HVAC SPECIFICATIONS
PART 1 - GENERAL

A. WORK SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF THE COMPLETE HEATING, VENTILATING AND CONDITIONING (HVAC), SYSTEMS AS INDICATED BY THE DRAWINGS AND SPECIFICATIONS.
B. DRAWINGS FOR OTHER TRADES, CONDITIONS OF CONTACT, AND SIMILAR DOCUMENTS ISSUED BY THE CLIENT, APPLY TO AND FORM A OF THIS WORK FOR THE PROJECT.
C. IT IS THE INTENT TO THE SPECIFICATIONS AND DRAWINGS TO CALL FOR THE FINISHED WORK, INCLUDING: TESTING AND PROVIDING AN OPERATIONAL AND COMPLETE HVAC SYSTEM. ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN OR DRAWINGS BUT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS AND TO MAKE THE SYSTEM OPERATIONAL, SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE CLIENT.
D. PRIOR TO SUBMITTING BIDS, AND DURING CONSTRUCTION, EXAMINE DRAWINGS FOR ALL OTHER TRADES. THE WORK OF ALL OTHER TRADES SHALL BE CAREFULLY CONSIDERED AND COORDINATED FOR COMPATIBILITY, AND TO ELIMINATE INTERFERENCES.
E. COORDINATE ALL ELECTRICAL VOLTAGES, REQUIREMENTS AND CHARACTERISTICS WITH ELECTRICAL CONTRACTOR PRIOR TO SUBMITTING SHOP DRAWINGS OR ORDERING EQUIPMENT.
F. PRIOR TO INITIATING WORK INDICATED ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK INDICATED WITH THE CLIENT, AS DESCRIBED UNDER THE GENERAL NOTES.
G. PROVIDE SLEEVES AND SEAL ALL DUCT, PIPE, CONDUIT, AND EQUIPMENT PENETRATIONS THROUGH WALLS, FLOORS, AND CEILING.
H. RIGGING NOTES:
THE CONTRACTOR SHALL PROVIDE ALL NECESSARY RIGGING OF THE HVAC EQUIPMENT ON SITE. COORDINATE RIGGING WORK WITH THE OTHER TRADE.
I. DURING CONSTRUCTION WORK INDICATED ON THE DOCUMENTS CLEAN AND MAINTAIN SPACE AT WORK AREAS. CLEAN-UP CONSTRUCTION DEBRIS AT THE END OF EACH DAY.

REGULATIONS

ENTIRE INSTALLATION INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL CONFORM WITH ALL APPLICABLE MUNICIPAL, COUNTY, STATE, LCC AND FEDERAL BUILDING CODES, LAWS, AND REGULATIONS INCLUDING RECOMMENDATIONS OF NATIONAL FIRE PROTECTION ASSOCIATION.
IT IS THE INTENT THAT ALL EQUIPMENT AND MATERIALS FURNISHED MEET APPLICABLE ENERGY CODES.
WHERE APPLICABLE, MATERIALS AND EQUIPMENT SHALL BEAR STAMPS OR SEALS OF AMCA, ARI, ASME, IEEE, NFPA, NEMA, UL AND OTHER SIMILAR REGULATING GROUPS. ALL WORK SHALL BE INSPECTED, TESTED, AND APPROVED BY THE PROPER AUTHORITIES. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CERTIFICATES AND INSPECTION FEES CONTRACTOR SHALL OBTAIN APPROVAL AND DELIVER CERTIFICATES TO CLIENT.
FIRE RATINGS: ALL MATERIAL USED ANYWHERE IN THE WORK MUST HAVE NFPA RATINGS AS FOLLOWS: FLAME SPREAD - NOT OVER 25, SMOKED DEVELOPED - NOT OVER 50, FUEL CONTRIBUTED - NOT OVER 25. ALL MATERIALS SHALL BE "SELF EXTINGUISHING".

PROTECTION

EFFECTIVELY PROTECT ALL MATERIAL AND EQUIPMENT FROM DUST, DIRT, WEATHER AND DAMAGE UNTIL THE FINAL ACCEPTANCE. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE SIMILAR DAMAGED ITEMS WITHOUT ADDITIONAL COST TO THE OWNER. AT THE END OF EACH WORK DAY, CONTRACTOR SHALL SECURE AND COVER-UP ANY OPENINGS IN BUILDING STRUCTURE AND ANY OPEN ENDS OF PIPING, DUCTWORK AND EQUIPMENT INSTALLED FOR THE PROJECT AT THAT TIME.

DRAWINGS

DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW APPROXIMATE AND RELATIVE LOCATIONS OF MATERIALS AND EQUIPMENT. DO NOT SCALE DRAWINGS TO DETERMINE EXACT POSITIONS AND CLEARANCES. ASCERTAIN ALL DIMENSIONS IN THE FIELD, UTILIZING ACTUAL EQUIPMENT DIMENSIONS.

SHOP DRAWINGS

PRIOR TO INSTALLATION, SUBMIT FOR REVIEW MANUFACTURER'S LITERATURE SHOWING COMPLETE PHYSICAL AND PERFORMANCE DATA FOR ALL MATERIALS AND EQUIPMENT. CONTRACTOR SHALL SUBMIT A MINIMUM OF SIX (6) COPIES OF SHOP DRAWING-SUBMITTALS FOR EACH ITEM/EQUIPMENT SPECIFIED. ON THE SUBMITTALS, CLEARLY LIST THE FOLLOWING: THE CONTRACTOR (NAME, ADDRESS, PHONE NUMBER AND FAX NUMBER), THE DATE SUBMITTED AND SUBMISSION NUMBER.
ALL HVAC COMPONENTS, INCLUDING OPTIONAL EQUIPMENT, SHALL BE SUBMITTED FOR APPROVAL. DATA OF A GENERAL NATURE WILL NOT BE ACCEPTED

MATERIALS, STANDARDS OF QUALITY, SUBSTITUTIONS

MATERIALS AND EQUIPMENT SHALL BE NEW, AND OF THE STANDARDS SPECIFIED HEREIN. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER INSTRUCTIONS, WHICH SHALL BE CONSIDERED PART OF THESE SPECIFICATIONS.

AHUs SHALL BE ASSEMBLED ONLY AT ROOF TOP.

SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF MANUFACTURER PROVIDED PERFORMANCE NUMBERS. MATERIALS AND EQUIPMENT OF OTHER MANUFACTURERS' SHALL BE APPROVED BE THE CLIENT AND ENGINEER.

OPERATING AND MAINTENANCE INSTRUCTIONS

AFTER ALL TESTS, START-UP, BALANCING AND ADJUSTMENTS HAVE BEEN COMPLETED, INSTRUCT THE REPRESENTATIVES OF THE CLIENT. IN ALL DETAILS OF OPERATION OF EQUIPMENT AND SYSTEMS. CONTRACTOR SHALL SUBMIT TO THE CLIENT A MINIMUM OF THREE (3) SETS OF INSTALLATION, OPERATION AND MAINTENANCE DATA, BOUND IN A THREE RING BINDER AT THE COMPETITION OF THE PROJECT.

START UP SERVICES

THE CONTRACTOR SHALL INCLUDE IN THE SCOPE OF WORK: "START-UP" SERVICE, FOR ALL HVAC EQUIPMENT AND AUTOMATIC CONTROLS, BY THE APPROVED EQUIPMENT MANUFACTURES.
UPON COMPLETE OF INSTALLATION & START-UP, CONTRACTOR SHALL COORDINATE W/ THE CLIENT TO SCHEDULE INSTALLATION/START-UP VERIFICATION
THE MANUFACTURE ENGINEER SHALL CHECK THE EQUIPMENT FOR PROPER INSTALLATION, AND SHALL RUN THE SYSTEM IN ALL MODES OF OPERATION TO ASCERTAIN THAT IT WILL FUNCTION PROPERLY AND ACCORDING TO MANUFACTURERS RECOMMENDED PROCEDURES. ALL NECESSARY ADJUSTMENTS SHALL BE MADE TO ENSURE TROUBLE FREE SERVICE.
AFTER COMPLETION OF THE START-UP PROCEDURE, MANUFACTURER SHALL CERTIFY, IN WRITING, THAT THE EQUIPMERNT IS INSTALLED AND OPERATING IN ACCORDANCE WITH THEIR REQUIREMENT.

DUCTWORK AND AIR HANDLING EQUIPMENT

PROVIDE HANGERS AND SUPPORTS FOR DUCTWORK. HANGERS AND SPACING SHALL BE IN ACCORDANCE WITH THE APPLICABLE SMACNA DUCT CONSTRUCTION STANDARDS DO NOT HANG ONE DUCT FROM ANOTHER OR FROM PIPING OR CONDUIT. DO NOT USE PERFORATED BAND IRON, WIRE OR CHAIN AS HANGERS.

PROVIDE ALL AUXILIARY STRUCTURAL STEEL, NOT A PART OF BUILDING STRUCTURE, REQUIRED FOR SUPPORT OR DUCTWORK. ALL SUCH STEEL SHALL CONFORM TO ASTM A36 AND SHALL BE DESIGNED IN ACCORDANCE WITH THE AISC HANDBOOK.

PAINT DUCTWORK VISIBLE IN BACK OF DIFFUSERS, REGISTERS, GRILLES, BRACKETS AND HANGERS SILVERADO AS DUCTWORK IS BEING INSTALLED.

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

DELIVER TWO SPARE SETS OF FILTERS FOR THE SYSTEM TO THE CLIENT AT COMPLETION OF PROJECT.

WHEN TRANSITIONS IN DUCTWORK ARE REQUIRED (RECTANGULAR TO RECTANGULAR OR ROUND TO RECTANGULAR) THEY SHALL BE CONSTRUCTED WITH LONG (MINIMUM OF 24 INCHES IN LENGTH) AND SMOOTH TRANSITIONS.

ALL FANS SHALL HAVE FLEXIBLE NEOPRENE DUCTWORK CONNECTIONS INSTALLED (WITH SLACK IN THE CONNECTION) ON SUPPLY AND INLET OPENINGS.

PART 2 - PRODUCTS
GENERAL

A. HVAC EQUIPMENT SHALL HAVE THE PERFORMANCE, CAPACITY AND CHARACTERISTICS INDICATED BY THE EQUIPMENT SHOWN ON THIS DRAWING.

DUCTWORK AND ACCESSORIES

A. FABRICATE RECTANGULAR SUPPLY AND RETURN AIR DUCTWORK INSTALLED INDOORS ABOVE THE CEILING, USING CARBON STEEL, GALVANIZED MATERIAL (ASTM A 653/A 653M, WITH G90 (Z275) GALVANIZED COATING). FABRICATE PER SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE" AND APPLICABLE REQUIREMENTS OF NFPA 90A.
B. SEALANT SHALL BE USED ON ALL JOINTS TO INSURE AIRTIGHT CONSTRUCTION, LESS THAN 5% LEAKAGE.
C. DUCTWORK SIZES NOT SHOEN SHALL NE SIZED BY THE CONTRACTOR FOR THE RATED AIR FLOW SHOWN AT A PRESSURE DROP OF 0.1 INCHES WG 100 FEET. MINIMUM DUCT SIZE SHALL BE 8" X 4".
D. ROUND DUCTWORK (BRANCH DUCT TO DIFFUSERS) SHALL BE EQUAL TO ACME LOCK-GROOVED SEAMS, SMACNA FIG. 3-1, TYPE RL-5. TRANSVERSE JOINTS SHALL BE BEADED SLEEVE TYPE ASSEMBLED WITH SEALANT AND SCREWS, SMACNA FIG. 3-2, TYPE RT-1.
E. FLEXIBLE ROUND DUCT SHALL BE OF FULLY ANNEALED ALUMINUM, CORRUGATED FOR STRENGTH AND FLEXIBILITY, WITH 2" THICK FIBERGLASS EXTERNAL INSULATION ENCLOSED IN A VINYL VAPOR BARRIER JACKET. DUCT SHALL BE COMPLY BY NFPA 90A AND BE LISTED CLASS I AIR DUCT, UL STANDARD 181. DUCT SHALL BE FLEXMASTER TRIPLE LOCK, TYPE TL-V OR APPROVED EQUAL. FLEXIBLE DUCT IS NOT TO EXCEED 6'-0" IN LENGTH ON ANY BRANCH.
F. DUCT SEALANT SHALL BE SCOTCH-SEAL "800 INDUSTRIAL SEALANT" OR APPROVED EQUAL. SEAL RECTANGULAR AND ROUND DUCTWORK TO COMPLY WITH SMACNA CLASS A.
G. HANG DUCTS FROM BUILDING STRICTURE WITH GALVANIZED STEEL HANGER MATERIALS AND METHODS COMPLYING WITH SMACNA. DUCT SUPPORTS SHALL NOT BE FASTENED TO ROOF (OR ROOF DECKING), BUT MAY BE FASTENED TO THE STRUCTURAL MEMBERS WHICH SUPPORT THE ROOF.
H. STATIC PRESSURE CLASSIFICATION FOR SUPPLY DUCT, RETURN DUCT AND EXHAUST DUCT: 2" WG SEAL CLASS B.
I. FABRICATE BRANCHES AND FITTINGS TO COMELY WITH GOOD PRACTICE AND PER SMACNA STANDARDS.
J. PROVIDE FIBERGLASS REINFORCED NEOPRENE FLEXIBLE CONNECTIONS BETWEEN FANS AND/OR HVAC EQUIPMENT AND DUCTS TO PREVENT TRANSMISSION OF VIBRATIONS THROUGH THE DUCTWORK.
K. PROVIDE STANDARD VOLUME DAMPERS: MULTIPLE (ABOVE 12" DUCT HT.) - OR SINGLE-BLADE (FOR DUCTS LESS THAN 12" IN LENGTH), OPPOSED-BLADE DESIGN FOR MULTIPLE BLADES, STANDARD LEAKAGE RATING, WITH LINKAGE OUTSIDE AIRSTREAM, AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS.
MATERIALS: GALVANIZED STEEL.
L. FABRICATE TURNING VANES TO COMLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS--METAL AND FLEXIBLE".
M. INSTALL RECTANGULAR DUCT ACCESS PANELS FOR ACCESS TO BOTH SIDES OF DUCT COILS. INSTALL DUCT ACCESS PANELS DOWNSTREAM FROM VOLUME DAMPERS, TURNING VANES, AND EQUIPMENT.
N. USE 90 DEGREE METAL ELBOW OR 12" LONG STRAIGHT METAL DUCT SPOOL PIECE AT DIFFUSER INLET FOR CONNECTION TO FLEXIBLE DUCT.
O. INSULATE SUPPLY AND RETURN AIR DUCTWORK RUN ABOVE FALSE CEILING WITH MINERAL - FIBER BLANKET (OR BOARD) THERMAL INSULATION WITH VAPOR BARRIER AS DESCRIBED BELOW.
P. PROVIDE MINERAL- FIBER BLANKET THERMAL INSULATION COMPLYING WITH ASTM C553, TYPE II, (OR BOARD COMPLYING WITH ASTM C612, TYPE 1B) WITHOUT FACING AND WITH ALL - SERVICE JACKET MANUFACTURED FROM ALUMINUM FOIL. USE 1-1/2" INCH THICK MATERIAL WITH A MAXIMUM K-FACTOR OF 0.16 AT 75 DEGREES F MEAN TEMPERATURE, UNLESS SPECIFIED OTHERWISE ON DRAWINGS.
Q. APPLY INSULATION TO RECTANGULAR DUCTS PER MANUFACTURERS RECOMMENDATIONS, WITH MANUFACTURERS SPECIFIED MATERIALS. THE INSULATION IS TO BE CAPABLE OF MINIMIZING HEAT LOSS THROUGH THE DUCT WHILE PREVENTING MOISTURE FORM CONDENSING ON ANY SURFACE ON THE DUCT, INSIDE THE DUCT OR ON ANY HANGER OR ATTACHMENT TO THE DUCT, THE INSULATION SHOULD BE INSTALLED SECURE ENOUGH TO PREVENT ANY JOINT FROM FAILING AND CREATING A PATH FOR MOIST AIR TO CONTACT COLD SURFACES. ALL INSULATING WORK SHALL BE PERFORMED BY AN INSULATION SUBCONTRACTOR NORMALLY ENGAGED FULL TIME IN SUCH WORK.
R. SOUND LINING SHALL BE CONTINUOUS GLASS FIBER FIRMLY BONDED INTO A RESILIENT BLANKET. LINING SHALL BE 1 INCH THICK, 3 POUND PER CUBIC FOOT LINING SHALL BE COATED ON ONE SIDE. DENSITY. FIRE HAZARD CLASSIFICATION SHALL NOT EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED. SOUND LINING SHALL BE CERTAINTIES ULTRAIST OR APPROVED EQUAL. LINING SHALL BE INSTALLED ON SUPPLY AND RETURN DUCT WORK OUTSIDE THE BUILDING, SUPPLY AND RETURN DUCT RISERS.
S. WHERE EXPOSED DUAL WALL INSULATED SPIRAL DUCT TO BE INSTALLED WITH MIN. 1" INSULATION THICKNESS (R-6 MIN.) AND SOLID GALVANIZED STEEL INNER WALL AND OUTER SHELL PER ZEN INDUSTRIES INC.
CLEVELAND, OH
PH# 877-600-0274, WWW.ZENINDUSTRIES.COM OR ANY EQUIVALENT.

DUCT ACCESSORIES

A. RECTANGULAR VOLUME DAMPERS (VD0 SHALL BE FABRICATED AS RECOMMENDED BY SMACNA STANDARDS FIG. 2-14. ROUND VOLUME DAMPERS SHALL BE FURNISHED BY THE MANUFACTURER OF THE DUCTWORK. PROVIDE DAMPER HARDWARE: ZINC-PLATED, DIE-CAST CORE WITH DIAL AND HANDLE MADE OF 3/32-INCH-(2.4-MM-)THICK ZINC-PLATED STEEL, AND A 3/4-INCH (19-MM) HEXAGON LOCKING NUT. INCLUDED CENTER HOLE TO SUIT DAMPER OPERATING-ROD SIZE. INCLUDE ELEVATED PLATFORM FOR INSULATED DUCT MOUNTING. IMPROVISED SHOP OR FIELD FABRICATED HARDWARE WILL NOT BE ACCEPTED.
B. FLEXIBLE CONNECTORS SHALL BE FACTORY ASSEMBLED, CONSISTING OF A 6" INSULATED FABRIC ATTACHED TO TWO STAINLESS STEEL CONNECTORS BY DOUBLE LOCK SEAMS EQUAL TO "INSULFLEX" BY DURO-DYNE CO. OR APPROVED EQUAL.
C. FLARED CONNECTIONS, FOR BRANCH DUCT TAKES OFFS, SHALL BE CNICAL BELLMOUTH FITTINGS WITH DAMPER AS MANUFACTURES BY BUCKLEY "AIR TITE" TYPE, FLEXMASTER, OR APPROVED EQUAL.
D. ACCESS DOORS SHALL BE 1" INSULATED DOUBLE PANEL, HINGED AND CAM LATCHED MANUFACTURED BY AIR BALANCE, INC. MODEL FSA100 FIRE/SEAL OR APPROVED EQUAL. IMPROVISED SHOP OR FIELD FABRICATED ACCESS DOORS WILL NOT BE PERMITTED

DIFFUSERS, REGISTERS & GRILLES

A. DIFFUSERS SHALL BE BY TITUS EQUAL. SEE DRAWINGS FOR MODE, SIZE, CAPACITY AND DIRECTIONAL THROW.
B. DIFFUSERS IN LAY-IN T-BAR CEILING SHALL INCLUDE 24X24 STEEL PAN WITH, BAKED ACRYLIC FINISH. PROVIDE OPTIONAL OPPOSED BLADE DAMPER.
C. WHERE METAL PAN DOES NOT FIT IN T-BAR PATTERN, PROVIDE APPROPRIATE FRAME FOR ACOUSTICAL TILE AND ANTI-SMUDGE BORDER.
D. RETURN GRILLS SHALL BE BY TITUS APPROVED EQUAL. MODEL AND SIZE AS INDICTED ON DRAWINGS. PROVIDE BAKED ACRYLIC FINISH FOR LAY-IN CEILING APPLICATIONS, OR PROVIDE SIDEWALL SURFACE MOUNTED FRAME FOR INDICATED SIDEWALL INSTALLATIONS.
E. ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE BAKED WHITE FINISH. MANUFACTURE'S REPRESENTATIVE SHALL REVIEW SELECTIONS AND NOTE ANY CHANGES ON HIS SHOP DRAWING SUBMITTAL.
F. SUBMIT SHOP DRAWINGS, AS SPECIFIED IN PART I.

ELECTRICAL WIRING

A. ALL WIRING IN CONNECTION WITH THE TEMPERATURE CONTROL SYSTEM SHALL BE FURNISHED UNDER THIS CONTRACT AND INSTALLED IN EMT CONDUIT.

B. ALL WIRING SHALL CONFORM TO NEC AND LOCAL ELECTRICAL CODES, AND SHALL BE RUN CONCEALED WHENEVER POSSIBLE.

CEILING EXHAUST FANS

A. BASIS OF DESIGN GREENHECK CEILING-MOUNTED CENTRIFUGAL EXHAUST FAN. FAN SHALL HAVE HORIZONTAL, ABOVE CEILING AIRLOW DISCHARGE WITH EGGCRATE TYPE CEILING GRILLE, WITH CAPACITY. PERFORMANCE AND ADDITIONAL ITEMS AS LISTED ON DRAWINGS.
B. UNIT SHALL HAVE SINGLE POINT ELECTRICAL POWER CONNECTION, AND SHALL BE RATED FOR VOLTAGES LISTED. MOTOR SHALL HAVE INTEGRAL OVERLOAD PROTECTION AND PLUG-IN TYPE DISCONNECT. UNIT SHALL BE CEILING-MOUNTED WITH VIBRATION ISOLATION HANGERS. PROVIDE FANS WITH INTEGRAL BACKDRAFT DAMPER, AND OTHER ACCESSIORIES AS NOTED ON SCHEDULES,

CONDENSATE AND REFRIGERANT PIPING

A. AIR CONDITIONING CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC.
B. REFRIGERANT PIPING SHALL BY TYPE ACR HARD-DRAWN OR SOFT- ANNEALED SEAMLESS COPPER TUBING, ASTM B280. FITTING SHALL BE WROUGHT COPPER FOR SOLDERED JOINTS, ANSI B16.22.
C. BRAZING FILLER METAL SHALL BE ANSI/AWS A5.8, BCUP AND BAG CLASSIFICATION CADMIUM-FREE ALLOYS. USE BCUP FILLER METAL ON COPPER-TO- COOPER CONNECTIONS, OTHERWISE USE BCUP OR BAG FILLER METAL.
D. FLUX BRAZED CONNECTIONS, EXCEPT COPPER-TO COPPER BCUP FILLER METAL CONNECTIONS. USE AWS FB3A NORMAL HEAT FLUX FOR BRAZING FILLER METAL WITH LIQUIDS BELOW 1550 DEGREES.
E. USE AWS FB3C HIGH TEMPERATURE FLUX WHERE OVERHEATING AND PROLONGED HEATING MAY OCCUR.
F. PROVIDE BRASS OR BRONZE VALVES FOR ISOLATION OF ALL EQUIPMENT.
G. PROVIDE CHARGING AND PURGING VALVE, SIGHT GLASS AND REPLACEABLE CORE FILTER DRYER FOR EACH REFRIGERANT SYSTEM. PROVIDE OTHER REFRIGERANT PIPING SPECIALTIES AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
H. CHARGING AND PURGING VALVES SHALL BE FORGED BRASS, PACKED SHUT-OFF VALVES WITH SEAL CAP, BOTTOM SOLDER CONNECTION, SIDE FLARE CONNECTION, HENRY VALVE CO. TYPE 927.
I. SIGHT GLASS SHALL BE ALL- BRASS BODY WITH REPLACEABLE, POLISHED, OPTICAL VIEWING WINDOW WITH COLOR-CODED MOISTURE INDICATOR; WITH SOLDER-END CONNECTIONS.
J. REPLACEABLE CORE FILTER DRYERS SHALL BE HEAVY GAGE PROTECTED WITH CORROSION-RESISTANT-PAINTED STEEL SHELL, FLANGED RING AND SPRING, DUCTILE-IRON COVER PLATE WITH STEEL CAP SCREWS; WROUGHT-COPPER FITTING FOR SOLDER-END CONNECTIONS; WITH REPLACEABLE-CORE KIT, INCLUDING GASKETS . FILTER-DRYER CARTRIDGE SHALL BE PLEATED MEDIA TYPE WITH SOLID-CORE SIEVE WITH ACTIVATED ALUMINA, ARI 730 RATED FOR CAPACITY.
K. REFRIGERANT SUCTION PIPING SHALL BE INSULATED WITH ARMSTRONG AP ARMAFLEX PIPE INSULATION, FLEXIBLE FOAMED PLASTIC CLOSED-CELL TYPE INSULATION THICKNESS SHALL BE BASED ON PIPE SIZE AS FOLLOW:

1" SMALLER	1 ½" THICK INSULATION
1 ½ LARGER	2" THICK INSULATION

AUTOMATIC TEMPERATURE CONTROLS
INSTRUMENTATION

A. PROVIDE HONEYWELL AUTOMATIC CONTROL SYSTEM: INCLUDING WALL MOUNTED PROGRAMMABLE TEMPERATURE CONTROLLED, REMOTE SENSORS, ACTUATORS, DAMPERS, WIRING, PROGRAMMING ECT. CONTROLLER SHALL BE CAPABLE OF CONTROLLING BOTH HEATING AND COOLING. CONTROLLER SHALL INCLUDE DIGITAL DISPLAY. AT A MINIMUM CONTROLLER SHALL BE CAPABLE OF DISPLAYING HEATING SET POINT, COOLING SET POINT AND CURRENT TEMPERATURE SENSED BY DUCT MOUNTED TEMPERATURE SENSOR.
THE PROGRAMMABLE CONTROLLER SHALL HAVE THREE OPERATIONAL POINTS AT A MINIMUM.
THESE THREE OPERATION POINT ARE HEATING, COOLING, AUTOMATIC
B. PROVIDE DUCT MOUNTED TEMPERATURE TRANSMITTERS (SENSORS) AT RETURN AIR DUCT PLENUM TEMPERATURE TRANSMITTERS SHALL BE COMPATIBLE WITH PROGRAMMABLE CONTROLLER
C. PROVIDE ALL CONTROL WIRING REQUIRED FOR OPERATION OF HVAC SYSTEM.
D. PROVIDE LOW AMBIENT CONTROL OPTION W/ AUTOMATIC RESTART.

SEQUENCE OF OPERATION
OCCUPIED MODE

THE AHUS SUPPLY FAN RUNS CONTINUOUSLY. HEATING OR COOLING IS ACTIVATED BY PROGRAMMABLE THERMOSTAT INS STAGES AS REQUIRED. OUT AIR DAMPER IS OPEN TO PROVIDE REQUIRED O.A.
BATHROOM EXHAUST FANS ARE ENERGIZED. WHEN THE ROOM AIR TEMPERATURE SENSED BY THE TEMPERATURE SENSOR RAISE/DROPS 1.5°F
ABOVE/BELOW THE CONTROLLER SET POINT, IT ACTIVATES THE COMPRESSOR OR FURNACE IN STAGES AS REQUIRED

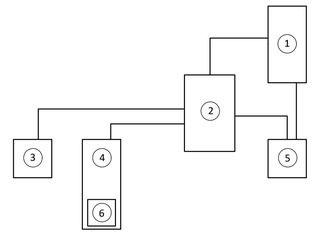
UNOCCUPIED MODE

ALL RTUS ARE DE-ENERGIZED. THE PROGRAMMABLE
THERMOSTATS ARE IN NIGHT SET BACK MODE. THE OUTSIDE AIR DAMPER IS FULLY CLOSED.
IF ANY THERMOSTAT RECEIVES A SIGNAL FROM SENSOR THAT IT NEEDS HEATING OR COOLING, THE THERMOSTAT ACTIVATES THE CORRESPONDING AHU SUPPLY FAN AND ACTIVATES COOLING OR HEATING AS REQUIRED.
HOODS EXHAUST FANS AND BATHROOM EXHAUST REMAIN DE-ENERGIZED.
THE O.A. DAMPER REMAINS CLOSED.

OCCUPIED & UNOCCUPIED MODE

THE KITCHEN GREASE EXHAUST HOOD SWITCH IS SER ON AUTO, WHICH MEANS THE EXHAUST SYSTEM IS ENERGIZED WHEN THE HOOD SENSOR SENSES THE TEMPERATURE ELEVATED ABOVE IT'S SET POINT. THE SYSTEM HAS A MANUAL OVERRIDE - WHEN THE SWITCH IS SET TO "ON" POSITION IT ENERGIZES THE EXHAUST FANS

NOTE:
1. THE MANUAL ACTIVATION OF HOOD IN UNOCCUPIED MODE WILL ATOMICALLY SWITCH ALL HVAC SYSTEMS INTO OCCUPIED MODE.
2. ACTIVATION OF HOOD ANSUL FIRE SUPPRESSION SYSTEM WILL AUTOMATICALLY DE-ENERGIZE ALL AHUs AND ACTIVATE ALARM.
3. ANSUL AUDIO VISUAL ALARM TO BE LOCATED IN THE CONSPICUOUS LOCATION SO THAT IS VISIBLE FROM THE SALES FLOOR.
4. ANSUL AUDIO VISUAL ALARM TO INCLUDE A RESET: REFERENCE #6 ON DIAGRAM ON THE SHEET.



1. ELECTRICAL PANEL
2. HVAC UNIT
3. HVAC SHUT DOWN SWITCH
4. PROGRAMMABLE CONTROLLER
5. DUCT MOUNTED SMOKE DETECTOR
6. RESET AUDIBLE/VISUAL ALARM AT THE CONTROLLER

PART 3 - EXECUTION
CLEANING OF PIPING, EQUIPMENT AND DUCTWORK

A. THOROUGHLY CLEAN ALL PIPING, DUCTWORK AND EQUIPMENT OF FOREIGN MATTER.

B. REPLACE ALL FILTERS IN THE AIR HANDLING EQUIPMENT THAT HAS BEEN OPERATED, FOR ANY REASONS, DURING CONSTRUCTION.

GUARANTEE AND SERVICE:

A. THIS CONTRACTOR SHALL GUARANTEE ALL THE MATERIAL, WORK AND EQUIPMENT FURNISHED UNDER THIS SPECIFICATION FOR A PERIOD OF ONE (1) YEAR FROM DATE OF THE FINAL ACCEPTANCE OF THIS INSTALLATION BY THE OWNER. DURING THIS GUARANTEE PERIOD ANY MATERIAL, WORK OR SPECIFICATION FOUND TO BE DEFECTIVE, UNSATISFACTORY OR FAILING TO MEET THIS SPECIFICATION AS TO QUALITY OR PERFORMANCE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR FREE OF CHARGE TO OWNER. ALL SERVICE AND ADJUSTMENT OF TEMPERATURE CONTROL SYSTEMS SHALL BE INCLUDED.
B. THIS CONTRACTOR SHALL PROVIDE ONE (1) FULL YEAR OF SERVICE INCLUDE ALL LABOR AND ALL MATERIALS FOR ALL HVAC PORTIONS OF THIS PROJECT.

TESTING, ADJUSTING AND BALANCING

A. UPON COMPLETE OF MECHANICAL INSTALLATION WORK, MAKE READY THE HVAC SYSTEM FOR START-UP. (INCLUDE : REFRIGERANT CHARGE FOR SYSTEM). START- UP UNIT AND SYSTEMS AND TEST AND ADJUST FOR PROPER OPERATION. BALANCE THE AIR SYSTEM(S) TO THE AIRFLOWS INDICATED ON THE DOCUMENTS. WHEN NEW UNIT IS OPERATING ACCORDING TO MANUFACTURE'S PARAMETERS, THEN TRAIN OWNER'S PERSONNEL ON THE USE THE HVAC SYSTEMS AND EQUIPMENT.
B. ADJUST EACH NEW HVAC SYSTEM INSTALLED FOR PROPER OPERATION, COMPLYING WITH THE MANUFACTURE'S INSTRUCTIONS.
C. PROVIDE MEASUREMENT TESTING, ADJUSTING AND BALANCING OF AIR DISTRIBUTION SYSTEMS AND ASSOCIATED EQUIPMENT AND APPARATUS OF HVAC SYSTEMS. RECORD DATA, PREPARE AND SUBMIT CERTIFIED REPORTS.
D. THE BALANCING CONTRACTOR, AND FIELD PERSONNG CONTRACTOR SHALL BE CERTIFIED TECHNICIAN (S), CERTIFIED BY EITHER NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR ASSOCIATED AIR BALANCE COUNCIL (AABC)
E. ALL BALANCING SHALL COMPLY WITH THE APPROPRIATE SECTION OF NEBB'S PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS, 5TH EDITION 1991 AND SO INDICATED BY SUBMITTING NEBB CERTIFICATE OF CONFORMANCE CERTIFICATION WITH BALANCING REPORT.
F. TESTING, ADJUSTING AND BALANCING SHALL BE COMMITTED UNDER FULL AND DIRECT SUPERVISION OF THE CLIENT
A. IDENTIFY EACH AIR UNIT & T-STATS (AHU NUMBER & ZONE), CONDENSING UNIT, ALL MOTOR CONTROL EQUIPMENT, ACT EQUIPMENT, ENGRAVED, WHILE CORE, BLACK FINISHED PLASTIC NAMEPLATES HAVING MINIMUM 1/4" SIZE LETTERING

OPERATING AND MAINTENANCE MANUALS

A. AT THE COMPLETION OF THE PROJECT, DELIVER TO THE CLIENT, THREE (3) COMPLETE SETS OF INSTRUCTION MANUALS, FOR EACH PIECE OF EQUIPMENT, CONTROLS, VALVES AND ALL SPECIALTY ITEMS.
B. EACH INSTRUCTION MANUAL SHALL CONSIST OF DATA SUPPLIED BY THE MANUFACTURE GIVING COMPLETE INFORMATION SUCH AS OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS AND DETAILED PARTS LIST.

CLIENT LOGO

Hendrix House

REFLECT DESIGN GROUP

306 S NEW STREET ©2021
BETHLEHEM, PA 18015

2021.10.08

PROJECT:
HENDRIX HOUSE
TENANT FIT-OUT

26 UNIVERSITY PLACE BLVD.
JERSEY CITY, NJ 07305

DATE: 10/08/2021
PROJECT NO.: 21-0026

REVISION DATE

NOTES:

NOT FOR CONSTRUCTION

MECHANICAL NOTES

SCALE: AS NOTED

M-0.0

DRAWN BY: SAE
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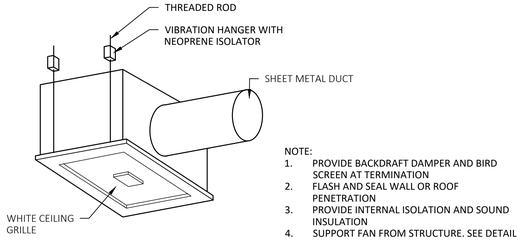
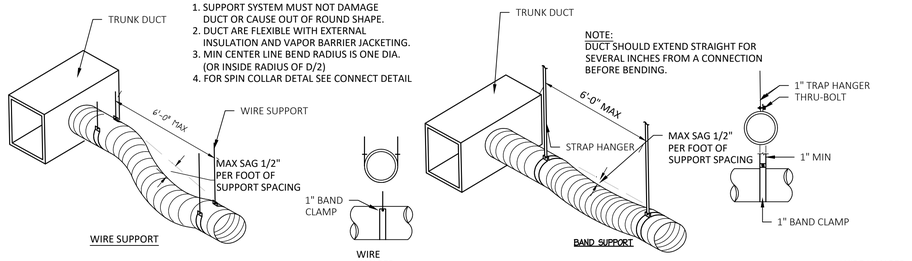


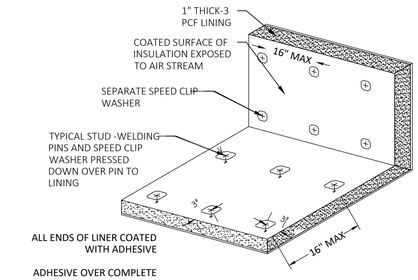
NOTE:
1. PROVIDE BACKDRAFT DAMPER AND BIRD SCREEN AT TERMINATION
2. FLASH AND SEAL WALL OR ROOF PENETRATION
3. PROVIDE INTERNAL ISOLATION AND SOUND INSULATION
4. SUPPORT FAN FROM STRUCTURE. SEE DETAIL #5 ON THIS SHEET.

1 TOILET ROOM FAN DETAIL
SCALE: NOTE

NOTE:
1. SUPPORT SYSTEM MUST NOT DAMAGE DUCT OR CAUSE OUT OF ROUND SHAPE.
2. DUCT ARE FLEXIBLE WITH EXTERNAL INSULATION AND VAPOR BARRIER JACKETING.
3. MIN CENTER LINE BEND RADIUS IS ONE DIA. (OR INSIDE RADIUS OF D/2)
4. FOR SPIN COLLAR DETAL SEE CONNECT DETAIL

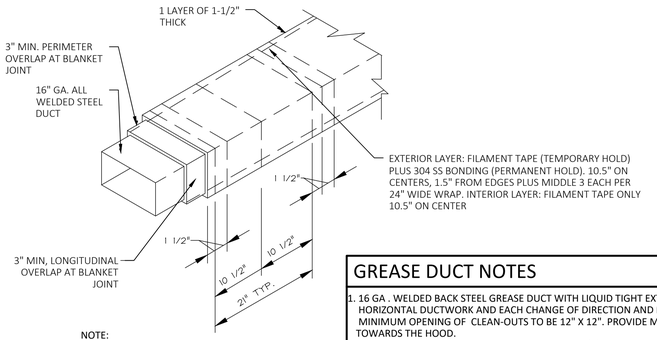


2 FLEXIBLE DUCT CONNECTION
SCALE: NOTE



NOTE:
1. OMIT PINS AND WASHERS FOR DUCTS LESS THAN 8" WIDTH OR DEPTH
2. ADHERE LINING TO SHEET METAL SURFACE WITH FIREPROOF ADHESIVE.
3. DIMENSIONS OF LINED DUCTWORK ARE CLEAR INSIDE DIMENSIONS AFTER LINING HAS BEEN INSTALLED.

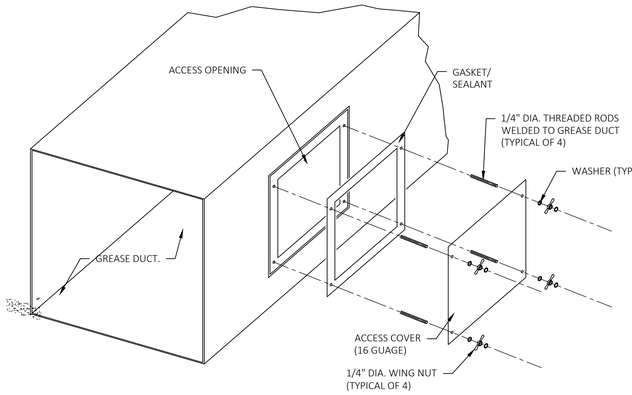
3 SOUND LINING INSTALLATION DETAIL
SCALE: NOTE



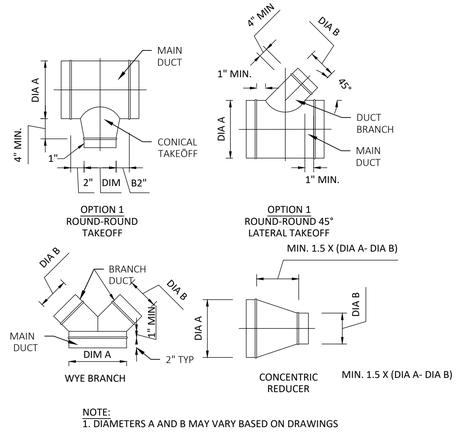
NOTE:
RATED ENCLOSURE SHALL BE 1 LAYER OF 1-1/2" THICK 3M FIREBARRIER 15A GREASE EXAUST DUCT WRAP.

GREASE DUCT NOTES
1. 16 GA . WELDED BACK STEEL GREASE DUCT WITH LIQUID TIGHT EXTERNAL WELD. PROVIDE CLEAN-OUTS IN HORIZONTAL DUCTWORK AND EACH CHANGE OF DIRECTION AND MAX 20'-0" O.C. AS REQUIRED BY CODE. MINIMUM OPENING OF CLEAN-OUTS TO BE 12" X 12". PROVIDE MINIMUM 2% HORIZONTAL DUCT SLOPE TOWARDS THE HOOD.
2. GREASE EXHAUST DUCT SHALL BE WRAPPED WITH (1) LAYER OF 3M FIRE BARRIER DUCT WRAP 15A, 1-1/2" THICK, WITH 3" OVERLAPS TO PROVIDE ONE OR TWO HOUR FIRE RESISTIVE RATION AND ZERO CLEARANCE TO COMBUSTIBLES AT OVERLAP OR COLLAR. 3M FIRE BARRIER DUCT WRAP IS LISTED BY OMEGA POINT LAB DESIGN NO. GD532F AND UL 1978. INSTALL PER MANUFACTURES INSTRUCTIONS.
3. PROVIDE WITH LONG RADIUS ELBOWS.
4. MAINTAIN MIN. 2" CLEARANCE TO ANY ADJACENT SURFACE (SEE 2014 NYC MECHANICAL CODE 506.3.6 EXCEPTION #4

4 GREASE DUCT DETAIL
SCALE: NOTE



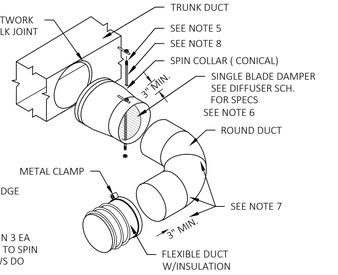
5 GREASE DUCT ACCESS PANEL DETAIL
SCALE: NOTE



NOTE:
1. DIAMETERS A AND B MAY VARY BASED ON DRAWINGS

6 TYPICAL ROUND DUCT FITTING
SCALE: NOTE

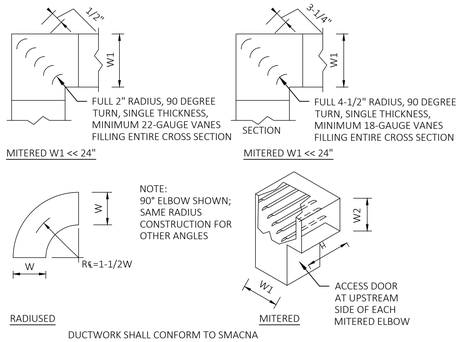
NOTES:
1. SUPPORT AS RECOMMENDED BY SMACNA
2. BAND FLEX TO COLLAR 1/2" MIN FROM OUTBOARD END OF COLLAR
3. INSTALL SPIN COLLAR DAMPER IN OPEN POSITION; FINAL ADJUSTMENT BY CONTRACTOR PER BALANCING REPORT.
4. PROVIDE INSULATION OVER ROUND DUCT ELL TO EDGE OF RECTANGULAR DUCTWORK;SEAL VAPOR BARRIER WITH GREY TAPE TO PREVENT MOISTURE MIGRATION
5. PROVIDE EXTENSION RODS TO ACCOMMODATE INSULATION, PULL TO EDGE OF DUCTWORK AS REQD AND SEAL TO EFFECT VAPOR BARRIER
6. POP RIVET OR SHEET METAL SCREWS, MIN 3 EA AT 120° INTERVALS, CONNECTING 90 ELL TO SPIN COLLAR. ENSURE THAT RIVETS OR SCREWS DO NOT INTERFERE W/ DAMPER
7. SEAL JOINTS TO PREVENT LEAKAGE
8. INSTALL LOCKING QUADRANT AND HANDLE ON BOTTOM OF DUCT FOR EASY SERVICE (SHOWN ON TOP FOR EASE OF ILLUSTRATION ONLY)



(TYPICAL FOR BOTH STRAIGHT OR ELBOW EXTENSION)

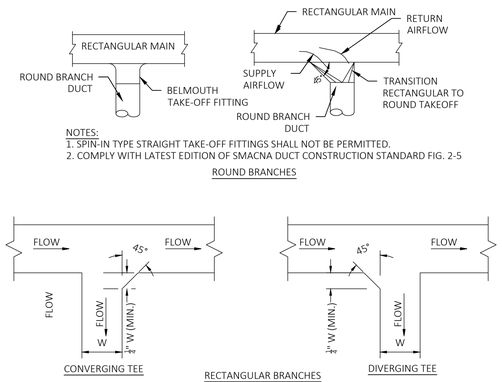
7 RIGID DUCT CONNECTION DETAIL
SCALE: NOTE

USE MITERED ONLY WHERE THE SPACE IS TOO TIGHT FOR RADIUSED.
HALF-RADIUSED (R¢=W) ELBOWS ARE AN ACCEPTABLE ALTERNATIVE TO MITERED ELBOWS.
ADJUSTABLE "STOVEPIPE" TYPE ELBOWS ARE NOT ALLOWED UNLESS OTHERWISE INDICATED

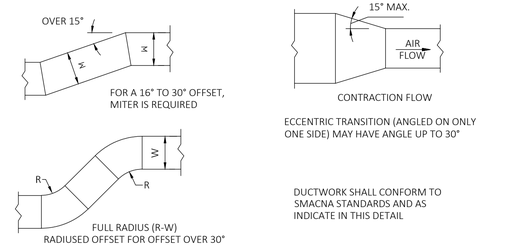


DUCTWORK SHALL CONFORM TO SMACNA AND AS INDICATED IN THIS DETAIL

8 DUCT ELBOW DETAILS
SCALE: NOTE



9 DUCT TEE TO RECTANGULAR MAINS
SCALE: NOTE



10 DUCTWORK TRANSITION
SCALE: NOTE

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Hendrix House

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2021.10.08

PROJECT:
HENDRIX HOUSE
TENANT FIT-OUT

26 UNIVERSITY PLACE BLVD.
JERSEY CITY, NJ 07305

DATE: 10/08/2021
PROJECT NO.: 21-0026

REVISION	DATE

NOTES:

NOT FOR CONSTRUCTION

MECHANICAL DETAILS

SCALE: AS NOTED

M-1.0

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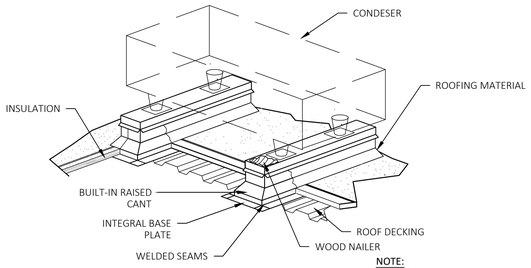
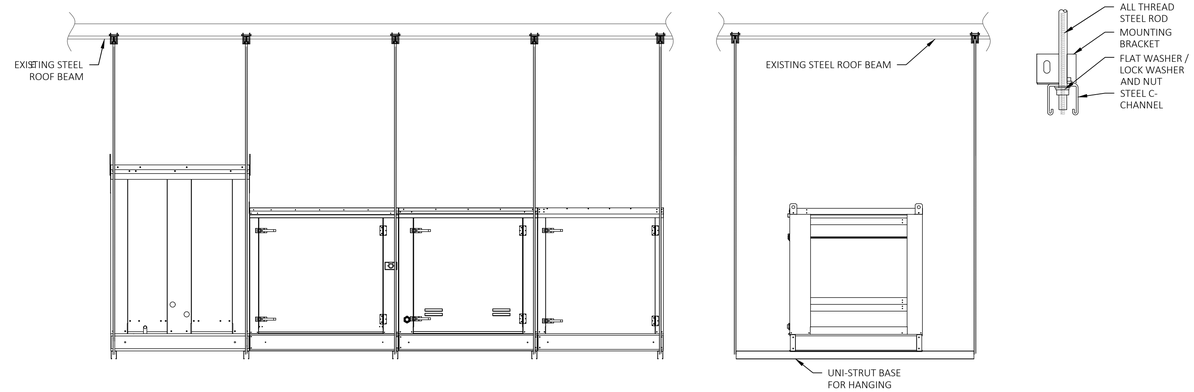
CHECKED BY: JM



NOTE:
1. GC TO PROVIDE ROOF CURBS FOR CONDENSERS W/ HURRICANE STRAPS..
2. CONDENSER WIRE AND REF. PIPES SHALL BE INSTALLED ON APPROVED ROOF SUPPORTED TRAY.
3. G.C. TO PROVIDE/INSTALL EQUIPMENT RAILS.

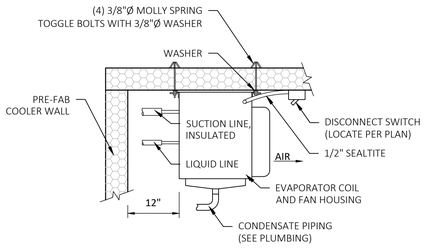
1 EQUIPMENT RAIL DETAIL
SCALE: NOTE



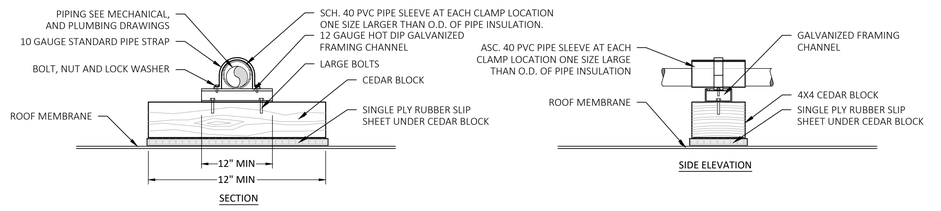
2 MUA-1 MOUNTING DETAIL
SCALE: NOTE

	A	B
DRAW THRU:	CASING STATIC PRESSURE PLUS 1" MIN.	A"/2
BLOW THRU:	1" MINIMUM	A" PLUS CASING STATIC PRESSURE

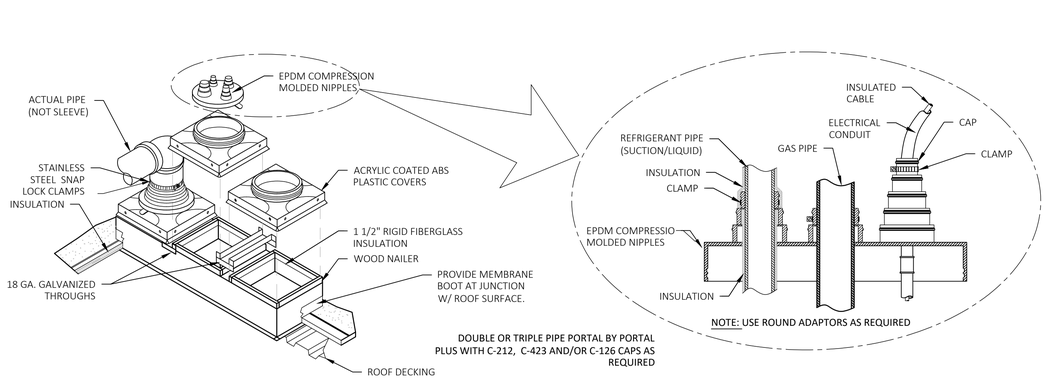
3 CONDENSATE DRAIN PIPING DETAIL
SCALE: NOTE



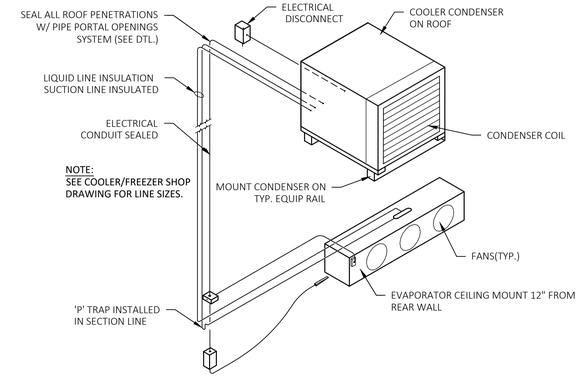
4 EVAPORATOR MOUNTING DETAIL



5 ROOF PIPE SUPPORT DETAIL
SCALE: NOTE



6 PIPE PORTAL OPENING SYSTEM
SCALE: NOTE



7 REFRIGERATION EQUIPMENT SCHEMATIC
SCALE: NOTE

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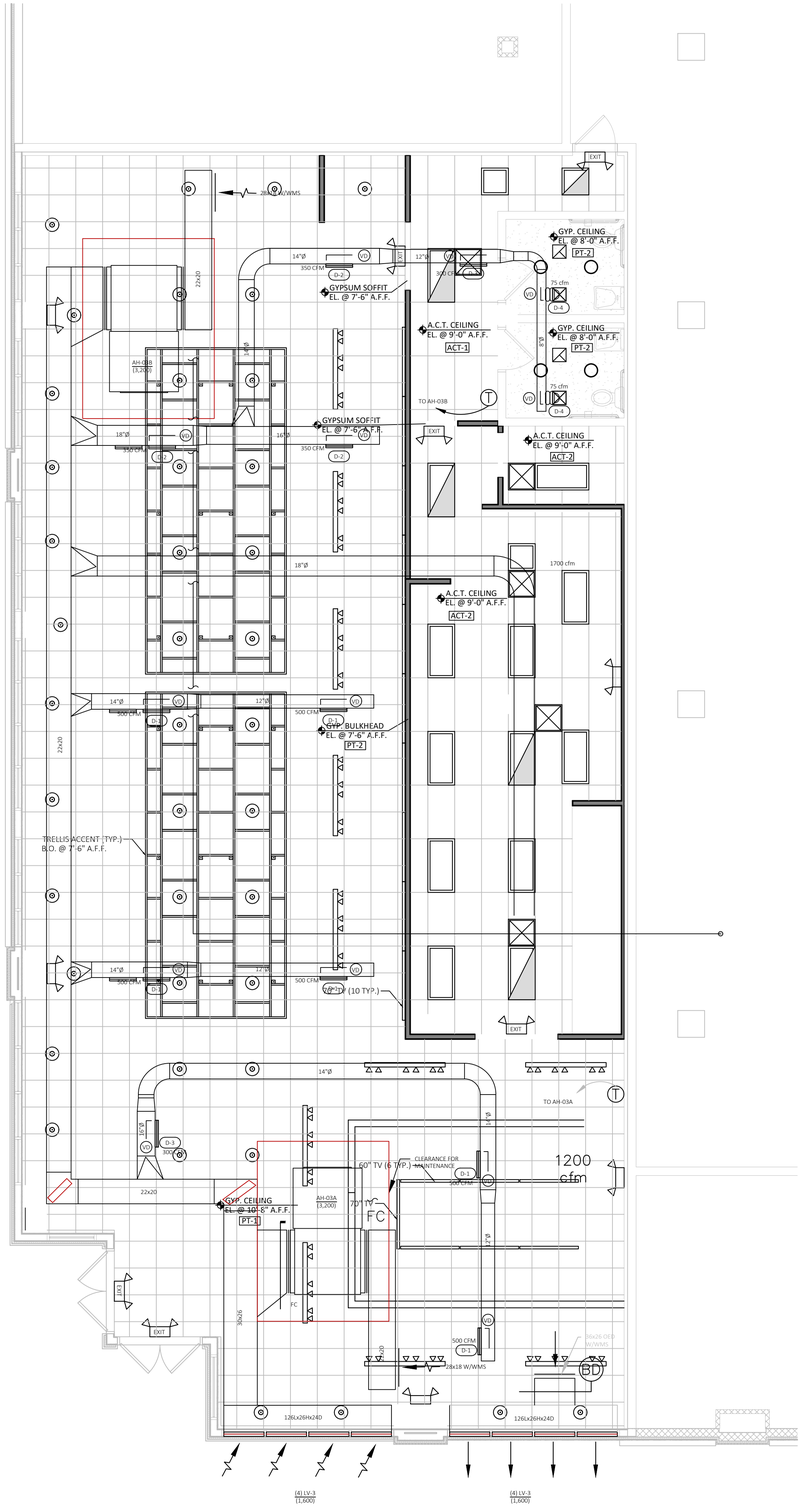

1 LIGHTING PLAN

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

MECHANICAL LEGEND

- DUCTWORK
- SUPPLY DUCTWORK TURNING UP
- RETURN DUCTWORK TURNING UP
- VOLUME DAMPER (VP)
- ROUND DUCT TAP OFF MAIN WIDTH VOLUME DAMPER AND FLEX DUCT
- RETURN/EXHAUST GRILLE.
- SUPPLY DIFFUSER
- DUCT ELBOW WITH TURNING VANES
- DUCT SMOKE DETECTOR (SD)
- EQUIPMENT ID TAG
- DOOR UNDERCUT (DU)
- DUCT MOUNTED O.A. MOTORIZED DAMPER (MD)
- REMOTE THERMOSTAT SENSOR (LOCATED IN RETURN GRILL) (TS)

EXISTING AIR HANDLER AND CONDENSER SCHEDULE

TAG #	MODEL NUMBER	BRAND	QTY	SUPPLY AIR BLOWER					COOLING									ELECTRICAL				ALT. (FT.)	WIGHT#
				MBH INPUT		HP	ESP (IWG)	BLWR RPM	TEMPERATURE (F°)					CAPACITY MBH1		EER	SEER/ IEER	REFRIG-ERANT	VOLATRAGE	MCA	MINI FUSE	MAX FUSE		
				SA	OA				ENT. AIR		LVG. AIR		OD AMB	TOTAL	SENS.								
									DB	WB	WB	DB											
CU-1	REZNOR	YORK	1	-	-	-	-	-	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	22.6		30	0.0	390
AHU-1	REZNOR	YORK	1	3000	750	2.00	0.8	898	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	3.6		15	0.0	526
CU-2	REZNOR	YORK	1	-	-	-	-	-	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	22.6		30	0.0	390
AHU-2	REZNOR	YORK	1	3000	750	2.00	0.8	898	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	3.6		15	0.0	526
CU-3		YORK	1	-	-	-	-	-	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	22.5		30	0.0	390
AHU-3		YORK	1	3000	750	2.00	0.8	898	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	3.6		15	0.0	526
CU-4		YORK	1	-	-	-	-	-	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	22.6		30	0.0	390
AHU-4		YORK	1	3000	750	2.00	0.8	898	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	3.6		15	0.0	526
CU-5		YORK	1	-	-	-	-	-	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	22.6		30	0.0	390
AHU-5		YORK	1	3000	750	2.00	0.8	898	80.0	66.6	58.1	56.7	95.0	93.3	71.0	11.5	13.7	R410A	450-3-60	57.7		60	0.0	526

NOTE:
1. PROVIDE 5 MINUTE TIME DELAY ON COMPRESSOR RESTART.
2. PROVIDE LOW AMBIENT CONTROLS TO ALLOW SAFE OPERATION OF UNIT TO 20°F
3. PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT WITH AUTO CHANGEOVER AND INTEGRATED AUDIBLE AND VISUAL ALARM AND RESET CAPACITY BY HONEYWELL.
4. PROVIDE FACTORY MOUNTED AND WIRED DISCONNECT SWITCH.
5. PROVIDE OUTDOOR UNIT WITH SNOW LEGS.
6. PROVIDE FILTER TO ACCOMMODATE 1" FILTER.
7. PROVIDE W/ POWERED CONVENIENCE OUTLET.
8. INSTALL PROPER REFRIGERANT PIPES TO ACCOMMODATE THE EXTENSIVE LINES LENGTH.
9. PROVIDE AHU-5 WITH ELECTRIC HEATER ADD-ON BY YORK MODEL #2HJ04703646.

EXISTING GAS DUCT HEATER SCHEDULE

TAG	MANUFACTURE	MODEL	MBH INPUT	MBH INPUT	WEIGHT				
DH-1	REZNOR	SC6-150	150	120	203	1.9	15	1	115
DH-2	REZNOR	SC6-150	150	120	203	1.9	15	1	115
DH-3	REZNOR	SC6-150	150	120	203	1.9	15	1	115
DH-4	REZNOR	SC6-150	150	120	203	1.9	15	1	115

NOTE:
1. UNIT SHALL BE INTEGRATED WITH ASSOCIATED AHU CONTROLLER
2. PROVIDE W/ STANDARD VERTICAL VENT TERMINAL/ COMBUSTION SIR INTEL ASSEMBLY W/ CONCENTRIC ADAPTOR
3. VIBRATION ISOLATION HANGER RODS OR APPROVED EQUAL.

EXISTING GAS DUCT HEATER SCHEDULE

MARK	MANUFACTURE	MODEL #	DEVICE SIZE	INLETSIZE	AIR PATTERN	MOUNTING	NOTE
D-1	TITUS	TMS	24" X 24"	12Ø	4-WAY	LAY-IN	SUPPLY
D-2	TITUS	TMS	24" X 24"	10Ø	4-WAY	LAY-IN	SUPPLY
D-3	TITUS	TMS	12" X 12"	6Ø	4-WAY	LAY-IN AND SURFACE	SUPPLY
D-4	TITUS	PAS	24" X 24"	10Ø	PERFORATED	LAY-IN	PROVIDE W/ INSULATED PLENUM BOX
D-5	TITUS	TMR-AA	20Ø	12Ø	---	LAY-IN	ROUND SUPPLY
D-6	TITUS	TMS	24" X 24"	8Ø	4-WAY	LAY-IN	SUPPLY
RG-1	TITUS	350F	24" X 24"	22" X 22"	---	SURFACE	RETURN
RG-2	TITUS	355F	12" X 12"	---	---	SURFACE	EXHAUST, TRANSFER
RG-3	TITUS	50F	48" X 24"	---	---	SURFACE	RETURN

NOTE:
SEE SHEET M-3.3 FOR KEF-1 & MUA-1 INFORMATION

VENTILATION SCHEDULE

ROOM NAME	CATEGORY	NET FLOOR ARE SQ. FT.	CODE REQUIREMENTS		ACTUAL SUPPLY CFM	EXHAUST CFM	EXHAUST FAN NUMBER	SUPPLY UNIT NUMBERS	REMARKS
			NUMBER OF OCCUPANTS OR W.C.	REQUIRED VENTILATION (CFM)					
DINING	DINING	4187	293	2951	3200	-	-	AHU-1,2,3&4	
UTILITY	STORAGE	92	-	11	40	-	-	AHU-5	
KITCHEN	KITCHEN	1314	-	920 EXH.	7012	3962	KEF-1	AHU-5 & MUA-1	
RESTROOM	TOILET ROOM	48	1 W.C.	50 EXH.	13	50	EF-R3 (E)	RTU-5	
RESTROOM	TOILET ROOM	48	1 W.C.	50 EXH.	13	50	EF-R3 (E)	RTU-5	
RESTROOM	TOILET ROOM	48	1 W.C.	50 EXH.	13	50	EF-R3 (E)	RTU-5	
RESTROOM	TOILET ROOM	48	1 W.C.	50 EXH.	13	50	EF-R3 (E)	RTU-5	

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MECHANICAL DETAILS

SCALE: AS NOTED

M-2.0

DRAWN BY: SAE
CHECKED BY: JM

GENERAL NOTES

1) CONTRACTOR SHALL FURNISH AND INSTALL ALL FIXTURES AND MATERIAL NECESSARY TO COMPLETE THE PLUMBING SYSTEM AS SHOWN AND/OR NOTED ON THE DOCUMENTATION ALL WORK TO BE COMPLETE IN A NEAT AND WORKMAN-LIKE MANNER IN ACCORDANCE WITH THE LATEST REVISION OF THE STANDARDS:
   A) INTERNATIONAL PLUMBING CODE
   B) ANSI STANDARDS
   C) ASME STANDARDS
   D) ASTM STANDARDS
   E) INTERNATIONAL FUEL GAS CODE
2) WATER PIPING: (USAGE OF PEX PIPING SYSTEM IS SUBJECT TO APPROVAL AUTHORITY HAVING JURISDICTION)
   A) BELOW FINISHED FLOOR SLAB TYPE "K" DRAWN COPPER TUBING WITH NO JOINTS.
   B) ABOVE FINISHED FLOOR SLAB TYPE "L" HARD DRAWN COPPER TUBING WITH WROUGHT COPPER OR CAST BRASS FITTINGS.
   C) ALL JOINTS SHALL BE PROPERLY REAMED TO FULL BORE, CLEANED, FLUXED, AND SWEAT SOLDERED USING (LEAD FREE) FLUX AND SOLDER. COPPER TUBING SHALL BE SUPPORTED AT EACH FIXTURE AND AT INTERVALS NOT EXCEEDING 10'-0" FOR VERTICAL PIPING RUNS AND AT INTERVALS NOT EXCEEDING 6'-0" FOR HORIZONTAL PIPING RUNS.
   D) INSULATION:
   - 2" AND SMALLER WILL BE INSTALLED WITH ARMAFLEX PIPE INSULATION HAVING A MINIMUM WALL THICKNESS OF ONE HALF INCH.
   - 2 1/2 " AND LARGER WILL BE INSTALLED WITH FIBERGLASS PIPE INSULATION HAVING A MINIMUM WALL THICKNESS OF ONE HALF INCH.
3) CONTRACTOR SHALL ENSURE THAT THE WATER HEATER UNIT IS COMPLETELY FILLED WATER PRIOR TO START UP.
4) DRAIN, WASTE AND VENT PIPING:
   A.) PIPING TO BE INSTALLED SHALL BE SCHEDULE 40 PVC PIPING, PVC PIPING IN ANY AIR PLENUM TO BE WRAPPED IN 3M PLENUM WRAP.
   B) SUPPORTS AND HANGERS
   - SUPPORT ALL VERTICAL PIPING WITH A RISER CLAMP AT EVERY 10'-0" WITH A RISER CLAMP WHERE POSSIBLE OR RIDGED SUPPORTS. SECURELY FASTEN TO THE BUILDING STRUCTURE
   - FIXTURE BENDS, TRAPS AND SIMILAR BRANCHES SHALL BE FIRMLY SECURED AGAINST MOVEMENT IN ANY DIRECTION
   - SUPPORT ALL HORIZONTAL PIPING ABOVE GRADE WITH ALL THREAD ROD, CLEVIS HANGERS AND SWAY PREVENTION HANGER TO BE INSTALLED AT EVERY JOINT IMMEDIATELY ADJACENT TO THE COUPLING, BUT NOT TO EXCEED 4'-6" ON CENTER.
   - SUPPORT ALL HORIZONTAL PIPING BELOW GRADE FIRMLY ON THE BOTTOM OF THE TRENCH TO INSURE SUPPORT FOR THE ENTIRE LENGTH OF PIPING.
   - ALL HORIZONTAL PIPING SUPPORTS AND HANGERS TO BE INSTALLED AT 4'-6" INTERVALS AS TO KEEP IT IN ALIGNMENT AND TO PREVENT SAGGING.
   C) CONTRACTOR SHALL ROUTE EQUIPMENT AND SINK INDIRECT WASTE DRAINS TO VARIOUS OPEN SITE DRAINS, FUNNEL DRAINS, FLOOR DRAINS AND MOP RECEPTORS AS INDICATED ON THE DRAWINGS AND PROVIDE THE NECESSARY AIR GAPS.
   D) ALL DRAINAGE PIPING SHALL BE SLOPED AT 1/8 " PER FOOT FOR PIPING 3" AND LARGER, AND 1/4 " PER FOOT FOR PIPING 2 1/2" AND SMALLER, IN THE DIRECTION OF FLOW.
   E) PROVIDE 2" INSULATION FOR ALL HORIZONTAL STORM DRAINAGE PIPING AND FOR PIPING CONNECTION BETWEEN ROOF DRAIN AND STORM LEADER.
5) PIPE SLEEVES:
   A) ALL PIPE PENETRATIONS THROUGH FLOORS AND WALLS SHALL BE SLEEVED, PACKED, AND CAULKED WATERTIGHT WITH AN APPROVED ELASTOMETRIC WATERPROOF SEALANT, AND A CHROME PLATED BRONZE ESCUTCHEON PLATE SHALL BE PROVIDED.
6) FOR ROOF PENETRATIONS REFER TO DETAILS.
7) CONTRACTOR SHALL OBTAIN ALL REQUIRED INSTALLATION PERMITS FROM LOCAL AUTHORITIES AND MAKE ARRANGEMENTS FOR ANY REQUIRED INSPECTIONS.
8) CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS OF THE WATER SUPPLY, DRAIN, AND VENT PIPING TO EQUIPMENT AND SERVICES AS SHOWN ON THE PLUMBING DRAWINGS.
9) CONTRACTOR SHALL PERFORM (ALL REQUIRED) ON SITE TESTING OF PLUMBING SYSTEMS AND SHALL INCLUDE THE COST OF THIS TESTING IN AHS BID. PLUMBING PIPING SYSTEMS SHALL BE LEAK/PRESSURE TESTED AND THE WATER SERVICE PIPING DISINFECTED AS PER THE AUTHORITY HAVING JURISDICTION. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE IFGC.
10) ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH ANY WORK.
11) PRIOR TO STARTING CONSTRUCTION, DETERMINE EXACT INVERT ELEVATION, SIZE, DEPTH AND LOCATION OF EXISTING UTILITIES WHERE CONNECTIONS ARE TO BE MADE OR INTERSECTIONS OCCUR. NOTIFY ARCHITECT OR ENGINEER OF ANY DISCREPANCY BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS. WORK BACK TOWARD BUILDING FROM UTILITY CONNECTION FOR ALL PIPING SYSTEMS
12) VERIFY WITH OWNER, PRIOR TO STARTING CONSTRUCTION, THE LOCATION OF ALL ON-SITE UNDERGROUND UTILITIES AND TANKS.
13) PROVIDE THREE (3) ELBOW SWING JOINTS FOR ALL DOMESTIC HOT WATER BRANCH CONNECTIONS TO MAINS.
14) INSTALL ALL NFWH 30" ABOVE FINISHED GRADE.
15) INSTALL ALL SHOCK ABSORBERS IN ACCORDANCE WITH THE LATEST "PLUMBING AND DRAINAGE INSTITUTE STANDARD" FOR WATER HAMMER ARRESTORS.
16) RUN ALL UNDERGROUND PIPING WITH THE FOLLOWING DEPTH OF COVER. TAKE CARE BACKFILLING THE TRENCH WITHOUT DAMAGING PIPE:
   A) DRAINAGE - 3'-0"
   B) WATER - 5'-0" (MIN)
   C) NATURAL GAS
17) LOCATE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS AND WALLS FOR ALL VALVES, SHOCK ABSORBERS, CLEANOUTS AND ALL OTHER ITEMS THAT REQUIRE ACCESS TO PROPERLY MAINTAIN OR SERVICE THE BUILDING. REFER TO DRAWINGS AND SPECIFICATIONS.
18) PROVIDE CLEANOUTS AT THE BASE OF ALL SANITARY DRAINAGE, AND RAIN WATER CONDUCTORS.
19) CONTRACTOR TO NOTIFY ENGINEER IF THE MAIN PRESSURE EXCEEDS 80 PSI, AND/OR IF THE WATER PRESSURE FROM THE STREET IS INSUFFICIENT BY THE STANDARDS OF THE AHWA.
20) PRESSURE RELIEF VALVES SHALL MEET ANSI AND ASME STANDARDS.
21) PLUMBING PIPING SYSTEMS AND EQUIPMENT SHALL BE SEISMICALLY SUPPORTED. SEE STRUCTURAL DRAWINGS FOR SEISMIC HAZARD EXPOSURE GROUP, SEISMIC PERFORMANCE CATEGORY AND IMPORTANCE FACTOR.
22) ROOF SUPPORTS SHALL BE MAPA PRODUCTS MODEL MB-146CS WITH PIPE CLAMP. SUPPORT PLATES SHALL BE SECURED TO ROOF STRUCTURAL STEEL. SPACING OF SUPPORTS SHALL NOT EXCEED 10'-0" O.C. SUPPORT PLATE UNDERSIDE AND PERIMETER SHALL BE SEALED WITH APPROVED MASTIC.
23) FABRICATE AND INSTALL GAS PIPING IN ACCORDANCE WITH ANSI B31.2 "FUEL GAS PIPING", NFPA 54 "NATURAL FUEL GAS CODE", NFPA 58 "STORAGE AND HANDLING OF LIQUEFIED PETROLIUM GASES", IAPMO "UNIFORM MECHANICAL CODE", AND ALL AUTHORITIES HAVING JURISDICTION.
   A. BUILDING DISTRIBUTION PIPING:
      1. PIPE SIZE 2" AND SMALLER: BLACK STEEL PIPE; SCHEDULE 40, MALLEABLE-IRON THREADED FITTINGS.
      2. PIPE SIZE 2-1/2" AND LARGER: BLACK STEEL PIPE; SCHEDULE 40; WROUGHT-STEEL BUTTWELDING FITTINGS.
      3. SPACING BETWEEN STEEL PIPE SUPPORTS SHALL NOT EXCEED 12'-0" IN HORIZONTAL AND 15'-0" IN VERTICAL DIRECTIONS.
   B. GAS COCKS:
      1. GAS COCKS 2" AND SMALLER: 150 PSI NON-SHOCK WOG, BRONZE STRAIGHTWAY COCK, FL... OR SQUARE HEAD, THREADED ENDS.
      2. GAS COCKS 2-1/2" AND LARGER: 125 PSI NON-SHOCK WOG, IRON BODY BRONZE MOUNTED, STRAIGHTWAY COCK, SQUARE HEAD, FLANGED ENDS.
   C. MASTER GAS CONTROL VALVE: BRONZE BODY, PACKLESS, SINGLE SEAT, EXPLOSION-PROOF, SOLENOID OPERATED, NORMALLY CLOSED, UL-APPROVED, AUTOMATIC RESET, 120 VOLT.
24) GROUND GAS PIPING ELECTRICALLY AND CONTINUOUSLY WITHIN PROJECT, AND BOND TIGHTLY TO GROUNDING CONNECTION.
25) INSTALL DRIP-LEGS IN GAS PIPING WHERE INDICATED, AND WHERE REQUIRED BY CODE OR REGULATI...
26) INSTALL "TEE" FITTING WITH BOTTOM OUTLET PLUGGED OR CAPPED, AT BOTTOM OF PIPE RISERS.
27) USE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED TOGETHER.
28) INSTALL PIPING WITH 1/64" PER FOOT (1/8%) DOWNWARD SLOPE IN DIRECTION OF FLOW.
29) INSULATE GAS PIPING EXPOSED TO FREEZING TEMPERATURES.
30) UTILITY COMPANY TO PROVIDE GAS SERVICE, METER, AND REGULATOR TO INDICATED LOCATION WITH SHUTOFF AT TERMINUS.

GENERAL NOTES

A. CONTRACTOR SHALL VERIFY THAT ALL PIPING TYPES AND SIZES MEET LOCAL CODE.

B. WHEN DEEP FROST LOCATIONS ARE ENCOUNTERED, ROUTE SANITARY LINES UNDER BUILDING AS MUCH AS POSSIBLE

C. PROVIDE PVC SLEEVE FOR ALL COLD/HOT WATER FLOOR PIPE PENETRATIONS. MAKE SLEEVE LARGE ENOUGH FOR INSULATION. SEAL WITH GRAY MASTIC AND ENSURE OF NO WATER PENETRATIONS.

D. FURNISH AND INSTALL WATTS BA VACUUM BREAKER ON ANY THREADED EXTERIOR OR INTERIOR FAUCETS.

E. ALL WATER SHUT OFF VALVES SHALL BE "BALL LOCK" TYPE. PROVIDE SHUT-OFF VALVES AT EACH TERMINATION POINT OF ASSOCIATED EQUIPMENT.

F. VERIFY GRADE OF INCOMING SANITARY SEWER BEFORE INSTALLATION OF SYSTEM.

G. NOT USED.

H. PITCH WASTE LINES AT 1/4" PER FOOT MINIMUM.

I. INSTALL WATER PIPING ON INSIDE OF EXTERIOR WALL INSULATION TO PREVENT FREEZING.

J. NOTES APPLY TO ALL PLUMBING SHEETS.

K. EACH CONTRACTOR IS RESPONSIBLE FOR HAVING THOROUGH KNOWLEDGE OF ALL DRAWINGS AND SPECIFICATIONS AS THEY RELATE TO THIS WORK. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED DUE TO LACK OF THIS KNOWLEDGE.

L. PROVIDE ALL MATERIALS FOR A COMPLETE INSTALLATION IN ALL RESPECTS READY FOR INTENDED USE AND IN STRICT ACCORDANCE WITH STATE AND LOCAL CODES AND MANUFACTURER'S RECOMMENDATIONS.

M. COORDINATE SEWER AND WATER CONNECTIONS PROVIDE PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER AS SHOWN.

N. REFER TO RISER DIAGRAM FOR ALL PIPE SIZES

O. SANITARY AND STORM SEWER PIPING SHOWN IS BASED ON 1/4" PER FOOT FALL FOR ALL PIPE SMALLER THAN 4" DIAMETER AND 1/8" PER FOOT FALL FOR PIPE 4" DIAMETER AND LARGER.

P. ALL SEWER PIPING BELOW SLAB TO BE 2" DIAMETER MINIMUM.

Q. PROVIDE ACCESS DOORS TO ALL CONCEALED VALVES AND CLEAN-OUTS; AND NOT ABOVE AN ACCESSIBLE CEILING.

R. PROVIDE TRAP SEAL PRIMERS AS SHOWN OR AS REQUIRED BY AHJ. CONTRACTOR SHALL VERIFY REQUIREMENTS.

S. INSTALL VTR'S, EXHAUST FANS, AND FLUES A MINIMUM 5'-0" FROM PARAPET OR OUTSIDE WALL AND 10'-0" MINIMUM FROM EQUIPMENT WITH OUTSIDE AIR INTAKE.

T. INSTALL WATER PIPE ON INSIDE OF EXTERIOR WALL INSULATION TO PREVENT FREEZING.

U. PROVIDE 2" INSULATION FOR ALL HORIZONTAL STORM DRAINAGE PIPING AND FOR PIPING CONNECTION BETWEEN ROOF DRAIN AND STORM LEADER.

DRAWING LEGEND

SAN	SANITARY SEWER
GR	GREASE WASTE
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
FW	FILTERED WATER
RD	ROOF DRAIN
	PLUMBING VENT
GAS	GAS PIPING
	GAS VALVE
	UNION
	ELBOW - TURNED DOWN
	ELBOW - TURNED UP
	TEE - TURNED DOWN
	TEE - TURNED UP
	BALL VALVE
	SHUT-OFF VALVE IN VERTICAL LINE
FDI	FLOOR DRAIN
FFDI	FLOOR DRAIN WITH FUNNEL
FSI	FLOOR SINK
FCO	FLOOR CLEANOUT
WCO	WALL CLEANOUT
GT	GREASE TRAP
	GATE VALVE

CLIENT LOGO

Hendrix House

REFLECT DESIGN GROUP
306 S NEW STREET
BETHLEHEM, PA 18015

2021.10.08

PROJECT:
HENDRIX HOUSE TENANT FIT-OUT

26 UNIVERSITY PLACE BLVD.
JERSEY CITY, NJ 07305

DATE: 10/08/2021
PROJECT NO.: 21-0026

REVISION	DATE

NOTES:

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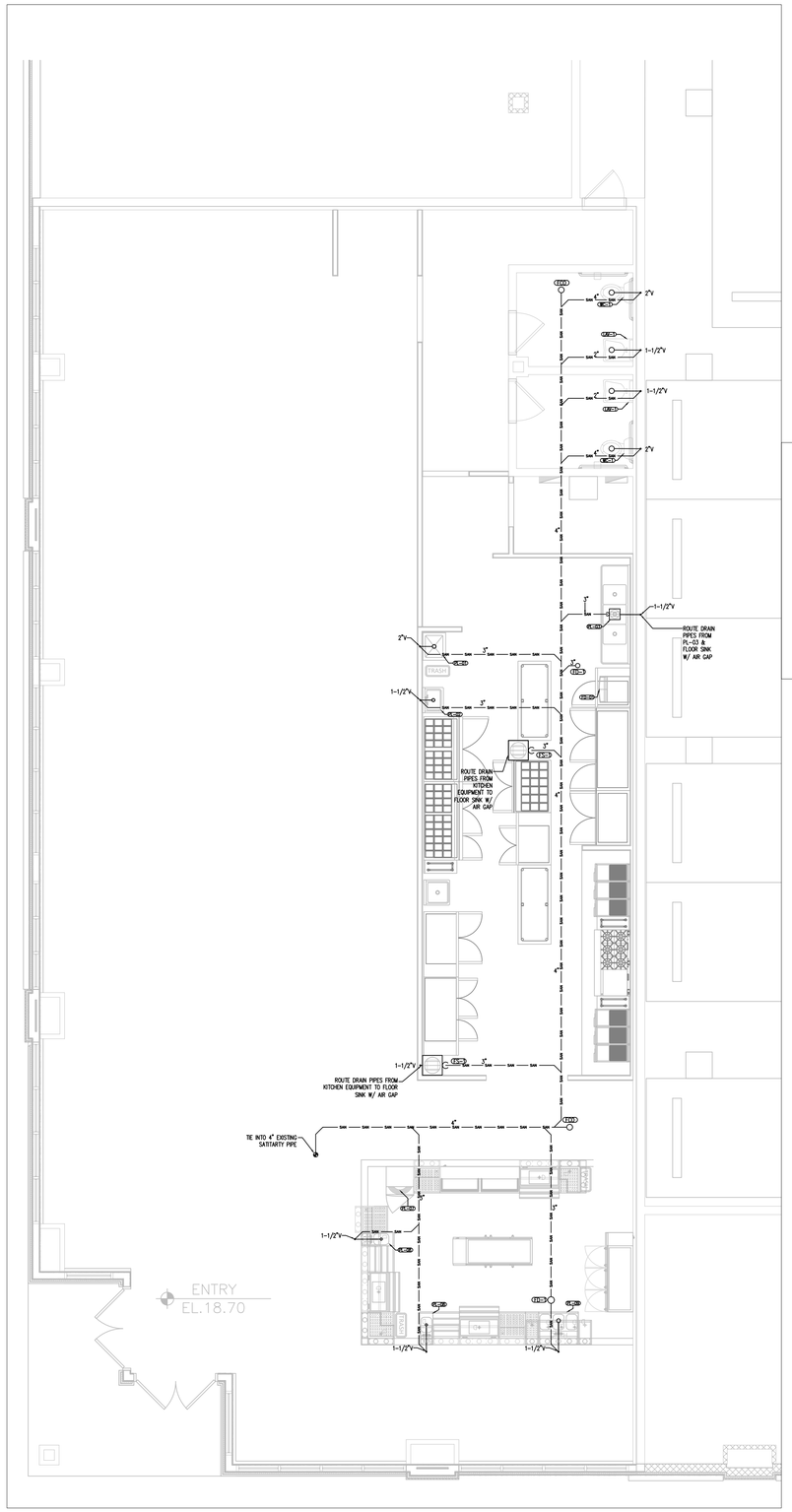
PLUMBING NOTES

SCALE: AS NOTED

P-0.0

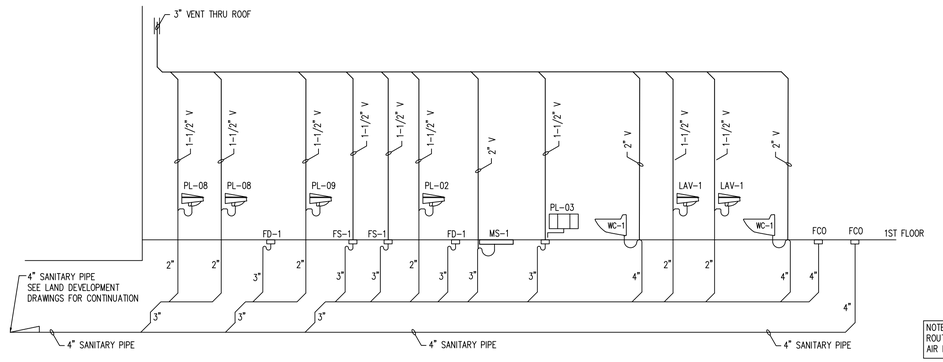
DRAWN BY: SAE
CHECKED BY: JM



EQUIPMENT LIST			
EQ. TAG	EQ. MODEL	MANUFACTURER	EQ. DESCRIPTION
FD-01	UC2024AA-1	SCOTSMAN	ICE MAKER WITH BIN
PL-01	SM1S-01	SAPPHIRE MANUFACTURING	MOP SINK
PL-02	SM1818	SAPPHIRE MANUFACTURING	HAND SINK
PL-03	SM3-3-1821D	SAPPHIRE MANUFACTURING	3 COMPARTMENT SINK
PL-04	SM1818	SAPPHIRE MANUFACTURING	1 COMPARTMENT SINK
LAV-1	–	–	LAVATORY
WC-1	–	–	WATER CLOSET
PL-07	GWR-24	KROWNE	EXPRESSO MACHINE
PL-08	KR24-1C	KROWNE	EYE WASH
PL-09	KR19-24-10	KROWNE	RATIONAL OVEN

1 SANITARY PLAN

SCALE: 3/16"=1'-0"



NOTE:
ROUTE VENT THRU ROOF 10FT. MIN. AWAY FROM ANY AIR INTAKE

2 RISER DIAGRAM

SCALE: NONE

CLIENT LOGO

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SANITARY PIPING PLAN

SCALE: AS NOTED

P-1.0

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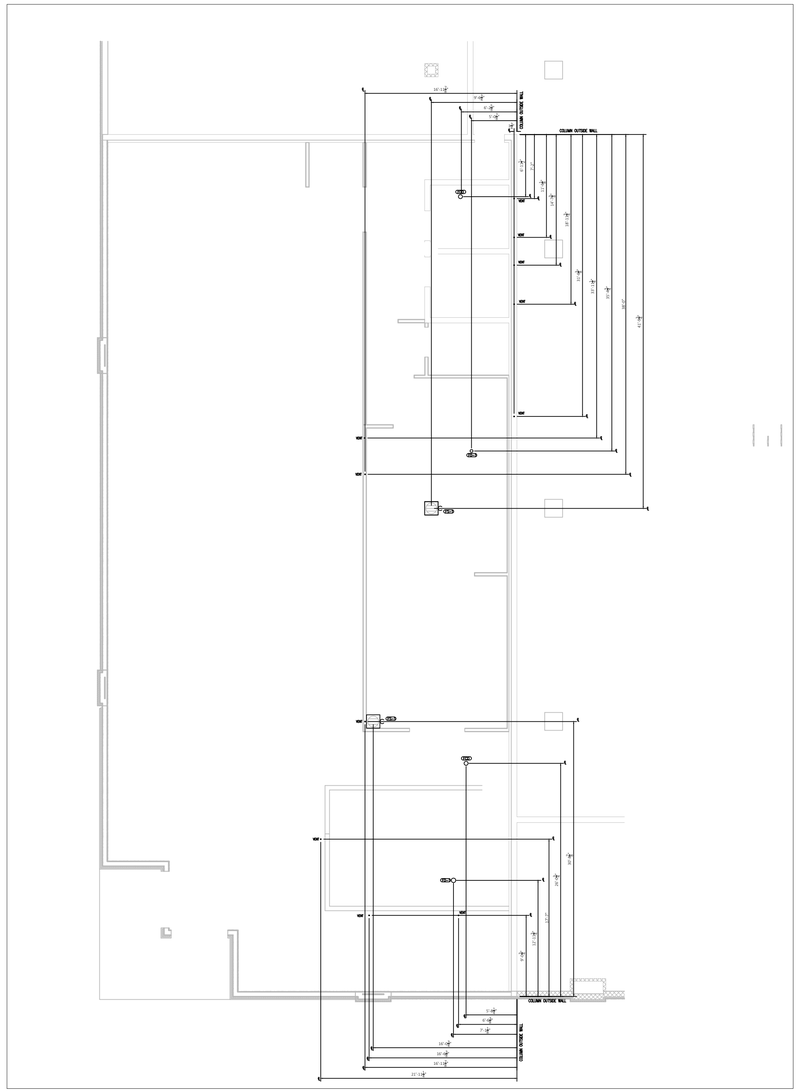

1 STUB–UP PLAN

SCALE: 3/16"=1'-0"

CLIENT LOGO

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STUB-UP PLAN

SCALE: AS NOTED

P-1.1

DRAWN BY: SAE
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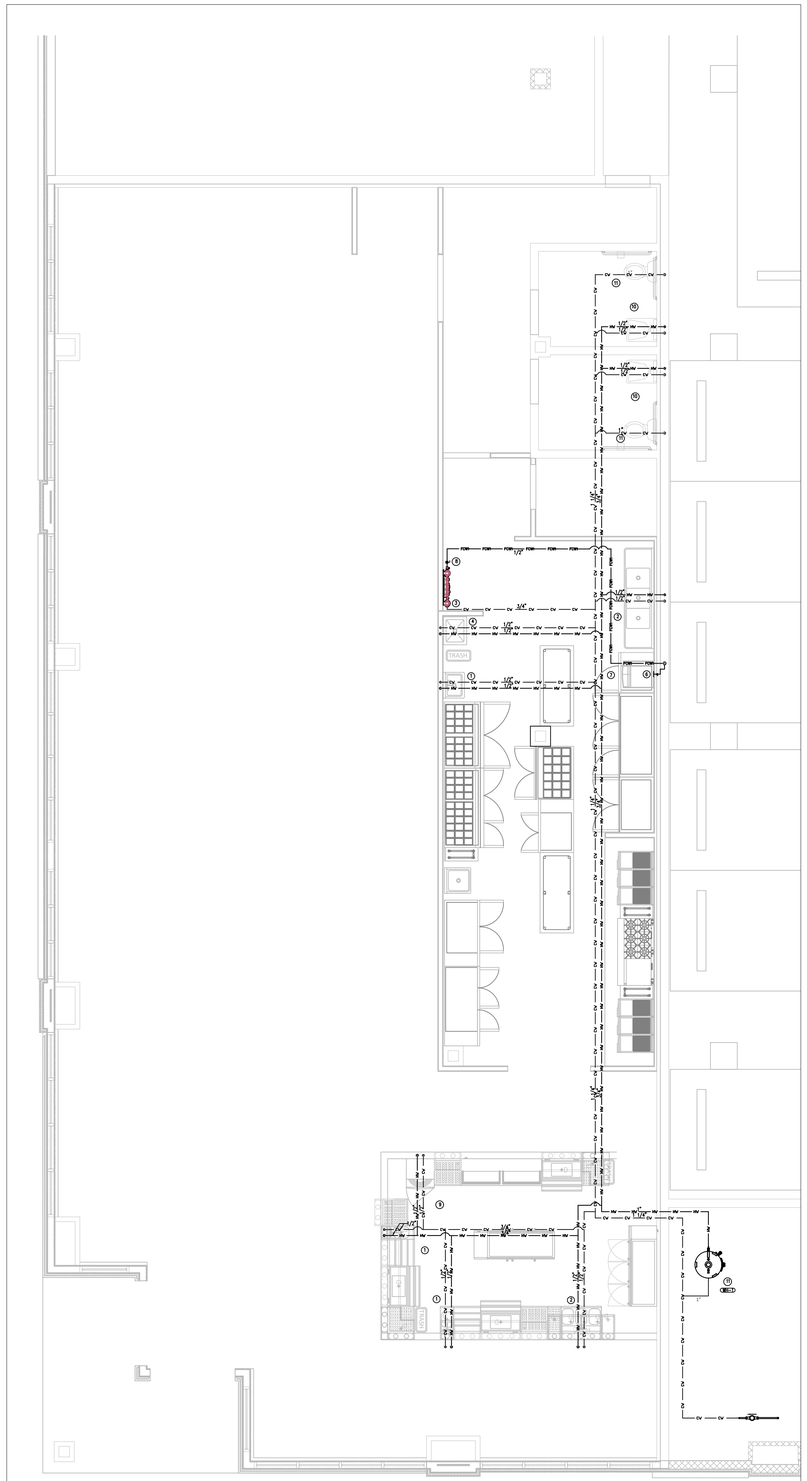


1 SUPPLY PLAN

SCALE: 3/16"=1'-0"

KEY NOTES

1. 1/2" CW/HW DROP TO SINK HS-1/CS-1. PROVIDE W/ MIXING VALVE SET AT 110°F MAX.
2. 1/2" CW/HW DROP TO 3 COMP SINK.
3. 3/4" CW DROP TO WATER FILTERS.
4. 1/2" CW/HW DROP TO MOP SINK.
5. 1/2" CW TO EXISTING FROST PROOF WALL HYDRANT.
6. FCW DROP UNDER COUNTER & RUN IN CABINET RACEWAY.
7. INSTALL SHUT-OFF VALVE & BP-2 AT EACH FCW EQUIPMENT CONNECTION (TYP.)
8. 1/2" CW/HW TO/FROM WATER HEATER
9. 1/2" CW/HW TO GLASSWASHER
10. 1/2" CW/HW DROP TO SINK LAV-1. PROVIDE W/ MIXING VALVE SET AT 110°F MAX.
11. 1" CW DROP TO WH-1.
12. NOT USED
13. NOT USED
14. NOT USED
15. NOT USED

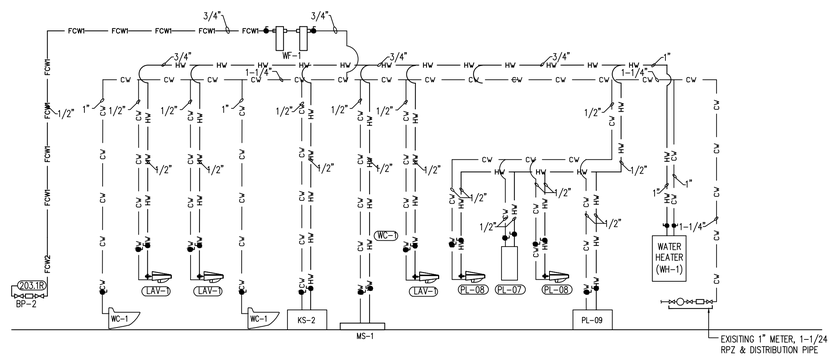
TIE INTO EXISTING

NOTES

1. REFER DWG# EQ-1.0 FOR TAGGED EQUIPMENT INFORMATION.
2. VERIFY EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCY.

EQUIPMENT LIST

EQ. TAG	EQ. MODEL	MANUFACTURER	EQ. DESCIPTION
FD-01	UC2024MA-1	SCOTSMAN	ICE MAKER WITH BIN
PL-01	SMHS-01	SAPPHIRE MANUFACTURING	MOP SINK
PL-02	SMS1818	SAPPHIRE MANUFACTURING	HAND SINK
PL-03	SMS-3-1821D	SAPPHIRE MANUFACTURING	3 COMPARTMENT SINK
PL-04	SMS1818	SAPPHIRE MANUFACTURING	1 COMPARTMENT SINK
LAV-1	–	–	LAVATORY
WC-1	–	–	WATER CLOSET
PL-07	CMR-24	KROWNE	EXPRESSO MACHINE
PL-08	KR24-1C	KROWNE	EYE WASH
PL-09	KR19-24-10	KROWNE	RATIONAL OVEN



2 RISER DIAGRAM

SCALE: NONE

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SUPPLY PLAN & RISER DIAGRAM

SCALE: AS NOTED

P-2.0

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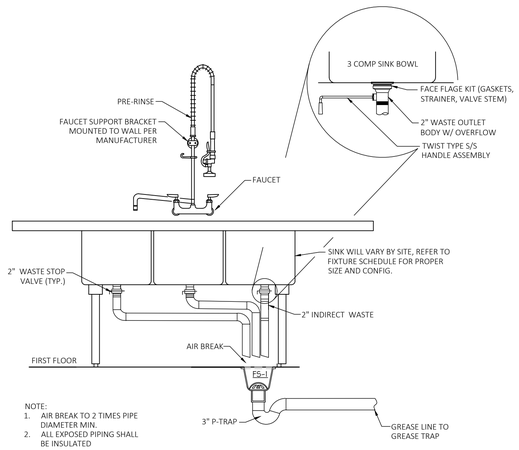
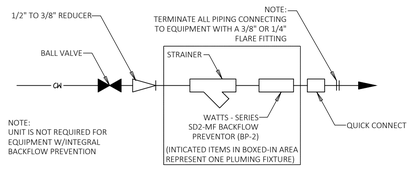
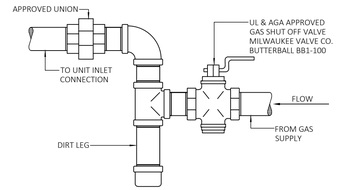


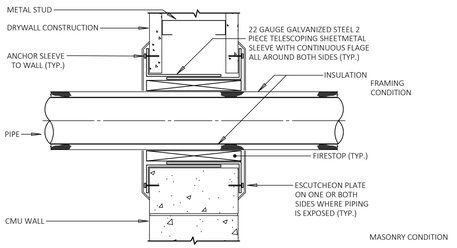
1 3 COMPARTMENT SINK DETAIL (TYP.)
SCALE: NOTE



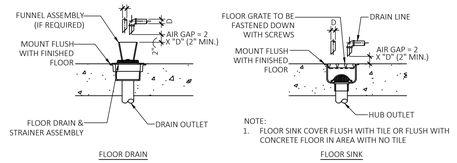
2 FOOD SERVICE BACKFLOW PREVENTOR (BP-2)
SCALE: NOTE



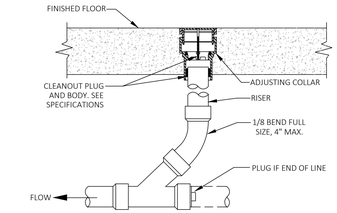
3 TYPICAL GAS/PROPANE DIRT LEG DETAIL
SCALE: NOTE



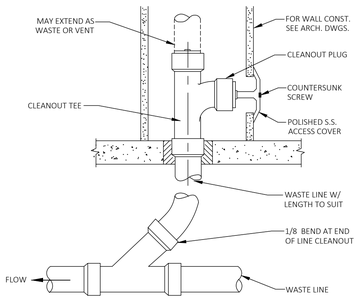
4 PIPE SLEEVE THRU WALL (TYP.)
SCALE: NOTE



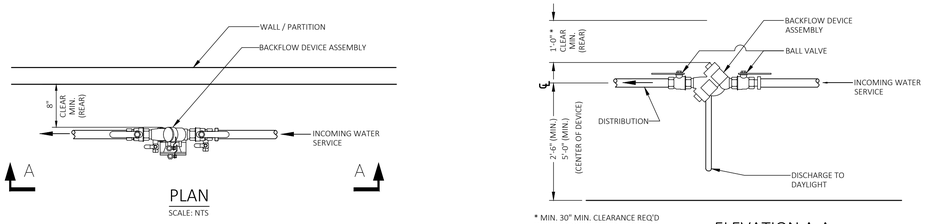
5 FLOOR SINK & DRAIN (TYP.)
SCALE: NOTE



6 FLOOR CLEANOUT DETAIL
SCALE: NOTE



7 WALL CLEANOUT DETAIL
SCALE: NOTE



NOTE:
1. LAYOUT ABOVE IS A REFERENCE FOR MINIMUM REQUIRED CLEARANCES ONLY. REFERENCE FLOOR PLAN AND RPZ PLANS AND DETAILS AS APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION FOR FINAL LAYOUT/ CONFIGURATION.
2. RPZ DEVICE SHALL BE LOCATED 3' MIN. FROM ANY ELECTRICAL METER OR PANEL.

8 FLOOR SINK & DRAIN (TYP.)
SCALE: NOTE

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PLUMBING DETAILS

SCALE: AS NOTED

P-4.0

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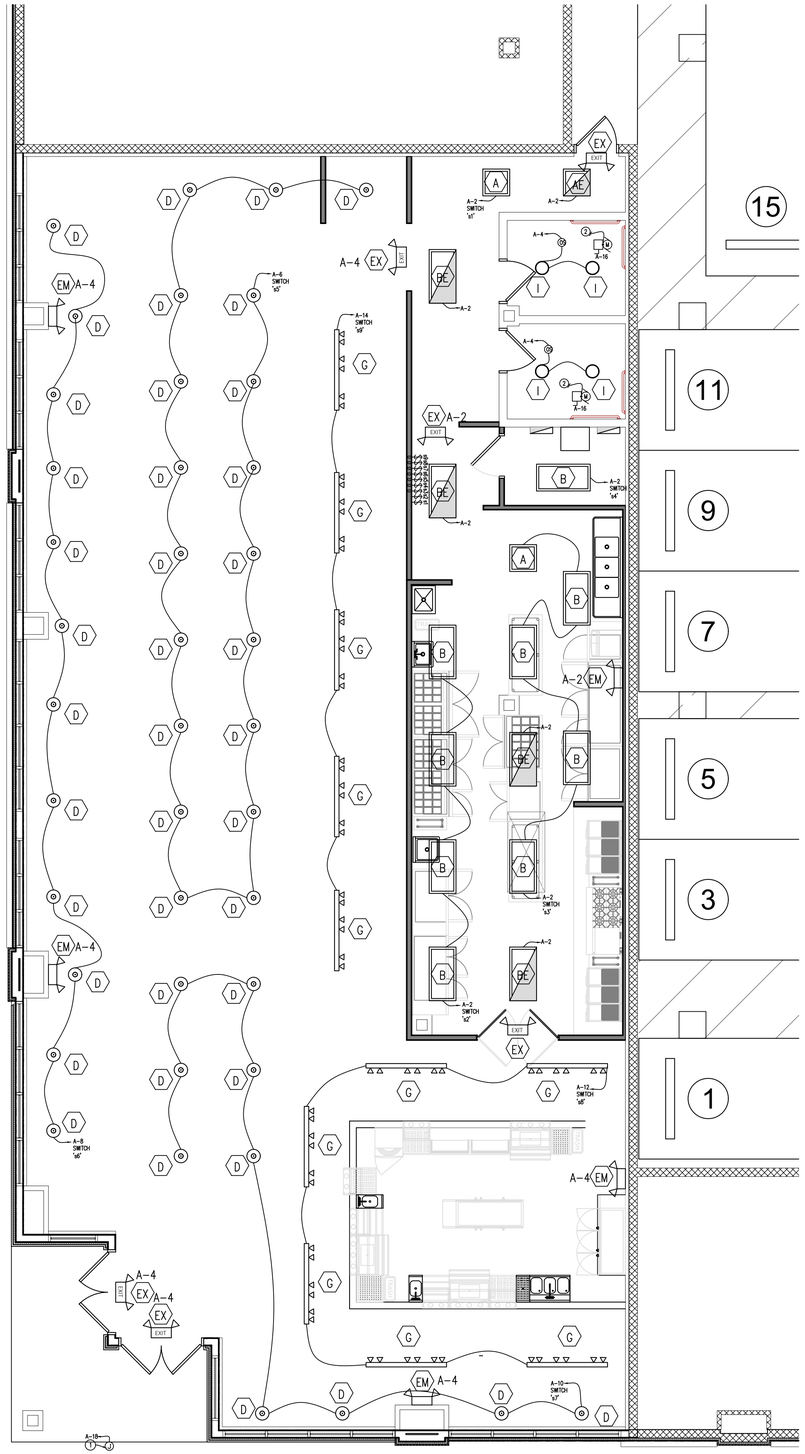

1 LIGHTING PLAN

SCALE: 3/16"=1'-0"

LEGEND

C	LIGHTING FIXTURE, LETTER IN FIXTURE TYPE. INDICATES SCHEDULED
EMY EXIT	EMERGENCY LIGHT FIXTURES (SEE LIGHT FIXTURE SCHEDULE) CONTRACTOR SHALL ADJUST EMERGENCY LIGHTING TO PROVIDE 1 FC. ALONG ALL PATHS OF EGRESS.
	2'X4' LED PANEL LIGHTING
	2'X4' LED PANEL LIGHTING. EMERGENCY LIGHTING BATTERY PACK
	RECESSED LED DOWN LIGHT FIXTURES.
	RECESSED LED DOWN LIGHT FIXTURES. EMERGENCY LIGHTING BATTERY PACK
	LED PENDANT LIGHT FIXTURES.
	LED TRACK LIGHT FIXTURES.
1_a	PASS AND SEYMPUR LIGHT SWITCH SINGLE POLE TOGGLE SWITCH. 20 AMP, 120–277 VOLT MOUNT 4'–0" A.F.F. (U.N.O.)
1_3	3 WAY SWITCH, 20 AMP, 120–277 VOLT MOUNT 4'–0" A.F.F. (U.N.O.)
1_D	DIMMER SWITCH, 120–277 VOLT MOUNT 48" AFF UNLESS OTHERWISE NOTED
1_{OS}	WALL MOUNTED OCCUPANCY SENSOR SWITCH, 120–277 VOLT MOUNT 48" AFF UNLESS OTHERWISE NOTED
OS	CEILING MOUNTED OCCUPANCY SENSOR SWITCH, 120–277 VOLT MOUNT 48" AFF UNLESS OTHERWISE NOTED
J	JUNCTION BOX
M	EXHAUST FAN. SEE MECHANICAL DRAWINGS FOR MORE INFO

KEYED NOTES

1. JUNCTION BOX FOR CONNECTION TO SIGNAGE. SIGNAGE SHALL BE CONTROLLED BY TIME CLOCK SYSTEM. FIELD VERIFY EXACT LOCATION OF SIGNAGE J-BOX, TIME CLOCK, AND EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN INSTALLATION
2. DISCONNECT SWITCH FOR RESTROOM EXHAUST FAN INTERLOCK W/ HVAC PANEL (SEE MECH. DRAWINGS)

LIGHT FIXTURE SCHEDULE

KEY	DESCRIPTION	MANUFACTURER	MODEL #	COMMENTS
A	2'X2' FLAT PANEL LED LIGHT	LumeGen OR EQUAL	SL-35W-66-28-TG-01	LED 35 WATTS COLOR: 4000K.
AE	2'X2' FLAT PANEL LED LIGHT	LumeGen OR EQUAL	LG-PL-EM-22-35W-28-40K	LED 35 WATTS COLOR: 4000K EMERGENCY LIGHTING BATTERY PACK
B	2'X4' FLAT PANEL LED LIGHT	LumeGen OR EQUAL	SL-35W-66-28-TG-01	LED 35 WATTS COLOR: 4000K.
BE	2'X4' FLAT PANEL LED LIGHT	LumeGen OR EQUAL	LG-PL-EM-22-35W-28-40K	LED 35 WATTS COLOR: 4000K EMERGENCY LIGHTING BATTERY PACK
C	LED CYLINDRICAL SURFACE MOUNT	CREE OR EQUAL	#SC6-BL-QU24 & LR6 DOWNLIGHT	LED 10.5 WATTS COLOR: 3500K, DIMMING
D	LED CEILING MTD. PENDANT LIGHT FIXTURE	CREE OR EQUAL	#SSP-450-L-27-WH-KB-D1	LED 12 WATTS COLOR: 2700K, DIMMING
EX	EMERGENCY LIGHT (W/ EXIT SIGN)	LITHONIA OR EQUAL	LHQM-LED- HO	W/ BATTERY BACK-UP
EM	EMERGENCY LIGHT (W/O EXIT SIGN)	LITHONIA OR EQUAL	ELM2-LED	W/ BATTERY BACK-UP
ER	DUAL HEAD EMERGENCY LIGHT (REMOTE HEAD)	LITHONIA OR EQUAL	ELA-T-QWP	W/ BATTERY BACK-UP
F	LED CEILING MTD. SPOT LIGHT FIXTURE.	DIRECT- LIGHTING OR EQUAL	50163LED-BK W/ 50102-BK-HT	LED 7.5 WATTS COLOR: 3000K, DIMMING
G	LED TRACK LIGHT FIXTURE W/ 4' LINE VOLTAGE TRACK SYS.	DIRECT- LIGHTING OR EQUAL	50163-3KIT-3k-BK	LED 7.5 WATTS COLOR: 3000K, DIMMING
H	LED TRACK LIGHT FIXTURE.	DIRECT- LIGHTING OR EQUAL	50163LED-BK	LED 7.5 WATTS COLOR: 3000K, DIMMING
I	6" LED DOWNLIGHT	CREE OR EQUAL	S-DL6T-M-S-DL-6-15-35K	LED 15 WATTS COLOR: 3500K, DIMMING PAINTED WHITE
IE	6" LED DOWNLIGHT	CREE OR EQUAL	S-DL6T-M-P-C S-DL-6-15-35K-EB	LED 15 WATTS COLOR: 3500K, PAINTED WHITE EMERGENCY LIGHTING BATTERY PACK

NOTES:
1. SUBMIT ALL FIXTURE TO OWNER FOR APPROVAL PRIOR TO ORDERING.
2. ALTERNATE FIXTURE SUBMITTALS WILL BE CONSIDERED BY OWNER WHEN SUBMITTED
3. CONTRACTOR SHALL ADJUST EMERGENCY LIGHTING TO PROVIDE 1 FC. ALONG ALL PATHS OF EGRESS.
4. ALL LUMINARIES IN SUSPENDED CEILINGS SHALL BE SECURED TO THE GRID BY SCREWS, BOLTS, RIVETS OR CEILING CLIPS APPROVED BY NEC 410.36(B)

CLIENT LOGO

Hendrix House

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NOTES:

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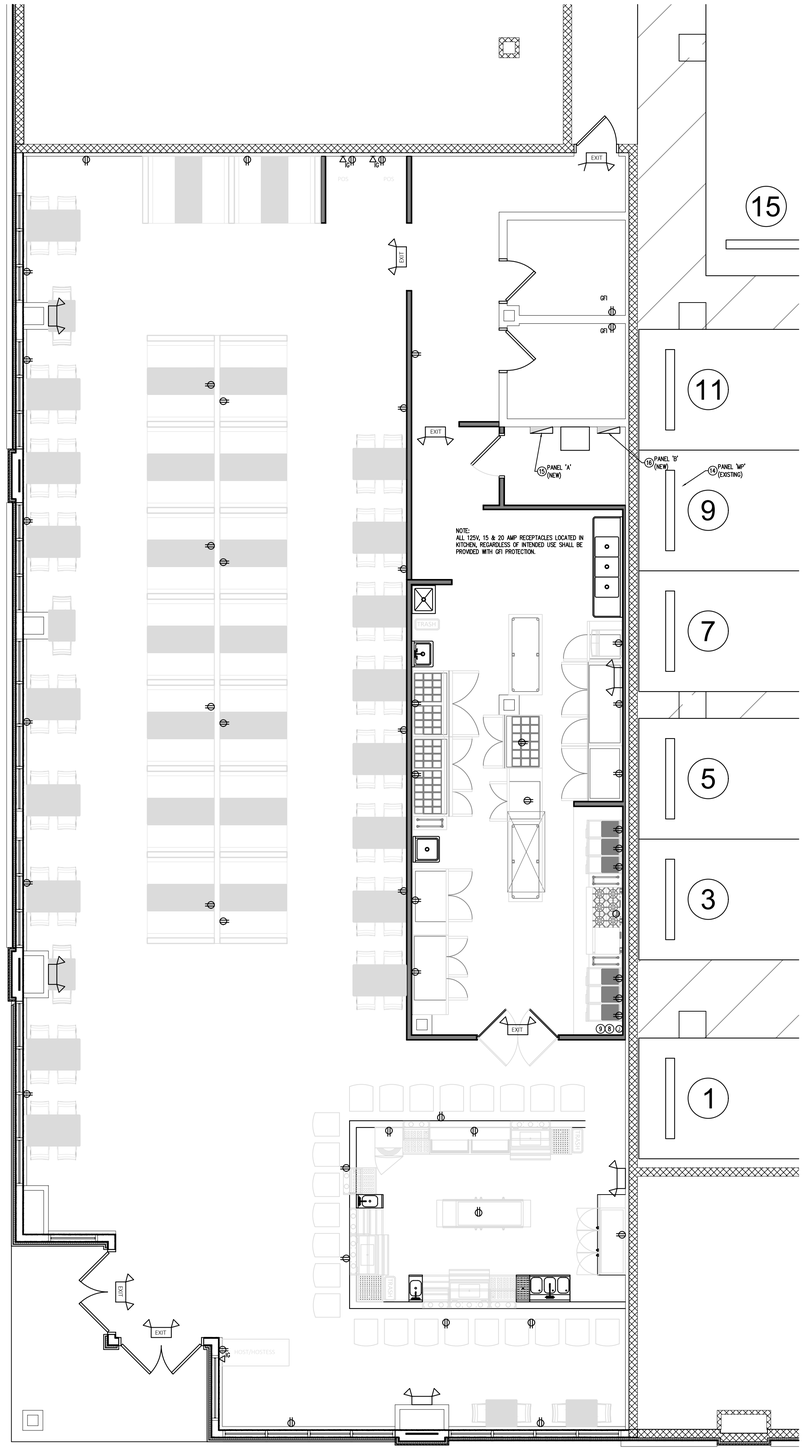
LIGHTING PLAN

SCALE: AS NOTED

E-1.0

DRAWN BY: SAE
CHECKED BY: JM



1 POWER PLAN

SCALE: 3/16"=1'-0"

KEYED NOTES

1. E.C. TO PROVIDE DUPLEX RECEPTACLE MOUNTED IN ABOVE WINDOW FOR SHOW WINDOW REQUIREMENTS. FIELD VERIFY EXACT LOCATION.
2. J-BOX FOR ICE MAKER, VERIFY ACTUAL WIRING REQUIREMENT W/ UNITS SUPPLIES PRIOR TO ROUGH-IN.
3. PROVIDE FINAL CONNECTION TO WALK-IN COOLER/FREEZER EVAPORATOR. VERIFY ALL REQUIREMENTS WITH WALK-IN COOLER/FREEZER MANUFACTURER PRIOR TO ROUGH-IN.
4. CONDUITS PENETRATING THE COOLER OR FREEZER BOXES SHALL HAVE MOISTURE SEALS.
5. WALK-IN COOLER/FREEZER LIGHT FIXTURES AND SWITCH PROVIDED WITH COOLER/FREEZER. VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN.
6. PROVIDE FINAL CONNECTION TO THE WALK-IN COOLER/FREEZER CONDENSING UNIT. VERIFY ALL REQUIREMENTS WITH THE MANUFACTURER PRIOR TO ROUGH-IN. INTERLOCK WITH ASSOCIATED EVAPORATOR PER THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
7. J-BOX FOR GAS WATER HEATER "GWH-1". COORDINATE LOCATION WITH PLUMBING CONTRACTOR.
8. CONNECT J-BOX TO EXHAUST SYSTEM INTERLOCK BOX. SEE MANUFACTURER'S CONTROL WIRING DIAGRAM. LIGHTS & FANS SWITCH FURNISHED WITH HOOD.
9. FOR EXHAUST SYSTEM WIRE INTERLOCK BOX REF. MANUFACTURERS CONTROL WIRING DIAGRAM.
10. J-BOX FOR ICE MAKER. PROVIDE INTERCONNECTION BETWEEN THE ICE MAKER AND THE REMOTE CONDENSING UNIT ON THE ROOF, VERIFY MOUNTING HEIGHT AND WIRING REQUIREMENT WITH EQUIPMENT SUPPLIED PRIOR TO INSTALLATION.
11. TO HOOD EXHAUST FANS CTL. PNL. BELOW AT THE HOOD, SEE KITCHEN HOOD DWGS. FOR CONNECTION DETAILS.
12. MAU-1 (SF-1) TO EXHAUST FANS CTL. PNL. BELOW AT THE HOOD, SEE KITCHEN HOOD DWGS. FOR CONNECTION DETAILS.
13. PROVIDE TELEPHONE MOUNTING BOARD "T.M.B." WITH #6 CU. GND., TO COMPLY WITH NEC 800-100. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. EXTEND EXISTING CONDUIT FROM EXISTING BUILDING TELEPHONE TERMINAL CABINET TO NEW T.M.B. LOCATION.
14. EXISTING PANEL 'MP' 120/208V, 3PH, 4W, 400A M.C.B. (V.I.F.)
15. NEW PANEL 'A' 120/208V, 3PH, 4W, 225A RATED. E.C. TO ROUTE TO THE EXISTING ELEC. PANEL 'MP' WITH 4#1/0 & 1#6 GRD, IN 2"C. TO NEW 150/3 C.B.
16. NEW PANEL 'B' 120/208V, 3PH, 4W, 225A RATED. E.C. TO ROUTE TO THE EXISTING ELEC. PANEL 'MP' WITH 4#1/0 & 1#6 GRD, IN 2"C. TO NEW 150/3 C.B.
17. OUTLET FOR CO2 SENSOR, COORDINATE LOCATION AND REQUIREMENT WITH MECHANICAL CONTRACTOR.
18. VERIFY LOCATION OF THE UNIT W/L.L. (LANDLORD).

LEGEND

- PASS AND SEYMPUR RECEPTACLE DUPLEX RECEPTACLE – 2 POLE, 3 WIRE, 20 AMP, 125 VOLT, NEMA 5-20R, MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED
- GFI DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTING CAPACITY– 2 POLE, 3 WIRE, 20 AMP, 125 VOLT, NEMA 5-20R, MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED
- WP GFI WEATHERPROOF DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTING CAPACITY – MOUNT 2'-0" (CENTERLINE) AFF UNLESS OTHERWISE NOTED
- GFI DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTING CAPACITY– 2 POLE, 3 WIRE, 20 AMP, 125 VOLT, NEMA 5-20R, MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED
- QUAD RECEPTACLE (2-DUPLEX RECEPTACLES IN THE SAME BOX), 20 AMP, 125 VOLT, NEMA 5-20R, MOUNT 1'-6" (CENTERLINE) AFF UNLESS OTHERWISE NOTED.
- DISCONNECT SWITCH – NUMBER OF POLES, AMPERE RATING, VOLTAGE, NEMA TYPE ENCLOSURE AS INDICATED – MOUNT 4'-6" AFF TO CENTERLINE OF HANDLE, OR AS NOTED.
- FUSED DISCONNECT SWITCH – NUMBER OF POLES, AMPERE RATING, FUSE SIZE, VOLTAGE, NEMA TYPE ENCLOSURE AS INDICATED – MOUNT 4'-6" A.F.F. TO CENTERLINE OF HANDLE OR AS NOTED.
- J JUNCTION BOX
- M EXHAUST FAN. SEE MECHANICAL DRAWINGS FOR MORE INFO
- TELEPHONE OUTLET BOX – MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED
- DATA OUTLET BOX (FEMALE RJ45 JACK W/CAT-5 NETWORKING CABLE)
- TELEPHONE/DATA SYSTEM OUTLET, 4" SQUARE BOX AND COVER PLATE, 3/4"C. TO CEILING SPACE UNLESS SHOWN WITH HOME RUN. MOUNT 1'-6" AFF UNLESS OTHERWISE NOTED
- WP PROVIDE WEATHER-PROOF COVER
- CLG. CEILING MOUNTED

ELECTRICAL SPECIFICATIONS

1. GENERAL: PROVIDE ALL MATERIALS AND LABOR FOR A COMPLETE ELECTRICAL SYSTEM.
2. ELECTRICAL SERVICE: MAKE ALL ARRANGEMENTS WITH POWER COMPANY AND INCLUDE ALL COSTS BY POWER COMPANY AND MATERIALS AND EQUIPMENT FOR INSTALLING THE ELECTRICAL SERVICE.
3. TELEPHONE SERVICE: MAKE ALL ARRANGEMENTS WITH LOCAL TELEPHONE COMPANY & PAY ALL CHARGES AND FEES FOR A NEW TELEPHONE SERVICE.
4. EXCAVATING AND BACKFILL: PROVIDE ALL EXCAVATING FOR UNDERGROUND CONDUITS. CONDUITS OUTSIDE THE BUILDING SHALL BE PROVIDED WITH 24" OF COVER. BACKFILL TO ORIGINAL COMPACTION.
5. OUTLET AND JUNCTION BOXES: A BOX SHALL BE PROVIDED AT EACH AND EVERY OUTLET LOCATION INDICATED ON THE DRAWINGS AND AS REQUIRED AT JUNCTIONS AND PULL POINTS. SWITCH, TELEPHONE AND RECEPTACLE BOXES SHALL BE USED WHERE MORE THAN ONE DEVICE IS TO BE INSTALLED IN A SINGLE LOCATION.
6. PULL BOXES: PULL BOXES SHALL BE PROVIDED IN LONG RUNS, OR WHERE EXCESS TURNS ARE ENCOUNTERED, AND ELSEWHERE AS REQUIRED BY CODE.
7. CONDUCTORS: ALL WIRES SHALL BE COPPER, TYPE THHN OR THWN RATED 600 VOLTS. NO WIRE SMALLER THAN NO. 12 SHALL BE USED FOR LIGHTING, CONVENIENT OUTLETS OR POWER OUTLETS. ALUMINUM WIRE SHALL NOT BE PERMITTED.
8. SPLICES AND TAPS: SPLICES AND TAPS SHALL BE MADE ONLY IN APPROVED BOXES APPROVED INDENTATION TYPE PRESSURE CONNECTORS INSTALLED WITH A CRIMP TOOL.
9. IDENTIFYING NAMEPLATE: EACH PANELBOARD, SAFETY SWITCH, TRANSFORMER, STARTER OR OTHER MAJOR ELECTRICAL ITEM OF EQUIPMENT SHALL BE IDENTIFIED WITH A PLASTIC ENGRAVED NAMEPLATE.
10. PANELBOARDS---GENERAL: THE MAKEUP OF THE PANELBOARDS SHALL BE AS INDICATED ON THE DRAWINGS. THE PANELBOARDS SHALL BE PROVIDED WITH FLUSH LOCKS, TYPED-IN CIRCUIT DIRECTORIES, AND NECESSARY TRIMS. PANELBOARD BUSSES SHALL BE COPPER. MULTI-POLE BREAKER SHALL BE ONE PIECE, COMMON TRIP WITH SINGLE HANDLE. PANELBOARDS SHALL BE RATED FOR 120/240 VOLT SERVICE. BUSSES SHALL BE COPPER AND BREAKERS SHALL BE RATED FOR 10,000 AMPERES SYMMETRICAL. GROUND BARS SHALL BE PROVIDED. PANELBOARDS SHALL BE SQUARE 'D', OR APPROVED EQUAL
11. SAFETY SWITCHES: SAFETY SWITCHES SHALL BE FURNISHED WITH RATINGS, NUMBER OF POLES, ETC. AS INDICATED, FUSED OR NONFUSED AS NOTED, G.E. TYPE TH ALL IN GENERAL PURPOSE ENCLOSURES. PROVIDE DISCONNECTS FOR EXTERIOR DEVICES. FUSED DISCONNECTS ON SERVICE SHALL LIMIT THE FAULT CURRENT TO THE COMPUTED AMPERAGE. NEMA 3R ENCLOSURES SHALL BE PROVIDED FOR SWITCHES LOCATED OUTSIDE. SWITCHES FOR MOTORS SHALL BE HORSEPOWER RATED. SWITCHES SHALL BE GENERAL ELECTRIC, SQUARE D, OR ITE.
12. MOTOR CONTROLLERS: FURNISH MAGNETIC STARTERS FOR ALL MOTORS, UNLESS PROVIDED AS PART OF PACKAGED EQUIPMENT. PROVIDE WITH HAND-OFF-AUTOMATIC FEATURE AND EXTRA CONTACTS FOR INTERLOCKING. CONTROLLERS MAY BE COMBINATION STARTER/ DISCONNECT SWITCH. CONTROLLERS SHALL BE TYPE SQUARE 'D' UNLESS OTHERWISE NOTED.
13. WIRING DEVICES: WIRING DEVICES SHALL BE SPECIFICATION GRADE, GROUNDING 6 TYPE, WHITE IN COLOR, OF THE TYPE AND CAPACITY REQUIRED. ISOLATED GROUND RECEPTACLES SHALL BE ORANGE WITH GROUNDING CONDUCTOR CONNECTED TO EQUIPMENT GROUNDING BAR IN ELECTRICAL PANEL. MANUFACTURER SHALL BE HUBBELL, BRYANT, GENERAL ELECTRIC, P AND S OR EQUAL.
14. LIGHTING FIXTURES: LIGHTING FIXTURES SHALL BE AS INDICATED ON THE DRAWINGS. ALL FIXTURES SHALL BE PROVIDED COMPLETE WITH LAMPS AND ACCESSORIES FOR MOUNTING. FIXTURES INDOORS SHALL HAVE THERMAL PROTECTION INTEGRAL WITH BALLAST. FIXTURES OUTDOORS SHALL BE SUITABLE FOR WET LOCATIONS. ALL BALLASTS SHALL BE OF THE ENERGY SAVING TYPE.
15. LAMPS: FLUORESCENT LAMPS SHALL BE T8 TYPE WITH ENERGY SAVING ELECTRIC BALLASTS. INCANDESCENT LAMPS SHALL BE RATED 120 VOLTS, INSIDE FROSTED.
16. WIRING DEVICES: WIRING DEVICES SHALL BE SPECIFICATION GRADE, GROUNDING 6 TYPE, WHITE IN COLOR, OF THE TYPE AND CAPACITY REQUIRED.
17. DEVICE PLATES: DEVICE PLATES SHALL BE OF THE SAME MANUFACTURER AS THE DEVICE AND SHALL BE STAINLESS STEEL.
18. FUSES: ALL FUSES INDICATED IN SAFETY SWITCHES SHALL BE DUAL ELEMENT TYPE FOR MOTORS AND CURRENT LIMITING TYPE FOR FEEDERS.
19. WIREWAYS: WIREWAYS SHALL BE ALL GALVANIZED, SIZES AS SHOWN, NEMA RATED. DERATE CONDUCTORS IN WIREWAY BY 50%.
20. GROUNDING: THE EXISTING GROUNDING SYSTEM SHALL COMPLY WITH ALL REQUIREMENTS OF NATIONAL ELECTRICAL CODE.
21. EQUIPMENT CONNECTIONS: ALL ELECTRICAL EQUIPMENT FURNISHED IN THE BUILDING CONTRACT SHALL BE ROUGHED-IN AND FULLY CONNECTED, INCLUDING ANY REQUIRED INTERCONNECTING WIRING.
22. TESTING: AFTER THE INSTALLATION OF THE ELECTRICAL SYSTEM HAS BEEN COMPLETED, THE CONTRACTOR SHALL CONDUCT OPERATING TESTS FOR ENGINEER'S APPROVAL. ALL EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE SPECIFICATIONS. TEST REPORTS SHALL BE PROVIDED FOR THE FOLLOWING:
    a. WIRE AND CABLE TESTS.
    b. GROUNDING SYSTEM TESTS.
    c. VOLTAGE & CURRENT READINGS FOR EACH FEEDER & MOTOR CIRCUIT.
    d. OPERATION OF RECEPTACLE CIRCUITS W/ASSOCIATED SWITCHING & CONTROLS.
    e. RUNNING OF MOTORS WITH DEMONSTRATION OF CONTROLS AND INTERLOCKS.
    f. CIRCUITS SHALL BE TESTED FOR CORRECT POLARITY AND GROUNDING.
23. ALL DUPLEX RECEPTACALES MOUNTED PER PLAN.
24. VERIFY MOUNTING HEIGHTS OF ALL RECEPTACLES WITH EQUIPMENT SUPPLIED PRIOR TO INSTALLATION.
25. PROVIDE HACR BREAKER IN PANELAND NEMA 3R NON-FUSED DISCONNECT AT HVAC UNITS.
26. ELECTRICAL CONTRACTOR TO PROVIDE CORD AND PLUS CONNECTIONS FOR EQUIPMENT AS REQUIRED.
27. COMPLETED INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, LOCAL CODES, AND THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
28. ELECTRICAL DESIGN HAS BEEN BASED ON THE INSTALLATION OF 75°C CONDUCTORS CONNECTED TO TERMINAL LUGS AND EQUIPMENT U.L. LISTED FOR A MINIMUM 75°C CONDUCTORS TERMINATED ON EQUIPMENT WITH A LOWER RATING (60°C) OR NO RATING SHOWN TO HAVE CONDUCTOR SIZE INCREASED TO CONFORM TO N.E.C. TABLE 310-16 AND U.L. NO. 489 REQUIREMENTS.
29. PANELBOARDS, DISCONNECT SWITCHES AND CONTRACTORS ARE TO BE "LISTED" AND "IDENTIFIED" AS RATED FOR A MINIMUM OF 75°C CONDUCTOR TERMINATION.
30. ALL CONDUIT INSTALLED INDOORS TO BE ELECTRICAL METALLIC TUBING (EMT), MINIMUM 1/2" AND CONDUCTORS TO BE A MINIMUM OF #12 THHN/THWN, COPPER UNLESS NOTED OTHERWISE. ALL POWER CONDUITS SHALL HAVE 2 #12 CONDUCTORS AND 1 #12 GROUND CONDUCTORS IN 1/2" CONDUIT, UNLESS NOTED OTHERWISE.
31. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A PULL WIRE.
32. ELECTRICAL CONTRACTOR TO INCLUDE GROUND WIRE IN ALL RACEWAYS. SIZE RACEWAYS AS NECESSARY TO COMPLY WITH N.E.C.
33. ELECTRICAL CONTRACTOR TO VERIFY EXACT PLACEMENT OF ALL DEVICES SHOWN ON THE ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, MECHANICAL AND PLUMBING DRAWINGS PRIOR TO FINAL PLACEMENT.

CLIENT LOGO

Hendrix House

REFLECT DESIGN GROUP
306 S NEW STREET
BETHLEHEM, PA 18015

2021.10.08

PROJECT:
HENDRIX HOUSE TENANT FIT-OUT

26 UNIVERSITY PLACE BLVD.
JERSEY CITY, NJ 07305

DATE: 10/08/2021
PROJECT NO.: 21-0026

REVISION	DATE

NOTES:

NOT FOR CONSTRUCTION

POWER PLAN

SCALE: AS NOTED

E-2.0

DRAWN BY: SAE
CHECKED BY: JM