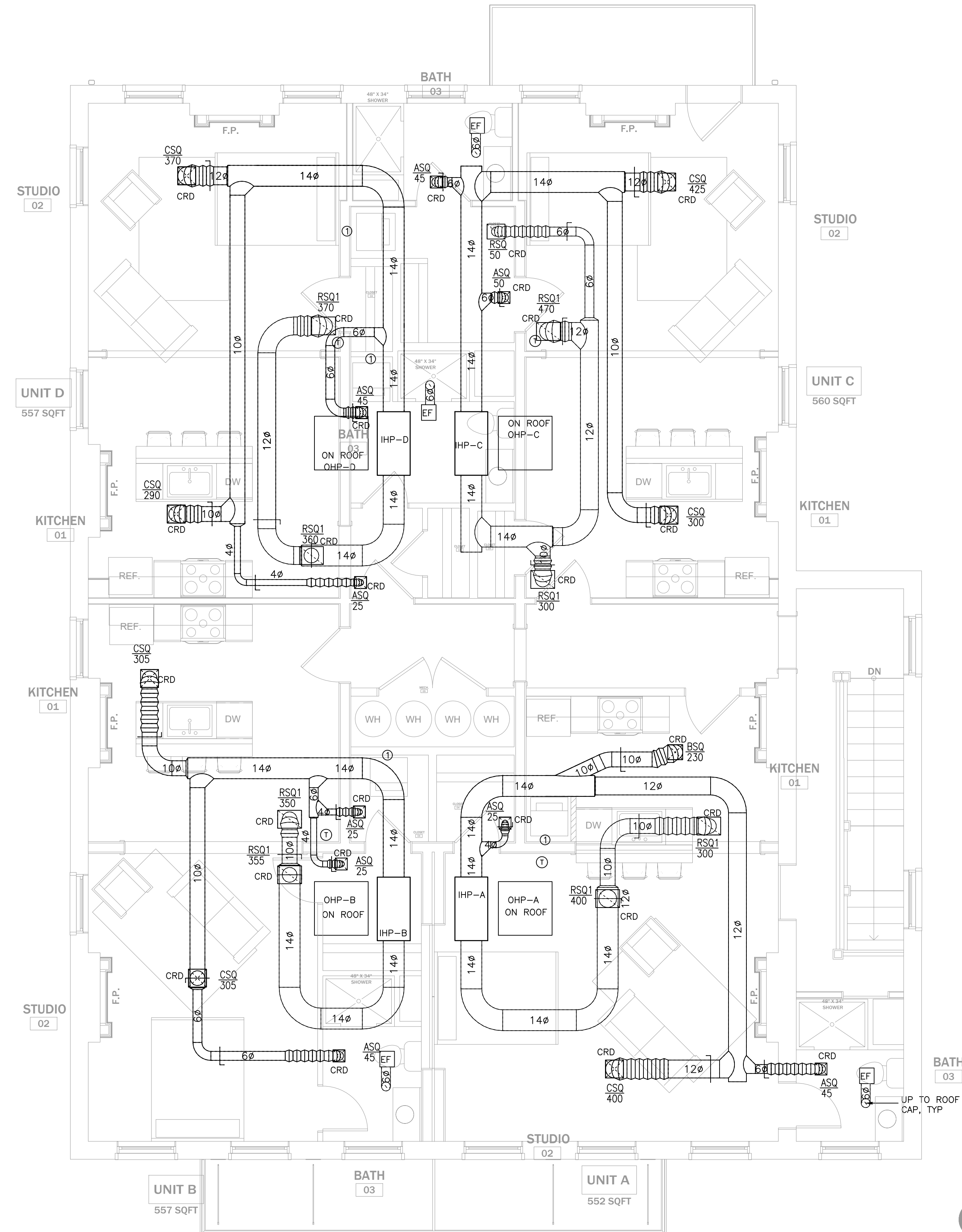


GENERAL CONSTRUCTION NOTES

1. INSTALL ROOF MOUNTED HVAC EQUIPMENT ON EQUIPMENT RAILS BY RPS OR EQ. REFRIGERANT LINE & CONTROL WIRING ROOF PENETRATIONS TO BE COVERED BY PIPE PORTAL SYSTEMS BY RPS OR EQ.
2. FIREPLACES WILL NOT BE USED.

BALLOONED CONSTRUCTION NOTES

1. VENT DRYER TO EXTERIOR PER CODE REQUIREMENTS & DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS. W/ DRYERBOX MODEL 350 & TERMINATION ON ROOF W/ ROOF CAP. 4" DIA.



1
M1.0

HVAC PLAN

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



5/13/20

HVAC PLAN

DRWN BY: JG
 CHKD BY:
 DATE: 4/22/20
 REVISIONS

JOB NO.
 2012
 SHEET NO.

M1.0

HVAC NOTES:

- ALL WORK SHALL BE PERFORMED PER THE LATEST EDITIONS OF NFPA 90A & 91, THE NATIONAL ELECTRICAL CODE, THE INTERNATIONAL MECHANICAL CODE AND ALL APPLICABLE STATE & LOCAL CODES & LATEST STATE AMENDMENTS. ALL PERMITS & FEES SHALL BE PAID BY THE HVAC CONTRACTOR.
- PLANS ARE DIAGRAMMATIC & SHOW THE GENERAL LOCATION OF THE EQUIPMENT & DUCTWORK. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS & DETAILS REGARDING BUILDING CONSTRUCTION. DRAWINGS ARE NOT TO BE SCALED & ALL DIMENSIONS & LOCATIONS SHALL BE VERIFIED AT THE BUILDING SITE BEFORE FABRICATION & EQUIPMENT/DUCT PURCHASES. REPORT ANY ERRORS FOUND WITH THESE PLANS TO NOTIFY ARCHITECT IMMEDIATELY PRIOR TO BID FOR RESOLUTION & CLARIFICATION. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT WITH GENERAL CONTRACTOR & ARCHITECT. CLOSELY COORDINATE ALL WORK WITH OTHER TRADES. REVIEW THE ARCHITECTURAL PLANS FOR MOUNTING HEIGHTS & ELEVATIONS REGARDING LOUVERS, GRILLES, LIGHTS OR OTHER CEILING MOUNTED ITEMS. IF THE HVAC CONTRACTOR INSTALLS HIS WORK PRIOR TO COORDINATING WITH ALL OTHER TRADES OR AS TO CAUSE ANY INTERFERENCE WITH WORK OF OTHER TRADES, HE SHALL MAKE NECESSARY CHANGES TO THE WORK OR CORRECT THE CONDITION WITHOUT EXTRA CHARGE. PROVIDE DUCT OFFSETS, DUCT ELEVATION CHANGES & DUCT REROUTING AS NEEDED TO AVOID CONFLICTS & INTERFERENCES. GENERAL CONTRACTOR TO PROVIDE FRAMED OPENINGS REQUIRED FOR DUCT/GRILLE/DIFFUSER/EQUIPMENT INSTALLATION THRU FLOOR & CEILING JOISTS. NOTIFY ARCHITECT/ENGINEER OF MAJOR CONFLICTS. THE HVAC CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE DRAWINGS TO DETERMINE THE QUANTITY OF ALL MECHANICAL ITEMS REQUIRED. THE SYMBOLS SHOWN ON SCHEDULES DEFINE THE TYPE OF EQUIPMENT & NOT THE QUANTITY. HVAC CONTRACTOR TO PROVIDE/INSTALL/COORDINATE ANY/ALL ADDITIONAL STRUCTURAL SUPPORTS/STEEL NEEDED FOR EQUIPMENT/DUCT, ETC., INSTALL UNDER THE HVAC SCOPE. HVAC CONTRACTOR TO INVESTIGATE AVAILABLE BUILDING STRUCTURE WITH GENERAL CONTRACTOR AND/OR STRUCTURAL ENGINEER AND/OR METAL BUILDING VENDOR (IF METAL BUILDING) FOR ADEQUACY TO SUPPORT ANY/ALL OF THE PROPOSED HVAC EQUIPMENT/DUCTWORK, ETC., OR OTHER ADDITIONAL EQUIPMENT SUPPLIED BY OTHERS BUT WILL BE INSTALLED BY THE HVAC CONTRACTOR PRIOR TO BID.
- ALL DUCTWORK & ACCESSORIES SHALL BE FABRICATED, SUPPORTED & INSTALLED PER ALL APPLICABLE ITEMS & REQUIREMENTS IN THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 2005 EDITION, FOR 1" W.G., & SEAL CLASS A. SUPPORT ANY EXTERIOR DUCT PER THE LATEST SMACNA INDUSTRIAL ROUND & RECTANGULAR DUCT STANDARDS. SEAL ALL LONGITUDINAL, CIRCUMFERENTIAL & FITTING GORES WITH DUCT SEALANT. INSULATED FLEX FOR RUN-OUTS ONLY TO BE HART & COOLEY F216, R6.0 OR EQUAL. FLEX DUCT SIZE SHALL BE SAME AS TAKE-OFF DUCT SIZE. INSTALL VOLUME DAMPERS AT ALL SUPPLY AIR DEVICES, OUTSIDE AIR DUCTS & RETURN AIR DEVICES IF INDICATED.
- INSULATE ALL METAL DUCTWORK CONVEYING CONDITIONED AIR FROM HVAC EQUIPMENT (EXCLUDING INSULATED FLEX & DUCT WITHIN CONDITIONED SPACE) WITH 1 INCH THICK (RS MIN.) 1" THICK, REFLECTIX BIG BUBBLE DUCT INSULATION OR EQUAL. SECURELY TAPE THE LINEAR AND CIRCUMFERENCE SEAMS WITH A UL 181 APPROVED TAPE (GOAL IS AN AIR-TIGHT, SMC SEAM SEAL). DO NOT LEAVE ANY EXPOSED DUCT OR SPACE WHERE AIR CAN ENTER BETWEEN THE DUCT AND THE REFLECTIX. WHERE INSULATION IS REQUIRED ON EXTERIOR DUCT, PROVIDE/INSTALL WATERPROOF INSULATION SYSTEM W/ VAPOR BARRIER, R8 MIN.
- DUCT SIZES MAY BE ALTERED AS LONG AS THE SAME CROSS SECTIONAL AREA IS MAINTAINED IN ORDER TO AVOID INTERFERENCES & CONFLICTS. COORDINATE FINAL DUCT LAYOUT WITH ALL OTHER TRADES & STRUCTURAL DRAWINGS & STRUCTURAL SHOP DRAWINGS PRIOR TO HVAC PROCUREMENT TO AVOID REWORK, INTERFERENCES & CONFLICTS.
- INSTALL ALL MECHANICAL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PROVIDE/INSTALL ALL COMPONENTS WHETHER SPECIFICALLY INDICATED ON DRAWINGS OR NOT THAT ARE NEEDED TO RESULT IN FULLY FUNCTIONAL HVAC SYSTEMS. INSTALL TRAPPED CONDENSATE DRAINS ON UNITS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE DRAIN & SPILL ON GRADE OR TO PLUMBING DRAIN OR ROOF DRAIN (NOT EMERGENCY ROOF DRAIN) WITH ELBOW TURNED DOWN. DRAIN LINE SHALL BE SCH 40 PVC WITH SOLVENT WELD JOINTS & WITH A 3 INCH MIN. CONDENSATE TRAP AT THE UNIT DRAIN PAN CONNECTION. SEE DETAIL THIS SHEET. INSULATE DRAIN WITH 0.5 INCH THICK ARMAFLEX OR EQ. ADJUST ELEVATIONS OF EQUIPMENT REQUIRING CONDENSATE DRAINS TO ENSURE GRAVITY DRAINAGE. OTHERWISE PROVIDE/INSTALL CONDENSATE PUMPS. IF CONDENSATE PUMPS ARE INSTALLED COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR. PROVIDE CONTACTORS FOR FANS/EQUIPMENT IF NEEDED. DO NOT SPILL DRAINS DIRECTLY TO ROOF.
- REGARDING HVAC EQUIPMENT, DIFFERENT MANUFACTURERS WITH EQUAL OR BETTER PERFORMANCE OR CONSTRUCTION CHARACTERISTICS WILL BE CONSIDERED BY THE HVAC ENGINEER FOR ALL HVAC EQUIPMENT EXCEPT HEATING AND COOLING EQUIPMENT. HEATING & COOLING EQUIPMENT SHALL BE BY CARRIER, TRANE, JCI (YORK) MITSUBISHI OR SCHEDULED EQUIPMENT ON HVAC DRAWINGS. ALL EQUIPMENT ALTERNATES DESIRED BY THE HVAC CONTRACTOR SHALL BE DOCUMENTED AND SENT TO THE ARCHITECT 10 BUSINESS DAYS PRIOR TO BID DATE. HVAC CONTRACTOR TO VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS W/ ELECTRICAL CONTRACTOR PRIOR TO EQUIPMENT PROCUREMENT.
- ALL 90 DEGREE RECTANGULAR ELBOWS SHALL HAVE TURNING VANES.
- PROVIDE PROGRAMMABLE COMMERCIAL AUTO CHANGEOVER TYPE THERMOSTAT. CONTROL WIRING SHALL BE 18 GAUGE THERMOSTAT CABLE. MOUNT THERMOSTAT 4'-0" ABOVE FINISHED FLOOR.
- ALL DUCT DIMENSIONS ARE CLEAR INSIDE DIMENSIONS.
- ALL SYSTEMS & AIRFLOWS SHALL BE ADJUSTED & BALANCED AFTER COMPLETE INSTALLATION & WITH ALL EXHAUST FANS ENERGIZED.
- FILTERS SHALL BE LOCATED INSIDE AIR HANDLERS & SHALL BE DISPOSABLE TYPE. INSTALL CLEAN FILTERS AT COMPLETION OF ALL CONSTRUCTION.
- PROVIDE FLEXIBLE CONNECTIONS TO ALL AIR HANDLING EQUIPMENT.
- PROVIDE SPACING BETWEEN/AROUND ALL HVAC EQUIPMENT TO ALLOW MAINTENANCE CLEARANCES AND FREE AIR FLOW.
- REFER TO ARCHITECTURAL DRAWINGS, ELECTRICAL LIGHTING PLANS & REFLECTED CEILING PLANS FOR FINAL LOCATIONS OF CEILING MOUNTED AIR DEVICES & EQUIPMENT.
- ALL ALTERNATES DESIRED BY THE HVAC CONTRACTOR SHALL BE DOCUMENTED AND SENT TO THE ARCHITECT 10 BUSINESS DAYS PRIOR TO BID DATE.
- REFRIGERANT PIPING (IF NEEDED) SHALL BE "ACR" WITH 15% SILVER SOLDER JOINTS. INSULATE SUCTION LINE WITH 0.75 INCH THICK ARMAFLEX INSULATION. IF HVAC EQUIPMENT VENDOR REQUIRES DIFFERENT INSULATION THICKNESS/AND OR REQUIREMENTS COMPLY WITH THE VENDOR REQUIREMENTS. PURGE TUBING WITH DRY NITROGEN WHILE BRAZING. INSULATION JOINTS SHALL BE BUTTED & GLUED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE ZOOM LOCK BRAZE-FREE FITTINGS BY PARKER HANIFIN CORPORATION ARE AN ACCEPTABLE ALTERNATIVE IF APPROVED BY THE HVAC EQUIPMENT MANUFACTURER. INSULATE & INSTALL TUBING & INSULATION PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. IF THESE SPECIFICATIONS CONFLICT WITH VENDOR REQUIREMENTS INSTALL IN ACCORDANCE WITH VENDOR REQUIREMENTS.
- IF HVAC CONTRACTOR DESIRES TO VALUE ENGINEER THE DUCT SYSTEM(S) DESIGN, THE HVAC CONTRACTOR SHALL BEAR ALL COSTS REQUIRED TO REVISE ALL AFFECTED CONSTRUCTION DOCUMENTS FOR RESUBMITTAL TO ALL APPROVING PARTIES. ANY DESIRE TO VALUE ENGINEER SHALL BE DOCUMENTED VIA A FORMAL RFI DOCUMENT. HVAC CONTRACTOR TO COORDINATE PROPOSED CHANGES WITH ALL OTHER AFFECTED TRADES.
- THE MECHANICAL/HVAC CONTRACTOR SHALL COORDINATE & CONFIRM ALL ELECTRICAL REQUIREMENTS & SPECIFICATIONS WITH THE ELECTRICAL CONTRACTOR IN WRITING ONCE THE PROJECT HAS BEEN AWARDED. ANY DIFFERENCES IN ELECTRICAL LOADS FOR EQUIPMENT OTHER THAN THE DESIGN BASIS SHALL NOT CONSTITUTE CHANGE ORDERS FOR ELECTRICAL CHANGES REQUIRED EVEN IF ENGINEER APPROVES SUBMITTALS.
- IF HVAC CONTRACTOR SELECTS EQUIPMENT OTHER THAN THE BRANDS/MODELS SPECIFIED, THEY WILL BE RESPONSIBLE FOR PAYING FOR ANY HVAC DRAWING REVISIONS REQUIRED FOR ANY REASON DUE TO DIFFERENCES IN THE HVAC CONTRACTORS DESIRED EQUIPMENT, AS APPROVED BY THE ENGINEER, VS THE HVAC EQUIPMENT USED AS THE DESIGN BASIS ON THE HVAC BID DRAWINGS. IF THE HVAC EQUIPMENT INDICATED ON DRAWINGS HAS BEEN SUPERCEDED THE HVAC CONTRACTOR SHALL NOTIFY THE ENGINEER OF THIS PRIOR TO BID.
- IF NEEDED, ADJUST ITEMS SUCH AS DIP SWITCHES ON AIR HANDLERS, ETC., TO ACHIEVE PROPER AIR FLOW CHARACTERISTICS PER MANUFACTURERS INSTALLATION INSTRUCTIONS. ALSO PROGRAM/ADJUST VFDs WHERE NEEDED TO PROHIBIT COIL FROM FREEZING AS DIRECTED BY MANUFACTURER.
- HVAC CONTRACTOR MUST VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS/SPECIFICATIONS W/ ELECTRICAL CONTRACTOR & GENERAL CONTRACTOR PRIOR TO HVAC EQUIPMENT PROCUREMENT.
- ROOF CAPS TO BE CROWN PRODUCTS 350 SERIES OR EQ. EXCEPT DRYER ROOF CAP. DRYER ROOF CAP TO BE CROWN MODEL 350-D W/ ROUND COLLAR IN BOTTOM & GRAVITY DAMPER. WALL CAPS TO BE HOODED CROWN MODEL 349 OR EQUAL.
- MECHANICAL CONTRACTOR SHALL TRAIN OWNER ON OPERATION OF ALL HVAC SYSTEMS & HVAC CONTROLS. DOCUMENT TRAINING VIA FORMAL LETTER OR EMAIL LISTING THE SPECIFIC HVAC INFORMATION COVERED IN THE TRAINING.

INDOOR HEAT PUMP SCHEDULE									
MARK	MFG./MODEL NO.	COOLING, BTUH, NOM	HEATING, BTUH, NOM	STRIP, KW, NOM	CFM	ELEC.	MAX FUSE	MCA	MOTOR HP
IHP-A,B,C,D	CARRIER FB4CNP024	24,000	24,000	5.0/3.8	800	208/230/1/60	30/30	208/230	26.0/28.4

PROVIDE MATCHED COOLING COILS, SINGLE PT ELECTRICAL CONNECTION, LINE SETS & REFRIGERATION LONG LINE SET SPECIALTIES IF NEEDED PER MANUFACTURERS RECOMMENDATIONS. INSTALL LARGEST REFRIGERANT LINES ALLOWED BY MANUFACTURER FOR LONG LINE SET CRITERIA.

OUTDOOR HEAT PUMP SCHEDULE									
MARK	MFG./MODEL NO.	COOLING, BTUH, NOM	HEATING, BTUH, NOM	MAX FUSE	MCA	ELEC.	SEER	EER	HSPF
OHP-A,B,C,D	CARRIER 25HCE424	24,000	24,000	25	14.2	208/230/1/60	14	11.5	8.2

EXHAUST FAN SCHEDULE							
MARK	MFG./MODEL NO.	CFM NOM.	IN. S.P.	AMPS	ELEC.	WATTS	OPTIONS/ACCESSORIES
EF	GREENHECK SP-A50	50	.125	.31	115/60/1	16	CEILING RADIATION DAMPER, ROOF CAP & BACKDRAFT DAMPER

INTERLOCK WITH LIGHT SWITCHES.

DIFFUSER, GRILLE, AND REGISTER SCHEDULE

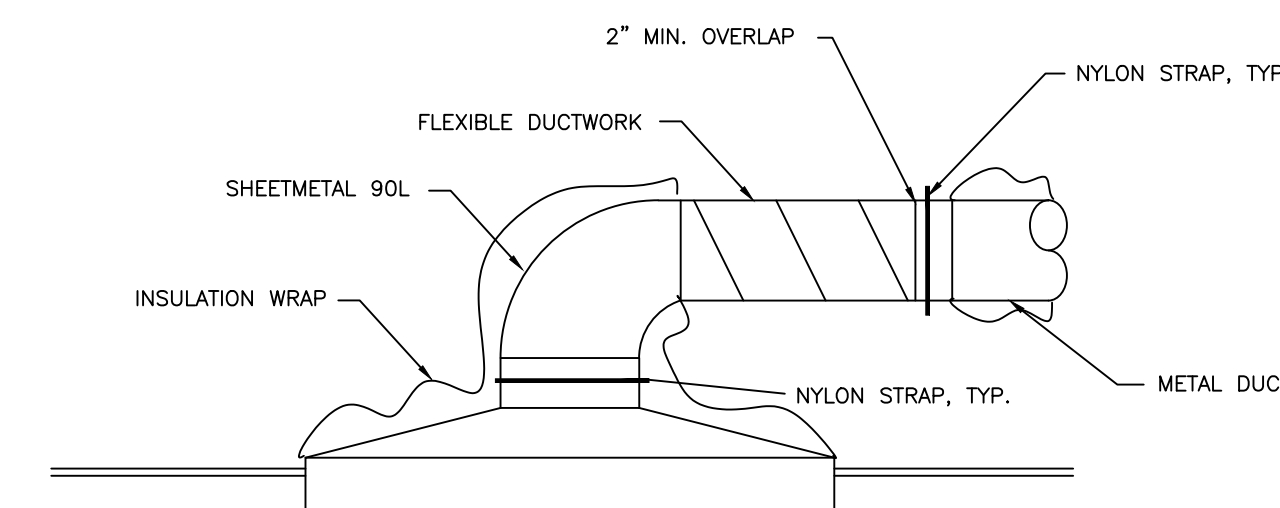
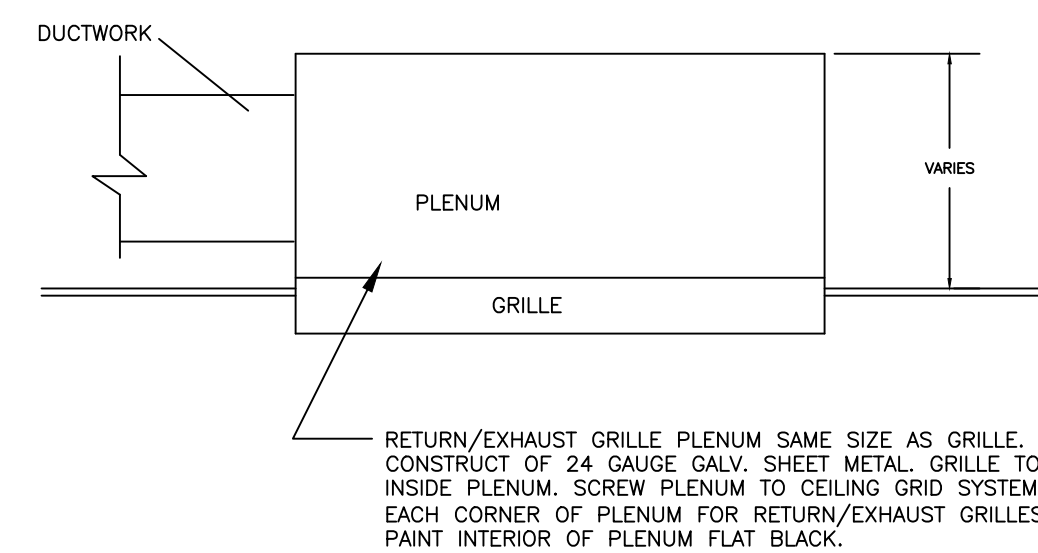
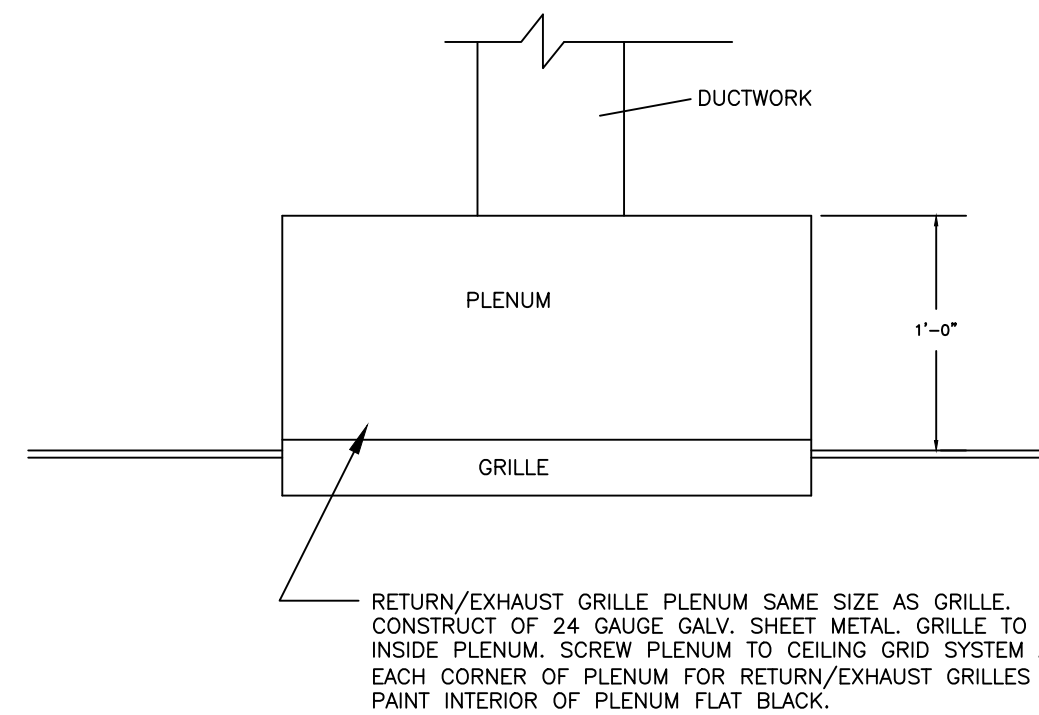
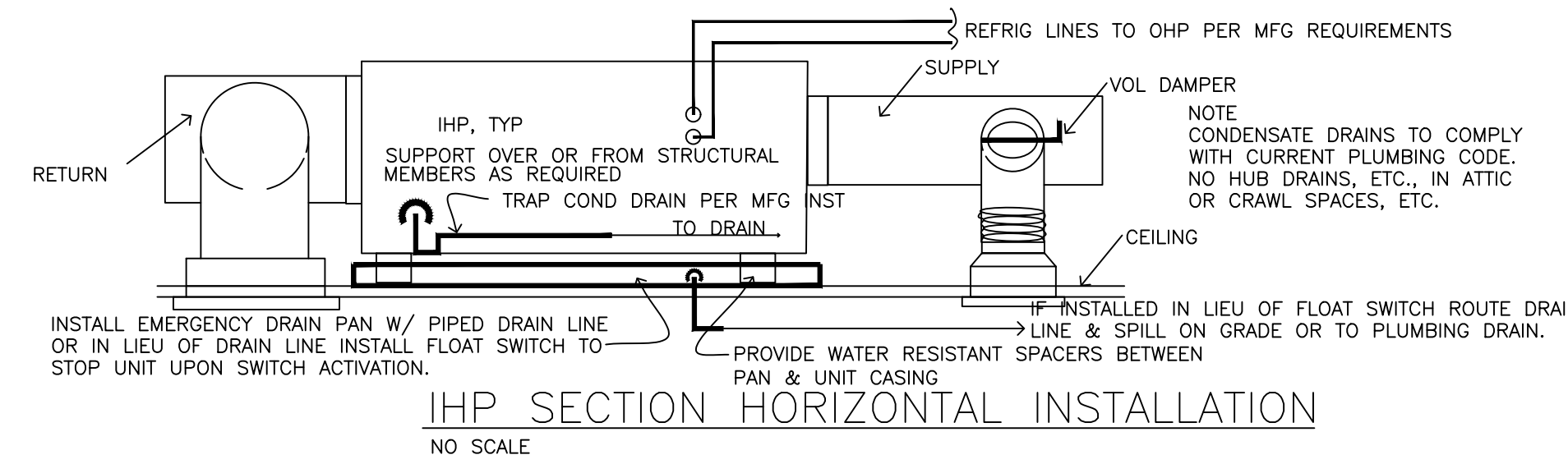
CALLOUT	AIRFLOW RANGE (CFM)	FACE SIZE (IN)	MODEL
ASQ	0 - 130	8x8	TITUS 300RL 6X6
BSQ	131 - 250	10x10	TITUS 300RL 8X8
CSQ	251 - 425	12x12	TITUS 300RL 10X10
RSQ	0 - 200	12x10	TITUS 350RL 10X8
RSQ1	0 - 500	16x12	TITUS 350RL 14X10

PROVIDE FACTORY INSULATED BOOTS WHERE POSSIBLE. NECK SIZE SAME AS RUNOUT SIZE. PROVIDE PLASTER RINGS FOR DRYWALL CEILINGS. OR EQUAL VENDORS.

HVAC LEGEND

- ☒ SUPPLY
- ☒ RETURN
- ▷ TRANSITION
- ▬ VOLUME DAMPER
- ⊕ THERMOSTAT
- A/300 DIFFUSER CFM
- CRD CEILING RADIATION DAMPER GREENHECK CRD-1 OR EQ

DESIGN CONDITIONS	
INDOOR	
SUMMER	75°F, 50%RH
WINTER	70°F



GREENCO of Augusta, Inc.
Consulting Engineering
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Harlem, GA 30814
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ARCHITECTS
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RENOVATION @ 1800 BROAD
 H. USRY, J. MORRIS, T. SCHUETZ
 1800 BROAD STREET
 AUGUSTA, GA 30901



HVAC NOTES & SCHEDULES

DRWN BY: JG
CHKD BY:
DATE: 4/22/20
REVISIONS

JOB NO.
2012
SHEET NO.

M2.0

SECTION 23 05 03
 PIPES AND TUBES FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

- 1.1 SUMMARY
 A. Section Includes: Pipe and pipe fittings for the following systems:
 1. Equipment drains and over flows.
 2. Refrigerant piping.
 3. Unions, flanges, and couplings.
- 1.2 REFERENCES
 B. American Society of Mechanical Engineers:
 1. ASME B16.3 - Malleable Iron Threaded Fittings.
 2. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
 3. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 4. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
 5. ASME B31.5 - Refrigeration Piping.
 6. ASME B31.9 - Building Services Piping.
 B. American Society for Testing and Materials:
 1. ASTM B32 - Standard Specification for Solder Metal.
 2. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
 3. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).
 4. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
 C. American Welding Society:
 1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
 2. AWS D11.1 - Structural Welding Code - Steel.
- 1.3 SYSTEM DESCRIPTION
 A. Where more than one piping system material is specified, provide compatible system components and joints. Provide flanges, union, and couplings at locations requiring servicing.
 B. Provide unions, flanges, and couplings downstream of valves and at equipment or apparatus connections.
 C. Provide non-conducting dielectric connections whenever joining dissimilar metals in open systems.
 D. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
- 1.4 SUBMITTALS
 A. Product Data: Submit data on pipe materials and fittings. Submit manufacturers catalog information.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 A. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.
 B. Protect piping from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system. Protect.
 C. Maintain charge of refrigeration components until installation in piping system.
- 1.6 FIELD MEASUREMENTS
 A. Verify field measurements prior to fabrication.
- PART 2 PRODUCTS
 2.1 EQUIPMENT DRAINS AND OVERFLOWS
 A. Copper Tubing: ASTM B88, Type M, hard drawn.
 1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
 2. Joints: Solder, lead free, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F (220 to 280 degrees C).
 B. PVC Pipe: ASTM D1785, Schedule 40.
 1. Fittings: ASTM D2466 or ASTM D2467, PVC.
 2. Joints: ASTM D2855, solvent weld.
- 2.2 REFRIGERANT PIPING
 A. Copper Tubing: ASTM B280, Type ACR hard drawn or annealed.
 1. Fittings: ASME B16.22 wrought copper.
 2. Joints: Braze, AWS A5.8 BCUIP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.
- 2.3 UNIONS, FLANGES, AND COUPLINGS
 A. Unions for Pipe 2 inches (50 mm) and Smaller:
 1. Ferrous Piping: 150 psig malleable iron, threaded.
 2. Copper Pipe: Bronze, soldered joints.
 B. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- PART 3 EXECUTION
 3.1 PREPARATION
 A. Ream pipe and tube ends. Remove burrs.
 B. Remove scale and dirt on inside and outside before assembly.
 C. Prepare piping connections to equipment with flanges or unions.
 D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
- 3.2 INSTALLATION
 A. Install refrigerant in accordance with ASME B31.5.
 B. Route piping parallel to building structure and maintain gradient.
 C. Install piping to conserve building space, and not interfere with use of space.
 D. Group piping whenever practical at common elevations.
 E. Sleeve pipe passing through partitions, walls and floors.
 F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
 G. Provide access where valves and fittings are not accessible.
 H. Provide unions at all valves except in refrigerant systems.
 I. Slope piping and arrange systems to drain at low points.
 J. Arrange refrigeration piping to return oil to compressor. Provide traps and loops in piping, and where necessary provide double risers.
 K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.
 L. Insulate piping; refer to drawing notes.
- END OF SECTION

SECTION 23 05 29
 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT AND FIRESTOPPING

PART 1 GENERAL

- 1.1 SUMMARY
 A. Section Includes:
 1. Pipe hangers and supports.
 2. Hanger rods.
 3. Flashing.
 4. Sleeves.
 5. Formed steel channel.
 6. Equipment bases and supports.
- B. Related Sections:
 1. Section 230503 - Pipes and Tubes: Execution requirements for placement of hangers and supports specified by this section.
- 1.2 REFERENCES
 A. American Society of Mechanical Engineers:
 1. ASME B31.5 - Refrigeration Piping.
 2. ASME B31.9 - Building Services Piping.
 B. American Society for Testing and Materials:
 1. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
 2. ASTM E119 - Method for Fire Tests of Building Construction and Materials.
 3. ASTM E814 - Test Method of Fire Tests of Through Penetration Firestops.
 4. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
 C. American Welding Society:
 1. AWS D11.1 - Structural Welding Code - Steel.
 D. Manufacturers Standardization Society of the Valve and Fittings Industry:
 1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
 2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
 3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
 E. Underwriters Laboratories Inc.:
 1. UL 263 - Fire Tests of Building Construction and Materials.
 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
 3. UL - Fire Resistance Directory.
- 1.3 DELIVERY, STORAGE, AND HANDLING
 A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
 B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- PART 2 PRODUCTS
 2.1 PIPE HANGERS AND SUPPORTS
 A. Manufacturers:
 1. Carpenter & Paterson Inc.
 2. Grinnell
 3. Eicen
 B. Refrigerant Piping:
 1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch (13 to 38 mm): Malleable iron or Carbon steel, adjustable swivel, split ring.
 2. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 3. Wall Support for Pipe Sizes 3 inches (75 mm) and Smaller: Cast iron hook.
 4. Vertical Support: Steel riser clamp.
 5. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 6. All Copper Pipe Supports: Copper-plated.
- 2.2 ACCESSORIES
 A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.
- 2.3 FLASHING
 A. Metal Flashing: 26 gage thick galvanized steel.
 B. Lead Flashing:
 1. Waterproofing: 5 lb./sq. ft sheet lead
 2. Soundproofing: 1 lb./sq. ft sheet lead.
- 2.4 SLEEVES
 A. Sleeves for Pipes through Non-fire Rated Floors: 18 gage thick galvanized steel.
 B. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe galvanized steel.
 C. Sleeves for Round Ductwork: Galvanized steel.
 D. Sleeves for Rectangular Ductwork: Galvanized steel.
 E. Sealant: Acrylic except at fire barrier partitions and rated fire walls. Install sealants to continue fire ratings. Seal with U.L. listed firestopping sealant system where required.
- 2.5 FORMED STEEL CHANNEL
 A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.
- PART 3 EXECUTION
 3.1 EXAMINATION
 A. Verify openings are ready to receive sleeves.
- 3.2 PREPARATION
 A. Obtain permission from Architect before drilling or cutting structural members.
- 3.3 INSTALLATION - PIPE HANGERS AND SUPPORTS
 A. Support horizontal piping as scheduled.
 B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
 C. Place hangers within 12 inches of each horizontal elbow.
 D. Use hangers with 1-1/2 inch minimum vertical adjustment.
 E. Support vertical piping at every floor.
 F. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
 G. Support riser piping independently of connected horizontal piping.
 H. Provide copper plated hangers and supports for all copper piping.
 I. Design hangers for pipe movement without disengagement of supported pipe.
 J. Prime coat exposed steel hangers and supports. Hangers and supports located in pipe shafts and suspended ceiling spaces are not considered exposed.
 K. Provide clearance in hangers and from structure and other equipment for installation of insulation.
 L. Provide 18 gauge galvanized shields 12 inches long for all insulated piping at supports.
- 3.4 INSTALLATION - EQUIPMENT BASES AND SUPPORTS
 A. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
 B. Construct supports of steel members or formed steel channel. Brace and fasten with flanges bolted to structure.
 C. Provide rigid anchors for pipes after vibration isolation components are installed.
- 3.5 INSTALLATION - HVAC DUCTWORK
 A. Install ductwork supports per SMACNA HVAC Duct Construction Standards Metal and Flexible 2005.
- 3.6 INSTALLATION - FLASHING
 A. Provide flexible flashing and metal Counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.
 B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked 1 inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.
- 3.7 INSTALLATION - SLEEVES
 A. Exterior watertight entries: Seal with mechanical sleeve seals.
 B. Set sleeves in position in forms. Provide reinforcing around sleeves.
 C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
 D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
 E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing or firestopping insulation (if fire rated) and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- 3.8 SCHEDULES

PIPE HANGER SPACING

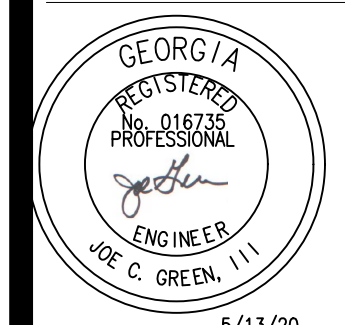
PIPE SIZE	MAX. HANGER SPACING	DIAMETER
Inches (mm)	Feet (m)	Inches (mm)
1/2 (12)	7 (2.1)	3/8 (9)
3/4 (20)	7 (2.1)	3/8 (9)
1 (25)	7 (2.1)	3/8 (9)
1-1/4 (32)	7 (2.1)	3/8 (9)
1-1/2 (38)	9 (2.7)	3/8 (9)
2 (50)	10 (3)	3/8 (9)
2-1/2 (65)	11 (3.4)	1/2 (13)
3 (75)	12 (3.7)	1/2 (13)
4 (100)	14 (4.3)	5/8 (15)
PVC (All Sizes)	6 (1.8)	3/8 (9)

END OF SECTION



ARCHITECTS
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RENOVATION @ 1800 BROAD
 H. USRY, J. MORRIS, T. SCHUETZE
 1800 BROAD STREET
 AUGUSTA, GA 30901



5/13/20

HVAC SPECIFICATIONS

DRWN BY: JG
 CHKD BY:
 DATE: 4/22/20
 REVISIONS

JOB NO.
 2012
 SHEET NO.

M2.1