BTU **BRITISH THERMAL UNIT** CUBIC FEET PER MINUTE

EXISTING

C.O. **CLEAN OUT** DIA DIAMETER

(E)

FPM

EAT ENTERING AIR TEMPERATURE ENTERING DRY BULBTEMPERATURE EDB

EF **EXHAUST FAN**

(E)RTU EXISTING ROOF TOP UNIT FAN ESP EXTERNAL STATIC PRESSURE ENTERING WET BULB TEMPERATURE

DEGREE FAHRENHEIT FLA FULL LOAD AMPS

FEET PER MINUTE

FT FOOT OR FEET **HORSEPOWER KILOWATT**

HΖ **HERTZ** INCH

LAT LEAVING AIR TEMPERATURE LEAVING DRY BULB TEMPERATURE

LOCKED ROTOR AMPS

LEAVING WET BULB TEMPERATURE

MAXIMUM 1,000 BTU'S PER HOUR

MAXIMUM CIRCUIT AMPACITY

MAXIMUM OVERCURRENT PROTECTION (N)

NEW NTSNOT TO SCALE OUTSIDE AIR

PHASE RUNNING LOAD AMPS

REVOLUTIONS PER MINUTE

ROOF TOP UNIT SUPPLY AIR SD SMOKE DETECTOR

SHC SENSIBLE HEAT CAPACITY SQUARE FEET **THERMOSTAT**

TRANSFER AIR **UNDERCUT**

1. ALL DRAWINGS ARE CONCEPTUAL AND SCHEMATIC AND ARE INTENDED FOR USE AS A DESIGN/BUILD GUIDELINE. THE CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL FIELD CONDITIONS AND ADJUSTING OR MODIFYING THE SPECIFIC ELEMENTS OF THEIR WORK AS REQUIRED TO MEET THE DESIGN INTENT. THE CONTRACTORS ARE RESPONSIBLE FOR THE FOLLOWING:

A COORDINATION WITH OTHER TRADES.

PROVIDING ADDITIONAL DRAWINGS. CALCULATIONS AND OTHER DOCUMENTATION REQUIRED FOR THE BUILDING DEPARTMENT. THE MECHANICAL CONTRACTOR SHALL DOCUMENT THE INSTALLATION AND PROVIDE ALL TESTS REQUIRED TO SUBSTANTIATE CODE COMPLIANCE AS REQUIRED BY THE BUILDING DEPARTMENT AND LOCAL INSPECTOR. CONTRACTOR SHALL SUBMIT FINAL AS-BUILT DRAWINGS TO BUILDING DEPARTMENT FOR RECORD AT COMPLETION.

MECHANICAL PLANS ARE DIAGRAMMATIC IN NATURE, NOT SHOWING EVERY ITEM IN EXACT LOCATION OR DETAIL MEASUREMENTS AND LOCATIONS MUST BE FIELD VERIFIED AND COORDINATED WITH ARCHITECTURAL, HVAC, FIRE PROTECTION, STRUCTURAL, ELECTRICAL AND OTHER BUILDING DRAWINGS.

3. CONTRACTOR TO INCLUDE IN BID ALL COSTS TO MAKE FIELD COORDINATION AND ADJUSTMENT TO DUCTWORK FOR FIT INTO EXISTING STRUCTURE. CONTRACTOR SHALL VERIFY AND FIELD COORDINATE FINAL LOCATION OF MECHANICAL EQUIPMENT.

4. FURNISH ALL LABOR, MATERIALS, TOOLS, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE HEATING, VENTILATING, AIR CONDITIONING SYSTEM. INCLUDE ANY LABOR AND MATERIAL NOT SPECIFICALLY MENTIONED. BUT NECESSARY TO PROVIDE A COMPLETE AND OPERATING SYSTEM. ALL WORK SHALL BE INSTALLED IN A PROFESSIONAL MANNER AND SHALL MEET ALL THE REQUIREMENTS OF THE STATE BUILDING CODE, CITY BUILDING CODE, SAFETY AND HEALTH CODES, NFPA CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. ALL COSTS FOR SAID REQUIREMENTS SHALL BE INCLUDED IN THIS CONTRACTORS BID

5. CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS AND PERFORM ALL TESTS CALLED FOR OR REQUIRED AS A PART OF HIS WORK. FURNISHED APPROVED CERTIFICATE OF FINAL INSPECTION, AND TURN OVER TO OWNER AT COMPLETION OF PROJECT.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL TRADES, LANDLORD REQUIREMENTS, CEILING HEIGHTS AND EXISTING STRUCTURAL CONDITIONS PRIOR TO FABRICATION OF ANY DUCTWORK OR ORDERING OF ANY EQUIPMENT.

7. ALL INSTALLATION OF THE MECHANICAL EQUIPMENT SHALL COMPLY WITH THE MANUFACTURER'S SPECIFICATION AND CLEARANCE REQUIREMENTS.

8. ALL HVAC WORK SHALL BE IN ACCORDANCE WITH NFPA 90A, 90B, 96, 54 AND NFC 101. LIFE SAFETY CODE.

9. INSTALLATION SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES. AND WITH LATEST ASHRAE PUBLICATIONS. WORK SHALL BE NEAT AND WORKMANSHIP SHALL BE ACCEPTABLE TO BUILDING STANDARDS.

10. CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE TEMPERATURE CONTROL SYSTEM TO INCLUDE: PANELS, MODULES, RELAYS, WIRING, THERMOSTATS, SENSORS, DAMPERS, ACTUATORS AND ALL MISCELLANEOUS ITEMS AS REQUIRED TO FULFILL THE DESIGN INTENT AS INDICATED ON THE PLANS AND IN THE CODED NOTES. THERMOSTATS AND SENSORS SHALL BE LOCATED GENERALLY AS SHOWN BUT THEIR EXACT LOCATION SHALL BE FIELD COORDINATED TO AVOID INTERFERENCE WITH WALL MOUNTED WORK.

11. DURING THE BIDDING PERIOD, EACH CONTRACTOR SHALL VISIT THE SITE TO DETERMINE CONDITIONS AFFECTING THE WORK. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF WORK REQUIRED CONDITIONS IN EVIDENCE THEREBY SHALL NOT BE JUSTIFICATION FOR ADDITIONAL COMPENSATION.

12. THE EQUIPMENT SHALL BE LOCATED TO ALLOW FOR EASY ACCESS FOR SERVICING, ADJUSTING OR MAINTENANCE AND SPACE FOR REMOVAL OF INTERNAL ASSEMBLIES. PROVIDE MINIMUM CLEARANCES FOR ALL EQUIPMENT PER THE MANUFACTURERS RECOMMENDATIONS.

13. PROVIDE ALL CONTROL EQUIPMENT, MOTOR STARTERS, RELAYS, LINE VOLTAGE CONTROLS, TRANSFORMERS, LOW VOLTAGE CONTROLS, AND DEVICES NECESSARY FOR THE COMPLETE OPERATION OF THE HEATING AND AIR CONDITIONING AND VENTILATING SYSTEM.

14. ALL LOW VOLTAGE WIRING AND CONDUIT REQUIRED FOR MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

15. SMOKE DETECTORS WIRED BY DIVISION 16.

16. IN THE EVENT OF FAN SHUT DOWN, ALL DUCT MOUNTED DETECTORS SHALL REMAIN IN OPERATION.

OCAL CODES AND ORDINANCES AND THE NATIONAL ELECTRIC THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS PRIOR TO

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH STATE AND

PURCHASING OR INSTALLING EQUIPMENT AND SYSTEMS INDICATED ON THE CONTRACT DOCUMENTS. PRIOR TO THE SUBMITTAL THE CONTRACTOR SHALL VERIFY THAT ADEQUATE SPACE EXIST FOR THE SUBMITTED EQUIPMENT. SHOP DRAWINGS MUST BE REVIEWED BY THE ENGINEER AND ARCHITECT.

19. ALL THE BARE METAL SURFACES SHALL BE PRIMED AND PAINTED TO PREVENT ANY RUST, INCLUDING, BUT NOT LIMITED TO, ANGLE FRAMING, UNIT SUPPORTS, MOUNTING HARDWARE, ETC. ANY PAINTING OF DUCTWORK SHALL BE VERIFIED WITH ARCHITECT.

20. CONTRACTOR TO PROVIDE TENANT WITH AS-BUILT DRAWINGS OF ALL CHANGES OR MODIFICATIONS MADE IN THE FIELD. TO THE ORIGINAL SET OF CONSTRUCTION DOCUMENTS, FOR TURN-OVER TO THE ARCHITECT/ ENGINEER UPON COMPLETION OF THE PROJECT. PROVIDE ALL EQUIPMENT SHOP DRAWINGS, INFORMATION ON CONTROL DEVICES, CONTROL WIRING DIAGRAMS AND OTHER PERTINENT INFORMATION AT COMPLETION OF PROJECT.

21. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE MECHANICAL EQUIPMENT COMPONENTS ARE INSTALLED AT LOCATIONS AND ELEVATIONS WHICH MAKE THEM READILY ACCESSIBLE FOR ROUTINE MAINTENANCE WITHOUT REQUIRING ANY EXTRAORDINARY MEASURES.

22. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADMINISTERING ALL WARRANTIES ON EQUIPMENT WHICH HE INSTALLS. THIS INCLUDES ALL CONDENSERS, REFRIGERANT PIPES, AND OTHER ITEMS FURNISHED BY OTHERS AS WELL AS THOSE FURNISHED BY HIM.

23. FIELD VERIFY THE EXACT LOCATION OF ALL EQUIPMENT WITH ARCHITECT/OWNER PRIOR TO INSTALLATION. INFORM OWNER OF ANY EQUIPMENT ITEMS THAT REQUIRE RELOCATION.

24. CONTRACTOR SHALL VERIFY THAT ALL EQUIPMENT. AS SHOWN ON THESE DRAWINGS. WILL NOT CONFLICT WITH ANY DRAINS. VENTS, MECH. PIPING OF ANY KIND, ELECTRICAL, ETC.

25. PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE CONNECTIONS TO ALL MOVING MACHINERY.

26. DUCT DIMENSIONS SHOWN ARE INSIDE NET DIMENSIONS, ADD TO SHEET METAL SIZE FOR INSULATION THICKNESS. HOLD DUCTWORK TIGHT TO UNDERSIDE OF STRUCTURE UNLESS OTHERWISE NOTED OR REQUIRED BY FIELD CONDITIONS. IT IS REQUIRED TO COORDINATE EXACT MOUNTING HEIGHT IN FIELD WITH SITE INVESTIGATION. SUPPLY, RETURN, OUTSIDE AIR AND RELIEF AIR DUCTS SHALL BE SHEET METAL AND BE EXTERNALLY INSULATED WITH OWENS CORNING TYPE 150 2" THICK, FOIL FACED FLEXIBLE FIBROUS GLASS BLANKET INSULATION WITH A MIN R-6.4 VALUE. EQUAL IS APPROVED. INSULATION WRAP SHALL BE SEALED WITH FAB AND MASTIC.

27. ALL DUCTWORK SHALL MAINTAIN SYSTEM PRESSURE. THE AIR DISTRIBUTION COMPONENTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA REQUIREMENTS. TWO INCH PRESSURE CLASS.

28. DUCT INSULATION CLOSURE SYSTEM SHALL CONSIST OF GLASS FABRIC AND NON MIGRATING MASTIC, SEAL AIR TIGHT.

29. ALL FLEXIBLE DUCTS SHALL BE SUPPORTED EVERY 4'-0" WITH 2" WIDE GALVANIZE. STEEL BANDS. MINIMUM ONE PER EACH SECTION OF FLEXIBLE DUCT. MAXIMUM LENGTH OF FLEX DUCT SHALL BE 5'-0" LONG AND SHALL MEET INSTALLATION AND MATERIAL REQUIREMENTS OF LOCAL CODES.

30. NO FLEXIBLE DUCTS SHALL PASS THROUGH FIRE WALLS, OR BE CONNECTED TO ANY METAL DUCT WITH-IN 5'-0" FROM EITHER SIDE OF THE FIREWALL.

31. ALL BRANCH TAKE-OFFS SHALL BE PROVIDED WITH MANUAL BALANCING DAMPERS LOCATED ABOVE ACCESSIBLE CEILINGS AS CLOSE TO MAIN TRUNK AS POSSIBLE. WHEN AIR DEVICE IS NOT ACCESSIBLE PROVIDE DAMPER AT AIR DEVICE.

32. CONTRACTOR IS RESPONSIBLE FOR COORDINATING BOX-OUT LOCATIONS FOR ALL DRYWALL MOUNTED AIR DEVICES WITH GENERAL CONTRACTOR AND CEILING FRAMING. CONTRACTOR SHALL COORDINATE ALL DUCT AND DIFFUSER LOCATIONS WITH LIGHTING LAYOUTS AS REQUIRED.

33. ALL DUCTWORK BEHIND RETURN AIR DEVICE PLENUMS SHALL BE PAINTED FLAT BLACK.

34. ALL SUPPLY DUCT BENDS FROM THE VERTICAL TO HORIZONTAL AND ANGLED TURNS OF DUCTWORK SHALL HAVE TURNING VANES INSTALLED.

35. PROVIDE SMOOTH TRANSITIONS AT EQUIPMENT AND AIR DEVICES TO MATCH CONNECTION SIZES. ALL DUCTWORK SHALL BE SHEET METAL FABRICATED IN ACCORDANCE WITH ASHRAE **GUIDE AND SMACNA MANUAL LATEST EDITIONS.**

36. THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT AIR BALANCING AGENCY SUBSEQUENT TO THE APPROVAL OF THE OWNERS REPRESENTATIVE. THE T&B AGENCY CAN ONLY ACT AS HIS OWN REPORTING AGENCY IF SUITABLE INSTRUMENTS HEREINAFTER REQUIRED ARE DEMONSTRATED TO BE PART OF HIS NORMAL PROCEDURE TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE. THE T&B AGENCY SHALL BE AABC OR NEBB CERTIFIED. CONTRACTOR SHALL PROVIDE LANDLORD WITH WATER AND AIR BALANCE REPORT.

37. IT SHALL BE THE RESPONSIBILITY OF THIS T&B AGENCY TO PROVIDE THE LOCAL BUILDING DEPARTMENT AND OWNER WITH PROPER TEST & BALANCE DATA ON AABC OR NEBB FORMS.

38. BUILDING AIR SYSTEMS SHALL BE BALANCED PER DATA INCLUDED ON THE DRAWINGS TO ACHIEVE RELATIVE AIR VOLUMES AS INDICATED ON THE DRAWINGS AND SCHEDULED HEREIN. REFER TO AIR FLOW DIAGRAM DETAIL.

39. ALL ROOFTOP EQUIPMENT TO BE SET LEVEL AND PLUMB.

SHEET LIST

SHEET NUMBER SHEET TITLE MECHANICAL GENERAL NOTES AND LEGEND M1.0 **HVAC FLOOR PLAN** HVAC ROOF PLAN MECHANICAL SCHEDULE MECHANICAL DETAILS (1 of 2) MECHANICAL DETAILS (2 of 2) HOOD DETAILS (1 OF 5) HOOD DETAILS (2 OF 5) HOOD DETAILS (3 OF 5) HOOD DETAILS (4 OF 5) HOOD DETAILS (5 OF 5) MECHANICAL COMPLIANCE (1 OF 2)

MECHANICAL COMPLIANCE (2 OF 2)

MECHANICAL SPECIFICATIONS (1 OF 2)

MECHANICAL SPECIFICATIONS (2 OF 2)

HOOD & GREASE EXHAUST DUCT NOTES

1. EXHAUST HOODS SHALL BE CONSTRUCTED OF 16 GAUGE GALVANIZED OR 18 GA. STAINLESS STEEL WITH ALL EXTERNAL SEAMS AND JOINTS CONTINUOUSLY WELDED 100% LIQUID TIGHT. EXHAUST HOODS SHALL MEET OR EXCEED THE REQUIREMENTS OF NFPA 96, ALL LOCAL CODES AND SHALL BEAR THE NSF SEAL OF APPROVAL. SEE CAPTIVEAIRE HOOD DRAWING FOR INFORMATION.

2. ALL LIGHTS USED IN THE HOODS SHALL BE U.L. LISTED FOR CANOPY HOOD USE AND OF THE INCANDESCENT TYPE AND SHALL BE WIRED TO COME ON THRU A SWITCH LOCATED ON THE HOOD FACE.

3. THE EXHAUST HOODS SHALL HAVE ALL STAINLESS STEEL BAFFLE FILTERS AND SHALL HAVE A FIRE ACTUATED DAMPER IN THE MAKE-UP

4. THE EXHAUST HOODS SHALL HAVE PREPIPED AUTOMATIC U.L. ANSU FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF THE EXHAUST PLENUM & DUCT AND COOKING SURFACES. FIRE CONTROL CABINETS SHALL ALSO BE PROVIDED AS SHOWN AND SHALL HAVE MICRO SWITCHES FURNISHED AS REQUIRED FOR EQUIPMENT SHUT OFF THERE SHALL BE A MANUAL PULL STATION NEAR THE EXIT DOOR AND MINIMUM OF 10'-0" FROM THE HOOD. (MUST BE FLUSH MOUNTED, CONDUIT RUN IN THE WALL).

5. THE SUPPLY FAN SWITCHES, 40 VA TRANSFORMERS, SUPPLY & EXHAUST FAN STARTERS, THERMAL OVERLOADS AND MECHANICAL GAS VALVE SHALL BE FURNISHED BY THE HOOD MANUFACTURER, AND SUPPLY FAN SWITCHES SHALL BE MOUNTED ON THE HOOD FACES. THE 40 VA TRANSFORMERS AND FAN STARTERS SHALL BE MOUNTED IN THE FIRE CONTROL CABINETS AND THE MECHANICAL GAS VALVE SHALL BE INSTALLED AS SHOWN ON THE PLUMBING DRAWINGS.

6. ALL EXHAUST COLLARS AND EXHAUST DUCTWORK ARE SIZED TO MAINTAIN BETWEEN 1500 AND 2000 FPM EXHAUST AIR VELOCITY. ALL GREASE EXHAUST DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH NFPA-96. GREASE EXHAUST UCTWORK SHALL HAVE ALL SEAMS, JOINTS AND PENETRATIONS NTINUOUSLY WELDED LIQUID TIGHT.

ALL HORIZONTAL RUNS OF GREASE EXHAUST DUCT SHALL SLOPE BACK TOWARD THE HOOD AT A SLOPE OF 1/4" PER FOOT. PROVIDE A RESIDUE RAP AT THE BASE OF EACH VERTICAL RISER.

PROVIDE U.L. LISTED CLEANOUTS IN GREASE EXHAUST DUCTWORK AT A MINIMUM OF 10'-0" INTERVALS, AT EACH CHANGE OF DIRECTION AND AT EACH RESIDUE TRAP.

THE DISCHARGE OF THE GREASE EXHAUST FANS SHALL BE A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE.

10. ALL GREASE EXHAUST DUCTWORK SHALL HAVE STANDARD OR RADIUS

11. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WARRANTIES.

12. THE FOLLOWING EQUIPMENT SHALL BE PURCHASED & INSTALLED BY THE HVAC SUB CONTRACTOR PROVIDED THROUGH CAPTIVEAIRE SYSTEMS. CONTRACTOR TO PROVIDE FINAL ELECTRICAL, PLUMBING AND MECHANICAL CONNECTIONS:

A.) STAINLESS STEEL HOODS AS SPECIFIED ABOVE WITH FIRE PROTECTION SYSTEMS, CONTROLS, STARTERS, FIRE CONTROL CABINETS CLOSURE STRIP AND MECH. GAS VALVE.

B) ALL HOODS, HOOD SUPPLY AND EXHAUST FANS WITH ROOF CURBS. PROVIDE ALL HOOD EXHAUST FANS WITH GREASE **GUARDS SUPPLIED BY CAPTIVEARIE.** C) WIRING BETWEEN HOODS, FANS AND FIRE SYSTEM - INSTALLED

13. KITCHEN HOOD TEST AND BALANCE REPORT SHALL BE SUBMITTED TO

BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION. 14. UPON ACTIVATION OF ANY FIRE EXTINGUISHING SYSTEM FOR A COOKING OPERATION, ALL SOURCES OF FUEL AND ELECTRIC POWER THAT PRODUCE HEAT TO ALL EQUIPMENT REQUIRING PROTECTION BY THAT SYSTEM SHALL AUTOMATICALLY SHUT OFF. ACTIVATION OF THE AUTOMATIC FIRE EXTINGUISHING SYSTEM MUST IMMEDIATELY SHUT OFF GAS AND ELECTRIC SUPPLY TO ALL APPLIANCES UNDER THE PROTECTED HOOD. THE PLUMBING CONTRACTOR SHALL PROVIDE A MASTER SOLENOID VALVE IN GAS LINE TO DISCONNECT ALL GAS

15. ALL REMOTE MANUAL OPERATING DEVICES SHALL BE IDENTIFIED AS THE "HAZARD PROTECTED" PROVIDE PLAQUE AND SIGN AS REQUIRED BY LOCAL JURISDICTION.

16. ONE PLENUM NOZZLE SHALL BE PROVIDE FOR EVERY 10 FEET OF HOOD. REFER TO HOOD DRAWINGS FOR EXACT LOCATION.

APPLIANCES. MANUAL GAS AND ELECTRIC RESETS ARE REQUIRED.

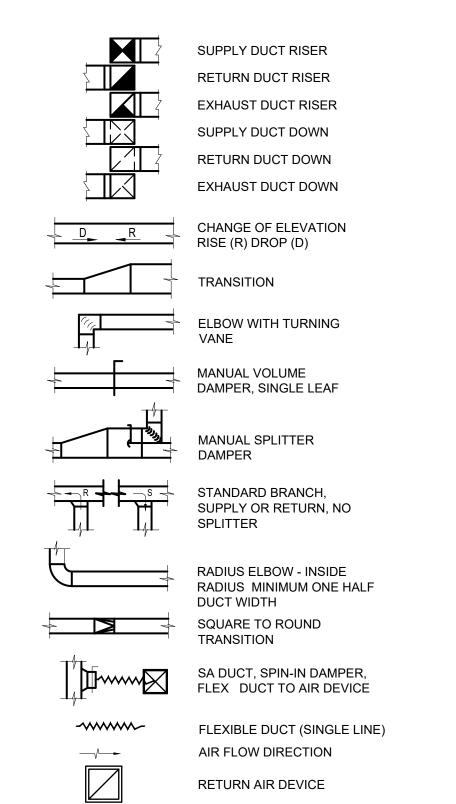
17. THE HOOD INSTALLING CONTRACTOR SHALL PROVIDE THE LATEST SYSTEM MANUAL AS PROVIDED BY THE MANUFACTURER TO VERIFY THE SYSTEM INSTALLATION.

18. A PERFORMANCE TEST SHALL BE CONDUCTED UPON COMPLETION AND BEFORE FINAL APPROVAL OF THE INSTALLATION OF A VENTILATION SYSTEM SERVING COMMERCIAL COOKING APPLIANCES. THE TEXT SHALL VERIFY THE RATE OF EXHAUST AIRFLOW REQUIRED BY CODE, MAKEUP AIR FLOW REQUIRED CODE AND PROPER OPERATION AS REQUIRED BY LOCAL CODE. THE PERMIT HOLDER SHALL THE NECESSARY TEST EQUIPMENT AND DEVICES REQUIRED.

19. THE PERMIT HOLDER SHALL VERIFY CAPTURE AND CONTAINMENT PERFORMANCE OF THE EXHAUST SYSTEM. THIS FIELD TEST SHALL BE CONDUCTED WITH ALL APPLIANCES UNDER THE HOOD AT OPERATING TEMPERATURES, WITH ALL SOURCES OF OUTDOOR AIR PROVIDING MAKEUP AIR FOR THE HOOD OPERATING AND WITH ALL SOURCES OF RECIRCULATED AIR PROVIDING CONDITIONING FOR THE SPACE IN WHICH THE HOOD IS LOCATED OPERATING. CAPTURE AND CONTAINMENT SHALL BE VERIFIED VISUALLY BY OBSERVING SMOKE OR STEAM PRODUCED BY ACTUAL OR SIMULATED COOKING, SUCH AS WITH SMOKE CANDLES, SMOKE PUFFERS AND SIMILAR MEANS.

> EACH HOOD SHALL BEAR THE FOLLOWING APPROVALS: NSF #1362, SBCCI #8469, U.L. CLASSIFICATION #91G6, NFPA #90A, 90B, 96-101

HVAC SYMBOLS LEGEND



SUPPLY AIR DEVICE

EXHAUST AIR DEVICE

MOTORIZED DAMPER

HUMIDITY SENSOR

THERMOSTAT

INDICATES TWO-WAY DIFFUSER

INDICATES BLANKED OFF SIDE

CARBON MONOXIDE SENSOR

PULL STATION FOR HOODS

REMOTE TEST STATION

FOR SMOKE DETECTOR

SMOKE DETECTOR

UNDERCUT DOOR 1"

REFERENCE NOTE

TYPE

NO. /

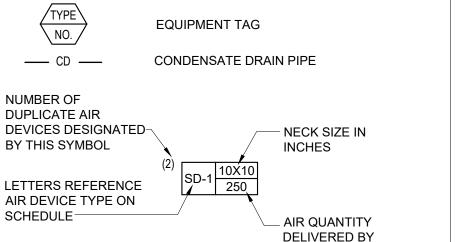
NUMBER OF

SCHEDULE-

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

REMOTE SENSOR/HUMIDISTAT COMBO MULTIPLE GROUPED THERMOSTATS

 $\frac{1}{2}$



DEVICE IN CFM

FIELD VERIFY ALL CONDITIONS

AS NOTED IN THE SPECIFICATIONS, ALL WIRING LAYOUTS, PIPING LAYOUTS AND DUCT LAYOUTS ARE SCHEMATIC. EXACT LOCATIONS SHALL BE DETERMINED BY THE CONSTRUCTION AND STRUCTURE OF THE BUILDING AND SHALL BE VERIFIED AND COORDINATED IN THE FIELD. EACH TRADE CONTRACTOR SHALL VERIFY WITH THE GENERAL CONTRACTOR THAT HE HAS THOROUGHLY REVIEWED AND COORDINATED ALL LOCATIONS AND ROUTINGS WITH ALL OTHER TRADES PRIOR TO FABRICATION OF CONDUITS, DUCTS, OR PIPING, AND START OF INSTALLATION OF SAME (INCLUDING SPRINKLER PIPING WHEN PRESENT ON JOB). ANY INSTALLATION OR CONSTRUCTION CONFLICTS WHICH OCCUR IN THE FIELD SHALL BE RESOLVED BY THE TRADE CONTRACTOR TO THE SATISFACTION OF THE OWNER AND ARCHITECT AND AT NO EXPENSE TO THE OWNER, ARCHITECT AND/OR GENERAL CONTRACTOR.

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

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

SHEET

FILE#: JDS DATE: 05/29/24 PM: NYE

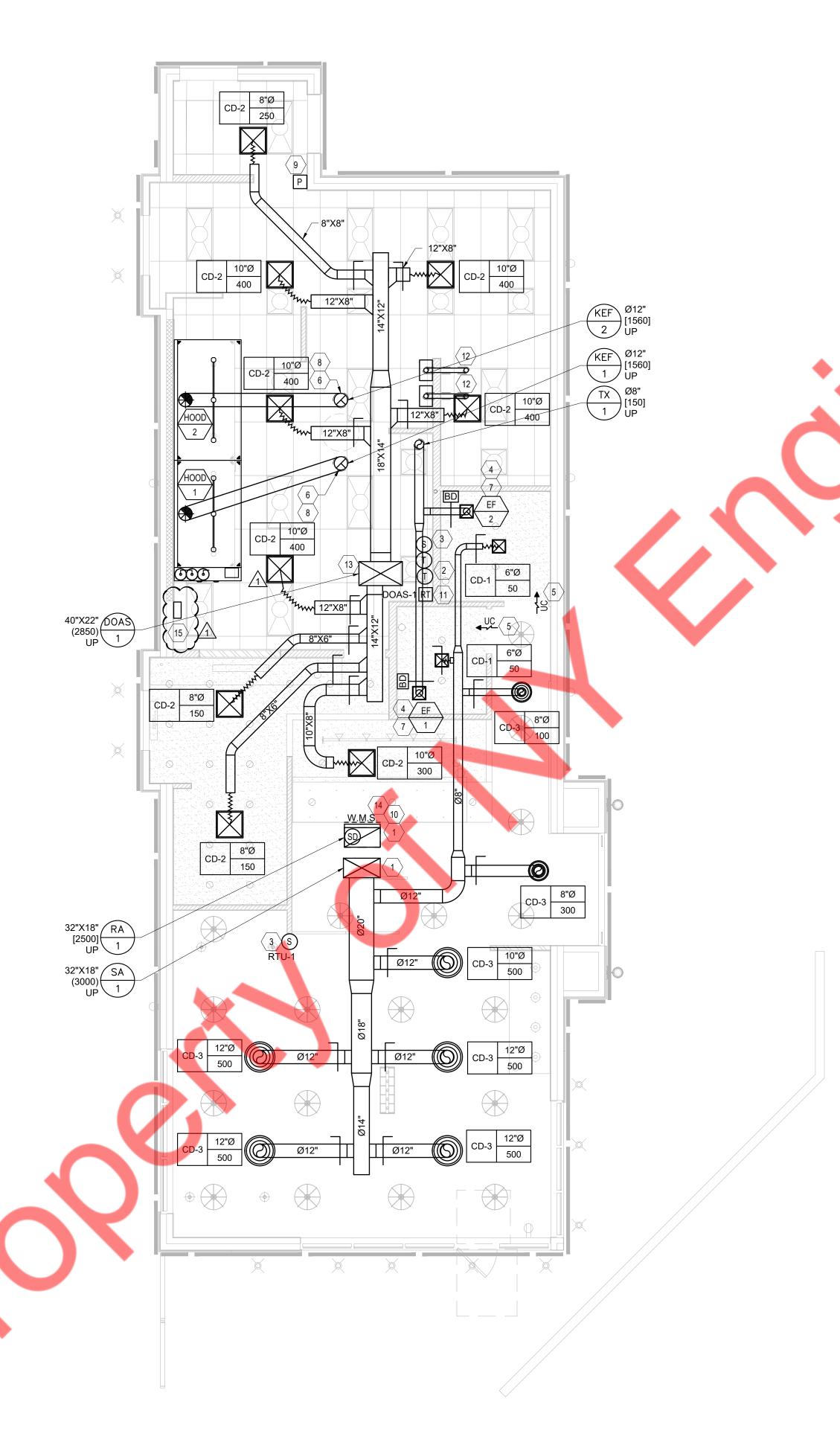
- A. ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
- AUTHORITIES HAVING JURISDICTION.

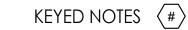
 B. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED
- PERMITS AND ARRANGE ALL REQUIRED INSPECTIONS.

 C. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.
- D. THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- E. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- F. EACH UNIT GENERATING CONDENSATE SHALL BE PROVIDED WITH A CONDENSATE DRAIN WITH EXTERNAL, 4" DEEP P-TRAP. EXTEND DRAIN TO A ROOF MOUNTED SPLASH PAD OR AN ACCEPTABLE LOCATION REQUIRED BY CODE.
- G. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSION.
- H. ALL METAL DUCT AND AIR DISTRIBUTION DEVICES SHALL BE INSULATED WITH R-6, 75 DENSITY FOIL-BACKED INSULATION WITH FIRE AND SMOKE RATING 25-50).
- I. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT
- J. ALL FLEX DUCT SHALL BE UL LISTED, R-6. FOIL-BACKED, CLASSIFIED AS A CLASS 1 AIR DUCT. MAXIMUM LENGTH IS TO BE 5'-O" PER DROP OR PER
- K. THE CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS ON SITE
- WITH THE MOST RECENT REFLECTED CEILING PLAN.

 L. THE CONTRACTOR IS TO MAKE ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTRACTOR
- M. PROVIDE AND INSTALL SMOKE DUCT DETECTORS IN EACH AIR CONDITIONING UNIT RETURN DUCT GREATER THAN 2000 CFM. CONTRACTOR SHALL PROVIDE INTERCONNECTION AND WIRE TO THE FIRE ALARM CONTROL PANEL IF REQUIRED. DUCT DETECTORS SHALL HAVE REMOTE TEST STATIONS LOCATED IN THE OFFICE NEAR THE RESPECTIVE THERMOSTATS. VERIFY CODE REQUIREMENTS FOR DUCT
- DETECTORS IN BOTH THE SUPPLY AND RETURN AIR STREAMS.

 N. THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY ARCHITECT
- O. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- P. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.
- Q. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/ BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS/ROOFS.
- R. CONTRACTOR TO PROVIDE CORD OPERATED DAMPERS IN INACCESSIBLE CEILINGS.
- S. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES





- 1. SUPPLY AND RETURN DUCT UP TO NEW RTU ON ROOF TRANSITION AS REQUIRED. FIELD VERIFY ALL DUCT ROUTING PRIOR TO FABRICATION. PROVIDE FLEX CONNECTION FOR VIBRATION ISOLATION.
- 2. CONTRACTOR SHALL PROVIDE A 7-DAY DIGITAL PROGRAMMABLE THERMOSTAT IN MANAGERS OFFICE MOUNTED 48" AFF TO TOP OF DEVICE. MOUNT THERMOSTAT AT 46" IF ADA REQUIREMENTS APPLY. COORDINATE EXACT LOCATION WITH TENANT CONSTRUCTION MANAGER. THE ENTIRE CONTROL SYSTEM SHALL BE PROVIDED COMPLETE IN EVERY RESPECT BY THE MECHANICAL CONTRACTOR.
- 3. PROVIDE REMOTE TEMPERATURE/HUMIDITY SENSORS ON WALL AS SHOWN AT 66" AFF. COORDINATE EXACT LOCATION WITH TENANT CONSTRUCTION MANAGER AND DO NOT MOUNT ON EXTERIOR WALL. THE ENTIRE CONTROL SYSTEM SHALL BE PROVIDED COMPLETE IN EVERY RESPECT BY THE MECHANICAL CONTRACTOR. REMOTE SENSORS TO BE CONNECTED TO 7-DAY PROGRAMMABLE THERMOSTAT. WIRE TO HVAC EQUIPMENT PER MANUFACTURER'S PRINTED INSTRUCTIONS.
- 4. INTERLOCK RESTROOM EXHAUST FAN WITH KITCHEN LIGHTS. EXHAUST FAN SHALL ENGAGE DURING KITCHEN OPERATIONAL HOURS. RESTROOM EXHAUST DUCT SHALL BE MINIMUM 26 GA. PROVIDE WITH INTEGRAL BIRD SCREEN, BACKDRAFT DAMPER, AND ACCESSORIES AS REQUIRED INCLUDING SPEED CONTROLLER CONCEALED AND ACCESSIBLE.
- 5. UNDERCUT DOOR 1" FOR AIR PASSAGE. COORDINATE WITH ARCHITECT.
- 6. EXHAUST DUCT DOWN FROM KITCHEN EXHAUST FAN ON ROOF. TRANSITION AND OFFSET AS REQUIRED TO SIZE SHOWN ON PLAN. ROUTE DUCTWORK TO HOOD(S) EXHAUST OPENING AND TRANSITION AS REQUIRED. FIELD VERIFY ROUTING PRIOR TO BID AND FABRICATION. SEE HOOD DRAWING FOR HOOD OPENING SIZES.
- 7. PROVIDE A CABINET STYLE EXHAUST FAN. INTERLOCK EXHAUST FAN WITH LIGHT SWITCH. RESTROOM EXHAUST DUCT SHALL BE GALVANIZED STEEL. PROVIDE SIDEWALL VENT WITH SCREEN AND FLAPPER DAMPER, CROWN MODEL 349 OR EQUAL. EXHAUST FAN SHALL MAINTAIN 10' CLEARANCE FOR ANY OUTSIDE AIR INTAKE. MUST MEET LOCAL CODE REQUIREMENTS. FIELD VERIFY ALL ROUTING AND REQUIREMENTS PRIOR TO BID. SEAL ALL PENETRATION WEATHER TIGHT.
- 8. GREASE DUCT CLEANOUTS LOCATED ON HORIZONTAL SECTIONS OF DUCTS SHALL BE SPACED NOT MORE THAN 20 FEET APART. THE CLEANOUTS SHALL BE LOCATED ON THE SIDE OF THE DUCT WITH THE OPENING NOT LESS THAN 1.5 INCHES ABOVE THE BOTTOM OF THE DUCT, AND NOT LESS THAN 1 INCH BELOW THE TOP OF THE DUCT. MINIMUM OPENING SHALL 12/12 INCHES. CONTRACTOR SHALL VERIFY ALL REQUIREMENTS TO MEET LOCAL CODES PRIOR TO BID AND INSTALLATION.
- 9. A MANUAL ACTUATION DEVICE (PULL STATION) SHALL BE LOCATED AT OR NEAR A MEANS OF EGRESS FROM THE COOKING AREA A MINIMUM OF 10 FEET (3048 MM) AND A MAXIMUM OF 20 FEET (6096 MM) FROM THE KITCHEN EXHAUST SYSTEM. THE MANUAL ACTUATION DEVICE SHALL BE INSTALLED NOT MORE THAN 48 INCHES (1200 MM) NOR LESS THAN 42 INCHES (1067 MM) ABOVE THE FLOOR AND SHALL CLEARLY IDENTIFY THE HAZARD PROTECTED. THE MANUAL ACTUATION SHALL REQUIRE A MAXIMUM FORCE OF 40 POUNDS (178 N) AND A MAXIMUM MOVEMENT OF 14 INCHES (356 MM) TO ACTUATE THE FIRE SUPPRESSION SYSTEM.
- 10. SMOKE DETECTOR (IN RETURN AIR DUCT) SHALL BE FURNISHED/INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR TO SHUT DOWN CORRESPONDING RTU UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER N E C.
- 11. PROVIDE REMOTE TEST STATION FOR SMOKE DETECTORS WITH AUDIBLE AND VISUAL ALARM WITH KEYED RESET. MOUNT TEST STATION 48 INCHES AFF. MOUNT AUDIBLE AND VISUAL ALARM IN CONSTANTLY ATTENDED LOCATION.
- 12. FURNISH AND INSTALL MANUFACTURER PROVIDED CONCENTRIC VENT FOR WATER HEATER. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND ALL APPLICABLE LOCAL AND STATE CODES. CONCENTRIC VENT SHALL BE LOCATED A MINIMUM OF 10' FROM ALL OUTDOOR INTAKES.
- 13. SUPPLY DUCT UP TO NEW DOAS-1 ON ROOF TRANSITION AS REQUIRED. FIELD VERIFY ALL DUCT ROUTING PRIOR TO FABRICATION. PROVIDE FLEX CONNECTION FOR VIBRATION ISOLATION.
- 14. FULL SIZE RETURN AIR DUCT WITH WIRE MESH SCREEN.
- 15. HOOD CONTROL PANEL AND FIRE SUPPRESSION SYSTEM FURNISHED BY HOOD SUPPLIER AND INSTALLED ON WALL BY HVAC CONTRACTOR. HOOD FIRE SUPPRESSION SYSTEM FURNISHED AND INSTALLED BY LICENSED FIRE SUPPRESSION CONTRACTOR. F.S. CONTRACTOR TO SUBMIT PLAN AND OBTAIN APPROVAL UNDER SEPARATE PERMIT APPLICATION PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR TO COORDINATE & CONFIRM FINAL LOCATION OF CONTROL & FIRE SUPPRESSION PANEL ON FIELD.

UPON ACTIVATION OF ANY FIRE EXTINGUISHING SYSTEM FOR A COOKING OPERATION, ALL SOURCES OF FUEL AND ELECTRIC POWER THAT PRODUCE HEAT TO ALL EQUIPMENT REQUIRING PROTECTION BY THAT SYSTEM SHALL AUTOMATICALLY SHUT OFF. ACTIVATION OF THE AUTOMATIC FIRE EXTINGUISHING SYSTEM MUST IMMEDIATELY SHUT OFF GAS AND ELECTRIC SUPPLY TO ALL APPLIANCES UNDER THE PROTECTED HOOD. THE PLUMBING CONTRACTOR SHALL PROVIDE A MASTER SOLENOID VALVE IN GAS LINE TO DISCONNECT ALL GAS APPLIANCES. MANUAL GAS AND ELECTRIC RESETS ARE REQUIRED. ALL MAKEUP AIR FANS AND KITCHEN ROOFTOP UNITS SHALL DE-ENERGIZE UPON ACTIVATION OF FIRE/ANSUL HOOD SYSTEM.

NOTE TO TENANT:

HOOD EXHAUST FANS AND RESTROOMS EXHAUST FANS SHOULD NOT BE ENGAGED AFTER RESTAURANT OPERATION HOURS, TO AVOID HIGH HUMIDITY PROBLEMS. IF FAN IS ENGAGED WITHOUT PROPER MAKEUP AIR HUMIDITY WILL BE DRAWN IN TO THE BUILDING.

mey Shuey Shuey CHICKEN STENDERS

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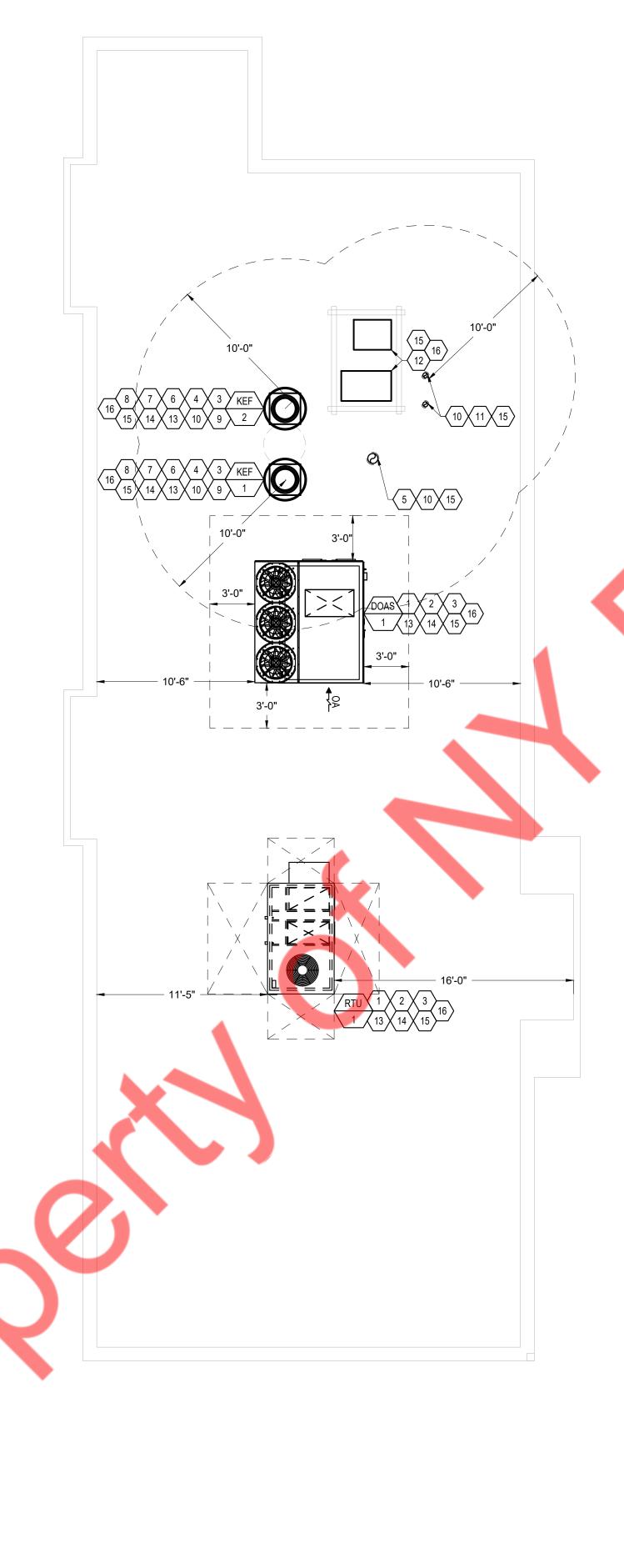
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1 HVAC FLOOR PLAN
M1.0 3/16" = 1'-0"

- 1. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL
- 2. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING
- 3. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON
- ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.

 4. ALL SOURCE OF MECHANICAL INTAKE SHALL MAINTAIN 10 LINEAR FEET SEPARATION BETWEEN ANY SOURCE OF EXHAUST, CONTRACTOR IS RESPONSIBLE TO ADJUST DUCT LENGTH AS NEEDED.
- TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO GENERAL CONTRACTOR AND OWNER.
 MAU WEIGHT IS INCLUDING ROOF CURBS AND/OR ADAPTERS.







2. MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL AQUAGUARD AG-3180E MICRO PAN SENSOR (OVERFLOW SWITCH) INSIDE ROOFTOP UNIT DRAIN PAN. ON DOWN-FLOW UNITS AND ALL OTHER COILS THAT DO NOT HAVE A SECONDARY DRAIN AND DO NOT HAVE A MEANS TO INSTALL AN AUXILIARY DRAIN PAN, A WATER-LEVEL MONITORING DEVICE SHALL BE INSTALLED INSIDE THE PRIMARY DRAIN PAN. THIS DEVICE SHALL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN BECOMES RESTRICTED. EXTERNALLY INSTALLED DEVICES AND DEVICES INSTALLED IN THE DRAIN LINE SHALL NOT BE PERMITTED. AQUAGUARD PH 888-708-6622.

COORDINATE ROOFTOP EQUIPMENT LOCATION AND OPENING IN THE ROOF WITH THE STRUCTURAL MEMBERS PRIOR TO CUTTING DECK.

- 4. PROVIDE ALL NEW GREASE EXHAUST FANS WITH PRE-FABRICATED MINIMUM 20 INCH HIGH ROOF CURBS. PROVIDE 40" MINIMUM CLEARANCE TO ROOF SURFACE (SEE DETAIL ON HOOD SHEETS). PROVIDED BY CAPTIVEAIRE INSTALLED BY GC.
- 5. 8"Ø EXHAUST UP FROM RESTROOMS. PROVIDE BACKDRAFT DAMPER, RAIN CAP, AND 1/4 SQ. NON CORROSIVE WIRE MESH.
- 6. PROVIDE TIE DOWNS OF THE FAN TO THE ROOF DECK OR SUPPORTING STRUCTURE. THE TIE DOWN POINTS HELP PROTECT AGAINST HIGH WINDLOADS.
- 7. PROVIDE LOREN COOK, CAPTIVIARE, OR EQUAL HINGED BASE KIT. LOCKABLE, HINGED CONNECTION BETWEEN THE FAN AND CURB. THIS ALLOWS EASY ACCESS TO THE WHEEL AND INLET OF THE FAN AS WELL AS THE INTERIOR DUCTWORK. THE KIT INCLUDES TWO HINGE PLATES, TWO LATCH PLATES, HINGE BOLTS, AIRCRAFT CABLE AND CLAMPS.
- 8. PROVIDE GREASE TROUGH FOR COLLECTION OF GREASE. THE LID IS REMOVABLE FOR CLEANING. TO PROVIDE FOR MORE THOROUGH PERIODIC CLEANING, THE GREASE TROUGH SHOULD BE MOUNTED TO THE UNIT FOR EASY REMOVAL.
- 9. DUCT-TO-EXHAUST FAN CONNECTIONS SHALL BE FLANGED AND GASKETED AND BOLTED TO THE INLET OF THE FAN FOR SIDE-INLET UTILITY FANS; AND SHALL BE FLANGED, GASKETED AND BOLTED TO THE INLET AND OUTLET OF THE FAN FOR IN-LINE FANS. GASKET AND SEALING MATERIALS SHALL BE RATED FOR CONTINUOUS DUTY AT A TEMPERATURE OF NOT LESS THAN 1500°F (816°C).
- 10.MAINTAIN 10 FOOT CLEARANCE FROM ANY FRESH AIR INTAKE. FIELD VERIFY EXACT REQUIREMENTS. PRIOR TO BID AND INSTALLATION. IF EXHAUST FAN FALLS WITHIN 10 FOOT OF ANY FRESH AIR INTAKE, THE EXHAUST DISCHARGE OPENING SHALL BE EXTENDED BY MEANS OF A SHROUD ON ROUND FANS AND DUCTWORK ON UTILITY FANS, TO MEET THE 3'-0" VERTICAL CLEARANCE REQUIREMENTS. SHROUD CAN BE PROVIDED BY CAPTIVEAIRE. FIELD VERIFY EXACT REQUIREMENTS PRIOR TO ORDERING, INSTALLATION AND BID., G.C. TO COORDINATE WITH CAPTIVIAIRE.
- 11.CONCENTRIC VENT/ COMBUSTION PIPING DOWN TO WATER HEATERS. CONTRACTOR TO VERIFY EXACT SIZE AND ROUTING. SLOPE 1/4 INCH PER FOOT BACK TOWARD WATER HEATER. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL REQUIREMENTS PRIOR TO BID.
- 12.APPROXIMATE LOCATION OF REFRIGERATION EQUIPMENT CONDENSING UNIT. COORDINATE WITH FOOD SERVICE, ARCHITECTURAL AND ELECTRICAL DRAWINGS. PROVIDE RAILS FOR CONDENSING UNITS. COORDINATE RAIL SYSTEM WITH MANUFACTURERS REQUIREMENTS AND STRUCTURAL ENGINEERS. CONTRACTOR INSTALLING REMOTE CONDENSERS SHALL VERIFY EXACT SIZE OF CONDENSER STAND. SEE DETAIL ON M5.1.
- 13.CONTRACTOR SHALL REVIEW ELECTRICAL POWER REQUIREMENTS FOR MECHANICAL EQUIPMENT THAT ARE SCHEDULED ON THE ELECTRICAL DRAWINGS AND VERIFY THAT THEY MATCH PRIOR TO ORDERING EQUIPMENT. DO NOT PURCHASE MOTORS OR ELECTRICAL EQUIPMENT UNTIL POWER CHARACTERISTICS AVAILABLE AT BUILDING HAVE BEEN CONFIRMED BY CONTRACTOR.
- 14.INSTALLATION OF EQUIPMENT SHALL COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION AND CLEARANCE REQUIREMENTS TO ALLOW FOR INSPECTION, SERVICE, REPAIR OR REPLACEMENT.
- 15.ALL NEW ROOF WORK SHALL BE DONE BY LANDLORDS ROOFING CONTRACTOR AT TENANTS EXPENSE. CONTRACTOR SHALL COORDINATE ALL NEW ROOF WORK TO CONFORM TO LANDLORDS ROOFING STANDARDS AND PER LOCAL CODE REQUIREMENTS. FIELD VERIFY ALL ROOF WORK PRIOR TO BID.
- 16.CONTRACTOR TO VERIFY WEIGHT LIMITS AND STRUCTURAL CONDITION PRIOR TO SETTING NEW ROOFTOP EQUIPMENT. PROVIDE ADDITIONAL BRACING AND STRUCTURE AS REQUIRED TO MEET DUNNAGE OF NEW UNITS, (TYPICAL ALL UNITS). CONSULT TENANT'S CONSTRUCTION MANAGER IT THERE ARE ANY STRUCTURAL CONCERNS.

NOTE

MECHANICAL EQUIPMENT, APPLIANCES AND SUPPORTS THAT ARE EXPOSED TO WIND SHALL BE DESIGNED AND INSTALLED TO RESIST THE WIND PRESSURES ON THE EQUIPMENT AND THE SUPPORTS AS DETERMINED IN ACCORDANCE WITH THE BUILDING CODE. ROOF MOUNTED MECHANICAL UNITS AND SUPPORTS SHALL BE SECURED TO THE STRUCTURE. THE USE OF WOOD "SLEEPERS" SHALL NOT BE PERMITTED.

REFRIGERANT PIPING NOTES

ALL REFRIGERATION PIPE INSULATION SHALL BE A MINIMUM OF 1.5" THICK BASED ON ASHRAE 6.8.3B. CONTRACTOR SHALL VERIFY WITH LOCAL CODE REQUIREMENTS PRIOR TO BID.

ALL REFRIGERATION PIPE INSULATION WHICH IS LOCATED OUTDOORS, MUST INCORPORATE A WEATHER RESISTANT PROTECTIVE FINISH, SUCH AS ARMACELL ARMAFLEX FINISH.

ALL REFRIGERATION PIPING INSTALLED OUTDOORS (EXPOSED TO AMBIENT) SHALL BE INSTALLED IN PVC JACKETS. RIC SHALL SUPPORT AND PROTECT REFRIGERATION PIPING AS REQUIRED. PVC JACKETS TO BE PROVIDED AND INTALLED BY THE RIC.

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1 HVAC ROOF PLAN
M2.0 3/16" = 1'-0"

CONTROL SEQUENCE OF OPERATIONS: RTU (ELECTRIC/GAS HEAT)

GAS HEATING ELECTRIC COOLING RTU SEQUENCE OF OPERATION

DAY CYCLE - COOLING

SUPPLY AIR FAN SHALL RUN CONTINUOUSLY.

OUTSIDE AIR DAMPER SHALL BE IN MINIMUM POSITION. THERMOSTAT SHALL CYCLE COMPRESSOR(S) TO MAINTAIN ROOM SET

DAY CYCLE - HEATING

TEMPERATURE.

I. SUPPLY AIR FAN SHALL RUN CONTINUOUSLY.

2. OUTSIDE AIR DAMPER SHALL BE IN MINIMUM POSITION. 3. THERMOSTAT SHALL CYCLE NATURAL GAS HEATER TO ACHIEVE ROOM SET TEMPERATURE.

DAY CYCLE - DEHUMIDIFICATION

- . SUPPLY AIR FANS SHALL RUN CONTINUOUSLY. 2. MECHANICAL OUTSIDE AIR DAMPERS SHALL BE IN OPEN POSITION.
- 3. RESTROOM EXHAUST FANS SHALL BE ENERGIZED. 4. HUMIDISTAT SHALL CYCLE COOLING COIL STAGES TO MAINTAIN SET POINT

HUMIDITY.

SUPPLY AIR FAN SHALL RUN CONTINUOUSLY. OUTSIDE AIR DAMPER SHALL MODULATE FROM MINIMUM TO 100% OUTSIDE AIR TO MAINTAIN ROOM SET TEMPERATURE.

SUPPLY AIR FAN SHALL RUN CONTINUOUSLY. 2. OUTSIDE AIR DAMPER SHALL BE IN CLOSED POSITION.

THERMOSTAT SHALL CYCLE RTU TO REACH ROOM SET TEMPERATURE. WHEN SET TEMPERATURE IS REACHED COOLING OR HEATING CYCLE SHALL

ALL HOODS AND EXHAUST FANS SHALL BE DE-ENERGIZED.

OUTSIDE AIR DAMPER SHALL BE IN CLOSED POSITION. THERMOSTAT SHALL CYCLE EITHER COOLING OR HEATING AND SUPPLY AIR FAN TO MAINTAIN ROOM SET TEMPERATURE.

WHEN SMOKE DETECTOR IS ACTIVATED SUPPLY AIR FAN SHALL SHUTDOWN.

FIRE ALARM SHALL BE SIGNALED. SUPPLY AIR FAN SHALL BE MANUALLY RESET.

CONTROL SEQUENCE OF OPERATIONS: DOAS (ELECTRIC/GAS)

GAS HEATING ELECTRIC COOLING DEDICATED OUTSIDE AIR SYSTEM SEQUENCE OF OPERATION

DAY CYCLE - COOLING

. SUPPLY AIR FAN SHALL RUN CONTINUOUSLY. OUTSIDE AIR DAMPER SHALL BE IN MINIMUM POSITION.

THERMOSTAT SHALL CYCLE COMPRESSOR(S) TO MAINTAIN ROOM SET TEMPERATURE.

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SUPPLY AIR FAN SHALL RUN CONTINUOUSLY.

OUTSIDE AIR DAMPER SHALL MODULATE FROM MINIMUM TO 100% OUTSIDE

AIR TO MAINTAIN ROOM SET TEMPERATURE.

SUPPLY AIR FAN SHALL RUN CONTINUOUSLY. 2. OUTSIDE AIR DAMPER SHALL BE IN CLOSED POSITION.

3. THERMOSTAT SHALL CYCLE RTU TO REACH ROOM SET TEMPERATURE. 4. WHEN SET TEMPERATURE IS REACHED COOLING OR HEATING CYCLE SHALL

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WHEN SMOKE DETECTOR IS ACTIVATED SUPPLY AIR FAN SHALL SHUTDOWN.

2. FIRE ALARM SHALL BE SIGNALED. 3. SUPPLY AIR FAN SHALL BE MANUALLY RESET.

MOTORIZED DAMPER OUTSIDE/RETURN AIR

WHEN UNIT IS ENERGIZED RETURN AIR DAMPER IS FULLY OPEN AND OUTSIDE AIR DAMPER IS AT THE MINIMUM OPEN POSITION.

WHEN THE GREASE EXHAUST FAN IS ENERGIZED THE OUTSIDE AIR DAMPER SHALL OPEN TO FULLY AND THE RETURN AIR DAMPER WILL CLOSE 100%.

OFF HOURS THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED AND THE RETURN AIR DAMPER SHALL BE FULLY OPEN.

	THERM	OSTAT	SCHEE	DULE	
		occu	PIED	UNOCC	UPIED
MARK	SERVICE LOCATION	COOLING	HEATING	COOLING	HEATING
RTU-1	DINING/HALL WAY/RR/ORD ER AREA	78	68	80	60
DOAS-1	KITCHEN	78	68	80	60

1. CONTRACTOR SHALL COORDINATE EXACT OPERATIONAL TIMES WITH OWNER/MANAGER PRIOR TO PROGRAMMING.

BUILDING	AIR BALANC	CE SCHEDULE								
MARK	OUTSIDE AIR	EXHAUST								
EF-1		-75								
EF-2		-75								
KEF-1		-1360								
KEF-2		-1530								
RTU-1	500									
DOAS-1	DOAS-1 2850									
TOTAL	TOTAL 3350 -3040									
BUILDING PO	BUILDING POSITIVE AIR BALANCE: 310									

HARD DU RUNOUT	
CFM	DIA
0-120	6"
125-240	8"
245-400	10"
405-650	12"
655-1000	14"

			AIR	DISTRIBUTI	ON SCHE	DULE				
TAG	SERVICE	MANUFACTURER & MODEL NO.	NECK SIZE	FACE SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	FINISH	NOTES
CD-1	SUPPLY	TITUS / OMNI-AA	SEE PLAN	12"X12"	LAY-IN	SEE PLAN	YES	ALUMINUM	WHITE	1,2,3,4,5,6
CD-2	SUPPLY	TITUS / OMNI-AA	SEE PLAN	24"X24"	LAY-IN	SEE PLAN	YES	ALUMINUM	WHITE	1,2,3,4,5,6
CD-3	SUPPLY	TITUS / TMRA-AA	SEE PLAN	SEE PLAN	DUCT	4-WAY	YES	ALUMINUM	WHITE	1,2,4,5,6

. PROVIDE WITH OPPOSED BLADE DAMPER AT AIR DEVICE.

2. MAX NC LEVEL 30. . PROVIDE SQUARE TO ROUND NECK ADAPTOR.

. SEE ARCHITECTURAL DRAWINGS FOR COLOR AND FINISH.

5. PROVIDE 4-WAY AIR THROW PATTERN UNLESS OTHERWISE NOTED OR INDICATED.

6. PROVIDE INSULATED BACK ON ALL AIR DEVICES MIN. R6. 7. DUCT BEHIND RETURN AIR DEVICES SHALL BE BLACK.

ALL BALANCING DAMPERS MUST BE ACCESSIBLE" CONTRACTOR TO FIELD COORDINATE PRIOR TO INSTALLATION.

				VEN	TILATION	SCHEDU	JLE				
OCCUPANCY	AREA (SQFT)	(PEOPLE PER 1000 SQFT)	TOTAL PEOPLE	PEOPLE OUTDOOR RATE (CFM/PERSO N)	PEOPLE REQUIRED VENTILATION (CFM)	AREA OUTDOOR AIRFLOW RATE (CFM/SQFT)	AREA REQUIRED VENTILATIO N (CFM)	TOTAL CFM (PEOPLE & AREA)	ZONE EFFECTIVEN ESS	TOTAL OA REQUIRED DOAS-1	TOTAL OA REQUIRED RTU-1
DINING	657	70	36	7.5	270	0.18	118.26	388.26	0.8		485.32
ORDER AREA	303	-	2	7.5	15	0.18	54.54	69.54	0.8	86.92	
DRIVE-THRU	206	-	3	7.5	22	0.18	37.08	59.08	0.8	73.85	-
HALLWAY	70	-	-	-	-	0.06	4.20	4.20	0.8		5.25
KITCHEN	948	-	10	7.5	75	0.18	170.64	245.64	0.8	307.05	-
RESTROOM	120	-	-	-	-	-	-	-		- 1	-
									REQ'D OA	468	491
									PROVIDE D OA	2850	500
OUTSIDE AIR CALCU	ILATION BAS	SED ON THE <u>INTE</u>	ERNATIONA	L MECHANICAL	CODE 2018 VEN	ITILATION REQ	UIREMENTS				

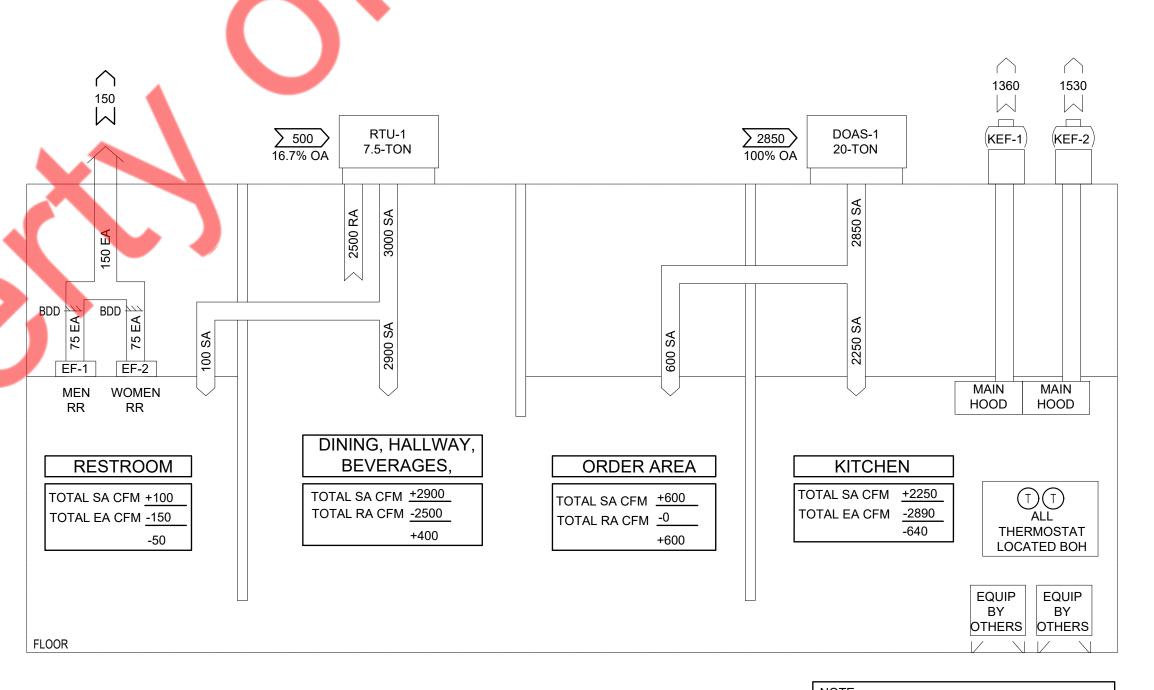
			E	VHAU	JST FAI	N SCHEI	DULE				
TAG	MANUFACTUR ER/ MODEL	AREA SERVED	LOCATIO N	CFM	EXTERN AL S.P.	MOTOR (HP)	FAN (RPM)	FLA	VOLTS/ PHASE	WEIGHT S (LBS)	NOTES
KEF-1	CAPTIVEAIRE/ AH-DU85HFA	KITCHEN	ROOF		4	SEE CA	APTIVEAIRE	DRAWIN	GS		A-E
KEF-2	CAPTIVEAIRE/ AH-DU85HFA	KITCHEN	ROOF			SEE CA	APTIV <mark>EAI</mark> RE	DRAWIN	GS		A-E
EF-1,2	GREENHECK/ SP-B110	RESTROOMS	CEILING	75	0.5	8(WATTS)	950	-	115V/1PH	10	F,G
	NOTES: A. GREASE EXHAUST FAN AND ACCESSORIES TO BE FURNISHED THRU CAPTIVEAIRE, INSTALLED BY MECHANICAL CONTRACTOR. B. PROVIDE WITH NON-VENTED ROOF CURB. HINGED BASE CHAIN AND HASP KIT AND BUILT-IN GREASE THROUGH DRAIN FITTING.										

B. PROVIDE WITH NON-VENTED ROOF CURB, HINGED BASE CH<mark>AIN A</mark>ND HASP KIT AND BUILT-IN GREASE THROUGH DRAIN FITTING. C. PROVIDE DISCONNECT SWITCH.

D. PROVIDE WITH HOOD ON/OFF TOGGLE SWITCH. INTERLOCK TO CONTROL PANEL.

E. PROVIDE WITH FACTORY CURB. SEE HOOD DRAWINGS FOR MORE INFORMATION.

F. PROVIDE BACKDRAFT DAMPER AND STAINLESS STEEL BIRDSCREEEN. G. MECHANICAL CONTRACTOR TO PROVIDE RESTROOM EXHAUST FAN & WIRED SPEED CONTROLLER CONCEALED AND ACCESSIBLE.





RESTROOMS -50 DINING, HALLWAY, BEVERAGES +400 ORDER AREA +600 KITCHEN <u>-640</u> TOTAL BUILDING PRESSURE +310

TYPE I HOODS SHALL BE DESIGNED AND INSTALLED TO AUTOMATICALLY ACTIVATE THE EXHAUST FAN WHENEVER COOKING OPERATIONS OCCUR. THE ACTIVATION OF THE EXHAUST FAN SHALL OCCUR THROUGH AN INTERLOCK WITH THE COOKING APPLIANCES, BY MEANS OF HEAT SENSORS OR BY MEANS OF OTHER APPROVED METHODS.

ı	111	-7 (1)	
1	MARK	RTU-1	DOAS-1
1	MANUFACTURER	TRANE	CAPTIVEAIRE
	MODEL NUMBER	YSJ090A3S0	AHRTU3-I.300-18-20T- DOAS
l	NOMINAL TONNAGE	7.5	20
	AREA SERVED	DINING/HALLWAY/RR	KITCHEN/SERVICE
l	EER/IEER	12.1/16.6	-/18.2
l	INDOOR FAN C.F.M.	3000	2850
J	EXTERNAL STATIC PRESSURE	1.1"	1.0"
	CONDENSER AM	BIENT CONDITIONS	
	TEMPERATURE °F	95	95.3
	MINIMUM OUTDOOR AIR (CFM)	500	2850
	PERCENTAGE OF OUTDOOR AIR	16.7%	100%
	COC	OLING	
	ENTERING AIR TEMP. DB. / WB. °F	80/67	95.3/74.1
	TOTAL COOLING CAPACITY (MBH)	94.5	241
	SENSIBLE COOLING CAPACITY (MBH)	73.2	145.6
	HEA	ATING	
	HEATING INPUT (MBH)	120	261.2
	HEATING OUTPUT (MBH)	97	211.5
	ELECTRICAL DATA (VERIFY WITH	ELEC. PRIOR TO ORDERIN	G UNITS)
	VOLTS / PHASE	208/3PH/60HZ	208/3PH/60HZ
	SUPPLY FAN RPM	-	-
	INDOOR FAN MOTOR - FLA	-	-
	COMPRESSORS RLA	-	-
	COMPRESSORS LRA	-	-
	MINIMUM CIRCUIT AMPS	48	79.1
	MAXIMUM OVERCURRENT PROTECTION (AMPS)	60	80
	UNIT WEIGHT (LBS.)	1227	2621
	UNIT OPTIONS:	1-13	SEE CAPTIVEAIRE DRAWINGS

ROOFTOP UNIT (RTU) SCHEDULE (ELECTRIC COOLING/GAS

INCLUDED SYSTEM OPTIONS RTU

1. REFERENCE ARCHITECTURAL DRAWINGS AND STRUCTURAL DRAWINGS FOR COORDINATION. 2. PROVIDE NEW FULLY INSULATED ROOF CURB WITH SLOPE TO MATCH ROOF PITCH AS

3. PROVIDE ECONOMIZER WITH DIFFERENTIAL ENTHALPY CONTROL. PROVIDE WITH CODE

4. ECONOMIZER FAULT DETECTION.

5. PROVIDE 2-STAGE COOLING COMPRESSOR ASSEMBLY.

6. PROVIDE GAS HEATING ASSEMBLY. PROVIDE HUMIDI-MIZER DEHUMIDIFICATION SYSTEM WITH FIELD INSTALLED

TEMPERATURE/HUMIDITY THERMOSTAT.

8. PROVIDE CONDENSER COIL HAIL GUARDS. 9. PROVIDE 2" PLEATED DISPOSABLE MERV 8 MINIMUM FILTERS.

10. PROVIDE FACTORY INSTALLED DISCONNECT SWITCH AND NON-POWERED GFI RECEPTACLE. 11. PROVIDE 5 YEAR COMPRESSOR AND 10 YEAR HEAT EXCHANGER WARRANTIES. 12. PROVIDE DUCT SMOKE DETECTOR, RELAY, AND TEST INDICATOR DEVICES. COORDINATE

REQUIREMENTS WITH ELECTRICAL CONTRACTOR. 13. VERIFY ELECTRICAL CHARACTERISTICS WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING

. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS & MAINTAIN ALL SERVICE CLEARANCES 2. COORDINATE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNIT. 3. PROVIDE CONDENSATE DRAIN "P" TRAP MINIMUM 4" DEEP. OR TWICE THE TOTAL STATIC PRESSURE, WHICHEVER IS GREATER. PROVIDE MINIMUM 1/2" + MAX STATIC PRESSURE NECK

DISCHARGE FROM P-TRAP. 4. MAXIMUM AIR VELOCITY THRU COOLING SHALL NOT EXCEED 500 FEET PER MINUTE. 5. ELECTRICAL CONNECTION TO BE SINGLE POINT AND TO BE THROUGH THE BOTTOM OF THE

6. PROVIDE FACTORY ROOF CURBS WITH WIND LOAD RATINGS. REFER TO DETAIL FOR UNIT INSTALLATION.

7. HEAT EXCHANGER SHALL HAVE A MINIMUM 10-YEAR PARTS WARRANTY. 8. COMPRESSOR PARTS SHALL HAVE A MINIMUM 5-YEAR WARRANTY ALL OTHER EQUIPMENT

SHALL HAVE MINIMUM 1 YEAR WARRANTY. 9. UNITS SHALL COME WITH 1ST YEAR PARTS AND LABOR WARRANTY. 10. CONTRACTOR TO PROVIDE ONE SET OF ADDITIONAL FILTERS. 11. AIR CONDITIONING UNITS ARE BASED ON ARI STANDARD CONDITIONS OF 80°F DB, 67° WB,

INDOOR ENTERING AIR TEMPERATURE AND 95° DB ENTERING AIR FOR OUTDOOR UNIT. 12. MUST MEET THE EER'S MINIMUM EFFICIENCY CODE REQUIREMENTS. 13. ALTERNATE MANUFACTURES AND MODELS WILL BE REVIEWED. THERE MAY BE ARCHITECTURAL STRUCTURAL, AND ELECTRICAL CHANGES RESULTING FROM THE ALTERNATES.

THE COST OF IMPLEMENTING AND ENGINEERING THESE CHANGES SHALL BE BORNE BY THE

MECHANICAL SUBCONTRACTOR. 14. RTUS TO BE ENERGIZED WHEN HOOD FANS ARE ON.

INCLUDED SYSTEM OPTIONS DOAS

1. REFER TO CAPTIVEAIRE DRAWINGS FOR DOAS OPTIONS. SYSTEM STANDARD FEATURES

1. HIGH PRESSURE SWITCH (MANUAL RESET)

BUILDING DEPARTMENT NOTE: . ALL HVAC UNITS AND REQUIRE INTERLINKING FOR FAN SHUTDOWN UPON ACTIVATION OF SPRINKLER FLOW SWITCH OR GLOBAL ALARM. UNITS OVER 2000 CFM REQUIRE DUCT SMOKE DETECTION ON RETURN SIDE PER 2002 NFPA 90A. CONTRACTOR SHALL FIELD VERIFY AND

COORDINATE ALL REQUIREMENTS PRIOR TO BID. 2. INTERLOCK ANSUL WITH MAKE-UP AIR UNITS AND KITCHEN ROOFTOP UNITS.

* CONTRACTOR SHALL VERIFY EXACT ELECTRICAL CONNECTIONS, WIRE SIZES, BREAKERS, DISCONNECT, ETC. PRIOR TO ORDERING AND BID.

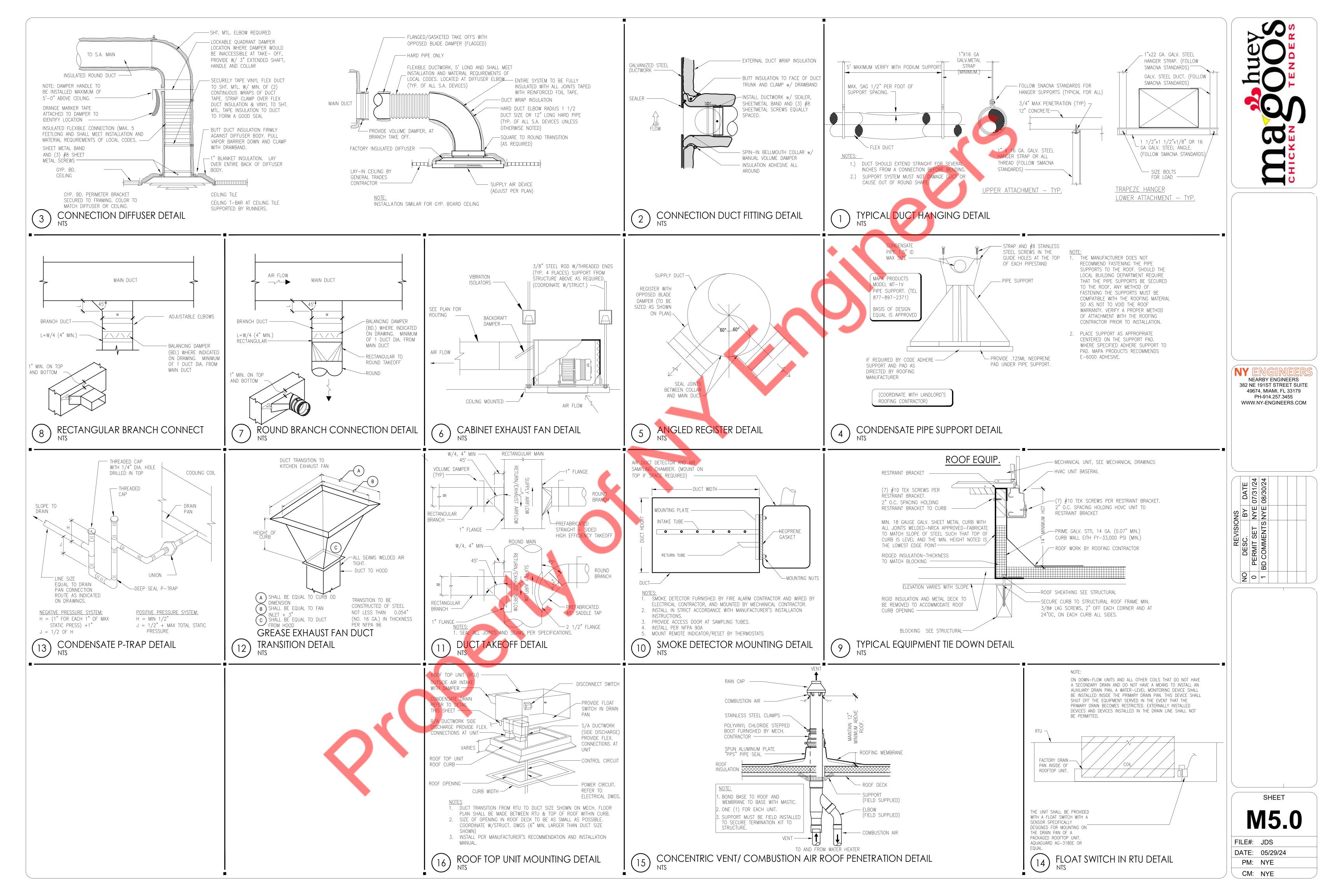
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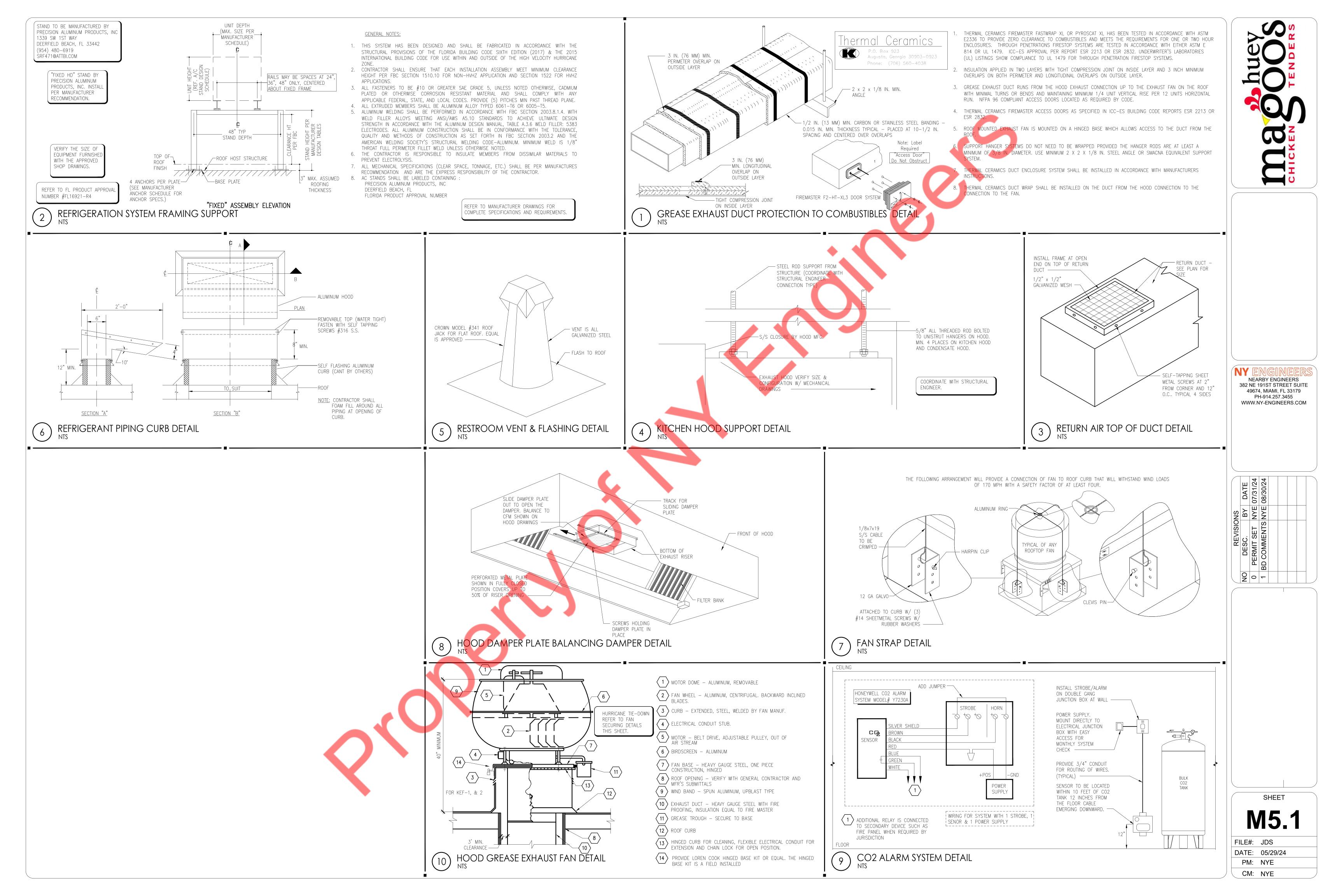
49674, MIAMI, FL 33179

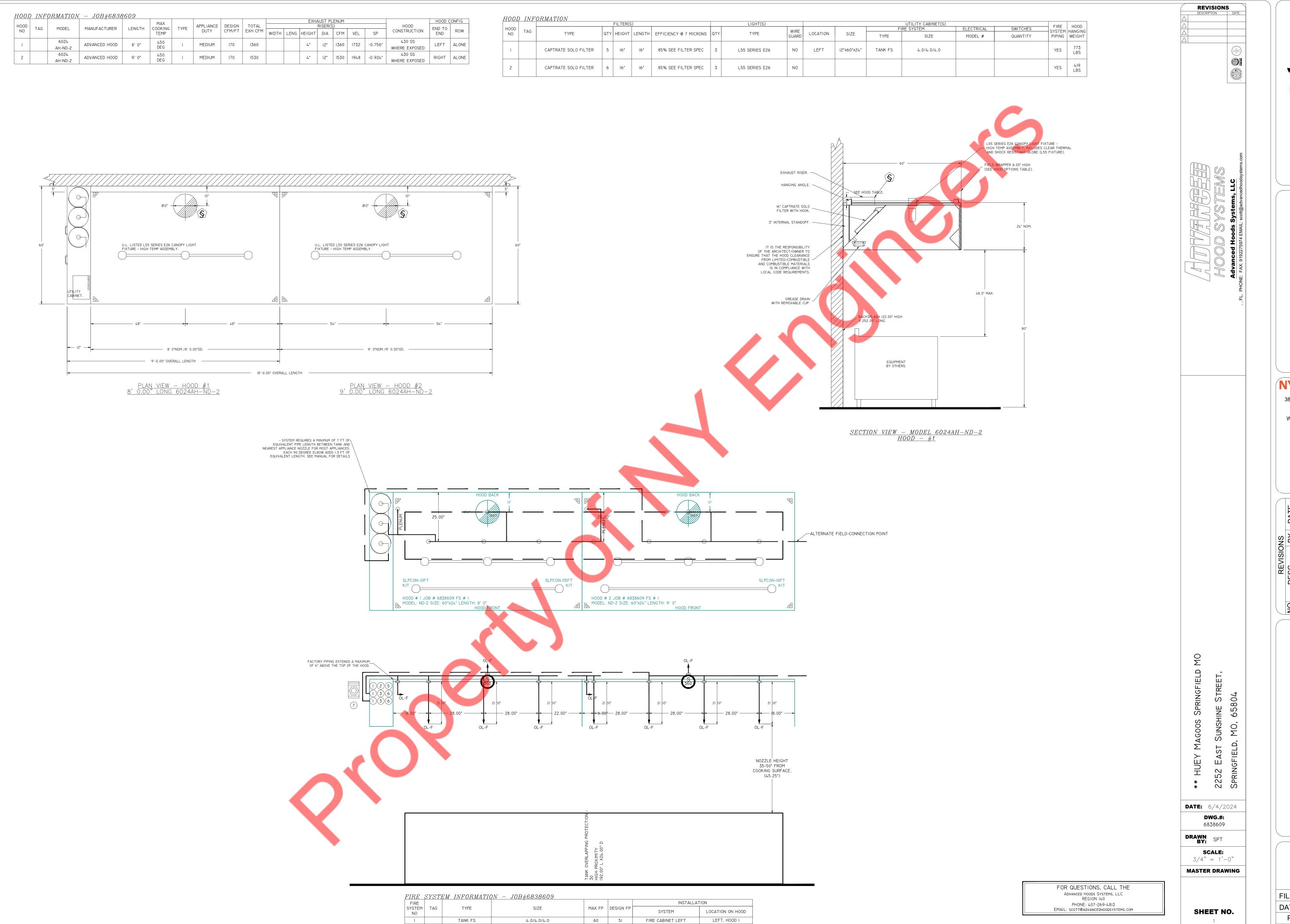
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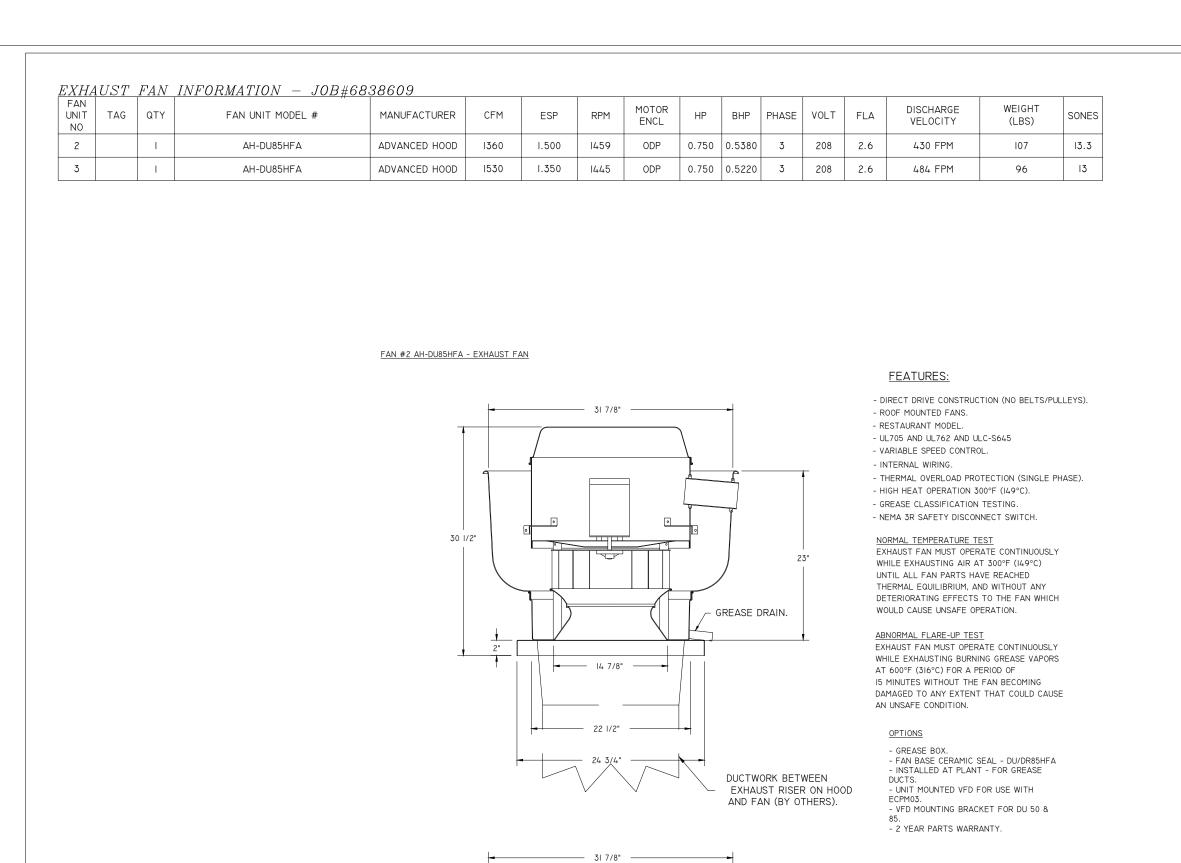




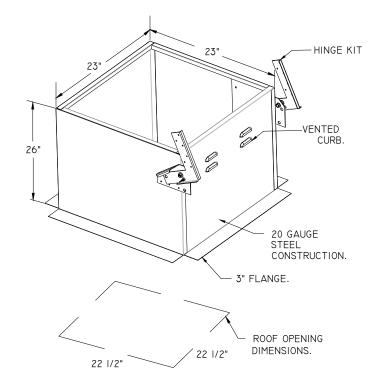
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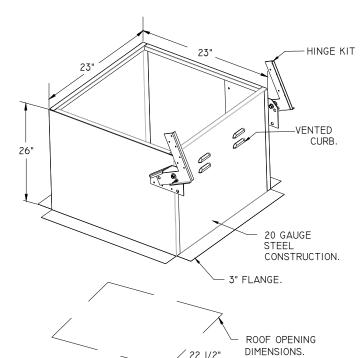
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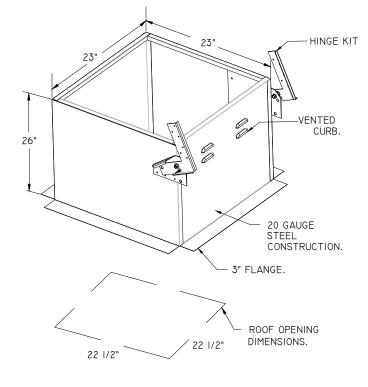
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24 3/4"









REVISIONS

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

65804 ST Μ0,

GREASEBOX REV.#2 08/19/02

<u>PIC. 2</u>

GREASE BOX FIELD INSTALLATION

ATTACH GREASE BOX COVER TO THE CURB, HOLD 3" DIMENSION AS SHOWN ON PIC. I. SCREW GREASE BOX COVER TO CURB USING (3) LONG (3/4" LG.)

ATTACH GREASE BOX TO GREASE BOX COVER, SLIDE AND DROP.

<u>STEP 1)</u>

STEP 2)

AS SHOWN ON PIC. 3.

<u>STEP 3)</u>

INSTALL GREASE PIPE AS SHOWN ON PIC. 4.

GREASE PIPE.

<u>PIC. 3</u>

GREASE BOX.

SCREWS AS SHOWN ON PIC. 2.

DATE: 6/4/2024 DWG.#: 6838609 DRAWN BY: SPT

22

MAGOOS

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

FILE#: JDS DATE: 05/29/24 PM: NYE

CM: NYE

SHEET

GREASE BOX INSTALLATION

OPEN POSITION

─ 3 APPROX.

GREASE BOX — COVER.

GREASE PIPE.

GREASE BOX.

*NOTE: UL 705 INSTALL.

CLOSED POSITION

PARTS INCLUDED

GREASE BOX.

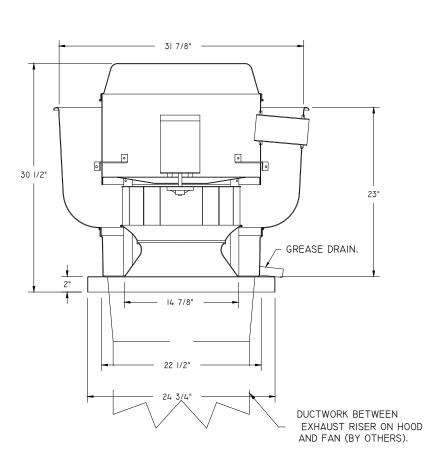
GREASE BOX → COVER.

GREASE BOX COVER. GREASE PIPE.

SHEET METAL SCREWS

3 - LONG (3/4" LG.).

FAN #3 AH-DU85HFA - EXHAUST FAN



TOP VIEW

FEATURES: - DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS). - ROOF MOUNTED FANS. - RESTAURANT MODEL. - UL705 AND UL762 AND ULC-S645

- VARIABLE SPEED CONTROL. - INTERNAL WIRING. - THERMAL OVERLOAD PROTECTION (SINGLE PHASE). - HIGH HEAT OPERATION 300°F (149°C). - GREASE CLASSIFICATION TESTING. - NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

<u>OPTIONS</u>

- GREASE BOX. - FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS. - 2 YEAR PARTS WARRANTY.

24 3/4" TOP VIEW

FOR QUESTIONS, CALL THE ADVANCED HOODS SYSTEMS, LLC REGION 140 PHONE: 407-269-4813

EMAIL: SCOTT@ADVANCEDHOODSYSTEMS.COM

DOAS/RTU FAN SCHEDULE - JOB#6838609

			FAN INFORMATION						ELECTRICAL	_ INFORMAT	TION			C(DOLING I	NFORMATION	N			R	REHEAT INFORM	MOITAN					GAS HEAT INF	FORMATION		
FAN	TAC	DOAS/RTU MODEL #	MANUFACTURER	RETURN	MAX	TOTAL	WEIGHT	ECD UD	DUACE VO	I T MCA	MOCE	OUTSID	E AIR	LEAVING	3 AIR	С	CAPACIT'	Y IEED ISN	DISCHA	ARGE	CAPACIT	MOISTURE	GAS	INPUT	OUTPU	T TEM	,	REQUIRED INPUT	N	NOTES
NO	TAG QIT	DOAS/RTO PIODEL #	MANOI ACTORER	AIR CFM	AIR CFM	CFM	(LBS)	LSF	FHASE VO	I I I I I I I I I I I I I I I I I I I	MOCE	DB	WB	DB WB	DP	TOTAL	L S	SENS.	DB	WB	DESIRED	MAX REMOVAL RA	TE TYPE	BTUs	BTUs	RISE		GAS PRESSURE		
I	I	AHRTU3-1.300-18-20T-DOAS	ADVANCED HOOD	18P-3 0	2850	2850	2621	1.000 2.00	3 20	08 79.IA	A08	95.3°F	74.1°F 44	4.3°F 44.3°	°F 44.4	°F 241.0 M	1BH 145	5.6 MBH 18.2 6	.0 70.0°F	55.5°F	80 MBH 129	9.6 MBH 87.5 LBS/HI	NATURA	L 261214	211583	64°F		7 IN. W.C I4 IN. W.C.	1,2,3,4,5,6,7	7,8,9,10,11,12,13,14
NIC	TEC.																													

NOTES:

I. INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL OR STAGED SCROLL NOT AN APPROVED EQUAL

2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE

3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER

4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE

5. EC MOTOR CONDENSING FANS
6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE
7. SUCTION LINE ACCUMULATOR

8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER
9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT) 10. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE

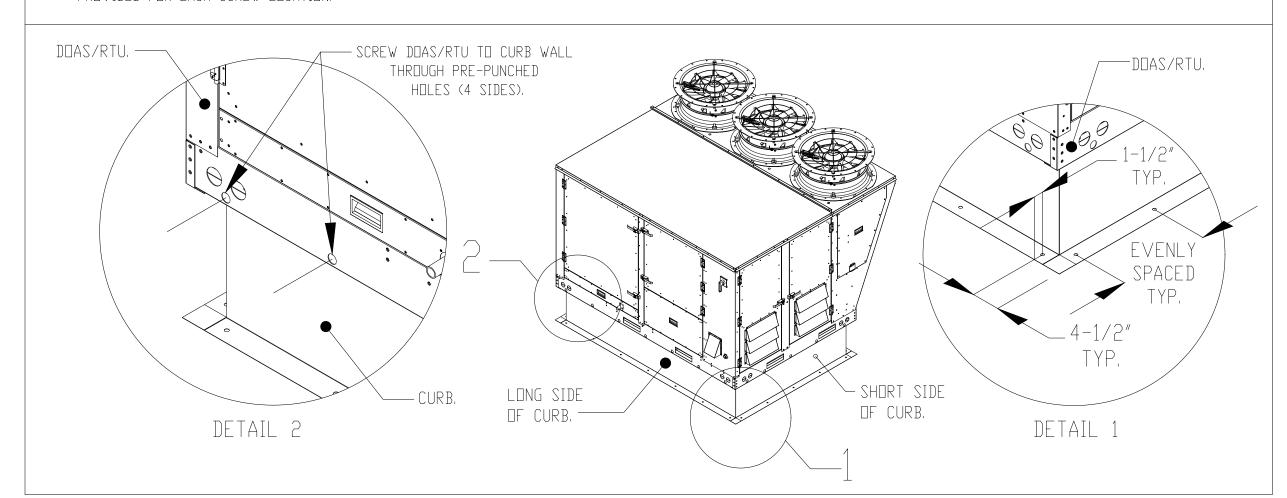
II. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 6:1 TURNDOWN WITH NG AND 5:1 TURNDOWN WITH LP 12. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE 13. FULLY MODULATING HOT GAS REHEAT

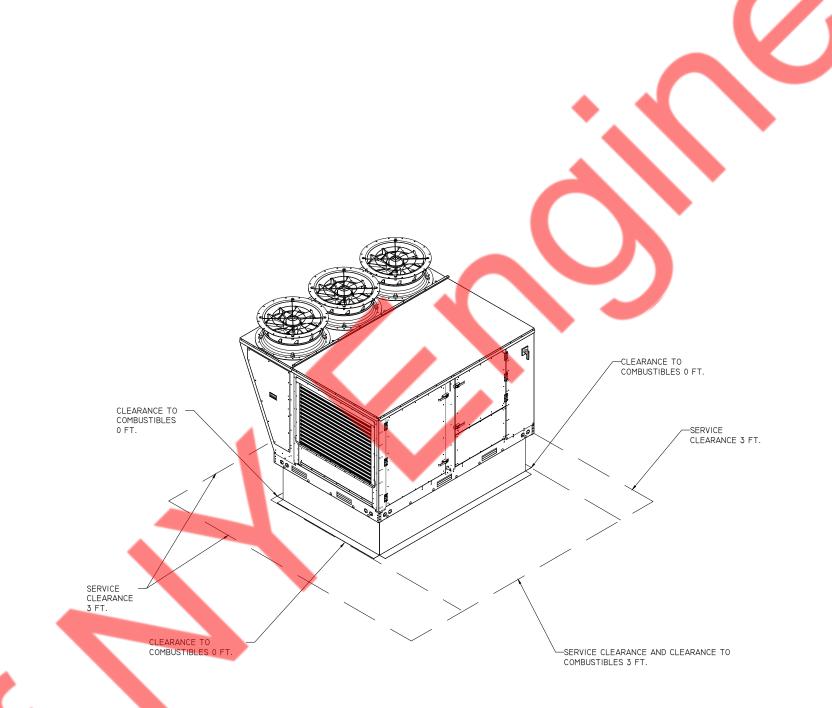
14. DOWN DISCHARGE/NO RETURN

TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 1/4" PILOT HOLES IN THE CURB FLANGES AT LOCATIONS SHOWN IN THE DIAGRAM BELOW. USING 3/8" X 2" ZINC PLATED STEEL LAG BOLTS, AND ZINC PLATED WASHERS, SCREW THROUGH THE CURB FLANGES AND INTO THE ROOF FRAMING MEMBERS. A MINIMUM OF (5) LAG BOLTS ON EACH SHORT SIDE, AND (7) LAG BOLTS ON EACH LONG SIDE IS REQUIRED.

SECURE THE UNIT BASE TO THE SIDE WALLS OF THE CURB USING (24) 1/4"-14 X 2" SELF-DRILLING, STEEL ZINC PLATED SCREWS, PRE-PUNCHED HOLES HAVE BEEN PROVIDED FOR EACH SCREW LOCATION.





	OPTI	2NS	
FAN UNIT NO	TAG	QTY	DESCRIPTION
		ı	INLET PRESSURE GAUGE, 0-35"
		ı	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, I FURNACE
		ı	TOTAL CFM MONITORING
		ı	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
			CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		I	RTU3 DOWN DISCHARGE
			2" MERV 13 FILTERS FOR RTU3 (QTY. 4)
			2" MERV 8 FILTERS FOR RTU3 (QTY. 4)
			OVERHEAT STAT
			RTU FIXED 100% OA INTAKE CONTROL
		I	RTU3 NO RETURN - 100% OA
1			REMOTE TEMPERATURE AND HUMIDITY SPACE SENSOR
		I	RTU3 CURB DUCT HANGER
		I	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		I	OCCUPIED SCHEDULING
		ı	20 TON MODULATING COOLING OPTION, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
			20 TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL - R410A
		I	INTAKE FIRESTAT SET TO 135°F
			FREEZESTAT
		I	DISCHARGE FIRESTAT SET TO 240°F
			UNIT MOUNTED VFD CONFIGURED FOR DCV
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
		I	GREASE BOX
			FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
2			UNIT MOUNTED VFD FOR USE WITH ECPM03
		I	VFD MOUNTING BRACKET FOR DU 50 & 85
		ı	2 YEAR PARTS WARRANTY
		I	GREASE BOX
3		I	FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		I	2 YEAR PARTS WARRANTY

RTU Installation Wiring	JOB ** HUEY MAGOOS SPRINGFIELD MO	
DRAWING NUMBER INST6838609-I	SHIP DATE 6/4/2024 MODEL AHRTU3-I.300-18-20T-DOAS	
SAFETY	FAN #1 INF #1 - UNIT INF #1 IN MUNITED IN UNIT IN TAXESAGED BUILT-IN TEMPERATURE SENSOR BUILT-IN TEMP	INSTALLED OPTIONS ADDRESS SS SUPPLY FAN SPEED REFERENCE SPACE REHEAT CONTROL
BREAKER TO PRIMARY DISCOLAR RESPONSIBILITY ELECTRICIAN BREAKER	DISCONNECT	
BREAKER SPH 208 VOLT CONTROL POWER. DO NOT WI TO GFCI OR SHUNT TRIP BEAKER. UNIT BOARD TO MAMAC SPACE SENSOR	L2 0 12 L3 0 13 GROUND OGND	PRI STANCEP
NUA BOARD TO BLOWER SPEED RE NUA BOARD TO BLOWER SPEED RE	FERENCE SPEED REF OVO- OVO-	India with Blast Ten Transport States Transport States Transport States Transport Advanced Transport Advanced Transport Advanced Transport Advanced Transport Transport States Transport T
- UNIT BOARD TO SMOKE DETECTOR RESPONSIBILITY ELECTRICIAN SMOKE DETECTOR SSD28 SD38 ONLO		Car 5 Confection Page 2 (1997) Card 1997 Card
		WIRE COLOR BK - BLACK YW - YELLOW BL - BLUE GR - GREEN BR - BROWN GY - GRAY OR - ORANGE PR - PURPLE

NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGINEERS.COM RINGFIELD, MO, 65804

FOR QUESTIONS, CALL THE
ADVANCED HOODS SYSTEMS, LLC
REGION 140 PHONE: 407-269-4813
EMAIL: SCOTT@ADVANCEDHOODSYSTEMS.COM

** HUEY MAGOOS SPRINGFIELD MO

JSHINE STREET,

DATE: 6/4/2024

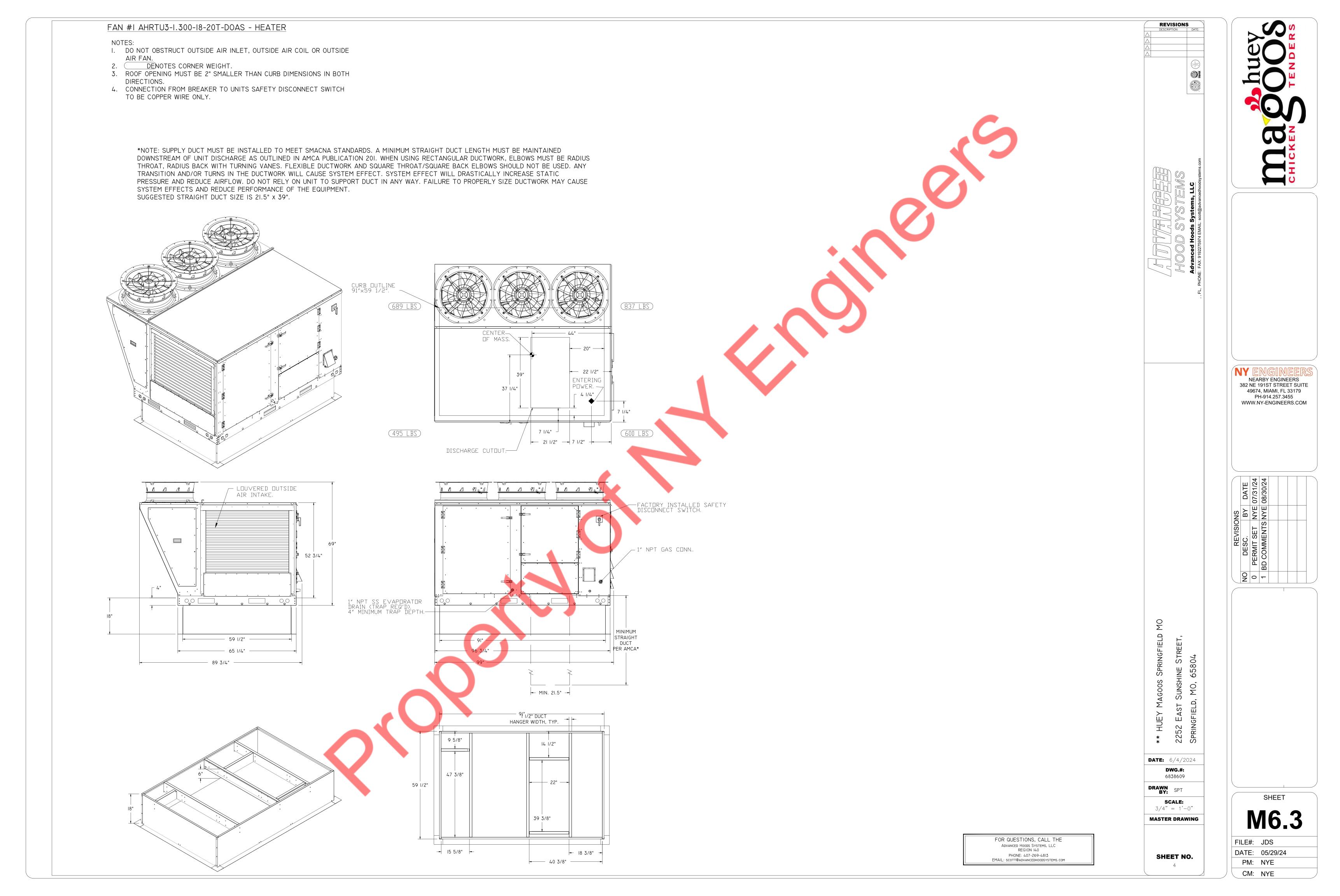
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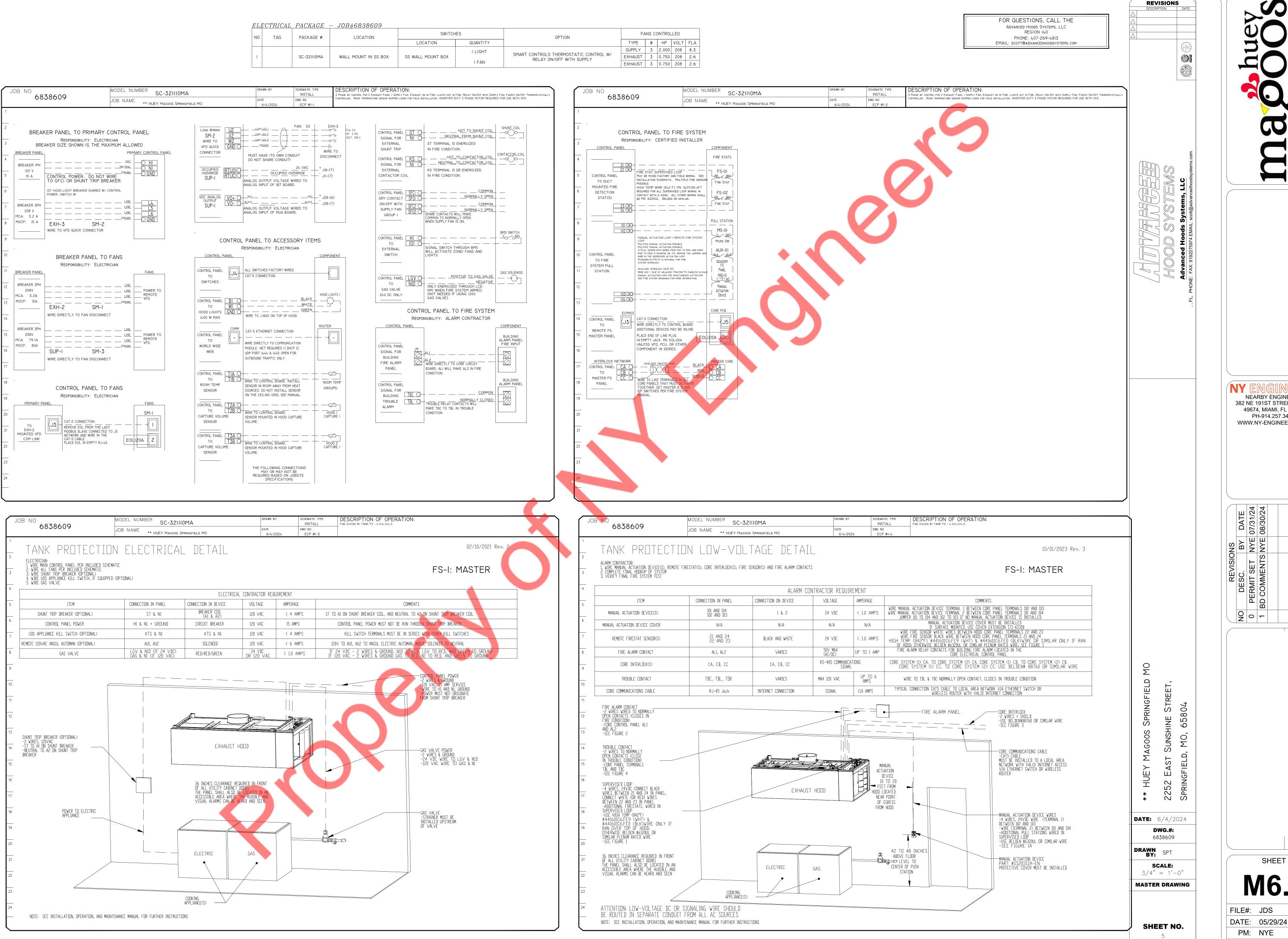
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SHEET

Project Information

2018 IECC Energy Code: Project Title: HUEY MAGOOS - SPRINGFIELD Location:

Climate Zone: **New Construction** Project Type:

Construction Site: Owner/Agent: Designer/Contractor:

> NY ENGINEERS 382 NE 191ST ST. **SUITE 49674** MIAMI, FL 33179

Credits: 1.0 Required 1.0 Proposed Enhanced Interior Lighting Controls, 1.0 credit

Additional Efficiency Package(s)

Mechanical Systems List

QuantitySystem Type & Description

1 RTU-1 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 120 kBtu/h

Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 94 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 12.10 EER, Required Efficiency = 11.00 EER

Proposed Part Load Efficiency = 16.60 IEER, Required Part Load Efficiency = 12.60 IEER

1 DOAS-1 (Unknown):

Heating: 1 each - Central Furnace, Gas, Capacity = 261 kBtu/h Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et

Cooling: 1 each - Single Package DX Unit, Capacity = 241 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 9.80 EER, Required Efficiency = 9.80 EER Proposed Part Load Efficiency = 18.20 IEER, Required Part Load Efficiency = 11.40 IEER

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

MICHAEL TOBIAS Name - Title

07/31/2024



Project Title: HUEY MAGOOS - SPRINGFIELD Report date: 07/03/24

Data filename: Page 1 of 9

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

piping to 104°F. **Additional Comments/Assumptions:**

Data filename:



Page 4 of 9



Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

	& Req.ID	Plan Review	Complies?	Comments/Assumptions
- 1	C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
- 1	C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: HUEY MAGOOS - SPRINGFIELD Report date: 07/03/24 Data filename: Page 2 of 9

Section #	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
Req.ID 2402.2.6	Thermally ineffective panel surfaces of	Complies	Exception: Requirement does not apply.
ME41] ³	sensible heating panels have	Does Not	Exception: Requirement does not apply.
		□Not Observable □Not Applicable	
2403.8.1 ME65] ³		□Complies □Does Not	Exception: Individual exhaust fans with motor nameplate horsepower less than 1 hp.
	fan system motor nameplate hp or fan system bhp.	□Not Observable □Not Applicable	See the Mechanical Systems list for values.
C403.8.3 ME117] ²	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
IVILII/]	the design point of operation <= 15%	□Does Not □Not Observable	C403.2.3.
	of maximum total efficiency of the fan.	□Not Applicable	
C403.12.1 ME71] ²	Systems that heat outside the building envelope are radiant heat systems	□Complies □Does Not	Requirement will be met.
I-IL/1]	controlled by an occupancy sensing	□Does Not □Not Observable	
		□Not Applicable	
C403.5.5 ME113 ²	Fault detection and diagnostics installed with air-cooled unitary DX	□Complies □Does Not	Requirement will be met.
	units having economizers.	□Not Observable	
		□Not Applicable	
2403.2.2 ME59] ¹	Natural or mechanical ventilation is provided in accordance with	□Complies □Does Not	Requirement will be met.
	International Mechanical Code Chapter 4. Mechanical ventilation has	□Not Observable	
	capability to reduce outdoor air supply to minimum per IMC Chapter 4.	□Not Applicable	
2403.7.1	Demand control ventilation provided	☐Complies	Exception: Requirement does not apply.
ME59] ¹	for spaces >500 ft2 and >25 people/1000 ft2 occupant density and	□Does Not □Not Observable	
	served by systems with air side economizer, auto modulating outside	□Not Observable □Not Applicable	
	air damper control, or design airflow >3,000 cfm.		
C403.7.2	Enclosed parking garage ventilation	Complies	Exception: Requirement does not apply.
ME115] ³	and capacity to stage or modulate	□Does Not □Not Observable	
	fans to 50% or less of design capacity.	□Not Observable	
C403.7.6 [ME141] ³	Group R-1 buildings with > 50	□Complies □Does Not	Exception: Requirement does not apply.
	guestrooms: Each guestroom is provided with controls that	□Not Observable	
	automatically manage temperature setpoint and ventilation (see sections	□Not Applicable	
100 = 1	C403.7.6.1 and C403.7.6.2).		
C403.7.4 ME57] ¹	Exhaust air energy recovery on systems meeting Table C403.7.4(1)	□Complies □Does Not	Exception: Requirement does not apply.
		□Not Observable	
2403.7.5		□Not Applicable □Complies	Requirement will be met.
ME116] ³	replacement air and conditioned	Does Not	nequirement will be met.
	supply air limitations, and satisfy hood rating requirements and maximum	□Not Observable	
	exhaust rate criteria.	□Not Applicable	

	1 High Impact (Tier 1)	2 Medium Impact (Tier 2) 3	Low Impact (Tier 3)			
Project Title:	HUEY MAGOOS - SPRINGFIELD			Repor	t date:	07/03/	/24
Data filename:				F	age	5 of	9

Section # & Req.II	Footing / Foundation Inspection	Complies?	Comments/Assumptions	
,	2 Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.	

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)	

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.11.1	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME62] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 3 [ME124] ¹	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 4 [ME125] ¹	System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.5.3. 5 [ME126] ¹	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.1. 4 [ME63] ²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.2. 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.5.2	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

Sy	stems that comply with C403.5.2	1		
Additional	Comments/Assumptions:			
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NEARBY ENGINEERS 382 NE 191ST STREET SUITE 49674, MIAMI, FL 33179 PH-914.257.3455 WWW.NY-ENGINEERS.COM

FILE#: JDS DATE: 05/29/24 PM: NYE

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C405.7 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C405.8.2, C405.8.2. 1 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C405.9 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits <= 5%.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

Additional	Comments/Assumptions:
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	1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tie	er 3)		
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5. 3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.2 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.1. 2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.2.4. 1.3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4. 2 [FI39] ³	Each zone equipped with setback controls using automatic time clock or programmable control system.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
2.1,	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2- hour occupant override, 10-hour backup	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C406.4 [FI54] ¹	Enhanced digital lighting controls efficiency package: Interior lighting has following enhanced lighting controls in accordance with Section C405.2.2: Luminaires capable of continuous dimming and being addressed individually, <= 8 luminaires controlled in combination in a daylight zone, digital control system for fixtures, "Sequence of Operations" documentation, and functional testing per Section C408.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.1.1 [FI57] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.1 [FI28] ¹	Commissioning plan developed by registered design professional or approved agency.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.3. 1 [FI31] ¹	HVAC equipment has been tested to ensure proper operation.	□Complies □Does Not	Requirement will be met.
[131]*		□Not Observable □Not Applicable	
2	HVAC control systems have been tested to ensure proper operation,	□Complies □Does Not	Requirement will be met.
[FI10] ¹	calibration and adjustment of controls.	□Not Observable □Not Applicable	
C408.2.3.	Economizers have been tested to ensure proper operation.	□Complies □Does Not	Requirement will be met.
[FI32] ¹		□Not Observable □Not Applicable	
C408.2.4 [FI29] ¹	completed and certified by registered	□Complies □Does Not	Exception: Requirement does not apply.
	design professional or approved agency.	□Not Observable □Not Applicable	
C408.2.5. 1	Furnished HVAC as-built drawings submitted within 90 days of system	□Complies □Does Not	Requirement will be met.
[FI7] ³	acceptance.	□Not Observable □Not Applicable	
C408.2.5. 3	An air and/or hydronic system balancing report is provided for HVAC	☐Comp <mark>lies</mark>	Requ <mark>ire</mark> ment will be met.
[FI43] ¹	systems.	□Not Observable □Not Applicable	
C408.2.5.	Final commissioning report due to building owner within 90 days of	☐Complies ☐Does Not	Exception: Requirement does not apply.
[FI30] ¹	receipt of certificate of occupancy.	□ Not Observable □ Not Applicable	

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2. ALL NEW DUCTWORK SHALL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED Y ASHRAE.

3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.

4. SUPPLY AND RETURN DUCTWORK 10' FROM ALL HVAC UNITS SHALL BE LINED WITH 1.5" ACOUSTICAL LINING.

5. CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.

6. IN CORRIDORS WHERE CEILING SPEAKERS AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE FIXTURES.

7. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.

8. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.

9. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.

10. PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN DISHWASHER, KITCHEN, AND LAUNDRY EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.

11. COORDINATE DIFFUSER, REGISTER, AND GRILL LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.

12. ALL AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.

13. LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.

14. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.

15. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.

16. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 FT.

17. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

18. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, COILS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.

19. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION. ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.

20. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE

21. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.

22. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.

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.

B. 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 CLEARLY 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

1.2 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.

1.3 INSTALLATION

A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.

1.4 FIELD QUALITY CONTROL

A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.

1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

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

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 ON OR MORE THE FOLLOWING MATERIALS:

a. LATEX SEALANT

b. SILICONE SEALANT c. INTUMESCENT PUTTY

d. MORTAR

h. SILICONE FOAM

i. PILLOWS/BAGS INTUMESCENT WRAP STRIPS

k. INTUMESCENT COMPOSITE SHEET

1.6 MANUFACTURERS

1. HILTI CONSTRUCTION CHEMICAL, INC

TREMCO INC.

3. 3M FIRE PROTECTION PRODUCTS

END OF SECTION 078413

SECTION 230548 - VIBRATION CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 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.

ALL-DIRECTIONAL,

10.PIPE RISER RESILIENT SUPPORT: ACOUSTICAL PIPE ANCHOR.

11.RESILIENT PIPE GUIDES.

B. AIR-MOUNTING SYSTEMS:

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

2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWS.

C. 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

1.2 FIELD QUALITY CONTROL

BY EITHER: OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR

PART-2 PRODUCTS

1.1 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES

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

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

1. ACE MOUNTINGS CO., INC.

2. AMBER/BOOTH COMPANY, INC

3. CALIFORNIA DYNAMICS CORPORATION.

4. HILTI, INC.

5. ISOLATION TECHNOLOGY, IN

6. KINETICS NOISE CONTROL. 7. LOOS & CO.; CABLEWARE DIVISION.

8. MASON INDUSTRIES.

9. TOLCO INCORPORATED: A BRAND OF NIBCO INC.

10.UNISTRUT; TYCO INTERNATIONAL, LTD.

END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:

1. AIR SYSTEMS: CONSTANT AND VARIABLE VOLUME SYSTEMS.

MOTORS.

1.2 QUALITY ASSURANCE A. THE CONTRACTOR SHALL PROCURE 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

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 S3ECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

1.1 QUALITY ASSURANCE

SURFACE-BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME-SPREAD INDEX OF 25, AND SMOKE-DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE-DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTME 84.

1.2 FIELD QUALITY CONTROL

FIELD INSPECTIONS: BY OWNER-ENGAGED AGENCY.

INDOOR DUCT AND PLENUM INSULATION SCHEDULE; CONCEALED, RECTANGULAR, ROUND AND FLAT-OVAL, SUPPLY-RETURN, OUTDOOR-AND EXHAUST-AIR DUCT AND AIR PLENUM INSULATION:

B. FLEXIBLE ELASTOMERIC, MINERAL-FIBER BLANKET, MINERAL-FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:

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

1.4 ITEMS NOT INSULATED:

 FIBROUS-GLASS DUCTS. 2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS

TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1. 3. FACTORY-INSULATED FLEXIBLE DUCTS.

4. FACTORY-INSULATED PLENUMS AND CASINGS.

FLEXIBLE CONNECTORS.

6. VIBRATION-CONTROL DEVICES.

7. FACTORY-INSULATED ACCESS PANELS AND DOORS.

8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:

1. JOHNS-MANVILLE

2. OWENS-CORNING

1.6 ACOUSTICAL TREATMENT 1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R-6 AS MANUFACTURED BY DUCTMATE, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE

END OF SECTION 230713

SECTION 233113 - METAL DUCTS

1.1 CONSTRUCTION A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS. WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".

MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED,

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:

1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH. USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.

SHEET STEEL SHALL COMPLY WITH ASTMA653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY-COATED (GALVANINEALED) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.

3. USE ELBOWS AND TEES WITH A CENTER LINE RADIUS TO WIDTH OR DIAMETER RATIO OF 1.5 WHEREVER SPACE PERMITS. WHEN A SHORTER RADIUS MUST BE USED DUE TO LIMITED SPACE, INSTALL SINGLE WALL SHEET METAL SPLITTER VANES IN ACCORDANCE WITH SMACNA PUBLICATIONS, TYPE RE 3. WHERE SPACE WILL NOT ALLOW AND THE C VALUE OF THE RADIUS ELBOW, AS GIVEN IN SMACNA PUBLICATIONS, EXCEEDS 0.31, USE RECTANGULAR ELBOWS WITH TURNING VANES AS SPECIFIED IN SECTION 23 33 00. SQUARE THROAT-RADIUS HEEL ELBOWS WILL NOT BE ACCEPTABLE. STRAIGHT TAPS OR BULLHEAD TEES ARE NOT ACCEPTABLE.

WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES IN ACCORDANCE WITH SECTION 23 33 00.

PROVIDE EXPANDED TAKE-OFFS OR 45 DEGREE ENTRY FITTINGS FOR BRANCH DUCT CONNECTIONS WITH BRANCH DUCTWORK AIRFLOW VELOCITIES GREATER THAN 700 FPM. SQUARE EDGE 90-DEGREE TAKE-OFF FITTINGS OR TRAIGHT TAPS WILL NOT BE ACCEPTED.

BUTTON PUNCH SNAP-LOCK CONSTRUCTION WILL NOT BE ACCEPTED ON ALUMINUM DUCTWORK.

ROUND DUCTS MAY BE SUBSTITUTED FOR RECTANGULAR DUCTS IF SIZED IN ACCORDANCE WITH ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY WRITTEN PERMISSION OF THE ENGINEER.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION. THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

> MAX. SIDE INCHES TRANSVERSE JOINTS AND BRACING

> > S SLIP, DRIVE SLIP, ONE INCH

POCKET LOCK ON 8 FOOT

CENTERS 22 13 TO 24 1"X1"X1/8" ANGLES ON 4 **FOOT CENTERS**

UP TO 12

20 25 TO 35 1"X1"X1/8"

D. PROVIDE TAPPING IN DUCTS FOR THERMOMETERS WHERE SPECIFIED. IN ADDITION, PROVIDE AN AIRTIGHT PLUGGED TAPPING LOCATED AS FOLLOWS:

ANGLES ON 2

FOOT CENTERS

1. UPSTREAM OF EACH REHEAT COIL AND VAV BOX.

2. DOWNSTREAM OF EACH REHEAT COIL AND VAV BOX.

E. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3-6 AND AS SHOWN IN FIG. 3-1 AND 3-2

F. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR

1.2 MATERIALS A. SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS.

C. SHEET METAL MATERIALS:

FOR ROUND DUCTWORK.

ROUND DUCTS.

GALVANIZED SHEET STEEL.

2. STAINLESS-STEEL SHEETS.

ALUMINUM SHEETS.

4. FACTORY-APPLIED ANTI-MICROBIAL COATING.

B. SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS.

D. DUCT LINER:

1. FIBROUS GLASS, TYPE I, FLEXIBLE. a. WITH ANTI-MICROBIAL EROSION-RESISTANT COATING.

2. FLEXIBLE ELASTOMERIC.

NATURAL FIBER.

E. SEALANT MATERIALS:

 TWO-PART TAPE SEALING SYSTEM. 2. WATER-BASED JOINT AND SEAM SEALANT.

3. SOLVENT-BASED JOINT AND SEAM SEALANT FLANGED JOINT SEALANT.

FLANGE GASKETS. 6. ROUND DUCT JOINT O-RING SEALS.

A. CLEAN DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

1.3 DUCT CLEANING

1. AIR OUTLETS AND INLETS.

2. SUPPLY, RETURN, AND EXHAUST FANS. AIR-HANDLING UNITS.

4. COILS AND RELATED COMPONENTS.

5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING

7. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND

6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING

1.4 DUCT SCHEDULE A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:

MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM. B. END OF SECTION 233113

MAKEUP AIR SYSTEMS.

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SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

1.1 PRODUCTS

- A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.
- B. MANUFACTURERS: METALAIRE
- 1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:
- a. CARNES.
- b. HART & COOLEY INC.
- c. KRUEGER.
- d. TITUS, INC. e. NAILOR INDUSTRIES INC.
- f. RUSKIN
- C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
- D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

THERMOSTATIC CONTROLS:

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

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:

THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).

THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.4.1.2 DEADBAND

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.

EXCEPTIONS:

THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND

OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE CODE OFFICIAL.

C403.4.1.3 SETPOINT OVERLAP RESTRICTION

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

EXCEPTION: CONTROL OF HEATING OR COOLING PROVIDED BY SITE-RECOVERED ENERGY OR TRANSFER AIR THAT WOULD OTHERWISE BE EXHAUSTED.

C403.4.2 OFF-HOUR CONTROLS

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

EXCEPTIONS:

ZONES THAT WILL BE OPERATED CONTINUOUSLY.

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

C403.4.2.1 THERMOSTATIC SETBACK

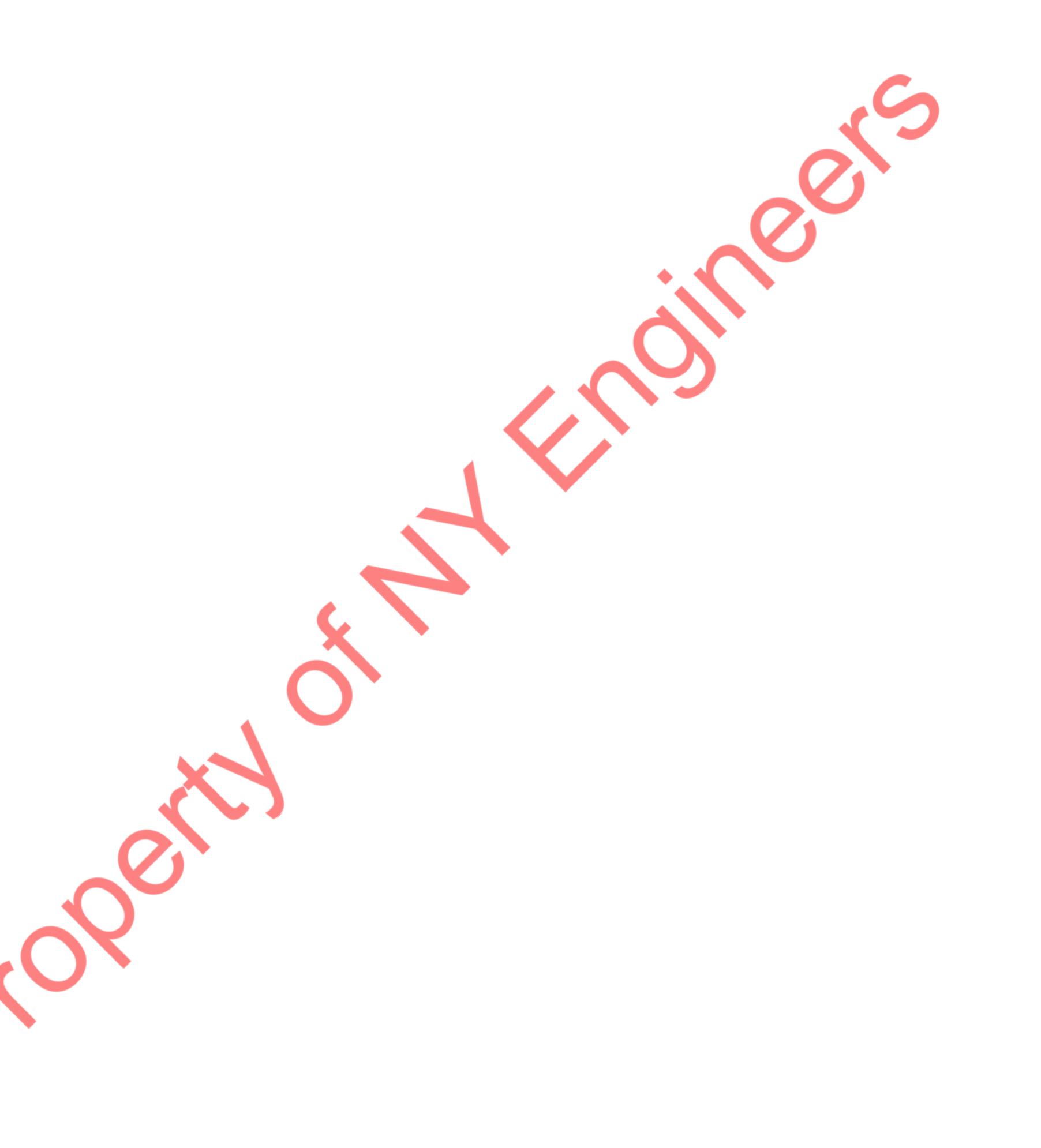
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN

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.

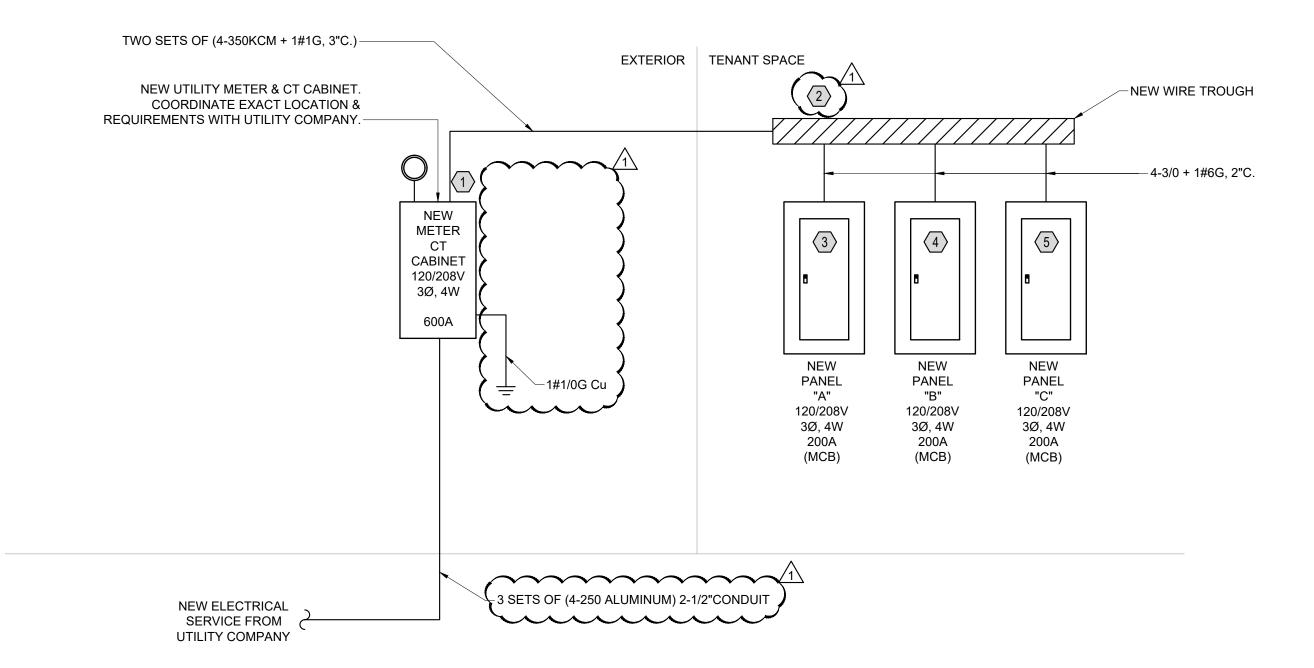




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- 1. EXIT SIGNS AND EMERGENCY LIGHTS SHALL HAVE THEIR OWN 13. CONTRACTOR IS REQUIRED TO INSTALL STANDARD RECEPTACLES FOR SELF-CONTAINED STANDBY BATTERY POWER SUPPLY. IF LOCAL CODE REQUIRES A DIRECT TAP BEFORE ANY CIRCUIT BREAKERS THEN INCORPORATE INTO THE FEEDER DIAGRAM.
- 2. LUMINAIRES INSTALLED IN CONTINUOUS ROWS SHALL BE GROUNDED WITH A CONDUCTOR ROUTED FROM LUMINAIRE TO LUMINAIRE, MOUNTED TO EACH WITH GROUNDING LUG OR SCREW. ALIGNING CLIPS ARE NOT ACCEPTABLE. NATIONAL ELECTRICAL CODE, ARTICLE 410-21.
- 3. CEILING LIGHTS ARE TO BE WIRED TO THE BAR JOIST MEMBERS AT THE DIAGONAL CORNERS.
- 4. COORDINATE LIGHTING WITH SPRINKLER & MECHANICAL DRAWINGS.
- 5. REFERENCE TO HEIGHT OF OUTLET OR RECEPTACLE SHALL BE MEASURED FROM FINISHED FLOOR TO CENTER OF OUTLET OR RECEPTACLE.
- 6. ALL RECEPTACLES AND SWITCHES SHALL HAVE TWO (2) REVOLUTIONS OF ELECTRICAL TAPE (SCOTCH 33+) OVER ALL THE TERMINALS, TO PREVENT ACCIDENTAL CONTACT WITH THE JUNCTION BOX OR OUTLET BOX.
- 7. CONDUIT SIZE TO BE PER NEC. PVC CONDUIT AND FITTINGS ARE ACCEPTABLE ONLY BELOW SUBBASE MATERIAL OF GROUND BEARING FLOOR JURISDICTION.
- 8. ELECTRICAL CONTRACTOR TO PROVIDE JUNCTION BOX AND CONDUIT STUB-UP ABOVE CEILING FOR ALL LOW VOLTAGE CABLING.
- 9. DIMENSION IS FROM FINISHED WALL, SEE ARCHITECTURAL FOR WALL THICKNESS.
- 10. FIELD COORDINATE EXACT LOCATION OF OUTLETS AS DETERMINED BY THE ACTUAL FURNITURE LAY OUT. VERIFY WITH FIXTURE PLAN.
- 11. COORDINATE WITH OTHER DISCIPLINES FOR ELECTRICAL REQUIREMENTS OF EQUIPMENT NOT SHOWN ON DETAILS (i.e. ROOF-TOP UNITS, UNIT HEATERS, FANS, ETC.).
- 12. EC SHALL VERIFY IN FIELD ALL KITCHEN EQUIPMENT CONNECTIONS AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION OF DEVICES. VERIFY ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH FOOD SERVICE CONTRACTOR. EC SHALL MAKE ADJUSTMENTS IN FIELD TO MATCH ACTUAL EQUIPMENT BEING INSTALLED, AS DIRECTED BY THE FOOD SERVICE CONTRACTOR.

- CIRCUITS DEDICATED TO SPECIFIC EQUIPMENT. SUBJECT TO THE APPROVAL OF CODE ENFORCING AGENCY.
- 14. ALL 125V, SINGLE PHASE 15 AMP AND 20 AMP RATED RECEPTACLES INSTALLED IN THE LOCATIONS SPECIFIED IN NEC.ART 210.8 (B)(1) - (8) SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION.
- LUMINAIRE GROUNDING SHALL BE INSTALLED IN COMPLIANCE WITH 15. NOTE THAT THE ISOLATED GROUNDING TYPE RECEPTACLES AND CLOCK TYPE RECEPTACLES LOCATED IN THE KITCHEN/SERVING AREA SHALL BE PROTECTED BY GROUND FAULT TYPE CIRCUIT BREAKERS RATHER THAN GROUND FAULT TYPE RECEPTACLES SINCE THESE RECEPTACLES ARE NOT AVAILABLE AS GROUND-FAULT TYPE RECEPTACLES. GFCI BREAKERS REQUIRE A DEDICATED NEUTRAL (NOT SHARED) TO OPERATE PROPERLY
 - 16. SERVICE CONDUCTORS ARE DESIGNED BASED ON THE SERVICE DISTANCE OF 100' TO MEET THE 2% VOLTAGE DROP PER NEC. IF SERVICE CONDUCTOR IS BETWEEN:
 - 100' TO 150' E.C. SHALL INCREASE THE CONDUCTOR BY ONE SIZE(S) LARGER THAN DESIGN 150' TO 200' - E.C. SHALL INCREASE THE CONDUCTOR BY TWO SIZE(S) LARGER THAN DESIGN 200' TO 250' - E.C. SHALL INCREASE THE CONDUCTOR BY THREE SIZE(S) LARGER THAN DESIGN
- SLABS WHERE SUCH USE IS ACCEPTABLE TO THE AUTHORITY HAVING 17. BRANCH CONDUCTORS ARE DESIGNED BASED ON A DISTANCE OF 100' TO MEET THE 3% VOLTAGE DROP PER NEC. IF BRANCH CONDUCTOR IS BETWEEN:
 - 100' TO 150' E.C. SHALL INCREASE THE CONDUCTOR BY ONE SIZE(S) LARGER THAN DESIGN 150' TO 200' - E.C. SHALL INCREASE THE CONDUCTOR BY TWO SIZE(S) LARGER THAN DESIGN 200' TO 250' - E.C. SHALL INCREASE THE CONDUCTOR BY THREE SIZE(S)
 - 18. E.C. IS TO VERIFY WITH LOCAL AHJ FOR REQUIREMENT OF EXTERIOR EMERGENCY EGRESS LIGHTING AND ADJUST BID TO INCORPORATE AS NEEDED.

LARGER THAN DESIGN

19. A.I.C OF PANELS AND SERVICE ENTRANCE EQUIPMENT IS BASED ON TYPICAL TRANSFORMER SPECIFICATIONS. CONTRACTOR SHALL FIELD VERIFY EXACT UTILITY A.I.C RATING AND MAKE EQUIPMENT ADJUSTMENTS AS REQUIRED IN THE FIELD AT NO EXTRA COST TO OWNER. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY FIELD CHANGES BASED ON UTILITY EQUIPMENT DATA.

- 1. NEW 600AMP, 120/208VOLT, 3-PHASE METER & CT CABINET FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION IN FIELD WITH UTILITY/OWNER. 2. NEW WIRE TROUGH FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION IN FIELD WITH ARCHITECT/OWNER.
- 3. NEW 200AMP, 120/208VOLT, 3-PHASE ELECTRICAL PANEL "A" FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION IN FIELD WITH ARCHITECT/OWNER.
- 4. NEW 200AMP, 120/208VOLT, 3-PHASE ELECTRICAL PANEL "B" FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION IN FIELD WITH ARCHITECT/OWNER.
- 5. NEW 200AMP, 120/208VOLT, 3-PHASE ELECTRICAL PANEL "C" FOR THE PROJECT SPACE. E.C. SHALL VERIFY THE EXACT LOCATION IN FIELD WITH ARCHITECT/OWNER.

LEGEND: (NOT ALL SYMBOLS ARE USED WITHIN THIS SET OF DRAWI

LIGHTING

	WP	WEATH
EXIT LIGHT (HATCHING DENOTES FACE)	AFF	ABOVE
SURFACE MOUNTED OR RECESSED EMERGENCY LIGHTING FIXTURE	UNO	UNLESS
· · · · · · · · ·	GFI	GROUN
SWITCH (P) PILOT LIGHT (R) ROTARY SWITCH	O.C	ON CEN
MOTOR RATED SWITCH	ETR	EXISTIN
SWITCH (x) DENOTES CONTROL LABEL, (D) DENOTES DIMMER	TR	TAMPER
OCCUPANCY SENSOR	STANDARD	MOUN
WALL SWITCH, OCCUPANCY SENSOR COMBINATION	A.F.F (IN.)	DESCRI
White Still Still, SSSSI / MIST SERIES IT GOINDINGTHON	84"	AUDIBL

TIMECLOCK

 \bigoplus **SPEAKER**

POWER

- SINGLE RECEPTACLE DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE
- CEILING MOUNTED RECEPTACLE
- LINE THRU CENTER OF RECEPTACLE DENOTES ABOVE COU
- CENTER SHADING IN RECEPTACLE DENOTES ISOLATED GRO
- TOP SHADING IN RECEPTACLE DENOTES GFCI PROTECTED
- SPECIAL PURPOSE RECEPTACLE (AS NOTED)

PHOTOCELL OR DAYLIGHT SENSOR

- TELEPHONE OUTLET DATA OUTLET
- **VOICE/DATA COMBINATION OUTLET**
- JUNCTION BOX
- MOTOR, FAN, PUMP OR AIR CONDITIONING UNIT
- PANELBOARD
- FUSED DISCONNECT SWITCH, RATING AS NOTED NON-FUSED DISCONNECT SWITCH, RATING AS NOTED.

LOW VOLTAGE

TELEPHONE OUTLET

- DATA OUTLET
- VOICE/DATA COMBINATION OUTLET
- SECURITY CAMERA, COORDINATE EXACT LOCATION WITH SECURITY VENDOR.
- WIRELESS ACCESS POINT, PROVIDE CAT6 CABLE

vings)	ABBREVIAT	TIONS
	WP	WEATHERPROOF
	AFF	ABOVE FINISHED FLOOR
G	UNO	UNLESS NOTED OTHERWISE
	GFI	GROUND FAULT INTERRUPT
	O.C	ON CENTER
	ETR	EXISTING TO REMAIN
1ER	TR	TAMPER RESISTANT
	STANDARD	MOUNTING HEIGHTS
	A.F.F (IN.)	DESCRIPTION
	84"	AUDIBLE APPLIANCES
	48"	ALARMS
	48"	ANNUNCIATOR PANELS
	84"	CLOCK OUTLETS (CENTERLINE)
	48"	CONTROLS (CENTERLINE)
	80"	EXIT SIGNS (WALL MOUNTED, BOTTOM)
	60"	FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)
	120"	FIRE ALARM BELL (EXTERIOR)
	60"	FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)
	36"	INTERCOM (AREA ONLY)
UNTER	48"	INTERCOMS
ROUND	72"	PANELS/PANELBOARDS (TOP)
)	48"	PULL STATIONS (TOP OF BOX)
-	144"	PHOTOCELLS
	18"	RECEPTACLES (CENTERLINE)
	24"	RECEPTACLES (EXTERIOR)
	26"	RECEPTACLES (GARAGES)
	48"	RECEPTACLES IN EQUIPMENT ROOMS
	48"	REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)

SAFETY SWITCHES STARTERS

SWITCHES (TOP OF BOX) TELEPHONES (PUBLIC)

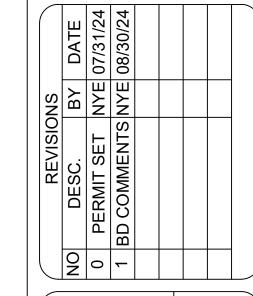
TELEPHONE DATA OUTLETS (CENTERLINE) TELEPHONE TERMINAL BOARD (BOTTOM)

REMOTE INDICATING LIGHT (FINISHED AREAS)

TELEVISION OUTLETS

VISIBLE APPLIANCES (CENTERLINE)

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FIELD VERIFY ALL CONDITIONS:

NOTE! ALL WIRING LAYOUTS, PIPING LAYOUTS AND DUCT LAYOUTS ARE SCHEMATIC. EXACT LOCATIONS SHALL BE DETERMINED BY THE CONSTRUCTION AND STRUCTURE OF THE BUILDING AND SHALL BE VERIFIED AND COORDINATED IN THE FIELD. EACH TRADE CONTRACTOR SHALL VERIFY WITH THE GENERAL CONTRACTOR THAT A THOROUGHLY REVIEWED AND COORDINATION OF ALL LOCATIONS AND ROUTINGS WITH ALL OTHER TRADES PRIOR TO FABRICATION OF CONDUITS, DUCTS, OR PIPING, AND START OF INSTALLATION OF SAME (INCLUDING SPRINKLER PIPING WHEN PRESENT ON JOB). ANY INSTALLATION OR CONSTRUCTION CONFLICTS WHICH OCCUR IN THE FIELD SHALL BE RESOLVED BY THE TRADE PROVIDER TO THE SATISFACTION OF THE OWNER AND/OR ARCHITECT AND AT NO EXPENSE TO THE OWNER, ARCHITECT AND/OR GENERAL CONTRACTOR.

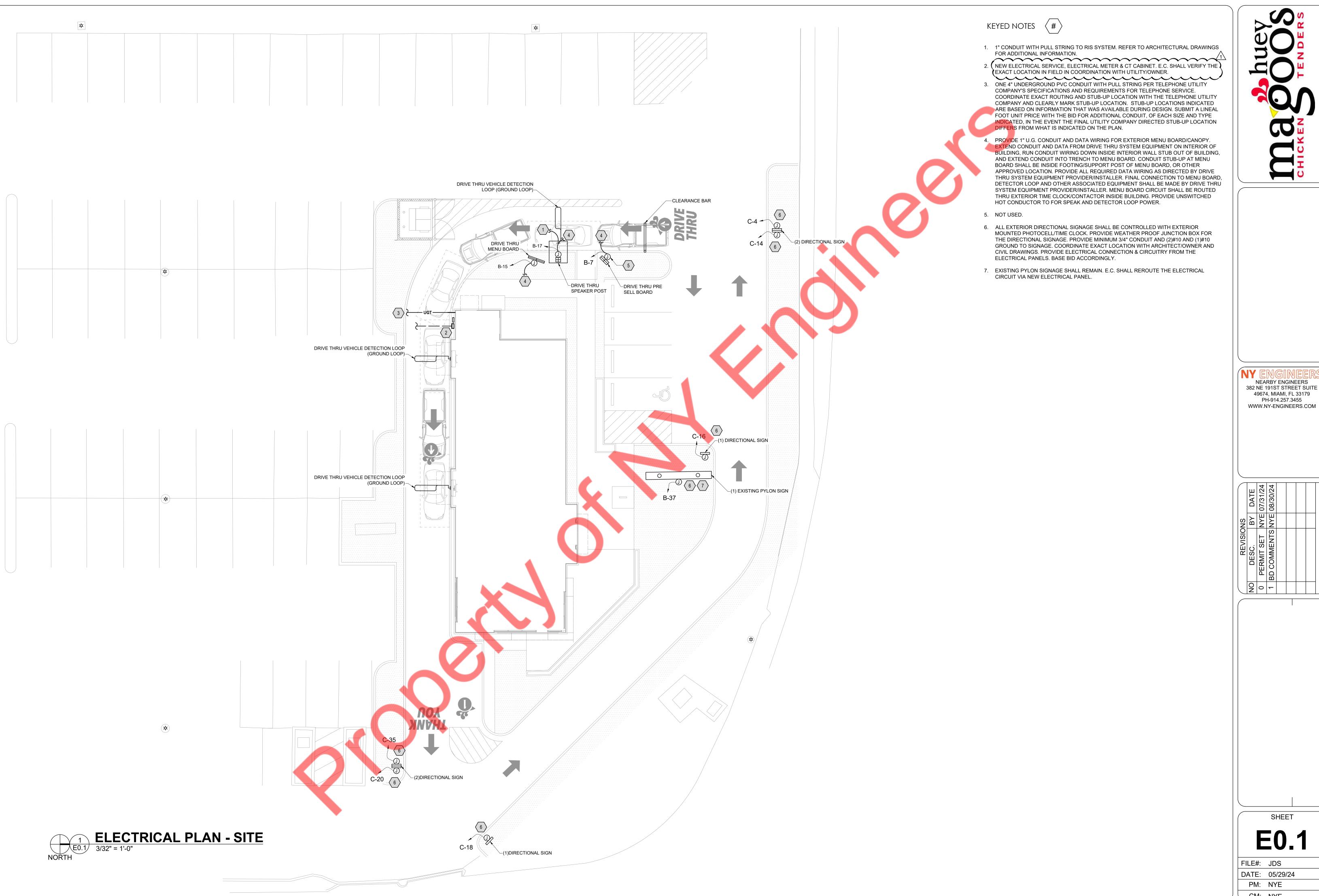
THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN THE BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED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

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF ALL CODES, REGULATIONS, UTILITY REQUIREMENTS, LAWS AND ORDINANCES APPLICABLE TO THIS SITE AND SHALL INCLUDE IN THE BID THE COSTS FOR ALL WORK PROVIDED IN STRICT ACCORDANCE WITH THESE GOVERNING ITEMS, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER AND/OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT FOR DIRECTIONS.

SHEET LIST	
SHEET NUMBER	SHEET TITLE
ELECTRICAL	
E0.0	LEGENDS, GENERAL NOTES AND RISER DIAGRAM
E0.1	ELECTRICAL PLAN - SITE
E1.0	ELECTRICAL PLAN - LIGHTING
E2.0	ELECTRICAL PLAN - POWER
E2.1	ELECTRICAL PLAN - ROOF
E3.0	ELECTRICAL PLAN - LOW VOLTAGE
E4.0	ELECTRICAL DETAILS
E5.0	ELECTRICAL SCHEDULES
E7.0	LIGHTING COMPLIANCE
E8.0	ELECTRICAL SPECIFICATIONS
E8.1	ELECTRICAL SPECIFICATIONS
E8.2	ELECTRICAL SPECIFICATIONS
E9.0	PHOTOMETRIC LAYOUT

SHEET

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- A. REFER SHEET E5.0 FOR LIGHT FIXTURE SCHEDULE, MOUNTING AND FIXTURE LOCATION.
- B. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS/QUANTITIES MAY BE REQUIRED BY AHJ UPON FINAL INSPECTION.
- C. ALL EXTERIOR LIGHTING (FACADE LIGHTING, BUILDING SIGNAGE, DIRECTIONAL SIGNAGE, PYLON LIGHT, LED STRIP, CANOPY LIGHTS ETC.) SHALL BE CONTROLLED BY TIME CLOCK/PHOTOCELL.

EYED NOTES

- EMERGENCY EGRESS/EXIT/NL FIXTURES SHALL BE ON A NON-SWITCHED LEG OF LOCAL AREA CIRCUIT. CIRCUIT BREAKERS CLEARLY MARKED WITH THE INTENDED USE AND HAVE A LOCK-ON DEVICE INSTALLED.
- CIRCUIT VIA LIGHTING CONTACTOR AND TIME CLOCK.
- PROVIDE JUNCTION BOX FOR EXTERIOR SIGNAGE FIELD VERIFY EXACT MOUNTING LOCATION OF JUNCTION BOX WITH SIGNAGE INSTALLER/OWNER PRIOR TO ROUGH-IN. JUNCTION BOX SHALL BE MOUNTED CENTERED BEHIND SIGN, HIGH UP ON THE INTERIOR OF THE BUILDING, ON THE EXTERIOR WALL. EXTERIOR SIGNAGE INSTALLATION BY SIGNAGE VENDOR INSTALLER. FINAL CONNECTION FROM JUNCTION BOX TO SIGNAGE SHALL BE COORDINATE WITH SIGNAGE INSTALLER AND PROVIDED IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS. CONTRACTOR TO CIRCUIT EXTERIOR SIGNAGE AS INDICATED.
- 4. APPROXIMATE LOCATION OF SWITCHBANK. SEE DETAIL 6/E4.0. COORDINATE EXACT LOCATION AND SWITCH CONFIGURATION WITH OWNER. (NOTE: CONTRACTOR TO PROVIDE A PILOT LIGHT INDICATOR TYPE WALL SWITCH, FOR ALL SWITCHES, WHERE LIGHTS BEING CONTROLLED BY SAID SWITCH ARE NOT VISIBLE FROM SWITCH BANK LOCATION.)
- APPROXIMATE LOCATION TIMECLOCK AND LIGHTING CONTACTORS, SEE LIGHTING CONTROL DIAGRAM 8/E4.0 FOR MORE INFORMATION.
- 6. SWITCH TO WALK-IN COOLER LIGHTING SHALL BE ILLUMINATED.
- 7. CONTRACTOR TO PROVIDE LAMPS (AS NEEDED) IN KITCHEN EXHAUST HOOD PER MANUFACTURER'S SPECIFICATION. SEE DETAIL 5/E4.0 FOR CIRCUIT/HOOD CONTROL INFORMATION. REFER TO HOOD DRAWINGS FOR ADDITIONAL INFORMATION.
- 8. LIGHT FIXTURE IS MOUNTED INSIDE OF WALK-IN COOLER/FREEZER. LIGHTING FIXTURE PROVIDED WITH WALK-IN UNIT, MAKE FINAL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS.
- 9. CIRCUIT RESTROOM LIGHTING INDEPENDENT OF INTERIOR TIMECLOCK LIGHTING CONTROLS.
- 10. 1P20A MOTOR SWITCH FOR RESTROOM EXHAUST FAN. CONTRACTOR TO CIRCUIT RESTROOM EXHAUST FAN WITH RESTROOM LIGHTING FOR SIMULTANEOUS OPERATION.
- 11. COORDINATE EXACT LOCATION OF SWITCH WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

mey Shuey Shuey CHICKEN STENDERS

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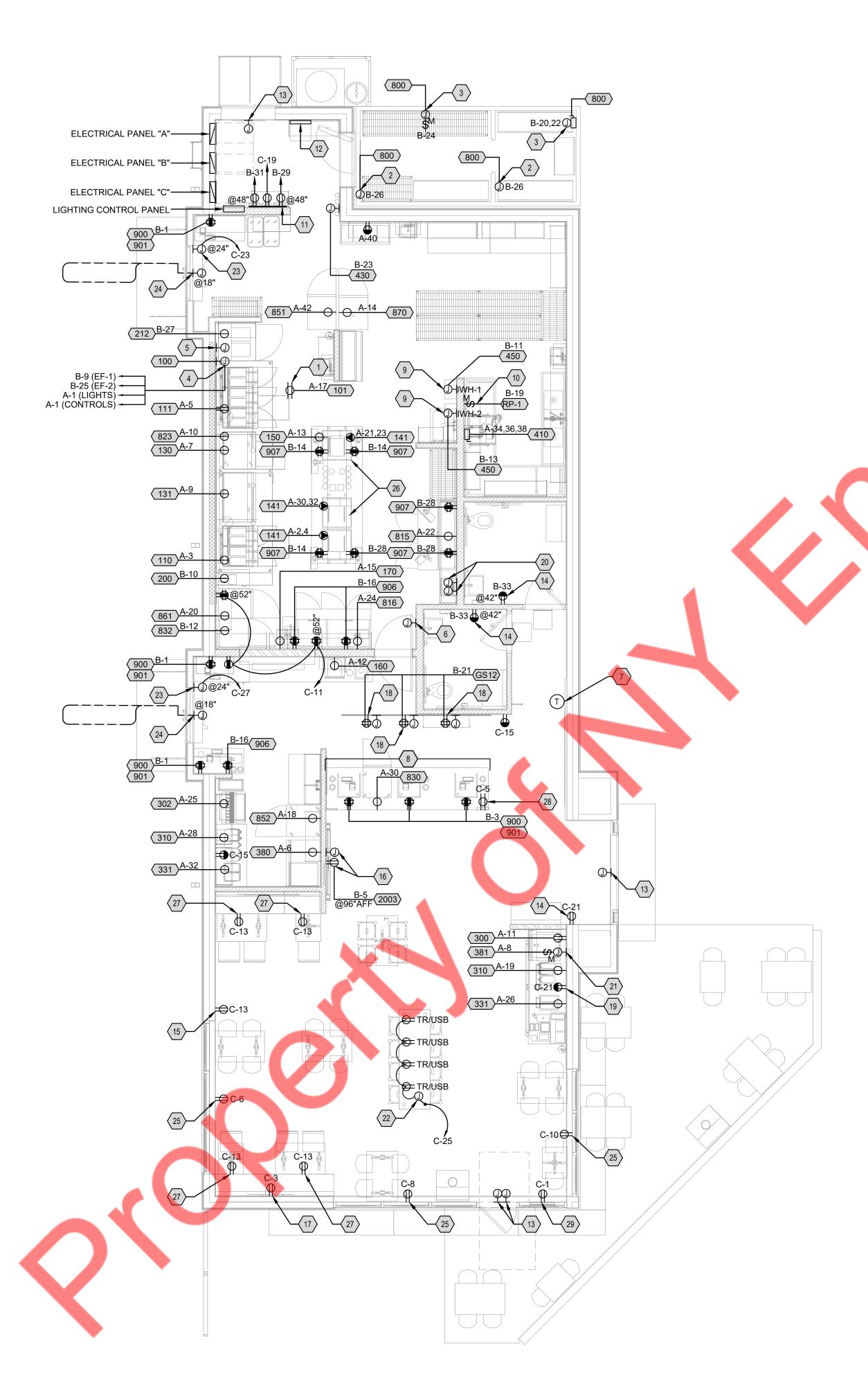
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ELECTRICAL PLAN - LIGHTING

3/16" = 1'-0"

- A. E.C. SHALL VERIFY IN FIELD ALL KITCHEN EQUIPMENT CONNECTIONS AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION OF DEVICES. VERIFY ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH FOOD SERVICE CONTRACTOR. E.C. SHALL MAKE ADJUSTMENTS IN FIELD TO MATCH ACTUAL EQUIPMENT BEING INSTALLED, AS DIRECTED BY THE FOOD SERVICE CONTRACTOR.
- B. CONTRACTOR IS REQUIRED TO INSTALL STANDARD RECEPTACLES FOR CIRCUITS DEDICATED TO SPECIFIC EQUIPMENT. SUBJECT TO THE APPROVAL OF CODE ENFORCING AGENCY.
- C. ALL SINGLE-PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPERES OR LESS AND THREE PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 100 AMPERES OR LESS INSTALLED IN THE FOLLOWING LOCATIONS SPECIFIED IN NEC. ART 210.8 (B)(1) (8) SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION.
- D. NOTE THAT THE ISOLATED GROUNDING TYPE RECEPTACLES AND CLOCK TYPE RECEPTACLES LOCATED IN THE KITCHEN/SERVING AREA SHALL BE PROTECTED BY GROUND FAULT TYPE CIRCUIT BREAKERS RATHER THAN GROUND FAULT TYPE RECEPTACLES SINCE THESE RECEPTACLES ARE NOT AVAILABLE AS GROUND-FAULT TYPE RECEPTACLES. GFCI BREAKERS REQUIRE A DEDICATED NEUTRAL (NOT SHARED) TO OPERATE PROPERLY.





KEYED NOTES (#)

- 1. PROVIDE A FLUSH MOUNTED CEILING RECEPTACLE, FOR FRYER TIMER MOUNTED TO THE FRONT OF HOOD. FIELD VERIFY EXACT MOUNTING LOCATION.
- 2. J-BOX FOR CONNECTION TO HEAT TRACE AND LIGHTING MOUNTED ABOVE WALK-IN COOLER/FREEZER BOX. CONTRACTOR SHALL INSTALL, WIRE AND PROVIDE LAMPS FOR WALK-IN COOLER AND FREEZER LIGHTS. COORDINATE REQUIREMENTS WITH MANUFACTURER SPECIFICATIONS.
- PROVIDE J BOX & CONDUIT THROUGH SEALED OPENING FOR CONTROL WIRING TO CONDENSER ON ROOF. SEE SHEET E2.1 ADDITIONAL INFORMATION.
- 4. HOOD CONTROL PANEL BOX, SEE HOOD DRAWINGS FOR EXHAUST FAN/MAKE UP AIR UNIT INTERLOCK, HOOD CONTROLS, REMOTE HOOD CONTROL CABINET & PRE-WIRE PACKAGE DETAILS. PROVIDE ALL FIELD WIRING (PER MANUFACTURER'S SPECIFICATIONS) TO HOOD CONTROL PANEL, HOOD CONTROLS & HOOD ROOM SENSOR, COORDINATE WITH MECHANICAL CONTRACTOR.
- PROPOSED LOCATION OF HOOD SHUNT TRIP CONTACTOR, IN A NEMA 1 ENCLOSURE, MOUNTED ABOVE THE CEILING (VERIFY EXACT MOUNTING LOCATION IN FIELD). HOOD SHUNT TRIP CONTACTOR SHALL BE CONNECTED TO HOOD FIRE SUPPRESSION SYSTEM CONTROLS. SEE HOOD SHUNT TRIP CONTACTOR DETAIL 5/E4.0 FOR MORE INFORMATION.
- . J-BOX (FLUSH MOUNTED) FOR ANSUL SYSTEM PULL STATION. MAKE CONNECTIONS AS REQUIRED.
- COORDINATE THERMOSTAT & LOCATIONS W/
 MECHANICAL CONTRACTOR. PROVIDE CONDUIT, WIRE
 & FINAL CONNECTIONS (AS REQUIRED). SEE
 MECHANICAL DRAWING FOR ADDITIONAL
 INFORMATION.
- COORDINATE INSTALLATION OF DEVICE AND CONDUIT WITH MILLWORK INSTALLER AND ARCHITECT PRIOR TO ROUGH-IN. ALL CONDUIT AND DEVICES SHALL BE CONCEALED FROM VIEW.
- ONTRACTOR TO PROVIDE HARDWIRED CONNECTION TO WATER HEATER, PER MANUFACTURER'S SPECIFICATION. FIELD VERIFY EXACT MOUNTING LOCATION WITH PLUMBING CONTRACTOR. PROVIDE LOCK-OUT/TAG-OUT DEVICE TO CIRCUIT BREAKER SERVING EQUIPMENT. CIRCUIT AS INDICATED.
- 10. CIRCULATION PUMP WITH INTEGRATED TIMECLOCK FOR PUMP CONTROL. FIELD VERIFY EXACT MOUNTING HEIGHT/LOCATION WITH PLUMBING INSTALLER PRIOR ROUGH-IN. INSTALL PER N.E.C..
- 11. PROVIDE 3'X4'X3/4" PAINTED PLYWOOD BACKBOARD FOR TELEPHONE SYSTEM AT 6'-Ø". CONNECT #10 AWG COPPER GROUND WIRE FROM TELEPHONE SYSTEM TO GROUND BUS AT PANEL "B".
- 12. ALARM SYSTEM CONTROL PANEL FINAL CONNECTION BY ALARM CONTRACTOR. STACK ALARM PANEL ABOVE TELEPHONE PANEL. COORDINATE OUTLET MOUNTING HEIGHT.
- 13. ROUTE 2" CONDUIT WITH PULL STRING TO ACCESSIBLE SPACE. COORDINATE ALARM J-BOX LOCATIONS WITH SECURITY CONTRACTOR.
- 14. CONVENIENCE RECEPTACLE (TAMPER-RESISTANT, 5-2ØR). RECEPTACLE & COVERPLATE TO MATCH WALL DECOR, VERIFY REQUIREMENTS.
- 15. CONVENIENCE RECEPTACLE PROVIDE A DUPLEX/USB COMBINATION RECEPTACLE (LEVITON #T5832 OR APPROVED EQUAL) RECEPTACLE & COVERPLATE TO MATCH WALL DECOR, VERIFY REQUIREMENT.
- 16. PROVIDE A RECEPTACLE & JUNCTION BOX FOR DINING ROOM TELEVISION. FIELD VERIFY EXACT MOUNTING LOCATION OF RECEPTACLE/JUNCTION BOX WITH TELEVISION/MOUNTING BRACKET IN FIELD. RECEPTACLE & JUNCTION BOX SHALL BE INSTALLED BEHIND TELEVISION CONCEALED FROM VIEW AS MUCH AS POSSIBLE.
- 17. PROVIDE RECEPTACLE FOR DINING ROOM ILLUMINATED "G" SIGN. FIELD VERIFY EXACT RECEPTACLE MOUNTING LOCATION/HEIGHT WITH CONSTRUCTION MANAGER PRIOR TO ROUGH-IN. RECEPTACLE SHALL BE CIRCUITED VIA INTERIOR TIME CLOCK/CONTACTOR FOR AUTOMATIC ON/OFF CONTROL.
- 18. PROVIDE A RECEPTACLE AND JUNCTION BOX FOR FUTURE DIGITAL MENU BOARD. RECEPTACLE AND JUNCTION BOX SHALL BE MOUNTED BEHIND NON POWERED MENU BOARD PANELS, CONCEALED FROM VIEW. FIELD VERIFY EXACT MOUNTING LOCATION WITH CONSTRUCTION MANAGER.
- 19. CONTRACTOR TO PROVIDE AND INSTALL A SURFACE MOUNTED C02 METER MODEL RAD-0102 CARBON DIOXIDE DETECTOR WITH REMOTE DISPLAY RAD-0103. SENSOR UNIT TO BE INSTALLED 18" ABOVE FLOOR IN LOCATION SHOWN. INSTALL IP65 CASE OVER SENSOR UNIT. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. PROVIDE WITH RAD-Ø1Ø2-24VDC TRANSFORMER TO PLUG INTO WALL. SET ALARM TO 5000 PPM TO COMPLY WITH LOCAL CODES. REUSE NEARBY RECEPTACLE IF APPLICABLE.
- 20. REMOTE DISPLAY FOR C02 METER. SECURELY MOUNT REMOTE SENSOR ON WALL AT 48" A.F.F. REMOTE UNIT MAXIMUM LENGTH FROM SENSOR IS 25'-Ø". FIELD VERIFY TOTAL LENGTH. IF REMOTE PLACEMENT DESTINATION IS GREATER THAN 25'-0", INSTALL UNIT ON CLOSEST WALL ADJACENT TO UNIT WITHIN PUBLIC & EMPLOYEE VIEW.
- 21. CONTRACTOR TO EXTEND ICE MAKER CIRCUIT TO ICE MAKER REMOTE CONDENSER (MOUNTED ON ROOF). REMOTE ICE MAKER CONDENSER POWERED FROM ICE MAKER CIRCUIT, NO ADDITIONAL CIRCUIT REQUIRED FOR ICE MAKER REMOTE CONDENSER. SEE SHEET E2.1 FOR ADDITIONAL INFORMATION. CONTRACTOR TO PROVIDE A LOCK-OUT/TAG-OUT DEVICE (INSTALLED IN PANEL) ON CIRCUIT BREAKER FEEDING ICE MAKER/REMOTE CONDENSER CIRCUIT. PROVIDE ALL NECESSARY DEVICES AND MAKE ALL FINAL CONNECTIONS PER MANUFACTURER'S SPECIFICATIONS. ROUTING OF CONDUIT SHALL BE DETERMINED IN FIELD.
- 22. PROVIDE POWER FOR COMMUNITY TABLE. PROVIDE

- FLUSH MOUNTED WEATHERPROOF JUNCTION BOX IN FLOOR BELOW TABLE, PROVIDE JUNCTION BOXES AND RECEPTACLES WITH USB CONNECTIONS AS NEEDED PER CUTOUTS IN COMMUNITY TABLE. FIELD VERIFY EXACT LOCATION AND REQUIREMENTS WITH EQUIPMENT INSTALLER PRIOR TO BID, ROUGH-IN AND CONSTRUCTION AND MAKE FINAL CONNECTION. REFER TO DETAIL 10/A9.1
- 23. PROVIDE JUNCTION BOX FOR ELECTRICAL CONNECTION TO DRIVE THRU WINDOW. VERIFY EXACT MOUNTING LOCATION AND ELECTRICAL REQUIREMENTS WITH POWERED DRIVE THRU WINDOW MANUFACTURER.
- 24. PROVIDE DRIVE THRU DETECTOR LOOP. VERIFY EXACT REQUIREMENTS WITH DRIVE THRU EQUIPMENT INSTALLER.
- 25. PROVIDE RECEPTACLE 6" ABOVE WINDOW FOR SHOW WINDOW AS REQUIRED BY CODE. VERIFY WITH LOCAL AGENCY. VERIFY EXACT LOCATION WITH ARCHITECT.
- 26. PROVIDE DROP CORD ASSEMBLY FOR KITCHEN EQUIPMENT AT MAKE LINE TABLE. COORDINATE REQUIREMENTS WITH OWNER AND KITCHEN EQUIPMENT INSTALLER.
- 27. PROVIDE A DUPLEX/USB COMBINATION RECEPTACLE (LEVITON #T5832 OR APPROVED EQUAL) RECEPTACLE & COVER PLATE AT FRONT OF BANQUETTES, COORDINATE REQUIREMENTS WITH MILL WORK INSTALLER PRIOR TO BID, ROUGH-IN AND CONSTRUCTION. RECEPTACLE AND COVER PLATES ARE TO BE BLACK.
- 28. PROVIDE RECEPTACLE FOR ILLUMINATED "TO-GO" SIGN. FIELD VERIFY EXACT RECEPTACLE LOCATION WITH CONSTRUCTION MANAGER PRIOR TO ROUGH-IN. RECEPTACLE SHALL BE CIRCUITED VIA INTERIOR TIMECLOCK/CONTACTOR FOR AUTOMATIC ON/OFF CONTROL.
- 29. PROVIDE RECEPTACLE 6" ABOVE WINDOW FOR "OPEN FOR TENDERS" SIGN. FIELD VERIFY EXACT RECEPTACLE LOCATION WITH CONSTRUCTION MANAGER PRIOR TO ROUGH-IN. RECEPTACLE SHALL BE CIRCUITED VIA INTERIOR TIMECLOCK/CONTACTOR FOR AUTOMATIC ON/OFF CONTROL.



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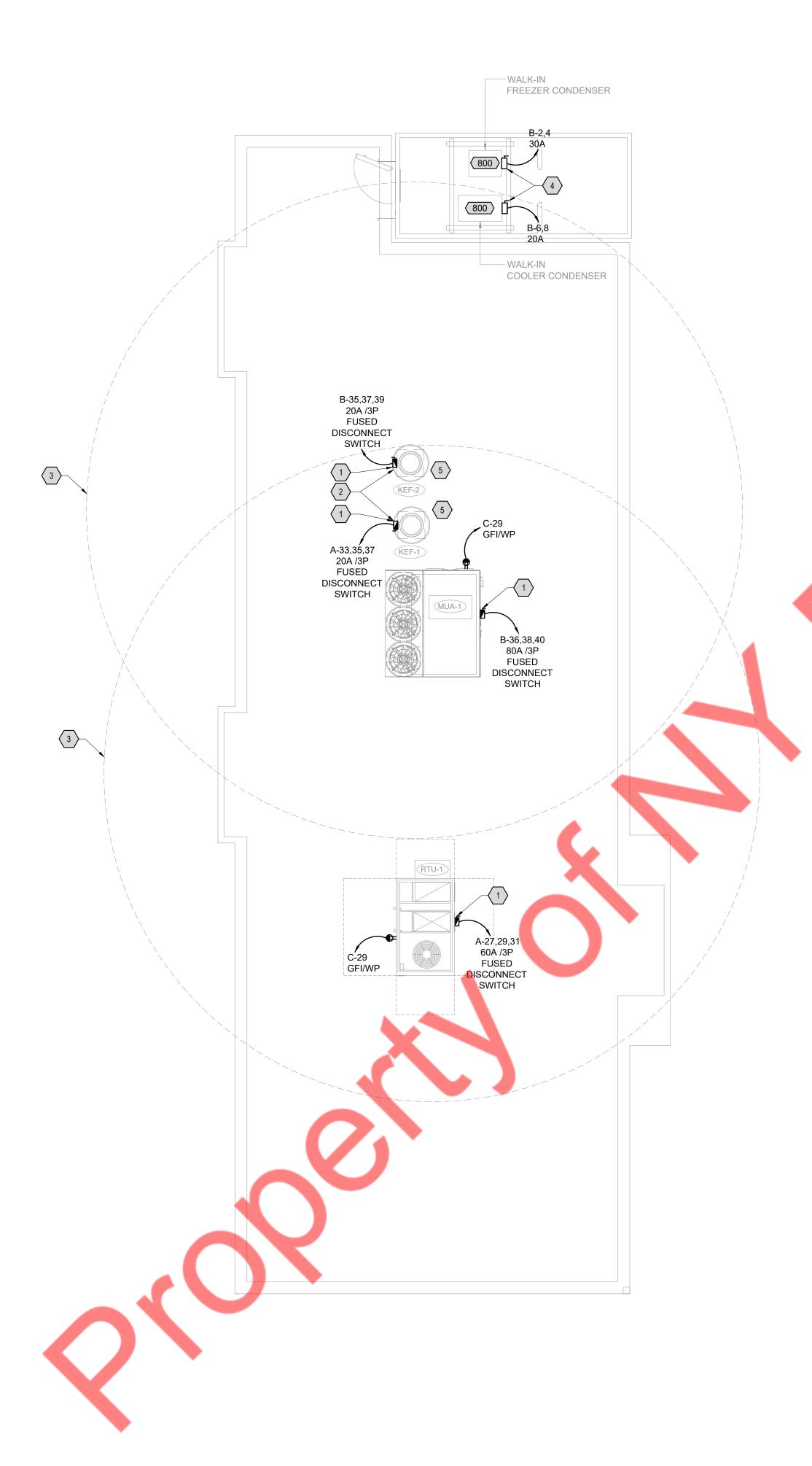
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- PROVIDE NEMA 3R DISCONNECT SWITCH (SIZE AS NOTED). FUSE PER
 MANUFACTURERS NAMEPLATE. PROVIDE & COORDINATE EXACT ELECTRICAL
 REQUIREMENTS WITH MECHANICAL CONTRACTOR & MANUFACTURER. BASE BID
 ACCORDINGLY.
- INTERLOCK WITH HOOD CONTROL CABINET BELOW. COORDINATE ELECTRICAL REQUIREMENTS WITH HOOD MANUFACTURERS SPECIFICATIONS. BASE BID ACCORDINGLY.
- 3. RADIUS TO SHOW CODE REQUIRED WP/GFI MAINTENANCE RECEPTACLE WITHIN 25' OF ROOF TOP EQUIPMENT.
- 4. PROVIDE NEMA 3R NF DISCONNECT SWITCH. INTERLOCK WITH COOLER EVAPORATOR FAN BELOW. COORDINATE ALL REQUIREMENTS WITH EQUIPMENT MANUFACTURER'S SPECIFICATIONS.
- EXHAUST FANS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. E.C. SHALL COORDINATE FOR SWITCHING AND CONTROLS AND PROVIDE ALL NECESSARY WIRING REQUIRED

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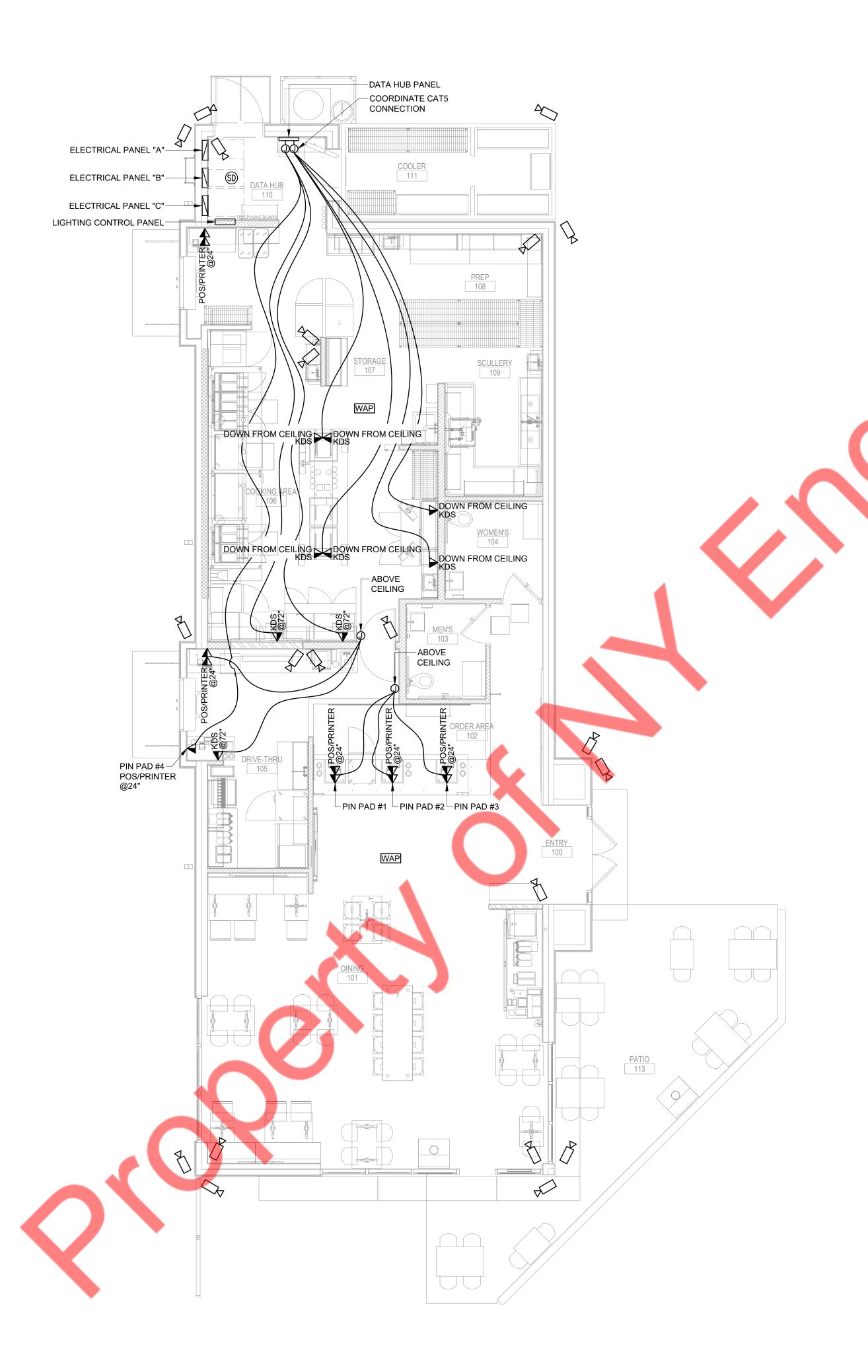
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1 ELECTRICAL PLAN - ROOF
NORTH 3/16" = 1'-0"



- A. ROUTE ALL CONDUIT CONCEALED ABOVE CEILING, WITHIN WALL, OR BELOW FLOOR.
- B. PROVIDE 1"C WITH PULL STRING FROM INTERNET MODEM, CABLE AND PHONE SHELF TO P.O.S.
- C. ALL LOW VOLTAGE WIRING SHALL BE PROVIDED AND INSTALLED BY THE LOW VOLTAGE CONTRACTOR.
- D. FIELD VERIFY ALL REQUIREMENTS PRIOR TO ROUGH IN AND INSTALLATION.
- E. ELECTRICAL CONTRACTOR IS TO PROVIDE ALL TRANSFORMERS, RELAYS AND CONTACTORS TO ENSURE ROOF TOP UNITS SHUT DOWN WITH ACTIVATION OF FIRE ALARM/SMOKE DETECTORS.

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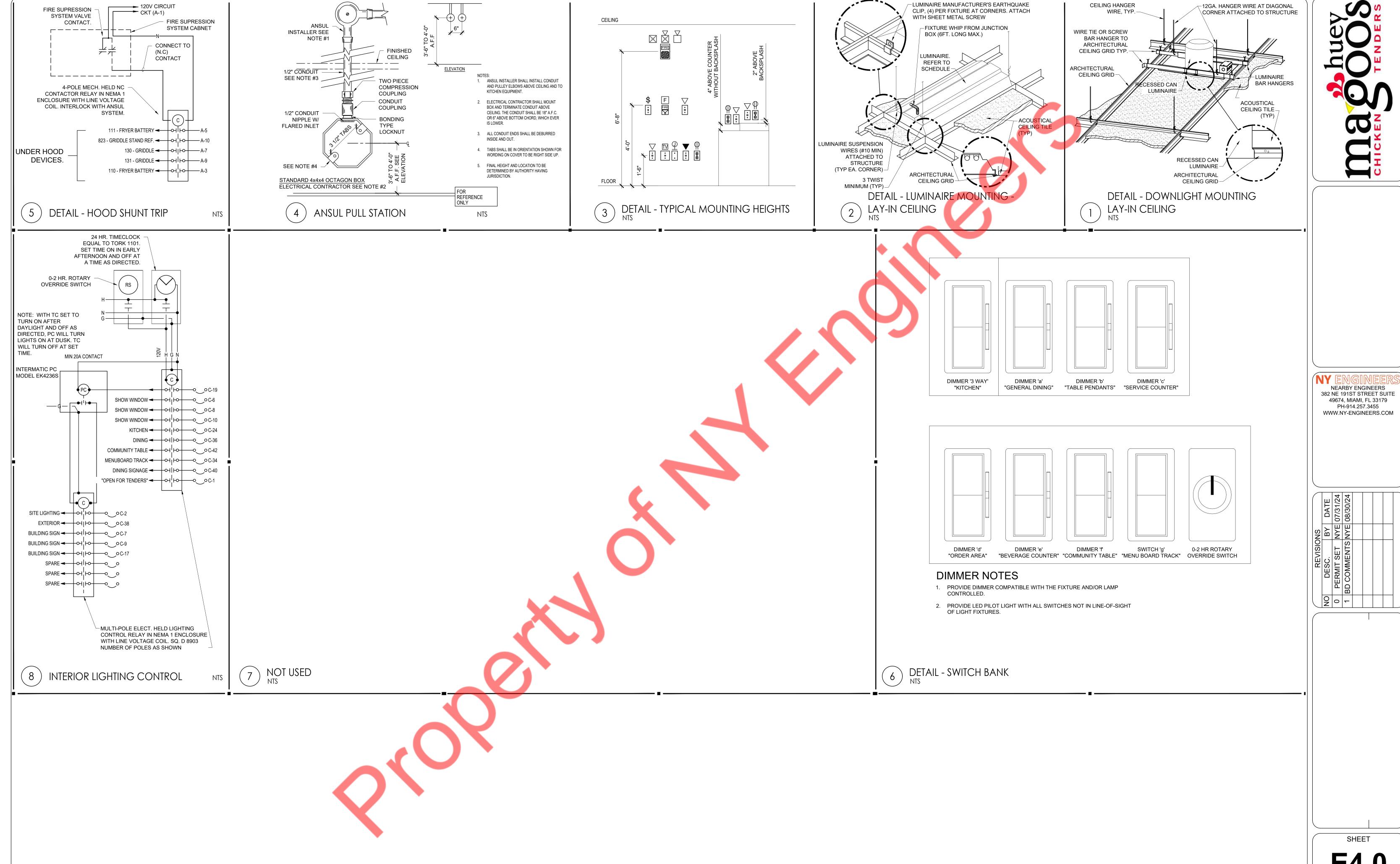
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ELECTRICAL PLAN - LOW VOLTAGE PLAN
NORTH



E4.0

FILE#: JDS DATE: 05/29/24 PM: NYE

	PANEL:	Α	(NEW)	Sections	:								MOUNTING:	RECESSED)	
	208Y/120	VOLTS,		3	PHASE	4	WIRE						PANEL LOCATION:	INTERIOR		
	МСВ	200A		BUS:	225A					INTERRUPTING RATING:	V.I.F.		FED FROM:	DISCONN	ECT SWIT	СН
PANEL	СКТ	TRIP	DESCRIPTION OF LOAD	LOAD	LOAD	MINIMUM BRANCH	PEF	R PHASE (K	VA)	MINIMUM BRANCH	LOAD	LOAD	DESCRIPTION OF LOAD	TRIP	СКТ	PANEL
NOTES	NO.	AMPS	DESCRIPTION OF LOAD	TYPE	(KVA)	CIRCUIT	Α	В	С	CIRCUIT	(KVA)	TYPE	DESCRIPTION OF EGAD	AMPS	NO.	NOTES
3	1	20	_100_HOOD LIGHTING & CONTROLS	L	1.51	2#12, #12G, 3/4"C	2.97			2#12 #12C 2/4"C	1.46	K	141 FRIED FOOD STATION	20/2P	2	1
7	3	20	_110_FRYER BATTERY	K	0.70	2#12, #12G, 3/4"C		2.16		2#12, #12G, 3/4"C	1.46	K	_141_FRIED FOOD STATION	20/2P	4	1
7	5	20	_111_3 BANK FRYER BATTERY	K	0.70	2#12, #12G, 3/4"C			2.45	2#12, #12G, 3/4"C	1.75	K	_380_ICE MAKER AT ICE BIN	20	6	1
7	7	20	_130_GAS GRIDDLE	K	0.12	2#12, #12G, 3/4"C	1.87			2#12, #12G, 3/4"C	1.75	K	_381_ICE MAKER AT BEVERAGE DISPENSER	20	8	1
7	9	20	_131_GAS GRIDDLE	K	0.12	2#12, #12G, 3/4"C		0.35		2#12, #12G, 3/4"C	0.23	K	_823_REFRIGERATOR	20	10	7
1	11	20	_300_ICE BEVERAGE DISPENSER	K	0.43	2#12, #12G, 3/4"C			1.74	2#12, #12G, 3/4"C	1.31	K	_160_CONVECTION COKIE OVEN	20	12	1
1	13	30	_150_HOLDING CABINET	K	1.92	2#10, #10G, 3/4"C	3.40			2#12, #12G, 3/4"C	1.48	K	_870_THAWING COOLER - SINGLE DOOR	20	14	1
1	15	20	_170_CHEESE DISPENSER	K	0.20	2#12, #12G, 3/4"C		0.20					SPARE	20	16	
3	17	20	_101_HOOD MOUNTED TIMER	K	1.51	2#12, #12G, 3/4"C			2.09	2#12, #12G, 3/4"C	0.58	K	_852_REFRIGERATOR RH SWING	20	18	1
1	19	20	_310_TEA BREWER	K	1.68	2#12, #12G, 3/4"C	2.66			2#12, #12G, 3/4"C	0.98	K	_861_FREEZER	20	20	1
1	21	20/20	141 FRIED FOOD STATION	K	1.46	2#12 #126 2/4"6		3.18		2#12, #12G, 3/4"C	1.73	K	_815_PIZZA PREP TABLE	20	22	1
1	23	20/2P	_141_FRIED FOOD STATION	K	1.46	2#12, #12G, 3/4"C			3.18	2#12, #12G, 3/4"C	1.73	K	_816_SANDWICH REFRIGERATOR	20	24	1
1	25	20	_302_ICE COOLED DISPENSER	K	0.72	2#12, #12G, 3/4"C	1.38			2#12, #12G, 3/4"C	0.66	K	_331_BEVERAGE DISPENSER	20	26	1
	27			Н	5.76			7.44		2#12, #12G, 3/4"C	1.68	K	_310_TEA BREWER	20	28	1
2	29	60/3P	RTU-1	Н	5.76	3#6, #10G, 3/4"C			6.05	2#12, #12G, 3/4"C	0.29	K	_830_UNDERCOUNTER REFRIGERATOR	20	30	1
	31			Н	5.76		6.42			2#12, #12G, 3/4"C	0.66	K	_331_BEVERAGE DISPENSER	20	32	1
	33			М	0.31			5.84			5.52	K			34	
	35	20/3P	KEF-1	M	0.31	3#12, #12G, 3/4"C			5.84	3#6, #10G, 3/4"C	5.52	K	_410_CHAMPION DISH WASHER	60/3P	36	1
	37			M	0.31		5.84				5.52	K			38	
	39	20	SPARE					0.92		2#12, #12G, 3/4"C	0.92	K	_779_BAG IN BOX	20	40	
	41	20	SPARE						0.58	2#12, #12G, 3/4"C	0.58	K	_851_REFRIGERATOR LH SWING	20	42	1
							24.53	20.10	21.92							
			LOAD CLASSIFICATION		CONNECT	ED LOAD (KVA)	DEM	IAND	DEI	MAND LOAD (KVA)			PANEL TOTAL LOAD			
	LIGHTING		L			1.51	12	5%		1.89			PANEL IOTAL LOAD			
	RECEPTAC	LE	R			0.00	10	0%		0.00		TOTAL CONNECTED LOAD 66.55 KVA				
	HVAC/PLU	IMBING	Н			17.29	10	0%		17.29	TOTAL DEMAND LOAD 50.54 KVA					
	MOTOR		M			0.94	10	0%		0.94	TOTAL CONNECTED CURRENT 184.72 AMP					
	EQUIPME	NTS	E			0.00	10	0%		0.00	TOTAL DEMAND CURRENT 140.30 AMP					
	KITCHEN L	OAD	K			46.81	65	5%		30.42			SYSTEM VOLTAGE	120/	208V	

	PANEL:	В	(NEW)	Sections:									MOUNTING:	RECESSED	ĺ	
	208Y/120	VOLTS,		3	PHASE		4 WIRE						PANEL LOCATION:	INTERIOR		
	МСВ	200A		BUS:	225A					INTERRUPTING RATING:	V.I.F.		FED FROM:	DISCONN	ECT SWIT	СН
PANEL NOTES	CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PE	R PHASE (K	(VA)	MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.	PANEL
5	1	20	900 901 POS EQUIPMENT	R	1.08	2#12, #12G, 3/4"C	2.65				1.57	C			2	NOTES
5	3	20	_900_901_POS EQUIPMENT	R	1.08	2#12, #12G, 3/4"C	2.03	2.65		2#10, #10G, 3/4"C	1.57	C	800_WALK-IN FREEZER CONDENSER	30/2P	4	
5	5	20	_2003_TV AT MERCHANDISING WALL	R	0.54	2#12, #12G, 3/4"C		2.03	1.31		0.77	C			6	
	7	20	_962_DRIVE THRU PRESELL BOARD	0	1.50	2#12, #12G, 3/4"C	2.27		1.01	2#12, #12G, 3/4"C	0.77	C	_800_WALK-IN COOLER CONDENSER	20/2P	8	
	9	30	SPARE					0.24		2#12, #12G, 3/4"C	0.24	K	_200_SLICER FOOD ELECRIC	20	10	1
4	11	20	_450_WATER HEATER (IWH-1)	0	0.60	2#12, #12G, 3/4"C			1.30	2#12, #12G, 3/4"C	0.70	K	832 WORK TOP FREEZER	20	12	1
4	13	20		0	0.60	2#12, #12G, 3/4"C	1.68			2#12, #12G, 3/4"C	1.08	R		20	14	5
	15	20	_960_DRIVE THRU MENU BOARD	0	1.50	2#12, #12G, 3/4"C		2.22		2#12, #12G, 3/4"C	0.72	R	_906_KDS MONITOR (WALL MOUNT)	20	16	5
	17	20	_961_DRIVE THRU SPEAKER TOWER	0	1.50	2#12, #12G, 3/4"C			1.50				SPARE	20	18	
	19	20	RP-1	0	0.60	2#12, #12G, 3/4"C	1.72			2#12 #120 2/4"0	1.12	С	200 FREEZER EVARORATOR	20/2P	20	
5	21	20	_GS12_MENU BOARDS	R	0.50	2#12, #12G, 3/4"C		1.62		2#12, #12G, 3/4"C	1.12	С	800_FREEZER EVAPORATOR	20/27	22	
	23	20	_430_WATER FILTER	0	0.50	2#12, #12G, 3/4"C			0.68	2#12, #12G, 3/4"C	0.18	С	_800_COOLER EVAPORATOR	20	24	
	25	30	SPARE				1.50			2#12, #12G, 3/4"C	1.50	С	_800_WALK-IN HEATER/LTG	20	26	
1	27	20	_212_BREAD TABLE	K	1.14	2#12, #12G, 3/4"C		2.22		2#12, #12G, 3/4"C	1.08	R	_907_KDS MONITOR (CEILING MOUNT)	20	28	5
4	29	20	ALARM PANEL RECEPTACLE	R	0.18	2#12, #12G, 3/4"C			1.64	2#12, #12G, 3/4"C	1.46	K	141_FRIED FOOD STATION	20/2P	30	1
	31	20	TELEPHONE RECEPTACLE	R	0.18	2#12, #12G, 3/4"C	1.64			2π12, π120, 5/4 C	1.46	K	_141_11(160100031A1101)	20/21	32	
	33	20	TOILET RECEPTACLES	R	0.36	2#12, #12G, 3/4"C		0.36					SPARE	20	34	
	35			М	0.31				9.92		9.61	Н			36	
	37	20/3P	KEF-2	M	0.31	3#12, #12G, 3/4"C	9.92			3#4, #8G, 1"C	9.61	Н	MUA-1	80/3P	38	2
	39			M	0.31			9.92			9.61	Н			40	
	41	20	SPARE						0.00				SPARE	20	42	
							21.38	19.23	16.34							
			LOAD CLASSIFICATION		CONNECT	ED LOAD (KVA)		/IAND	DEI	MAND LOAD (KVA)			PANEL TOTAL LOAD			
	LIGHTING		L			0.00		25%		0.00						
	RECEPTAC		R			6.80		00%		6.80			TOTAL CONNECTED LOAD			
	HVAC/PLU		Н			28.82		00%		28.82			TOTAL DEMAND LOAD	55.21		
	REFRIGER	NON	C			8.61		00%		8.61			TOTAL CONNECTED CURRENT	158.09		
	MOTOR	040	M			0.94		00%		0.94			TOTAL DEMAND CURRENT	153.24	AMP	
	KITCHEN L	UAD	K			4.99	6	5%	1	3.24						

	OTHER		0			6.80	10	JU70		6.80						
			(1)													
	PANEL:	С	(NEW)	Sections:	:								MOUNTING:	RECESSEL	?	
	208Y/120	VOLTS,		3	PHASE	4	4 WIRE						PANEL LOCATION:	INTERIOR		
	МСВ	200A		BUS:	225A					INTERRUPTING RATING:	V.I.F.		FED FROM:	DISCONN	IECT SWIT	СН
PANEL	СКТ	TRIP		LOAD	LOAD	MINIMUM BRANCH	PEI	R PHASE (K	(VA)	MINIMUM BRANCH	LOAD	LOAD		TRIP	СКТ	PANEL
NOTES	NO.	AMPS	DESCRIPTION OF LOAD	TYPE	(KVA)	CIRCUIT	Α	В	C	CIRCUIT	(KVA)	TYPE	DESCRIPTION OF LOAD	AMPS	NO.	NOTES
6	1	20	"OPEN FOR TENDERS" SIGN RECEPTACLE	L	1.20	2#12, #12G, 3/4"C	3.00			2#12, #12G, 3/4"C	1.80	L	EXISTING SITE LIGHTING	20	2 🗸	6
	3	20	"G" SIGN RECEPTACLE	Ĺ	1.20	2#12, #12G, 3/4"C		2.40		2#12, #12G, 3/4"C	1.20	L	DIRECTIONAL SIGNAGE	20	4	
	5	20	"TO GO" SIGN RECEPTACLE	L	1.20	2#12, #12G, 3/4"C			3.00	2#12, #12G, 3/4"C	1.80	L	SHOW WINDOW RECEPTACLE	20	6	6
6	7	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"C	3.00			2#12, #12G, 3/4"C	1.80	L	SHOW WINDOW RECEPTACLE	20	8	6
6	9	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"C		3.00		2#12, #12G, 3/4"C	1.80	L	SHOW WINDOW RECEPTACLE	20	10	6
	11	20	CONVENIENCE RECEPTACLES	R	0.90	2#12, #12G, 3/4"C			2.10	2#12, #12G, 3/4"C	1.20	L.	BUILDING SIGNAGE	20	12	6
	13	20	CONVENIENCE RECEPTACLES	R	0.90	2#12, #12G, 3/4"C	2.10			2#12, #12G, 3/4"C	1.20	L	DIRECTIONAL SIGNAGE	20	14	6
	15	20	CONVENIENCE RECEPTACLES	R	0.36	2#12, #12G, 3/4"C		1.56		2#12, #12G, 3/4"C	1.20	L.	DIRECTIONAL SIGNAGE	20	16	6
6	17	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"C			2.40	2#12, #12G, 3/4"C	1.20	L	DIRECTIONAL SIGNAGE	20	18	6
	19	20	TIME CLOCK - LIGHTING CONTROLS	R	0.50	2#12, #12G, 3/4"C	1.70			2#12, #12G, 3/4"C	1.20	L	DIRECTIONAL SIGNAGE	20	20	6
	21	20	GENERAL RECEPTACLES	R	0.36	2#12, #12G, 3/4"C		1.56		2#12, #12G, 3/4"C	1.20	L	BUILDING SIGNAGE	20	22	6
	23	20	DRIVE THRU WINDOW	R	1.80	2#12, #12G, 3/4"C			3.00	2#12, #12G, 3/4"C	1.20	L	COOKING AREA LIGHTING	20	24	
	25	20	COMMUNITY TABLE RECEPTACLES	R	0.72	2#12, #12G, 3/4"C	1.92			2#12, #12G, 3/4"C	1.20	L	BUILDING SIGNAGE	20	26	6
	27	20	DRIVE THRU WINDOW	R	1.80	2#12, #12G, 3/4"C		3.60		2#12, #12G, 3/4"C	1.80	_	WALK-IN FREEZER/COOLER LIGHTING	20	28	
	29	20	ROOF TOP RECEPTACLES	R	0.36	2#12, #12G, 3/4"C			1.16	2#12, #12G, 3/4"C	0.80	L	MEN'S & WOMEN'S LIGHTING + EF-1 + EF-2	20	30	
6	31	20	BUILDING SIGNAGE	L	1.20	2#12, #12G, 3/4"C	2.10			2#12, #12G, 3/4"C	0.90	L.	DRIVE THRU LIGHTING	20	32	
	33	20	EXTERIOR COVE LIGHTING	L	1.20	2#12, #12G, 3/4"C		2.70		2#12, #12G, 3/4 <mark>"C</mark>	1.50	L	ORDER AREA LIGHTING	20	34	6
	35	20	DIRECTIONAL SIGNAGE	Ĺ	1.80	2#12, #12G, 3/4"C			3.00	2#12, #12G, 3/4"C	1.20	1	DINING AREA LIGHTING	20	36	
	37	20	EXISTING PYLON SIGNAGE	L,	1.80	2#12, #12G, 3/4"C	3.00			2#12, #12G, 3/4"C	1.20		EXTERIOR LIGHTING	20	38	6
	39	20	SPARE					1.20		2#12, #12G, 3/4"C	1.20	Ĺ	EXTERIOR LIGHTING	20	40	6
	41	20	SPARE						0.50	2#12, #12G, 3/4"C	0.50	L	COMMUNITY TABLE LIGHTING	20	42	6
							16.82	16.02	15.16							
			LOAD CLASSIFICATION		CONNECT	ED LOAD (KVA)		IAND	DEI	MAND LOAD (KVA)			PANEL TOTAL LOAD			
	LIGHTING		L			40.30		25%		50.38			TANEL TOTAL LOAD			
	RECEPTAC		R			7.70		00%		7.70			TOTAL CONNECTED LOAD		KVA	
	HVAC/PLU	JMBING	Н			0.00		00%		0.00			TOTAL DEMAND LOAD		+	
	MOTOR		M			0.00		00%		0.00			TOTAL CONNECTED CURRENT	133.24		
	EQUIPME		E			0.00		00%		0.00			TOTAL DEMAND CURRENT	161.20	AMP	<u> </u>
	KITCHEN I	.OAD	K			0.00	6.	5%		0.00						

			EQL	JIPMENT :	SCHEE	DULE						
ITEM NO.	QUANTITY	EQUIPMENT DESCRIPTION	SUPPLIED BY	INSTALLED BY	VOLTS	PHASE	AMPS	DIRECT	PLUG	NEMA	ELECTRICAL AFF	ELECTRICAL REMARKS
100	1	HOOD	KEC	GC	120 V	1	12.5 A	Х			VERIFY	
101	1	HOOD MOUNTED TIMER	KEC	GC	120 V	1	0.1 A		Х	5-15P	86"	
110	1	FRYER BATTERY	KEC	GC	115 V	1	6.1 A		Х	5-15P	18"	
111	1	3 BANK FRYER BATTERY	KEC	GC	115 V	1	6.1 A		Х	5-15P	24"	
130	1	GAS GRIDDLE, COUNTERTOP W/ THERMOSTATIC CONTROLS	KEC	GC	120 V	1	1.0 A		Х	5-15P	24"	
131	1	GAS GRIDDLE, COUNTERTOP W/ THERMOSTATIC CONTROLS	KEC	GC	120 V	1	1.0 A		Х	5-15P	24"	
141	3	SMALLER CRISP N HOLD FRIED FOOD STATION	KEC	GC	208 V	1	14.0 A		Х			
150	1	HOLDING CABINET - PROGRAMMABLE	KEC	GC	120 V	1	16.0 A		Х	5-20P	57"	
160	1	CONVECTION COOKIE OVEN	OSV	OSV	120 V	1	10.9 A		Х	5-15P	42"	
170	1	CHEESE DISPENSER	OSV	OSV	120 V	1	1.7 A		Х		42"	
200	1	SLICER FOOD	KEC	GC	120 V	1	2.0 A		Х	5-15P	42"	
212	1	BREAD TABLE	KEC	GC	120 V	1	9.5 A		Х	5-15P	24"	
300	1	ICE BEVERAGE DISPENSER - SENSATION	OSV	OSV/GC	115 V	1	3.6 A		Х	5-20P	42"	
302	1	ICE COOLED DROP IN DISPENSER - CONFIRM IF CLIENT WANTS 8 OR 10	KEC	GC	115 V	1	12.0 A		Х		42"	
310	2	TEA BREWER	OSV	OSV	120 V	1	14.0 A		Х	5-20P	42"	
331	2	DISPENSER, BEVERAGE/NON-CARBONATED - DOUBLE	KEC	GC	115 V	1_4	5.5 A		Х	5-15P	42"	
380	1	CUBELET ICEMAKER AIR COOLED AT ICE BIN	KEC	GC	115 V	1	15.2 A		Х	5-15P	18"	
381	1	CUBELET ICEMAKER AT BEVERAGE DISPENSER	KEC	GC	115 V	1	15.2 A		Х	5-15P	72"	
410	1	CHAMPION DISH WASHER	KEC	GC	208V	3	60.0A	TBD	TBD	TBD	18"	COORDINATE WITH MANUFACTURER
430	1	WATER FILTERATION	GC	GC	115 V	1	TBD	TBD	TBD	TBD	VERIFY	COORDINATE WITH PLUMBING
450	2	WATER HEATER	GC	GC	115 V	1	5.0 A	Х			VERIFY	
800	2	OUTDOOR WALK-IN COOLER/FREEZER COMBO W/ FLOOR THROUGHOUT	KEC	KEC	115 V	1	12.5 A	х			VERIFY	LIGHT & HEAT TRACE
815	1	PIZZA PREP TABLE (SALAD COOLER)	KEC	GC	115 V	1	15.0 A		Х	5-15P	18"	
816	1	MEGA TOP SANDWICH REFRIGERATOR (DIP COOLER)	KEC	GC	115 V	1	15.0 A		Х	5-15P	18"	
823	1	REFRIGERATOR, LOW PROFILE EQUIPMENT STAND - FLAT TOP	KEC	GC	115 V	1	2.0 A		Х	5-15P	18"	
830	1	UNDERCOUNTER REFRIGERATOR	KEC	GC	115 V	1	2.5 A		Х	5-15P	24"	
832	1	WORK TOP FREEZER	KEC	GC	115 V	1	5.8 A		Х	5-15P	18"	
851	1	REFRIGERATOR LH SWING GLASS FRONT TALL	KEC	GC	115 V	1	5.0 A		Х	5-15P	24"	
852	1	REFRIGERATOR RH SWING GLASS FRONT TALL	KEC	GC	115 V	1	5.0 A		Х	5-15P	24"	
861	1	FREEZER	KEC	GC	115 V	1	8.5 A		Х	5-15P	24"	
870	1	THAWING COOLER - SINGLE DOOR	KEC	GC	115 V	1	12.3 A		Х	5-20P	VERIFY	
900	6	POS EQUIPMENT	OSV	OSV	115 V	1	2.0 A		Х	5-15P	24"	PROVIDED BY OWNER
901	6	POS PRINTERS	OSV	OSV	115 V	1	2.0 A		Х	5-15P	24"	PROVIDED BY OWNER
2003	1	TV AT MERCHANDISING WALL	KEC	GC	115 V	1	3.0 A		Х	5-15P	96"	PROVIDED BY OWNER
906	2	KDS MONITORS AND SWIVEL MOUNTS W/ BUMP BAR (TRIPP LITE MOUNT)	OSV	GC	115 V	1	2.0 A		Х	5-15P	84"	PROVIDED BY OWNER - ENSURE DATA IS PROVIDED
907	6	KDS MONITOR AND CEILING MOUNT W/ BUMP BAR	OSV	GC	115 V	1	2.0 A		Х	5-15P	CEILING	PROVIDED BY OWNER - ENSURE DATA IS PROVIDED
960	1	DRIVE THRU MENU BOARD	OSV	GC	115 V	1	12.0 A				N/A	
961	1	DRIVE THRU SPEAKER TOWER	OSV	GC	115 V	1 1	12.0 A				N/A	
962	1	DRIVE THRU PRESELL BOARD	OSV	GC	115 V	1	12.0 A				N/A	
968	2	VHD FOR SINGLE DT - RIGHT ARM	OSV	GC	-	-	-				N/A	
970	3	DETECTOR LOOP TO BE PLACED AT ORDER POINT AND ALL DT WINDW	OSV	GC	-	-	-				N/A	
GS12	3	MENU BOARDS - CONFIRM IF THE OWNER WANTS DIGITAL OR STATIC. DIGITAL FROM EVERBRITE - STATIC FROM GRAPHICS SERVICES	OSV	GC	115 V	1	10.0 A				VERIFY	
DD 4	4	DE OLDOUR ATION DUMP	00	00							VEDIEV	OOODDINATE WITH DILIMBING

	LIGHTING FIXTURE SCHEDULE													
	FOR NATIONAL AG	CCOUNT QUOTATION, PLEASE CALL MIKE KRE	EINER AT	HERMITAGE LIGHTING NATIO	NAL ACCOL	JNTS AT 224-25	50-1561 OR	EMAIL MKREINER@GOHERMITAGE.COM. SUBSTITUTIONS NOT ALLOWED.						
MARK	MANUFACTURER	CATALOG NUMBER		ELECTRIC	CAL DATA			DESCRIPTION	MOUNTING					
IVIARK	MANUFACTURER	CATALOG NUMBER	QTY.	TYPE	VOLTS	DIMMING	WATTS	DESCRIPTION	MOUNTING					
L1	SHADES OF LIGHT	PE14058BS	18	BULBRIGHT #774007	120	YES	6.5	INDUSTRIAL CAGE PENDANT, MOUNT 11' FROM THE BOTTOM OF SHADE	SURFACE					
L2	SHADES OF LIGHT	CH18104-ST	1	BULBRIGHT #776801	120	YES	300	RUSTIC INDUSTRIAL LINEAR CHANDELIER, MOUNT 6'-6" FROM BOTTOM OF BULBS	SURFACE					
L3	SHADES OF LIGHT	PE15253	3	BULBRIGHT #776693	120	YES	40	DECORATIVE PENDANT, MOUNT 5'-6" FROM THE BOTTOM OF SHADE	SURFACE					
L4	NORA LIGHTING	NYLM3C30XBBLE4	4	LED	120	NO	30	3" INTEGRAL LED CYLINDER, BLACK PAINT FINISH	SURFACE					
	NORA LIGHTING	NTE-875-L935X18B/J	5	LED	120	YES	18	TRACK HEAD, BLACK, 1100 LUMEN, 18W	SURFACE					
	CONTECH	LT-4-B	N/A				•	4' TRACK SECTION, BLACK, SINGLE CIRCUIT	SURFACE					
L5	CONTECH	LA-10-B		N	/A			LIVE END FEED, BLACK	SURFACE					
	CONTECH	LA-2-B		N	/A			TRACK SECTION IN-LINE CONNECTOR, BLACK	SURFACE					
L6	CREE LIGHTING	CR6T-1100L-27K-12-E26GU24 TRIM: CR6T-TRMSTAN-1 HOUSING: RC6-GU24	28	LED	120	YES	11	6" 1100 LUMEN DOWNLIGHT WITH SATIN NICKEL TRIM RING AND HOUSING	RECESSED					
L7	CRAFT MADE	38002-ESP	2	LED	120	NO	60	MODINA 2-LIGHT VANITY FIXTURE WITH LAMPS	SURFACE					
L8	LITHONIA LIGHTING	CPX 2X4 ALO8 SWW7 M2	11	LED	120	YES	48.53	2X4 FLAT PANEL TROFFER, 5000 LUMENS, 35K	RECESSED					
L8E	LITHONIA LIGHTING	CPX 2X4 ALO8 SWW7 M2/CL-ILB-CP10	3	LED	120	YES	48.53	SAME AS ABOVE WITH FIELD-INSTALLED BATTERY BACKUP	RECESSED					
L9	LITHONIA LIGHTING	CPX 2X2 ALO7 SWW7 M4	9	LED	120	YES	35.8	2X2 FLAT PANEL TROFFER, 5000 LUMENS, 35K	RECESSED					
EX1	HERMITAGE NATIONAL ACCOUNT	CR-7082	2	LED	120	NO	5.2	COMBO BATTERY BACKUP EMERGENCY LIGHT & EXIT	SURFACE					
EX2	HERMITAGE NATIONAL ACCOUNT	CR-7037	2	LED	120	NO	1.0	EXIT SIGN	SURFACE					
EM1	HERMITAGE NATIONAL ACCOUNT	CR-7036	4	LED	120	NO	1.8	TWO HEADED BATTERY BACKUP EMERGENCY LIGHT	SURFACE					
ETX4	LITHONIA LIGHTING	AFO DB MVOLT N SD CW	3	LED	120	NO	2.5	EXTERIOR EGRESS LIGHT, DARK BRONZE	SURFACE					
EXT1	SHADES OF LIGHT	OL19134BK	2	BULBRIGHT #776801	120	NO	5	RUGGED RIVER OUTDOOR SCONCE, LARGE, BLACK FINISH WITH LED LAMP	SURFACE					
EXT2	ELITE	CR6T-825L-40K-12-E26GU24 TRIM: CR6T-TRMBKBB-1 HOUSING: RC6-GU24	12	LED	120	NO	11	6" 825 LUMEN DOWNLIGHT WITH HOUSING	SURFACE					
EXT4	SHADES OF LIGHT	OL18089	5	BULBRIGHT #776801	120	NO	5	SLEEK MINIMALIST LED WALL SCONCE WITH LED LAMP	SURFACE					
X1	SAYLITE	LT8ABP48L18W2250LXXK	37'FT	LED	120	YES	18	LED COVE LIGHT	SURFACE					

115 V

- A. INSTALLATION OF LIGHT FIXTURES SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE CODE REQUIREMENTS.
- B. VERIFY THE EXACT MOUNTING HEIGHT AND FINISH OF ALL LIGHTING FIXTURES WITH ARCHITECT PRIOR TO PLACING ORDER OR COMMENCING ROUGH-IN.
- WIRING CONNECTIONS TO EXTERIOR WALL MOUNTED FIXTURES SHALL BE WEATHERTIGHT. USE WEATHERPROOF JUNCTION BOXES, FITTINGS, COVERPLATES, ETC. AS REQUIRED TO PREVENT ENTRY OF WATER INTO WIRING BOXES.
- D. ALL POLES SHALL INCLUDE AN INTERNALLY MOUNTED, FACTORY INSTALLED PENDULUM VIBRATION DAMPENER, WITH FLUSH STAINLESS STEEL SOCKET HEAD FASTENERS FINISHED TO MATCH POLE. (EXTERIOR ONLY)

PANELBOARD NOTES

1 RE-CIRCULATION PUMP

- 1. PROVIDE GFI RATED BREAKER(S) FOR CIRCUIT
- 2. PROVIDE HACR RATED BREAKER(S) FOR CIRCUIT
- 3. PROVIDE SHUNT TRIP BREAKER(S) FOR CIRCUIT
- 4. PROVIDE LOCKABLE BREAKER(S) FOR CIRCUIT
- 6. VIA AUTOMATIC LIGHTING CONTROLS SEE DETAIL 8/E4.0
- 7. VIA SHUNT TRIP CONTACTOR SEE DETAIL 5/E4.0

NOTE: ALL EQUIPMENT LOCATED FOR METERING OR OTHER NEEDS EXTERIOR TO THE BUILDING OR WITHIN THE MAIN ELECTRICAL ROOM, SHALL BE INSTALLED IN AN ORDERLY MANNER, STACKED AND KEPT TIGHT TO MINIMIZE REQUIRED WALL SPACE. ALL EQUIPMENT INSTALLED IN NON-ORGANIZED MANNER OR LAYOUT IS UN-ACCEPTABLE TO THE OWNER SHALL BE SUBJECT TO REMOVAL AND RE-INSTALLATION.

NOTE: BREAKERS SERVING HVAC CIRCUITS SHALL BE HACR RATED.

NOTE: CONTRACTOR TO PROVIDE TYPED PANEL SCHEDULES FOR ALL PANELS SHOWING ALL CIRCUIT LABELS. PROVIDE ENGRAVED NAME PLATES FOR ALL PANELS AS WELL AS

ENGRAVED NAME PLATES WITH SUITE NUMBER AND TENANT NAME ON METER SOCKET/DISCONNECT.

5. PROVIDE ISOLATED GROUND CONDUCTOR(S) FOR CIRCUIT NOTE: PER NEC 210.4(B) ALL MULTI WIRE BRANCH CIRCUITS ARE TO BE PROVIDED WITH A DEVICE THAT WILL DISCONNECT POWER TO ALL UNGROUNDED CONDUCTORS SIMULTANEOUSLY AT THE POINT OF ORIGIN.

NOTE: E.C. TO PROVIDE NEW CIRCUIT BREAKERS IN PLACE ON EXISTING CIRCUIT BREAKERS WHEREVER NECESSARY TO MATCH THE PANEL SCHEDULE & PROJECT REQUIREMENTS. BASE BID ACCORDINGLY.

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

COORDINATE WITH PLUMBING

	DATE	NYE 07/31/24	08/30/24		
NS	ВУ	NYE	NYE		
REVISIONS	DESC.	PERMIT SET	BD COMMENTS NYE 08/30/24		
	9 N	0	-		

FILE#: JDS DATE: 05/29/24 PM: NYE

Project Information					
Energy Code:	2018 IECC				
Project Title:	HUEY MAGOOS - SPRINGFIELD				
Project Type:	New Construction				
Construction Site:	Owner/Agent:	Designer/C	ontractor:		
		NY ENGIN	NEERS		
		382 NE 1	.91ST ST.		
Additional Efficiency P	ackage(s)	SUITE 49 MIAMI, FI			
Credits: 1.0 Required 1.0 Pr Enhanced Interior Lighting (·				
Allowed Interior Lightin					
	Α	В	С		D
	Area Category	Floor Area	Allowed	Allo	wed Watts
		(ft2)	Watts / ft	2 (B X C)
	_	2640 To	0.79 tal Allowed W	/atts =	2086
Proposed Interior Ligh	ting Power A escription / Lamp / Wattage Per Lamp / Ballast	2640	0.79		2086
Proposed Interior Ligh Fixture ID : De	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To	0.79 tal Allowed W C # of	/atts = D Fixture	2086 2086 E
Proposed Interior Ligh Fixture ID : De	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To	0.79 tal Allowed W C # of	/atts = D Fixture	2086 2086 E
Proposed Interior Ligh Fixture ID : De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures	/atts = D Fixture Watt. 6 300	2086 2086 E (C X D)
Proposed Interior Ligh Fixture ID: De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3	/atts = D Fixture Watt. 6 300 40	2086 2086 E (C X D)
Proposed Interior Ligh Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3 4	/atts = D Fixture Watt. 6 300 40 30	2086 2086 E (C X D) 117 300 120 120
Proposed Interior Ligh Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5	/atts = D Fixture Watt. 6 300 40 30 18	2086 2086 E (C X D) 117 300 120 120 90
Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28	/atts = D Fixture Watt. 6 300 40 30 18 11	2086 2086 E (C X D) 117 300 120 120 90 308
Proposed Interior Ligh Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5	/atts = D Fixture Watt. 6 300 40 30 18	2086 2086 E (C X D) 117 300 120 120 90
Proposed Interior Ligh Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2	/atts = D Fixture Watt. 6 300 40 30 18 11 60	2086 2086 E (C X D) 117 300 120 120 90 308 120
Fixture ID: De I-Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other: L8: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2 11	/atts = D Fixture Watt. 6 300 40 30 18 11 60 49 36	2086 2086 E (C X D) 117 300 120 120 90 308 120 534 322
Proposed Interior Ligh Fixture ID: De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other: L8: Other: L9: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2 11 9	/atts = D Fixture Watt. 6 300 40 30 18 11 60 49 36	2086 2086 E (C X D) 117 300 120 120 90 308 120 534 322
Proposed Interior Ligh Fixture ID: De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other: L8: Other: L9: Other:	A escription / Lamp / Wattage Per Lamp / Ballast	2640 To: B Lamps/ Fixture 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2 11 9	/atts = D Fixture Watt. 6 300 40 30 18 11 60 49 36	2086 2086 E (C X D) 117 300 120 120 90 308 120 534 322
Proposed Interior Ligh Fixture ID: De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other: L8: Other: L9: Other: Nterior Lighting PASS	A escription / Lamp / Wattage Per Lamp / Ballast and	2640 To: B Lamps/ Fixture 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2 11 9	/atts = D Fixture Watt. 6 300 40 30 18 11 60 49 36	2086 2086 E (C X D) 117 300 120 120 90 308 120 534 322
Proposed Interior Ligh Fixture ID : De -Dining: Cafeteria/Fast Fo L1: Other: L2: Other: L3: Other: L4: Other: L5: Other: L6: Other: L7: Other: L8: Other: L9: Other: nterior Lighting PASS compliance Statement: Ti	A escription / Lamp / Wattage Per Lamp / Ballast and	2640 Total B Lamps/Fixture 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.79 tal Allowed W C # of Fixtures 18 1 3 4 5 28 2 11 9 Total Propose	/atts = D Fixture Watt. 6 300 40 30 18 11 60 49 36 sed Watts =	2086 2086 E (C X D) 117 300 120 120 90 308 120 534 322 2031
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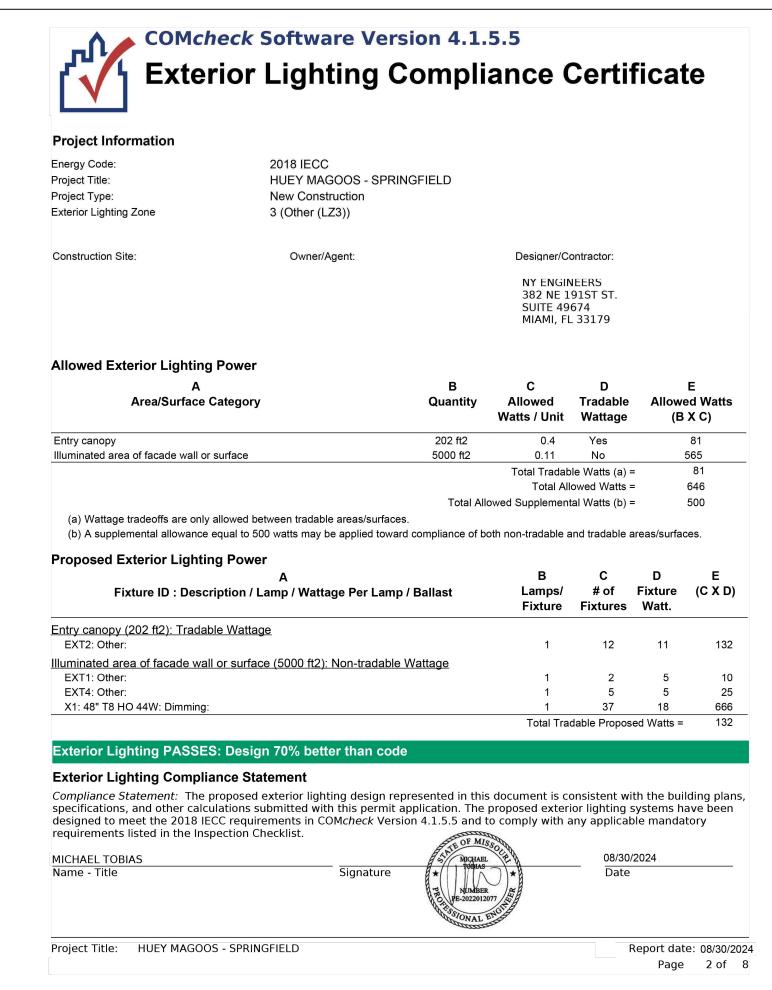
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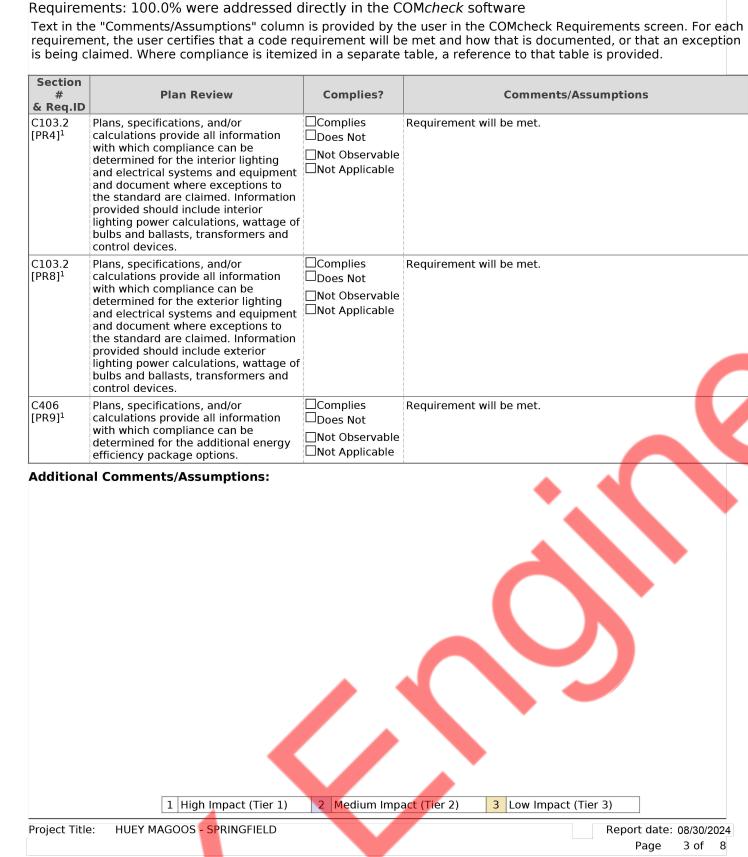
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Project Title: HUEY MAGOOS - SPRINGFIELD

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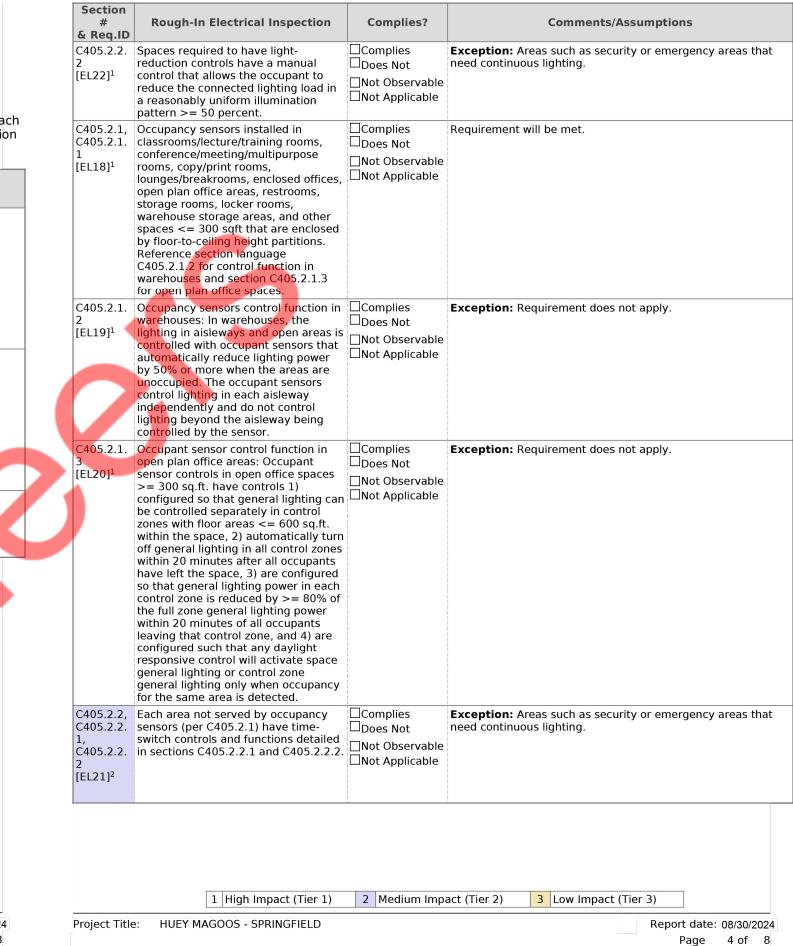


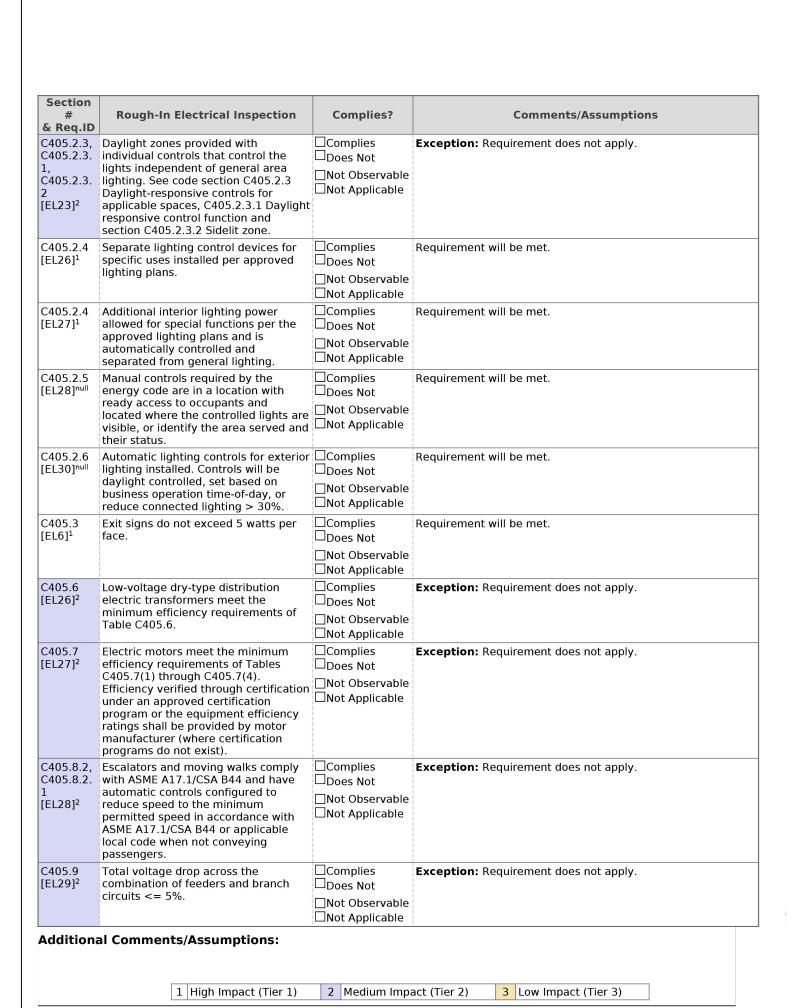


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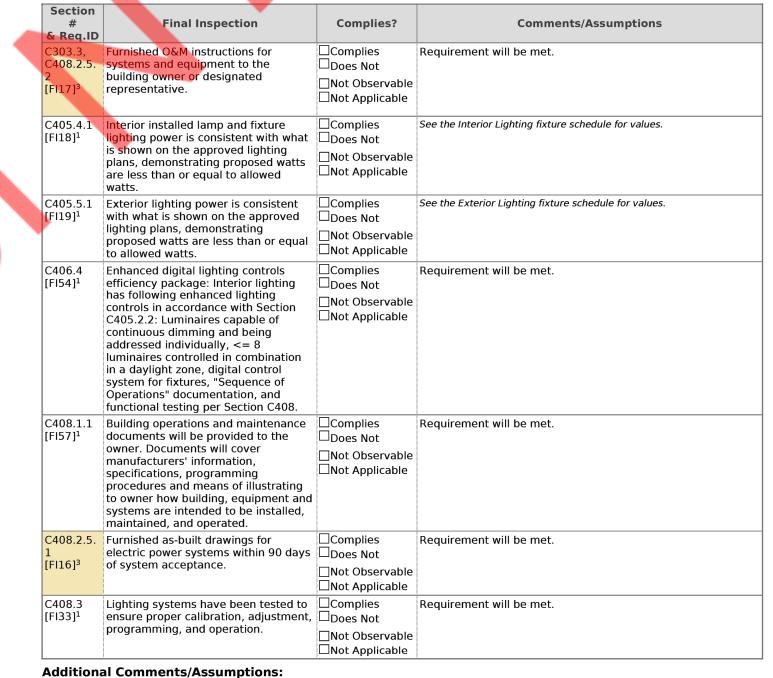
Inspection Checklist

Energy Code: 2018 IECC









1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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HICKEN STENDERS

NY ENGINEERS

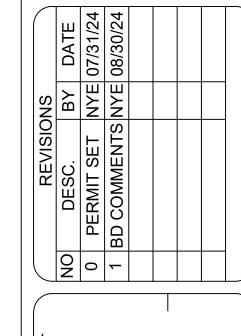
NEARBY ENGINEERS

382 NE 191ST STREET SUITE

49674, MIAMI, FL 33179

PH-914.257.3455

WWW.NY-ENGINEERS.COM



SHEET

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FILE#: JDS

DATE: 05/29/24

PM: NYE

CM: NYE

DIVISION 26 - ELECTRICAL SPECIFICATIONS

- GENERAL INFORMATION PROVIDE ALL SUPPLIES, MATERIAL, LABOR, EQUIPMENT, AND APPURTENANCES
- NECESSARY FOR COMPLETE INSTALLATION AND FULL OPERATION OF ALL ELECTRICAL AND ELECTRICAL RELATED WORK, INDICATED HEREINAFTER ON DRAWINGS AND SPECIFICATIONS, FOR A SAFE AND FULLY OPERATIONAL SYSTEM. THE INSTALLED SYSTEM SHALL BE COMPLETE IN EVERY WAY AND FUNCTIONING ACCORDING TO THE DESIGN INTENT, WHETHER OR NOT ALL SUCH MATERIALS AND APPURTENANCES ARE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE
- **SPECIFICATIONS** PERFORM ALL OPERATIONS INCLUDING EXCAVATION & BACKFILLING, SHORING, CUTTING, CHANNELING & CHASING, DE-WATERING, ETC. NECESSARY FOR INSTALLATION OF FULLY OPERATIONAL SYSTEM, WHETHER OR NOT SHOWN ON THE
- DRAWINGS. DEFINITION OF TERMS 1.3.
- FURNISH SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS. INSTALL - OPERATIONS AT THE PROJECT SITE INCLUDING THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING,

APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING,

- CLEANING, AND SIMILAR OPERATIONS. 1.3.3. PROVIDE - FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED
- U.N.O. UNLESS NOTED OTHERWISE.
- M.S.D.S. MATERIAL SAFETY DATA SHEET
- CONTRACTOR APPEARANCE ON DRAWINGS OR IN SPECIFICATIONS FOR ELECTRICAL WORK SHALL REFER TO ELECTRICAL SUB-CONTRACTOR.
- RELOCATE DISCONNECT ELECTRICAL FEEDER, MAKE SAFE (INCLUDING LOCK OUT/TAG OUT), STORE AND PROTECT DEVICE, REINSTALL, REWORK AND
- EXTEND CONDUIT & WIRE TO NEW LOCATION, RE-ENERGIZE AND TEST. EQUAL AND EQUIVALENT - TO MEAN OF THE SAME QUALITY, SIZE, NUMBER, VALUE, DEGREE, INTENSITY AND THE ITEMS ARE SIMILAR IN ALL RESPECTS.

THE FINAL DECISION OF ACCEPTANCE OF THESE ITEMS WILL BE MADE BY

- IT SHALL BE UNDERSTOOD THAT FOR ANY SPECIFIED ITEM ON THE
- DRAWINGS AND/OR IN THE SPECIFICATION, THIS TERM SHALL APPLY. ALL WORK SHALL BE PERFORMED UNDER THE PERSONAL SUPERVISION OF A PROJECT SUPERINTENDENT ON-SITE. MAINTAIN A COMPLETE SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES DURING THE PROJECT.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SUITABLE FOR THE CONDITIONS AND DUTIES IMPOSED ON THEM AFTER INSTALLATION. ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BEAR THE SEAL OF
- UNDERWRITERS LABORATORIES INC. (UL), OR A SIMILAR CREDIBLE TESTING AGENCY, LABEL WHERE REGULARLY SUPPLIED.
- CERTAIN MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT.
- WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, CONTRACTOR SHALL STATE IN BID WHICH MAKE THEY PROPOSE TO FURNISH. SHOP DRAWINGS SHALL BE SUBMITTED ON MATERIAL AND EQUIPMENT TO BE FURNISHED BY CONTRACTOR FOR ENGINEERS APPROVAL
- THIS APPROVAL TO BE OBTAINED PRIOR TO SHIPMENT OF EQUIPMENT. COORDINATE CONNECTION OF SECONDARY ELECTRICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH
- CONTRACTOR SHALL VERIFY TRANSFORMER LOCATION AND METERING SCHEME WITH LOCAL UTILITY CO.
- ALL MATERIALS SHALL BE FABRICATED AND INSTALLED IN A NEAT AND WORKMANLIKE 3.1.4.
- THE OWNER AND ENGINEER SHALL DETERMINE WHETHER WORKMANSHIP IS ACCEPTABLE. NO ALLOWANCES WILL BE MADE FOR REWORK OR DELAY DUE TO 3.1.5. POOR WORKMANSHIP, COORDINATION DIFFICULTIES, OR INTERFERENCES BETWEEN INVOLVED TRADES.
- PERFORM ALL WORK NECESSARY TO PREPARE THE STRUCTURE FOR THE INSTALLATION OF THE WORK. ALL HOLES, OPENINGS AND DAMAGED MATERIALS CREATED DURING CONSTRUCTION SHALL BE REPAIRED AND FINISHED BY EXPERIENCED WORKMEN.
- RELATED WORK SPECIFIED ELSEWHERE:
- ALL DIVISION 1 REQUIREMENT, AND ALL TERMS AND CONDITIONS OF CONTRACT. REFER TO MECHANICAL SPECIFICATION FOR MECHANICAL WORK TO BE DONE IN CONJUNCTION WITH THE ELECTRICAL WORK. CONTRACTOR IS RESPONSIBLE FOR ALL CONDUIT, WIRING, JUNCTION BOXES, ETC., REQUIRED FOR HVAC CONTROLS, UNLESS SPECIFICALLY NOTED OTHERWISE.
- ALL ELECTRICAL EQUIPMENT AND WIRING PROVIDED UNDER DIVISION 23 SHALL COMPLY WITH THE ELECTRICAL SYSTEM CHARACTERISTICS INDICATED ON THE ELECTRICAL DRAWINGS AND SPECIFIED DIVISION 26.
- ELECTRIC CONTROLS, CONTACTORS, STARTERS, PILOT LIGHTS, PUSH BUTTONS, ETC., SHALL BE PROVIDED COMPLETE AS PART OF THE MOTOR, HEATER OR OTHER EQUIPMENT WHICH IT OPERATES. ALL ELECTRICAL COMPONENTS SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND DIVISION 26.
- WHERE EQUIPMENT SPECIFICATIONS INDICATE THAT A FACTORY-AUTHORIZED SERVICE ENGINEER OR TECHNICIAN SHALL OBSERVE INSTALLATION, TEST & ADJUST, OR START-UP OF EQUIPMENT, ETC.; SUCH SERVICES WILL BE CONTRACTED BY OWNER AS PART OF THE EQUIPMENT PURCHASE.
- CONTRACTOR SHALL ARRANGE FOR, SCHEDULE, AND COORDINATE SUCH FIELD SERVICES AS WORK INCLUDED IN THE CONTRACT.
- CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY TO SUPPORT ALL SUCH FACTORY REPRESENTATIVE'S FIELD SERVICES.
- REGULARLY DURING EACH WORKING DAY, REMOVE REFUSE AND DEBRIS ACCUMULATING FROM ELECTRICAL CONSTRUCTION AND LEAVE AREA CLEAN AT END OF THE WORK DAY.
- 1.10.1. PRIOR TO ACCEPTANCE OF THIS WORK, LEAVE THE PREMISES "BROOM CLEAN" INSOFAR AS AFFECTED BY ELECTRICAL WORK.
- CLEAN ALL LIGHT FIXTURES, LAMPS AND LENSES PRIOR TO FINAL ACCEPTANCE. CLEAN THE INTERIOR OF EACH ELECTRICAL COMPONENT OF DIRT AND CONSTRUCTION DUST INCLUDING BUT NOT LIMITED TO PANEL BOARDS,
- CONTROLLERS AND SWITCHES BEFORE ENERGIZING. EXPOSED FINISHED MATERIALS AND EQUIPMENT SHALL BE CAREFULLY CLEANED AND WIPED TO REMOVE GREASE, SMUDGES, FINGERPRINTS, DUST
- AND OTHER SPOTS AND LEFT SMOOTH AND CLEAN. CLEAN THE EXTERIOR OF ELECTRICAL COMPONENTS PRIOR TO ACCEPTANCE
- FOR ALL MATERIALS AND DEVICES REMOVED, THE CONTRACTOR SHALL DISPOSE OFF-SITE IN AN APPROVED MANNER. PROVIDE WRITTEN

- DOCUMENTATION FOR DISPOSAL OF ALL ITEMS
- 1.11. PROVIDE ALL LABOR, INSTRUMENTS, AND OTHER SERVICES REQUIRED FOR COMPLETE AND SATISFACTORY TEST AND ADJUSTMENT OF ELECTRICAL SYSTEMS AND RELATED WORK.
- CHECK ALL MOTORS AND ROTATING EQUIPMENT FOR PROPER ROTATION. TEST ALL FEEDERS WITH MEGGER PRIOR TO ENERGIZING TO ASSURE CODE RESISTANCE IS MET, (AND WITHOUT 'SHORTS' OR 'OPEN CIRCUITS').
- CHECK ALL FUSES AND OVERLOADS FOR PROPER SIZING. VERIFY FUSE LABELS
- CHECK ALL ELECTRICAL POWER AND CONTROL WIRING, INTERLOCKS, ETC. RELATED TO MECHANICAL EQUIPMENT TO DETERMINE THAT ALL WIRING IS
- IMMEDIATELY REMEDIATE ALL EQUIPMENT PROVIDED UNDER THIS DIVISION THAT TESTS PROVE TO BE DEFECTIVE OR OPERATING IMPROPERLY AS A PART OF THIS CONTRACT.
- 1.12. GUARANTEE ALL ELECTRICAL SYSTEM EQUIPMENT, MATERIALS, AND WORKMANSHIP TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE AND PROPERLY CORRECT LATENT DEFECTS ARISING DURING THIS PERIOD UPON NOTIFICATION BY THE OWNER'S REPRESENTATIVE WITHOUT ADDITIONAL COMPENSATION AND TO THE SATISFACTION OF THE ENGINEER AND OWNER'S REPRESENTATIVE.
- 1.13. ALL EQUIPMENT, ETC., SHALL BE NEW UNLESS OTHERWISE NOTED, AND AS SPECIFIED FREE OF DEFECTS. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. OR E.T.L.

CODES & PERMITS

- ENTIRE INSTALLATION (INCLUDING EQUIPMENT, DEVICES, AND WIRING) SHALL BE IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE (N.E.C.), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 70 & NFPA 101), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.), INTERNATIONAL BUILDING CODE (I.B.C), INTERNATIONAL ENERGY CONSERVATION CODE (I.E.C.C.), AND 6. ALL LAWS & ORDINANCES APPLICABLE TO WORK AT THIS SITE. IN ADDITION, INSTALLATION SHALL MEET APPROVAL OF LOCAL INSPECTION AUTHORITY HAVING JURISDICTION. REFER TO COVER SHEET FOR LIST OF CURRENT APPLICABLE CODE
- SECURE AND PAY ALL FEES ASSOCIATED WITH ALL PERMITS AND LICENSES REQUIRED FOR EXECUTION OF THE CONTRACT. ARRANGE FOR ALL INSPECTIONS REQUIRED BY CITY, COUNTY, STATE AND OTHER AUTHORITIES HAVING JURISDICTION, AND DELIVER CERTIFICATES OF APPROVAL TO THE ARCHITECT.
- A CERTIFICATE OF APPROVAL FOR WORK FROM INSPECTION AUTHORITY SHALL BE GIVEN TO THE OWNER BEFORE FINAL ACCEPTANCE WILL BE GIVEN BY OWNERS REPRESENTATIVE.
- THE CODE REQUIREMENTS ARE STRICTLY A MINIMUM AND SHALL BE MET WITHOUT INCURRING ADDITIONS TO THE CONTRACT. WHERE REQUIREMENTS OF THE DRAWINGS OR SPECIFICATIONS EXCEED THE CODE REQUIREMENTS, THE WORK SHALL BE PROVIDED IN ACCORDANCE WITH THESE DRAWINGS OR SPECIFICATIONS. IN THE EVENT OF CONFLICT OR AMBIGUITY BETWEEN THE VARIOUS CODES, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.

- THE CONTRACTOR SHALL MAINTAIN A SAFE WORK ENVIRONMENT AT ALL TIMES. COMPLY WITH ALL O.S.H.A., N.I.O.S.H., D.O.T., STATE & LOCAL REQUIREMENTS REGARDING SAFE HANDLING, STORING, TRANSPORTING, AND DISPENSING OF
- MAINTAIN AND DISPLAY M.S.D.S. INFORMATION FOR ALL CHEMICAL PRODUCTS. PROVIDE ALL NECESSARY MEANS TO MAINTAIN SAFE WORKING CONDITIONS
- INCLUDING VENTILATION FANS, FIRE EXTINGUISHERS, EYE PROTECTION, RESPIRATORS, PROTECTIVE CLOTHING, VENTILATION, ETC. ALL EQUIPMENT AND MATERIALS USED TO IMPLEMENT THE WORK SHALL BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN
- INSTRUCTIONS, INCLUDING ALL RECOMMENDED SAFETY PRECAUTIONS. MAINTAIN A PROPER FIRE WATCH FOR ALL OPERATIONS WHERE SPARKS,

WHICH POSE A HEALTH OR FIRE HAZARD.

FLAMES, OR OTHER SOURCES OF FIRE ARE PRODUCED. FOR ALL MATERIALS CONTAINING SOLVENTS, MAINTAIN THE RECOMMENDED VENTILATION OF THE AREA TO PREVENT THE ACCUMULATION OF VAPORS

4. INTENT OF DRAWINGS AND SPECIFICATIONS

- 4.1. THE IMPLIED AND STATED INTENT OF THE DRAWINGS & SPECIFICATIONS ARE TO ESTABLISH MINIMUM ACCEPTABLE STANDARDS FOR MATERIALS, EQUIPMENT, WORKMANSHIP, AND TO PROVIDE OPERABLE SYSTEMS THAT ARE COMPLETE IN EVERY RESPECT.
- ENGINEERING DRAWINGS ARE DIAGRAMMATIC, INTENDED TO SHOW GENERAL ARRANGEMENT AND SIZES OF SYSTEM COMPONENTS, AND SHALL NOT BE SCALED. ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL GOVERN SPACE
- CONSTRAINTS, DIMENSIONS AND FINISHES. ALL OFFSETS AND FITTINGS THAT SHALL BE NECESSARY TO ACCOMPLISH A FINISHED INSTALLATION SHALL BE PROVIDED AT NO ADDITIONAL COST OR INCREASE THE CONTRACT.
- WORK INTENDED, BUT HAVING MINOR DETAILS OBVIOUSLY OMITTED, SHALL BE PROVIDED COMPLETE AS A REQUIREMENT OF THIS CONTRACT.
- LOCATIONS OF EQUIPMENT INDICATED ON PLANS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE TO THE PLANS SUBJECT TO BUILDING CONSTRUCTION AND INTERFERENCES WITH OTHER TRADES.
- MAINTAIN MINIMUM SERVICE CLEARANCE AS REQUIRED BY THE EQUIPMENT MANUFACTURER AND N.E.C. PROVIDE THE OWNER A COMPLETE SET OF RECORD DRAWINGS AT THE END OF THE
- PROJECT. PROJECT WILL NOT BE COMPLETE UNTIL ACCURATE RECORD DRAWINGS
- 4.4. THE RECORD DRAWINGS SHALL BE MACHINE DRAFTED, AND SHALL BE PROVIDED ON MAGNETIC MEDIA CAD FILES TO THE ARCHITECT WHICH REFLECT ALL CHANGES, DEVIATIONS AND REVISIONS MADE TO THE ORIGINAL DESIGN DOCUMENTS
- LOCATIONS OF ALL UNDERGROUND PIPING AND UTILITIES SHALL BE CLEARLY SHOWN AND DIMENSIONED FROM PERMANENT REFERENCE POINTS SUCH AS BUILDING COLUMN LINES.

DRAWING FORMAT FOR THIS PROJECT SHALL BE AUTOCAD.

- ALL ITEMS MOUNTED IN OR BELOW THE CEILING, AND ALL ITEMS PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. IF ANY ITEMS ARE NOT SHOWN ON THESE PLANS, OR ANY ITEMS NEED TO BE RELOCATED FOR COORDINATION PURPOSES, PREPARE A REFLECTED CEILING PLAN SUBMIT IT TO THE ARCHITECT FOR APPROVAL.
- ATTENTION IS CALLED TO THE FACT THAT THE WORK IS TO BE PERFORMED WITHIN AN EXISTING, OPERATIONAL FACILITY.
- 5.2. THE FOLLOWING GENERAL PROVISIONS OF THE CONTRACT, INCLUDING THE

- GENERAL & SUPPLEMENTAL CONDITIONS AND GENERAL REQUIREMENTS, SHALL APPLY TO THE WORK IN THIS DRAWING AND SPECIFICATION SET.
- VISIT THE SITE OF THE WORK AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING CONDITIONS, AND THOROUGHLY REVIEW ALL DRAWINGS, SPECIFICATIONS AND ADDENDA PRIOR TO BIDDING ON THIS WORK. NO EXTRA PAYMENTS TO THE CONTRACT AMOUNT WILL BE ALLOWED FOR FAILURE TO COMPLY WITH THIS REQUIREMENT
- TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED FOR THE INSTALLATION OF WORK. FIELD DIMENSIONS ARE REASONABLY ACCURATE AND SHOULD GOVERN IN
- WHERE DETAILED METHOD OF INSTALLATION IS NOT INDICATED OR WHERE 5.2.4. VARIATIONS EXIST BETWEEN DESCRIBED WORK AND APPROVED PRACTICE, DIRECTION OF THE OWNERS REPRESENTATIVE ON JOB SITE SHALL BE
- CONTRACTOR SHALL VERIFY PROJECT CONDITIONS TO ENSURE THAT THE WORK WILL FIT INTO THE STRUCTURE IN THE MANNER INTENDED ON THE DRAWINGS.
- SHOULD ANY CONDITIONS EXIST THAT ARE CONTRARY TO THOSE SHOWN ON THE DRAWINGS, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO FABRICATION OR PERFORMING ANY WORK IN THE AREA INVOLVING THE DIFFERENCES.
- NOTIFICATION SHALL BE IN THE FORM OF A DRAWING OR SKETCH INDICATING 5.3.2. FIELD MEASUREMENTS OR NOTES RELATING TO THE AREA.
- CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND WORKMANLIKE MANNER. WHERE AN EXISTING STRUCTURE MUST BE CUT OR EXISTING UTILITIES INTERFERE, SUCH OBSTRUCTION SHALL BE BYPASSED, REMOVED, REPLACE OR RELOCATED, PATCH AND REPAIR.
- WORK DISTURBED OR DAMAGED SHALL BE REPLACED OR REPAIR TO ITS PRIOR

SHOP DRAWINGS, SUBMITTALS, AND SUBSTITUTIONS

SETTING OUT WORK.

- ENGINEER OF RECORD SHALL BE PROVIDED WITH SHOP DRAWINGS, COORDINATION DRAWINGS, AND MANUFACTURER'S DATA OF ANY CONTRACTOR FURNISHED MATERIALS AND EQUIPMENT, PRIOR TO PURCHASE AND/OR FABRICATION, AND SHALL VERIFY, BY STAMPING AND SIGNING THE DATA AND DRAWINGS BEFORE RETURNING THEM TO THE CONTRACTOR, THAT THE ITEMS FURNISHED BY THE CONTRACTOR FIT THE SPACES AND DIMENSIONS DESCRIBED IN AND CONFORM TO THE SPIRIT AND INTENT OF THE CONTRACT DOCUMENTS.
- ENGINEER SHALL, WITHIN FIVE (5) WORKING DAYS OF RECEIPT OF SHOP DRAWINGS AND PRODUCT DATA, NOTIFY THE CONTRACTOR OF ANY DISCREPANCY OR INCOMPATIBILITY WITH THE CONTRACT DOCUMENTS, AND SHALL RETURN THE SHOP DRAWINGS TO THE CONTRACTOR APPROPRIATELY
- REVIEW OF SUBMITTALS SHALL NOT BE CONSTRUED AS AUTHORIZING ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS UNLESS SUCH DEVIATIONS ARE CLEARLY IDENTIFIED AND SEPARATELY SUBMITTED IN THE FORM OF A LETTER THAT IS ENCLOSED WITH THE SUBMITTALS.
- 6.1.3. SUBMIT SHOP DRAWING CUT SHEETS AND TECHNICAL DATA ON THE FOLLOWING ITEMS: LIGHTING EQUIPMENT, PANELS, WIRING DEVICES-SWITCHES AND RECEPTACLES, DISCONNECT SWITCHES/SAFETY SWITCHES, MOTOR STARTERS, TRANSFORMERS, AND ANY OTHER ITEM REQUIRED BY NOTES. 6.1.4. SUBMIT CATALOG INFORMATION, FACTORY ASSEMBLY DRAWINGS, FIELD
- INSTALLATION DRAWINGS AND CERTIFICATIONS AS REQUIRED FOR COMPLETE EXPLANATION AND DESCRIPTION OF ALL ITEMS OF EQUIPMENT. THE SUBMITTAL DATA SHALL PROVIDE AMPLE, UNQUESTIONABLE COMPLIANCE WITH THE CONTRACT DOCUMENTS.
- SUBMIT PROPOSED CONTROL SYSTEM FOR REVIEW BY THE ENGINEER PRIOR TO EQUIPMENT PURCHASE OR FABRICATION. DO NOT PROCEED WITH THE WORK WITHOUT APPROVED SUBMITTALS.
- WHERE QUALIFICATIONS AND/OR QUALITY ASSURANCE REQUIREMENTS AR SPECIFIED, THE SUBMITTAL SHALL INCLUDE EVIDENCE THAT THE STATED REQUIREMENTS HAVE BEEN MET. INCLUDE QUALIFICATIONS AND CERTIFICATIONS OF PROPOSED TEST AND BALANCE SUBCONTRACTOR. EQUIPMENT PERFORMANCE SHALL BE VERIFIED BY THE EQUIPMENT 6.1.7.
- MANUFACTURER AS PART OF THE SUBMITTAL, PRIOR TO ORDERING. VERIFY EQUIPMENT VOLTAGE AND ELECTRICAL REQUIREMENTS OF THE 6.1.8. EQUIPMENT WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT. SHOP DRAWINGS FOR EQUIPMENT REQUIRING ELECTRIC POWER OR CONTROL

DRAWINGS, PRODUCT DATA, AND SAMPLES FOR SUBMITTAL DEFINITIONS,

- WIRING CONNECTIONS SHALL INCLUDE COMPLETE WIRING DIAGRAMS. 6.2. REFER TO THE CONDITIONS OF THE CONTRACT (GENERAL AND SUPPLEMENTARY WHEN INCLUDED AND OTHER DIVISIONS) REFERENCING SUBMITTALS FOR SHOP
- REQUIREMENTS AND PROCEDURE 6.2.1. IN ADDITION TO DIVISION 01, THE CONTRACTOR IS ADVISED TO REVIEW AND COMPLY WITH THE REQUIREMENTS ARTICULATED WITH IN EACH DIVISION AND
- WITHIN EACH SECTION OF THAT DIVISION. BEFORE PREPARING SUBMITTALS, STUDY ALL CONTRACTS DRAWINGS AND SPECIFICATIONS IN DETAIL, OBTAIN MANUFACTURER'S RECOMMENDED INST<mark>RU</mark>CTIONS, AND HAVE SUBMITTALS PREPARED BASED ON SPECIFIC EQUIPMENT
- AND MATERIAL PROPOSED FOR INSTALLATION. AN OFFICER OF THE CONTRACTING FIRM SHALL SIGN ALL SHOP DRAWINGS (CERTIFYING CONFORMANCE WITH PLANS AND SPECIFICATIONS) BEFORE SUBMITTING TO THE ARCHITECT OR RELEASING TO THE FIELD.
- AFTER THE EXECUTION OF THE CONTRACT. SHOULD AN UNSPECIFIED OR UNEQUAL PRODUCT BE SUBMITTED, IT WILL BE REJECTED. IF A SECOND ATTEMPT AT SUBSTITUTION IS MADE DURING THE RE-SUBMITTAL OF THE SAME PRODUCT, THEN NO MORE REVIEWS OF THAT PRODUCT WILL BE PERFORMED WITHOUT DIRECT COMPENSATION TO THE ENGINEER BEING PAID FOR THE ADDITIONAL SERVICES REQUIRED FOR THE

THE SUBMITTAL PROCESS SHALL NOT BE UTILIZED AS AN AVENUE TO SUBSTITUTE

- THIRD REVIEW AND ANY FURTHER REVIEWS. IN ADDITION TO THE OTHER REQUIREMENTS IN PARAGRAPHS ABOVE, THE FOLLOWING APPLIES TO SUBMITTALS OF THIS DIVISION:
- DO NOT INSTALL OR ORDER ELECTRICAL EQUIPMENT OR PROCEED WITH THE WORK UNTIL SUBMITTALS HAVE BEEN ACCEPTABLY REVIEWED BY THE OWNER'S REPRESENTATIVE AND STAMPED ACCORDINGLY. EQUIPMENT OR WORK WHICH IS ORDERED OR INSTALLED WITHOUT PRIOR APPROVED SUBMITTALS SHALL, AT THE ENGINEER'S DISCRETION, BE REMOVED AT NO COST TO THE OWNER. NO ALLOWANCES WILL BE MADE FOR REWORK OR DELAY DUE TO NEGLECT OF REQUIRED APPROVAL PROCESS.
- 6.5.2. MAKE ALL ELECTRICAL SUBMITTALS AT ONE TIME AND WITHIN FOURTEEN (14) CALENDAR DAYS OF OWNER'S "NOTICE TO PROCEED". SUBMITTAL DATA WILL BE PROVIDED AND REVIEWED IN PDF FORMAT ELECTRONICALLY VIA EMAIL.

6.5.4.

SUBMITTAL DATA WILL NOT BE ACCEPTED FOR REVIEW UNLESS THEY: 6.5.4.1. COMPLY WITH THE REQUIREMENTS OF DIVISION 1. 6.5.4.2. INCLUDE COMPLETE INFORMATION PERTAINING TO ALL APPURTENANCE AND ACCESSORIES.

TO OBTAIN ACCEPTANCE OF ALL ITEMS.

- ARE SUBMITTED AS COMPLETE PACKAGES WHICH PERTAIN TO ALL
- RELATED ITEMS IN DIVISION 26. ARE PROPERLY MARKED WITH EQUIPMENT, SERVICE OR FUNCTION IDENTIFICATION AS RELATED TO THE PROJECT AND ARE MARKED WITH
- PERTINENT SPECIFICATION PARAGRAPH NUMBER. IF ANY ITEM IN THE SUBMITTAL IS "NOT ACCEPTABLE" FOR ANY REASON, IT AUTOMATICALLY VOIDS THE ENTIRE SET, AND A RE-SUBMIT OF ALL IS REQUIRED
- IN CASE OF DISCREPANCIES BETWEEN SETS OF SUBMITTALS, THE SET RETAINED BY THE OWNER'S REPRESENTATIVE SHALL HAVE PRECEDENCE.
- THE FOLLOWING REQUIREMENTS HELP TO IDENTIFY, TRACK AND KEEP THE PROJECT ORGANIZED FOR ALL PARTIES INVOLVED. THEY ARE NECESSARY TO ENSURE A TIMELY TURNAROUND AND AN APPROPRIATE TECHNICAL REVIEW. SUBMITTALS THAT DO NOT CONFORM TO THE ADMINISTRATIVE REQUIREMENTS ARE REJECTED AND RETURNED, WITHOUT TECHNICAL REVIEW.
- SUPPLY SUBMITTALS FOR EACH SECTION: SUBMITTALS SHALL BE SUPPLIED ON A SECTION-BY-SECTION AND TYPE-BY-TYPE BASIS. FOR EXAMPLE INDEPENDENT PRODUCT DATA SUBMITTALS SHALL BE FURNISHED FOR EACH SECTION THAT REQUIRES PRODUCT DATA SUBMITTALS. INDEPENDENT SHOP DRAWING SUBMITTALS SHALL BE FURNISHED FOR EACH SECTION THAT REQUIRES SHOP DRAWINGS. SEPARATE PDF FILE PACKAGES SHALL BE SUPPLIED FOR EACH SECTION, FOR EACH SUBMITTAL TYPE. EACH PDF SHALL
 - REPRESENT A SINGLE STANDALONE SUBMITTAL. INCLUDE A TRANSMITTAL: TRANSMITTALS SHALL ENUMERATE EACH SUBMITTAL FOR EACH SECTION OF EACH TYPE AND ITERATION.
- INCLUDE COVER SHEET/ TITLE PAGE: THE COVER SHEET SHALL INCLUDE THE INFORMATION IDENTIFIED IN THE CONTRACT DOCUMENTS. IT SHALL BE INCLUDED AS THE FIRST PAGE OF EACH ELECTRONIC AND/OR HARDCOPY DOCUMENT-BASED SUBMITTAL.
- INCLUDE AN INDEX: THE INDEX SHALL ENUMERATE THE CONTENTS OF 1HE
- INCLUDE CHECKLISTS: WHERE CHECKLISTS ARE INCLUDED WITH THE SPECIFICATIONS, COMPLETE AND INCLUDE THEM WITHIN THE APPROPRIATE
- SUPPLY COMPLETE SUBMITTALS: COMPLETE SUBMITTALS OF EACH TYPE ARE REQUIRED. PARTIAL SUBMITTALS WILL BE REJECTED. WHERE A SECTION REQUIRES A PRODUCT DATA SUBMITTAL, ALL PRODUCT DATA FOR THAT SECTION SHALL BE SUPPLIED TOGETHER, AT ONE TIME, AS ONE COMPLETE SUBMITTAL. WHEN RE-SUBMITTAL IS REQUIRED (I.E. REVISE AND RESUBMIT) THE REVISED SUBMITTAL SHALL BE MORE COMPLETE, MORE ACCURATE, AND MORE CONTRACT-COMPLIANT THAN ITS REJECTED PREDECESSOR. THE SUBMITTAL NUMBER (FOR EACH SECTION AND TYPE) SHALL INCREMENT FOR EACH SUBSEQUENT SUBMITTAL (DO - ORIGINAL SUBMISSION, 01 - FIRST RESUBMISSION, 02 -SECOND RESUBMISSION, ETC.). RE-SUBMITTALS SHALL INCLUDE A COPY OF THE REVIEWERS COMMENTS SUPPLIED WITH THE PRIOR SUBMITTAL REJE<mark>CTION AND SHALL BE AMENDED WITH A DESCRIPTION OF THE</mark> SPECIFIC ACTION TAKEN TO COMPLY WITH THE REVIEWER'S COMMENTS. THE ABSENCE OF THIS ON RE-SUBMITTAL IS CAUSE FOR REJECTION.
- IF EXPRESSLY PERMITTED BY THE OWNER AND THE TERMS OF THE CONTRACT, EDITABLE ELECTRONIC VERSIONS OF PUBLISHED TWO-DIMENSIONAL PLAN DRAWINGS MAY BE MADE AVAILABLE FOR THE CREATION OF SHOP AND AS-BUILT DRAWINGS.
- DUE TO THE PROPRIETARY NATURE OF INTERNAL DESIGN SYSTEMS, EDITABLE NATIVE-SOFTWARE VERSIONS OF SOME DRAWINGS, INCLUDING BUT NOT LIMITED TO SYSTEM DIAGRAMS AND DETAILS WILL NOT BE MADE AVAILABLE IN AN EDITABLE FORM. IN THESE CASES, ELECTRONIC VERSIONS OF THE DRAWINGS MAY BE MADE AVAILABLE ONLY IN PDF, JPG OR SIMILAR NON-EDITABLE ELECTRONIC FORM, AT THE SOLE DISCRETION OF THE DESIGN
- EQUIPMENT AND DESIGN OF SYSTEMS INDICATED ON THE DESIGN DRAWINGS AND WITHIN THESE SPECIFICATIONS SHALL BE CONSIDERED AS SPECIFIED STANDARD OF
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF ALL COSTS ARISING FROM A SUBSTITUTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR MAKING THE SUBSTITUTION, INCLUDING VERIFICATION OF

FIT AND ACCESS, FIELD-INSTALLED ACCESSORIES, SUPPORTS, ELECTRICAL

- REQUIREMENTS, AND REVISIONS TO DOCUMENTS (DESIGN COSTS). WHERE MATERIAL OR EQUIPMENT IS IDENTIFIED BY PROPRIETARY NAME, MODEL NUMBER AND/OR MANUFACTURER, FURNISH THE NAMED ITEM OR EQUAL THEREOF. SUBSTITUTED ITEMS SHALL BE EQUAL OR BETTER IN QUALITY AND PERFORMANCE AND MUST BE SUITABLE FOR THE AVAILABLE SPACE, REQUIRED ARRANGEMENT AND
- MANUFACTURER'S NAME, SERIES AND MODEL NUMBERS, AS NOTED OR SPECIFIED, ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, AND
- QUALITY OF EQUIPMENT, MATERIALS AND PRODUCTS TO BE USED. UNLESS "OR EQUAL" IS SPECIFICALLY STATED, BIDS SHALL BE BASED ONLY ON THE SPECIFIED "BASIS OF DESIGN" MANUFACTURER. THE LISTING OF A PARTICULAR MANUFACTURER AS AN "EQUAL" OR
- "ACCEPTABLE SUBSTITUTE" MANUFACTURER SHALL NOT BE MISCONSTRUED AS APPROVING NOR ALLOWING THE SUBSTITUTION OF THAT MANUFACTURER'S STANDARD PRODUCT IN PLACE OF THE BASIS DESIGN. NO CONSIDERATION WILL BE GIVEN TO A PRODUCT WHICH WOULD REQUIRE DIMENSIONAL, SPATIAL OR AESTHETIC CHANGES TO THE PROJECT.
- "ACCEPTABLE SUBSTITUTE" AND "EQUAL" MANUFACTURERS SHALL ONLY BID THOSE PRODUCTS WHICH EXACTLY MATCH THE SIZE AND OTHER CHARACTERISTIC OF THE SPECIFIED BASIS OF DESIGN. ANY CHANGES TO OTHER DISCIPLINES AND TRADES OF WORK REQUIRED BY AN
- "OR EQUAL" OR "SUBSTITUTE" PRODUCT SHALL BE DULY CONSIDERED AND PRICED ACCORDINGLY PRIOR TO BIDDING OR PRICING. THE DECISION AS TO WHETHER OR NOT A PROPOSED SUBSTITUTE OR "EQUAL" PRODUCT IS ACTUALLY EQUAL TO THAT SPECIFIED SHALL REST SOLELY WITH
- REQUEST TO PROVIDE "EQUAL" PRODUCTS IN LIEU OF THOSE SPECIFIED SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING AT LEAST TEN (10) DAYS PRIOR TO FINAL PRICING AND EXECUTION OF THE CONTRACT. NO CONSIDERATION WILL BE GIVEN TO SUBSTITUTE PRODUCTS AFTER FINAL PRICING AND

EXECUTION OF THE CONTRACT.

- ANY "OR EQUAL" PRODUCT OR PROPOSED PRODUCTION SUBSTATION WHICH WILL CAUSE A CHANGE IN THE APPEARANCE, DIMENSIONS OR DESIGN OF ANY PART OF THE BUILDING, IF STRUCTURE, ELECTRICAL SYSTEM OR ANY OTHER ENGINEERED SYSTEM SHALL BE ACCOMPANIED BY A SCALED DRAWING AND WRITTEN DESCRIPTION OF THE REQUIRED CHANGES(S) FOR APPROVAL BY THE
- IF DEEMED NECESSARY BY ARCHITECT, DESIGN CHANGES SHALL BE SIGNED AND SEAL BY A REGISTERED PROFESSIONAL ENGINEER, CURRENTLY LICENSED IN THIS STATE.

- INSTALLATION
- PROVIDE ALL EQUIPMENT FOR THIS CONTRACT NEATLY AND WITH WORKMANSHIP AS DEFINED BY N.E.C.A. "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN
- THE ENTIRE INSTALLATION, AND MANNER OF INSTALLATION SHALL MEET THE COMPLETE SATISFACTION OF THE OWNER'S REPRESENTATIVE OR IT SHALL BE REMOVED AND REWORKED AS DIRECTED BY THE OWNER'S REPRESENTATIVE AS INCLUDED IN THE CONTRACT AMOUNT.

ELECTRICAL CONSTRUCTION", LEVEL AND PLUMB, AND SECURELY SUPPORTED.

- CONTRACTOR SHALL CONSULT PLUMBING, HVAC, AND STRUCTURAL PLANS (WHERE APPLICABLE) IN ALL INSTANCES BEFORE INSTALLING WORK SO THAT WORK WILL NOT
- INTERFERE WITH THOSE BRANCHES. IN THE EVENT OF A CONFLICT, CONTRACTOR SHALL REPORT TO THE OWNERS REPRESENTATIVE AT ONCE AND DO NO FURTHER WORK UNTIL A
- SATISFACTORY ARRANGEMENT IS DECIDED UPON. ANY WORK DONE, OR EQUIPMENT PLACED IN POSITION, BY CONTRACTOR THAT CREATES A CONFLICT IN VIOLATION HEREOF, SHALL BE READJUSTED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT THE EXPENSE OF THE CONTRACTOR. THE DECISION OF THE OWNERS REPRESENTATIVE SHALL BE FINAL IN REGARD TO CHANGES DUE TO CONFLICTING CONDITIONS.
- CONTRACTOR SHALL COMPLETE WORK OR ANY PART THEREOF AT SUCH TIME AS MAY BE DESIGNATED BY THE OWNER, SO THAT IT CAN BE USED FOR TEMPORARY OR PERMANENT USE AND SUCH USE OF THE SYSTEM SHALL NOT BE CONSTRUED AS AN ACCEPTANCE OF SAME BY OWNER.
- VERIFY VOL<mark>TAGE AND ALL ELECTRI</mark>CAL REQUIREMENTS OF MECHANICAL EQUIPMENT AND SYSTEMS WITH DIV. 23 CONTRACTOR PRIOR TO ORDERING. OORDINATION OF SPACE REQUIREMENTS WITH RESPECT TO DIVISION 23
- SHALL BE PERFORMED SUCH THAT: NO EQUIPMENT, PIPING OR DUCTWORK, OTHER THAN ELECTRICAL, SHALL BE INSTALLED WITHIN 42" OF SWITCHBOARDS OR PANELBOARDS. NO PIPING OR DUCTWORK WHICH EVER OPERATES AT A TEMPERATURE IN
- EXCESS OF 120 DEGREES F. TWO SETS OF ELECTRICAL DRAWINGS SHALL BE PROVIDED AS RECORD DRAWINGS WHICH SHALL BE SEPARATE, CLEAN, COPIES RESERVED FOR THE PURPOSE OF
- SHOWING A COMPLETE PICTURE OF THE WORK AS ACTUALLY INSTALLED. DRAWINGS SHALL ALSO SERVE AS WORK PROGRESS REPORT SHEETS AND THE ELECTRICAL CONTRACTOR SHALL MAKE ANY NOTATIONS, NEAT AND LEGIBLE THEREON DAILY AS WORK PROCEEDS.
- DRAWINGS SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES AND SHALL BE KEPT AT THE JOB AT A LOCATION DESIGNATED BY THE OWNERS REPRESENTATIVE. AT THE COMPLETION OF THE WORK, THESE RECORD DRAWINGS SHALL BE

SIGNED BY THE ELECTRICAL CONTRACTOR, DATED AND RETURNED TO THE

- OWNERS REPRESENTATIVE. FINAL PAYMENT OF CONTRACT WILL NOT BE MADE UNTIL RECEIPT AND REVIEW OF SAID DRAWINGS. PROVIDE ALL ROOF, WALL, AND FLOOR PENETRATIONS REQUIRED TO COMPLETE INSTALLATION AND REMOVAL OF WORK (MAINTAIN FIRE RATING OF EXISTING
- ALL PENETRATIONS SHALL BE PATCHED AND FINISHED TO MATCH
- SURROUNDING SURFACES AND FINISHES. ALL EQUIPMENT OR PIPE PENETRATIONS THROUGH WALL, ROOF AND FLOORS SHALL BE SLEEVED AND SEALED SO AS TO BE WATER AND AIR TIGHT.
- ALL ROOF CUTS AND REPAIRS SHALL BE PERFORMED BY OWNER APPROVED ROOFING CONTRACTOR IN ORDER TO MAINTAIN ROOF WARRANTY. CUTTING OF HOLES THROUGH CONCRETE AND MASONRY SHALL BE BY DIAMOND
- CORE CONCRETE SAW. PNEUMATIC HAMMER, IMPACT ELECTRIC AND HAND OR MANUAL HAMMER TYPE DRILLS WILL NOT BE ALLOWED, EXCEPT AS PERMITTED BY THE ARCHITECT
- WHERE REQUIRED BY LIMITED WORKING SPACE. LOCATE HOLES SUCH THAT THEY WILL NOT AFFECT STRUCTURAL SECTIONS SUCH AS RIBS OR BEAMS. HOLES SHALL BE LAID OUT WELL IN ADVANCE OF THE INSTALLATION. THESE LAYOUT LOCATIONS SHALL BE APPROVED BY THE
- ARCHITECT PRIOR TO DRILLING. PROVIDE ALL EXCAVATION AND TRENCHING TO THE CORRECT ELEVATIONS, FOR THE INSTALLATION OF ALL PIPING, MANHOLES, CATCH BASINS AND FOUNDATIONS
- INCLUDED UNDER THIS DIVISION OF THE WORK. PROVIDE ALL BACKFILL IN STRICT ACCORDANCE WITH THE EXCAVATION AND BACKFILL SECTION OF DIVISION 1 SPECIFICATIONS.
- EXCAVATE PIPE TRENCH. HAND DIG IN ALL AREAS WHERE EXISTING UTILITIES EXIST. HAND TRIM EXCAVATION FOR ACCURATE PLACEMENT OF PIPE TO
- 7.7.1.1. PROVIDE NECESSARY SHEETING AND SHORING TO COMPLY WITH O.S.H.A. REGULATIONS FOR SAFETY IN THE TRENCH. PLACE BEDDING MATERIAL AT TRENCH BOTTOM, LEVEL MATERIALS IN CONTINUOUS LAYER NOT EXCEEDING 6 INCHES COMPACTED DEPTH, COMPACT
- TO 95 PERCENT 7.7.2.1. MAINTAIN OPTIMUM MOISTURE CONTENT OF BEDDING MATERIAL TO
- ATTAIN REQUIRED COMPACTION DENSITY. BACKFILL MATERIAL SHALL BE CLEAN EARTH FILL COMPOSED OF SAND, SLIGHTLY SILTY SAND, SAND AND ROCK, CRUSHED ROCK, OR AN APPROVED
- COMBINATION THEREOF. THE BACKFILL MATERIAL SHALL HAVE NO MORE THAN 12 PERCENT PASSING THE NUMBER 200 SIEVE UNLESS APPROVED BY THE OWNER AND

7.7.3.2.

COMPACTION AS DETERMINED BY ASSHTO SPECIFICATION T-180 (MODIFIED), SHALL BE NOT LESS THAN 98 PERCENT OF MAXIMUM DENSITY. ALL OTHER LOCATIONS SHALL BE 95 PERCENT. DENSITY TESTS FOR CONFORMANCE TO THE COMPACTION REQUIREMENTS SHALL BE MADE BY TESTING LABORATORY SELECTED BY

WHEN TRENCHES ARE CUT IN PAVEMENTS OR AREAS TO BE PAVED

THE OWNER AT THE EXPENSE OF THE CONTRACTOR. TESTS SHALL BE

MADE EVERY 100 FEET OR LESS, MINIMUM TWO TESTS PER SITE. IF ANY

- TEST RESULTS ARE UNSATISFACTORY, THE CONTRACTOR SHALL RE-EXCAVATE AND RE-COMPACT THE BACKFILL AT HIS EXPENSE UNTIL THE DESIRED COMPACTION IS OBTAINED. PAVEMENT OR ROADWAY SURFACES CUT OR DAMAGED SHALL BE REPLACED IN EQUAL OR BETTER CONDITION THAN THE ORIGINAL, INCLUDING STABILIZATION,
- BASE COURSE, SURFACE COURSE, CURB AND GUTTER, OR OTHER APPURTENANCES. WHERE EXISTING PAVEMENT IS REMOVED, THE SURFACING SHALL BE MECHANICALLY SAW CUT PRIOR TO TRENCH EXCAVATION, LEAVING A UNIFORM AND STRAIGHT EDGE WITH MINIMUM DISTURBANCE TO THE
- REMAINING ADJACENT SURFACING. 7.7.4.2. THE WIDTH OF THE PAVEMENT REMOVAL SHALL BE THE MINIMAL NECESSARY TO ALLOW FOR INSTALLATION OF THE NEW UTILITIES.
- THE PAVING WORK SHALL BE GUARANTEED FROM DEFECTS IN WORKMANSHIP, INCLUDING SETTLING, FOR TWO YEARS. 7.8. ALL WIRING SHALL BE IN CONDUIT. THE USE OF E.N.T., BX, NM, ETC. OR

- PRE-MANUFACTURED CABLE ASSEMBLIES OR ALUMINUM WIRE WILL NOT BE
- VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH SHOP DRAWING SUBMITTALS, FIELD MEASUREMENTS, AND WITH REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED PRIOR TO ROUGH-IN.
- REFER TO EQUIPMENT SPECIFICATIONS AND DIMENSIONS SPECIFIED FOR ROUGH-IN REQUIREMENTS.

EQUIPMENT IDENTIFICATION FOR ELECTRICAL SYSTEMS

- PROVIDE MANUFACTURER'S STANDARD SELF-ADHESIVE VINYL TAPE NOT LESS THAN 3 MILS THICK BY 1-1/2" WIDE. WHERE APPLICABLE, INSTALL ON ALL CONCEALED RACEWAYS AT CONNECTION TO ALL JUNCTION BOXES, PULL BOXES, EQUIPMENT, WALL/FLOOR/ROOF PENETRATIONS, ETC. UNLESS
- OTHERWISE INDICATED OR REQUIRED BY GOVERNING REGULATIONS. PROVIDE ORANGE TAPE WITH BLACK LETTERS.
 - PROVIDE CIRCUIT IDENTIFICATION BANDS FOR ALL CABLES AND CONDUCTORS. PROVIDE MANUFACTURERS STANDARD COLOR CODING FOR CABLE/CONDUCTOR JACKET AND/OR INSULATION FOR ALL CABLES AND CONDUCTORS OF ALL SYSTEMS.
- MATCH IDENTIFICATION WITH MARKING SYSTEM USED IN EXISTING SYSTEMS (WHERE APPLICABLE), SHOP DRAWINGS, CONTRACT DOCUMENTS, AND SIMILAR PREVIOUSLY ESTABLISHED IDENTIFICATION
- FOR ELECTRICAL WORK. PROVIDE ON ALL CONDUCTORS OF ALL SYSTEMS. PROVIDE ENGRAVED PLASTIC-LAMINATE SIGN ON MAJOR UNITS OF ELECTRICAL EQUIPMENT, INCLUDING PANELBOARDS, DISCONNECTS, STARTERS, CONTROL
- PANELS, ETC. EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEXT, 112" HIGH LETTERING, ON 1-1/2" HIGH SIGN
- (2" HIGH WHERE 2 LINES ARE REQUIRED). 7.10.2.2. MAKE NAMEPLATES FROM WHITE ENGRAVING STOCK WITH BLACK
- LETTERS AND BLACK FOUR EDGE BEVEL. WORDING SHALL SUITABLY DESCRIBE ITEMS SUCH AS PANEL ID, SOURCE OVER CURRENT PROTECTION DEVICE, AND VOLTAGE.
- 7.10.2.4. NAMEPLATES SHALL BE ATTACHED USING PROPER SIZE AND TYPE STAINLESS STEEL BOLTS, LOCK WASHERS AND NUTS. GLUE ON, 7.10.2.5. TAPE ON, OR TAPE TYPE NAMEPLATES ARE NOT ACCEPTABLE FOR THE
- EQUIPMENT. 7.10.2.6. PROVIDE CIRCUIT NUMBERS (PANEL-#) ON EACH RECEPTACLE USING TAPE TYPE IDENTIFICATION AT EACH RECEPTACLE OR OTHERS WHERE
- PROVIDE TEXT MATCHING TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. SECURE TO SUBSTRATE WITH FASTENERS, EXCEPT USE ADHESIVE WHERE
- FASTENERS SHOULD NOT OR CANNOT PENETRATE SUBSTRATE. ALL EQUIPMENT AND SYSTEM IDENTIFICATION NOMENCLATURE SHOWN ON DRAWINGS OR LISTED HEREIN IS SHOWN FOR GENERAL DESIGN AND INSTALLATION REFERENCE ONLY. THE ACTUAL NAMEPLATE, ETC. NOMENCLATURE FOR THIS PROJECT SHALL BE VERIFIED BY ELECTRICAL

CONTRACTOR IN FIELD PRIOR TO FABRICATION AND WHERE APPLICABLE, SHALL

ACCESS DOORS AND PANELS FOR CONCEALED ELECTRICAL ITEMS

- BE AN EXTENSION OF EXISTING NOMENCLATURE USED ON THE SITE AS DETERMINED IN FIELD BY ELECTRICAL CONTRACTOR.
- EQUIPMENT TO BE LABELED: 7.10.4.1. ALL ENCLOSURES FOR ALL ELECTRICAL EQUIPMENT FURNISHED OR
- INSTALLED UNDER DIVISIONS 26 AND 28 7.10.4.2. REMOTE-CONTROLLED SWITCHES

7.10.4.6.

- 7.10.4.3. DIMMER MODULES CONTROL DEVICES VIA ENGRAVED WALL PLATES 7.10.4.5. MISCELLANEOUS CONTROL STATIONS
- OTHER SIMILAR EQUIPMENT DESIGNATED BY OWNER'S REPRESENTATIVE, ARCHITECT OR ENGINEER IN FIELD.
- 7.11. BEARINGS THAT REQUIRE LUBRICATION SHALL BE LUBRICATED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- ALL COILS SHALL BE THOROUGHLY CLEANED AND COMBED PRIOR TO FINAL INSPECTION. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR ELECTRICAL INSTALLATIONS.
- TO BE SET IN POURED-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR

COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES

- ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN
- THE EXACT MOUNTING HEIGHT OF DEVICES SHALL BE DETERMINED IN THE FIELD WITH RELATION TO ARCHITECTURAL DETAILS AND EQUIPMENT BEING SERVED. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO COORDINATE OUTLET LOCATION WITH EQUIPMENT. OWNERS REPRESENTATIVE SHALL BE PERMITTED
- NO ADDITIONAL CHARGE IN CONTRACT PRICE. ALL FASTENERS, HANGERS, AND METHODS OF HANGING EXPOSED WORK IN FINISHED AREAS SHALL BE SUBMITTED TO THE OWNERS REPRESENTATIVE FOR

TO RELOCATE ANY OUTLET PRIOR TO INSTALLATION WITHIN A 15 FOOT LIMIT AT

WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND

APPROVAL BEFORE INSTALLATION.

CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.

REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL,

INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT GIVING RIGHT-OF-WAY PRIORITY TO

- 7.18. SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIED SLOPE. ALL NEW ELECTRICALLY RELATED WORK SHALL BE SUPPORTED DIRECTLY FROM BUILDING STRUCTURAL MEMBERS. NEW ELECTRICAL RELATED WORK SHALL NOT BE SUPPORTED FROM DUCTWORK, DUCTWORK HANGER, CEILING SUPPORTS, EXISTING
- CONDUIT SUPPORT, ETC. TOUCH-UP PAINTING: CLEAN FIELD WELDS AND ABRADED AREAS OF SHOP PAINT. PAINT EXPOSED AREAS IMMEDIATELY AFTER ERECTING HANGERS AND SUPPORTS. USE SAME MATERIALS AS USED FOR SHOP PAINTING.

- EXTENT OF RACEWAY WORK IS INDICATED DIAGRAMMATICALLY ON THE DRAWINGS OR IN THE SCHEDULES. CONTRACTOR SHALL ONLY PROVIDE TYPE REQUIRED FOR
- INSTALL ALL WIRING IN CONDUIT (EXCEPT WHERE NOTED UNDER WIRE AND CABLE) AND PROVIDE EMPTY CONDUIT FOR SPECIAL SYSTEMS DESCRIBED ELSEWHERE. 8.3. ALL CONDUIT EMBEDDED IN CONCRETE SHALL BE 3/4" MINIMUM. ALL EXTERIOR

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PM: NYE CM: NYE

WHEN SIZE IS NOT INDICATED ON PLANS, CONDUIT SHALL BE SIZED FOR

CONDUCTORS IN ACCORDANCE WITH TABLES 3(A)(B)(C), CHAPTER 9 OF THE N.E.C. THE ROUTING AND METHOD OF INSTALLATION OF CONDUITS SHALL BE COORDINATED WITH ALL TRADES PRIOR TO INSTALLATION SO AS NOT TO INTERFERE WITH OTHER EQUIPMENT INSTALLATIONS. COORDINATED INSTALLATION SHALL MEET THE COMPLETE SATISFACTION OF THE OWNER'S REPRESENTATIVE OR SHALL BE REINSTALLED AT NO COST TO THE OWNER.

THE USE OF INTERMEDIATE METAL CONDUIT (IMC), ELECTRICAL NON-METALLIC TUBING (ENT), ARMORED CABLE (AC), METAL CLAD (MC), OR MANUFACTURED CABLE ASSEMBLIES SHALL NOT BE INCORPORATED INTO THE WORK, UNLESS NOTED OTHERWISE. SHOULD CONTRACTOR FAIL TO UTILIZE APPROVED RACEWAYS, OWNER'S REPRESENTATIVE CAN REQUEST THE REMOVAL AND REPLACEMENT OF ALREADY INSTALLED RACEWAY AT NO COST TO THE OWNER.

USE ONLY THE TYPES OF RACEWAYS SPECIFIED HEREIN. 8.8.1. TYPES OF RACEWAYS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING: 8.8.1.1. ELECTRICAL METALLIC TUBING (EMT); GALVANIZED STEEL; MINIMUM

8.8.1.2. FLEXIBLE METAL CONDUIT (FMC). MINIMUM TRADE SIZE 3/4".

LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LFMC), (SEALTIGHT) MINIMUM 8.8.1.3. TRADE SIZE 3/4".

RIGID METAL CONDUIT (RMC). MINIMUM TRADE SIZE 3/4" 8.8.1.4. RIGID NONMETALLIC CONDUIT (PVC). SCHEDULE 40, MINIMUM TRADE SIZE

TYPE MC (METAL-CLAD) CABLE: FORM FROM CONTINUOUS LENGTH OF SPIRALLY

WOUND, INTERLOCKED ZINC-COATED OR GALVANIZED (INSIDE AND OUTSIDE) STRIP STEEL OR ALUMINUM JACKET, WITH STRANDED COPPER CONDUCTORS WITH 90 DEG. C THHN INSULATION SYSTEM. PROVIDE FOR FINAL CONNECTIONS TO LIGHT FIXTURES THAT ARE INSTALLED IN

ACCESSIBLE TILE CEILING SYSTEMS (LIMITED TO 6' MAXIMUM IN LENGTH AND

LIMITED TO "WHIPS" FROM BUILDING ELECTRICAL SYSTEM JUNCTION BOXES DOWN TO LIGHT FIXTURES). DO NOT INSTALL TYPE MC CABLE FROM FIXTURE TO FIXTURE UNLESS A SPECIAL PROPERLY LISTED AND LABELED UL APPROVED SYSTEM IS

SPECIFICALLY INDICATED. PROVIDE FOR NEW 15 AND 20 AMPERE BRANCH CIRCUIT DROPS TO OUTLETS IN EXISTING HOLLOW PARTITIONS FOR REMODELING WORK. THIS APPLIES ONLY

UNDER ALL OF THE FOLLOWING CIRCUMSTANCES AND CONDITIONS: BASIS OF DESIGN INCLUDES CUTTING AND PATCHING FOR SUCH APPLICATIONS. TYPE MC CABLE MAY BE USED ONLY WHERE OWNER OR ARCHITECT SPECIFICALLY DIRECTS INSTALLER CASE-BY-CASE NOT TO SLOT WALLS (LIMITED TO 10 FEET MAXIMUM CABLE LENGTH FROM OVERHEAD CONDUIT SYSTEM JUNCTION BOX TO RESPECTIVE WALL OUTLET BOX); PROVIDE ONLY WHERE CONCEALED (INSTALL WIRING FOR

PROVIDE FOR NEW 15 THROUGH 30 AMPERE BRANCH CIRCUIT WORK. THIS APPLIES ONLY UNDER ALL OF THE FOLLOWING CIRCUMSTANCES AND CONDITIONS:

EXPOSED APPLICATIONS IN RACEWAY)

PROVIDE ONLY WHERE CONCEALED (INSTALL WIRING FOR EXPOSED APPLICATIONS IN RACEWAY)

8.10. RACEWAY FITTINGS

FITTINGS FOR EMT SHALL BE STEEL SET SCREW OR COMPRESSION TYPE WITH FACTORY INSTALLED INSULATED THROAT CONNECTORS. DIE CAST OR POT METAL FITTINGS ARE NOT ACCEPTABLE.

FITTINGS FOR FLEXIBLE CONDUIT SHALL BE STEEL OR CAST IRON. 8.10.3. FITTINGS FOR RIGID CONDUIT SHALL BE STEEL THREADED TYPE.

8.10.4. FITTINGS FOR PVC SHALL BE SCHEDULE 40 GLUE-ON TYPE

8.11. INSTALLATION OF RACEWAYS

PROVIDE ALL CONDUITS CONCEALED, EXCEPT IN EQUIPMENT ROOM, CHASES OR AS INDICATED ON THE DRAWINGS. ALL CONDUITS, EXPOSED AND CONCEALED SHALL BE RUN PARALLEL AND PERPENDICULAR TO BUILDING LINES 9.3.1. AND GROUPED TOGETHER AS MUCH AS POSSIBLE, EVEN ABOVE LAY-IN

HOLD ROUTING OF NEW RACEWAYS IN NEW AND EXISTING BUILDINGS AS TIGHTLY AS POSSIBLE TO THE STRUCTURE ABOVE. OBTAIN APPROVAL OF OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. DO NOT INSTALL ANY ELECTRICAL WORK WITHIN 6 INCHES OF ROOF DECKING.

CONDUIT SHALL BE CLEANED INSIDE BEFORE ANY WIRES ARE PULLED. CONDUIT ENDS SHALL BE CAPPED AND PLUGGED WITH STANDARD ACCESSORIES AS SOON AS CONDUIT HAS BEEN PERMANENTLY INSTALLED. ALL RACEWAYS SHALL BE ENTIRELY FREE OF PLASTER, MORTAR, WATER AND OTHER FOREIGN MATTER BEFORE INSTALLING CONDUCTORS OR CABLES.

A SEPARATE GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL RUNS. WHERE SIZES LARGER THAN #12 AWG ARE REQUIRED BY THE NEC, THE CONDUCTOR SHALL BE SIZED AS INDICATED IN THE NEC. ALL GROUNDING CONDUCTORS SHALL HAVE A GREEN OUTER COVERING, OR GREEN MARKING TAPE OVER THEIR ENTIRE EXPOSED LENGTHS.

ALL JOINTS SHALL BE MADE TIGHT WITH WATERTIGHT COUPLINGS MATCHING CONDUIT AND ALL CORNERS SHALL BE MADE WITH LONG RADIUS ELBOWS. THE ENDS OF ALL CONDUITS SHALL BE CUT SQUARE AND REAMED AND ALL JOINTS BROUGHT TO A SHOULDER. CONDUIT SHALL BE CONTINUOUS BETWEEN OUTLETS LO MAKE A COMPLETE INSTALLATION AND TO PROVIDE A CONTINUOUS GROUND.

MECHANICALLY FASTEN TOGETHER METAL CONDUITS, ENCLOSURES, AND RACEWAYS FOR CONDUCTORS TO FORM A CONTINUOUS ELECTRICAL CONDUCTOR. CONNECT BONDS TO ELECTRICAL BOXES, FITTINGS AND CABINETS TO PROVIDE ELECTRICAL CONTINUITY AND FIRM MECHANICAL

AVOID USE OF DISSIMILAR METALS THROUGH SYSTEM TO ELIMINATE

POSSIBILITY OF ELECTROLYSIS. PROVIDE EXPANSION FITTINGS IN RACEWAYS EVERY 200' LINEAR RUN OR

WHEREVER STRUCTURAL EXPANSION JOINTS ARE CROSSED. PROVIDE NYLON PULL CORD IN ALL EMPTY CONDUITS. (MINIMUM 90# TENSILE STRENGTH).

8.11.10. CONDUIT INSTALLATION (EXCEPT AS NOTED) USE: RIGID METAL CONDUIT (RMC) FOR ALL WEATHER EXPOSED WORK, FOR ALL STUB-UPS IN WET/DAMP AREAS, FOR ALL ROOF PENETRATIONS AND FOR ANY FREEZER/ COOLER PENETRATIONS.

E.M.T. FOR ALL INTERIOR CONCEALED AND FOR INTERIOR EXPOSED WORK NOT SUBJECT TO MECHANICAL INJURY.

FLEXIBLE METAL CONDUIT FROM OUTLET BOXES TO RECESSED LIGHTING

8.11.10.3. P.V.C. FOR ALL UNDERGROUND WORK OR WORK INSTALLED IN CONCRETE AND USE RIGID METAL CONDUIT ELBOW AT STUB-UP LOCATIONS.

MOVEMENT OR VIBRATION. LIQUID-TIGHT FLEXIBLE CONDUIT FOR FINAL 24" CONNECTION TO ITEMS WHERE SUBJECTED TO ONE OR MORE OF THE FOLLOWING CONDITIONS: 8.11.10.5.1. EXTERIOR LOCATION.

MOIST OR HUMID ATMOSPHERE WHERE CONDENSATE CAN BE EXPECTED TO ACCUMULATE

FIXTURE AND FINAL 24" OF CONNECTION TO ITEMS SUBJECT TO

CORROSIVE ATMOSPHERE. 8.11.10.5.4. SUBJECTED TO WATER SPRAY OR DRIPPING OIL, WATER OR GREASE.

FINAL CONNECTION TO ROTATING OR VIBRATING EQUIPMENT CUT CONDUITS STRAIGHT, PROPERLY REAM AND CUT THREADS FOR HEAVY WALL CONDUIT DEEP AND CLEAN INTERIOR AND EXTERIOR THREADS, FIELD GALVANIZE THREADS WITH APPROVED COMPOUND FOR THE PURPOSE.

FIELD BEND CONDUIT WITH BENDERS DESIGNED FOR THE PURPOSE TO PREVENT DISTORTION NOR VARY INTERNAL DIAMETER.

ONLY INSTALL CONDUIT EXPOSED ON ROOFTOPS WHEN IT IS IMPOSSIBLE TO DO OTHERWISE, OR ONLY IF SPECIFICALLY INDICATED FOR SUCH INSTALLATION CASE-BY-CASE ELSEWHERE IN DOCUMENTS. INSTALLATION CONVENIENCE, FINANCIAL CONSIDERATIONS, LACK OF COORDINATION WITH OTHER TRADES AND SIMILAR RATIONALE ARE NOT SUFFICIENT REASONS FOR DOING SO.

IN CASES WHERE CONDUITS MUST BE INSTALLED ON ROOFTOPS, DE-RATE CONDUCTORS AND MODIFY CONDUIT SIZES AS NEEDED TO ACCOMMODATE THIS CONDITION.

PROVIDE EXPANSION FITTINGS, WHICH ARE UL LISTED AND LABELED FOR THE RESPECTIVE APPLICATIONS, AT ALL BUILDING EXPANSION JOINTS AND AT MAXIMUM DISTANCES OF 100 FEET.

PAINT ALL SUCH CONDUITS WITH AT LEAST TWO COATS OF UV-RESISTANT 8.11.13.3. WEATHERPROOF PAINT. PROVIDE WHITE PAINT ON FLAT ROOFTOPS THAT HAVE FINISHES WHITE IN COLOR, AND FOR OTHERWISE-COLORED ROOF FINISHES THAT ARE NOT VISIBLE FROM THE BUILDING INTERIOR OR FROM THE GROUND OUTDOORS. ELSEWHERE SELECT COLORS TO MATCH SURROUNDING SURFACES. SUBMIT COLORS TO ARCHITECT FOR REVIEW IN ADVANCE OF PROCURING PAINT.

CONDUITS PASSING THROUGH STRUCTURAL MEMBERS SHALL BE PROVIDED WITH STUB AND COUPLING OR SLEEVE IN THE MEMBER.

WHERE MOISTURE CONDITIONS ARE ENCOUNTERED, A HOLE SHALL BE DRILLED AT THE LOWEST POINT IN THE CONDUIT RUN.

PROVIDE SLEEVES FOR ALL FIRE WALL AND SMOKE PARTITION PENETRATIONS (SEALED ACCORDINGLY)

OVERHEAD ELECTRIC WORK: INSTALL WORK SO THAT NO RACEWAY OR CABLE IS WITHIN SIX INCHES BELOW ROOF DECK(S). SUSPEND AND SUPPORT OVERHEAD ELECTRICAL WORK FROM ROOF TRUSSES AND JOISTS/JOIST GIRDERS ONLY AT PANEL POINTS, AT TOP CORD ONLY, UNLESS OTHERWISE INDICATED.

8.11.17.1. STRENGTH OF SUPPORT ASSEMBLIES: WHERE NOT INDICATED, SELECT SIZES OF COMPONENTS SO STRENGTH WILL BE ADEQUATE TO CARRY PRESENT AND FUTURE STATIC LOADS WITHIN SPECIFIED LOADING LIMITS. MINIMUM STATIC DESIGN LOAD USED FOR STRENGTH DETERMINATION SHALL BE WEIGHT OF SUPPORTED COMPONENTS PLUS 200 LBS.

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PROVIDE SUPPORTS FOR MULTIPLE RACEWAYS CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, EQUIPMENT, CONNECTED SYSTEMS AND ASSOCIATED COMPONENTS/CONTENTS. PROVIDE SUPPORTS ADEQUATE IN TENSION, SHEAR, AND PULLOUT FORCE TO RESIST MAXIMUM LOADS CALCULATED OR IMPOSED FOR THIS PROJECT, WITH A MINIMUM STRUCTURAL SAFETY FACTOR OI FIVE TIMES THE APPLIED FORCE.

9.2. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO SUPERVISE THE INSTALLATION OF AND PAY FOR ALL ADDITIONAL MATERIAL, WOOD OR METAL, AND LABOR WHICH MAY BE REQUIRED TO SUPPORT ANY TYPE OF PERMANENT OR TEMPORARY ELECTRICAL APPARATUS EMPLOYED IN THE EXECUTION OF THE ELECTRICAL CONTRACTOR'S WORK.

PROVIDE SUPPORTS, ANCHORS, SLEEVES, AND SEALS FURNISHED AS PART OF FACTORY-FABRICATED EQUIPMENT AS REQUIRED.

ALL CONDUIT SHALL BE SUPPORTED INDEPENDENTLY FROM ALL OTHER BUILDING SYSTEMS AND SHALL BE SUPPORTED DIRECTLY FROM STRUCTURAL

ELECTRICALLY RELATED WORK SHALL NOT BE SUPPORTED FROM DUCTWORK, DUCTWORK HANGERS, CEILING SUPPORTS. EXISTING CONDUIT SUPPORTS, ETC. ALL PARTS AND HARDWARE USED FOR SUPPORT OF EQUIPMENT, CONDUITS AND

FITTINGS, SHALL BE GALVANIZED. MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZE-TYPE SUPPORTS FABRICATED WITH STEEL SLOTTED "KINDORF" CHANNELS, SIZED SO CAPACITY CAN BE INCREASED BY AT LEAST 50 PERCENT IN FUTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOAD LIMITS. SECURE RACEWAYS AND CABLES TO THESE SUPPORTS WITH TWO-BOLT CONDUIT CLAMPS, SINGLE-BOLT CONDUIT CLAMPS, OR SINGLE-BOLT CONDUIT CLAMPS USING SPRING FRICTION ACTION FOR RETENTION IN SUPPORT CHANNEL AS

CONDUIT SHALL BE SUPPORTED BY APPROVED STRAPS, FASTENERS AND HANGERS. 9.6.1. HANGERS SHALL BE SUSPENDED FROM THREADED RODS.

PERFORATED STRAPS WILL NOT BE ACCEPTABLE. FASTENERS SHALL BE LEAD EXPANSION SHIELDS IN BLOCK OR CONCRETE, TOGGLE BOLTS IN HOLLOW WALLS, MACHINE SCREWS ON METAL SURFACES

AND WOOD SCREWS ON WOOD CONSTRUCTION, FASTEN PIPE STRAPS AND HANGERS TO CONCRETE USING INSERTS OR EXPANSION BOLTS AND TO HOLLOW MASONRY USING TOGGLE BOLTS. WOODEN PLUGS AND SHIELDS WILL NOT BE PERMITTED. ALL SUPPORTS IN BAR JOIST CONSTRUCTION SHALL BE ATTACHED TO THE TOP CORD OF THE JOISTS USING SUITABLE CLAMPS APPROVED FOR THE PURPOSE.

AT BUILDING EXPANSION JOINTS AND WHERE DEFLECTION IS EXPECTED, CONDUITS SHALL BE PROVIDED WITH EXPANSION FITTINGS WITH BONDING JUMPERS. 9.8. STRUCTURAL STEEL FOR FABRICATED SUPPORTS AND RESTRAINTS: ASTM A 36/A

36M, STEEL PLATES, SHAPES, AND BARS; BLACK AND GALVANIZED. USE OF SYNTHETIC OR PLASTIC "TIE-WRAPS", "ZIP TIES", "WIRE LIES" AND SIMILAR PRODUCTS ARE NOT PERMITTED AS A PERMANENT MEANS OF ANCHORING, SECURING, SUPPORTING OR OTHERWISE INSTALLING ANY CABLES, CONDUCTORS,

CONDUITS, RACEWAYS, DEVICES, EQUIPMENT OR OTHER ELECTRICAL WORK. CUT, FIT, AND PLACE MISCELLANEOUS METAL FABRICATIONS ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR ELECTRICAL MATERIALS AND EQUIPMENT.

PLACE AND SECURE ANCHORAGE DEVICES. USE SUPPORTED EQUIPMENT MANUFACTURER'S SETTING DRAWINGS, TEMPLATES, DIAGRAMS, INSTRUCTIONS, AND DIRECTIONS FURNISHED WITH ITEMS TO BE EMBEDDED.

INSTALL ANCHOR BOLTS TO ELEVATIONS REQUIRED FOR PROPER ATTACHMENT TO SUPPORTED EQUIPMENT. PROVIDE FEMALE EXPANSION ANCHORS, AND INSTALL STUDS AND NUTS AFTER

EQUIPMENT IS POSITIONED.

PROVIDE BUSHINGS FOR FLOOR/WALL-MOUNTED EQUIPMENT ANCHORS TO ALLOW FOR RESILIENT MEDIA BETWEEN ANCHOR BOLTS/STUDS AND MOUNTING

CONCRETE INSERTS: STEEL OR MALLEABLE-IRON, SLOTTED SUPPORT SYSTEM UNITS 9.12. SIMILAR TO MSS TYPE 18; COMPLYING WITH MFMA-4 OR MSS SP-58. 9.13. MECHANICAL-EXPANSION ANCHORS: INSERT-WEDGE-TYPE1 ZINC-COATED STEEL FOR USE IN HARDENED PORTLAND CEMENT CONCRETE WITH TENSION, SHEAR, AND

PULLOUT CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS IN WHICH USED. CLAMPS FOR ATTACHMENT TO STEEL STRUCTURAL ELEMENTS: MSS SP-58, TYPE

SUITABLE FOR ATTACHED STRUCTURAL ELEMENT. THROUGH BOLTS: STRUCTURAL TYPE, HEX HEAD, AND HIGH STRENGTH. COMPLY WITH ASTM A 325.

9.14.2. TOGGLE BOLTS: ALL-STEEL GALVANIZED SPRINGHEAD TYPE, 3116" X 4". 9.14.3. HANGER RODS: THREADED STEEL, GALVANIZED STEEL RODS; 1/2" DIA MIN. MINIMUM HANGER ROD SIZE FOR RACEWAY: MINIMUM ROD SIZE SHALL BE

1/4 INCH IN DIAMETER. CLEVIS HANGERS: GALVANIZED STEEL: WITH 1/2" DIA. HOLE FOR ROUND STEEL

GALVANIZED STEEL ROD REDUCING COUPLINGS, 112" X 5/8".

GALVANIZED STEEL CLAMPS; 112" ROD SIZE GALVANIZED STEEL CLAMPS, 1-1/4" X 3/16" STOCK; 3/8" CROSS BOLT; FLANGE

WIDTH 2". HEXAGON NUTS FOR 112" ROD SIZE;

9.14.5.

GALVANIZED STEEL LEAD EXPANSION ANCHORS, 1/2". COORDINATE INSTALLATION OF ROOF CURBS, EQUIPMENT SUPPORTS, AND ROOF

PENETRATIONS STEEL SLOTTED SUPPORT SYSTEMS COMPLY WITH MFMA-4, FACTORY-FABRICATED COMPONENTS FOR FIELD ASSEMBLY.

CONSTRUCT WITH 9116" DIA. HOLES, NOMINAL 2" O.C. ON TOP SURFACE, WITH STANDARD FACTORY FINISH, AND WITH THE ALL NECESSARY FITTINGS WHICH

MATE AND MATCH WITH UCHANNEL PROVIDE METALLIC COATINGS THAT ARE HOT-DIP GALVANIZED AFTER FABRICATION AND APPLIED ACCORDING TO MFMA-4.

9.16.3. PROVIDE CHANNEL DIMENSIONS THAT ARE SELECTED FOR APPLICABLE LOAD COMPLY WITH NECA 1 AND NECA 101 UNLESS REQUIREMENTS IN THIS OR 9.16.4.

OTHER SPECIFICATION SECTIONS ARE STRICTER. FOR SUPPORTING RIGID METAL:

RISER CLAMPS: GALVANIZED STEEL; WITH 2 BOLTS AND NUTS, AND 4" EARS. CLEVIS HANGERS: GALVANIZED STEEL WITH 1/2" DIA. HOLE FOR ROUND STEEL

TWO-HOLE CONDUIT STRAPS: GALVANIZED STEEL; 3/4" STRAP WIDTH; AND 2-1 9.17.3. /8" BETWEEN CENTER OF SCREW HOLES.

OFFSET CONDUIT CLAMPS: GALVANIZED STEEL SUPPORT FOR CONDUCTORS IN VERTICAL CONDUIT: FACTORY-FABRICATED 9.18. ASSEMBLY CONSISTING OF THREADED BODY AND INSULATING WEDGING PLUG OR PLUGS FOR NON-ARMORED ELECTRICAL CONDUCTORS OR CABLES IN RISER CONDUITS. PLUGS SHALL HAVE NUMBER, SIZE, AND SHAPE OF CONDUCTOR GRIPPING PIECES AS REQUIRED TO SUIT INDIVIDUAL CONDUCTORS OR CABLES SUPPORTED BODY SHALL BE MALLEABLE IRON.

9.19. MOUNTING TO WOOD:

FASTEN WITH LAG SCREWS OR THROUGH-BOLTS 9.19.2. PROVIDE STANDARD GRADE, LIGHT-FRAMING-SIZE LUMBER OF ANY SPECIES. NUMBER 3 COMMON OR STANDARD GRADE BOARDS COMPLYING WITH WCLIB OR AWPA RULES, OR NUMBER 3 BOARDS COMPLYING WITH SPIB RULES.

AND KILN DRIED TO A MOISTURE CONTENT OF NOT MORE THAN 19 PERCENT. PROVIDE MARINE GRADE PRODUCTS WHERE SUBJECT TO MOISTURE CONDITIONS.

LUMBER SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH AWPB LP-2

9.19.5. PROVIDE SIMPSON STRONG TIE (OR EQUAL) EXPANSION SCREW ANCHORS. 9.19.6. CUT, FIT, AND PLACE WOOD GROUNDS, NAILERS, BLOCKING, AND ANCHORAGE ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION TO SUPPORT AND ANCHOR ELECTRICAL MATERIALS AND EQUIPMENT.

SELECT FASTENER SIZES THAT WILL NOT PENETRATE MEMBERS WHERE OPPOSITE SIDE WILL BE EXPOSED TO VIEW OR WILL RECEIVE FINISH MAKE TIGHT CONNECTIONS BETWEEN MEMBERS. INSTALL FASTENERS

WITHOUT SPLITTING WOOD MEMBERS. ATTACH TO SUBSTRATES AS REQUIRED TO SUPPORT APPLIED LOADS. ATTACHMENTS TO WOOD STRUCTURAL MEMBERS: PROVIDE BOLTS INSTALLED THROUGH MEMBERS.

MOUNTING TO NEW CONCRETE: PROVIDE CHANNEL-TYPE CONCRETE INSERTS AND BOLT TO INSERTS, OR PROVIDE EXPANSION ANCHORS FOR APPLICATIONS WHERE INSERTS ARE NOT PRACTICAL. 9.21. MOUNTING TO EXISTING CONCRETE: EXPANSION ANCHOR FASTENERS. INSTEAD OF

EXPANSION ANCHORS, POWDER/GAS-ACTUATED DRIVEN THREADED STUDS PROVIDED WITH LOCK WASHERS AND NUTS MAY BE USED IN EXISTING STANDARD-WEIGHT CONCRETE 4 INCHES THICK OR GREATER. DO NOT USE FOR ANCHORAGE TO LIGHTWEIGHT-AGGREGATE CONCRETE OR FOR SLABS LESS THAN 4 INCHES THICK. DO NOT USE FOR WORK ANCHORED TO NEWLY INSTALLED CONCRETE. ONLY USE THIS METHOD WHERE OTHER METHODS CANNOT OR SHOULD NOT BE USED, AND ONLY AFTER RECEIVING CASE-BY-CASE PERMISSION FROM

OWNER AND DESIGN PROFESSIONALS. HOLES FOR EXPANSION ANCHORS IN CONCRETE: DRILL AT LOCATIONS AND TO EPTHS THAT AVOID REINFORCING BARS.

IOUNTING TO MASONRY: APPROVED TOGGLE-TYPE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION ANCHOR FASTENERS ON SOLID MASONRY UNITS. MOUNTING TO STEEL: WELDED THREADED STUDS COMPLYING WITH AWS D11/D1 TM WITH LOCK WASHERS AND NUTS, OR BEAM CLAMPS (MSS TYPE 19, 21, 23, 25, OR 27) COMPLYING WITH MSS SP-69, CLAMPED TO FLANGES OF BEAMS OR ON UPPER TRUSS CHORDS OF BAR JOISTS.

MOUNTING TO LIGHT STEEL: SHEET METAL SCREWS. ITEMS MOUNTED ON HOLLOW WALLS AND NONSTRUCTURAL BUILDING SURFACES: 9.26. MOUNT CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES ON

SLOTTED-CHANNEL RACKS ATTACHED TO SUBSTRATE. FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES: WELDED OR BOLTED, STRUCTURAL-STEEL SHAPES, SHOP OR FIELD FABRICATED TO FIT DIMENSIONS OF SUPPORTED EQUIPMENT.

ROOF DECKS: DO NOT SUSPEND OVERHEAD HANGERS, OR SUPPORT ANY OTHER 9.28. OVERHEAD ELECTRICAL WORK, FROM ROOF DECKS. 9.29. ACCESS DOORS. DO NOT USE ACCESS DOORS UNLESS SPECIAL PRIOR WRITTEN PERMISSION IS

9.29.2.

GRANTED FROM THE OWNER'S REPRESENTATIVE. INSTALL PULL BOXES, JUNCTION BOXES, ETC. IN AREAS WHICH ARE ACCESSIBLE AFTER COMPLETION OF CONSTRUCTION. DO NOT INSTALL PULL BOXES OR JUNCTION BOXES ABOVE GYPSUM BOARD OR SIMILAR INACCESSIBLE CEILING SYSTEMS

WHERE THERE IS NO OTHER RECOURSE BUT TO PROVIDE AN ACCESS DOOR/PANEL, AND WHERE APPROVAL OF OWNER'S REPRESENTATIVE HAS BEEN OBTAINED, PROVIDE REQUIRED ACCESS DOORS/PANELS AS REQUIRED FOR A COMPLETE CODE-COMPLIANT ELECTRICAL INSTALLATION.

PROVIDE ACCESS DOORS IN FIRE/SMOKE RATINGS THAT MEET OR EXCEED THE SURROUNDING SURFACE THAT IS BEING PENETRATED.

CONDUCTORS

BUILDING WIRE, UNLESS OTHERWISE INDICATED, SHALL BE 600 VOLT, TYPE THHN/THWN/THWN-2 INSULATION FOR INTERIOR USE AND EXTERIOR USE WITHIN CONDUIT. PROVIDE TYPE XHHW-2 INSULATION FOR ALL WIRING BELOW GRADE. CONDUCTORS SHALL BE SIZED AND RUN AS INDICATED

CONDUCTORS SHALL BE SOFT DRAWN COPPER OF NOT LESS THAN 98% NO WIRE SMALLER THAN NUMBER TWELVE (12) AWG SHALL BE USED UNLESS

OTHERWISE INDICATED. USE OF #14 COLOR CODED WIRE WILL BE ALLOWED FOR CONTROL CIRCUITS ONLY CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND FROM TERMINAL BOARD TO POINT OF FINAL CONNECTION, AND NO SPLICE SHALL BE MADE

EXCEPT WITHIN OUTLET OR JUNCTION BOXES. KEEP CONDUCTOR SPLICES TO MINIMUM.

PULL CONDUCTORS SIMULTANEOUSLY WHERE MORE THAN ONE IS BEING INSTALLED IN SAME RACEWAY. USE UL LISTED PULLING COMPOUND OR LUBRICANT. WHERE NECESSARY INCREASE WIRE SIZES TO OFFSET VOLTAGE DROP AS/IF

ALL CONDUCTORS SHALL BE RATED FOR 90 DEG. C. MINIMUM. PROVIDE WITH FULL PARITY SIZED GREEN INSULATED EQUIPMENT GROUND CONDUCTOR. PROVIDE COMPATIBLE STEEL FITTINGS WITH INTEGRAL RED PLASTIC INSULATED THROAT BUSHINGS. CABLES SHALL BE 90 DEG. C. RATED WITH ALL COMPONENTS AND FITTINGS LISTED FOR GROUNDING AND COMPLIANT WITH THE FOLLOWING: UL STD.4 AND UL STD. 83;ANSI E119 AND E814; NFPA 70.

INSULATION VALUE OF JOINTS SHALL BE 100%, IN EXCESS OF WIRE. PROVIDE ADEQUATE LENGTH OF CONDUCTORS WITHIN ELECTRICAL ENCLOSURES AND TRAIN THE CONDUCTORS TO TERMINAL POINTS WITH NO EXCESS.

BUNDLE MULTIPLE CONDUCTORS, WITH CONDUCTORS NO LARGER THAN 10 AWG CABLED IN INDIVIDUAL CIRCUITS. DO NOT USE ARMORED AC, BX, NM, OR ANY MANUFACTURED CABLE ASSEMBLY,

UNLESS NOTED OTHERWISE

ALL WIRING SHALL BE IN CONDUIT, UNLESS NOTED OTHERWISE. COLOR CODING OF CONDUCTORS SHALL BE AS FOLLOWS FOR VOLTAGES WHEN PRESENT

208Y/120V SYSTEMS 10.13.1. 10.13.2. PHASE A - BLACK PHASE B PHASE C 10.13.4.

10.13.5. G #10 AND SMALLER SHALL BE SOLID. AWG #8 AND LARGER SHALL BE STRANDED. MAINTAIN A UNIFORM ELEVATION FOR ALL CABLE RUNS WHEREVER POSSIBLE. ALL

CABLES SHALL BE SUPPORTED/ANCHORED AT MAXIMUM 4 FOOT INTERVALS AND WITHIN 12" OF BOX OR OUTLET AND SHALL NOT SAG. INSTALL CABLES IN A MANNER THAT PREVENTS OVERHEATING. CABLES SHALL BE FASTENED DIRECTLY TO THE STRUCTURE USING FACTORY

AMPS/CLIPS SPECIFICALLY DESIGNED FOR THE RESPECTIVE CABLE. 10.18. **RE CONNECTIONS**

FOR EACH ELECTRICAL CONNECTION INDICATED, PROVIDE COMPLETE ASSEMBLY OF MATERIALS, INCLUDING BUT NOT LIMITED TO, PRESSURE CONNECTORS, TERMINALS (LUGS), ELECTRICAL INSULATING TAPE, HEAT-SHRINKABLE INSULATING TUBING, CABLE TIES, SOLDERLESS WIRE-NUTS, AND OTHER ITEMS AND ACCESSORIES AS NEEDED TO COMPLETE SPLICES AND

TERMINATIONS OF TYPES INDICATED. ALL FEEDER AND SUB-FEEDER WIRING CONNECTIONS SHALL BE MADE WITH COMPRESSION CONNECTORS BY SQUARE D OR ACCEPTABLE EQUIVALENT. ALL BRANCH WIRING CONNECTIONS SHALL BE 3M SCOTCH LOCK CONNECTORS OR ACCEPTABLE EQUIVALENT.

WHERE CABLE CONNECTIONS REQUIRE INSULATION, SCOTCH #33, ELECTRICAL TAPE SHALL BE USED FOR WRAPPING. THE CONDUCTORS TERMINATING AT EACH WIRED OUTLET SHALL BE LEFT NO LESS THAN 8" LONG AT THE IR OUTLET FITTINGS TO FACILITATE INSTALLMENT

OF DEVICES OR LUMINAIRES. MAKE TERMINATIONS SO THERE IS NO BARE CONDUCTOR AT THE TERMINAL. 10.19. GROUND AND BONDING CONDUCTORS FOR ELECTRICAL SYSTEMS

ALL METALLIC CONDUIT. SURFACE RACEWAYS, WIREWAYS, SUPPORTS, CABINET AND EQUIPMENT SHALL BE GROUNDED. PROVIDE GROUNDING ELECTRODE CONDUCTORS FOR SERVICE ENTRANCES

AND DERIVED SYSTEMS. PROVIDE ALL FEEDERS AND BRANCH CIRCUITS WITH INSULATED (GREEN COVERING) EQUIPMENT GROUNDING.

DO NOT SHARE NEUTRALS WHEN AMONGST MULTIPLE BRANCH CIRCUITS OR WITH MULTI-WIRE BRANCH CIRCUITS. UNLESS SPECIFICALLY INDICATED OTHERWISE ON DRAWINGS, PROVIDE

GROUNDED ("NEUTRAL") CONDUCTORS THAT ARE AT LEAST COMPARABLY-SIZED WITH CORRESPONDING PHASE CONDUCTORS FOR ALL **APPLICATIONS** NORMAL SYSTEM POWER FEEDERS AND BRANCH CIRCUITS SHALL BE INSTALLED IN SEPARATE RACEWAYS FROM EMERGENCY SYSTEM POWER. ALL WIRING FOR DIFFERENT POWER VOLTAGES SHALL BE INSTALLED IN RACEWAY SYSTEMS

SEPARATE FROM EACH OTHER. ALL WIRING FOR THE VARIOUS ELECTRICAL SYSTEMS

SHALL BE INSTALLED IN RACEWAY SYSTEMS SEPARATE FROM EACH OTHER. BOXES AND FITTINGS

EXTENT OF ELECTRICAL BOX AND ASSOCIATED FITTING WORK IS GENERALLY INDICATED BY DRAWINGS AND SCHEDULES. 11.2. PROVIDE BOXES AND FITTINGS FOR ALL WORK.

GANG TYPE OUTLET BOXES SHALL NOT BE USED. THE OUTLET BOX LOCATIONS INDICATED ON DRAWINGS SHALL BE CONSIDERED APPROXIMATE, AND THEREFORE, IT SHALL BE INCUMBENT UPON CONTRACTOR TO

STUDY THE GENERAL CONSTRUCTION WITH RELATION TO SPACES AND EQUIPMENT SURROUNDING EACH OUTLET. ALL OUTLET, SWITCH, AND JUNCTION BOXES SHALL BE MADE OF CODE COMPLIANT #12 GAUGE STEEL COMPLETE WITH RINGS AND REMOVABLE FRONT FASTENED SCREW COVER PLATES WITH COUNTER SINK HEAD SCREWS.

> OUTLET BOXES WHERE CONDUIT IS CONCEALED, BOXES SHALL NOT BE LESS THAN 4" SQUARE

X 1-1/2" DEEP.

CEILING: 4" SQUARE, 2-1/8" DEEP FOR EXPOSED OR FURRED WORK, 3" DEEP FOR BOXES POURED IN CONCRETE.

PROVIDE CONCRETE POUR BOXES OF THE TYPE SPECIALLY DESIGNED FOR THE APPLICATION. PROVIDE PLASTER RINGS OR EXTENSION RINGS WHERE REQUIRED.

11.6.2.3. PROVIDE DEEPER BOXES WHERE REQUIRED. 11.6.3. WALL: 4" SQUARE, 2-1/8" DEEP BOXES.

PROVIDE EXTENSION RINGS OR COVERS OF SUFFICIENT DEPTH TO BRING COVERS FLUSH WITH THE FINISHED SURFACE. MASONRY: FOR FLUSH MOUNTED BOXES IN EXPOSED MASONRY OR TILE.

PROVIDE COVERS WITH SQUARE CORNERS ON THE RAISED PORTION AND

WITH SUFFICIENT DEPTH TO TRIM OUT FLUSH WITH FINISHED SURFACE.

OUTLET BOXES SHALL BE 4" OCTAGONAL FOR LIGHTING FIXTURES WITH APPROVED PLASTER RINGS AND PLATES. EXPOSED AND WET OR DAMP AREA AT EQUIPMENT, SUCH AS EXTERIOR, ROOFS OR KITCHENS WHEN PRESENT, PROVIDE FS OR FD BOXES WITH SUITABLE

WEATHERPROOF COVERS PROVIDE COVERS OF "IN USE" TYPE COVERS WHERE CORDS/PLUGS ARE INSTALLED AND MUST REMAIN AS "IN USE".

PULL AND JUNCTION BOXES PROVIDE BOXES WHERE REQUIRED TO FACILITATE THE PULLING OF WIRES OR

BOXES SHALL BE IN ACCORDANCE WITH ARTICLE 370 OF N.E.C. 11.10. 11.10.1. PROVIDE CORROSION-RESISTANT KNOCKOUT CLOSURES, CONDUIT LOCKNUTS

AND MALLEABLE IRON CONDUIT BUSHINGS, OFFSET CONNECTORS, OF TYPES ND SIZES, TO SUIT RESPECTIVE INSTALLATION REQUIREMENTS AND

INSTALLATION OF BOXES AND FITTINGS POSITION RECESSED OUTLET BOXES ACCURATELY TO ALLOW FOR SURFACE

INISH THICKNESS FASTEN ELECTRICAL BOXES FIRMLY AND RIGIDLY TO SUBSTRATES OR STRUCTURAL SURFACES TO WHICH ATTACHED OR SOLIDLY EMBED ELECTRICAL BOXES IN CONCRETE OR MASONRY.

ALL BOXES SHALL BE EQUIPPED WITH PROPER COVERS TO BE FLUSH WITH FINISHED WALL SURFACE.

WHERE OUTLET BOXES OCCUR IN BLOCK, CINDER, CONCRETE BLOCK, FACING TILE, OR OTHER MATERIAL WHERE SUCH MATERIALS FORM THE FINISHED WALL SURFACE; THE OPENING FOR THE BOX SHALL BE CUT NEATLY AND OF THE SIZE THAT THE COVER PLATE WILL COVER ALL PARTS OF THE OPENING.

11.11.5. FOR SPECIAL APPLICATION, JUNCTION BOXES SHALL BE NOTED, DETAILED AND/OR SIZED ON THE DRAWINGS OR IN THE FIELD AS REQUIRED. LOCATIONS OF OUTLETS

CONTRACTOR SHALL STUDY THE ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR EXACT LOCATIONS COORDINATED WITH DOOR SWINGS, GLASS PARTITIONS, ETC. VERIFY ALL BOX/DEVICE MOUNTING HEIGHTS AND LOCATIONS IN FIELD WITH OWNERS REPRESENTATIVE. THE VARIOUS OUTLETS ARE TO BE LOCATED AT THE FOLLOWING HEIGHTS ABOVE FINISHED FLOOR TO THE CENTER LINE OF BOX, UNLESS NOTED OTHERWISE AT AN INDIVIDUAL OUTLET ON THE DRAWINGS, WHEN SCHEDULED, OR IN CASES WHERE USING CENTER OF BOX FOR MEASUREMENT WOULD RESULT IN A DEVICE HAVING AN OPERABLE COMPONENT HIGHER THAN 48 INCHES ABOVE FINISHED FLOOR, INSTALL BOXES LOWER AS NEEDED SO THAT UPPERMOST PART OF OPERABLE COMPONENT IS

NO HIGHER THAN 48 INCHES. VERIFY ALL EQUIPMENT REQUIREMENTS BEFORE

ROUGH-IN: 11.12.1.1. WALL SWITCHES & PULL STATIONS (VERT. MTD.) 48" RECEPTACLES (VERT. MTD.) 18"

11.12.1.3. TELEPHONE OUTLETS (DESK PHONE) 18" TELEPHONE OUTLETS (WALL PHONE) 46" 11.12.1.4. 11.12.1.5. DATA CABLE OUTLETS 18" 11.12.1.6. OUTLETS ABOVE COUNTERS (HORZ. MTD.) 6" ABOVE 11.12.1.7. BACKSPLASH

11.12.1.8. FIRE ALARM HORNS/STROBES 80" MIN TO 11.12.1.9. 84" MAX TO 11.12.1.10. TOP OF

OUTLET MOUNTING HEIGHTS INDICATED ON THE DRAWINGS AT OUTLETS TAKE PRECEDENCE. REFER TO DRAWINGS FOR DETAILS OF OTHER EQUIPMENT MOUNTING HEIGHTS. MOUNTING HEIGHTS FOR FLUSH OUTLETS IN BLOCK WALLS MAY BE CHANGED FOR INSTALLATION. CONSULT OWNER'S

REPRESENTATIVE IN FIELD PRIOR TO ANY SUCH INSTALLATION. 12. ELECTRICAL SYSTEM GROUNDING MAIN SERVICE GROUNDING SYSTEM SHALL CONSIST OF THREE BRANCHES.

SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. GROUNDING CONDUCTOR TO THE CONCRETE FOOTING REINFORCING/BUILDING REINFORCING STEEL

GROUNDING CONDUCTOR TO THE WATER PIPING SYSTEM WHICH SHALL BE

GROUNDING CONDUCTOR TO THE ELECTRODE GROUNDING SYSTEM (DRIVEN

GROUND RODS) WHICH SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. 12.2. GROUNDING CONDUCTOR SHALL BE BONDED AT BOTH ENDS TO THE CONDUIT IN

WHICH IT IS INSTALLED. MAIN SERVICE GROUND TO THE WATER PIPING SYSTEM SHALL BE CONNECTED ON THE STREET SIDE OF THE WATER METER, OR ON A COLD WATER PIPE AS NEAR AS PRACTICABLE TO THE WATER SERVICE ENTRANCE TO THE BUILDING.

BONDING JUMPERS SHALL BE PROVIDED WHERE REQUIRED BY THE NATIONAL ELECTRICAL CODE. BOND ALL STRUCTURAL STEEL OF THE BUILDING TO THE MAIN SERVICE

BOND THE NATURAL GAS SERVICE TO THE GROUND ELECTRODE SYSTEM. CONTRACTOR SHALL PROVIDE A GROUNDING SYSTEM CONSISTING OF DRIVEN GROUND RODS WITH INTERCONNECTING CABLES.

GROUND RODS SHALL BE INSTALLED WITH TWO FEET OF COVER AND CABLES EXOTHERMICALLY WELDED. GROUND RODS SHALL BE 3/4" DIAMETER BY 10 FEET LONG COPPER CLAD STEEL, ONE PIECE, COPPERWELD #9450, OR APPROVED EQUAL.

GROUND SYSTEM SHALL BE SO CONSTRUCTED THAT THE RESISTANCE BETWEEN THE EQUIPMENT AND THE GROUND SHALL NOT EXCEED 25 OHMS. PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN ALL RACEWAYS AND CABLES

GROUND GRID CONDUCTORS SHALL BE #1/0 BARE DIRECT BURIED.

WIRING DEVICES

SIZED IN ACCORDANCE WITH THE NEC.

GROUND BUS.

THE EXTENT OF WIRING DEVICE WORK IS INDICATED BY THE DRAWINGS AND SCHEDULES. COORDINATE PLATE COLORS WITH ARCHITECTURAL REQUIREMENTS. PROVIDE WIRING DEVICES WHICH ARE U.L. LISTED AND LABELED.

13.3. ACCEPTABLE MANUFACTURERS 13.3.1. HARVEY HUBBELL CO.

13.4.1.2.1.

13.4.2.1.1.

13.4.3.1.2.

13.3.2. LEGRAND-PASS AND SEYMOUR LEVITON MFG. CO. 13.4. FABRICATED WIRING DEVICES SWITCHES SHALL BE SPECIFICATION GRADE, BACK & SIDE WIRED, RATED 20

FINISHES. 13.4.1.1. SNAP SWITCHES 13.4.1.1.1. COMPLY WITH NEMA WD 1 AND UL 20. SILENT MECHANICAL TYPE. THREE AND FOUR-WAY SWITCHES SHALL BE OF THE SAME

13.4.1.1.2. MANUFACTURER AND GRADE. 13.4.1.2. PILOT LIGHT SWITCHES, 20 A:

AMP. 120/277 VOLT, 1 HP @ 120V, A.G. QUIET TYPE, HUBBELL #1221 - IVORY OR

BROWN, COLOR AS DESCRIBED AND/OR SELECTED BY ARCHITECT TO MATCH

SINGLE POLE, WITH NEON-LIGHTED HANDLE, ILLUMINATED WHEN

SWITCH IS "ON." SINGLE-POLE, DOUBLE-THROW, MOMENTARY CONTACT, CENTER-OFF SWITCHES, 120/277 V, 20 A; FOR USE WITH MECHANICALLY HELD LIGHTING CONTACTORS

KEY-OPERATED, SINGLE-POLE, DOUBLE-THROW, MOMENTARY CONTACT, CENTER-OFF SWITCHES, 120/277 V, 20 A; FOR USE WITH MECHANICALLY HELD LIGHTING CONTACTORS, WITH FACTORY-SUPPLIED KEY IN LIEU OF SWITCH HANDLE

13.4.1.5. WALL-BOX DIMMERS 13.4.1.5.1. DIMMER SWITCHES: MODULAR, FULL-WAVE, SOLID-STATE UNITS WITH INTEGRAL, QUIET ON-OFF SWITCHES, WITH AUDIBLE FREQUENCY AND EMI/RFI SUPPRESSION FILTERS. CONTROL: CONTINUOUSLY ADJUSTABLE SLIDER, TOGGLE SWITCH, 13.4.1.5.2.

OR ROTARY KNOB; WITH SINGLE-POLE OR THREE-WAY SWITCHING. COMPLY WITH UL 1472. INCANDESCENT LAMP DIMMERS: 120 V; CONTROL SHALL FOLLOW SQUARE-LAW DIMMING CURVE. ON-OFF SWITCH POSITIONS SHALL

BYPASS DIMMER MODULE. 13.4.1.5.4. 600 W; DIMMERS SHALL REQUIRE NO DERATING WHEN GANGED WITH OTHER DEVICES. ILLUMINATED WHEN "OFF."

FAN SPEED CONTROLS 13.4.2.1. MODULAR, 120-V, FULL-WAVE, SOLID-STATE UNITS WITH INTEGRAL, QUIET ON-OFF SWITCHES AND AUDIBLE FREQUENCY AND EMI/RFI FILTERS.

13.4.2.1.2. CONTINUOUSLY ADJUSTABLE SLIDER, TOGGLE SWITCH, OR ROTARY KNOB, 5 A OR 1.5 A. 13.4.2.1.3. THREE-SPEED ADJUSTABLE SLIDER OR ROTARY KNOB, 1.5 A.

COMPLY WITH UL 1917

OCCUPANCY SENSORS 13.4.3.1. WALL-SWITCH SENSORS: PASSIVE-INFRARED TYPE, 120/277 V, ADJUSTABLE TIME DELAY UP TO 30 MINUTES, 180-DEGREE FIELD OF VIEW, WITH A MINIMUM

COVERAGE AREA OF 900 SQ. FT.

UP TO 20 MINUTES, 180-DEGREE FIELD OF VIEW, WITH A MINIMUM COVERAGE AREA OF 900 SQ. FT. RECEPTACLES SHALL BE HEAVY DUTY GROUNDING TYPE. 20 AMP 125 VOLT RATED, HUBBELL #5362 - IVORY OR BROWN, AND/OR SELECTED BY ARCHITECT TO MATCH FINISHES. FOR OTHER TYPES/STYLES ETC, AND APPLICATIONS SEE

ADAPTIVE-TECHNOLOGY TYPE, 120/277 V, ADJUSTABLE TIME DELAY

GFCI RECEPTACLES - STRAIGHT BLADE, FEED OR NON-FEED THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE

IS TRIPPED. COMMUNICATIONS OUTLETS TELEPHONE OUTLET - SINGLE RJ-45 JACK FOR TERMINATING 100-OHM,

BALANCED, FOUR-PAIR UTP; TIA/EIA-568-B.1 COMPLYING WITH CATEGORY 5E. COMPLY WITH UL 1863. COMBINATION TV AND TELEPHONE OUTLET - SINGLE RJ-45 JACK FOR 100-OHM, BALANCED, FOUR-PAIR UTP; TIA/EIA-568-B.1; COMPLYING WITH CATEGORY 5E; AND ONE TYPE F COAXIAL CABLE CONNECTOR.

FIELD, PROVIDE ALMOND COLOR FOR NORMAL UTILITY WIRING DEVICES. 13.5. PROVIDE SMOOTH FINISH PLATES FOR ALL DEVICES WITH APPROPRIATE MOUNTING ARRANGEMENTS FOR GAUGED DEVICES.

UNLESS SPECIFICALLY INDICATED OTHERWISE, OR DIRECTED OTHERWISE IN

FOR TELEPHONE, COMPUTER, AND MICROPHONE OUTLETS PROVIDE BUSHED

HOLE COVER PLATES. PLATES SHALL BE IVORY, BROWN, OR GRAY STAINLESS STEEL. WALL PLATES IN FINISHED AREAS SHALL BE COMMERCIAL SPECIFICATION GRADE, SATIN FINISH STAINLESS STEEL, WITH BEVELED EDGES, EQUAL TO

GRAY STAINLESS STEEL PLATES FOR SERVICE AREAS, KITCHEN STORAGE, AND IVORY DEVICES WHERE 302 STAINLESS STEEL OR IVORY PLATES ARE USED. IVORY PLATES FOR ALL OTHER AREAS EXCEPT BROWN PLATES ON WOOD OR

LEVITON TYPE 430 SERIES.

DARK SURFACES. BROWN DEVICES WHERE BROWN PLATES ARE USED. 13.5.6. PROVIDE WALL PLATES WITH ENGRAVED LEGENDS WHERE INDICATED ON DRAWINGS AND/OR WHERE REQUIRED.

SPRING-LOADED LIFT COVER, AND LISTED AND LABELED FOR USE IN "WET WET-LOCATION, WEATHERPROOF COVER PLATES - NEMA 250, COMPLYING WITH TYPE 3R WEATHER-RESISTANT, DIE-CAST ALUMINUM OR THERMOPLASTIC WITH

MATERIAL FOR DAMP LOCATIONS - THERMOPLASTIC OR CAST ALUMINUM WITH

HINGED LOCKABLE COVER. REFER TO ARCHITECTURAL FINISH SCHEDULES AND OWNER REPRESENTATIVE 13.5.9. FOR ADDITIONAL INFORMATION.

13.6. FLOOR SERVICE FITTINGS TYPE - MODULAR, FLUSH-TYPE, FLAP-TYPE, OR ABOVE-FLOOR, DUAL-SERVICE UNITS SUITABLE FOR WIRING METHOD USED.

COMPARTMENTS - BARRIER SEPARATES POWER FROM VOICE AND DATA

SERVICE PLATE - RECTANGULAR OR ROUND, DIE-CAST ALUMINUM OR SOLID BRASS WITH SATIN FINISH. POWER RECEPTACLE - NEMA WD 6 CONFIGURATION 5-20R, GRAY FINISH,

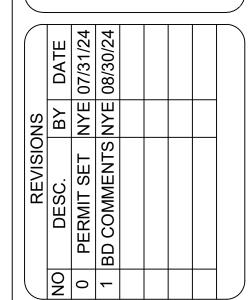
UNLESS OTHERWISE INDICATED. VOICE AND DATA COMMUNICATION OUTLET - BLANK COVER WITH BUSHED CABLE OPENING OR TWO MODULAR, KEYED, COLOR-CODED, RJ-45

CATEGORY 5E JACKS FOR UTP CABLE.

COMMUNICATION CABLING.

13.7. PROVIDE GROUNDED ("NEUTRAL") CONDUCTORS IN ALL WALL SWITCH, DIMMER, AND

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



SHEET

FILE#: JDS DATE: 05/29/24

CM: NYE

PM: NYE

DIVISION 26 - ELECTRICAL SPECIFICATIONS

- OTHER LIGHTING CONTROL OUTLET BOXES, EVEN IF NOT IMMEDIATELY UTILIZED. ALL DEVICE WALL PLATES SHALL BE STANDARD SIZE: "MIDWAY", "OVERSIZED" ("JUMBO") OR "EXTRA DEEP" WALL PLATES SHALL NOT BE ACCEPTABLE.
- SCREW HEADS COLORED TO MATCH FINISH OF PLATES. GROUND, PHASE AND NEUTRAL CONDUCTORS SHALL BE PIG-TAILED IN OUTLET BOXES, OR MULTI-OUTLET ASSEMBLY FOR RECEPTACLES, SO THAT GROUND AND ELECTRICAL SERVICE WILL NOT BE DISTURBED DUE TO OTHER RECEPTACLES ON

THE SAME MULTI-WIRE CIRCUIT IF RECEPTACLE IS REMOVED.

14. PANEL BOARDS

- PROVIDE PANELS MATCHING VOLTAGES, PHASE AND WIRES AS NOTED ON THE PANEL 14.1.
- AS A BASIS OF DESIGN, USE SQUARE-D TYPE "NQ", "NF" UNLESS OTHERWISE NOTED ON THE PANEL SCHEDULE OR AS A NOTE ASSOCIATED WITH THE PANEL.
- ACCEPTABLE MANUFACTURERS
- SQUARE D CO. (BOLT ON BREAKERS)
- 14.3.2. SIEMENS (BOLT ON BREAKERS) 14.3.3. EATON/CUTLER HAMMER (BOLT ON BREAKERS)
- PROVIDE DEAD-FRONT, SAFETY CONSTRUCTED, FACTORY-ASSEMBLED CIRCUIT BREAKER TYPE PANEL BOARDS IN SIZES AND RATINGS AS INDICATED.
- ALL PANEL BOARDS INTERIORS SHALL BE FACTORY ASSEMBLED COMPLETE WITH CIRCUIT BREAKERS AS SCHEDULED ON THE DRAWINGS. ALL CIRCUIT
- BREAKERS SHALL BE QUICK-MAKE AND SHALL BE TRIP INDICATING. EACH BOLT-ON PANEL BOARD SHALL BE PROVIDED WITH AN EQUIPMENT GROUND BUS BONDED TO THE PANEL BACK BOX. IN ADDITION, PROVIDE 200% NEUTRAL BUS AND ISOLATED GROUND BUS WHERE INDICATED
- EQUIP PANEL BOARD UNIT DEVICES WITH TYPES, RATINGS, AND CHARACTERISTICS INDICATED.
- BUS STRUCTURE AND MAIN LUGS OR MAIN BREAKER SHALL HAVE CURRENT RATINGS AS SHOWN ON THE PANEL BOARD SCHEDULE
- SUCH RATINGS SHALL BE ESTABLISHED BY TEST CONDUCTED IN ACCORDANCE WITH UNDERWRITERS LABORATORIES STANDARD UL 67. THE USE OF CONDUCTOR DIMENSIONS WILL NOT BE ACCEPTED IN LIEU OF ACTUAL HEAT TEST.
- BUS BAR CONNECTIONS TO THE BRANCH CIRCUIT BREAKERS SHALL BE "PHASE-SEQUENCE" TYPE.
- THREE-PHASE, FOUR WIRE BUSSING SHALL BE SUCH THAT ANY THREE ADJACENT SINGLE-POLE BREAKERS ARE INDIVIDUALLY CONNECTED TO EACH OF THE THREE DIFFERENT PHASES IN SUCH A MANNER THAT TWO OR THREE-POLE BREAKERS CAN BE INSTALLED AT ANY LOCATION.
- ALL CURRENT CARRYING PARTS OF THE BUSS ASSEMBLY SHALL BE PLATED COPPER WITH CONDUCTIVITY OF NOT LESS THAN 98%.

PANEL BOARD ENCLOSURE 14.5.

- PROVIDE GALVANIZED SHEET STEEL CABINET TYPE ENCLOSURES, IN SIZES AND NEMA TYPES AS INDICATED, CODE GAUGE MINIMUM 16-GAUGE THICKNESS. ENCLOSURES SHALL BE SURFACE MOUNTED UNLESS OTHERWISE INDICATED.
- PANEL BOARDS AND ENCLOSING CABINETS SHALL CONFORM TO STANDARDS ESTABLISHED BY UNDERWRITERS' LABORATORIES, INC., AND REQUIREMENTS OF THE NEC.
- CONSTRUCT WITH MULTIPLE KNOCKOUTS AND WIRING GUTTERS.
- PROVIDE FRONTS WITH ADJUSTABLE TRIM CLAMPS, AND DOORS WITH FLUSH LOCKS AND KEYS, ALL PANEL BOARD ENCLOSURES KEYED ALIKE WITH CONCEALED PIANO DOOR HINGES.
- EQUIP WITH INTERIOR CIRCUIT DIRECTORY FRAME, AND CARD WITH CLEAR
- PROVIDE BAKED GRAY ENAMEL FINISH OVER A RUST INHIBITOR COATING.

PROVIDE ENCLOSURES FABRICATED BY SAME MANUFACTURER AS

- MINIMUM DEPTH OF 5-3/4" & MINIMUM WIDTH OF 20" FOR PANELS. SEE PANEL SCHEDULE NOTES FOR SPECIFIED ALTERNATE SPECIAL
- CONDITIONS. BALANCE AMPERES OF CIRCUITS AFTER ACTIVE LOADS ARE ENERGIZED TO WITHIN
- 10% MAXIMUM AND PROVIDE TYPEWRITTEN PANEL BOARD SCHEDULE WITH CORRECTED LOADS.
- 14.7. PROVIDE PANEL BOARD WITH CIRCUIT BREAKERS HAVING THE SHORT CIRCUIT RATING (SCCR) INDICATED.
- PROVIDE CIRCUIT BREAKERS HAVING THE AIC RATING INDICATED AND IF THE PANEL BOARD IS "SERIES RATED", MANUFACTURER SHALL PROVIDE LABELING REQUIRED BY N.E.C. RELATIVE TO THIS RATING.AND SHALL SUBMIT DATA WITH THE PANEL BOARD AND CIRCUIT BREAKER SUBMITTAL.

15. MOTOR LOAD CONNECTIONS

- 15.1. PROVIDE ALL POWER WIRING AND CONNECTIONS FROM SOURCE TO STARTER, STARTER TO DISCONNECT, AND DISCONNECT TO MOTOR OR DEVICE, EXCEPT WHERE SUCH WIRING IS PROVIDED BY EQUIPMENT MANUFACTURER.
- 15.2. ALL AUTOMATIC TEMPERATURE CONTROL WIRING SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 23 - MECHANICAL, UNLESS INDICATED OR SPECIFIED OTHERWISE. HOWEVER, ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL
- ALL STARTERS AND MAKE ALL POWER CONNECTIONS. MANUAL CONTROL SWITCHES SHALL BE FURNISHED AND/OR INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED.
- VARIABLE FREQUENCY DRIVES (VFD) SHALL BE FURNISHED BY THE MECHANICAL
- CONTRACTOR. FURNISH AND INSTALL A DISCONNECT FOR EACH MOTOR (UNLESS PROVIDED
- INTEGRAL BY MANUFACTURER). DISCONNECTS SHALL BE FUSED OR UNFUSED SAFETY SWITCHES AS REQUIRED.
- UPON COMPLETION OF MOTOR INSTALLATION WORK, CONTRACTOR SHALL ENSURE
- PHASES ARE CORRECTLY CONNECTED BY CHECKING ROTATION OF MOTOR. 15.8. DRAWINGS INDICATE MINIMUM MOTOR HORSEPOWER RATINGS.
- BRAKE HORSEPOWER SHALL NOT EXCEED MOTOR HORSEPOWER, I.E. MOTORS SHALL NOT OPERATE IN THEIR SERVICE FACTORS. MINIMUM MOTOR EFFICIENCIES SHALL NOT BE LESS THAN THAT SET FORTH IN
- THE LOCAL ENERGY CODE. MOTOR CHARACTERISTICS, SUCH AS INSULATION CLASS, SPEED/TORQUE CURVE, BEARING DESIGN LIFE, SHAFT MATERIAL, BODY MATERIAL, ETC. SHALL BE SELECTED BY THE EQUIPMENT MANUFACTURER BASED UPON THE INTENDED SERVICE OF THE
- EQUIPMENT. MOTORS SHALL BE SELECTED BY THE EQUIPMENT MANUFACTURER SUCH THAT
- THE MOTOR SURFACE TEMPERATURE IS NOT EXCESSIVE. SURFACE TEMPERATURES OVER 150 DEG F, WITH SURROUNDING AIR OF
- 100 DEG F SHALL BE CONSIDERED EXCESSIVE AND UNACCEPTABLE. MOTORS FOUND TO OPERATE AT EXCESSIVE TEMPERATURES SHALL BE REPLACED WITH COOLER-RUNNING MOTORS, AT NO ADDITIONAL COST TO
- 15.10. PROVIDE INHERENT THERMAL PROTECTION FOR ALL FRACTIONAL HORSEPOWER

MOTORS.

- 15.11. DISCONNECT SWITCHES AND SAFETY SWITCHES
- ACCEPTABLE MANUFACTURERS SQUARE D COMPANY
- EATON-CUTLER HAMMER

OPERATING.

- 15.11.1.3. SIEMENS FURNISH AND INSTALL SAFETY SWITCHES WHERE INDICATED AND AS REQUIRED FOR MOTOR OUTLETS OR OTHER EQUIPMENT. SWITCHES SHALL BE OF SIZE, NUMBER OF POLES AND FUSED OR NON-FUSED, AS REQUIRED FOR JOB
- CONDITIONS AND THE NATIONAL ELECTRICAL CODE. PROVIDE SWITCHES WITH ELECTRICAL CHARACTERISTICS INDICATED: SWITCHES SHALL BE EQUIPPED WITH FUSE CONTACTS AND JAWS WHICH INSURE POSITIVE FUSE AND JAW CONTACT BY MEANS OF REINFORCING
- SPRING CLIPS OR OTHER APPROVED MEANS. HINGES SHALL BE NON-CURRENT CARRYING.
- SWITCHES SHALL BE SO DESIGNED THAT THEY CAN BE LOCKED IN EITHER OPEN OR CLOSED POSITION.
- SWITCHES SHALL HAVE REJECTION CLIP PROVISIONS SO THAT ONLY 15.11.3.4. CLASS RK-1 CURRENT LIMITING FUSES CAN BE INSTALLED. ALL SAFETY SWITCHES SHALL BE QUICK-MAKE, QUICK-BREAK, AND HAVE INTERLOCKING COVER WITH HANDLE THAT MAY EITHER BE FRONT OR SIDE
- SWITCH BLADE SHALL BE VISIBLE IN OFF POSITION WITH THE DOOR OPEN. 15.11.3.6. 15.11.3.7. EQUIP WITH OPERATING HANDLE THAT IS AN INTEGRAL PART OF ENCLOSURE BASE AND WHOSE OPERATING POSITION IS CLEARLY
- INDICATED AND IS PADLOCKABLE IN THE OFF POSITION. CONSTRUCT CURRENT CARRYING PARTS OF HIGH-CONDUCTIVITY COPPER
- AND SILVER-TUNGSTEN TYPE SWITCH CONTACTS. 15.11.3.9. PROVIDE NEMA TYPE 1 FOR INTERIOR AND NEMA TYPE 3R FOR EXTERIOR AND PROVIDE TYPE INDICATED FOR SPECIAL CASES.
- 15.11.3.10. PROVIDE FUSIBLE SWITCHES WITH FUSES REQUIRED. FUSES SHALL BE U.L. LISTED CLASS RK-1 CURRENT LIMITING TYPE. 15.11.3.10.1.
- PROVIDE BUSSMAN "LOW PEAK" OR APPROVED EQUAL. PROVIDE CONTROL INTERLOCKS WHEN INDICATED.
- HEAVY-DUTY SAFETY SWITCHES PROVIDE SURFACE MOUNTED, HEAVY DUTY TYPE, SHEET STEEL ENCLOSED SWITCHES THAT ARE PAINTED WITH PRIME COATS AND FINAL ENAMEL COATS THAT IS SUITABLE FOR EXPOSURE TO EXTERIOR ELEMENTS WITHOUT CORROSION.
- 15.12. MOTOR STARTERS STARTERS AND CONTROL DEVICES FOR MECHANICAL EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 26 - ELECTRICAL WHERE SHOWN ON THE
- UNLESS SPECIFIED OTHERWISE UNDER OTHER DIVISION 23 SPECIFICATIONS, MECHANICAL DRAWINGS, OR INDIVIDUAL EQUIPMENT SECTIONS, MOTOR
- STARTERS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: 15.12.2.1. STARTERS FOR MOTORS 1/3 HORSEPOWER OR SMALLER SHALL BE MANUAL UNLESS REMOTE OR AUTOMATIC STARTING IS REQUIRED, IN WHICH CASE THE STARTERS SHALL BE MAGNETIC, FULL VOLTAGE, NON-REVERSING, SINGLE-SPEED, UNLESS OTHERWISE INDICATED. ALL
- OTHER STARTERS SHALL BE MAGNETIC. 15.12.2.2. EACH STARTER FOR A THREE-PHASE MOTOR SHALL BE FURNISHED WITH THREE (3) OVERLOAD RELAYS SIZED FOR THE FULL LOAD RUNNING CURRENT OF THE MOTOR ACTUALLY PROVIDED.
- PROVIDE AN EXTERNAL "HAND-OFF-AUTO SELECTOR SWITCH WITH
- 15.12.2.2.2. PROVIDE A GREEN LIGHT TO INDICATE MOTOR "STOPPED". 15.12.2.2.3. EACH PILOT LIGHT SHALL HAVE A LEGEND PLATE INDICATING
- REASON FOR SIGNAL. EACH OVERLOAD RELAY SHALL HAVE A NORMAL OPEN ALARM CONTACT WHICH WILL CLOSE ONLY WHEN ACTUATED BY AN OVERLOAD (NOT TO BE CONFUSED WITH N.O. OR N.C. AUXILIARY CONTACTS). THESE CONTACTS SHALL BE PROPERLY WIRED TO THEIR RESPECTIVE BLUE PILOT LIGHT PROVIDED ON THE STARTER FRONT COVER AND HAVING A "TRIPPED"
- LEGEND PLATE. INDIVIDUAL MOUNTED MOTOR STARTERS SHALL BE IN A NEMA TYPE 1 GENERAL PURPOSE ENCLOSED IN UNFINISHED AREAS AND SHALL BE FLUSH MOUNTED IN ALL FINISHED AREAS. ALL STARTERS MOUNTED IN EXTERIOR AREAS SHALL HAVE A NEMA 3R ENCLOSURE. EACH STARTER SHALL HAVE A LAMINATED NAMEPLATE TO INDICATE EQUIPMENT UNIT
- NUMBER, FUNCTION AND CIRCUIT NUMBER. ALL MOTORS STARTERS, PUSH BUTTONS AND PILOT LIGHTS SHALL BE OF THE SAME MANUFACTURER AS THE SWITCHBOARD.
- MOTOR STARTERS FOR THE FOLLOWING EQUIPMENT SHALL BE PROVIDED UNDER DIVISION 23 BY THE MANUFACTURER OF THE EQUIPMENT:
- 15.12.3.1. PACKAGED AIR CONDITION EQUIPMENT
- 15.12.3.2. PACKAGED BOOSTER PUMP SYSTEM 15.12.3.3. OTHER EQUIPMENT HEREINAFTER IN OTHER SECTIONS TO BE PROVIDED
- WITH INTEGRAL STARTERS. 15.13. UNLESS OTHERWISE NOTED OR SPECIFIED IN INDIVIDUAL SECTION, ALL 3-PHASE MOTORS SHALL BE STANDARD NEMA CONTINUOUS DUTY "B" TYPE, WITH CLASS B
- INSULATION, OPEN DRIP-PROOF FRAME FOR INDOOR SERVICE, TEFC FOR OUTDOOR SERVICES AND A SERVICE FACTOR OF 1.15. ALL MOTORS 5 HP AND LARGER SHALL BE 📥 U.S. MOTORS HI-EFFICIENCY MODEL OR RELIANCE XE HI-EFFICIENCY MODEL.
- 15.14. EQUIPMENT CONNECTION COORDINATION
- COORDINATE EXACT LOCATION OF OUTLETS, EQUIPMENT CONNECTIONS, AND REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION OF DEVICES. AS DETERMINED BY THE ACTUAL EQUIPMENT AND FURNITURE LAY OUT. VERIFY WITH FIXTURE PLAN AND EQUIPMENT INSTALLER.
- COORDINATE ELECTRICAL REQUIREMENTS OF EQUIPMENT NOT SHOWN ON DETAILS, I.E. ROOF-TOP UNITS, UNIT HEATERS, FANS, ETC., AN EQUIPMENT/DEVICES REQUIRING AN ELECTRICAL CIRCUIT AND CONTROL.

LIGHTING FIXTURES

FURNISH AND INSTALL A COMPLETE LIGHTING FIXTURE FOR EACH LIGHTING FIXTURE SYMBOL SHOWN ON THE DRAWINGS, OF THE TYPE AND QUALITY DESCRIBED HEREIN. FIXTURES SHALL BE INSTALLED COMPLETE WITH LAMPS OF THE WATTAGE

INDICATED, SOCKETS, HOUSING, BALLAST (IF REQUIRED), SHADES, DIFFUSERS,

- SUPPORTS, ETC., AND WIRED FOR OPERATION. CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR THE PROPER AND ACCURATE POSITION OF SOCKETS IN ALL FIXTURES SO THAT THE FILAMENT OF THE SIZE AND TYPE LAMPS SPECIFIED, WHEN INSTALLED IN SUCH SOCKETS, WILL BE IN CORRECT RELATION TO THE CENTER OF THE FIXTURE AS SPECIFIED BY THE
- MANUFACTURER OF THE VARIOUS LIGHTING FIXTURES AND GLASS UNITS SPECIFIED. ALL SOCKETS SHALL BE APPROVED BY UNDERWRITERS' LABORATORIES, INC. FLUORESCENT SOCKETS SHALL BE THRU-SLOT TYPE AND INCANDESCENT LAMP SOCKETS SHALL BE 250 VOLT CODE STANDARD, MEDIUM BASE FOR LAMPS UP TO 200

WATTS INCLUSIVE AND MOGUL BASE FOR LAMPS 300 WATTS AND LARGER.

- 16.4. ALL FIXTURES SHALL BE WIRED FOR POLARIZED SYSTEM WITH ONE WIRE IN EACH FIXTURE TO BE DISTINCTLY MARKED FOR ITS ENTIRE LENGTH.
- WIRE SHALL BEAR THE LABEL OF APPROVAL OF THE UNDERWRITERS
- LABORATORIES, INC. TYPE AF WIRE SHALL ONLY BE USED FOR INTERIOR INCANDESCENT FIXTURE
- ALL FIXTURES SHALL BE IN ACCORDANCE WITH ALL LOCAL MUNICIPAL AND STATE
- REQUIREMENTS GOVERNING SAME AND SHALL BE U.L. APPROVED. EACH FIXTURE SHALL BE COMPLETELY EQUIPPED WITH LAMPS OF THE SIZE, TYPE,

LUMEN OUTPUT AND LIFE OF LAMPS SHALL BE PROPER VOLTAGE FOR THE

WATTAGE AND SHAPE INDICATED AND SPECIFIED. ALL LAMPS SHALL OF STANDARD SCHEDULE MAKE.

16.6.2.

- BUILDING. EXACT VOLTAGE SHALL BE CHECKED BEFORE ORDERING FIXTURES. 16.7. AT THE LOCATION OF OUTLETS INDICATED ON THE VARIOUS DRAWINGS, THE TYPE OF FIXTURE REQUIRED IS DESIGNATED BY A TYPE LETTER. ALL FIXTURES SHALL BE
- FURNISHED IN THE QUANTITIES, SIZES AND TYPES AS INDICATED ON THE DRAWINGS. HANDLE LIGHTING FIXTURES CAREFULLY TO PREVENT DAMAGE, BREAKING AND SCORING. DO NOT INSTALL DAMAGED FIXTURES OR COMPONENTS, REPLACE WITH
- STORE LIGHTING FIXTURES IN A CLEAN DRY PLACE. PROTECT FROM WEATHER, DIRT, FUMES, WATER CONSTRUCTION DEBRIS AND PHYSICAL DAMAGE.
- 16.10. SHIP FIXTURES FACTORY ASSEMBLED, WITH PARTS REQUIRED FOR A COMPLETE INSTALLATION.
- 16.11. AT DATE OF SUBSTANTIAL COMPLETION REPLACE LAMPS IN ALL FIXTURES WHICH ARE OBSERVED TO BE INOPERATIVE OR NOTICEABLY DIMMED AFTER CONSTRUCTION USE AS JUDGED BY THE OWNER'S REPRESENTATIVE.
- ALL LUMINAIRES UTILIZED FOR EMERGENCY AND/OR EGRESS LIGHTING SHALL BE CONNECTED AHEAD OF SWITCHING.
- ALL BALLASTS OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND
- ALL LAMPS OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND CATALOG NUMBER.
- 16.15. LED (LIGHT EMITTING DIODE) LIGHT FIXTURES
- PROVIDE FACTORY INSTALLED LED MODULES THAT ARE SPECIFICALLY DESIGNED FOR, AND MATCHED AND MATED TO, THE RESPECTIVE LUMINAIRE IN WHICH THEY ARE USED.
- PROVIDE LED MODULES THAT CAN EASILY BE REPLACED IN THE FIELD AND ARE READILY ACCESSIBLE FOR REPLACEMENT.
- 16.15.1.2. PROVIDE COLOR TEMPERATURE AS INDICATED IN LUMINAIRE SCHEDULE. 16.15.2. PROVIDE FACTORY INSTALLED DRIVER(S) FOR THE LED SOURCE UTILIZED THAT ARE SPECIFICALLY COORDINATED TO THE LED SOURCE AND LUMINAIRE IN WHICH THEY ARE USED.
- PROVIDE DRIVER(S) HAVING SPECIFIC OPERATING CHARACTERISTICS 16.15.2.1. DEFINED IN THE LUMINAIRE SCHEDULE.
- PROVIDE DRIVER(S) THAT CAN EASILY BE REPLACED IN THE FIELD AND 16.15.2.2. ARE READILY ACCESSIBLE FOR REPLACEMENT.
- 16.15.2.3. PROVIDE SPECIFICATION SHEET FOR THE SPECIFIC DRIVER AS PART OF THE LUMINAIRE SUBMITTAL.
- 16.15.3. PROVIDE TOTAL HARMONIC DISTORTION (THD) RATING OF LESS THAN 20
- PROVIDE FACTORY-INSTALLED INTEGRAL FILTERING SYSTEM TO ENSURE THD DOES NOT EXCEED 20 PERCENT REGARDLESS OF QUANTITIES AND/OR MIXES WITH OTHER MANUFACTURED LED SYSTEMS
- INCANDESCENT LIGHT FIXTURES 16.16.1. PROVIDE INCANDESCENT LAMPS IN THE SIZES AND RATED AS INDICATED AND
- 130 VOLT RATED. 16.17. MOUNTING
- ALL SURFACE AND RECESSED CEILING LUM1NAIRES INSTALLED ON GRID OF TILE CEILINGS SHALL BE INSTALLED TO AGREE WITH MODULE OF CEILING EITHER DISPLACING A TILE, OR UNIT ON CENTER OF TILE, OR CENTERED ON GRID LINES.
- RECESSED INCANDESCENT AND FLUORESCENT FIXTURES IN CEILINGS MAY NO BE SUPPORTED FROM THE SUSPENDED CEILING CONSTRUCTION. BOX AND FIXTURE SUPPORTS SHALL BE FASTENED SECURELY TO CONCRETE SLAB OR BAR JOIST EXCEPT AS NOTED. WHERE FIXTURES ARE SURFACE MOUNTED, NEAT HOLES SHALL BE CUT IN THE HUNG CEILINGS AS REQUIRED FOR THE FIXTURE SUPPORTS. ALL SUPPORT HANGERS, CHANNELS, BOLTS, ETC., SHALL
- BE GALVANIZED OR GALV-KROM. PROVIDE ADEQUATE SUPPORTS FOR ALL FIXTURES SEPARATE FROM THE SUSPENDED CEILING SYSTEM. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES, AS REQUIRED, TO SUPPORT THE FIXTURES. PROVIDE A MINIMUM OF TWO (2) GALVANIZED STEEL #12 GAUGE HANGER WIRES (ALTERNATE CORNERS) ON ALL RECESSED FIXTURES.PROVIDE LUMINAIRES AND/OR LUMINAIRE OUTLET BOXES WITH HANGERS TO PROPERLY SUPPORT LUMINAIRE WEIGHT. ALL LUMINAIRES INSTALLED IN OR ON SUSPENDED CEILING SYSTEMS SHALL BE ANCHORED DIRECTLY TO THE BUILDING STRUCTURAL

SYSTEM ABOVE. SUCH ANCHORING SHALL BE INDEPENDENT OF THE CEILING

- SUPPORT SYSTEM. LUMINAIRES SHALL BE INSTALLED PLUMB AND SUPPORT SURFACE MOUNTED LUMINAIRES GREATER THAN 2 FEET IN LENGTH AT A POINT IN
- DDITION TO THE OUTLET BOX LUMINAIRE STUD. INSTALL FLUSH MOUNTED FIXTURES TO ELIMINATE LIGHT LEAKAGE BETWEEN AME AND FINISHED SURFACE.
- ALL RECESSED LUMINAIRES SHALL BE EQUIPPED WITH NECESSARY PLASTER FRAMES AND SURFACE TRIM. ALL JUNCTION BOXES AND SERVICEABLE COMPONENTS FOR RECESSED
- LUMINAIRES SHALL BE READILY ACCESSIBLE FOR SERVICE OR REPLACEMENT FROM BELOW THE CEILING, WITHOUT REMOVING ANY CEILING COMPONENTS (OTHER THAN TILES).
- STEM LENGTHS OF ALL PENDANT FIXTURES SHALL BE AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- ALL FASTENERS, HANGERS AND METHOD OF HANGING EXPOSED WORK IN FINISHED AREAS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW BEFORE INSTALLATION.
- FASTENERS SHALL BE ZINC-COATED, TYPE, GRADE, AND CLASS AS REQUIRED FOR A NEAT FINISHED INSTALLATION.

16.18. LIGHTING CONTROL DEVICES OCCUPANCY SENSORS, DUAL TECHNOLOGY WALL SWITCHES: 16.18.1.

- PROVIDE WATTSTOPPER DW-100 WALL SWITCH (OR EQUIVALENT) AND CONFIGURE AS MANUAL ON, AUTO OFF (VACANCY SENSOR) UNLESS OTHERWISE SPECIFIED ON DRAWINGS. PROVIDE WITH TIME DELAY AS SPECIFIED ON DRAWINGS, IF NO TIME DELAY IS SPECIFIED, PROGRAM TO
- OCCUPANCY SENSORS, DUAL TECHNOLOGY CEILING SENSORS:

- 16.18.3. PROVIDE WATTSTOPPER DT-300 CE ILING MOUNTED OCCUPANCY SENSOR (OR EQUIVALENT). PROVIDE WITH TIME DELAY AS SPECIFIED ON DRAWINGS. IF NO TIME DELAY IS SPECIFIED, PROGRAM TO 20 MINUTES. ADJUST SENSITIVITY BASED ON FIELD CONDITIONS AND OCCUPANCY OF ROOM TO PROVIDE 100% COVERAGE WITHOUT NUISANCE TRIPPING.
- PROVIDE WATTSTOPPER BZ-50 UNIVERSAL VOLTAGE PACK(S) AS REQUIRED TO PROPERLY POWER ALL OCCUPANCY SENSORS AND PROVIDE SWITCHING PER THE DESIGN INTENT.
- IN AREAS WHERE MULTIPLE OCCUPANCY SENSORS CONTROL A SINGLE ZONE TOGETHER, INTERLOCK OCCUPANCY SENSORS/POWER PACKS PER MANUFACTURER INSTRUCTIONS TO MEET CONTROL INTENT.
- 16.19. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING AIMABLE LUMINAIRES TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO PROJECT DURING OTHER-THAN-NORMAL OCCUPANCY HOURS FOR THIS PURPOSE. SOME OF THIS WORK MAY BE REQUIRED AFTER DARK. ADJUST AIMABLE LUMINAIRES IN THE PRESENCE OF OWNER'S REPRESENTATIVE AND DESIGN PROFESSIONALS.

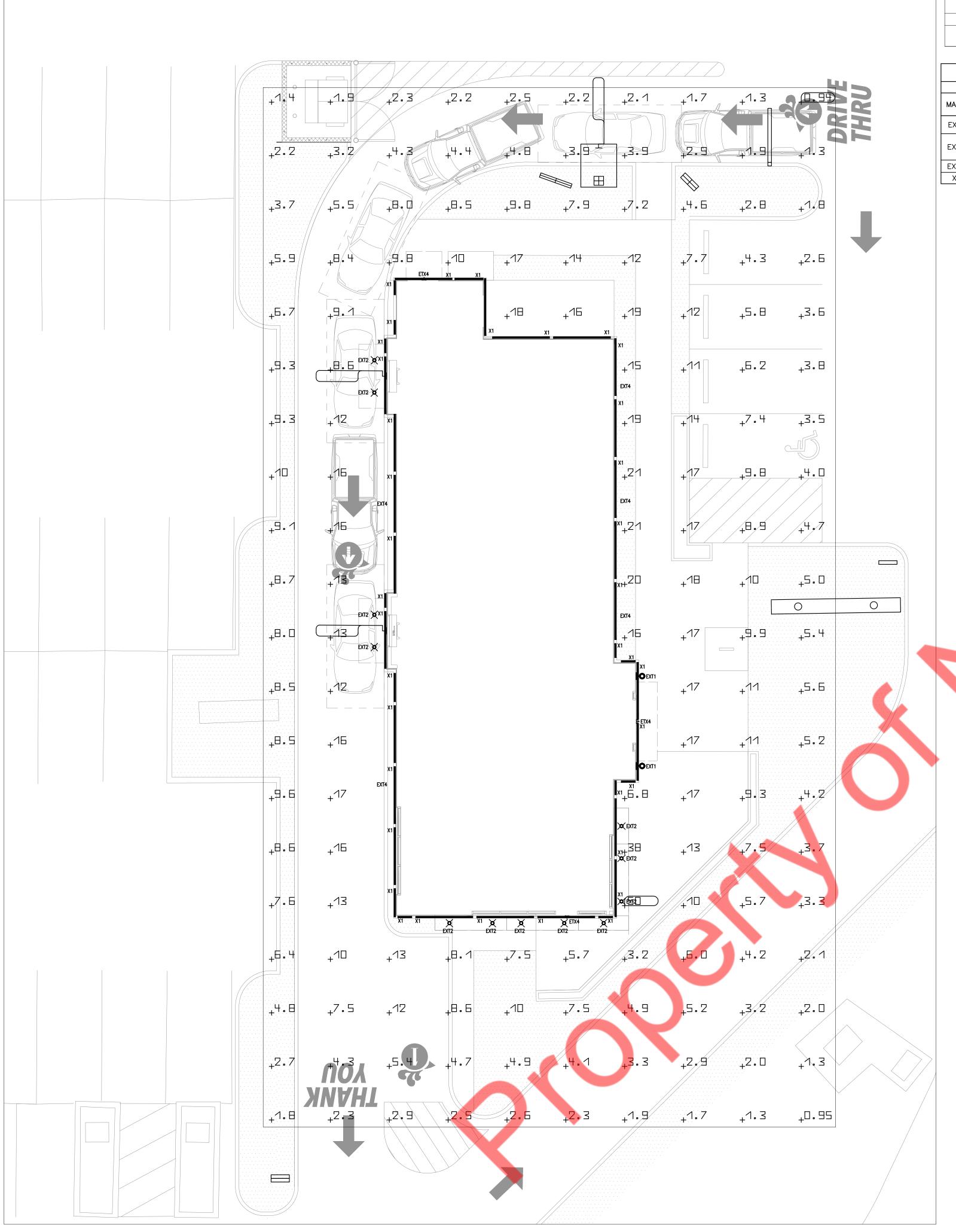


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(1)	PHOTOMETRIC LAYOUT
E9.0	3/16" = 1'-0"
NORTH	

			PHOTOMETR	IC DATA			
#	Name	Parameter	Min	Max	Average	Mean/Min	Max/Min
1	Parking Area & Drive Through	Horizontal illuminance	0.94 fc	50.1 fc	8.23 fc	8.71	52.98

	LIGHTING FIXTURE SCHEDULE												
	FOR NATIONAL ACCOUNT QUOTATION, PLEASE CALL MIKE KREINER AT HERMITAGE LIGHTING NATIONAL ACCOUNTS AT 224-250-1561 OR EMAIL MKREINER@GOHERMITAGE.COM. SUBSTITUTIONS NOT ALLOWED.												
MARK	MANUFACTURER	CATALOG NUMBER	ELECTRICAL DATA					DESCRIPTION	MOUNTING				
MARK	MANOFACTURER		QTY.	TYPE	VOLTS	DIMMING	WATTS	- DESCRIPTION N					
EXT1	SHADES OF LIGHT	OL19134BK	2	BULBRIGHT #776801	120	NO	5	RUGGED RIVER OUTDOOR SCONCE, LARGE, BLACK FINISH WITH LED LAMP					
EXT2	ELITE	CR6T-825L-40K-12-E26GU24 TRIM: CR6T-TRMBKBB-1 HOUSING: RC6-GU24	12	LED	120	NO	11	6" 825 LUMEN DOWNLIGHT WITH HOUSING	SURFACE				
EXT4	SHADES OF LIGHT	OL18089	5	BULBRIGHT #776801	120	NO	5	SLEEK MINIMALIST LED WALL SCONCE WITH LED LAMP	SURFACE				
X1	SAYLITE	LT8ABP48L18W2250LXXK	37'FT	LED	120	YES	18	LED COVE LIGHT	SURFACE				



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- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY FITTINGS AS REQUIRED BY ALL APPLICABLE CODES AND GOVERNING AUTHORITIES.
- 2. CONTRACTOR SHALL VERIFY AND CORRECT AS REQUIRED TO MEET ALL CODES AND REGULATIONS ANY POSSIBLE DISCREPANCIES BETWEEN TYPE AND SIZE OF CONNECTION SPECIFIED IN PLUMBING FIXTURE SCHEDULE AND FIXTURES ACTUALLY INSTALLED ON THE SITE.
- 3. ALL SANITARY 1/8" AND GREASE WASTE PIPING SHALL HAVE A 1/4" PER FOOT SLOPE UNLESS OTHERWISE NOTED OR PER LOCAL CODE.
- 4. VENT PIPING SHOWN ON FLOOR PLANS IS ONLY INDICATIVE EXCEPT FOR VTR LOCATIONS.
- 5. VALVES AND FITTINGS SHALL BE OF SAME SIZE OF LINE ON WHICH THEY ARE LOCATED, UNLESS OTHERWISE INDICATED ON DRAWINGS.
- 6. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES.
- 7. CONTRACTOR SHALL FIELD VERIFY ALL GIVEN MEASUREMENTS PRIOR TO LAYING AND CONNECTING ALL SANITARY AND WASTE PIPING AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
- 8. AIR CHAMBERS SHALL NOT BE CONSIDERED AN EQUAL TO WATER ARRESTORS AS SPECIFIED.
- 9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FIRE RATING AND WEATHERPROOFING INTEGRITY OF ALL PIPING AND PENETRATIONS.
- 10. ALL WATER SUPPLY AND SANITARY LINES SHALL BE RUN AS CLOSE TO PLANS AS POSSIBLE WITH NO CHANGES IN SIZING.
- 11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY SUPPORTING DEVICES FOR ALL FIXTURES INCLUDED IN CONTRACT OR HEREIN SPECIFIED OR OTHERWISE.
- 12. CHANGES IN THE DIRECTION OF SANITARY PIPING SHALL NOT BE MADE WITH FITTINGS WHICH WILL CAUSE EXCESSIVE REDUCTION IN THE VELOCITY OF FLOW OR CREATE ANY OTHER ADVERSE EFFECT UNLESS PHYSICALLY IMPOSSIBLE (IE: USE OF SANITARY TEE IN A HORIZONTAL CONNECTION, USE OF A DOUBLE SANITARY TEE IN A VERTICAL STACK, IN GENERAL, USE OF SHORT-RADIUS FITTINGS FOR BRANCH TO HOUSE DRAIN OR STACK CONNECTION).
- 13. ALL DRAINAGE PIPING SHALL BE MARKED WITH THE SEAL OF APPROVAL OF THE NATIONAL SANITATION FOUNDATION.
- 14. PROVIDE ACCESS PANELS TO ALL VALVES WITHIN CHASES OR ABOVE NONACCESSIBLE CEILINGS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 15. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF PLUMBING FIXTURE MOUNTING HEIGHTS, AND DIMENSIONS.
- 16. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SANITARY AND GREASE TRAPS TO WHICH NEW SEWER LINES ARE TO BE CONNECTED BEFORE INSTALLATION OF NEW SEWER LINE.
- 17. ALL VENTS THROUGH ROOF SHALL BE MIN. 10'-0" FROM ANY AIR INTAKES.
- 18. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (INCLUDING PIPE ROUTING AND EQUIPMENT LOCATIONS) TO ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE INSTALLATION OR PURCHASING OF ANY PIPING AND/OR
- 20. PROVIDE 3/4" H.W. SUPPLY WITH ANGLE STOP AND FLEXIBLE SUPPLY TO DISHWASHER MACHINE. AT HEIGHT REQUIRED BY MANUFACTURER OF EQUIPMENT INSTALLED IF APPLICABLE IN THE RESPECTIVE PROJECT.
- 21. CLEANOUTS SHALL BE PROVIDED AT THE LOCATIONS INDICATED AND A MINIMUM WHERE REQUIRED BY CODE . FLOOR CLEANOUTS SHALL BE A MINIMUM OF 4" AND SHALL BE COMPLETE WITH A FLUSH PLUG AND REMOVABLE SCORIATED BRONZE FLOOR PLATE, PROVIDE CARPET BUTTONS IN CARPETED AREAS.

FOOD SERVICE NOTES

- 1. ALL SERVICE LINES FOR WATER AND GAS SIZED TO PROVIDE FULL FLOW VOLUME FOR ALL ITEMS SUPPLIED ON RESPECTIVE MAINS AND BRANCHES. IDENTIFY ALL LINES WITH PERMANENT LABELS FOR THE SERVICE THEY PROVIDE.
- 2. FUEL GAS SERVICES SHALL BE SIZED TO SUPPLY THE REQUIRED BTUH INDICATED AT THE EQUIPMENT AT LOW PRESSURE OF APPROXIMATELY 7"-11" WATER COLUMN. PROVIDE PRESSURE REGULATORS AS REQUIRED.
- 3. ALL HOT AND COLD WATER SERVICE LINES, EXCEPT SHORT BRANCHES EXTENDED AND CONNECTED TO FIXTURES, SHALL BE INSULATED. ALL EXPOSED INSULATED LINES SHALL BE COVERED WITH PROTECTIVE COVERING TO SUIT THE APPLICATION.
- 4. ALL HORIZONTAL PIPING LINES EXTENDED AND CONNECTED TO EQUIPMENT, BELOW EQUIPMENT, SHALL BE RUN AT THE HIGHEST POSSIBLE ELEVATION ABOVE FLOOR, TO PROVIDE CLEARANCE FOR CLEARING. NO LINES SHALL LAY ON FLOOR.
- 5. ALL PIPING ROUTED THROUGH OR NEAR EQUIPMENT OR COUNTERS SHALL NOT INTERFERE WITH THE INTENDED USE OF, OR SERVICING OF, EQUIPMENT OR COUNTERS.
- 6. ALL EXPOSED PIPING AND FITTINGS SHALL BE CHROME PLATED OR STAINLESS STEEL. TAIL PIECES FOR SINKS SHALL BE 17 GAUGE CHROME PLATED FLARED BRASS TUBING FOR CONNECTION TO 1-1/2" I.P.S. MALE THREAD FITTING. "P" TRAPS SHALL BE CHROME PLATED BRASS, UNIFORM CODE PATTERN.
- 7. STOPS SHALL BE FURNISHED AND INSTALLED ON ALL HOT AND COLD WATER LINES AT EQUIPMENT. PROVIDE ALL REQUIRED HUT-OFF VALVES, CHROME FINISH.
- KITCHEN EQUIPMENT DIVISION SHALL PROVIDE ALL FOOD SERVICE EQUIPMENT FAUCETS. PLUMBING CONTRACTOR SHALL INSTALL AND CONNECT. EQUIPMENT SINKS ARE PROVIDED WITH 1-1/2" WASTE CONNECTIONS.
- ALL WASTES, DIRECT OR INDIRECT, SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING CONTRACTOR EXCEPT AS NOTED ON UTILITY PLANS.
- MINIMUM SIZE INDIRECT WASTES SHALL BE 1", REGARDLESS OF SIZE OF CONNECTION AT EQUIPMENT.
- ADEQUATE CLEAN-OUT PROVISION SHALL BE MADE FOR ALL WASTE LINES BY MEANS OF PLUGGED "T" FITTING EXTENDED TO ACCESSIBLE POSITION.
- LOCATIONS WITH MINIMAL PITCH AND "P" TRAP IN END OVER FLOOR RECEPTOR DRAIN LINES SHALL BE 1" MINIMUM. EACH EVAPORATOR SHALL HAVE A SEPARATE DRAIN LINE.
- STAINLESS STEEL FLEXIBLE HOSES AND QUICK DISCONNECT FITTINGS. GAS FITTINGS AND HOSES SHALL BE A.G.A. APPROVED FOR COMMERCIAL KITCHEN EQUIPMENT. GAS AND WATER HOSES SHALL BE COVERED WITH A THICK FIRE RESISTANT PLASTIC OR POLY COATING.
- HOOK-UP REQUIREMENTS FOR ALL KITCHEN EQUIPMENT. RECOMMENDATIONS.

SHEET LIST SHEET NUMBER SHEET TITLE PLUMBING GENERAL NOTES AND LEGEND SANITARY & VENT PLAN WATER SUPPLY PLAN GAS PLAN ROOF GAS PLAN PLUMBING SCHEDULES PLUMBING DETAILS (1 OF 2) PLUMBING DETAILS (2 OF 2) RISER DIAGRAMS PLUMBING ENERGY COMPLIANCE FORMS PLUMBING SPECIFICATIONS (1 OF 2) PLUMBING SPECIFICATIONS (2 OF 2)

FIELD VERIFY ALL CONDITIONS

NOTE! AS NOTED IN THE SPECIFICATIONS, ALL WIRING LAYOUTS,

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR

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

PLUMBING LEGEND

→ DIRECTION OF FLOW IN PIPE PITCH PIPE DOWN IN DIRECTION OF ARROW —O—O PIPE UP

———— BALL VALVE

— PIPE DOWN

CHECK VALVE / SECONDARY BFP ——▶ BALANCING VALVE

— F GAS COCK VALVE — GAS ISOLATION VALVE BALANCING VALVE

— VALVE IN VERTICAL ——— UNION

E------ HOSE END VALVE

PRESSURE REDUCING VALVE

— SAN — SANITARY SEWER (BELOW GRADE) —— – — DOMESTIC COLD WATER (CWS) —— -- DOMESTIC HOT WATER (HWS) —— --- DOMESTIC HOT WATER RETURN (HWR)

——TW — DOMESTIC TEMPERED HOT WATER —— CD—— CONDENSATE DRAIN (BELOW GRADE) —— CD—— CONDENSATE DRAIN (ABOVE GRADE)

TO EXISTING

FLOOR DRAIN

TRENCH DRAIN

HORIZONTAL CLEANOUT

HUB DRAIN

FLOOR CLEANOUT

EXTERIOR CLEANOUT

ABBREVIATIONS

EXPANSION TANK

FLOOR DRAIN

HUB DRAIN

FLOOR SINK

FRANCHISE

TRENCH DRAIN

EQUIPMENT VENDOR

OWNERS CHOICE

FLOOR CLEANOUT

GALLON PER HOUR

GALLON PER MINUTE

CONDENSATE DRAIN

GALLONS

HOSE BIBB

FILTER WATER

NOT TO SCALE

TYPICAL

CONTRACTORS CHOICE

VERIFY WITH LANDLORD SEE PLUMBING SCHDULE

RE CIRCULATION PUMP

FS-1 (FLOOR SINK 1/2 GRATE)

FS-3 (FLOOR SINK DISHWASHER, 1/2 GRATE)

FS-2 (WITH FUNNEL DRAIN)

—— GW—— GREASE WASTE (BELOW GRADE) — · · — FILTERED WATER

—— G —— GAS LINE (ABOVE GRADE) POINT OF CONNECTION NEW

TD [[[[[[[]]]]

— — VENT

HOSE BIB

12. PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL DRAIN LINES FROM COLD STORAGE ROOM EVAPORATORS TO DRAIN

13. GAS AND WATER SERVICES FOR PORTABLE AND COUNTER TOP APPLIANCES SHALL BE CONNECTED TO EQUIPMENT WITH

14. PLUMBING CONTRACTOR SHALL COORDINATE WITH KITCHEN CONSULTANT DRAWINGS FOR ROUGH IN LOCATIONS, SIZES AND ROUGH IN EQUIPMENT PER MANUFACTURERS

CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
GW	GREASE WASTE
V	VENT
AFF/AFG	ABOVE FINISHED FLOOR/GRADE
AHJ	AUTHORITY HAVING JURISDICTION
BFP	BACKFLOW PREVENTER
ETR	EXISTING TO REMAIN
FCO	FLOOR CLEANOUT
GC	GENERAL CONTRACTOR
IW	INDIRECT WASTE
PC	PLUMBING CONTRACTOR
wco	WALL CLEANOUT
IWH	INSTANTANEOUS WATER HEATER

FD

HD

TD

EV

CC

OC

FCO

GAL

HB

FW

NTS

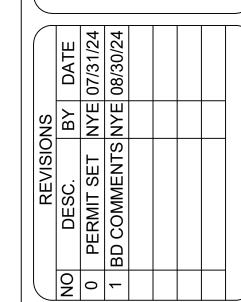
PIPING LAYOUTS AND DUCT LAYOUTS ARE SCHEMATIC. EXACT LOCATIONS SHALL BE DETERMINED BY THE CONSTRUCTION AND STRUCTURE OF THE BUILDING AND SHALL BE VERIFIED AND COORDINATED IN THE FIELD. EACH TRADE CONTRACTOR SHALL VERIFY WITH THE GENERAL CONTRACTOR THAT HE HAS THOROUGHLY REVIEWED AND COORDINATED ALL LOCATIONS AND ROUTINGS WITH ALL OTHER TRADES PRIOR TO FABRICATION OF CONDUITS, DUCTS, OR PIPING, AND START OF INSTALLATION OF SAME (INCLUDING SPRINKLER PIPING WHEN PRESENT ON JOB). ANY INSTALLATION OR CONSTRUCTION CONFLICTS WHICH OCCUR IN THE FIELD SHALL BE RESOLVED BY THE TRADE CONTRACTOR TO THE SATISFACTION OF THE OWNER AND ARCHITECT AND AT NO EXPENSE TO THE OWNER, ARCHITECT AND/OR GENERAL CONTRACTOR.

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

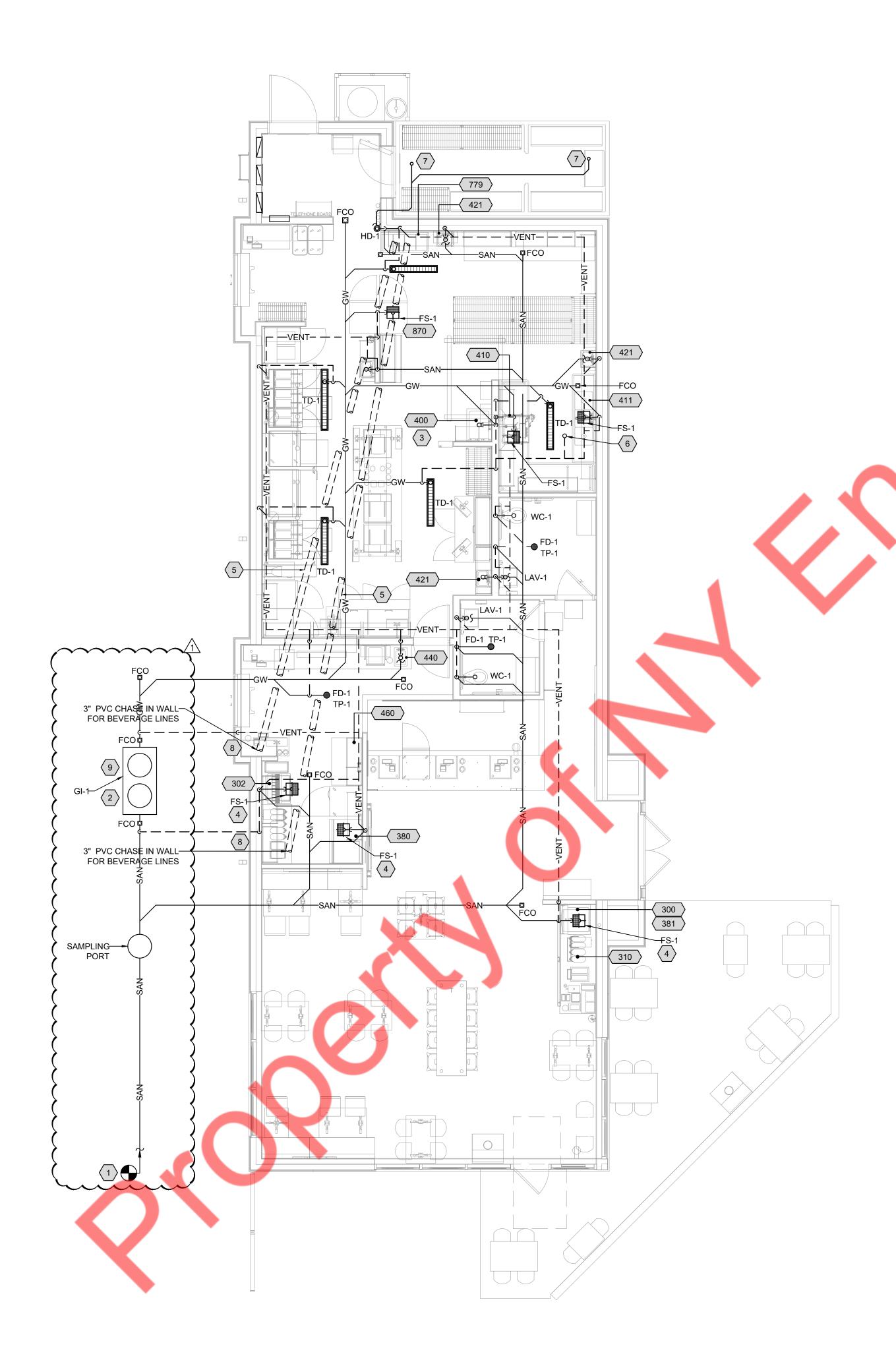
GOVERNING CODES AND DESIGN INTENT.



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KEYED NOTES (#)

- FIELD LOCATE AND TIE INTO THE SEWER MAINS. PLUMBING CONTRACTOR SHALL FIELD VERIFY LOCATION OF SEWER MAINS, VERIFY SIZE AND INVERT. NOTIFY THE ENGINEER IF INVERT CAN NOT BE MET.
- 2. CONNECT 4" GREASE WASTE LINE TO NEW 250 GALLON CONCRETE GREASE INTERCEPTOR. PROVIDE SAMPLING PORT 6" MIN DEPTH DOWN STREAM OF G.I. FIELD VERIFY & COORDINATE WITH CIVIL ENGINEER & JURISDICTION FOR LOCATION AND REQUIREMENTS OF SAMPLING PORT.
- 3. ROUTE WATER HEATER T&P DRAIN LINES TO MOP SINK WITH AIR GAP.
- 4. FLOOR SINKS RECEIVING SODA WASTE SHALL BE ACID RESISTANT WASTE PIPING FROM THESE FLOOR SINKS SHALL BE ACID RESISTANT PIPING TO THE POINT THEY CONNECT WITH THE MAIN WASTE LINE AND ARE DILUTED BY OTHER LIQUID WASTES.
- KITCHEN VENDOR TO PROVIDE UNDERGROUND 6" MINIMUM PVC CONDUIT TO SODA SYSTEM AS SHOWN. USE LONG RADIUS ELBOWS ONLY. SEE KITCHEN CONSULTANT DRAWINGS FOR MORE DETAIL ON SODA PVC.
- 6. PROVIDE 3" V.T.R THRU ROOF.
- 7. CONTRACTOR TO ROUTE 1" CONDENSATE LINES FROM COOLER/FREEZER EVAPORATORS TO HUB DRAIN WITH PROPER AIR GAP. PROVIDE WITH HEAT TRACE TAPE. CONNECT TO SANITARY LINE.
- 8. ROUTE GREASE INTERCEPTOR VENT LINES UNDERGROUND AND UP EXTERIOR WALL.
- 9. INTERCEPTOR LOCATION SHOWN IN THE DRAWING APPROX. CONTRACTOR CO-ORDINATE WITH CIVIL DRAWINGS AND LOCAL AHJ FOR GREASE INTERCEPTOR LOCATIONS AND INSTALLATIONS.

GENERAL NOTES

- 1. ALL PIPING SHALL BE SNAKE CLEAN PRIOR TO CONNECTION.
- ALL DRAIN, WASTE AND VENT FITTINGS SHALL BE CAST IRON PIPE.
 PLUMBING IS NOT PERMITTED IN ANY DEMISING PARTITIONS. FURROUT THE WALL AS NECESSARY
- 4. EXHAUST AND PLUMBING VENTS SHALL BE LOCATED A MINIMUM OF 10'-0"AWAY FROM ANY OUTSIDE AIR INTAKE AND 5'-0"EROM ANY DEMISING WALL VERTICAL PLANE
- ANY OUTSIDE AIR INTAKE, AND 5'-0"FROM ANY DEMISING WALL VERTICAL PLANE.
 5. ALL FLOOR DRAINS ARE REQUIRED TO HAVE TRAP PRIMERS.
- 6. ALL FLOOR PENETRATIONS MUST BE CORE BORED, SLEEVED, GROUTED, SEALED AND MADE WATERPROOF. SLEEVES MUST EXTEND A MINIMUM OF 4"AFF.
- 7. IF NOT ALREADY EXISTING, INSTALL A SHUT OFF VALVE ON DOMESTIC WATER LINE INSIDE SPACE.
- 8. TENANT IS REQUIRED TO INSTALL A WATERPROOF MEMBRANE IN ALL WET AREAS OF THE SPACE. TENANT SHALL USE A 30 MIL POLYETHYLENE CLEAVAGE MEMBRANE (EQUAL TO NOBLESEAL TS) INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND ANSI A108. MEMBRANE MUST BE EXTENDED UP THE WALL A MINIMUM OF 6"OR EQUAL TO THE HEIGHT OF THE FLOOR BASE.
- 9. SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT FOR SANITARY & ½" PER FOOT OF RUN FOR GREASE WASTE FOR PIPE 3" AND ABOVE. 1/4" PER FOOT OF RUN FOR PIPE
- LESS THAN 3". VENT PIPING SHALL BE PITCHED TO DRAIN.

 10. PROVIDE ACCESS PANEL FOR CLEANOUTS AND ALL CONCEALED EQUIPMENTS THAT REQUIRE MAINTENANCE ACCESS. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR LOCATION.
- PROVIDE WALL CLEANOUTS WHEREVER POSSIBLE FOR EACH CHANGE IN DIRECTION OF MORE THAN 45DEG.
- 12. REFER RISER DIAGRAMS FOR PIPE SIZES.

manuel Solo Survivors Chicken Solo Steno S

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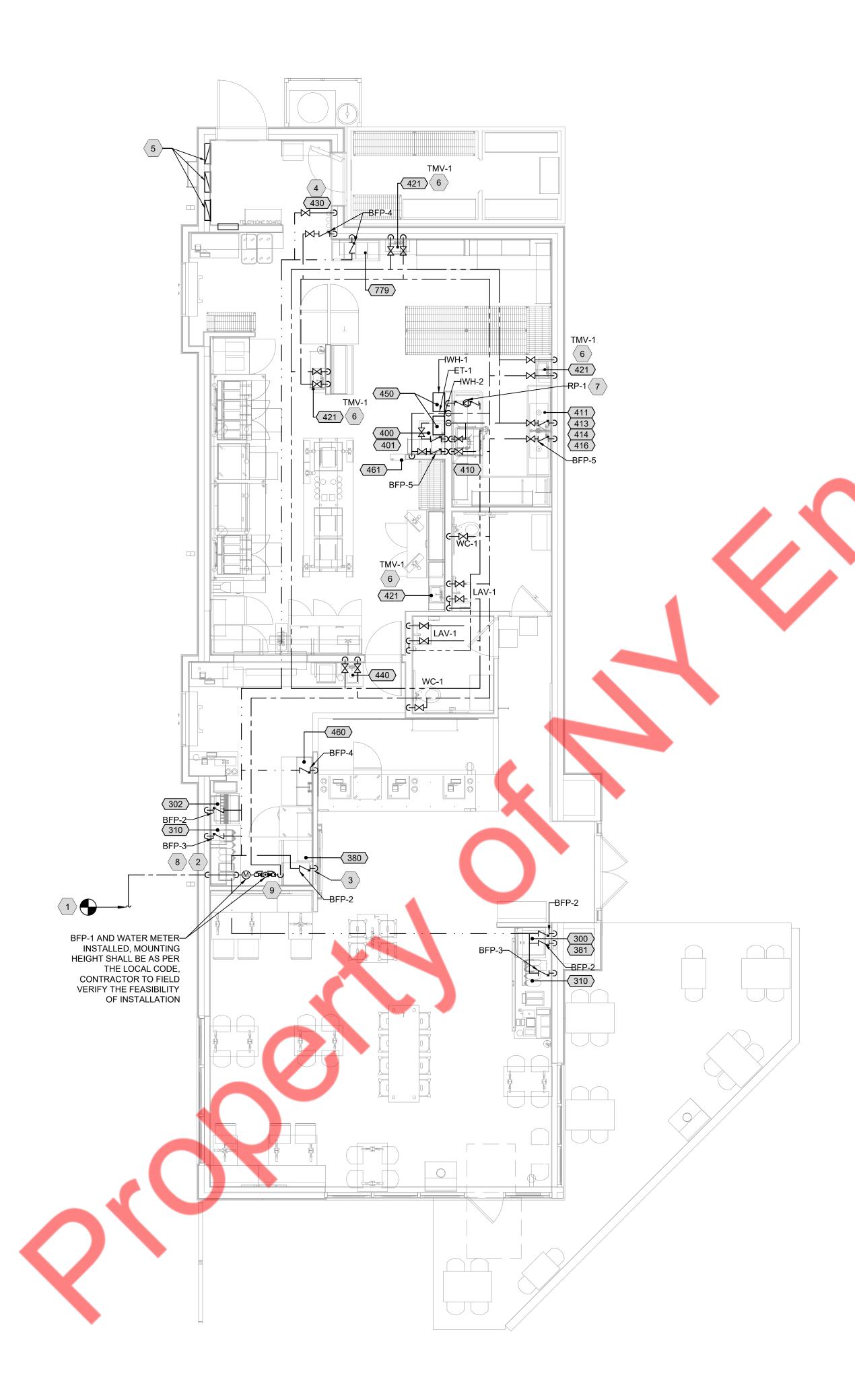
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SANITARY AND VENT PLAN

P1.0 3/16" = 1'-0"





- CONNECT NEW 2" CW SERVICE TO WATER MAINS. FIELD VERIFY LOCATION OF EXISTING WATER MAINS. PROVIDE NEW RPZ AND NEW WATER METER AS REQUIRED BY LOCAL AND STATE CODES. NOTIFY ARCHITECT OF ANY CONFLICTS.
- 2. ROUTE WATER LINE DOWN IN WALL AND UNDERGROUND.
- 3. 1/2" CW TO ICE MACHINE. MINIMUM PRESSURE REQUIRED FOR THE ICE MACHINES IS 40 PSI.
- 4. ROUTE CW DOWN IN WALL. STUB OUT TO WATER FILTER CONNECTION. PIPE FILTER WATER TO FIXTURES INDICATED ON PLAN.
- 5. NO NEW PIPING SHALL BE INSTALLED ABOVE THE PROPOSED LOCATION OF INTERIOR ELECTRICAL PANEL(S).
- PROVIDE MIXING VALVE WATT'S SERIES TO LAVATORIES AND HAND SINK FAUCETS CONFORMING TO ASSE 1070 (TMV-1).
- 7. RE-CIRCULATION PUMP SHALL BE LOCATED IN AN ACCESSIBLE LOCATION ABOVE THE CEILING. PROVIDE TIME CLOCK FOR RECIRCULATING PUMP BASED ON HOURS OF OPERATION FOR TENANT. INCLUDE RETURN WATER TEMPERATURE SENSOR TO PAUSE PUMP WHEN RETURN WATER IS HOT. PROVIDE BALL VALVES, CHECK VALVE, AND BALANCING VALVE (CIRCUIT SETTER CALIBRATED BALANCE VALVE).
- 8. NO TAP OFF TO BE TAKEN BEFORE RPZ.
- TERMINATE BFP-1 DRAIN TO THE NEAREST FLOOR SINK BELOW WITH CODE REQUIRED AIR-GAP.

- ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
- 2. CW/ HW PIPING TO BE PROVIDED WITH INSULATION AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2018, TABLE C403.11.3.
- CONSERVATION CODE 2018, TABLE C403.11.3.

 3. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF FLOOR SLAB PENETRATION AS PER
- STRUCTURAL REQUIREMENT.
 4. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
- 5. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR, CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
- FOR HAND SINK & LAVATORIES PROVIDE HOT WATER AT 110°F. PROVIDE POINT OF USE MIXING VALVE IF REQUIRED.
- PROVIDE MINIMUM PRESSURE REQUIRED FOR WATER LINES AT EXTREME FIXTURE AS PER TABLE NO 604.3 FROM INTERNATIONAL PLUMBING CODE 2018. PROVIDE BRANCH PRV IF PRESSURE INCREASES 80 PSI.
- 8. PROVIDE HOT WATER RETURN AS PER MAXIMUM PIPE LENGTH TABLE FROM
- INTERNATIONAL ENERGY CONSERVATION CODE 2018, TABLE C404.5.1.

 9. REFER BACKFLOW PREVENTERS DEVICE SCHEDULE IN SHEET P-4.0 FOR SECONDARY BFP LOCATIONS.

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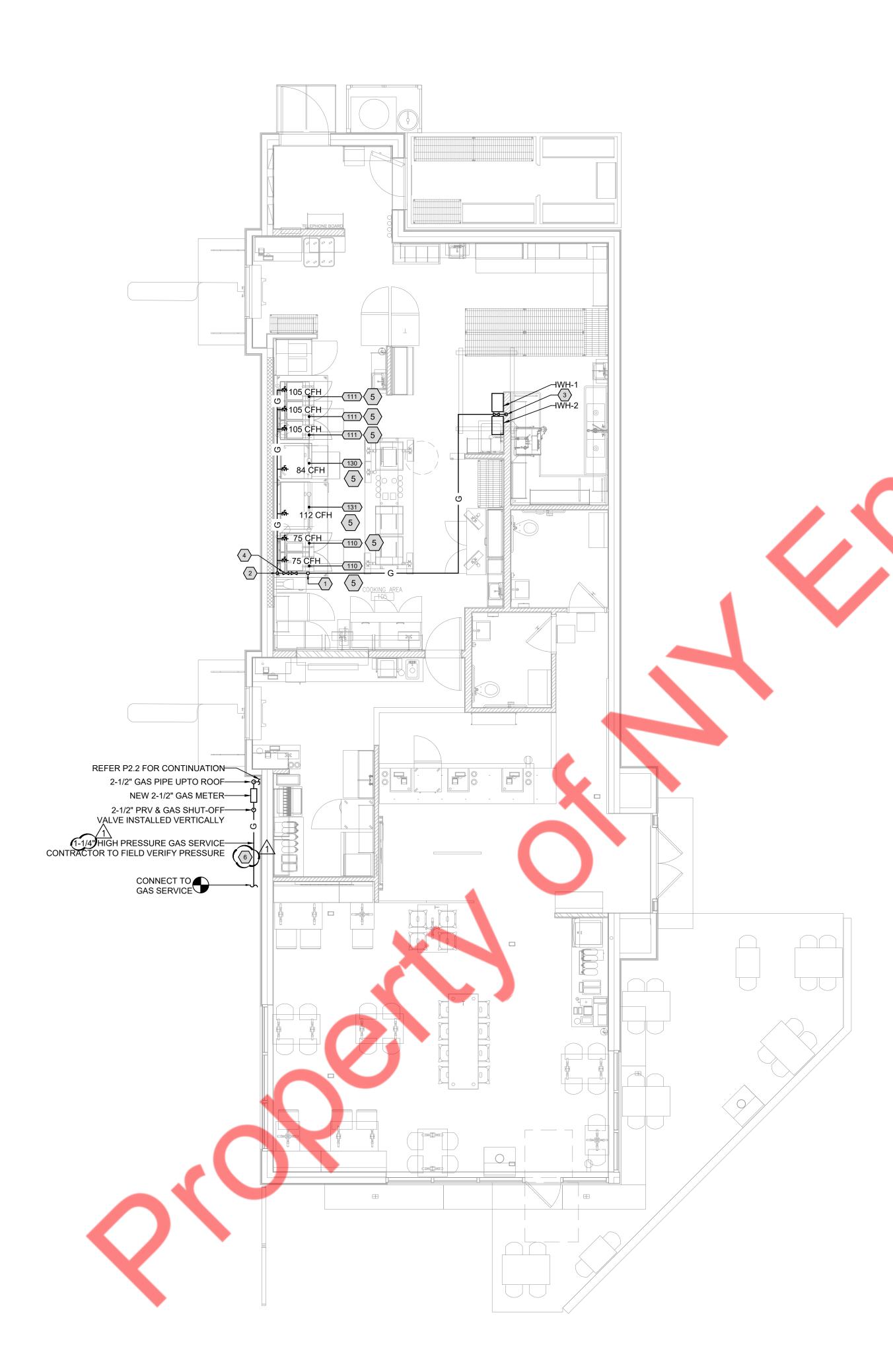
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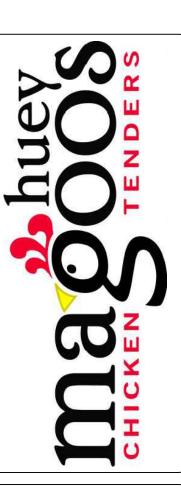
WATER SUPPLY PLAN
P2.0 3/16" = 1'-0"





- 1. GAS PIPE DOWN FROM ROOF ABOVE.
- 2. ROUTE GAS LINE ABOVE CEILING AS SHOWN, DOWN TO COOKING EQUIPMENTS. COORDINATE EXACT LOCATION AND SIZE PRIOR TO BID.
- 3. ROUTE GAS LINE ABOVE CEILING AS SHOWN, DOWN TO WATER HEATERS. COORDINATE EXACT LOCATION AND SIZE PRIOR TO BID. MAKE CONNECTION WITH GAS COCK AND DIRT LEG.
- 4. PROVIDE LINE SIZE SOLENOID SHUT-OFF BELOW CEILING. INTERLOCK WITH HOOD FIRE SUPPRESSION SYSTEM. COORDINATE EXACT VALVE LOCATION. PROVIDE MANUAL SHUT-OFF VALVE BEFORE SOLENOID VALVE.
- KITCHEN CONTRACTOR TO PROVIDE SINGLE SWIVEL MAX/SNAPFAST QUICK DISCONNECT ASSEMBLY FOR CONNECTION TO KITCHEN GAS EQUIPMENT. PLUMBING CONTRACTOR TO PROVIDE SUPPLY PIPING AND SHUT OFF VALVE WITH STUB TO LOCATION SHOWN. COORDINATE EXACT REQUIREMENTS WITH KITCHEN CONSULTANT PRIOR TO RID.
- 6. CONTRACTOR TO FIELD VERIFY AND MAINTAIN 5 FEET OF HORIZONTAL SEPARATION FROM ALL OTHER UTILITIES PARALLEL TO NATURAL GAS SERVICE.

- GAS PIPING OPERATING AT PRESSURE HIGHER THAN 1LB. WHERE INSTALLED IN BUILDING SHALL HAVE WELDED JOINTS, PIPING BELOW 1LB. PRESSURE SHALL HAVE THREADED CONNECTION.
- GAS PIPING SHALL BE STANDARD WEIGHT SCHEDULE 40 BLACK STEEL PIPE. PIPE SHALL BE THREADED OR WELDED AS DIRECTED BY LOCAL GAS COMPANY AND STATE AND LOCAL PLUMBING CODES.
- 3. PROVIDE GAS PIPING COMPLETE WITH ALL REQUIRED FITTINGS, STRAPS, HANGERS, SUPPORTS, ETC. OBTAIN ALL REQUIRED INSPECTIONS AND APPROVALS. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 54 AND ANY APPLICABLE STATE AND LOCAL CODES OR REGULATIONS.
- GAS PIPING ROUTED ON ROOF SHALL BE SUPPORTED BY ROOF PIPE SUPPORT AS PER CODE.
- PAINT GAS PIPING EXPOSED TO WEATHER WITH (2) COATS OF "RUSTOLEUM" OR EQUAL PAINT. COLOR TO BE SELECTED BY OWNER OR GENERAL CONTRACTOR AND PER REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- MAKE FINAL CONNECTIONS TO GAS FIRED EQUIPMENT. PROVIDE GAS SHUT-OFF VALVE AND 6" DIRT LEG AT EACH CONNECTION.
- INSTALL AND CONNECT FLEXIBLE GAS PIPING PROVIDED WITH GAS FIRED OVEN EQUIPMENT AND MAKE FINAL CONNECTIONS TO OVEN.
- 8. PAINT GAS PIPING EXPOSED IN STORE BELOW CEILING SILVER.



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P2.1

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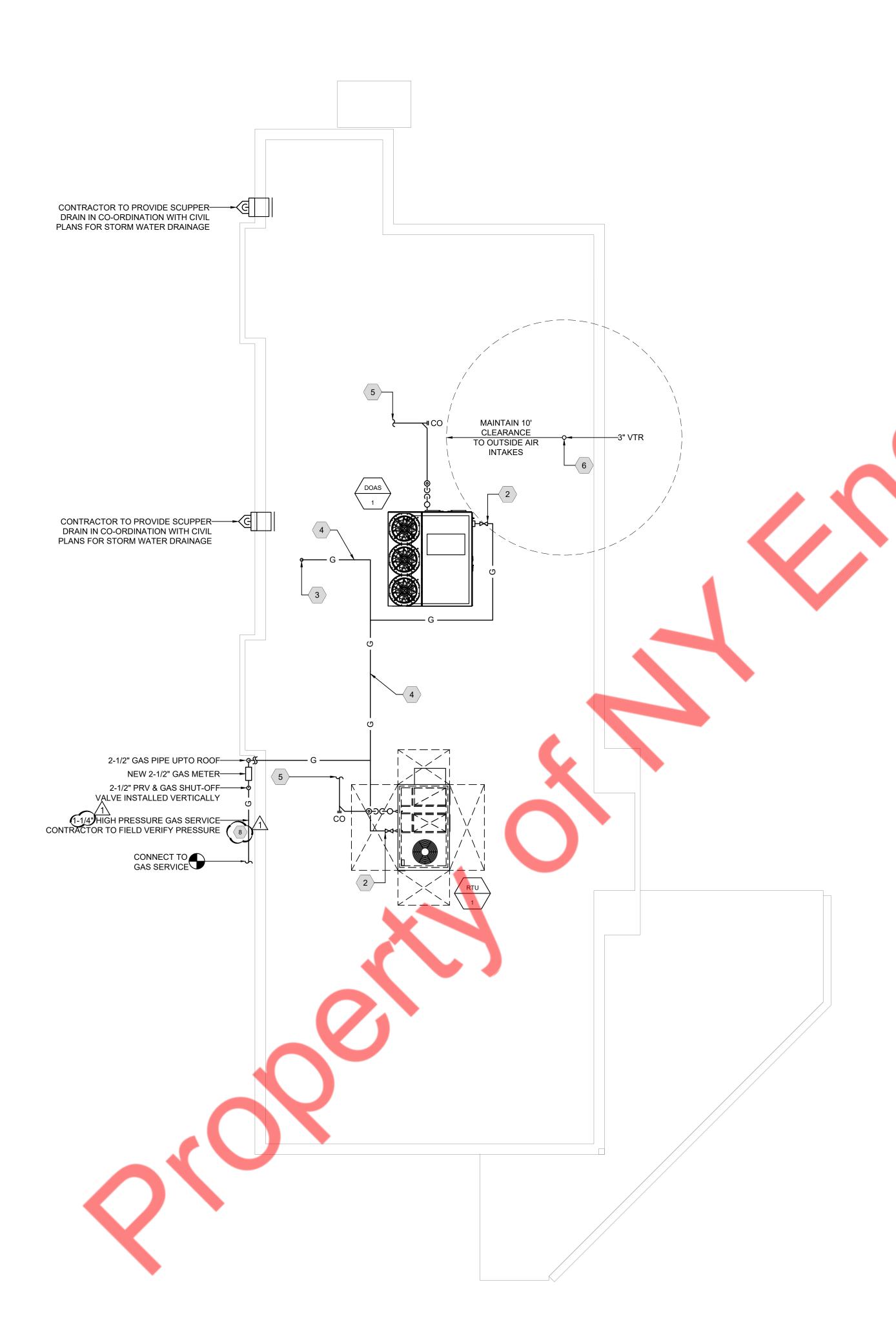
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1 GAS PLAN P2.1 3/16" = 1'-0"





- 1. PROVIDE NEW GAS METER AND GAS PIPING. COORDINATE WITH GAS COMPANY TOTAL LENGTH: ±125'-0", SYSTEM PRESSURE: LESS THAN 2 PSI, AND TOTAL LOAD: 1,441 CFH PRIOR TO BID AND CONSTRUCTION. ROUTE GAS PIPING UP WALL AND ONTO ROOF.
- GAS CONNECTION TO HVAC EQUIPMENT ON ROOF. PROVIDE WITH GAS COCK, DIRT LEG, AND SHUTOFF VALVE. COORDINATE EXACT ROUTING OF GAS PIPING WITH OTHER TRADES PRIOR TO BID.
- 3. ROUTE PIPING DOWN THRU ROOF. PROVIDE WITH WEATHERPROOF PENETRATION. COORDIANTE WITH HOLDER OF ROOF WARRANTY FOR THIS WORK.
- 4. GAS PIPING ROUTED ON ROOF DECK. PROVIDE SUPPORTS AS REQUIRED. SEE DETAILS FOR ADDITIONAL INFORMATION. EXPOSED GAS PIPING ON ROOF TO BE PAINTED BLACK.
- 5. ROUTE CONDENSATE LINES AS SHOWN ACROSS ROOF WITH SUPPORT AS REQUIRED. DRAIN TO ROOF DRAIN/SCUPPER. COORDINATE EXACT LOCATION OF DRAIN/SCUPPER PRIOR TO CONSTRUCTION. PROVIDE WITH AIR GAP.
- 6. 3" VENT THRU ROOF. MAINTAIN 10'-0" SEPARATION BETWEEN OUTSIDE AIR INTAKES AND VENT LOCATIONS.
- 7. GAS METER LOCATION SHOWN IN PLAN IS APPROXIMATE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY PROVIDER FOR GAS METER LOCATION AND PRESSURE. NOTIFY THE ENGINEER IF ANY DISCREPANCIES.
- 3. CONTRACTOR TO FIELD VERIFY AND MAINTAIN 5 FEET OF HORIZONTAL SEPARATION FROM ALL OTHER UTILITIES PARALLEL TO NATURAL GAS SERVICE.

- GAS PIPING OPERATING AT PRESSURE HIGHER THAN 1LB. WHERE INSTALLED IN BUILDING SHALL HAVE WELDED JOINTS, PIPING BELOW 1LB. PRESSURE SHALL HAVE THREADED CONNECTION.
- GAS PIPING SHALL BE STANDARD WEIGHT SCHEDULE 40 BLACK STEEL PIPE. PIPE SHALL BE THREADED OR WELDED AS DIRECTED BY LOCAL GAS COMPANY AND STATE AND LOCAL PLUMBING CODES.
- 3. PROVIDE GAS PIPING COMPLETE WITH ALL REQUIRED FITTINGS, STRAPS, HANGERS, SUPPORTS, ETC. OBTAIN ALL REQUIRED INSPECTIONS AND APPROVALS. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 54 AND ANY APPLICABLE STATE AND LOCAL CODES OR REGULATIONS.
- 4. GAS PIPING ROUTED ON ROOF SHALL BE SUPPORTED BY ROOF PIPE SUPPORT AS PER
- 5. PAINT GAS PIPING EXPOSED TO WEATHER WITH (2) COATS OF "RUSTOLEUM" OR EQUAL PAINT. COLOR TO BE SELECTED BY OWNER OR GENERAL CONTRACTOR AND PER REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- 6. MAKE FINAL CONNECTIONS TO GAS FIRED EQUIPMENT. PROVIDE GAS SHUT-OFF VALVE AND 6" DIRT LEG AT EACH CONNECTION.
- 7. PAINT GAS PIPING EXPOSED IN STORE BELOW CEILING SILVER.



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1 ROOF GAS PLAN
P2.2 3/16" = 1'-0"

WATER HEATER SIZING CALCULATION											
FIXTURE	FIXTURE DESIGNATION	QTY.	GPM	TOTAL							
MOP SINK	400	1	2	2.0							
3-COMP SINK	411	1	2	2.0							
PREP-RINSE	413	1	2	2.0							
HAND SINK / SINK, DROP-IN	421/440	4	0.5	2.0							
LAVATORY	LAV-1	2	0.5	1.0							
DISHWASHER	410	1	5	5.0							
				14.0							

SELECTION BASED ON: 14 GPM & 55 DEG F TEMP DIFFERENCE GROUND WATER TEMPERATURE IS 65 DEG F, WATER HEATER SET TEMPERATURE @ 140 DEG F

GAS CONNECTION SCHEDULE

EQUIPMENT	GAS LOAD				
RTU-1	120,000 BTUH				
DOAS-1	261,200 BTUH				
IWH-1	199,000 BTUH				
IWH-2	199,000 BTUH				
(2) FRYER (#110)	150,000 BTUH				
(3) FRYER (#111)	315,000 BTUH				
GRIDDLE (#130)	84,000 BTUH				
GRIDDLE (#131)	112,000 BTUH				
TOTAL CONNECTED LOAD	1,440,200 BTUH				

1. EQUIVALENT TO 1,441 CFH 2. LESS THAN 2 PSI DELIVERY PRESSURE

3. DEVELOPED LENGTH IS 125'-0"

		PIPING A	NATERIALS		
SERVICE	SIZE	PIPE	FITTINGS	UNIONS & FLANGES	JOINTS
WASTE AND VENT (ABOVE GRADE)	ALL	CAST IRON PIPE HUBLESS, ASTM A 888, CISPI 301, PVC	-	-	-
WASTE AND VENT (BELOW GRADE)	ALL	CAST IRON PIPE HUBLESS, ASTM A 888, CISPI 301, PVC	-	-	-
DOMESTIC COLD WATER AND HOT WATER INSIDE BUILDING	ALL	COPPER PIPING TYPE "L", CPVC	-	-	-
DOMESTIC COLD WATER AND HOT WATER INSIDE BUILDING (BELOW GRADE)	ALL	CROSS LINKED PEX PIPING	NO FITTINGS ALLOWED BELOW GRADE	NO FITTINGS ALLOWED BELOW GRADE	NO FITTINGS ALLOWED BELOW GRADE
GAS PIPING (ABOVE GRADE)	-	BLACK STEEL SCHEDULE 40 ASTM A 120 LAP	#150 BLACK MALLEABLE IRON SCREWED ANSI B16.3 BUSHINGS PROHIBITED	-	THREADED UP TO 2" WELDED OVER 4", CONFORM WITH LOCAL CODES
CONDENSATE WALK-IN REFRIGERATION AND FREEZER EVAPORATORS	ALL	SCHEDULE 40 CPVC	SCHEDULE 40 CPVC	SCHEDULE 40 CPVC	SCHEDULE 40 CPVC
EXPOSED WATER PIPING FROM COMPARTMENT SINK	ALL	COPPER "M"	-	-	

WATER HAMMER ARRESTOR SCHEDULE

П							
ı	(BASED ON SOUIX	CHIEF HYDRA-	RESTOR) OR	(BASE ON ZURI	N MODEL Z-1700)	PER PDI STAN	DAF

SR NO.	MODEL NO.	UNIT SIZE	I ON I LOCATION		REMARKS	
1	652-A	А	1/2"	CONTRACTOR TO LOCATE IN FIELD	LOCATE AT HIGH POINTS	
2	653-B	В	3/4"	CONTRACTOR TO LOCATE IN FIELD	LOCATE AT HIGH POINTS	
3	653-C	С	1"	CONTRACTOR TO LOCATE IN FIELD	LOCATE AT HIGH POINTS	

			E	QUIPM	ENT SCH	HEDULE			
ITE M NO.	QT Y.	EQUIPMENT CATEGORY	COLD WATER SIZE (IN)	HOT WATER SIZE (IN)	DIRECT DRIAN SIZE (IN)	INDIRECT DRIAN SIZE (IN)	MBTUH	GAS SIZE (IN)	PLUMBING REMARKS
110	2	FRYER, DEEP FAT GAS W/FILTER	-	-	-	-	315	1-1/4	-
111	3	FRYER, DEEP FAT GAS W/FILTER	-	-	-	-	150	1	-
130	1	GRIDDLE, HEAVY DUTY, GAS	-	-	-	-	84	3/4	-
131	1	GRIDDLE, HEAVY DUTY, GAS	-	-	-	-	112	3/4	-
300	1	ICE BEVERAGE DISPENSER	1/2	-	-	3/4	-	-	-
302	1	ICE COOLED DROP IN DISPENSER	1/2	-	-	3/4	-	-	-
310	2	TEA BREWER	1/2	-	-	-	-	-	WATER LINE AT 48" AFF
380	1	CUBELET ICE MAKER AT ICE BIN	1/2	-	-	3/4	-	-	-
381	1	ICE MAKER AT BEVERAGE DISPENSER	1/2	-	-	3/4	-	-	-
400	1	SINK, MOP - BY CONTRACTOR	-	-	2	-	-	1	-
401	1	SERVICE FAUCET	3/4	3/4	-	-	ı	ı	-
410	1	DISHWASHER	3/4	3/4	-	2	ı	ı	-
411	1	SINK, SCULLERY, 3-COMPARTMENTS	3/4	3/4	-	1-1/2	ı	ı	-
413	1	PRE-RINSE FAUCET, WALL MOUNT	3/4	3/4	-	-	•	-	-
414	1	PRE-RINSE ADD-A-FAUCET	3/4	3/4	-	-	-	-	-
416	1	DRAIN,TWIST OPERATED OUTLET CONNECTIONS	-	-	-	1-1/2	-	-	
421	4	SINK, HAND, WALL MOUNT	1/2	1/2	1-1/2	-	-	-	-
430	1	WATER FILTER	3/4	-	-	-	-		
440	1	SINK, DROP-IN	1/2	1/2	-	1-1/2	-		
460	1	FAUCET, POT FILLER, WALL MOUNT	1/2	-	-	-) - \
461	1	HOSE REEL AND WATER GUN	3/4	-	-		Y		-
779	1	BAG IN BOX	1/2	-	-	-	-	-	-
870	1	THAWING CABINET	-	-		2	-		_

GREASE INTERCEPTOR CALCULATIONS

Reference No. 69851 Project Name: Huey Magoos Step 1: Flow rate to grease interceptor

Fixture flow rate: (cu in / 231) = $gal \times 0.75 / 2 min = 2 min flow rate$

DIMENSIONS QTY CUIN FLOW RATE 3 Compartment Sink 18" x 18" x 14" (3) 1 13,608 3 Compartment Sink Dishwasher Dishwasher (Door Type) 10 gal. 1 2,310 Floor Drain Floor Drain N/A 0 GPM Floor Sink Floor Sink N/A 2 N/A 0 GPM Dump Sink One Bowl 10" x 14" x 6" 1 840 1.36 GPM Sink Drop-in Trench Drain Floor Sink 5 N/A 0 GPM

28.45 GPM

Step 2: Grease Production Servings per day x Grease production value x Days between pump-outs = Grease output

Total

Servings per day: 500 Grease production value: 0.035 lbs per serving (Bar and Grille: High / No flatware)

Days between pump-outs: 90 days

 $500 \times 0.035 \times 90 = 1575 \text{ lbs of FOG}$

SCHIER MODEL

GB-250

Description: GREASE INTERCEPTOR 100 GPM / 200 GPM, 4" PLAIN/FPT CONNECTIONS, H-20 RATED PICKABLE CAST IRON COVERS

Dimensions: Length: 87", Width: 33", Height: 44" Flow Rate/Grease Capacity: 100 GPM / 1895 lbs Liquid Capacity: 277 gal

BACKELOW	DEVICE SCHEDULE
D/ (CIXI LOV)	DL VICE JOHLDULE

	TAG	SERIES	SIZE	TYPE	USAGE	APPROVAL
]	BFP-1	009QT	2"	REDUCED PRESSURE BACKFLOW PREVENTER	DOMESTIC WATER CONNECTION	ASSE 1015, AWWA 10
	BFP-2	SD-3	1/2"	DUAL CHECK VALVE W/ ATMOSPHERIC VENT	CARBONATED BEVERAGE	ASSE 1022
	BFP-3	9D	1/2"	BACKFLOW PREVENTER W/ ATMOSPHERIC VENT	TEA MAKER, COFFEE MACHINE, JUICE DISPENSER, ETC	ASSE 1012
	BFP-4	007QTS	1/2"	DUAL CHECK VALVE	NON-CABONATED BEVERAGE, SOFT SERVE ICE CREAM, WATER FILTER, HUMIDIFIER, EYE WASH, ETC	ASSE 1015
	BFP-5	008PCQ T	1/2"	SPILL RESISTANT VACUUM BREAKER	SOAP DISPENSER, SPECIALTY SINK, CLEANING EQUIPMENT, DISHWASHER	ASSE 1056

CONTRACTOR TO VERIFY EXACT REQUIREMENTS OF ALL REQUIRED BACKFLOW DEVICES AND FIXTURES WITH AUTHORITIES HAVING JURISDICTION PRIOR TO BID.

DRAINAGE FIXTURE UNITS SCHEDULE IIMUM FIX. TRAP AND FIX. UNITS (EACH) TOTAL FIX. UNITS TYPE OF FIXTURE QTY. FLOOR SINK 25.0 5.0 FLOOR DRAIN 15.0 TRENCH DRAIN 5.0 25.0 **HUB DRAIN** 5.0 1.0 HAND SINK 1-1/4" 5.0 1.0 LAVATORY 2.0 2.0 2" 2.0 MOP BASIN 3-COMP SINK / PREP SINK 2.0 2.0 1-1/2" 4.0 8.0 WATER CLOSET TOTAL DRAINAGE FIXTURE UNITS: 89.0

SANITARY SERVICE SIZE:

		PLUMBING FIXTURE	SCH	IEDUL	Е		
	ENTURE TYPE			FIXTURE (CONNECTIO	MANUFACTURER: MODEL	
MARK	MARK FIXTURE TYPE DESCRIPTION		CW	HW	W	V	NUMBER
<u>WC-1</u>	ADA WATER CLOSET	FLOOR MOUNTED, WHITE VITREOUS CHINA, 1.1 GPF FLUSH VALVE, BATTERY POWERED	1"	-	4"	2"	PROFLO: PF1723 ZURN: ZER6000AV-ONE-CPM
LAV-1	ADA LAVATORY	LUCERNE WALL MOUNTED, ADA COMPLIANT. PROVIDE SENSOR OPERATED FAUCET, PROVIDE AC ADAPTER.	1/2"	1/2"	2"	1-1/2"	AMERICAN STANDARD: 0356.019 MOEN: CA8301
<u>FD-1</u>	FLOOR DRAIN	TYPE "N" STRAINER. PROVIDE WITH COMPLETE BODY ASSEMBLY WITH TRAP PRIMER CONNECTION.	-	-	3" / 4"	2"	ZURN: MODEL #Z-415
<u>FS-1</u>	FS-1 TYPE "K" FLOOR SINK IN KITCHEN AND FOOD SERVICE AREAS SHALL BE J.R. SMITH 3000 SERIES WITH SEDIMENT BUCKET AND 12 1/2" NICKEL BRONZE SQUARE TOP 10" DEEP 1/2 GRATE. PROVIDE WITH PERMADRAIN LOW PRO LOCKING DOME STRAINER KIT. SEE PLAN FOR LOCATION.		-	-	3"	2"	J.R.SMITH: 3000 SERIES
<u>HD-1</u>	HUB DRAIN	HUB DRAIN	-	-	3"	2"	-
<u>TD-1</u>	TRENCH DRAIN	PROVIDE WITH STAINLESS STEEL PERFORATED GRATE AND MEMBRANE CLAMP. CLEAN AND POLISH STRAINER AFTER INSTALLATION. 4' X 6"	-	-	3"	2"	ZURN: Z886-RPSC-2E1-1U4
<u>TP-1</u>	TRAP PRIMER	PROVIDE WITH DISTRIBUTION UNIT AS REQUIRED	-	-	-	-	ZURN: MODEL NO. Z1022
TMV-1	MIXING VALVE	THERMOSTATIC MIXING VALVE. MOUNT VALVE BELOW FIXTURE. SET TEMPERATURE TO 110°F	-	-	-	-	POWERS: LFE480
<u>RP-1</u>	RECIRCULATING PUMP	39 WATTS,115V/1PH, 2GPM @ 7 FT. HEAD	1"	-	-	-	BELL&GOSSETT: MODEL NBF-8
FCO	FLOOR CLEANOUT	SIZE PER PIPING LATERAL, 4" MAX.	-	-	-	-	ZURN: MODEL #1454
<u>IWH-1 &</u> <u>IWH-2</u>	TANKLESS GAS WATER HEATER	GAS TANKLESS WATER HEATER, 7.0 GPM RECOVERY AT 55°F RISE. 120V, 60HZ, 199,000 BTU/H	1"	1"	-	-	RINNAI: CU199i
<u>Gl-1</u>	GREASE INTERCEPTOR	EXTERIOR SCHIER GB-250 GREASE INTERCEPTOR, REFER MANUFACTURER INSTALLATION MANUAL	-	-	4"	2"	SCHIER GB-250
<u>ET-1</u>	EXPANSION TANK	ASME TANK WITH DIAPHRAGM, FULL ACCEPTANCE BLADDER EXPANSION TANK. MODEL: AMTROL, ST-5C-DD	3/4"	-	-	-	AMTROL, ST-5C-DD

NOTES: 1. THERMAL EXPANSION TANK FURNISHED AND INSTALLED BY CONTRACTOR.

ST-5C-DD

2. SET DISCHARGE TEMPERATURE OF WATER HEATER TO OPERATE AT 140 DEG F. 3. TEMPERATURE AND PRESSURE RELIEF VALVE FURNISHED AND INSTALLED BY CONTRACTOR.

4. REFER TO DETAIL FOR ADDITIONAL COMPONENTS AND CONFIGURATION. 5. PROVIDE MANUFACTURER'S VENT TERMINATION KIT FOR COMBUSTION AIR AND DISCHARGE OF FLUE GASES.

6. ALL TEMPERATURE AND PRESSURE RELIEF VALVES SHALL BE PIPED FULL SIZE TO INDIRECT WASTE SUCH AS THE NEAREST FLOOR DRAIN.

	DOMESTIC WATER SUPPLY FIXTURE UNITS											
TYPE OF FIXTURE	TYPE OF SUPPLY CONTROL	QUANTITY	HW (EACH)	HW (TOTAL)	CW (EACH)	CW (TOTAL)	TOTAL (EACH)	TOTAL (F.U.'S) (TOTAL)				
WATER CLOSET	VALVE	2	0.0	0.00	10.0	20.00	10.0	20.00				
LAVATORY	FAUCET	2	1.5	3.00	1.5	3.00	2.0	4.00				
HAND SINK	FAUCET	4	1.5	6.00	1.5	6.00	2.0	8.00				
MOP BASIN	FAUCET	1	2.25	2.25	2.25	2.25	3.0	3.00				
3-COMPARTMENT SINK FAUCET / PREP SINK	FAUCET	2	3.0	6.00	3.0	6.00	4.0	8.00				
DISHWASHER	VALVE	1	1.4	1.4 1.40 0.0		0.00	1.4	1.40				
HOSE	VALVE	1	0.0	0.00	4.0	4.00	4.0	4.00				
ICE MAKER	VALVE	2	0.0	0.00	0.5	1.00	0.5	1.00				
TEA BREWER	VALVE	2	0.0	0.00	0.5	1.00	0.5	1.00				
SODA MACHINE	VALVE	3	0.0	0.00	0.5	1.50	0.5	1.50				
		<u>HW</u>	<u>CW</u>	TOTAL (FIXTURE UNITS (TOTAL)								
				SERVICE TOTAL	FIXTURE UNITS:	18.65	44.75	51.90				
•				1								

SERVICE TOTAL GPM:

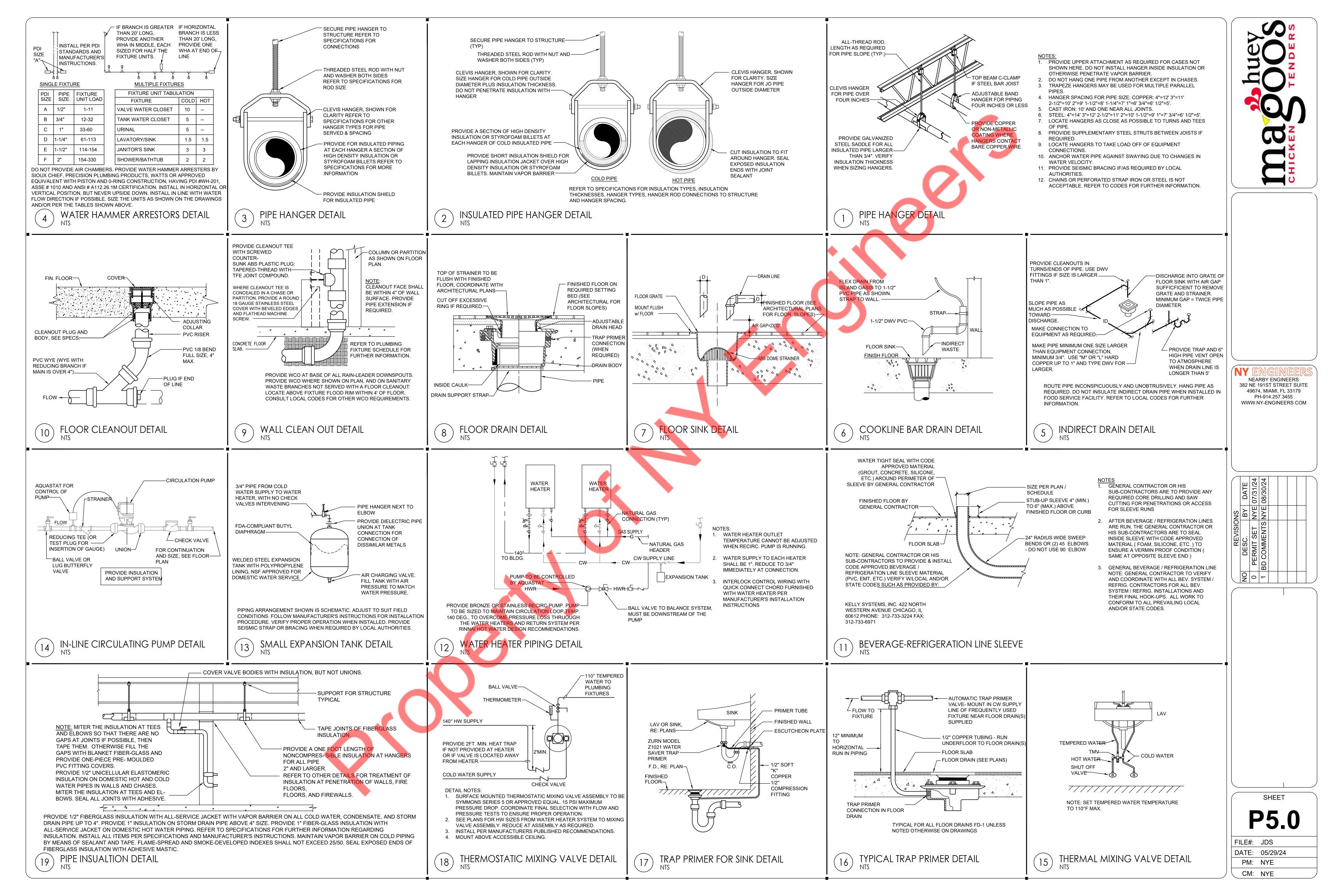
SERVICE SIZE:

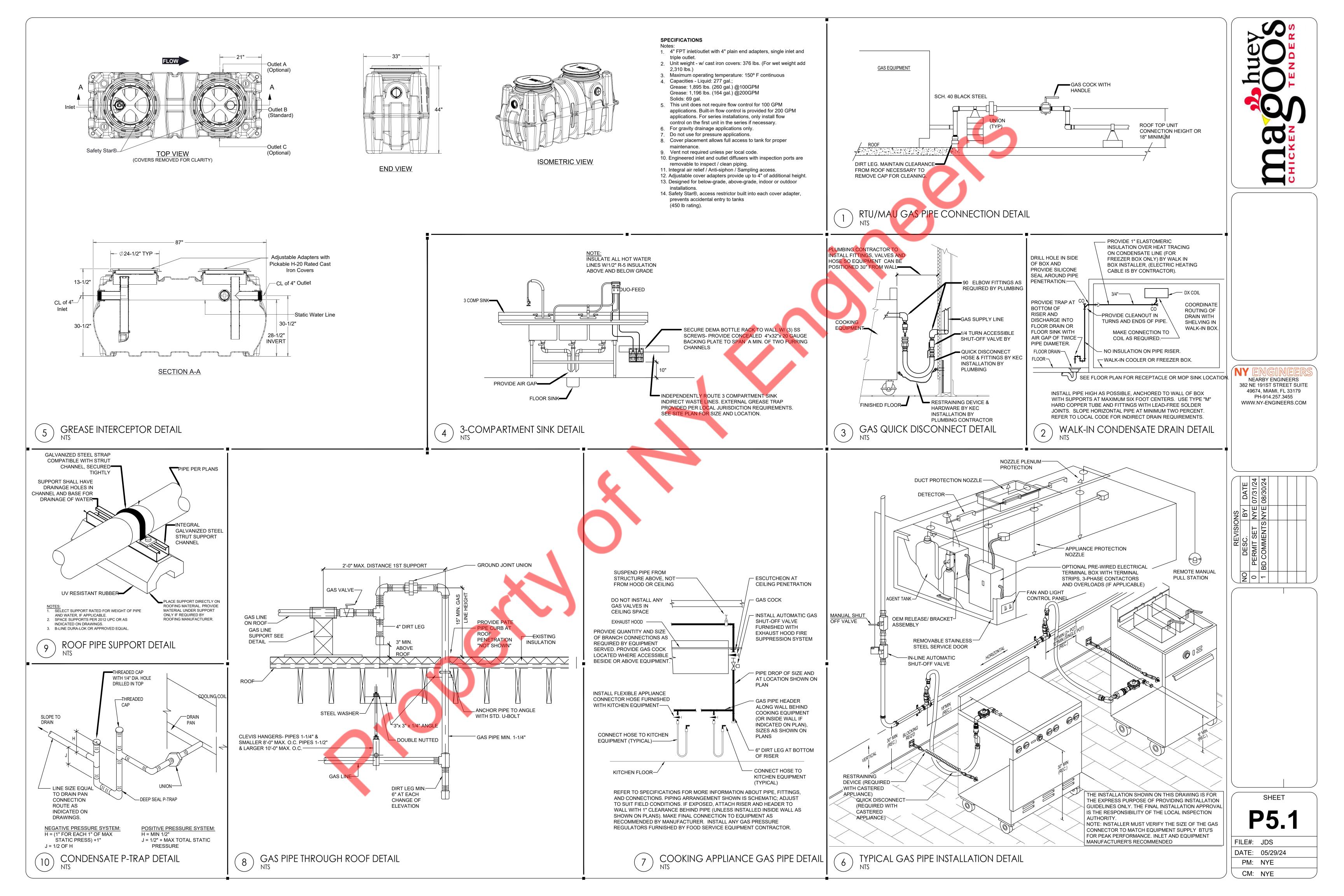
48.0 GPM

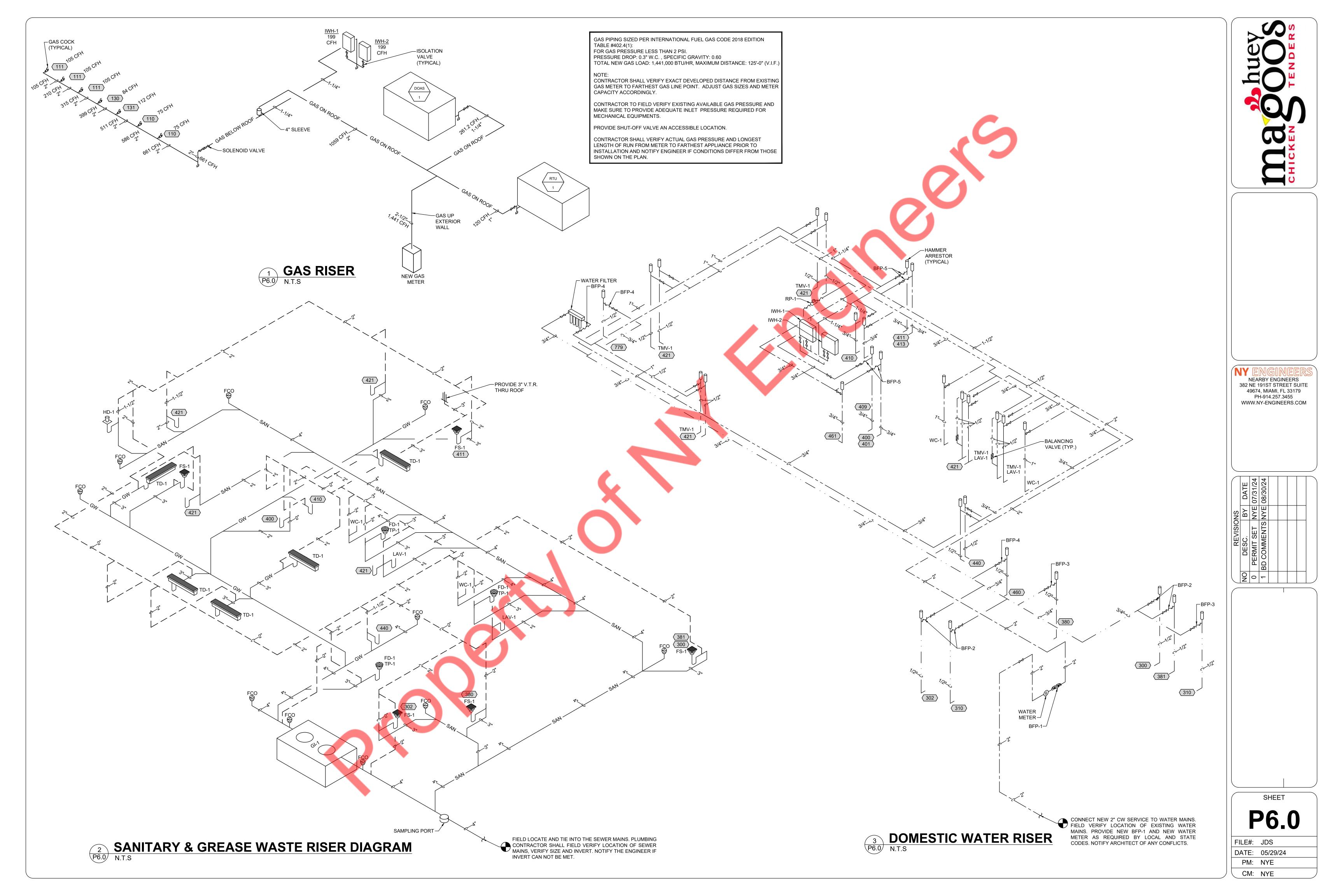
51.8 GPM

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FILE#: JDS DATE: 05/29/24 PM: NYE







Project Information

Energy Code: 2018 IECC
Project Title: HUEY MAGOOS - SPRINGFIELD
Location: 4a
Project Type: New Construction

Construction Site:

Owner/Agent:

Designer/Contractor:

NY ENGINEERS
382 NE 191ST ST.

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed Enhanced Interior Lighting Controls, 1.0 credit

Mechanical Systems List
Quantity System Type & Description

2 IWH-1 & IWH-2:
Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump

No minimum efficiency requirement applies

requirements listed in the Inspection Checklist.

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory

MICHAEL TOBIAS
Name - Title
Signature
08/30/2024
Date



SUITE 49674

MIAMI, FL 33179

Project Title: HUEY MAGOOS - SPRINGFIELD Report date: 06/14/24

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C403.7.2 [ME115] ³	, 33 3	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.7.5 [ME116] ³	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.4.1. 4 [ME63] ²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C408.2.2. 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.5, C403.5.1, C403.5.2 [ME123] ³	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: HUEY MAGOOS - SPRINGFIELD

Report date: 06/14/24
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COMcheck Software Version 4.1.5.5 Inspection Checklist Energy Code: 2018 IECC

Additional Comments/Assumptions:

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

 1 | High Impact (Tier 1)
 2 | Medium Impact (Tier 2)
 3 | Low Impact (Tier 3)

 Project Title:
 HUEY MAGOOS - SPRINGFIELD
 Report date: 06/14/24

 Page
 2 of 7

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C405.7 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C405.8.2, C405.8.2. 1 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C405.9 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits <= 5%.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

ditional Comments/Assumptions:

1 | High Impact (Tier 1) | 2 | Medium Impact (Tier 2) | 3 | Low Impact (Tier 3) |

Project Title: HUEY MAGOOS - SPRINGFIELD | Report date: 06/14/24 |
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions	
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.	
C404.6.1, C404.6.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C404.3 [FI11] ³	Heat traps installed on supply and discharge piping of non-circulating systems.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C404.4 [FI25] ²	All piping insulated in accordance with section details and Table C403.11.3.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C404.6.1 [FI12] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C406.7, C406.7.1 [FI53] ¹	Enhanced Service Water Heat System efficiency package. One of the following SWH system enhancements must satisfy 60 percent of buildings annual hot water requirements, or 100 percent if the building requirements otherwise complies with heat recovery per Section C403.9.5: Waste heat recovery (from SWH, process equipment, OR on-site renewable water-heating.		Requirement will be met.
C408.1.1 [FI57] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

Project Title: HUEY MAGOOS - SPRINGFIELD

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Report date: 06/14/24

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1.0 <u>GENERAL</u>

- 1.01 <u>DESCRIPTION</u>
- A. THIS DIVISION 22 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISION OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORM ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE PLUMBING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN.
- B. THE GENERAL PROVISION AND DIVISION 1, INCLUDING THE GENERAL, SUPPLEMENTARY AND OTHER CONDITION AND OTHER DIVISION, AS APPROPRIATE, APPLY TO WORK SPECIFIED IN THIS DIVISION.

1.02 EXISTING CONDITIONS

- A. PRIOR TO THE SUBMISSION OF BIDS, EACH BIDDER SHALL VISIT THE PROJECTS SITE, THOROUGHLY INVESTIGATE AND BE FAMILIAR WITH ALL THE SITE CONDITIONS WHICH WILL AFFECT THEIR WORK.
- B. CONNECT NEW WORK IN A NEAT AND WORKMANLIKE MANNER.

1.03 <u>INTENT OF DRAWINGS AND SPECIFICATIONS</u>

- A. THE IMPLIED AND STATED INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO ESTABLISH MINIMUM ACCEPTABLE STANDARDS FOR MATERIALS, EQUIPMENT AND WORKMANSHIP, AND TO PROVIDE OPERABLE MECHANICAL SYSTEMS COMPLETE IN EVERY ASPECT.
- B. THE ENGINEERING DRAWINGS ARE DIAGRAMMATIC. INTENDED TO SHOW GENERAL ARRANGEMENT AND SIZES OF SYSTEM COMPONENTS, AND SHALL NOT BE SCALED. RATHER, THE ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL GOVERN SPACE CONSTRAINTS, DIMENSIONS AND FINISHES. ALL OFFSETS AND FITTINGS WHICH WILL BE NECESSARY TO ACCOMPLISH THE FINISHED INSTALLATION SHALL BE PROVIDED AT NO ADDITIONAL COST OR INCREASE IN THE CONTRACT.

- A. ENSURE OPTIMUM USE OF AVAILABLE SPACE FOR MATERIALS AND EQUIPMENT INSTALLED ABOVE CEILINGS. ALLOCATE SPACE IN THE ORDER OF PRIORITY AS LISTED BELOW EXCEPT AS OTHERWISE DETAILED. ITEMS ARE LISTED IN THE ORDER OF PRIORITY, WITH ITEMS OF EQUAL IMPORTANCE LISTED UNDER A SINGLE PRIORITY
- GRAVITY FLOW PIPING SYSTEMS
- VENT PIPING SYSTEMS 3. RECESSED LIGHTING FIXTURES
- CONCEALED HVAC TERMINALS AND EQUIPMENT
- 5. AIR DUCT SYSTEMS
- 6. SPRINKLER PIPING SYSTEMS
- 7. PRESSURIZED PIPING SYSTEMS 8. ELECTRICAL CONDUIT, WIRING, CONTROL AIR TUBING
- SEQUENCE. INSTALLATION SEQUENCE SHALL BE AS REQUIRED TO INSTALL ALL AFFECTED TRADES.

B. ORDER OF SPACE PRIORITY DOES NOT DICTATE INSTALLATION

- C. THE WORK OF THIS DIVISION 22 SHALL NOT OBSTRUCT ACCESS FOR INSTALLATION, OPERATION AND MAINTENANCE OF THE WORK OF ANY OTHER DIVISION.
- D. ALL MAJOR ITEMS OF EQUIPMENT SHALL BE ARRANGED SO AS TO PROVIDE A MINIMUM OF 28" CLEAR AISLE SPACE. ADDITIONAL SPACE SHALL BE PROVIDED BETWEEN AND AROUND EQUIPMENT FOR MAINTENANCE AND PROPER OPERATION AS SHOWN IN THE EQUIPMENT MANUFACTURER'S LITERATURE.

- A. COORDINATE ALL WORK UNDER THIS DIVISION 22 WITH WORK UNDER ALL OTHER DIVISIONS, PROVIDING ADJUSTMENT AS
- B. ALL FIRE SUPPRESSION, PLUMBING, HEATING, VENTILATING, AND AIR CONDITIONING MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS AS MINIMUM REQUIREMENTS:
 - 1. 2018 INTERNATIONAL BUILDING CODE.
 - 2. 2018 INTERNATIONAL PLUMBING CODE.
 - 3. 2018 INTERNATIONAL MECHANICAL CODE
 - 4. 2018 INTERNATIONAL ELECTRICAL CODE. 5. 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
- 6. 2018 INTERNATIONAL FUEL GAS CODE.
- 7. 2017 NATIONAL ELECTRICAL CODE.
- C. SECURE AND PAY ALL FEES ASSOCIATED WITH ALL PERMITS AND LICENSES REQUIRED FOR EXECUTION OF THE CONTRACT. ARRANGE FOR ALL INSPECTIONS REQUIRED BY CITY, COUNTY, STATE AND OTHER AUTHORITIES HAVING JURISDICTION, AND DELIVER CERTIFICATES OF APPROVAL TO THE ARCHITECT.
- D. THE CODE REQUIREMENTS ARE STRICTLY A MINIMUM AND SHALL BE MET WITHOUT INCURRING ADDITIONS TO THE CONTRACT. WHERE REQUIREMENTS OF THE DRAWINGS OR SPECIFICATIONS EXCEED THE CODE REQUIREMENTS, THE WORK SHALL BE PROVIDED IN ACCORDANCE WITH THESE DRAWINGS OR SPECIFICATIONS. IN THE EVENT OF CONFLICT OR AMBIGUITY BETWEEN THE VARIOUS CODES, THE MOST STRINGENT REQUIREMENT SHALL GOVERN.

1.07 ELECTRICAL REQUIREMENTS AND INTERFACE

- A. ALL ELECTRICAL EQUIPMENT AND WIRING PROVIDED UNDER THIS DIVISION 22 SHALL COMPLY WITH THE ELECTRICAL SYSTEM CHARACTERISTICS INDICATED ON THE ELECTRICAL DRAWINGS AND SPECIFIED IN DIVISION 26.
- B. ELECTRIC CONTROLS, CONTRACTORS, STARTERS, PILOT LIGHTS, PUSH BUTTONS, ETC., SHALL BE PROVIDED COMPLETE AS PART OF THE MOTOR, HEATER OR OTHER EQUIPMENT WHICH IT OPERATES. ALL ELECTRICAL COMPONENTS SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND DIVISION 26. REFERENCE DIVISION 26 AND THE ELECTRICAL ENGINEERING DRAWINGS FOR THOSE MOTOR STARTERS PROVIDED UNDER THAT DIVISION 26. ALL STARTS NOT SHOWN SHALL BE PROVIDED UNDER THIS DIVISION 22. UNLESS SPECIFIED OTHERWISE UNDER OTHER INDIVIDUAL EQUIPMENT SECTIONS. MOTOR STARTERS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS:
- 1. STARTERS FOR MOTORS 1/3 HORSEPOWER OR SMALLER SHALL BE MANUAL UNLESS REMOTE OR AUTOMATIC STARTING IS REQUIRED, IN WHICH CASE THE STARTERS SHALL BE MAGNETIC, FULL VOLTAGE, NON-REVERSING, SINGLE-SPEED, UNLESS OTHERWISE INDICATED. ALL OTHER STARTERS SHALL BE MAGNETIC.
- 2. EACH STARTER FOR A THREE-PHASE MOTOR SHALL BE FURNISHED WITH THREE (3) OVERLOAD RELAYS SIZED FOR THE FULL LOAD RUNNING CURRENT OF THE MOTOR ACTUALLY PROVIDED. PROVIDE AN EXTERNAL "HAND-OFF AUTO" SELECTOR SWITCH WITH RED "RUNNING" LIGHT. PROVIDE A GREEN PILOT LIGHT TO INDICATE MOTOR "STOPPED". EACH PILOT LIGHT SHALL HAVE A LEGEND PLATE INDICATING REASON FOR SIGNAL.
- 3. EACH OVERLOAD RELAY SHALL HAVE A NORMALLY OPEN ALARM CONTACT WHICH WILL CLOSE ONLY WHEN ACTUATED BY AN OVERLOAD (NOT TO BE CONFUSED WITH N.O. OR N.C. AUXILIARY CONTACTS). THESE CONTACTS SHALL BE PROPERLY WIRED TO THEIR RESPECTIVE BLUE PILOT LIGHT PROVIDED ON THE STARTER

- FRONT COVER AND HAVING A "TRIPPED" LEGEND PLATE.
- 4. INDIVIDUALLY MOUNTED MOTOR STARTERS SHALL BE IN A NEMA TYPE 1 GENERAL PURPOSE ENCLOSURE IN UNFINISHED AREAS AND SHALL BE FLUSH MOUNTED IN ALL FINISHED AREAS. ALL STARTERS MOUNTED IN EXTERIOR AREAS SHALL HAVE A NEMA 3R ENCLOSURE. EACH STARTER SHALL HAVE A LAMINATED NAMEPLATE TO INDICATE THE EQUIPMENT UNIT NUMBER FUNCTION AND CIRCUIT NUMBER.
- 5. ALL MOTOR STARTERS, PUSH BUTTONS AND PILOT LIGHTS SHALL BE OF THE SAME MANUFACTURER AS THE SWITCHBOARD AND SHALL BE GENERAL ELECTRIC, SQUARE D, SIEMENS I.T.E., OR WESTINGHOUSE.
- C. MOTOR STARTERS FOR THE FOLLOWING EQUIPMENT SHALL BE PROVIDED UNDER THIS DIVISION 22 BY THE MANUFACTURER OF THE EQUIPMENT:
- 1. PACKAGED BOOSTER PUMP SYSTEMS. 2. OTHER EQUIPMENT HEREINAFTER SPECIFIED IN OTHER SECTIONS
- TO BE PROVIDED WITH INTEGRAL STARTERS. D. UNLESS OTHERWISE NOTED OR SPECIFIED IN INDIVIDUAL SECTIONS, ALL 3-PHASE MOTORS SHALL BE STANDARD NEMA
- CONTINUOUS DUTY "B" TYPE, WITH CLASS B INSULATION, OPEN DRIP-PROOF FRAME FOR INDOOR SERVICE, TEFC FOR HI-EFFICIENCY MODEL OR RELIANCE XE HI-EFFICIENCY MODEL E. ALL POWER WIRING AND FINAL CONNECTIONS TO EQUIPMENT
- SHALL BE PROVIDED UNDER DIVISION 26. F. CONTROL COMPONENTS, ALL INTERLOCKS (MOTOR-OPERATED DAMPERS, FIRE ALARM MOTORS, ETC.) AND CONTROL WIRING (120 VOLT, SINGLE PHASE AND LESS) SHALL BE PROVIDED UNDER THIS
- G. ALL CONTROL WIRING OVER 30 VOLTS SHALL BE INSTALLED BY A LICENSED ELECTRICIAN WORKING UNDER THIS DIVISION 22.

DIVISION 22 AS REQUIRED TO ACHIEVE THE SPECIFIED CONTROL

1.08 <u>SLEEVES, SEALS AND ESCUTCHEONS</u>

- A. SLEEVES SHALL BE PROVIDED THROUGH ALL PIPE PENETRATIONS OF CONCRETE OR MASONRY WALLS, ELEVATED FLOORS AND ROOFS, EXCEPT THOSE PLUMBING PIPING PENETRATIONS FOR FIXTURES, VENTS, ETC.
- B. SLEEVES SHALL BE FABRICATED FROM SCHEDULE 40 STEEL PIPE THROUGH 10" AND STANDARD WALL STEEL PIPE FOR SLEEVE SIZES 12" AND LARGER. ALL SLEEVES PENETRATING EXTERIOR WALLS, UNDERGROUND WALLS, PIT OR VAULT WALLS SHALL BE PROVIDED WITH A 3" X 3/8" THICK WATERSTOP RING WELDED COMPLETED TO THE MIDPOINT OF THE SLEEVE.
- C. ALL SLEEVES PENETRATING EXTERIOR WALLS, UNDERGROUND WALLS, PIT OR VAULT WALLS AND ELEVATED FLOORS SHALL BE PACKED AND SEALED WATERTIGHT.
- D. SLEEVES THROUGH ROOFS SHALL EXTEND ABOVE THE ROOF SURFACE AND BE FLASHED WATERTIGHT.
- E. SLEEVES THROUGH WALLS SHALL BE CUT AND FINISHED FLUSH WITH EACH SURFACE OF THE WALL IN WHICH THEY ARE INSTALLED.
- F. SLEEVES SHALL BE SIZED TO PROVIDE A MINIMUM OF 1/2" CLEARANCE BETWEEN THE INSIDE SURFACE OF THE SLEEVE AND THE OUTSIDE FINISHED SURFACE OF THE PIPE PLUS ANY INSULATION SPECIFIED.
- G. FIRE-STOPS SHALL BE PROVIDED AS SPECIFIED HEREIN. ALL ANNULAR SPACES BETWEEN PIPING AND SLEEVES WHICH DO NOT REQUIRE FIRE-STOPS SHALL BE PACKED WITH MINERAL WOOL AND CAULKED.
- H. PROVIDE ROUND, CHROME PLATED ESCUTCHEONS ON ALL EXPOSED PIPING PENETRATIONS PASSING THROUGH WALLS, FLOORS, PARTITIONS AND CEILINGS.

1.09 CORE DRILLING

A. CUTTING OF HOLES THROUGH CONCRETE AND MASONRY SHALL BE BY DIAMOND CORE OR CONCRETE SAW. PNEUMATIC HAMMER, IMPACT ELECTRIC AND HAND OR MANUAL HAMMER TYPE DRILLS WILL NOT BE ALLOWED. EXCEPT AS PERMITTED BY THE ARCHITECT WHERE REQUIRED BY LIMITED WORKING SPACE. LOCATE HOLES SUCH THAT THEY WILL NOT AFFECT STRUCTURAL SECTIONS SUCH AS RIBS OR BEAMS. HOLES SHALL BE LAID OUT WELL IN ADVANCED OF THE INSULATION. THESE LAYOUT LOCATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO DRILLING.

PRODUCTS

BID BASIS AND SUBSTITUTION PROCESS

- A. MANUFACTURERS NAMES, SERIES AND MODEL NUMBERS AS NOTED OR SPECIFIED. ARE FOR THE PURPOSE OF DESCRIBING TYPE. CAPACITY, AND QUALITY OF EQUIPMENT, MATERIALS AND PRODUCTS TO BE USED. UNLESS "OR EQUAL" IS SPECIFICALLY STATED, BIDS SHALL BE BASED ONLY ON THE SPECIFIED "BASIS OF DESIGN" MANUFACTURER. THE LISTING OF A PARTICULAR MANUFACTURER AS AN "EQUAL" OR "ACCEPTABLE SUBSTITUTE" MANUFACTURER SHALL NOT BE MISCONSTRUED AS APPROVED NOR ALLOWING THE SUBSTITUTION OF THAT MANUFACTURER'S STANDARD PRODUCT IN PLACE OF THE BASIS OF DESIGN. NO CONSIDERATION ILL BE GIVEN TO A PRODUCT WHICH WOULD REQUIRE DIMENSIONAL, SPATIAL OR AESTHETIC CHANGES TO THE PROJECT. "ACCEPTABLE SUBSTITUTE" AND "EQUAL" MANUFACTURERS SHALL ONLY BID THOSE PRODUCTS WHICH EXACTLY MATCH THE SIZE AND OTHER CHARACTERISTICS OF THE SPECIFIED BASIS OF DESIGN. ANY CHANGES TO OTHER DISCIPLINES AND TRADE OF WORK REQUIRED BY AN "OR EQUAL" OF "SUBSTITUTE" PRODUCT SHALL BE DULLY CONSIDERED AND PRICED ACCORDINGLY PRIOR TO BIDDING OR PRICING. THE DECISION AS TO WHETHER OR NOT A PROPOSED SUBSTITUTE OR "EQUAL" PRODUCT IS ACTUALLY EQUAL TO THAT SPECIFIED SHALL REST SOLELY WITH THE ARCHITECT.
- REQUEST TO PROVIDE "EQUAL" PRODUCTS IN LIEU OF THOSE SPECIFIED SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING A LEAST TEN (10) DAYS PRIOR TO FINAL PRICING AND EXECUTION OF THE CONTRACT. NO CONSIDERATION WILL BE GIVEN TO SUBSTITUTE PRODUCTS AFTER FINAL PRICING AND EXECUTION OF THE CONTRACT.
- C. ANY "OR EQUAL" PRODUCT OR PROPOSED PRODUCT SUBSTITUTION WHICH WILL CAUSE A CHANGE IN THE APPEARANCE, DIMENSIONS OR DESIGN OF ANY PART OF THE BUILDING, ITS STRUCTURE, ELECTRICAL SYSTEM OR ANY OTHER ENGINEERING SYSTEMS SHALL BE ACCOMPANIED BY A SCALED DRAWING AND WRITTEN DESCRIPTION OF THE REQUIRED CHANGE(S) FOR APPROVAL BY THE ARCHITECT. IF DEEMED NECESSARY BY THE ARCHITECT, DESIGN CHANGES SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, CURRENTLY LICENSED IN THIS STATE.

MINIMUM STANDARDS

- A. EVERY PIECE OF ENERGY CONSUMING EQUIPMENT, ALL FIRE SUPPRESSION PRODUCTS AND LIFE SAFETY EQUIPMENT SHALL COMPLY WITH THE FOLLOWING STANDARDS AS APPLICABLE: ESPECIALLY IN REGARD TO PREVAILING CODES:
- 1. FACTORY MUTUAL LABORATORIES (FM)
- 2. INDUSTRIAL RISK INSURERS (IRI) 3. UNDERWRITING LABORATORIES, INC. (UL)
- 4. ADC: AIR DIFFUSION COUNCIL
- 5. AGA: AMERICAN GAS ASSOCIATION
- 6. AMCA: AIR MOVING AND CONDITIONING ASSOCIATION, INC. 7. ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE

- 8. API: AMERICAN PETROLEUM INSTITUTE
- 9. ARI: AMERICAN REFRIGERATION INSTITUTE
- 10. ASHRAE: AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
- 11. ASME: AMERICAN SOCIETY OF MECHANICAL ENGINEERS
- 12. ASTM: AMERICAN SOCIETY OF TESTING AND MATERIALS
- 13. AWWA: AMERICAN WATER WORKS ASSOCIATION
- 14. IBR: INSTITUTE OF BOILER AND RADIATOR MANUFACTURERS
- 15. MSS: MANUFACTURERS STANDARDIZATION SOCIETY
- 16. NBBPVI: NATIONAL BOARD OF BOILER AND PRESSURE VESSEL 17. NEMA: NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
- 18. OSHA: OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
- 19. PDI: PLUMBING DRAINAGE INSTITUTE 20. PPI: PLASTIC PIPE INSTITUTE
- 21. SMACNA: SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC.

3.0 EXECUTION

3.01 SUBMITTALS

- A. BEFORE PREPARING SUBMITTALS, STUDY ALL CONTRACT DRAWINGS AND SPECIFICATIONS IN DETAIL, OBTAIN MANUFACTURER'S RECOMMENDED INSTRUCTIONS, AND HAVE SUBMITTALS PREPARED BASED ON SPECIFIC EQUIPMENT AND MATERIAL PROPOSED FOR INSTALLATION. AN OFFICER OF THE CONTRACTING FIRM SHALL SIGN ALL SHOP DRAWINGS (CERTIFYING CONFORMANCE WITH PLANS AND SPECIFICATIONS) BEFORE SUBMITTING TO THE ARCHITECT OR RELEASING TO THE FIELD.
- B. THE SUBMITTAL PROCESS SHALL NOT BE UTILIZED AS AN AVENUE TO SUBSTITUTE PRODUCTS AFTER THE EXECUTION OF THE CONTRACT. SHOULD AN UNSPECIFIED OR UNEQUAL PRODUCT BE SUBMITTED, IT WILL BE REJECTED. IF A SECOND ATTEMPT AT SUBSTITUTION IS MADE DURING THE RESUBMITTAL OF THE SAME PRODUCT, THERE ARE NO MORE REVIEWS OF THE PRODUCT THAT WILL BE PERFORMER WITHOUT DIRECT COMPENSATION TO THE ENGINEER BEING PAID FOR THE ADDITIONAL SERVICES REQUIRED FOR THE THIRD REVIEW AND ANY FURTHER REVIEW.
- NO MORE THAN FOUR (4) COPIES OF SUBMITTAL DATA WILL BE REVIEWED. ANY ADDITIONAL COPIES WILL BE RETURNED UNMARKED. THE RESPONSIBILITY OF COPYING REVIEW COMMENTS ON ANY ADDITIONAL COPIES WILL REST SOLELY WITH THE CONTRACTOR.
- D. SUBMITTALS WILL NOT BE ACCEPTED FOR REVIEW UNLESS THEY:
- COMPLY WITH THE REQUIREMENTS OF DIVISION 1
- 2. INCLUDE COMPLETE INFORMATION PERTAINING TO ALL APPURTENANCES AND ACCESSORIES.
- 3. ARE SUBMITTED AS COMPLETE PACKAGES WHICH PERTAIN TO ALL RELATED ITEMS IN DIVISION 22. SEPARATE PACKAGES SHALL BE SUBMITTED AS FOLLOWS:
- a. ALL PLUMBING EQUIPMENT, FIXTURES AND COMPONENTS
- b. THE AUTOMATIC CONTROLS AND EMS ARE PROPERLY MARKED WITH EQUIPMENT, SERVICE OR FUNCTION IDENTIFICATION AS RELATED TO THE PROJECT AND ARE MARKED
- WITH PERTINENT SPECIFICATION PARAGRAPH NUMBER. SUBMIT CATALOG INFORMATION, FACTORY ASSEMBLY DRAWINGS, FIELD INSTALLATION DRAWINGS AND CERTIFICATIONS AS REQUIRED FOR COMPLETE EXPLANATION AND DESCRIPTION OF ALL ITEMS FOR EQUIPMENT. THE SUBMITTAL DATA SHALL PROVIDE AMPLE, UNQUESTIONABLE COMPLIANCE WITH THE CONTRACT
- REVIEW OF SUBMITTALS SHALL NOT BE CONSTRUED AS AUTHORIZING ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS UNLESS SUCH DEVIATIONS ARE CLEARLY IDENTIFIED AND SEPARATELY SUBMITTED IN THE FORM OF A LETTER THAT IS ENCLOSED WITH THE SUBMITTALS.
- G. SUBMITTALS ARE REQUIRED ON ALL MANUFACTURED EQUIPMENT ESPECIALLY ENERGY CONSUMING EQUIPMENT. SUBMITTALS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING ITEMS OF
- EQUIPMENT: PIPING SPECIALTIES
- INSULATION
- PUMPS 4. WATER HEATERS
- PLUMBING FIXTURES

PACKAGED BOOSTER SYSTEM

3.02 EXCAVATION, TRENCHING AND BACKFILLING

- A. PERFORM ALL EXCAVATION, TRENCHING AND BACKFILLING F UNDERGROUND WORK UNDER THIS DIVISION 22. DURING EXCAVATION. THE EXCAVATED MATERIAL SHALL BE PILED BACK FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING. SLIDES OR CAVE-INS. DO NOT EXCEED THE ANGLE OF REPOSE UNLESS WRITTEN APPROVAL IS OBTAINED IN ADVANCE FROM THE ARCHITECT OR OWNER FOR SHORING, BRACING OR OTHER ALTERNATE EXCAVATION METHODS. ALL EXCAVATED MATERIAL NOT USED FOR BACKFILLING SHALL BE REMOVED FROM THE BUILDING AND DISPOSED OF AS INDICATED OR DIRECTED BY THE OWNER OR LANDLORD. TAKE MEASURES TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES AND OTHER EXCAVATIONS AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING. ALL EXCAVATION SHALL BE MADE BY OPEN CUT.
- TUNNELING SHALL NOT BE ALLOWED. THE BOTTOM OF ALL TRENCHES SHALL BE EVENLY GRADED TO PROVIDE FIRM SUPPORT AND AN EVEN BEARING SURFACE. PIPE HALL BE LAID ON FIRM SOIL, LAID IN STRAIGHT LINES AND ON INIFORM GRADES. PROVIDE BELL HOLES SO THAT THE BARREL OF THE PIPE RESTS EVENLY ON THE BOTTOM OF THE TRENCH ALONG THE ENTIRE LENGTH OF THE PIPE.
- PIPE SHALL BE INSPECTED AND TESTED PRIOR TO BACKFILLING. TRENCH SHALL BE HAND FILLED TO A MINIMUM OF 12" ABOVE THE TOP OF PIPE WITH SUITABLE EARTH (FREE OF ROCKS, TRASH, ARGE CLODS AND ORGANIC MATERIAL) AND COMPACTED TO A MINIMUM 95% PROCTOR. AFTER THE FIRST LATER IS COMPLETED, SUBSEQUENT LAYERS SHALL BE FILLED AND COMPACTED THE AME AS THE FIRST LAYER. SETTLING THE BACKFILL WITH WATER SHALL NOT BE PERMITTED.

3.03 INSTALLATION REQUIREMENTS

- A. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER, AS INDICATED ON THE DRAWINGS AND AS
- PROVIDE INSTALLATION MANUALS FOR EACH PIECE OF EQUIPMENT. SUBMIT IN SEPARATELY BOUND VOLUMES AFTER REVIEW OF SUBMITTALS.
- C. PROVIDE SUPPLEMENTARY STEEL FRAMING AND WELDED STEEL EQUIPMENT SUPPORT STANDS AS REQUIRED FOR PROPER HANGING AND SUPPORT OF THE MECHANICAL SYSTEMS. STEEL ANGLES, CHANNELS AND TUBING UTILIZED FOR SUCH FRAMING SHALL BE SELECTED FOR A MAXIMUM DEFLECTION OF 1/360TH OF THE SPAN.

3.04 <u>CLEANING, LUBRICATION AND ADJUSTMENT</u>

A. THE EXTERIOR SURFACES OF ALL MECHANICAL EQUIPMENT. PIPING, CONDUIT, ETC., SHALL BE CLEANED AND FREE OF ALL DIRT, GREASE, OIL, PAINT SPLATTER, AND OTHER CONSTRUCTION DEBRIS.

- B. BEARINGS THAT REQUIRE LUBRICATIONS HALL BE LUBRICATED IN STRICT ACCORDANCE WITH THE MANUFACTURERS
- RECOMMENDATIONS. C. ALL CONTROL EQUIPMENT SHALL BE ADJUSTED TO THE SETTINGS REQUIRED FOR THE PERFORMANCE SPECIFIED.
- D. ALL COILS SHALL BE THOROUGHLY CLEANED AND COMBED PRIOR TO FINAL INSPECTION.

3.05 <u>PAINTING</u>

- A. ALL UNCOATED AND UNINSULATED STEEL SURFACES EXPOSED TO SIGHT INSIDE THE BUILDING, SUCH AS PIPING, EQUIPMENT HANGERS AND SUPPORTS WHICH ARE NOT PROVIDED WITH FACTORY PRIME COAT OR GALVANIZING, SHALL BE CLEANED AND PAINTED WITH ONE COAT OF RUST INHIBITING PRIMER. IN ADDITION, ALL SURFACES IN FINISHED SPACES SHALL ALSO BE PAINTED WITH TWO COATS OF FINISH PAINT IN A COLOR SELECTED BY THE ARCHITECT.
- B. STEEL ITEMS EXPOSED OUTSIDE THE BUILDING, SUCH AS EQUIPMENT SUPPORTS, UNINSULATED PIPING AND HANGERS WHICH ARE NOT FACTORY PAINTED OR GALVANIZED SHALL BE CLEANED AND PAINTED WITH ONE COAT OF RUST INHIBITING PRIMER AND TWO COATS OF ASPHALTIC BASE ALUMINUM PAINT INSULATED STEEL PIPES OUTSIDE THE BUILDING SHALL BE CLEANED AND PAINTED WITH ONE COAT OF RUST INHIBITING PRIMER BEFORE INSTALLING.
- FACTORY PAINTED EQUIPMENT THAT HAS BEEN SCRATCHED OR MARRED SHALL BE REPAINTED TO MATCH THE ORIGINAL FACTORY

- A. SOIL, WASTE, STORM AND VENT PIPING SHALL BE TESTED WITH WATER BEFORE INSTALLING FIXTURES. WATER TEST SHALL BE APPLIED TO THE SYSTEM EITHER IN ITS ENTIRETY OR TO THE INDIVIDUAL SECTIONS. EACH OPENING EXCEPT THE HIGHEST OPENING OF THE SECTION UNDER TEST SHALL BE PLUGGED, AND THE SECTION SHALL BE FILLED WITH WATER AND TESTED WITH A HEAD OF WATER OF AT LEAST TEN (10) FEET ABOVE THE HIGHEST POINT IN THE SYSTEM. THE WATER SHALL BE KEPT IN THE PORTION UNDER TEST, FOR AT LEAST THIRTY (30) MINUTES; NO
- DROP IN THE WATER LEVEL WILL BE ACCEPTABLE. THE WATER PIPING SYSTEMS SHALL BE TESTED AT A MINIMUM PRESSURE OF 125 PSI AND PROVED TIGHT AT THIS PRESSURE FO NOT LESS THAN THIRTY (30) MINUTES OR LONGER IF REQUIRED TO PERMIT INSPECTION OF ALL POINTS. NO LOSS IN PRESSURE WILL BE PERMITTED.
- C. ALL GAS PIPING SHALL BE TESTED PNEUMATICALLY AND PROVED TIGHT AT A PRESSURE OF NOT LESS THAN 100 PSI FOR A PERIOD OF NOT LESS THAN TWO (2) HOURS. NO LOSS IN PRESSURE WILL BE PERMITTED.
- D. ALL LEAKS SHALL BE REPAIRED BY TIGHTENING, REMAKING JOINTS, OR REPLACING PIPE AND FITTINGS. CAULKING OF JOINTS SHALL NOT BE PERMITTED.

3.07 RECORD (AS-BUILT) DRAWINGS A. AT THE COMPLETION OF THE PROJECT, PROVIDE A SET OF REPRODUCIBLE PRINTS TO THE ARCHITECT WHICH REFLECT ALL CHANGES, DEVIATIONS AND REVISIONS MADE TO THE ORIGINAL DESIGN DOCUMENTS. LOCATIONS OF ALL UNDERGROUND PIPING AND UTILITIES SHALL BE CLEARLY SHOWN AND DIMENSIONED FROM PERMANENT REFERENCE POINTS SUCH AS BUILDING COLUMN

- OPERATING AND MAINTENANCE AND INSTRUCTIONS A. COMPLETE OPERATING AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER. FOUR COPIES SHALL BE PROVIDED. EACH COPY SHALL BE BOUND IN SEPARATE 3-RING. LOOSE LEAI NOTEBOOK. OPERATING INSTRUCTIONS SHALL BE PROVIDED FOR ACH MECHANICAL SYSTEM. AND SHALL EACH INCLUDE A BRIEF YSTEM DESCRIPTION, A SIMPLE SCHEMATIC AND A SEQUENCE OF OPERATION. OPERATING AND MAINTENANCE INSTRUCTIONS SHALL BE PROVIDED FOR EACH PIECE OF EQUIPMENT. A CONTROL SYSTEM WIRING DIAGRAM SHALL BE INCLUDED IN EACH
- OPERATING AND MAINTENANCE MANUAL. PRIOR TO FINAL ACCEPTANCE OR BENEFICIAL OCCUPANCY. PROVIDE THE SERVICES OF A COMPETENT TECHNICIAN FOR NOT LESS THAN ONE (1) DAY TO INSTRUCT THE OWNER IN THE OPERATION OF THE MECHANICAL SYSTEMS.

WARRANTY A. ALL WORK PROVIDED UNDER THIS DIVISION 22 SHALL BE SUBJECT TO A MINIMUM ONE YEAR WARRANTY. THE WARRANTY SHALL INCLUDE PROMPT REPAIR OR REPLACEMENT OF EQUIPMENT OR SYSTEM FAILURES AND SHALL INCLUDE ALL PARTS AND LABOR. IN ADDITION, ALL RECIPROCATING AIR CONDITION COMPRESSORS SHALL CARRY AN ADDITIONAL FOUR YEAR PARTS-ONLY WARRANTY. EXTENDED WARRANTIES SHALL BE PROVIDED ON ALL OTHER

EQUIPMENT SO SPECIFIED IN OTHER SECTIONS. END OF SECTION

SECTION 22100

- PLUMBING SYSTEMS
- 1.0 GENERAL
- 1.01 DESCRIPTION A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE
- PLUMBING GENERAL SECTION 22010. B. THIS SECTION 22100 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISION OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE PLUMBING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN. THESE SYSTEMS INCLUDE, BUT
- ARE NOT LIMITED TO, THE FOLLOWING: SANITARY WASTE AND VENT SYSTEMS.
- DOMESTIC WATER SYSTEMS.
- 3. NATURAL GAS SYSTEMS. C. PROVIDE ALL FINAL PLUMBING CONNECTIONS TO ALL EQUIPMENT FURNISHED BY OWNER.
- D. PROVIDE GATE VALVE AND REDUCED PRESSURE BACKFLOW PREVENTER OR VACUUM BREAKER AT THE SERVICE ENTRANCE AND AT THOSE CONNECTIONS (ESPECIALLY TO KITCHEN EQUIPMENT) REQUIRED BY LOCAL PLUMBING CODE.

- A. IT IS THE INTENT OF THIS SECTION OF THE SPECIFICATIONS TO PROVIDE COMPLETE AND OPERABLE PLUMBING SYSTEMS AS SHOWN AND SPECIFIED WHICH ARE FREE OF LEAKS, PROPERLY VENTED. FREE OF UNREASONABLE NOISE. VIBRATION AND SWEATING, AND FABRICATED SO AS TO FIT THE SPACE ALLOTTED AND TO EXHIBIT A MINIMUM RESISTANCE TO FLUID FLOW.
- B. THE WORD "PIPING" IS DEFINED TO MEAN ALL PIPING, FITTINGS, JOINTS, HANGERS, COATINGS, VALVES, COCKS, INSULATION AND ACCESSORIES NECESSARY FOR THE PLUMBING SYSTEMS DESCRIBED, SHOWN AND SPECIFIED.

1.03 GENERAL REQUIREMENTS

- A. PROVIDE ALL REDUCING FITTINGS, FLANGES, COUPLINGS AND UNIONS OF THE SIZE AND TYPE OF MATERIAL TO MATCH THE PIPING CONNECTIONS AT EACH FIXTURE, PIECE OF EQUIPMENT, VALVE
- B. UNION JOINTS, COUPLINGS OR FLANGES SHALL BE PROVIDED IN EACH PIPE LINE CONNECTED TO EACH PIECE OF EQUIPMENT, FIXTURE AND ELSEWHERE AS INDICATED AND SPECIFIED. UNIONS
- SHALL MATCH THE PIPING SYSTEM IN WHICH THEY ARE INSTALLED. 1. UNIONS OR FLANGES SHALL BE PROVIDED BETWEEN ALL COPPER TO STEEL CONNECTIONS. THESE UNIONS SHALL BE DIELECTRIC,
- C. ALL CHANGES IN DIRECTION AND BRANCHES SHALL BE MADE WITH MANUFACTURED FITTINGS.
- D. THE USE OF OFFSET-TYPE REDUCERS IS STRICTLY PROHIBITED IN ANY PIPING SYSTEM.
- E. IN ALL WATER PIPING SYSTEMS, CHANGES IN HORIZONTAL PIP LINE SIZES SHALL BE MADE WITH ECCENTRIC REDUCE! INSTALLED FLAT ON TOP FOR PROPER AIR VENTING. REDUCING TEES, REDUCING ELBOWS AND CONCENTRIC REDUCERS SHA ONLY BE ALLOWED IN WATER PIPING SYSTEM FOR CHANGING PIPE SIZES IN VERTICAL RISERS AND FOR MAKING CONNECTIONS TO EQUIPMENT AND ACCESSORIES FROM VERTICAL RISERS.
- F. ALL PIPE JOINTS SHALL BE CUT SQUARE AND ALL BURRS SHALL BE
- G. OPEN ENDS OF PIPE LINES NOT CURRENTLY BRING HANDLED SHALL BE PLUGGED DURING INSTALLATION TO KEEP DIRT, WATER AND FOREIGN MATERIAL OUT OF THE SYSTEM.
- H. SANITARY WASTE AND STORM DRAINAGE PIPING SHALL SLOPE DOWN IN THE DIRECTION OF FLOW AS SHOWN ON THE DRAWINGS OR AS PRESCRIBED BY CODE, NUT NOT LESS THAN 1 PERCENT.
- I. ALL CENTS THROUGH ROOF (VTR'S) SHALL BE OFFSET JUST BELOW HE ROOF SUCH THAT THEIR TERMINATION POINTS ARE AT LEAST FT. FROM ANY OUTSIDE AIR INTAKE OF ANY HVAC UNIT; SPECIAL ATTENTION IS CALLED TO PACKAGED ROOFTOP UNITS.
- TRAP PRIMERS SHALL BE PROVIDED AT ALL RESTROOM FLOOR DRAINS AND ANY HUB DRAIN.

MARKER

INSULATING TYPE.

- IDENTIFICATION PIPING ALL ABOVEGROUND PLUMBING SYSTEMS PIPING AND VALVES SIZED 3/4" AND LARGER WHICH ARE INSTALLED IN ACCESSIBLE LOCATIONS INCLUDING PIPING ABOVE REMOVABLE CEILINGS AND BEHIND CCESS PANELS) SHALL BE IDENTIFIED IN STRICT CONFORMANCE VITH THE "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS"
- B. EACH IDENTIFICATION MARKER SHALL INCLUDE THE FOLLOWING:
- PROPER COLOR-CODED BACKGROUND. 2. PROPER COLOR OF LEGEND IN RELATION TO BACKGROUND COLOR

5. DIRECTION OF FLOW ARROW SHALL BE INCLUDED ON EACH

- 3. PROPER LEGEND LETTER SIZE. 4. PROPER MARKER LENGTH.
- C. LOCATIONS FOR PIPE MARKERS SHALL BE AS FOLLOWS:

AT EACH BRANCH AND RISER TAKE OFF.

- ADJACENT TO EACH VALVE AND FITTING.
- 3. AT EACH PIPE PASSAGE THROUGH WALLS, FLOORS AND CEILINGS. 4. ON ALL STRAIGHT PIPE RUNS EVERY 25 FEET.
- D. IDENTIFICATION MARKERS MAY BE STENCILED OR SHALL BE SETMARK PIPE MAKERS, AS MANUFACTURED BY SETON NAME PLATE CORPORATION. E. ALL VALVES SHALL BE IDENTIFIED WITH THE APPROPRIATE

EACH VALVE TAG SHALL BE 19 GAUGE BRASS WITH 1/4"

SHALL BE FASTENED TO VALVES WITH BRASS "S" HOOKS OR BRASS JACK CHAIN. BRASS RAGS AND FASTENERS SHALL BE AS MANUFACTURED BY SETON NAME PLATE CORPORATION.

SERVICE DESIGNATION AND VALVE NUMBER BRASS VALVE TAGS.

BLACK-FILLED LETTERS OVER 1/2" BACK-FILLED NUMBERS. TAGS

- PROVIDE CHARTS OF ALL VALVES. VALVE CHARTS SHALL INCLUDE THE FOLLOWING ITEMS:
- 1. VALVE IDENTIFICATION NUMBER

PURPOSE/MATERIAL

LOCATION

- 2.0 PRODUCTS
- 2.01 SANITARY WASTE AND VENT SYSTEMS A. ALL UNDERGROUND SANITARY WASTE AND VENT PIPING SHALL BE PVC, DWV SCHEDULE 40 WITH SOCKET-TYPE SOLVENT WELDED

JOINTS AND ACCEPTED SUBSTITUTE AS CAST IRON PIPES.

B. CLEANOUTS SHALL BE PROVIDED AT THE LOCATIONS INDICATED

AND, AS A MINIMUM, WHERE REQUIRED BY CODE. FLOOR CLEANOUTS SHALL BE A MINIMUM OF 4" AND SHALL BE COMPLETE WITH A FLUSH PLUG AND REMOVABLE, SCORIATED BRONZE FLOOR PLATE. PROVIDE CARPET BUTTONS IN CARPETED AREAS. C. ALL ABOVEGROUND SANITARY, WASTE AND VENT PIPING SHALL BE PVC DWV SCHEDULE 40 WITH SOCKET-TYPE, SOLVENT WELDED JOINTS; EXCEPT THAT SANITARY, WASTE AND VENT PIPING

LOCATED WITHIN RETURN AIR PLENUMS SHALL BE HUBLESS CAST

IRON SOIL PIPE. HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE

MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO

ASTMA A 888 AND CISPI STANDARD 301. ALL PIPE AND FITTINGS

SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK FO THE

- CAST IRON SOIL PIPE INSTITUTE® AND LISTED BY NSP® INTERNATIONAL
- 2.03 DOMESTIC WATER SYSTEM A. UNDERGROUND DOMESTIC WATER SERVICE ENTRANCE PIPING 3" AND SMALLER IN SIZE SHALL BE TYPE K HARD DRAWN COPPER

WITH NO JOINTS ALLOWED UNDERGROUND.

B. ALL UNDERGROUND COPPER BRANCH LINES (1/2" AND 3/4" ONLY) SHALL BE CONTINUOUS LENGTHS OF SOFT TYPE K COPPER TUBING

TUBING WITH WROUGHT COPPER FITTINGS. ALL JOINTS SHALL BE

C. UNDERGROUND DOMESTIC WATER SERVICE ENTRANCE PIPING ABOVE 3" IN SIZE SHALL BE CLASS 150 DUCTILE IRON PIPE WITH MECHANICAL JOINTS. D. ABOVEGROUND DOMESTIC WATER SYSTEM PIPING 3" IN SIZE AND

WROUGHT COPPER FITTINGS AND SOLDERED JOINTS.

OR SILICON BRONZE ASTM B-371 WITH MALLEABLE IRON

E. ABOVEGROUND DOMESTIC WATER PIPING 4" AND LARGER SHALL BE TYPE L HARD DRAIN COPPER TUBING WITH ROLLED GROOVED JOINTS AND FITTINGS F. GATE VALVES 3" OR LESS IN SIZE SHALL BE CONSTRUCTED WITH A

BRONZE BODY, NON-RISING STEM. STEM TO BE BRONZE ASTM B-62

SMALLER SHALL BE TYPE L HARD DRAWN COPPER RUBBING WITH

- HANDWHEELS. VALVE SHALL MEET MSS-SP80. VALVE SHALL BE MANUFACTURED BY MILWAUKEE, HAMMOND, NIBCO OR STOCKHAM. G. BALL VALVES 2 INCH AND SMALLER:
- 1. BALL VALVES SHALL BE TWO PIECE BRONZE BODY, LARGE PORT WITH SOLID. SMOOTH BORE CHROME PLATED BRASS BALL. MEETING MSS-SP110. SEATS SHALL BE REINFORCED TFE WITH TEFLON PACKING RING AND THREADED ADJUSTABLE PACKING NUT. VALVES ON INSULATED LINES WILL BE PROVIDED WITH STEM EXTENSIONS TO PROVIDE CLEARANCE FOR TWO INCHES OF PIPE INSULATION. VALVES TO BE APOLLO 70, HAMMOND 8501 OR WATTS

- NON-FREEZE WALL HYDRANTS (CFWH) SHALL BE NON-FREEZE, BRONZE BOX TYPE WITH VACUUM BREAKER, LOOSE KEY AND WALL CLAMP. FINISH SHALL BE ROUGH BRONZE. WALL HYDRANTS SHALL
- BE SMITH 5509QTPB OR APPROVED EQUAL BY JOSAM OR ZURN. BACKFLOW PREVENTERS SHALL BE WATTS SERIES 909 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS COMPLETE WITH STRAINER AND SHUT-OFF VALVES. AIR GAP DRAIN SHALL BE PIPED INTO NEAREST FLOOR DRAIN OR OUTSIDE OF BUILDING TO A CONCRETE SPLASHBLOCK.
- WATER PRESSURE REDUCING VALVES (PRV) SHALL BE THE SELF-CONTAINED DIRECT OPERATING TYPE WITH BRONZE BODY. STAINLESS STEEL SEAT, STAINLESS STEEL SPRING, AND SEALED SPRING CAGE. THE STRAINER SHALL HAVE BRONZE BODY WITH 20 MESH STAINLESS STEEL SCREEN. STRAINER SHALL BE ATTACHED WITH A BRONZE NIPPLE. THE UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASSE STANDARD 1003 AND SHALL BEAR THE SEAL OF APPROVAL. THE CAPACITIES SHALL BE BASED ON MAXIMUM REDUCED PRESSURE FALL-OFF, AS DEFINED IN THE ASSE STANDARD, OF 10 POUND. PRESSURE REGULATORS SHALL BE WATTS REGULATOR COMPANY'S SERIES 223S OR APPROVED
- MIXING VALVES SHALL BE AS INDICATED ON DRAWINGS OR AN APPROVED EQUAL WITH THE 1/2" BYPASS PIPED INTO THE SMALLER TM025 VALVE. MIXING VALVE SHALL BE SIZED BY THE MANUFACTURER FOR THE FIXTURES SERVED. SECURE THE ASSEMBLY TO THE ADJACENT WALL
- ALL WATER HAMMER ARRESTERS (WHA) SHALL BE PDI CERTIFIED, SIZE A, D, C, D, E OR F, AS INDICATED FOR THE FIXTURE UNITS SERVED: JOSAM, JAY R. SMITH OR SURN.
- M. THE HOSE BIBS (HB) SHALL BE COMPLETE WITH VACUUM BREAKER AND HANDLE.

N. SOLDERED JOINTS SHALL BE MADE WITH TIN-ANTIMONY/SILVER SOLDER. SOLDER CONTAINING LEAD SHALL NOT BE PERMITTED

2.04 NATURAL GAS PIPING

- A. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL COMPLYING WITH ANSI B36.10. FITTINGS SHALL BE STEEL OR MALLEABLE IRON. JOINTS SHALL BE THREADED OR WELDED.
- B. GAS COCKS SHALL MEET ANSI B16.33.

2.05 PLUMBING INSULATION

- A. ALL PIPE INSULATION PRODUCTS SHALL HAVE A PERMANENT COMPOSITE INSULATION, JACKET AND ADHESIVE FIRE AND SMOKE HAZARD RATING AS TESTED BY PROCEDURES ASTM-84, NFPA 255 AND UL 723 NOT EXCEEDING FLAME SPREAD 25 OR SMOKE
- B. BLANKET-TYPE INSULATION SHALL HAVE AN AVERAGE THERMAL CONDUCTIVITY NOT TO EXCEED 0.27 BTU-IN. PER SQ. FT. PER DEGREES F. PER HOUR AT A MEAN TEMPERATURE OF 75 DEGREES F. INSULATION SHALL HAVE A MINIMUM DENSITY OF 1 LB./CU.FT. AND SHALL BE 2" THICK.
- PREFORMED INSULATION FOR ALL DOMESTIC HOT AND COLD WATER PIPING SHALL BE MINIMUM 1" THICK PERFORMED FIBERGLASS PIPE INSULATION WITH WHITE ALL-SERVICE JACKET. ALL LONGITUDINAL JOINTS SHALL BE LAPPED, SELF-STICKING TYPE WITH ALL BUTT JOINTS, TEARS, ETC. SEALED WITH A MATCHING WHITE VAPOR BARRIER TAPE. ELBOWS SHALL BE MITERED OR MAY BE ZESTON COVERS FILLED WITH EQUIVALENT FIBERGLASS INSULATION. THE MAXIMUM K VALUE OF THE INSULATION SHALL BE 0.23 AT 70 DEGREES F. ALL PIPING IN UNCONDITIONED AREAS SHALL BE INSULATED WITH A MINIMUM R VALUE OF 6.5 IN

ACCORDANCE WITH THE IPC SECTION 305.6.

- 2.06 PIPE HANGERS AND SUPPORTS A. PIPE HANGERS, HANGER RODS, TRAPEZE TYPE HANGERS, UPPER ATTACHMENTS AND OTHER SUPPORTS SHALL BE SELECTED BASED ON PIPE SIZE (PLUS INSULATION OF PIPES SPECIFIED TO BE INSULATED) AND THE WEIGHT OF THE MEDIUM BEING TRANSPORTED OR THE MEDIUM USED FOR TESTING, WHICHEVER IS GREATER. PROVIDE ALL HANGERS AND RODS, TURNBUCKLES, ANGLES, CHANNELS, AND OTHER STRUCTURAL SUPPORTS TO SUPPORT THE PIPING SYSTEMS. RODS FOR PIPE HANGERS SHALL BE FULL SIZE OF THE HANGER MANUFACTURER'S CATALOG LISTED ROD SIZE FOR EACH TYPE OF HANGER SPECIFIED. HANGERS AND
- ALL MATERIAL UTILIZED FOR THE HANGING AND SUPPORT OF THE PIPING SYSTEMS SHALL BE MANUFACTURED PRODUCTS WHICH ARE SPECIFICALLY INTENDED FOR THE PURPOSE OF HANGING PIPING SYSTEMS. THE USE OF WIRE, STEEL STRAPS, PLASTIC TIES, ETC. IS STRICTLY PROHIBITED.

PIPE HANGERS SELECTED FOR SUPPORTING HORIZONTAL

SUPPORTS SHALL BE MICHIGAN, ITT GINNELL OR B-LINE.

INSULATED PIPING SHALL BE SIZED TO FIT AROUND THE OUTSIDE OF THE PIPE INSULATION. INSULATED PIPING SHALL BE SUPPORTED ON GALVANIZED SHIELDS.

1. SHIELDS SHALL BE AS FOLLOWS:

TO PREVENT RUST FORMATION.

EXPANSION LOOPS AND OFFSETS.

a. PIPES 2" AND SMALLER: 18 GAUGE X 12" LONG. b. PIPES 2½" AND LARGER: 16 GAUGE X 18" LONG. 2. SHIELDS SHALL BE 180 DEGREES AROUND THE LOWER HALF OF THE PIPE AT ALL PIPE HANGERS, EXCEPT THAT ON TRAPEZE

HANGERS, PIPE RACKS AND FLOOR SUPPORTED HORIZONTAL

E. STEEL RODS, FRAMING AND CLAMPS SHALL BE PLATED OR PRIMED

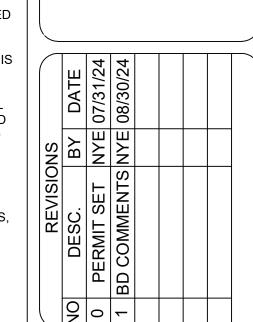
PIPES, SHIELDS SHALL BE 360 DEGREES AROUND THE ENTIRE PIPE.

PIPE HANGERS FOR COPPER PIPING SHALL BE COPPER PLATED OR THE PIPING SHALL BE DIELECTRICALLY ISOLATED FROM ANY STEEL HANGERS OR CLAMPS THAT ARE USED.

- 3.0 <u>EXECUTION</u>
- 3.01 <u>ARRANGEMENT</u> A. FOLLOW THE GENERAL PIPING LAYOUT, ARRANGEMENT, SCHEMATICS AND DETAILS. PROVIDE ALL OFFSETS, VENTS, DRAINS AND CONNECTIONS NECESSARY TO ACCOMPLISH THE INSTALLATION. FABRICATE PIPING ACCURATELY TO MEASUREMENTS ESTABLISHED AT THE PROJECT SITE TO AVOID INTERFERENCE WITH DUCTWORK, OTHER PIPING, EQUIPMENT, OPENINGS, ELECTRICAL CONDUITS AND LIGHT FIXTURES. MAKE SUITABLE PROVISION FOR EXPANSION AND CONTRACTION WITH
- WATER HAMMER ARRESTERS SHALL BE INSTALLED AT THE TOP OF EACH RISER AND ON EACH FIXTURE BRANCH IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD WH201.
- CLEANOUTS SHALL BE PROVIDED AT THE BASE OF ALL SANITARY AND STORM RISERS.



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SECTION 22400

PLUMBING FIXTURES AND TRIM

1.0 <u>GENERAL</u>

1.01 <u>DESCRIPTION</u>

- A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE MECHANICAL GENERAL SECTION 22010.
- B. THIS SECTION 22400 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISIONS OF ALL LABOR, FIXTURES, EQUIPMENT, APPLIANCES AND MATERIALS, AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION AND INSTALLATION OF THE PLUMBING FIXTURES AND TRIM AS SPECIFIED HEREIN AND AS
- C. ALL EXPOSED PIPING, VALVES, STOPS, P-TRAPS, ETC. SHALL BE CHROME-PLATED. ALSO, ALL EXPOSED PIPING PENETRATIONS THROUGH WALLS, FLOORS OR CEILINGS SHALL BE PROVIDED WITH CHROME-PLATED BRASS ESCUTCHEONS.
- D. ALL P-TRAPS SHALL BE MINIMUM 17-GAUGE BRASS.
- E. FLUSH VALVES SHALL HAVE NON-HOLD OPEN FEATURE, VACUUM BREAKERS AND COVER CAP ON ANGLE-TYPE STOP.
- F. PROVIDE ALL FINAL CONNECTIONS TO ALL EQUIPMENT AND

FIXTURES FURNISHED BY OWNER.

G. UNLESS OTHERWISE SPECIFIED IN AN INDIVIDUAL FIXTURE DESCRIPTION, ALL ENAMELED CAST-IRON AND PORCELAIN FIXTURES SHALL BE WHITE.

1.02 <u>INTENT</u>

A. IT IS THE INTENT OF THIS SECTION OF THE SPECIFICATIONS TO OVIDE COMPLETE, OPERABLE, ADJUSTED, CLEAN PLUMBING FIXTURES AS SHOWN AND SPECIFIED, WHICH ARE FREE OF LEAKS, NOISE, AIR, VIBRATION AND WATERFLOW FLUCTUATIONS.

BASIS OF DESIGN

THE BASIS OF DESIGN IS AS OUTLINED FOR EACH FIXTURE IN THE 2.0 PRODUCTS SUBSECTION. ANY PROPOSED SUBSTITUTIONS HALL BE PROVEN EQUAL IN ALL RESPECTS TO THE EQUIPMENT SPECIFIED AS THE BASIS OF DESIGN.

ACCEPTABLE MANUFACTURERS

- ACCEPTABLE FIXTURE MANUFACTURERS ARE AMERICAN STANDARD, ELJER AND KOHLER PROVIDED THAT THEIR UNITS ARE EQUAL IN ALL RESPECTS FOR THIS SPECIFIC PROJECT. FAUCETS AND TRIM MAY BE EQUAL PRODUCTS AS MANUFACTURED BY CHICAGO, DELANY, ZURN, T&S BRONZE, BRASS WORKS OR
- B. FLUSH VALVES MAY BE EQUAL PRODUCTS BY ZURN OR DELANY. STAINLESS STEEL SINKS AND DRINKING FOUNTAINS SHALL BE AS MANUFACTURED BY THOSE COMPANIES SPECIFIED FOR EACH SPECIFIC ITEM OUTLINED UNDER SUBSECTION 2.0 PRODUCTS.

2.0 PRODUCTS

(SEE FIXTURE SCHEDULE ON PLUMBING DRAWINGS)

3.0 <u>EXECUTION</u>

- 3.01 <u>INSTALLATION</u>
- A. UNITS SHALL BE INSTALLED AS INDICATED AND IN CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. COORDINATE THE ACTUAL UNITS TO BE PROVIDED WITH ALL TRADES.
- B. ALL PLUMBING FIXTURES SHALL BE FREE OF LEAKS, PROVIDED COMPLETELY FINISHED, TRIMMED, AND ADJUSTED, CLEANED AND READY FOR USE. THEY SHALL BE PROPERLY SECURED TO THE STRUCTURE BY THE USE OF THRU-BOLTING, BACKPLATES, CARRIERS, EXPANSION SHIELDS (FOR FLOOR MOUNTING ONLY) OR TOGGLE BOLTS.
- C. FIXTURES ON STEEL STUD WALLS SHALL HAVE A 1/4" X 4" WIDE STEEL BACKPLATE WIRED WITH 1/16" STEEL WIRE TO THE STUDS. BOLTS NOT LESS THAN 3/8" SHALL SECURE THE FIXTURES THROUGH THE FIXTURE HANGER AND THE BACKPLATE.
- D. ALL MOUNTING HOLES PROVIDED IN FIXTURES SHALL BE USED FOR SUPPORT. IN ADDITION TO THE MAIN HANGERS, 1/4" TOGGLE BOLTS SHALL SECURE THE BOTTOM OF ALL WALL HUNG FIXTURES AT EACH DRILLING PROVIDED FOR THIS PURPOSE.
- E. MOUNT WALL-HUNG FIXTURES AT THE HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS OR AS PRESCRIBED BY LOCAL CODE. SPECIAL ATTENTION IS CALLED TO THE INSTALLATION REQUIREMENTS OF THE ANSI OR ANY OTHER ADA HANDICAP CODE.

3.02 <u>CLEANING AND ADJUSTMENT</u>

A. THE UNIT SHALL BE CLEANED, TESTED AND FIELD-ADJUSTED TO PROVIDE OPTIMUM FLOW AND DRAINAGE.

END OF SECTION

3.02 <u>UNDERGROUND WATER PIPING</u>

- A. ALL UNDERGROUND DOMESTIC WATER PIPING SHALL HAVE A MINIMUM COVER OF 3'-0".
- B. PROVIDE CONCRETE THRUST BLOCKS AT ALL CHANGES OF DIRECTION AND SECURE ALL MECHANICAL JOINTS WITH RESTRAINING RODS.
- C. ALL UNDERGROUND COPPER WATER LINES SHALL BE PROTECTED FROM CORROSION WITH A CONTINUOUS PLASTIC SHEATHING OR COATING AND WRAPPING. THIS SHEATHING OR COATING AND WRAPPING SHALL BE EXTENDED 6" TO 12" ABOVE FINISHED FLOOR.

3.03 MINIMUM HANGER SPACING

- A. PIPE HANGERS OR SUPPORTS SHALL BE PROVIDED WITHIN 18" OF EACH HORIZONTAL FITTING, EQUIPMENT CONNECTION, VALVE, ETC. AND AT NOT MORE THAN 10 FT. SPACINGS ALONG HORIZONTAL RUNS OF STRAIGHT, COPPER PIPING EQUAL TO OR GREATER THAN 1½" DIAMETER, 6 FT. SPACING FOR COPPER PIPING EQUAL TO OR LESS THAN 11/4" DIAMETER, AND 4 FT. SPACING FOR PVC PIPING IN ACCORDANCE WITH TABLE 308.5 IN THE IPC. FOLLOW MIDSTORY GUIDE FOR MAXIMUM VERTICAL SPACING OF PVC PIPE 2 INCHES AND SMALLER.
- B. RISER CLAMPS SHALL BE PROVIDED AT EACH FLOOR PENETRATION.

3.04 <u>INSULATION INSTALLAT</u>ION

- A. PROVIDE BLANKET INSULATION OVER ALL HORIZONTAL ROOF
- 1. ALL JOINTS AND TEARS SHALL BE SEALED WITH MATCHING WHITE VAPOR BARRIER TAPE.
- B. PROVIDE INSULATION OVER ALL ABOVE GROUND HOT AND COLD WATER PIPING, EXCEPT THAT NO INSULATION IS REQUIRED ON COLD WATER LINES INSTALLED INSIDE INTERIOR PLUMBING
- 1. ALL JOINTS AND TEARS SHALL BE SEALED WITH MATCHING WHITE VAPOR BARRIER TAPE.

CHASES (THOSE CHASES WITH NO EXTERIOR WALL).

END OF SECTION

WATER HEATERS AND ACCESSORIES

1.0 GENERAL

SECTION 22424

- 1.01 DESCRIPTION
- A. ALL WORK SPECIFIED IN THIS SECTION IS GOVERNED BY THE PLUMBING GENERAL SECTION 22010.
- B. THIS SECTION 22424 AND THE ACCOMPANYING DRAWINGS COVER THE PROVISIONS OF ALL LABOR, EQUIPMENT, APPLIANCES, AND MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE CONSTRUCTION OF THE WATER HEATING SYSTEMS AS SPECIFIED HEREIN AND AS SHOWN. THESE SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
- WATER HEATERS 2. HOT WATER CIRCULATOR

2.0 PRODUCTS

2.01 TANKLESS INSTANTANEOUS WATER HEATER

- A. THE TANKLESS WATER HEATER SHALL BE UL LISTED FOR THE US AND NSF CERTIFIED.
- UNIT SHALL BE PROTECTED BY A SHEET METAL HOUSING. HEAT EXCHANGER SHALL BE RATED FOR MAXIMUM WORKING PRESSURE NOT LESS THAN 150 PSIG.
- ALL ASPECTS OF INSTALLATION OF WATER HEATER PLANT SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. MATERIALS SHALL CONFORM TO ALL MANUFACTURER RECOMMENDATION INCLUDING ELECTRICAL CONNECTIONS AND WIRING.
- D. WATER HEATER PIPING SHALL BE FIELD CONSTRUCTED OF MATERIALS AS SPECIFIED. WATER HEATER SHALL BE INSTALLED WITH INDIVIDUAL ISOLATING SHUTOFF VALVES FOR SERVICE AND MAINTENANCE.

2.09 HOT WATER CIRCULATOR

- A. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
- B. 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 CARBO SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
- C. 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.
- D. 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.

3.0 <u>EXECUTION</u>

3.01 <u>INSTALLATION</u>

- A. THE WATER HEATERS AND ACCESSORIES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THE CONTRACT DOCUMENTS.
- B. ALL TEMPERATURE AND PRESSURE RELIEF VALVES SHALL BE PIPED FULL SIZE TO AN INDIRECT WASTE SUCH AS THE NEAREST FLOOR DRAIN, SERVICE SINK, SINK TAILPIECE, ETC.

END OF SECTION



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