTE MATERIALS WILL BE CONSIDERED FOR APPROVAL AFTER CONTRACT HAS BEEN AWARDED
- B. APPROVAL OF SUBSTITUTIONS IS SPECIFICALLY EXCLUDED FROM THIS DIVISION PRIOR TO SIGNING OF CONTRACT. REQUESTS FOR SUBSTITUTIONS:
- IN WRITING. REQUIRED DATA NECESSARY FOR EVALUATION.

ADDITIONAL COST TO THE OWNER.

- DIFFERENCE IN CONTRACT AMOUNT FOR EACH ITEM.
- 4. IN ACCORDANCE WITH SUBMITTALS PROCEDURE. D. REQUESTS FOR SUBSTITUTION IMPLY NO OBLIGATION ON THE OWNER AND HIS REPRESENTATIVES. IF APPROVED SUBSTITUTIONS CAUSE CHANGES IN THE WORK REQUIRED, INCLUDING WORK BY OTHER TRADES, PAY ALL COSTS INVOLVED AND EFFECT ALL NECESSARY CHANGES TO ACCOMMODATE SUBSTITUTIONS AT NO

#### PART 3 - EXECUTION 3.01 INSPECTION

- A. EXAMINE MATERIALS UPON RECEIPT FOR DAMAGES. REPLACE DAMAGED MATERIALS.
- B. EXAMINE BUILDING STRUCTURE TO WHICH MATERIALS ARE TO BE SECURED FOR DEFECTS ADVERSELY AFFECTING THE QUALITY AND EXECUTION OF WORK. DO NOT START WORK UNTIL DEFECTS ARE CORRECTED.

#### A. FIELD MEASUREMENTS:

- REFER CONFLICTS TO THE ARCHITECT FOR REVIEW. RESOLVE CONFLICTS IN ACCORDANCE WITH THE ARCHITECT'S WRITTEN DIRECTION AT NO ADDITIONAL COSTS TO THE OWNER.
- 2. COORDINATE LOCATIONS OF MATERIALS WITH OTHER TRADES BY REFERENCE TO CONTRACT DOCUMENTS AND BY CONFERENCE WITH OTHER TRADES. IF WORK IS LATER FOUND TO INTERFERE WITH WORK OF OTHER TRADES, MAKE NECESSARY CHANGES TO ELIMINATE INTERFERENCE AT NO ADDITIONAL COST TO THE OWNER.
- . PREPARATION OF SURFACES: CLEAN AND OTHERWISE MODIFY SURFACES TO WHICH MATERIALS ARE TO BE APPLIED AND SECURED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ARCHITECTS
- C. VERIFY PROPER TYPE MATERIALS BEING INSTALLED FOR ENVIRONMENTAL CONDITIONS

- 3.03 INSTALLATION: A. INSTALL MATERIALS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE MANUFACTURER'S RECOMMENDATIONS. ALL HEIGHTS AND CLEARANCES OF EQUIPMENT TO BE INSTALLED IS TO BE AS DETAILED ON THE ARCHITECTURAL PLANS AND AS REQUIRED BY THE ADA. NOTIFY THE ARCHITECT OF ALL DISCREPANCIES IN WRITING PRIOR TO ROUGH-IN.
- B. RECORDS FOR OWNER: 1. MAINTAIN FULL SET OF CONTRACT DOCUMENTS AT PROJECT. NOTE DAILY CHANGES MADE IN CONNECTION
- WITH FINAL INSTALLATION. PROVIDE A COMPLETE SET OF "AS-BUILT" REPRODUCIBLE DRAWINGS TO THE OWNER SHOWING EXACT LOCATIONS OF ALL EQUIPMENT, VALVES, PIPING, DUCTS, ETC. THESE DRAWINGS SHALL REFLECT ANY CHANGES FROM CONTRACT DOCUMENTS AND SHALL BE DRAFTED BY COMPETENT PERSONNEL TO PROVIDE THE OWNER WITH QUALITY DOCUMENTS OF FACILITIES AT PROJECT COMPLETION.

#### BASIC MATERIALS AND METHODS

## PART 1 - GENERAL

A. WORK INCLUDED IN THIS SECTION: THE FOLLOWING SPECIFICATION APPLIES TO ALL WORK OF THE MECHANICAL AND PLUMBING CONTRACTORS.

#### PART 2 - PRODUCTS 2.01STANDARDS FOR MATERIALS:

- A. ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THEY SHALL BE NEW, FREE FROM DEFECTS, AND THEY SHALL CONFORM TO THE FOLLOWING STANDARDS WHERE THESE ORGANIZATIONS HAVE SET STANDARDS. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED AND LABELED
- UNDERWRITERS LABORATORIES, INC. (UL). NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). B. MANUFACTURER'S NAMES AND CATALOG NUMBERS ARE USED AS A MEANS OF ESTABLISHING PRODUCT GRADE AND QUALITY. WHERE SEVERAL MANUFACTURERS ARE NAMED, ONLY THESE NAMED MANUFACTURERS' ARE TO BE
- PROVE THEIR PRODUCT WILL CONFORM SATISFACTORILY AND WILL MEET SPACE AND CAPACITY REQUIREMENTS, ETC., OF THE FIRST NAMED MANUFACTURER. C. THE USE OF ONE NAMED MANUFACTURER IN THE SCHEDULES ON THE DRAWINGS IS FOR GUIDE PURPOSES. THE

USED ON THE JOB. OTHER NAMED MANUFACTURERS, ALTHOUGH ACCEPTABLE AS MANUFACTURERS, MUST

- PROVISIONS OF THE ABOVE PARAGRAPH WILL GOVERN IN THE SELECTION OF PRODUCTS TO BE USED. D. WHERE THE "OR APPROVED EQUAL" CLAUSE IS USED IN THESE SPECIFICATIONS. THE NAME. OR NAMES. MENTIONED ARE TO BE USED AS A BASIS OF QUALITY. OTHER MANUFACTURER'S PRODUCTS WILL, HOWEVER, BE
- CONSIDERED AS SUBSTITUTIONS AND SHALL NOT BE USED AS A BASIS FOR PRICING. BASIS OF QUALITY SHALL BE INTERPRETED TO INCLUDE MATERIAL, WORKMANSHIP, WEIGHT, FINISH, GAUGES OF MATERIAL, APPEARANCES, CAPACITY, PERFORMANCE, ETC.
- MANUFACTURER'S REPRESENTATION AS TO AVAILABILITY OF EQUIPMENT PARTS AND REPLACEMENT AND SERVICE PERSONNEL IN THE AREA WILL BE A FACTOR IN CONSIDERATION OF SUBSTITUTIONS.

## 2.02FLAME SPREAD PROPERTIES OF MATERIALS:

- A. MATERIALS AND ADHESIVES USED THROUGHOUT THE MECHANICAL SYSTEM FOR FILTERS, ACOUSTICAL LINING, THERMAL (PIPE) INSULATION, FLEXIBLE CONNECTIONS, DUCT TAPE, PNEUMATIC TUBING, ETC., EXPOSED IN PLENUMS, SHALL CONFORM TO THE FEDERAL STANDARD FLAME SPREAD PROPERTIES OF MATERIALS. UNDER THIS REQUIREMENT, THE CLASSIFICATION SHALL NOT EXCEED NO. 11, WITH THE RANGE OF INDEX BETWEEN 0 AND 25 FOR THE BASIC MATERIALS, THEIR INDEX OF 50 IN ITS CLASSIFICATION NO. 111 AS LISTED IN THE FEDERAL
- SPECIFICATION. B. ONLY MATERIALS AND ADHESIVES MEETING THESE REQUIREMENTS WILL BE ACCEPTABLE.

#### PART 3 - EXECUTION 3.01 FIREPROOFING PENETRATIONS:

A. PROVIDE FIRE SEALING FOR PENETRATIONS THROUGH FIRE RATED CONSTRUCTION TO MAINTAIN THE FIRE RATING OF THE WALLS, FLOORS, PARTITIONS OR ROOFS PER LOCAL JURISDICTION AND LANDLORD'S REQUIREMENTS.

## 3.02 ROUGHING-IN AND FINAL CONNECTIONS:

- A. THE MECHANICAL SUB-CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF ROUGH-IN FOR AND ASSEMBLY OF VARIOUS EQUIPMENT AND TO MAKE FINAL CONNECTION TO ALL EQUIPMENT FURNISHED BY OWNER AND/OR UNDER SECTIONS OF THESE SPECIFICATIONS.
- B. ROUGHING-IN AND ASSEMBLING OF THIS EQUIPMENT SHALL BE DETERMINED FROM THE MANUFACTURER'S SHOP DRAWINGS OR AS DIRECTED AND IN NO CASE SHALL THE LOCATION BE SCALED FROM THE ARCHITECTURAL OR MECHANICAL DRAWINGS. C. THE CONTRACTOR SHALL BE AWARE THAT VARIOUS EQUIPMENT, VALVES, STRAINERS, UNIONS, ETC., SHOWN ON

THE PLANS FURNISHED BY OTHERS SHALL BE COORDINATED AND ASSEMBLED BEFORE INSTALLATION UNDER THIS

## CONTRACT.

# 3.03 CONSTRUCTION REQUIREMENTS:

A. WHERE EQUIPMENT IS BEING FURNISHED UNDER ANOTHER DIVISION, REQUEST FROM THE ARCHITECT AN ACCEPTED DRAWING THAT WILL SHOW EXACT DIMENSIONS OF REQUIRED LOCATIONS OF CONNECTIONS. INSTALL HE REQUIRED FACILITIES TO THE EXACT REQUIREMENTS OF THE APPROVED DRAWING ASSUME RESPONSIBILITY FOR ALL COSTS OR CHANGES REQUIRED THAT MAY BE INCURRED IF THIS SPECIFICATION

## 3.04 CLEAN-

IS NOT FOLLOWED.

- DURING THE EXECUTION OF THE WORK REMOVE ALL RUBBISH AND EXCESS MATERIALS ACCUMULATED AS A
- REMOVE ALL DIRT, PAINT, GREASE AND STAINS FROM ALL EXPOSED EQUIPMENT. UPON COMPLETION OF WORK, CLEAN ALL EQUIPMENT AND THE ENTIRE INSTALLATION SO AS TO PRESENT A FIRST CLASS JOB SUITABLE FOR OCCUPANCY. NO LOOSE PARTS OR SCRAPS OF EQUIPMENT SHALL BE LEFT ON THE PREMISES.
- C. EQUIPMENT PAINT SCARS SHALL BE REPAIRED WITH PAINT KITS SUPPLIED BY THE EQUIPMENT MANUFACTURER.
- 3.05 TESTS, ADJUSTMENTS AND INSPECTIONS: A. ON COMPLETION OF THE INSTALLATION, TEST AND ADJUST ALL NEW EQUIPMENT INSTALLED OR EXISTING

### EQUIPMENT CONNECTED.

- B. PAY ALL COSTS FOR LABOR, MATERIALS, EQUIPMENT, ETC., AS REQUIRED FOR TESTING AND ADJUSTING OF THE SYSTEMS. PROVIDE ALL APPARATUS, TEMPORARY PIPING CONNECTION OR ANY OTHER REQUIREMENTS FOR ALL TESTS. TAKE DUE PRECAUTIONS TO PREVENT DAMAGE TO THE BUILDING OR ITS CONTENTS INCURRED BY SUCH
- TESTS. REPAIR AND MAKE GOOD ANY DAMAGE SO CAUSED AT NO ADDITIONAL COST TO OWNER. C. ANY LEAKS, DEFECTS OR DEFICIENCIES DISCOVERED AS A RESULT OF THESE TESTS OR TESTS PERFORMED BY THE OWNER-RETAINED TESTING AND BALANCING FIRM SHALL BE REPAIRED AND TEST SHALL BE REPEATED UNTIL
- TEST REQUIREMENTS ARE FULLY COMPLETED.
- D. WHEN PRACTICAL, ALL PIPING TESTS SHALL BE MADE BEFORE PIPE IS COVERED OR CONCEALED E. IT IS THE INTENTION OF THIS SECTION OF THE SPECIFICATIONS TO PROVIDE NECESSARY TESTS DURING AND AT COMPLETION OF THE JOB TO ENSURE TIGHT PIPING AND DUCTWORK AND A CORRECTLY ADJUSTED SYSTEM, AND THE CONTRACTOR SHALL DO EVERYTHING NECESSARY TO ACCOMPLISH THIS.
- F. ALL MOTORS, BEARINGS, ETC., ON ALL EQUIPMENT SHALL BE CORRECTLY OILED AND GREASED BEFORE THE EQUIPMENT IS OPERATED AND AGAIN AT THE COMPLETION OF THE JOB. PROVIDE COMPLETE OILING AND GREASING INSTRUCTIONS FOR OWNER'S DESIGNATED PERSONNEL. GREASE FITTINGS SHALL BE INSTALLED ON EQUIPMENT THAT REQUIRES PERIODIC GREASING.

### PIPING INSULATION

#### PART 1 - GENERAL 1.01 SCOPE:

A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF INSULATION AS INDICATED BY THE CONTRACT DOCUMENTS. ALL PIPING INSULATION VALUES (R-VALUES) MUST MEET THAT REQUIRED BY THE APPLICABLE ENERGY CODES REGARDLESS OF THE THICKNESS

#### 1.0 2 QUALITY ASSURANCE:

- A. APPLICATOR: COMPANY SPECIALIZING IN PIPING INSULATION APPLICATION WITH THREE YEARS MINIMUM EXPERIENCE.
- MATERIALS: FLAME SPREAD/FUEL CONTRIBUTED/SMOKE DEVELOPED RATING OF 25/50 IN ACCORDANCE WITH ASTM E84, NFPA 255, UL 723.
- C. UNDER NO CIRCUMSTANCES WILL MATERIALS CONTAINING ASBESTOS BE ALLOWED ON THIS PROJECT SITE.

## 1.03 SUBMITTALS:

- SUBMIT PRODUCT DATA PRIOR TO ORDERING.
- B. INCLUDE PRODUCT DESCRIPTION, LIST OF MATERIALS AND THICKNESS FOR EACH SERVICE, AND LOCATIONS. C. SUBMIT MANUFACTURER'S INSTALLATION INSTRUCTIONS.

#### PART 2 - PRODUCTS 2.01 ACCEPTABLE MANUFACTURERS

A. MANVILLE., KNAUF, OWENS-CORNING.

## 2.02 GENERAL

A. ALL MATERIALS USED SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 WITHOUT EVIDENCE OF CONTINUOUS PROGRESSIVE COMBUSTION, AND WITH A SMOKE DEVELOPED RATING OF NOT HIGHER THAN SHOP DRAWING SUBMITTALS SHALL SHOW THIS INFORMATION.

### 2.03 DOMESTIC WATER PIPING:

- A. FOR ALL HOT WATER, COLD WATER AND (IF USED) HOT WATER RETURN PIPING: 1. USE OWENS-CORNING FIBERGLASS 25 ASJ/SSL OR EQUAL ONE-PIECE PIPE INSULATION WITH ALL SERVICE JACKET AND SELF SEALING LAP. 2. FOR 1/2" AND 3/4" LINES USE 1/2" THICK PIPE INSULATION. FOR 1" AND LARGER LINES USE 1" THICK PIPE
- A. USE 1/2" THICK "ARMAFLEX" OR EQUAL PIPE INSULATION. THE INSULATION SHALL BE THREADED ON THE PIPE,

BUTT JOINT CONNECTION.

2.04 A/C UNIT CONDENSATE DRAIN PIPING:

INSULATION.

2.05 REFRIGERANT PIPING A. USE 1/2" THICK "ARMAFLEX" OF APPROVED EQUAL PIPE INSULATION ON THE SUCTION LINE. THE INSULATION SHALL BE THREADED ON THE PIPE, PULLED BACK, THEN THE CONNECTION SHOULD BE MADE. ALL SEAMS WILL BE

PULLED BACK, THEN THE CONNECTION SHOULD BE MADE. ALL SEAMS WILL BE BUTT JOINT CONNECTION.

- INSULATION BANDS: 3/4 INCH WIDE; 0.015 INCH THICK GALVANIZED STEEL. METAL JACKET BANDS: 3/8 INCH WIDE; 0.015 INCH THICK ALUMINUM. INSULATING CEMENT: ANSI/ASTM C195; HYDRAULIC SETTING MINERAL WOOL.
- FIBROUS GLASS CLOTH: UNTREATED; 9 OZ/SQ. YD. (305 G/SQ. M) WEIGHT ADHESIVES: COMPATIBLE WITH INSULATION AND F. SUITABLE FOR RETURN AIR USE IF USED IN THOSE SPACES.

# 3.01 PREPARATION:

PART 3 - EXECUTION

A. DO NOT APPLY ANY INSULATION UNTIL PIPING HAS BEEN INSPECTED, PRESSURE TESTED AND FOUND TIGHT. B. ALL SURFACES TO BE INSULATED SHALL BE CLEANED AND DRIED BEFORE APPLYING INSULATION.

- 2 INSTALLATION:
- A. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION. B. CONTINUE INSULATION WITH VAPOR BARRIER THROUGH PENETRATIONS.
- IN EXPOSED PIPING, LOCATE INSULATION AND COVER SEAMS IN LEASE VISIBLE LOCATIONS. ON INSULATED PIPING WITH VAPOR BARRIER, INSULATE FITTINGS, VALVES, UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS. E. ON INSULATED PIPING WITHOUT VAPOR BARRIER AND PIPING CONVEYING FLUIDS 140 DEGREES F (60 DEGREES C)
- OR LESS, DO NOT INSULATE FLANGES AND UNIONS AT EQUIPMENT, BUT BEVEL AND SEAL ENDS OF INSULATION AT SUCH LOCATIONS. PROVIDE AN INSERT, NOT LESS THAN 6 INCHES (150 MM) LONG, OF SAME THICKNESS AND CONTOUR AS ADJOINING INSULATION, BETWEEN SUPPORT SHIELD AND PIPING, BUT UNDER THE FINISH JACKET, ON PIPING 2 INCHES (50 MM) DIAMETER OR LARGER, TO PREVENT INSULATION FROM SAGGING AT SUPPORT POINTS. INSERTS SHALL BE CORK OR OTHER HEAVY DENSITY INSULATING MATERIAL SUITABLE FOR THE PLANNED TEMPERATURE RANGE. FACTORY
- FABRICATED INSERTS MAY BE USED. G. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS.

## 3.03 DOMESTIC WATER PIPING INSULATION INSTALLATION:

A. INSULATE ALL COLD WATER, HOT WATER SUPPLY, AND HOT WATER RETURN PIPING, VALVES AND FITTINGS. B. FITTINGS AND VALVES SHALL BE INSULATED WITH INSULATING CEMENT APPLIED TO THICKNESS EQUAL TO THAT OF ADJOINING PIPE INSULATION AND SHALL BE COVERED WITH GLASS CLOTH JACKET. FITTINGS MAY BE INSULATED WITH TWO LAYERS OF PRE-CUT FIBERGLASS BLANKET INSULATION JACKETED WITH PRE-FORMED PVC

## COVERS IN LIEU OF INSULATING CEMENT AND CLOTH JACKET. 3.04 A/C UNIT CONDENSATE DRAIN PIPING INSULATION INSTALLATION:

- A. INSULATE ALL CONDENSATE DRAIN PIPING AND FITTINGS WITHIN THE BUILDING
- B. INSTALL INSULATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTION. SEAL ALL JOINTS AND SEAMS WITH MANUFACTURER'S RECOMMENDED ADHESIVE TO PROVIDE CONTINUOUS VAPOR SEAL.

- A. INSULATE ALL STORM DRAIN PIPING ABOVE FINISHED FLOOR. INSULATE THE UNDERSIDE OF ALL ROOF DRAIN AND
- OVERFLOW DRAIN BODIES. B. FITTINGS AND VALVES SHALL BE INSULATED WITH INSULATING CEMENT APPLIED TO THICKNESS EQUAL TO THAT OF ADJOINING PIPE INSULATION AND SHALL BE COVERED WITH GLASS CLOTH JACKET. FITTINGS MAY BE INSULATED WITH TWO LAYERS OF PRE-CUT FIBERGLASS BLANKET INSULATION JACKETED WITH PRE-FORMED PVC COVERS IN LIEU OF INSULATING CEMENT AND CLOTH JACKET.

## PLUMBING PIPING

- PART 1 GENERAL 1.01 SCOPE:
- A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE
- INSTALLATION OF PLUMBING PIPING AS INDICATED BY THE CONTRACT DOCUMENTS. B. THE PLUMBING CONTRACTOR SHALL OBTAIN ALL PERMITS, INSPECTIONS, AND APPROVALS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION. ALL FEES AND COSTS INCIDENTAL THERETO SHALL BE ASSUMED AND PAID FOR BY THIS CONTRACTOR.

#### PART 2 - PRODUCTS 2.01SANITARY SEWER WASTE AND VENT PIPING:

A. BURIED WITHIN 5 FEET OF BUILDING:

- 1. CAST IRON PIPE: ASTM A74 SERVICE WEIGHT. FITTINGS: CAST IRON. JOINTS: HUB-AND-SPIGOT, CISPI HSN COMPRESSION TYPE WITH ASTM C564 NEOPRENE GASKETS OR LEAD AND OAKUM.
- 2. PVC PIPE: SCHEDULE 40 PVC PIPING WITH SOLVENT WELDED PVC PIPE FITTINGS MAY BE USED IF APPROVED BY
- LOCAL AUTHORITIES. 3. COPPER TUBING: ASTM B306, DWV. FITTINGS: ANSI/ASME B16.3, CAST BRONZE, OR ANSI/ASME B16.29,
- WROUGHT COPPER. JOINTS: ANSI/ASTM B32. SOLDER. GRADE 50B. B. ABOVE GRADE: 1. CAST IRON PIPE: ASTM A74, SERVICE WEIGHT. FITTINGS: CAST IRON. JOINTS: HUB-AND-SPIGOT, CISPI HSN
- COMPRESSION TYPE WITH ASTM C564 NEOPRENE GASKETS OR LEAD AND OAKUM. 2. CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT. FITTINGS: CAST IRON. JOINTS: NEOPRENE GASKETS AND STAINLESS STEEL CLAMP-AND-SHIELD ASSEMBLIES. ("NO HUB").
- 3. COPPER PIPE: ASTM B306, DWV. FITTINGS: ANSI/ASME B16.3, CAST BRONZE, OR ANSI/ASME B16.29, WROUGHT COPPER. JOINTS: ANSI/ASTM B32, SOLDER, GRADE 50B. 4. PVC PIPE: SCHEDULE 40 PVC PIPING WITH SOLVENT WELDED PVC PIPE FITTINGS MAY BE USED IF APPROVED BY
- LOCAL AUTHORITIES.

### 2.02 WATER PIPING:

### A BURIFD:

- 1. WITHIN 5 FEET: COPPER TUBING: ASTM B88, TYPE K SOFT OR HARD DRAWN. FITTINGS; ANSI/ASME B16.29, WROUGHT COPPER. JOINTS: ANSI/ASTM B32, SOLDER, SILVABRITE #100, 95.5% TIN, 4% COPPER, 0.5% SILVER. AWS A5.8, B CUP SILVER BRAZE. WRAP PIPING WITH 3M SCOTCHGUARD PIPE WRAP.
- 2. BEYOND 5 FEET: COPPER TUBING: ASTM B88, TYPE K HARD DRAWN. FITTINGS; ANSI/ASME B16.29, WROUGHT COPPER. JOINTS: ANSI/ASTM B32, SOLDER, SILVABRITE #100, 95.5% TIN, 4% COPPER, 0.5% SILVER. AWS A5.8, B CUP SILVER BRAZE.
- B. ABOVE GRADE: COPPER TUBING: ASTM B88, TYPE L, HARD DRAWN. FITTINGS: ANSI/ASME B16.23, CAST BRASS, OR ANSI/ASME B16.29, WROUGHT COPPER. JOINTS: ANSI/ASTM B32, SOLDER, SILVABRITE #100, 95.5% TIN, 4% COPPER, 0.5%

## 2.03 CONDENSATE DRAIN PIPING:

CONDENSATE DRAIN PIPING SHALL BE DWV COPPER WITH SWEAT FITTINGS.

### 2.04 NATURAL GAS PIPING:

- $^{f k}$ OVE GRADE BLACK STEEL PIPE: A-120 SCHEDULE 40 BLACK STEEL ASSEMBLED WITH BLACK MALLEABLE 125 LB. FITTINGS IN SIZES 2" OR SMALLER AND FOR LARGER SIZES ASSEMBLED BY WELDING FITTINGS AS MANUFACTURED
- B. BELOW GRADE SAME AS FOR GAS PIPING ABOVE GRADE, EXCEPT WRAPPED WITH 3M SCOTCHGUARD PIPE WRAP. 1.PLASTIC PIPE (NIPAK) POLYETHYLENE PE-2306 MAY BE PROVIDED IF APPROVED BY LOCAL AUTHORITIES.
- GAS COCKS: 1.CRANE NO. 320 IRON BODY VALVE SCREW ENDS, WITH SQUARE PLUG HEAD, FOR PIPE SIZES UNDER 2". 2.CRANE NO. 325 IRON BODY VALVE, FLANGE ENDS, SQUARE PLUG HEAD, FOR PIPE SIZES OVER 2". D. GAS PRESSURE REGULATOR: FISHER S-202 STEEL BODY, DIE CAST ALUMINUM SPRING AND DIAPHRAGM CASINGS RELIEF VENT, AND SCREWED ENDS.

## 2.05 BALL VALVES:

- A. ACCEPTABLE MANUFACTURERS
- 1. 1.CRANE MODEL 2180 CXC UNDER 2" AND MODEL 2180 IPS OVER 2". RED AND WHITE - MODEL 5043 UNDER 2" AND MODEL 5044 OVER 2".
- 3. NIBCO MODEL S580 UNDER 2" AND MODEL T580 OVER 2". B. UP TO 2 INCHES: BRONZE BODY, STAINLESS STEEL BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE,
- SOLDER ENDS C. OVER 2 INCHES: BRONZE BODY, CHROME PLATED STEEL BALL, TEFLON SEAT AND STUFFING BOX SEALS, LEVER HANDLE SCREW ENDS.

#### PART 3 - EXECUTION 3.01PREPARATION:

- A. A.REAM PIPE AND TUBE ENDS, REMOVE BURRS. B. REMOVE SCALE AND DIRT, ON INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
- D. DETERMINE WATER PRESSURE AT BUILDING SITE. INSTALL AN APPROVED PRESSURE REDUCING VALVE IN SERVICE PIPING WHERE WATER PRESSURE EXCEEDS 80 PSIG.

C. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES OR UNIONS.

- 3.02 INSTALLATION: A. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTION WHEREVER JOINTING DISSIMILAR METALS.
- B. ROUTE PIPING IN ORDERLY MANNER AND MAINTAIN GRADIENT. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE. . GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS. E. CONCEAL PIPING ABOVE CEILING, IN WALLS OR CHASES UNLESS OTHERWISE SHOWN OR NOTED ON THE
- BENDING OF RIGID PIPING IS NOT PERMITTED, ONLY ELLS SHALL BE UTILIZED FOR A CHANGE IN DIRECTION. . INSTALL SANITARY DRAINAGE PIPING TRUE TO LINE WITH PROPER GRADING. CONNECT HORIZONTAL BRANCHES TO ONE ANOTHER WITH 45 DEGREES "Y" FITTINGS, COMBINATION "Y" AND 1/8 BEND FITTINGS. CONNECT HORIZONTAL LINES TO VERTICAL STACKS USING 45 DEGREE "Y" BRANCHES, 60 DEGREE "Y" BRANCHES OR COMBINATION "Y" AND 1/8 BEND FITTINGS. HORIZONTAL BRANCHES TURNING DOWN TO VERTICAL STACKS MAY USE A SHORT SWEEP OR 1/2 BEND. BRANCHES CONNECTING TO MAINS OR TO OTHER BRANCHES SHALL ENTER
- THE BRANCH LINE AT A 45 DEGREE ANGLE, TILTED 45 DEGREES UPWARD, SO THAT THE ENTRY IS FROM THE SIDE H. VERIFY WITH THE AIR CONDITIONING INSTALLER THAT ALL VENTS THROUGH THE ROOF ARE LOCATED AT LEAST TEN FEET FROM THE OUTSIDE AIR INTAKE OF THE UNIT. THERE SHALL BE AT LEAST TEN FEET OF SEPARATION BETWEEN THESE VENTS AND ANY OUTSIDE AIR INTAKE, INCLUDING THE COMBUSTION AIR INTAKE. OFFSET AND
- EXTEND THE VENT PIPING AS REQUIRED. I. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.

PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.

- K. PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED. L. SLOPE WATER PIPING AND ARRANGE TO DRAIN AT LOW POINTS. M. ESTABLISH ELEVATIONS OF BURIED PIPING OUTSIDE THE BUILDING TO ENSURE NOT LESS THAN 18 INCHES OF
- N. WHERE PIPE SUPPORT MEMBERS ARE WELDED TO STRUCTURAL BUILDING FRAMING, SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT OF ZINC RICH PRIMER TO WELDING. O. PREPARE PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES NOT PREFINISHED, READY FOR FINISH PAINTING. REFER
- P. ESTABLISH INVERT ELEVATIONS, SLOPES FOR DRAINAGE TO 1/8 INCH PER FOOT MINIMUM. MAINTAIN GRADIENTS. Q. EXTEND ALL CONDENSATE DRAINS TO NEAREST APPROVED RECEPTOR (UNLESS SHOWN OTHERWISE) AND SLOPE PROPERLY TO AVOID SECONDARY TRAPPING. R. ANY PVC PIPING EXPOSED TO THE SUNLIGHT SHALL BE UV PROTECTED. THIS MAY BE FROM ADDITIVES IN THE PLASTIC COMPOUNDS MAKING UP THE PIPE OR FROM COATING OR SHEATINGS ADDED TO THE PIPE AFTER

#### INSTALLATION. IF PAINT IS APPLIED TO THE PIPE, MANUFACTURERS' INSTRUCTIONS ON PREPARATION OF THE SURFACE PRIOR TO PAINTING MUST BE STRICTLY FOLLOWED.

- 3.03 APPLICATION:
- A. USE GROOVED MECHANICAL COUPLINGS AND FASTENERS ONLY IN ACCESSIBLE LOCATIONS. B. INSTALL UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.
- INSTALL BRASS MALE ADAPTERS EACH SIDE OF VALVES IN COPPER PIPING SYSTEM. SWEAT SOLDER ADAPTERS

D. INSTALL BALL VALVES FOR SHUT-OFF AND TO ISOLATE EQUIPMENT, PART OF SYSTEMS, OR VERTICAL RISERS.

KITCHEN EQUIPMENT SHALL HAVE BALL VALVES USED FOR EQUIPMENT ISOLATION. E. INSTALL GATE VALVES FOR THROTTLING, BYPASS, OR MANUAL FLOW CONTROL SERVICES.

TO OTHER SECTIONS OF THIS SPECIFICATION FOR PAINTING.

- 3.04 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM: A. PRIOR TO STARTING WORK, VERIFY SYSTEM IS COMPLETE, FLUSHED AND CLEAN.
- B. ENSURE PH OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING ALKALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC). C. INJECT DISINFECTANT, FREE CHLORINE IN LIQUID, POWDER, TABLET OR GAS FORM, THROUGHOUT SYSTEM TO OBTAIN 50 TO 80 MG/L RESIDUAL.

D. BLEED WATER FROM OUTLETS TO ENSURE DISTRIBUTION AND TEST FOR DISINFECTANT RESIDUAL AT MINIMUM 15

H. TAKE SAMPLES NO SOONER THAN 24 HOURS AFTER FLUSHING, FROM 10 PERCENT OF OUTLETS AND FROM WATER

E. MAINTAIN DISINFECTANT IN SYSTEM FOR 24 HOURS. F. IF FINAL DISINFECTANT RESIDUAL TESTS LESS THAN 25 MG/L, REPEAT TREATMENT. G. FLUSH DISINFECTANT FROM SYSTEM UNTIL RESIDUAL EQUAL TO THAT OF INCOMING WATER OR 1.0 MG/L.

ENTRY, AND ANALYZE IN ACCORDANCE WITH AWWA C601.

## PLUMBING EQUIPMENT PART 1 - GENERAL

PERCENT OF OUTLETS.

FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF PLUMBING EQUIPMENT AS INDICATED BY THE CONTRACT DOCUMENTS.

CONSULTANT (ENGINEER)

**NEARBY ENGINEERS** 382 NE 191ST STREET SUITE 49674

MIAMI, FL 33179

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PROFESSIONAL SEAL:

CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE

OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY **CHATIME** CONSTRUCTION MANAGER FOR SSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS

12.06.24 CLIENT REVIEW SET

| DATE |

PRIOR TO THE COMMENCEMENT OF WORK.

DATE REVISION

OCATION:

PROJECT INFORMATION:

DRAWN BY: NYE

REVIEWED BY: NYE

AREA: 465 SQ. FT.

(1 OF 2) SHEET NUMBER:

PLUMBING GENERAL NOTES

& SPECIFICATIONS

PLUMBING GENERAL NOTES & SPECIFICATIONS N.T.S.

### 1.01GENERAL:

- RELATED WORK SPECIFIED ELSEWHERE:
- 1. THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS INSTRUCTIONS TO BIDDERS AND GENERAL REQUIREMENTS, APPLY TO THE WORK SPECIFIED IN THIS DIVISION.
- THIS SECTION APPLIES TO ALL ASPECTS OF DIVISION 15 AND IS INTENDED TO BE COMPLEMENTARY TO THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND GENERAL REQUIREMENTS.
- FURNISH ALL LABOR, MATERIALS, SERVICES, COMPLETE FURNISHING AND INSTALLATION OF THE MECHANICAL SYSTEMS, INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING AND FIRE PROTECTION. 4. THE USE OF THE WORDS "PROVIDE", "FURNISH", OR "INSTALL" MEANS THAT THE ITEM OR FACILITY IS TO BE
- BOTH FURNISHED AND INSTALLED UNLESS EXPRESSLY STATED OTHERWISE. THE TERM "CONTRACTOR" USED IN THIS DIVISION OF THE SPECIFICATIONS SHALL MEAN THE "MECHANICAL SUB-CONTRACTOR", "PLUMBING SUBCONTRACTOR", OR "FIRE PROTECTION SUBCONTRACTOR".
- B. SCOPE:
- REFER TO ARCHITECTURAL SUPPLEMENTS FOR THE SCOPE OF THE PROJECT.
- 2. THE CONTRACT DOCUMENTS AND COMPLETE SCOPE OF WORK ARE ILLUSTRATED ON THE COMBINED ARCHITECTURAL; STRUCTURAL; PLUMBING; HEATING, VENTILATING AND AIR CONDITIONING; AND ELECTRICAL DRAWINGS. REVIEW AND EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS.
- REFER DISCREPANCIES, ERRORS, OMISSIONS AND AMBIGUITIES IN THE CONTRACT DOCUMENTS TO THE ARCHITECT. OTHERWISE, PROVIDE MATERIALS AND LABOR TO RESOLVE SAME IN A MANNER APPROVED BY THE ARCHITECT AT NO ADDITIONAL COSTS TO THE OWNER.
- 4. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO PROVIDE COMPLETE SYSTEMS. ITEMS INCLUDED IN

#### 1.02 REFERENCES:

- ANSI/ASSE 1011 HOSE CONNECTION VACUUM BREAKERS.
- ANSI/ASSE 1019 WALL HYDRANTS, FROST PROOF AUTOMATIC DRAINING ANTI-BACKFLOW TYPES.
- C. ANSI A112.21.1 FLOOR DRAINS AND FLOOR SINKS.

#### PART 2 - PRODUCTS

#### 2.01 FLOOR DRAINS AND FLOOR SINKS:

- A. FD 'A' CAST IRON TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, CLAMPING COLLAR, AND ROUND, ADJUSTABLE NICKEL-BRONZE STRAINER; MODEL 30000-5A MANUFACTURED BY JOSAM.
- B. FD-'B' CAST IRON BODY WITH DOUBLE DRAINAGE FLANGE, WEEPHOLES, CLAMPING COLLAR, REMOVABLE SEDIMENT BUCKET, AND ROUND CAST IRON STRAINER, MODEL 32320 MANUFACTURED BY JOSAM. C.ALL DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS.
- D. FS: CAST IRON BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, CLAMPING COLLAR, ENAMELED INTERIOR, ALUMINUM INTERNAL DOME STRAINER, SEDIMENT BUCKET WITH LINER, AND ROUND NICKEL-BRONZE STRAINER
- WITH 3/4 GRATE; MODEL 49280 MANUFACTURED BY JOSAM. ACCEPTABLE MANUFACTURERS - FLOOR DRAINS AND FLOOR SINKS:
- J.R. SMITH

#### ZURN. WADE.

2.02 CLEANOUTS:

- A. EXTERIOR AREAS: CAST IRON BODY WITH ROUND CAST NICKEL BRONZE ACCESS FRAME AND NON-SKID COVER; MODEL 56010 MANUFACTURED BY JOSAM.
- INTERIOR FINISHED FLOOR AREAS: CAST IRON, TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, CLAMPING COLLAR, ROUND WITH NICKEL BRONZE SCORIATED COVER IN SERVICE AREAS AND ROUND WITH DEPRESSED COVER TO ACCEPT FLOOR FINISH (TILE OR CARPET) IN FINISHED FLOOR AREAS; MODEL 56010-41-12
- INTERIOR FINISHED WALL AREAS: CAST IRON BODY AND ROUND EPOXY COATED GASKETED COVER, AND ROUND STAINLESS STEEL ACCESS COVER SECURED WITH MACHINE SCREW; MODEL 58710 MANUFACTURED BY JOSAM.
- INTERIOR UNFINISHED ACCESSIBLE AREAS: CAULKED OR THREADED TYPE. ACCEPTABLE MANUFACTURERS -CLEANOUTS: JOSAM, J.R. SMITH., , ZURN, WADE.

### 2.03 AIR CHAMBERS:

AIR CHAMBERS OF TYPE "L" COPPER, NOT LESS THAN 12" LONG, AND NO SMALLER IN SIZE THAN THE SUPPLY PIPE SHALL BE PROVIDED AND INSTALLED IN EACH WATER SUPPLY TO EACH AND EVERY FIXTURE, OUTLET, ITEM OF EQUIPMENT, ETC. THE LENGTH AND/OR THE DIAMETER OF THESE AIR CHAMBERS SHALL BE GREATER WHERE REQUIRED TO ELIMINATE WATER HAMMER. REFER TO PLUMBING RISER DIAGRAM FOR LOCATIONS.

## 2.04 WALL HYDRANTS AND HOSE BIBBS:

- WALL HYDRANT: ANSI/ASSE 1019; NON-FREEZE, SELF-DRAINING TYPE WITH CHROME PLATED RECESSED BOX
- HOSE THREAD SPOUT, REMOVABLE KEY, AND VACUUM BREAKER; MODEL B65 MANUFACTURED BY WOODFORD. HOSE BIBB: ANSI/ASSE 1019; CHROME PLATED BRASS HOSE BIBB, HOSE THREADED, WITH TEE HANDLE AND VACUUM BREAKER. WOODFORD MODEL 24P.
- ACCEPTABLE MANUFACTURERS WALL HYDRANTS: WOODFORD , JOSAM, J.R. SMITH, ZURN, WADE.

## 2.05 TRAP PRIMER VALVES:

TRAP PRIMER VALVES SHALL BE JOSAM 88250 OR APPROVED EQUAL WITH BRONZE VALVE BODY, REMOVABLE OPERATING PARTS, INTEGRAL VACUUM BREAKER, AND GASKETED ACCESS COVER.

## 2.06 BACKFLOW PREVENTERS

ALL FIXTURES PLUMBED ON THIS PROJECT SHALL HAVE BACKFLOW PREVENTERS AS REQUIRED BY THE APPLICABLE CODE ENFORCEMENT AUTHORITIES. THESE MAY BE INDIVIDUAL (PER FIXTURE) BACKFLOW DEVICES OR THEY MAKE A BACKFLOW DEVICE FOR THE ENTIRE WATER SERVICE, BUT THEY MUST PREVENT CROSS-CONTAMINATION IN ACCORDANCE WITH THE LOCAL PLUMBING AND HEALTH CODES.

#### PART 3 - EXECUTION 3.01 PREPARATION:

A. COORDINATE FORMING OF ROOF AND FLOOR CONSTRUCTION TO RECEIVE DRAINS TO REQUIRED INVERT ELEVATIONS.

## 3.02 INSTALLATION AND APPLICATIONS:

- A. INSTALL SPECIALTIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO PERMIT INTENDED PERFORMANCE.
- B. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL SURFACE. LUBRICATE THREADED CLEANOUT PLUGS WITH MIXTURE OF GRAPHITE AND LINSEED OIL. ENSURE CLEARANCE AT CLEANOUT FOR RODDING OF DRAINAGE
- C. ON ALL INSTALLATIONS WITH SPACES BELOW THE FLOOR, ALL DRAINS, CLEANOUTS AND FLOOR SINKS SHALL HAVE THE NECESSARY CLAMPING COLLARS TO ENSURE WATERPROOF FLOOR INSTALLATIONS.
- ENCASE EXTERIOR CLEANOUTS IN CONCRETE FLUSH WITH GRADE. CLEANOUTS SHALL BE PROVIDED WHERE REQUIRED TO PROVIDE ACCESS TO ALL LINES AND AT EACH CHANGE IN
- DIRECTION GREATER THAN 45° AND IN EACH HORIZONTAL RUN AT INTERVALS NOT EXCEEDING 50 FEET IN ALL SOIL, WASTE, AND DRAIN LINES.
- EXTEND A 1/2" SOFT COPPER LINE TO EACH DRAIN FROM TRAP PRIMER VALVE AT THE NEAREST LAVATORY OR

## PLUMBING FIXTURES

#### PART 1 - GENERAL 1.01 SCOPE:

A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR THE COMPLETE INSTALLATION OF PLUMBING FIXTURES AS INDICATED BY THE CONTRACT DOCUMENTS.

## 1.02 REFERENCES:

- AMERICANS WITH DISABILITIES ACT (ADA). B. NSF 61 SECTION 9 DRINKING WATER STANDARD.
- C. ANSI A112.6.1 SUPPORTS FOR OFF-THE-FLOOR PLUMBING FIXTURES FOR PUBLIC USE. D. ANSI A112.18.1 - FURNISHED AND ROUGH BRASS PLUMBING FIXTURE FITTINGS.
- E. ANSI A112.19.1 ENAMELED CAST IRON PLUMBING FIXTURES.
- F. ANSI A112.19.2 VITREOUS CHINA PLUMBING FIXTURES. G. ANSI A112.19.5 - TRIM FOR WATER-CLOSET BOWLS, TANKS, AND URINALS.

## 1.03 OPERATION AND MAINTENANCE DATA:

A. SUBMIT OPERATION AND MAINTENANCE DATA. B. INCLUDE FIXTURE TRIM EXPLODED VIEW AND REPLACEMENT PARTS LISTS.

## 1.09 WARRANTY:

A. PROVIDE FIVE YEAR MANUFACTURER'S WARRANTY.

B. WARRANTY: INCLUDE COVERAGE OF ELECTRIC WATER COOLER COMPRESSOR.

## PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS -FIXTURES:

A. AMERICAN STANDARD. KOHLER. CRANE. ELJER. JUST. ELKAY. FIAT. STERN-WILLIAMS

#### PART 3 - EXECUTION 3.01 INSPECTION:

- A. REVIEW MILLWORK SHOP DRAWINGS. CONFORM LOCATION AND SIZE OF FIXTURES AND OPENINGS BEFORE
- ROUGH-IN AND INSTALLATION.

## B. VERIFY ADJACENT CONSTRUCTION IS READY TO RECEIVE ROUGH-IN WORK OF THIS SECTION.

- A. INSTALL EACH FIXTURE WITH TRAP, EASILY REMOVABLE FOR SERVICING AND CLEANING.
- B. PROVIDE CHROME PLATED RIGID OR FLEXIBLE SUPPLIES TO FIXTURES WITH LOOSE KEY STOPS, REDUCERS, AND ESCUTCHEONS.
- INSTALL COMPONENTS LEVEL AND PLUMB.
- D. INSTALL AND SECURE FIXTURES IN PLACE WITH WALL CARRIERS AND BOLTS. SEAL FIXTURES TO WALL AND FLOOR SURFACES WITH SEALANT AS SPECIFIED IN OTHER SECTIONS OF THIS
- SPECIFICATION, COLOR TO MATCH FIXTURE. MAINTAIN FIXTURES TO THE HEIGHTS AS INDICATED ON THE ARCHITECTURAL ELEVATIONS. ALL CLEARANCES,
- ACCESS AND REACH DISTANCES AS REQUIRED BY THE AMERICANS WITH DISABILITIES ACT (ADA) SHALL BE ADHERED TO. G. ON ALL WATER CLOSETS USED IN ACCESSIBLITY REQUIRED AREAS, ROUGH IN FLUSH VALVES SO THAT THE OPERATING LEVER IS ON THE WIDE SIDE OF THE STALL OR IN THE CASE OF TANK TYPE FIXTURES PROVIDE EITHER

LEFT OR RIGHT TRIP LEVERS TO PUT THE OPERATION OF THE WATER CLOSET ON THE WIDE SIDE OF THE STALL.

#### 3.03 ADJUSTING AND CLEANING:

- A. ADJUST STOPS OR VALVES FOR INTENDED WATER FLOW RATE TO FIXTURES WITHOUT SPLASHING, NOISE, OR
- B. AT COMPLETION, CLEAN PLUMBING FIXTURES AND EQUIPMENT.
- SOLIDLY ATTACH WATER CLOSETS TO FLOOR WITH LAG SCREWS. LEAD FLASHING IS NOT INTENDED TO HOLD FIXTURE IN PLACE.

## 3.04 FIXTURE ROUGH-IN SCHEDULE:

A. ROUGH-IN FIXTURE PIPING CONNECTION IN ACCORDANCE WITH FOLLOWING TABLE OF MINIMUM SIZES FOR PARTICULAR FIXTURES.

	HOT	COLD	WASTE	VENT
		W	ATER	WATER
LAVATORY	1/2"	1/2"	2"	1-1/
MOP SINK	3/4"	3/4"	3"	2"
SINK	1/2"	1/2"	2"	1-1/
EWC		1/2"	2"	1-1/
WTR CLOSET	-	1/2"	4"	2"
URINAI		3/,"	2"	2"

### WATER HEATERS

## PART 1 - GENERAL

1.01 QUALITY ASSURANCE:

- A. ENSURE PRODUCTS AND INSTALLATION OF SPECIFIED PRODUCTS ARE IN CONFORMANCE WITH RECOMMENDATIONS AND REQUIREMENTS OF THE FOLLOWING ORGANIZATIONS.
- 1. NATIONAL SANITATION FOUNDATION (NSF). AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
- NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS (NBBPVI).
- NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA).

### 1.02 REGULATORY REQUIREMENTS:

5. UNDERWRITERS LABORATORIES (UL).

A. ALL EQUIPMENT MUST CONFORM TO ALL STATE AND LOCAL REQUIREMENTS IF THOSE REQUIREMENTS ARE MORE STRINGENT THAN THESE SPECIFICATIONS.

#### 1.03 WARRANTY

A. PROVIDE MINIMUM THREE YEAR MANUFACTURER'S WARRANTY FOR WATER HEATERS UNDER PROVISIONS OF SECTION 15010.

### PART 2 - PRODUCTS

2.01 ELECTRIC WATER HEATERS:

- A. FACTORY-ASSEMBLED AND WIRED, ELECTRIC, VERTICAL STORAGE TYPE, 150 PSIG MAXIMUM WORKING PRESSURE AND WITH CAPACITIES AS SCHEDULED ON THE DRAWINGS.
- B. GLASS LINED WELDED STEEL TANK: THERMALLY INSULATED WITH MINIMUM 2 INCHES (50 MM) GLASS FIBER
- INCASED IN CORROSION-RESISTANT STEEL JACKET; AND BAKED-ON ENAMEL FINISH. C. AUTOMATIC IMMERSION WATER THERMOSTAT; EXTERNALLY ADJUSTABLE TEMPERATURE RANGE FROM 60 TO 140
- DEGREES F. FLANGED OR SCREW-IN NICHROME ELEMENTS. HIGH TEMPERATURE LIMIT THERMOSTAT. BRASS WATER CONNECTIONS AND DIP TUBE, DRAIN VALVE, HIGH-DENSITY MAGNESIUM ANODE, AND ASME RATED
- TEMPERATURE AND PRESSURE RELIEF VALVE. E. FLANGE-MOUNTED IMMERSION HEATING ELECTRICAL ELEMENTS; INDIVIDUAL ELEMENTS SHEATHED WITH INCOLOY
- CORROSION-RESISTANT METAL ALLOY, RATED LESS THAN 75 WATTS PER SQUARE INCH.
- F. ACCEPTABLE MANUFACTURERS WATER HEATERS: 1. STATE. A.O. SMITH. RUUD, RHEEM, LOCHINVAR.

#### PART 3 - EXECUTION 3.01 WATER HEATER INSTALLATION:

A. INSTALL WATER HEATERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION AND TO NSF UL REQUIREMENTS. B. COORDINATE WITH PLUMBING PIPING AND RELATED ELECTRICAL WORK TO ACHIEVE COMPLETE OPERATING SYSTEM.

## PART 4 - ENERGY CONSERVATION NOTES:

A. ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ASHRAE 90.1 2019 SECTION ENERGY CONSERVATION CODE SECTION 7.4.3 REFER BELOW TABLE.

	MINIMUM PIPE	E INSULATION THI	CKNE	ess	K		
FLUID OPERATING	INSULATION CO	NDUCTIVITY	NOMINAL PIPE OR TUBE SIZE (INCHES)				
TEMPERATURE RANGE AND USAGE (°F)	CONDUCTIVITY BTU· IN./ (H. FT2 °F)	MEAN RATING TEMPERATURE, °F	<1	1 to < 1½	1½ to < 4	4 to < 8	<u>&gt;</u> 8
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0

- B. AS PER ASHRAE 90.1 2019 SECTION 7.4.4.1, TEMPERATURE CONTROLS SHALL BE PROVIDED THAT ALLOW FOR STORAGE TEMPERATURE ADJUSTMENT FROM 120° OR LOWER TO A MAXIMUM TEMPERATURE COMPATIBLE WITH THE INTENDED USE.
- AS PER ASHRAE 90.1 2019 SECTION 7.4.4.2, SYSTEM DESIGNED TO MAINTAIN USAGE TEMPERATURE IN HOT WATER PIPES, SUCH AS RECIRCULATING HOT WATER SYSTEMS OR HEAT TRANCE, SHALL BE EQUIPED WITH AUTOMATIC TIME SWITCHES OR OTHER CONTROLS THAT CAN BE USED TO SWITCH THE USAGE TEMPERATURE MAINTAINANCE SYSTEM DURING EXTENDED PERIOD WHEN HOT WATER IS NOT REQUIRED.
- AS PER ASHRAE 90.1 2019 SECTION 7.4.4.3, TEMPERATURE CONTROLLING MEANS SHALL BE PROVIDED TO LIMIT THE MAXIMUM TEMPERATURE OF WATER DELIVERED FROM LAVATORY FAUCETS IN PUBLIC FACILITY RESTROOMS
- AS PER ASHRAE 90.1 2019 SECTION 7.4.4.4, WHEN USED TO MAINTAIN STORAGE TANK WATER TEMPERATURE, RECIRCULATING PUMPS SHALL BE EQUIPPED WITH CONTROLS LIMITING OPERATION TO A PERIOD FROM THE START OF THE HEATING CYCLE TO A MAXIMUM OF FIVE MINUTES AFTER THE END OF THE HEATING CYCLE.
- SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION. PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.

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PROFESSIONAL SEAL:

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| DATE |

12.06.24	CLIENT REVIEW SET

DATE REVISION

OCATION:

PROJECT INFORMATION: DRAWN BY: NYE

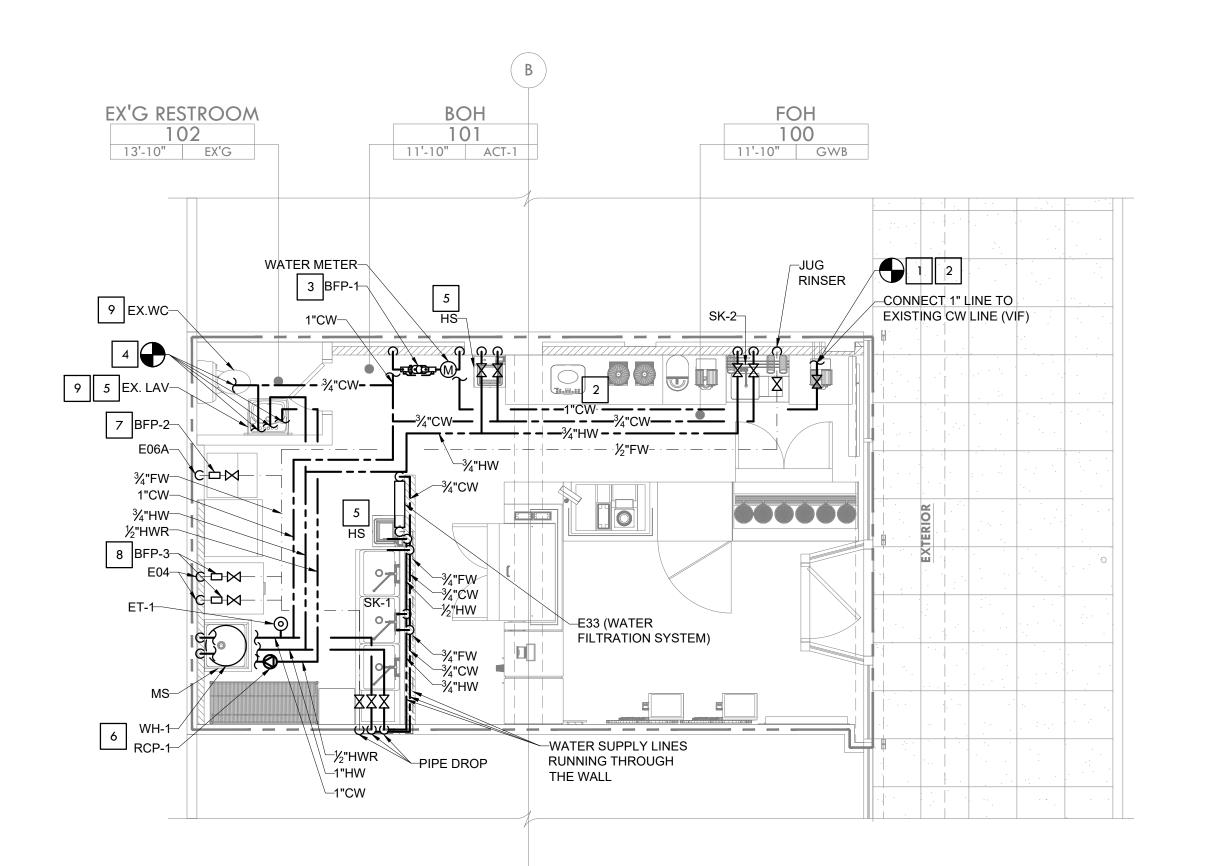
REVIEWED BY: NYE AREA: 465 SQ. FT.

PLUMBING GENERAL NOTES & SPECIFICATIONS (2 OF 2)

SHEET NUMBER:

N.T.S.

PLUMBING GENERAL NOTES & SPECIFICATIONS



- CONTRACTOR SHALL VERIFY EXISTING WATER PRESSURE IN FIELD PRIOR TO ANY WORK AND PIPING ROUGH IN.
- 2. PRIOR TO WORK VERIFY INCOMING WATER QUALITY TO SPACE. WHEN INCOMING WATER IS ABOVE 3.5 GRAINS PER GALLON (60 PARTS PER MILLION) SCALE BUILD-UP WILL FORM INSIDE THE PLUMBING SYSTEM CAUSING DAMAGE TO SYSTEM COMPONENTS AND COPPER PIPE. TO AVOID DAMAGE DUE TO SCALE BUILD-UP, EITHER A WATER SOFTENER OR ANTI-SCALE DEVICE SHOULD BE INSTALLED AT POINT-OF-ENTRY APPLICATIONS WHERE THERE IS A CONCERN FOR WATER SPOTS ON GLASS SHOWER DOORS, GLASS DISHES, VEHICLES IN CARWASHES, ETC., AND/OR THE EFFECTS OF HARD WATER ON HUMAN SKIN, A WATER SOFTENER SHOULD BE USED INSTEAD OF AN ANTI-SCALE DEVICE. ANTI-SCALE DEVICES REDUCE THE FORMATION OF SCALE IN A PLUMBING SYSTEM BUT DO NOT REMOVE THE CALCIUM AND MAGNESIUM FROM THE WATER, WHICH WILL REMAIN ONCE THE WATER HAS EVAPORATE LEAVING WATER SPOTS AND/OR DRYING OUT HUMAN SKIN. WATER SOFTENERS REMOVE CALCIUM AND MAGNESIUM FROM THE WATER BUT REQUIRE ROUTINE REFILLING OF SALT LEVELS IN THE BRINE TANK.
- 3. ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHALL BE LISTED.
- 4. ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN THE NEW JERSEY PLUMBING CODE.
- 5. ALL FAUCETS IN PUBLIC RESTROOMS SHALL BE SELF CLOSING OR SELF CLOSING METERING FAUCETS
- 6. WATER PIPES AND FITTINGS WITH A LEAD CONTENT WHICH EXCEEDS 0.25% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER.
- 7. PUBLIC LAVATORIES SHALL HAVE CONTROLS TO LIMIT THE WATER TEMPERATURE TO 110 DEGREES FAHRENHE
- 8. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREME
- 9. PROVIDE TRAP PRIMER FOR FLOOR DRAIN.
- 10. REFER RISER DIAGRAM FOR ALL PIPE SIZES.
- 11. COPPER PIPE SHALL BE USED FOR ALL WATER PIPING EXCEPT FILTERED AND R.O. WATER PIPING. TYPE "L" HARD DRAWN COPPER SHALL BE USED FOR PIPE NOT SET UNDER CONCRETE. TYPE "K" SOFT COPPER SHALL BE USED FOR PIPING UNDER CONCRETE. FITTINGS SHALL BE WROUGHT COPPER THROUGHOUT. (LARR #:5482) PEX PIPE SHALL BE USED FOR ALL FILTERED AND R.O. WATER LINES, "UPONOR" PEX PIPE AND FITTINGS ASTM F 876/877 AND PEX-A FITTINGS ASTM F1960, MULTI-PORT TEES, MANIFOLDS AND TRANSITION FITTINGS AS REQUIRED. INSTALLATION SHALL BE AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS

## WATER SUPPLY KEYED NOTES

- CONNECT NEW 1" CW LINE TO EXISTING COLD WATER LINE IN THE SPACE. CONTRACTOR TO FIELD VERIFY EXISTING PIPE LOCATION AND SIZE, UPGRADE IF REQUIRED. BASE BID ACCORDINGLY.
- NO TAP OFF TO BE TAKEN BEFORE BFP.
- CONTRACTOR TO COORDINATE WITH LANDLORD/AHJ REQUIREMENT OF BFP. PROVIDE BFP (WATTS LF009) AS SHOWN ON THE PLAN IF REQUIRED. INSTALLED BFP AS PER LOCAL AHJ. CONTRACTOR TO FILED VERIFY EXISTING WATER METER, PROVIDE NEW IF NOT EXISTING. BASE BID ACCORDINGLY.
- EXTEND AND CONNECT NEW CW / HW / HWR LINE TO THE EXISTING WATER SUPPLY LINE. CONTRACTOR TO FIELD VERIFY THE SIZE, LOCATION AND CONDITION OF EXISTING PIPING AND UPGRADE/REPLACE IF REQUIRED.
- PROVIDE ASSE 1070 APPROVED THERMOSTATIC MIXING VALVE (TMV) TO LAVATORY AND HAND SINK. SET AT MAXIMUM 110° F.
- INSTALL NEW ELECTRIC WATER HEATER ON SHELF ABOVE THE MOP SINK. TERMINATE T & P RELIEF AND DRAIN FROM WATER HEATER DRAIN PAN ABOVE RIM OF THE MOP SINK WITH APPROVED AIR GAP.
- PROVIDE ASSE 1012 APPROVED WATTS LF9D OR EQUIVALENT BACKFLOW PREVENTER TO ICEOMATIC AT ACCESSIBLE LOCATION.
- PROVIDE ASSE 1022 APPROVED WATTS SD-3 OR EQUIVALENT BACKFLOW PREVENTER TO TEA BREWER AT ACCESSIBLE LOCATION.
- EXISTING WATER CLOSET AND LAVATORY TO REMAIN WITH EXISTING CW/HW PIPING CONNECTIONS, ASSOCIATED ACCESSORIES AND FITTINGS. CONTRACTOR TO FIELD VERIFY THE CONDITION OF EXISTING PIPING AND UPGRADE/REPLACE IF REQUIRED. WATER SUPPLY LINES EXTEND AND CONNECT TO THE NEAREST WATER SUPPLY LINE.

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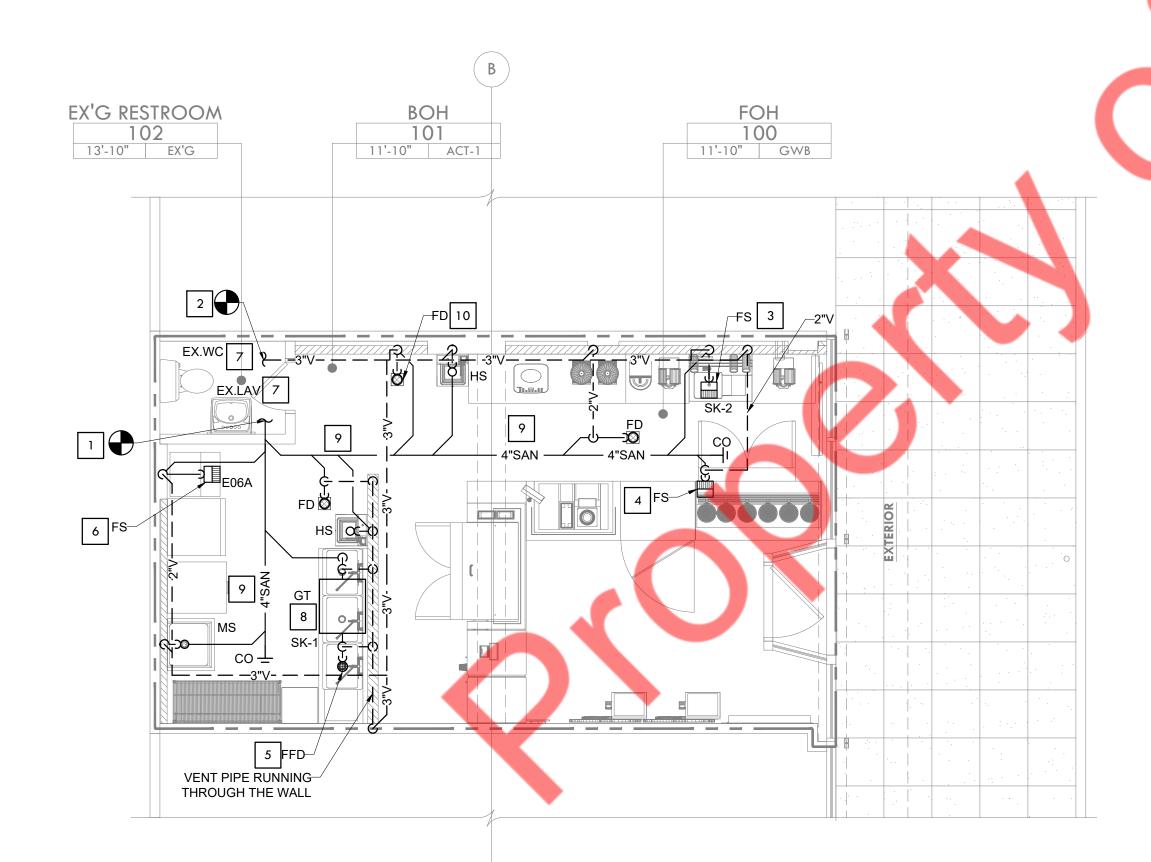
12.06.24 | CLIENT REVIEW SET

PRIOR TO THE COMMENCEMENT OF WORK.

| DATE |

# 1/4" = 1' - 0"

PLUMBING WATER SUPPLY PLAN



# GENERAL NOTES

- ANY CHANGES AND/ OR UPGRADES TO TENANT'S EXISTING PLUMBING SYSTEMS SHALL COMPLY WITH ALL CODES AND MALL CRITERIA. EXISTING SYSTEMS SHALL POSSESS THE CAPACITY TO HANDLE ANY AND ALL CHANGES IN LOAD.
- ALL WATER LINES SHALL BE COPPER PVC IS NOT PERMITTED. THERE SHALL BE NO PIPING JOINTS OF FITTINGS INSTALLED IN WATER PIPING BELOW THE FLOOR SLAB.
- 3. PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS\ NECESSARY.
- 4. EXHAUST AND PLUMBING VENTS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE, AND 5'-0" FROM ANY DEMISING WALL VERTICAL PLANE.
- 5. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
- 6. ANY UNUSED PLUMBING EQUIPMENT, PIPING, ETC., WITHIN OR SERVING THE PREMISES MUST BE COMPLETELY REMOVED TO POINT OF ORIGIN. DO NOT ABANDON IN PLACE.
- 7. ALL FLOOR PENETRATIONS MUST BE CORE BORED, SLEEVED, GROUTED, SEALED AND MADE WATERPROOF. SLEEVES MUST EXTEND A
- 8. IF NOT ALREADY EXISTING, INSTALL A SHUT OFF VALVE ON DOMESTIC WATER LINE INSIDE SPACE.
- 9. REFER TO RISER DIAGRAM FOR ALL WASTE AND VENT SIZES
- 10. VERIFY WITH THE LOCAL BUILDING AUTHORITY THAT CONDENSATE DRAINAGE CAN BE ROUTED TO THE MOP SINK.
- 11. ALL SANITARY DRAIN PIPING 2" OR LESS IN DIAMETER SHALL BE SLOPED  $\frac{1}{4}$ " PER FOOT MINIMUM. ALL SANITARY DRAIN PIPING GREATER THAN 3" IN DIAMETER SHALL BE SLOPED 1/8" PER FOOT MINIMUM.

# SANITARY AND VENT KEYED NOTES:

- 7 EXTEND AND CONNECT NEW 4" SANITARY PIPING TO THE EXISTING SANITARY LINE. CONTRACTOR SHALL VERIFY THE EXISTING MAIN PIPE SIZE, ROUTING, INVERT, DIRECTION OF FLOW & TIE-IN CONNECTION PRIOR TO BID.
- CONNECT NEW 3" VENT LINE TO EXISTING LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING LINE AND ITS SIZE. UPGRADE VENT LINE IF REQUIRED.
- ROUTE INDIRECT WASTE FROM PREP SINK (SK-2) AND JUG RINSER TO FLOOR SINK WITH APPROVED AIR GAP.
- ROUTE INDIRECT WASTE FROM TEA URN COUNTER TO FLOOR SINK WITH APPROVED
- ☐ ROUTE INDIRECT WASTE FROM 3-COMPARTMENT SINK (SK-1) TO FUNNEL DRAIN WITH APPROVED AIR GAP. REFER TO DETAILS 9/P-3.0.
- ROUTE INDIRECT WASTE FROM ICE MACHINE TO FLOOR SINK WITH APPROVED AIR
- ☐ EXISTING WATER CLOSET AND LAVATORY WITH EXISTING SANITARY, VENT LINE AND ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING, REPLACE IF REQUIRED. SANITARY PIPING EXTEND AND CONNECT TO THE NEAREST SANITARY LINE.
- GT: GREASE TRAP SCHIER GB-1 OR EQUIVALENT. GREASE 64.9 LBS @ 25 GPM. INSTALL GREASE TRAP ABOVE FLOOR AS PER MANUFACTURER RECOMMENDATION AND LOCAL GUIDELINES. CONTRACTOR TO FIELD VERIFY GREASE TRAP LOCATION AS PER SITE CONDITION PRIOR TO BID AND COORDINATE WITH ARCHITECT/LANDLORD FOR FINAL
- PLUMBING PIPING RUNNING AT LOWER BASEMENT CEILING LEVEL. CONTRACTOR TO CO-ORDINATE PLUMBING PIPING TO THE EXISTING LOWER BASEMENT CEILING LEVEL PIPING, REROUTE IF REQUIRED. BASE BID ACCORDINGLY. NOTIFY ENGINEER IF ANY DISCREPANCIES.

GREASE TRAP LOCATION. BASE BID ACCORDINGLY.

10 ROUTE INDIRECT WASTE FROM BFP TO FLOOR DRAIN WITH APPROVED AIR GAP.

\ DATE | REVISION

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PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE

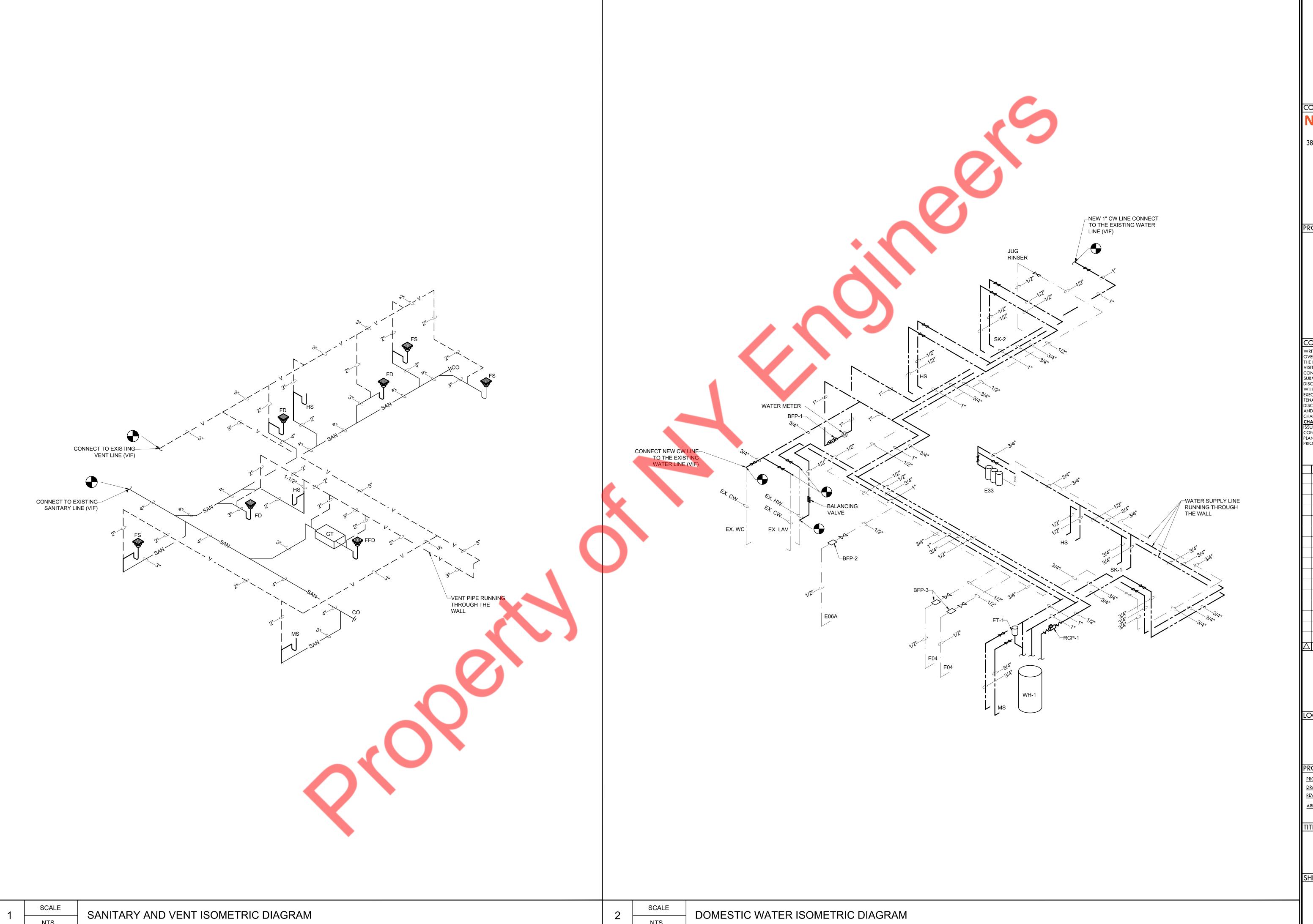
AREA: 465 SQ. FT.

SHEET NUMBER:

PLUMBING PLANS

1/4" = 1' - 0"

PLUMBING SANITARY AND VENT PLAN



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DATE ISSUE 12.06.24 CLIENT REVIEW SET

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LOCATION:

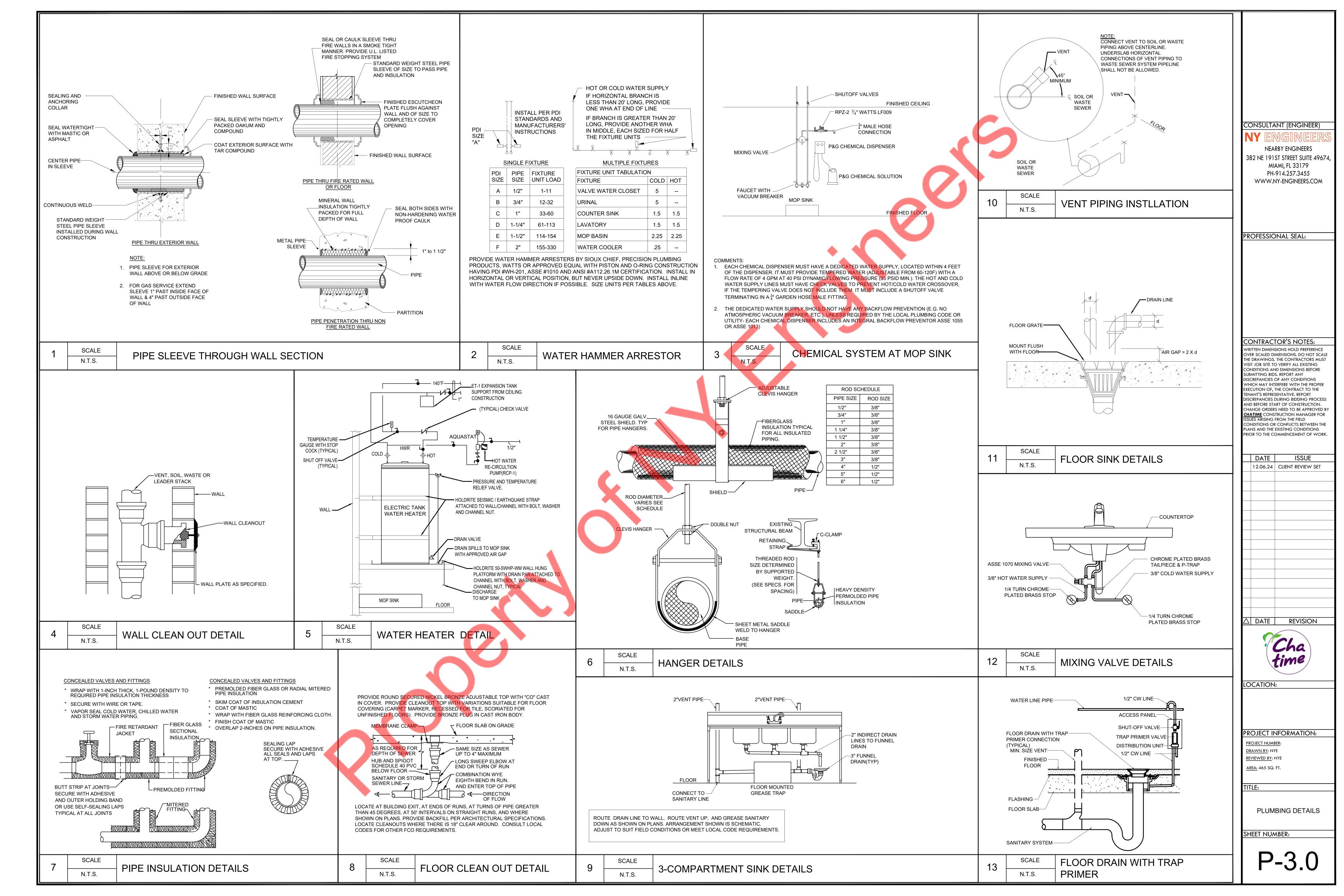
PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE AREA: 465 SQ. FT.

PLUMBING RISERS

SHEET NUMBER:

P-2.0



PLUMBING FIXTURE SCHEDULE													
MARK	FIXTURE	MANUFACTURER MODEL NO.	QTY.	DIRECT WASTE	INDIRECT WASTE	VENT	CW	HW	FW	DESCRIPTION/REMARKS			
FD	FLOOR DRAIN	JOSAM 30003-A-55	3	3"	-	2"	-	-	-	CAST IRON BODY, ADJUSTABLE ROUND TOP WITH SATIN NIKALOY STRAINER, AND FLASHING COLLAR. INSTALL ASSE 1072 COMPLIANT TRAP GUARD EQUAL TO PROVENT PROSET.			
FS	FLOOR SINK	JOSAM 49300-LF-3	3	3"	-	2"	-	-	-	CAST IRON BODY, 8"x8" SQUARE CAST IRON TOP WITH ACID RESISTANT PORCELAIN INTERIOR, LESS FLANGE, HALF GRATE, ALUMINUM INTERNAL DOME STRAINER. INSTALL ASSE 1072 COMPLIANT TRAP GUARD EQUAL TO PROVENT PROSET.			
FFD	FUNNEL DRAIN	-	1	3"	-	2"	-	-	-	FURNISHED BY OWNER AND INSTALLED BY GC.			
HS	HAND SINK	JOHN BOOS PBHS-W-1410-2DM-SSLR	2	2"	-	1-1/2"	1/2"	1/2"	-	FURNISHED BY OWNER AND INSTALLED BY GC. INSTALL LEAD-FREE ASSE 1070 COMPLIANT MIXING VALVE EQUAL TO WATTS LFUSG-B BELOW FIXTURE AND SET OUTLET TEMP TO 105°F.			
X.LAV	EXISTING LAVATORY	E	E	Е	-	E	Е	E	-	PROVIDE NEW HOT WATER RETURN LINE, IF NOT EXISTING. LAVATORY EXISTING TO REMAIN			
MS	MOP SINK	-	1	2"	-	2"	3/4"	3/4"	-	FURNISHED BY OWNER AND INSTALLED BY GC. INSTALL LEAD-FREE CHECK VALVES EQUAL TO WATTS LF600 ON WATER SUPPLY LINES TO FAUCET.			
K-1	3 COMP SINK	JOHN BOOS 3B184-2D18	1	-	1-1/2"	-	3/4"	3/4"	-	FURNISHED BY OWNER AND INSTALLED BY GC.			
K-2	PREP SINK	JOHN BOOS 4CH4-3048	1	-	1-1/2"	-	1/2"	1/2"	-	FURNISHED BY OWNER AND INSTALLED BY GC.			
X.WC	EXISTING WATER CLOSET	E	E	E	-	E	E	-	-	EXISTING TO REMAIN			
-	JUG RINSER	-	1	-	3/4"	-	-	-	1/2"	FURNISHED BY OWNER AND INSTALLED BY GC.			
-	ICE & SYRUP WELL	-	1	-	3/4"	-	-	-	-	FURNISHED BY OWNER AND INSTALLED BY GC.			
-	TEA URN	-	2	-		-	-	-	1/2"	FURNISHED BY OWNER AND INSTALLED BY GC.			
-	ICE MACHINE	-	1	-	3/4"	-	-	-	1/2"	FURNISHED BY OWNER AND INSTALLED BY GC.			

	ELECTRIC WATER HEATER SCHEDULE											
MARK	TYPE	MANUFACTURER	MODEL NO.	STORAGE (GAL)	RECOVERY @90°F TEMP RISE (GPH)	TEMP. SETPOINT			DEMARKO			
MARK		WANDFACTURER	MODEL NO.			(°F)	KW	VOLTS	PHASE	REMARKS		
WH-1	TANK	RHEEM	ELD40-TB	40	55	140	12.0	208	1	SEE NOTES		
NOTES: 1. INSTALL WATE	ER HEATER PER	MANUFACTURER'S INS	TRUCTIONS.									

- 2. PROVIDE T&P RELIEF VALVE, DRAIN VALVE AND OVERFLOW DRAIN PAN. T&P VALVE AND DRAIN PAN SHALL DRAIN TO NEAREST APPRVED RECEPTOR WITH CODE REQUIRED AIR GAP.
- 3. INSTALL 2.0 GALLON EXPANSION TANK EQUAL TO AMTROL ST-5C-DD.

CIRCULATION PUMP SCHEDULE										
MARK	TYPE	MANUFACTURER	MODEL NO.	CAPACITY (GPM)	PUMP HEAD (FT)	HP	ELECT VOLT	RICAL PH	H7	REMARKS
RCP-1	HW CIRCULATION	BELL & GOSSETT	NBF-9U	2.0	5.0	1/40	120	1	60	PRVOIDE WITH AUTOMATIC TIME KIT TC-1 AND AQUASTAT AQS-1/2

		PLUMBING SPECIALT	IES SCHEDULE
MARK	DESCRIPTION	MANUFACTURER MODEL NO.	REMARKS
FCO	FLOOR CLEANOUT	JOSAM 55000-1	CAST IRON BODY, ADJUSTABLE SCORIATED MEDIUM DUTY NIKALOY TOP SET FLUSH WITH FINISHED FLOOR.
СО	CLEANOUT	-	FURNISHED BY OWNER AND INSTALLED BY GC.
TMV	THERMOSTATIC MIXING VALVE	WATTS LFUSG-B-2	ASSE 1070 COMPLIANT, SET AT 105°F UNLESS NOTED OTHERWISE ON PLANS. INSTALL PER MANUFACTURER REQUIREMENTS.
WHA	WATER HAMMER ARRESTER	J.R. SMITH 5020 HYDROTROL	LEAD-FREE COPPER BODY. SIZE AND INSTALL PER MANUFACTURER REQUIREMENTS.
WCO	WALL CLEANOUT	JOSAM 58600-CO	CAST IRON BODY, NO HUB OUTLET WITH COUNTERSUNK BRONZE PLUG AND ROUND STAINLESS STEEL ACESS COVER.

	PII	PING MATERIAL & INSU	ILATION		
APPLICATION	PIPING MATERIAL	PIPE FITTING/WELD	PIPE SCHEDULE/TYPE II	NSULATION MATERIAL	INSULATION THICKNESS
SANITARY WASTE & VENT					
BELOW GRADE	CI-H&S, CI-NO HUB, PVC	SLIP JOINT, BAND, SOLVENT	SCH 40		
ABOVE GRADE	CI-NO HUB, PVC	BAND, SOLVENT	SCH 40		
DOMESTIC WATER					
ABOVE GRADE HOT WATER	HARD COPPER	SOLDER	TYPE L	FIBERGLASS	< 1" PIPE: 1", ≥ 1" PIPE: 1 1/2"
ABOVE GRADE COLD WATER	HARD COPPER	SOLDER	TYPE L	FIBERGLASS	< 1" PIPE: 1/2", ≥ 1" PIPE: 1"
CONDENSATE DRAIN		·			
INDOORS	COPPER DWV, PVC DWV	SOLDER, SOLVENT	TYPE M, 40	ARMAFLEX	
NOTEC.	•	•	•		

- 1. UNDER NO CIRCUMSTANCES SHALL PVC PIPING BE USED IN RETURN AIR SPACES. 2. USE MATERIAL ONLY AS APPROVED BY AUTHORITIES HAVING JURISDICTION.
- 3. ALL MATERIALS USED SHALL HAVE A FLAME SPREAD OF NOT MORE THAN 25 WITHOUT EVIDENCE OF CONTINUOUS PROGRESSIVE COMBUSTION AND WITH A SMOKE DEVELOPED RATING OF NOT GREATER THAN 50. SHOP DRAWINGS SUBMITTAL SHALL SHOW THIS INFORMATION.

DFU 49 DFU = 4" PIPING HORIZONTAL @ 1/8" PER FOOT SLOPE (180 DFU MAX)

4. INSULATION VALUES MUST MEET MINIMUM REQUIREMENT OF ENERGY CODE ADOPTED BY THE AUTHORITY HAVING JURISDICTION, OR AS LISTED HEREIN, WHICHEVER IS GREATER.

DESCRIPTION FLOOR DRAIN FLOOR SINK FUNNEL DRAIN HAND SINK EXISTING LAVATORY	QTY.  3  3  1  2  1	5 5 5 3	15 15 05 6	0.8	TOTAL CWFU  -  -  1.6	HWFU - -	TOTAL HWFU	WSFU	TOTAL WSFU
FLOOR SINK FUNNEL DRAIN HAND SINK	3 1 2	5	15 05	-	·		-	-	-
FUNNEL DRAIN HAND SINK	1 2	5	05	-	·		-		
HAND SINK	2				- 16			-	-
		3	6	0.8	1.6	0.0			
EXISTING LAVATORY	1		1	0.0	1.0	8.0	1.6	1	2
	I	1	1	0.8	0.8	0.8	0.8	1	1
MOP SINK	1	3	3	2.3	2.3	2.3	2.3	3	3
3 COMP SINK	1	-	-	2.3	2.3	2.3	2.3	3	3
PREP SINK	1	-	-	2.3	2.3	2.3	2.3	3	3
ISTING WATER CLOSET	1	4	4	2.5	2.5	-	-	2.5	2.5
TEA BREWER	2	-		0.5	1.0	-	-	-	1
ICE MACHINE	1	-		0.5	0.5	-	-	0.5	0.5
JUG RINSER	1	-	-	0.5	0.5	-	-	0.5	0.5
	•	•	49.0				9.3		16.5
	3 COMP SINK PREP SINK STING WATER CLOSET TEA BREWER ICE MACHINE JUG RINSER	3 COMP SINK       1         PREP SINK       1         STING WATER CLOSET       1         TEA BREWER       2         ICE MACHINE       1	3 COMP SINK 1 - PREP SINK 1 - STING WATER CLOSET 1 4 TEA BREWER 2 - ICE MACHINE 1 - JUG RINSER 1 -	3 COMP SINK  1  PREP SINK  1  STING WATER CLOSET  1 4 4  TEA BREWER  2  ICE MACHINE  1  JUG RINSER  1  49.0	3 COMP SINK 1 2.3  PREP SINK 1 2.3  STING WATER CLOSET 1 4 4 2.5  TEA BREWER 2 0.5  ICE MACHINE 1 0.5  JUG RINSER 1 - 0.5  49.0	3 COMP SINK 1 2.3 2.3  PREP SINK 1 2.3 2.3  STING WATER CLOSET 1 4 4 2.5 2.5  TEA BREWER 2 0.5 1.0  ICE MACHINE 1 0.5 0.5  JUG RINSER 1 - 0.5 0.5  49.0	3 COMP SINK 1 2.3 2.3 2.3 2.3 PREP SINK 1 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3	3 COMP SINK 1 2.3 2.3 2.3 2.3 2.3 2.3 PREP SINK 1 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3	3 COMP SINK 1 2.3 2.3 2.3 2.3 3  PREP SINK 1 2.3 2.3 2.3 2.3 2.3 3  STING WATER CLOSET 1 4 4 2.5 2.5 2.5  TEA BREWER 2 0.5 1.0 0.5  ICE MACHINE 1 0.5 0.5 0.5  JUG RINSER 1 0.5 0.5 0.5  49.0 9.3

L ASSE		VENT PIPING
, HALF	SAN	WASTE PIPE BELOW GROUND
VENT	GSAN	GREASE WASTE BELOW GROUND
NIAL TO		COLD WATER PIPING
QUAL TO		HOT WATER PIPING
		HOT WATER RETURN PIPING
ON		FILTER WATER PIPING
		EXISTING COLD WATER PIPING
		P-T <mark>RA</mark> P
	o	PIPE UP
		PIPE DROP
		PIPE CAP
	<b>──</b> ₩	CONTROL VALVE
		FLOOR DRAIN / HUB DRAIN
	e good	BACKFLOW PREVENTER
		POINT OF CONNECTION
		CLEANOUT
		BALANCING VALVE
		FLOOR SINK
1		FUNNEL DRAIN

PLUMBING SYMBOL LIST

GREASE TRAP SCHEDULE						
ITEM	SERVICE	FLOW CAPACITY (GPM)	GREASE CAPACITY (LBS)	LIQUID CAPACITY (GALLON)	MANUFACTURER AND MODEL	
GT: GREASE TRAP	KITCHEN WASTE	25	64.9	10	SCHIER GB1	
NOTE- CONTRACTOR TO PROVIDE ALL REQUIRED ACCESSORIES FOR SATISFACTORY WORKING OF GREASE TRAP AS PER SITE CONDITIONS.						

GREASE INTERCEPTOR	Quote: CF7FX636  Project Name: Chatime				
Reference No. 77612					
Step 1: Flow rate to grease Fixture flow rate: (cu in / 231)	<u>-</u>	flow rate			
NAME	TYPE	DIMENSIONS	QTY	CU IN	FLOW RATE
3 Compartment Sink	3 Compartment Sink	18" x 18" x 14" (3)	1	13,608	22.09 GPM
Total					22.09 GPM
Dining area / 14 Sq ft per seat pump-out] = Grease output	x reams per seat per day x [	oreace reduction v	aracj x	[Dayo De	
Grease production value: 0.00	5 lbs per serving (Coffee Sh	op: Low / No flatwar	e)		
Amount of square feet in faci Grease production value: 0.00 Days between pump-outs: 90 (475 x .6) / 14 x 4 x 0.005	15 lbs per serving (Coffee Sh days	op: Low / No flatwar	e)		
Days between pump-outs: 90	bs per serving (Coffee Shapes)  x 90 = 36.643 lbs of FOG  Description: GREASE CONNEC	INTERCEPTOR 20 CTIONS W/ 3" AND ERS, PEDESTRIAN F	GPM , 2" PLA RATED	AIN END POLYPI	•

### **GENERAL NOTES**

- A. VERIFY EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF UTILITIES AND PIPING BEFORE COMMENCEMENT OF WORK, AND IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
- B. OBTAIN EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES FROM ARCHITECTURAL DRAWINGS.
- C. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH UTILITY COMPANIES FOR SERVICE AND CONNECTIONS AND SHALL PAY FOR ALL PERMITS, FEES, CHARGES AND METERS.
- D. TERMINATE ALL VENT AND FLUE OUTLETS AT 10'-0" MINIMUM FROM ANY FRESH AIR INTAKES.
- E. INSTALL ALL PLUMBING TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING. NO WATER OR DRAIN LINES PERMITTED OVER OR UNDER ELECTRICAL PANELS. INSURE THAT ALL WATER LINES INSIDE ARE ADEQUATELY SECURED. F. PROVIDE FAUCETS UNLESS OTHERWISE NOTED, TRAPS, STOPS, GATE VALVES, GAS COCKS, WATER HAMMER ARRESTERS, WALL CLEANOUTS, COVERS, FLEX CONNECTIONS, SHUT OFF VALVES AND INDIRECT WASTE TO AN APPROVED RECEPTOR AND ALL NECESSARY TRIM FOR A COMPLETELY INSTALLED & CONNECTED PLUMBING SYSTEM.
- RECORD ON AS BUILT DRAWINGS ALL SIZES, LOCATIONS, INVERTS AND MATERIALS OF EXISTING PIPES THAT ARE ENCOUNTERED AND NEW PIPES INSTALLED DURING THE COURSE OF THE PROJECT DELIVER AS BUILTS TO THE CONSTRUCTION MANAGER AT THE END OF THE PROJECT. H. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL AND FEDERAL CODES, RULES AND REGULATIONS GOVERNING THIS PROJECT. UPON COMPLETION OF JOB, INSPECT ALL EXPOSED PORTIONS OF THE I.
  PLUMBING INSTALLATIONS AND COMPLETELY REMOVE ALL EXPOSED
  LABELS, SOIL, MARKINGS, AND FOREIGN MATERIAL EXCEPT PRODUCT LABELS AND THOSE REQUIRED BY LAW. J. TERMINATE ALL INDIRECT WASTE LINES ABOVE FLOOR SINK WITH A TWO PIPE DIAMETER AIR GAP. ALL INDIRECT WASTE PIPING MUST BE HARD PIPED, COPPER DWV PIPING AND FITTINGS ONLY. NO P.V.C. ALLOWED.
- K. PLUMBING CONTRACTOR SHALL VERIFY INSTALLATION REQUIREMENTS FOR FLOOR SINKS AND FLOOR DRAINS. THE GOVERNING AUTHORITY HAVING JURISDICTION MAY REQUIRE THE FOLLOWING: FLOOR SINKS MAY BE REQUIRED TO BE INSTALLED WITH THE RIM RAISED ABOVE THE FINISHED FLOOR. FLOOR DRAINS MAY NEED TO BE RECESSED WITH THE FLOOR SLOPED TO THE DRAIN. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THIS INFORMATION AND INSTALLING THESE ITEMS AS REQUIRED BY CODE.
- PROVIDE FIRE BOOTS AT FIRE WALL AND FLOOR PENETRATIONS WHEN REQUIRED BY CODE. FOR PVC PIPING AND OTHER MATERIALS THE FIRE INSPECTIONS DEPARTMENT MAY REQUIRE PROTECTION AROUND.
- M. CONTRACTOR TO PROVIDE AND INSTALL CLAMPING RINGS AND COLLARS FOR ALL FLOOR DRAINS, FLOOR SINKS, FLOOR CLEANOUTS, AND ANY OTHER PLUMBING FLOOR PENETRATIONS. MAKE WATER TIGHT CONNECTIONS WITH WATER PROOFING MEMBRANE.
- N. WHEN WORKING IN A REMODEL OR TENANT FINISH OUT IN AN EXISTING OCCUPIED BUILDING, THE CONTRACTOR IS TO OBSERVE THE FOLLOWING. REMOVE EXISTING WASTE PIPING NOT TO BE REUSED OR IN USE BY OTHER TENANTS. AVOID CONFLICTS BETWEEN NEW AND EXISTING PIPING SYSTEMS. TO ENSURE PROPER INSTALLATION OF NEW PIPING VERIFY FLOW LINE ELEVATION AND LOCATION OF EXISTING PIPING CONNECTION POINTS. Q. THE INTENT OF THE DRAWINGS HEREIN IS TO REPRESENT A COMPLETE WORKING SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL COMPONENTS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.
- R. PLUMBING CONTRACTOR SHALL TAKE WATER PRESSURE READING AT/ADJACENT TENANT SERVICE CONNECTION POINT PRIOR TO PERFORMING WORK. MULTIPLE READINGS SHALL BE TAKEN WITH CONSIDERATION TO OTHER TENANT WATER USAGE AT DIFFERENT PERIODS DURING THE DAY. PLUMBING CONTRACTOR SHALL SEND PHOTOGRAPH OF PRESSURE READINGS TO GENERAL CONTRACTOR. GENERAL CONTRACTOR SHALL

SEI	SEND TO OWNER'S REPRESENTATIVE.							
	PLUMBING ABBREVIATIONS							
SAN	SANITARY	М	WATER METER					
V	VENT	PRV	PRESSURE REDUCING VALVE					
GSAN	GREASE SANITARY	UNGD	UNDERGROUND					
		HS	HAND SINK					
FFD	FUNNEL DRAIN	FS	FLOOR SINK					
HD	HUB DRAIN	FW	FILTERED WATER					
EX.	EXISTING	СО	CLEANOUT					
FD	FLOOR DRAIN	WH	WATER HEATER					
CW	COLD WATER	RCP-1	RECIRCULATION PUMP					
HW	HOT WATER	ET	EXPANSION TANK					
HWR	HOT WATER RETURN	VIF	VERIFY IN FIELD					
TYP.	TYPICAL							
DN	DOWN							
AFF	ABOVE FINISH FLOOR							
BFP	BACK FLOW PREVENTER							

CONSULTANT (ENGINEER)

NEARBY ENGINEERS

382 NE 191ST STREET SUITE 49674,

MIAMI, FL 33179

PH-914.257.3455 WWW.NY-ENGINEERS.COM

PROFESSIONAL SEAL:

CONTRACTOR'S NOTES:

WRITTEN DIMENSIONS HOLD PREFERENCE OVER SCALED DIMENSIONS. DO NOT SCALE THE DRAWINGS. THE CONTRACTORS MUST VISIT JOB SITE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE SUBMITTING BIDS. REPORT ANY DISCREPANCIES OF ANY CONDITIONS WHICH MAY INTERFERE WITH THE PROPER EXECUTION OF, THE CONTRACT TO THE TENANT'S REPRESENTATIVE, REPORT DISCREPANCIES DURING BIDDING PROCESS AND BEFORE START OF CONSTRUCTION. CHANGE ORDERS NEED TO BE APPROVED BY CHATIME CONSTRUCTION MANAGER FOR ISSUES ARISING FROM THE FIELD CONDITIONS OR CONFLICTS BETWEEN THE PLANS AND THE EXISTING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

DATE

$\overline{\Delta}$	DATE	REVISION

ISSUE

12.06.24 | CLIENT REVIEW SET



LOCATION:

PROJECT INFORMATION:

DRAWN BY: NYE REVIEWED BY: NYE

AREA: 465 SQ. FT.

PLUMBING SCHEDULE

SHEET NUMBER: