

**GENERAL NOTES:**

**PART I. GENERAL:**

- A. These GENERAL NOTES present and/or summarize key project information for the plans reader's convenience. See also individual PLAN NOTES and project specifications for further details and requirements.
- B. These notes shall apply unless otherwise indicated by drawings or specifications.
- C. Where a detail is shown for one condition it shall apply for all like or similar conditions even though not specifically marked on the drawings.
- D. Contractor shall provide adequate bracing or shoring for all work during the construction period.

**PART II. STRUCTURAL STEEL:**

- A. Structural steel detailing, fabrication and erection to be in accordance with the latest edition of the "Manual of Steel Construction" of the American Institute of Steel Construction.  
Structural steel shall conform to :
  - 1. Steel Beams and Columns ASTM Grade 50, Mill Certifications Required.
  - 2. Steel Plates and Angles ASTM A-36.
  - 3. Tube Steel ASTM A-500 Grade B.
- B. Welding electrodes shall conform to AWS A5.1 E70XX series.

**PART III. CLEANING AND PAINTING:**

- A. All structural steel surfaces shall be cleaned as specified in SSPC-SP2 (hand tool cleaning) unless noted.
- B. All interior structural steel shall be primed with one coat of standard shop primer. Consult owner if finish paint is required.
- C. All exterior structural steel shall be hot dipped galvanized.

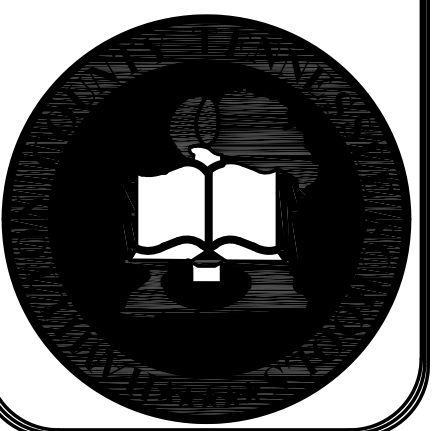
**PART IV. STRUCTURAL OBSERVATION:**

- A. Engineer of record shall observe construction prior to contractor covering with finish material. Contractor to coordinate visit accordingly.

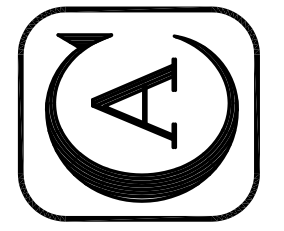
MARK	DATE	DESCRIPTION	OF	REVISION

**REVISIONS**

**Red Bank High School  
HVAC Improvements**  
640 Morrison Springs Rd., Red Bank, TN 37415



**CAMPBELL & ASSOC., INC.**  
CONSULTING ENGINEERS  
1401 Carter St. Chattanooga, TN 37403  
(423) 267-9718 FAX: (423) 265-7879  
E-mail: caengrs@caengrs.com  
www.caengrs.com

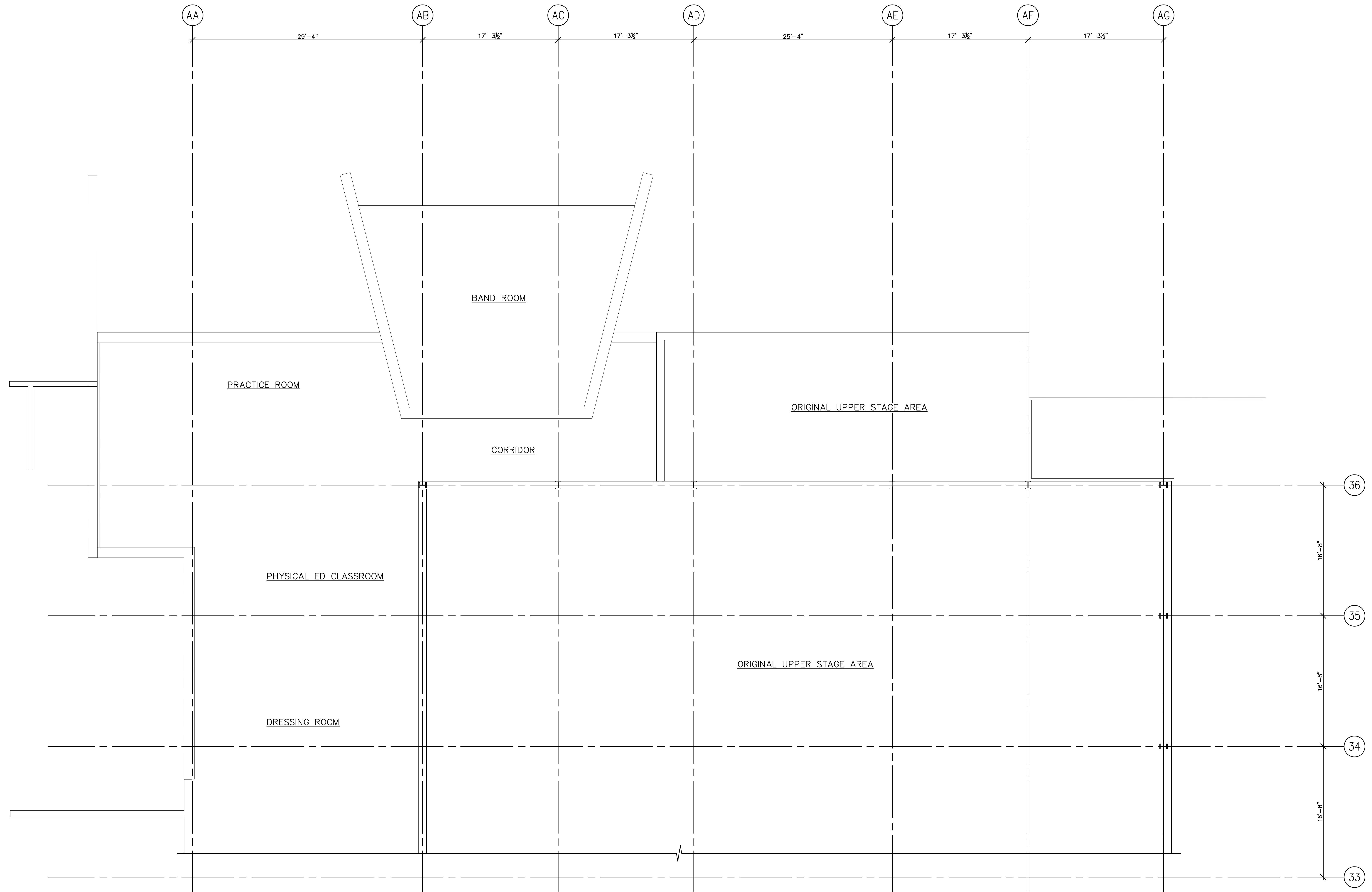


SHEET TITLE:  
**STRUCTURAL  
GENERAL  
NOTES**

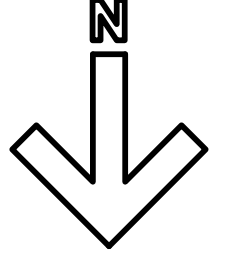
JOB No. C0123	DATE: MARCH 17, 2023
------------------	----------------------------

DRAWN BY:  
KMH

SHEET NUMBER:  
**S0.1**



- NOTES.**
1. FOR GENERAL NOTES SEE SHEET S0.1.
  2. FOR EXISTING ROOF FRAMING PLAN SEE SHEET S1.2.
  3. FOR ENLARGED OLD STAGE AREA ROOF FRAMING SEE S1.2A.
  4. FOR SECTIONS AND DETAILS SEE SHEET S3.1.



**EXISTING 2nd FLOOR PLAN**

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

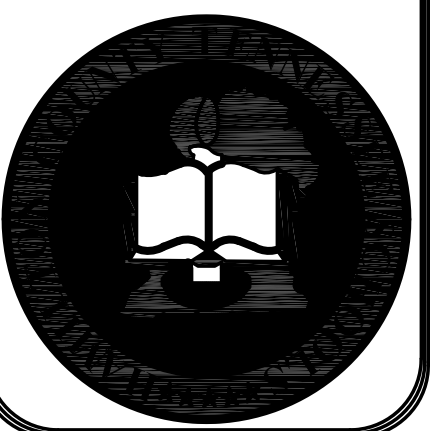
(T/S VARIES)

MARK	DATE	DESCRIPTION	OF	REVISION

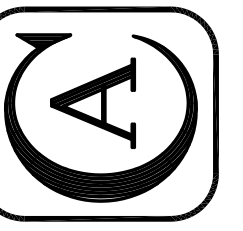
**REVISIONS**

**Red Bank High School  
HVAC Improvements**

640 Morrison Springs Rd., Red Bank, TN 37415



**CAMPBELL & ASSOC., INC.**  
CONSULTING ENGINEERS



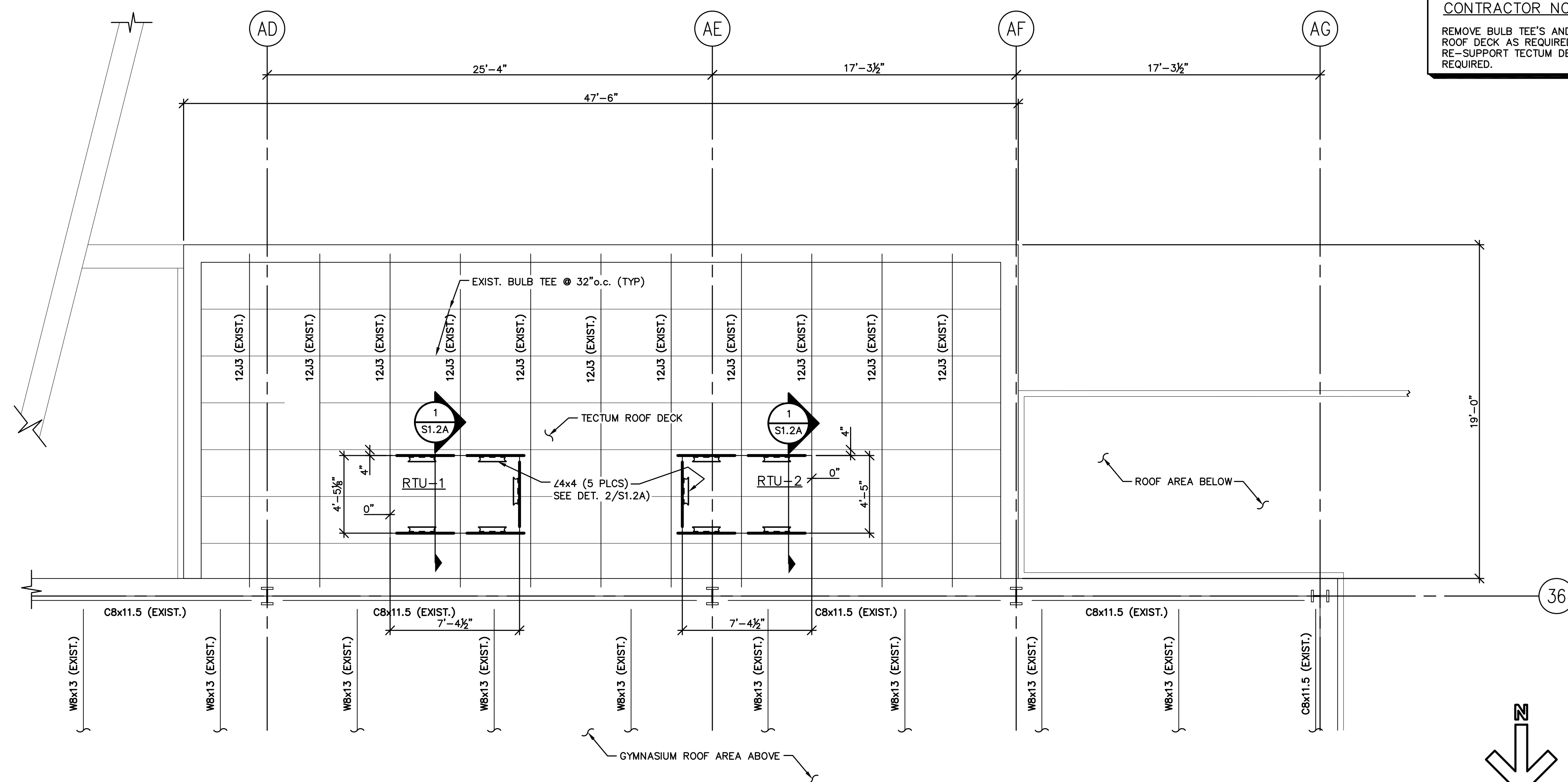
1401 Carter St. Chattanooga, TN 37403  
(423) 267-9718 FAX: (423) 265-7879  
E-mail: caengrs@caengrs.com  
www.caengrs.com

SHEET TITLE:  
**STRUCTURAL  
EXISTING  
PLAN**

JOB No. C0123 DATE: MARCH 17, 2023

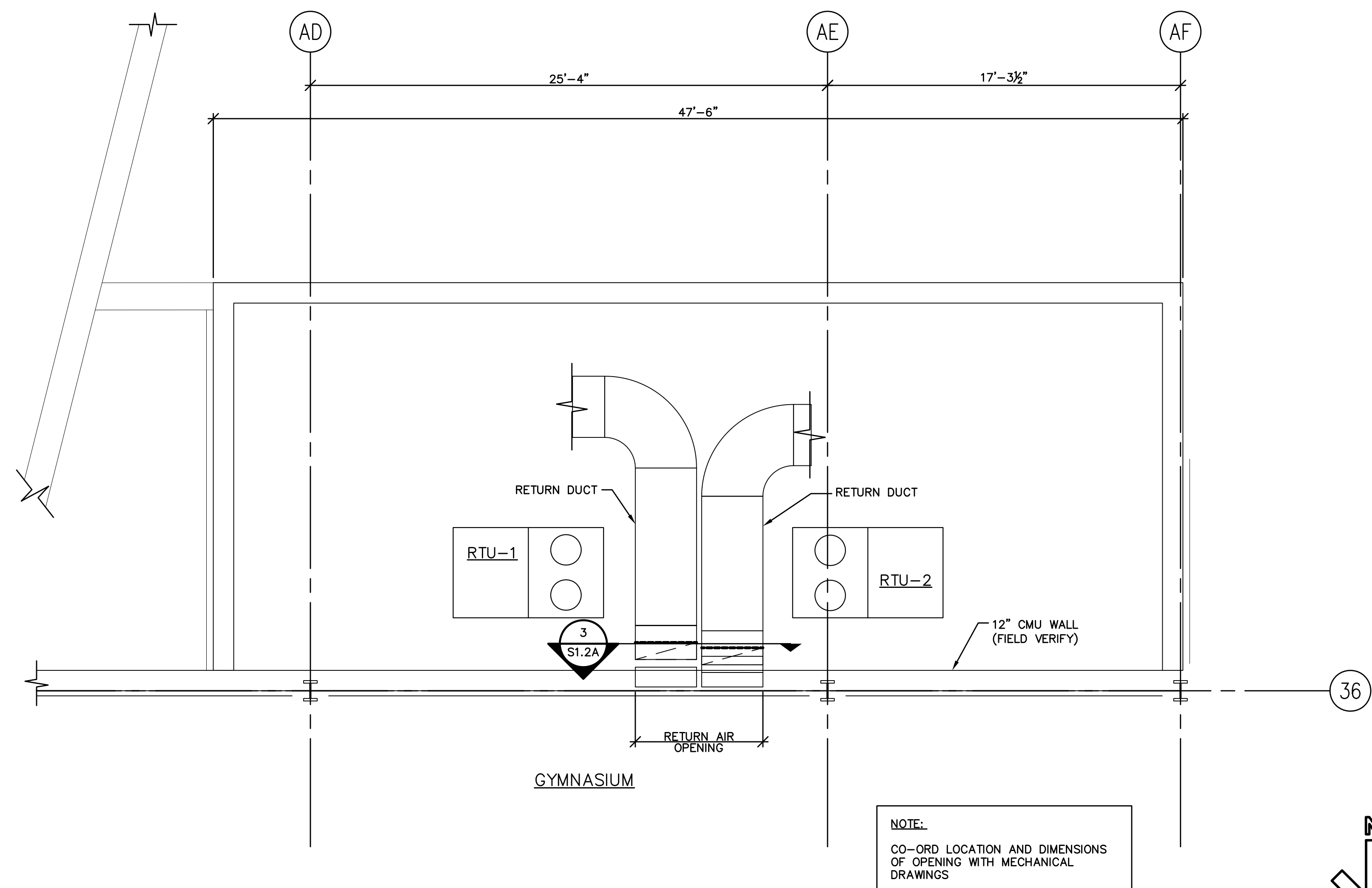
DRAWN BY: KMH

SHEET NUMBER:  
**S1.1**



**ENLARGED EXISTING ROOF FRAMING PLAN**

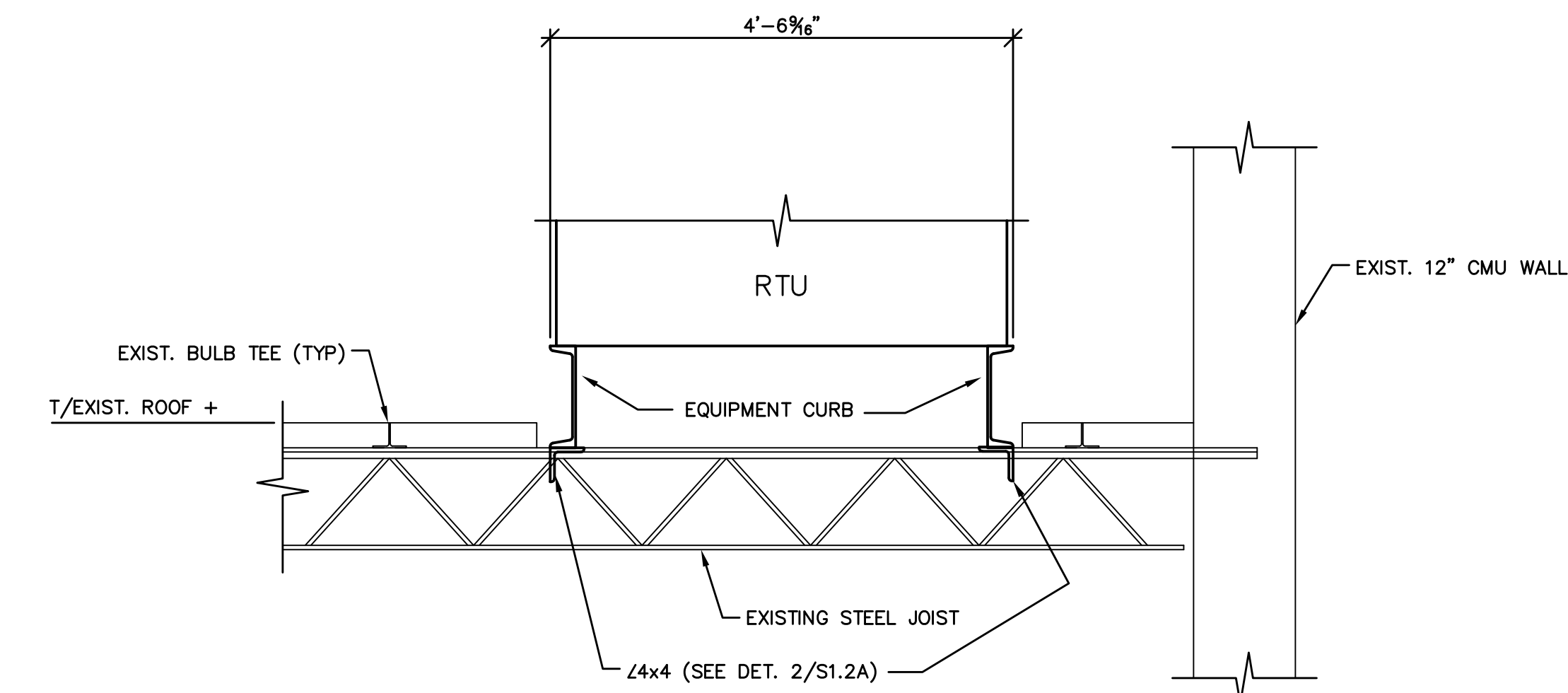
SCALE: 1/4" = 1'-0"



**ENLARGED PLAN AT CMU WALL OPENING**

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

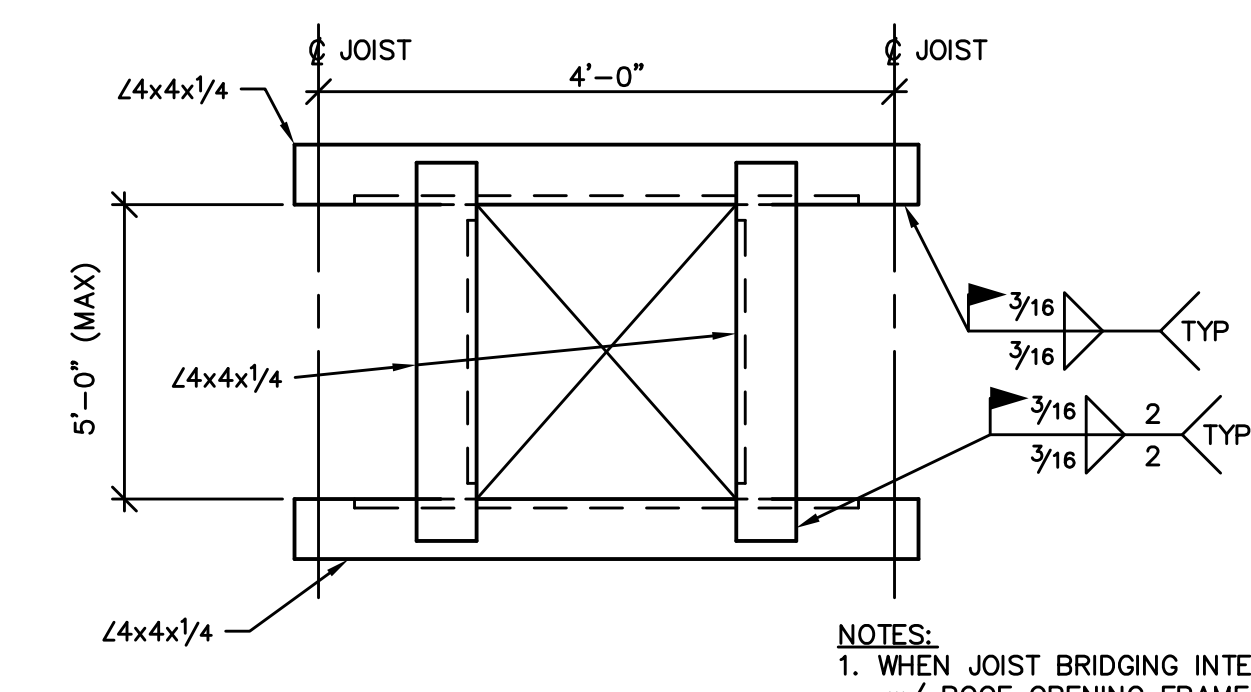
**CONTRACTOR NOTE:**  
REMOVE BULB TEE'S AND TECTUM ROOF DECK AS REQUIRED. RE-SUPPORT TECTUM DECK WHERE REQUIRED.



**1 SECTION**

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

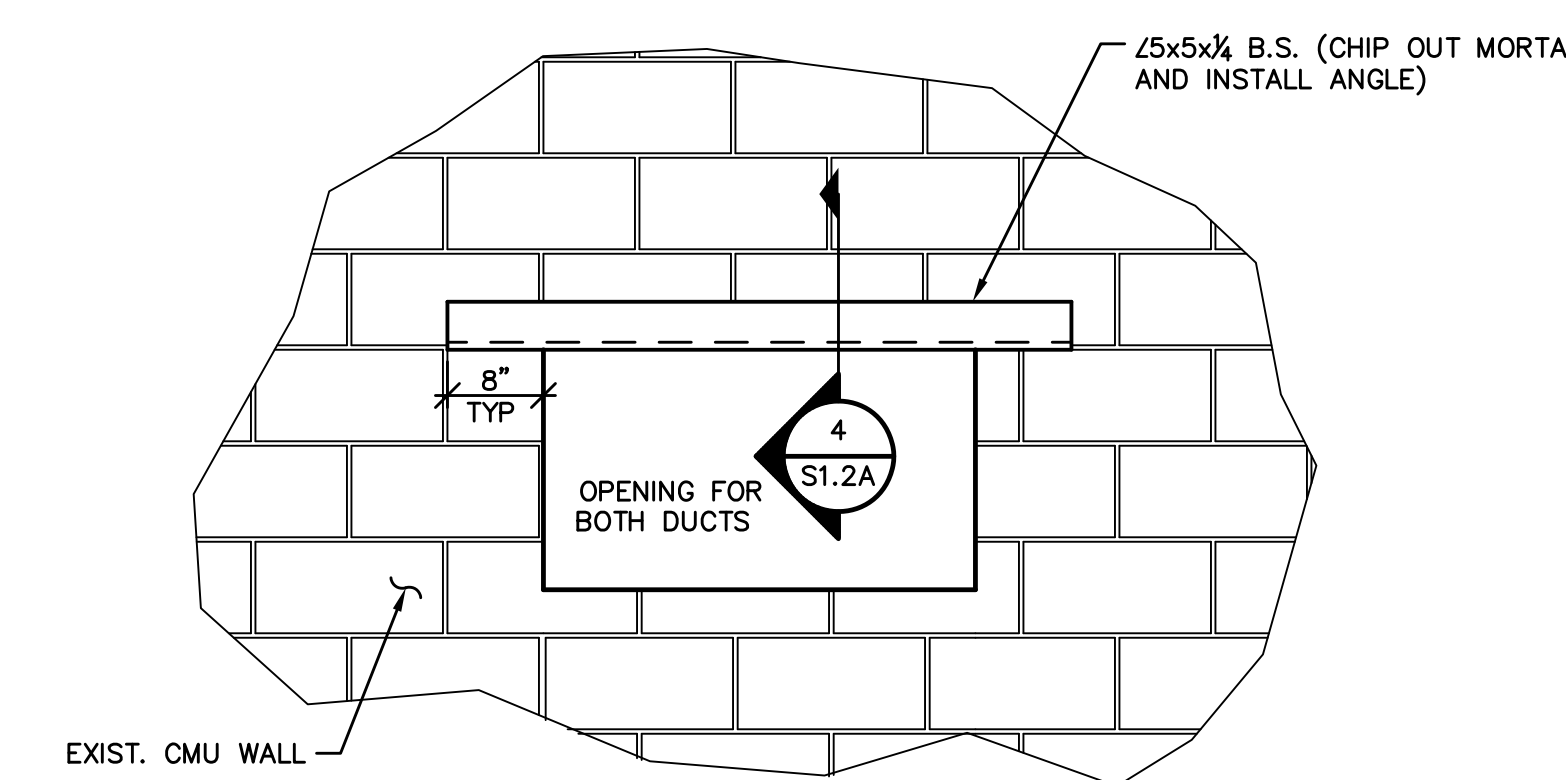
EQUIPMENT PLATFORM



**2 DETAIL**

SCALE: NONE

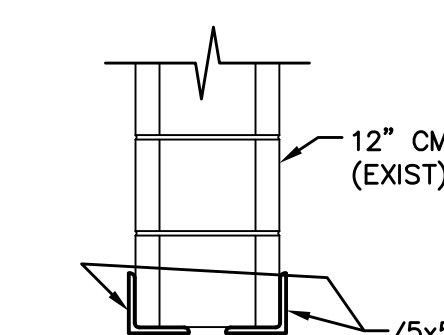
TYP FRAMING AT RTU SUPPORT AND ROOF OPENINGS



**3 SECTION**

SCALE: NONE

HVAC WALL OPENING



**4 SECTION**

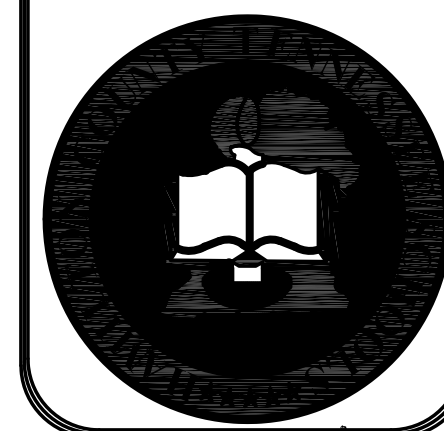
SCALE: NONE

CMU LINTEL

MARK	DATE	DESCRIPTION	OF	REVISION

**REVISIONS**

**Red Bank High School  
HVAC Improvements**  
640 Morrison Springs Rd., Red Bank, TN 37415



**CAMPBELL & ASSOC., INC.**  
CONSULTING ENGINEERS  
1401 Carter St. Chattanooga, TN 37403  
(423) 267-9718 FAX: (423) 265-7879  
E-mail: caengrs@caengrs.com  
www.caengrs.com

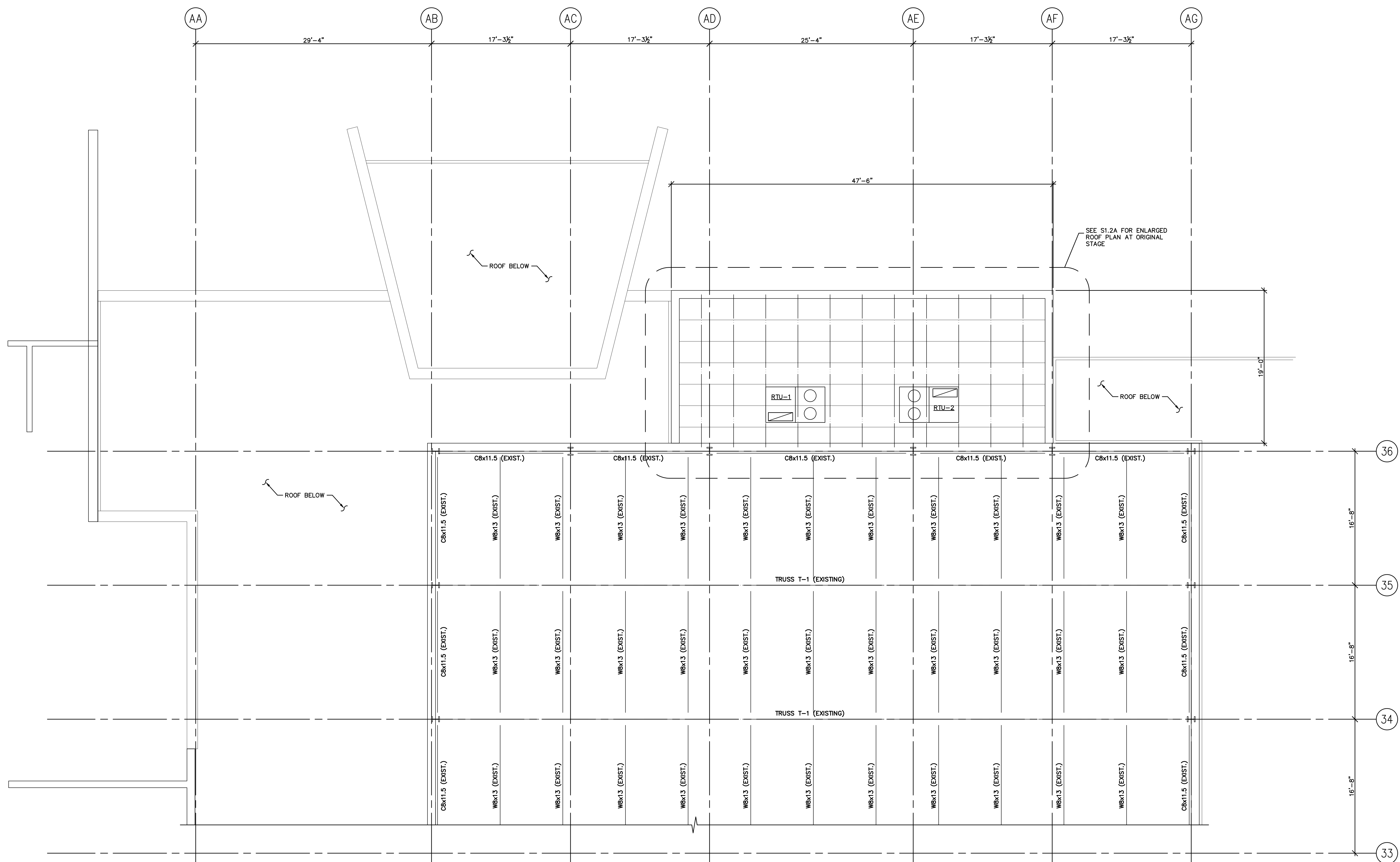
SHEET TITLE:  
**STRUCTURAL ENLARGED FRAMING PLAN**

JOB No. C0123 DATE: MARCH 17, 2023

DRAWN BY: KMH

SHEET NUMBER:

**S1.2A**



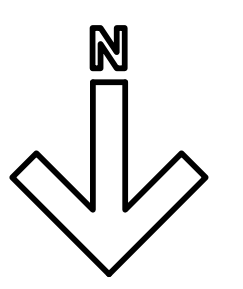
**EXISTING ROOF DESIGN LOADS:**

LIVE LOAD =	20 psf
DEAD LOAD =	30 psf (CONSERVATIVE)
TOTAL LOAD =	50 psf

**RTU LOADS:**

UNIT	WEIGHT #s
RTU-1	1172
RTU-2	1172

- NOTES:**
1. FOR GENERAL NOTES SEE SHEET S0.1.
  2. FOR EXISTING FLOOR PLAN SEE SHEET S1.1.
  3. FOR ENLARGED OLD STAGE AREA FRAMING PLAN SEE S1.2A.
  4. FOR SECTIONS AND DETAILS SEE SHEET S3.1.



**EXISTING ROOF PLAN w/ UNIT LOCATIONS**

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

(ALL SIZES SHOWN ARE EXISTING MEMBERS)

MARK	DATE	DESCRIPTION	OF	REVISION

**REVISIONS**

**Red Bank High School  
HVAC Improvements**  
640 Morrison Springs Rd., Red Bank, TN 37415



**CAMPBELL & ASSOC., INC.**  
CONSULTING ENGINEERS  
1401 Carter St. Chattanooga, TN 37403  
(423) 267-9718 FAX: (423) 265-7879  
E-mail: caengrs@caengrs.com  
www.caengrs.com

SHEET TITLE:

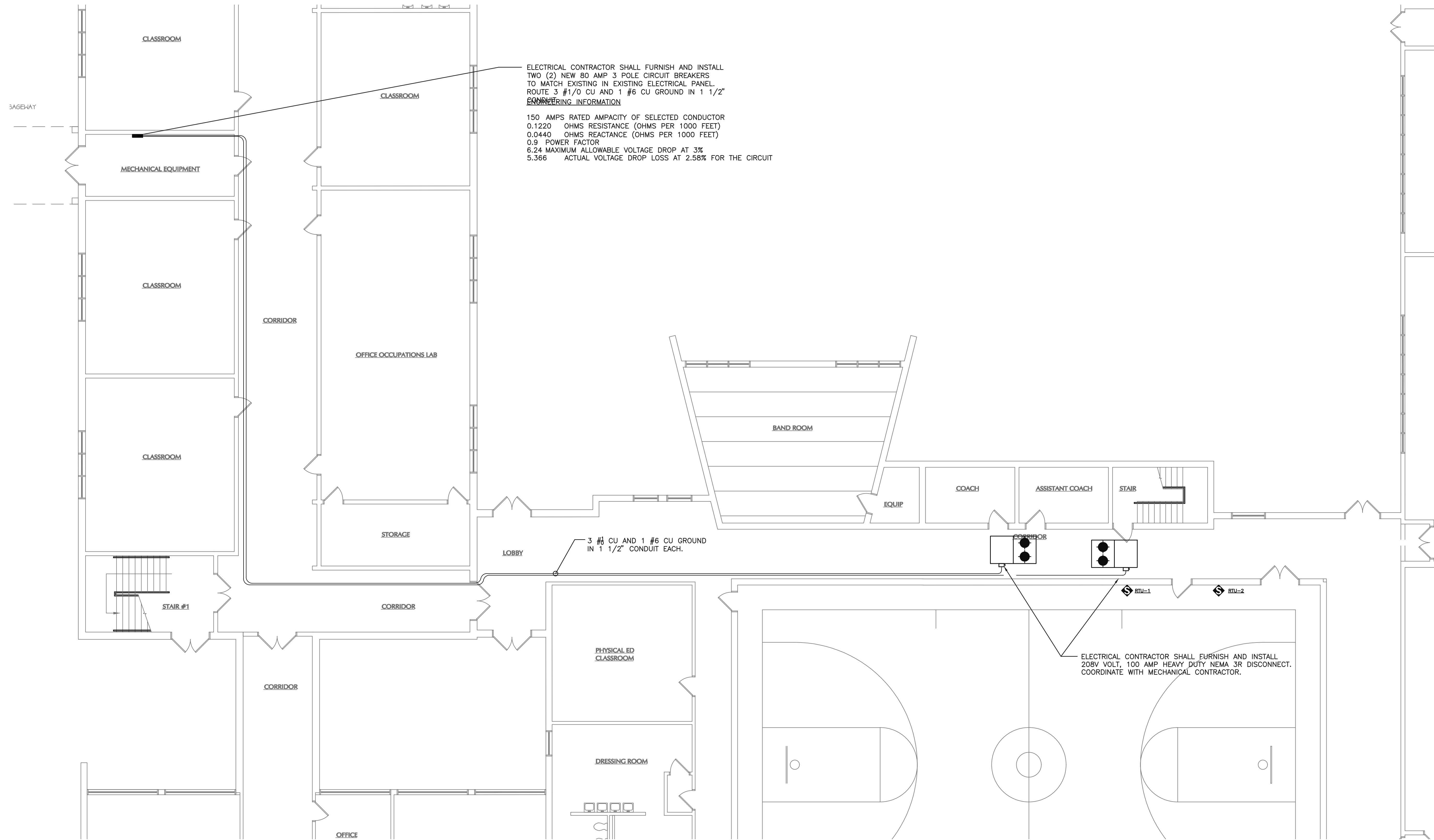
**STRUCTURAL  
EXIST. ROOF  
FRAMING PLAN**

JOB No. C0123 DATE: MARCH 17, 2023

DRAWN BY: KMH

SHEET NUMBER:

**S1.2**



ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) NEW 80 AMP 3 POLE CIRCUIT BREAKERS TO MATCH EXISTING IN EXISTING ELECTRICAL PANEL. ROUTE 3 #1/0 CU AND 1 #6 CU GROUND IN 1 1/2" CONDUIT.

**ENGINEERING INFORMATION**

150 AMPS RATED AMPACITY OF SELECTED CONDUCTOR  
 0.1220 OHMS RESISTANCE (OHMS PER 1000 FEET)  
 0.0440 OHMS REACTANCE (OHMS PER 1000 FEET)  
 0.9 POWER FACTOR  
 6.24 MAXIMUM ALLOWABLE VOLTAGE DROP AT 3%  
 5.366 ACTUAL VOLTAGE DROP LOSS AT 2.58% FOR THE CIRCUIT

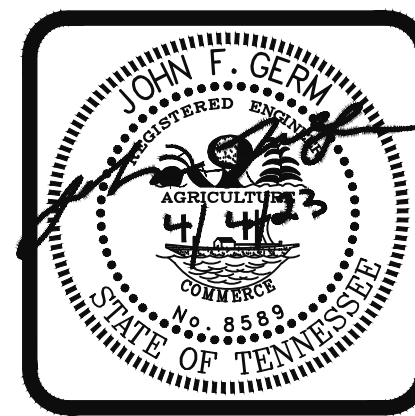
3 #1/0 CU AND 1 #6 CU GROUND IN 1 1/2" CONDUIT EACH.

ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL 208V VOLT, 100 AMP HEAVY DUTY NEMA 3R DISCONNECT. COORDINATE WITH MECHANICAL CONTRACTOR.

MARK	DATE	DESCRIPTION OF REVISION

**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 265-7879  
 E-mail: caengrs@caengrs.com WWW.CAENGRS.COM



DRAWN BY: RKS  
 CHECKED BY: RKS  
 DATE: 04/14/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: **E1.0**  
 ELECTRICAL POWER PLAN  
 OF



**ELECTRICAL SPECIFICATIONS**

- ALL WORK SHALL CONFORM TO THE LATEST APPROVED VERSION OF THE 2017 N.E.C., 2009 I.E.C. NATIONAL, STATE AND LOCAL CODES WHICH APPLY.
- ALL MATERIAL AND EQUIPMENT SHALL CONFORM TO U.L. AND NEMA STANDARDS WHICH APPLY.
- THIS CONTRACTOR SHALL PAY ALL FEES AND OBTAIN ALL PERMITS REQUIRED FOR THE EXECUTION OF HIS WORK. HE SHALL ALSO PROVIDE PROOF OF FINAL APPROVAL BY THE AUTHORITY HAVING JURISDICTION BEFORE FINAL PAYMENT IS MADE.
- THIS CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE OF HIS ENTIRE ELECTRICAL INSTALLATION AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER.
- SUBMIT EIGHT COPIES OF DETAILED SHOP DRAWINGS OF ALL ITEMS OF EQUIPMENT FURNISHED UNDER THIS CONTRACT IN A TIMELY MANNER FOR APPROVAL, BEFORE MANUFACTURE OF THE EQUIPMENT OR ITS INCORPORATION IN THE WORK.
- CONDUCTORS:  
MINIMUM WIRE SIZE SHALL BE #12 UNLESS NOTED OTHERWISE.  
CONDUCTORS SMALLER THAN #2 AWG SHALL BE "THHN/THWN". CONDUCTORS #2 AWG AND LARGER SHALL BE "XHHW".  
ALL CONDUCTORS SHALL BE COPPER.  
CONDUCTORS SHALL BE AS MANUFACTURED BY AETNA, AMERICAN INSULATED, ENCORE, ESSEX, PARANITE, PIRELLI OR SOUTHWIRE.
- CONDUITS:  
INTERIOR CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) UNLESS NOTED OTHERWISE.  
FLEXIBLE METAL CONDUIT SHALL BE USED FOR "MAKE UP" CONNECTIONS TO ROTATING MACHINERY (72" MAXIMUM LENGTH), EQUIPMENT OR FLUSH LIGHT FIXTURES.  
CONDUIT CONNECTORS SHALL BE STEEL SETSCREW OR COMPRESSION. FLEXIBLE METALLIC COUPLINGS AND CONNECTORS SHALL BE MALLEABLE IRON OR STAMPED STEEL FITTINGS.  
MINIMUM CONDUIT SIZE IS 3/4" UNLESS NOTED OTHERWISE. MINIMUM CONDUIT SIZE SHALL BE 1" FOR CONDUITS CONCEALED UNDER FLOOR SLABS OR EXTERIOR BELOW GRADE.
- DISCONNECT SWITCHES SHALL BE SQUARE D "HD" OR EQUAL BY GENERAL ELECTRIC, SIEMENS OR CUTLER-HAMMER.
- FUSES SHALL BE CLASS "R" MANUFACTURED BY BUSSMANN AS FOLLOWS: 0-99A FUSETRON, 100-600A LOW PEAK, ABOVE 600A HI-CAP, OR EQUAL BY FERRAZ-SHAWMUT OR LITTELFUSE.
- PANELBOARDS: (EXISTING TO REMAIN)
- NAMEPLATES SHALL BE INSTALLED ON ALL OF THE FOLLOWING EQUIPMENT TYPES: PANELBOARDS, MOTOR STARTERS, CONTROL PANELS, CONTROL DEVICES, TELEPHONE CABINETS, EMERGENCY SYSTEM EQUIPMENT, TRANSFORMERS, ETC. NAMEPLATES SHALL BE LAMINATED PHENOLIC, WHITE WITH BLACK CORE.
- PROVIDE TYPED PANEL SCHEDULES FOR ALL PANELBOARDS DESCRIBING LOCATION OF DEVICE SERVED. PROVIDE PHENOLIC NAMEPLATES FOR EACH SWITCHBOARD DISCONNECT SWITCH OR CIRCUIT BREAKER.

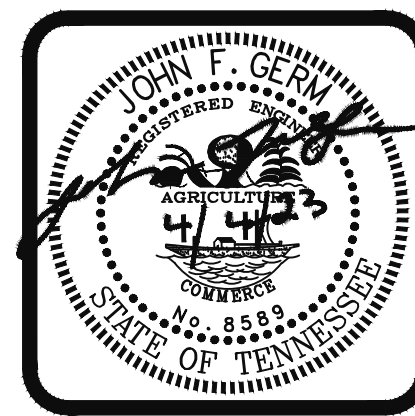
**ELECTRICAL GENERAL NOTES:**

- IT IS STRONGLY RECOMMENDED THAT ALL BIDDERS VISIT AND EXAMINE THE SITE. NO ADDITIONAL COMPENSATION WILL BE AWARDED FOR ANY DEVIATIONS OR DISCREPANCIES TO THESE PLANS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS UNDER WHICH WORK MUST BE PERFORMED AND CHECK ALL PRESENT ELEVATIONS. THE CONTRACTOR SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ARCHITECT. FAILURE TO DO SO SHALL BE DEEMED AS ACCEPTANCE OF EXISTING CONDITIONS.
- ANY OTHER RELOCATIONS, ALTERATIONS AND/OR EXTENSIONS OF ELECTRICAL ITEMS DUE TO REMODELING (THOUGH NOT SPECIFICALLY SHOWN) SHALL BE INCLUDED TO PROVIDE A COMPLETE AND WORKING INSTALLATION.
- THE DRAWINGS INDICATE MAJOR ITEMS TO BE REMOVED SUCH AS PANELS, COMMUNICATIONS SYSTEM TERMINAL BOXES, MAJOR FEEDERS, ETC. THE DRAWINGS DO NOT DETAIL REMOVALS FOR MINOR DEVICES, LIGHTING FIXTURES, BRANCH CIRCUITS, ETC., UNLESS SPECIFICALLY INDICATED FOR REUSE ELSEWHERE. IT IS INTENDED THAT ALL ITEMS NOT SHOWN TO BE REUSED ON THE NEW FLOOR PLANS BE REMOVED BACK TO SOURCE AND CONTINUITY OF CIRCUITRY TO ADJACENT AREAS BE PROVIDED FOR.
- ALL REMOVED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS DIRECTED OTHERWISE BY THE OWNER.
- ALL WORK REQUIRING A POWER OUTAGE SHALL BE COORDINATED WITH THE OWNER AND SCHEDULED AT SUCH A TIME AS TO MINIMIZE DISRUPTION. THE CONTRACTOR SHALL SCHEDULE FULL WORK CREWS FOR AS LONG AS REQUIRED TO MINIMIZE THE SHUTDOWN PERIOD. ALL SHUTDOWNS SHALL OCCUR BETWEEN 8:00 P.M. AND 4:00 A.M.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING FOR INSTALLATION OF ALL ELECTRICAL WORK. ALL CONDUIT SHALL BE RUN CONCEALED IN WALLS AND CEILINGS, WIREMOLD OR EXPOSED CONDUITS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. ELECTRICAL CONTRACTOR TO PROVIDE ACCESS PANELS IN WALLS AND CEILINGS AS REQUIRED. MATCH ALL EXISTING CONDITIONS.
- OPENINGS AROUND CONDUITS OR IN SLEEVES FOR CONDUITS PENETRATING FIRE-RATED FLOOR SLABS, WALLS, PARTITIONS, CEILINGS OR SMOKE PARTITIONS, SHALL BE SEALED AT BOTH SIDES OF THE PENETRATION. INSULATION SHALL NOT EXTEND THROUGH SLEEVES. PACK OPENINGS WITH CALCIUM SILICATE BLOCK, DOW CORNING 3-6548 RTV SILICON FOAM, 3M CP25 CAULK, OR 303 PUTTY FIRE BARRIER SYSTEM, OR MATERIAL HAVING THE SAME FIRE-RATING AS THE FLOOR OR WALL PENETRATED. FIBERGLASS IS NOT ACCEPTABLE.
- ELECTRICAL CONTRACTOR TO PROVIDE AN INSTALLATION SCHEDULE DETAILING MAJOR DATES OF INSTALLATION FOR ITEMS SUCH AS TRANSFORMERS, MAIN DISTRIBUTION PANELS, SHUT DOWN TIMES, SERVICE SWITCHOVER, ETC. THE SCHEDULE SHALL BE APPROVED BY THE OWNER PRIOR TO ANY SHUT DOWN TIMES.
- ALL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES TO AVOID INTERFERENCES AND CONFLICTS. REFER TO THE DRAWINGS OF THE RESPECTIVE SYSTEMS PRIOR TO SUBMISSION OF BIDS FOR ADDITIONAL WORK WHICH MAY BE REQUIRED AS PART OF THIS WORK. NO ALLOWANCES WILL BE MADE FOR THE LACK OF COORDINATION BETWEEN DISCIPLINES OR SYSTEMS AND EQUIPMENT.
- THE WORK SHALL BE COORDINATED WITH THE ARCHITECT FOR THE EXACT LOCATION OF LIGHT FIXTURES, EQUIPMENT, DEVICES, ETC. TO ASSURE PROPER PLACEMENT OF SAID DEVICES AND EQUIPMENT. WHERE A CONFLICT EXISTS BETWEEN ANY TWO DOCUMENTS, NOTIFY THE ENGINEER FOR RESOLUTION PRIOR TO ANY ROUGH-IN OR INSTALLATION.
- THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT BEING INSTALLED PRIOR TO INSTALLATION TO ASSURE THAT THE FEEDER, DISCONNECT, STARTER, OVERCURRENT PROTECTION, ETC. MATCHES THE ACTUAL NAMEPLATE DATA AS SUPPLIED BY THE MANUFACTURER.
- SPECIFIC REQUIREMENTS REGARDING MATERIALS, WORKMANSHIP AND THE WORK TO BE DONE ARE COVERED BY THE SPECIFICATIONS WHICH COMPLEMENT THE PLANS. WORK CALLED FOR BY THE SPECIFICATIONS OR THE PLANS IS REQUIRED THE SAME AS IF REQUIRED BY BOTH. WHERE A CONFLICT EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS OF THE TWO SHALL APPLY UNLESS SPECIFICALLY APPROVED IN WRITING BY THE ENGINEER.
- REFER TO EQUIPMENT CUT SHEETS AND MANUFACTURER'S DATA FOR ROUGH IN LOCATIONS OF ELECTRICAL CONNECTIONS AND INTERCONNECTIONS OF ALL EQUIPMENT.
- INSTALL OVER CURRENT PROTECTION AND BRANCH CIRCUIT WIRING PER U.L. LISTING REQUIREMENTS FOR EQUIPMENT SERVED - REFER TO NAMEPLATE DATA.
- PROVIDE START-UP ASSISTANCE TO OWNER PERSONNEL AND EQUIPMENT TECHNICIANS TO CONFIRM CORRECT PHASE ROTATION, PROPER OPERATION AND SEQUENCE, AND CONTROLS.
- CONTRACTOR SHALL COORDINATE ELEVATIONS AND PIPING SYSTEM SLOPES SUCH THAT DUCTWORK, PIPING, RACEWAY, CABLE TRAY, AND ASSOCIATED EQUIPMENT IS INSTALLED AT UNIFORM ELEVATIONS WITH MINIMAL OFFSET. PROVIDE COORDINATION DRAWING TO ENGINEER FOR REVIEW PRIOR TO EQUIPMENT ORDERS AND ROUGH-IN.
- ATTENTION IS CALLED TO THE FACT THAT THIS IS A RENOVATION WITHIN AN EXISTING BUILDING. WHEN THE WORK IS FINISHED, THE ELECTRICAL INSTALLATION SHALL BE COMPLETE IN EVERY RESPECT, COMPLETELY INTEGRATED WITH ALL THE EXISTING ELECTRICAL SYSTEMS. COORDINATION WITH THE ENGINEER IS REQUIRED FOR CHANGING OVER OF EXISTING LOADS. ALL EXISTING ELECTRICAL WORK REQUIRED TO REMAIN IN USE DURING AND/OR AFTER THE COMPLETION OF THE WORK SHALL BE EXTENDED, REROUTED, REPLACED, RECONNECTED OR OTHERWISE TO FIT INTO THE RENOVATED AREA AND LEFT IN SAFE WORKING ORDER. CONTRACTOR TO VERIFY LOAD OF EXISTING CIRCUITS. REMOVE ALL ELECTRICAL EQUIPMENT AND MATERIAL WHICH IS IN THE AFFECTED SPACE AND WILL NOT BE RE-USED BY THE RENOVATION.
- IN AREAS TO BE REMODELED, REMOVE ALL EXISTING LIGHTS, SWITCHES, JUNCTION BOXES, EXPOSED WIRING, MISCELLANEOUS EQUIPMENT, ETC., WHICH ARE TO BE ABANDONED OR ARE NOT UNUSED OR OTHERWISE NOT SERVICEABLE. ALL EXPOSED CONDUIT AND WIRE SHALL BE REMOVED BACK TO THE POINT OF SERVICE TIE-IN AND PLUGGED OR CAPPED AS REQUIRED. ALL ITEMS REMOVED AND NOT REUSED SHALL REMAIN THE PROPERTY OF THE OWNER OR DISPOSED OF AS DIRECTED.
- PROVIDE FOR THE CONTINUITY OF EXISTING CIRCUITS WHICH MAY PASS THROUGH THIS AREA AND ARE DISTURBED BY THE DEMOLITION.
- THERE SHALL BE NO EXPOSED CONDUIT OR WIRING. ALL CONDUIT AND WIRING SHALL BE CONCEALED WITHIN WALLS, CABINETS, ETC.
- MOUNTING HEIGHT (M.H.) SHALL BE FROM FINISHED FLOOR TO BOTTOM OF ITEM, UNLESS OTHERWISE NOTED.
- SEE ARCHITECTURAL DRAWING(S) FOR EXACT LOCATION OF LIGHT FIXTURES, RECEPTACLES, ETC. OTHERWISE NOTED.
- ANY OTHER RELOCATIONS, ALTERATIONS AND/OR EXTENSIONS OF ELECTRICAL ITEMS DUE TO REMODELING (THOUGH NOT SPECIFICALLY SHOWN) SHALL BE INCLUDED TO PROVIDE A COMPLETE AND WORKING INSTALLATION.
- RUN SEPARATE GREEN GROUND WIRE IN ALL CONDUIT SYSTEMS TO ALL DEVICES.
- VERIFY CEILING TYPE FOR GRID OR FLANGE-TYPE HOUSING CONSTRUCTION OF LIGHTING FIXTURES.
- THIS CONTRACTOR SHALL ROUGH-IN AND COMPLETELY CONNECT UP AFTER EQUIPMENT INSTALLATION BY OTHERS. ALL EQUIPMENT AS DETAILED ON THE DRAWINGS AND SPECIFIED HEREIN. ELECTRICAL OUTLETS AND APPROXIMATE LOADS FOR THE VARIOUS ITEMS OF EQUIPMENT ARE NOTED ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY EXACT LOCATIONS OF SUCH OUTLETS SERVING VARIOUS EQUIPMENT UNITS, AS WELL AS TO VERIFY THE EQUIPMENT MANUFACTURER'S REQUIRED CIRCUIT TERMINATION METHODS TO BEST SUIT REQUIREMENTS FOR EACH EQUIPMENT ITEM (E.G., BLANKED BOX, PLUG-IN, RECEPTACLES, ETC.). COMPLIANCE WITH SUCH REQUIREMENTS OF THE EQUIPMENT MANUFACTURER SHALL BE A PART OF THE CONTRACT AND SHALL BE MET WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

MARK	DATE	DESCRIPTION OF REVISION

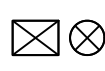


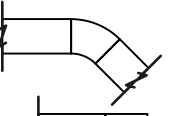
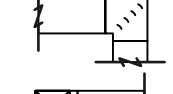

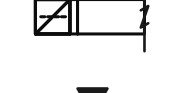
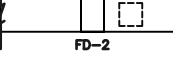
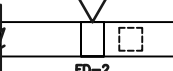
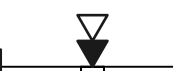
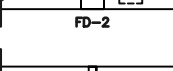




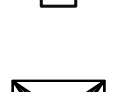



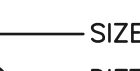
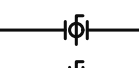
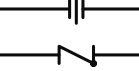
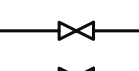


**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 285-7879  
 E-mail: caengrs@caengrs.com www.caengrs.com



DRAWN BY: RKS  
 CHECKED BY: RKS  
 DATE: 04/14/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: **E2.0**  
 ELECTRICAL SPECS  
 AND NOTES  
 OF \_\_\_\_\_

### HVAC LEGEND AND SYMBOLS

A.F.F. ABOVE FINISHED FLOOR		
AMB. AMBIENT	VALVE ACTUATORS: MANUAL, NON-RISING STEM	 SUPPLY, OUTSIDE AIR, OR MAKE-UP AIR DUCTWORK CROSS-SECTION
B.F.C. BELOW FINISHED CEILING	ELECTRIC MOTOR	 RETURN DUCTWORK CROSS-SECTION
CFM CUBIC FEET PER MINUTE	ELECTRIC SOLENOID	 EXHAUST DUCTWORK CROSS-SECTION
EA EXHAUST AIR	CAP	 RADIUS ELBOW (45° SHOWN)
E.A.D.B. ENTERING AIR DRY BULB TEMPERATURE	ELBOW, FACING TOWARD VIEWER	 MITERED ELBOW WITH DOUBLE THICK TURNING VANES (90° SHOWN)
E.A.W.B. ENTERING AIR WET BULB TEMPERATURE	ELBOW, FACING AWAY FROM VIEWER	 SUPPLY DUCTWORK SHOWN TURNING UP
E.S.P. EXTERNAL STATIC PRESSURE	REDUCER, CONCENTRIC	 RETURN DUCTWORK SHOWN TURNING DOWN
FD-2 2-HOUR FIRE DAMPER	REDUCER, ECCENTRIC, FLAT ON BOTTOM	 FIRE DAMPER WITH ACCESS DOOR IN DUCT
GPM GALLONS PER MINUTE	REDUCER, ECCENTRIC, FLAT ON TOP	 SMOKE DAMPER WITH ACCESS DOOR IN DUCT
MBH THOUSAND BTU/HOUR	TEE, FACING TOWARD VIEWER	 FIRE/SMOKE DAMPER WITH ACCESS DOOR IN DUCT
MCDB MEAN COINCIDENT DRY BULB TEMP.	TEE, FACING AWAY FROM VIEWER	 MANUAL VOLUME BALANCING DAMPER
MCWB MEAN COINCIDENT WET BULB TEMP.	UNION, SCREWED	 PROGRAMMABLE TEMPERATURE SENSOR
MUA MAKE-UP AIR	UNION, FLANGED	 REMOTE WIRED WALL-MOUNTED CONTROLLER
N.C. NORMALLY CLOSED	STRAINER	 DUCT-MOUNTED SMOKE DETECTOR
N.O. NORMALLY OPEN	STRAINER, BLOW OFF	 MANUAL PULL STATION FOR KITCHEN EXHAUST HOOD FIRE SUPPRESSION SYSTEM
N/A NOT APPLICABLE	PETE'S PLUG	 DUCT CONNECTION TO THE NECK OF A DIFFUSER, REGISTER, OR GRILLE (DIFFUSER CONNECTION SHOWN)
N.I.C. NOT IN CONTRACT	PRESSURE GAGE AND COCK	 SIDEWALL GRILLE OR REGISTER; ARROW INDICATES FLOW DIRECTION
N.T.S. NOT TO SCALE	THERMOMETER	 SIZE OF DIFFUSER/GRILLE NECK
OA OUTSIDE AIR	PUMP	 DIFFUSER/GRILLE TYPE (SEE SCHEDULE)
RA RETURN AIR	DIRECTION OF FLOW	 AIR VOLUME OF DIFFUSER/GRILLE
RH RELATIVE HUMIDITY	RECTANGULAR DUCTWORK; DIMENSIONS SHOWN ARE NET INTERNAL DIMENSIONS	
SA SUPPLY AIR	ROUND DUCTWORK; DIMENSION SHOWN IS NET INTERNAL DIMENSION	
---CHWS--- CHILLED WATER SUPPLY	FLAT OVAL DUCTWORK; DIMENSION SHOWN IS NET INTERNAL DIMENSION	
---CHWR--- CHILLED WATER RETURN	FLEXIBLE DUCTWORK (MAX. LENGTH = 4 FEET)	
---HWS--- LOW-TEMPERATURE HOT WATER SUPPLY	EXISTING DUCTWORK TO BE REMOVED	
---HWR--- LOW-TEMPERATURE HOT WATER RETURN	EXISTING DUCTWORK TO REMAIN IN PLACE	
---H/C S--- HOT/CHILLED WATER SUPPLY	NEW DUCTWORK	
---H/C R--- HOT/CHILLED WATER RETURN		
---CWS--- CONDENSER WATER SUPPLY		
---CWR--- CONDENSER WATER RETURN		
---HPWS--- HEAT PUMP WATER SUPPLY		
---HPWR--- HEAT PUMP WATER RETURN		
---RL--- REFRIGERANT LIQUID		
---RS--- REFRIGERANT SUCTION		
---CD--- CONDENSATE DRAIN ABOVE FLOOR/GRADE		
-----CD----- CONDENSATE DRAIN BELOW FLOOR/GRADE		
 BALL VALVE		
 BUTTERFLY VALVE		
 CHECK VALVE		
 GATE OR GLOBE VALVE		
 THREE-WAY VALVE		

NOTE: NOT ALL SYMBOLS SHOWN IN LEGEND MAY BE ON THE DRAWINGS.

#### MECHANICAL GENERAL NOTES:

INTENT: IT IS THE INTENT OF THE CONTRACT DOCUMENTS THAT THE CONTRACTOR FURNISH AND INSTALL ALL MATERIALS AND SYSTEMS, WITH NECESSARY AND INCIDENTAL APPROPRIACIES, FOR A COMPLETE, FUNCTIONAL INSTALLATION, READY AND SUITABLE FOR THE OWNER'S USE.

CODES: WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES. THE INTERNATIONAL MECHANICAL, ENERGY CONSERVATION, AND PLUMBING CODES SHALL FORM THE BASIS FOR MINIMUM CONSTRUCTION STANDARDS FOR THIS PROJECT.

FEES, PERMITS, AND TAXES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR INSPECTIONS AND PAY ALL LAWFUL FEES AND PERMITS REQUIRED BY LOCAL AUTHORITIES. CONTRACTOR SHALL PAY TAXES LEVIED FOR LABOR AND MATERIALS ASSOCIATED WITH WORK ON THIS PROJECT.

INSPECTION OF SITE: THE DRAWINGS ARE PREPARED FROM THE BEST INFORMATION AVAILABLE AND REFLECT THE CONDITIONS COMMENSURATE WITH THIS INFORMATION. HOWEVER, THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A PROPOSAL AND SHALL VERIFY THE LOCATIONS, SIZES, DEPTH, PRESSURE, ETC., OF ALL EXISTING UTILITIES; AND FAMILIARIZE HIMSELF WITH WORKING CONDITIONS, HAZARDS, EXISTING GRADES, SOIL CONDITIONS, OBSTRUCTIONS, ETC. IF IT BECOMES EVIDENT THAT EXISTING SITE CONDITIONS WILL IMPAIR THE PROPER OPERATION OF THE UTILITIES, OR THE CONSTRUCTION PROCESS, THE ARCHITECT SHALL BE NOTIFIED IN WRITING. ALL PROPOSALS AND BIDS SHALL TAKE THESE EXISTING CONDITIONS AND ANY REVISIONS REQUIRED INTO ACCOUNT, AND THE LACK OF SPECIFIC SITE INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY.

DATA AND SHOP DRAWINGS: PRIOR TO ORDERING, SUBMIT CERTIFIED PRINTS AND/OR DESCRIPTIVE DATA FOR MAJOR PIECES OF EQUIPMENT, FIXTURES, VALVES, INSULATION, CONTROLS, ETC. STAMP, SIGN, AND CERTIFY TO BE CORRECT AND IN COMPLIANCE WITH THE CONTRACT DOCUMENTS. EACH DRAWING SUBMITTED FOR REVIEW. DRAWINGS SUBMITTED WITHOUT SIGNED CERTIFICATION WILL BE RETURNED WITHOUT REVIEW. ANY DEVIATION IN SUBMITTAL FROM CONTRACT DOCUMENTS OF MATERIALS, CAPACITIES, SPACE REQUIREMENTS IN ITEMS FURNISHED, ETC., SHALL BE LISTED IN A LETTER ACCOMPANYING SUBMITTAL STATING DEVIATION AND REASON REQUESTED FOR CONSIDERATION OF ACCEPTANCE. SUBMITTALS SHALL INCLUDE ONE PAPER COPY (IF REQUESTED) AND ONE ELECTRONIC COPY, CLEARLY MARKED, AND IN ORDER AS INDICATED IN DRAWINGS. ITEMS SUBMITTED PARTIALLY AND IN AN UNORGANIZED MANNER SHALL BE RETURNED WITHOUT REVIEW. SUBMITTAL SHALL SHOW MANUFACTURER'S CATALOG NUMBER, PERFORMANCE DATA WITH INDICATED OPERATING POINTS, FINISHES, OPTIONAL FEATURES AND MODIFICATIONS. EACH SHEET OF PRINTED SUBMITTAL DATA SHALL BE CLEARLY MARKED (USING ARROWS, UNDERLINING, CIRCLING, OR HIGHLIGHTING) TO SHOW THE PARTICULAR SIZE, TYPE, MODEL NUMBER, RATINGS AND OPTIONS ACTUALLY PROPOSED. WHEN WORK IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION IS SPECIFIED, A COPY OF THESE RECOMMENDATIONS SHALL BE KEPT IN THE JOB OFFICE. SHOP DRAWINGS SHALL SHOW SIZES AND DETAILS OF REQUIRED CONCRETE AND STEEL MACHINE FOUNDATION, LOCATION OF ANCHOR BOLTS, PHYSICAL DIMENSION OF EQUIPMENT, EQUIPMENT WEIGHT OR OTHER PERTINENT DATA REQUIRED FOR EQUIPMENT SUPPORT OR INSTALLATION. APPROVED SHOP DRAWINGS DO NOT MEAN THAT DRAWINGS HAVE BEEN CHECKED IN DETAIL; SAID APPROVAL DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY OR NECESSITY OF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS OR SPECIFICATIONS.

ALL DUCTWORK DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS.

MOUNT TEMPERATURE SENSORS, REMOTE CONTROL PANELS, ETC., AS INDICATED ON PLANS 48" A.F.F. TO CENTER OF DEVICE UNLESS OTHERWISE NOTED OR AS REQUIRED FOR ACCESSIBILITY CODE COMPLIANCE. COORDINATE LOCATION OF SENSORS WITH CABINETS AND OTHER SERVICES. THE TEMPERATURE SENSORS SHALL NOT BE INSTALLED ON OUTSIDE WALLS, IN THE DIRECT AIR STREAM FROM ANY DIFFUSER, OR WHERE IT MAY BE INFLUENCED BY HEAT GIVEN OFF FROM EQUIPMENT.

ADJUSTING AND BALANCING: ALL EQUIPMENT AND SYSTEMS SHALL BE ADJUSTED AND BALANCED SO THAT THEY PERFORM TO THE SATISFACTION OF THE OWNER. AIR DISTRIBUTION SYSTEM(S) SHALL BE ADJUSTED TO THE AIR QUANTITIES INDICATED AND TO ELIMINATE ANY TEMPERATURE GRADIENTS BETWEEN ROOMS OR WITHIN ROOMS GREATER THAN 3° F. CONTRACTOR SHALL ENGAGE THE SERVICES OF A TEST AND BALANCE AGENCY TO PERFORM THE ADJUSTING AND BALANCING OF THE MECHANICAL SYSTEM(S). ALL ADJUSTING AND BALANCING WORK SHALL BE PERFORMED BY THE PROCEDURAL STANDARDS AS SET FORTH BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), THE ASSOCIATED AIR BALANCE COUNCIL (AABC), OR THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). THE CONTRACTOR SHALL SUBMIT TAB REPORTS TO THE ENGINEER FOR REVIEW; ALL TAB REPORTS SHALL BE SUBMITTED ON FORMS AS SET FORTH BY THE ORGANIZATIONS LISTED ABOVE.

ALL SAFETY DEVICES SHALL BE CHECKED FOR PROPER OPERATION.

DUCTWORK: RIGID - GALVANIZED SHEET METAL PER SMACNA WITH THE EXCEPTION THAT ALL DUCTWORK SHALL BE CONSTRUCTED WITH A MINIMUM OF 26 GA. SHEET METAL. USE ROUND DUCTWORK WHERE CLEARANCES PERMIT. SEAL ALL SUPPLY AIR DUCTWORK JOINTS TO SMACNA CLASS "A" OR TO DUCT SEAL SCHEDULE IF PRESENT ON DRAWINGS; DUCT LEAKAGE SHALL NOT EXCEED 1% PERCENT OF THE SPECIFIED AIRFLOWS WHEN TESTED AT 1" W.G.

AIR DISTRIBUTION DEVICES: AS SCHEDULED ON DRAWINGS.

CONDENSATE DRAIN PIPING: SCHEDULE 40 PVC WITH DWV FITTINGS, EXCEPT IN RETURN AIR PLENUMS, WIRE TYPE 1/2" COPPER SHALL BE USED. PIPING SHALL BE INSTALLED WITHOUT ANY SAGGING TO ENSURE COMPLETE DRAINAGE. THE CONDENSATE DRAIN SHALL BE THE SAME SIZE AS THE UNIT DRAIN CONNECTION BUT SHALL NOT BE LESS THAN 3/4" DIAMETER PIPE. ALL CONDENSATE DRAIN PIPING SHALL SLOPE DOWN 1/8" IN 12' MINIMUM IN DIRECTION OF FLOW.

INSULATION: DUCTWORK; SUPPLY, RETURN, OUTSIDE AIR, OR MAKE-UP AIR (CONCEALED) - 2" THICK, 1 PCF DENSITY FIBERGLASS BLANKET WITH FIRE RATED VAPOR BARRIER (INSTALLED R-VALUE SHALL BE 5.0 MINIMUM). OVERLAP BUTTING EDGES, FOLD, SEAL AND TAPE. AND PROVIDE A CONTINUOUS VAPOR BARRIER. USE OF STAPLES SHALL NOT BE PERMITTED. RETURN AIR DUCT INSIDE THE CONDITIONED SPACE NEED NOT BE EXTERNALLY INSULATED. ALL SHEET METAL SURFACES, INCLUDING THE TOPS OF SUPPLY AIR DIFFUSERS EXPOSED ABOVE THE CEILING, SHALL BE INSULATED.

INSULATION: DUCTWORK; RETURN (CONCEALED) - 1" THICK CLOSED CELL ELASTOMERIC INSULATION, ARMAFLEX OR EQUAL, WITH MANUFACTURER'S RECOMMENDED ADHESIVE AT ALL JOINTS.

INSULATION: ALL DUCTWORK EXPOSED TO EXTERIOR CONDITIONS OR IN MECHANICAL ROOM OR ATTIC - 2" THICK FIBERGLASS BLANKET WITH FIRE-RATED VAPOR BARRIER HAVING A DENSITY OF 6 PCF MINIMUM, A THERMAL CONDUCTIVITY OF NO GREATER THAN 0.23 BTU-IN/HR-F<sup>2</sup>-F AT 75° F AND A MINIMUM INSTALLED R-VALUE OF 8.0. SEAL ALL INSULATION SEAMS AND BUTTING EDGES VAPOR TIGHT TO ENSURE A CONTINUOUS VAPOR BARRIER. FOR DUCTWORK ON THE EXTERIOR OF THE BUILDING, SLOPE INSULATION ON TOP OF DUCTWORK FROM A HIGH POINT ON THE CENTERLINE OF THE DUCT TO THE SIDES, WITH A MINIMUM THICKNESS OF 2" AT THE SIDES, TO ENSURE NO WATER BUILDS UP ON TOP OF DUCT. INSTALL AN ALUMINUM JACKET OR VENTURECLAD PVC JACKET ON THE OUTSIDE OF THE INSULATION.

INSULATION: DUCTWORK; SUPPLY, RETURN, OUTSIDE AIR, OR MAKE-UP AIR (EXPOSED) - AS FOR CONCEALED DUCT INSULATION, WITH AN ALUMINUM JACKET OR VENTURECLAD PVC JACKET ON THE OUTSIDE OF THE INSULATION.

HVAC EQUIPMENT: AS SCHEDULED ON DRAWINGS.

FIRE DAMPERS: PROVIDE IN DUCTWORK AT PENETRATION OF RATED WALLS AND FLOORS. FIRE DAMPERS SHALL BE THE DYNAMIC FOLDING BLADE TYPE WITH DAMPER BLADES OUT OF THE AIR STREAM WHEN IN THE FOLDED POSITION, WITH STAINLESS STEEL CONSTANT FORCE SPRINGS TO ENSURE CLOSED POSITION. PROVIDE AN ACCESS PANEL IN DUCTWORK AT EACH FIRE DAMPER TO ENSURE EASY ACCESS, TO LOCAL AUTHORITY APPROVAL, FOR INSPECTION AND RESETTING.

GUARANTEE: WORK AND MATERIALS TO BE GUARANTEED FOR ONE (1) YEAR AFTER PROJECT COMPLETION. HVAC REFRIGERATION SYSTEM COMPONENTS SHALL HAVE AN ADDITIONAL 4-YEAR WARRANTY. EACH PIECE OF EQUIPMENT SHALL MEET PERFORMANCE SPECIFICATIONS AFTER ONE (1) YEAR'S ACTUAL OPERATION. THE CONTRACTOR SHALL REPLACE, OR MAKE GOOD, ANY DEFECT DUE TO FAULTY WORKMANSHIP OR MATERIAL, WHICH SHALL DEVELOP WITHIN ONE (1) YEAR FROM DATE OF ACCEPTANCE AT NO COST TO THE OWNER. THIS GUARANTEE SHALL COVER BOTH MATERIAL AND LABOR AND SHALL INCLUDE: (A) REFRIGERANT AND OIL REPLACEMENT, (B) ANY ADJUSTMENTS OR SERVICE REQUIRED, AND (C) ANY NECESSARY ADJUSTMENTS IN SYSTEM CONTROL SET POINTS WHEN REQUIRED, BUT NO FILTER MAINTENANCE. THE CONTRACTOR IS RESPONSIBLE TO REPLACE WORK FOUND NOT IN COMPLIANCE WITH THE CONTRACT AT ANY TIME DURING THE LIFE OF THE INSTALLATION; REPLACEMENT OF NON-COMFORMING WORK IS NOT SUBJECT TO THE ONE-YEAR WARRANTY LIMITATION.

WHERE THE WORK OF VARIOUS TRADES WILL BE INSTALLED IN CLOSE PROXIMITY TO ONE ANOTHER, OR WHERE THERE IS EVIDENCE THAT THE WORK OF ONE TRADE WILL INTERFERE WITH WORK OR REQUIRED ACCESS/CLEARANCE SPACE OF OTHER TRADES. COORDINATE ADJUSTMENTS PRIOR TO INSTALLATION TO PROVIDE SATISFACTORY CLEARANCE. FOR ANY WORK INSTALLED WITHOUT COORDINATION AND/OR CAUSING CONFLICTS, PROVIDE ALL NECESSARY CHANGES TO CORRECT THE CONDITIONS. THE CONSTRUCTION WORK SHALL BE PERFORMED IN A MANNER ACCEPTABLE TO ARCHITECT AND ENGINEER AND SHALL BEAR NO ADDITIONAL COSTS.

LOCATE ALL EQUIPMENT REQUIRING SERVICING, OPERATIONAL, OR MAINTENANCE CLEARANCES IN A FULLY ACCESSIBLE POSITION. EQUIPMENT REQUIRING THESE CLEARANCES SHALL INCLUDE, BUT NOT BE LIMITED TO: DAMPERS, VALVES, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, DISCONNECTS, DRAIN PANS, ETC. IF EQUIPMENT IS CONCEALED, PROVIDE ACCESS DOORS TO MAINTAIN ACCESSIBILITY. MINOR DEVIATIONS FROM THE CONTRACT DOCUMENTS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY. WHERE FIRE DAMPERS ARE REQUIRED, PROVIDE ACCESS PANELS TO ALLOW RE-LINKING OF DAMPER FUSIBLE LINKS. PANELS IN RATED CONSTRUCTION SHALL BEAR UL LABEL.

INSTALL ALL DUCTWORK AND HORIZONTAL PIPING AS HIGH AS POSSIBLE AND ABOVE THE FINISHED CEILING, UNLESS NOTED OTHERWISE. PROVIDE OFFSETS, AS REQUIRED, TO AVOID ALL OBSTRUCTIONS.

PIPING, CONDUITS, CABLES, ETC., SHALL BE RUN NEATLY, PARALLEL TO EXISTING AND NEW PIPING AND BUILDING WALLS AND FLOORS.

DO NOT SCALE DRAWINGS: USE GIVEN DIMENSIONS ONLY. IF NOT SHOWN, VERIFY AND DOCUMENT CORRECT DIMENSION WITH THE ARCHITECT OR ENGINEER. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE.

A TECHNICIAN, FACTORY TRAINED AND CERTIFIED BY THE MANUFACTURER OF THE HVAC EQUIPMENT PROVIDED, SHALL PERFORM PRE START-UP CHECK AND SHALL SUBMIT A REPORT TO THE OWNER ON EACH AIR HANDLING UNIT, ROOFTOP UNIT, AND SPLIT SYSTEM. THIS REPORT SHALL INCLUDE CERTIFICATION, IN WRITING, THAT THE EQUIPMENT IS CORRECTLY INSTALLED (INCLUDING PROPER DRAINAGE FROM DRAIN PANS AND SEALING OF AIR LEAKS); ELECTRICAL CONNECTIONS AND TERMINAL TIGHTNESS; GAS PIPING IS LEAK FREE; INDOOR FILTERS ARE CLEAN, IN PLACE, AND EASILY REPLACEABLE; FANS AND COMPRESSORS ROTATE CORRECTLY; ELECTRICAL AMP DRAWS SHALL BE RECORDED AND CERTIFIED WITHIN MANUFACTURER'S RECOMMENDED LIMITS; REFRIGERANT SUCTION AND DISCHARGE PRESSURES FOR ALL CIRCUITS WITH STATEMENT THAT SYSTEMS ARE CORRECTLY CHARGED.

PRIOR TO COMPLETION AND FINAL ACCEPTANCE OF THE FACILITY, FURNISH TO THE ENGINEER CERTIFICATION THAT THE MECHANICAL SYSTEMS HAVE BEEN TESTED AND THAT THE INSTALLATION AND PERFORMANCE OF THOSE SYSTEMS CONFORM TO THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE A SET OF CONTRACT RECORD DOCUMENTS KEPT CURRENT BY INDICATING THEREON ALL CHANGES, SUBSTITUTIONS, ETC., BETWEEN WORK AS SPECIFIED AND AS INSTALLED, SHOW ON RECORD DRAWINGS ACTUAL AIR QUANTITIES, WATER FLOW RATES, VALVE OR DAMPER POSITIONS AFTER BALANCING, ETC.; ALSO SHOW, BY ACTUAL DIMENSION, LOCATION OF ALL UNDERGROUND WORK. FURNISH THE ENGINEER AND THE OWNER WITH ONE (1) COMPLETE SET EACH OF ELECTRONIC DRAWING FILES SHOWING INSTALLED LOCATION, SIZE, ETC. OF ALL WORK AND MATERIAL IN .PDF AND .DWG FORMATS.

RECORD AND AS-BUILT DRAWINGS: MAINTAIN AT THE JOB SITE A SET OF CONTRACT RECORD DRAWINGS KEPT CURRENT BY INDICATING THEREON ALL CHANGES, SUBSTITUTIONS, ETC., BETWEEN WORK AS SPECIFIED AND AS INSTALLED. FURNISH THE ENGINEER WITH ONE (1) COMPLETE SET OF ELECTRONIC DRAWING FILES SHOWING INSTALLED LOCATION, SIZE, ETC., OF ALL WORK AND MATERIAL IN .PDF AND .DWG FORMATS. SHOW ON RECORD DRAWINGS ACTUAL AIR QUANTITIES, WATER FLOW RATES, VALVE AND/OR DAMPER POSITIONS AFTER BALANCING, ETC.; ALSO SHOW, BY ACTUAL DIMENSION, LOCATION OF ALL UNDERGROUND WORK. FOR EACH PIECE OF EQUIPMENT, PROVIDE THE OWNER THREE (3) SETS OF: (A) MANUFACTURER'S PRINTED CATALOG PAGES, OPERATING AND MAINTENANCE INSTRUCTIONS, WIRING AND CONNECTION DIAGRAM, ETC.; (B) TEMPERATURE-HUMIDITY AND MOTOR INTERLOCK CONTROL AND WIRING DIAGRAMS SHOWING OPERATION INSTRUCTIONS FOR, AND NORMAL POSITION OF, EACH MOTOR AND CONTROLLER, CONTROL VALVE, THERMOSTAT, ETC.; AND (C) LUBRICATION CHART. BIND THIS INFORMATION INTO 8-1/2" X 11" BOOKLETS. ALL THREE (3) SETS SHALL BE ASSEMBLED IN HARDBACK BINDERS.

MARK	DATE	DESCRIPTION OF REVISION

**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 285-7879  
 E-mail: [cae@caeengr.com](mailto:cae@caeengr.com) [www.caeengr.com](http://www.caeengr.com)



DRAWN BY: JYM  
 CHECKED BY: MJW  
 DATE: 03/03/2023  
 SCALE: 1/8" = 1'-0"  
 JOB No.: 22-021  
 SHEET: M1.0  
 HVAC LEGEND AND NOTES



## ROOFTOP PACKAGED A/C UNIT SCHEDULE (GAS FIRED)

DESIG.	INDOOR FAN			COOLING (MBH)					HEATING			UNIT ELECTRICAL			MANUFAC.	MODEL NO.	WEIGHT (LBS.)	O.A. CFM	MINIMUM POWERED EXHAUST (CFM)	EER @ ARI	AFUE % @ ARI	REFR.	NOMINAL TONS	COMMENTS
	CFM-TOTAL	E.S.P. (IN. H <sub>2</sub> O)	HP	TOTAL	SENS.	E.A.D.B. (°F)	E.A.W.B. (°F)	AMB. (°F)	INPUT (MBH)	OUTPUT (MBH)	E.A.D.B. (°F)	VOLTS/PH	MCA	MOCP										
RTU-1	4600	-	3.0	140.55	86.3	84.2	69.8	95.0	225.0	180.0	80	208-230/3	66.0	80.0	TRANE	GCC150	1172	500	4140	11.0	81.0	R410A	12.5	SEE NOTES
RTU-2	4600	-	3.0	140.55	86.3	53.2	52.1	95.0	225.0	180.0	80	208-230/3	66.0	80.0	TRANE	GCC150	1172	500	4140	11.0	81.0	R410A	12.5	SEE NOTES

NOTES:

- PROVIDE PROGRAMMABLE THERMOSTATS FOR EACH. THERMOSTATS ARE TO HAVE NIGHT SETBACK MODE FOR BOTH SUMMER AND WINTER OPERATION, AUTO-CHANGEOVER, AND SCHEDULING FOR CONTROL DURING NON-USE DAYS. COORDINATE PROGRAMMING AND SETTINGS WITH OWNER. PROVIDE NECESSARY TRAINING AND MANUALS FOR THERMOSTAT OPERATION AND PROGRAMMING.
- PROVIDE UNIT WITH ENTHALPY ECONOMIZER WITH POWERED EXHAUST; POWERED EXHAUST SHALL BE CAPABLE OF EXHAUSTING A MINIMUM OF 90% OF THE UNIT AIRFLOW AT THE EXTERNAL STATIC PRESSURE REQUIRED FOR THE AIRFLOW THROUGH THE RETURN DUCTWORK. SUBMIT POWERED EXHAUST FAN DATA FOR REVIEW.
- PROVIDE MAINTENANCE CLEARANCE AS PER THE MANUFACTURER'S GUIDELINES.
- PROVIDE SMOKE DETECTORS IN THE RETURN AIR DUCT FOR BOTH UNITS. DUCT DETECTORS TO BE PROVIDED AND CONNECTED BY EC, INSTALLED IN THE DUCT BY MC.
- PROVIDE UNIT WITH 14" HIGH INSULATED ROOF CURB. ROOF CURB SHALL MATCH ROOF SLOPE.
- PROVIDE UNITS WITH HAIL GUARDS.

### MINIMUM DUCT SEAL LEVEL

DUCT LOCATION	DUCT TYPE			
	SUPPLY (< OR = 2" W.G.)	SUPPLY (> OR = 2" W.G.)	EXHAUST	RETURN
OUTDOORS	SMACNA SEAL CLASS A	SMACNA SEAL CLASS A	SMACNA SEAL CLASS C	SMACNA SEAL CLASS A
UNCONDITIONED SPACE	SMACNA SEAL CLASS B	SMACNA SEAL CLASS A	SMACNA SEAL CLASS C	SMACNA SEAL CLASS B
CONDITIONED SPACES (INCLUDING RETURN AIR PLENUMS)	SMACNA SEAL CLASS C	SMACNA SEAL CLASS B	SMACNA SEAL CLASS B	SMACNA SEAL CLASS C

NOTES:

SMACNA SEAL CLASS A: ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS TO BE SEALED. NON UL-181A OR UL-181B (OR OTHER INDEPENDANT TESTING LABORATORY) CERTIFIED PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS THE PRIMARY SEALANT.

SMACNA SEAL CLASS B: ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS TO BE SEALED. NON UL-181A OR UL-181B (OR OTHER INDEPENDANT TESTING LABORATORY) CERTIFIED PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS THE PRIMARY SEALANT.

SMACNA SEAL CLASS C: TRANSVERSE JOINTS ONLY

### REGISTERS, GRILLES, & DIFFUSERS

MARK	MANUFAC.	DESCRIPTION	MODEL/CAT#	AIR CONTROL	MATERIAL	FINISH	COMMENTS
A	TITUS	SIDE WALL RETURN/EXHAUST	33R, HEAVY DUTY, 1/2" SPACING, 38" DEFLECTION	OBD	STEEL	#26 WHITE	SEE NOTES

NOTES:

- DIRECTION OF FLOW 4-WAY UNLESS NOTED OTHERWISE.
- PROVIDE SIDEWALL RETURN/EXHAUST WITH TITUS MODEL AG-15 DAMPERS.
- SIDEWALL RETURN/EXHAUST GRILLES TO 1/2" BLADE SPACING.

### AIR PURIFICATION SCHEDULE

SERVING MARK	SERVING	CFM	PRESSURE DROP (IN. H <sub>2</sub> O)	MANUFAC.	MODEL NUMBER	QUANTITY	TOTAL WATTS	VOLTAGE	MOUNTING LOCATION	MIN ION DENSITY(IONS/CC)	COMMENTS
RTU-1	MULTIPURPOSE	4,600	0.05	GLOBAL PLASMA SOLUTIONS	GPS-FC-3-BAS	2	16.0	24VAC	RTU-1	160 MILLION	SEE NOTES
RTU-2	MULTIPURPOSE	4,600	0.05	GLOBAL PLASMA SOLUTIONS	GPS-FC-3-BAS	2	16.0	24VAC	RTU-2	160 MILLION	SEE NOTES

NOTES:

1. CONTRACTOR TO MOUNT UNITS WITHIN AC UNIT PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO POWER GPS UNIT FROM RESPECTIVE UNIT'S CONTROLS TRANSFORMER (PROVIDE IF NOT A MFG'S OPTION) PROVIDE A VISUAL ALARM ADJACENT TO RA GRILL THAT WOULD INDICATE A FAILURE.

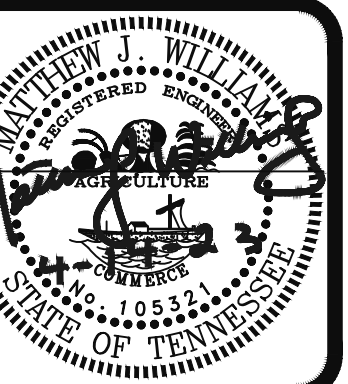
2. BI-POLAR IONIZATION SYSTEMS REQUIRING PERISHABLE GLASS TUBES ARE NOT ACCEPTABLE. CONTRACTOR IS TO ENSURE THAT ANY SUBSTITUTIONS ARE TO MEET INSTALLATION SIZE CONSTRAINTS AND THAT THE REQUIREMENTS OF ASHRAE 62.1-2007 IAQ METHOD ARE MET.

3. NOTE THAT THE AIR PURIFICATION UNITS AS SPECIFIED ARE REQUIRED, NOT OPTIONAL. IF THEY ARE NOT PROVIDED, OUTSIDE AIR QUANTITIES WILL NEED TO INCREASE ALONG WITH EQUIPMENT CAPACITIES AND SIZES.

MARK	DATE	DESCRIPTION OF REVISION

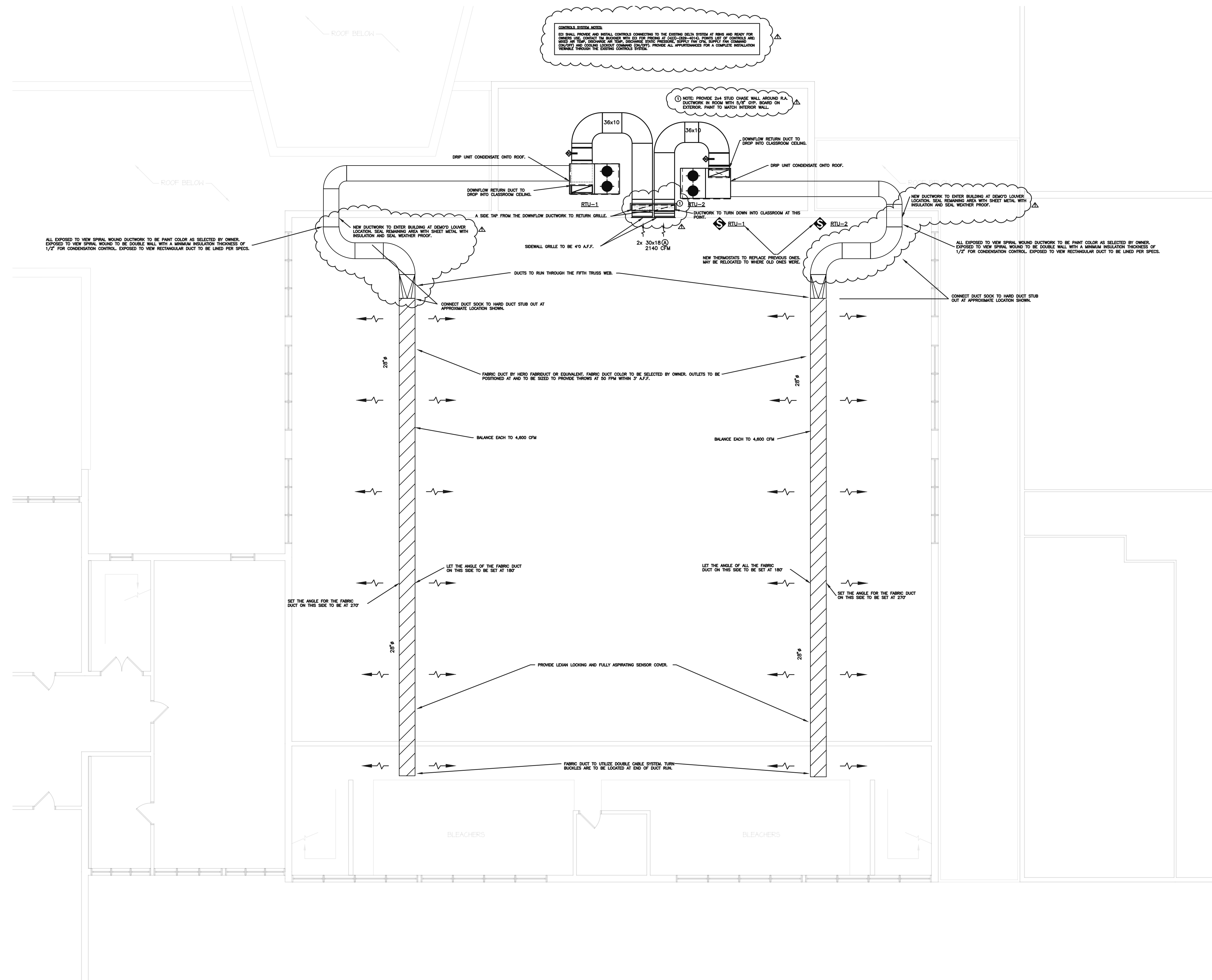
**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 265-7879  
 E-mail: caengrs@caengrs.com WWW.CAENGRS.COM



DRAWN BY: JYM  
 CHECKED BY: MJW  
 DATE: 03/03/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: M1.1  
 SCHEDULES





GENERAL NOTES:  
 1. ALL EXPOSED TO VIEW SPINAL WOUND DUCTWORK TO BE PAINT COLOR AS SELECTED BY OWNER.  
 2. EXPOSED TO VIEW SPINAL WOUND TO BE DOUBLE WALL WITH A MINIMUM INSULATION THICKNESS OF 1/2" FOR CONDENSATION CONTROL. EXPOSED TO VIEW RECTANGULAR DUCT TO BE LINED PER SPECS.

NOTE: PROVIDE 2x4 STUD CHASE WALL AROUND R.A. DUCTWORK BY ROOM WITH 1/2" GYP BOARD ON EXTERIOR. PAINT TO MATCH INTERIOR WALL.

ALL EXPOSED TO VIEW SPINAL WOUND DUCTWORK TO BE PAINT COLOR AS SELECTED BY OWNER.  
 EXPOSED TO VIEW SPINAL WOUND TO BE DOUBLE WALL WITH A MINIMUM INSULATION THICKNESS OF 1/2" FOR CONDENSATION CONTROL. EXPOSED TO VIEW RECTANGULAR DUCT TO BE LINED PER SPECS.

ALL EXPOSED TO VIEW SPINAL WOUND DUCTWORK TO BE PAINT COLOR AS SELECTED BY OWNER.  
 EXPOSED TO VIEW SPINAL WOUND TO BE DOUBLE WALL WITH A MINIMUM INSULATION THICKNESS OF 1/2" FOR CONDENSATION CONTROL. EXPOSED TO VIEW RECTANGULAR DUCT TO BE LINED PER SPECS.

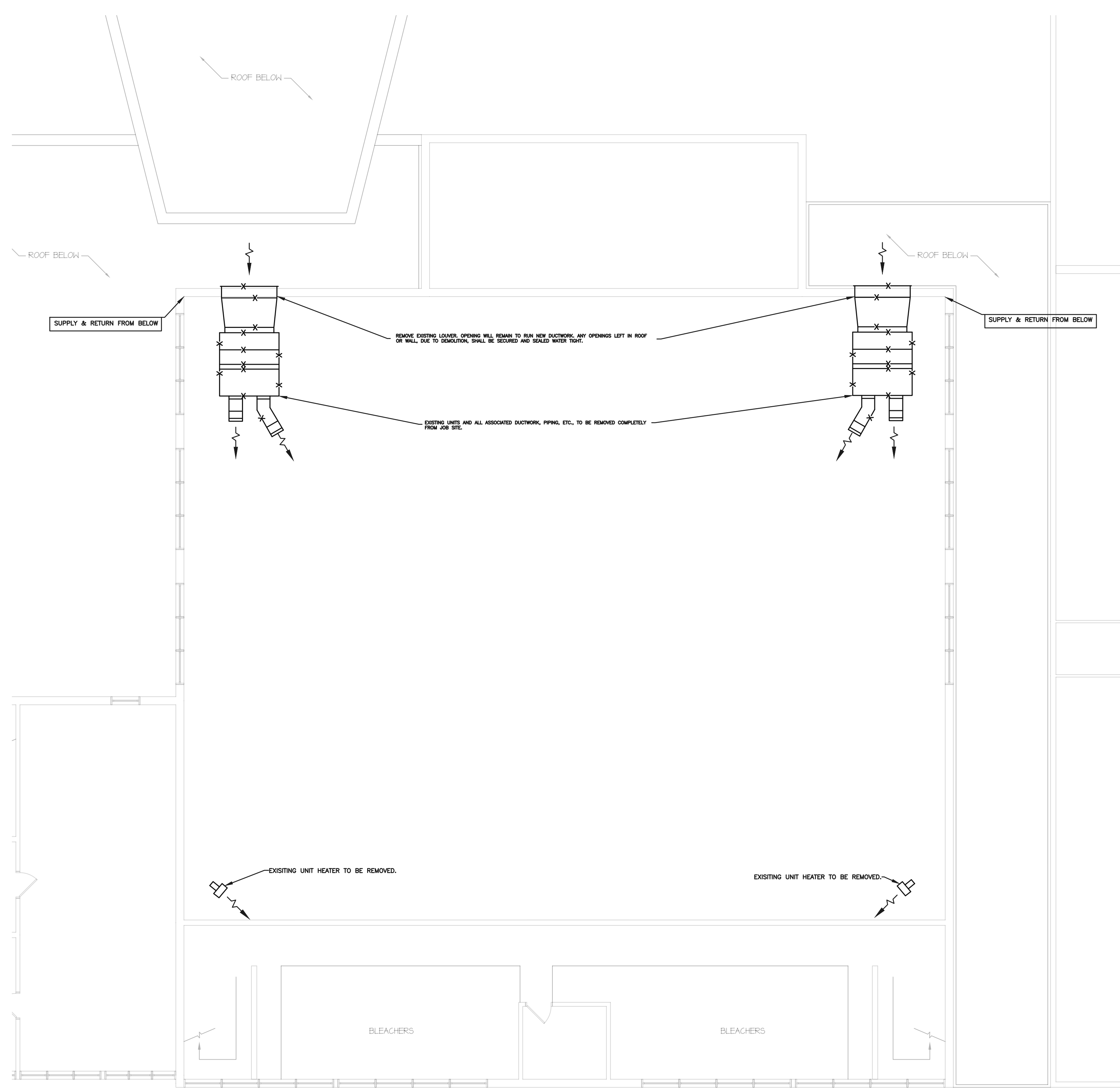
MARK	DATE	DESCRIPTION OF REVISION
Δ	08.07.23	HVAC REVISIONS

**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 285-7879  
 E-mail: caengrs@caengrs.com WWW.CAENGRS.COM



DRAWN BY: JYM  
 CHECKED BY: MJW  
 DATE: 03/03/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: M2.0  
 SECOND FLOOR  
 HVAC PLAN  
 OF



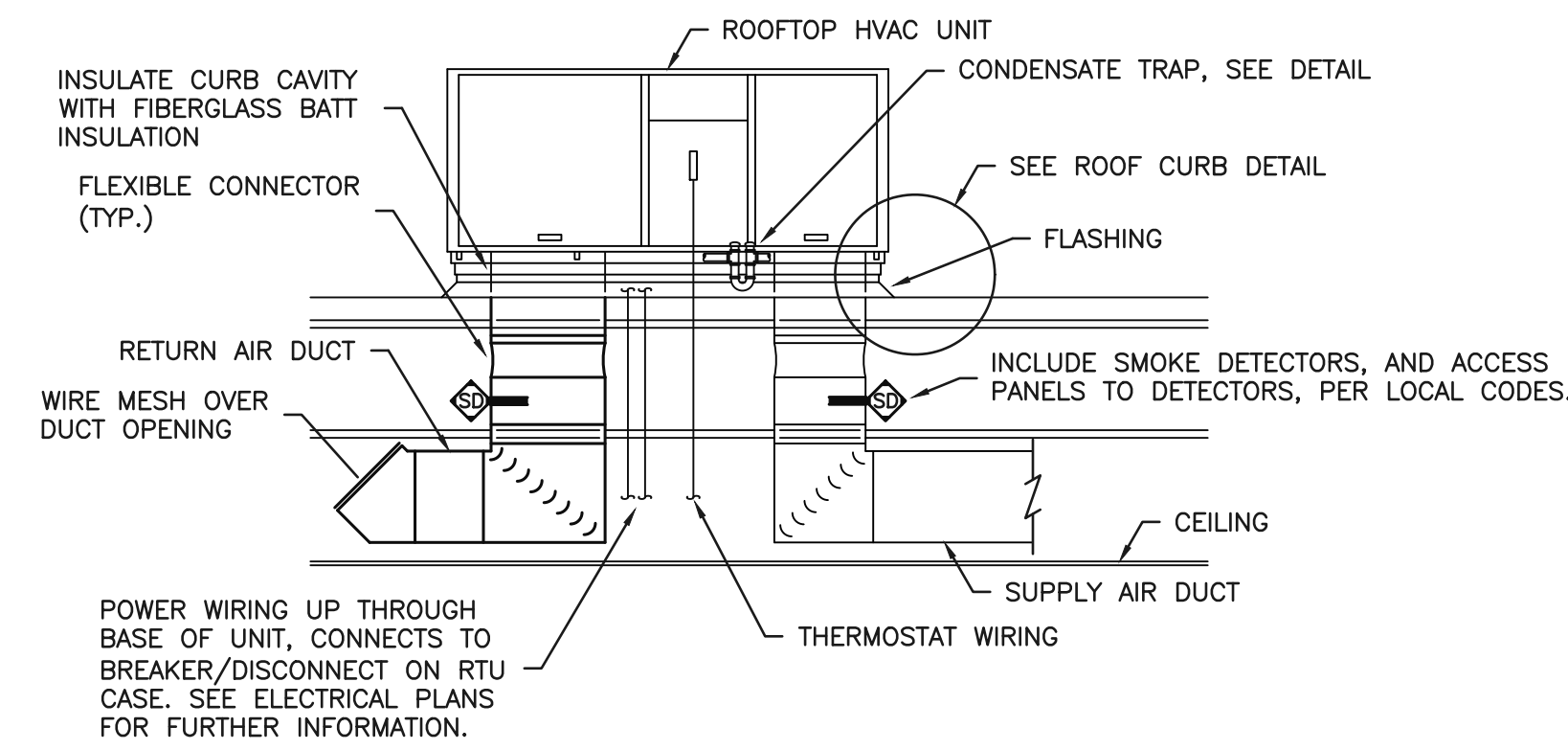
MARK	DATE	DESCRIPTION OF REVISION

**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 285-7879  
 E-mail: caengrs@caengrs.com WWW.CAENGRS.COM



DRAWN BY: JYM  
 CHECKED BY: MJW  
 DATE: 03/03/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: M2.1  
 SECOND FLOOR  
 DEMO PLAN  
 OF \_\_\_\_\_

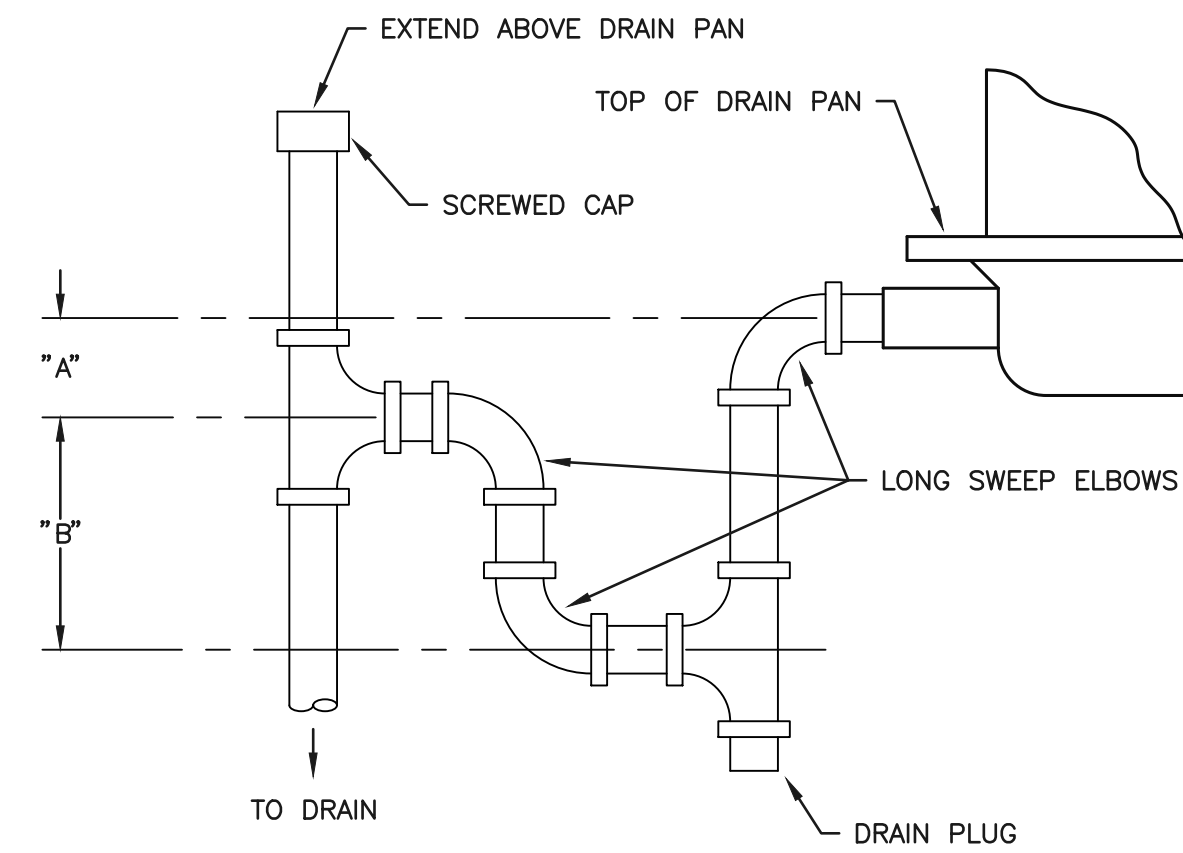


**NOTES:**

1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. REFER TO PLANS FOR DUCT SIZES. TRANSITION AS REQUIRED IN ROOF CURB TO RTU SUPPLY AND RETURN OPENINGS.
2. PROVIDE SLOPED ROOF CURB TO INSTALL ROOFTOP UNIT LEVEL TO ENSURE PROPER DRAINAGE. COORDINATE ROOF SLOPE WITH ARCHITECTURAL DRAWINGS. FLASH AND COUNTERFLASH ROOF PENETRATIONS, ETC., TO ENSURE WEATHER TIGHT INSTALLATION.

**ROOFTOP UNIT WITH DUCTWORK DETAIL**

NO SCALE



"A" DIMENSION TO BE A MINIMUM OF 1/2"

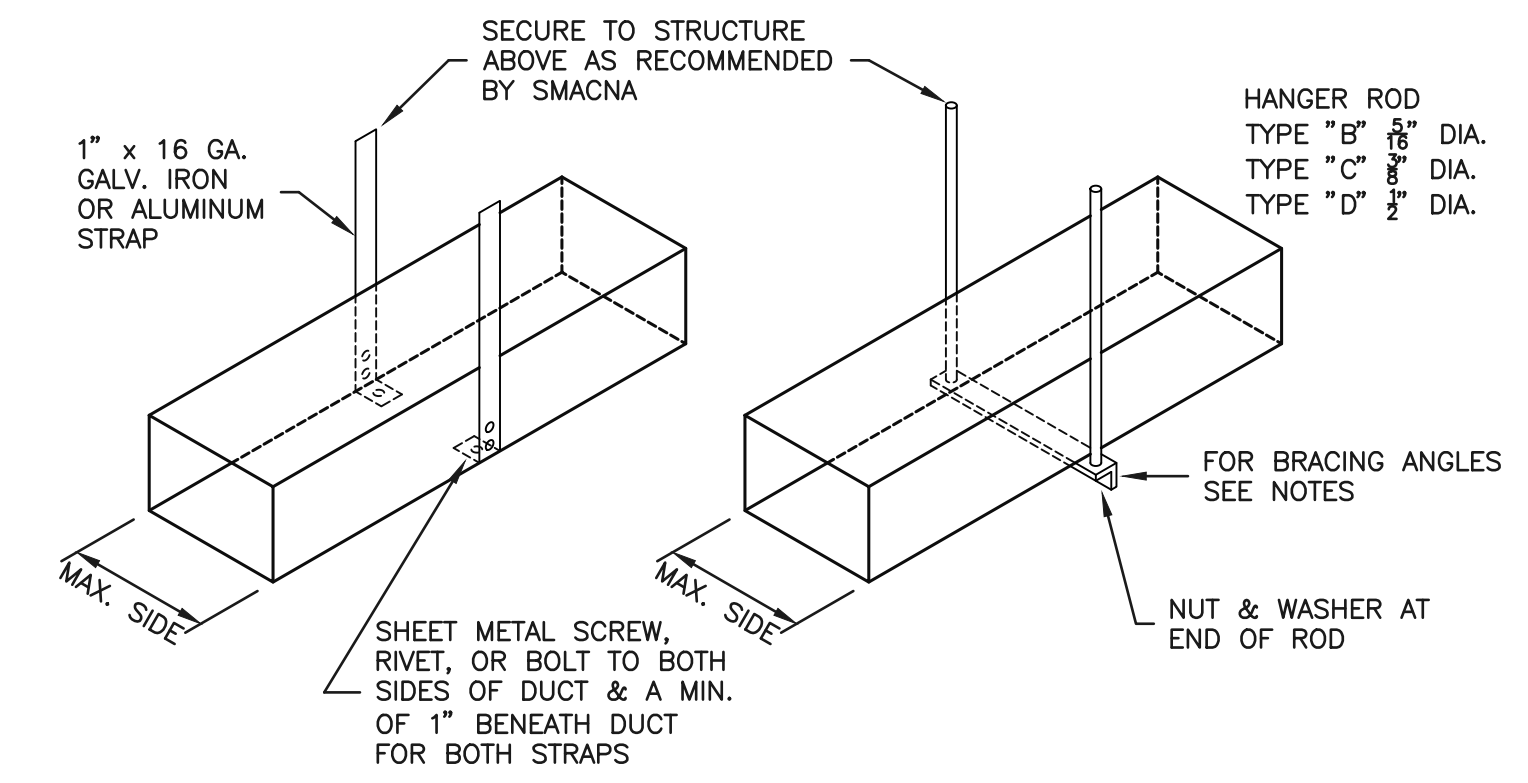
"B" DIMENSION TO BE 1/2" PLUS TOTAL STATIC PRESSURE

**NOTES:**

1. PROVIDE 3/8" VALVED PRIMING LINE FOR FLOOR DRAINS LOCATED IN PLENUMS.
2. CONDENSATE DRAIN LINE SHALL BE FULL UNIT CONDENSATE DRAIN CONNECTION SIZE (3/4" MINIMUM).

**DRAIN TRAP FOR A.C. UNITS**

NO SCALE



**TYPE "A"**

(8 FT. MAX. HANGER SPACING. ALSO PROVIDE 3 HANGERS AT EACH TAKE-OFF OR BRANCH.)

**TYPE "B", "C", & "D"**

(8 FT. MAX. HANGER SPACING)

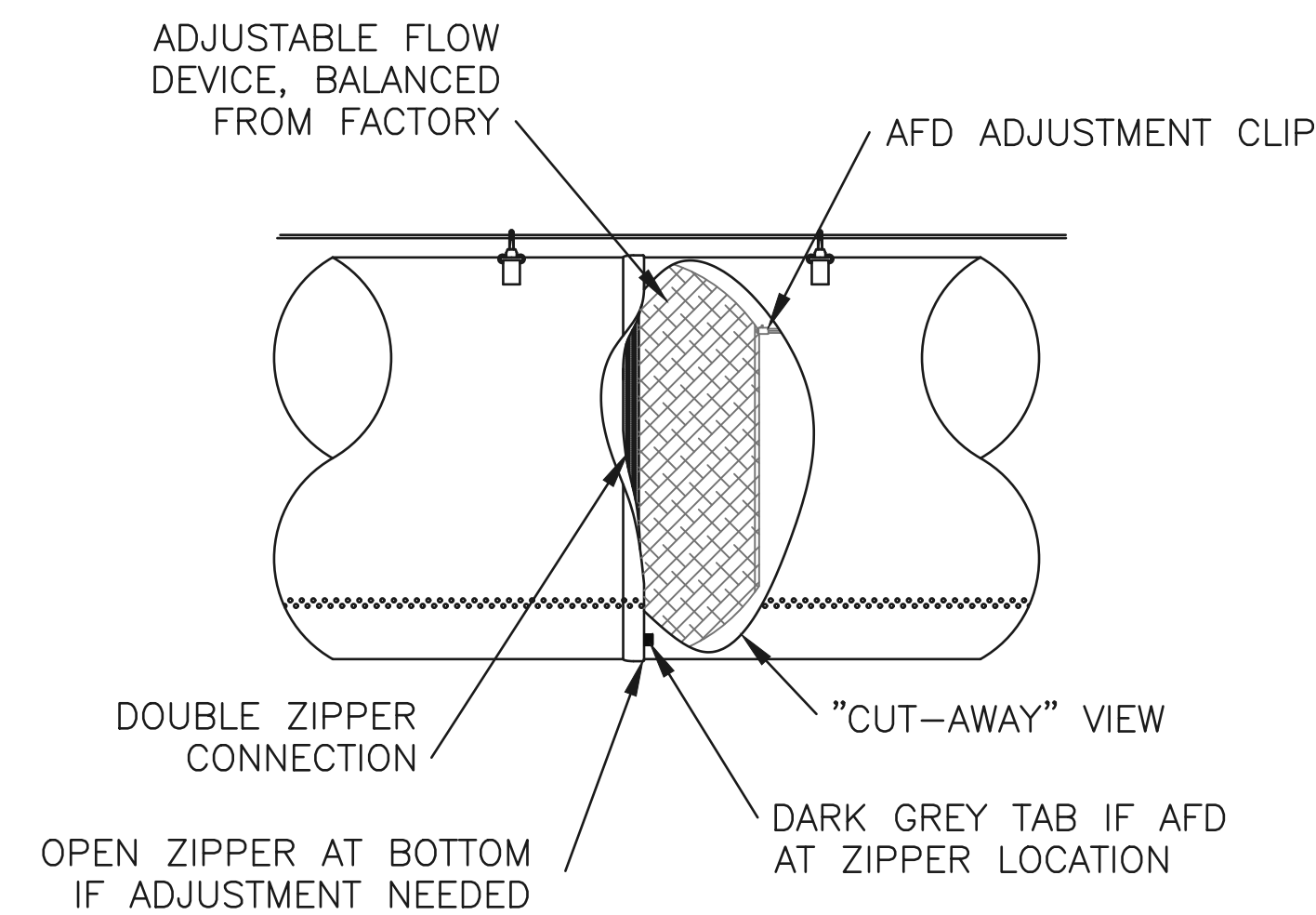
DUCT HANGER SCHEDULE	
DUCT DIMENSIONS (INCHES)	TYPE HANGER
UP THRU 12	A
13 THRU 18	A
19 THRU 30	A/B
31 THRU 42	B
43 THRU 54	B
55 THRU 60	B
61 THRU 84	C
85 THRU 96	C
OVER 96	D

**NOTES:**

1. FOR SEVERAL DUCTS ON ONE HANGER, TYPE "B", "C", OR "D" MAY BE USED. SIZE OF HANGER WILL BE SELECTED ON SUM OF DUCT WIDTHS EQUAL TO MAXIMUM WIDTH OF DUCT HANGER SCHEDULE.
2. SCHEDULES FOR ANGLES FOR BRACING: TYPE "B" - 1/2" x 1/2" x 3/8" ANGLE, MAX. SPACING 8'-0" CENTERS; TYPE "C" - 1/2" x 1/2" x 3/8" ANGLE, MAX. SPACING 8'-0" CENTERS; TYPE "D" - 2" x 2" x 1/2" ANGLE, MAX. SPACING 4'-0" CENTERS.

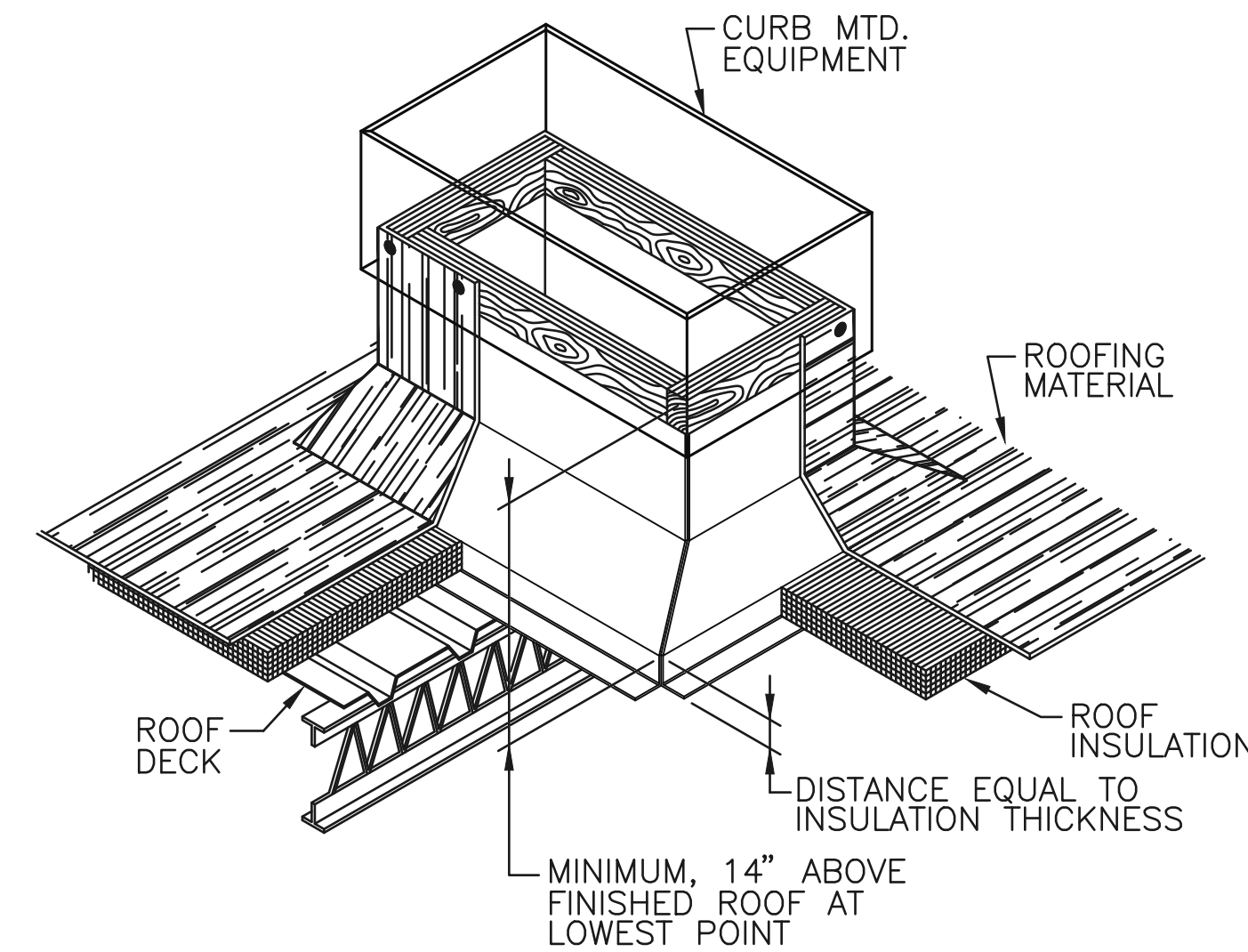
**DUCT HANGERS**

NO SCALE



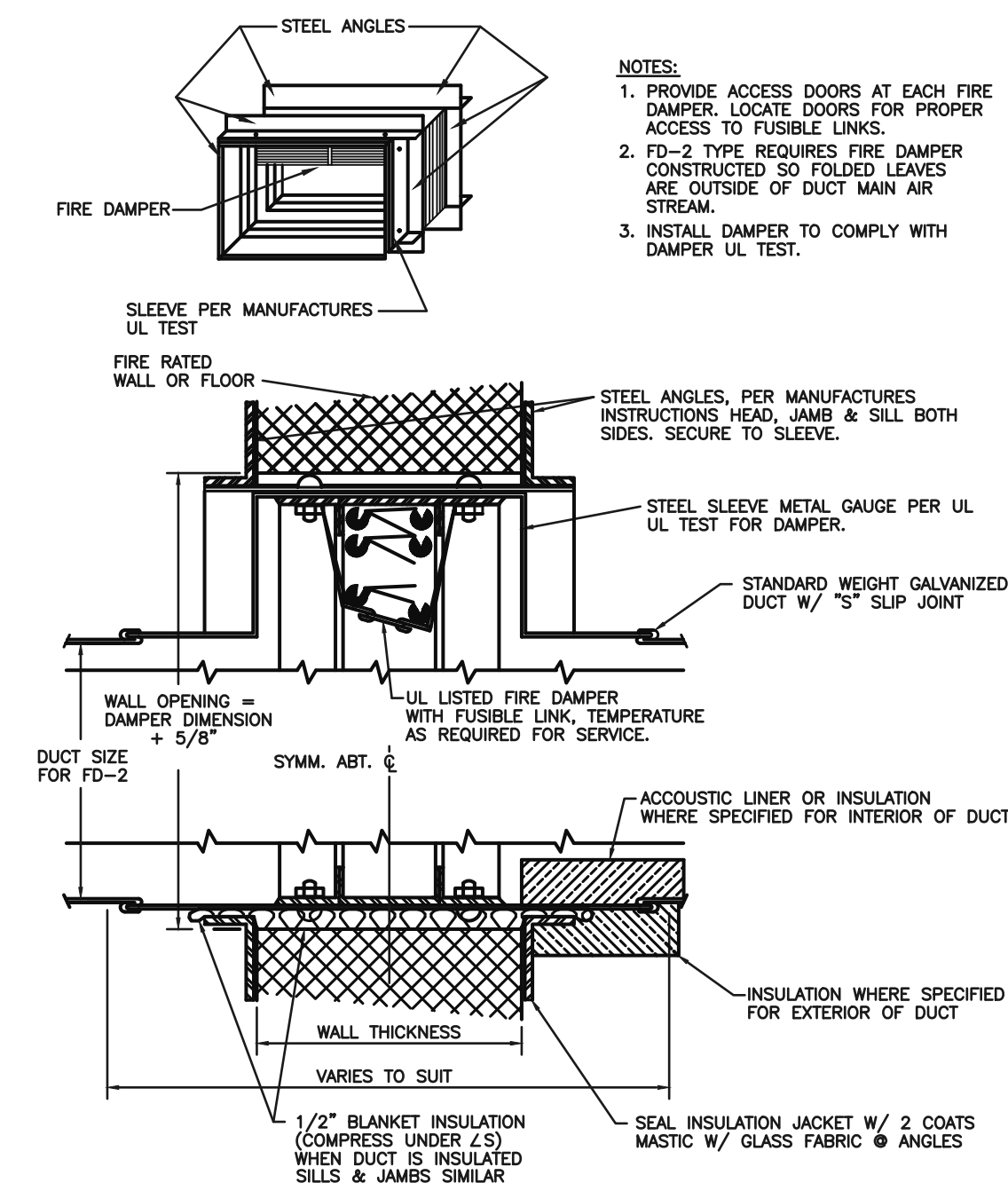
**FABRIC DUCT ADJUSTABLE FLOW DEVICE (AFD)**

INSTALLED AT ZIPPER LOCATION AT INLET OR AS SPECIFIED IN OTHER LOCATIONS. ZIPPER TO ZIPPER CONNECTION AS SHOWN. EXTERNAL LABEL IDENTIFIES LOCATION



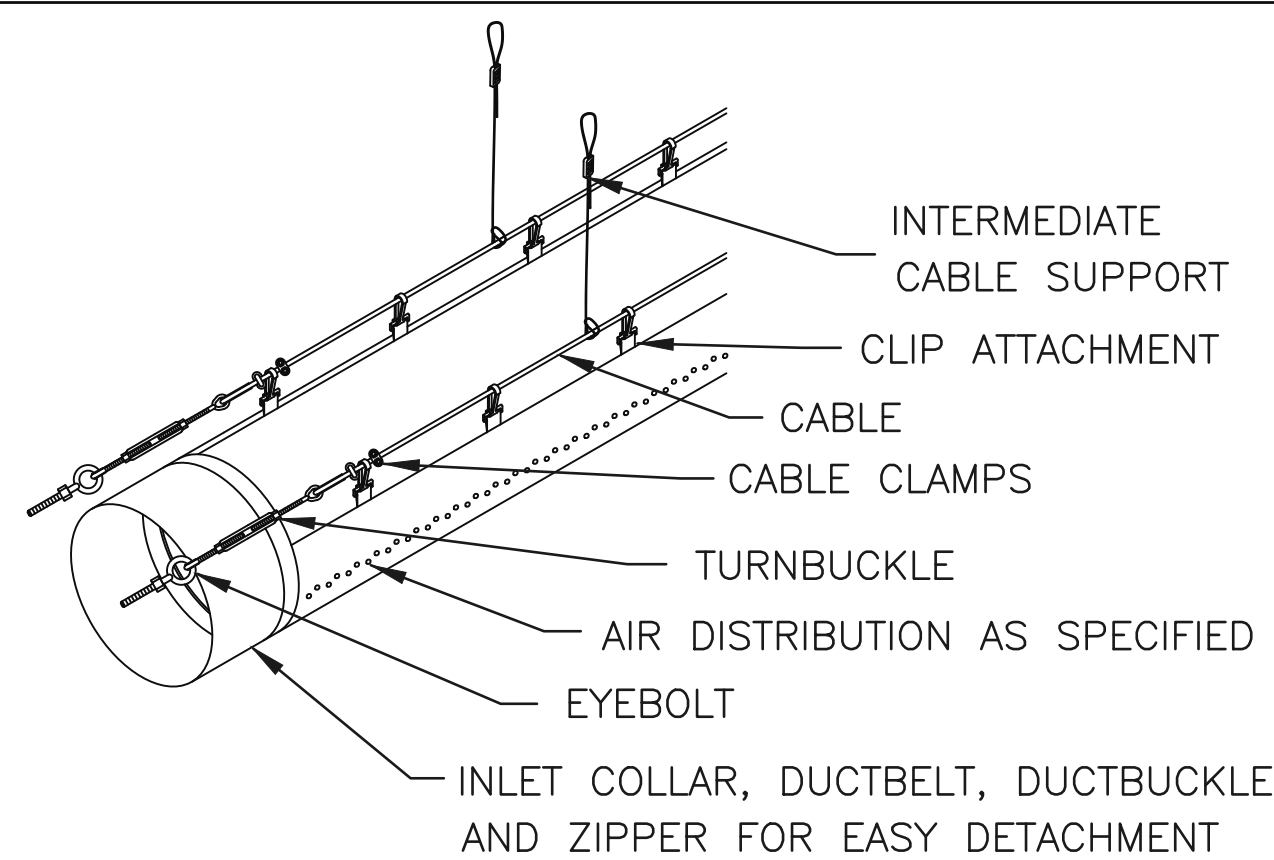
**TYPICAL ROOF CURB DETAIL**

NO SCALE



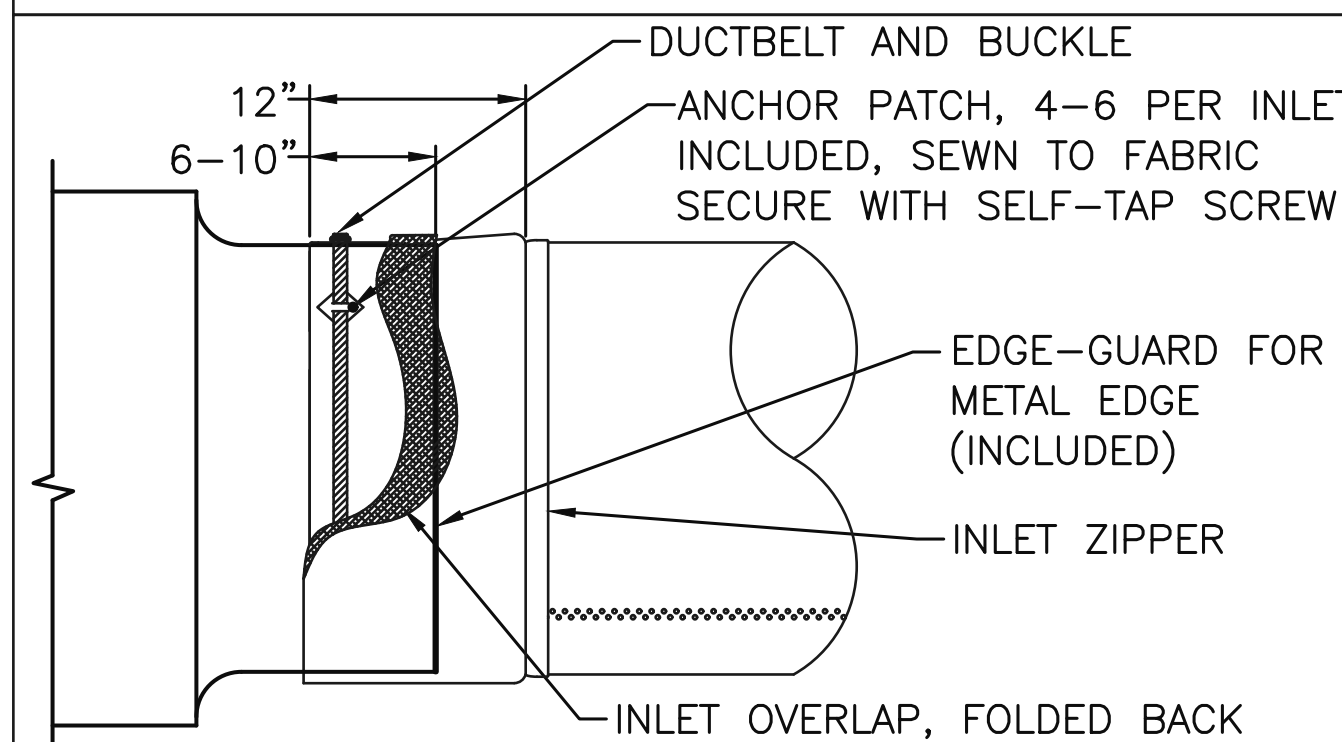
**FIRE DAMPER DETAIL  
TYPE FD-2  
15910-V**

NO SCALE



**SUSPENSION DETAIL**

2 ROW CABLE SUSPENSION AT 10&2 O'CLOCK



**FABRIC DUCT INLET ATTACHMENT DETAIL**

SCALE: NONE

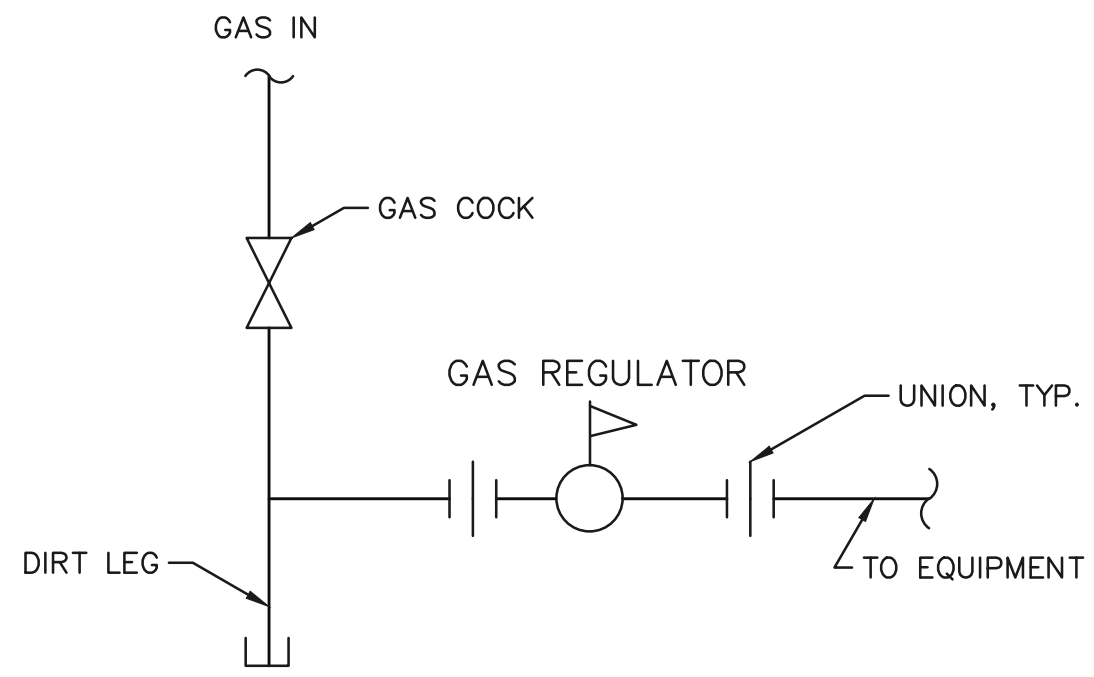
MARK	DATE	DESCRIPTION OF REVISION

**RED BANK HIGH SCHOOL**  
**GYMNASIUM H.V.A.C.**  
 640 MORRISON SPRINGS ROAD  
 RED BANK, TN 37415  
 (423) 874-1900

**CAMPBELL & ASSOC., INC.**  
**CONSULTING ENGINEERS**  
 1401 CARTER STREET  
 CHATTANOOGA, TN 37402  
 (423) 287-9718 FAX (423) 265-7879  
 E-mail: caenrgs@caenrgs.com WWW.CAENRGs.COM



DRAWN BY: JYM  
 CHECKED BY: MJW  
 DATE: 03/03/2023  
 SCALE: 1/8" = 1'0"  
 JOB No.: 22-021  
 SHEET: M3.0  
 MECHANICAL  
 DETAILS



**GAS PIPING TO APPLIANCES**  
SCALE: N.T.S.

**GENERAL SPECIFICATIONS:**

**INTENT:** IT IS THE INTENT OF THE CONTRACT DOCUMENTS THAT THE CONTRACTOR FURNISH AND INSTALL ALL MATERIALS AND SYSTEMS, WITH NECESSARY AND INCIDENTAL APPURTENANCES, FOR A COMPLETE, FUNCTIONAL INSTALLATION, READY AND SUITABLE FOR THE OWNER'S USE.

**CODES:** WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES. THE INTERNATIONAL MECHANICAL, ENERGY, AND PLUMBING CODES SHALL FORM THE BASIS FOR MINIMUM CONSTRUCTION STANDARDS FOR THIS PROJECT.

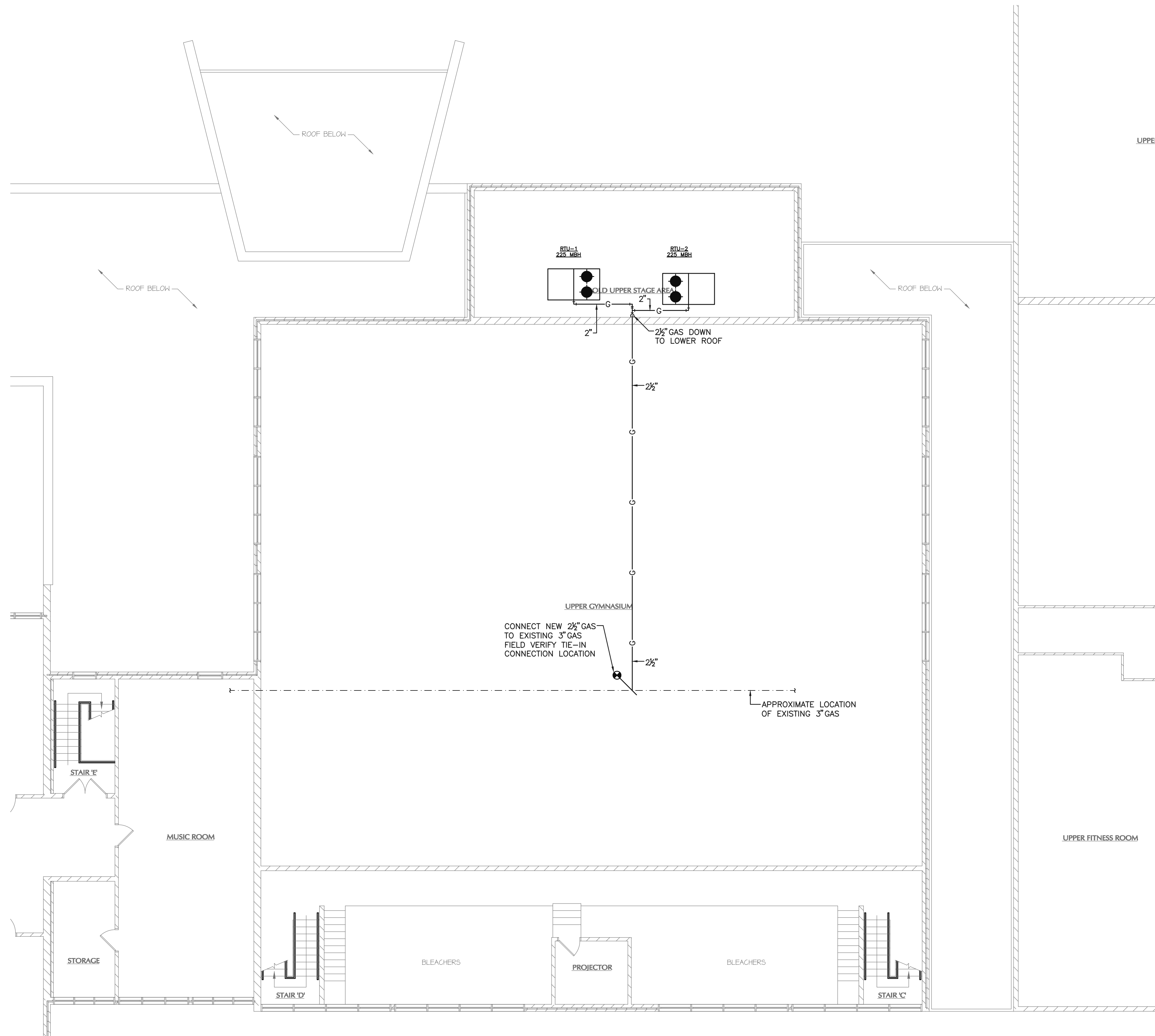
**FEES, PERMITS, AND TAXES:** CONTRACTOR SHALL MAKE ARRANGEMENTS FOR INSPECTIONS AND PAY ALL LAWFUL FEES AND PERMITS REQUIRED BY LOCAL AUTHORITIES. CONTRACTOR SHALL PAY TAXES LEVIED FOR LABOR AND MATERIALS ASSOCIATED WITH WORK ON THIS PROJECT.

**GUARANTEE:** WORK AND MATERIALS TO BE GUARANTEED FOR ONE (1) YEAR AFTER PROJECT COMPLETION.

**PLUMBING SPECIFICATIONS:**

- GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL, MEETING ASTM A-53, GRADE A.

**GAS REQUIREMENTS:**  
DEMAND: 450 CFH  
GAS PRESSURE: LESS THAN 2 PSI  
PRESSURE DROP: 0.5 IN W.C.  
TOTAL EQUIV. LENGTH: 500'



**PARTIAL ROOF PLAN - NATURAL GAS PIPING**

SCALE: 1/8" = 1'-0"

MARK	DATE	DESCRIPTION OF REVISION

**RED BANK HIGH SCHOOL**  
GYMNASIUM H.V.A.C.  
640 MORRISON SPRINGS ROAD  
RED BANK, TN 37415  
(423) 874-1900

**CAMPBELL & ASSOC., INC.**  
CONSULTING ENGINEERS  
1401 CARTER STREET  
CHATTANOOGA, TN 37402  
(423) 287-9718 FAX (423) 285-7879  
E-mail: caengrs@caengrs.com WWW.CAENGRS.COM



DRAWN BY:	MDT
CHECKED BY:	MDT
DATE:	4-21-23
SCALE:	1/8"=1'-0"
JOB No.:	22-021
SHEET:	