

MECHANICAL SYMBOLS LIST

	ROOF TOP UNIT
	KITCHEN SUPPLY FAN
	KITCHEN EXHAUST FAN
	CEILING MOUNTED EXHAUST FAN
	CEILING DIFFUSER SUPPLY
	CEILING DIFFUSER RETURN/EXHAUST
	THERMOSTAT
	MANUAL PULL STATION
	DUCT MOUNTED SMOKE DETECTOR
	RECTANGULAR DUCT (WIDTH X DEPTH)
	ROUND DUCT (DIAMETER)
	ROUND DUCT CROSS SECTION
	POINT OF NEW CONNECTION
	SUPPLY AIR RECTANGULAR DUCT GOING UP/DOWN
	RETURN AIR RECTANGULAR DUCT GOING UP/DOWN
	BACKDRAFT DAMPER
	VOLUME DAMPER W/ ACCESS DOOR

BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF 2020 NEW YORK STATE WITH ALL AMENDMENTS, BASE CODE IBC 2018 AND RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTION AND TESTS.
- TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH 2020 NEW YORK STATE BUILDING CODE.
- THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
- TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE INTERNATIONAL 2020 NYS MECHANICAL CODE (2018 IMC):
A. VENTILATION SYSTEM BALANCING 2020 NYS MECHANICAL CODE (2018 IMC) - 403.3
B. GREASE DUCT TEST 2020 NYS MECHANICAL CODE (2018 IMC) - 506.3.2.5
- THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
A. STANDARDS OF HEATING 2020 NYS MECHANICAL CODE (2018 IMC) - 309.1
B. DUCT CONSTRUCTION AND INSTALLATION 2020 NYS MECHANICAL CODE (2018 IMC) - 603
C. AIR INTAKES, EXHAUSTS AND RELIEF 2020 NYS MECHANICAL CODE (2018 IMC) - 401.5
D. AIR FILTERS 2020 NYS MECHANICAL CODE (2018 IMC) - 605
- MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
- VENTILATION FOR ALL AREA SHALL COMPLY WITH 2020 NYS MECHANICAL CODE (2018 IMC), CHAPTER 4.
- VENTILATION SYSTEM SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATES AS SHOWN IN VENTILATION REQUIREMENT TABLE. THE SYSTEM SHALL BE BALANCED BY APPROVED METHOD. CONTRACTOR TO SUBMIT THE AIR BALANCE REPORT TO INSPECTOR OF RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.
- 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 2020 NYS MECHANICAL CODE (2018 IMC) - 403.
- REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
- THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
- SMOKE DETECTOR SHALL MEET UL268A.
- MECHANICAL SYSTEM COMMISSIONING SHALL BE DONE AS PER 2020 NEW YORK STATE ENERGY CONSERVATION CODE SECTION C408.2 IF THE TOTAL MECHANICAL EQUIPMENT CAPACITY BEING INSTALLED OR THE TOTAL MECHANICAL EQUIPMENT CONNECTED LOAD SERVING THE ALTERATION SPACE IS MORE THAN 480,000 BTU/H COOLING AND 600,000 BTU/H COMBINED SERVICE WATER HEATING AND SPACE HEATING.

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BD	GRAVITY DAMPER
CD	CONDENSATE DRAIN
CFM	CUBIC FEET OF AIR PER MINUTE
DN	DOWN
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
KEF	KITCHEN EXHAUST FAN
KSF	KITCHEN SUPPLY FAN
OA	OUTSIDE AIR
RA	RETURN AIR
RAD	RETURN AIR DUCT
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAD	SUPPLY AIR DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
VD	VOLUME CONTROL DAMPER

THERMOSTATIC CONTROL NOTES

C403.4.1 THERMOSTATIC CONTROLS (MANDATORY)
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

C403.4.1.2 DEADBAND (MANDATORY)
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

C403.4.1.3 SETPOINT OVERLAP RESTRICTION (MANDATORY)
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.

C403.4.2 OFF-HOUR CONTROLS (MANDATORY)
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

C403.4.2.1 THERMOSTATIC SETBACK (MANDATORY)
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN (MANDATORY)
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.4.2.3 AUTOMATIC START (MANDATORY)
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

MECHANICAL DRAWING LIST

M001	MECHANICAL GENERAL SHEET
M002	MECHANICAL SPECIFICATIONS
M111	MECHANICAL FLOOR AND ROOF PLAN
M201	MECHANICAL DETAILS (1 OF 2)
M202	MECHANICAL DETAILS (2 OF 2)
M301	MECHANICAL SCHEDULE
M401	HOOD DETAILS (1 OF 2)
M402	HOOD DETAILS (2 OF 2)

GENERAL NOTES

- CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
- ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
- THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
- THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
- CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
- DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT, COORDINATION WITH THE OTHER TRADES IS REQUIRED.
- SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY, WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
- PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
- SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
- WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
- ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACE, AND ACCESS DOOR SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
- REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION, PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
- THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
- MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE.
- ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
- SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
- INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
- THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
- SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES, WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
- WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.

DEFINITIONS:

- "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

GENERAL HVAC NOTES

- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS. DIMENSIONS SHALL NOT BE DEPENDENT UPON DRAWINGS. IF DIMENSIONS ARE SHOWN, THEY ARE FOR INFORMATION ONLY.
- WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- ALL ROOF-MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

SCOPE OF WORK

SCOPE OF WORK

- THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFIS, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
- THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
- THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WH

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

A. THE BIDDER BY MAKING A BID REPRESENTS THAT:
 B. THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
 C. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
 D. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.

E. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.

F. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT, AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.

1.2 EXISTING CONDITIONS AND COORDINATION

A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND HAS CORRELATED THE BIDDER'S OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.

B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

1.3 RESPONSIBILITIES

A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST, OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.

B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.

C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUTDOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUTDOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

1.1 WORKMANSHIP

A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.

B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.

C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.

1.2 CODE COMPLIANCE

A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

END OF SECTION 0101

SECTION 0102 - REQUIRED DOCUMENTS

1.1 SHOP DRAWINGS

A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.

1.2 SUBMITTALS

A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES, AND CHOICES SHALL BE CHECKED, PRINTED, OR OTHERWISE INDICATED ON THE SUBMITTALS.

1.3 RECORD DRAWINGS

A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.

1.4 EQUIPMENT OPERATING INSTRUCTIONS

A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

END OF SECTION 0102

SECTION 078413-PENETRATION FIRE-STOPPING

1.1 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
 B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL
 C. PENETRATION FIRESTOPPING

A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.
 B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479:
 C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
 D. W-RATINGS: PER UL 1479.

1.2 INSTALLATION

A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
 B. FIELD QUALITY CONTROL

A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
 B. THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE:

A. WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

B. FOR THE FOLLOWING SYSTEMS: METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ONE OR MORE OF THE FOLLOWING MATERIALS:

a. LATEX SEALANT
 b. SILICONE SEALANT
 c. MORTAR
 d. SILICONE FOAM
 e. PILLOWS/BAGS
 f. INTUMESCENT WRAP STRIPS

1.6 MANUFACTURERS

A. HILTI CONSTRUCTION CHEMICAL, INC
 B. 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

1.1 SLEEVE-SEAL SYSTEMS

A. FIELD-ASSEMBLED MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNUAL SPACE BETWEEN PIPING AND SLEEVE.
 B. SEALING ELEMENTS: EPDM RUBBER OR NBR.

C. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL, CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

D. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. ADVANCE PRODUCTS & SYSTEMS, INC.
 2. CALPICO, INC.
 3. METRAFLEX COMPANY (THE)
 4. PIPELINE SEAL AND INSULATOR, INC.

1.2 SLEEVE-SEAL FITTINGS

A. MANUFACTURED PLASTIC, SLEEVE-TYPE, PLASTIC OR RUBBER WATER-STOP ASSEMBLY MADE FOR IMBEDDING IN CONCRETE SLAB OR WALL.

1.3 GROUT

A. NON-SHRINK, FACTORY PACKAGED.

1.4 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. USE SLEEVES AND SLEEVE SEALS FOR THE FOLLOWING PIPING-PENETRATION APPLICATIONS:

1. INTERIOR PARTITIONS:
 a. PIPING SMALLER THAN NPS 6 (DN 150): GALVANIZED-STEEL-PIPE SLEEVES, PVC-PIPE SLEEVES.

b. PIPING NPS 6 (DN 150) AND LARGER: GALVANIZED-STEEL-SHEET SLEEVES.

END OF SECTION 230517

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

1.1 PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND

3. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

1.2 SUBMITTALS

A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

1.3 QUALITY ASSURANCE

A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL."

1.4 COMPONENTS

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL
 B. FIBERGLASS PIPE HANGERS: CLEVIS, CENTURY COMPOSITES, COOPER B-LINE
 C. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
 D. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE
 E. THERMAL-HANGER SHIELD INSERTS:
 F. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
 G. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURE-MOUNTED TYP EQUIPMENT SUPPORTS.

END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR PIPING AND HVAC EQUIPMENT

PART 1 - GENERAL

A. PERFORMANCE REQUIREMENTS
 B. SEISMIC-RESTRAINT LOADING:

1. SITE CLASS AS DEFINED IN THE IBC: A, B

2. ASSIGNED USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III

a. COMPONENT IMPORTANCE FACTOR: 1.0
 b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
 c. COMPONENT AMPLIFICATION FACTOR: 2.5

3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
 4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
 2. MOUNTS: DOUBLE-DEFLECTION TYPE

3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING
 4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN-SPRING TYPE

5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT
 6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS

7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE
 8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION

9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP
 10. PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR

11. RESILIENT PIPE GUIDES

A. AIR-MOUNTING SYSTEMS:
 1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWS

2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS
 3. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS

D. VIBRATION ISOLATION EQUIPMENT BASES:
 1. STEEL BASE: FACTORY- FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS
 2. INERTIA BASE: FACTORY- FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE

1.3 FIELD QUALITY CONTROL

A. TESTING: BY EITHER OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR

PART-2 PRODUCTS

A. VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
 B. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. ACE MOUNTINGS CO., INC.
 2. AMBER/BOOTH COMPANY, INC.
 3. CALIFORNIA DYNAMICS CORPORATION
 4. COOPER B-LINE, INC; A DIVISION OF COOPER INDUSTRIES
 5. HILTI, INC.
 6. ISOLATION TECHNOLOGY, INC.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
 1. MOTORS
 2. CONDENSING UNITS
 3. AIR SYSTEM: CONSTANT VOLUME

1.2 QUALITY ASSURANCE
 A. THE CONTRACTOR SHALL PROCUER THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION
 A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

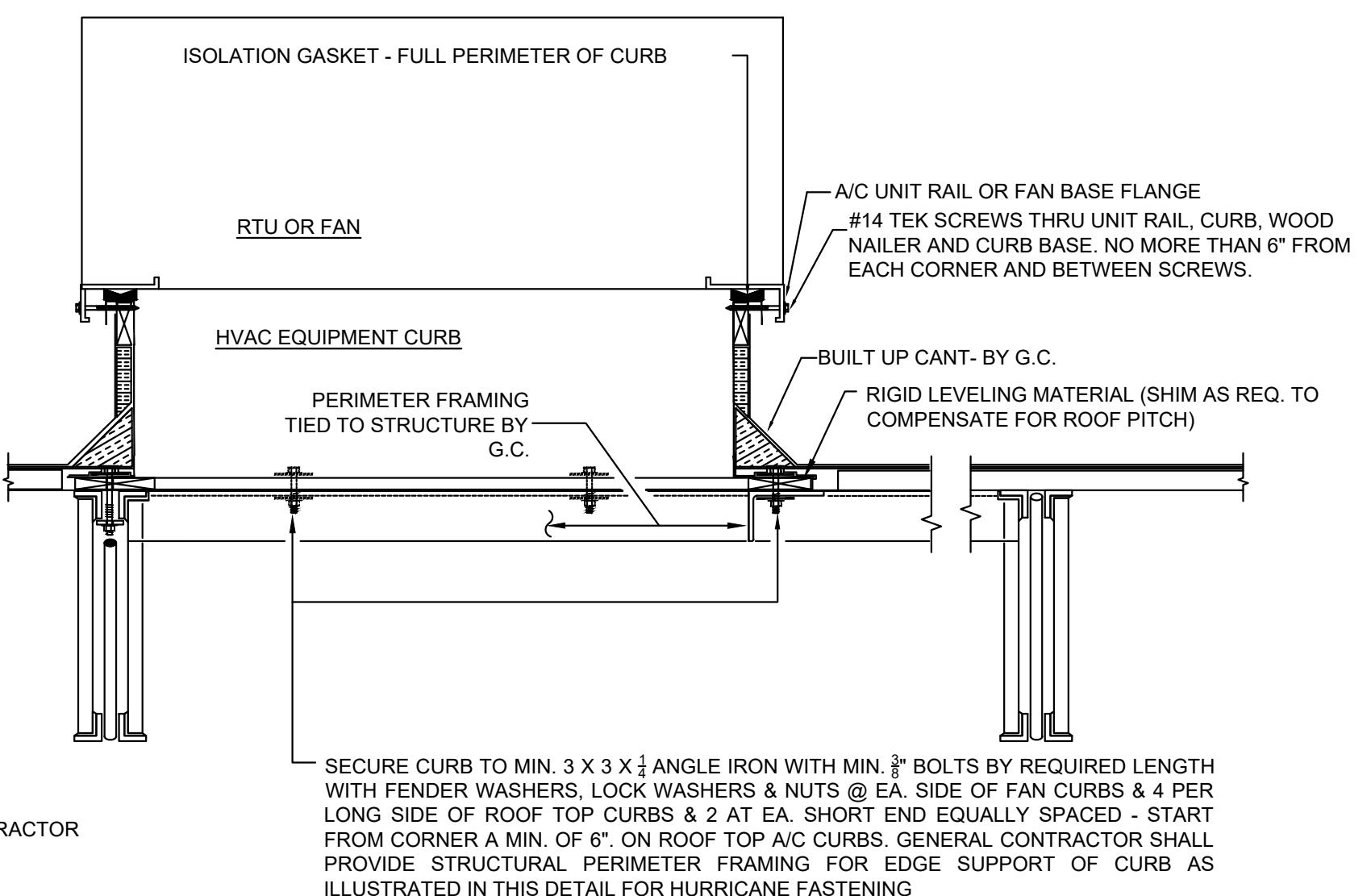
F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL IN

A

ACCEPTABLE FOR 170 MPH ZONE

VERIFY ON SITE WITH GENERAL CONTRACTOR



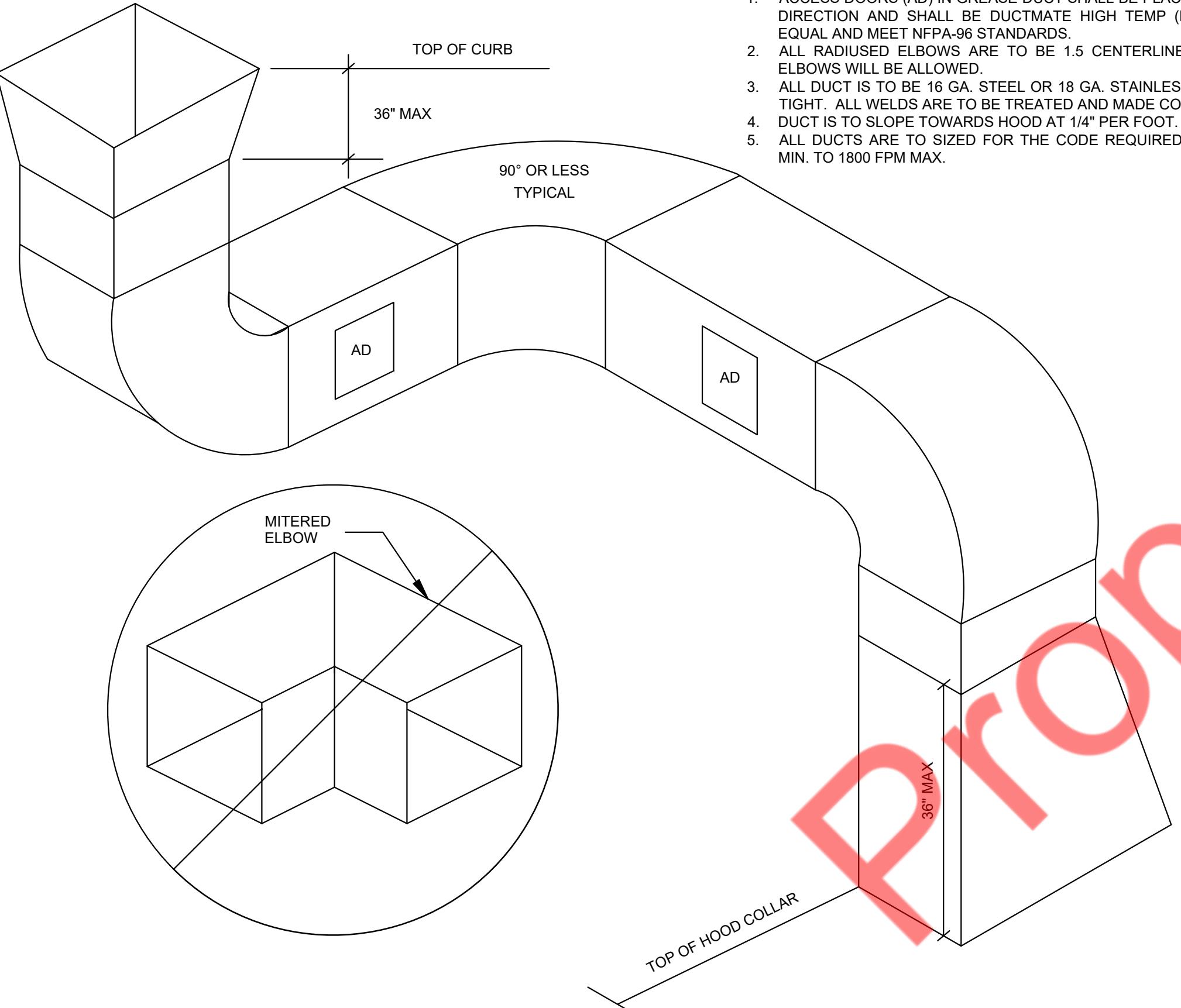
RTU OR FAN

A/C UNIT RAIL OR FAN BASE FLANGE
#14 TEK SCREWS THRU UNIT RAIL, CURB, WOOD NAILER AND CURB BASE. NO MORE THAN 6" FROM EACH CORNER AND BETWEEN SCREWS.

SECURE CURB TO MIN. 3 X 3 X $\frac{1}{4}$ ANGLE IRON WITH MIN. $\frac{3}{8}$ " BOLTS BY REQUIRED LENGTH WITH FENDER WASHERS, LOCK WASHERS & NUTS @ EA. SIDE OF FAN CURBS & 4 PER LONG SIDE OF ROOF TOP CURBS & 2 AT EA. SHORT END EQUALLY SPACED - START FROM CORNER A MIN. OF 6". ON ROOF TOP A/C CURBS. GENERAL CONTRACTOR SHALL PROVIDE STRUCTURAL PERIMETER FRAMING FOR EDGE SUPPORT OF CURB AS ILLUSTRATED IN THIS DETAIL FOR HURRICANE FASTENING

C

RTU INSTALLATION DETAIL

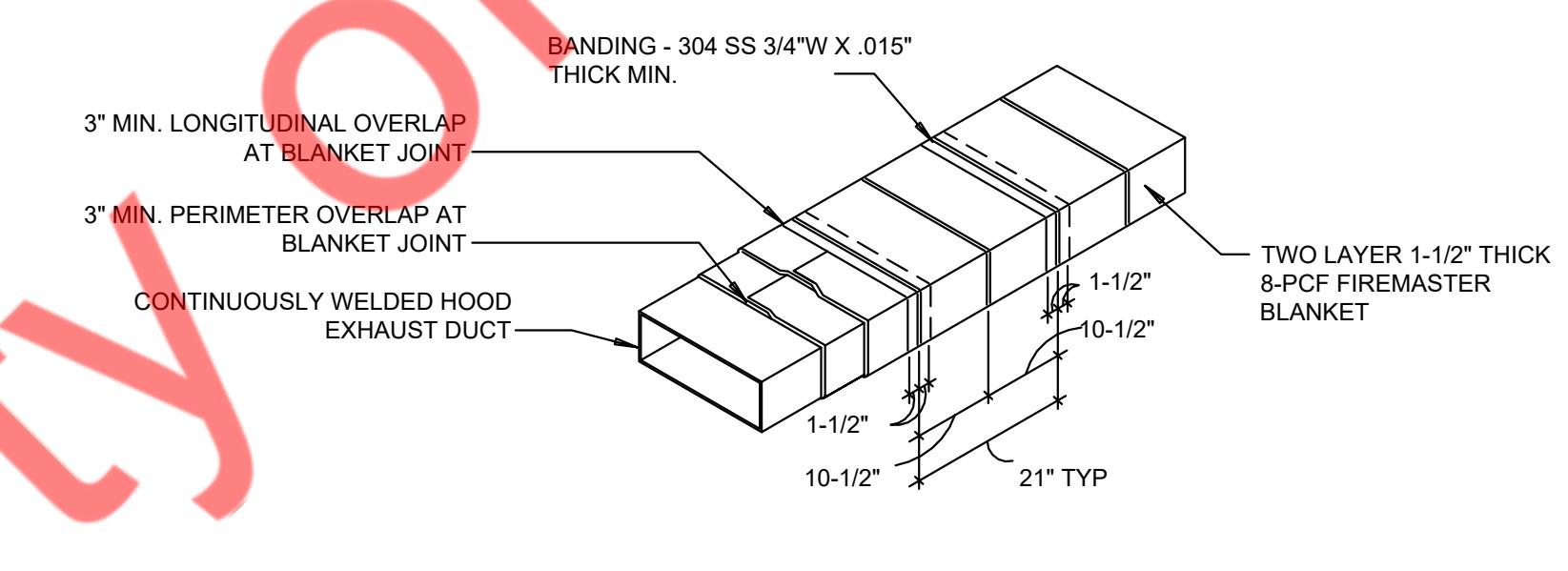


NOTES:

1. ACCESS DOORS (AD) IN GREASE DUCT SHALL BE PLACED AT EVERY CHANGE IN DIRECTION AND SHALL BE DUCTMATE HIGH TEMP (FOR GREASE DUCT) OR EQUAL AND MEET NFPA-96 STANDARDS.
2. ALL RADIUSED ELBOWS ARE TO BE 1.5 CENTERLINE RADIUS. NO MITERED ELBOWS WILL BE ALLOWED.
3. ALL DUCT IS TO BE 16 GA. STEEL OR 18 GA. STAINLESS STEEL WELDED LIQUID TIGHT. ALL WELDS ARE TO BE TREATED AND MADE CORROSION RESISTANT.
4. DUCT IS TO SLOPE TOWARDS HOOD AT 1/4" PER FOOT.
5. ALL DUCTS ARE TO SIZED FOR THE CODE REQUIRED VELOCITY OF 1500 FPM MIN. TO 1800 FPM MAX.

RTU INSTALLATION DETAIL

CEILING MOUNTED EXHAUST FAN DETAIL



BANDING REQUIREMENTS: USE 304 STAINLESS STEEL BANDS A MAXIMUM 1-1/2" FROM BLANKET EDGE AND SPACED A MAXIMUM OF 10-1/2" ON CENTER.

NOTES:

1. WRAP GREASE DUCT CONTINUOUS AS SHOWN FROM CONNECTION AT FAN THROUGH CURB AND EXTEND 18" MIN. BELOW ROOF DECK.
2. FOR HORIZONTAL RUNS OF EXHAUST DUCTS PROVIDE TYPICAL TRAPEZE SUPPORT SYSTEM WITH 1/2" HANGER RODS A MAXIMUM OF 6" FROM INSULATION EDGE. TRAPEZE SUPPORTS SHALL BE SPACED A MAXIMUM OF 60" ON CENTER FROM CENTERLINE OF VERTICAL EXHAUST DUCT.
3. SLOPE HORIZONTAL EXHAUST DUCT RUNS A MINIMUM OF 1/4" PER FOOT (2% SLOPE) TOWARDS EXHAUST HOOD.
4. PROVIDE INSULATED ACCESS DOOR OR PANEL NEAR MID POINT OF EXHAUST DUCT RUN FOR CLEANING AND INSPECTION OF DUCT. PROVIDE AN APPROVED SIGN ON ACCESS DOOR OR PANEL WHICH READS "ACCESS PANEL DO NOT OBSTRUCT."

4 TYPICAL GREASE DUCT DETAIL N.T.S.

KITCHEN EXHAUST DUCT DETAIL

KITCHEN EXHAUST FAN DETAIL

**MICHAEL TOBIAS
NEW YORK**

088805
t: 07/31/2012

The logo for NY ENGINEERS. It features the word "NY" in a large, bold, black, sans-serif font. To the right of "NY", the word "ENGINEERS" is written in a large, bold, orange, sans-serif font. The "E" in "ENGINEERS" is stylized with a vertical line extending downwards, and the "N" has a diagonal line through it.

ING CONDITIONS	
ATIC DESIGN	
DEVELOPMENT	
ESS PRINT	
LEASE	03/03/2025

CT:
E SALAD HOUSE
WHITE PLAINS

8 STQ-0870-1124
NG TITLE:
CHANICAL
TAILS (2 OF 2)

M202

ROOM	OCCUPANCY DESCRIPTION	OCCUPANT DENSITY (#/1000 SQFT.)	Az	Pz	Rp	Ra	Ez	CODE TOTAL EXHAUST (CFM)	EXHAUST SPECIFIED ON DRAWINGS	Voz=(Rp*Pz+Ra*Az)/Ez	MINIMUM CFM REQUIRED BASED ON PERCENT OUTSIDE AIR REQUIRED	CFM SPECIFIED ON DRAWINGS
			SQFT.	# PEOPLE	CFM/PERSON	CFM/AREA	ZONE AIR DISTANCE EFFECTIVENESS					
DINING	DINING ROOMS	70	590	27	7.5	0.18	0.8	-	-	366	1929.36	2400
POS/SALES	SALES	15	150	3	7.5	0.12	0.8	-	-	51	253.13	
HALLWAY	CORRIDORE	0	150	0	0	0.06	0.8	-	-	11	56.25	
PERCENT OUTSIDE AIR FOR EQUIPMENT:								20.00%	TOTAL CFM OUTSIDE AIR REQUIRED		448	TOTAL UNIT CFM: 2400
								TOTAL CFM OUTSIDE AIR SPECIFIED		480		

ROOM	OCCUPANCY DESCRIPTION	OCCUPANT DENSITY (#/1000 SQFT.)	Az	Pz	Rp	Ra	Ez	CODE TOTAL EXHAUST (CFM)	EXHAUST SPECIFIED ON DRAWINGS	Voz=(Rp*Pz+Ra*Az)/Ez	MINIMUM CFM REQUIRED BASED ON PERCENT OUTSIDE AIR REQUIRED	CFM SPECIFIED ON DRAWINGS
			SQFT.	# PEOPLE	CFM/PERSON	CFM/AREA	ZONE AIR DISTANCE EFFECTIVENESS					
KITCHEN	KITCHEN	20	940	19	7.5	0.12	0.8	658	2250	319	1595.63	2150
OFFICE	OFFICE	5	40	1	5	0.06	0.8	-	-	9	46.25	150
MENS RESTROOM	TOILET ROOMS -PUBLIC	0	55	0	0	0	0.8	70	70	0	0.00	50
WOMENS RESTROOM	TOILET ROOMS -PUBLIC	0	55	0	0	0	0.8	70	70	0	0.00	50
PERCENT OUTSIDE AIR FOR EQUIPMENT:								20.00%	TOTAL CFM OUTSIDE AIR REQUIRED		328	TOTAL UNIT CFM: 2400
								TOTAL CFM OUTSIDE AIR SPECIFIED		480		

ROOF TOP UNIT SCHEDULE																			
UNIT ID	MANUFACTURER	MODEL	AREA SERVED	NOMINAL TONS	SUPPLY FAN DATA			HEATING DATA		COOLING DATA		ELECTRICAL DATA							
					TOTAL CFM	OUTSIDE AIR CFM	E.S.P. (IN W.G.)	INPUT MBH	OUTPUT MBH	TOTAL MBH	SENSIBLE MBH	VOLTS	PHASE	MCA(A)	MOPC(A)	EER	IEER	OPERATING WEIGHT (LBS)	
RTU-1	TRANE OR EQUIVALENT	YSK072A3SSH OR EQUIVALENT	SEE PLAN	6.0	2400	480	1.0	150	121.5	80.14	59.58	208-230	3	38	50	11.00	14.60	81%	1160
RTU-2	TRANE OR EQUIVALENT	YSK072A3SSH OR EQUIVALENT	SEE PLAN	6.0	2400	480	1.0	150	121.5	80.14	59.58	208-230	3	38	50	11.00	14.60	81%	1160

NOTES / ACCESSORIES:

- 1 ALL UNITS ARE NEW AND PROVIDED BY LL.
- 2 ALL EQUIPMENT MUST BE HIGH EFFICIENT, MEETING OR EXCEEDING THE BRANDS MINIMUM REQUIREMENTS.
- 3 ELECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE UNIT.
- 4 PROVIDE DISCONNECT SWITCH AND AN UNPOWERED GFCI RECEPTACLE.
- 5 14" ROOF CURB - CONTRACTOR SHALL FIELD INSULATE. SHIP ASAP AHEAD OF THE UNIT.
- 6 CONDENSATE DRAIN WITH 2" DEEP VENTED TRAP DISCHARGE TO SPLASH BLOCK ON ROOF.
- 7 CABINET WITH 1/2" FIBERGLASS INSULATION.
- 8 UNIT SHALL BE COMPLETE WITH GAS HEATING SECTION. GAS REGULATOR TO RECEIVE 7"15" GAS PRESSURE FROM MAIN.
- 9 ENTHALPY ECONOMIZER FOR UNIT MORE THAN 4.5 TONS WITH BAROMETRIC RELIEF / 25% MANUAL OUTSIDE AIR DAMPER ASSEMBLY WITH HOOD. PROVIDE FDD.
- 10 PROVIDE 8-WIRE, 24 VAC, AUTOMATIC CHANGEOVER, 2-STAGE HEAT / COOL, REMOTELY PROGRAMMABLE THERMOSTAT.
- 11 REMOTE SENSORS SHALL BE PROVIDED IN RETURN AIR DUCT WIRED BACK TO PROGRAMMABLE, 24 HOUR, 7 DAY, THERMOSTATS.
- 12 ANTI SHORT CYCLE TIMER.
- 13 THROWAWAY 2" FILTERS (MERV 8).
- 14 WHERE REQUIRED, PROVIDE LOW AMBIENT COOLING CAPABILITY DOWN TO 0 DEGREES F.
- 15 PROVIDE ALL COMPRESSORS WITH 5 YEAR WARRANTY.
- 16 RETURN AIR SMOKE DETECTOR - UNIT MOUNTED AS SHOWN ON PLAN
- 17 PROVIDE HOT GAS REHEAT
- 18 PLUMBING CONTRACTOR TO COORDINATE EXACT GAS REQUIREMENTS OF RTUS INSTALLED ON SITE.

AIR BALANCE					MAKE UP AIR UNIT SCHEDULE													
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR(CFM)	UNIT ID	MANUFACTURER	MODEL	CFM	E.S.P.(IN W.G.)	HEATING DATA	ELECTRICAL DATA	WEIGHT (LBS)					
											INPUT MBH	OUTPUT MBH						
RTU-1	SEE PLAN	2400	480	1920	0	KSF-1	ECON-AIR	EA1-D.250-15D	1800	0.5	124.925	114.931	208	3	5.5	15	92%	585
RTU-2	SEE PLAN	2400	480	1920	0													
KSF-1	SEE PLAN	1800	1800	0	0													
EF-1	SEE PLAN	0	0	0	70													
EF-2	SEE PLAN	0	0	0	70													
KEF-1	SEE PLAN	0	0	0	2250													
TOTAL:		6600	2760	3840	2390													
BUILDING PRESSURE: 370 POSITIVE																		

NOTES:

- 1 CONTRACTOR TO ADJUST MOTORIZED DAMPER ON OUTSIDE AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

FAN SCHEDULE												
UNIT ID	MANUFACTURER	MODEL	CFM	RPM	E.S.P. (IN W.G.)	ELECTRICAL DATA			WEIGHT (LBS)			
						VOLTS (V)	PHASE	FLA (A)	VOLTS (V)	PHASE	FLA (A)	WEIGHT (LBS)
EF-1	GREENHECK	SP-B110ES	70	650	0.5	115	1	0.27	10			
EF-2	GREENHECK	SP-B110ES	70	650	0.5	115	1	0.				

SWITCHES AND CONTROLS		POWER AND TELECOMMUNICATION		ELECTRICAL ABBREVIATIONS		GENERAL NOTES (APPLY TO ALL "E" DRAWINGS)	
\$ ^a	20A SPST SWITCH U.O.N. "a" DENOTES SWITCH'S TAG	①	ELECTRICAL JUNCTION BOX	A	AMPERES	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
\$ ³	THREE WAY SWITCH	∅	DUPLEX RECEPTACLE, +18" AFF OR AS NOTED.	A/C, AC	AIR CONDITIONING UNIT	EF	EXHAUST FAN
\$ _{OS}	WALL MOUNTED OCCUPANCY SENSOR SWITCH	∅	208V/1PH RECEPTACLE	AF	AMPERE FRAME/AMP FUSE	EM	EMERGENCY
\$ _{OV}	OVERRIDE SWITCH	∅	QUAD RECEPTACLE	AFF	ABOVE FINISHED FLOOR	EMT	ELECTRICAL METALLIC TUBING
\$ ^d	DIMMER SWITCH	∅ GFI	GFI DUPLEX RECEPTACLE	AS	AMP SWITCH	EQUIP	EQUIPMENT
O _{CO}	CARBON MONOXIDE DETECTOR	∅ IG	ISOLATED GROUNDING TYPE DUPLEX RECEPTACLE	AIC	AMPS INTERRUPTING CAPACITY	ER	EXISTING TO BE RELOCATED
O _{SD}	SMOKE DETECTOR	CL	CEILING MOUNTED QUAD RECEPTACLE OUTLET	AUTO	AUTOMATIC	ETR	EXISTING TO REMAIN ELECTRIFIED WORKSTATION FURNITURE
SD	DUCT SMOKE DETECTOR	△	DATA OUTLET, 1" C. STUB INTO ACCESSIBLE SPACE	AWG	AMERICAN WIRE GAUGE	EWF	
S	SPEAKER	MOTORS AND CONTROLS		C	CONDUIT	EWH	ELECTRIC WATER HEATER
OS	CEILING MOUNTED OCCUPANCY SENSOR	□	NON FUSED DISCONNECT SWITCH, POLES AS NOTED.	C/B,CB	CIRCUIT BREAKER	FA	FIRE ALARM
WIRING SYSTEMS		\$ _M	MANUAL MOTOR SWITCH	CKT	CIRCUIT	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
EXISTING		COMMUNICATION		CLG	CEILING	FDR	FEEDER
NEW		COMM		COMM	COMMUNICATION	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
ANNOTATION		CT		CT	CURRENT TRANSFORMER	FIXT	FIXTURE
+24"	INDICATES MOUNTING HEIGHT CENTER LINE TO FINISHED FLOOR.	CU		CU	COPPER	FL	FLOOR
#	KEY NOTES	°C		°C	DEGREE CELSIUS	FLUOR	FLUORESCENT
#	EQUIPMENT TAGS	°F		°F	DEGREE FAHRENHEIT	G	GROUND
POWER DISTRIBUTION		DIA		DIA	DIAMETER	GFI	GROUND FAULT INTERRUPTER
□	DISTRIBUTION PANELBOARD, SURFACE OR FLUSH MOUNTED.	DISC		DISC	DISCONNECT	GP	GENERAL PURPOSE
TC	TIME CLOCK	DN		DN	DOWN	HC	HUNG CEILING
ELECTRICAL DRAWING LIST		DWG		DWG	DRAWING	HP	HORSEPOWER
E001	ELECTRICAL GENERAL SHEET	JB		JB	JUNCTION BOX	HWH	HOW WATER HEATER
E002	ELECTRICAL SPECIFICATIONS (1 OF 2)	KCMIL		KCMIL	ONE THOUSAND CIRCULAR MILS	HZ	HERTZ
E003	ELECTRICAL SPECIFICATIONS (2 OF 2)	KV		KV	KILOVOLT	IC	INTERRUPTING CAPACITY
E111	ELECTRICAL POWER AND ROOF PLAN	KVA		KVA	KILOVOLT-AMPERES	PP	POWER PANEL
E112	LIGHTING PLAN	KW		KW	KILOWATTS	PVC	POLYVINYL CHLORIDE
E201	ELECTRICAL DETAILS	LP		LP	LIGHTING PANEL	PWR	POWER
E301	ELECTRICAL PANEL SCHEDULE AND RISER DIAGRAM	LTG		LTG	LIGHTING	R	REMOVE
ELECTRICAL DRAWING LIST		MAX		MAX	MAXIMUM	RE	RELOCATED EXISTING
E001	ELECTRICAL GENERAL SHEET	MC		MC	MOTOR CONTROLLER	REC	RECEPTACLE
E002	ELECTRICAL SPECIFICATIONS (1 OF 2)	MCB		MCB	MAIN CIRCUIT BREAKER	RR	REMOVE & RELOCATE
E003	ELECTRICAL SPECIFICATIONS (2 OF 2)	MER		MER	MECHANICAL EQUIPMENT ROOM	SECT	SECTION
E111	ELECTRICAL POWER AND ROOF PLAN	MIN		MIN	MINIMUM	SPDT	SINGLE POLE DOUBLE THROW
E112	LIGHTING PLAN	MLO		MLO	MAIN LUGS ONLY	SPST	SINGLE POLE SINGLE THROW
E201	ELECTRICAL DETAILS	MTD		MTD	MOUNTED	SPEC	SPECIFICATION
E301	ELECTRICAL PANEL SCHEDULE AND RISER DIAGRAM	N		N	NEUTRAL	SW	SWITCH
PROPERTY OF NY		NF		NF	NON FUSED	SWBD	SWITCHBOARD
Engineering		NIC		NIC	NOT IN CONTRACT	SYM	SYMMETRICAL
Engineering		NL		NL	NIGHT LIGHT	SYS	SYSTEMS
Engineering		NTS		NTS	NOT TO SCALE	TELE	TELEPHONE
Engineering		OC		OC	ON CENTER	TEMP	TEMPERATURE
Engineering		P		P	POLES	TXF	TOILET EXHAUST FAN
Engineering		PB		PB	PULLBOX	TYP	TYPICAL
Engineering		PC		PC	PERSONAL COMPUTER	UON	UNLESS OTHERWISE NOTED
Engineering		Ø		Ø	PHASE	V	VOLT/VOLTAGE
Engineering		PNL		PNL	PANEL	VA	VOLT AMPERE
Engineering		W		W	WATT	VFD	VARIABLE FREQUENCY DRIVE
Engineering		W		W	WIRE	WP	WEATHER PROOF
Engineering		WH		WH	WALL HEATER	XFMR	TRANSFORMER
Engineering		E		E	EXISTING	IG	ISOLATED GROUND
Engineering		TC		TC	TIME CLOCK	TR	TAMPER RESISTANCE

**MICHAEL TOBIAS
NEW YORK**

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BY CERTIFY THAT THESE DOCUMENTS
WERE DRAWN AND OR APPROVED BY ME, AND THAT
I AM A LICENSED PROFESSIONAL ENGINEER
ACCORDING TO THE LAW OF THE STATE OF
CALIFORNIA.

Y ENGINEERS

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ELECTRICAL SPECIFICATION

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. 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.

C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.

F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER, ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS MUCH AS POSSIBLE. WHERE NECESSARY, TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK, CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.

J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.

K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATE OF INSPECTION AND APPROVAL.

2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:

- "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
- "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
- "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
- "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.

3) CURRENT CHARACTERISTICS:

a. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, AS NOTED OR DIRECTED.

D. PRODUCT DELIVERY, STORAGE AND HANDLING

1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. MATERIALS

1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

- INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
 - SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
 - MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
 - CLIP FORM NAILS FLUSH WITH INSERTS.
 - MAXIMUM LOADING 75 PERCENT OF RATING.

b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.

d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

G. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.

H. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

3. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE NATIONAL ELECTRICAL CODE 2017 WITH LOCAL ADOPTIONS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HERIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER. DEFECTS FOR THE VARIOUS PARTS OF THE WORK, WHATEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR

REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

- 1) PROJECT NAME AND LOCATION
- 2) NAME OF ARCHITECT AND ENGINEER
- 3) ITEM IDENTIFICATION
- 4) APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

- 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
- 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

- 1) SAFETY/DISCONNECT SWITCHES
- 2) FUSES
- 3) CIRCUIT BREAKERS
- 4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
- 5) RACEWAYS
- 6) WIRE AND CABLE
- 7) WALL SWITCHES
- 8) INSERTION RECEPTACLES
- 9) MOMENTARY CONTACT SWITCHES
- 10) TIME SWITCHES
- 11) LIGHTING FIXTURES
- 12) TRANSFORMER

E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE. CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER A BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE-QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

D. DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.

E. SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE, MECHANICALLY INTERLOCKED, WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.

F. SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.

G. SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.

7. FUSES:

A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMPISP (250V) /LPS-RK (AMPISP (600V) OR LPJ (AMP) SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULLLOAD AMPERE RATINGS FLA OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMPISP (250V) /LPS-RK (AMPISP (600V) OR LPJ (AMP) SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS.

1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.

2) 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM.

8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:

ELECTRICAL SPECIFICATION (CONT.)

D. INSTALLATION

1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDOF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.

H. IDENTIFICATION

1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.

I. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY. ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

M. MATERIALS

1) RACEWAYS:

- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADDLESS.
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.
- d. WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED, BASE 0.04 IN. COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL COVERS SHALL BE SCREW-ON.

2) FITTINGS AND ACCESSORIES:

- a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.
- b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
- c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
- d. BUSHINGS: METALLIC INSULATED TYPE.

3) BOXES:

- a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON. FOR FIXTURE BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR RECEPTEACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE, FURNISH BLANK COVER. OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.
- b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

N. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED, EXCEPT AS NOTED. RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS, TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK, NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND Poured CONCRETE, RUN VERTICALLY ONLY.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE,

GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT METAL THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS. CRC-COLD GALVANIZED EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT METAL THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

O. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH NATIONAL ELECTRIC CODE ARTICLE 300.19. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

P. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE NUTS AND IRON GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIER BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

Q. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED WHERE NECESSARY. REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

R. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITION ROOMS.

S. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLEING SHALL BE NO. 12 MINIMUM, AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM, AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

C. CONTROL AND ALARM CABLEING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM, AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND IPECA STANDARDS. TYPE THW OR THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE 'BX'.

F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM: 277/480 VOLT SYSTEM:
BLACK FOR A PHASE BROWN FOR A PHASE
RED FOR B PHASE ORANGE FOR C PHASE
BLUE FOR C PHASE YELLOW FOR C PHASE

1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

G. WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPE IN ACCESSIBLE LOCATIONS.

H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON, SPRING-LOADER, CONNECTORS, AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE. USING MANUFACTURER'S RECOMMENDED TOOLING, CABLE LUGS, AND CONNECTORS, SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/460 VOLT SYSTEMS, EXCEPT 460 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATE 20 AMP, 120/277 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

C. STRAIGHT BLADE RECEPTACLES SHALL BE RESIDENTIAL GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R; LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).

2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT.

D. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

E. COLORS: COORDINATE COLORS WITH ARCHITECT.

F. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

C. BALAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, ETI AND CEM APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALASTS, NO THREE LAMP BALASTS. BALASTS SHALL BE ADVANCE MAGNETIC, UNIVERSAL OR EQUAL.

D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPATIBLE WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47 PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE. DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.

F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGED/TYPE.

G. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE MSA APPROVED. AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

C. OUTLETS SHALL BE:

1) WALL: 4 IN. SQUARE WITH SINGLE GANG COVER PLATE.

D. PROVIDE FISH WIRES, IN RACEWAYS OVER 10 FT LONG.

E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.

F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. PANELBOARDS:

A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYED ALIKE.

B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4", SIDES, TOP AND BOTTOM, INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911

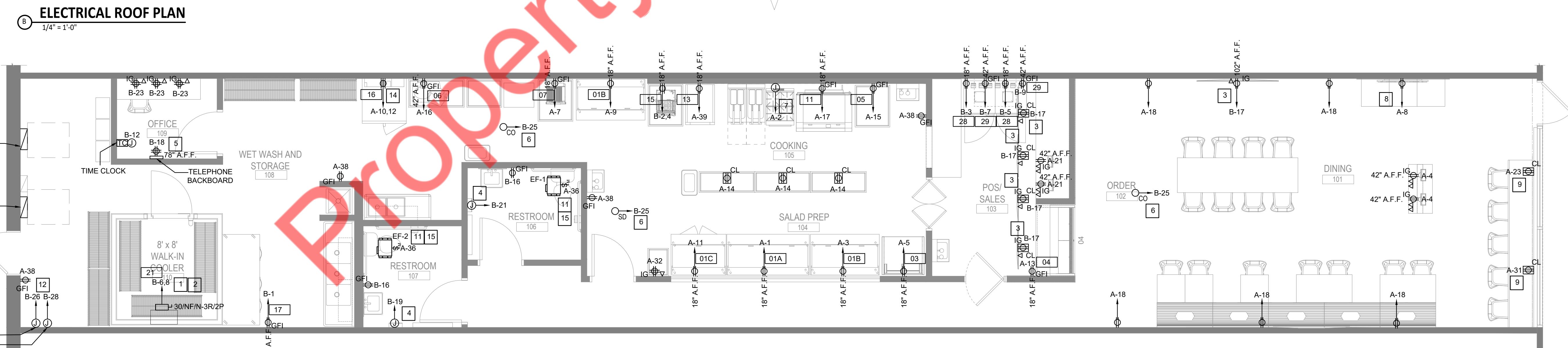
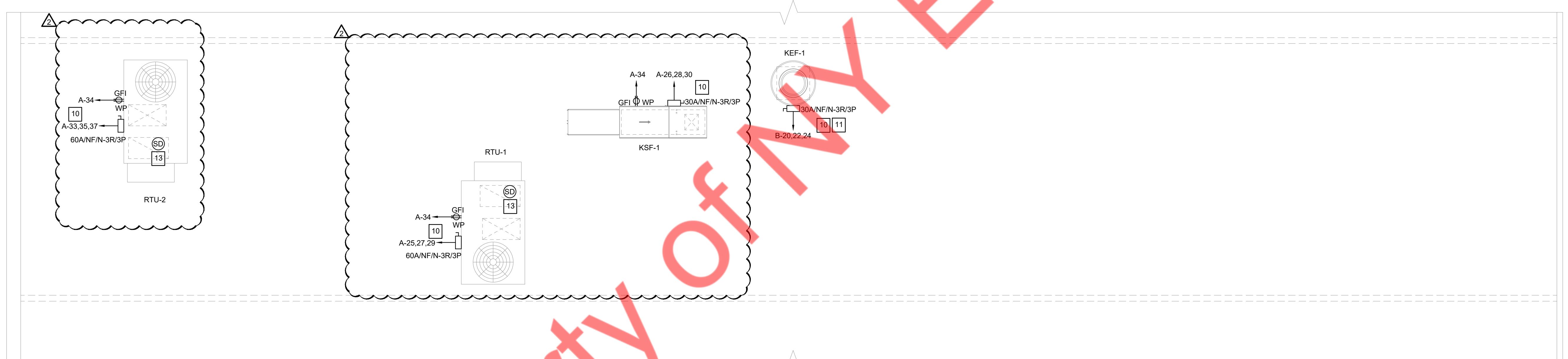
KEY NOTES: #	
1. E.C. TO COORDINATE EXACT POWER REQUIREMENT WITH WALK-IN BOX MANUFACTURER AND MAKE POWER PROVISION ACCORDINGLY.	
2. E.C. TO PROVIDE DISCONNECT SWITCH AND MAKE FINAL CONNECTION TO SELF-CONTAINED COOLER/FREEZER CONDENSER UNIT MOUNTED ABOVE COOLER.	
3. E.C. SHALL FIELD VERIFY MOUNTING HEIGHT FOR TV/MENU BOARD. FIELD VERIFY IF DATA OUTLET REQUIRED. PROVIDE A 2"X4" JUNCTION BOX WITH CONDUIT AND PULL STRING ADJACENT TO THE TV OUTLETS IF REQUIRED. THE LOW VOLTAGE CONTRACTOR SHALL PROVIDE CABLE & CONNECT.	
4. JUNCTION BOX FOR HAND DRYER. E.C. TO COORDINATE JUNCTION BOX AND ITS POWER DETAILS AS PER ADA REQUIREMENT.	
5. E.C. SHALL PROVIDE CONDUIT FOR TELEPHONE SERVICE TO TENANT TELEPHONE BACKBOARD IF REQUIRED. FIELD VERIFY LOCATION.	
6. PROVIDE CARBON MONOXIDE/SMOKE DETECTORS AS SHOWN. CO DETECTORS SHALL COMPLY WITH NFPA 720 AND SHALL BE UL 2075 LISTED. COMBINATION CARBON MONOXIDE/SMOKE DETECTORS SHALL UL 2075 AND UL 268 LISTED. PROVIDE CO DETECTORS BY HONEYWELL OR APPROVED EQUIVALENT.	
7. KITCHEN EXHAUST HOOD SHALL BE CONNECTED TO A FIRE HORN/STROBE HOOD ACCESSORY THRU A MICRO SWITCH PROVIDED BY THE HOOD MANUFACTURER. HORN/STROBE MAY BE OMITTED WHERE NOT REQUIRED BY AUTHORITY HAVING JURISDICTION.	
8. E.C. SHALL PROVIDE COORDINATE EXACT HEIGHT/LOCATION FOR SALAD HOUSE LOGO RECEPTACLE WITH ARCHITECT/OWNER. MAKE POWER PROVISION ACCORDINGLY. BASE BID ACCORDINGLY.	
9. E.C. TO INSTALL SHOW WINDOW RECEPTACLES AS PER NEC 210.62.	
10. ELECTRICAL CONTRACTOR SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER FOR FINAL SELECTION PRIOR TO ROUGH-IN. E.C. COORDINATE LOCATION OF DISCONNECT SWITCH WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.	
11. EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR SWITCHING & CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED.	
12. JUNCTION BOX FOR RECIRCULATION PUMP AND WATER HEATER. E.C. TO COORDINATE FINAL LOCATION WITH PLUMBING CONTRACTOR IN FIELD PRIOR TO ROUGH-IN.	
13. PROVIDE DUCT SMOKE DETECTOR FOR RTUS. UNITS SHALL SHUT DOWN IF SMOKE DETECTOR IS ENERGIZED.	
14. E.C. SHALL VERIFY EXACT ELECTRICAL CONNECTION REQUIREMENT & MOUNTING HEIGHT WITH KITCHEN EQUIPMENT MANUFACTURER. MAKE POWER PROVISION ACCORDINGLY. BASE BID ACCORDINGLY.	
15. EF-1 & EF-2 SHALL BE INTERLOCKED WITH RTU-1. E.C. SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR MORE DETAILS. MAKE POWER PROVISION ACCORDINGLY. BASE BID ACCORDINGLY.	

ELECTRICAL GENERAL NOTES:							
1. ALL 208 VOLT AND 120 VOLT, SINGLE PHASE RECEPTACLES 50A OR LESS, AND 208V, 3 PHASE RECEPTACLES 100A OR LESS INSTALLED OUTDOORS, IN BATHROOMS, KITCHENS AND ON ROOFTOP AREAS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION.							
2. PROVIDE 1" C FROM TELEPHONE BACKBOARD TO CASH REGISTER FOR EXTENSION OF TWO (2) CAT 5 DATA LINES.							
3. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ABOVE CEILING WITH MECHANICAL CONTRACTOR.							
4. E.C. SHALL COORDINATE DISCONNECT AND FUSE REQUIREMENT FOR MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER FOR FINAL SELECTION PRIOR TO ROUGH-IN. E.C. COORDINATE LOCATION OF DISCONNECT SWITCH WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE AS REQUIRED TO MAINTAIN NEC CLEARANCES.							
5. THE LOW VOLTAGE CONTRACTOR SHALL PROVIDE REQUIRED LOW VOLTAGE WIRING FOR SPEAKERS, RECEIVERS, INTERNET AT POS ON SHELF AND VOICE/FAX.							
6. MAIN FEEDERS FROM SERVICE DISCONNECT TO PANEL AND FROM MAIN PANEL TO SUB PANEL SHALL BE STANDARD METAL CONDUIT.							
7. CONDUITS BELOW SLAB SHALL BE PVC CONDUITS. ENCLOSED CONDUIT SHALL EITHER BE METAL CONDUITS OR FLEXIBLE CONDUITS. ANY EXPOSED CONDUITS SHALL BE METAL CONDUITS ONLY.							
8. EXPOSED CONDUITS WITHIN FOOD PREP AREA MUST HAVE SMOOTH SURFACE FOR CLEANING PER HEALTH DEPARTMENT REQUIREMENTS AND SHALL BE STANDARD METAL CONDUITS.							
9. CONDUITS BELOW SLAB SHALL BE PVC CONDUITS. ENCLOSED CONDUIT SHALL EITHER BE METAL CONDUITS OR FLEXIBLE CONDUITS. ANY EXPOSED CONDUITS SHALL BE METAL CONDUITS ONLY.							
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENTS ON ROOF WITH MECHANICAL CONTRACTOR.							
11. PROVIDE SINGLE GANG JUNCTION BOX FOR EACH TELEPHONE AND OR DATA OUTLET WITH 3/4" C. STUBBED-UP TO 6" WALL ABOVE PARTITION OR, LAY-IN CEILING. PROVIDE BLANK COVER PLATE ON EACH OUTLET.							
12. E.C. SHALL VERIFY WITH KITCHEN EQUIPMENT MANUFACTURER FOR ELECTRIC REQUIREMENT ALONG WITH OUTLETS, WIRES FOR GAS FIRED EQUIPMENT. BASE BID ACCORDINGLY.							

EQUIPMENT SCHEDULE: #							
ITEM NO.	DESCRIPTION	VOLTAGE	PHASE	AMPS	KW	CONNECTION TYPE	REMARK
01A	MEGA TOP SANDWICH PREP TABLE, 3 SECTION	115	1	5.4	0.62	NEMA 5-15	
01B	MEGA TOP SANDWICH PREP TABLE, 2 SECTION	115	1	4.9	0.56	NEMA 5-15	
01C	MEGA TOP SANDWICH PREP TABLE, 2 SECTION	115	1	4.7	0.54	NEMA 5-15	
3	VERTICAL OPEN DISPLAY CASE	115	1	16.5	1.90	NEMA 5-20	
4	DROP-IN OPEN DISPLAY CASE	115	1	7.5	0.86	NEMA 5-15	
5	RICE COOKER/WARMER	120	1	13	1.56	NEMA 5-15	
6	FOOD SLICER	120	1	3	0.36	NEMA 5-15	
7	SINGLE PANINI GRILL /W CAST IRON	120	1	15	1.80	NEMA 5-20	
11	REFRIGERATED BASE STAND	115	1	3	0.35	NEMA 5-15	
13	REACH IN FREEZER, ONE SECTION	115	1	4.9	0.56	NEMA 5-15	
15	RAPID COOK OVEN	208	1	20	4.16	NEMA L6-20	
16	ELECTRIC CONVECTION OVEN	208	1	28	5.82	NEMA L6-50P	PURCHASE POWER CORD WITH PLUG SEPERATELY
17	REACH IN FREEZER	115	1	5.5	0.63	NEMA 5-15	
21	WALK-IN COOLER	208	1	20	4.16	HARDWIRED	
28	U.C. REFRIGERATOR	115	1	2.5	0.29	NEMA 5-15	
29	BLENDER	120	1	13	1.56	NEMA 5-20	

MICHAEL TOBIAS
NEW YORK
LICENSE # 086805
EXPIRATION: 07/26/2026
I HERBLY CERTIFY THAT THESE DOCUMENTS WERE PREPARED IN ACCORDANCE WITH THE STANDARDS OF THE PROFESSION AND IN ACCORDANCE WITH THE LAW OF THE STATE.
A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW OF THE STATE.

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DRAWN BY: NYE CHECKED BY: NYE

PROJECT: THE SALAD HOUSE
WHITE PLAINS

STO-0570-1124

DRAWING TITLE: ELECTRICAL POWER AND ROOF PLAN

SHEET: E111

LIGHTING PLAN KEY NOTES: #	
1. WIRE ALL EMERGENCY, EXIT LIGHT AND NIGHT LAMP TO THE NEAREST CIRCUIT AHEAD OF ALL CONTROLS & SWITCHING FOR CONTINUOUS OPERATION. E.C. SHALL REVIEW AND UNDERSTAND THE OWNER'S/ARCHITECT'S REQUIREMENTS FOR THE NIGHT LAMP BEFORE STARTING WORK AND BASE THE BID ACCORDINGLY.	
2. E.C. SHALL ENSURE THAT LIGHTING FIXTURES LOCATED NEAR ELECTRICAL PANEL OR SWITCHGEAR ARE NOT CONTROLLED BY AUTOMATIC MEANS, IN ACCORDANCE WITH NEC SECTION 110.26.	
3. E.C. SHALL CO-ORDINATE LOCATION OF TIME CLOCK & LIGHTING CONTRACTORS WITH ARCHITECT/OWNER. SEE DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.	
4. LOCATION OF LIGHTING SWITCH BANK. E.C. TO VERIFY EXACT LOCATION WITH ARCHITECT/OWNER PRIOR ROUGH-IN.	
5. TIME CLOCK OVERRIDE SWITCH. E.C. SHALL VERIFY EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.	
6. J-BOX FOR HOOD LIGHTS. HOOD LIGHT FIXTURES BY HOOD SUPPLIER, WIRED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL COORDINATE AND CONNECT PROVIDED CONTACTORS ON HOOD CONTROL PANEL.	
7. LIGHT FIXTURES FURNISHED BY WALK-IN BOX VENDOR. ELECTRICAL CONTRACTOR TO INSTALL AND PROVIDE THE ELECTRICAL CONNECTION FOR LIGHT FIXTURE IN COORDINATION WITH WALK-IN BOX SUPPLIER. BASE BID ACCORDINGLY.	
8. PROVIDE LOW VOLTAGE OCCUPANCY SENSOR EQUAL TO WATTSTOPPER DT-305. PROVIDE WATTSTOPPER BZ POWER PACK(S) AS REQUIRED. INTERCONNECT OCCUPANCY SENSORS SO THAT ANY SENSOR WILL TRIGGER ALL LIGHTS. SET OFF TIME FOR 20 MINUTES.	
9. THE LINE VOLTAGE, WALL-MOUNTED, LOW-TEMPERATURE WALK-IN OCCUPANCY SENSOR WILL BE FURNISHED BY THE WALK-IN BOX SUPPLIER. E.C. TO COORDINATE WITH THE MANUFACTURER AND OWNER TO PROVIDE CONTROLS FOR THE LIGHTING FIXTURE IN THE WALK-IN COOLER, ENSURING COMPLIANCE WITH CODE REQUIREMENTS. BASE THE BID ACCORDINGLY.	
10. WALL MOUNTED OCCUPANCY SENSOR. E.C. TO COORDINATE EXACT LOCATION OF OCCUPANCY SENSOR WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.	
11. TERMINATE SPEAKER WIRE AT OFFICE VOLUME CONTROLS.	
12. EXTERNAL SIGNAGE & SHOW WINDOW CONTROL BY PHOTOCELL AND TIME CLOCK. E.C. TO COORDINATE WITH ARCHITECT FOR EXACT LOCATION OF TIME CLOCK.	
13. JUNCTION BOX WITH TOGGLE DISCONNECT PER NEC FOR CONNECTION TO BUILDING MOUNTED SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURE'S INSTRUCTION. ROUTE CIRCUIT TO PANEL VIA EXTERIOR LIGHTING/SIGNAGE.	

LIGHTING PLAN GENERAL NOTES:			
1. VERIFY ALL LUMINAIRE COLORS, TRIMS, LENGTHS, ETC. WITH THE ARCHITECT PRIOR TO PLACING FINAL PURCHASE ORDERS. SUBMISSION OF SHOP DRAWINGS WILL BE INTERPRETED AS HAVING BEEN COORDINATED WITH THE ARCHITECTURAL DRAWINGS.			
2. PROVIDE ALL LENGTHS, FEEDS, ACCESSORIES, CONNECTORS, WIRING, POWER SUPPLIES, DRIVERS ETC. FOR A COMPLETE INSTALLATION. THE E.C. SHALL VERIFY THE COMPLETE BILL OF MATERIAL WITH MANUFACTURER'S REPRESENTATIVE AND ENSURE ALL EQUIPMENT ARE INCLUDED IN BID PRICE. COORDINATE INSTALLATION WITH ARCHITECTURAL DETAILS.			
3. VERIFY FINAL LUMINAIRE LOCATIONS WITH OTHER CEILING MOUNTED EQUIPMENT SUCH AS DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLANS.			
4. VERIFY EXACT MOUNTING HEIGHT AND LOCATIONS OF ALL WALL MOUNTED LUMINAIRE WITH ARCHITECTURAL PLANS AND ELEVATIONS PRIOR TO ROUGH-IN			
5. ANY PROPOSED ALTERNATE LUMINAIRES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO FINAL BID PRICING.			
6. EXIT SIGNS SHALL BE DUAL VOLTAGE WITH RED FACE LETTERING.			
7. E.C. TO CONFIRM THE FINAL SELECTION OF LIGHTING FIXTURE WITH OWNER/ARCHITECT/MANUFACTURER PRIOR TO PROCUREMENT.			
8. PLACEMENT OF LIGHT FIXTURES SHALL BE SET AS DIMENSIONED & AS SCHEDULED.			
9. E.C. TO ENSURE THAT THE LIGHT FIXTURES ARE SCHEDULED WITHOUT EXCEPTIONS. E.C. MUST OBTAIN APPROVAL FOR ANY ALTERNATE MAKES AND MODEL NUMBERS OF FIXTURES.			
10. ALL EMERGENCY LIGHTS, NIGHT LAMPS AND EXIST LIGHTS SHALL BE CONNECTED TO NEAREST LIGHTING CIRCUIT IN THE AREA AHEAD OF ALL LIGHTING CONTROL MEANS IN ORDER TO BE ENERGIZED AT ALL TIME.			
11. ALL LIGHTING FIXTURES IN FOOD AND BEVERAGE PREP AREA SHALL BE SHATTERPROOF.			
12. PROVIDE DIMMER SWITCH FOR COMPLIANCE OF THE LIGHTING REDUCTION AS PER ENERGY CONSERVATION CODE.			

ELECTRICAL LIGHTING SCHEDULE:			
LEGEND	DESCRIPTION	QUANTITY	COMMENTS
L-T-01	DAY-BRITE, RECESSED, SELECTED BACKLIT PANEL 2X4 (2SBP3550L8CS4-UVN-DIM) 51W LED	5	WET WASH, STORAGE, SALAD PREP AND COOKING
L-T-01EB	DAY-BRITE, RECESSED, SELECTED BACKLIT PANEL 2X4 (2SBP3550L8CS4-UVN-DIM) (EMERGENCY BATTERY BACKUP) 51W LED	3	WET WASH, STORAGE, SALAD PREP AND COOKING
LX-02	DAY-BRITE, FLUXPANEL LED GEN 2 2X2 (2FP238L835-2-DS-UVN-DIM) 34W LED	19	WET WASH, STORAGE, OFFICE, RESTROOM, COOKING, POS/SALES AND DINING
LX-02EB	DAY-BRITE, FLUXPANEL LED GEN 2 2X2 (2FP238L835-2-DS-UVN-DIM) 34W LED (EMERGENCY BATTERY BACKUP)	7	WET WASH, STORAGE, OFFICE, RESTROOM, COOKING, POS/SALES AND DINING
L-T-03	PENDANT LIGHT: 1600LM, 2700K, 24W LED	9	DINING AND SALAD PREP AREA
EMR	SURE-LITE APCH7-R WITH APWR2 BASE & (2) REMOTE HEADS	2	ENTRY AND EXIT DOOR
EM	SURE-LITE CU2-LED	3	OFFICE, RESTROOM, AND DINING AREA
TBD		1	WALK-IN COOLER

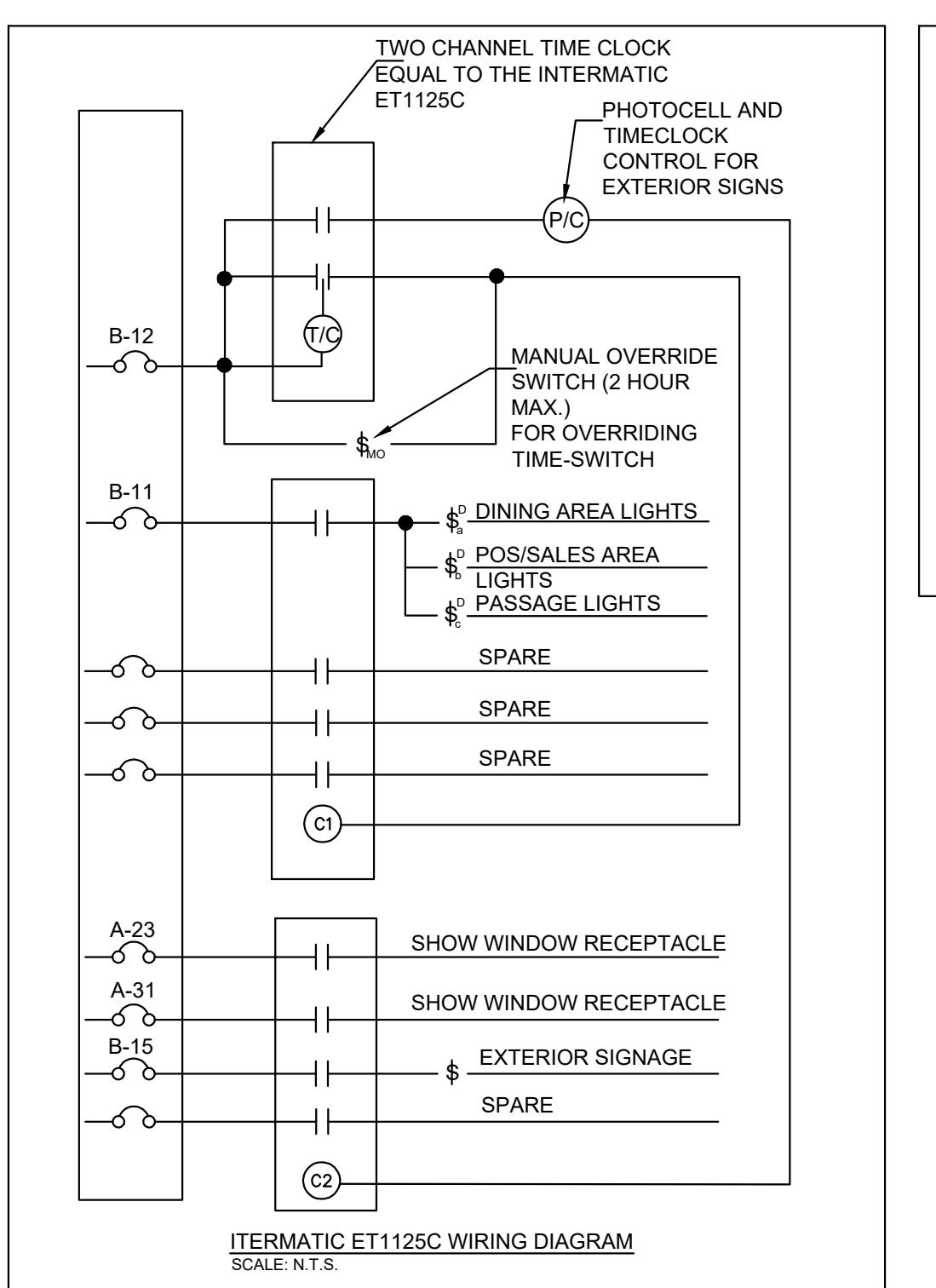
MICHAEL TOBIAS
NEW YORK

LICENSE # 086805

EXPIRATION: 07/31/2026

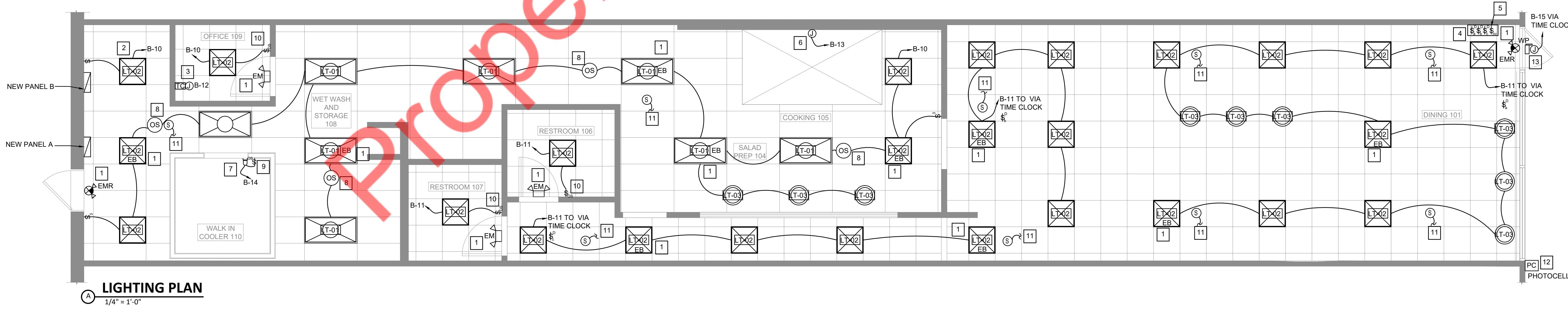
I HERBLY CERTIFY THAT THESE DOCUMENTS WERE PREPARED AND APPROVED BY A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW OF THIS STATE.

NY ENGINEERS

NY ENGINEERS
382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786) 788-0295
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ITERMATIC ET1125C 24-HOUR ELECTRONIC TIME SWITCH:
NOTES:

- ITERMATIC TIMER BOX SHALL BE LOCATED AS CLOSE TO PANELBOARD AS PRACTICAL. PROVIDE WIRING FROM LOW VOLTAGE SWITCH TO RELAY CABINET REQUIRED FOR EACH RELAY AS REQUIRED.
- PROGRAM LIGHTING SCHEDULE AND HOURS OF OPERATION WITH OWNER.
- PROVIDE LOW VOLTAGE OVERRIDE SWITCH AS INDICATED ON DRAWINGS ITERMATIC ET1125C SERIES. LOW-VOLTAGE OVERRIDE SWITCH CONTROLS SHALL INITIATE AN OVERRIDE OF A MAXIMUM TIME OF NO MORE THAN TWO (2) HOURS.
- PROVIDE TWO (2) HOUR TRAINING ON PROGRAMMING OF SYSTEM & SYSTEM OPERATION.



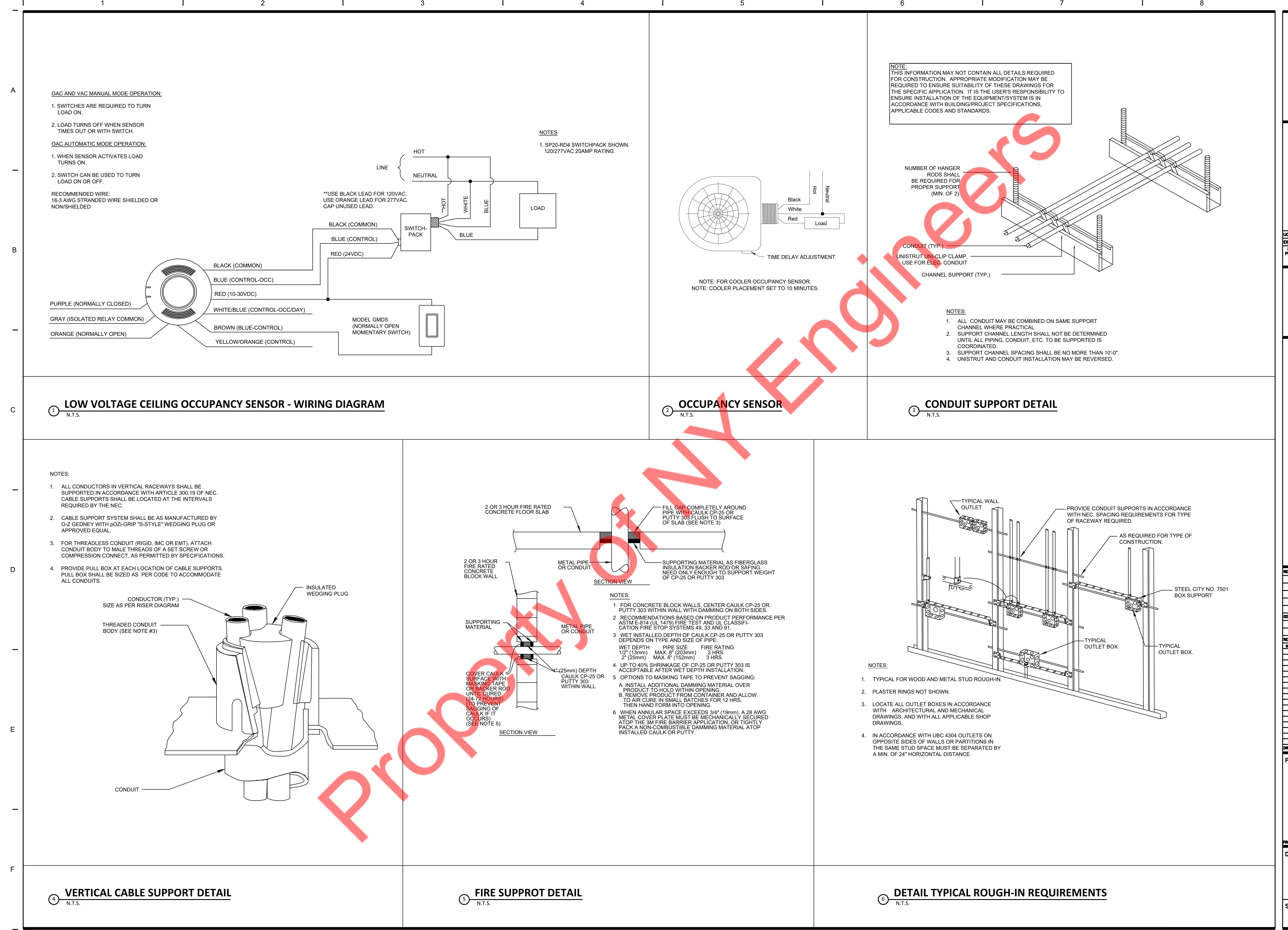
RELEASE:
EXISTING CONDITIONS
SCHEMATIC DESIGN
DESIGN DEVELOPMENT
PROGRESS PRINT
FULL RELEASE 03/03/2025
ISSUED TO:

REVISIONS:
NO. DESCRIPTION DATE
1 HEATH DEPARTMENT COMMENTS 04/15/2025

DRAWN BY: NYE CHECKED BY: NYE
PROJECT: THE SALAD HOUSE
WHITE PLAINS

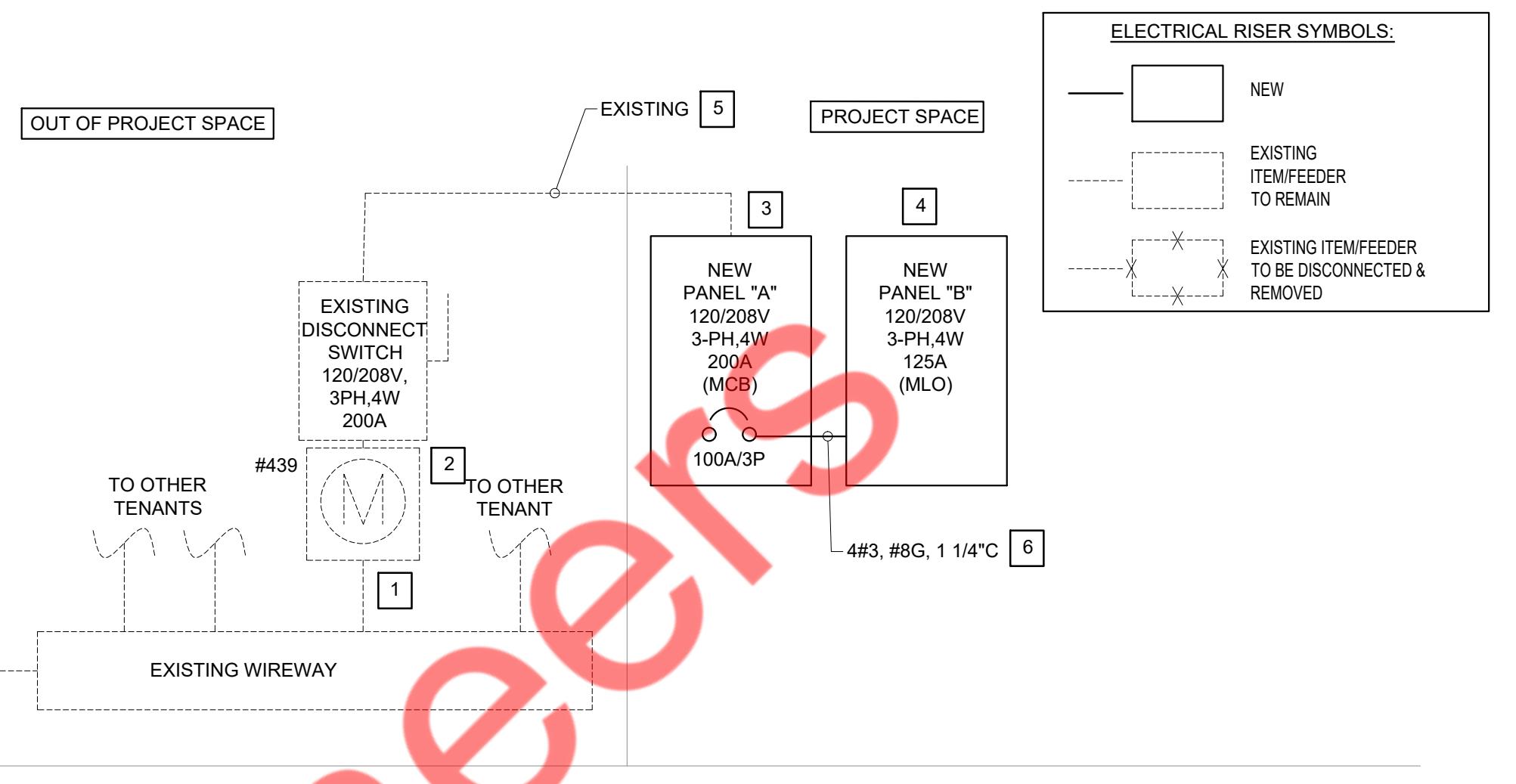
PROJECT #: STQ-0570-1124
DRAWING TITLE: LIGHTING PLAN

SHEET: E112



PANEL: A (NEW) 1										MOUNTING:		SURFACE							
120/208V VOLTS, 3 PHASE, 4 WIRE			LOCATION: BOH							FED FROM: EXISTING 200A ELECTRICAL SERVICE									
MAIN CB: 200A		MLO: NA		BUS: 225		MIN,													
NOTE: L - LIGHTING, R - RECEPTACLE, H - HVAC, E - KITCHEN EQUIPMENTS, O - OTHER/MISCELLANEOUS, * - GFI BREAKER																			
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)	A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.				
1	20*	01A_MEGA TOP SANDWICH PREP TABLE, 3 SECTION	E	0.62	2#12, #12G, 3/4" C	0.97				2#12, #12G, 3/4" C	0.35	O	HOOD POWER	20	2				
3	20*	01B_MEGA TOP SANDWICH PREP TABLE, 2 SECTION	E	0.56	2#12, #12G, 3/4" C	0.92				2#12, #12G, 3/4" C	0.36	R	KIOSK RECEPTACLES	20	4				
5	20*	03_VERTICAL OPEN DISPLAY CASE	E	1.90	2#12, #12G, 3/4" C				2.40	2#12, #12G, 3/4" C	0.56	O	FA PANEL	20	6				
7	20	07_SINGLE PANINI GRILL /W CAST IRON	E	1.80	2#12, #12G, 3/4" C	1.98				2#12, #12G, 3/4" C	0.18	R	SALAD HOUSE LOGO	20	8				
9	20*	01B_MEGA TOP SANDWICH PREP TABLE, 2 SECTION	E	0.56	2#12, #12G, 3/4" C				3.47	2#8, #10G, 3/4" C	2.91	E	16_ELECTRIC CONVECTION OVEN	2P-50*	10				
11	20*	01C_MEGA TOP SANDWICH PREP TABLE, 2 SECTION	E	0.54	2#12, #12G, 3/4" C				3.45	2#12, #12G, 3/4" C	2.91	E	16_ELECTRIC CONVECTION OVEN	2P-50*	12				
13	20	04_DROP-IN OPEN DISPLAY CASE	E	0.86	2#12, #12G, 3/4" C	1.40				2#12, #12G, 3/4" C	0.54	R	SS TABLE RECEPTACLES	20	14				
15	20	05_RICE COOKER/WARMER	E	1.56	2#12, #12G, 3/4" C				1.92	2#12, #12G, 3/4" C	0.36	E	06_FOOD SLICER	20	16				
17	20	11_REFRIGERATED BASE STAND	E	0.35	2#12, #12G, 3/4" C				1.25	2#12, #12G, 3/4" C	0.90	R	DINING AREA RECEPTACLES	20	18				
19		SHUNT TRIP							7.20			O		20					
21	20	POS RECEPTACLES	R	0.36	2#12, #12G, 3/4" C				7.56	4#3, #8G, 1 1/4" C	7.20	O	PANEL "B"	3P-100	22				
23	20	SHOW WINDOW RECEPTACLES	R	0.80	2#12, #12G, 3/4" C				8.00		7.20	O		24					
25			H	4.56					5.22		0.66	H			26				
27	3P-50	RTU-1	H	4.56	3#8, #10G, 3/4" C				5.22	3#12, #12G, 3/4" C	0.66	H	KSF-1	3P-15	28				
29			H	4.56					5.22		0.66	H			30				
31	20	SHOW WINDOW RECEPTACLES	R	0.80	2#12, #12G, 3/4" C	1.16				2#12, #12G, 3/4" C	0.36	R	TICKETS RECEPTACLE	20	32				
33			H	4.56					5.46	2#12, #12G, 3/4" C	0.90	R	ROOF RECEPTACLES	20	34				
35	3P-50	RTU-2	H	4.56	3#8, #10G, 3/4" C				4.64	2#12, #12G, 3/4" C	0.08	M	EF-1 & EF-2	20	36				
37			H	4.56					5.28	2#12, #12G, 3/4" C	0.72	R	BOH RECEPTACLES	20	38				
39	20*	13_REACH IN FREEZER, ONE SECTION	E	0.56	2#12, #12G, 3/4" C				0.56				SPARE	20	40				
41	20	SPARE							0.00				SPARE	20	42				
					TOTAL LOAD (KVA)	23.22	25.12	24.97											

PANEL: B (NEW)										MOUNTING:		SURFACE							
120/208V VOLTS, 3 PHASE, 4 WIRE			LOCATION: BOH							FED FROM: EXISTING PANEL "A"									
MAIN CB: NA		MLO: 125A		BUS: 125A		MIN,													
NOTE: L - LIGHTING, R - RECEPTACLE, H - HVAC, E - KITCHEN EQUIPMENTS, O - OTHER/MISCELLANEOUS, * - GFI BREAKER																			
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)	A	B	C	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.				
1	20	17_REACH IN FREEZER	E	0.63	2#12, #12G, 3/4" C	2.71				2#12, #12G, 3/4" C	2.08	E	15_RAPID COOK OVEN	2P-20*	2				
3	20*	28_U.C. REFRIGERATOR	E	0.29	2#12, #12G, 3/4" C		2.37			2#12, #12G, 3/4" C	2.08	E			4				
5	20	28_U.C. REFRIGERATOR	E	0.29	2#12, #12G, 3/4" C				2.37	2#12, #12G, 3/4" C	2.08	H	21_WALK-IN COOLER	2P-20	6				
7	20	29_BLENDER	E	1.56	2#12, #12G, 3/4" C	3.64				2#12, #12G, 3/4" C	2.08	H			8				
9	20	29_BLENDER	E	1.56	2#12, #12G, 3/4" C		2.23			2#12, #12G, 3/4" C	0.67	L	BACK OF HOUSE AND OFFICE AREA LIGHTING	20	10				
11	20	DINING, POS/SALES AND RESTROOM AREA LIGHTING	L	0.90	2#12, #12G, 3/4" C				1.10	2#12, #12G, 3/4" C	0.20	O	TIME CLOCK	20	12				
13	20	HOOD LIGHTS	L	0.20	2#12, #12G, 3/4" C	0.56				2#12, #12G, 3/4" C	0.36	L	WALK-IN COOLER LIGHT	20	14				
15	20	EXTERIOR SIGNAGE	L	1.50	2#12, #12G, 3/4" C		1.86			2#12, #12G, 3/4" C	0.36	R	RESTROOM RECEPTACLES	20	16				
17	20	TV MONITOR RECEPTACLES	R	0.72	2#12, #12G, 3/4" C				1.08	2#12, #12G, 3/4" C	0.36	R	TELEPHONE BACKBOARD RECEPTACLE	20	18				
19	20	RESTROOM HAND DRYER	M	0.60	2#12, #12G, 3/4" C	1.59					0.99	M		20					
21	20	RESTROOM HAND DRYER	M	0.60	2#12, #12G, 3/4" C		1.59			2#12, #12G, 3/4" C	0.99	M	KEF-1	3P-15	22				
23	20	OFFICE RECEPTACLES	R	1.08	2#12, #12G, 3/4" C				2.07		0.99	M			24				
25	20	CO/SD DETECTORS	O	0.10	2#12, #12G, 3/4" C	0.30				2#12, #12G, 3/4" C	0.20	O	WH-1	20	26				
27	20	SPARE							0.20	2#12, #12G, 3/4" C	0.20	O	RCP-1	20	28				
29	20	SPARE							0.00				SPARE	20	30				
					TOTAL LOAD (KVA)	8.80	8.25	6.62											



PLUMBING SYMBOL LIST

— SAN —	SANITARY SEWER PIPING (ABOVE FLOOR)
— SAN —	SANITARY SEWER PIPING (UNDERGROUND)
— G —	GAS PIPING
— GSAN —	GREASE WASTE (UNDERGROUND)
— — —	VENT PIPING
— — —	COLD WATER PIPING
— — —	HOT WATER PIPING
— — —	EXISTING COLD WATER PIPING
— — —	EXISTING HOT WATER PIPING
— — —	HOT WATER RETURN PIPING
— — —	P-TRAP
— — —	PIPE UP
— — —	PIPE DROP
— — —	CLEANOUT
— — —	PLUGGED OUTLET/CLEANOUT
— — —	SHUT-OFF VALVE
— — —	POINT OF CONNECTION
— — —	ANGLE VALVE
— — —	RECIRCULATION PUMP
— — —	BALANCING VALVE

PLUMBING SPECIFICATIONS

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS
 - 1.01 SCOPE
 - A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
 - B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
 - C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
 - D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
 - E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
 - F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
 - G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
 - H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
 - I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
 - J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITIES SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
 - K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
- 1.02 SUBMITTALS
 - A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.
 1. PIPE AND FITTINGS
 2. VALVES
 3. HANGERS AND SUPPORTS
 4. PLUMBING PIPING LAYOUT
 5. TESTS
 6. PLUMBING FIXTURES
 7. WATER HEATERS & ACCESSORIES
 8. MIXING VALVES
 9. ALL SCHEDULED PLUMBING EQUIPMENT
 - B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS SHALL BE RETURNED REJECTED.
 - C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

PLUMBING ABBREVIATIONS

CO	CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
V	VENT
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
FD	FLOOR DRAIN
N.I.C.	NOT IN SCOPE
AAV	AIR ADMITTANCE VALVE
GSAN	GREASE WASTE
RO	REVERSE OSMOSIS
GCO	GRADE CLEANOUT

PLUMBING DRAWING LIST

P001	PLUMBING GENERAL SHEET
P002	PLUMBING GENERAL SHEET
P111	PLUMBING WATER SUPPLY FLOOR PLAN & RISER
P112	PLUMBING WASTE FLOOR PLAN & RISER
P113	PLUMBING GAS SUPPLY FLOOR PLAN & RISER
P201	PLUMBING DETAILS
P301	PLUMBING SCHEDULE

BUILDING DEPARTMENT PLUMBING NOTES

1. ALL PLUMBING SYSTEMS (SANITARY WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE.
2. INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE (TOWN OF GREENBURGH CODE) SECTION 704.
3. PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 2020 NYS PLUMBING CODE SECTION 305.
4. TRENCHING, EXCAVATION AND BACKFILL AS PER 2020 NYS PLUMBING CODE SECTION 306.
5. RODENT PROOFING AS PER 2020 NYS PLUMBING CODE 304.
6. MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE SECTION PC 303, 605, 607, 702, AND 902.
7. DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER 2020 NYS PLUMBING CODE SECTION 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 708.
8. VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE SECTION 308.
9. WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE CHAPTER 6 SECTION 601-603, 604, 605, 606, 607, 608, 610.
10. THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE CHAPTER 7 SECTION 701, 704, 705, 706, 707, 708, 711.
11. VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2020 NYS PLUMBING CODE CHAPTER 9 SECTIONS 917.
12. INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH 2020 NYS PLUMBING CODE SECTION 312.
13. GREASE TRAP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NYS PC 2020 SECTION 1003.
14. GAS PIPING INSTALLATIONS SHALL BE IN ACCORDANCE WITH NYS FUEL GAS CODE 2020 CHAPTER 4.

1.05 DEFINITIONS

- A. FURNISH TO PURCHASE, PROCUER, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.
- B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.
- C. PROVIDE: TO FURNISH AND INSTALL.
- D. PLUMBING CONTRACTOR: THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- E. DRAWINGS: THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/tenant AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
- F. EQUIPMENT: ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
- G. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
- H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED, PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.
- I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

1.06 DRAWINGS

- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/tenant AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
- B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
- C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
- D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
- E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.

1.07 PRODUCTS

- A. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.
- B. SANITARY AND VENT PIPING:
 1. ABOVE GRADE PIPING SHALL BE HUB AND SPICOT CAST IRON PIPE AS PER ASTM A4/4 WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
 2. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
 3. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

1.08 DOMESTIC WATER PIPING:

- A. DOMESTIC WATER PIPING:
 1. ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
 2. FITTINGS IN DOMESTIC WATER PIPING SHALL BE COPPER OR COPPER ALLOY
 3. JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
 4. THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
 5. COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
 6. 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 2020 NYS ENERGY CODE SECTION C404.4 TABLE C403.2.10.

1.09 MINIMUM PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	CONDUCTIVITY BTU/IN. (H.FT2°F)	MEAN RATING °F	<1	1 to <1½	1½ to <4	4 to >8
141-200	0.25-0.29	125	1.5	1.5	2	2
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0

7. WATER DISTRIBUTION SYSTEM AS PER 2020 NYS ENERGY CODE C404.7, HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. GRAVITY AND THERMO-SYNPY CIRCULATION SYSTEMS SHALL BE PROHIBITED. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NOT A DEMAND FOR HOT WATER.
- a. THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
- b. THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPE TO 104°F (40°C).
8. HW SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2020 NYS ENERGY CODE SECTION C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE C404.5.1.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1½"	0.5'	8'
1¾"	0.5'	6'
2" OR LARGER	0.5'	4'

C. HANGERS AND SUPPORTS:

1. HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
2. SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
4. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

D. VALVES:

1. PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES FOR ALL PIPE RUNS 2" AND SMALLER. PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4". PROVIDE GATE VALVES. PIPING 4" AND LARGER. PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
2. ALL FIXTURES WITH THE EXCEPTION OF FLUSHOMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.

E. TESTS:

3. ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
4. ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
5. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
6. PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

F. INSTALLATION:

- E. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.
- F. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 3

4. WARRANTY
 A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES, OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

E. GAS WATER HEATER

1. TANK SHALL 50 GALLON CAPACITY AND SHALL HAVE 150 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.
2. ALL INTERNAL SURFACES OF THE HEATER EXPOSED TO WATER SHALL BE GLASS-LINED WITH AN ALKALINE BORO SILICATE COMPOSITION THAT HAS BEEN FUSED-TO-STEEL BY FIRING AT A TEMPERATURE RANGE OF 1400°F TO 1600°F.
3. ELECTRIC HEATING ELEMENTS SHALL BE LOW WATT DENSITY GOLDENROD 1" SCREW-IN TYPE.
4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

F. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE- BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS. INSTALLED IN HORIZONTAL PIPING RUNS.

G. GAS PIPING INSTALLATION

1. GAS PIPING SHALL BE SIZED IN ACCORDANCE WITH PIPE SIZING TABLES OR SIZING EQUATIONS IN ACCORDANCE WITH NYS FUEL GAS CODE 2020 SECTION 402.4.
2. INDIVIDUAL OUTLETS TO GAS RANGES SHALL NOT BE LESS THAN $\frac{3}{4}$ INCHES NPS.
3. METALLIC PIPE SHALL COMPLY WITH SECTIONS 403.4.1 THROUGH 403.4.4.
4. PIPING SYSTEM INSTALLATION SHALL COMPLY WITH REQUIREMENTS OF NYS FUEL GAS CODE 2020 SECTION 404.
5. AS PER NYS FUEL GAS CODE 2020 SECTION 404.4: UNDERGROUND PIPING, WHERE INSTALLED BELOW GRADE THROUGH THE OUTER FOUNDATION OR BASEMENT WALL OF A BUILDING, SHALL BE ENCASED IN A PROTECTIVE PIPE SLEEVE. THE ANNUAL SPACE BETWEEN THE GAS PIPING AND THE SLEEVE SHALL BE SEALED.
6. PIPING INSTALLED UNDERGROUND BENEATH BUILDINGS IS PROHIBITED EXCEPT WHERE THE PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE DESIGNED TO WITHSTAND THE SUPERIMPOSED LOADS. THE CONDUIT SHALL BE PROTECTED FROM CORROSION IN ACCORDANCE WITH SECTION 404.9 AND SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 404.12.1 OR 404.12.2 OF NYC FUEL GAS CODE.
7. AS PER NYS FUEL GAS CODE 2020 SECTION 404.4: UNDERGROUND PIPING SYSTEMS SHALL BE INSTALLED A MINIMUM DEPTH OF 24 INCHES BELOW GRADE.
8. THE GAS PIPING IS ENCASED IN A CONDUIT OF WROUGHT IRON OR STEEL PIPE TO WITH STAND THE SUPERIMPOSED LOADS.
9. SHUTOFF VALVES SHALL BE LOCATED IN PLACES SO AS TO PROVIDE ACCESS FOR OPERATION AND SHALL BE INSTALLED SO AS TO BE PROTECTED FROM DAMAGE.

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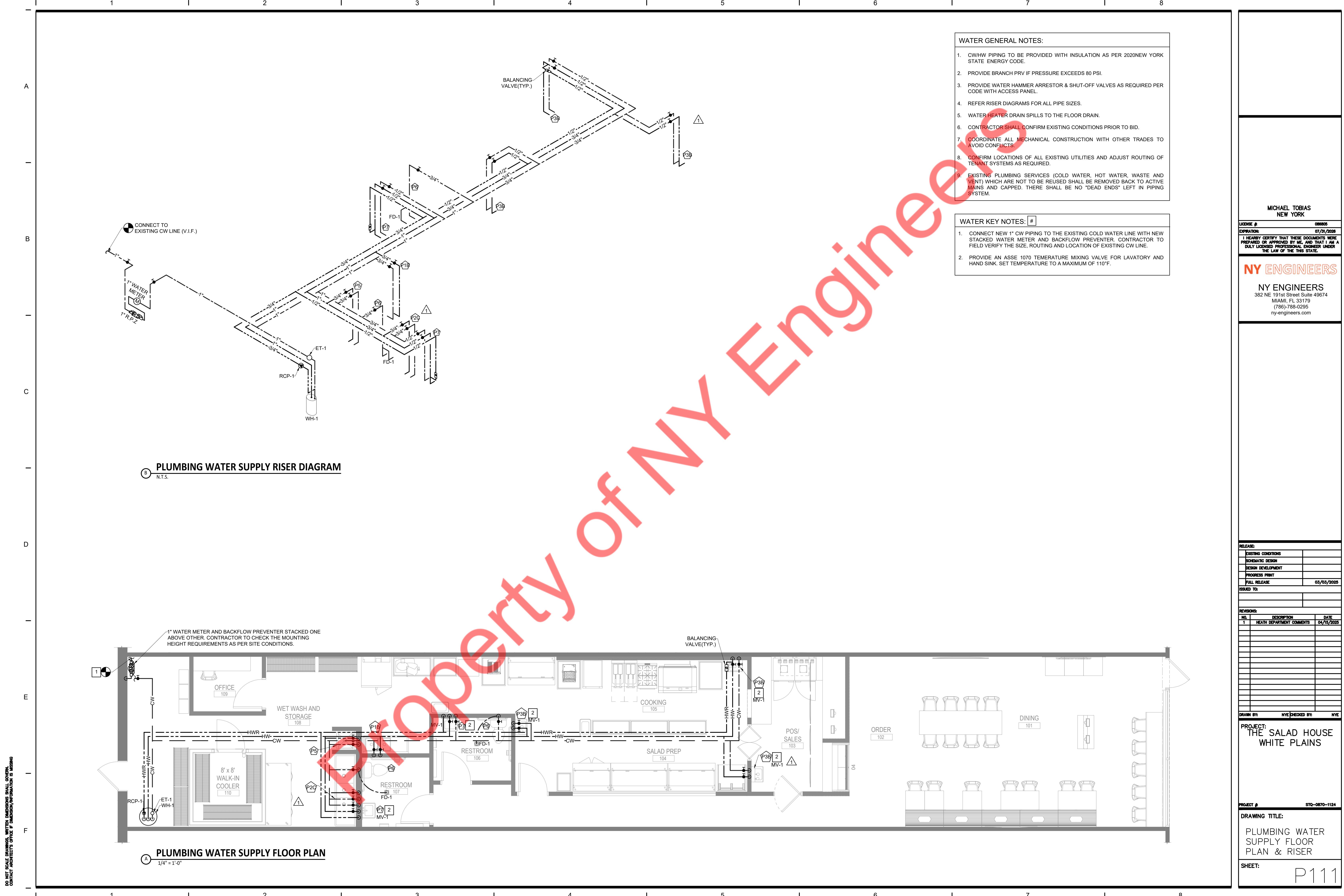
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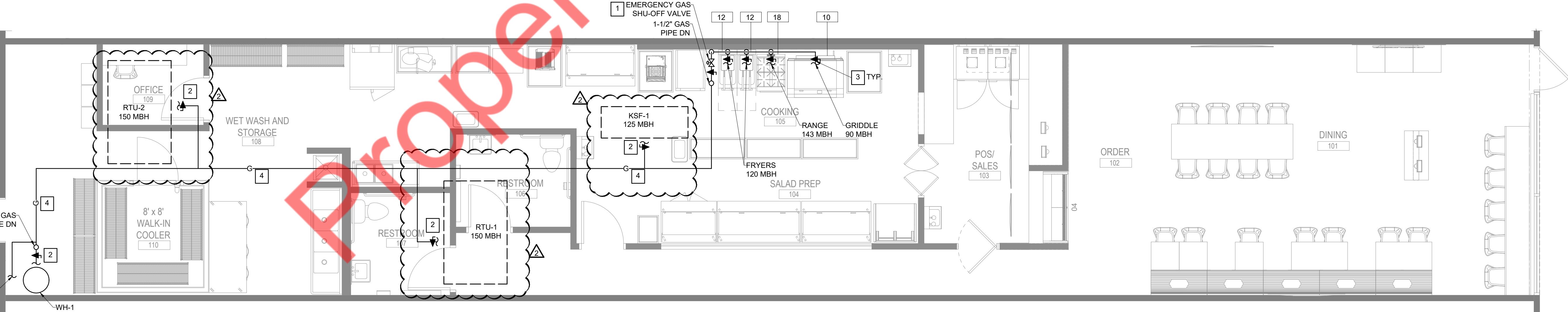
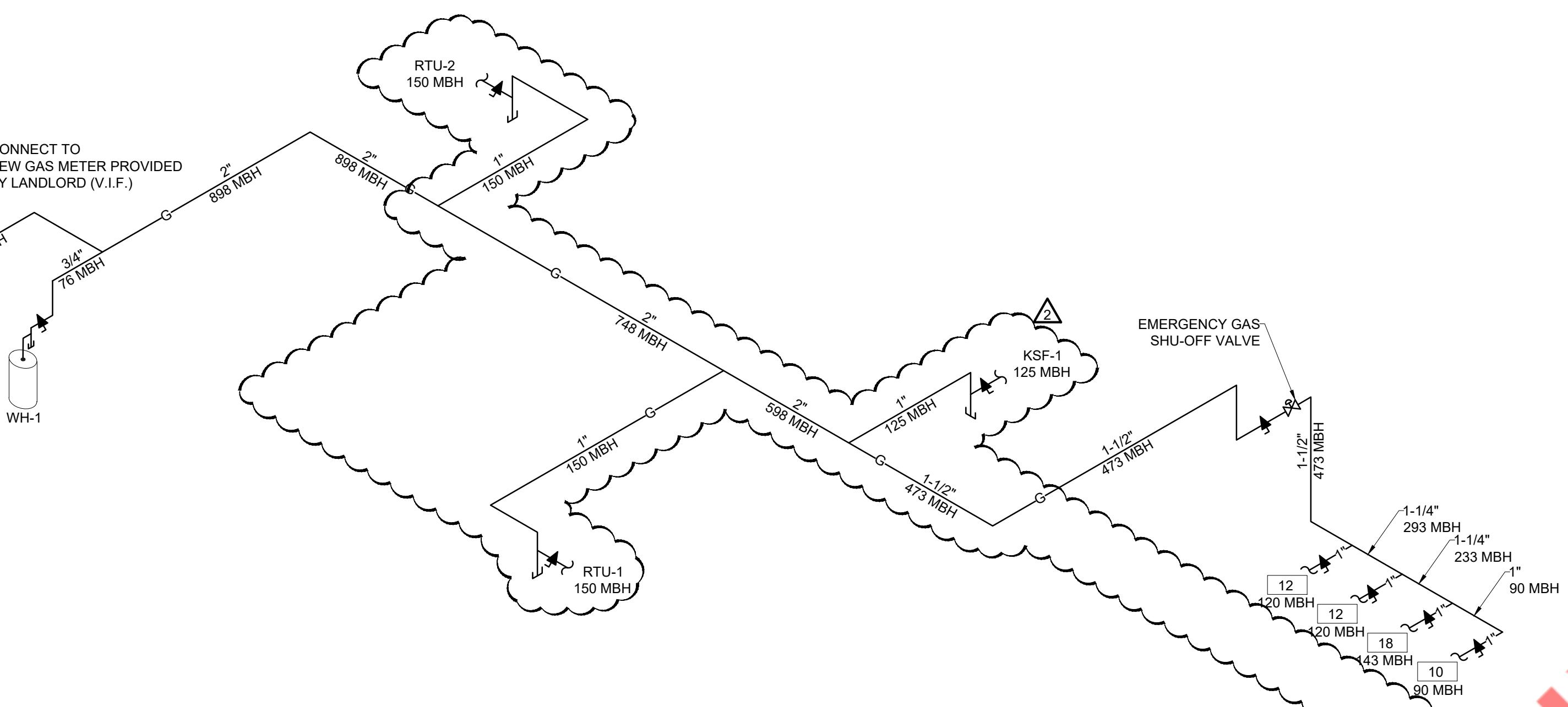
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Property of NY Engineers





GAS GENERAL NOTES:

- VERIFY GAS SERVICE PRESSURE, IF HIGHER THAN 14" W.C., PROVIDE VENTLESS PRESSURE REGULATOR AT EACH APPLIANCE, SET OUTLET PRESSURE PER APPLIANCE MANUFACTURER'S INSTRUCTIONS.
- GAS PIPING TO BE SCHEDULE 40 STEEL PIPE W/125 CAST IRON SCREWED FITTINGS.
- GAS SYSTEM TO BE INSTALLED BY QUALIFIED LICENSED CONTRACTOR.
- VERIFY ALL EQUIPMENT BTU'S PRIOR TO INSTALLATION.

GAS KEY NOTES: #

- MECHANICAL GAS SHUT-OFF VALVE BELOW CEILING, INTERLOCK TO HOOD FF SYSTEM & EXHAUST FAN PER NYS FGC TO DISABLE GAS WHEN THE FF SYSTEM ACTIVATES. GAS VALVE SHALL BE FULL SIZE OF LINE.
- PROVIDE GAS COCK, DIRTLEG AND UNION AT CONNECTION TO EQUIPMENT. SEDIMENT TRAP SHALL BE INSTALLED AFTER THE GAS COCK, AS CLOSE TO THE UNIT CONNECTION AS PRACTICAL, AND SHALL HAVE A REMOVABLE CAP FOR CLEANING.
- PROVIDE GAS COCK, DIRTLEG AND FLEXIBLE CONNECTION TO COOKING EQUIPMENT. SEDIMENT TRAP SHALL BE INSTALLED AFTER THE GAS COCK AND SHALL HAVE REMOVABLE CAP FOR CLEANING.
- GAS PIPING RUNNING ON ROOF. SHOWN ON PLAN FOR REFERENCE.
- CONNECT NEW 2-1/2" GAS PIPING TO NEW GAS METER PROVIDED BY LANDLORD. CONTRACTOR TO FIELD VERIFY THE CAPACITY, LOCATION AND PRESSURE OF GAS PIPING.

MICHAEL TOBIAS
NEW YORK

LICENSE # 086805
EXPIRATION 07/31/2026
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED AND APPROVED BY ME AS A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW OF THE THIS STATE.

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GAS LOAD AND SIZING SUMMARY:

- LOAD SUMMARY

SPACE HEATING (RTU-1,2)	=300 MBH
MAKE-UP AIR UNIT (KSF-1)	=125 MBH
WATER HEATING (WH-1)	=76 MBH
COOKING EQUIPMENT	= 473 MBH
TOTAL	=974 MBH
- PIPE SIZING SUMMARY:
 - 14" W.C. INLET PRESSURE
 - 0.5" W.C. PRESSURE DROP
 - 140 FT TOTAL EQUIV. LENGTH
 - NYS FGC 2020 TABLE 402.4(2) SCHEDULE 40 METALLIC PIPE IS USED.
- CONTRACTOR TO VERIFY PRESSURE AND PIPING LENGTHS ON SITE AND ADJUST PIPE SIZES IN ACCORDANCE WITH NYS FGC 2020 CHAPTER 4.

NATURAL GAS PIPING SYSTEM
PROVIDE A COMPLETE GAS PIPING SYSTEM TO SERVE GAS EQUIPMENT FURNISHED BY OTHERS, AS NOTED ON THE DRAWINGS. PROVIDE EITHER THREADED STEEL OR MALLEABLE IRON PIPE WITH MALLEABLE FITTINGS OR WELDED STEEL. PROVIDE ALL UNIONS, SHUT-OFF VALVES AND DIRT LEGS REQUIRED BY NFPA-54 AND GOVERNING LOCAL CODES AND AT EACH GAS APPLIANCE CONNECTION. PROVIDE ALL TESTS, METERS, INSPECTIONS, HANGERS AND EQUIPMENT CONNECTIONS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

RELEASE:
EXISTING CONDITIONS
SCHEMATIC DESIGN
DESIGN DEVELOPMENT
PROGRESS PRINT
FULL RELEASE 03/03/2025
ISSUED TO:

REVISIONS:
NO. DESCRIPTION DATE
2 DESIGN CHANGES PER STRUCTURE 05/29/2025

DRAWN BY: NYE CHECKED BY: NYE

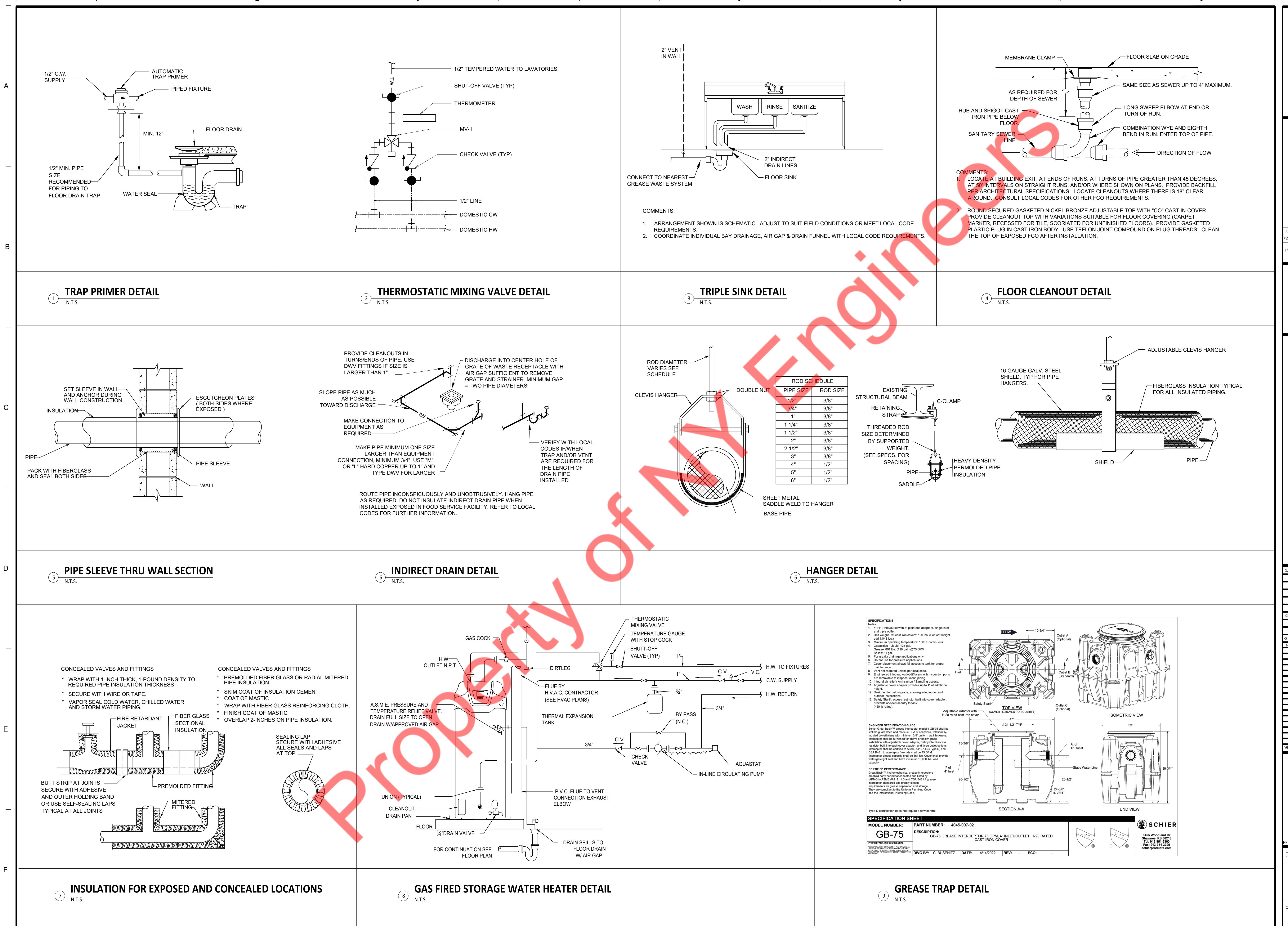
PROJECT: THE SALAD HOUSE WHITE PLAINS

PROJECT #: STQ-0570-1124

DRAWING TITLE:

PLUMBING GAS SUPPLY FLOOR PLAN & RISER

SHEET: P113



MICHAEL TOBIAS
NEW YORK

08

BY CERTIFY THAT THESE DOCUMENTS WERE
D OR APPROVED BY ME, AND THAT I AM A
LICENCED PROFESSIONAL ENGINEER UNDER
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GENERAL CONDITIONS	
STATIC DESIGN	
DEVELOPMENT	
LESS PRINT	
RELEASE	03/03/2025

SECRET: THE SALAD HOUSE

THE SALTBOX HOUSE
WHITE PLAINS

WHITE LEADERS

10. *Journal of the American Statistical Association*, 1990, 85, 200-209.

10. *Journal of the American Statistical Association*, 1980, 75, 338-342.

STQ-0870-1124

Limbing Details

...
[REDACTED]

TAG	PLUMBING FIXTURE	MANUFACTURER	MODEL	CONNECTION SIZE - INCHES					REMARKS
				TRAP	SOIL/WASTE	VENT	COLD WATER	HOT WATER	
P8	WATER CLOSET	AMER. STD.	--	-	4"	2"	3/4"	-	1.28 GPF, FURNISH WITH OPEN FRONT, WHITE SEAT BY CHURCH OR OLSONITE CHROME 3/8" ANGLE TYPE SUPPLY. FLUSH TRIP LEVER SHALL BE ON WIDE SIDE OF WATER CLOSET.
P7	LAVATORY	AMER. STD.	--	2"	2"	1-1/2"	1/2"	1/2"	SINGLE HANDLE FAUCET, GRID STRAINER & CONCEALED ARM SUPPORTS. 0.5 GPM FLOW RESTRICTOR, CHROME17 GA. P-TRAP W/CHROME ANGLE TYPE SUPPLIES AND TRUBRO TRAP WRAP KIT #102W. WATTS ASSE 1070 MIXING VALVE. SET TO 110°F OUTLET.
P5	MOP SINK	SAPPHIRE	SMS-252	3"	3"	2"	3/4"	3/4"	PROVIDE A FAUCET W/VACUUM BREAKER, WALL BRACE, INTERGRAL STOPS, FINAL HOOK UPS BY P.C. PROVIDE HOOKS OR HANG-UP BRACKETS AT THE MOP SINK FOR STORAGE OF MOPS AND BROOMS.
P1B	DOUBLE SINK	SAPPHIRE	SMS-2-1818L	2"	2"	--	3/4"	3/4"	INDIRECT WASTE TO FLOOR SINK
P2C	TRIPLE SINK	SAPPHIRE	SMS-3-1821D 	2"	2"	--	3/4"	3/4"	INDIRECT WASTE TO FLOOR SINK
P3B	HAND SINK	--	--	2"	2"	1-1/2"	1/2"	1/2"	-
FD-1	FLOOR DRAIN	JONES STEPHENS	#D53	3"	3"	2"	-	-	BRASS GRATE; TRAP PRIMER CONNECTION WHERE REQUIRED; VANDAL PROOF SCREWS
FS-1	FLOOR SINK	JONES STEPHENS	#S59-093	3"	3"	2"	-	-	PVC BODY, 12"X12" TOP, 9"X9" HALF GRATE, FLAT BOTTOM STRAINER
FCO-1	FLOOR CLEANOUT	JONES STEPHENS	#C60	--	AS NOTED	--	--	--	PVC SPUD WITH 6" ROUND SCORIATED TOP W/ POLISHED BRONZE FINISH, ADJUSTABLE TOP.

NOTE: CONTRACTOR TO COORDINATE WITH ARCHITECTURAL DRAWINGS ALL PLUMBING FIXTURES SPECIFICATIONS AND MOUNTING HEIGHT INSTALLATION.

MICHAEL TOBIAS
NEW YORK

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EXPIRATION: 07/31/2026
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COOKING EQUIPMENT SCHEDULE							
TAG	EQUIPMENT	MANUFACTURER	MODEL	GAS INPUTS			
				CAPACITY (BTU'S)	SIZE	MIN. PRESSURE	MAX. PRESSURE
10	COUNTERTOP GAS GRIDDLE	GLOBE	GC36TG	90,000	1"	6"	--
12	VULCAN FRYER	IMPERIAL	LG400	120,000	1"	7"	9"
18	GAS RANGE 24" 4 OPEN BURNER	IMPERIAL	SX24-4BN	143,000	1"	5"	--

RECIRCULATING PUMP SCHEDULE						
MARK	SERVICE	GPM	TOTAL HEAD FT.	MOTOR HP	MANUFACTURER & REMARKS	
RCP-1	HW RECIRCULATION	2	10	0.115	GRUNDFOS UP 15-18 BUCS W/AQUASTAT + TIMER	

EXPANSION TANK SCHEDULE						
ITEM	SERVICE	QTY	GALLONS	MAKE	REMARKS	
EXPANSION TANK (ET-1)	HOT WATER	1	2	AMTROL ST-5C-DD	-DIMENSIONS- 14"(H) x 8"(DIA.) -SHIPPING WEIGHT- 10 LBS	

GAS STORAGE WATER HEATER SCHEDULE											
TAG	MANUFACTURER AND MODEL NO.	STORAGE GPH	RECOVERY GPH	TEMP. RISE °F	INPUT RATING BTU/H	THERMAL EFFICIENCY	APPROX. WEIGHT (LBS)	TANK DIA.	TANK HEIGHT	ELECTRICAL INPUT	REMARKS
WH-1	AO SMITH DTX-80	50	95	90	76,000	94%	225	22"	71-1/8"	120V/60HZ/1PH. (<5 AMPS)	-PROVIDE Drip PAN AND ALL ACCESSORIES REQUIRED FOR SATISFACTORILY WORKING.

THERMOSTATIC MIXING VALVE											
ITEM	QUANTITY	LOCATION	SERVICE	CAPACITY (GPM)	PRESSURE DROP (PSI)	MINIMUM FLOW (GPM)	MAKE	CW INLET	HIGH TEMP. INLET	LOW TEMP. OUTLET	REMARKS
MV-1	01	REFER PLAN	HOT WATER	17	5	1	LAWLER 801 OR EQUAL	3/4"	3/4" (140°F)	1" (110°F)	-BRONZE BODY AND LEAD FREE CONSTRUCTION -ASSE CERTIFIED

BALANCING VALVE VALVE						
ITEM	QUANTITY	LOCATION	WORKING TEMP.	MAKE	MODEL	REMARKS
BALANCING VALVE	03	REFER PLAN	250°F	WATTS OR EQUAL	CSM-61-T	-BRONZE BODY AND LEAD FREE CONSTRUCTION

GREASE TRAP SCHEDULE						
ITEM	MANUFACTURER	MODEL	FLOW (GPM)	GREASE CAPACITY	LIQUID CAPACITY	DIMENSIONS
GT-1	SCHIER	GB-75	75	861 LBS	125 GAL.	- 47"(L) X 33" (W) X 39-3/4" (H)

RELEASE:
 EXISTING CONDITIONS
 SCHEMATIC DESIGN
 DESIGN DEVELOPMENT
 PROGRESS PRINT
 FULL RELEASE 03/03/2025
ISSUED TO:
REVISIONS:
NO. DESCRIPTION DATE
1. HEATH DEPARTMENT COMMENTS 04/15/2025

DRAWN BY: NYE CHECKED BY: NYE

PROJECT: THE SALAD HOUSE
WHITE PLAINS

PROJECT #: STQ-0870-1124
DRAWING TITLE: PLUMBING SCHEDULES

SHEET: P301