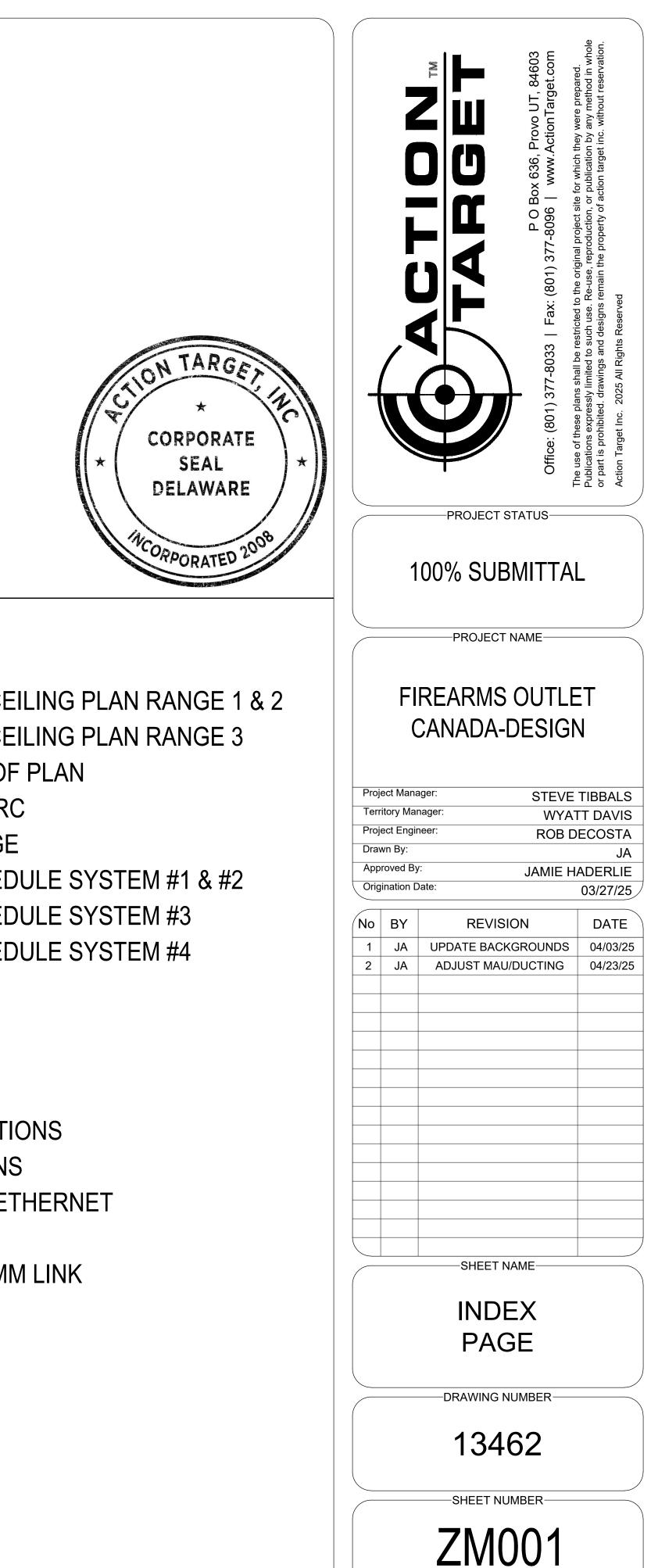
FIREARMS OUTLET CANADA-DESIGN ACTION TARGET

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SHEET INDEX:



-SCALED FOR ORIGINAL DRAWING AT 22" X 34"

GENERAL NOTES:

- EACH DRAWING HAS SPECIFIC KEYED AND GENERAL NOTES. THE NOTES ON THIS DRAWING ARE GENERAL IN NATURE AND APPLY TO WORK DESCRIBED IN ALL THE RANGE VENTILATION DRAWINGS AND SPECIFICATIONS.
- 2. THE RANGE VENTILATION DUCT ROUTING SHOWN IS APPROXIMATE AND DIAGRAMMATIC AND IS NOT TO BE SCALED. MINOR ALTERATIONS ARE ALLOWED TO AVOID LOCAL INTERFERENCES. WHERE FIELD CONDITIONS REQUIRE SUBSTANTIAL CHANGES TO THE DUCT LAYOUT, CHANGES MUST BE APPROVED BY ACTION TARGET
- THIS PROJECT AND ALL WORK SHALL CONFORM TO ALL LOCAL AND NATIONAL CODES AND STANDARDS WHICH ARE APPLICABLE TO THIS TYPE OF WORK. SOME OF WHICH ARE AS FOLLOWS: LOCAL AND NATIONAL BUILDING AND MECHANICAL CODES, NFPA, ASHRAE, SMACNA AND OTHER REGULATORY BODIES HAVING JURISDICTION OVER THIS TYPE OF WORK. ALL SYSTEMS INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL CONFORM TO THE ASSOCIATED CODES AND REGULATIONS OF GOVERNING BODIES, CODES AND REGULATIONS OF THE ASSOCIATED MUNICIPAL, STATE AND FEDERAL AUTHORITIES.
- 4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, LICENSES, AND UTILITY SERVICE AGREEMENTS RELATED TO THE INSTALLATION, COMMISSIONING, TESTING AND BALANCING FOR THE COMPLETION OF THIS WORK. THE CONTRACTOR SHALL ASSIST AND WORK WITH THE OWNER TO OBTAIN OWNER SPECIFIC PERMITS. LICENSES AND AGREEMENTS.
- 5. THE CONTRACTOR SHALL COORDINATE THE RANGE VENTILATION WORK WILL ALL BUILDING PLUMBING, ELECTRICAL, AND STRUCTURAL TRADES TO PROVIDE ALL THE NECESSARY UTILITY CONNECTIONS FOR THE RANGE VENTILATION EQUIPMENT. COORDINATE THIS WORK WITH ALL OTHER TRADES IN ORDER TO RESOLVE ANY CONFLICTS THAT MIGHT ARISE DUE TO THE INSTALLATION AND LOCATION OF DUCTWORK, PIPING, CONTROLS OR EQUIPMENT THAT IS TO BE INSTALLED AS PART OF THIS PROJECT.
- THE GENERAL CONTRACTOR OR OTHER DIVISIONS WILL INSURE THAT THE RANGE ENVELOPE IS SEALED TIGHT TO MAINTAIN THE REQUIRED NEGATIVE SPACE PRESSURE AS SPECIFIED ON THE DRAWINGS AND IN THE SPECIFICATIONS.
- 7. ALL WALL AND ROOF PENETRATIONS FOR DUCTWORK AND OTHER RELATED OPENINGS SHALL BE COMPLETED BY THE GENERAL CONTRACTOR OR BY THE OWNER. PROVIDE ROOF CURBS FOR ALL ROOF DUCT PENETRATIONS AND FLASH WATER TIGHT
- THE EQUIPMENT PADS AND STRUCTURAL SUPPORTS WILL BE FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR OR BY THE OWNER.
- DUCTWORK, PIPING, CONTROLS AND EQUIPMENT INCLUDING FILTER 9. HOUSING SHALL BE INSTALLED SUCH THAT THEY CAN BE SERVICED AND REPAIRED OR REPLACED BY ANY PERSON ASSOCIATED WITH THIS PROJECT, INCLUDING THE OWNER AND THE OWNERS REPRESENTATIVE.
- 10. ALL DUCTWORK, SUPPLY, EXHAUST AND RETURN SHALL BE SEALED AS DESCRIBED IN THE DRAWINGS AND IN THE SPECIFICATIONS AND PER SMACNA STANDARDS.
- 11. ALL DUCTWORK NEEDS TO BE RATED AT A MINIMUM OF 2" WC STATIC PRESSURE. THE DUCTWORK CONNECTING TO THE RANGE EXHAUST FANS AND THE FILTER HOUSING IS RATED AT A MINIMUM OF 10" WC STATIC PRESSURE. SEE DRAWINGS AND SPECIFICATIONS AND SMACNA STANDARDS FOR THE CONSTRUCTION AND INSTALLATION OF ALL DUCTWORK.
- 12. ALL DUCTWORK SIZES ARE INSIDE CLEAR DIMENSIONS. IF INSULATION LINING IS NOTED THE DUCTWORK SHALL BE INCREASED IN SIZE TO ALLOW FOR THE INSULATION.
- 13. ALL DUCTWORK ELBOWS SHALL BE RADIUS ELBOWS UNLESS NOTED OTHERWISE. WHERE SQUARE ELBOWS ARE SHOWN THEY SHALL HAVE SINGLE BLADE TURNING VANES. ROUTE ALL DUCTWORK AS HIGH AS POSSIBLE ABOVE BALLISTIC BAFFLES. COORDINATE DUCT INSTALL WITH CEILING SUPPORT SYSTEM. DUCTWORK SIZE CHANGES ARE ALLOWED AS LONG AS THE FREE AREA IS NOT REDUCED. SUBMIT COORDINATED SHEET METAL SHOP DRAWINGS FOR APPROVAL BEFORE FABRICATION OF DUCTWORK SYSTEMS. SHOP DRAWINGS SHALL BE APPROVED BY ACTION TARGET INC (ATI). ALL OFF- SETS, RISERS OR DROPS ARE TO BE INDICATED ON THE SHOP DRAWINGS.
- 14. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONDUIT AND WIRING FROM THE POWER SOURCES TO THE EQUIPMENT DISCONNECT AND FROM THE DISCONNECT SWITCHES TO STARTERS AND FROM STARTERS TO THE EQUIPMENT.
- 15. ALL HIGH VOLTAGE CONDUITS AND WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- 16. ALL LOW VOLTAGE CONDUITS AND WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- 17. AUTOMATIC CONTROL DEVICES, SUCH AS TEMPERATURE SENSORS, RELAYS AND PRESSURE SWITCHES WHICH ARE ASSOCIATED WITH THIS WORK AND THESE SYSTEMS AND SHALL BE FURNISHED AND INSTALLED BY THIS DIVISION.
- 18. ALL CONTROL WIRING SHALL BE RUN CONCEALED WHEN POSSIBLE. WIRING IN WALLS SHALL BE IN CONDUIT. ALL CONTROL WIRING SHALL BE PLENUM RATED. CONTROL WIRING IN EXPOSED AREAS SHALL BE RUN IN CONDUIT. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODES AND ANY OTHER LOCAL OR STATE CODES.
- 19. FIELD VERIFY LOCATIONS OF ALL RANGE MECHANICAL EQUIPMENT, ROOF PENETRATIONS, AND DEVICES PRIOR TO FABRICATION OR STARTING NEW WORK. MECHANICAL CONTRACTOR SHALL COORDINATE WITH OWNERS GENERAL CONTRACTOR AND STRUCTURAL ENGINEER ALL SUPPORTING STEEL FOR MECHANICAL EQUIPMENT. GENERAL CONTRACTOR TO FURNISH AND INSTALL SUPPORT ANGLES AND SUPPORT BEAMS FOR MECHANICAL EQUIPMENT.

- 20. THE CONTRACTOR SHALL INSTALL THE RANGE MECHANICAL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION GUIDELINES AND STANDARDS. MAINTAIN THE MANUFACTURER'S OPERATIONAL AND SERVICE CLEARANCES AROUND EQUIPMENT
- 21. ALL RANGE MECHANICAL SYSTEMS SHALL BE TESTED, COMMISSIONED AND SHALL BE COMPLETE AND FUNCTIONAL AT THE COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL WARRANTY HIS WORK FOR A PERIOD OF TWELVE (12) MONTHS FROM DATE OF FINAL ACCEPTANCE.
- 22. THIS WORK SHALL INCLUDE ALL THE PRODUCTS AND EQUIPMENT FOR COMPLETE AND FUNCTIONAL SYSTEMS FOR THE AREAS INDICTED IN THESE DOCUMENTS.

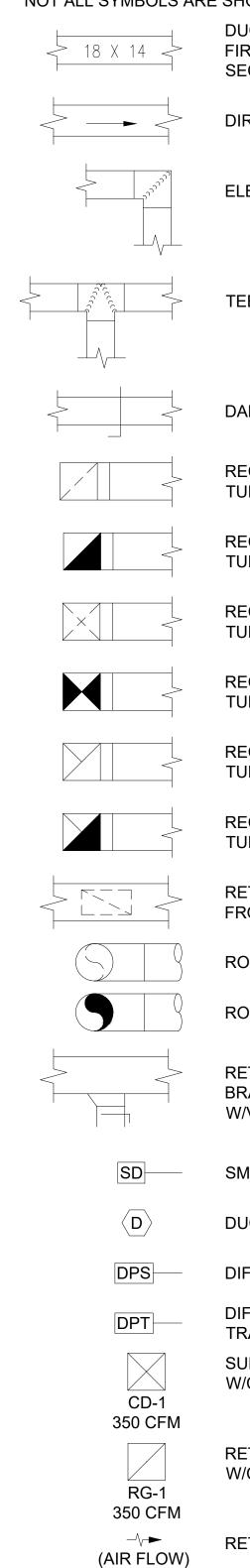
ATTENTION:

- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE PROVIDED TO SHOW GENERAL INTENT OF THE VENTILATION EQUIPMENT AND DUCT LAYOUT
- ACTUAL EQUIPMENT AND DUCT SIZE WILL BE DETERMINED DURING DETAILED DESIGN AND MAY VARY FROM THE SIZES SHOWN ON THESE DRAWINGS.
- ACTION TARGET'S DESIGNERS/ENGINEERS WILL NEED TO COORDINATE WITH THE CUSTOMER'S STRUCTURAL ENGINEER, ARCHITECT, AND CONTRACTOR THE LAYOUT OF THE VENTILATION SYSTEM AND SCOPE OF WORK
- PROVIDE ACTION TARGET WITH BUILDING DRAWINGS OF THE RANGE SPACE. PLANS AND SECTION VIEWS IN AUTOCAD FORMAT. (PDF FILES OR HAND SKETCHES ARE REQUIRED WHEN AUTOCAD FILES ARE NOT AVAILABLE.)
- ACTION TARGET ROUTES VENTILATION DUCTING BETWEEN THE STEEL BAFFLES AND THE BOTTOM OF THE RANGE CEILING STRUCTURE.
- THE MINIMUM CLEAR DISTANCE FROM THE FLOOR TO THE BOTTOM OF THE RANGE ROOF STRUCTURAL MEMBERS (TRUSSES, ETC.) IS 14'-0".

REQUIRED INFORMATION:

OWNER/CONTRACTOR TO PROVIDE

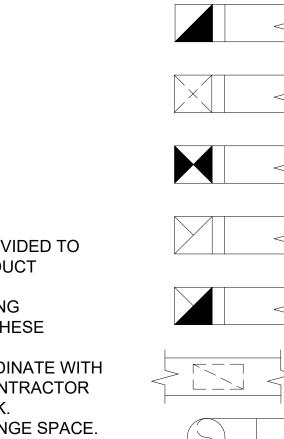
- COMPLETE ACTION TARGET HVAC SURV PROJECT MANAGER.
- ALL PERMITS AND LICENSES PERTAINING TO PROJECT. STRUCTURAL
- STRUCTURAL SUPPORT OF MECHANICAL VENTILATION EQUIPMENT. CONCRETE EQUIPMENT PADS FOR MECHANICAL VENTILATION EQUIPMENT. IF APPLICABLE.
- WALL PENETRATIONS FOR VENTILATION DUCTING
- ROOF PENETRATIONS, PATCHING, AND ROOFING AROUND DUCT ROOF CURBING AND EQUIPMENT SUPPORTS OF MECHANICAL EQUIPMENT. FLASH AND WATER TIGHT SEAL.
- ELECTRICAL
- MATERIAL AND INSTALL OF HIGH AND LOW VOLTAGE WIRE AND CONDUIT FOR VENTILATION EQUIPMENT.
- ELECTRICAL DISCONNECTS FOR MECHANICAL EQUIPMENT.
- DEDICATED 120V CIRCUIT TO VENTILATION CONTROL PANEL INSTALLATION OF ATI PROVIDED VFD'S AND CONTROL/RANGE DISPLAY
- PANELS.
- INTERNET STATIC IP ADDRESS FOR REMOTE CONTROL ACCESS. CAT5 CABLE TO RANGE CONTROL PANEL. MECHANICAL
- ALL GAS PIPE (SIZED FOR MECHANICAL EQUIPMENT), REGULATORS & FINAL CONNECTIONS AND HOOKUPS FOR RANGE MECHANICAL EQUIPMENT. MISCELLANEOUS
- PROVIDE AN AIR TIGHT RANGE ENVELOPE. SEAL ALL HOLES, PENETRATIONS, DOORWAYS, DOOR JAMS, AND OPENINGS IN RANGE WALLS, WALL TO ROOF CONNECTIONS, AND ALL ROOF OPENINGS.
- T-BAR CEILING BETWEEN SAFETY CEILING AND RANGE DIFFUSERS. ANY FIRE/SMOKE DEVICES REQUIRED BY LOCAL JURISDICTION NOTE: THIS LIST IS PROVIDED TO IDENTIFY AND COORDINATE THE SCOPE OF WORK FOR THE RANGE VENTILATION SYSTEM. A COMPLETE AND DETAILED LIST WILL BE PROVIDED UPON CONTRACT.



NOT ALL SYMBOLS ARE	SHOWN ON THESE DRAWINGS
18 X 14	DUCT-(SIZE VARIES) FIRST FIGURE = SIDE SHOWN SECOND FIGURE = SIDE NOT SHOWN
	DIRECTION OF FLOW IN DUCT
	ELBOW WITH TURNING VANES
	TEE WITH TURNING VANES
	DAMPER
	RECTANGULAR RETURN DUCT TURNING DOWN
	RECTANGULAR RETURN DUCT TURNING UP
	RECTANGULAR SUPPLY DUCT TURNING DOWN
	RECTANGULAR SUPPLY DUCT TURNING UP
	RECTANGULAR EXHAUST DUCT TURNING UP
	RECTANGULAR EXHAUST DUCT TURNING DOWN
	RETURN OR EXHAUST DUCT TAP FROM BOTTOM OF DUCT
	ROUND DUCT TURNING DOWN
	ROUND DUCT TURNING UP
	RETURN, SUPPLY, OR EXHAUST BRANCH DUCT IN SIDE OF DUCT W/VOLUME DAMPER
SD	SMOKE DAMPER
	DUCT SMOKE DETECTOR
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
CD-1 350 CFM	SUPPLY OR VENTILATING DIFFUSER W/CFM AND FIXTURE TYPE SHOWN
	RETURN OR EXHAUST DUCT W/CFM AND FIXTURE TYPE SHOWN

ABBREVIATED AFF AD ALT BOD BTU/H CFM EA EAT ESP FPM FT FV GA HP HR HT IN INWC INWG LAT LBS MAU MBH MECH NTS OA OBD PH PSI **PSIG** RA RAD RH SA SEN SP SQ FT TOD TSP TYP. VFD V WB

/EY WITH SALES ASSOCIATE AN	D/OR	



SYMBOLS:

(Block sz = 12" sq.; Scale up for 24" sq.)

(Block sz = 12" sq.; Scale up for 24" sq.)

W/CFM AND FIXTURE TYPE SHOWN

RETURN (Block sz = 12" sq.; Scale up for 24" sq.)

RETURN/EXHAUST AIR

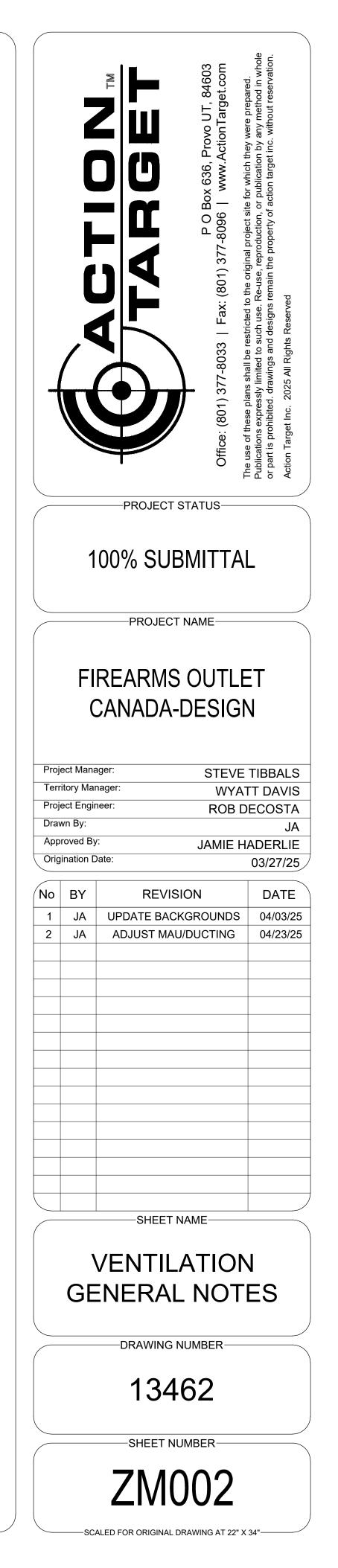
EXHAUST FAN

EXHAUST GRILLE

(RTN-EXH)

ABBREVIATIONS:

UN-ABBREVIATED ABOVE FINISHED FLOOR ACCESS DOOR ALTERNATE BOTTOM OF DUCT BRITISH THERMAL UNITS PER HOUR CUBIC FEET PER MINUTE EXHAUST AIR ENTERING AIR TEMPERATURE EXTERNAL STATIC PRESSURE FEET PER MINUTE FEET FACE VELOCITY GUAGE HORSEPOWER HOUR HEIGHT INCH INCHES OF WATER COLUMN INCHES OF WATER GUAGE LEAVING AIR TEMPERATURE POUNDS MAKE-UP AIR UNIT THOUSAND BTU/H MECHANICAL NOT TO SCALE **OUTSIDE AIR** OPPOSED BLADE DAMPER PHASE POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH GAUGE **RETURN AIR** RADIUS **RELATIVE HUMIDITY** SUPPLY AIR SENSIBLE STATIC PRESSURE SQUARE FEET TOP OF DUCT TOTAL STATIC PRESSURE TYPICAL VARIABLE FREQUENCY DRIVE VELOCITY WET BULB



SPECIFICATIONS

SECTION 23000 GENERAL REQUIREMENTS.

- 1. THIS WORK SHALL INCLUDE ALL LABOR. MATERIALS. EQUIPMENT, FIXTURES, AND DEVICES FOR THE ENTIRE MECHANICAL WORK AND A COMPLETE OPERATING AND TESTED INSTALLATION AS REQUIRED FOR THIS **PROJECT**
- 2. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH ALL LOCAL AND STATE RULES AND REGULATIONS APPLICABLE TO THE TRADE AFFECTED. AFTER ENTERING INTO THIS CONTRACT, THE CONTRACTOR WILL COMPLETE ALL WORK NECESSARY TO MEET THESE REQUIREMENTS WITHOUT EXTRA EXPENSES TO THE OWNER.
- APPLICABLE CODES SHALL BE THE LATEST EDITION OF 3 IBC, IMC, IPC, AND IFC. INDUSTRY STANDARDS SHALL BE AS FOLLOWS: ARI, ADC, AMCA, AGA, ANSI, ASHRAE, ASME, ASTM, AWWA, ETL, IEEE, NFPA, NEC, NEMA, NESC OSHA, SMACNA, AND UL
- 4. THE CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS TO PERFORM THIS WORK.
- 5. SHOP DRAWINGS AND COORDINATION DRAWING SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER AND ATI FOR REVIEW AND MUST BE COORDINATE WITH ALL OTHER TRADES. SHOP DRAWINGS SHALL INCLUDED PLANS, ELEVATIONS, SECTIONS AND INDICATE PRESSURE CLASS. DRAWINGS SHALL ALSO INCLUDE FITTINGS, REINFORCING AND SPACING, SEAM AND JOINT CONSTRUCTION DETAILS. PENETRATIONS THROUGH PARTITIONS AND FIRE-RATE WALLS SHALL BE INDICATED. HANGERS AND SUPPORTS WITH BUILDING ATTACHMENT AS WELL AS VIBRATION ISOLATION SHALL ALSO BE INCLUDED. SHEETMETAL SHOP DRAWINGS WILL BE REQUIRED FOR ALL DUCTWORK IN THE ENTIRE BUILDING. THESE DRAWINGS SHALL BE COORDINATED WITH ALL PIPING, CONDUIT, VALVES, EQUIPMENT AND DUCTWORK.
- THE CONTRACT DRAWINGS SHOW THE GENERAL DESIGN ARRANGEMENTS AND THE EXTENT OF THE SYSTEMS. THE DRAWINGS MAY INCLUDE DETAILS THAT SHOW MORE NEARLY EXACT LOCATIONS AND ARRANGEMENTS; HOWEVER, THE LOCATIONS ARE SHOWN DIAGRAMMATICALLY, AND ARE TO BE REGARDED AS GENERAL. IT SHALL BE THE WORK OF THIS CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE COMPONENTS AND SYSTEMS FIT. THE DRAWINGS SHALL NOT BE SCALED FOR ROUGHING IN MEASUREMENTS NOR SHALL THEY BE USED AS SHOP DRAWINGS
- EXISTING CONDITIONS SHALL BE CAREFULLY EXAMINED BY THIS CONTRACTOR. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING SERVICES AND UNDERSTAND THE STRUCTURAL AND ELECTRICAL DRAWINGS AND REQUIREMENTS NEEDED TO COMPLETE THIS WORK.
- 8. THE EQUIPMENT CAPACITIES SHOWN FOR THE EQUIPMENT IS THE MINIMUM ACCEPTABLE. ALL EQUIPMENT SUBMITTALS SHALL GIVE THE SPECIFIED CAPACITY AND PERFORMANCE AT THE GIVEN JOB-SITE ELEVATION.
- ALL EQUIPMENT SHALL BE FURNISHED AND INSTALLED STRUCTURALLY ADEQUATE TO WITHSTAND THE SEISMIC FORCES AS OUTLINED IN THE INTERNATIONAL BUILDING CODE AND THE SMACNA GUIDELINES FOR THE AREA WHICH THIS PROJECT IS BEING CONSTRUCTED.
- 10. THE CONTRACTOR SHALL REFER TO OTHER DRAWINGS AND PARTS OF THIS SPECIFICATION THAT COVER WORK OF OTHER TRADES THAT IS CARRIED ON IN CONJUNCTION WITH THE MECHANICAL WORK SUCH THAT ALL WORK CAN PROCEED WITHOUT INTERFERENCE RESULTING FROM LACK OF COORDINATION. THE CEILING CAVITY MUST BE CAREFULLY REVIEWED AND COORDINATED WITH ALL TRADES. THIS CONTRACTOR SHALL INSURE THAT THE INSTALLATION OF ALL DUCTWORK, PIPING AND **EQUIPMENT IS IN COMPLIANCE WITH ARTICLES 110-16** AND 384-4 OF THE NATIONAL ELECTRICAL CODE RELATIVE TO PROPER CLEARANCES IN FRONT OF AND OVER ALL ELECTRICAL PANELS AND EQUIPMENT. NO PIPING OR DUCTWORK SHALL BE ALLOWED TO RUN OVER ELECTRICAL PANELS.
- 11. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF A SATISFACTORY PIECE OF WORK IN ACCORDANCE WITH THE TRUE INTENT OF THE DRAWINGS AND SPECIFICATIONS. HE SHALL PROVIDE AS A PART OF HIS WORK AND WITHOUT EXPENSE, ALL INCIDENTAL ITEMS REQUIRED EVEN THOUGH THESE ITEMS ARE NOT PARTICULARLY SPECIFIED OR INDICATED. THE INSTALLATION SHALL BE MADE SO

THAT SEVERAL COMPONENT PARTS WILL FUNCTION TOGETHER AS A WORKABLE SYSTEM AND SHALL BE LEFT WITH ALL EQUIPMENT PROPERLY ADJUSTED AND IN WORKING ORDER. THE CONTRACTOR SHALL FAMILIARIZE THE OWNER'S REPRESENTATIVE WITH MAINTENANCE AND LUBRICATION INSTRUCTIONS AS PREPARED BY THE CONTRACTOR AND SHALL EXPLAIN AND FULLY INSTRUCT HIM RELATIVE TO OPERATING, SERVICING, AND MAINTENANCE OF EACH ITEM.

- 12. WORKMANSHIP SHALL BE THE BEST QUALITY OF ITS KIND FOR THE RESPECTIVE INDUSTRIES, TRADE, CRAFTS, AND PRACTICES, AND SHALL BE ACCEPTABLE IN EVERY RESPECT TO THE OWNERS REPRESENTATIVE. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, AND OSHA SAFETY REQUIREMENTS IN PERFORMANCE WITH THIS WORK
- 13. THE ACCESS TO EQUIPMENT SHOWN ON THE DRAWINGS IS THE MINIMUM ACCEPTABLE SPACE REQUIREMENTS. ALL OPEN DUCT AND PIPE OPENINGS SHALL BE ADEQUATELY COVERED AT ALL TIME TO PREVENT ITEMS FROM ENTERING
- 14. NO CUTTING OR DRILLING IN STRUCTURAL MEMBERS SHALL BE DONE WITHOUT WRITTEN APPROVAL OF THE ARCHITECT.
- 15. ALL FLOOR MOUNTED MECHANICAL EQUIPMENT SHALL BE SET ON 6-INCH HIGH CONCRETE BASE, UNLESS OTHERWISE NOTED OR SHOWN ON DRAWINGS. THE UNISTRUT INSERT OF DUCTWORK AND PIPING SYSTEMS SHALL INCLUDE ALL INSERTS, VERTICAL SUPPORTS, HORIZONTAL SUPPORT MEMBERS CLAMPS, HANGERS, ROLLERS, BOLTS, NUTS AND ANY OTHER ACCESSORY ITEMS FOR A COMPLETE SUPPORTING SYSTEM.
- 16. UPON COMPLETION OF THIS WORK REMOVE ALL SURPLUS MATERIAL AND RUBBISH RESULTING FROM THIS WORK AND LEAVE THE PREMISES IN A CLEAN AND ORDERLY CONDITION.
- 17. THE ENTIRE MECHANICAL SYSTEM INCLUDING PLUMBING AND HVAC SYSTEMS SHALL BE QUIET IN OPERATION. THE CONTRACTOR SHALL MAKE PROMPTLY AND FREE OF CHARGE, UPON NOTICE FROM THE OWNER, ANY NECESSARY REPAIRS DUE TO DEFECTIVE WORKMANSHIP OR MATERIALS THAT MAY OCCUR DURING A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
- 18. PRE FILTERS USED DURING CONSTRUCTION AND TESTING SHALL BE REPLACED PRIOR TO TURNING THE SYSTEM OVER TO THE OWNER.

SECTION 230100 OPERATION AND MAINTENANCE MANUALS

19. THE CONTRACTOR SHALL TURN OVER TO THE OWNER THE OPERATION AND MAINTENANCE MANUALS WITH THE BALANCING REPORTS. THE MANUALS SHALL INCLUDE AIR-BALANCING REPORTS. SYSTEM COMMISSIONING PROCEDURES, START-UP TESTS AND REPORTS. ALSO INCLUDED SHALL BE THE EQUIPMENT AND SYSTEM PERFORMANCE TEST REPORTS AND WARRANTIES.

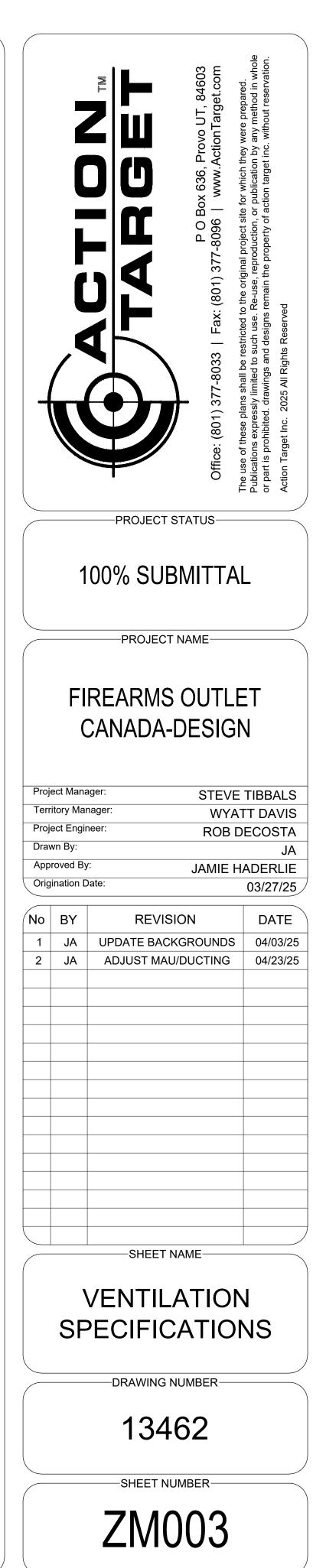
SECTION 233001 METAL DUCTS

- 20. THIS SECTION INCLUDES RECTANGULAR AND ROUND METAL DUCTWORK FOR VENTILATING, AIR CONDITIONING SYSTEMS IN PRESSURE CLASSES FROM MINUS 2 INCHES TO PLUS 10 INCHES WATER GAGE.
- 21. THE DUCT SYSTEM DESIGNS, AS INDICATED, HAVE BEEN USED TO SELECT AND SIZE AIR MOVING AND DISTRIBUTION EQUIPMENT AND OTHER COMPONENTS OF THE HVAC AIR SYSTEM. CHANGES OR ALTERATIONS TO THE LAYOUT OR CONFIGURATION OF THE DUCT SYSTEM MUST BE SPECIFICALLY APPROVED IN WRITING. APPROVED LAYOUT MODIFICATIONS PROPOSED MUST BE WITHOUT INCREASING THE SYSTEM TOTAL STATIC PRESSURE.
- 22. THE GENERAL FABRICATION REQUIREMENTS SHALL ALSO COMPLY WITH ALL SMACNA'S HVAC DUCT CONSTRUCTION STANDARDS. CONSTRUCTION SHALL BE BASED ON STATIC PRESSURES INDICATED ON THE SCHEDULES, DRAWINGS AND SPECIFICATIONS. TYPICAL TOTAL STATIC PRESSURE OF THE SUPPLY FAN SYSTEMS ARE IN THE 2.5" RANGE AND THE EXHAUST SYSTEMS ARE TYPICALLY IN THE 8" RANGE, SEE SCHEDULES FOR EXACT PRESSURES. COMPLIANCE OF THIS WORK SHALL ALSO CONFORM TO NFPA STANDARD 90A.
- 23. TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO "SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-1, RECTANGULAR DUCT/TRANSVERSE JOINTS FOR STATIC-PRESSURE CLASS AS REQUIRED FOR THIS PROJECT, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT SUPPORT INTERVALS, AND OTHER PROVISIONS ARE TO BE PER THE SMACNA STANDARDS.

- 24. LONGITUDINAL SEAMS: SELECT SEAM TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2, "RECTANGULAR DUCT/LONGITUDINAL SEAMS," FOR STATIC-PRESSURE CLASS FOR THIS PROJECT, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS ARE TO BE PER THE SMACNA STANDARDS.
- 25. ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER DUCT CONSTRUCTION: SELECT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS -METAL AND FLEXIBLE," CHAPTER 4, "FITTINGS AND OTHER CONSTRUCTION" FOR STATIC-PRESSURE CLASS FOR THIS PROJECT, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS
- ARE TO BE PER SMACNA STANDARDS. 26. ROUND DUCTS AND FITTINGS, GENERAL FABRICATION REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 3, "ROUND, OVAL, AND FLEXIBLE DUCT" BASED ON INDICATED STATIC-PRESSURE CLASS FOR THIS PROJECT.
- 27. TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-1, "ROUND DUCT TRANSVERSE JOINTS," FOR STATIC PRESSURE CLASS FOR THIS PROJECT APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS PER SMACNA STANDARDS.
- 28. LONGITUDINAL SEAMS: SELECT SEAM TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FIGURE 3-2, "ROUND DUCT LONGITUDINAL SEAMS," FOR STATIC-PRESSURE CLASS FOR THIS PROJECT APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS AS PER SMACNA STANDARDS. 29. TEES AND LATERALS: SELECT TYPES AND FABRICATE
- ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE,' FIGURE 3-5, "90 DEGREE TEES AND LATERALS," AND FIGURE 3-6 "CONICAL TEES," FOR STATIC-PRESSURE CLASS PER THIS PROJECT, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED. DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS
- PER SMACNA STANDARDS. 30. SHEET METAL MATERIALS, GENERAL MATERIAL
- **REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND** FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESS, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE NEW PRODUCT WITHOUT IMPERFECTIONS. GALVANIZED SHEET STEEL: COMPLY WITH ASTM A 653. GALVANIZED COATING DESIGNATION: G60. REINFORCEMENT SHAPES AND PLATES: COMPLY WITH ASTM A 36, STEEL PLATES, SHAPES, AND BARS: BLACK AND GALVANIZED. TIE RODS: GALVANIZED STEEL, 1/4-INCH MINIMUM DIAMETER FOR LENGTHS 36 INCHES OR LESS; 3-INCH MINIMUM DIAMETER FOR LENGTHS LONGER THAN 36
- INCHES. SEALANT AND GASKETS, GENERAL SEALANT AND GASKET REQUIREMENTS: SURFACE-BURNING CHARACTERISTICS FOR SEALANTS AND GASKETS SHALL HAVE A MINIMUM FLAME-SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO UL723; CERTIFIED BY AN NRTL. USE A TWO PART TAPE SEALING SYSTEM OR A WATER BASED JOINT AND SEAM SEALANT. FLANGED
- JOINT SEALANT SHALL COMPLY WITH ASTM C 920. 32. HANGERS AND SUPPORTS. HANGER RODS: CADMIUM-PLATED STEEL RODS AND NUTS. STRAP AND ROD SIZES: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," TABLE 5-1, "RECTANGULAR DUCT HANGERS MINIMUM SIZE," AND TABLE 5-2, "MINIMUM HANGER SIZES FOR ROUND DUCT."
- 33. STEEL CABLES FOR GALVANIZED-STEEL DUCTS: GALVANIZED STEEL COMPLYING WITH ASTM A 603.STEEL CABLE END CONNECTIONS: CADMIUM-PLATED STEEL ASSEMBLIES WITH BRACKETS, SWIVEL, AND BOLTS DESIGNED FOR DUCT HANGER SERVICE: WITH AN AUTOMATIC-LOCKING AND CLAMPING DEVICE. DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS: COMPATIBLE WITH DUCT MATERIALS.

- 34. TRAPEZE AND RISER SUPPORTS FOR GALVANIZED-STEEL DUCTS SHALL BE USED AS NEED AND ARE TO BE GALVANIZED - STEEL SHAPES AND PLATES. WIRE HANGERS ARE NOT ALLOWED. USE THREADED ROD TO STEEL JOIST WITH ANVIL STEEL WASHERS AND DOUBLE NUT CONNECTION. ONE INCH 18 GA GALVANIZED STEEL STRAPS ARE ALLOWED FOR SMALLER SINGLE RUN DUCTWORK.
- 35. INSTALL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED. DUCTWORK IS TO BE INSTALLED WITH FEWEST JOINTS AS POSSIBLE. SHOP AND PREFABRICATE THE FITTINGS WHENEVER POSSIBLE. PREFABRICATED FITTINGS ARE TO BE USED FOR CHANGES IN DIRECTIONS AND **BRANCH CONNECTIONS. UNLESS OTHERWISE** INDICATED, INSTALL DUCTS VERTICALLY AND HORIZONTALLY, AND PARALLEL AND PERPENDICULAR TO BUILDING LINES AND WALLS. INSTALL DUCTS WITH A CLEARANCE OF AT LEAST 1 INCH, PLUS ALLOW FOR INSULATION THICKNESS WHEN NOTED IN THE SPECIFICATIONS OR DRAWINGS. WHERE DUCTS PASS THROUGH EXTERIOR WALLS AND ARE EXPOSED TO THE OUTSIDE OR VIEW, COVER THE OPENING BETWEEN THE WALL AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME METAL THICKNESS AS THE DUCT. OVERLAP OPENINGS ON FOUR SIDES BY AT LEAST 1-1/2 INCHES. DURING CONSTRUCTION PROTECT DUCT INTERIORS FROM MOISTURE, CONSTRUCTION DEBRIS AND DUST, AND OTHER FOREIGN MATERIALS AT ALL TIMES.
- 36. DUCT SEALING SHALL BE FOR THE DUCT STATIC PRESSURES, SEAL CLASSES, AND LEAKAGE CLASSES SPECIFIED IN "DUCT CONSTRUCTION SCHEDULE" ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." THE CONTRACTOR SHALL COMPLY WITH SMACNA'S **"HVAC DUCT CONSTRUCTION STANDARDS - METAL** AND FLEXIBLE," CHAPTER 5, "HANGERS AND SUPPORTS."
- 37. THIS CONTRACTOR NEEDS TO GET APPROVAL FROM THE STRUCTURAL ENGINEER ON ATTACHMENT SELECTION AND SPACING OF THE SYSTEMS HE WANTS TO INSTALL AND THE SUPPORTING OF THE DUCTWORK FROM THE STRUCTURE. BUILDING ATTACHMENTS SHALL BE CONCRETE INSERTS, POWDER-ACTUATED FASTENERS, OR STRUCTURAL-STEEL FASTENERS APPROPRIATE FOR CONSTRUCTION MATERIALS TO WHICH HANGERS ARE BEING ATTACHED. IF CONSTRUCTION PHASING ALLOWS, INSTALL CONCRETE INSERTS BEFORE PLACING CONCRETE IS PREFERRED. POWDER-ACTUATED CONCRETE FASTENERS ARE TO BE INSTALLED AFTER CONCRETE IS PLACED AND COMPLETELY CURED. ONLY USE POWDER-ACTUATED CONCRETE FASTENERS FOR STANDARD-WEIGHT AGGREGATE CONCRETE OR FOR SLABS MORE WHICH HAVE A THICKNESS GREATER THAN 4 INCHES. POWDER-ACTUATED CONCRETE FASTENERS ARE NOT TO BE USED FOR LIGHTWEIGHT-AGGREGATE CONCRETES OR FOR SLABS LESS THAN 4 INCHES THICK.
- 38. HANGER SPACING: COMPLY WITH SMACNA'S "HVAC **DUCT CONSTRUCTION STANDARDS - METAL AND** FLEXIBLE." TABLE 5-1. "RECTANGULAR DUCT HANGERS MINIMUM SIZE," AND TABLE 5-2, "MINIMUM HANGER SIZES FOR ROUND DUCT," FOR MAXIMUM HANGER SPACING: INSTALL HANGERS AND SUPPORTS WITHIN 24 INCHES OF EACH ELBOW AND WITHIN 48 INCHES OF EACH BRANCH INTERSECTION. IF THE HANGERS ARE EXPOSED TO VIEW THEY SHALL BE THREADED ROD AND ANGLE OR CHANNEL SUPPORTS. INSTALL UPPER ATTACHMENTS TO STRUCTURES. SELECT AND SIZE UPPER ATTACHMENTS WITH PULL-OUT, TENSION, AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
- 39. COORDINATE DUCT INSTALLATIONS AND SPECIALTY ARRANGEMENTS WITH DRAWINGS. MAKE DUCTWORK CONNECTIONS TO EQUIPMENT WITH FLEXIBLE CONNECTORS FOR THE RATED PRESSURE AND USE INDOOR OR OUTDOOR. COMPLY WITH SMACNA'S **"HVAC DUCT CONSTRUCTION STANDARDS - METAL** AND FLEXIBLE" FOR BRANCH, OUTLET AND INLET, AND FAN OR UNIT CONNECTIONS.
- 40. FABRICATE DUCTS WITH GALVANIZED SHEET STEEL EXCEPT AS OTHERWISE INDICATED AND AS FOLLOWS: ELBOW CONFIGURATION - RECTANGULAR DUCT: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 4-2 **"RECTANGULAR ELBOWS." BRANCH CONFIGURATION -**RECTANGULAR DUCT: COMPLY WITH SMACNA'S "HVAC **DUCT CONSTRUCTION STANDARDS - METAL AND**

FLEXIBLE," FIGURE 4-6, "BRANCH CONNECTIONS." RECTANGULAR MAIN TO RECTANGULAR BRANCH: 45-DEGREE ENTRY.RECTANGULAR MAIN TO ROUND BRANCH PROVIDE A 45 DEGREE TYPE TAKE-OFF.



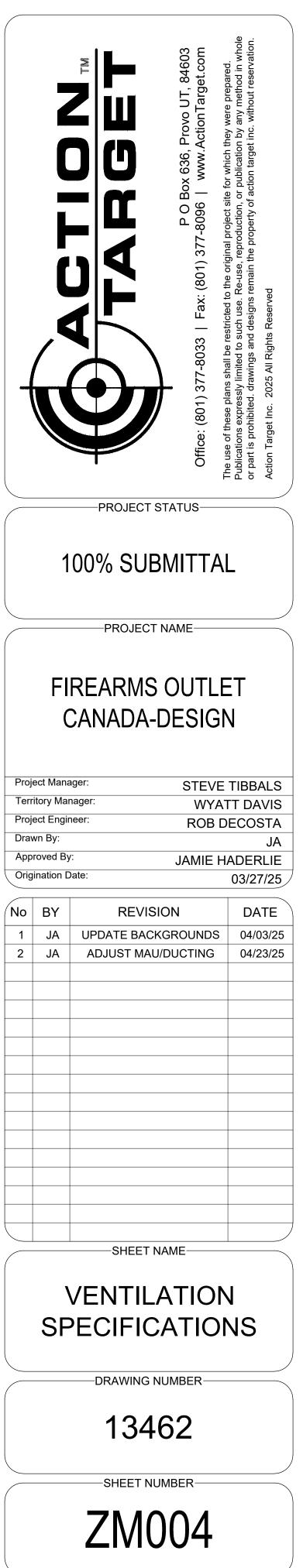
SCALED FOR ORIGINAL DRAWING AT 22" X 34"

SPECIFICATIONS:

- SECTION 233300 AIR DUCT ACCESSORIES
- 41. GENERAL, COMPLY WITH NEPA 90A, "INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS," AND WITH NFPA 90B, "INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS." COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS -METAL AND FLEXIBLE"FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS. MATERIALS, GALVANIZED SHEET STEEL: COMPLY WITH ASTM A 653, GALVANIZED COATING DESIGNATION G60. REINFORCEMENT SHAPES AND PLATES: GALVANIZED - STEEL REINFORCEMENT WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS: TIE RODS SHALL BE GALVANIZED STEEL, 1/4-INCH MINIMUM DIAMETER FOR LENGTHS 36 INCHES OR LESS: ³/₈-INCH MINIMUM DIAMETER FOR LENGTHS LONGER THAN 36 INCHES.
- 42. MANUAL VOLUME DAMPERS, STANDARD, STEEL, MANUAL VOLUME DAMPERS: STANDARD LEAKAGE RATING WITH LINKAGE OUTSIDE AIRSTREAM, SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS. FRAMES SHALL BE A HAT-SHAPED TYPE, GALVANIZED SHEET STEEL, MITERED AND WELDED CORNERS WITH FLANGES FOR ATTACHING TO WALLS. PROVIDE FRAMES FOR INSTALLING IN DUCTS. THE BLADES ARE TO BE MULTIPLE OR SINGLE BLADE OR PARALLEL THE BLADE AXLES SHALL BE GALVANIZED STEEL, DAMPERS IN DUCTS WITH PRESSURE CLASSES OF 3-INCH WG OR LESS SHALL HAVE AXLES FULL LENGTH OF DAMPER BLADES AND BEARINGS AT BOTH ENDS OF OPERATING SHAFT. 2.10.4 MANUAL BALANCING DAMPERS.
- 43. CONTROL DAMPERS, GENERAL REQUIREMENTS: USE PARALLEL BLADE CONFIGURATION FOR TWO-POSITION CONTROL. SEE DRAWINGS FOR SIZES.
- 44. CONSTRUCTION SHALL BE STANDARD STEEL. PROVIDE STANDARD LEAKAGE RATING WITH LINKAGE OUTSIDE AIRSTREAM, SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS. THE FRAMES SHALL BE HAT-SHAPED CHANNEL WITH INTEGRAL FLANGES. THE BLADES SHALL BE AIRFOIL. GALVANIZED STEEL WITH A PARALLEL BLADE CONFIGURATION. MATERIAL SHALL BE ASTM A 653 GALVANIZED STEEL. THE BLADE SEALS SHALL BE REPLACEABLE AND ARE TO BE MECHANICALLY ATTACHED EXTRUDED SILICONE, VINYL. OR PLASTIC COMPOSITE. THE JAMB SEALS ARE TO BE STAINLESS STEEL, OR COMPRESSION TYPE. THE AXLES SHALL BE MECHANICALLY ATTACHED TO BLADES. BEARINGS ARE TO BE STAINLESS STEEL MOUNTED IN THE FRAME. WHERE BLADE AXLES ARE INSTALLED IN VERTICAL POSITION, PROVIDE THRUST BEARINGS. THE LINKAGE SHALL BE CONCEALED IN FRAME AND CONSTRUCTED OF ALUMINUM AND PLATED OR STAINLESS STEEL WITH STAINLESS STEEL HARDWARE. THE DAMPERS AND ACTUATORS SHALL BE ACCESSIBLE FOR VISUAL INSPECTION AND SERVICE. DAMPER ACTUATORS SHALL OPERATE WITH DAMPERS WITH SUFFICIENT RESERVE POWER TO PROVIDE SMOOTH MODULATING ACTION OR TWO-POSITION ACTION AND PROPER SPEED OF RESPONSE AT VELOCITY AND PRESSURE CONDITIONS TO WHICH THE DAMPER IS SUBJECT TO. ACTUATORS SHALL PRODUCE SUFFICIENT POWER AND TORQUE TO CLOSE OFF AGAINST THE MAXIMUM SYSTEM PRESSURES ENCOUNTERED. ACTUATORS SHALL BE SIZED TO CLOSE OFF AGAINST THE FAN SHUTOFF PRESSURE AS A MINIMUM REQUIREMENT. PROVIDE ONE ACTUATOR FOR EACH DAMPER ASSEMBLY. MULTIPLE ACTUATORS REQUIRED TO DRIVE A SINGLE DAMPER ASSEMBLY SHALL OPERATE IN UNISON IF NEEDED.
- 45. FLANGE CONNECTIONS SHALL BE ADD-ON OR ROLL-FORMED, FACTORY-FABRICATED, SLIDE-ON TRANSVERSE FLANGE CONNECTORS, GASKETS, AND COMPONENTS, GALVANIZED STEEL, GAGE AND SHAPE TO MATCH CONNECTING DUCTWORK.
- 46. TURNING VANES SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"; FIGURES 4-3, "VANES AND VANE RUNNERS," AND 4-4, "VANE SUPPORT IN ELBOWS." VANE CONSTRUCTION SHALL BE SINGLE OR DOUBLE WALL.
- 47. DUCT-MOUNTED ACCESS DOORS PROVIDE IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"; FIGURES 7-2, "DUCT ACCESS DOORS AND PANELS."

AND LATCHES: 1-BY-1-INCH BUTT OR PIANO HINGE AND CAM LATCHES. FABRICATE DOORS AIRTIGHT AND SUITABLE FOR DUCT PRESSURE CLASS. FRAME SHALL BE GALVANIZED SHEET STEEL WITH BEND-OVER TABS AND FOAM GASKETS.

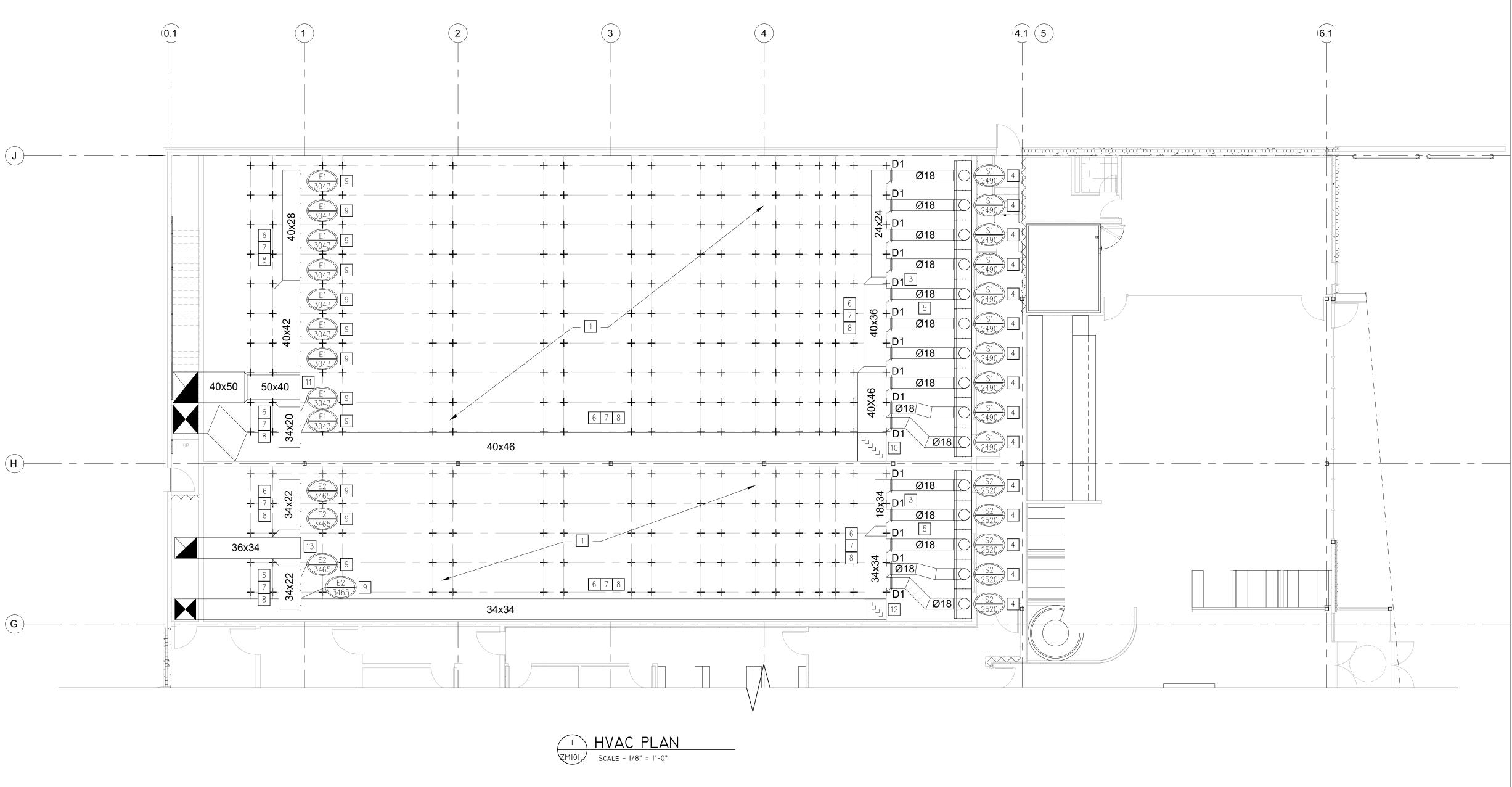
- 48. FLEXIBLE CONNECTORS SHALL BE FLAME-RETARDANT OR NONCOMBUSTIBLE FABRICS COMPLY WITH UL 181, CLASS 1. THE OUTDOOR SYSTEM, FLEXIBLE CONNECTORS SHALL BE FABRIC GLASS FABRIC DOUBLE COATED WITH WEATHERPROOF, SYNTHETIC RUBBER RESISTANT TO UV RAYS AND OZONE.
- 49. DUCT ACCESSORY INSTALLATION SHALL BE ACCORDING TO APPLICABLE DETAILS IN SMACNA'S **"HVAC DUCT CONSTRUCTION STANDARDS - METAL** AND FLEXIBLE" FOR METAL DUCTS. USE GALVANIZED-STEEL ACCESSORIES IN GALVANIZED STEEL. INSTALL VOLUME DAMPERS AT POINTS ON SUPPLY, RETURN, AND EXHAUST SYSTEMS WHERE BRANCHES EXTEND FROM LARGER DUCTS. WHERE DAMPERS ARE INSTALLED IN DUCTS HAVING DUCT LINER, INSTALL DAMPERS WITH HAT CHANNELS OF SAME DEPTH AS LINER, AND TERMINATE LINER WITH NOSING AT HAT CHANNEL. SEE DRAWINGS FOR SOME OF THE DAMPER LOCATIONS. HOWEVER DAMPERS WILL NEED TO BE PROVIDED AS REQUIRED IN THE SYSTEM TO BALANCE THE SYSTEM ADEQUATELY DAMPERS ARE TO BE SET AT A FULLY OPEN POSITION BEFORE TESTING, ADJUSTING, AND BALANCING. **INSTALL TEST HOLES AT FAN INLETS AND OUTLETS** AND ELSEWHERE AS NEEDED FOR BALANCING INSTALL DUCT ACCESS DOORS ON SIDES OF DUCTS TO ALLOW FOR INSPECTING, ADJUSTING, AND MAINTAINING ACCESSORIES AND EQUIPMENT AT THE FOLLOWING LOCATIONS: FIRE AND SMOKE DAMPERS LOCATIONS IF JOB REQUIRED! AS WELL AS CONTROL DAMPERS AREAS. DOORS ARE TO BE INSTALLED WITH SWING AGAINST DUCT STATIC PRESSURES.
- 50. INSTALL FLEXIBLE CONNECTORS TO CONNECT DUCTS TO EQUIPMENT. INSTALL DUCT TEST HOLES WHERE REQUIRED FOR TESTING AND BALANCING PURPOSES.



KEYED NOTES (SHEET ZM101.1)

- 1 BALLISTIC CEILING (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 2 BULLET TRAP (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 3 HIGH EFFICIENCY TAKEOFF (HET) SUPPLIED BY MECHANICAL CONTRACTOR (M.C.). (TYP). MANUAL VOLUME DAMPER SUPPLIED BY ACTION TARGET. (TYP)
- 4 RADIAL SUPPLY AIR (SA) DIFFUSER SUPPLIED BY ATI AND INSTALLED BY M.C. INSTALL RADIAL DIFFUSER UNIFORMLY, PLUMB AND LEVEL, AND SYMMETRICAL ACROSS WIDTH OF RANGE. RADIAL DIFFUSER FACE SHALL BE A MINIMUM OF 7'-0" A.F.F. SEE DETAILS AT.07.01 AND AT.08.04 WITHIN ZM60X SERIES SHEETS. DIFFUSER SHALL BE FIELD BALANCED TO SUPPLY CFM STATED ON PLANS.
- 5 T-BAR LAY-IN CEILING SHALL BE PROVIDED BY OWNER OR GENERAL CONTRACTOR. T-BAR CEILING SHALL BE INSTALLED BETWEEN TOP OF RADIAL DIFFUSER AND THE STEEL SAFETY CEILING. SEE DETAIL AT.08.04 WITHIN ZM60X SERIES SHEETS.
- 6 ALL SUPPLY/RETURN/EXHAUST AIR DUCTWORK INSTALLED ABOVE CEILINGS, OR HUNG HIGH WITHIN SPACE SHALL BE SUPPORTED FROM OVERHEAD STRUCTURE (TYP). OWNER SHALL BE RESPONSIBLE FOR STRUCTURAL INTEGRITY REQUIRED TO SUPPORT ALL DUCTWORK IN ACCORDANCE WITH CODE AND INDUSTRY STANDARDS.
- DUCTWORK HANGERS/SUPPORTS BY M.C. ALL SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE SECTION OF DUCT PLUS 15% SAFETY FACTOR. M.C. SHALL BE RESPONSIBLE FOR SUPPORTS FINAL DESIGN AND LOCATION IN COORDINATION WITH FINAL DUCTWORK LAYOUT. ALL SUPPORTS SHALL BE FABRICATED OF RUST RESISTANT MATERIALS.
- ALL DUCTWORK (SA, RA, & EA) SHALL BE CROSS BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA 8 'HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE' LATEST EDITION FOR THE FOLLOWING STATED STATIC PRESSURE RATINGS: •SUPPLY AIR (SA) DUCTWORK = 2.5"W.C.
 - •RETURN AIR (RA) DUCTWORK = 2.5"W.C.
 - •EXHAUST AIR (EA) DUCTWORK = 2.5"W.C. (SEE KEYNOTE 13 EXCEPTION)
- 9 PROVIDE CONTINUOUS 8" SLOT ON DUCT SIDE FOR AIR RETURN. SLOT NOT REQUIRED AT DUCT SECTION JOINTS. COVER WITH SCREEN. AIRFLOW IS APPROXIMATE.

- FOR CLARIFICATION.
- CLARIFICATION.
- FOR CLARIFICATION.
- CLARIFICATION.



GENERAL NOTES (SHEET ZM101.1)

- PRIOR TO INSTALLATION (TYP.).
- PROVIDED BY ACTION TARGET.
- REQUIREMENTS.
- SQUARE/RECTANGULAR DUCTS.
- HAVE BEEN MADE TO ACCOMMODATE PASSAGE.
- SHALL BE THE RESPONSIBILITY OF THE M.C.

10 40"x46" SUPPLY AIR (SA1) DUCT UP THROUGH DECK TO ROOF TO CURB. CURB CONNECTION SHALL MATCH SA1 DUCT SIZE (38"x38") FROM RANGE. SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS

11 50"x40" EXHAUST AIR (EA1) DUCT UP THROUGH DECK TO ROOF. EA DUCT SHALL CONNECT TO FB-1 (CORRESPONDING EF1 SUCTION). SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS FOR

12 34"x34" SUPPLY AIR (SA2) DUCT UP THROUGH DECK TO ROOF TO CURB. CURB CONNECTION SHALL MATCH SA2 DUCT SIZE (38"x38") FROM RANGE. SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS

13 36"x34" EXHAUST AIR (EA2) DUCT UP THROUGH DECK TO ROOF. EA DUCT SHALL CONNECT TO FB-2 CORRESPONDING EF2 SUCTION). SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS FOR

1. DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS

2. FRAMED WALL BETWEEN RANGE AND ADJACENT SPACES SHALL BE AIRTIGHT TO ENSURE PROPER AIR MOVEMENT OF RANGE VENTILATION SYSTEM.

3. PROVIDE ANGLE IRON DUCT TRAPEZE WHERE INDICATED ON PLANS. TRAPEZE

4. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION

5. TURNING VANES SHALL BE USED ON ALL 90, 45, AND 22.5 DEGREE CHANGE IN DIRECTION FITTINGS FOR ALL SUPPLY, RETURN, AND EXHAUST AIR

6. MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCTWORK FLOOR PENETRATIONS WITH STRUCTURAL ENGINEER TO ENSURE THE PROPER STRUCTURAL MODIFICATIONS

7. M.C. SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL SEEN AND UNSEEN ARCHITECTURAL AND STRUCTURAL BUILDING FEATURES. FINAL DUCTWORK ROUTING

8. M.C. SHALL BE RESPONSIBLE FOR PROVIDING SHOP DRAWINGS, INCLUDING DUCTWORK ROUTING, TO ATI FOR REVIEW PRIOR TO SYSTEM INSTALLATION.

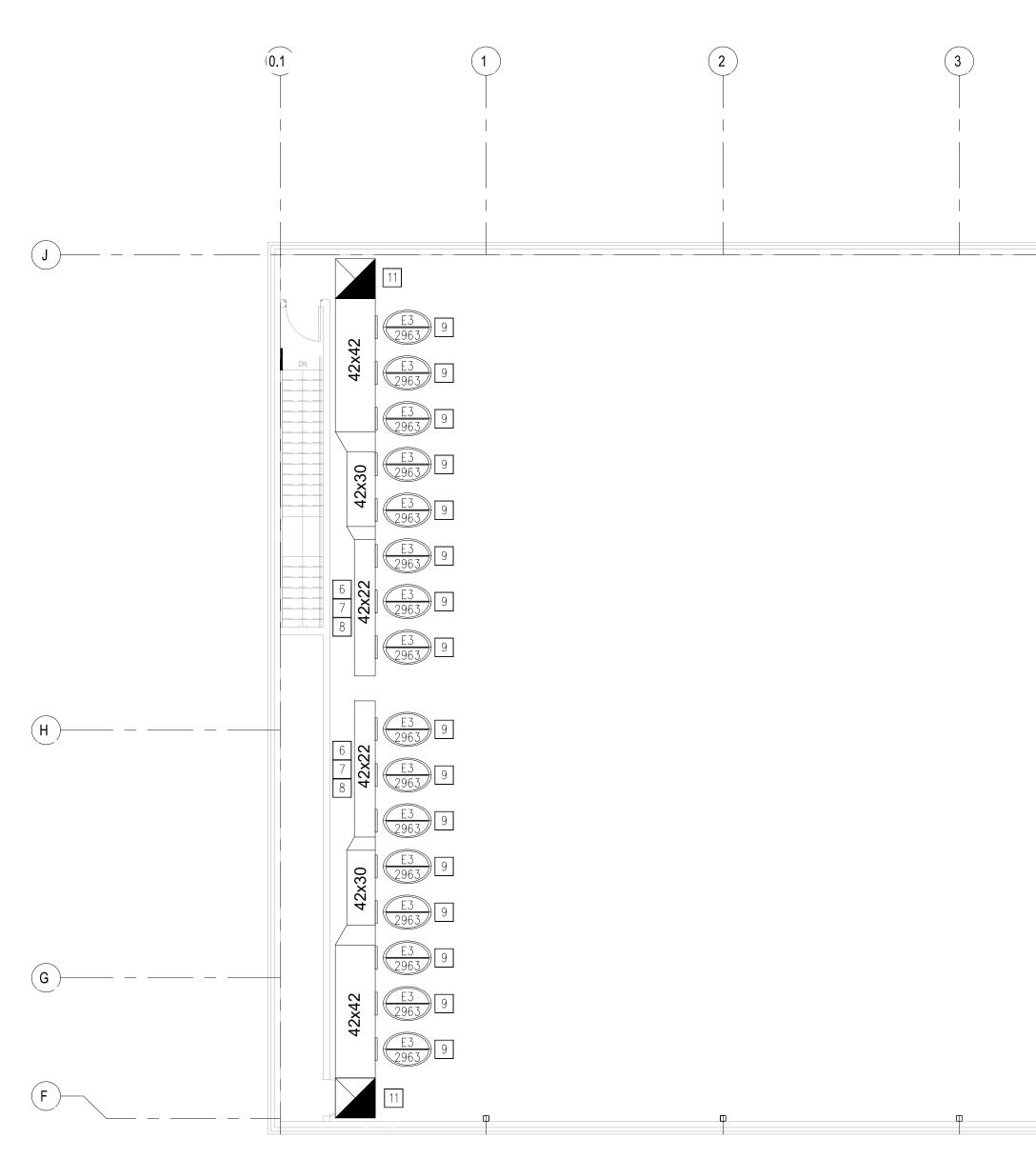


SCALED FOR ORIGINAL DRAWING AT 22" X 34

KEYED NOTES (SHEET ZM101.2)

- 1 BALLISTIC CEILING (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 2 BULLET TRAP (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 3 HIGH EFFICIENCY TAKEOFF (HET) SUPPLIED BY MECHANICAL CONTRACTOR (M.C.). (TYP). MANUAL VOLUME DAMPER SUPPLIED BY ACTION TARGET. (TYP)
- 4 RADIAL SUPPLY AIR (SA) DIFFUSER SUPPLIED BY ATI AND INSTALLED BY M.C. INSTALL RADIAL DIFFUSER UNIFORMLY, PLUMB AND LEVEL, AND SYMMETRICAL ACROSS WIDTH OF RANGE. RADIAL DIFFUSER FACE SHALL BE A MINIMUM OF 7'-0" A.F.F. SEE DETAILS AT.07.01 AND AT.08.04 WITHIN ZM60X SERIES SHEETS. DIFFUSER SHALL BE FIELD BALANCED TO SUPPLY CFM STATED ON PLANS.
- 5 T-BAR LAY-IN CEILING SHALL BE PROVIDED BY OWNER OR GENERAL CONTRACTOR. T-BAR CEILING SHALL BE INSTALLED BETWEEN TOP OF RADIAL DIFFUSER AND THE STEEL SAFETY CEILING. SEE DETAIL AT.08.04 WITHIN ZM60X SERIES SHEETS.
- 6 ALL SUPPLY/RETURN/EXHAUST AIR DUCTWORK INSTALLED ABOVE CEILINGS, OR HUNG HIGH WITHIN SPACE SHALL BE SUPPORTED FROM OVERHEAD STRUCTURE (TYP). OWNER SHALL BE RESPONSIBLE FOR STRUCTURAL INTEGRITY REQUIRED TO SUPPORT ALL DUCTWORK IN ACCORDANCE WITH CODE AND INDUSTRY STANDARDS.
- DUCTWORK HANGERS/SUPPORTS BY M.C. ALL SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE
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 DUCTWORK HANGERS/SUPPORTS BY M.C. ALL SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE SECTION OF DUCT PLUS 15% SAFETY FACTOR. M.C. SHALL BE RESPONSIBLE FOR SUPPORTS FINAL DESIGN
 AND LOCATION IN COORDINATION WITH FINAL DUCTWORK LAYOUT. ALL SUPPORTS SHALL BE FABRICATED OF RUST RESISTANT MATERIALS.
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 - •SUPPLY AIR (SA) DUCTWORK = 2.5"W.C. •RETURN AIR (RA) DUCTWORK = 2.5"W.C.
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- 9 PROVIDE CONTINUOUS 8" SLOT ON DUCT SIDE FOR AIR RETURN. SLOT NOT REQUIRED AT DUCT SECTION JOINTS. COVER WITH SCREEN. AIRFLOW IS APPROXIMATE.

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GENERAL NOTES (SHEET ZM101.2)

- PRIOR TO INSTALLATION (TYP.).
- PROVIDED BY ACTION TARGET.
- REQUIREMENTS.
- SQUARE/RECTANGULAR DUCTS.
- HAVE BEEN MADE TO ACCOMMODATE PASSAGE.
- SHALL BE THE RESPONSIBILITY OF THE M.C.

(4) (4.1 (5 (6.1 6 7 8 12 28x28 Ø18 CLAY THROWER 6 7 8 10 **D4** 6 7 8 10 **D4 CLAY THROWER** 8 28x28 12 HVAC PLAN XMI01.2 SCALE - 1/8" = 1'-0"

10 42"x42" SUPPLY AIR (SA) DUCT UP THROUGH DECK TO ROOF TO CURB. CURB CONNECTION SHALL MATCH SA DUCT SIZE (44"x44") FROM RANGE. SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS

11 42"x42" EXHAUST AIR (EA1) DUCT UP THROUGH DECK TO ROOF. EA1 DUCT SHALL CONNECT TO FB-1 (CORRESPONDING EF SUCTION). SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS FOR

12 26"x26" MIDRANGE EXHAUST AIR (EA2) DUCT UP THROUGH DECK TO ROOF. EA1 DUCT SHALL CONNECT TO FB-1 (CORRESPONDING EF SUCTION). SEE ASSOCIATED ELEVATION SECTION WITHIN ZM301 SERIES SHEETS

1. DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS

2. FRAMED WALL BETWEEN RANGE AND ADJACENT SPACES SHALL BE AIRTIGHT TO ENSURE PROPER AIR MOVEMENT OF RANGE VENTILATION SYSTEM.

3. PROVIDE ANGLE IRON DUCT TRAPEZE WHERE INDICATED ON PLANS. TRAPEZE

4. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION

5. TURNING VANES SHALL BE USED ON ALL 90, 45, AND 22.5 DEGREE CHANGE IN DIRECTION FITTINGS FOR ALL SUPPLY, RETURN, AND EXHAUST AIR

6. MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCTWORK FLOOR PENETRATIONS WITH STRUCTURAL ENGINEER TO ENSURE THE PROPER STRUCTURAL MODIFICATIONS

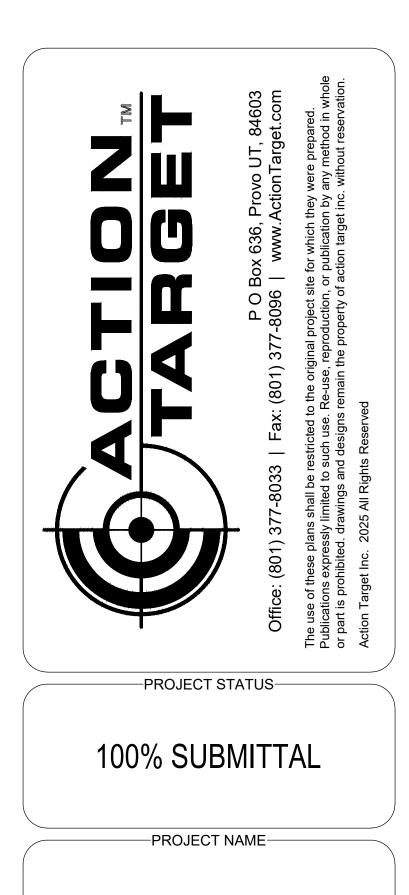
7. M.C. SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL SEEN AND UNSEEN ARCHITECTURAL AND STRUCTURAL BUILDING FEATURES. FINAL DUCTWORK ROUTING

8. M.C. SHALL BE RESPONSIBLE FOR PROVIDING SHOP DRAWINGS, INCLUDING DUCTWORK ROUTING, TO ATI FOR REVIEW PRIOR TO SYSTEM INSTALLATION.

—(J

-(H)

-(G)



FIREARMS OUTLET CANADA-DESIGN

Project Manager:	STEVE TIBBALS
Territory Manager:	WYATT DAVIS
Project Engineer:	ROB DECOSTA
Drawn By:	JA
Approved By:	JAMIE HADERLIE
Origination Date:	03/27/25

No	BY	REVISION	DATE
1	JA	UPDATE BACKGROUNDS	04/03/25
2	JA	ADJUST MAU/DUCTING	04/23/25
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-SHEET NAME-

RANGE 3 HVAC PLAN

-DRAWING NUMBER

13462

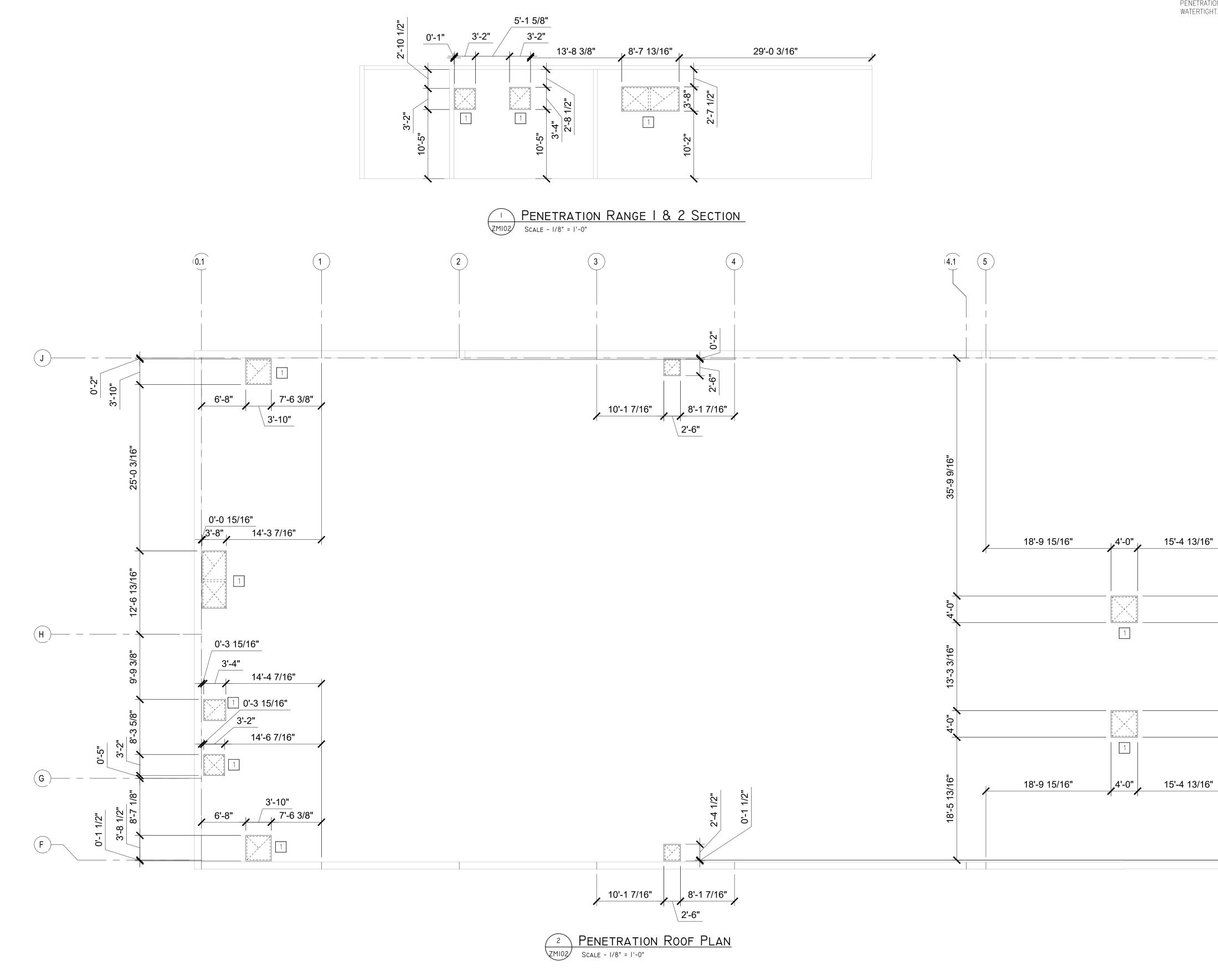
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ZM101.2

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KEYED NOTES (SHEET ZM102)

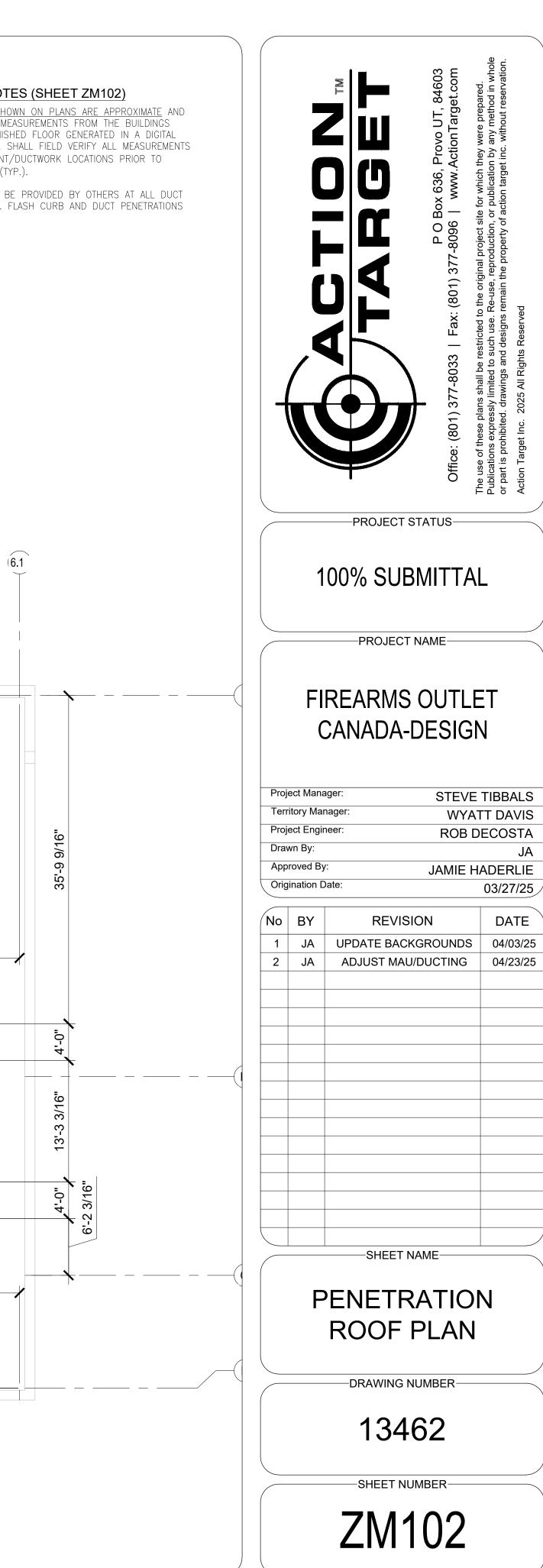
1 CONTRACTOR SHALL PROVIDE A MINIMUM OF 2" OF CLEARANCE ON ALL SIDES FROM THE DUCT TO THE PENETRATION OPENING.





1. <u>DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE</u> AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS PRIOR TO INSTALLATION (TYP.).

2. CURBS SHALL BE PROVIDED BY OTHERS AT ALL DUCT PENETRATIONS. FLASH CURB AND DUCT PENETRATIONS WATERTIGHT.



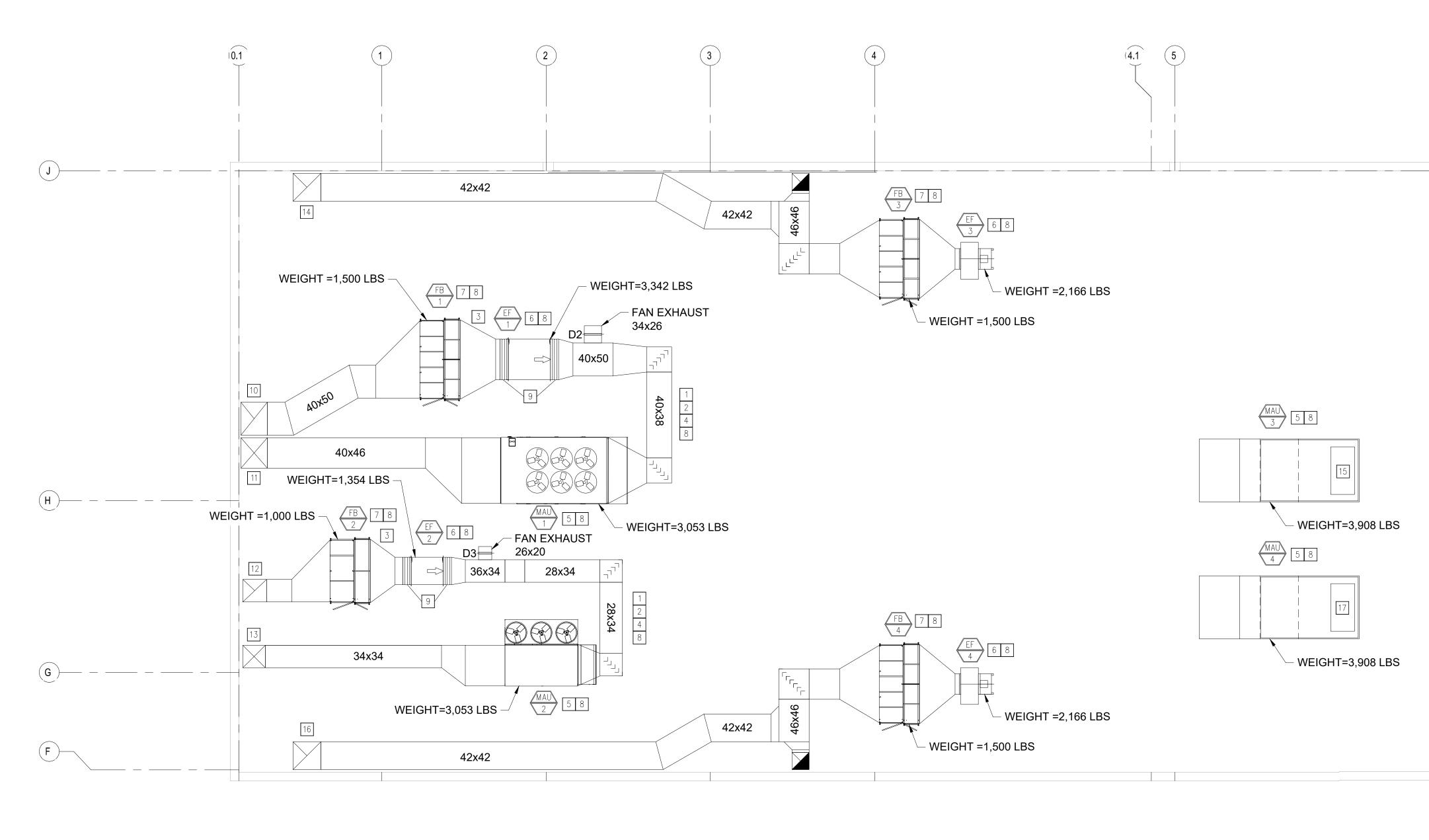
-SCALED FOR ORIGINAL DRAWING AT 22" X 34"

KEYED NOTES (SHEET ZM103)

- 1 ROOF APPLIED DUCTWORK SUPPORTS BY MECHANICAL CONTRACTOR (M.C.) ALL SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE SECTION OF DUCT PLUS 15% SAFETY FACTOR. M.C. SHALL BE RESPONSIBLE FOR SUPPORTS FINAL DESIGN AND LOCATION IN COORDINATION WITH FINAL DUCTWORK LAYOUT AND CODE. ALL SUPPORTS SHALL BE FABRICATED OF RUST RESISTANT MATERIALS.
- 2 ALL DUCTWORK (SA, RA, & EA) SHALL BE CROSS BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA 'HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE' LATEST EDITION FOR THE FOLLOWING STATED STATIC PRESSURE RATINGS: •SUPPLY AIR (SA) DUCTWORK = 2.5"W.C.

•RETURN AIR (RA) DUCTWORK = 2.5"W.C. •EXHAUST AIR (EA) DUCTWORK = 2.5"W.C. (SEE EXCEPTION BELOW)

- 3 EXHAUST AIR EXCEPTION*** THE SEGMENT OF EXHAUST DUCT, INCLUDING THE TRANSITION, BETWEEN THE FILTER BANK (FB) AND THE EXHAUST FAN (EF) SHALL BE DESIGNED TO HANDLE A STATIC PRESSURE OF -8"W.C.
- 4 ALL EXTERIOR DUCTWORK SHALL BE CONSTRUCTED TO PEAK ON TOP TO PREVENT STANDING WATER. DUCTWORK MAY BE SEALED WATER-TIGHT, INSULATED WITH A CODE MINIMUM R-8 INSULATION, AND JACKETED OR WRAPPED WITH A UV PROTECTIVE COATING.
- 5 INSTALL MAKE UP AIR UNIT (MAU) ON ROOF IN THIS LOCATION. SEE SCHEDULES WITHIN ZM60X SERIES SHEETS FOR EQUIPMENT SPECIFICATIONS.THE CURB TO BE PROVIDED BY ATI, TO BE INSTALLED BY M.C.. ROOF CURB SHALL BE SECURELY ANCHORED AND BRACED TO ROOF DECK IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION, AND SHALL MEET ALL SEISMIC REQUIREMENTS WHERE APPLICABLE.
- 6 INSTALL EXHAUST FAN (EF) ON EQUIPMENT RAILS ON ROOF IN THIS LOCATION. SEE SCHEDULES WITHIN ZM60X SERIES SHEETS FOR EQUIPMENT SPECIFICATIONS. M.C. SHALL PROVIDE A MINIMUM OF TWO (2) RAILS BELOW EXHAUST FAN (EF). ROOF APPLIED EQUIPMENT RAILS SHALL BE INSTALLED IN COORDINATION WITH THE EXHAUST FAN APPLIED EQUIPMENT SUPPORTS FROM MANUFACTURER.
- 7 INSTALL 2-STAGE FILTER BANK (FB) ON EQUIPMENT RAILS ON ROOF IN THIS LOCATION. SEE SCHEDULES WITHIN ZM60X SERIES SHEETS FOR EQUIPMENT SPECIFICATIONS. M.C. SHALL PROVIDE A MINIMUM OF THREE (3) RAILS BELOW FILTER BANK (FB). SUPPORTS SHALL BE INSTALLED IN PARALLEL TO SHORT SIDE DIMENSION (I.E. SAME DIRECTION AS AIRFLOW). RAILS SHALL BE PLACED ON THE EDGES AND IN THE MIDDLE OF THE FILTER BANK.
- 8 EQUIPMENT RAILS/SUPPORTS BY M.C. ALL RAILS/SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE EQUIPMENT PLUS 15% SAFETY FACTOR. M.C. SHALL BE RESPONSIBLE FOR RAILS/SUPPORTS FINAL DESIGN AND LOCATION IN COORDINATION WITH FINAL EQUIPMENT LOCATION AND CODE. ALL RAILS/SUPPORTS SHALL BE FABRICATED OF RUST RESISTANT MATERIALS.



9 M.C. SHALL PROVIDE FLEXIBLE FABRIC DUCT CONNECTOR INSTALLED BETWEEN DUCT AND MECHANICAL EQUIPMENT. (TYP). 10 40"x50" EXHAUST AIR (EA1) DUCT UP THROUGH DECK FROM BELOW. EA DUCT SHALL CONNECT TO FB-1 (CORRESPONDING EF SUCTION). SEE CONTINUATION ON SHEET ZM101.

11 40"x46" SUPPLY AIR (SA1) DUCT DOWN TO RANGE FROM CURB. OPENING IN CURB SHALL MATCH DUCT SIZE AND LOCATION. SEE CONTINUATION ON SHEET ZM101.

12 36"x34" EXHAUST AIR (EA2) DUCT UP THROUGH DECK FROM BELOW. EA DUCT SHALL CONNECT TO FB-2 (CORRESPONDING EF SUCTION). SEE CONTINUATION ON SHEET ZM101.

13 34"x34" SUPPLY AIR (SA2) DUCT DOWN TO RANGE FROM CURB. OPENING IN CURB SHALL MATCH DUCT SIZE AND LOCATION. SEE CONTINUATION ON SHEET ZM101.

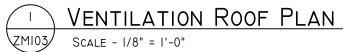
14 42"x42" EXHAUST AIR (EA3) DUCT UP THROUGH DECK FROM BELOW. EA DUCT SHALL CONNECT TO FB-3 (CORRESPONDING EF SUCTION). SEE CONTINUATION ON SHEET ZM101.

15 44"x44" SUPPLY AIR (SA3) DUCT DOWN TO RANGE FROM CURB. OPENING IN CURB SHALL MATCH DUCT SIZE AND LOCATION. SEE CONTINUATION ON SHEET ZM101. 16 42"x42" EXHAUST AIR (EA4) DUCT UP THROUGH DECK FROM BELOW. EA DUCT SHALL CONNECT TO FB-4 (CORRESPONDING EF SUCTION). SEE

CONTINUATION ON SHEET ZM101. 17 44"x44" SUPPLY AIR (SA4) DUCT DOWN TO RANGE FROM CURB. OPENING IN CURB SHALL MATCH DUCT SIZE AND LOCATION. SEE CONTINUATION ON SHEET ZM101.

GENERAL NOTES (SHEET ZM103)

- LOCATIONS PRIOR TO INSTALLATION (TYP.).
- REQUIREMENTS.
- SQUARE/RECTANGULAR DUCTS.
- MODIFICATIONS HAVE BEEN MADE TO ACCOMMODATE PASSAGE.
- WATERTIGHT.
- PENETRATION SIZES AND EQUIPMENT LOCATIONS.
- SHALL BE THE RESPONSIBILITY OF THE M.C.



1. DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK

2. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION

3. TURNING VANES SHALL BE USED ON ALL 90, 45, AND 22.5 DEGREE CHANGE IN DIRECTION FITTINGS FOR ALL SUPPLY, RETURN, AND EXHAUST AIR

4. MECHANICAL CONTRACTOR (M.C.) SHALL COORDINATE ALL DUCTWORK FLOOR PENETRATIONS WITH STRUCTURAL ENGINEER TO ENSURE THE PROPER STRUCTURAL

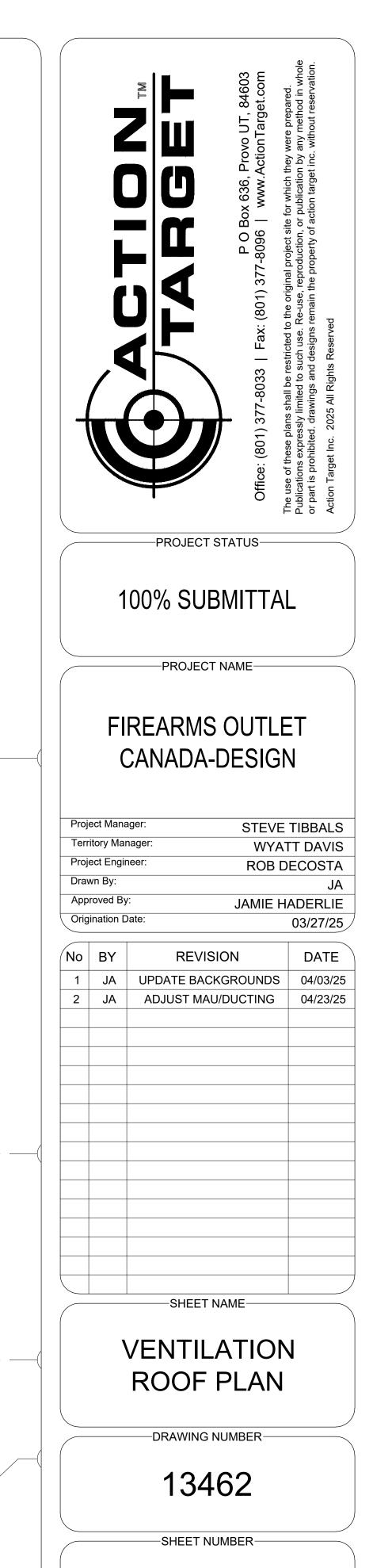
5. ROOF CURBS SHALL BE PROVIDED BY ATI. FLASH CURB AND DUCT PENETRATIONS

6. M.C. SHALL REFER TO ZM102 SERIES SHEETS FOR DIMENSIONS OF ROOF

7. M.C. SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL SEE AND UNSEEN ARCHITECTURAL AND STRUCTURAL BUILDING FEATURES. FINAL DUCTWORK ROUTING

8. M.C. SHALL BE RESPONSIBLE FOR PROVIDING SHOP DRAWINGS, INCLUDING DUCTWORK ROUTING, TO ATI FOR REVIEW PRIOR TO SYSTEM INSTALLATION.

(6.1)

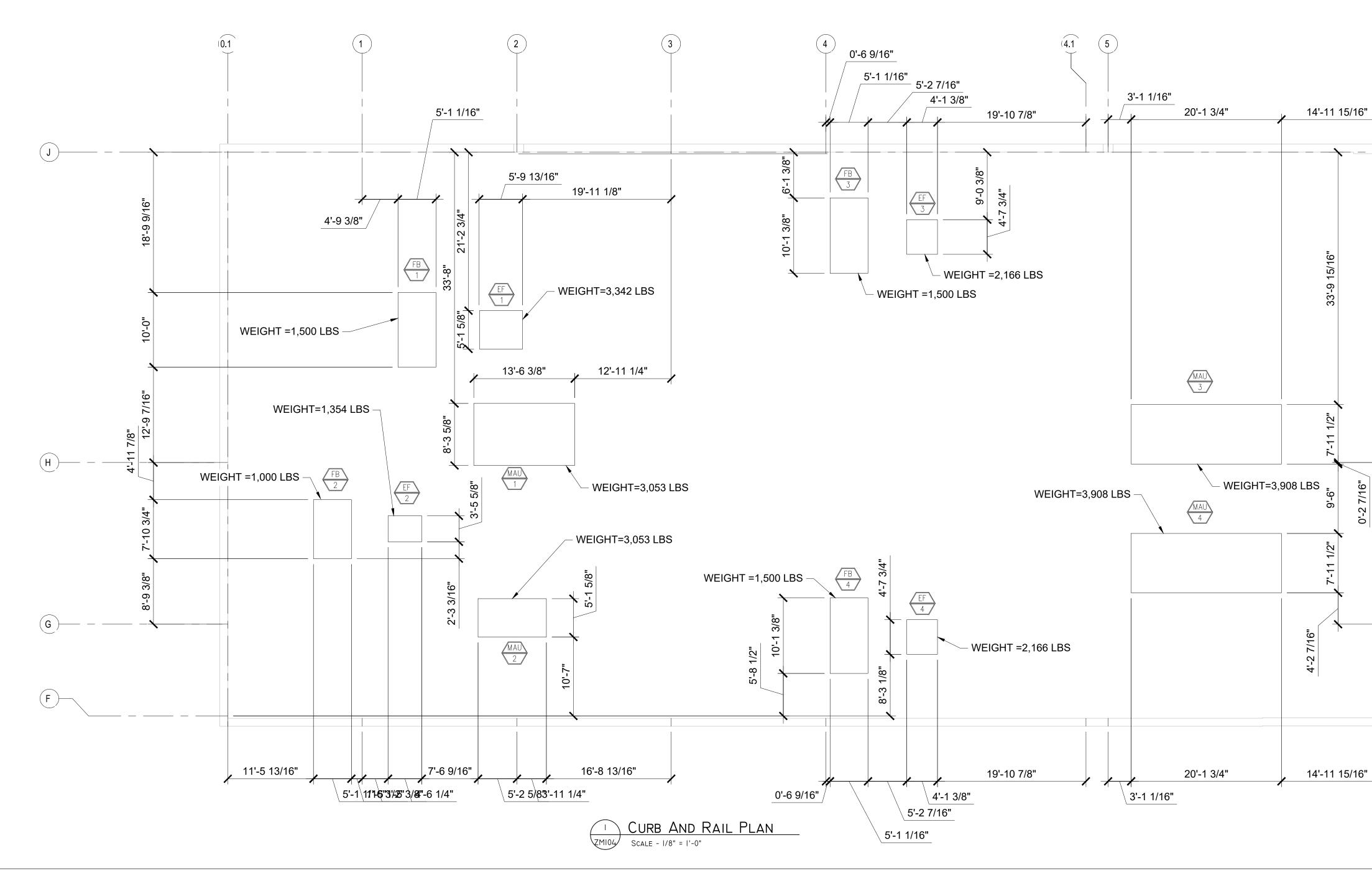


ZM103

SCALED FOR ORIGINAL DRAWING AT 22" X 34

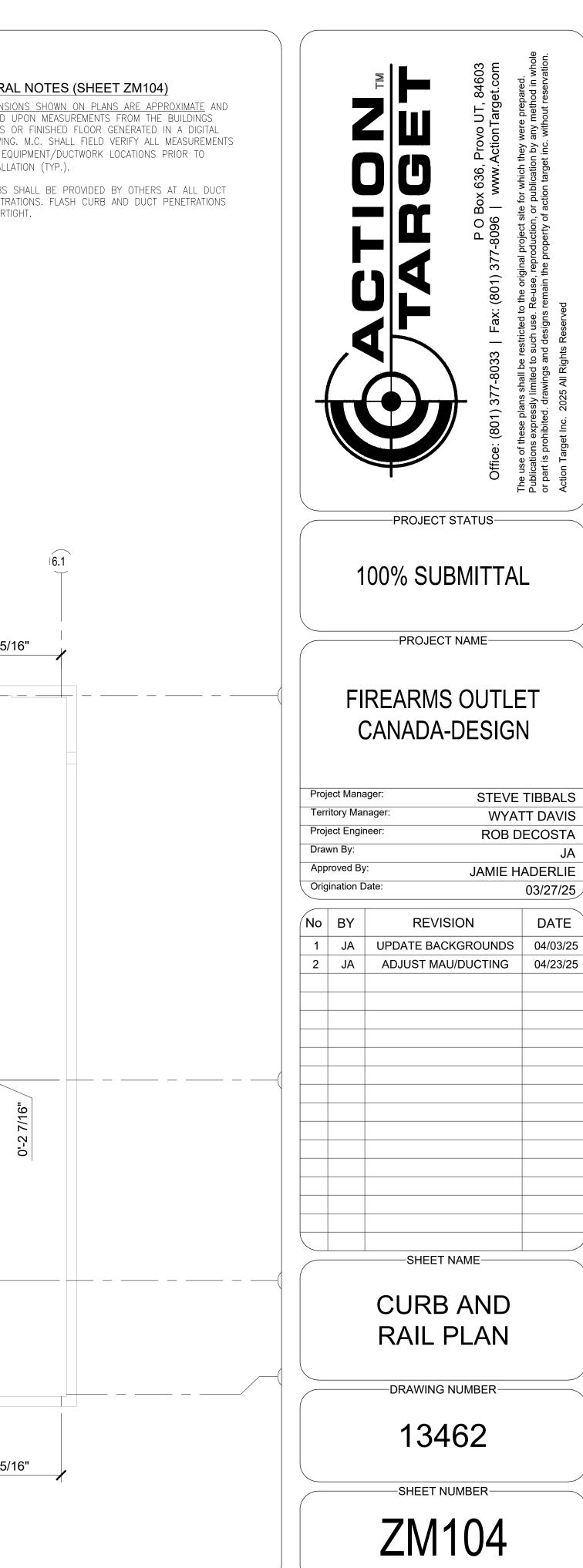
KEYED NOTES (SHEET ZM104)

1 CONTRACTOR SHALL PROVIDE A MINIMUM OF 2" OF CLEARANCE ON ALL SIDES FROM THE DUCT TO THE PENETRATION OPENING.





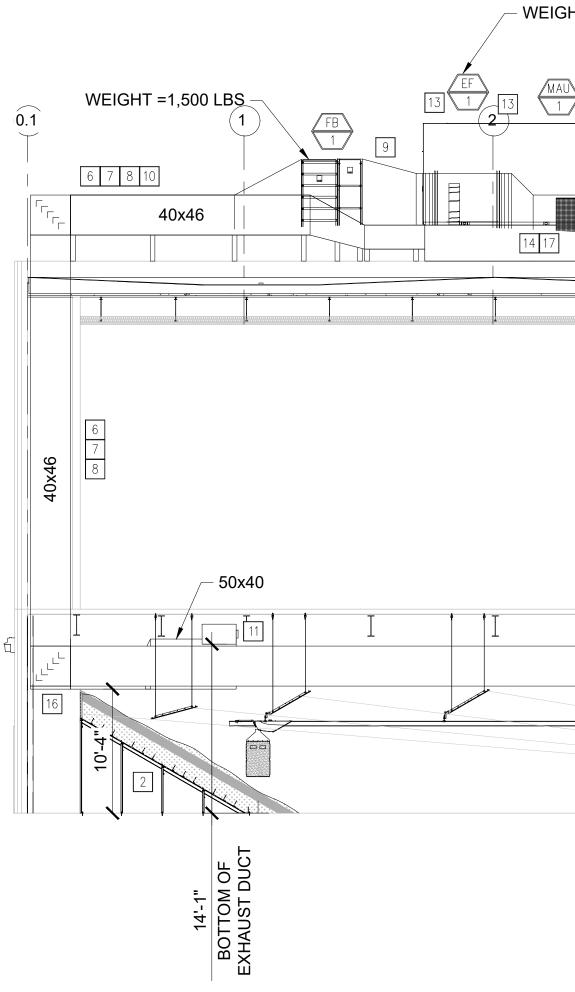
- 1. <u>DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE</u> AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS PRIOR TO INSTALLATION (TYP.).
- 2. CURBS SHALL BE PROVIDED BY OTHERS AT ALL DUCT PENETRATIONS. FLASH CURB AND DUCT PENETRATIONS WATERTIGHT.



-SCALED FOR ORIGINAL DRAWING AT 22" X 34

KEYED NOTES (SHEET ZM301.1)

- 1 BALLISTIC CEILING (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 2 BULLET TRAP (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
- 3 HIGH EFFICIENCY TAKEOFF (HET) SUPPLIED BY MECHANICAL CONTRACTOR (M.C.). (TYP). MANUAL VOLUME DAMPER SUPPLIED BY ACTION TARGET. (TYP)
- 4 RADIAL SUPPLY AIR (SA) DIFFUSER SUPPLIED BY ATI AND INSTALLED BY M.C. INSTALL RADIAL DIFFUSER UNIFORMLY, PLUMB AND LEVEL, AND SYMMETRICAL ACROSS WIDTH OF RANGE. RADIAL DIFFUSER FACE SHALL BE A MINIMUM OF 7'-0" A.F.F. SEE DETAILS AT.07.01 AND AT.08.04 WITHIN ZM60X SERIES SHEETS. DIFFUSER SHALL BE FIELD BALANCED TO SUPPLY CFM STATED ON PLANS.
- 5 T-BAR LAY-IN CEILING SHALL BE PROVIDED BY OWNER OR GENERAL CONTRACTOR. T-BAR CEILING SHALL BE INSTALLED BETWEEN TOP OF RADIAL DIFFUSER AND THE STEEL SAFETY CEILING. SEE DETAIL AT.08.04 WITHIN ZM60X SERIES SHEETS.
- 6 ALL SUPPLY/RETURN/EXHAUST AIR DUCTWORK INSTALLED ABOVE CEILINGS, OR HUNG HIGH WITHIN SPACE SHALL BE SUPPORTED FROM OVERHEAD 15 40"x46" SUPPLY AIR (SA) DUCT DOWN THROUGH DECK TO RANGE. M.C. SHALL TRANSITION SA DUCT FROM 40"x26" TO MATCH SA DUCT CODE AND INDUSTRY STANDARDS.
- DUCTWORK HANGERS/SUPPORTS BY M.C. ALL SUPPORTS SHALL BE ABLE TO CARRY THE WEIGHT OF THE SECTION OF DUCT PLUS 15% SAFETY FACTOR. M.C. SHALL BE RESPONSIBLE FOR SUPPORTS FINAL DESIGN AND LOCATION IN COORDINATION WITH FINAL DUCTWORK LAYOUT. ALL SUPPORTS SHALL BE FABRICATED OF RUST RESISTANT MATERIALS.
- 8 ALL DUCTWORK (SA, RA, & EA) SHALL BE CROSS BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA 'HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE' LATEST EDITION FOR THE FOLLOWING STATED STATIC PRESSURE RATINGS: •SUPPLY AIR (SA) DUCTWORK = 2.5"W.C. •RETURN AIR (RA) DUCTWORK = 2.5"W.C.
 - •EXHAUST AIR (EA) DUCTWORK = 2.5"W.C. (SEE EXCEPTION BELOW)
- 9 EXHAUST AIR EXCEPTION*** THE SEGMENT OF EXHAUST DUCT, INCLUDING THE TRANSITION, BETWEEN THE FILTER BANK (FB) AND THE EXHAUST FAN (EF) SHALL BE DESIGNED TO HANDLE A STATIC PRESSURE OF -8"W.C. T-GRID CEILING SHALL REMAIN FREE OF ALL OBSTRUCTIONS BETWEEN DIFFUSER AND SHOOTING LINE INCLUDING BUT NOT LIMITED TO LIGHTS, SIGNAGE ETC.



10 ALL EXTERIOR DUCTWORK SHALL BE CONSTRUCTED TO PEAK ON TOP TO PREVENT STANDING WATER. DUCTWORK MAY BE SEALED WATER-TIGHT, INSULATED WITH A CODE MINIMUM R-8 INSULATION, AND JACKETED OR WRAPPED WITH A UV PROTECTIVE COATING. 11 PROVIDE CONTINUOUS 8" SLOT ON DUCT SIDE FOR AIR RETURN. SLOT NOT REQUIRED AT DUCT SECTION JOINTS. COVER WITH SCREEN. AIRFLOW

12 CO SENSOR PROVIDED BY ATI. SENSOR INSTALLED A MAX OF 48-72" A.F.F. ON RANGE SIDEWALL, AND WITHIN 18" OF BACK EDGE OF SHOOTING

13 M.C. SHALL PROVIDE FLEXIBLE DUCTWORK FITTING AT CONNECTION OF DUCT TO EQUIPMENT (TYP.)

14 CURB PROVIDED BY ATI, TO BE INSTALLED BY MC. CURB SHALL BE BUILT IN COORDINATION WITH SCHEDULED MAU DIMENSIONS. ROOF CURB SHALL BE SECURELY ANCHORED AND BRACED TO ROOF DECK IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION, AND SHALL MEET ALL SEISMIC REQUIREMENTS WHERE APPLICABLE.

CONNECTION AT MAU-1.

16 40"x50" EXHAUST AIR (EA) DUCT DOWN THROUGH DECK TO RANGE. EA DUCT SHALL CONNECT TO FB-1 (EF-1 SUCTION). SEE ASSOCIATED ELEVATION SECTION WITHIN ZM30X SERIES SHEETS FOR CLARIFICATION.

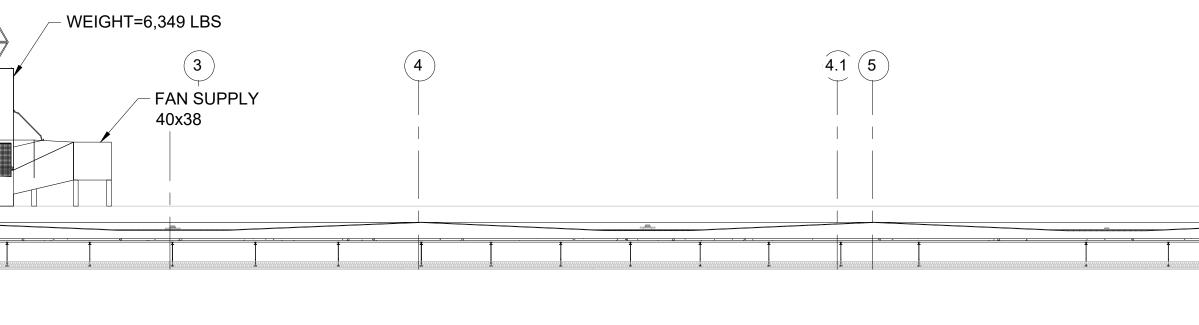
17 PROVIDE SLOPED CURB AT MAU-1 TO MATCH ROOF PITCH. CONTRACTOR SHALL FIELD VERIFY FINAL ROOF PITCH BEFORE INSTALLATION.

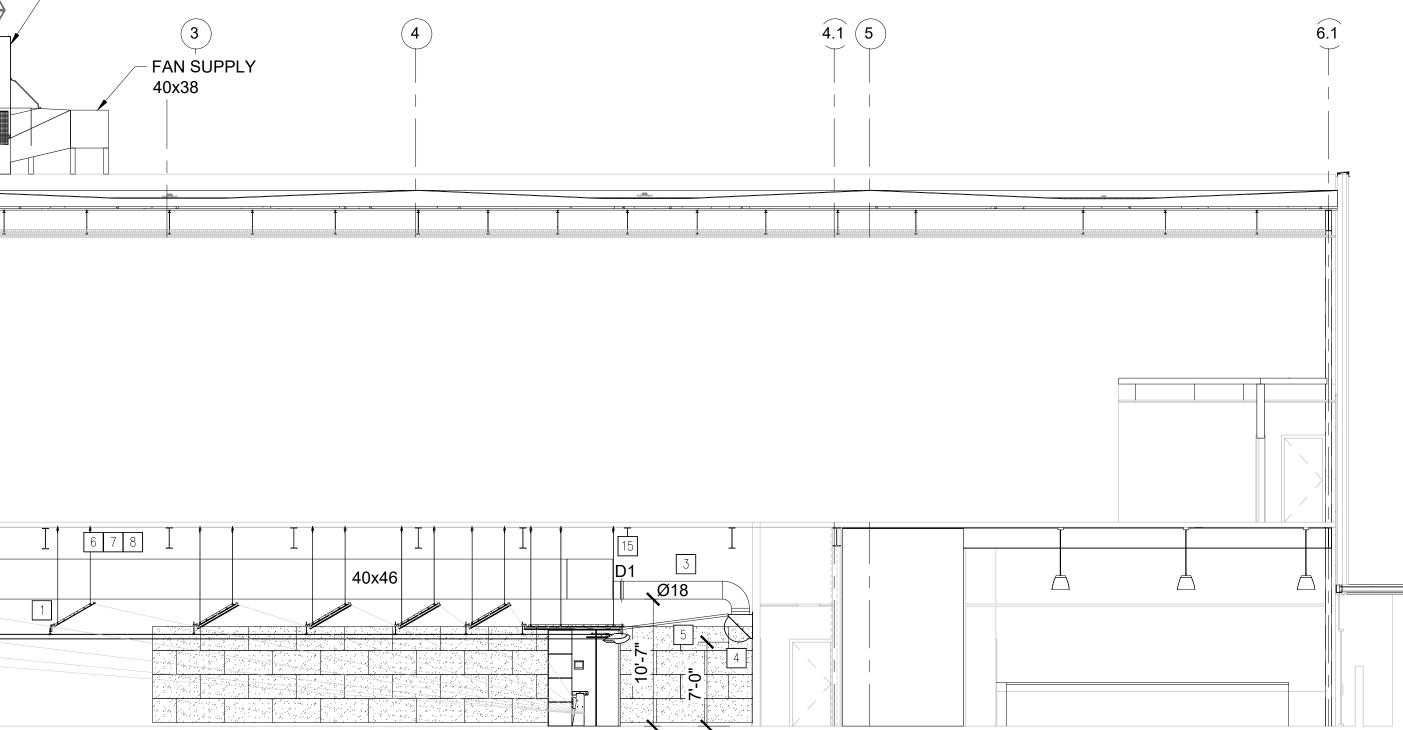
- GENERAL NOTES (SHEET ZM301.1)
- 1. DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS PRIOR TO INSTALLATION (TYP.).
- 2. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION REQUIREMENTS.
- 3. TURNING VANES SHALL BE USED ON ALL 90, 45, AND 22.5 DEGREE CHANGE IN DIRECTION FITTINGS FOR ALL SUPPLY, RETURN, AND EXHAUST AIR SQUARE/RECTANGULAR DUCTS.
- 4. MECHANICAL CONTRACTOR (M.C.) SHALL COORDINATE ALL DUCTWORK FLOOR PENETRATIONS WITH STRUCTURAL ENGINEER TO ENSURE THE PROPER STRUCTURAL MODIFICATIONS HAVE BEEN MADE TO ACCOMMODATE PASSAGE.
- 5. ROOF CURB SHALL BE PROVIDED BY ATI. FLASH CURB AND DUCT PENETRATIONS WATERTIGHT.
- 6. M.C. SHALL REFER TO ZM102 SERIES SHEETS FOR DIMENSIONS OF ROOF PENETRATION SIZES AND EQUIPMENT LOCATIONS.
- 7. M.C. SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL SEEN AND UNSEEN ARCHITECTURAL AND STRUCTURAL BUILDING FEATURES. FINAL DUCTWORK ROUTING SHALL BE THE RESPONSIBILITY OF THE M.C.
- 8. M.C. SHALL BE RESPONSIBLE FOR PROVIDING SHOP DRAWINGS, INCLUDING DUCTWORK ROUTING, TO ATI FOR REVIEW PRIOR TO SYSTEM INSTALLATION.

WEIGHT=3,342 LBS

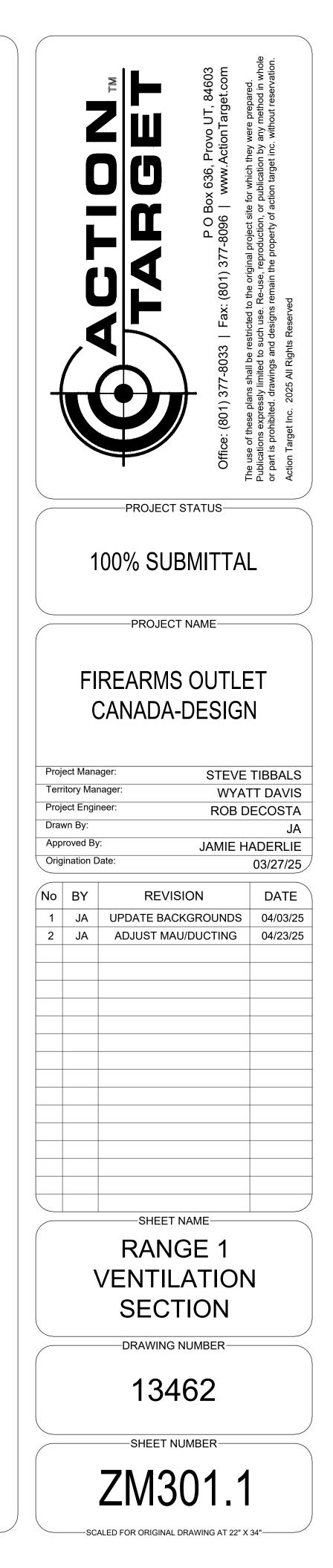
IS APPROXIMATE.

STALL.



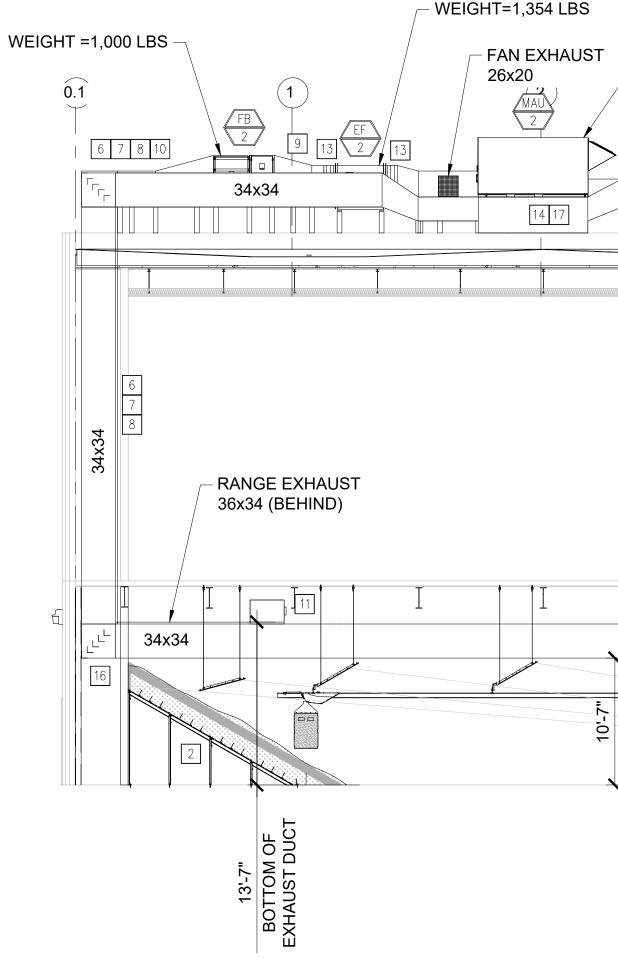


VENTILATION SECTION SCALE - 1/8" = 1'-0" ZM301,/



KEYED NOTES (SHEET ZM301.2)

- 1 BALLISTIC CEILING (TYP.). SEE ATI RANGE DRAWINGS FOR DETAILS.
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- 3 HIGH EFFICIENCY TAKEOFF (HET) SUPPLIED BY MECHANICAL CONTRACTOR (M.C.). (TYP). MANUAL VOLUME DAMPER SUPPLIED BY ACTION TARGET. (TYP)
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11 PROVIDE CONTINUOUS 8" SLOT ON DUCT SIDE FOR AIR RETURN. SLOT NOT REQUIRED AT DUCT SECTION JOINTS. COVER WITH SCREEN. AIRFLOW IS APPROXIMATE.

12 CO SENSOR PROVIDED BY ATI. SENSOR INSTALLED A MAX OF 48-72" A.F.F. ON RANGE SIDEWALL, AND WITHIN 18" OF BACK EDGE OF SHOOTING

13 M.C. SHALL PROVIDE FLEXIBLE DUCTWORK FITTING AT CONNECTION OF DUCT TO EQUIPMENT (TYP.)

STALL.

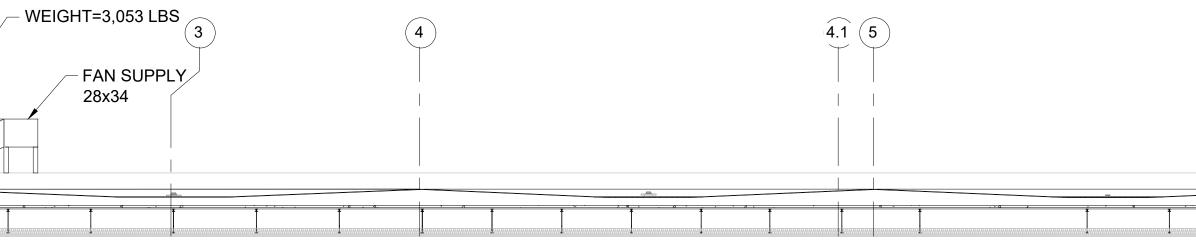
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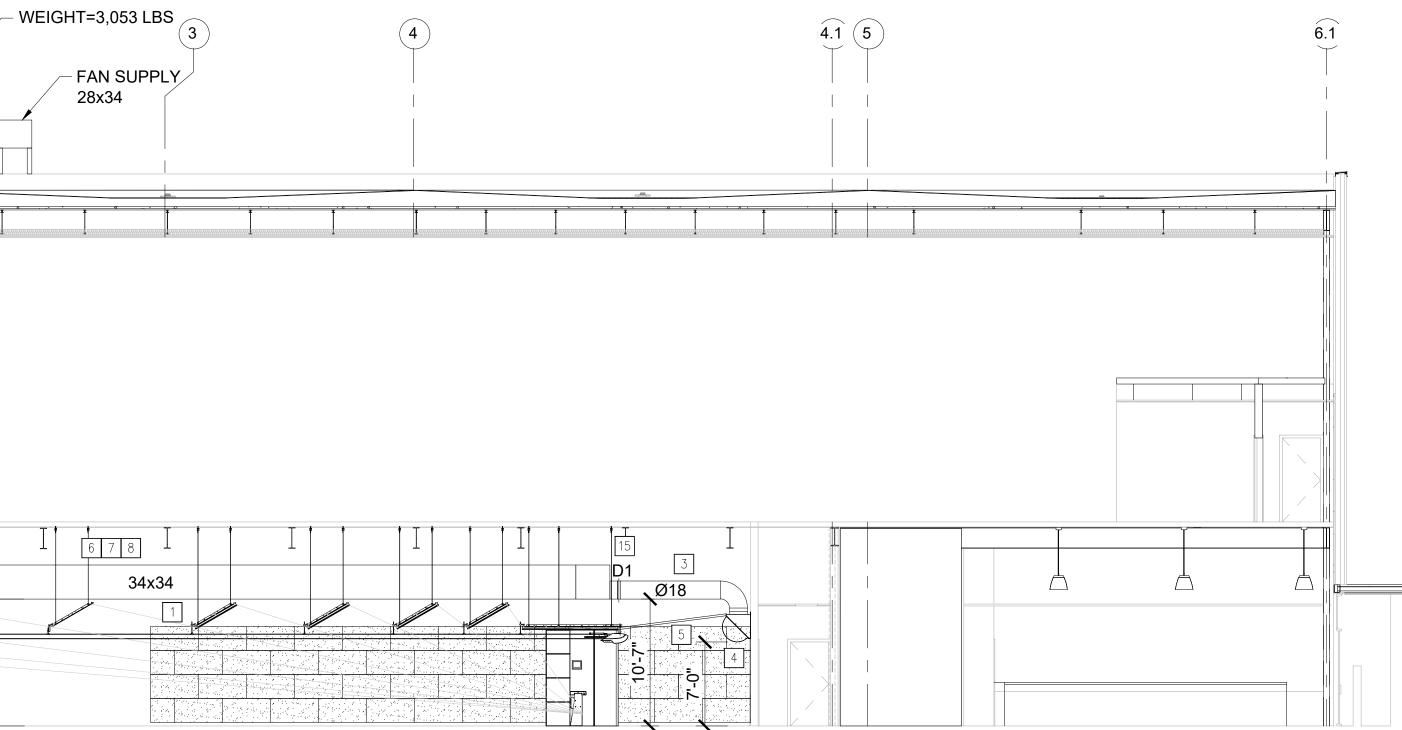
CONNECTION AT MAU-2.

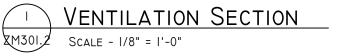
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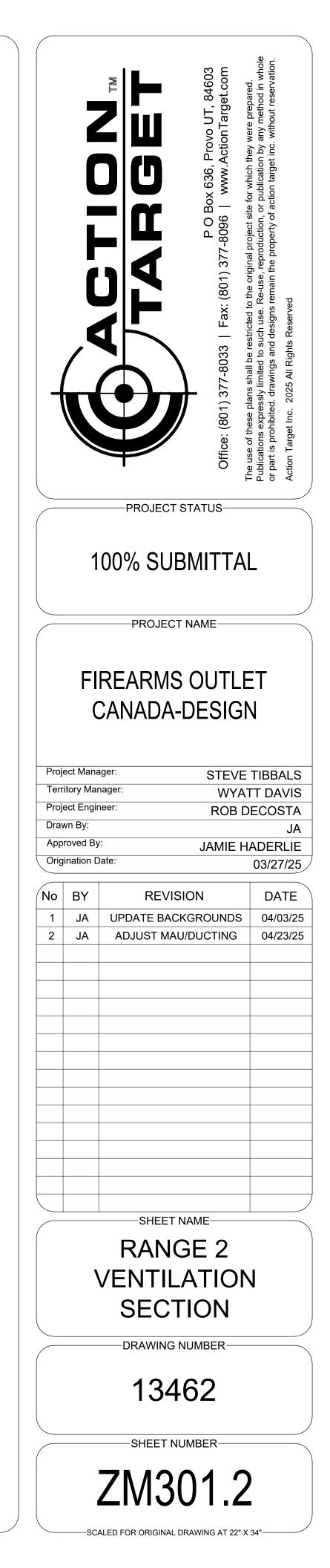
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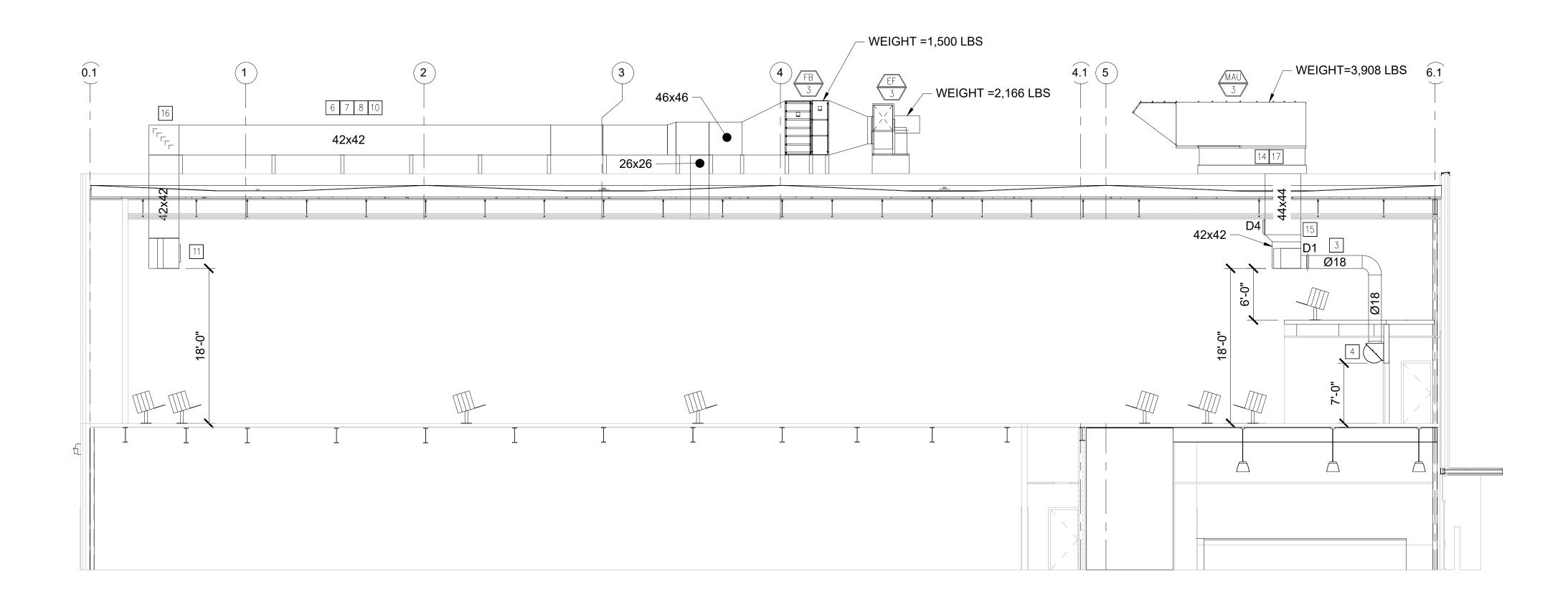


2. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION REQUIREMENTS.



KEYED NOTES (SHEET ZM301.3)

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- IS APPROXIMATE. STALL.

- CONNECTION AT MAU-3.

10 ALL EXTERIOR DUCTWORK SHALL BE CONSTRUCTED TO PEAK ON TOP TO PREVENT STANDING WATER. DUCTWORK MAY BE SEALED WATER-TIGHT, INSULATED WITH A CODE MINIMUM R-8 INSULATION, AND JACKETED OR WRAPPED WITH A UV PROTECTIVE COATING.

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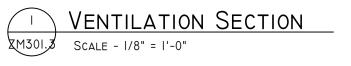
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17 PROVIDE SLOPED CURB AT MAU-3 TO MATCH ROOF PITCH. CONTRACTOR SHALL FIELD VERIFY FINAL ROOF PITCH BEFORE INSTALLATION.

- **GENERAL NOTES (SHEET ZM301.3)**
- I. DIMENSIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED UPON MEASUREMENTS FROM THE BUILDINGS WALLS OR FINISHED FLOOR GENERATED IN A DIGITAL DRAWING. M.C. SHALL FIELD VERIFY ALL MEASUREMENTS AND EQUIPMENT/DUCTWORK LOCATIONS PRIOR TO INSTALLATION (TYP.).
- 2. REFER TO DETAILS WITH ZM60X SERIES SHEETS FOR DUCTWORK INSTALLATION REQUIREMENTS.
- 3. TURNING VANES SHALL BE USED ON ALL 90, 45, AND 22.5 DEGREE CHANGE IN DIRECTION FITTINGS FOR ALL SUPPLY, RETURN, AND EXHAUST AIR SQUARE/RECTANGULAR DUCTS.
- 4. MECHANICAL CONTRACTOR (M.C.) SHALL COORDINATE ALL DUCTWORK FLOOR PENETRATIONS WITH STRUCTURAL ENGINEER TO ENSURE THE PROPER STRUCTURAL MODIFICATIONS HAVE BEEN MADE TO ACCOMMODATE PASSAGE.
- LOCATIONS.
- BUILDING FEATURES. FINAL DUCTWORK ROUTING SHALL BE THE RESPONSIBILITY OF THE M.C.
- 8. M.C. SHALL BE RESPONSIBLE FOR PROVIDING SHOP DRAWINGS, INCLUDING DUCTWORK ROUTING, TO ATI FOR REVIEW PRIOR TO SYSTEM INSTALLATION.



5. ROOF CURB SHALL BE PROVIDED BY ATI. FLASH CURB AND DUCT PENETRATIONS WATERTIGHT.

6. M.C. SHALL REFER TO ZM102 SERIES SHEETS FOR DIMENSIONS OF ROOF PENETRATION SIZES AND EQUIPMENT

7. M.C. SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL SEEN AND UNSEEN ARCHITECTURAL AND STRUCTURAL

≳ ? 0 % -PROJECT STATUS-100% SUBMITTAL -PROJECT NAME-FIREARMS OUTLET CANADA-DESIGN Project Manager: STEVE TIBBALS Territory Manager WYATT DAVIS Project Engineer **ROB DECOSTA** Drawn By: Approved By: JAMIE HADERLIE Origination Date: 03/27/25 (No | BY REVISION DATE 1 JA UPDATE BACKGROUNDS 04/03/25 ADJUST MAU/DUCTING 04/23/25 2 JA -SHEET NAME-

JA

RANGE 3 VENTILATION SECTION

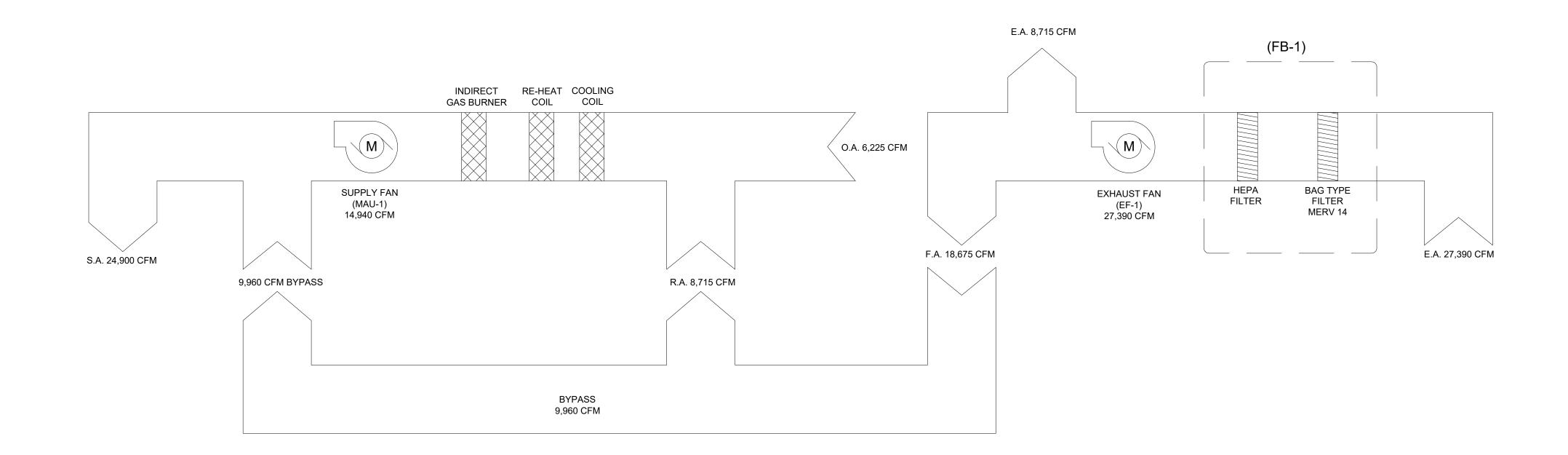
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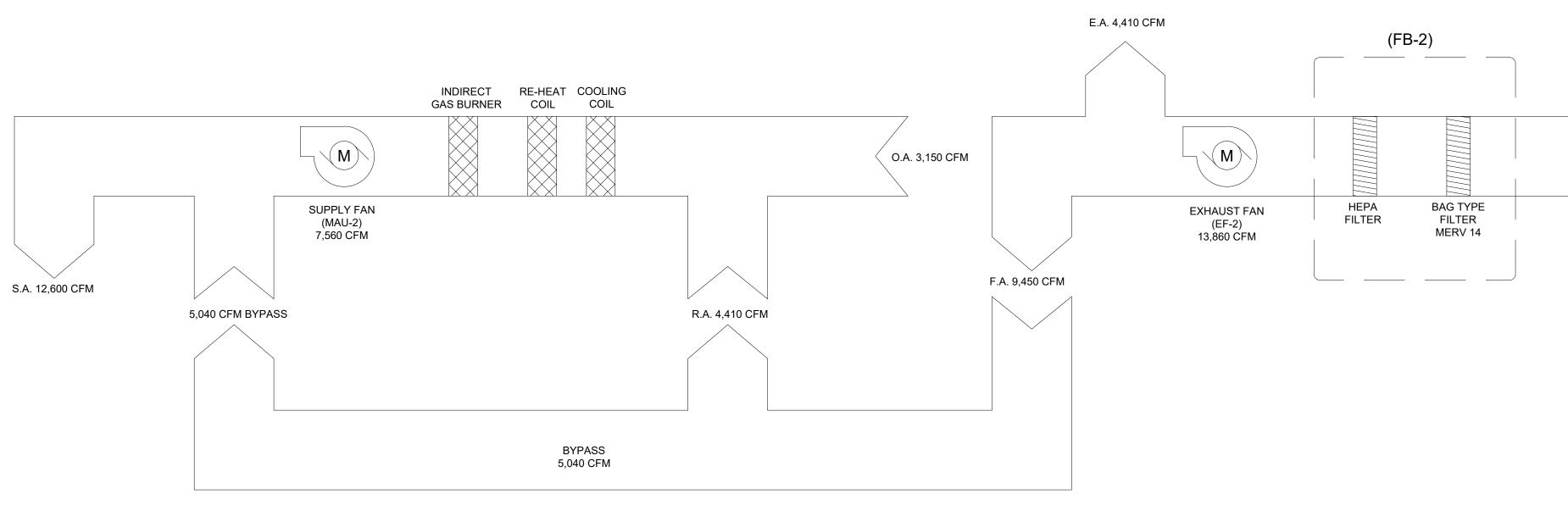
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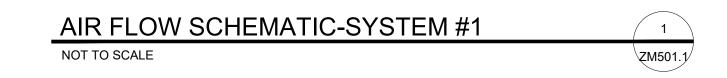
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ZM301.3

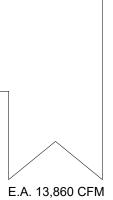
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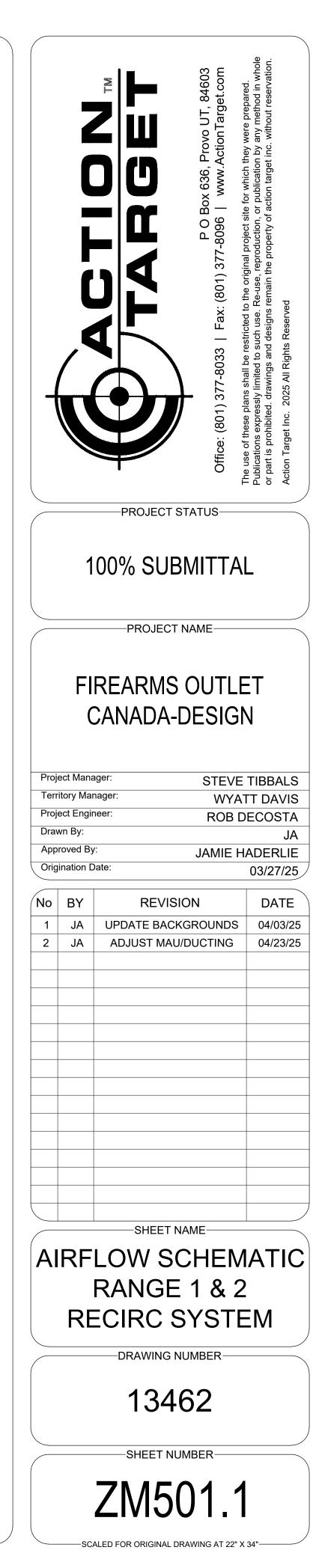




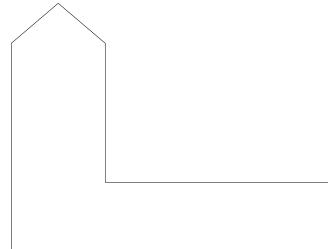


AIR FLOW SCHEMATIC-SYSTEM #2 2 NOT TO SCALE ZM501.1





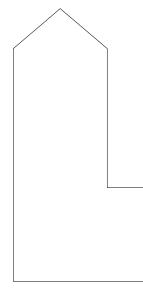
S.A. 27,000 CFM

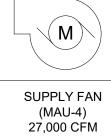


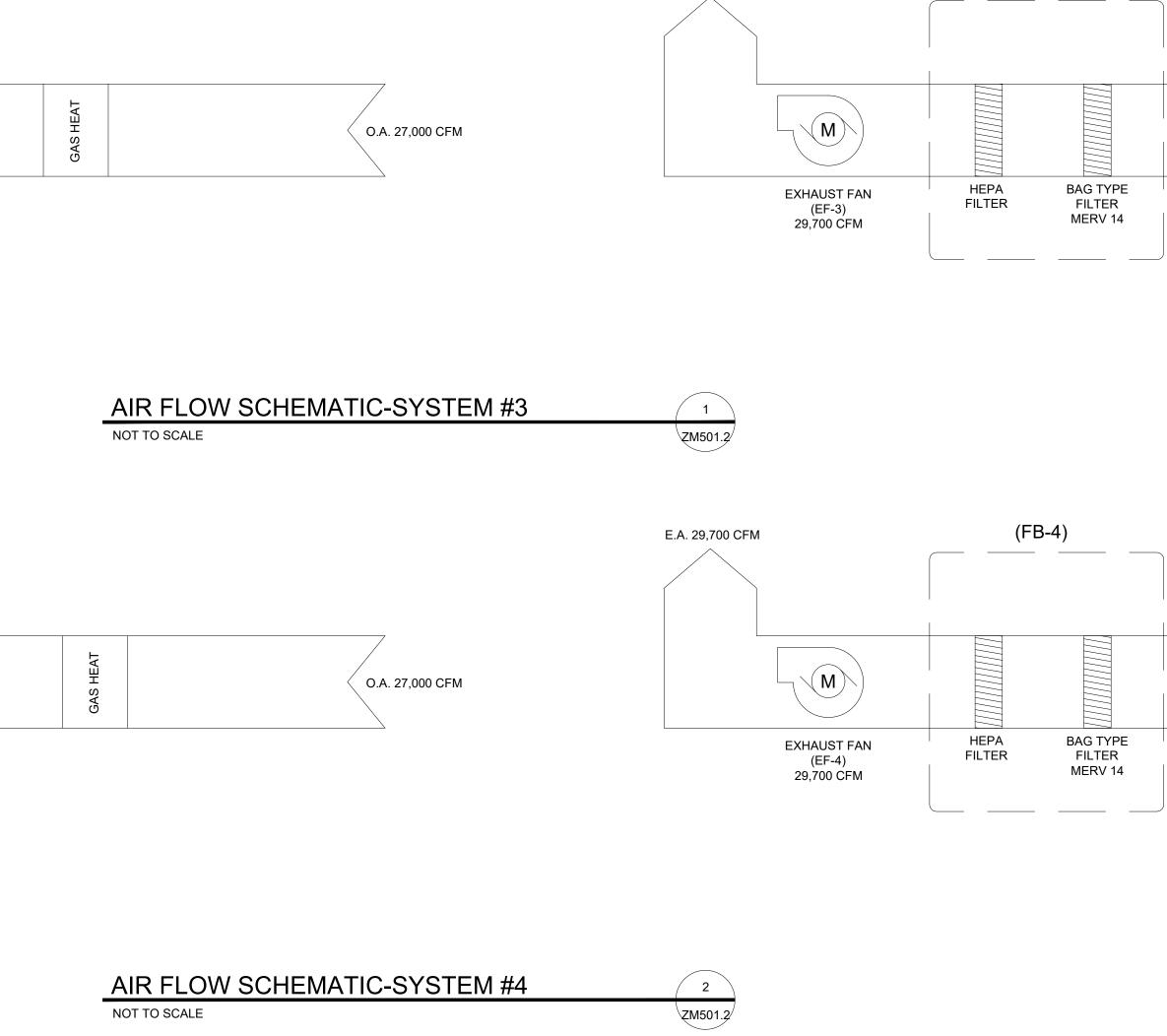


SUPPLY FAN (MAU-3) 27,000 CFM

S.A. 27,000 CFM

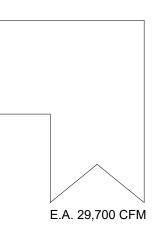




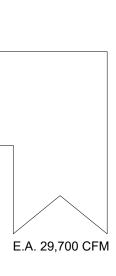


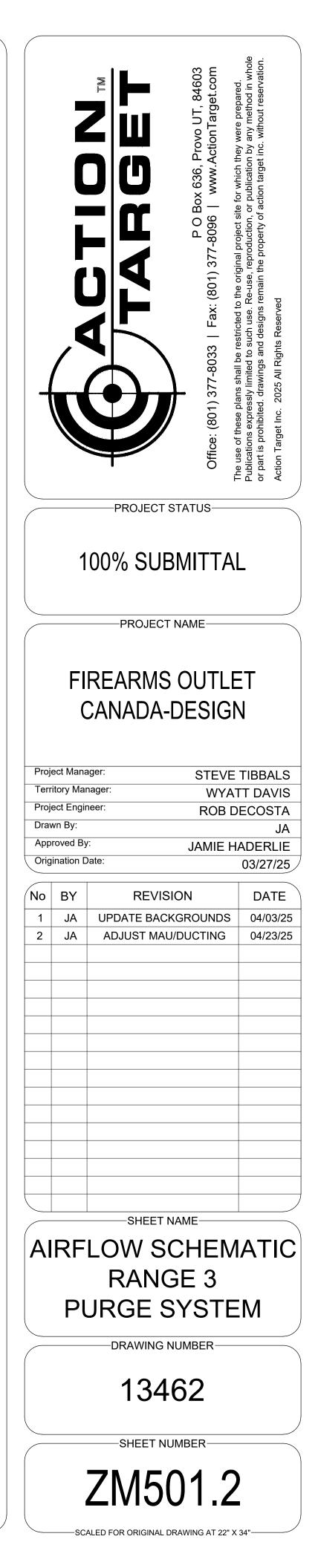
NOT TO SCALE

E.A. 29,700 CFM



(FB-3)





										PAC	KAG	ED M/	AKE-	UP AI	R UN	IIT RE	CIRC									
	-	_			l	JNIT		_	_			_		_	_	COOLING	3			НОТ	GAS REH	EAT		HEA	TING	
			MANUFACTURER	WEIGHT	E	LECTRIC	AL	EFFICIENCY		SUPPLY FAI	N	FILTERS	EAT	LAT		SENSIBLE		MPRE	SSOR	TOTAL	EAT	LAT			TOTAL	EDB LDB
ID	LOCATION	SERVICE	AND MODEL NUMBER	(LB)	VOLTAGE (V/HZ/PH)	MCA (A)	MROPD (A)	EER	AIRFLOW (CFM)	TSP (''W.C.)	MOTOR SIZE	EFFICIENCY	DB/WB (°F)	DB/WB (°F)	CAPACITY (MBH)	CAPACITY (MBH)		QTY	REFRIGERANT	CAPACITY (MBH)	OB/WB (°F)	DB/WB (°F)	TYPE	MODULATION	CAPACITY (MBH)	(°F) (°F)
MAU-1	ROOF	RANGE	AAON RNA-050-D-B-4	6,286	575/60/3	98	110	10.49	6,225	4.05	(2) 10	MERV 8	78.5/67.6	54.1/53.7	620	387	VARIABLE CAPACITY	4	R-454B	331	54.1/53.7	75.0/61.6	NATURA L GAS	15:1	900	39.8 85.0
MAU-2	ROOF	RANGE	AAON RNA-030-C-A-4	2,957	575/60/3	60	70	10.68	3,150	3.92	15	MERV 8	78.5/67.6	53.2/52.8	332	203	VARIABLE CAPACITY	2	R-454B	175	53.2/52.8	75.5/61.1	NATURA L GAS	18:1	540	39.8 93.4

GENERAL NOTES:

1. APPROVED RTU MANUFACTURERS ARE: AAON, OR ATI-APPROVED EQUIVALENT.

2. COOLING COIL CAPACITIES LISTED ARE AT SITE ALTITUDE.

3. SEE EQUIPMENT TECHNICAL DATA SHEET FOR ALL UNIT DIMENSIONS.

4. UNIT TO BE SUPPLIED WITH 24" CURB MATCHED TO THE MAU FOOTPRINT.

5. AAON NATIONAL ACCOUNT #100188

ACCESSORIES:

1. FACTORY-INSTALLED NON-FUSED ELECTRICAL DISCONNECT

2. GFCI CONVENIENCE OUTLET (NON-POWERED), SEPARATE CIRCUIT, WIRED BY E.C.

3. CURB SUPPLIED BY ATI. REFER TO GENERAL NOTES FOR MORE INFORMATION.

5. MOTORIZED OA DAMPER, DDC CONTROL 6. HIGH-STATIC PRESSURE SUPPLY FAN.

7. BACNET-IP INTERFACE

		DE	SIGN (CONDI	TIONS				
SPACE TYPE	WINTER	INDOOR	WINTER	OUTDOOR	SUMMER	INDOOR	SUMMER OUTDOOR		
SPACETTPE	DB (°F)	%RH	DB (°F)	WB (°F)	DB (°F)	%RH	DB (°F)	WB (°F)	
FIRING RANGE	70	-	3	-	70	50	79.3	74.4	

NOTES:

1. OUTDOOR DESIGN TEMPERATURES ARE FROM ASHRAE WEATHER DATA FOR TORONTO, ONTARIO, CA (99.6% HEATING, 0.4% COOLING DESIGN VALUES).

2. INDOOR DESIGN CONDITIONS ARE ASSUMED FOR EQUIPMENT SIZING PURPOSES.

		VARIA	BLE FF	REQL	JENCY		E SCHE	DULE			
	MANUFACTURER		MOTOF	R/ELECTRIC	AL DATA			PHYSCIAL			
ID	AND	UNIT SERVED	НР	AMPERE	V/Hz/PH	LENGTH	WIDTH	HEIGHT	ENCLOSURE	WEIGHT]
	MODEL NUMBER			RATING	v/n2/PH	(IN.)	(IN.)	(IN.)	TYPE	(LBS.)	
VFD-1	GALT G560-00520UL-03	EF-1	50	52	575/60/3	12.8	10.6	21.9	IP20	66.1	
VFD-2	GALT G560-00350UL-03	EF-2	30	35	575/60/3	12.8	10.6	21.9	IP20	66.1	
VFD-3	GALT G560-00620UL-03	EF-3	60	62	575/60/3	14.4	12.8	26.8	IP20	102.5	

NOTES:

2. PROVIDE BACNET IP INTERFACE - GALT# G500ETH

1. EXTERNAL VFD'S ARE NOT REQUIRED WHERE HVAC EQUIPMENT PROVIDED BY THE MANUFACTURER IS FURNISHED WITH INTEGRAL VFD'S.

CVACED BAAKE LID AID LINUT DECIDE

4. VARIABLE SPEED SUPPLY FAN MOTOR CONTROLLED BY VFD.

8. PHASE AND BROWN OUT PROTECTION

EXHAUST FAN SCHEDULE RECIRC

					AIR		l	AN		ELECTRICA	۱L	PHY	SICAL	
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	ТҮРЕ	AIR TYPE	MAXIMUM AIRFLOW RATE (CFM)	STATIC PRESSURE (IN H20)	FAN SPEED (RPM)	OPERATING POWER (HP)	MOTOR SPEED (RPM)	MOTOR SIZE (HP)	POWER V/Hz/PH	LENGTH/ WIDTH/ HEIGHT (IN.)	ESTIMATED WEIGHT (LBS)	
EF-1	GREENHECK QEI-44-50	ROOF	INLINE MIXED FLOW	EXHAUST	27,324	7.46	1170	49	1170	50	575/60/3	70/67/70	3,342	
EF-2	GREENHECK QEI-30-60	ROOF	INLINE MIXED FLOW	EXHAUST	13,860	7.5	1678	25	1770	30	575/60/3	55/46/48	1,355	

NOTES:

1. PUNCHED INLET AND OUTLET FLANGES WITH COMPANION FLANGES.

2. DIRECT MOUNT, RESTRAINED-SPRING ISOLATORS, 1 INCH.

3. FAN HOUSING SEALED FOR OUTDOOR USE.

4. ENERGY EFFICIENT MOTOR WITH CLASS-B INSULATION.

5. WEATHER-PROOF MOTOR ENCLOSURE.

6. VFD-RATED MOTOR.

SPACE AIRFLOW VENTILATION SCHEDULE RECIRC

						All	RFLOW REQUIREMEN	ITS			
NOTES		ID	LOCATION	SUPPLY AIRFLOW	EXHAUST AIRFLOW	BYPASS AIRFLOW	OUTSIDE AIRFLOW	EXHAUST AIRFLOW	RETURN AIRFLOW	VENTILATION	
		U	LUCATION	RATE TO RANGE	RATE FROM RANGE	RATE	RATE	RATE	RATE	AIRFLOW RATE	1
1,2				(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	
1,2	[BAY 1	SHOOTING RANGE	24900	27390	9960	6225	8715	8915	14940	
1,2	[BAY 2	SHOOTING RANGE	12600	13860	5040	3150	4410	4410	7560	

NOTES:

1. SUPPLY AIRFLOW SIZED FOR 75 FPM AIR VELOCITY ACROSS RANGE WIDTH AT FIRING LINE PER NIOSH RECOMMENDATIONS.

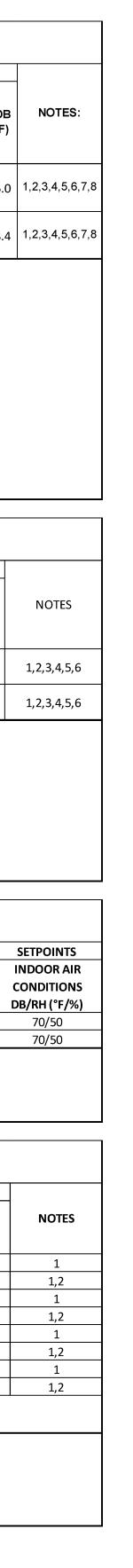
			FIL	TER	BANK	SCHED	ULE		
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	FILTRATION	ТҮРЕ	ARRANG.	A CLEAN STATIC PRESSURE (IN H20)	IR DIRTY STATIC PRESSURE (IN H20)	PHY NUMBER 24" X 24" MODULES	SICAL NUMBER 12" X 24" MODULE
	CAMFIL GP36H /		MERV 14	BAG	FLAT	0.48	2.5	15	
FB-1	SAD3 SPCL 3HX5W	ROOF	MERV 17	HEPA	FLAT	1.0	3.5	15	0
FD 3	CAMFIL GP36H /	DOOL	MERV 14	BAG	FLAT	0.48	2.5	8	0
FB-2	SAD3 SPCL 2HX4W	ROOF	MERV 17	HEPA	FLAT	1.0	3.5	8	0
FD 3	CAMFIL GP36H /	DOOL	MERV 14	BAG	FLAT	0.48	2.5	15	0
FB-3	SAD3 SPCL 3HX5W	ROOF	MERV 17	HEPA	FLAT	1.0	3.5	15	0
FD 4	CAMFIL GP36H /	воог	MERV 14	BAG	FLAT	0.48	2.5	15	0
FB-4	SAD3 SPCL 3HX5W	ROOF	MERV 17	HEPA	FLAT	1.0	3.5	15	0

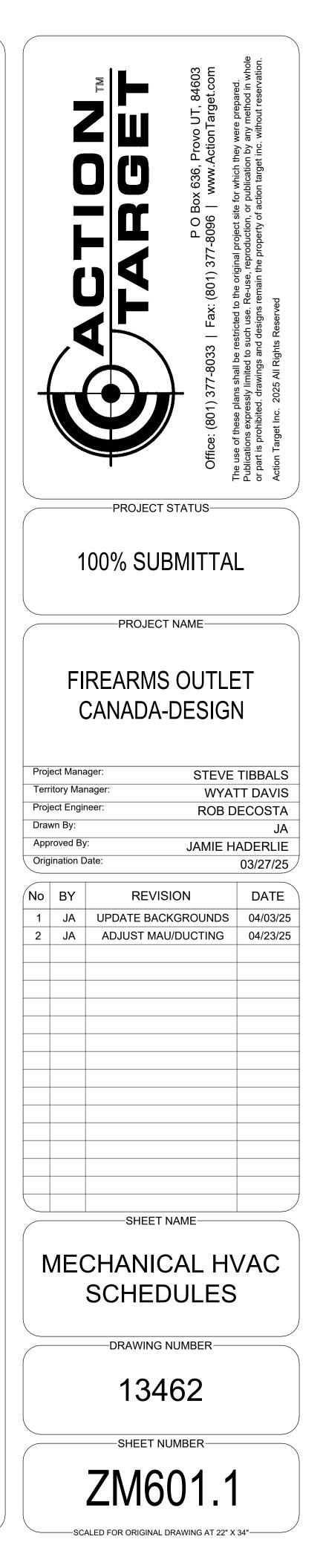
(2) IEST CERTIFIED HEPA FILTER, MIN 99.97% CAPTURE @ 0.3 MICRONS.

NOTES:

1. PROVIDE WEATHER-PROOF FILTER HOUSING WITH HINGED, LOCKABLE ACCESS DOORS.

2. IEST CERTIFIED HEPA FILTER, MIN 99.97% CAPTURE @ 0.3 MICRONS.





								MA	KE-U	P AI		Γ Ρυι	RGE								
					UNIT											HEATING					
			MANUFACTURER		E	LECTRICA	L	รเ	JPPLY FAN	l	FILTERS				GAS F	RESSURE		TOTAL			
ID	LOCATION	SERVICE	AND MODEL NUMBER	WEIGHT (LB)	VOLTAGE (V/HZ/PH)	MCA (A)	MROPD (A)	AIRFLOW (CFM)	TSP (''W.C.)	MOTOR SIZE	EFFICIENCY	TYPE	GAS TYPE			MAX.	MODULATION		EDB (°F)	LDB (°F)	
MAU-3	ROOF	CLAY HOSUE	GREENHECK DGX-P227-H38-II	3,908	575/60/3	55.7	70	26,925	2.97	(2) 20 HP	MERV 8	DIRECT GAS	NATURAL GAS	1.5"	14" W.C.	.5 PSI	HI- TURNDOWN	2,118	3.0	70.0	1,2,3,4,5,6,7,8, 9,10

GENERAL NOTES:

1. APPROVED RTU MANUFACTURERS ARE: GREENHECK, OR ATI-APPROVED EQUIVALENT.

2. SEE EQUIPMENT TECHNICAL DATA SHEET FOR ALL UNIT DIMENSIONS.

3. UNIT TO BE SUPPLIED WITH 24" CURB MATCHED TO THE MAU FOOTPRINT

				AIR		FAN		ELECTRICAL			PHYSICAL			
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	ТҮРЕ	AIR TYPE	MAXIMUM AIRFLOW RATE (CFM)	STATIC PRESSURE (IN H20)	FAN SPEED (RPM)	OPERATING POWER (HP)	MOTOR SPEED (RPM)	MOTOR SIZE (HP)	POWER V/Hz/PH	LENGTH/ WIDTH/ HEIGHT (IN.)	ESTIMATED WEIGHT (LBS)	NOTES
EF-3	GREENHECK USF-33	ROOF	UTILITY SET FAN	EXHAUST	29,700	7.5	1727	56	1770	60	575/60/3	56/64/69	2,166	1,2,3,4,5,6,7

- 1. SLIP-FIT INLET AND PUNCHED OUTLET FLANGE.
- 2. DIRECT MOUNT, RESTRAINED-SPRING ISOLATORS, 1 INCH.
- 3. FAN HOUSING SEALED FOR OUTDOOR USE.
- 4. ENERGY EFFICIENT MOTOR WITH CLASS-B INSULATION.
- 5. WEATHER-PROOF MOTOR ENCLOSURE. 6. VFD-RATED MOTOR.
- 7. SUPPLIED WITH GRAVITY DAMPER ON FAN OUTLET.

72/50

29700

SPACE AIRFLOW VENTILATION SCHEDULE PURGE						
			QUIREMENTS	SETPOINTS		
ID	LOCATION	SUPPLY AIRFLOW RATE TO RANGE (CFM)	EXHAUST AIRFLOW RATE FROM RANGE (CFM)	INDOOR AIR CONDITIONS DB/RH (°F/%)		

26925

NOTES:

SHOOTING RANGE

BAY 3

1. SUPPLY AIRFLOW SIZED FOR 75 FPM AIR VELOCITY ACROSS RANGE WIDTH AT FIRING LINE PER NIOSH RECOMMENDATIONS.

ACCESSORIES:

1. WEATHERHOOD WITH BIRDSCREEN.

2. GFCI CONVENIENCE OUTLET (NON-POWERED), SEPARATE CIRCUIT, WIRED BY E.C.

3. CURB SUPPLIED BY ATI. REFER TO GENERAL NOTES FOR MORE INFORMATION.

4. VARIABLE SPEED SUPPLY FAN MOTOR CONTROLLED BY VFD.

5. MOTORIZED OA DAMPER, DDC CONTROL

6. HIGH-STATIC PRESSURE SUPPLY FAN.

7. BACNET-IP INTERFACE 8.

AIR DEVICE SCHEDULE FACE SIZE MANUFACTURER CONNECTION AND SERVICE TYPE QTY. SIZE (IN.) OR (IN.) OR FINISH NOTES ID MODEL NUMBER (W X H) (W X H) ACTION TARGET RANGE SUPPLY PERFORATED RADIAL Ø18" 48 X 18 ALUMINUM 10 1,3 S1 S2 ACTION TARGET RANGE SUPPLY PERFORATED RADIAL Ø18" ALUMINUM 48 X 18 1,3 S3 ACTION TARGET RANGE SUPPLY PERFORATED RADIAL 16 Ø18" 48 X 18 ALUMINUM 1,3 RANGE E1 TITUS 350ZR LOUVER 0° DEFL 9 20 X 20 WHITE 2,4 EXHAUST RANGE E2 TITUS 350ZR LOUVER 0° DEFL 4 WHITE 2,4 22 X 20 EXHAUST RANGE E3 TITUS 350ZR LOUVER 0° DEFL 16 20 X 20 WHITE 2,4 EXHAUST SINGLE-BLADE BALANCE GREENHECK MBDR-50 RANGE SUPPLY 27 D1 Ø18" GALVANIZED -DAMPER 3V BLADE CONTROL GREENHECK VCD-20 D2 FAN EXHAUST 26 X 34 GALVANIZED DAMPER 3V BLADE CONTROL D3 GREENHECK VCD-20 FAN EXHAUST 20 X 26 GALVANIZED DAMPER 3V BLADE CONTROL GREENHECK VCD-20 MAU SUPPLY 24 X 24 GALVANIZED D4 2 DAMPER

NOTES:

1. RADIAL DIFFUSER SHALL BE SUPPLIED BY ACTION TARGET.

2. PROVIDE OPPOSED BLADE DAMPER WITH LOUVER. DAMPER SHALL BE ADJUSTABLE THROUGH LOUVER FACE.

3. DIFFUSER SHALL BE INSTALLED IN ACCORDANCE WITH ACTION TARGET SPECIFICATIONS.

4. APPROVED MANUFACTURERS: TITUS, CARNES, NAILOR, PRICE, KRUEGER, METALAIRE, HART & COOLEY.

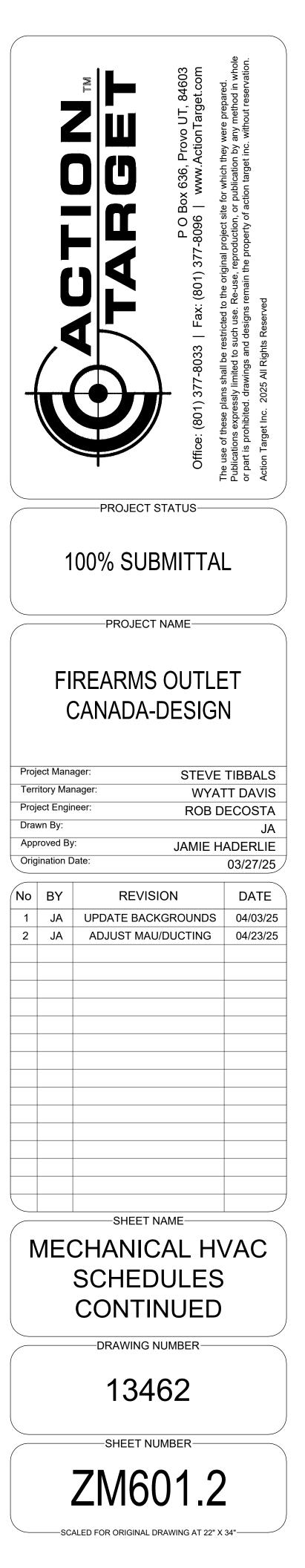
5. DAMPER CONSTRUCTION: 16 GA GALVANIZED STEEL, CHANNEL FRAME W/ SINGLE FLANGE, 3V BLADE TYPE, OPPOSED BLADE OPERATION,

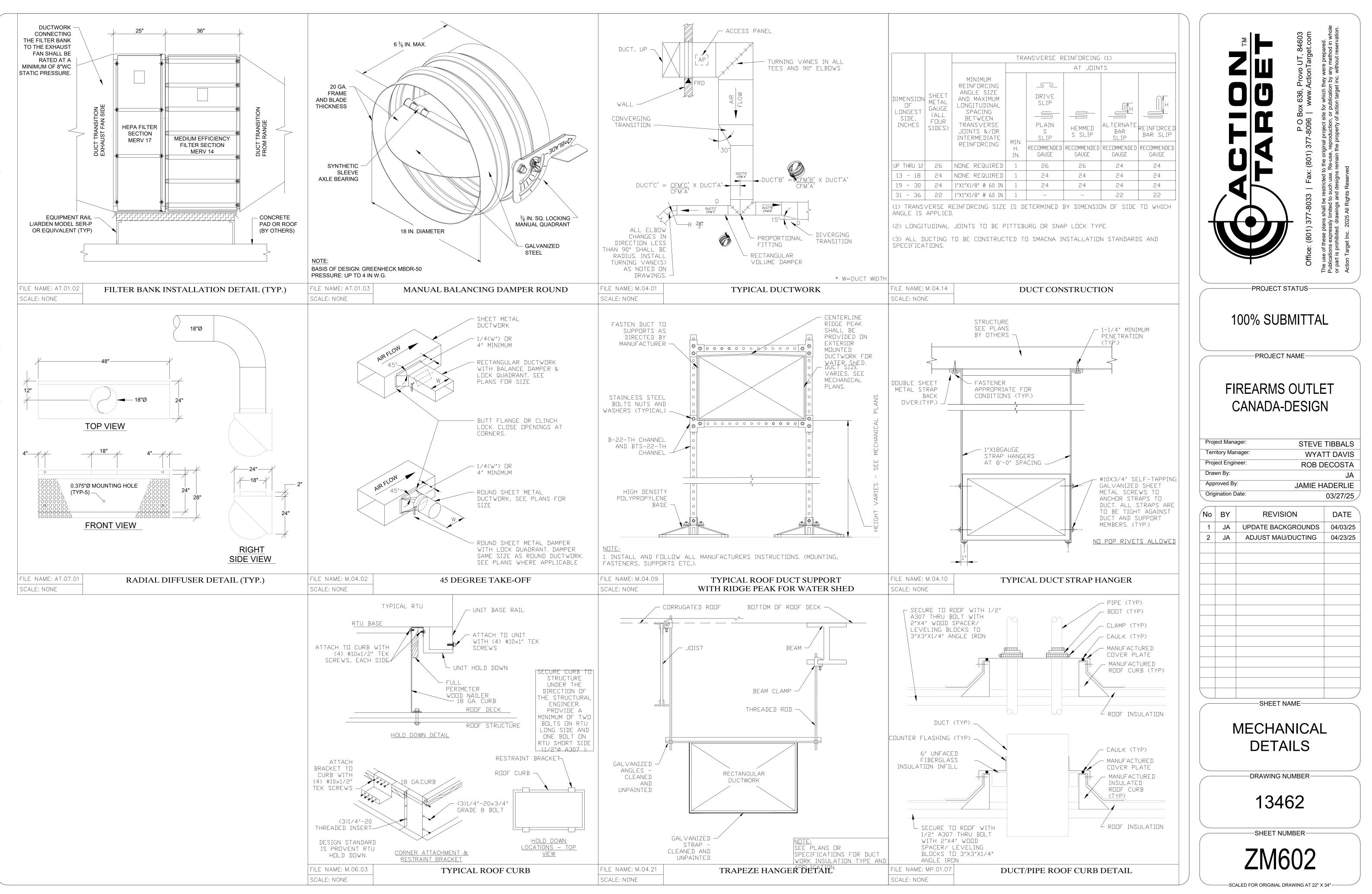
6. DAMPER CONSTRUCTION: 20 GA GALVANIZED STEEL, SLIP FIT, SYNTHETIC AXLE BEARING, MANUAL LOCKING QUADRANT.

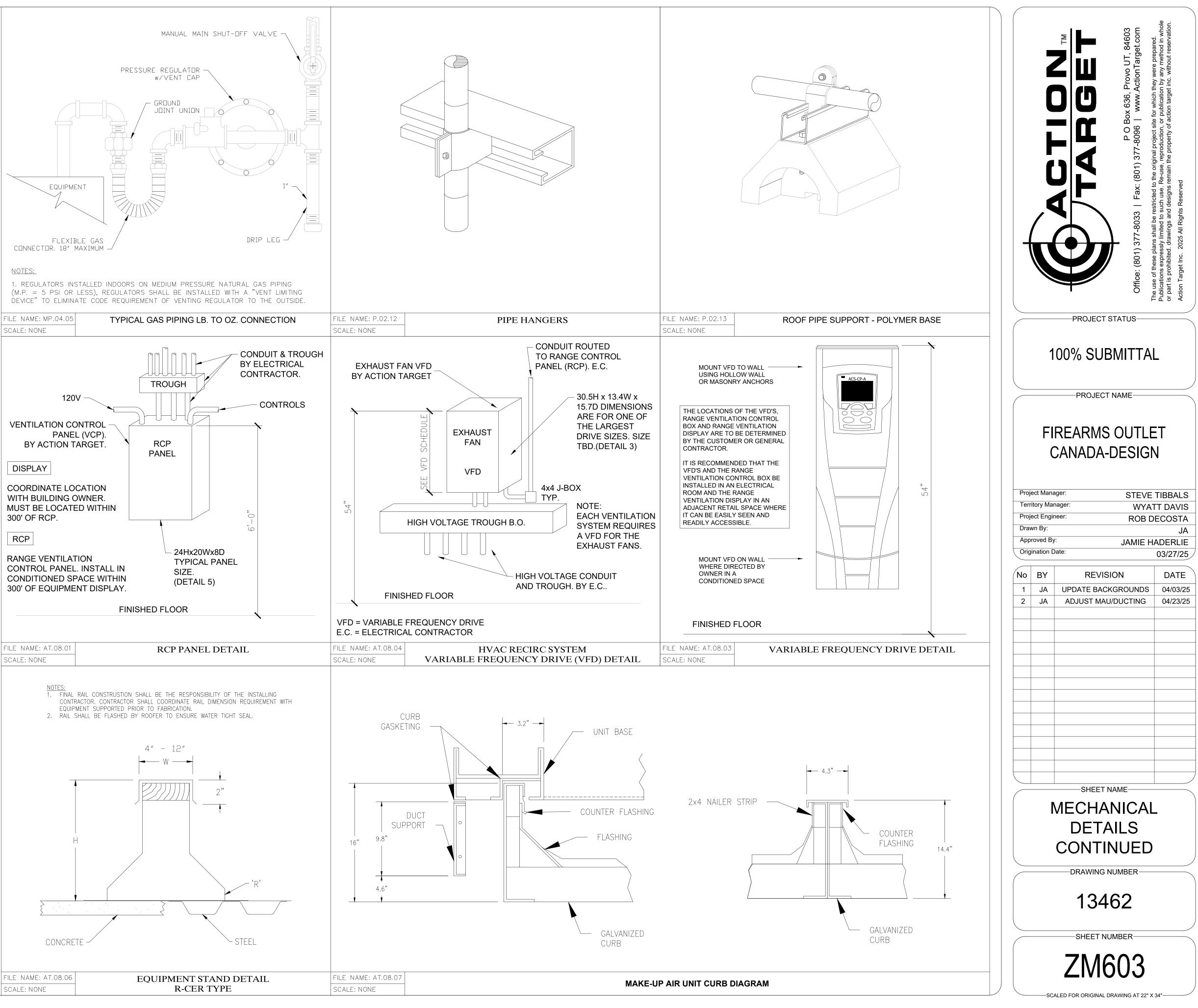
7. ACTUATOR: BELIMO AFB24-SR, 24 VDC, MODULATING, 2-10 VDC CONTROL, 2-10 VDC FEEDBACK, SPRING RETURN CLOSED, 180 IN-LB.

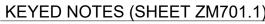
8. ACTUATOR: BELIMO AFB24-SR, 24 VDC, MODULATING, 2-10 VDC CONTROL, 2-10 VDC FEEDBACK, SPRING RETURN OPEN, 180 IN-LB.

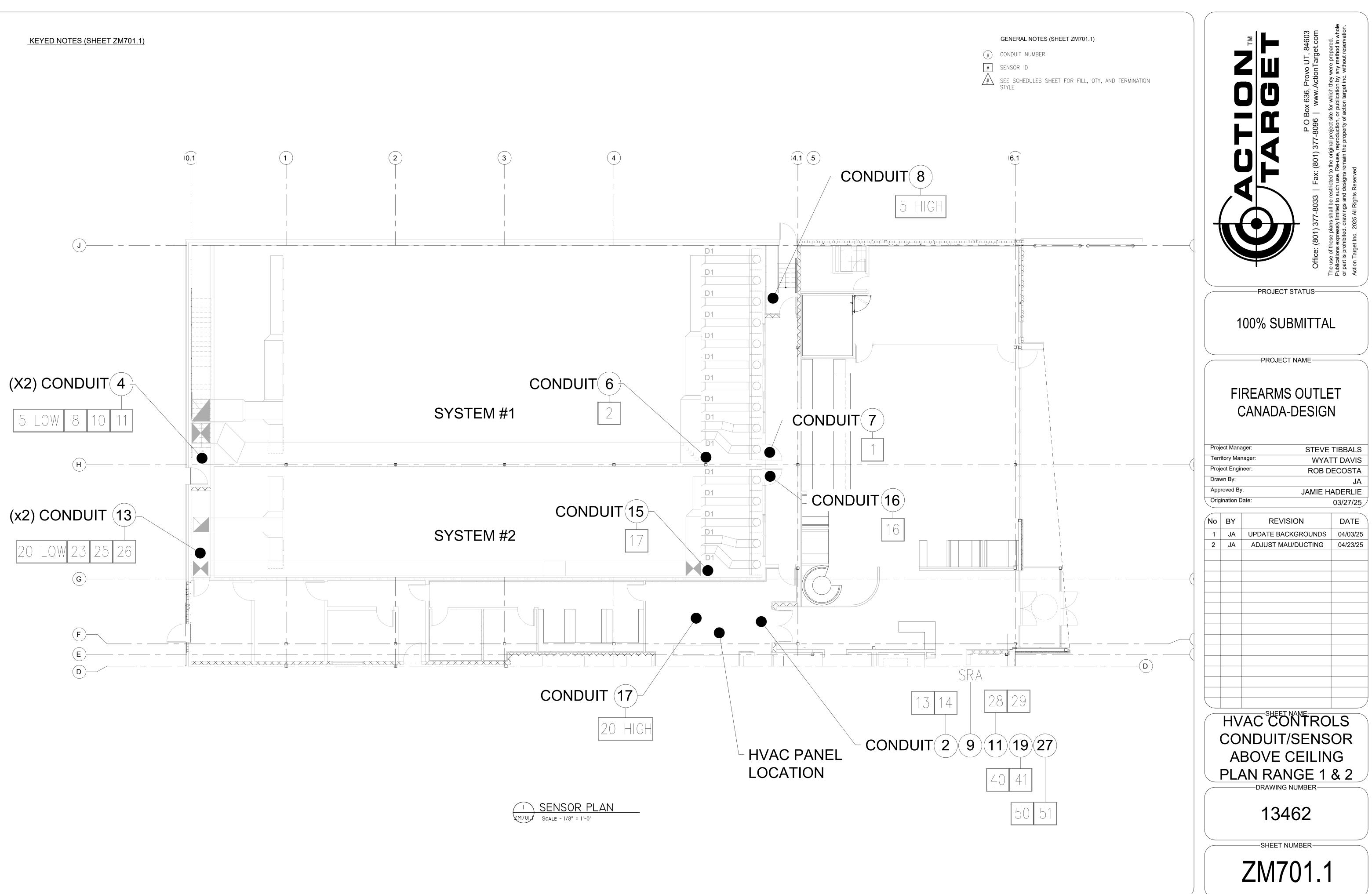
9. ACTUATOR: BELIMO AFX24-SR, 24 VDC, MODULATING, 2-10 VDC CONTROL, 2-10 VDC FEEDBACK, SPRING RETURN CLOSED, 180 IN-LB, NEMA 4/4X ENCLOSURE.

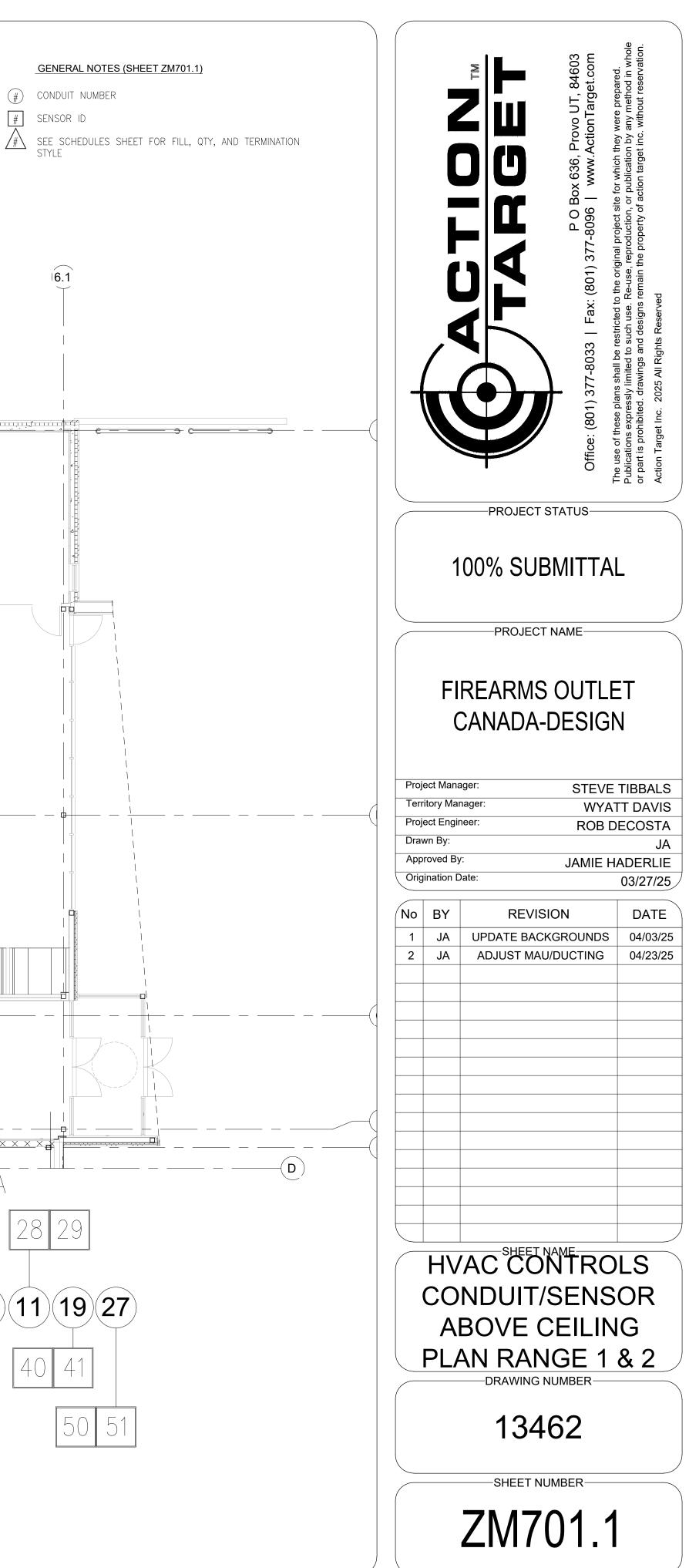




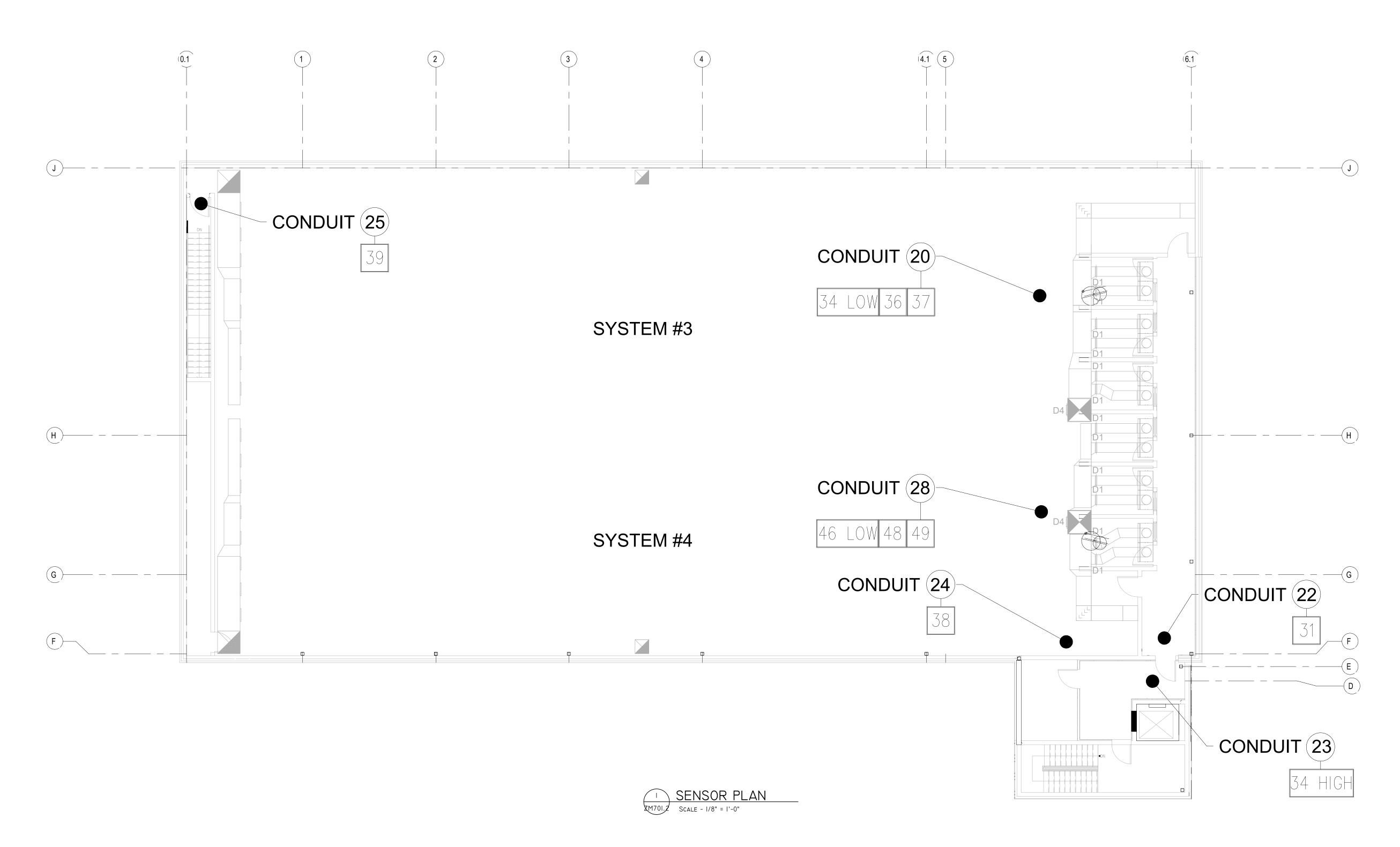


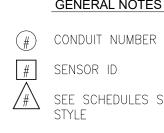






-SCALED FOR ORIGINAL DRAWING AT 22" X 34





GENERAL NOTES (SHEET ZM701.2)

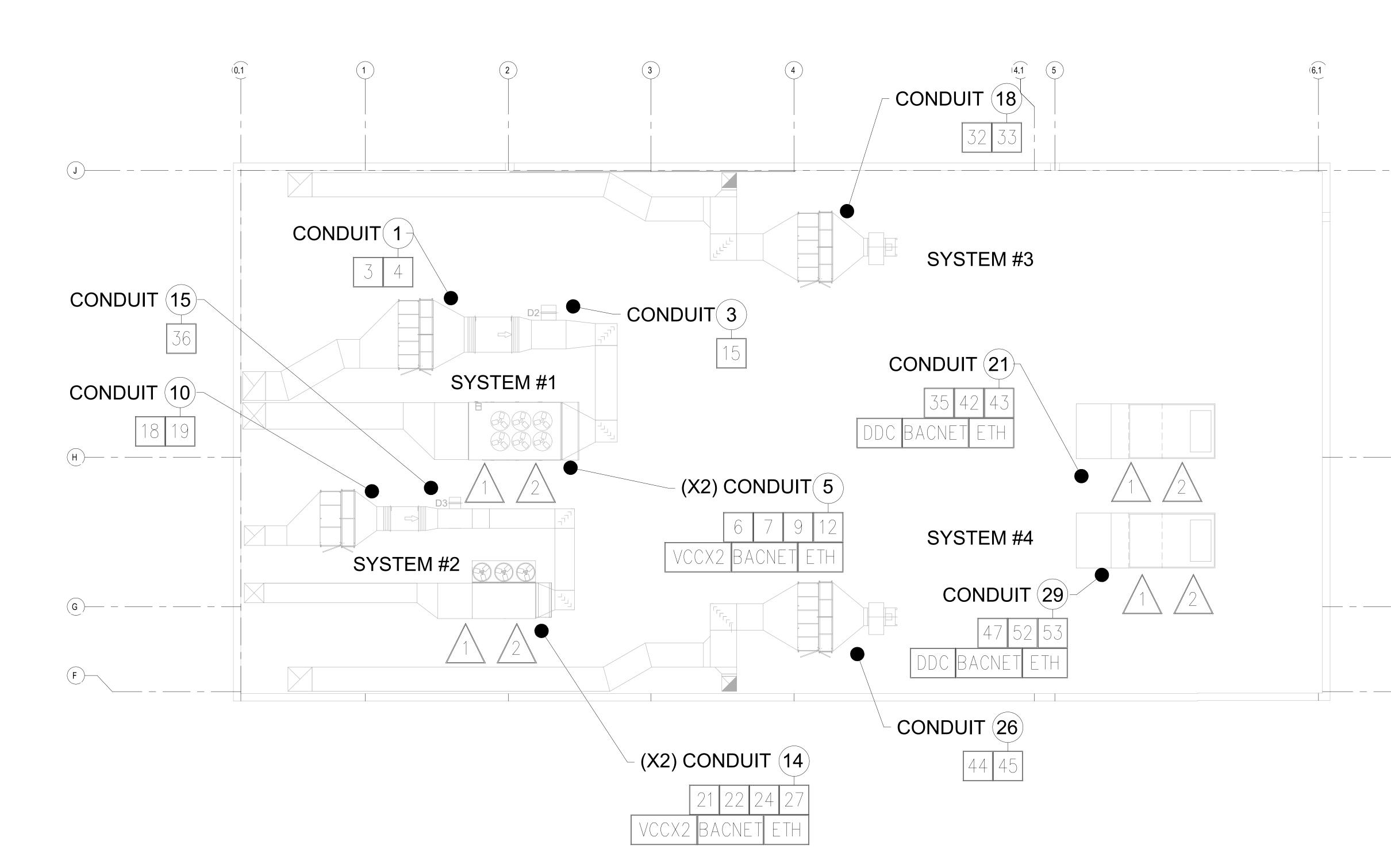
 \swarrow see schedules sheet for fill, QTY, and termination style

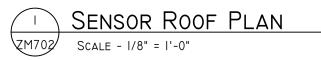


KEYED NOTES (SHEET ZM702)

SITE CONTRACTOR IS RESPONSIBLE FOR RUNNING BUILT IN AAON SUPPLY DUCT PRESSURE SENSOR, AAON SUPPLY DUCT TEMPERATURE SENSOR, AAON SPACE TEMPERATURE SENSOR, AND ANY OTHER INCLUDED OR NECESSARY AAON UNIT SENSORS AS REQUIRED FOR AAON STARTUP. THESE SENSORS SHALL BE INSTALLED PRIOR TO AAON SERVICE PERFORMING STARTUP ON THE AAON UNIT. ATI WILL INSTALL SUPERVISORY CONTROLS AFTER AAON CERTIFIED STARTUP.

FOR AAON STARTUP ALL SUPPLY DAMPERS, RETURN, OUTSIDE AIR, AND BYPASS SHALL BE IN THEIR FULLY OPEN POSITIONS





GENERAL NOTES (SHEET ZM702)

CONDUIT NUMBER

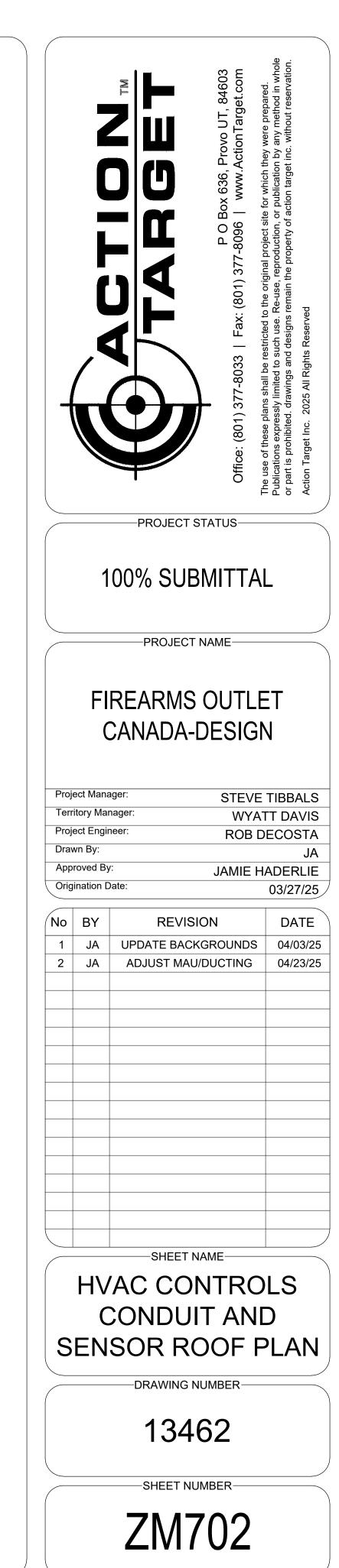
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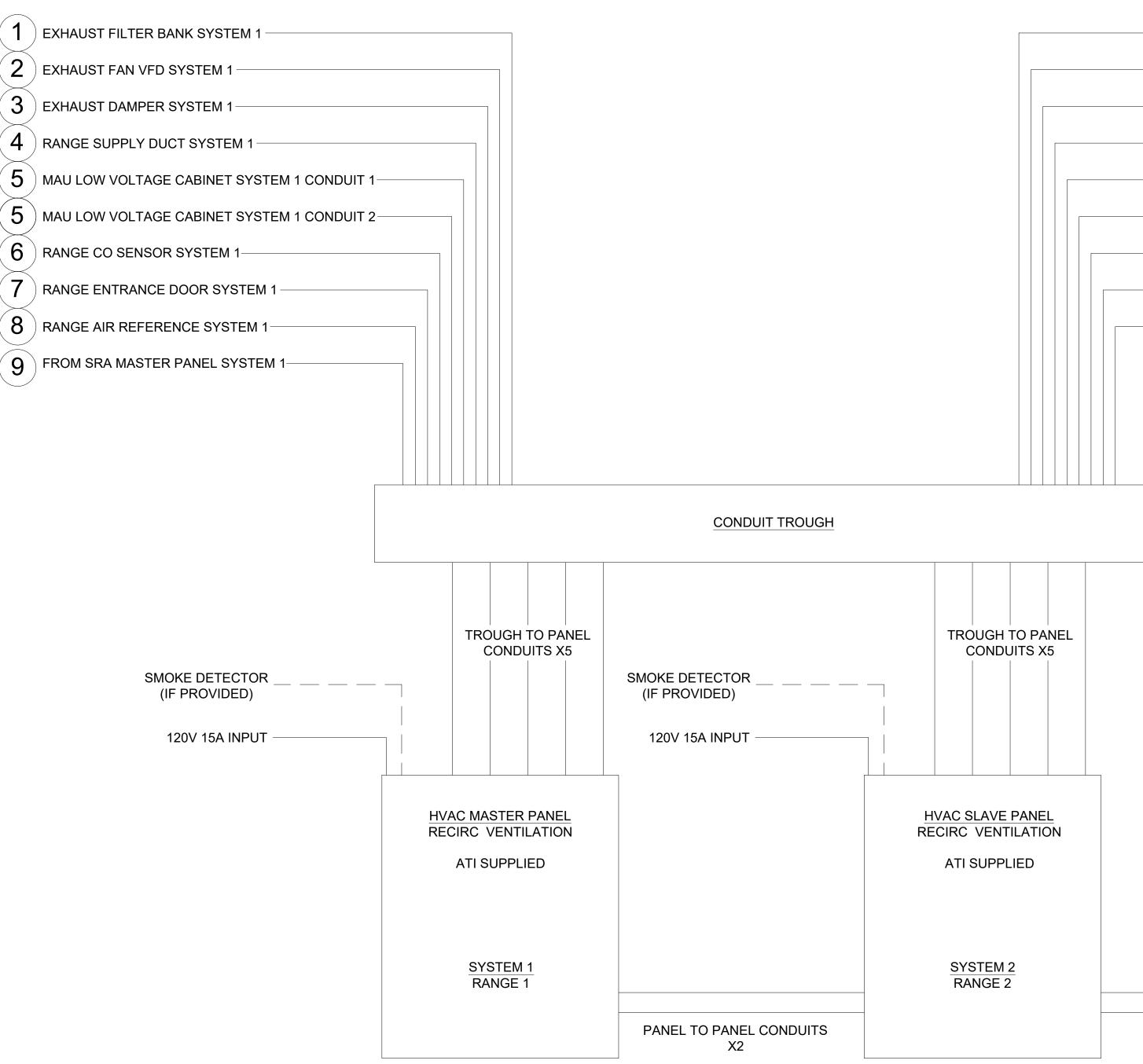
-(J)

-(H)

-(G)

-(F)





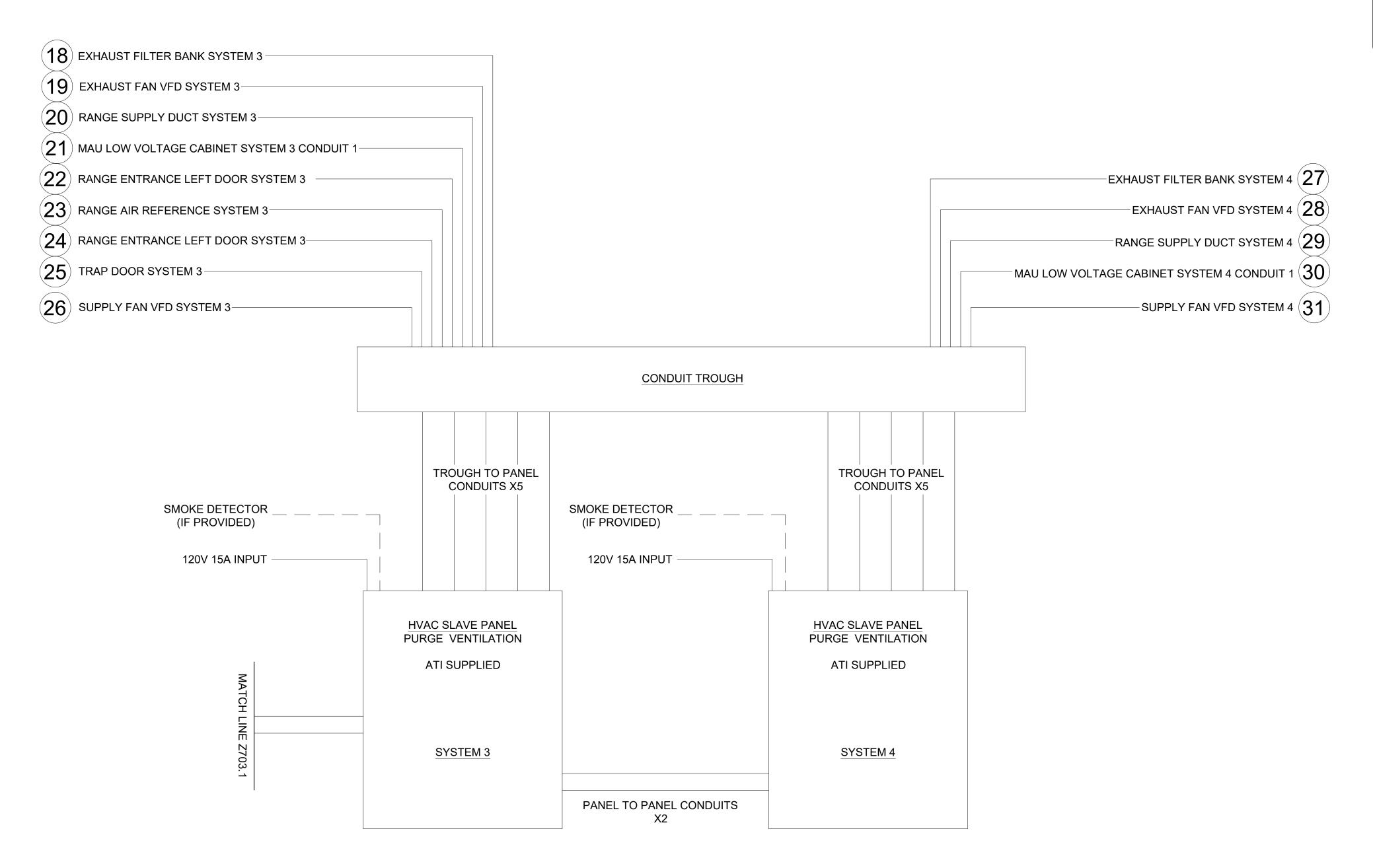
NOTE:

-ALL CONDUITS 3/4 INCH UNLESS SPECIFIED OTHERWISE -PROVIDE A MINIMUM OF 5 CONDUITS BETWEEN TROUGH AND EACH CONTROL PANEL -PROVIDE A MINIMUM OF 2 CONDUITS BETWEEN CONTROL PANELS, IF MULTIPLE CONTROL PANELS ARE PRESENT -PROVIDE EACH CONTROL PANEL WITH 120V 15AMP 1¢ SERVICE, ON LEFT HAND SIDE -IF INTEGRATION WITH SITE SMOKE DETECTORS IS REQUIRED, RUN ADDITIONAL CONDUIT FROM FIRE SYSTEM TO HVAC SYSTEM, AS DIRECTED BY FIRE SYSTEM INSTALLERS -SEE CONDUIT AND SENSOR PLANS FOR CONDUIT PLACEMENT -SEE CONDUIT SCHEDULE AND RANGE DETAILS FOR CONDUIT TERMINATIONS AND CONDUIT FILL

10	EXHAUST FILTER BANK SYSTEM 2
1	EXHAUST FAN VFD SYSTEM 2
1	EXHAUST DAMPER SYSTEM 2
1	RANGE SUPPLY DUCT SYSTEM 2
1	MAU LOW VOLTAGE CABINET SYSTEM 2 CONDUIT 1
1	MAU LOW VOLTAGE CABINET SYSTEM 2 CONDUIT 2
1	RANGE CO SENSOR SYSTEM 2
1	RANGE ENTRANCE DOOR SYSTEM 2
1	RANGE AIR REFERENCE SYSTEM 2

Z703.2

T A C A C A C A C A C A C A C A C A C A		The use of these plans shall be restricted to the original project site for which they were prepared. Publications expressly limited to such use. Re-use, reproduction, or publication by any method in whole or part is prohibited. drawings and designs remain the property of action target inc. without reservation. Action Target Inc. 2025 All Rights Reserved
PROJECT	STATUS	
100% SU	BMITTA	L
PROJEC		
PROJEC		
FIREARMS CANADA		
Project Manager: Territory Manager:		TIBBALS
Project Engineer: Drawn By:		TT DAVIS DECOSTA
	ROB [
Drawn By: Approved By: Origination Date: No BY REVI 1 JA UPDATE BAC	ROB E JAMIE H	JA JA JADERLIE
Drawn By: Approved By: Origination Date: No BY REVI 1 JA UPDATE BAC	ROB E JAMIE H SION CKGROUNDS	DECOSTA JA IADERLIE 03/27/25 DATE 04/03/25
Drawn By: Approved By: Origination Date: No BY REVI 1 JA UPDATE BAG	ROB E JAMIE H SION CKGROUNDS	DECOSTA JA IADERLIE 03/27/25 DATE 04/03/25
Drawn By: Approved By: Origination Date: No BY REVI 1 JA UPDATE BAC	ROB E	DECOSTA JA IADERLIE 03/27/25 DATE 04/03/25
Drawn By: Approved By: Origination Date: No BY REVI 1 JA UPDATE BAC 2 JA ADJUST MA 2 JA ADJUST MA 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		DECOSTA JA JA ADERLIE 03/27/25 DATE 04/03/25 04/23/25
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HVAC CONTROLS CONDUIT SCHEMATIC

NOTE:

-ALL CONDUITS 3/4 INCH UNLESS SPECIFIED OTHERWISE -PROVIDE A MINIMUM OF 5 CONDUITS BETWEEN TROUGH AND EACH CONTROL PANEL -PROVIDE A MINIMUM OF 2 CONDUITS BETWEEN CONTROL PANELS, IF MULTIPLE CONTROL PANELS ARE PRESENT -PROVIDE EACH CONTROL PANEL WITH 120V 15AMP 1¢ SERVICE, ON LEFT HAND SIDE -IF INTEGRATION WITH SITE SMOKE DETECTORS IS REQUIRED, RUN ADDITIONAL CONDUIT FROM FIRE SYSTEM TO HVAC SYSTEM, AS DIRECTED BY FIRE SYSTEM INSTALLERS -SEE CONDUIT AND SENSOR PLANS FOR CONDUIT PLACEMENT -SEE CONDUIT SCHEDULE AND RANGE DETAILS FOR CONDUIT TERMINATIONS AND CONDUIT FILL

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PROJEC		
FIREARM CANADA		
Project Manager: Territory Manager:		TIBBALS
Project Engineer: Drawn By:	ROB [DECOSTA
Approved By:		
Approved By: Origination Date:	JAMIE H	JA IADERLIE 03/27/25
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Origination Date:		ADERLIE 03/27/25 DATE 04/03/25 04/23/25
Origination Date:		ADERLIE 03/27/25 DATE 04/03/25 04/23/25
Origination Date:	ISION CKGROUNDS AU/DUCTING	ADERLIE 03/27/25 DATE 04/03/25 04/23/25

-SCALED FOR ORIGINAL DRAWING AT 22" X 34"-

		CONDUIT SCHEDULE RANGE	E 1 SY	′STEM #	1		
CONDUIT	QTY	DECRIPTION	FROM	то	FILL	SENSOR(S)	
	1	TO EXHAUST FILTER BANK. TERMINATE WITH A 36" STUB UP, WITHIN 12" NEAR FILER BANK AS INDICATED ON PLANS.	TROUGH	EXHAUST FILTER BANK	(1) 18/6	3,4	
2	1	TO EXHAUST FAN VFD, TERMINATE TO 4 SQUARE BOX WITH BLANK, 6-12" FROM VFD	TROUGH	EXHAUST FAN VFD	(1) 18/4, (1) CAT5E	13, 14	
3	1	TO EXHAUST DAMPER, TERMINATE WITH A 36" STUB UP WITHIN 12" OF EXHUAST DAMPER, AS INDICATED ON THE PLANS	TROUGH	EXHAUST DAMPER	(1) 18/6	15	
		TO RANGE SUPPLY DUCT, MOUNT ON DUCT, AT LAMINAR FLOW POINT IN		TROUGU	RANGE	(2) 18/4, (1) 18/6	
(4)	(4) 2	THE RANGE FROM MAU, TERMINATE A 4 SQUARE BOX WITH A BLANK.	TROUGH	SUPPLY DUCT	(1) 1/4" PNEUMATIC TUBE	5 LOW, 8, 10, 11	
(5)	2	TO MAU, TERMINATE IN LOW VOLTAGE CABINET	TROUGH	MAU	(2) 18/6, (2) 18/4	6, 7, 9, 12, AAON VCCX2 &	
			moodin	MAO	(4) 18/2, (1) CAT5E	BACNET & SRA LINK	
6	1	TO RANGE CO SENSOR BOX, TERMINATE TO 4 SQUARE BOX WITH SINGLE GANG MUD RING, 48" AFF, BEHIND FIRING LINE, SHOOTERS LEFT	TROUGH	RANGE CO SENSOR	(1) 18/4	2	
7	1	TO RANGE ENTRANCE DOOR, TERMINATE TO 4 SQUARE BOX WITH BLANK, 6" ABOVE DOOR FRAME, ON THE RANGE SIDE, ON HANDLE SIDE OF ENTRANCE DOOR	TROUGH	RANGE ENTRANCE DOOR	(1) 18/4	1	
8	1	TO RANGE AIR REFERENCE AREA, TERMINATE IN A 4 SQUARE BOX WITH SINGLE GANG MUD RING IN OCCUPIED REFERENCE SPACE, LOCATE AWAY FROM DOORS AND HVAC DIFFUSERS ON THE CEILING	TROUGH	RANGE AIR REFERENCE AREA	(1) 1/4" PNEUMATIC TUBE	5 HIGH	
9	1	TO SMART RANGE AXIS MASTER PANEL, TERMINATE ON OR IN SRA MASTER PANEL	TROUGH	SMART RANGE AXIS MASTER PANEL	(1) CAT5E	N/A	

CONDUIT SCHEDULE RANGE 2 SYSTEM #2

	1			<u> </u>	 		
CONDUIT	QTY	DECRIPTION	FROM	то	FILL	SENSOR(S)	
10	1	TO EXHAUST FILTER BANK. TERMINATE WITH A 36" STUB UP, WITHIN 12" NEAR FILER BANK AS INDICATED ON PLANS.	TROUGH	EXHAUST FILTER BANK	(1) 18/6	18, 19	
(11)	1	TO EXHAUST FAN VFD, TERMINATE TO 4 SQUARE BOX WITH BLANK, 6-12" FROM VFD	TROUGH	EXHAUST FAN VFD	(1) 18/4, (1) CAT5E	28, 29	
(12)	1	TO EXHAUST DAMPER, TERMINATE WITH A 36" STUB UP WITHIN 12" OF EXHUAST DAMPER, AS INDICATED ON THE PLANS	TROUGH	EXHAUST DAMPER	(1) 18/6	30	
(13)	2	TO RANGE SUPPLY DUCT, MOUNT ON DUCT, AT LAMINAR FLOW POINT IN			(2) 18/4, (1) 18/6	23, 25, 26,	
	2	THE RANGE FROM MAU, TERMINATE TO A 4 SQUARE BOX WITH A BLANK.		SUPPLY DUCT	(1) 1/4" PNEUMATIC TUBE	20 LOW	
(14)	2	TO MAU, TERMINATE IN LOW VOLTAGE CABINET	TROUGH	ROUGH MAU	(2) 18/6, (2) 18/4	21, 22, 24, 27 AAON VCCX2 &	
	2		TROUGH	MAO	(2) 18/2, (1) CAT5E	BACNET & SRA LINK	
15	1	TO RANGE CO SENSOR BOX, TERMINATE TO 4 SQUARE BOX WITH SINGLE GANG MUD RING, 48" AFF, BEHIND FIRING LINE, SHOOTERS LEFT	TROUGH	RANGE CO SENSOR	(1) 18/4	17	
(16)	1	TO RANGE ENTRANCE DOOR, TERMINATE TO 4 SQUARE BOX WITH BLANK, 6" ABOVE DOOR FRAME, ON THE RANGE SIDE, ON HANDLE SIDE OF ENTRANCE DOOR	TROUGH	RANGE ENTRANCE DOOR	(1) 18/4	16	
(17)	0	TO RANGE AIR REFERENCE AREA, TERMINATE IN A 4 SQUARE BOX WITH SINGLE GANG MUD RING IN OCCUPIED REFERENCE SPACE, LOCATE AWAY FROM DOORS AND HVAC DIFFUSERS ON THE CEILING	TROUGH	RANGE AIR REFERENCE AREA	(1) 1/4" PNEUMATIC TUBE	20 HIGH	

NOTE:

-ALL 4 CONDUCTOR CABLE IS GENESIS 22151009, 18AWG, STRANDED, SHIELDED, CMR RATED, AND SUNLIGHT RESISTANT, OR EQUIVALENT -ALL 6 CONDUCTOR CABLE IS GENESIS 22161009, 18AWG, STRANDED, SHIELDED, CMR RATED, AND SUNLIGHT RESISTANT, OR EQUIVALENT -ALL COMMUNICATION CABLE IS CAT5E OR GREATER, 4 PAIR UTP, 24 AWG, CMR OR PLENUM RATED, SUNLIGHT RESISTANT, OR EQUIVALENT

-ALL 2 CONDUCTOR CABLE PLENUM RATED -I FAVE ENOUGH WIRE TO

IS LOCATED ON THE PLANS -FOR WIRE PULLS TO AAON UNIT, LEAVE ENOUGH WIRE TO PULL THROUGH THE ENTIRE LENGTH OF UNIT +24"

	SENSOR SCHEDU		GE 1 SYSTE	EM #1		
QTY	DECRIPTION	MFR	MFR PN	FED FROM CONDUIT	WIRE TYPE	SENSOR ID
1	RANGE ENTRANCE RIGHT DOOR MAGNETIC SENSOR	RESIDEO	7939WG-WH	7	(1) 18/4	1
1	RANGE CO SENSOR	KELE	KCOC-W-V-LCD	6	(1) 18/4	2
1	BAG FILTER SENSOR	SETRA	2651005WDACT1C	1	(1) 18/6	3
1	HEPA FILTER SENSOR	SETRA	2651005WDACT1C	1	(1) 18/6	4
				4	1/4"	5 LOW
1	RANGE PRESSURE SENSOR LOW/HIGH	SETRA	2651005WDACT1C	8	PNEUMATIC TUBE	5 HIGH
1	SUPPLY FAN STATUS SENSOR	AUTOMATION DIRECT	ACSN250-AE-S	5	(1) 18/4	6
1	OUTSIDE AIR FILTER SENSOR	SETRA	2651005WDACT1C	5	(1) 18/4	7
1	BYPASS DAMPER ACTUATOR	BELIMO	AFB24-SR	4	(1) 18/6	8
1	RETURN DAMPER ACTUATOR	BELIMO	AFB24-SR	5	(1) 18/6	9
1	SUPPLY DUCT PRESSURE SENSOR	SETRA	2651005WDACT1C	4	(1) 18/4	10
1	SUPPLY AIR TEMP/HUMIDITY	SIEMENS	QFM2160U	4	(1) 18/4	11
1	OUTSIDE AIR DAMPER ACTUATOR	AAON	USE BUILT IN	5	(1) 18/6	12
1	EXHAUST FAN VFD STATUS/RUN ENABLE	RIB	RIBXLCJF	2	(1) 18/4	13
1	EXHAUST FAN VFD COMM MODULE	GALT	G500	2	(1) CAT5E	14
1	EXHAUST DAMPER ACTUATOR	BELIMO	AFB24-SR	3	(1) 18/6	15

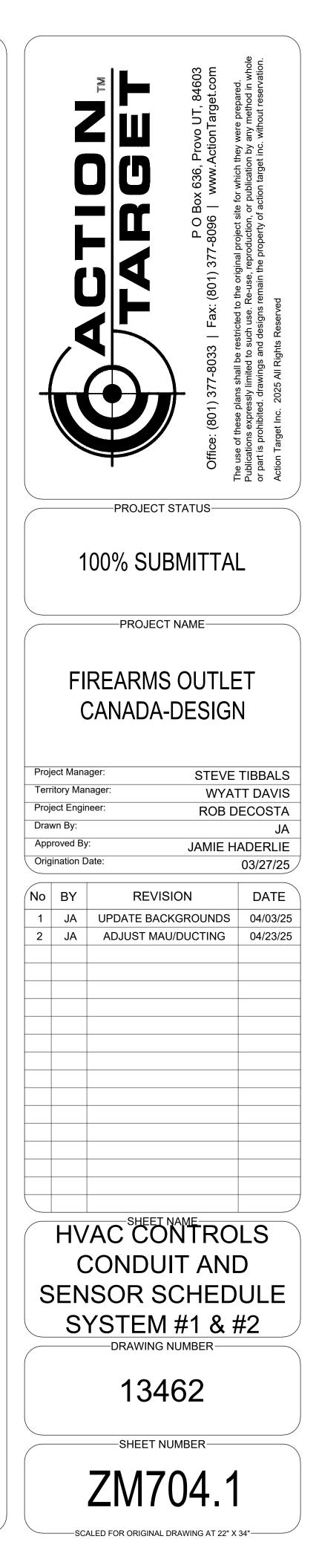
SENSOR SCHEDULE RANGE 2 SYSTEM

QTY	DECRIPTION	MFR	MFR PN	FED FROM CONDUIT	WIRE TYPE	SENSOR ID
1	RANGE ENTRANCE DOOR MAGNETIC SENSOR	RESIDEO	7939WG-WH	16	(1) 18/4	16
1	RANGE CO SENSOR	KELE	KCOC-W-V-LCD	15	(1) 18/4	17
1	BAG FILTER SENSOR	SETRA	2651005WDACT1C	10	(1) 18/6	18
1	HEPA FILTER SENSOR	SETRA	2651005WDACT1C	(10)	(1) 18/6	19
1	RANGE PRESSURE SENSOR LOW/HIGH	SETRA 2651005WDACT1		13	1/4" • PNEUMATIC	20 LOW
I		SEIIX	200100000000000000000000000000000000000	(17)	TUBE	20 HIGH
1	SUPPLY FAN STATUS SENSOR	AUTOMATION DIRECT	ACSN250-AE-S	14	(1) 18/4	21
1	OUTSIDE AIR FILTER SENSOR	SETRA	2651005WDACT1C	14	(1) 18/4	22
1	BYPASS DAMPER ACTUATOR	BELIMO	AFB24-SR	(13)	(1) 18/6	23
1	RETURN DAMPER ACTUATOR	BELIMO	AFB24-SR	14	(1) 18/6	24
1	SUPPLY DUCT PRESSURE SENSOR	SETRA	2651005WDACT1C	(13)	(1) 18/4	25
1	SUPPLY AIR TEMP/HUMIDITY	SIEMENS	QFM2160U	(13)	(1) 18/4	26
1	OUTSIDE AIR DAMPER ACTUATOR	AAON	USE BUILT IN	(14)	(1) 18/6	27
1	EXHAUST FAN VFD STATUS/RUN ENABLE	RIB	RIBXLCJF	(11)	(1) 18/4	28
1	EXHAUST FAN VFD COMM MODULE	GALT	G500	(11)	(1) CAT5E	29
1	EXHAUST DAMPER ACTUATOR	BELIMO	AFB24-SR	12	(1) 18/6	30

-ALL 2 CONDUCTOR CABLE IS BELDEN 82760, 18 AWG, TWISTED PAIR,

-LEAVE ENOUGH WIRE TO EXTEND 24" BEYOND WHERE THE SENSOR

h	E	2



CONDUIT SCHEDULE RANGE 3 SYSTEM #3

		CONDUIT SCHEDULE RANGE	3 SY	′STEM #3	3	
CONDUIT	QTY	DECRIPTION	FROM	ТО	FILL	SENSOR(S)
18	1	TO EXHAUST FILTER BANK. TERMINATE WITH A 36" STUB UP, WITHIN 12" NEAR FILER BANK AS INDICATED ON PLANS.	TROUGH	EXHAUST FILTER BANK	(1) 18/6	32 33
(19)	1	TO EXHAUST FAN VFD, TERMINATE TO A 4 SQUARE BOX WITH BLANK, 6-12" FROM VFD	TROUGH	EXHAUST FAN VFD	(1) 18/4	40 41
	4	TO RANGE SUPPLY DUCT, MOUNT ON DUCT, AT LAMINAR FLOW POINT IN	TROUCU	RANGE	(2) 18/4	
(20)	1	THE RANGE FROM MAU, TERMINATE TO A 4 SQUARE BOX WITH A BLANK.	TROUGH	SUPPLY DUCT	(1) 1/4" PNEUMATIC TUBE	34 LOW 36 37
(21)	2	TO MAU, TERMINATE IN LOW VOLTAGE CABINET	TROUGH	MAU	(1) 18/6, (2) 18/4	35, 42, 43, GREENHECK
			mooon		(4) 18/2, (1) CAT5E	DDC & BACNET & SRA LINK
22	1	TO RANGE ENTRANCE DOOR LEFT, TERMINATE TO A 4 SQUARE BOX WITH BLANK, 6" ABOVE DOOR FRAME, ON THE RANGE SIDE, ON HANDLE SIDE OF ENTRANCE DOOR	TROUGH	RANGE ENTRANCE DOOR RIGHT	(1) 18/4	31
23	1	TO RANGE AIR REFERENCE AREA, TERMINATE TO A 4 SQUARE BOX WITH SINGLE GANG MUD RING IN OCCUPIED REFERENCE SPACE, LOCATE AWAY FROM DOORS AND HVAC DIFFUSERS ON THE CEILING	TROUGH	RANGE AIR REFERENCE AREA	(1) 1/4" PNEUMATIC TUBE	34 HIGH
24)	1	TO RANGE ENTRANCE DOOR LEFT2, TERMINATE TO 4 SQUARE BOX WITH BLANK, 6" ABOVE DOOR FRAME, ON THE RANGE SIDE, ON HANDLE SIDE OF DOOR	TROUGH	RANGE ENTRANCE DOOR LEFT2	(1) 18/4	38
25	1	TO RANGE TRAP DOOR, TERMINATE TO A 4 SQUARE BOX WITH BLANK, 6" ABOVE DOOR FRAME, ON THE RANGE SIDE, ON HANDLE SIDE OF DOOR	TROUGH	RANGE TRAP DOOR	(1) 18/4	39

NOTE:

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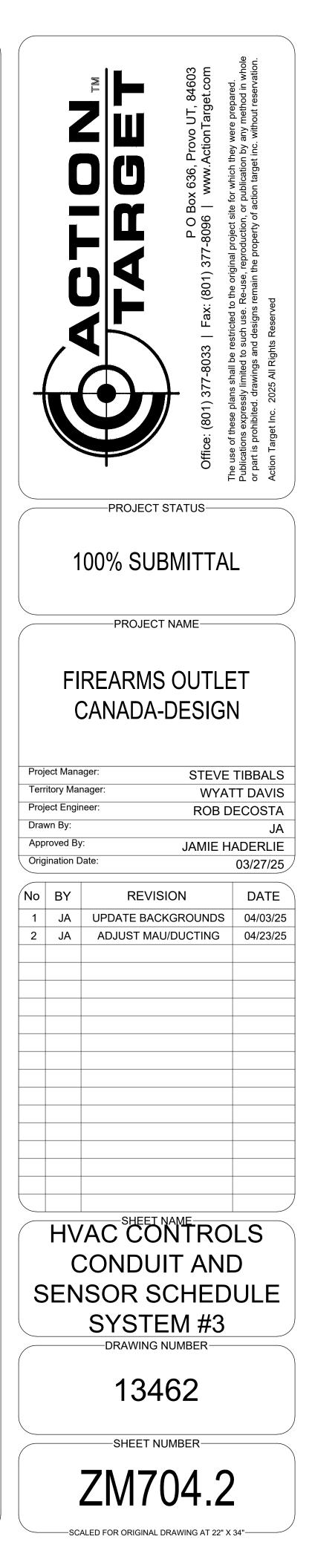
PLENUM RATED

IS LOCATED ON THE PLANS -FOR WIRE PULLS TO MAU UNIT, LEAVE ENOUGH WIRE TO PULL THROUGH THE ENTIRE LENGTH OF UNIT +24"

	SENSOR SCHEDU	LE RANC	GE 3 SYSTE	EM #3		
QTY	DECRIPTION	MFR	MFR PN	FED FROM CONDUIT	WIRE TYPE	SENSOR ID
1	RANGE ENTRANCE LEFT DOOR MAGNETIC SENSOR	RESIDEO	7939WG-WH	(22)	(1) 18/4	31
1	BAG FILTER SENSOR	SETRA	2651005WDACT1C	(18)	(1) 18/6	32
1	HEPA FILTER SENSOR	SETRA	2651005WDACT1C	(18)	(1) 18/6	33
1	RANGE PRESSURE SENSOR LOW/HIGH	SETRA	IN PANEL	20	1/4" PNEUMATIC	34 LOW
I	RANGE FRESSURE SENSOR LOW/HIGH	JEINA		23	TUBE	34 HIGH
1	SUPPLY FAN STATUS SENSOR	AUTOMATION DIRECT	ACSN250-AE-S	21)	(1) 18/4	35
1	SUPPLY DUCT PRESSURE SENSOR	SETRA	2651005WDACT1C	20	(1) 18/4	36
1	SUPPLY AIR TEMP	SIEMENS	QAM2161.040	20	(1) 18/4	37
1	RANGE ENTRANCE LEFT2 DOOR SENSOR	RESIDEO	7939WG-WH	24	(1) 18/4	38
1	RANGE TRAP DOOR SENSOR	RESIDEO	7939WG-WH	25	(1) 18/4	39
1	EXHAUST FAN VFD STATUS/RUN ENABLE	RIB	RIBXLCJF	(19)	(1) 18/4	40
1	EXHAUST FAN VFD COMM MODULE	GALT	G500	(19)	(1) CAT5E	41
1	OUTSIDE AIR FILTER SENSOR	SETRA	2651005WDACT1C	21)	(1) 18/4	42
1	OUTSIDE AIR DAMPER ACTUATOR	AAON	USE BUILT IN	21)	(1) 18/6	43

-ALL 2 CONDUCTOR CABLE IS BELDEN 82760, 18 AWG, TWISTED PAIR,

-LEAVE ENOUGH WIRE TO EXTEND 24" BEYOND WHERE THE SENSOR



	CONDUIT SCHEDULE RANGE 3 SYSTEM #4									
CONDUIT	QTY	DECRIPTION	FROM	ТО	FILL	SENSOR(S)				
26	1	TO EXHAUST FILTER BANK. TERMINATE WITH A 36" STUB UP, WITHIN 12" NEAR FILER BANK AS INDICATED ON PLANS.	TROUGH	EXHAUST FILTER BANK	(1) 18/6	44 45				
(27)	1	TO EXHAUST FAN VFD, TERMINATE TO A 4 SQUARE BOX WITH BLANK, 6-12" FROM VFD	TROUGH	EXHAUST FAN VFD	(1) 18/4, (1) CAT5E	50 51				
28	1	TO RANGE SUPPLY DUCT, MOUNT ON DUCT, AT LAMINAR FLOW POINT IN THE RANGE FROM MAU, TERMINATE TO A 4 SQUARE BOX WITH A BLANK.	TROUGH	RANGE SUPPLY DUCT	(2) 18/4 (1) 1/4" PNEUMATIC TUBE	46 LOW 48 49				
29	2	TO MAU, TERMINATE IN LOW VOLTAGE CABINET	TROUGH	MAU	(1) 18/6, (2) 18/4 (4) 18/2, (1) CAT5E	47, 52, 53, GREENHECK DDC & BACNET & SRA LINK				

NOTE:

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PLENUM RATED

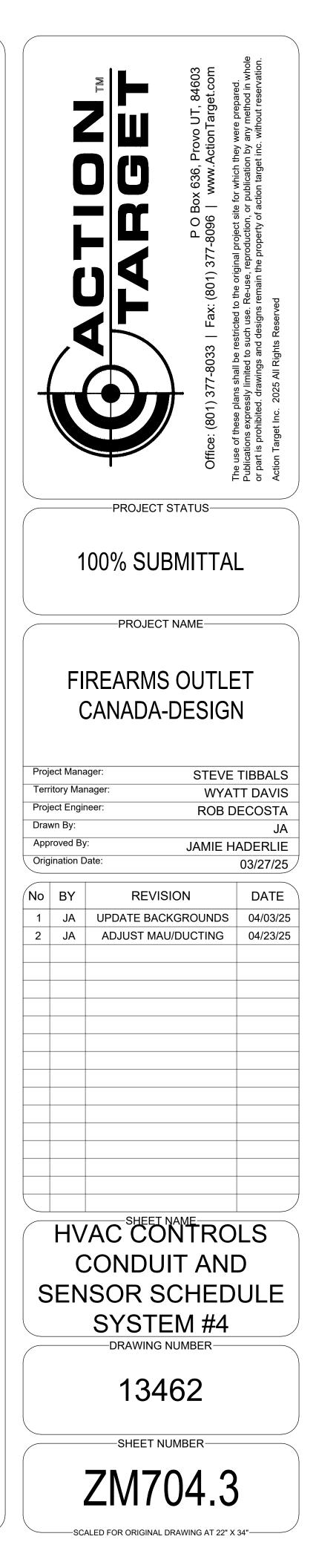
IS LOCATED ON THE PLANS

	SENSOR SCHED	ULE RANG	GE 3 SYSTE	EM #4		
QTY	DECRIPTION	MFR	MFR PN	FED FROM CONDUIT	WIRE TYPE	SENSOR ID
1	BAG FILTER SENSOR	SETRA	2651005WDACT1C	26	(1) 18/6	44
1	HEPA FILTER SENSOR	SETRA	2651005WDACT1C	26	(1) 18/6	45
1		OFTDA		28		46 LOW
	RANGE PRESSURE SENSOR LOW/HIGH	SETRA	IN PANEL	N/A	PNEUMATIC TUBE	N/A
1	SUPPLY FAN STATUS SENSOR	AUTOMATION DIRECT	ACSN250-AE-S	29	(1) 18/4	47
1	SUPPLY DUCT PRESSURE SENSOR	SETRA	2651005WDACT1C	28	(1) 18/4	48
1	SUPPLY AIR TEMP	SIEMENS	QFM2160U.040	28	(1) 18/4	49
1	EXHAUST FAN VFD STATUS/RUN ENABLE	RIB	RIBXLCJF	27	(1) 18/4	50
1	EXHAUST FAN VFD COMM MODULE	GALT	G500	27	(1) CAT5E	51
1	OUTSIDE AIR FILTER SENSOR	SETRA	2651005WDACT1C	29	(1) 18/4	52
1	OUTSIDE AIR DAMPER ACTUATOR	AAON	USE BUILT IN	29	(1) 18/6	53

-ALL 2 CONDUCTOR CABLE IS BELDEN 82760, 18 AWG, TWISTED PAIR,

-LEAVE ENOUGH WIRE TO EXTEND 24" BEYOND WHERE THE SENSOR

-FOR WIRE PULLS TO MAU UNIT, LEAVE ENOUGH WIRE TO PULL THROUGH THE ENTIRE LENGTH OF UNIT +24"

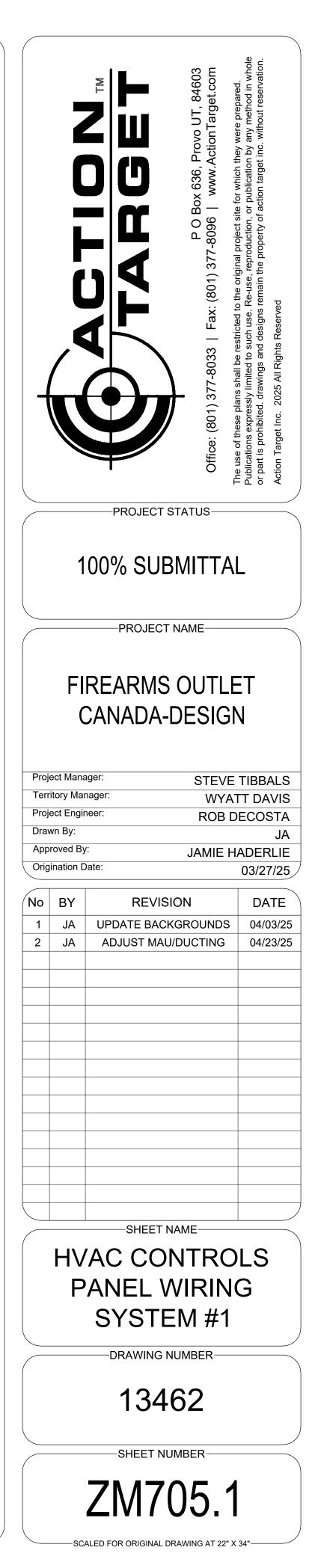


SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SE
	1	RED	+24		RED		
ENTRANCE DOOR	2	WHITE	SIGNAL	18/4	WHITE		
	3	RED	+24		RED		
N/A	4	WHITE	SIGNAL	18/4	WHITE	— N/A	
	5	GREEN	TEMP SIGNAL 0-10V		GREEN		
TEMP/HUMIDITY	6	WHITE	HUMIDITY SIGNAL 0-10V		WHITE		
SENSOR	7	RED	+24	18/4	RED	- 4	
	8	BLACK	DC GRND		BLACK		
	9	GREEN	CO SIGNAL 0-10V		GREEN		
CARBON MONOXIDE	10	WHITE	DC GRND		WHITE		
SENSOR	11	RED	+24	18/4	RED		
	12	BLACK	DC GRND		BLACK		
	13	RED	+24		RED		
OUTSIDE AIR FILTER	14	BLACK	DC GRND	18/4	BLACK	5	
	15	WHITE	OUTSIDE AIR FILTER SIGNAL 0-10V		WHITE		
	16	BROWN	+24		BROWN		
SUPPLY FAN STATUS	17	GREEN	SIGNAL	18/4	GREEN	- 5	
	18	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		
	19	GREEN	DRIVE SIGNAL 0-10V		GREEN		
	20	WHITE	DC GRND	1010	WHITE		
BYPASS DAMPER	21	ORANGE	+24	18/6	BROWN	(4)	
	22	RED	+24		RED		
	23	BLACK	DC GRND		BLACK	_	
	24	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		
	25	GREEN	DRIVE SIGNAL 0-10V		GREEN		
	26	WHITE	DC GRND	40/0	WHITE		
RETURN DAMPER	27	ORANGE	+24	18/6	BROWN	- 5	
	28	RED	+24		RED		
	29	BLACK	DC GRND		BLACK		
	30	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		
	31	GREEN	DRIVE SIGNAL 0-10V		GREEN		
	32	WHITE	DC GRND	40/0	WHITE		
EXHAUST DAMPER	33	ORANGE	+24	18/6	BROWN	3	
	34	RED	+24		RED		
	35	BLACK	DC GRND		BLACK		

15

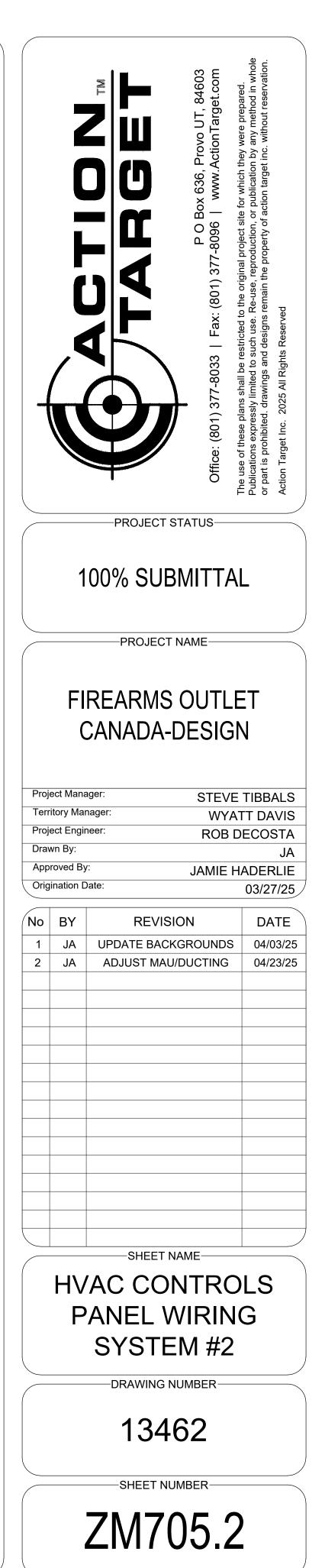
				1 #1 HVAC PAN			00110110			
ENSOR(S)	SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S)		
1		36	BLUE	HEPA FILTER SIGNAL 0-10V		BLUE				
		37	GREEN	BAG FILTER SIGNAL 0-10V		GREEN				
N/A	EXHAUST/RETURN	38	WHITE	DC GRND	18/6	WHITE	- (1)	3 4		
	FILTERS	39	ORANGE	+24	10/0	BROWN		5 4		
		40	RED	+24		RED				
11		41	BLACK	DC GRND		BLACK				
		42	RED	+24	40/4	RED	(12)	45		
	TRAP DOOR	43	WHITE	SIGNAL	18/4	WHITE		15		
		44	GREEN	+24		GREEN				
		45	WHITE	DC GRND		WHITE				
2	EXHAUST FAN VFD	46	RED	VFD ENABLE SIGNAL	18/4	RED	2	13 14		
		47	BLACK	CURRENT SENSOR FB SIGNAL		BLACK				
		48	RED	+24		RED				
7	N/A	49	WHITE	SIGNAL	18/4	WHITE	— N/A	N/A		
		80	GREEN	SIGNAL						
	SMOKE	81	WHITE	+24		BY OTHERS				
6	DETECTOR/FIRE	82	RED	+24		BYOIF	IERS			
		83	BLACK	DC GRND						
		84	GREEN	SUPPLY DP SIGNAL 0-10V		GREEN				
	SUPPLY DUCT	85	WHITE	+24		WHITE				
8	PRESSURE	86	RED	+24	18/4	RED	- 4	10		
		87	BLACK	DC GRND		BLACK				
				DRIVE SIGNAL 0-10V		GREEN				
				DC GRND		WHITE				
	*OUTSIDE AIR DAMPER	SEE FIEL	D WIRING PACKET	+24	18/6	BROWN	5	12		
				+24		RED				
9				DC GRND		BLACK	_			

NOTE: *MAU OUTSIDE AIR DAMPER WIRING FOR EXTERNAL CONTROL DIRECT WIRE TO PLC ANALOG OUTPUT 1 TERMINAL 2.3. SEE FIELD WIRING PACKET FOR ADDITIONAL DETAILS.



		SYSTEM	HVAC PAN		NG					SYSTEM	1 #2 HVAC PAN	EL WIR	ING		
SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S)	SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S)
	1	RED	+24		RED				36	BLUE	HEPA FILTER SIGNAL 0-10V		BLUE		
ENTRANCE DOOR	2	WHITE	SIGNAL	18/4	WHITE	- (16)	16		37	GREEN	BAG FILTER SIGNAL 0-10V		GREEN	_	
	3	RED	+24		RED			EXHAUST/RETURN	38	WHITE	DC GRND		WHITE		
N/A	4	WHITE	SIGNAL	18/4	WHITE	– N/A	N/A	FILTERS	39	ORANGE	+24	18/6	BROWN	- 10	18 19
	5	GREEN	TEMP SIGNAL 0-10V		GREEN				40	RED	+24		RED	_	
TEMP/HUMIDITY	6	WHITE	HUMIDITY SIGNAL 0-10V	10/4	WHITE				41	BLACK	DC GRND		BLACK		
SENSOR	7	RED	+24	18/4	RED	- (13)	26	N1/A	42	RED	+24	40/4	RED	N1/A	N1/A
	8	BLACK	DC GRND		BLACK	_		N/A	43	WHITE	SIGNAL	18/4	WHITE	— N/A	N/A
	9	GREEN	CO SIGNAL 0-10V		GREEN				44	GREEN	+24		GREEN		
CARBON MONOXIDE	10	WHITE	DC GRND	40/4	WHITE	(15)	17		45	WHITE	DC GRND	40/4	WHITE		
SENSOR	11	RED	+24	18/4	RED	- (15)		EXHAUST FAN VFD	46	RED	VFD ENABLE SIGNAL	18/4	RED		28 29
	12	BLACK	DC GRND		BLACK				47	BLACK	CURRENT SENSOR FB SIGNAL		BLACK		
	13	RED	+24		RED			N1/A	48	RED	+24	40/0	RED	N//A	N1/A
OUTSIDE AIR FILTER	14	BLACK	DC GRND	18/4	BLACK	(14)	22	N/A	49	WHITE	SIGNAL	18/6	WHITE	— N/A	N/A
	15	WHITE	OUTSIDE AIR FILTER SIGNAL 0-10V		WHITE				80	GREEN	SIGNAL				
	16	BROWN	+24	18/4	BROWN			SMOKE	81	WHITE	+24				
SUPPLY FAN STATUS	17	GREEN	SIGNAL	-	GREEN	- (14)	21	DETECTOR/FIRE	82	RED	+24		IERS		
	18	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		23		83	BLACK	DC GRND				
	19	GREEN	DRIVE SIGNAL 0-10V		GREEN	_			84	GREEN	SUPPLY DP SIGNAL 0-10V		GREEN		25
	20	WHITE	DC GRND		WHITE			SUPPLY DUCT	85	WHITE	+24	40/4	WHITE	(13)	
BYPASS DAMPER	21	ORANGE	+24	18/6	BROWN			PRESSURE	86	RED	+24	18/4	RED		
	22	RED	+24		RED				87	BLACK	DC GRND		BLACK		
	23	BLACK	DC GRND		BLACK						DRIVE SIGNAL 0-10V		GREEN		
	24	BLUE	FEEDBACK SIGNAL 0-10V		BLUE						DC GRND		WHITE		
	25	GREEN	DRIVE SIGNAL 0-10V		GREEN			*OUTSIDE AIR DAMPER	SEE FIEL	D WIRING PACKET	+24	18/6	BROWN	(14)	27
RETURN DAMPER	26	WHITE	DC GRND	18/6	WHITE	- (14)	24				+24		RED		
RETURN DAMPER	27	ORANGE	+24	16/0	BROWN		24				DC GRND		BLACK		
	28	RED	+24		RED										
	29	BLACK	DC GRND		BLACK										
	30	BLUE	FEEDBACK SIGNAL 0-10V		BLUE										
	31	GREEN	DRIVE SIGNAL 0-10V		GREEN										
	32	WHITE	DC GRND	40/0	WHITE										
EXHAUST DAMPER	33	ORANGE	+24	18/6	BROWN	- (12)	30								
	34	RED	+24		RED										
	35	BLACK	DC GRND		BLACK										

NOTE: *MAU OUTSIDE AIR DAMPER WIRING FOR EXTERNAL CONTROL DIRECT WIRE TO PLC ANALOG OUTPUT 1 TERMINAL 2.3. SEE FIELD WIRING PACKET FOR ADDITIONAL DETAILS.



-SCALED FOR ORIGINAL DRAWING AT 22" X 34"-

SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S
ENTRANCE DOOR	1	RED	+24	40/4	RED		
LEFT	2	WHITE	SIGNAL	18/4	WHITE	- 22	33
ENTRANCE DOOR	3	RED	+24	40/4	RED		
LEFT2	4	WHITE	SIGNAL	18/4	WHITE	- 24	38
	5	GREEN	TEMP SIGNAL 0-10V		GREEN		
	6	WHITE	HUMIDITY SIGNAL 0-10V	40/4	WHITE	20	
TEMP SENSOR	7	RED	+24	18/4	RED		37
	8	BLACK	DC GRND		BLACK		
	9	GREEN	TEMP SIGNAL 0-10V		GREEN		
	10	WHITE	DC GRND	10/1	WHITE		
MAU OA TEMP	11	RED	+24	18/4	RED	— N/A	N/A
	12	BLACK	DC GRND		BLACK	_	
	13	RED	+24		RED		
OUTSIDE AIR FILTER	14	BLACK	DC GRND	18/4	BLACK	(21)	42
	15	WHITE	OUTSIDE AIR FILTER SIGNAL 0-10V		WHITE	_	
	16	BROWN	+24		BROWN		
SUPPLY FAN STATUS	17	GREEN	SIGNAL	18/4	GREEN		35
	18	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		
	19	GREEN	DRIVE SIGNAL 0-10V		GREEN		
	20	WHITE	DC GRND		WHITE		
OUTSIDE AIR DAMPER	21	ORANGE	+24	18/6	BROWN	— N/A	N/A
	22	RED	+24		RED		
	23	BLACK	DC GRND		BLACK		
	24	GREEN	HEAT CONTROL		GREEN		
	25	WHITE	HEAT ENABLE		WHITE		
HEATER CONTROL	26	RED	+24	18/4	RED	— N/A	N/A
	27	BLACK	DC GRND		BLACK		
	29	WHITE	DC GRND		WHITE		
SUPPLY FAN ENABLE	30	RED	ENABLE SIGNAL	18/4	RED	— N/A	N/A
	28	GREEN	+24		GREEN		
SUPPLY FAN STATUS	31	BLACK	SIGNAL	18/4	BLACK	— N/A	N/A

	· · ·	SYSTEM	Л #3 HVAC PAN		ING		1	
SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S	
	32	BLUE	HEPA FILTER SIGNAL 0-10V		BLUE			
	33	GREEN	BAG FILTER SIGNAL 0-10V		GREEN	_		
EXHAUST/RETURN	34	WHITE	DC GRND	4.0/0	WHITE			
FILTERS	35	ORANGE	+24	18/6	BROWN	- (18)	32 33	
	36	RED	+24		RED			
	37	BLACK	DC GRND		BLACK			
	38	RED	+24	10/4	RED		39	
TRAP DOOR	39	WHITE	SIGNAL	18/4	WHITE	- 25	39	
	40	GREEN	+24		GREEN			
	41	WHITE	DC GRND	19/4	WHITE		20 21	
EXHAUST FAN VFD	42	RED	VFD ENABLE SIGNAL	18/4	RED		30 31	
	43	BLACK	CURRENT SENSOR FB SIGNAL		BLACK			
OTHER DOOR	44	RED	+24	18/6	RED	— N/A	N/A	
OTHER DOOR	45	WHITE	SIGNAL	10/0	WHITE	— N/A	IN/A	
	80	GREEN	SIGNAL					
SMOKE	81	WHITE	+24			EDO		
DETECTOR/FIRE	82	RED	+24		втопп	HERS		
	83	BLACK	DC GRND					
	84	GREEN	SUPPLY DP SIGNAL 0-10V		GREEN			
SUPPLY DUCT	85	WHITE	+24	18/4	WHITE	_ 20	36	
PRESSURE	86	RED	+24	10/4	RED		30	
	87	BLACK	DC GRND		BLACK			
			DRIVE SIGNAL 0-10V		GREEN			
			DC GRND		WHITE			
*OUTSIDE AIR DAMPER	SEE FIEL	D WIRING PACKET	+24	18/6	BROWN	(21)	43	
			+24		RED			
			DC GRND		BLACK			

NOTE: *MAU OUTSIDE AIR DAMPER WIRING FOR EXTERNAL CONTROL DIRECT WIRE TO PLC ANALOG OUTPUT 1 TERMINAL 2.3. SEE FIELD WIRING PACKET FOR ADDITIONAL DETAILS.

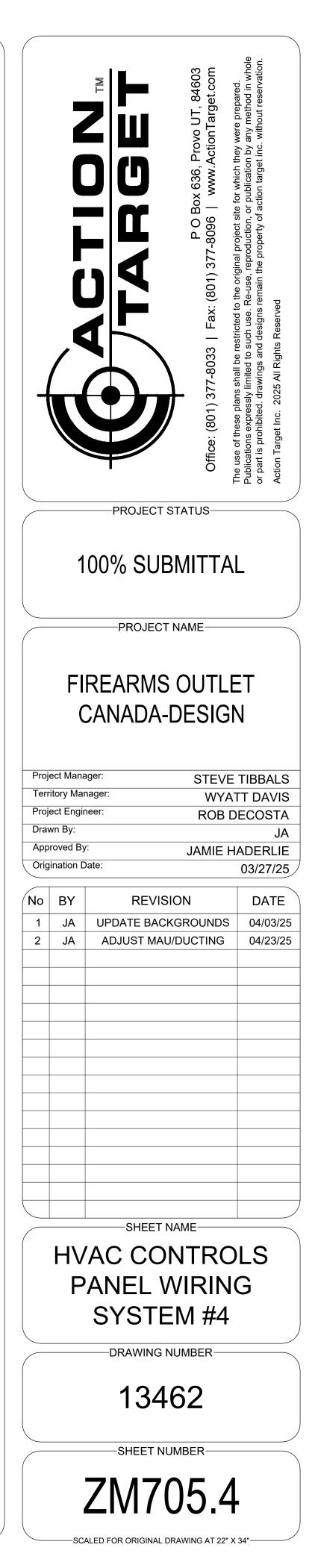


-SCALED FOR ORIGINAL DRAWING AT 22" X 34"-

SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S)
ENTRANCE DOOR	1	RED	+24		RED		
LEFT	2	WHITE	SIGNAL	18/4	WHITE	— N/A	N/A
ENTRANCE DOOR	3	RED	+24		RED		
LEFT2	4	WHITE	SIGNAL	18/4	WHITE	— N/A	N/A
	5	GREEN	TEMP SIGNAL 0-10V		GREEN		
	6	WHITE	HUMIDITY SIGNAL 0-10V		WHITE		
TEMP SENSOR	7	RED	+24	18/4	RED	- 28	49
	8	BLACK	DC GRND		BLACK	_	
	9	GREEN	TEMP SIGNAL 0-10V		GREEN		
	10	WHITE	DC GRND		WHITE		
MAU OA TEMP	11	RED	+24	18/4	RED	— N/A	N/A
	12	BLACK	DC GRND		BLACK		
	13	RED	+24		RED		
OUTSIDE AIR FILTER	14	BLACK	DC GRND	18/4	BLACK	29	52
	15	WHITE	OUTSIDE AIR FILTER SIGNAL 0-10V		WHITE		
	16	BROWN	+24		BROWN	21	
SUPPLY FAN STATUS	17	GREEN	SIGNAL	18/4	GREEN		35
	18	BLUE	FEEDBACK SIGNAL 0-10V		BLUE		
	19	GREEN	DRIVE SIGNAL 0-10V		GREEN		
	20	WHITE	DC GRND		WHITE		
OUTSIDE AIR DAMPER	21	ORANGE	+24	18/6	BROWN	— N/A	N/A
	22	RED	+24		RED		
	23	BLACK	DC GRND		BLACK		
	24	GREEN	HEAT CONTROL		GREEN		
	25	WHITE	HEAT ENABLE		WHITE	_	
HEATER CONTROL	26	RED	+24	18/4	RED	— N/A	N/A
	27	BLACK	DC GRND		BLACK	-	
	29	WHITE	DC GRND		WHITE		
SUPPLY FAN ENABLE	30	RED	ENABLE SIGNAL	18/4	RED	— N/A	N/A
	28	GREEN	+24		GREEN		
SUPPLY FAN STATUS	31	BLACK	SIGNAL	18/4	BLACK	— N/A	N/A

SENSOR NAME	TERMINAL#	TERMINAL COLOR	SIGNAL	WIRE	WIRE COLOR	CONDUIT FEED	SENSOR(S)
	32	BLUE	HEPA FILTER SIGNAL 0-10V		BLUE		
	33	GREEN	BAG FILTER SIGNAL 0-10V		GREEN	_	
EXHAUST/RETURN	34	WHITE	DC GRND	4.0/0	WHITE		
FILTERS	35	ORANGE	+24	18/6	BROWN	- 26	44 45
	36	RED	+24		RED		
	37	BLACK	DC GRND		BLACK		
TRAP DOOR	38	RED	+24	18/4	RED	– N/A	N/A
TRAP DOOR	39	WHITE	SIGNAL	10/4	WHITE	IN/A	IN/A
	40	GREEN	+24		GREEN		
	41	WHITE	DC GRND	10/4	WHITE	27	<u> </u>
EXHAUST FAN VFD	42	RED	VFD ENABLE SIGNAL	18/4	RED		50 51
	43	BLACK	CURRENT SENSOR FB SIGNAL		BLACK		
	44	RED	+24	18/6	RED	N1/A	ΝΙ/Δ
OTHER DOOR	45	WHITE	SIGNAL	18/0	WHITE	– N/A	N/A
	80	GREEN	SIGNAL				
SMOKE	81	WHITE	+24				
DETECTOR/FIRE	82	RED	+24	BY OTHE		EKS	
	83	BLACK	DC GRND				
	84	GREEN	SUPPLY DP SIGNAL 0-10V		GREEN		
SUPPLY DUCT	85	WHITE	+24	40/4	WHITE		40
PRESSURE	86	RED	+24	18/4	RED	- 28	48
	87	BLACK	DC GRND		BLACK		
			DRIVE SIGNAL 0-10V		GREEN		
			DC GRND		WHITE		
*OUTSIDE AIR DAMPER	SEE FIEL	D WIRING PACKET	+24	18/6	BROWN	29	53
			+24		RED		
			DC GRND		BLACK		

NOTE: *MAU OUTSIDE AIR DAMPER WIRING FOR EXTERNAL CONTROL DIRECT WIRE TO PLC ANALOG OUTPUT 1 TERMINAL 2.3. SEE FIELD WIRING PACKET FOR ADDITIONAL DETAILS.



RANGE 1 & 2 SEQUENCE OF OPERATIONS

Startup Sequence:

- Dampers for the systems open to their preset running positions as defined on commissioning
- Start command sent to Return Air Fan
- Start command sent to each Packaged unit
- Packaged unit reports start sequence activated
- Packaged unit actuates internal dampers to running positions as defined on commissioning
- Package unit starts its Supply Fan
- Once Supply Fan current exceeds minimum running current, corresponding return fan will start •
- Supply and Return fans will ramp up and begin controlling supply duct and range pressures.

Normal operation:

Supply fan

• Will regulate its speed to achieve the desired supply duct pressure and air flow across the firing line. Return fan

Will regulate its speed in to achieve the desired range pressure required to create proper air flow across the firing line. Package unit

- Will operate in mode of operation selected on the control screen.
- Heat mode:
- Temperature will be increased if the discharge air temperature goes below the desired setpoint. $\bullet \bullet$
- Cooling Mode:
- Temperature will decrease if the discharge air temperature goes above the desired setpoint. ••
- $\bullet \bullet$ re-heat function to achieve desired setpoint.
- Fan Only:
- The supply and return fan will regulate as normal.
- Humidity and temperature are not controlled in this mode. $\bullet \bullet$

Events, Alarms and Shutdowns:

Door Opened

- The fan will stop modulating for a period of time to eliminate potential for incorrect control due to excess air entering through the door
- If the door is left open for longer than the system allows, the system will either display a warning or shutdown depending upon how the door is configured

CO levels

• If CO levels exceed the warning or alarm threshold, a warning will appear on the control screen, and do not shoot will be illuminated on the control screen

Supply Fan failure

• If a supply fan fails to provide sufficient current feedback, the system will shutdown

Return Fan failure

• If a return fan fails to provide sufficient current feedback, the system will shutdown

Safe to Shoot

• If the range can achieve at least 50% of the desired pressure for a preset amount of time, the Safe To Shoot indication will turn on. If the pressure falls below the lower threshold, the system will shutdown

Filter Levels

- If the filter pressure differential exceeds the alarm setpoint, meaning the filter is starting to reach the end-of-life, an alarm indication will appear on the control screen indicating this condition.
- If the filter pressure differential exceeds the fault setpoint, meaning the filter has reached end-of-life, a alarm will appear on the control screen indicating this condition

Smoke detect

• If configured a smoke detection event occurs, the system will shutdown

Humidity is controlled by drawing moisture out of the air using the cooling coils to drop the air temperature below the dew point, then using the package unit

	CONTROL SYSTI
2	# OF SYSTEMS
	PARALLEL OR INDEPEND
	CUSTOM MASTER HVAC
	CUSTOM HVAC SLAVE P
	EXTRA OR CUSTOM SEN
	PURGE
X	RECIRC
X	GAS HEAT
	ELECTRIC HEAT
	HEAT PUMP
	RECOVERY WHEEL
	ECONOMIZER
X	VARIABLE SPEED/CAPAC
X	AAON PANEL REQUIRED
	COMPRESSOR OFFLOAD
	FREEZE PROTECTION
	OTHER CUSTOM NOTES
X	CUSTOM CODE REQUIRI

CONTROL SYSTEM OPTIONS

DENT

C PANEL

PANEL

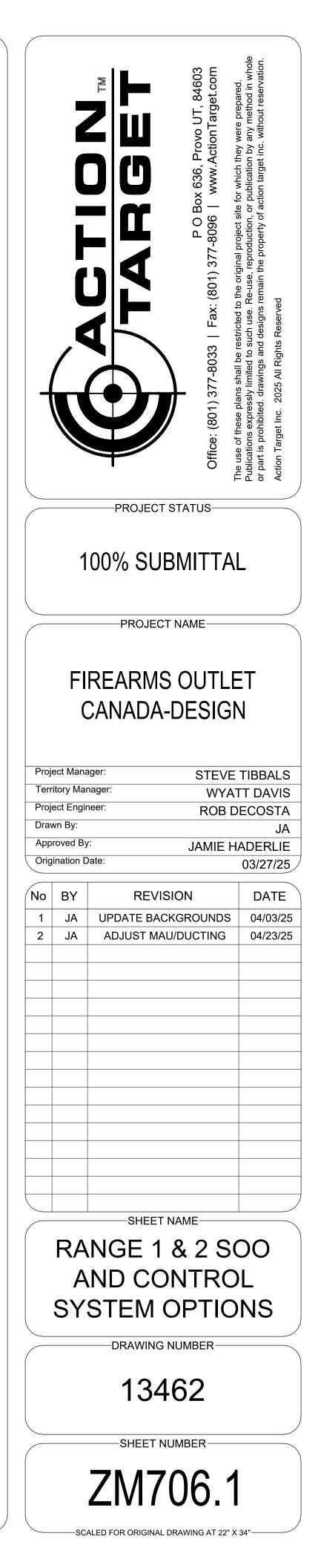
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D LOGIC

AS REQUIRED

ED



RANGE 3 SEQUENCE OF OPERATIONS

Startup Sequence:

- Dampers open to their preset running positions as defined on commissioning
- Start command sent to Return Air Fan
- Start command sent to each Makeup Air Unit
- Makeup Air Unit reports start sequence activated
- Makeup Air Unit actuates internal dampers to running positions as defined on commissioning
- Make Up Air unit starts its Supply Fan
- Once Supply Fan current exceeds minimum running current, corresponding return fan will start
- Supply and Return fans will ramp up and begin controlling supply duct and range pressures.

Normal operation:

Supply fan

Will regulate its speed to achieve the desired supply duct pressure and air flow across the firing line. Return fan

• Will regulate its speed in to achieve the desired range pressure required to create proper air flow across the firing line. Makeup Air Unit

- ATI Controls and a SF and inlet our damper actuator activation enable signal from terminal block 19 OA Damper command enable
- Will operate in mode of operation selected on the control screen.
- Heat mode:
- Temperature will be increased if the discharge air temperature goes below the desired setpoint. $\bullet \bullet$
- Fan Only:
- The supply and return fan will regulate as normal. ••
- Temperature is not controlled in this mode. $\bullet \bullet$

Events, Alarms and Shutdowns:

Door Opened

- The fan will stop modulating for a period of time to eliminate potential for incorrect control due to excess air entering through the door
- If the door is left open for longer than the system allows, the system will either display a warning or shutdown depending upon how the door is configured

Supply Fan failure

• If a supply fan fails to provide sufficient current feedback, the system will shutdown

Return Fan failure

• If a return fan fails to provide sufficient current feedback, the system will shutdown

Safe to Shoot

• If the range can achieve at least 50% of the desired pressure for a preset amount of time, the Safe To Shoot indication will turn on. If the pressure falls below the lower threshold, the system will shutdown

Filter Levels

- If the filter pressure differential exceeds the alarm setpoint, meaning the filter is starting to reach the end-of-life, an alarm indication will appear on the control screen indicating this condition.
- If the filter pressure differential exceeds the fault setpoint, meaning the filter has reached end-of-life, a alarm will appear on the control screen indicating this condition

Smoke detect

• If configured a smoke detection event occurs, the system will shutdown

	CONTROL STST
2	# OF SYSTEMS
Ρ	PARALLEL OR INDEPEND
	CUSTOM MASTER HVAC
	CUSTOM HVAC SLAVE P
	EXTRA OR CUSTOM SEN
X	PURGE
	RECIRC
X	GAS HEAT
	ELECTRIC HEAT
	HEAT PUMP
	RECOVERY WHEEL
	ECONOMIZER
	VARIABLE SPEED/CAPAC
	AAON PANEL REQUIRED
	COMPRESSOR OFFLOAD
	FREEZE PROTECTION
	OTHER CUSTOM NOTES
X	CUSTOM CODE REQUIRE

CONTROL SYSTEM OPTIONS

DENT

C PANEL

PANEL

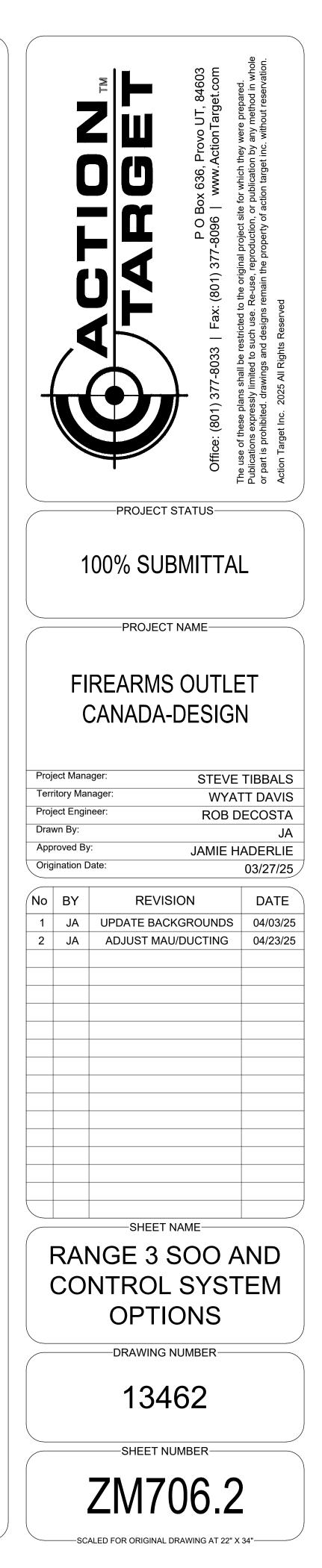
ISORS

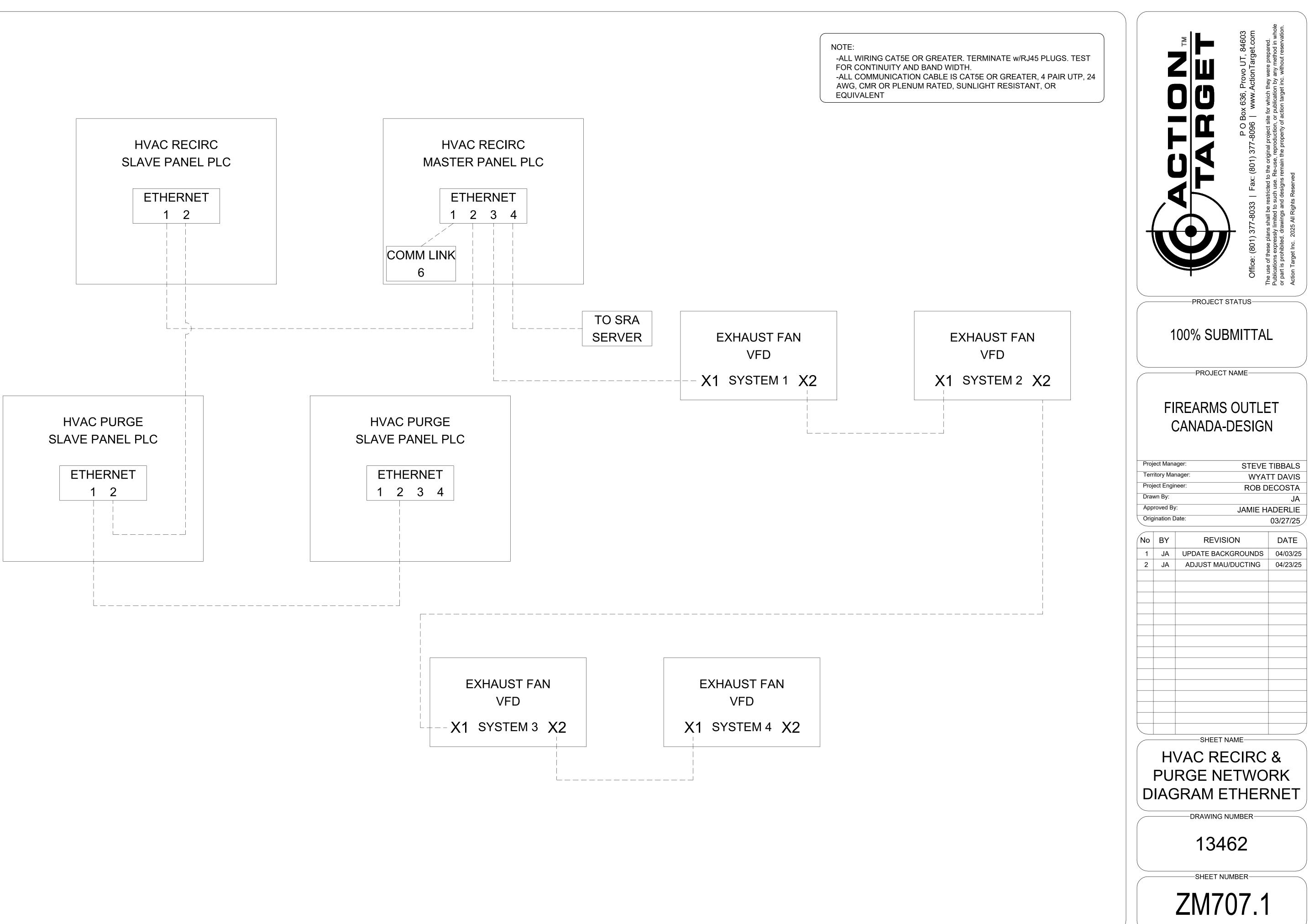
CITY COMPRESSORS

D LOGIC

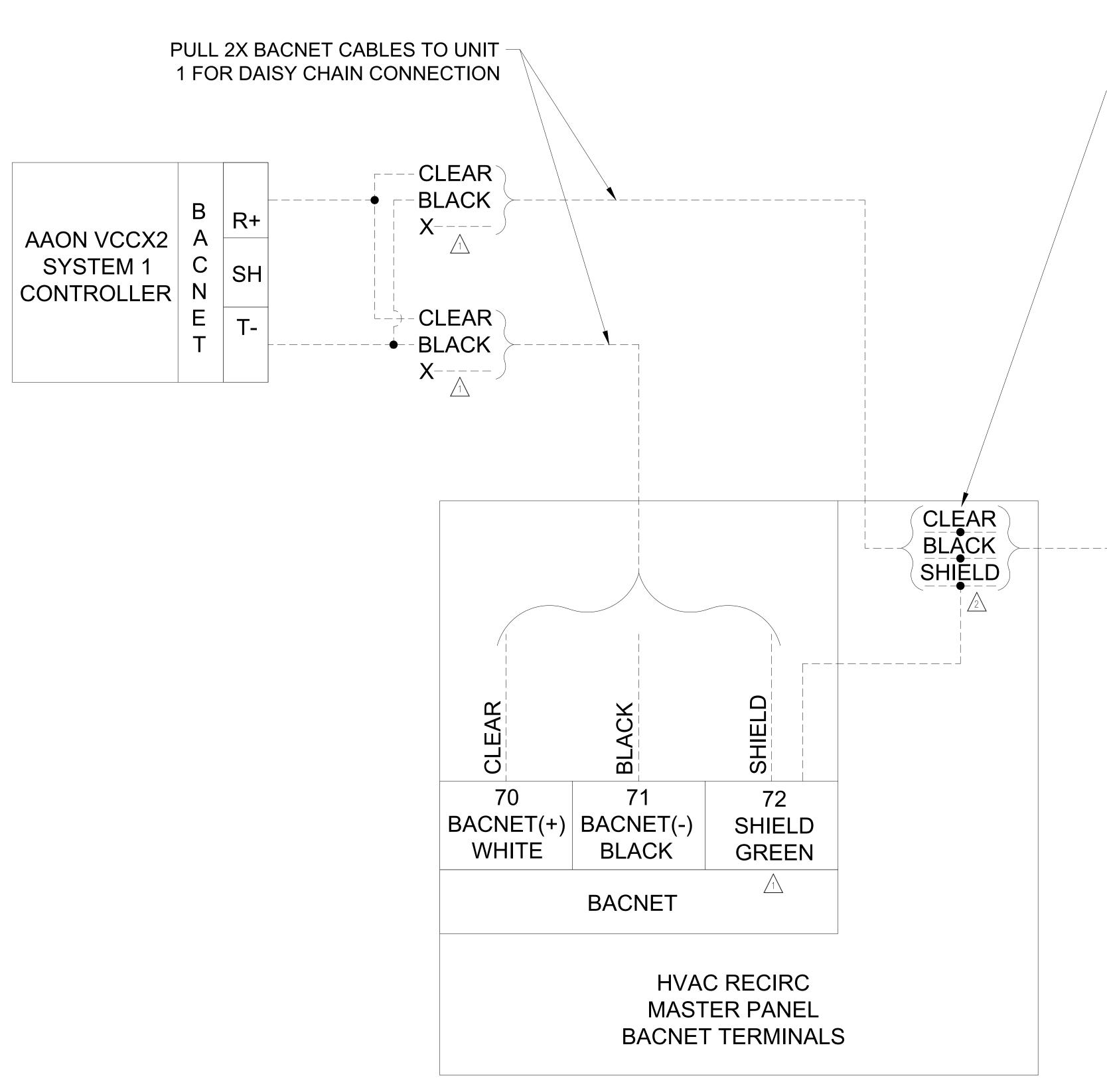
S AS REQUIRED

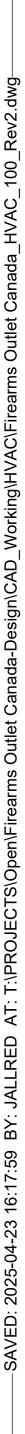
RED

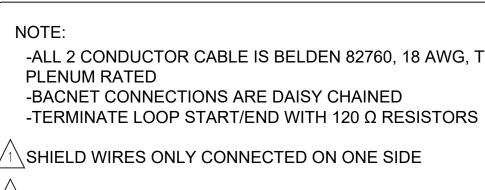




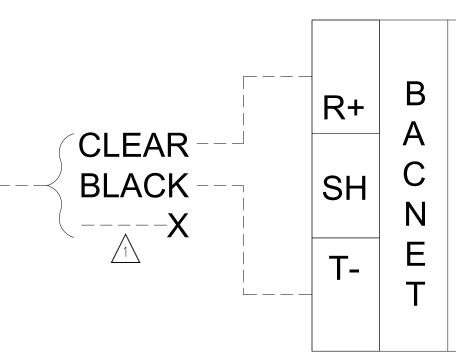
⁻SCALED FOR ORIGINAL DRAWING AT 22" X 34"





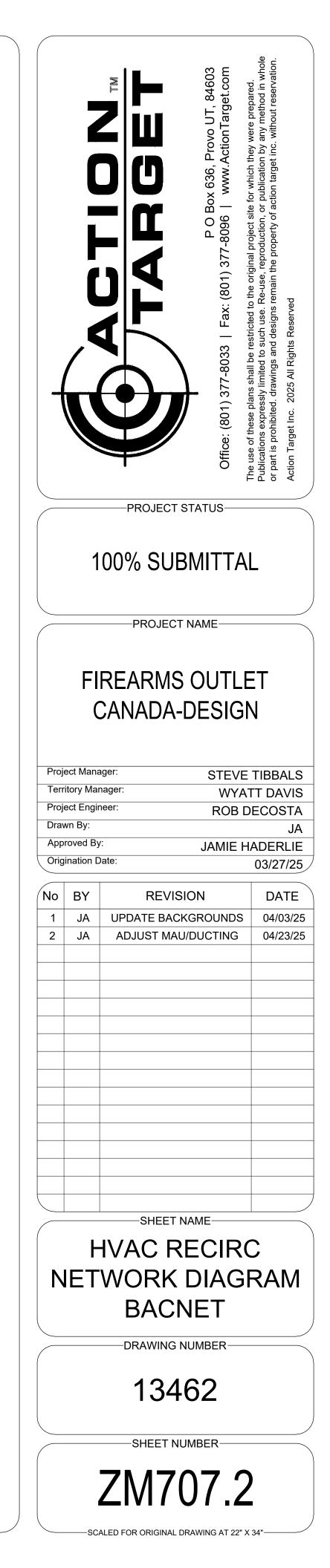


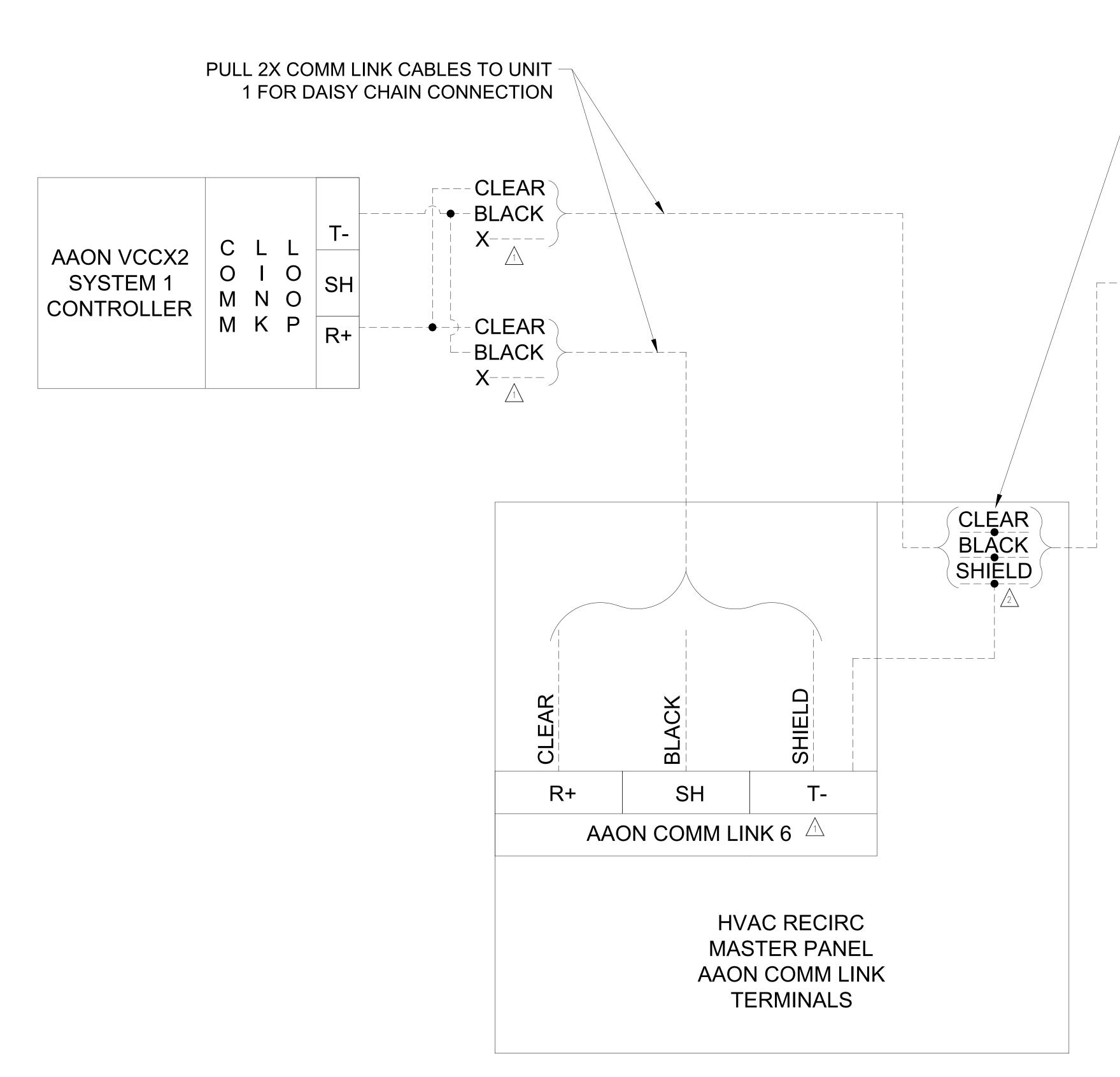
CONNECT DAISY CHAIN BACNET CONNECTION THROUGH MASTER PANEL

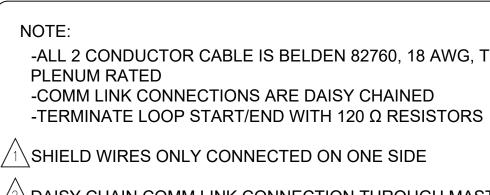


- -ALL 2 CONDUCTOR CABLE IS BELDEN 82760, 18 AWG, TWISTED PAIR,
- $/2 \$ DAISY CHAIN BACNET CONNECTION THROUGH MASTER PANEL

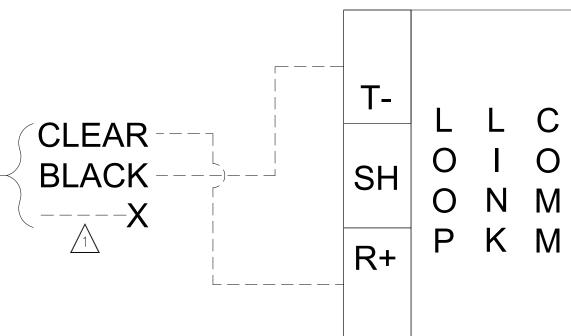
AAON VCCX2 SYSTEM 2 N CONTROLLER







CONNECT DAISY CHAIN COMM LINK CONNECTION THROUGH MASTER PANEL



- -ALL 2 CONDUCTOR CABLE IS BELDEN 82760, 18 AWG, TWISTED PAIR,
- $/2 ar{}$ DAISY CHAIN COMM LINK CONNECTION THROUGH MASTER PANEL

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AAON VCCX2 SYSTEM 2 CONTROLLER

