### DIVISION 20: MECHANICAL AND ELECTRICAL GENERAL REQUIREMENTS

#### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
- A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT. INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.
- B. WHERE PARAGRAPHS OF THIS SECTION CONFLICT WITH SIMILAR PARAGRAPHS OF DIVISION 01, THE MORE
- STRINGENT SPECIFICATION REQUIREMENTS SHALL PREVAIL. C. THIS SECTION SHALL APPLY TO THE FOLLOWING DIVISIONS:
- 1. DIVISION 21 FIRE SUPPRESSION
- 2. DIVISION 22 PLUMBING
- 3. DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)
- 4. DIVISION 26 ELECTRICAL
- 5. DIVISION 27 COMMUNICATIONS

6. DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

#### 1.2 SUMMARY

- A. PERFORM WORK AND PROVIDE MATERIAL AND EQUIPMENT AS SHOWN ON THE DRAWINGS. AS SPECIFIED AND IN ACCORDANCE WITH THIS SECTION. COMPLETELY COORDINATE WORK OF THIS DIVISION WITH WORK OF OTHERS AND PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION.
- B. DRAWINGS AND SPECIFICATIONS FORM COMPLIMENTARY REQUIREMENTS. PROVIDE WORK SPECIFIED AND NOT SHOWN, WORK SHOWN AND NOT SPECIFIED AS THOUGH EXPLICITLY REQUIRED BY BOTH. ALTHOUGH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE
- C. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION. PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH SPECIFICATIONS, DRAWINGS, ADDENDA AND CHANGE ORDERS, ALL OF WHICH ARE PART OF CONTRACT DOCUMENTS.
- D. EXAMINE DRAWINGS AND OTHER SECTIONS OF SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK OF
- E. OBTAIN CONSTRUCTION STANDARDS, IF ANY, FROM BUILDING OWNER, AND ENSURE ALL WORK COMPLIES.
- 1.3 DEFINITIONS
- A. AS USED IN ALL SECTIONS, "PROVIDE" MEANS "FURNISH AND INSTALL." "FURNISH" MEANS "TO PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT," AND "INSTALL" MEANS "TO UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT. 'POS' MEANS PROVIDED UNDER OTHER SPECIFICATION SECTION. "ARCHITECT" MEANS THE "PRIME DESIGN CONSULTANT." IF R.G. VANDERWEIL ENGINEERS, LLP IS NOT THE PRIME DESIGN CONSULTANT, THE ARCHITECT MAY AUTHORIZE R.G. VANDERWEIL ENGINEERS, LLP TO ACT ON THE ARCHITECT'S BEHALF IN MATTERS CONCERNING THE ALL SECTIONS OF SPECIFICATIONS.
- 1.4 CONTRACT DOCUMENTS
- A. REFER TO ARCHITECTURAL, FIRE PROTECTION, PLUMBING, HVAC, ELECTRICAL, STRUCTURAL, TELE/DATA AND ALL OTHER DRAWINGS AND OTHER SECTIONS THAT INDICATE TYPES OF CONSTRUCTION IN WHICH WORK SHALL BE INSTALLED AND WORK OF OTHER TRADES WITH WHICH WORK OF THIS SECTION MUST BE COORDINATED
- B. EXCEPT WHERE MODIFIED BY A SPECIFIC NOTATION TO THE CONTRARY, IT SHALL BE UNDERSTOOD THAT THE INDICATION AND/OR DESCRIPTION OF AN ITEM, IN THE DRAWINGS OR SPECIFICATIONS OR BOTH, CARRIES WITH

IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM, REGARDLESS OF WHETHER OR NOT THIS INSTRUCTION

C. ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS SHALL BE PROVIDED IN QUANTITIES NECESSARY TO COMPLETE WORK.

IS EXPLICITLY STATED AS PART OF THE INDICATION OR DESCRIPTION.

- . DRAWINGS ARE DIAGRAMMATIC. THEY ARE NOT INTENDED TO BE ABSOLUTELY PRECISE; THEY ARE NOT INTENDED TO SPECIFY OR TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE PURPOSE OF THE DRAWINGS IS TO INDICATE A SYSTEMS CONCEPT. THE MAIN COMPONENTS OF THE SYSTEMS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS. BASED ON THE SYSTEMS CONCEPT, THE MAIN COMPONENTS, AND THE APPROXIMATE GEOMETRICAL RELATIONSHIPS, PROVIDE ALL OTHER COMPONENTS AND MATERIALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE, COORDINATED WITH OTHER SYSTEMS AND THE STRUCTURE AND SPACE AVAILABLE, AND OPERATIONAL
- E. INFORMATION AND COMPONENTS SHOWN ON SINGLE LINE /SCHEMATIC DIAGRAMS BUT NOT SHOWN ON PLANS. AND VICE VERSA, SHALL APPLY OR BE PROVIDED AS IF EXPRESSLY REQUIRED ON BOTH.
- F. DATA THAT MAY BE FURNISHED ELECTRONICALLY (ON COMPACT DISK (CD), ELECTRONIC MAIL, OR OTHERWISE) IS DIAGRAMMATIC. ELECTRONICALLY FURNISHED INFORMATION IS SUBJECT TO THE SAME LIMITATION OF PRECISION DESCRIBED ABOVE. IF FURNISHED, ELECTRONIC DATA IS FOR CONVENIENCE AND GENERALIZED REFERENCE, AND SHALL NOT SUBSTITUTE FOR SEALED OR STAMPED CONSTRUCTION DOCUMENTS.

#### 1.5 ELECTRONIC CAD FILES

- A. ELECTRONIC CAD FILES FOR FIRE PROTECTION, PLUMBING, HVAC, ELECTRICAL, TELE/DATA AND SECURITY DRAWINGS WILL BE FURNISHED BY ENGINEER AT CONTRACTOR'S REQUEST. ENGINEER WILL FORWARD THE 'RELEASE OF LIABILITY' FORM TO CONTRACTOR FOR COMPLETION/SIGNATURE. CONTRACTOR TO RETURN FORM TO ENGINEER PRIOR TO ENGINEER'S ISSUANCE OF ELECTRONIC CAD FILES. 1.6 DISCREPANCIES IN DOCUMENTS
- A. WHERE DRAWINGS OR SPECIFICATIONS CONFLICT OR ARE UNCLEAR, SUBMIT CLARIFICATION REQUEST IN
- WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF CONTRACT DOCUMENTS SHALL BE FINAL, AND NO ADDITIONAL COMPENSATION SHALL BE PERMITTED DUE TO DISCREPANCIES OR UN-CLARITIES THUS RESOLVED. B. WHERE DRAWINGS OR SPECIFICATIONS DO NOT COINCIDE WITH MANUFACTURERS' RECOMMENDATIONS OR
- WITH APPLICABLE CODES AND STANDARDS, SUBMIT CLARIFICATION REQUEST IN WRITING BEFORE INSTALLATION. OTHERWISE, MAKE CHANGES IN INSTALLED WORK REQUIRED FOR COMPLIANCE WITH MANUFACTURER INSTRUCTIONS OR CODES AND STANDARDS WITHIN CONTRACT PRICE.
- C. IF THE REQUIRED MATERIAL, INSTALLATION, OR WORK CAN BE INTERPRETED DIFFERENTLY FROM DRAWING TO DRAWING, OR BETWEEN DRAWINGS AND SPECS, PROVIDE MATERIAL, INSTALLATION OR WORK THAT IS OF THE HIGHER STANDARD.
- D. IT IS THE REQUIREMENT OF THESE CONTRACT DOCUMENTS TO REQUIRE PROVISION OF SYSTEMS AND COMPONENTS THAT ARE FULLY COMPLETE AND OPERATIONAL AND FULLY SUITABLE FOR THE INTENDED USE. THERE MAY BE SITUATIONS IN THE DOCUMENTS WHERE INSUFFICIENT INFORMATION EXISTS TO PRECISELY DESCRIBE A CERTAIN COMPONENT OR SUBSYSTEM, OR THE ROUTING OF A COMPONENT OR ITS COORDINATION WITH OTHER BUILDING ELEMENTS. IN THESE CASES, WHERE NOTIFICATION REQUIRED BY PARAGRAPH (A) ABOVE HAS NOT BEEN SUBMITTED, PROVIDE THE SPECIFIC COMPONENT OR SUBSYSTEM WITH ALL PARTS NECESSARY FOR THE INTENDED USE, FULLY COMPLETE AND OPERATIONAL, AND INSTALLED IN WORKMANLIKE MANNER EITHER CONCEALED OR EXPOSED IN ACCORDANCE WITH THE DESIGN INTENT.
- . IN CASES COVERED BY PARAGRAPH (D) ABOVE, WHERE THE CONTRACTOR BELIEVES ENGINEERING GUIDANCE IS NEEDED THE CONTRACTOR SHALL, SUBMIT A SKETCH IDENTIFYING PROPOSED SOLUTION. ARCHITECT SHALL REVIEW, NOTE IF NECESSARY, AND APPROVE THE SKETCH.
- WHERE DISCREPANCIES EXIST BETWEEN THE MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL AND TELE/DATA DRAWINGS IN REGARDS TO WHAT TRADE OWNS EQUIPMENT SUCH AS DISCONNECTS, STARTERS, ETC., THE DISCREPANCY SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IN ACCORDANCE WITH PARAGRAPH (A) ABOVE. IF THE SCOPE IS NOT RESOLVED PRIOR TO THE AWARD OF CONTRACT, THE ELECTRICAL CONTRACTOR SHALL PROVIDE SUCH ITEMS.
- 1.7 MODIFICATIONS IN LAYOUT
- A. DRAWINGS ARE DIAGRAMMATIC. THEY INDICATE GENERAL ARRANGEMENTS OF MECHANICAL SYSTEMS AND OTHER WORK. THEY DO NOT SHOW ALL OFFSETS REQUIRED FOR COORDINATION NOR DO THEY SHOW THE EXACT ROUTINGS AND LOCATIONS NEEDED TO COORDINATE WITH STRUCTURE AND OTHER TRADES AND TO MEET CEILING HEIGHTS AND OTHER ARCHITECTURAL REQUIREMENTS.
- B. TO OBTAIN THE INTENDED AESTHETICS IN SPACES USED BY BUILDING OCCUPANTS, PRIOR TO INSTALLATION OF VISIBLE MATERIAL AND EQUIPMENT (INCLUDING ACCESS PANELS), REVIEW ARCHITECTURAL DRAWINGS FOR DESIRED LOCATIONS. WHERE NOT DEFINITIVELY INDICATED THE CONTRACTOR SHALL REQUEST INFORMATION
- C. CHECK CONTRACT DRAWINGS, AS WELL AS SHOP DRAWINGS, TO VERIFY AND COORDINATE SPACES IN WHICH WORK OF THIS SECTION WILL BE INSTALLED.
- D. MAINTAIN MAXIMUM HEADROOM AT ALL LOCATIONS. ALL PIPING, DUCT, CONDUIT, AND ASSOCIATED COMPONENTS TO BE AS TIGHT TO UNDERSIDE OF STRUCTURE AS POSSIBLE.
- E. MAKE REASONABLE MODIFICATIONS IN LAYOUT AND COMPONENTS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND TO COORDINATE ACCORDING TO PARAGRAPHS ABOVE. SYSTEMS SHALL BE RUN IN A RECTILINEAR FASHION.
- F. WHERE CONFLICTS OR POTENTIAL CONFLICTS EXIST AND ENGINEERING GUIDANCE IS DESIRED THE CONTRACTOR SHALL SUBMIT SKETCH OF PROPOSED RESOLUTION TO ARCHITECT FOR REVIEW AND APPROVAL AS DESCRIBED/OUTLINED BELOW IN 'REQUEST FOR INFORMATION' (RFI) SECTION.

#### 1.8 REQUEST FOR INFORMATION (RFI'S)

- A. WHERE AN RFI IS A REQUEST TO RESOLVE A CONFLICT OR AN UN-CLARITY, OR A REQUEST FOR ADDITIONAL DETAIL, CONTRACTOR'S RFI SHALL INCLUDED SKETCH OR EQUIVALENT DESCRIPTION OF CONTRACTOR'S PROPOSED SOLUTION, IN ACCORDANCE WITH PARAGRAPHS "DISCREPANCIES IN DOCUMENTS; AND "MODIFICATIONS IN LAYOUT" ABOVE.
- B. TO EXPEDITE THE PROCESSING OF RFIS, THE CONTRACTOR SHALL SUBMIT AN ELECTRONIC CORRESPONDENCE WITH THE FOLLOWING INFORMATION CONTAINED WITHIN, AT THE MINIMUM, AS WELL AS THE CONTRACTOR'S PROPOSED SOLUTION, WITH SKETCHES AS REQUIRED:
- 1. PROJECT NAME
- 2. DATE OF RFI SUBMISSION / DATE OF REQUIRED RFI RESPONSE (3-DAY MINIMUM)
- 3. RFI NUMBER
- 4. NAME OF CONTRACTING COMPANY SUBMITTING RFI AND NAME OF PERSON SUBMITTING RFI 5. SPECIFICATION SECTION CITED
- 6. DRAWING NUMBER REFERENCED

- 7. CONTRACTOR EMAIL ADDRESS AND FAX NUMBER (FOR RESPONSE)
- 8. CONTRACTOR FIELD QUESTION (PROVIDE A NARRATIVE WITH SUPPLEMENTAL SKETCH) 9. CONTRACTOR PROPOSED SOLUTION (PROVIDE A NARRATIVE WITH SUPPLEMENTAL SKETCH)

#### 10. RESPONDENT NARRATIVE BOX (FOR ENGINEER'S RESPONSE) 1.9 EXISTING CONDITIONS AND PREPARATORY WORK

- A. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN THE FIELD.
- B. CARE SHALL BE TAKEN DURING THE INSTALLATION OF THE NEW WORK, AS NOT TO DAMAGE OR INTERRUPT THE EXISTING BUILDING SYSTEMS AND SERVICES INSTALLED.
- C. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS
- OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD. D. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITION OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. POTENTIAL PROBLEMS AREA SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.
- E. ANY/ALL DEMOLITION SHALL BE COORDINATED WITH OWNER, ARCHITECT, G.C.. AND ENGINEER.
- BEFORE STARTING WORK IN A PARTICULAR AREA OF THE PROJECT, VISIT THE LOCATION AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED INCLUDING PREPARATORY WORK DONE UNDER OTHER SECTIONS OR OTHER CONTRACTS OR BY THE OWNER. REVIEW GEOMETRICAL CONSTRAINTS, SUCH AS CEILING HEIGHTS, TO ENSURE CONSTRUCTABILITY AND ACCESS FOR MAINTENANCE. REPORT CONDITIONS THAT MIGHT ADVERSELY AFFECT WORK IN WRITING TO THE ARCHITECT. DO NOT PROCEED WITH WORK UNTIL DEFECTS HAVE BEEN CORRECTED AND CONDITIONS ARE SATISFACTORY. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.

#### 1.10 CODES, STANDARDS, AUTHORITIES AND PERMITS

- A. PERFORM WORK IN ACCORDANCE WITH RULES, REGULATIONS, STANDARDS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LEGAL JURISDICTION
- B. PRIOR TO COMMENCEMENT OF WORK, NOTIFY STATE AND APPLICABLE AUTHORITIES AND SUBMIT ALL OF THE APPLICABLE NOTIFICATIONS FOR CONSTRUCTION, OPERATION AND/OR DEMOLITION.
- C. MATERIALS AND EQUIPMENT SHALL BE MANUFACTURED, INSTALLED AND TESTED AS SPECIFIED IN LATEST EDITIONS OF APPLICABLE PUBLICATIONS, STANDARDS, RULINGS AND DETERMINATIONS OF:
- 1. LOCAL AND STATE BUILDING, PLUMBING, MECHANICAL, ELECTRICAL, FIRE AND HEALTH DEPARTMENT
- CODES. 2. AMERICAN GAS ASSOCIATION (AGA).
- 3. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
- 4. AMERICAN INSURANCE ASSOCIATION (AIA) (FORMERLY NATIONAL BOARD OF FIRE UNDERWRITERS).
- OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
- 6. UNDERWRITERS LABORATORIES (UL)
- 7. FACTORY MUTUAL ASSOCIATION (FM)
- 8. OWNER'S INSURANCE UNDERWRITER. 9. SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
- D. MATERIAL AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES (UL), AND APPROVED BY
- ASME, ANSI, ASTM, AND AGA FOR INTENDED SERVICE.
- E. WHEN REQUIREMENTS CITED IN THIS SPECIFICATION CONFLICT WITH EACH OTHER OR WITH CONTRACT DOCUMENTS, MOST STRINGENT SHALL GOVERN WORK.
- F. SECURE AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
- SECURE TRADE PERMITS PRIOR TO BEGINNING WORK.
- G. PERFORM ALL WORK IN ACCORDANCE WITH BASE BUILDING RULES, REGULATIONS, SPECIFICATIONS AND STANDARDS.
- A. WARRANT THE WORK OF THIS SECTION IN WRITING FOR ONE YEAR FOLLOWING THE DATE OF SUBSTANTIAL COMPLETION. IF THE EQUIPMENT IS USED FOR VENTILATION, TEMPORARY HEAT, OR OTHER USE PRIOR TO INITIAL BENEFICIAL OCCUPANCY BY THE OWNER, THE BID PRICE SHALL INCLUDE AN EXTENDED PERIOD OF WARRANTY COVERING THE ONE-YEAR OF BENEFICIAL OCCUPANCY BY THE OWNER. THE WARRANTY SHALL REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO ARCHITECT'S SATISFACTION AND CORRECT DAMAGE CAUSED IN

MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY WITHIN CONTRACT PRICE.

#### 1.12 COORDINATION DRAWINGS

- A. A SINGLE SET OF COORDINATION DRAWINGS SHALL BE MUTUALLY PREPARED BY ALL MECHANICAL AND ELECTRICAL TRADES. THE INITIATION OF THESE DRAWINGS BEGINS WITH THE SHEET METAL SUBCONTRACTOR.
- B. THE SHEET METAL SUBCONTRACTOR SHALL PREPARE A COMPLETE SET OF ELECTRONIC DRAWINGS IN APPROVED VERSIONS OF AUTOCAD, REVIT, OR APPROVED ALTERNATIVE, AT SCALE NOT LESS THAN 3/8" EQUALS 1'-0" SHOWING: STRUCTURE, RATED PARTITIONS, CEILING TYPE AND OTHER INFORMATION AS NEEDED FOR COORDINATION. ALL TRADES SHALL ELECTRONICALLY ADD THEIR SYSTEMS TO THE ELECTRONIC FORMATTED DRAWINGS, EACH TRADE IN A DIFFERENT COLOR, SHOWING REQUIRED OFFSETS AND DIMENSIONS TO AVOID INTERFERENCES. THESE ELECTRONIC FILES WILL BE CONSIDERED THE PROJECT COORDINATION DRAWINGS.
- C. WHERE CONFLICTS OCCUR WITH PLACEMENT OF MATERIALS OF VARIOUS TRADES, THE SHEET METAL SUBCONTRACTOR WILL BE RESPONSIBLE TO COORDINATE THE AVAILABLE SPACE TO ACCOMMODATE
- D. SHEET METAL FABRICATION SHALL NOT START UNTIL COPIES OF COMPLETED COORDINATION DRAWINGS ARE RECEIVED BY THE ARCHITECT AND HAVE BEEN REVIEWED.
- E. REVIEW BY ENGINEER OF COORDINATION DRAWINGS IS LIMITED TO CONFIRMING THAT REQUIREMENTS FOR COORDINATION AND PREPARATION OF PLANS HAVE BEEN COMPLIED WITH BY THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR FINAL COORDINATION OF INSTALLATION AND MAINTENANCE CLEARANCES OF ALL SYSTEMS AND EQUIPMENT WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER RELATED WORK.
- 1.13 SHOP DRAWING SUBMITTALS
- A. SUBMITTAL COVER SHEET:
- 1. SHOP DRAWING SUBMITTAL FOR EACH PRODUCT SHALL INCLUDE A COPY OF THE FOLLOWING COVER SHEET COMPLETELY FILLED OUT. INCOMPLETE OR INCORRECT COVER SHEET SUBMITTAL SHALL CONSTITUTE REASON FOR REJECTION.
- 2. PROVIDE SEPARATE COVER SHEET (BELOW) FOR EACH PRODUCT, RATHER THAN ONE COVER SHEET FOR MULTIPLE PRODUCTS, WHETHER OR NOT SUPPLIED BY ONE MANUFACTURER OR VENDOR.

	SHOP DRAWING COVER SHEE	ĒΤ								
PROJ	JECT: CONTRA	ACTOR:								
DIVISION NO.: SECTION NO.:										
DESC	CRIPTION:									
CON	TRACT DRAWING REFERENCE NO:									
EQUI	PMENT TAG:									
SUBN	ISSION (CIRCLE ONE): FIRST, SECOND, THIRD, FOURTH	1								
DATE	E									
INFO	RMATION AND CHECKLIST									
1.	Contractor's Log #ID									
2.	Name, address, and phone number of supplier.									
3.	Are all specified or scheduled items included and exactly match scheduled/specified items?	Yes	No							
4.	Is this item a substitution?	Yes	No							
5.	Are deviations clearly identified?	Yes	No							
6.	Does equipment fit space shown on construction documents, coordination drawings, and actual field conditions?	Yes	No							
7.	Has support, erection, weights, and installation been coordinated with all trades?	Yes	No							
8.	Does the proposed installation void warranties and/or violate UL or code requirements?	Yes	No							
9.	Does this material/equipment add expense to other trades or project costs?	Yes	No							
10.	Does equipment require interface with other trades? List divisions and specifics requiring coordination?	Yes	No							
11.	Is control interface coordinated?	Yes	No							
12.	List electrical characteristics (Voltage/Phase/Hz/Amps)									

#### B. SUBMITTAL PROCEDURES, CONTENTS, AND FORMAT

1. CONSTRUCTION MANAGER OR GENERAL CONTRACTOR SHALL FIRST REVIEW SUBMITTAL PACKAGES FOR COMPLIANCE WITH CONTRACT DOCUMENTS. UPON REVIEW BY THE G.C. THE SUBMITTALS WILL THEN BE SUBMITTED FOR REVIEW BY ARCHITECT. REVIEW BY CONSTRUCTION MANAGER OR CONTRACTOR IS INTENDED TO ENSURE THAT THE SUBMITTALS INCLUDE THE FOREGOING COVER SHEET, ARE IN THE CORRECT ELECTRONIC FORMAT AS SPECIFIED BELOW. AND THAT THE DEVICES/EQUIPMENT/ITEMS FIT INTO THE SPACE PROVIDED. ALSO, THAT THE SUBMITTAL CONTAINS ADEQUATE INFORMATION TO VERIFY SPECIFICATION REQUIREMENTS AS WELL AS THE PERFORMANCE AND DIMENSIONAL REQUIREMENTS SHOWN ON THE DRAWINGS. IF A SHOP DRAWING IS RETURNED WITH A SUBMITTAL STATUS OF "REJECTED"

#### OR "REJECTED: REVISE AND RESUBMIT", IT INDICATES THE SHOP DRAWING WAS NOT ADEQUATELY REVIEWED BY THE CONTRACTOR. SUBSEQUENT RE-SUBMITTALS SHALL BE COMPLETE AND SHALL INCLUDE A COVER LETTER SUMMARIZING THE CORRECTIONS MADE IN RESPONSE TO THE REVIEW COMMENTS.

- 2. SUBMITTALS WILL BE PROVIDED TO ENGINEER IN ELECTRONIC (PDF) FORMAT. A SINGLE PDF FILE SHALL BE SUBMITTED FOR EACH RESPECTIVE SUBMITTAL. THE PDF FILE WILL BE FORMATTED IN THE FOLLOWING WAY:
- a. SUBMITTALS WILL BE 'EMAILED' TO THE MECHANICAL/ELECTRICAL TEAM VIA THE FOLLOWING EMAIL ADDRESS(ES):
- 1. PROJECT MANAGERS EMAIL: pvankauwenberg@vanderweil.com
- 2. DL-BOS-SHOPDRAWINGS@VANDERWEIL.COM 3. SUBMITTAL CONTENTS
- a. ELECTRONIC SUBMITTALS SHALL BE COMPREHENSIVE AND FULLY SELF CONTAINED AND SHALL NOT CONTAIN LINKS TO ASSOCIATED WEBSITES.
- AND PLANS AND DIAGRAMS AS NECESSARY TO CONFIRM COMPLIANCE WITH PLANS AND c. SUBMITTALS SHALL CONTAIN ONLY INFORMATION RELEVANT TO THE PARTICULAR EQUIPMENT OR
- MATERIALS TO BE FURNISHED. CLEARLY INDICATE THE PIECE OF EQUIPMENT OR MATERIAL BEING PROVIDED. DO NOT SUBMIT GENERIC CATALOG CUTS WHICH DESCRIBE SEVERAL DIFFERENT ITEMS IN ADDITION TO THOSE SPECIFIC ITEMS BEING PROVIDED.
- 4. SHOP DRAWINGS SHOWING MANUFACTURER'S PRODUCT DATA SHALL CONTAIN DETAILED DIMENSIONAL DRAWINGS, ACCURATE AND COMPLETE DESCRIPTION OF MATERIALS OF CONSTRUCTION, MANUFACTURER'S PUBLISHED PERFORMANCE CHARACTERISTICS AND CAPACITY RATINGS (PERFORMANCE DATA, ALONE, IS NOT ACCEPTABLE), ELECTRICAL REQUIREMENTS AND WIRING DIAGRAMS. DRAWINGS SHALL CLEARLY INDICATE LOCATION (TERMINAL BLOCK OR WIRE NUMBER). VOLTAGE AND FUNCTION FOR ALL FIELD TERMINATIONS, AND OTHER INFORMATION NECESSARY TO DEMONSTRATE COMPLIANCE WITH ALL REQUIREMENTS OF CONTRACT DOCUMENTS.
- D. ACCEPTABLE MANUFACTURERS: SUBSTITUTION OF PRODUCTS OTHER THAN THOSE OF THE ACCEPTABLE MANUFACTURERS SPECIFIED HEREIN SHALL NOT BE MADE. ONLY THE SPECIFIED ITEMS, OR COMPARABLE PRODUCTS BY ONE OF THE OTHER NAMED ALTERNATIVE MANUFACTURERS SHALL BE SUBMITTED. OTHER MANUFACTURERS AND PRODUCTS WILL NOT BE USED.

- E. DEVIATIONS 1. PROPOSED DEVIATIONS FROM CONTRACT DOCUMENTS SHALL BE REQUESTED INDIVIDUALLY IN WRITING WHETHER DEVIATIONS RESULT FROM FIELD CONDITIONS, STANDARD SHOP PRACTICE, OR OTHER CAUSE. SUBMIT LETTER WITH TRANSMITTAL OF SHOP DRAWINGS WHICH FLAGS THE DEVIATION TO THE ATTENTION
  - 2. WITHOUT LETTERS FLAGGING THE DEVIATION TO THE ARCHITECT, IT IS POSSIBLE THAT THE ARCHITECT MAY NOT NOTICE SUCH DEVIATION OR MAY NOT REALIZE ITS RAMIFICATIONS. THEREFORE, IF SUCH LETTERS ARE NOT SUBMITTED TO THE ARCHITECT, THE CONTRACTOR SHALL HOLD THE ARCHITECT AND HIS CONSULTANTS HARMLESS FOR ANY AND ALL ADVERSE CONSEQUENCES RESULTING FROM THE DEVIATIONS BEING IMPLEMENTED. THIS SHALL APPLY REGARDLESS OF WHETHER THE ARCHITECT HAS REVIEWED OR APPROVED SHOP DRAWINGS CONTAINING THE DEVIATION, AND WILL BE STRICTLY
- 3. APPROVAL OF PROPOSED DEVIATIONS, IF ANY, WILL BE MADE AT DISCRETION OF ARCHITECT.
- F. SUBMITTAL STATUS: SUBMITTALS WILL BE RETURNED MARKED/NOTED AS ILLUSTRATED BELOW: "APPROVED AS NOTED": REVIEWED AND FOUND GENERALLY ACCEPTABLE. MINOR DEVIATIONS NOTED. NO FURTHER SUBMITTAL IS REQUIRED IF NOTED DEVIATIONS ARE COMPLIED WITH/CORRECTED.
  - "REJECTED: REVISE AND RESUBMIT": SUBMITTAL CONTAINS DEVIATIONS WHICH SHALL BE CORRECTED AND CONFIRMED BY A NEW SUBMITTAL
  - "<u>REJECTED</u>": SUBMITTAL IS INCORRECT TO SUCH AN EXTENT THAT MATERIAL IS UNACCEPTABLE, OR IS INCOMPLETE TO SUCH AN EXTENT THAT A COMPLETE REVIEW CANNOT BE MADE. RESUBMIT IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.
- "NO ACTION": SUBMITTAL NOT REVIEWED. "REVIEWED FOR INFORMATION": THIS SUBMITTAL IS FOR INFORMATION ONLY.
- G. RESPONSIBILITY: INTENT OF ARCHITECT'S SUBMITTAL REVIEW IS TO CHECK FOR CAPACITY. RATING. AND CERTAIN CONSTRUCTION FEATURES. CONTRACTOR SHALL ENSURE THAT WORK MEETS REQUIREMENTS OF CONTRACT DOCUMENTS REGARDING INFORMATION THAT PERTAINS TO FABRICATION PROCESSES OR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR COORDINATION OF WORK OF THIS AND OTHER SECTIONS. WORK SHALL COMPLY WITH SUBMITTALS MARKED "REVIEWED" TO EXTENT THAT THEY AGREE WITH CONTRACT DOCUMENTS. SUBMITTAL REVIEW SHALL NOT DIMINISH RESPONSIBILITY UNDER THIS CONTRACT FOR DIMENSIONAL COORDINATION, QUANTITIES, INSTALLATION, WIRING. SUPPORTS AND ACCESS FOR SERVICE. NOR SHOP DRAWING ERRORS OR DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS. NOTING OF SOME ERRORS WHILE OVERLOOKING OTHERS WILL NOT EXCUSE PROCEEDING IN ERROR. CONTRACT DOCUMENTS REQUIREMENTS ARE NOT LIMITED, WAIVED NOR
- SUPERSEDED BY REVIEW. H. SCHEDULE: INCORPORATE SHOP DRAWING REVIEW PERIOD INTO CONSTRUCTION SCHEDULE SO THAT WORK IS NOT DELAYED. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DELAYS CAUSED BY NOT INCORPORATING THE FOLLOWING SHOP DRAWING REVIEW TIME REQUIREMENTS INTO HIS PROJECT SC HEDULE. WORKING DAYS LISTED REFERENCE THE TIME IN THE ENGINEER'S OFFICE. IT DOES NOT INCLUDE TRANSMITTAL OR REVIEW TIME OF OTHERS. ALLOW AT LEAST 7 WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR REVIEW EACH TIME SHOP DRAWING IS SUBMITTED OR RESUBMITTED WITH THE EXCEPTION THAT 14 WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, ARE REQUIRED FOR THE FOLLOWING:
- 1. HVAC TEMPERATURE CONTROL SUBMITTALS.
- 2. COORDINATION DRAWINGS. 3. FIRE PROTECTION FABRICATION DRAWINGS.
- 4. IF MORE THAN FIVE SHOP DRAWINGS OF A SINGLE TRADE ARE RECEIVED IN ONE CALENDAR WEEK 1.14 RECORD DRAWINGS (AS-BUILTS)
- A. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS. SUCH CHANGES SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE RESULTING FROM RFI'S, FIELD CONDITIONS, AND MODIFICATIONS AND ADDITIONS. INCLUDE ACTUAL LOCATION OF EXISTING UTILITIES IF THEY DIFFER FROM DESIGN DOCUMENTS. AT COMPLETION OF PROJECT CONTRACTOR SHALL INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT
- FOR REVIEW AND APPROVAL. B. AT COMPLETION OF WORK, PREPARE A COMPLETE SET OF RECORD DRAWINGS IN ELECTRONIC FORMAT

#### DELIVER TO THE ARCHITECT FOR APPROVAL. C. AFTER APPROVAL, DELIVER THE FOLLOWING:

1.16 SPECIAL RESPONSIBILITIES

- 1. ORIGINAL (NOT SCANNED) ELECTRONIC VERSION OF DRAWINGS IN APPROVED FORMAT, NOTATED AS "RECORD DRAWINGS," AND CONFORMED TO INCORPORATE ALL CHANGES TO THE ORIGINAL DESIGN NOTED ABOVE, THE CHANGES SHALL BE CLOUDED AND APPROPRIATELY IDENTIFIED. DELIVER ONE COPY EACH TO THE GENERAL CONTRACTOR, OWNER, ARCHITECT, AND ENGINEER.
- 1.15 BULLETINS, MANUALS, AND OPERATING INSTRUCTIONS ELECTRONIC FORMAT
- PROVIDE ELECTRONICALLY FORMATTED (SEARCHABLE PDF) FILES OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT AND SYSTEM. COMPILE RESPECTIVE WORK OF EACH DISCIPLINE INTO A SINGLE FILE FOR EACH DISCIPLINE. INFORMATION SUCH AS MAKE, TYPE, SIZE, CAPACITY, SERIAL NUMBER, ETC. SHALL BE INCLUDED AS PART OF THE MANUAL. PROVIDE, WITHIN THE ELECTRONIC FILE, TABLE OF CONTENTS/INDEX LISTING.
- A. COOPERATE AND COORDINATE WITH WORK OF OTHER SECTIONS IN EXECUTING WORK OF THIS SECTION. 1. PERFORM WORK SO THAT PROGRESS OF ENTIRE PROJECT INCLUDING WORK OF OTHER SECTIONS SHALL
- NOT BE INTERFERED WITH OR DELAYED. 2. PROVIDE INFORMATION AS REQUESTED ON ITEMS FURNISHED UNDER ONE SECTION WHICH SHALL BE INSTALLED UNDER OTHER SECTIONS.
- 3. FOR EQUIPMENT PROVIDED UNDER ANY DIVISION OR SECTION WHICH HAS CONNECTION MADE UNDER THE MECHANICAL OR ELECTRICAL SECTIONS, OBTAIN DETAILED INSTALLATION AND HOOKUP INFORMATION FROM THE EQUIPMENT MANUFACTURERS. 4. OBTAIN FINAL ROUGHING DIMENSIONS OR OTHER INFORMATION AS NEEDED FOR COMPLETE INSTALLATION
- OF ITEMS FURNISHED UNDER OTHER SECTIONS OR BY OWNER. 5. KEEP FULLY INFORMED AS TO SHAPE, SIZE AND POSITION OF OPENINGS REQUIRED FOR MATERIAL OR EQUIPMENT TO BE PROVIDED UNDER ALL SECTIONS. GIVE FULL INFORMATION SO THAT OPENINGS REQUIRED BY WORK OF THIS SECTION MAY BE COORDINATED WITH OTHER WORK AND OTHER OPENINGS AND MAY BE PROVIDED FOR IN ADVANCE. IN CASE OF FAILURE TO PROVIDE SUFFICIENT INFORMATION IN PROPER TIME, PROVIDE CUTTING AND PATCHING OR HAVE SAME DONE, AT OWN EXPENSE AND TO FULL
- 6. NOTIFY ARCHITECT OF LOCATION AND EXTENT OF EXISTING PIPING, CONDUIT, DUCTWORK AND EQUIPMENT THAT INTERFERES WITH NEW CONSTRUCTION. IN COORDINATION WITH AND WITH APPROVAL OF ARCHITECT, RELOCATE PIPING, DUCTWORK AND EQUIPMENT TO PERMIT NEW WORK TO BE PROVIDED. REMOVE NON\_FUNCTIONING AND ABANDONED PIPING, DUCTWORK AND EQUIPMENT. DISPOSE OF OR STORE ITEMS.

#### B. BUILDING EXPANSION JOINTS AND FIREWALLS

SATISFACTION OF ARCHITECT.

- 1. DUCTWORK, CONDUIT, CABLE TRAY, PIPING, AND OTHER HORIZONTAL DISTRIBUTION SYSTEMS SHALL BE PROVIDED WITH APPROVED EXPANSION PROVISIONS WHEN PASSING BY BUILDING EXPANSION JOINTS. PROVIDE COPPER GROUND JUMPER ACROSS EXPANSION JOINTS FOR ELECTRICAL COMPONENTS. SYSTEMS SHALL BE RUN THROUGH RATED WALLS, PARTITIONS, AND FLOORS VIA APPROVED FIREPROOFED SLEEVES.
- INSTALLATION SHALL PROVIDE ACCESS TO SYSTEMS
- 1. INSTALLATION SHALL ALLOW CLEARANCES FOR EASY ACCESS TO SYSTEMS FOR ROUTINE MAINTENANCE. FOR REPAIRS, AND FOR INSTALLING NEW CABLE IN CONDUIT AND CABLE TRAYS.
- 2. ACCESS PANELS SHALL BE INSTALLED IN CEILINGS THAT ARE NOT COMPOSED OF REMOVABLE TILES. THESE SHALL BE LOCATED WHEREVER SYSTEMS COMPONENTS EXIST THAT HAVE MOVING PARTS, MOTORS, OR OTHER COMPONENTS REQUIRING PERIODIC MAINTENANCE, ADJUSTMENT, OR REPLACEMENT. ACCESS PANELS SHALL BE SHOWN ON COORDINATION DRAWINGS AND SHALL BE OF THE TYPE AND FINISH AS APPROVED BY THE ARCHITECT.

#### D. PROTECTION OF WORK

- 1. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED, AND ACCEPTED. CAREFULLY STORE MATERIALS AND EQUIPMENT THAT IS NOT IMMEDIATELY INSTALLED AFTER DELIVERY TO SITE. CLOSE OPEN ENDS OF WORK WITH TEMPORARY COVERS OR PLUG DURING CONSTRUCTION TO PREVENT ENTRY OF OBSTRUCTING MATERIAL. COVER WORK SUBJECT TO
- FALLING DEBRIS WITH TEMPORARY COVERS. 2. PROVIDE ALL MATERIALS, EQUIPMENT AND LABOR TO PROVIDE ADEQUATE PROTECTION OF ALL EQUIPMENT DURING THE COURSE OF CONSTRUCTION. THIS INCLUDES PROTECTION FROM MOISTURE AND FOREIGN
- MATERIAL. AT COMPLETION, ALL WORK MUST BE TURNED OVER TO OWNER CLEAN AND IN NEW CONDITION. 3. PROTECT THE WORK AND MATERIAL OF OTHER TRADES THAT MIGHT BE DAMAGED BY WORK OR WORKMEN AND MAKE GOOD ALL DAMAGE THUS CAUSED.
- E. FIREPROOFING: PATCHING AND REPAIRING OF FIREPROOFING DUE TO CUTTING OR DAMAGING TO FIREPROOFING DURING COURSE OF WORK SPECIFIED UNDER THIS SECTION SHALL BE PERFORMED BY INSTALLER OF FIREPROOFING AND PAID FOR BY TRADE RESPONSIBLE FOR DAMAGE AND SHALL NOT CONSTITUTE GROUNDS FOR AN EXTRA TO OWNER.
- b. SUBMITTALS SHALL INCLUDE ALL CATALOG DATA AND PHYSICAL AND PERFORMANCE CHARACTERISTICS 1.17 CONTINUITY OF SERVICES
  - A. DO NOT INTERRUPT EXISTING SERVICES WITHOUT OWNER'S WRITTEN APPROVAL
  - B. SCHEDULE INTERRUPTIONS IN ADVANCE, ACCORDING TO OWNER'S INSTRUCTIONS. SUBMIT, IN WRITING, WITH REQUEST FOR INTERRUPTION, METHODS PROPOSED TO MINIMIZE LENGTH OF INTERRUPTION.
  - C. INTERRUPTIONS SHALL BE SCHEDULED AT TIMES OF DAY AND WORK SO THAT THEY HAVE MINIMAL IMPACT ON

E. INCLUDE PREMIUM TIME WORK ASSOCIATED WITH INTERRUPTIONS OF SERVICES AND/OR SHUTDOWNS TO

- OWNER'S OPERATIONS. D. SUBCONTRACTOR SHALL COORDINATE SHUTDOWNS OF EXISTING SYSTEMS.
- AVOID DISRUPTION TO OWNER'S OPERATIONS.
- 1.18 PROJECT PUNCH LIST PROCEDURE: A. WHEN THE CONTRACT WORK IS SUBSTANTIALLY COMPLETE, EACH TRADE CONTRACTOR SHALL PHYSICALLY WALK DOWN THE INSTALLATION AND PREPARE A PUNCH LIST CONTAINING AN ITEMIZATION OF WORK REMAINING FOR 100% COMPLETION. THE PUNCH LIST SHALL BE SUBMITTED TO THE ARCHITECT AS A PREREQUISITE TO THE ARCHITECT'S OWN PUNCH LIST, WHICH WILL THEN BE DEVELOPED TO COMPLEMENT THAT OF THE TRADE
- CONTRACTOR. B. REGARDLESS OF WHAT THE ENGINEER OBSERVES AND DOES NOT OBSERVE IN THE WALK-THROUGH, THE RESPONSIBILITY FOR SUCCESSFUL COMPLETION OF THE CONTRACT IN ALL OF ITS DETAILS REMAINS WITH
- THE CONTRACTOR. C. IF, WHEN THE ENGINEER ARRIVES AT THE SITE CERTAIN AREAS ARE NOT COMPLETE AND READY FOR PUNCH OUT, THE ENGINEER WILL NOT REVIEW THESE AREAS. WHEN A SECOND NOTIFICATION IS ISSUED INDICATING THE INSTALLATION IS COMPLETED AND THE CONTRACTOR HAS PUNCHED AND CORRECTED THESE AREAS, THE
- ENGINEER WILL THEN RE-VISIT THE SITE FOR FINAL OBSERVATIONS AND PUNCH LIST. D. CONFIRMATION OF PUNCH LIST REMEDIATION. ONCE THE ENGINEER HAS SUBMITTED THE ENGINEERING PUNCH LIST, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THAT ALL THE LISTED ITEMS HAVE BEEN CORRECTLY REMEDIED. THE ENGINEER WILL NOT VISIT THE PROJECT TO RE-OBSERVE

- 1.19 ELECTRONIC FILES A. ELECTRONIC FILES FOR FIRE PROTECTION, PLUMBING, HVAC, ELECTRICAL, COMMUNICATION, OR ELECTRONIC SAFETY AND SECURITY DRAWINGS WILL BE FURNISHED BY ENGINEER AT CONTRACTOR'S REQUEST. THESE FILES WILL BE PROVIDED ON ENGINEER'S FTP SITE IN THE SOFTWARE RELEASE USED BY THE ENGINEER. IF OTHER MEDIA OR SOFTWARE VERSION IS REQUESTED, ENGINEER WILL REQUIRE ADVANCE REIMBURSEMENT OF PROCESSING COSTS.
- B. REQUESTS SHOULD BE MADE BY FILLING OUT A FORM LETTER AND PROVIDING AN AUTHORIZED SIGNATURE. THE REQUESTED INFORMATION WILL NOT BE RELEASED PRIOR TO RECEIPT OF THIS LETTER FOR THE APPROPRIATE DOCUMENTS. THE CONTRACTOR SHALL REQUEST THE FORM LETTER FROM PROJECT MANAGER
- 1.20 PROJECT CLOSE-OUT PROCEDURE:
- REVIEW REQUIREMENTS OF EACH SECTION OF THE SPECIFICATIONS AND SUBMIT FOR APPROVAL TO ARCHITECT THE SIGN-OFF FORMS THAT SHALL BECOME THE PROJECT CLOSE-OUT CHECKLIST. THESE, AT A MINIMUM, SHALL INCLUDE THE FOLLOWING INFORMATION SHOWN IN ATTACHED PROJECT CLOSEOUT CHECKLIST EXAMPLE. THE ARCHITECT AND/OR OWNER MAY INCORPORATE ADDITIONAL SPECIFIC ITEMS TO THE FOLLOWING CHECKLIST WHICH SHALL BECOME PART OF THE PROJECT REQUIREMENTS. REQUIREMENTS SHALL ALSO INCLUDE THE FOLLOWING:
- a. NFPA 13 FIRE PROTECTION TEST CERTIFICATE COMPLETED AND SIGNED b. NFPA 72 - FIRE ALARM COMPLETED FORM

e. A PLUMBING DISINFECTION OF WATER SYSTEM TEST CERTIFICATE

c. EMERGENCY LIGHTING LOAD LETTER FROM ELECTRICAL CONTRACTOR CONFIRMING EMERGENCY LIGHTING SYSTEM IS FULLY INSTALLED AND OPERATIONAL. d. LIGHTING CONTROLS COMMISSIONING REPORT

f. HVAC TESTING AND BALANCING REPORT

THE AREAS ALREADY VISITED IN THE FINAL WALK-THROUGH.

BIDDING &

**CROCKFORDS** -

**Monticello. NY 1270** 

**JCJ**ARCHITECTURE

. 617.423.7401 FAX

vanderweil.com

120 HUYSHOPE AVENUE

HARTFORD, CT 06106

SUITE 400

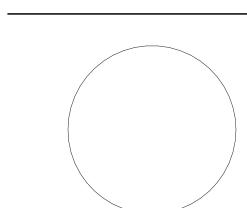
860.247.9226

© 2021 JCJ Architecture

CONSULTANT:

274 Summer Street

Boston, MA 02210



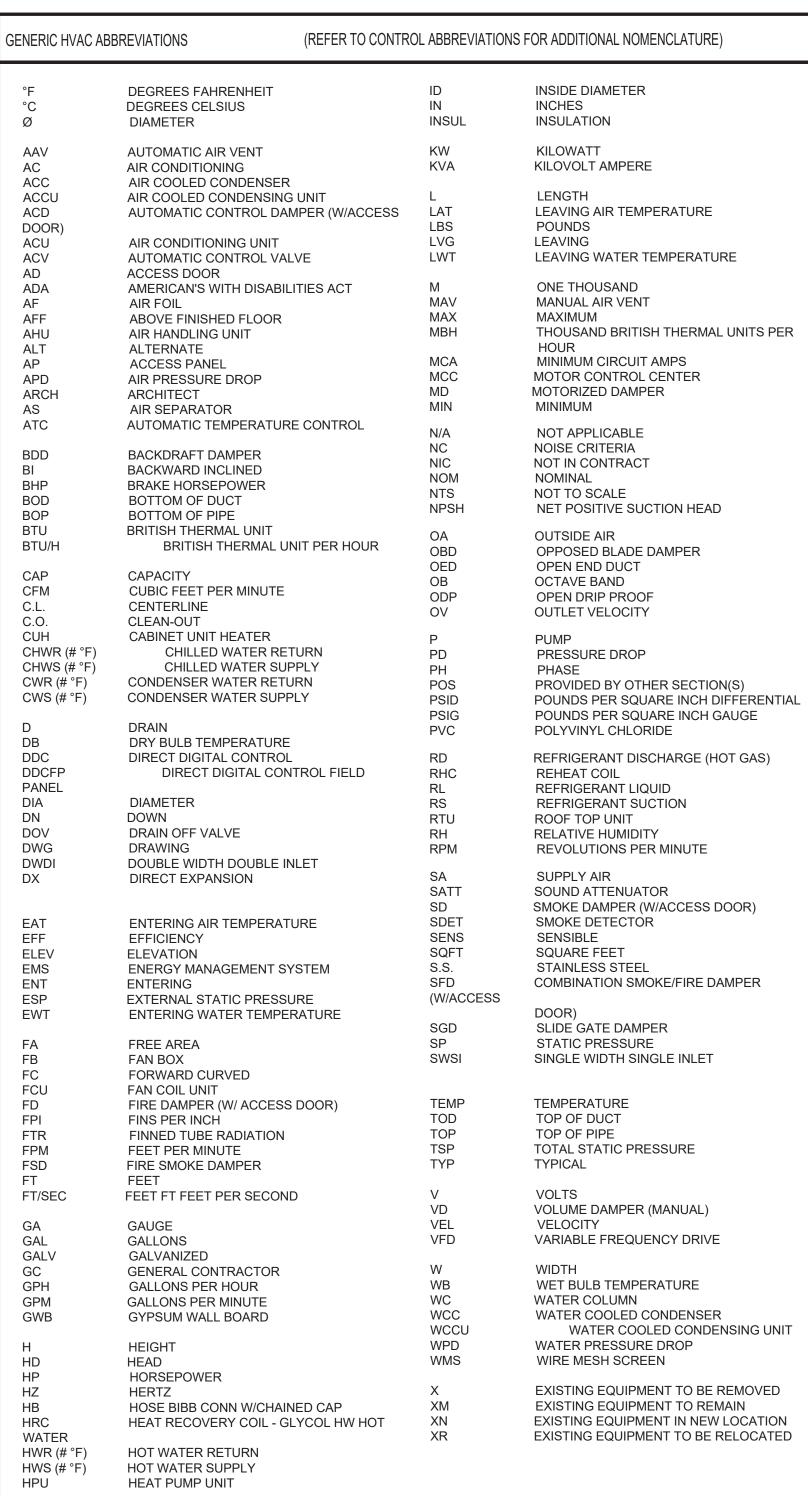
ISSUE 07/06/2022

DRAWN Author

REVISIONS

SCALE 12" = 1'-0"

**DIVISION 20 SPECIFICATIONS** 



CALL OUT SYMBOLS

UC (1/2")

LVDR (1.5)

-

TEMPERATURE SENSOR OR HUMIDISTAT

HUMIDITY SENSOR OR HUMIDISTAT

PRESSURE TRANSMITTER

CARBON DIOXIDE SENSOR

REFRIGERANT SENSOR

LOUVERED DOOR

SUPPLY AIR FLOW

24X24 ACCESS PANEL

LINE VOLTAGE THERMOSTAT

TEMPERATURE SENSOR WITH INSULATED BASE

UNDERCUT DOOR (UNDER CUT DIMENSION)

(FREE AREA OF LOUVER IN SQUARE FEET)

RETURN OR EXHAUST AIR FLOW

CONNECT NEW TO EXISTING

DUCTWORK OR PIPING RISER

DIFFUSER, GRILLE, REGISTER LETTER DESIGNATOR (See schedule for ATD type)

LIMIT OF REMOVAL

DESIGNATION

REVISION NUMBER

\_\_ DESIGN CFM

SECTION DESIGNATION

1 DETAIL DESIGNATION

H3.1 SHEET NUMBER

H3.1 SHEET NUMBER

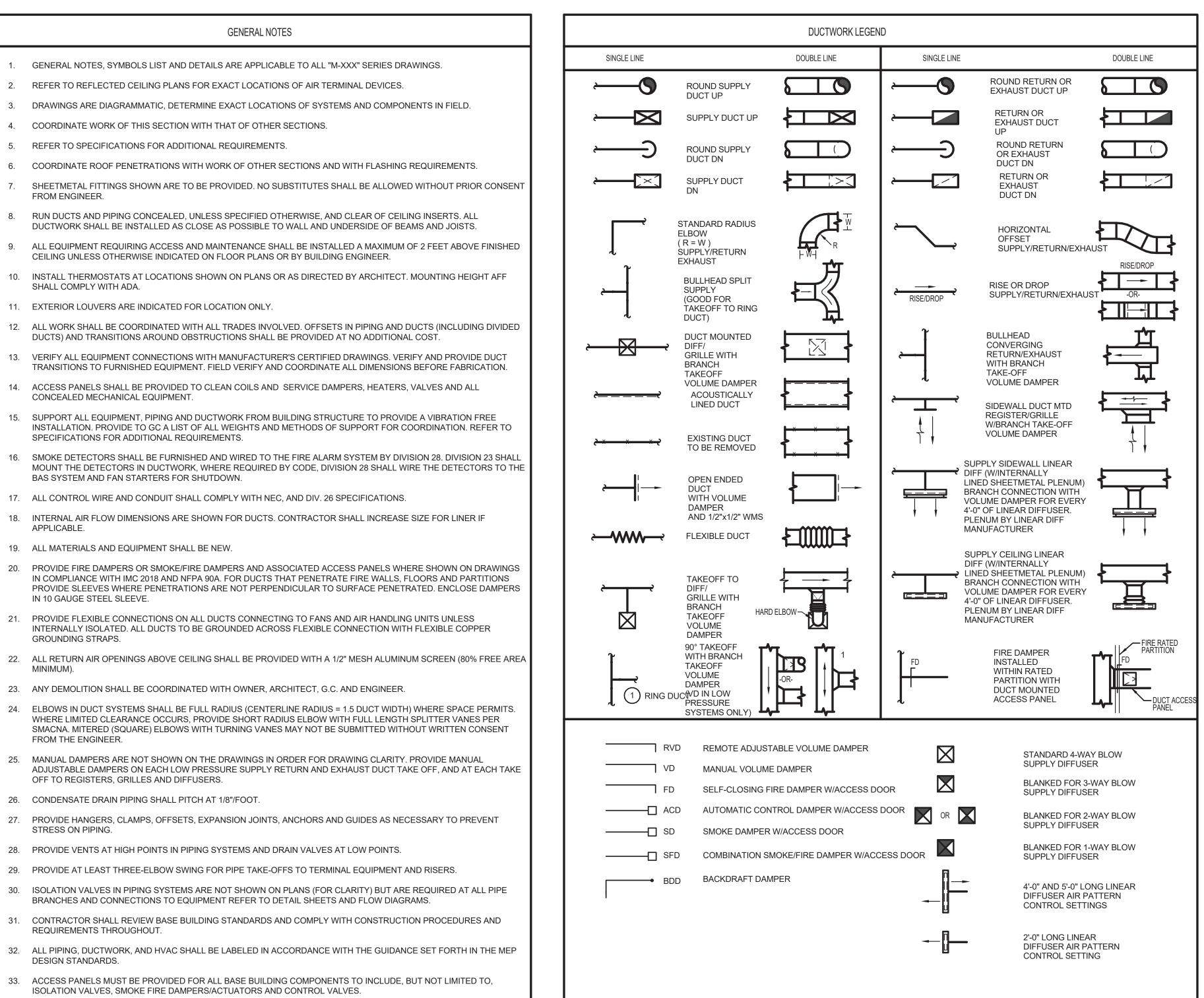
ADDITIONAL NOMENCLATURE)		GENERAL NOTES
IDE DIAMETER	1.	GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL "M-XXX" SERIES DRAWINGS.
CHES CULATION	2.	REFER TO REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
OWATT OVOLT AMPERE	3.	DRAWINGS ARE DIAGRAMMATIC, DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
NGTH	4.	COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS.
AVING AIR TEMPERATURE UNDS	5.	REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
AVING AVING WATER TEMPERATURE	6.	COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
E THOUSAND NUAL AIR VENT	7.	SHEETMETAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTES SHALL BE ALLOWED WITHOUT PRIOR CONSENFROM ENGINEER.
XIMUM OUSAND BRITISH THERMAL UNITS PER OUR	8.	RUN DUCTS AND PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS. ALL DUCTWORK SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALL AND UNDERSIDE OF BEAMS AND JOISTS.
NIMUM CIRCUIT AMPS TOR CONTROL CENTER FORIZED DAMPER	9.	ALL EQUIPMENT REQUIRING ACCESS AND MAINTENANCE SHALL BE INSTALLED A MAXIMUM OF 2 FEET ABOVE FINISHED CEILING UNLESS OTHERWISE INDICATED ON FLOOR PLANS OR BY BUILDING ENGINEER.
IIMUM T APPLICABLE	10.	INSTALL THERMOSTATS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY ARCHITECT. MOUNTING HEIGHT AFF SHALL COMPLY WITH ADA.
SE CRITERIA I IN CONTRACT	11.	EXTERIOR LOUVERS ARE INDICATED FOR LOCATION ONLY.
MINAL T TO SCALE T POSITIVE SUCTION HEAD	12.	ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST.
TSIDE AIR POSED BLADE DAMPER EN END DUCT	13.	VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
TAVE BAND EN DRIP PROOF TLET VELOCITY	14.	ACCESS PANELS SHALL BE PROVIDED TO CLEAN COILS AND SERVICE DAMPERS, HEATERS, VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT.
MP ESSURE DROP ASE	15.	SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. PROVIDE TO GC A LIST OF ALL WEIGHTS AND METHODS OF SUPPORT FOR COORDINATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
OVIDED BY OTHER SECTION(S)  JNDS PER SQUARE INCH DIFFERENTIAL  UNDS PER SQUARE INCH GAUGE  LYVINYL CHLORIDE	16.	SMOKE DETECTORS SHALL BE FURNISHED AND WIRED TO THE FIRE ALARM SYSTEM BY DIVISION 28. DIVISION 23 SHALL MOUNT THE DETECTORS IN DUCTWORK, WHERE REQUIRED BY CODE, DIVISION 28 SHALL WIRE THE DETECTORS TO TH BAS SYSTEM AND FAN STARTERS FOR SHUTDOWN.
FRIGERANT DISCHARGE (HOT GAS)	17.	ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC, AND DIV. 26 SPECIFICATIONS.
HEAT COIL FRIGERANT LIQUID FRIGERANT SUCTION	18.	INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. CONTRACTOR SHALL INCREASE SIZE FOR LINER IF APPLICABLE.
OF TOP UNIT LATIVE HUMIDITY	19.	ALL MATERIALS AND EQUIPMENT SHALL BE NEW.
VOLUTIONS PER MINUTE  PPLY AIR  JND ATTENUATOR  OKE DAMPER (W/ACCESS DOOR)	20.	PROVIDE FIRE DAMPERS OR SMOKE/FIRE DAMPERS AND ASSOCIATED ACCESS PANELS WHERE SHOWN ON DRAWINGS IN COMPLIANCE WITH IMC 2018 AND NFPA 90A. FOR DUCTS THAT PENETRATE FIRE WALLS, FLOORS AND PARTITIONS PROVIDE SLEEVES WHERE PENETRATIONS ARE NOT PERPENDICULAR TO SURFACE PENETRATED. ENCLOSE DAMPERS IN 10 GAUGE STEEL SLEEVE.
OKE DETECTOR NSIBLE UARE FEET AINLESS STEEL	21.	PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND AIR HANDLING UNITS UNLESS INTERNALLY ISOLATED. ALL DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
MBINATION SMOKE/FIRE DAMPER  OR)	22.	ALL RETURN AIR OPENINGS ABOVE CEILING SHALL BE PROVIDED WITH A 1/2" MESH ALUMINUM SCREEN (80% FREE ARE MINIMUM).
DE GATE DAMPER ATIC PRESSURE	23.	ANY DEMOLITION SHALL BE COORDINATED WITH OWNER, ARCHITECT, G.C. AND ENGINEER.
GLE WIDTH SINGLE INLET  MPERATURE	24.	ELBOWS IN DUCT SYSTEMS SHALL BE FULL RADIUS (CENTERLINE RADIUS = 1.5 DUCT WIDTH) WHERE SPACE PERMITS. WHERE LIMITED CLEARANCE OCCURS, PROVIDE SHORT RADIUS ELBOW WITH FULL LENGTH SPLITTER VANES PER SMACNA. MITERED (SQUARE) ELBOWS WITH TURNING VANES MAY NOT BE SUBMITTED WITHOUT WRITTEN CONSENT FROM THE ENGINEER.
P OF DUCT P OF PIPE FAL STATIC PRESSURE PICAL	25.	
LTS LUME DAMPER (MANUAL)	26.	CONDENSATE DRAIN PIPING SHALL PITCH AT 1/8"/FOOT.
LOCITY RIABLE FREQUENCY DRIVE	27.	PROVIDE HANGERS, CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
OTH ET BULB TEMPERATURE	28.	PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
TER COLUMN TER COOLED CONDENSER	29.	PROVIDE AT LEAST THREE-ELBOW SWING FOR PIPE TAKE-OFFS TO TERMINAL EQUIPMENT AND RISERS.
WATER COOLED CONDENSING UNIT TER PRESSURE DROP RE MESH SCREEN	30.	ISOLATION VALVES IN PIPING SYSTEMS ARE NOT SHOWN ON PLANS (FOR CLARITY) BUT ARE REQUIRED AT ALL PIPE BRANCHES AND CONNECTIONS TO EQUIPMENT REFER TO DETAIL SHEETS AND FLOW DIAGRAMS.
STING EQUIPMENT TO BE REMOVED STING EQUIPMENT TO REMAIN	31.	CONTRACTOR SHALL REVIEW BASE BUILDING STANDARDS AND COMPLY WITH CONSTRUCTION PROCEDURES AND REQUIREMENTS THROUGHOUT.
STING EQUIPMENT IN NEW LOCATION	00	ALL DIDING DUCTWORK AND UVAC CUALL DE LADELED IN ACCORDANCE WITH THE CHIDANCE SET CODTHINITHE MED

SYMBOL	IDENTIFICATION/	DESCRIPTOR
		VARIABLE AIR VOLUME TERMINAL BOX WITHOUT HEATING COIL  VARIABLE AIR VOLUME TERMINAL BOX WITH HEATING COIL
	FCU # (GPM)	CONCEALED FAN COIL UNIT (WITH AUXILIARY DRAIN PAN)

33. ACCESS PANELS MUST BE PROVIDED FOR ALL BASE BUILDING COMPONENTS TO INCLUDE, BUT NOT LIMITED TO,

ISOLATION VALVES, SMOKE FIRE DAMPERS/ACTUATORS AND CONTROL VALVES.

DESIGN STANDARDS.



<b>←</b>	GATE VALVE	VB	VACUUM BREAKER
<del></del> [	BALL VALVE		SOLENOID VALVE
	BALL VALVE WITH MEMORY STOP (BALANCING VALVE)	<b>T</b> PT	PRESSURE/TEMPERATURE WELL
I	BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRAIN	AAV	AUTOMATIC AIR VENT WITH ISOLATION VALVE
	VALVES) BUTTERFLY VALVE		MANUAL AIR VENT (UTLIZING PLUG VALVE)
I	BUTTERFLY VALVE WITH MEMORY STOP BALANCING VALVE)		REDUCER (ECCENTRIC-FLAT ON BOTTOM OF FLAT ON TOP)
	GLOBE VALVE		REDUCER (CONCENTRIC)
F	PLUG VALVE	<del></del>	FLEXIBLE CONNECTION
i	PRESSURE REDUCING VALVE	E	EXPANSION JOINT
	CHECK VALVE		PIPE GUIDE
	STRAINER W/BALL VALVE, HOSE BIBB & CAP (GATE VALVE FOR STEAM)	<b>─</b> ─⊠	ANCHOR
	AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR	<del></del>	RISE (SINGLE LINE - PLAN VIEW)
	AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR	<del></del> >	DROP (SINGLE LINE - PLAN VIEW)
	THREE WAY AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR		TOP TAKEOFF
	AUTOMATIC FLOW CONTROL VALVE (PRESSURE INDEPENDENT)		BOTTOM TAKEOFF
(	COMBINATION FLOWMETER/SHUT OFF/BALANCING VA CIRCUIT SETTER)	ALVE ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	PIPE BREAK (SINGLE LINE)
<del></del> i	FLOW MEASURING DEVICE		DIRT LEG
	SAFETY RELIEF VALVE	C.O.	CLEAN OUT FOR CONDENSATE DRAIN
<u> </u>	JNION OR FLANGE (AS INDICATED BY PIPE SIZE)		DIRECTION OF FLOW IN PIPE
E	ND CAP	UP ,	PITCH PIPE UP IN DIRECTION OF FLOW
<del></del> F	PRESSURE GAUGE WITH GAUGE COCK	DN	PITCH PIPE DOWN IN DIRECTION OF FLOW
<u> </u>	HERMOMETER		SUPPLY LINES (NEW)
F	RISE (DOUBLE LINE - PLAN VIEW)		RETURN LINES (NEW)
	DROP (DOUBLE LINE - PLAN VIEW)		EXISTING
F	PIPE BREAK (DOUBLE LINE)	<del></del>	DEMO/EXISTING TO BE REMOVED

**CROCKFORDS** -**RESORTS WORLD CATSKILLS** 

888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE 120 HUYSHOPE AVENUE SUITE 400

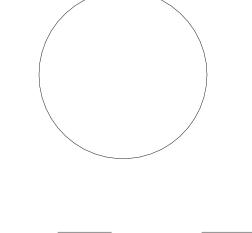
HARTFORD, CT 06106

© 2021 JCJ Architecture

860.247.9226

CONSULTANT: R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street . 617.423.7401 FAX Boston, MA 02210 : vanderweil.com

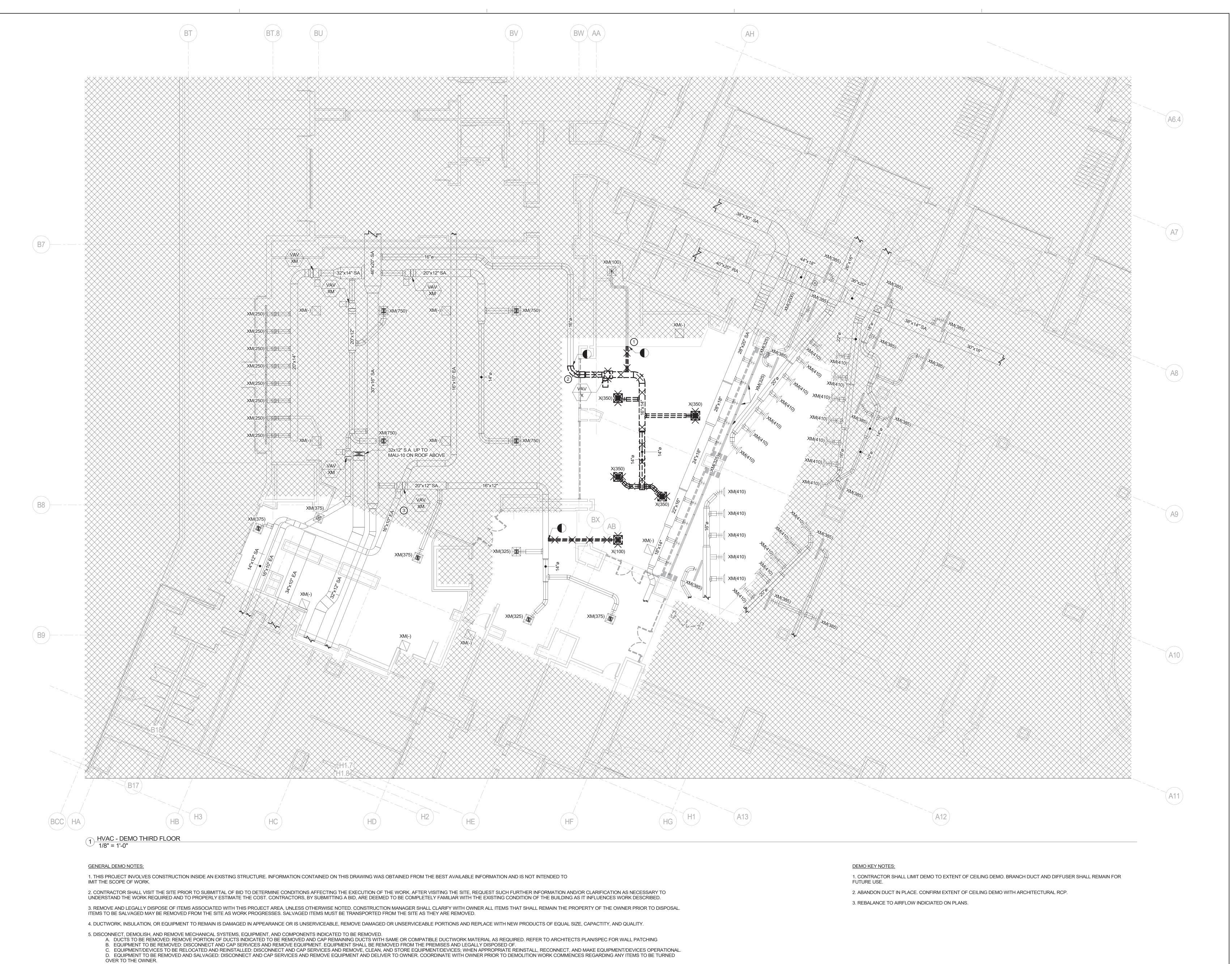
> BIDDING & CONSTRUCTION 07/06/2022



ISSUE \_\_07/06/2022 JOB 30860.00 DRAWN Author SCALE 12" = 1'-0"

REVISIONS

**LEGEND** 



888 resorts World Di Monticello, NY 12701

JCJARCHITECTURE

120 HUYSHOPE AVENUE
SUITE 400
HARTFORD, CT 06106
860.247.9226

© 2021 JCJ Architecture

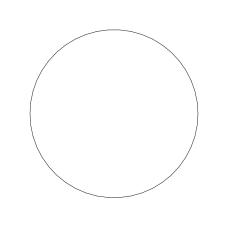
\_\_\_\_\_

CONSULTANT:

VANDERWEIL

R.G. Vanderwell Engineers, LLP 617.423.7423 TEL
274 Summer Street 617.423.7401 FAX

BIDDING & CONSTRUCTION 07/06/2022



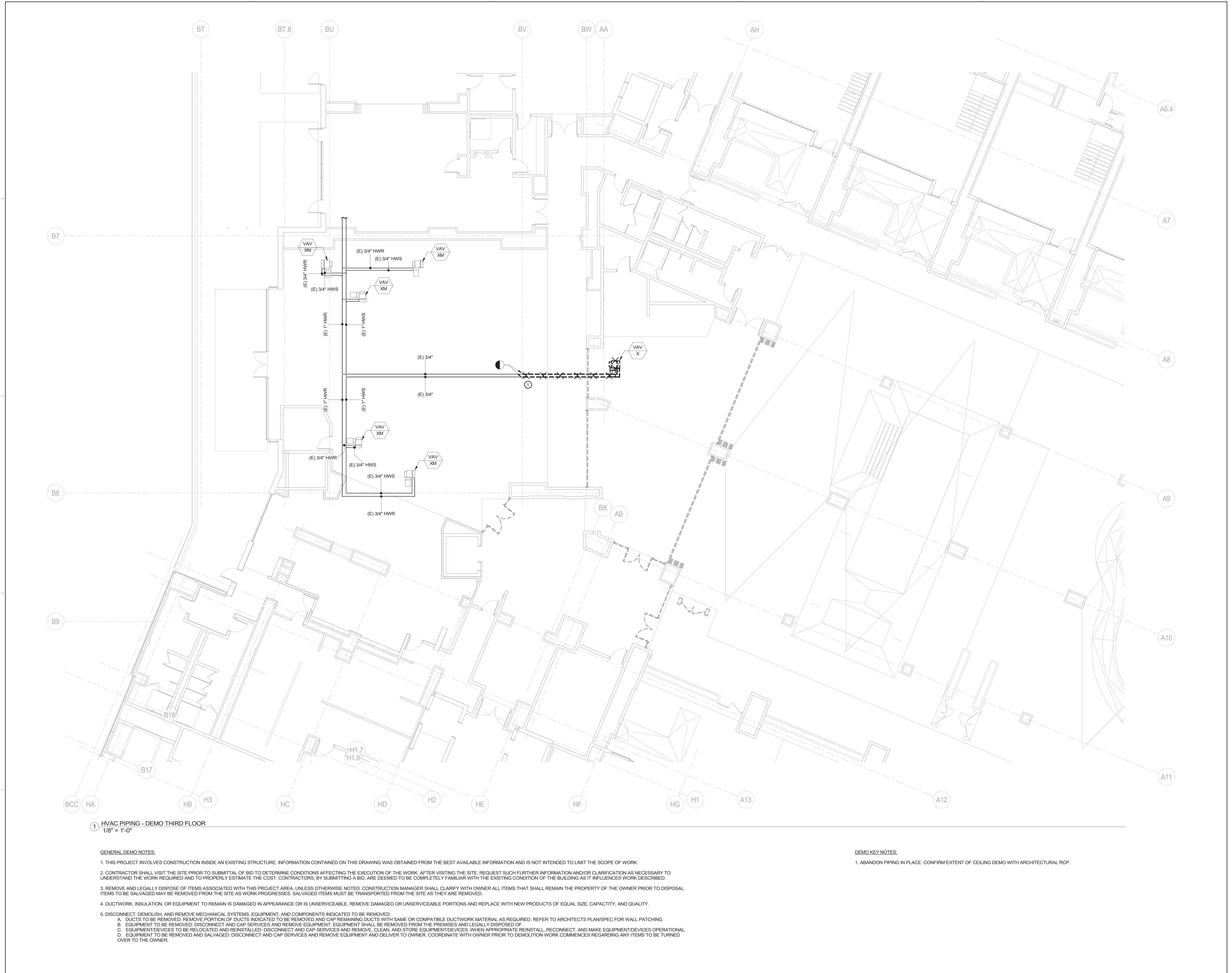
UE 07/06/2022

DRAWN <u>Author</u>

SCALE <u>1/8" = 1'-0"</u>

REVISIONS

DEMO DUCTWORK THIRD



888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE

120 HUYSHOPE AVENUE
SUITE 400
HARTFORD, CT 06106
860.247.9226

© 2021 JCJ Architecture

CONSULTANT:

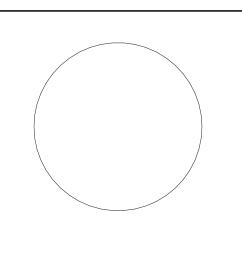
CONSULTANT:

VANDERWEIL

R.G. Vanderwell Engineers, LLP
274 Summer Street
Boston, MA 02210

i R.G. Vanderwell Engineers, LLP
i 617.423.7423 TEL
i 617.423.7401 FAX
vanderwell.com

BIDDING & CONSTRUCTION 07/06/2022



SSUE 07/06/2022 OB 30860.00

SCALE \_\_\_\_1/8" = 1'-0"

DRAWN Author

DEMO PIPING THIRD FLOOR



HVAC DUCTWORK - FIRST FLOOR

1. COORDINATE INSTALLATION OF DUCTWORK WITH OTHER TRADES BEFORE FABRICATION PROVIDE OFFSETS AS REQUIRED TO AVOID INTERFERENCES.

- 2. FINAL LOCATION OF DIFFUSERS, REGISTERS AND GRILLES SHALL BE FROM ARCHITECTURAL REFLECTED CEILING PLANS.
- 3. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL DEVICE MOUNTING HEIGHTS AND LOCATIONS.
- 4. BRANCH DUCT SIZES TO DIFFUSERS/GRILLE SHALL MATCH NECK SIZE OF AIR DEVICE UNLESS OTHERWISE NOTED.
- 5. ALL THERMOSTATS LOCATED ON PERIMETER WALLS & COLUMNS SHALL BE PROVIDED WITH INSULATED BACKPLATES.
- 6. CONTRACTOR SHALL SEAL ALL EXISTING TO REMAIN DUCTWORK JOINTS WITHIN SCOPE OF WORK IN ACCORDANCE WITH BASE BUILDING SPECIFICATIONS.
- 7. CONTRACTOR SHALL REPAIR ANY MISSING OR DAMAGED DUCTWORK INSULATION ON ALL EXISTING TO REMAIN DUCTWORK WITHIN SCOPE OF WORK IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND/OR BASE BUILDING SPECIFICATIONS.
- 8. CONTRACTOR SHALL MAINTAIN BUILDING MANAGEMENT AIR QUALITY STANDARD DURING CONSTRUCTION.
- 9. COORDINATE ANY/ALL BASE BUILDING EQUIPMENT OR SYSTEM SHUTDOWN REQUIREMENTS WITH OWNER.
- 10. CONTRACTOR MAY SIZE LOW PRESSURE DUCTWORK TO ACCOMMODATE FIELD CONDITIONS BASED UPON THE "LOW PRESSURE DUCT SIZING TABLE" LOCATED WITHIN DIV 23 SPECIFICATIONS.
- 11. REFER TO HVAC SPECIFICATIONS FOR EXTENT AND LOCATION OF ACOUSTICALLY LINED DUCTWORK.
- 12. PROVIDE MANUAL ADJUSTABLE DAMPERS ON EACH LOW PRESSURE SUPPLY RETURN AND EXHAUST DUCT TAKE OFF, AND AT EACH TAKE OFF TO REGISTERS, GRILLES AND DIFFUSERS. PROVIDE REMOTE ADJUSTABLE VOLUME DAMPERS AT INACCESSIBLE LOCATIONS. WHERE MANUAL DAMPERS ARE SHOWN ON PLAN, PROVIDE AT EXACT LOCATION. OTHERWISE VD SHALL BE AS FAR UPSTREAM AS POSSIBLE.
- 13. ALL NEW LISTED DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.

# **CROCKFORDS** -**RESORTS WORLD CATSKILLS**

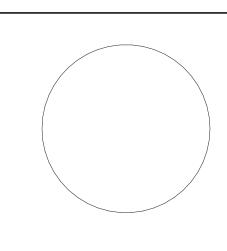
888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE 120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

CONSULTANT: R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX : 617.423.7401 FAX Boston, MA 02210

BIDDING & CONSTRUCTION 07/06/2022



DRAWN Author SCALE 1/8" = 1'-0"

REVISIONS

**DUCTWORK FIRST FLOOR** 



1. COORDINATE INSTALLATION OF DUCTWORK WITH OTHER TRADES BEFORE FABRICATION PROVIDE OFFSETS AS REQUIRED TO AVOID INTERFERENCES.

- 2. FINAL LOCATION OF DIFFUSERS, REGISTERS AND GRILLES SHALL BE FROM ARCHITECTURAL REFLECTED CEILING PLANS.
- 3. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL DEVICE MOUNTING HEIGHTS AND LOCATIONS.
- 4. BRANCH DUCT SIZES TO DIFFUSERS/GRILLE SHALL MATCH NECK SIZE OF AIR DEVICE UNLESS OTHERWISE NOTED.
- 5. ALL THERMOSTATS LOCATED ON PERIMETER WALLS & COLUMNS SHALL BE PROVIDED WITH INSULATED BACKPLATES.
- 6. CONTRACTOR SHALL SEAL ALL EXISTING TO REMAIN DUCTWORK JOINTS WITHIN SCOPE OF WORK IN ACCORDANCE WITH BASE BUILDING SPECIFICATIONS.
- 7. CONTRACTOR SHALL REPAIR ANY MISSING OR DAMAGED DUCTWORK INSULATION ON ALL EXISTING TO REMAIN DUCTWORK WITHIN SCOPE OF WORK IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND/OR BASE BUILDING SPECIFICATIONS.
- 8. CONTRACTOR SHALL MAINTAIN BUILDING MANAGEMENT AIR QUALITY STANDARD DURING CONSTRUCTION.
- 9. COORDINATE ANY/ALL BASE BUILDING EQUIPMENT OR SYSTEM SHUTDOWN REQUIREMENTS WITH OWNER.
- 10. CONTRACTOR MAY SIZE LOW PRESSURE DUCTWORK TO ACCOMMODATE FIELD CONDITIONS BASED UPON THE "LOW PRESSURE DUCT SIZING TABLE" LOCATED WITHIN DIV 23 SPECIFICATIONS.
- 11. REFER TO HVAC SPECIFICATIONS FOR EXTENT AND LOCATION OF ACOUSTICALLY LINED DUCTWORK.
- 12. PROVIDE MANUAL ADJUSTABLE DAMPERS ON EACH LOW PRESSURE SUPPLY RETURN AND EXHAUST DUCT TAKE OFF, AND AT EACH TAKE OFF TO REGISTERS, GRILLES AND DIFFUSERS. PROVIDE REMOTE ADJUSTABLE VOLUME DAMPERS AT INACCESSIBLE LOCATIONS. WHERE MANUAL DAMPERS ARE SHOWN ON PLAN, PROVIDE AT EXACT LOCATION. OTHERWISE VD SHALL BE AS FAR UPSTREAM AS POSSIBLE.
- 13. ALL NEW LISTED DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.

# **CROCKFORDS** -**RESORTS WORLD CATSKILLS**

888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE 120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

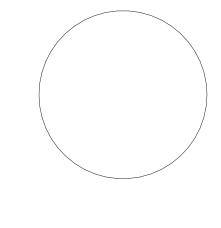
Boston, MA 02210

CONSULTANT:

R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX

: 617.423.7401 FAX

BIDDING & CONSTRUCTION 07/06/2022



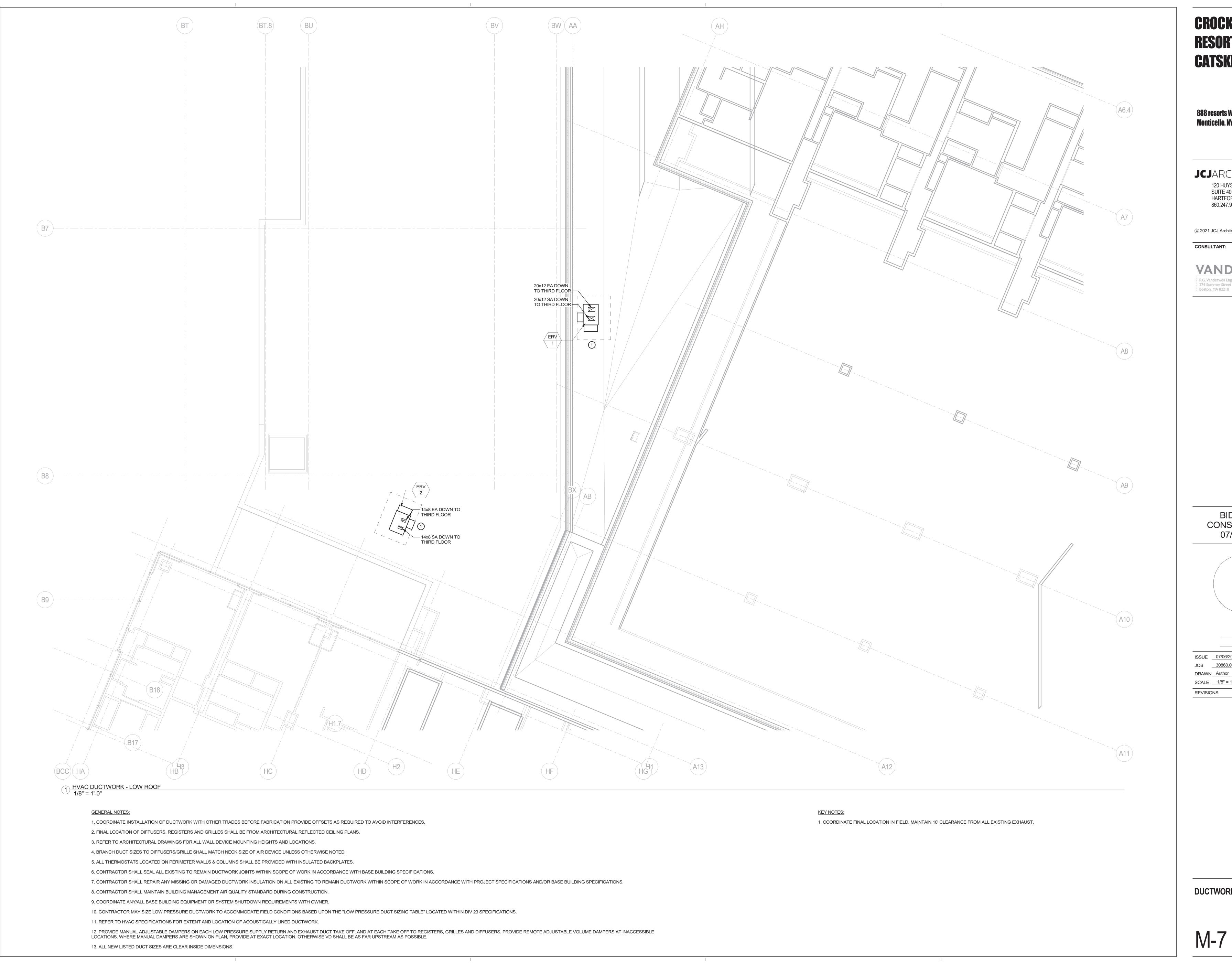
SCALE 1/8" = 1'-0"

REVISIONS

1. RECONNECT TO EXISTING TO REMAIN BRANCH DUCT. BALANCE TO AIRFLOW INDICATED ON PLANS.

2. REBALANCE TO AIRFLOW INDICATED ON PLANS.

**DUCTWORK THIRD FLOOR** 



888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE 120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106

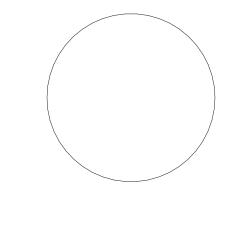
© 2021 JCJ Architecture

860.247.9226

CONSULTANT:

R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street : 617.423.7401 FAX Boston, MA 02210

BIDDING & CONSTRUCTION 07/06/2022



SCALE \_\_\_1/8" = 1'-0"

**DUCTWORK ROOF** 



## GENERAL NOTES:

1. ALL THERMOSTATS LOCATED ON PERIMETER WALLS & COLUMNS SHALL BE PROVIDED WITH INSULATED BACKPLATES.

2. CONTRACTOR SHALL MAINTAIN BUILDING MANAGEMENT AIR QUALITY STANDARD DURING CONSTRUCTION.

3. COORDINATE ANY/ALL BASE BUILDING EQUIPMENT OR SYSTEM SHUTDOWN REQUIREMENTS WITH OWNER.

1. COORDINATE CEILING DEMO WITH ARCHITECTURAL RCP.

**KEY NOTES:** 

# CROCKFORDS RESORTS WORLD CATSKILLS

888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE

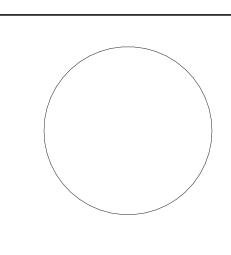
120 HUYSHOPE AVENUE
SUITE 400
HARTFORD, CT 06106
860.247.9226

© 2021 JCJ Architecture

CONSULTANT:

R.G. Vanderwell Engineers, LLP 617.423.7423 TEL 617.423.7401 FAX boston, MA 02210 canderwell.com

BIDDING & CONSTRUCTION 07/06/2022



ISSUE \_\_07/06/2022 JOB \_\_30860.00

DRAWN Author

SCALE 1/8" = 1'-0"

REVISIONS

\_\_\_\_

PIPING FIRST FLOOR



PIPING SECOND FLOOR

**CROCKFORDS** -

**CATSKILLS** 

888 resorts World Dr

Monticello, NY 12701

© 2021 JCJ Architecture

CONSULTANT:

**RESORTS WORLD** 

JCJARCHITECTURE

120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106 860.247.9226

R.G. Vanderwell Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX Boston, MA 02210 vanderwell.com

BIDDING & CONSTRUCTION 07/06/2022

 ISSUE
 07/06/2022

 JOB
 30860.00

SCALE \_\_\_1/8" = 1'-0"

DRAWN\_Author

REVISIONS



888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE

120 HUYSHOPE AVENUE
SUITE 400
HARTFORD, CT 06106
860.247.9226

© 2021 JCJ Architecture

CONSULTANT:

R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX Boston, MA 02210 vanderweil.com

BIDDING & CONSTRUCTION 07/06/2022

ISSUE 07/06/2022

JOB 30860.00

DRAWN Author

SCALE 1/8" = 1'-0"

REVISIONS

PIPING THIRD FLOOR



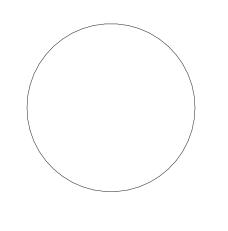
888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE 120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

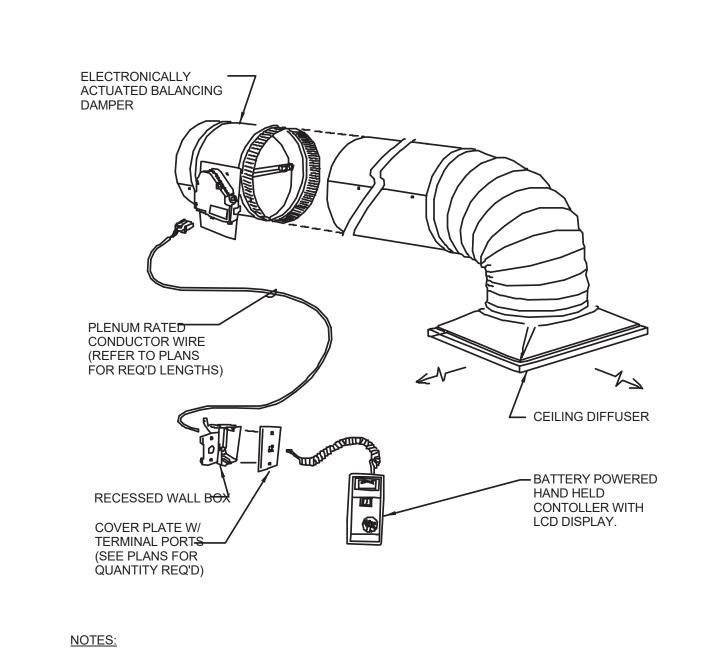
R.G. Vanderwell Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX Boston, MA 02210 vanderwell.com

BIDDING & CONSTRUCTION 07/06/2022

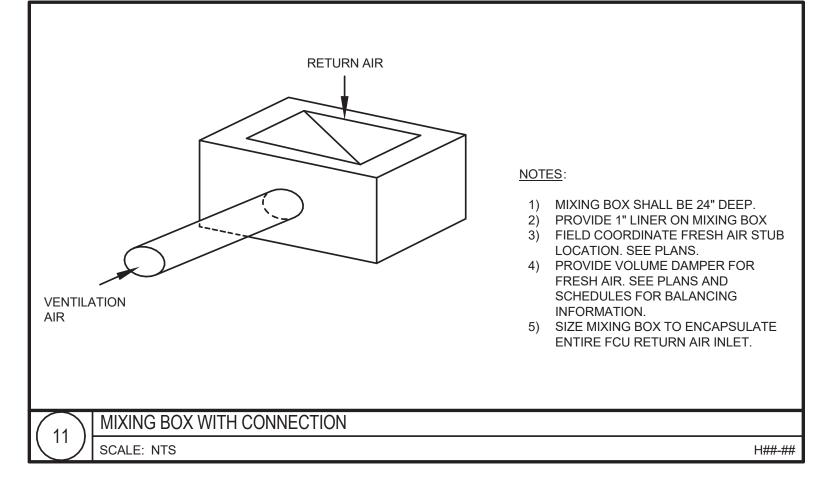


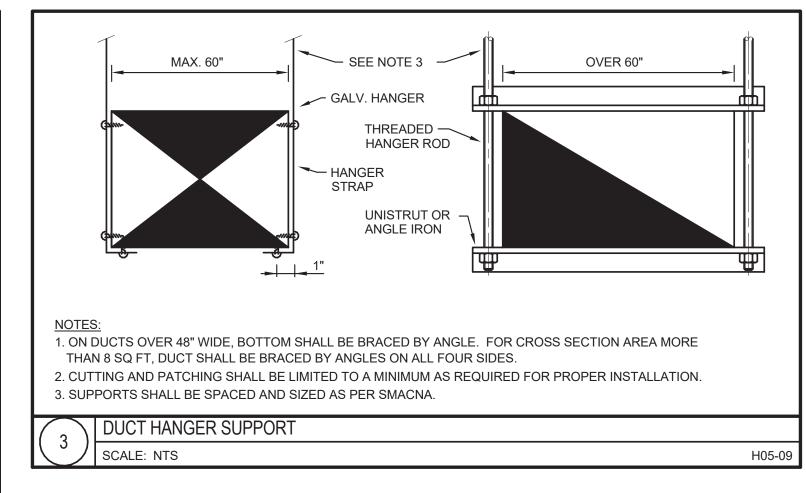
SCALE \_\_\_1/8" = 1'-0"

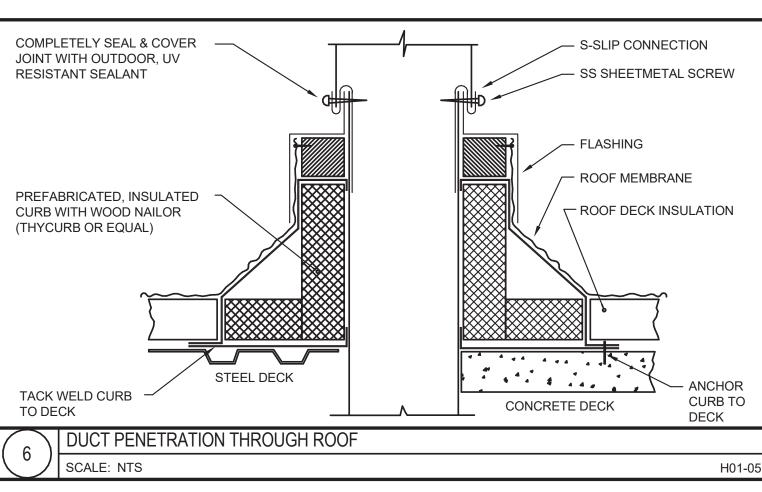
**PIPING ROOF** 

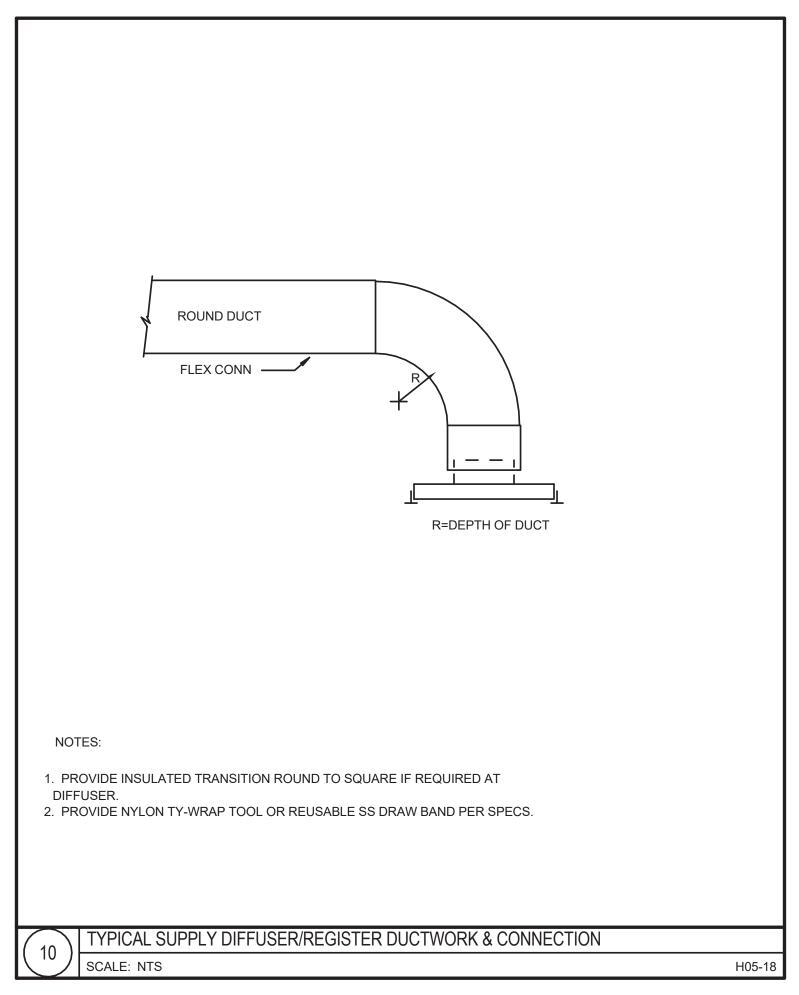


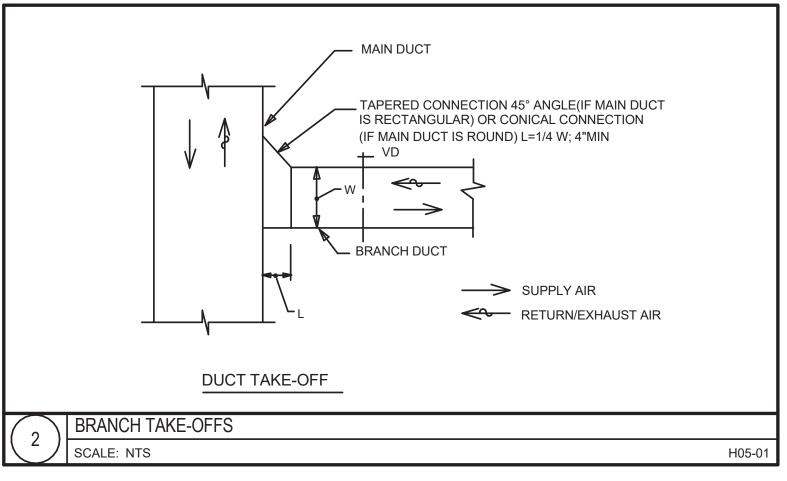
- 1. PROVIDE ELECTRONICALLY ACTUATED VOLUME DAMPERS SIMILAR TO YOUNG REGULATOR MODEL
- PROVIDE WITH ONE (1) HAND HELD DAMPER ACTUATOR SIMILAR TO YOUNG REGULATOR MODEL EBD-P.
- 3. PROVIDE WALL-BOX COVER(S) WITH PORTS EQUALING THE QUANTITY OF REMOTE VOLUME DAMPERS. REFER TO FLOOR PLANS FOR QUANTITIES AND LOCATIONS OF WALL MOUNTED DEVICES. 4. CONTRACTOR SHALL COORDINATE LENGTH OF INDIVIDUAL CONDUCTOR WIRES BETWEEN WALL-BOX AND REMOTE VOLUME DAMPERS AS SHOWN ON FLOOR PLANS.
- REMOTLEY (ELECTRONIC) ADJUSTABLE BALANCING DAMPER SCALE: NTS

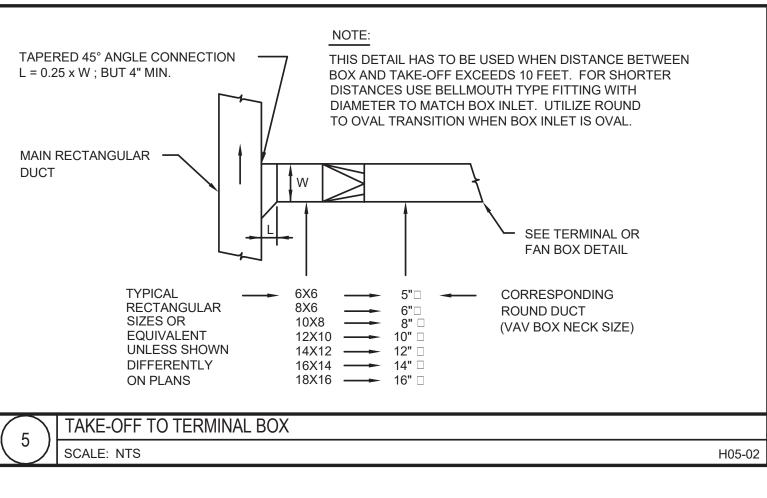


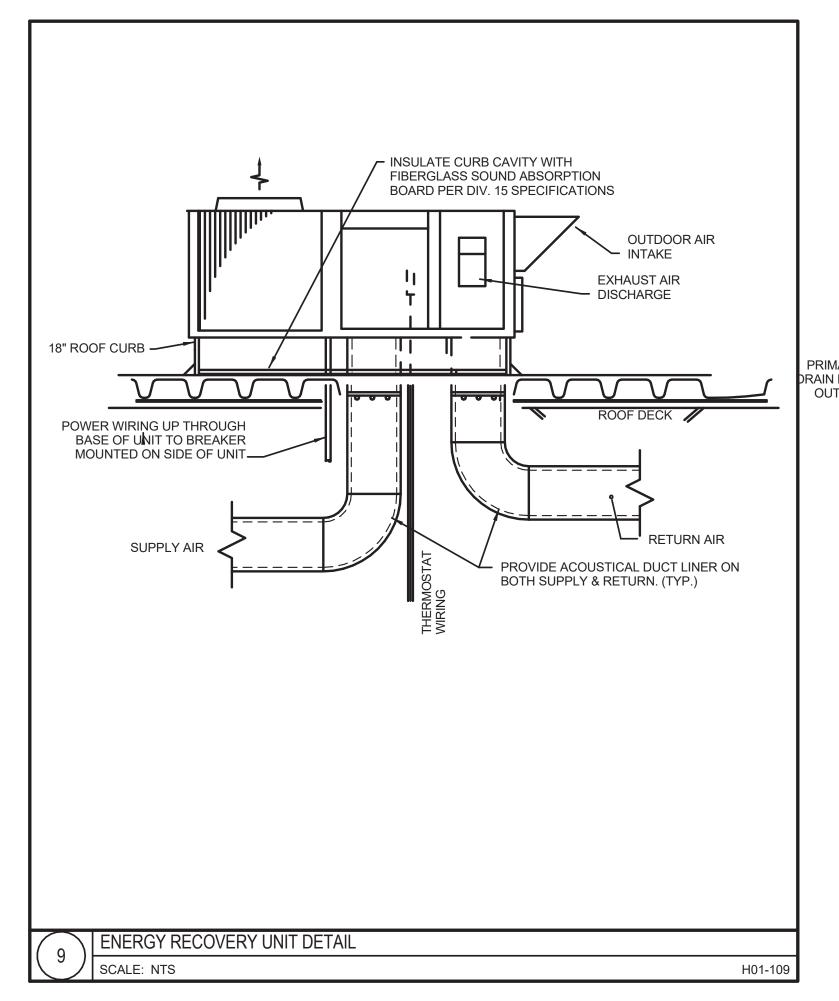


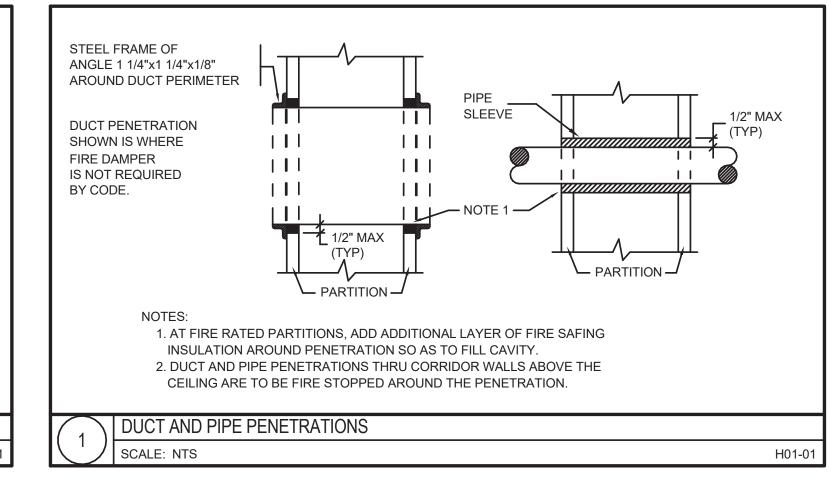


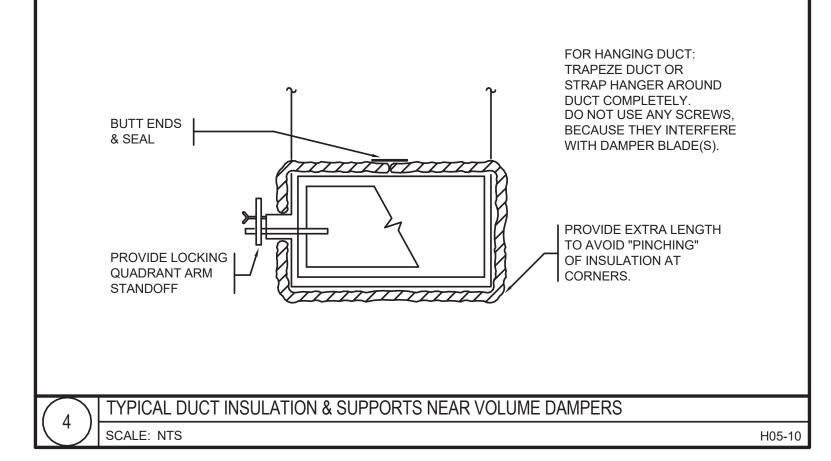


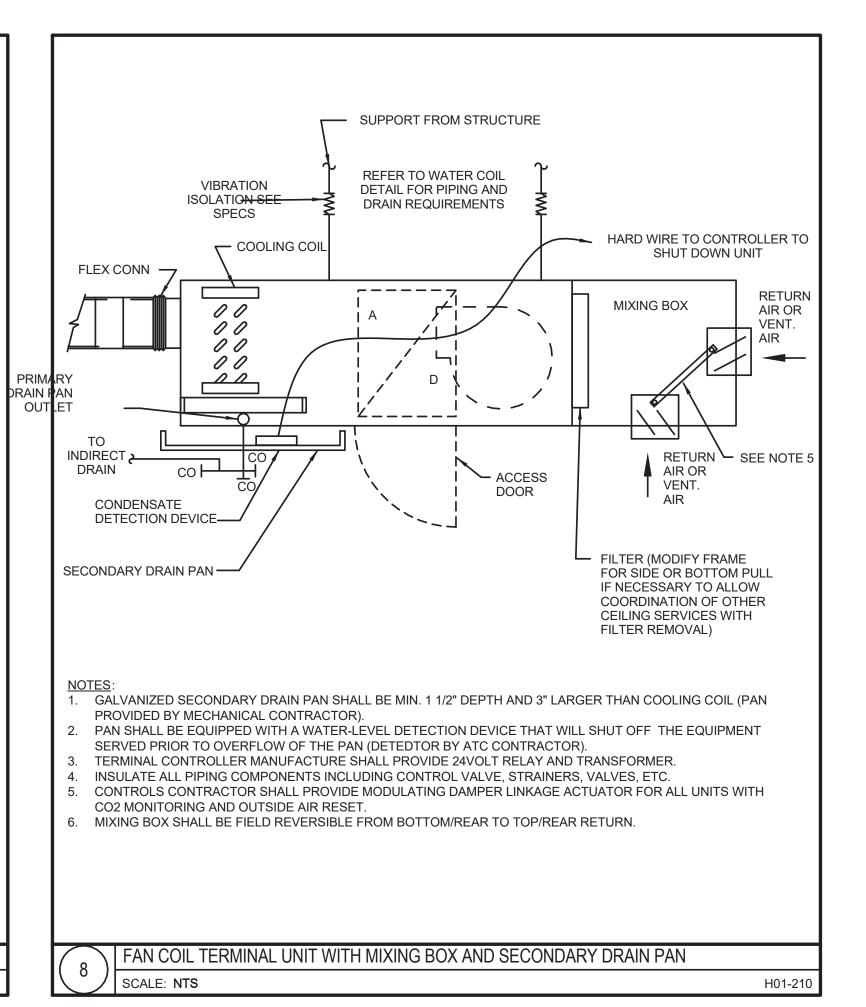












888 resorts World Dr **Monticello, NY 12701** 

JCJARCHITECTURE

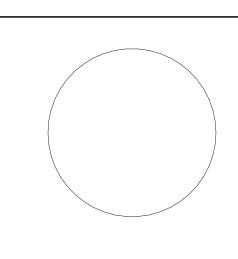
120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106

© 2021 JCJ Architecture

860.247.9226

CONSULTANT: R.G. Vanderweil Engineers, LLP 617.423.7423 TEL 274 Summer Street 617.423.7401 FAX Boston, MA 02210 vanderweil.com

> BIDDING & CONSTRUCTION



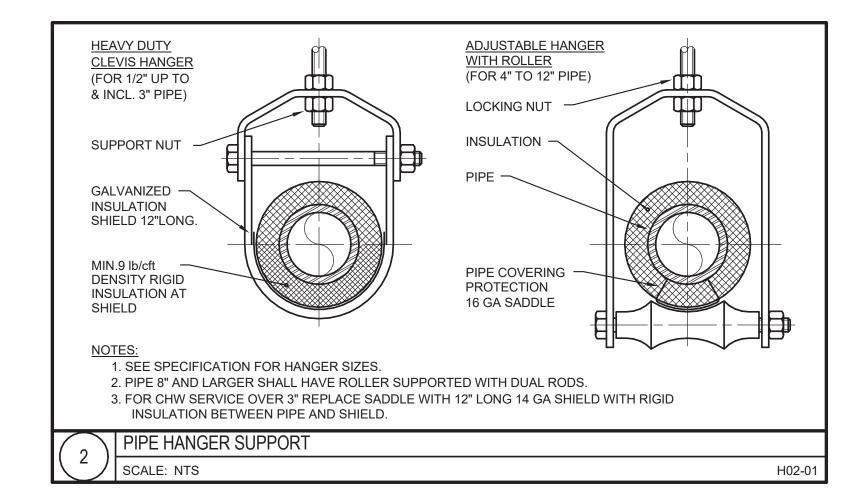
ISSUE \_\_07/06/2022

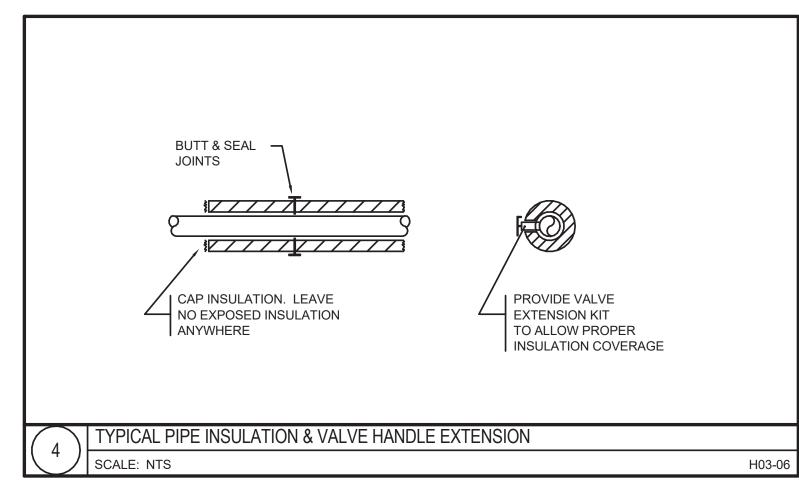
DRAWN\_Author SCALE 12" = 1'-0"

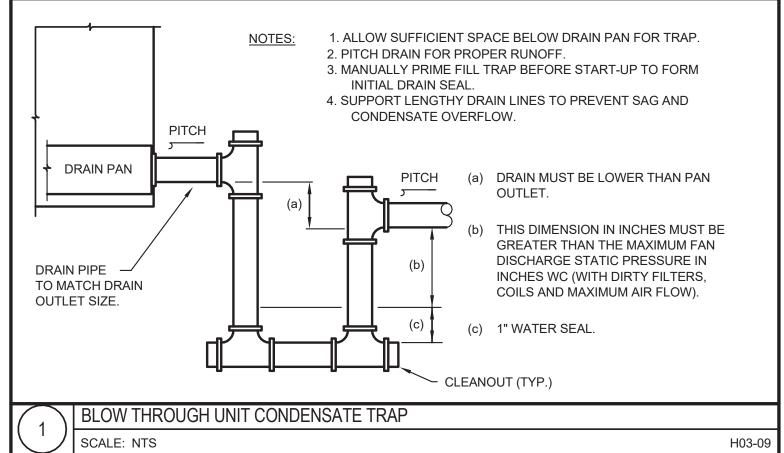
JOB 30860.00

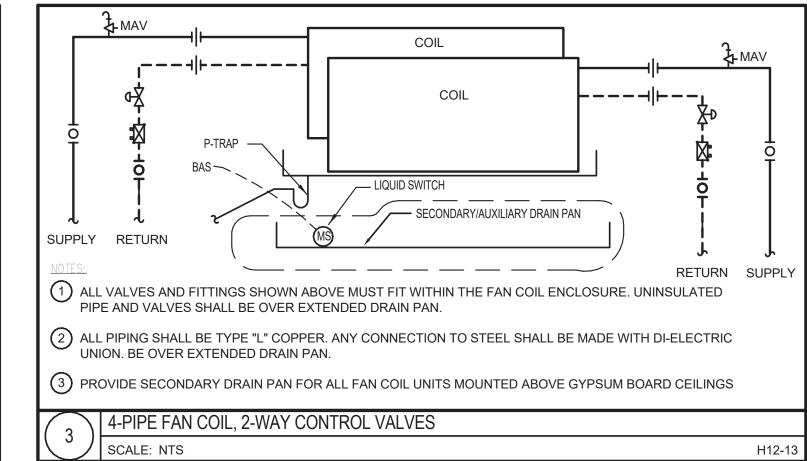
REVISIONS

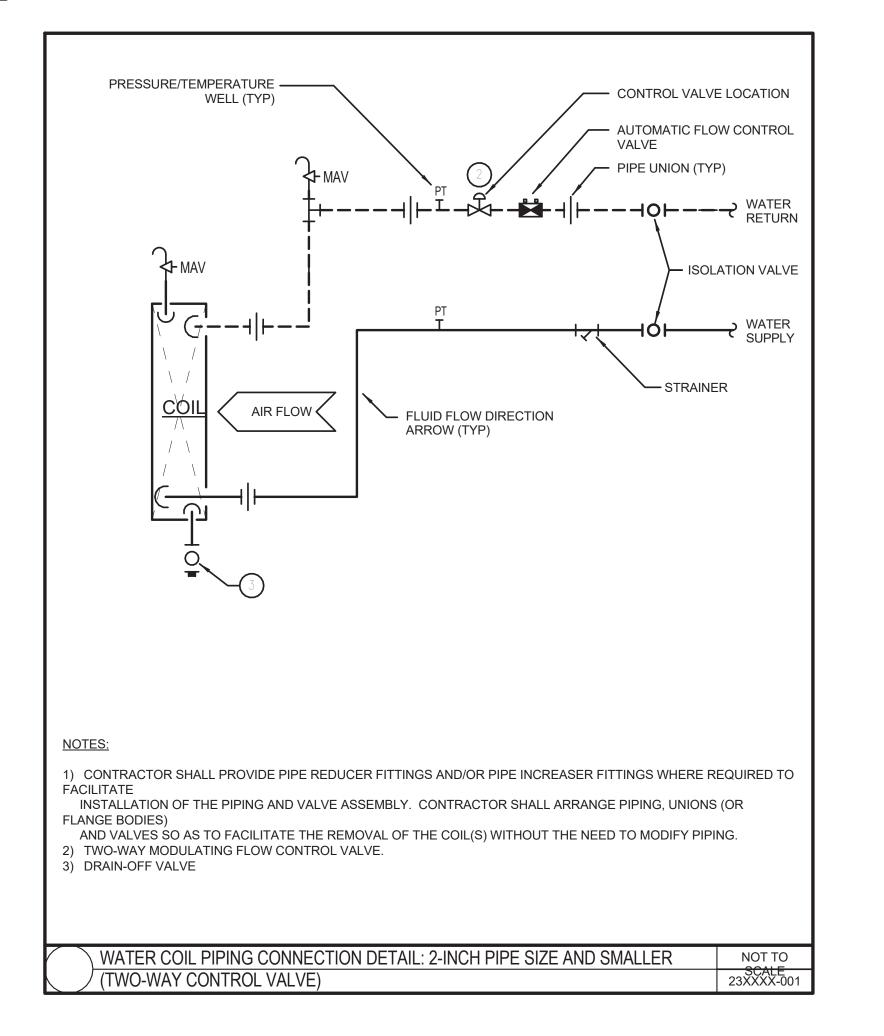
**DETAILS** 











888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE
120 HUYSHOPE AVENUE

SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

\_\_\_\_\_

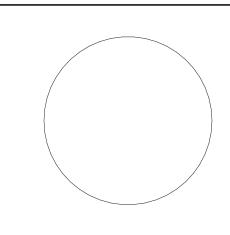
CONSULTANT:

VANDERWEIL

R.G. Vanderweil Engineers, LLP
274 Summer Street
Boston, MA 02210

617.423.7423 TEL
617.423.7401 FAX
vanderweil.com

BIDDING & CONSTRUCTION 07/06/2022



ISSUE 07/06/2022

JOB 30860.00

DRAWN Author

SCALE 12" = 1'-0"

REVISIONS

**DETAILS** 

								<u>H</u>	OF	RIZO	TNC	AL	FAN	1 C	OIL	_ UN	VIT SO	CHE	DU	ILE													
			FAN							COO	LING CO	IL (CHILI	LED WATE	ER)							HOT V	VATER H	IEATING	COIL		ELEC	TRICAL	DATA					
UNIT NO.									AIR [	DATA			(	CHILLE	D WATE	ER DATA															FAN	MANUFACTURER/ MODEL NUMBER (AS	REMARKS
ONIT NO.	SERVICE	FAN CFM	OA CFM	E.S.P. (IN.WG)	TOTA MBH	L SENS	S. E DI	AT (°F	F) L/	AT (°F) B WB	P.D. (IN.WG	NO. ROWS	FLOW (GPM)	EWT (°F)	LWT (°F)	WPD	RUNOUT PIP SIZE (IN.)	TOTAL E MBH	FLOW (GPM)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	RUNOUT PIPE SIZE (IN.)	ROWS	V	Ph	Hz	MCA	MSCP	MOTOR HP	STANDARD)	REWARRS
FCU-1	LOUNGE	1995	500	0.75	86.2	58.9	8	30 6	57 53	.5 52.9	-	6	12.3	42	56	2.9	1-1/2"	53.6	2.7	60	84.7	160	120	3/4"	1	460	3	60	2.75	15.0	1.5	JOHNSON CONTROLS AHD20	SEE NOTES: 1 THRU 1
FCU-2	LOUNGE	1995	500	0.75	86.2	2 58.9	8	30 6	57 53	.5 52.9	-	6	12.3	42	56	2.9	1-1/2"	53.6	2.7	60	84.7	160	120	3/4"	1	460	3	60	2.75	15.0	1.5	JOHNSON CONTROLS AHD20	SEE NOTES: 1 THRU 1
FCU-3	LOUNGE	1995	500	0.75	86.2	58.9	8	30 6	57 53	.5 52.9	-	6	12.3	42	56	2.9	1-1/2"	53.6	2.7	60	84.7	160	120	3/4"	1	460	3	60	2.75	15.0	1.5	JOHNSON CONTROLS AHD20	SEE NOTES: 1 THRU 1
FCU-4	SLOTS	1600	325	0.75	62.1	44.3	8	30 6	57 55	.1 54.5	-	6	8.8	42	56	1.8	1-1/4"	40.1	2.1	60	83.1	160	120	3/4"	1	460	3	60	2.75	15.0	1.5	JOHNSON CONTROLS AHD16	SEE NOTES: 1 THRU 1
FCU-5	WINE BAR	1200	225	0.75	51.3	35.2	2 8	30 6	57 53	.6 53.0	-	6	7.3	42	56	3.1	1-1/4"	29.7	1.5	60	82.9	160	120	3/4"	1	460	3	60	2.13	15.0	1	JOHNSON CONTROLS AHD12	SEE NOTES: 1 THRU 1

- 1. SINGLE POINT ELECTRIC CONNECTION WITH BOTTOM HINGED ACCESS, FAN INTERLOCK RELAY.
- 2. FACTORY PRE-WIRED TERMINAL STRIP (DAMPERS, UNIT SHUTDOWN & CONTROL VALVES) ALL INTERCONNECTING WIRES BY CONTROL CONTRACTOR.
- 3. PROVIDE WITH MANUFACTURERS ELECTRONIC CONDENSATE DRAIN PAN OVERFLOW PROTECTION SWITCH WIRED TO FAN MOTOR AND COOLING COIL CONTROL VALVE TO DEACTIVATE UNIT UPON DETECTION OF A FULL DRAIN PAN, CONFORMING TO IMC 2018.
- 4. PROVIDE WITH CUSTOM MIXING BOX ON BACK OF UNIT. 5. PROVIDE PREMIUM EFFICIENCY FULLY MODULATING ECM MOTORS.
- 6. PROVIDE WITH PLENUM RATED FACTORY CONDENSATE PUMP.
- 7. PROVIDE 1" MERV-7 FILTER
- 8. PROVIDE UNIT MOUNTED FUSED DISCONNECT SWITCH.
- 9. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF PANEL MOUNTINGS. COIL PIPING CONNECTIONS, ELECTRICAL, AND CONTROLS CONNECTIONS SHALL BE ON SAME SIDE OF UNIT.
- 10. PROVIDE WITH VARIABLE FAN SPEED.
- 11. HOT WATER COIL SHALL BE LOCATED IN THE REHEAT COIL POSITION AND SHALL BE CAPABLE OF REHEAT FOR DEHUMIDIFICATION.

	CONDENSATE PUMP SCHEDULE													
UNIT NO.	LOCATION	CAP. (GPH)	MAX FLUID TEMP. (°F)	HEAD (FT.)	SHUT-OFF HEAD (FT.)	MOTOR HP	REC.CAP. GAL.	W	IMENSIC D	NS (in)	ELECT V/□/HZ	RICAL	MANUFACTURER MODEL NUMBER (AS STANDARD)	REMARKS
CP-1	FCUs/AC-1	38	110	12	18	-	0.25	11.25	5.5	5.25	120/1/60	1.7	HARTELL KL-20X-1ULT	SEE NOTES: 1 THRU 3
NOTES:							•			•	•			

- 1 PROVIDE SAFTEY SWITCH FOR OVERFLOW PROTECTION & CHECK VALVE ASSEMBLY
- 2 PROVIDE 6 FT POWER WIRING IN METAL CONDUIT SUITABLE FOR HARD WIRING CONNECTION ABOVE CEILING.
- 3 PUMP TO BE RATED FOR PLENUM APPLICATION

	AIR INLET AND OUTLET SCHEDULE											
DEVICE TAG	DEVICE CONNECTION SIZE	AIR FLOW RANGE (CFM)	FACE / MODULE SIZE (INCHES)	SERVICE	TOTAL AIR PRESURE AT MAXIMUM CFM INDICATED (IN WG)	NOISE CRITERIA AT THE MAXIMUM CFM INDICATED (NC)	MOUNTING STYLE	MANUFACTURER MODEL NUMBER (BASIS OF DESIGN)	REMARKS			
A1	14" DIA.	0-500	24x24	SUPPLY	0.071	<10	ACT/GYP	PRICE SMX	NOTES 1, 2, 3, 4, 5			
В1	14" DIA.	0-500	24x24	SUPPLY	0.071	<10	ACT/GYP	PRICE SPD	NOTES 1, 2, 3, 4, 5			
C1	15" DIA.	0-600	24x24	RETURN / EXHAUST	0.059	<10	ACT/GYP	PRICE SMX	NOTES 1, 2, 3, 4, 7			
D1	15" DIA.	0-600	24x24	RETURN / EXHAUST	0.059	<10	ACT/GYP	PRICE SPD	NOTES 1, 2, 3, 4, 7			

- DIFFUSERS SHALL MEET ALL N.C. LEVELS INDICATED ON SCHEDULE. COORDINATE COLOR, FINISH, FRAMES & BORDER TYPES WITH ARCHITECT. 7.
- DIFFUSER BLOW PATTERN AS INDICATED ON PLANS BRANCH RUNOUTS SHALL BE SAME AS NECK SIZE SCHEDULED, UNLESS
- OTHERWISE INDICATED ON FLOOR PLANS. PROVIDE MANUFACTURERS 4'-0" LONG ACOUSTICALLY LINED PLENUM.
  REFER TO DRAWINGS FOR ADDITIONAL PLENUM HEIGHT REQUIREMENTS
- 6. PROVIDE MANUFACTURERS MITERED CORNERS AND BLANK OFF SECTIONS FOR CONTINUOUS LENGTH LINEAR DIFFUSERS.
- DIFFUSERS.

  PROVIDE RETURN AIR SOUND BOOT

  PROVIDE SIDEWALL DIFFUSERS WITH 45° THROW

  SIDEWALL "DEVICE CONNECTION SIZE" IS BASED ON SIZE OF SPIRAL DUCTWORK

  PROVIDE SIDEWALL DIFFUSERS WITH AIR-SCOOP/EXTRACTOR DEVICE ASD OR EQUAL

  GRILLE SHALL BE ALUMINUM.
- 12. PROVIDE WITH INSULATED RETURN HOOD/LIGHT SHIELD TITUS FBRI OR SIMILAR

	AIR-TO-AIR HEAT EXCHANGER SCHEDULE																																	
							ВІ	UILDIN	G SUPI	PLY DA	ATA								BUILDI	NG EXH	AUST DA	ATA				% EFFICII	ENCY	ELEC	TRICAL	DATA				
UNIT	SYSTEM				WINT	ΓER			5	SUMME	ΞR		DECOVER	DED MOU				WIN	ITER			SUM	MER								Τ		MANUFACTURER	DEMARKO
NO.	SERVED	CFM		EAT(°F	-)	LA	AT(°F)	E	AT(°F)		LAT(°F	)	RECOVER	KED MBH	MAX PD (IN WC)	CFM	EAT	Γ(°F)	LAT	Γ(°F)	EAT	Γ(°F)	LA	Γ(°F)	MAX PD (IN WC)	WIN-	SUM-	V	   Ph	Hz	MCA	MOP	MODEL NUMBER (AS STANDARD)	REMARKS
			D	В	WB	DB	WB	DB	W	В	DB V	VB	WINTER	SUMMER	' /		DB	WB	DB	WB	DB	WB	DB	WB	(114 440)	TER	MER							
ERV-1	FCU-1/2/3	1500	(	) .	-1.5	56.1	46.4	90.8	3 76	.2	78.6 6	6.7	91.6	56.7	0.76	1400	75.0	58.1	14.6	14.5	75.0	62.5	87.9	73.5	0.64	79.4	76.0	208	1	60	21.9	25	GREENHECK ERVe-20-15L	2, 3, 4, 5, 6
ERV-2	FCU-4/5	500	(	) .	-1.5	56.4	47.4	90.8	3 76	.2	78.6 6	6.3	30.7	19.6	0.61	450	75.0	58.1	11.6	11.5	75.0	62.5	88.3	74.2	0.55	82.1	83.7	208	3	60	22.2	25	GREENHECK ERV-10-20L-VG	1, 3, 4, 5, 6

- 1. PROVIDE WITH 2 KW PRE-HEATER
- 2. PROVIDE WITH 4.1 KW PRE-HEATER 3. PROVIDE WITH HINGED ACCESS
- 4. PROVIDE SUPPLY AND EXHAUST FAN WITH VFD. 5. PROVIDE FACTORY SUPPLIED MINIMUM 18" ROOF CURB.
- 6. PROVIDE WITH INTEGRAL MOTORIZED DAMPERS FOR OUTDOOR AIR AND EXHAUST.

888 resorts World Dr Monticello, NY 12701

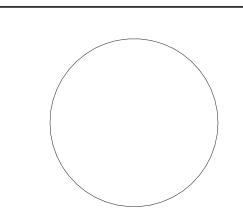
JCJARCHITECTURE 120 HUYSHOPE AVENUE

> SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture



BIDDING & CONSTRUCTION 07/06/2022



ISSUE 07/06/2022 JOB 30860.00 DRAWN Author SCALE \_\_12" = 1'-0"

REVISIONS

**SCHEDULES** 

	INS	TRUMENT I	DENTIFICATION L	ETTERS	
	FIRST LETTER(S)			SUCCEEDING LETTERS	
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
А	ANALYSIS		ALARM		
В	BURNER FLAME		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
7	CARBON DIOXIDE			CONTROL	
5	DENSITY (S.G.)/DEWPOINT	DIFFERENTIAL		DAMPER	
	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
:	FLOW RATE	RATIO			
}	GAUGE		GLASS	GATE	
1	HAND (MANUAL)				HIGH
	CURRENT		INDICATE		
	POWER	SCAN			
	TIME OR SCHEDULE	RATE OF CHANGE		CONTROL STATION	
-	LEVEL		LIGHT (PILOT)		LOW
1	MOTION/MOISTURE	MOMENTARY			
1	DIAL VOLATILE OR GAME COMPUTER		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
	OXYGEN		OXYGEN		
,	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Į.	QUANTITY OR EVENT(*)	INTEGRATE	INTEGRATE		
₹	RADIATION		RECORD OR PRINT		
;	SPEED OR FREQUENCY	SAFETY		SWITCH	
-	TEMPERATURE			TRANSMIT	
J	MULTIVARIABLE(*)		MULTIFUNCTION(*)	MULTIFUNCTION(*)	MULTIFUNCTION(*)
/	VIBRATION, MECH ANALYSIS			VALVE	
/	WEIGHT OR FORCE		WELL		
	CARBON MONOXIDE		UNCLASSIFIED(*)	TRANSFORMER	UNCLASSIFIED(*)
	EVENT (STATUS)			RELAY OR COMPUTE(*)	
2	POSITION, DIMENSION			DRIVER, ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(\*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS. EXAMPLE: PT=PRESSURE TRANSMITTER, HS=HAND SWITCH

#### SEQUENCE OF CONTROLS - GENERAL

- 1. SEQUENCES OUTLINED (UNLESS OTHERWISE SPECIFIED) SHALL BE PERFORMED BY DIRECT DIGITAL
- 2. UNLESS OTHERWISE SPECIFIED, ALL SETPOINTS AND TIME DELAYS SHALL BE ADJUSTABLE BY THE OPERATOR THROUGH THE BAS.
- 3. ABILITY TO REVIEW ALL MEASURED DATA, CONTROL SETPOINTS AND FUNCTIONS SHALL BE PROVIDED AT BAS WORKSTATION.
- 4. PROVIDE MENU DRIVEN CAPABILITY TO OVERRIDE AUTOMATED START/STOP OR OPERATING MODES FOR EACH PIECE OF EQUIPMENT (INCLUDING FAN COIL UNITS, FANS, VAV BOXES, ETC...). IF A SEQUENCE IS DISABLED BY MANUAL INPUT AND THE BAS ATTEMPTS AN AUTOMATED CHANGE IN OPERATING MODE, AN ALARM SHALL BE INITIATED AT THE BAS STATING THAT THE SYSTEM WAS UNABLE TO CHANGE THE MODE DUE TO USER INPUT. WHERE APPLICABLE A MANUAL INPUT COMMAND WILL THEN BE REQUIRED FROM THE USER INSTRUCTING THE BAS TO START THE NEXT SEQUENTIAL PIECE OF EQUIPMENT.
- 5. THE DESIGN INTENT IS FOR THE BAS TO MONITOR PRESSURES, TEMPERATURES AND FLOWS. MONITORED DATA WILL BE USED TO ENERGIZE OR DE-ENERGIZE EQUIPMENT IN ACCORDANCE WITH THE SEQUENCES OUTLINED.
- 6. THE FOLLOWING DEFINITIONS APPLY TO THE SEQUENCES OF OPERATION:
- a. BAS: BUIDING DDC AUTOMATION SYSTEM (FX JOHNSON)
- b. END DEVICE / POINT: MONITORED SENSORS AND CONTROLLED OPERATORS FOR SPECIFIC EQUIPMENT ITEMS. END DEVICES WILL PROVIDE A VARIETY OF ANALOG OR BINARY INPUT SOURCES TO THE DDCFPS AS WELL AS RECEIVE OUTPUTS FROM LOCAL CONTROLLERS OR DDCFPS.
- 7. UNLESS NOTED OTHERWISE THE FOLLOWING SHALL BE INITIAL SPACETEMPERATURE SETPOINTS (ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH DDC SYTEM):
- a. OFFICE SPACES, CONFERENCE ROOMS AND OTHER OCCUPIED SPACES: OCCUPIED 5:30 AM TO 5:00 PM MONDAY THROUGH FRIDAY

UNOCCUPIED ALL OTHER TIME PERIODS DAYTIME OCCUPIED COOLING 75 DEGREES F (ADJ.) DAYTIME OCCUPIED HEATING 70 DEGREES F (ADJ.)

NIGHT TIME UNOCCUPIED COOLING 85 DEGREES F (ADJ.) NIGHT TIME UNOCCUPIED HEATING 55 DEGREES F (ADJ.)

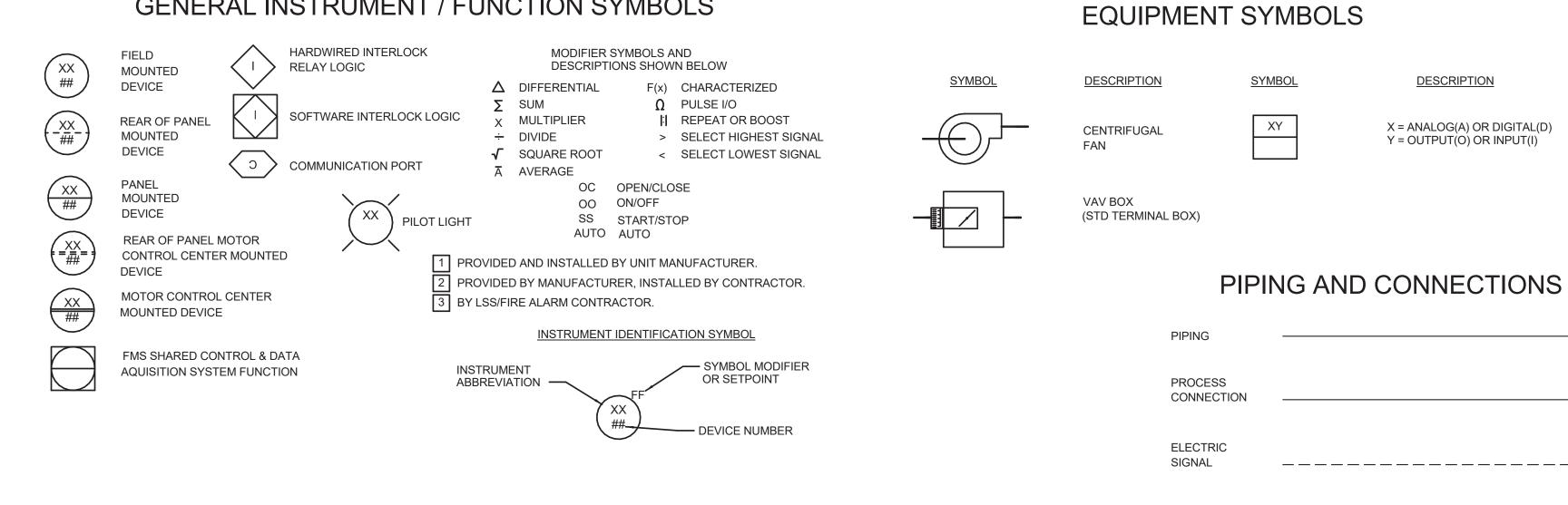
- b. ELECTRIC CLOSETS: COOLING 85 DEGREES F (ADJ.)
- c. DATA ROOMS, IDF, MDF, TELE/DATA ROOMS: COOLING 75 DEGREES F (ADJ.)
- \* REFER TO INDIVIDUAL SEQUENCES FOR ADDITIONAL VARIABLE SETPOINTS.

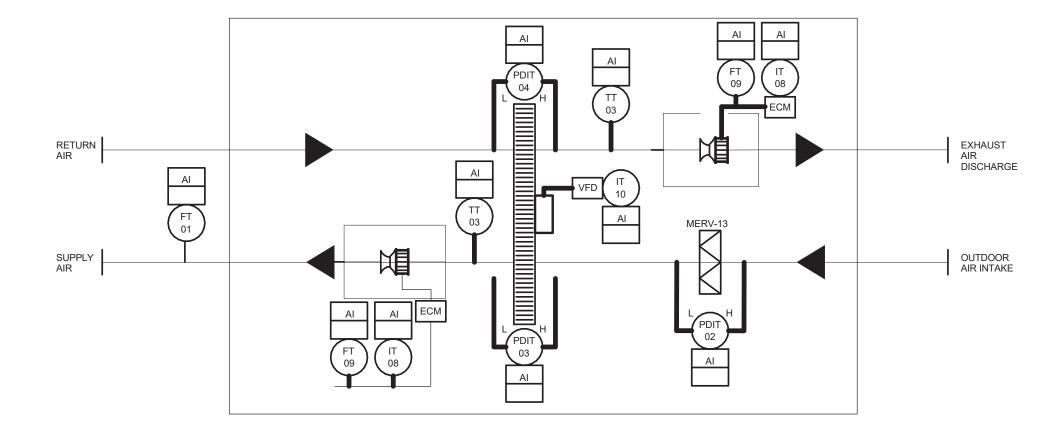
8. THERMOSTATS

ATC SHALL PROVIDE SPACE MOUNTED THERMOSTATS SHALL HAVE LED DISPLAYS WITH +/-2°F ADJUSTMENT CAPABILITIES.

9. ALL SENSORS AND DEVICES APPEARING ON THE CONTROL DIAGRAMS AND/OR DRAWINGS BUT ARE NOT REFERENCED SPECIFICALLY IN SEQUENCES SHALL BE INSTALLED AND SEND FEEDBACK TO THE DDC CONTROL SYSTEM TO ASSIST THE OPERATOR. SIMILARLY, DEVICES REQUIRED TO COMPLETE ALL SEQUENCES HEREIN WHICH ARE NOT SHOWN ON THE DESIGN DOCUMENTS SHALL BE INCLUDED UNDER THE ATC CONTRACTORS SCOPE OF WORK.

## GENERAL INSTRUMENT / FUNCTION SYMBOLS





#### SEQUENCE OF OPERATION

- A. GENERAL
- 1. REQUIREMENTS OF "SEQUENCE OF OPERATION-GENERAL" APPLY TO ALL SEQUENCES. 2. THE ERV SHALL BE CONTROLLED BY THE BASE BUILDING BMS.
- 3. THE ATC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERCONNECTING WIRING. 4. THE VENTILATION AIR TO THE INDOOR FCUs WILL BE CONTROLLED BY A DEDICATED ROOF MOUNTED ERV
- CONTROLLED IN RESPONSE TO OCCUPANCY SCHEDULE. 5. ERV UNIT SHALL BE CONTROLLED BY A LOCAL (BOX MOUNTED) DIRECT DIGITAL CONTROLLER COMMUNICATING WITH THE ERV PACKAGED CONTROLS.
- 6. ERV AIR FLOW RATE SHALL BE CONSTANT VOLUME. 7. OCCUPIED/UNOCCUPIED PERIODS SHALL BE DETERMINED BY AN OWNER SPECIFIED SCHEDULE.
- 1. THE FOLLOWING SAFETIES, WHICH ARE INTEGRAL TO THE UNIT, SHALL SHUTDOWN THE UNIT.
- a. INTEGRAL UNIT FAULT SIGNALS
- C. OCCUPIED/UNOCCUPIED MODE
- 1. THE VENTILATION AIR TO THE SPACE SHALL BE CONSTANT. 2. DURING OCCUPIED PERIODS THE ERV FANS SHALL ENERGIZE AND PROVIDE SCHEDULED AIRFLOW AT CONSTANT RATE. DURING UNOCCUPIED PERIODS THE FANS SHALL DE-ENERGIZE.

ENERGY RECOVERY UNIT CONTROL DIAGRAM
P&ID

PIPING	
PROCESS CONNECTION	
ELECTRIC SIGNAL	

DATA LINK SIGNAL 

CONTROLS LEGEND

BIDDING &

**CROCKFORDS** -

**CATSKILLS** 

888 resorts World Dr

Monticello, NY 12701

**RESORTS WORLD** 

JCJARCHITECTURE

R.G. Vanderweil Engineers, LLP 617.423.7423 TEL

: 617.423.7401 FAX

vanderweil.com

120 HUYSHOPE AVENUE

HARTFORD, CT 06106

SUITE 400

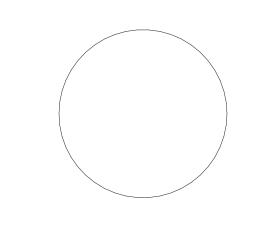
860.247.9226

© 2021 JCJ Architecture

274 Summer Street

Boston, MA 02210

CONSULTANT:

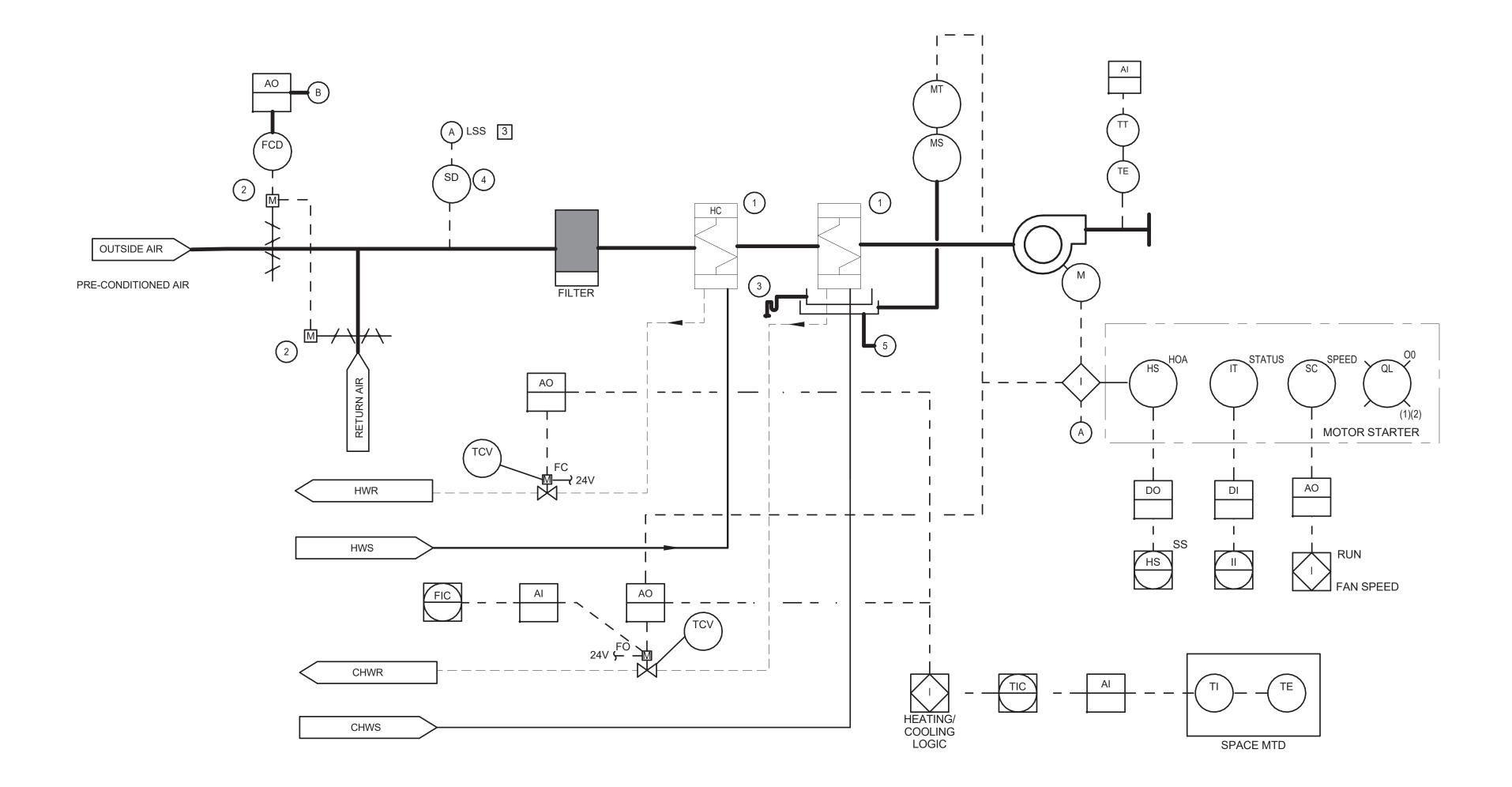


ISSUE \_\_07/06/2022 JOB 30860.00

DRAWN Author SCALE 12" = 1'-0"

REVISIONS

**CONTROLS DIAGRAMS** 



TYPICAL 4-PIPE HORIZONTAL FAN COIL UNIT W/ MIXING BOX

# GENERAL NOTES: 1. REFER TO HVAC CONTROLS SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. 2. REFER TO DWG M001 FOR INSTRUMENTATION SYMBOLS AND LEGEND. 3. FOLLOWING SYMBOLS INDICATES POINT OF RESPONSIBILITY. 1 BY LSS/FIRE ALARM CONTRACTOR. 2 PROVIDED BY UNIT MANUFACTURER, INSTALLED BY CONTROLS CONTRACTOR. 3 BY LSS/FIRE ALARM CONTRACTOR. 4. FOR EQUIPMENT SCHEDULES SEE DRAWINGS SERIES M600.

### KEY NOTES:

FOR COIL CONNECTION & DETAILS SEE DRAWING SERIES M500.

5. FOR EQUIPMENT AND PIPING DETAILS SEE DRAWINGS SERIES M500.

2 DAMPERS PROVIDED BY UNIT MANUFACTURER, ACTUATORS BY CONTROL CONTRACTOR.

PIPE CONDENSATE TO DRAIN, FULL SIZE BASE ON UNIT MANUFACTURER.

(4) SMOKE DETECTOR ON UNITS EQUAL OR GREATER THAN 2000 CFM. (RETURN SIDE)

ALL FAN COIL UNIT WITH EVAPORATOR COOLING COILS SHALL BE PROVIDED WITH A MANUFACTURERS FLOAT SWITCH INSIDE MAIN DRAIN PAN OR A SECONDARY DRAIN PAIN (NON-PIPED) WITH LEAK DETECTION. DETECTION OF WATER SHOULD DE-ENERGIZE UNIT & CLOSE CHILLED WATER VALVE.

6 ALL INTERCONNECT WIRING & CONTACT ARE PROVIDED BY ATC CONTRACTOR.

#### GENERAL NOTES:

 REQUIREMENTS OF "SEQUENCE OF OPERATION - GENERAL" ON DWG. M701 APPLY TO ALL SEQUENCES.

2. TEMPERATURE SETTINGS SHALL BE AS OUTLINED IN THE "SEQUENCE OF CONTROLS - GENERAL" ON M701.

3. ALL SETPOINTS SHALL BE ADJUSTABLE FROM THE DDC SYSTEM.

#### SEQUENCE OF OPERATIONS

A. GENERAL

1. FAN COIL UNITS (FCU) SHALL BE PROVIDED WITH DDC CONTROLLERS AND INTERLOCKED TO THE BMS.

2. SUPPLY FAN SPEED SHALL BE CONTROLLABLE THROUGH THE BMS.

2. HEATING 85 F

#### B. OCCUPIED MODE

1. GENERAL

a. UNIT CONTROL VALVES SHALL OPERATE TO MAINTAIN CONSTANT DISCHARGE AIR TEMPERATURE:

1. COOLING: 55 F

2. THE FAN SHALL ENERGIZE AND RUN AT 40% SPEED DURING OCCUPIED MODE.

3. COOLING: AT MINIMUM FAN SPEED, THE CONTROL VALVE SHALL MODULATE BASED ON SPACE TEMPERATURE. UPON RISE IN SPACE TEMPERATURE ABOVE THE OCCUPIED SETPOINT, THE FAN SHALL SLOWLY RAMP UP TO MAXIMUM SPEED AND THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. WHEN SET POINT IS ACHIEVED THE REVERSE SHALL OCCUR. IF SPACE TEMPERATURE REACHES 3°F (ADJ.) BELOW SPACE SETPOINT, CONTROL VALVE SHALL MODULATE TOWARDS CLOSED POSITION UNTIL SPACE TEMPERATURE RISES ABOVE SETPOINT.

4. HEATING: AT MINIMUM FAN SPEED, THE CONTROL VALVE SHALL MODULATE BASED ON SPACE TEMPERATURE. UPON DROP IN SPACE TEMPERATURE BELOW THE OCCUPIED HEATING SETPOINT, THE FAN SHALL SLOWLY RAMP UP TO MAXIMUM SPEED AND THE HEATING COIL SHALL ENERGIZE AND MODULATE TO MAINTAIN DISCHARGE TEMPERATURE SETPOINT. WHEN SET POINT IS ACHIEVED THE REVERSE SHALL OCCUR. IF SPACE TEMPERATURE REACHES 3°F (ADJ.) ABOVE SPACE SETPOINT, CONTROL VALVE SHALL MODULATE TO CLOSED POSITION UNTIL SPACE TEMPERATURE FALLS BELOW SETPOINT.

#### C. UNOCCUPIED MODE

 THE SUPPLY FAN SHALL BE DE-ACTIVATED AND THE CHILLED WATER CONTROL VALVES SHALL BE CLOSED AND AND HEATING COIL DE-ENERGIZED.

2. UPON A RISE IN SPACE TEMPERATURE ABOVE THE UN-OCCUPIED SETPOINT THE SUPPLY FAN SHALL ENERGIZE AND THE THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN SET POINT IS ACHIEVED THE COOLING COIL CONTROL VALVE SHALL CLOSE AND THE SUPPLY FAN SHALL DE-ENERGIZE.

3. UPON A DROP IN SPACE TEMPERATURE BELOW THE UN-OCCUPIED SETPOINT THE SUPPLY FAN SHALL ENERGIZE AND THE HHEATING COIL SHALL ENERGIZE AND MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN SET POINT IS ACHIEVED THE HEATING COIL SHALL DE-ENERGIZE AND THE SUPPLY FAN SHALL DE-ENERGIZE.

#### D. LEAK DETECTION

 LEAK DETECTOR TO BE HARD WIRED TO SHUT DOWN THE UNIT AND TO SHUT OFF THE CHILLED WATER CONTROL VALVE. ATC CONTRACTOR TO PROVIDE ALL INTERCONNECTION WIRING, CONTACTS AND ALARM THROUGH THE DDC SYSTEM.

#### E. DEHUMIDIFICATION

1. IF SPACE HUMIDITY RISES ABOVE 60%RH, THE FCU SHALL OPERATE IN DEHUMIDIFCATION MODE FOR 30 MINUTES.

CROCKFORDS RESORTS WORLD
CATSKILLS

888 resorts World Dr Monticello, NY 12701

JCJARCHITECTURE

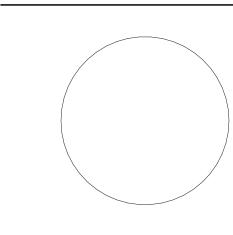
120 HUYSHOPE AVENUE SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

\_\_\_\_\_



BIDDING & CONSTRUCTION 07/06/2022



ISSUE 07/06/2022 JOB 30860.00

DRAWN Author

SCALE 12" = 1'-0"

REVISIONS

CONTROLS DIAGRAMS

#### DIVISION 23: HEATING, VENTILATING AND AIR CONDITIONING REQUIREMENTS

#### I. GENERAL REQUIREMENTS:

- 1. THE WORK REQUIREMENTS DESCRIBED WITHIN DIVISION 20 SPECIFICATION SECTION "COMMON MECHANICAL / ELECTRICAL REQUIREMENTS" FORM COMPLIMENTARY REQUIREMENTS TO THE SCOPE OF WORK CONTAINED WITHIN DIVISION 23. REFER TO DRAWING H0.3 FOR SAID DIVISION 20 REQUIREMENTS.
- 2. CONTRACTOR SHALL PROVIDE MEANS OF SECURING AND ATTACHMENT TO ROOF FOR ALL ROOF-MOUNTED EQUIPMENT IN ACCORDANCE WITH STATE BUILDING CODE AND ALL OTHER APPLICABLE CODES. CONTRACTOR SHALL SUBMIT TO ARCHITECT THE PROPOSED MEANS OF EQUIPMENT SECURING AND ATTACHMENT TO ROOF, STAMPED AND SIGNED BY A REGISTERED STRUCTURAL PROFESSIONAL ENGINEER.
- 3. PRIOR TO ANY DEMOLITION OR NEW WORK, TESTING AND BALANCING CONTRACTOR SHALL TAKE CFM AND STATIC PRESSURE READINGS AT ALL LOCATIONS WHERE NEW SYSTEMS ARE TO CONNECT TO EXISTING, AND ELSEWHERE AS NOTED ON PLANS. SUBMIT TO ARCHITECT AND ENGINEER PRIOR TO STARTING NEW WORK.
- 4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING SYSTEMS AS INDICATED ON THE DRAWINGS. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM CONDITIONS.
- a) ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED AS WELL AS WITH EXISTING SYSTEMS, THE STRUCTURE, AND OTHER OBSTRUCTIONS.
- b) SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION OF NEW WORK SHALL BE COORDINATED IN ADVANCE WITH THE CONSTRUCTION MANAGER AND BUILDING OWNER.
- 5. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
- 6. ALL MATERIALS AND EQUIPMENT SHALL BE UNUSED AND OF NEW MANUFACTURE, EXCEPT FOR EXISTING COMPONENTS INDICATED TO REMAIN AND BE REUSED.
- 7. ACCESS PANELS SHALL BE PROVIDED IN WALLS AND GYPSUM WALL BOARD CEILINGS TO FACILITATE CLEANING, ACCESS AND SERVICE TO: DAMPERS, HEATERS, VALVES, VARIABLE AIR VOLUME BOXES, FAN BOXES AND ALL CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS ARE NOT INDICATED WITHIN THE PLANS. THE BIDDING CONTRACTOR SHALL REVIEW ARCHITECTURAL AND MECHANICAL PLANS TO DETERMINE THE LOCATION AND QUANTITY OF ACCESS PANELS REQUIRED. WITHIN THE MECHANICAL BID ALL ACCESS PANELS SHALL BE CLEARLY ENUMERATED AND PRICING SHALL BE ALLOCATED FOR STANDARD STYLE ACCESS PANELS. AN ALTERNATE PRICE SHALL BE INDICATED FOR AN INCREASE IN QUALITY FROM STANDARD ACCESS PANELS TO DECORATIVE ACCESS PANELS.
- 8. INSTALL THERMOSTATS AT MOUNTING HEIGHTS ABOVE FINISHED FLOOR IN ACCORDANCE WITH "ADA" REQUIREMENTS, OR AS DIRECTED OTHERWISE BY ARCHITECT.
- 9. CONTRACTOR SHALL PROVIDE THE FOLLOWING SERVICES ON ALL EXISTING HVAC EQUIPMENT INDICATED TO REMAIN: a) CLEAN CONDENSATE PAN AND TRAP
- b) CALIBRATE CONTROLS
- c) FILTER CHANGES d) VERIFY FAN ROTATION AND OPERATION
- e) BALANCING
- f) VERIFY PITCH OF CONDENSATE DRAIN PIPES AND DRAIN PAN g) VERIFY EQUIPMENT CONTROL OPERATION
- h) LUBRICATION OF FANS, MOTORS, ETC.i) CLEAN HEATING/COOLING COILS
- 10 EXISTING TO BE REUSED/RELOCATED EQUIPMENT: CONTRACTOR SHALL REPORT ANY EQUIPMENT DEFICIENCIES FOUND TO THE OWNER AND THE ARCHITECT AND/OR ENGINEER.
- 11 WORK SHALL CONFORM TO THE CURRENT IN-FORCE EDITIONS OF THE FOLLOWING:
- a) SHEET METAL SMACNA STANDARDS (2005 3RD EDITION)
  b) MASSACHUSETTS STATE BUILDING CODE (CMR-780, NINTH EDITION).
- c) INTERNATIONAL MECHANICAL CODE (IMC-2015)
  d) INTERNATIONAL ENERGY CONSERVATION CODE (IECC-2015)
- e) INTERNATIONAL EXISTING BUILDING CODE (2015)
  e) ALL OTHER APPLICABLE STATE AND LOCAL CODES AND ORDINANCES

f) WORK SHALL ALSO CONFORM TO BASE BUILDING SPECIFICATIONS AND STANDARDS.

12. SUBMITTALS:

MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL MATERIAL AND EQUIPMENT, CONTRACTOR SHALL POINT OUT ANY DEVIATIONS OF THE SHOP DRAWINGS FROM THE DESIGN, SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW. SHOP DRAWINGS MAY BE PAPER OR ELECTRONIC. ELECTRONIC SHOP DRAWINGS SHALL BE IN SEARCHABLE PDF FORMAT. IN ADDITION TO THE FOREGOING, SUBMIT PAPER SHOP DRAWINGS SHOWING THE FOLLOWING:

a) DUCTWORK SHOP DRAWINGS AND DETAILS. THE ROUTING OF DUCTWORK ON VANDERWEIL'S DRAWINGS IS SHOWN DIAGRAMMATICALLY AND APPROXIMATELY, AS ARE THE POSITIONS OF NEW VAV BOXES AND OTHER ABOVE-THE-CEILING COMPONENTS. THE CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LOCATIONS, PROVIDING PROPER CLEARANCES, MAKING PROVISIONS FOR MAINTENANCE ACCESS, AND COORDINATING WITH EXISTING AND NEW COMPONENTS OF OTHER TRADES, THE STRUCTURE, AND OTHER OBSTRUCTIONS. THE DUCTWORK SHOP DRAWING SUBMITTAL SHALL BE BASED ON THIS COORDINATION EFFORT AND SHALL SHOW ALL AIR DISTRIBUTION COMPONENTS. DUCTWORK AND COMPONENTS SHALL BE DRAWN TO SCALE, AND DUCT SIZES SHALL BE INDICATED.

#### b) PIPING SHOP DRAWINGS SHOWING LAYOUT, COMPONENTS, AND DETAILS.

- c) CONTROLS SHOP DRAWINGS, INCLUDING EQUIPMENT AND SYSTEM CONTROL SCHEMATICS, SEQUENCES OF OPERATIONS, LOGIC DIAGRAMS AND SYSTEM COMPONENTS INCLUDING DETAILS OF TIE-IN TO EXISTING BUILDING CONTROL MANAGEMENT SYSTEM. SUBMIT A POINT BY POINT STATEMENT OF COMPLIANCE WITH THE SPECIFICATIONS, SEQUENCE OF OPERATIONS AND DRAWING P&ID'S. THIS STATEMENT SHALL CONSIST OF A LIST OF ALL NUMBERED PARAGRAPHS. WHERE THE SYSTEM COMPLIES FULLY, SUCH SHALL BE INDICATED BY PLACING THE WORD "COMPLY" OPPOSITE THE PARAGRAPH NUMBER. WHERE THE SYSTEM DOES NOT COMPLY, OR ACCOMPLISHES THE STATED FUNCTION IN A MANNER DIFFERENT FROM THAT DESCRIBED, A FULL DESCRIPTION OF THE DEVIATION SHALL BE PROVIDED.
- 13. MOTORS AND STARTERS:
- PROVIDE MOTORS AND CONTROLS, AND FURNISH STARTERS FOR HVAC EQUIPMENT, EXCEPT FOR UNITS SERVED BY MCC WHICH ARE PROVIDED UNDER ELECTRIC WORK. PROVIDE CONTROL AND OTHER RELATED WIRING INCLUDING INTERLOCKS. ALL MOTORS SHALL TO BE PREMIUM EFFICIENCY. ALL THREE PHASE MOTORS SHALL BE RATED FOR INVERTER DUTY SERVICE.
- 14. VIBRATION ISOLATION:
- PROVIDE VIBRATION ISOLATION FOR EACH PIECE OF ROTATING OR RECIPROCATING HVAC EQUIPMENT SHOWN ON THE DRAWINGS. ALL ISOLATION COMPONENTS SHALL BE SUPPLIED BY A SINGLE MANUFACTURER MASON INDUSTRIES OR AMBER BOOTH. TYPES OF ISOLATORS, REQUIRED DEFLECTIONS, AND INSTALLATION PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE VIBRATION ISOLATION MANUFACTURER.
- 15. SEISMIC RESTRAINTS:
- PROVIDE RESTRAINTS AS REQUIRED BY CODE. FOR EACH SEISMIC RESTRAINT, PROVIDE CERTIFIED CALCULATIONS TO VERIFY ADEQUACY TO MEET THE FOLLOWING DESIGN REQUIREMENTS: ABILITY TO ACCOMMODATE RELATIVE SEISMIC DISPLACEMENTS OF SUPPORTED ITEM BETWEEN POINTS OF SUPPORT. ABILITY TO ACCOMMODATE THE REQUIRED SEISMIC FORCES. FOR EACH RESPECTIVE SET OF ANCHOR BOLTS PROVIDE CALCULATIONS TO VERIFY ADEQUACY TO MEET COMBINED SEISMIC-INDUCED SHEER AND TENSION FORCES. FOR EACH WELDMENT BETWEEN STRUCTURE AND ITEM SUBJECT TO SEISMIC FORCE, PROVIDE CALCULATIONS TO VERIFY ADEQUACY. CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE WHERE THE WORK IS BEING PERFORMED AND HAS SPECIFIC EXPERIENCE IN SEISMIC CALCULATIONS. RESTRAINTS SHALL MAINTAIN THE RESTRAINED ITEM IN A CAPTIVE POSITION WITHOUT SHORT CIRCUITING THE VIBRATION ISOLATION.
- 16. HANGERS AND SUPPORTS:
- a) STRUCTURAL STEEL SUPPORTS, HANGERS, ETC. SHALL BE ANGLE IRON, STEEL CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC.. ALL SUPPORTS, HANGERS, BRACKETS, ETC.., SHALL BE AS APPROVED BY THE ENGINEER. ALL HANGERS SHALL BE GALVANIZED OR PAINTED WITH TWO COATS OF RUSTOLEUM PAINT BEFORE THEIR INSTALLATION.
- b) ATTACH HANGERS AND SUPPORTS DIRECTLY ONTO THE STRUCTURE BY FIRST REMOVING EXISTING FIRE PROOFING AND AFTER SECURING THE ATTACHMENT, REPAIRING THE FIRE PROOFING TO ITS ORIGINAL CONDITION, CONTINUOUSLY OVER THE ATTACHMENT.

#### 17. CLEANING:

- a) CONTRACTOR WILL CLEAN THE ENTIRE INSTALLATION AND ALL WORK AREAS SHALL BE LEFT AS CLEAN AS NEW. CLEAN INTERNALS OF ALL DUCTWORK AND AIR HANDLING UNITS, AND REPLACE FILTERS AFTERWARDS.
- b) DUCTWORK: DUCTS SHALL BE THOROUGHLY CLEANED SO THAT NO DIRT OR DUST SHALL BE DISCHARGED FROM DIFFUSERS, REGISTERS, OR GRILLES, WHEN SYSTEM IS OPERATED.
- c) PIPING: AFTER CHILLED WATER, CONDENSER WATER OR CONDENSATE PIPING HAVE BEEN PRESSURE TESTED AND APPROVED FOR TIGHTNESS, CLEAN AND FLUSH PIPING.
- d) EQUIPMENT: AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, INCLUDING REMOVAL OF CONCRETE RESIDUE.
- e) WORK AREA: AFTER COMPLETION OF PROJECT, REMOVE ALL CONSTRUCTION DEBRIS, TEMPORARY FACILITIES AND EQUIPMENT FROM WORK AREA. CLEAN WORK AREA TO PERMIT OCCUPATION.
- 18. START UP, TESTING AND BALANCING:
- a) START UP ALL SYSTEMS, PRESSURE TEST DUCTWORK AND PIPING, AND BALANCE SYSTEMS INCLUDING, BUT NOT LIMITED TO, ALL NEW AND EXISTING REGISTERS, GRILLES, DIFFUSERS, VAV BOXES, FAN POWERED BOXES, HEAT PUMPS, FANS, ETC WITHIN THE AREA OF WORK TO PERFORMANCE DATA SHOWN ON PLANS, SCHEDULES, AND AS SPECIFIED.
- b) DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL.
- c) LEAKS, DAMAGE AND DEFECTS DISCOVERED OR RESULTING FROM STARTUP, TESTING, AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS. TEST SHALL BE CONTINUED UNTIL SYSTEM OPERATES WITHOUT ADJUSTMENT OR REPAIR.
- d) REPORT ON REPORTING FORMS, SUBMITTED TO ARCHITECT FOR APPROVAL IN ADVANCE.
- e) SUBMIT ELECTRONIC COPY OF TESTING AND BALANCING REPORTS TO ARCHITECT FOR APPROVAL
- f) THIS CONTRACTOR SHALL FURNISH ALL TEST MEDIUMS AND DISPOSE OF ALL TEST MEDIUMS AT AN APPROVED OFF SITE LOCATION AFTER TESTING IS COMPLETE.
- g) NOTE REQUIREMENT ABOVE FOR CFM AND STATIC PRESSURE READINGS PRIOR TO DEMOLITION.
- h) THE BALANCING CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL DIRECTIONAL ADJUSTMENT OF ALL LINEAR DIFFUSERS AS INDICATED ON PLANS. IF NO DIRECTIONAL FLOW IS INDICATED INTERIOR LINEAR DIFFUSERS SHALL BE DIRECTED HORIZONTALLY AND PERIMETER LINEAR DIFFUSER SHALL BE DIRECTED VERTICALLY, IF PERIMETER LINEAR DIFFUSERS HAVE MULTIPLE SLOTS THE PERIMETER SLOT DIRECTED VERTICALLY AND THE INTERIOR SLOT DIRECTED HORIZONTALLY TOWARDS THE INTERIOR SPACE.
- 19. WARRANTY:
  - a) WARRANT WORK OF THIS SECTION IN WRITING FOR ONE YEAR FROM DATE OF OWNERS ACCEPTANCE OF SUBSTANTIAL COMPLETION. REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY WITHIN CONTRACT PRICE.

#### II. DUCTWORK AND AIR DISTRIBUTION EQUIPMENT:

1. ROUTING AND SIZING OF DUCTWORK: THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. REFER TO GENERAL NOTE "SUBMITTALS", FOR ROUTING. WHERE DUCT SIZES ARE NOT INDICATED, CONTRACTOR SHALL SELECT SIZES BASED ON THE CFM USING THE "LOW PRESSURE DUCT SIZING TABLE."

#### LOW PRESSURE DUCT SIZING TABLE

Airflow (cfm)	Round Duct Size (inches)	FLAT OVAL Size (inches)	Equi	valent Rectangul	ar Duct Sizes (in	ches x inches)
80-100	6	4x10	4x8	6x6		
100-150	8	6x9	4x12	6x8		
150-200	8	6x10	6x10	8x8		
200-300	10	6x14	6x12	8x10		
300-400	10	6x17	6x16	8x12	10x10	
400-500	12	6x20	6x20	8x14	10x10	
500-600	12	8x16	6x24	8x16	10x12	
600-750	14	8x19	8x18	10x14	12x12	
750-1000	14	8x25	8x24	10x16	12x14	
1000-1200	16	8x30	8x26	10x20	12x16	14x14
1200-1400	16	10x26	8x30	10x24	12x18	14x16
1200-1700	18	10x32	10x26	12x22	14x18	16x16
1700-1900	18	12x26	10x28	12x24	14x20	16x18
1900-2200	20	12x28	12x26	14x24	16x20	18x18
2200-2500	20	12x34	12x30	14x26	16x22	18x20
2500-2800	22	12x37	12x36	14x30	16x26	18x24

#### 2. SPECIAL DUCTWORK REQUIREMENTS:

- a) NEW ROUND DUCT IN EXPOSED AREAS SHALL BE SPIRAL, DOUBLE WALL, FLANGED, AND GASKETED. DIMENSIONS ON PLAN REPRESENT INTERNAL AIR FLOW DIMENSIONS. CONTRACTOR SHALL INCREASE SIZE FOR LINER WHERE APPLICABLE. NEW RECTANGULAR DUCT IN EXPOSED AREAS SHALL BE DOUBLE WALL. EXISTING RECTANGULAR DUCT SHALL HAVE NEW RIGID INSULATION APPLIED THAT IS FIELD PAINTABLE.
- b) DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZES ARE NOMINAL.
- c) PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTED TO EQUIPMENT AND COMPONENTS WITH ROTATING OR VIBRATING PARTS. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
- d) ALL DUCTS PENETRATING RATED FIRE WALLS SHALL BE PROVIDED WITH FIRE DAMPERS AND ACCESS DOORS.
- e) DUCTWORK SHALL NOT RUN ALONG FULL HEIGHT PARTITIONS.
- f) PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK NOT UTILIZED FOR NEW LAYOUT.
- g) THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
- h) WHEN SECTION OF DUCTWORK IS NOT LABELED FOR SIZE, THE LARGER SIZE INDICATED ON THE CONNECTED DUCT SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSER SHALL EQUAL DIFFUSER NECK SIZE.
- i) DUCT BRANCH CONNECTIONS AND TAKE OFFS SHALL BE MADE WITH 45° CONNECTION, BELLMOUTH OR CONICAL ONLY. SPIN IN COLLARS AND STRAIGHT TAPS SHALL NOT BE USED.
- j) ELBOWS AND BENDS FOR RECTANGULAR DUCTS SHALL HAVE CENTER LINE RADIUS OF 1.5 TIMES DUCT WIDTH WHEREVER POSSIBLE. WHERE CENTERLINE RADIUS IS LESS THAN 1.5 TIMES DUCT WITH, ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEEL AND FULL LENGTH SPLITTER VANES.

#### 3. MATERIALS AND PRESSURE RATINGS:

e) DOUBLE WALLED DUCTWORK:

- a) SHEET METAL DUCTS SHALL BE CONSTRUCTED OF HOT DIPPED G90 GALVANIZED SHEET METAL UNLESS OTHERWISE SPECIFIED.
- b) KITCHEN HOOD EXHAUST DUCTS SHALL BE 16 GA. ALL WELDED CARBON STEEL AND WILL BE INSTALLED IN ACCORDANCE WITH NFPA-96.
- c) SHOWER EXHAUST DUCTWORK SHALL BE (ALUMINUM WITH WELDED SEAMS). DUCTWORK SHALL PITCH TOWARDS SHOWERS.
  d) ALL MEDIUM PRESSURE DUCTWORK BETWEEN MAIN SYSTEM FAN AND AIR TERMINAL DEVICE SHALL BE MINIMUM 4"(wg)
  PRESSURE CLASS, SEAL CLASS A, LEAKAGE CLASS 6. ALL LOW PRESSURE DUCTWORK BETWEEN TERMINAL DEVICE AND
  AIR OUTLETS SHALL BE MINIMUM 2"(wg) PRESSURE CLASS. SEAL CLASS B, LEAKAGE CLASS 12.
- 1) DOUBLE WALLED DUCTWORK SHALL BE SUITABLE TO SUSTAIN INTERNAL PRESSURES STATED BELOW. THE OUTER CASING SHALL BE SOLID GALVANIZED STEEL AND THE INNER CASING SHALL BE PERFORATED GALVANIZED STEEL. THE DUCT ASSEMBLY SHALL HAVE AN R-VALUE OF NOT LESS THAN 6. THE INSULATION SHALL BE ENCAPSULATED TO ENSURE IT DOES NOT TOUCH THE AIR STREAM. DOUBLE WALLED DUCTS SHALL BE BY MCGILL, SHEET METAL CONNECTORS INC, OR APPROVED EQUAL. PROVIDE INSULATED DOUBLE WALL DUCTWORK FOR THE FOLLOWING SYSTEMS:
- i) ALL EXPOSED ROUND, RECTANGULAR AND FLAT OVAL DUCTWORK.

#### 4. FLEXIBLE DUCTWORK:

- a) FLEXIBLE DUCTWORK, CONNECTING TO UNINSULATED OR UNLINED DUCT, SHALL BE VINYL COATED FIBERGLASS CLOTH 0.0057" MINIMUM THICKNESS, 25 STRANDS PER INCH MINIMUM THREAD COUNT WITH CORROSION-RESISTANT HELICAL WIRE REINFORCEMENT. FLEX DUCT SHALL BE UL RATED FOR 12" W.C. POSITIVE PRESSURE, 2" W.C. NEGATIVE PRESSURE WITH A MAXIMUM VELOCITY OF 4000 FPM. FLEXDUCT MUST BE LISTED AS A CLASS 1 CONNECTOR ACCORDING TO UL 181 AND SHALL MEET THE REQUIREMENTS OF NFPA 90A MAXIMUM ASTM E-84 FIRE HAZARD RATING SHALL BE 25 FLAME SPREAD, 50 FUEL CONTRIBUTED AND 50 SMOKE DEVELOPED. UNINSULATED FLEXIBLE DUCT SHALL BE EQUIVALENT TO FLEXMASTER TYPE 4.
- b) FLEXIBLE DUCT CONNECTED TO INSULATED OR LINED DUCT SHALL BE INSULATED WITH 1-1/2", 1/2 LB. DENSITY FIBERGLASS INSULATION AND FLAME RETARDANT (UL LISTED) VAPOR BARRIER, MEETING ASTM E-84 RATING AS
- c) SUBMITTALS SHALL INCLUDE DATA ON CORE, IN ADDITION TO OTHER DATA LISTED ABOVE REQUIRED TO ENSURE THAT SUBMITTED PRODUCT MEETS THE REQUIREMENTS OF THESE SPECIFICATIONS.
- d) PROVIDE SEALING COMPOUND FOR INSTALLATION. SEE FURTHER PARAGRAPHS IN THIS SPECIFICATION, AND DETAILS FOR OTHER INSTALLATION REQUIREMENTS.
- e) FLEXIBLE DUCTWORK SHALL BE A 5'-0' LONG. FLEXIBLE DUCTS SHALL BE INSTALLED WITH MINIMUM SAG OF 1/2" PER 1"-0".
  MORE THAN ONE (1) 90 DEGREE TURNS/BENDS OF FLEXIBLE DUCT ARE PROHIBITED.

#### 5. VOLUME DAMPERS:

REFERENCED ABOVE.

- a) GENERAL: FOR CLARITY PURPOSES; PLANS/DRAWINGS DO NOT INDICATE VOLUME DAMPERS TO DIFFUSERS, REGISTERS OR GRILLES. DAMPERS SHALL BE TAMCO.
- b) PROVIDE MANUAL ADJUSTABLE VOLUME DAMPERS, WITH EXTENDED MOUNT INDICATING AND LOCKING QUADRANTS ON EACH SUPPLY, RETURN, AND GENERAL EXHAUST DUCT TAKEOFF, AND AT EACH TAKEOFF TO A REGISTER, GRILLE, OR DIFFUSER (NOT ALL DAMPERS ARE SHOWN ON DRAWINGS). DAMPERS SHALL BE LOCATED AS FAR UPSTREAM AS POSSIBLE IN THE BRANCH DUCT OR TAKE OFF TO MINIMIZE DOWNSTREAM NOISE.
- c) REMOTE ADJUSTABLE VOLUME DAMPERS: REMOTE ADJUSTABLE VOLUME DAMPERS ARE REQUIRED IN AREAS WHERE CEILING CAVITY ACCESS IS LIMITED BY HARD (SOLID) CEILINGS, EQUIPMENT OBSTRUCTIONS, ARCHITECTURAL FEATURES, ETC. CONTRACTOR SHALL COORDINATE BETWEEN MECHANICAL PLANS AND ARCHITECTURAL CEILING PLANS TO DETERMINE IF AND WHERE REMOTE ADJUSTABLE VOLUME DAMPERS ARE REQUIRED. CONTRACTOR SHALL CLEARLY IDENTIFY WITH THEIR BID THE QUANTITY OF REMOTE ADJUSTABLE VOLUME DAMPERS BEING PROVIDED AND A DESCRIPTION OF THEIR MOUNTING LOCATIONS.
- i) MANUALLY ADJUSTED REMOTE VOLUME DAMPERS SHALL BE SIMILAR TO YOUNG REGULATOR MODEL 270. REFER TO FLOOR PLANS AND DETAILS FOR TYPES OF OPERATORS (CEILING MOUNTED OR CONCEALED).
- ii) ELECTRONICALLY ADJUSTED REMOTE VOLUME DAMPERS SHALL BE SIMILAR TO YOUNG REGULATOR MODEL EBD. PROVIDE WITH RECESSED WALL-BOX TERMINATION PORT, REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF PORTS REQUIRED AT EACH WALL-BOX. WIRING SHALL BE NON-SHIELDED PLENUM RATED WIRE, LENGTHS SHALL BE BASED ON FLOOR PLAN REQUIREMENTS. PROVIDE WITH ONE HAND HELD BATTERY POWERED DAMPER ACTUATOR WITH LCD POSITION INDICATOR, SIMILAR TO YOUNG REGULATOR EBD-P.
- 6. DIFFUSERS, REGISTERS AND GRILLES (AIR INLETS AND OUTLETS):
- a) GENERAL: PROVIDE DIFFUSERS, REGISTERS, AND GRILLES FOR SUPPLY, RETURN, AND EXHAUST OUTLETS, OF SIZE, TYPE, MATERIAL AND DESIGN SHOWN ON DRAWINGS. ACCEPTABLE MANUFACTURERS SHALL BE NAILOR, METALAIRE, TITUS, OR PRICE. SOUND PRESSURE LEVELS SHALL NOT EXCEED NC 30. COLOR AND FINISH SHALL BE SELECTED BY THE ARCHITECT.
- b) EXISTING TO REMAIN/BE REUSED DIFFUSERS/REGISTIERS/GRILLES SHALL BE CLEANED, TOUCH-UP PAINTED AND RENDERED IN 'LIKE-NEW-CONDITION' BY THE CONTRACTOR.
- 7. ACOUSTICAL DUCTWORK LINING: (LOW PRESSURE DUCTWORK ONLY)
- a) PROVIDE ACOUSTICAL LINING BY CERTAIN-TEED, KNAUF, OWENS CORNING, OR MANVILLE TO ACHIEVE A MINIMUM INSULATORY VALUE OF R-6 (AS INSTALLED) FOR THE FOLLOWING DUCTWORK:
- 1) SUPPLY AND RETURN AIR DUCTWORK, INCLUDING PLENUMS, FOR MINIMUM OF 20 FEET FROM CONNECTION OF AIR
- 2) ALL LOW PRESSURE DUCTWORK DOWNSTREAM OF VARIABLE VOLUME, CONSTANT VOLUME BOXES, FAN BOXES, FAN COIL UNITS, AND HEAT PUMPS.
- 3) EXHAUST DUCTWORK, INCLUDING PLENUMS, FOR MINIMUM OF 20 FEET FROM AIR HANDLERS AND EXHAUST FANS.
  4) ALL TRANSFER AIR DUCTS
- 5) ALL OTHER DUCTWORK INDICATED AS LINED ON DRAWINGS.
- b) MATERIALS AND INSTALLATION SHALL MEET THE FOLLOWING STANDARDS, AS APPLICABLE:
- 1) NFPA-90A, UL723, NFPA-255; SMACNA DUCT LINER APPLICATIONS STANDARD; SMACNA MECHANICAL FASTENERS STANDARD; ADHESIVE AND SEALANT COUNCIL; ADHESIVES STANDARD FOR DUCT LINER ASC-A-7001A; ASTM E-84 FIRE HAZARD CLASSIFICATIONS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED, AND 50 FUEL CONTRIBUTED.
- 8. DUCTWORK INSULATION (EXTERNAL)
- a) INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA AND MUST BE NON-FERMALDEHYDE (FSK WRAP). INSULATE (EXISTING AND NEW) SUPPLY, FRESH AIR, AND RETURN DUCTS AND PLENUMS WITH A MINIMUM OF R-6 (AS INSTALLED) INSULATION WHEN LOCATED WITHIN UNCONDITIONED SPACES AND A MINIMUM OF R-8 (AS INSTALLED) INSULATION WHEN LOCATED OUTSIDE THE BUILDING ENVELOP. INSULATION SHALL BE FIBROUS GLASS DUCT WRAP, WITH FOIL-KRAFT FLAME RESISTANT VAPOR BARRIER. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD. 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.
- b) INSULATE STANDING SEAMS IN DUCTWORK WITH THE SAME MATERIAL AND THICKNESS AS DUCT.

#### c) ACOUSTICALLY LINED DUCTWORK SHALL NOT BE INSULATED.

d) INSULATION AND VAPOR BARRIER SHALL BE CONTINUOUS AROUND ENTIRE PERIMETER OF DUCTS. DUCTS SUPPORTED BY METAL STRAPS SHALL HAVE INSULATION ENCOMPASSING STRAPS, WHERE STRAPS PENETRATE AT TOP OF DUCT TIGHTLY SEAL AROUND STRAP WITH INSULATING TAPE. DUCTS SUPPORTED BY TRAPEZE TYPE HANGERS UNDER DUCTS SHALL HAVE 6 LB. DENSITY RIGID INSULATION PROVIDED BETWEEN DUCT AND HANGER, INSULATION SHALL BE SAME THICKNESS AND VAPOR BARRIER AS SPECIFIED FOR SPECIFIC DUCT TYPE. RIGID INSULATION SECTION SHALL BE FULL WIDTH OF DUCT AND MINIMUM 12" LONG. TAPE AND SEAL ALL SEAMS WHERE RIGID INSULATION MEETS OTHER INSULATION.

CROCKFORDS RESORTS WORL

888 resorts World D Monticello. NY 12701

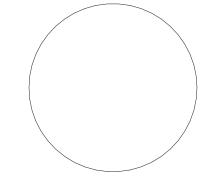
HARTFORD, CT 06106

860.247.9226

SUITE 400

© 2021 JCJ Architecture

BIDDING &



ISSUE 07/06/2022

JOB <u>30860.00</u>

DRAWN Author

SCALE 12" = 1'-0"

\_\_\_\_

REVISIONS

SPECIFICATIONS

## DIVISION 23: HEATING, VENTILATING AND AIR CONDITIONING REQUIREMENTS

#### 9. ENERGY RECOVERY UNITS:

a) PROVIDE ENERGY RECOVERY UNIT SUITABLE FOR OUTDOOR INSTALLATION AND WITH THE CAPACITIES AS INDICATED WITHIN THE EQUIPMENT SCHEDULES AND THE ARRANGEMENT AS ILLUSTRATED WITHIN THE FLOOR PLANS AS WELL AS ALL FEATURES AND ACCESSORIES NOTED WITHIN THE DRAWINGS.

b) CASING SHALL BE OF DOUBLE WALLED CONSTRUCTION WITH EXTERIOR AND INTERIOR CASING BEING CONSTRUCTED OF GALVANIZED STEEL WITH WATERPROOF INSULATION.

c) INSTALLATION: THE ENERGY RECOVERY UNIT SHALL BE ROOF MOUNTED WITH FACTORY SUPPLIED 18" (MINIMUM) ROOF CURB. UNIT SHALL BE ORIENTED WITH BOTTOM RETURN/SUPPLY AIR CONNECTIONS.

#### 10. FAN COIL UNITS

a) PROVIDE FAN COIL UNITS (4-PIPE) IN THE CAPACITIES AND QUANTITIES AS INDICATED WITHIN THE PLANS AND EQUIPMENT SCHEDULES. FAN COILS SHALL BE MANUFACTURED BY EITHER: JCI, WILLIAMS, TITUS, YORK, TRANE. PRICE OR CARRIER.

b) DRAIN PANS: ALL FAN COIL UNITS SHALL BE PROVIDED WITH MANUFACTURER PROVIDED DRAIN PANS AND CONDENSATE DRAIN CONNECTION. ALL FAN COIL UNITS LOCATED ABOVE HARD CEILINGS, IN NON-ACCESS SPACES, OR WITHIN THE VICINITY OF ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH AN AUXILIARY (SECONDARY) DRAIN PAN WHICH SHALL BE FABRICATED BY THE CONTRACTOR. THE AUXILIARY PAN SHALL NOT BE LESS THAN 3 INCHES LARGER THAN THE UNIT OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL.GALVANIZED SHEET STEEL PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0236 INCH (0.6010 MM) (NO. 24 GAGE). NONMETALLIC PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0625 INCH (1.6 MM). THE AUXILIARY PAN SHALL HAVE A MINIMUM HOLDING DEPTH OF 1-1/2 INCHES. THE PAN SHALL BE EQUIPPED WITH A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL 508 THAT WILL SHUT OFF THE EQUIPMENT SERVED PRIOR TO OVERFLOW OF THE PAN. WATER LEVEL DETECTOR SHALL ISSUE AN ALARM TO THE BUILDING AUTOMATION SYSTEM.

c) PROVIDE VALVING AND FITTINGS AS SHOWN ON DETAILS.

d) PROVIDE ALL FAN COIL UNITS WITH FULLY MODULATING ECM MOTORS.

e) PROVIDE UNIT MOUNTED DISCONNECT SWITCH.

#### III. HYDRONIC SYSTEMS:

#### PIPING AND FITTINGS:

- a) ALL EXPOSED PIPING SHALL BE WRAPPED IN PVC JACKET AND MAINTAIN REQUIRED INSULATION VALUES. COLORS BY ARCHITECT
- b) PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS INDICATED IN SCHEDULE OF PIPE AND FITTING MATERIALS. NOTE: THERE SHALL BE NO MECHANICAL COUPLED FITTINGS.
- c) PIPING 2-1/2 AND LARGER AND ALL DIRECT-BURIED PIPING SHALL BE WELDED STEEL. PIPING 2" AND SMALLER (EXCEPT DIRECT-BURIED PIPING) SHALL BE SCREWED STEEL OR COPPER, STEEL PIPING SHALL BE ASTM A53 OR A106, GRADE B, COPPER PIPING SHALL BE ASTM B88.

d) PRO-PRESS AND COPPER LOCK GLUE FITTINGS ARE NOT PERMITTED

#### SCHEDULE OF PIPING AND FITTING MATERIALS

SERVICE	PIPE MATERIAL WEIGHT	JOINT TYPE/ STYLE	FITTING MATERIAL	PRESSURE RATING (PSIG, SWP OR WEIGHT)
CHILLED / HOT WATER	STEEL SCHEDULE 40 or TYPE 'L' COPPER	SCREWED IRON or 95/5 SOLDERED	MALLEABLE or WROUGHT COPPER	150 PSIG
CHILLED / HOT WATER	STEEL SCHEDULE 40	WELDED	STEEL	SCHEDULE 40
CONDENSER WATER	STEEL SCHEDULE 40 or TYPE 'L' COPPER	SCREWED IRON or 95/5 SOLDERED	MALLEABLE or WROUGHT COPPER	150 PSIG
CONDENSER WATER	STEEL SCHEDULE 40	WELDED	STEEL	SCHEDULE 40
HEATING HOT WATER	STEEL SCHEDULE 40 or TYPE 'L' COPPER	SCREWED IRON or 95/5 SOLDERED	MALLEABLE or WROUGHT COPPER	150 PSIG
HEATING HOT WATER	STEEL SCHEDULE 40	WELDED	STEEL	SCHEDULE 40
CLEAR WATER CONDENSATE DRAIN	TYPE 'L' COPPER	95/5 SOLDERED	WROUGHT COPPER	125 PSIG
STEAM (LP)	STEEL SCHEDULE 40	SCREWED	MALLEABLE	150 PSIG
STEAM (LP)	STEEL SCHEDULE 40	WELDED	STEEL	SCHEDULE 40
STEAM CONDENSATE	STEEL SCHEDULE 80	WELDED	STEEL	SCHEDULE 80

#### 2. VALVES AND STRAINERS

a) VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. VALVES SHALL BE AS MANUFACTURED BY APOLLO, CRANE, HAMMOND, JENKINS, STOCKHOLM OR MILWAUKEE.

b) FOR WATER SERVICE, STRAINERS SHALL BE FULL SIZE OF EXTERNAL PIPE SIZE AND HAVE A MAXIMUM CLEAN PRESSURE DROP OF ONE PSI (FOR STEAM CONDENSATE 1/4 PSI). STRAINERS SHALL BE PER MANUFACTURER'S TABLE BY SARCO,

WATTS, OR ARMSTRONG. INSTALL STRAINERS AT LOCATIONS THAT WILL ALLOW REMOVAL OF SCREENS FOR CLEANING.

#### c) VALVE FOR WATER SERVICES SHALL BE AS SHOWN ON THE FOLLOWING TABLE(S):

#### GLYCOL AND HOT WATER SERVICE

MAXIMUM 250°F AND 175 PSIG (1/2" THRU 12"); 125 PSIG (14" THRU 24") SPECIALTY APPLICATION <u>TYPE</u> ISOLATION (WITH | FULL PORT, 3-PIECE | BRONZE / TEFLON | SWEAT (NOTE 1) | 400 PSIG WOG AND MODULATION FULL PORT, 3-PIECE | 1 TO 2" | BRONZE / TEFLON | THREADED GATE VALVE NOT USED TO 6" | BRONZE / METAL | THREADED GLOBE VALVE ATC MODULATION | CONTROL VALVE GENERAL SERVICE 2-1" - 12" DUCTILE IRON / THREADED LUG 200 PSIG CWP; 00 PSIG BI-DIRECTIONAL SHUTOFF VALVE MODULATION 200 PSIG DEAD END SERVICE 14" - 24" DUCTILE IRON / THREADED LUG 150 PSIG CWP; 50 PSIG BI-DIRECTIONAL SHUTOFF; 150 PSIG DEAD END SERVICE PLUG VALVE | MANUAL BALANCING | NON - LUBRICATED | 3" TO 12" | STEEL / IRON | FLANGED SILENT BRONZE / BRONZE | THREADED 200 PSIG WOG SILENT GLOBE 2-1" TO 24" | IRON / BRONZE | FLANGED CLASS 125 <sup>1</sup>" TO 2" | BRONZE | BRONZE | THREADED Y-PATTERN 200 PSIG WOG 2-1" TO 24" | IRON / BRONZE | FLANGED CLASS 125 1" TO 2" | BRONZE / STRAINER CONTROL VALVES Y-TYPE THREADED 200 PSIG WOG AND FLOW METERS STAINLESS  $(\frac{1}{16}" DIAMETER)$ 2-1" TO 4" | IRON / STAINLESS | FLANGED  $\left(\frac{1}{16}\right)$  DIAMETER) 5" TO 24" | IRON / STAINLESS | FLANGED CLASS 125 (1/8" DIAMETER) PUMP SUCTION Y-TYPE BRONZE / THREADED ½" TO 2" STAINLESS  $(\frac{1}{16}" DIAMETER)$ 2-1" TO 4" | IRON / STAINLESS | FLANGED CLASS 125 (3/16" DIAMETER)

#### NOTES:

1) THESE ARE MINIMUM RATINGS FOR ASTM A126, CLASS B AND ASTM B-61 AND 62. FOR HIGHER PRESSURES AND TEMPERATURES, ADJUST THESE VALUES TO INCLUDE STATIC HEAD PLUS 1.1 TIMES PRESSURE RELIEF VALVE SETTING PLUS PUMP SHUTOFF HEAD PRESSURE. FOR ACTUAL MAXIMUM ALLOWABLE VALVE AND PRESSURE RATINGS, REFER TO "PRESSURE-TEMPEATURE RATINGS - NON SHOCK" TABLES AND "ADJUSTED PRESSURE RATINGS" FOR COPPER TUBE, SOLDERED END VALVES AND STRAINERS.

ANGLE SUCTION 2" TO 12" | IRON / STAINLESS | FLANGED

2) SWP = STEAM WORKING PRESSURE CWP = COLD WATER WORKING PRESSURE WSP = WORKING STEAM PRESSURE WOG = WATER, OIL OR GAS

SUCTION PUMPS

3) USE 1/8" DIAMETER FOR PLATE HEAT EXCHANGER APPLICATION.

#### 3. AUTOMATIC FLOW CONTROL VALVES

a) PROVIDE AUTOMATIC PRESSURE COMPENSATING FLOW CONTROL VALVES BY GRISWOLD OR AUTOFLOW WHERE INDICATED ON THE DRAWINGS. VALVES SHALL BE FACTORY SET AND SHALL AUTOMATICALLY LIMIT THE RATE OF FLOW TO REQUIRED ENGINEERED CAPACITY WITHIN ±5% ACCURACY OVER AN OPERATING PRESSURE DIFFERENTIAL OF AT LEAST 14 TIMES THE MINIMUM REQUIRED FOR CONTROL. PROVIDE GAUGE KIT VALVE MANUFACTURER FOR USE BY BUILDING OPERATING

5" TO 24" | IRON / STAINLESS | FLANGED

(1/4" DIAMETER)

(3/16" DIAMETER)

#### 4. COMBINATION BALANCING AND SHUT-OFF VALVES:

a) PROVIDE CALIBRATED COMBINATION BALANCING SHUT-OFF VALVES. ACCEPTABLE MANUFACTURERS SHALL BE ARMSTRONG, BELL AND GOSSET, FLOWSET, OR TACO.

#### 5. PIPING INSULATION

a. PIPE INSULATION SHALL BE FIBROUS GLASS INSULATION WITH FACTORY-APPLIED FIRE RETARDANT VAPOR BARRIER JACKET WITH MAXIMUM K FACTOR OF 0.23 AT 75°F MEAN TEMPERATURE: INSULATION SHALL BE BY OWNERS CORNING, CERTAIN-TEED, MANVILLE, OR KNAUF. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD. 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED. ALL OUTDOOR PIPING SHALL BE TWO (2) TIMES THE THICKNESS LISTED IN THE TABLE BELOW AND SHALL BE ADDITIONALLY COVERED WITH WEATHERPROOF ALUMINUM JACKET.

#### b. COOLING COIL CONDENSATE DRAIN PIPING FIBROUS GLASS INSULATION.

c. REFRIGERANT SUCTION LINES, REFRIGERANT HOT GAS BYPASS LINES, OUTDOOR COOLING TOWER DRAIN PIPING, AND OUTDOOR REFRIGERANT LIQUID LINES SHALL BE INSULATED WITH 3/4" THICK RIGID CLOSED CELL FOAM INSULATION, ARMSTRONG RIGID ARMAFLEX, MANVILLE, OWNES CORNING, OR HALSTEAD/NOMACO (INSULTUBE), EXCEPT IN COMPUTER ROOM PLENA AND RETURN AIR PLENUM PIPING SHALL BE INSULATED WITH 3/4" FIBERGLASS PIPE INSULATION. ALL OUTDOOR PIPING SHALL BE ADDITIONALLY COVERED WITH WEATHERPROOF ALUMINUM JACKET.

#### SCHEDULE OF PIPE INSULATION THICKNESS:

FLUID SERVICE	PIPE DIAMETER (INCHES)		
	PIPE SIZE UNDER 1-1/2 INCH	PIPE SIZE 1-1/2 INCH AND OVER	
HEATING HOT WATER	1.5 THICK	2.0 THICK	
CHILLED WATER, BRINE, OR GLYCOL	1.5 THICK	1.5 THICK	
COOLING COIL CONDENSATE	0.75 THICK	0.75 THICK	
CONDENSER WATER	N/a	N/a	
STEAM AND STEAM CONDENSATE	1.5 THICK	3.0 THICK	

#### 6. EQUIPMENT INSULATION

a) INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

b) INSULATE THE FOLLOWING EQUIPMENT:

1) HEAT EXCHANGERS
2) EXPANSION TANKS
3) AIR SEPARATORS
4) CONDENSATE DRAIN PANS
5) DUCT-MOUNTED COILS
6) PUMPS

#### IV. AUTOMATIC TEMPERATURE CONTROLS

PROVIDE COMPLETE SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS BY BUILDING CONTROL MANUFACTURER. CONTROL SYSTEM SHALL BE CAPABLE OF PERFORMING ALL SEQUENCES OF OPERATION TO CONFORM WITH BUILDING STANDARDS. INDIVIDUAL CONTROL COMPONENTS MAY NOT BE SHOWN ON CONTRACT DOCUMENTS, BUT ATC CONTRACTOR SHALL PROVIDE ALL COMPONENTS AND CONTROL WIRING NECESSARY FOR A COMPLETE OPERABLE SYSTEM. ATC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SYSTEM COMPONENTS, WHETHER HE SUBCONTRACTS ELECTRICAL AND OTHER WORK OR NOT. ALL CONTROL VALVES SHALL BE ELECTRICALLY ACTUATED.

- ALL CONTROL WIRING SHALL COMPLY WITH THE REQUIREMENTS OF THE ELECTRICAL SECTION OF THESE CONTRACT
- 3. THERMOSTATS INSTALLED ON EXTERIOR WALLS SHALL BE PROVIDED WITH INSULATED BACK PLATES.
- 4. PNEUMATIC TUBING, IF PROVIDED, SHALL BE TYPE FR POLYETHYLENE. IF TUBING IS USED FOR OPERATING A COMPONENT OF A SMOKE CONTROL SYSTEM, IT SHALL BE ENCLOSED IN CONDUIT.
- 5. WIRING BETWEEN FIRE ALARM SYSTEM AND TEMPERATURE CONTROL SYSTEM, EXCEPT FOR DUCT MOUNTED SMOKE DETECTORS, SHALL BE BY ATC CONTRACTOR.
- 6. DDC/BUILDING AUTOMATION SYSTEM INTERFACE
- a) PROVIDE ALL NECESSARY COMPONENTS AND WIRING FOR INTERLOCK TO EXISTING DDC/BUILDING AUTOMATION SYSTEM. ALL COMPONENTS MUST BE COMPATIBLE WITH EXISTING OUTPUT DEVICES. PROVIDE HAND HELD OPERATOR'S TERMINALS FOR LOCAL OUTPUT OF SENSORS WHEN NO OUTPUT DEVICES EXIST.
- b) PROVIDE TO OWNER FULL OPERATING AND MAINTENANCE INSTRUCTIONS FOR NEW AND/OR ALTERATION OF DDC
- c) ATC SHALL UPDATE BMS EQUIPMENT GRAPHICS PER BASE BUILDING ENGINEER STANDARDS AND REQUIREMENTS.

# CROCKFORDS RESORTS WORL CATSKILLS

888 resorts World Dr Monticello. NY 12701

JCJARCHITECTURE
120 HUYSHOPE AVENUE

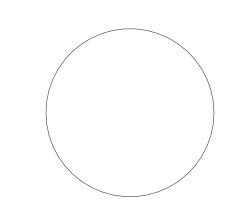
SUITE 400 HARTFORD, CT 06106 860.247.9226

© 2021 JCJ Architecture

CONSULTANT:



BIDDING & CONSTRUCTION 07/06/2022



ISSUE 07/06/2022 JOB 30860.00

SCALE \_\_\_12" = 1'-0"

REVISIONS

DRAWN Author

**SPECIFICATIONS**