

# DIVISION 15 SPECIFICATIONS

## PART I - GENERAL

### 1.01 SCOPE

- A. IT IS THE RESPONSIBILITY OF CONTRACTOR TO READ ALL SPECIFICATIONS AND CONSULT ALL DRAWINGS WHICH MAY AFFECT THE INSTALLATION AND COORDINATION OF WORK WITH OTHER TRADES. CONTRACTOR SHALL COORDINATE AND MAKE MINOR ADJUSTMENTS IN LOCATION OF EQUIPMENT AND MATERIALS AS NECESSARY FOR COORDINATION.
- B. COMPLETED INSTALLATION SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES.
- C. SYSTEM LAYOUT IS SCHEMATIC AND EXACT LOCATIONS SHALL BE DETERMINED BY STRUCTURAL CONDITIONS, COORDINATION WITH OTHER TRADES, COORDINATION WITH FINISHES AND OTHER CONDITIONS. STRUCTURAL SUPPORTS SHALL NOT BE CUT OR ALTERED TO ASSURE FIT OF HVAC SYSTEM. TEN FOOT CLEARANCE SHALL BE MAINTAINED BETWEEN OUTSIDE AIR INTAKES AND EXHAUST FANS AND PLUMBING VENT TERMINALS.
- D. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEFECTS, REPAIRS AND REPLACEMENTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER FINAL PAYMENT IS APPROVED. CONTRACTOR SHALL HONOR FACTORY WARRANTIES ON ALL EQUIPMENT PROVIDED AS PART OF THIS SYSTEM.
- E. UPON COMPLETION OF PROJECT, ALL SYSTEM EQUIPMENT AND MATERIALS SHALL BE IN NEW, CLEAN CONDITION WITH ALL DAMAGE RESTORED TO CONDITION ACCEPTABLE TO THE OWNERS REPRESENTATIVE. ALL EQUIPMENT, COMPONENTS, DUCTWORK AND AIR DEVICES SHALL BE INSPECTED AND THOROUGHLY CLEANED, CLEARED OF DEBRIS, AND READY FOR USE. AT COMPLETION OF JOB, ALL MISCELLANEOUS TOOLS, SCAFFOLDING, SURPLUS MATERIALS, RUBBISH AND DEBRIS SHALL BE REMOVED BY CONTRACTOR.
- F. CONTRACTOR SHALL PROVIDE TWO SETS OF 2" MERV 8 OR HIGHER THROW AWAY TYPE FILTERS. A CLEAN SET SHALL BE PROVIDED PRIOR TO TEST AND BALANCE AND AGAIN PRIOR TO OPENING.

## PART II - PRODUCTS

### 2.01 HEATING AND COOLING EQUIPMENT

- A. FURNISH AND INSTALL R-410A ROOFTOP SINGLE PACKAGE COMBINATION ELECTRIC COOLING AND NATURAL GAS FIRED HEATING UNITS AS SHOWN ON DRAWINGS. EQUIPMENT SHALL BE ARI CERTIFIED AND A.G.A. AND U.L. LISTED.
- B. ACCESSORIES SHALL INCLUDE LOW AND HIGH PRESSURE SAFETIES, CRANK CASE HEATER, OVERCURRENT AND OVERTEMPERATURE SAFETY COMPRESSOR VIBRATION ISOLATORS, FILTER DRIERS, REFRIGERANT SERVICE VALVES, COIL HAIL GUARDS WHERE SCHEDULED, CONVENIENCE OUTLETS FACTORY INSTALLED ON SCHEDULED UNITS, UNIT MOUNTED NON-FUSED DISCONNECTS, LOW AMBIENT OPERATION DOWN TO 30 DEGREES F AND EVAPORATOR FREEZE STAT.
- C. COMPRESSORS SHALL BE HERMETIC SCROLL TYPE WITH INTERNAL VIBRATION ISOLATORS. COMPRESSORS SHALL BE PROVIDED WITH A MINIMUM FIVE (5) YEAR FULL WARRANTY.
- D. THE UNIT HEAT EXCHANGERS SHALL BE ALUMINIZED STEEL COATING. HEATING CONTROLS SHALL CONSIST OF REDUNDANT GAS VALVES, INTERMITTENT PILOT WITH ELECTRONIC SPARK OR HOT PLATE IGNITION SYSTEM, COMBUSTION/EXHAUST FAN PROTECTED BY CENTRIFUGAL SWITCHES, HEAT LIMIT SWITCHES, TIME-DELAY RELAY, FLAME, AND PILOT SENSORS. HEAT EXCHANGERS SHALL HAVE A TEN (10) YEAR WARRANTY. BURNERS SHALL BE IN-SHOT TYPE. THE DRAFT MOTOR SHALL BE MONITORED BY THE CONTROL SYSTEM.

### 2.02 DUCTWORK (C15735)

- A. ACCEPTABLE MANUFACTURERS OF INSULATION SHALL BE: JOHNS MANVILLE, OWENS CORNING OR KNAUF.
- B. ALL DUCTWORK SHALL BE SHEET METAL, UNLESS NOTED OTHERWISE (U.N.O.).
- C. DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS, U.N.O.
- D. CONSTRUCTION OF DUCTWORK SHALL MEET SMACNA 1" W.C. PRESSURE CLASS STANDARD AND RECOMMENDATIONS. SMACNA SHALL BE FOLLOWED WITH RESPECT TO GAGE THICKNESS, JOINTS, REINFORCING, CONSTRUCTION, INSTALLATION AND SUPPORT FOR PRESSURE CLASS STATED. ALL TRANSVERSE JOINTS IN RECTANGULAR AND ROUND DUCT INCLUDING DUCT CONNECTION TO AIR DEVICE COLLAR SHALL BE SEALED PER SMACNA SEAL CLASS A WITH U.L. DUCT MASTIC SEALANT APPROVED FOR INTENDED USE. DUCT TAPE IS NOT AN ACCEPTABLE SUBSTITUTE FOR MASTIC UNLESS EQUAL TO HARDCAST FOIL-GRIP 1402 BUTYL RUBBER ADHESIVE TAPE.
- E. DUCT SHALL BE SUPPORTED AT BASE OF DUCT DROPS. CURB DUCT RAILS ARE NOT INTENDED TO AND SHALL NOT SUPPORT THE WEIGHT OF THE DUCT.
- F. ALL DUCT WRAP SHALL BE MINIMUM 2" THICK, 3/4 PCF AND 8 R-VALUE INSTALLED WITH EITHER A VAPOR BARRIER WITH MAXIMUM PERMEANCE 0.05 OR A MINIMUM 2 MIL ALUMINUM REINFORCED FOIL/KRAFT FACING.
- G. ALL DUCT DROPS FROM THE ROOFTOP UNITS SHALL BE EXTERNALLY INSULATED.
- H. SUPPLY AND RETURN AIR DUCTWORK SERVING ALL AREAS SHALL BE EXTERNALLY INSULATED.
- I. ALL AIR CONVEYANCE COMPONENTS SUCH AS, BUT NOT LIMITED TO DUCT, DUCT PLENUMS, GRILLES/DIFFUSERS, BACK PANS, AND BOOTS SHALL BE INSULATED. INSULATION TYPE IS COVERED ELSEWHERE IN THIS SPECIFICATION.
- J. RESTROOM RECTANGULAR EXHAUST AIR DUCTWORK SHALL BE LINED WITH 1" THICK, 1-1/2 PCF INSULATION. RESTROOM ROUND EXHAUST DUCT SHALL BE EXTERNALLY INSULATED PER SECTION 2.02F.
- K. DUCT DROPS SHALL BE ISOLATED FROM UNIT VIBRATION WITH THE USE OF NFPA AND U.L. APPROVED FLEXIBLE CONNECTORS INSTALLED AT THE TOP OF BOTH SUPPLY AND RETURN DROPS.
- L. INSULATED FLEXIBLE DUCT MAY BE UTILIZED FOR RUNOUTS TO GRILLES AND DIFFUSERS ONLY IN THE HORIZONTAL POSITION AND IN MAXIMUM LENGTHS OF 4'-0", NO EXCEPTIONS.
- M. CONSTRUCTION OF FLEXIBLE DUCTWORK SHALL INCLUDE SPIRAL METAL HELIX BONDED TO A POLYESTER CORE, FIBERGLASS INSULATION WITH POLYETHYLENE OR MYLAR VAPOR BARRIER. ALL COMPONENTS SHALL HAVE APPROPRIATE U.L. APPROVAL AND SHALL BE EQUIVALENT TO THERMAFLEX MKE. FLEX DUCT SHALL HAVE A MINIMUM R-VALUE OF 6.
- N. FLEXIBLE DUCT SHALL BE INSTALLED PER THE "ADC FLEXIBLE DUCT PERFORMANCE AND INSTALLATION STANDARDS, 4TH ED" USING FOIL TAPE AND DRAWBAND ON THE INNER CORE AND TAPE OR DRAWBAND ON THE OUTER JACKET.
- O. DUCT TAPE SHALL BE EQUAL TO FASSON 181-B FX, 2-1/2" WIDE.
- P. SINGLE THICKNESS TURNING VANES SHALL BE INSTALLED IN SUPPLY DUCTS AT ALL 90 DEGREE ELBOWS WHERE THE CENTERLINE RADIUS (R) IS LESS THAN THE WIDTH OF THE DUCT AND ANY ONE DIMENSION IS GREATER THAN 12".
- Q. EXTERNAL INSULATION ON BOTTOM OF DUCTS 24" OR WIDER SHALL BE SUPPORTED WITH STICK PINS ON 18" CENTERS. STICK PIN WASHERS SHALL BE COVERED WITH DUCT TAPE OR MASTIC.

### 2.03 CONTROLS

- A. SYSTEMS SHALL BE COMPLETE WITH CONNECTIONS TO CFA-500 TEMPERATURE CONTROL PANEL AS MANUFACTURED BY SUNCOAST ENVIRONMENTAL CONTROLS (S.E.C.) (PH: 877-544-6679). THE PANEL IS PROVIDED AND MOUNTED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING TERMINATIONS ARE BY THE MECHANICAL CONTRACTOR WHERE PERMITTED BY AHJ.
- B. THE SMOKE DETECTORS SHALL BE FACTORY INSTALLED AND WIRED BY THE ROOFTOP UNIT MANUFACTURER.
- C. A FACTORY INSTALLED SMOKE DETECTOR IN THE RETURN AIR SECTION OF EACH AIR CONDITIONING UNIT SHALL STOP THE INDOOR FAN AND CLOSE THE OUTSIDE AIR DAMPER IN THE EVENT OF EXCESSIVE TEMPERATURE OR SMOKE. SMOKE DETECTOR SHALL BE LOCATED PRIOR TO ANY EXHAUST FROM THE BUILDING OR MIXING WITH FRESH AIR MAKE-UP. UPON DETECTION, THE SYSTEM SHALL NOT RESTART UNTIL THE DEVICE IS MANUALLY RESET. DEVICES SHALL BE LOCATED WHERE THEY CAN BE EASILY ACCESSED AND WHERE CLEAR OF FILTERS.
- D. CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH SUNCOAST ENVIRONMENTAL CONTROLS FOR THE SMOKE DETECTOR TEST/RESET ANNUNCIATOR STATIONS. THE TEST/RESET STATIONS WILL BE PURCHASED BY THE ELECTRICAL CONTRACTOR AS A PART OF A NATIONAL ACCOUNT PACKAGE AND TURNED OVER TO THE MECHANICAL CONTRACTOR FOR INSTALLATION.
- E. THE REMOTE TEST/RESET ANNUNCIATORS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. INSTALLATION BY MECHANICAL SHALL INCLUDE MOUNTING OF THE ANNUNCIATORS AND ALL WIRING FROM EACH DEVICE TO THE RTU. ELECTRICAL WILL PROVIDE A JUNCTION BOX IN THE WALL WITH 1/2" CONDUIT STUBBED UP ABOVE THE CEILING FOR EACH REMOTE TEST STATION AS SHOWN ON THE ELECTRICAL PLANS. ANNUNCIATOR SHALL BE SUNCOAST CONTROLS REMOTE TEST/RESET STATION WITH POWER LED, TROUBLE LED, ALARM LED, 90DB HORN AND TEST/RESET BUTTON.
- F. THE RESTROOM FAN SHALL BE INTERLOCKED TO THE LIGHTS SERVING THE MEN AND WOMEN'S RESTROOMS. THE HOOD FANS SHALL BE CONTROLLED VIA THE SUNCOAST CFA-500 CONTROL PANEL, WIRING, RELAYS AND SWITCHES FOR CONTROL OF ALL FANS ARE BY ELECTRICAL CONTRACTOR.
- G. THERMOSTATS ARE PROVIDED AND INTEGRATED INTO THE TEMPERATURE CONTROL PANEL BY SUNCOAST ENVIRONMENTAL CONTROLS. SUNCOAST WILL PROVIDE A NETWORK THERMOSTAT US32-CFA THERMOSTAT PRE-WIRED IN THE TEMPERATURE CONTROL PANEL. REMOTE TEMPERATURE SENSOR(S) FOR EACH THERMOSTAT IS ALSO PROVIDED. MECHANICAL CONTRACTOR SHALL INSTALL ALL WIRING BETWEEN THE THERMOSTAT, THE REMOTE SENSOR(S) AND THE ROOFTOP UNIT.
- H. MECHANICAL CONTRACTOR SHALL INSTALL CONTROL WIRING IN 1/2" CONDUIT WHERE REQUIRED BY CODE. WHERE NOT REQUIRED TO BE IN CONDUIT, ALL WIRING SHALL BE RUN PARALLEL TO STRUCTURAL MEMBERS OR PERPENDICULAR WITH NO DIAGONAL ROUTING. ALL WIRING SHALL BE SECURED TO THE FRAMING TO PREVENT SAGGING IN RUNS. WIRING TO ROOFTOP UNITS SHALL BE ROUTED THROUGH THE FACTORY THRU-BASE FITTING IN THE UNIT BASE. NO SPLICING OF WIRING WILL BE ACCEPTED. ALL WIRING ABOVE THE ROOF SHALL BE INSTALLED IN EXTERIOR GRADE FLEXIBLE CONDUIT. ALL CONTROL WIRING AND CONTROL WIRING CONDUIT SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. WIRING SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF NEC. ALL LOW VOLTAGE CONTROL WIRING SHALL BE NO LESS THAN 18 AWG MIN. CONTROL WIRING CONDUCTORS SHALL BE SIZED TO ACCOUNT FOR LOAD AND LENGTH OF RUN TO ALLOW SUFFICIENT VOLTAGE AVAILABLE AT CONTROLLED DEVICE TO OPERATE THE SYSTEM RELIABLY.

### 2.04 PIPING

- A. ALL ABOVE GRADE NATURAL GAS PIPING SHALL BE SCHEDULE 40 STEEL MEETING ASTM A53 WITH SCREWED OR WELDED FITTINGS AND GASKET TYPE UNIONS AND FLANGES. FOR SCREWED PIPING, PIPING SHALL BE JOINED WITH BLACK 150 POUND MALLEABLE IRON SCREWED FITTINGS AS ALLOWED BY LOCAL AUTHORITY. CONTRACTOR SHALL VERIFY THE NEED FOR WELDED PIPING AS REQUIRED BY THE LOCAL GAS CODE AND/OR APPLICABLE LOCAL ORDINANCES AND AMENDMENTS.
- B. ALL BELOW GRADE NATURAL GAS PIPING SHALL BE MEDIUM DENSITY POLYETHYLENE (PE) MEETING ASTM D2513 AS MANUFACTURED BY GASTITE WITH JOINING SYSTEM AS MANUFACTURED BY CON-STAB. TRANSITIONS FROM ABOVE GRADE RIGID PIPING TO PE BELOW GRADE PIPING SHALL BE MADE WITH ANODE-LESS RISER ASSEMBLY AS MANUFACTURED BY CON-STAB.

- C. PROVIDE AND INSTALL A CUT-OFF VALVE, UNION AND FULL SIZE DIRT LEG AT CONNECTION TO EACH GAS-FIRED PIECE OF EQUIPMENT. INSTALL PIPING AT AND AROUND EQUIPMENT SO AS TO NO WAY OBSTRUCT EQUIPMENT ACCESS PANELS AND/OR ACCESS DOORS.
- D. ALL GAS PIPING ABOVE ROOF SHALL BE CLEANED FREE OF RUST AND PAINTED WITH COAT OF ZINC RUST PRIMER AND ONE COAT OF ALUMINUM BASE PAINT. METER AND GAS RISER SHALL BE PRIMED AND PAINTED TO MATCH BUILDING.

- E. NATURAL GAS PIPING SHALL BE LEAK TESTED IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS AND MANUFACTURERS RECOMMENDATIONS.

## PART III - EXECUTION

### 3.01 SCOPE

- A. FURNISH AND INSTALL SYSTEM IN ACCORDANCE WITH REFERENCED STANDARDS, APPLICABLE CODES, MANUFACTURER'S RECOMMENDATIONS AND AS INDICATED ON DRAWINGS.
- B. CONTRACTOR SHALL INSTRUCT THE OWNER'S REPRESENTATIVE IN ALL MATTERS PERTAINING TO THE PROPER MAINTENANCE OF EQUIPMENT FURNISHED UNDER THIS CONTRACT THROUGH DEMONSTRATION AND EXPLANATION OF OPERATING & MAINTENANCE MANUALS.
- C. CONTRACTOR SHALL PROVIDE A "SAMPLE MAINTENANCE PROPOSAL" TO THE OWNER'S REPRESENTATIVE IN ALL MATTERS PERTAINING TO THE PROPER MAINTENANCE OF EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- D. CONTRACTOR SHALL COMPLETE A/C EQUIPMENT STARTUP DOCUMENTATION PROVIDED BY OWNER AND/OR MANUFACTURER. THIS SHALL INCLUDE RE-TORQUE OF ALL FIELD AND FACTORY HIGH VOLTAGE CONNECTIONS.

### 3.02 LEED PROJECTS

- A. CONTRACTOR SHALL COMPLETE RECEIPT INSPECTION CHECKLISTS PROVIDED IN THE COMMISSIONING PLAN WITHIN 5 DAYS OF RECEIVING EQUIPMENT ON SITE.
- B. CONTRACTOR SHALL COMPLETE PRE-FUNCTIONAL CHECKLISTS PROVIDED IN THE COMMISSIONING PLAN. CHECKLISTS SHALL BE RETURNED AT LEAST 5 DAYS PRIOR TO SCHEDULING FUNCTIONAL PERFORMANCE TESTING.
- C. CONTRACTOR SHALL PROVIDE A TECHNICIAN TO ASSIST THE THIRD PARTY COMMISSIONING AUTHORITY WITH FUNCTIONAL TESTING. FUNCTIONAL TESTING SHALL OCCUR AFTER ALL CONTROLS HAVE BEEN INSTALLED AND VERIFIED AND AFTER TEST AND BALANCE IS COMPLETE. THE FUNCTIONAL PERFORMANCE TEST PROCEDURES CAN BE FOUND IN THE COMMISSIONING PLAN.
- D. IF THE TOTAL TIME REQUIRED TO CORRECT PROBLEMS DURING TESTING IS GREATER THAN FORTY-FIVE (45) MINUTES (UNLESS EXTENUATING CIRCUMSTANCES EXIST), THE TEST SHALL BE CONSIDERED FAILED AND MUST BE REPEATED IN ITS ENTIRETY.
- E. RE-TESTING: DURING THE COURSE OF THE RETEST, IF AT ANY POINT A MAJOR DEFICIENCY IS DISCOVERED, THE TEST WILL BE STOPPED. REPEAT TESTS UNTIL ACCEPTABLE RESULTS ARE ACHIEVED. IF MORE THAN TWO FUNCTIONAL PERFORMANCE TESTS (ONE INITIAL TEST AND ONE RETEST) FOR ANY TYPE OF EQUIPMENT DUE TO ISSUES THAT THE CONTRACTOR HAD DIRECT OR INDIRECT CONTROL OVER ARE REQUIRED, THE COSTS FOR THE CXA TO WITNESS RETESTING OF SIMILAR TYPES OF EQUIPMENT UNTIL SATISFACTORY RESULTS ARE OBTAINED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

### 3.03 TEST & BALANCE

- A. OWNER SHALL TEST AND BALANCE MECHANICAL SYSTEM IN ACCORDANCE WITH NEBB, NBC OR AAC STANDARDS TO ASSURE CONFORMANCE WITH DESIGN. G.C. WILL MAKE MECHANICAL CONTRACTOR AVAILABLE DURING TEST AND BALANCE TO ASSIST TESTING AGENCY AND TO MAKE CORRECTIONS IMMEDIATELY NECESSARY. CONTRACTOR SHALL CORRECT ITEMS ON WRITTEN TEST AND BALANCE REPORT.
- B. ALL EQUIPMENT TO BE BALANCED MUST HAVE GONE THRU SUCCESSFUL START-UP PROCEDURE BY THE MECHANICAL CONTRACTOR (MC) PRIOR TO TAB VISIT.
- C. THE FLOOR OF THE RESTAURANT SHALL BE CLEARED OF DEBRIS, STAGED CONSTRUCTION MATERIALS, EQUIPMENT, ETC. WHICH MAY, IN THE OPINION OF THE TAB TECHNICIAN, OBSTRUCT ACCESS TO AIR DISTRIBUTION COMPONENTS IN AND ABOVE THE CEILING.
- D. EQUIPMENT ACCESS PANELS, DUCT AIR DEVICES SUCH AS BALANCING DAMPERS AND ACTUATORS SHALL BE ACCESSIBLE AND CLEAR OF PIPING, CONDUIT, FRAMING, SUPPORTS ETC..
- E. PROVIDE AN 8 FT PORTABLE A-FRAME STYLE LADDER DEDICATED FOR THE TAB TECHNICIAN'S USE DURING THE ENTIRE TAB EFFORT DURATION.

## KITCHEN HOOD SYSTEMS NOTES

1. CHICK-FIL-A MAINTAINS A NATIONAL ACCOUNT WITH HALTON CO. FOR THE HOODS. CHICK-FIL-A WILL PURCHASE AND PROVIDE THE HOODS FOR INSTALLATION BY THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR RECEIVING THE HOODS. CONTACT HALTON CO. AT 270-237-5600 FOR MORE INFO.
2. THE FIRE SUPPRESSION SYSTEM SHALL CONSIST OF A COMPLETE WET CHEMICAL SYSTEM FURNISHED BY HALTON. THE HOOD SHALL BE FURNISHED PRE-PIPED BY HALTON.
3. THE FIRE SUPPRESSION SYSTEM EXTERNAL TO THE HOODS SHALL BE INSTALLED IN ACCORDANCE WITH HOOD MANUFACTURER'S SHOP DRAWINGS BY AN AUTHORIZED INSTALLER SELECTED AND HIRED BY HALTON. COST FOR INSTALLATION INCLUDED IN PRICE OF HOODS TO CFA.
4. HOOD EXHAUST DUCTWORK SHALL BE 16 GA. BLACK STEEL WITH CONTINUOUS LIQUID TIGHT WELD OF JOINTS & SEAMS.
5. TURNS IN GREASE EXHAUST DUCTWORK SHALL BE LONG RADIUS TYPE, WITH A CENTERLINE RADIUS R=3W/2, UNLESS OTHERWISE NOTED. NO MITERED FITTINGS ALLOWED.
6. ALL STAINLESS STEEL CLOSURE PANELS SHALL BE SUPPLIED BY HOOD MANUFACTURER AND INSTALLED BY THE MECHANICAL CONTRACTOR ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. SLOPE ALL GREASE EXHAUST DUCT BACK TO HOOD AT 1/4" PER FOOT OF RUN.
8. WRAP NEAR GREASE DUCT WITH UNIFRAX FYREWAP. INSULATION ON ACCESS DOORS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTALLATION RECOMMENDATIONS. UNIFRAX FYREWAP PRODUCT USED SHALL MEET LOCAL CODE REQUIREMENTS.
9. SUPPORT ALL HOODS WITH THREADED ROD AT EACH FACTORY SUPPORT POINT. EACH SUPPORT POINT MUST SUPPORT THE HOOD WEIGHT EQUALLY. ATTACH TO STRUCTURE AS DETAILED ON STRUCTURAL DRAWINGS. ATTACH HOOD TO WALL AT 16" INTERVALS ALONG FULL LENGTH OF HOOD ON TOP AND BOTTOM. ATTACHMENT TO WALL REQUIRES FIELD DRILLING OF SUPPORT ANGLE AT BACK OF HOODS. EACH WALL ATTACHMENT POINT MUST OCCUR AT A WALL STUD. ATTACHMENT HARDWARE TO BE #12-24 HEX HEAD SHEET METAL SCREW EQUAL TO TEXTRON SDS EDT265, LENGTH AS REQUIRED TO FULLY PENETRATE THE STUD.

## LEGEND

A-12-400	TYPE - NECK SIZE - CFM	EF#1	EXHAUST FAN #1 (TYP.)
	SPIN-IN FITTING WITH MANUAL BALANCING DAMPER, WITHOUT SCOOP	AC#1	AIR CONDITIONING UNIT #1 (TYP.)
	SPIN-IN HARD FLEXIBLE DIFFUSER		RETURN/EXHAUST (TYP.)
	REMOTE TEMPERATURE SENSOR		SUPPLY DIFFUSER, SQ FACE (TYP.)
	HUMIDITY SENSOR		PLAN NOTE REFERENCE
	SMOKE DETECTOR		MANUAL VOLUME DAMPER
	DUCT SIZE (reverse for elevation views)		DIRECTION OF THROW ON DIFFUSER
	1ST NUMBER - HORIZONTAL DIMENSION		CLOSED AIR PATTERN DEFLECTOR
	2ND NUMBER - VERTICAL DIMENSION		GAS INFRARED HEATER (TYP.)
	AIR DOOR SWITCH		ELECTRIC INFRARED HEATER
	ELECTRIC INFRARED HEATER		BELOW GRADE
	PULL STATION		THERMOSTAT

## ABBREVIATIONS

EC	ELECTRICAL CONTRACTOR
GC	GENERAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
PC	PLUMBING CONTRACTOR
O.C.	ON CENTER
IRH	INFRARED HEATER
CF	CIRCULATING FAN
TF	TRANSFER FAN
EF	EXHAUST FAN

## GENERAL NOTES

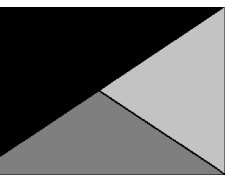
1. DUCT SIZES SERVING DIFFUSERS AND GRILLES ARE SAME SIZE AS DIFFUSER OR GRILLE NECK UNLESS NOTED OTHERWISE.
2. FLEXIBLE DUCT AND INSULATION NOT SHOWN FOR CLARITY.
3. FOR ALL ROOF EQUIPMENT, PROVIDE A PLASTIC ENGRAVED LABEL WITH 1" HIGH WHITE LETTERS ON A BLACK BACKGROUND. WITH A SELF ADHESIVE BACKING.
4. UNLESS NOTED OTHERWISE, MC TO ADJUST ALL DIFFUSER AIR PATTERN DEFLECTORS TO THROW HORIZONTALLY ALONG THE CEILING.
5. ALL EXHAUST DUCTWORK AND UNFINISHED METAL ON ROOF EXCEPT STAINLESS SHALL BE PREPARED WITH COATS OF SHERWIN WILLIAMS PRO INDUSTRIAL DTM ACRYLIC COATING, SEMI-GLOSS, WHITE. DEGREASE AND PRIME BARE METAL SURFACE WITH ONE COAT OF SHERWIN WILLIAMS PRO INDUSTRIAL PRO-CRYLACRYLIC UNIVERSAL PRIMER, WHITE, PRIOR TO PAINTING.
6. MAINTAIN 18" CLEARANCE FROM GREASE EXHAUST DUCTWORK ABOVE ROOF TO ANY COMBUSTIBLE CONSTRUCTION INCLUDING PARAPET WALLS.

## CANOPY GENERAL NOTES

1. COORDINATE WORK WITH CONDUIT, STRUCTURE, AND PIPING. FIELD VERIFY CONDITIONS PRIOR TO START OF WORK.
2. COORDINATE LOCATION AND RESPONSIBILITIES FOR UNDERGROUND PIPING AND ASSOCIATED TRENCHING WITH GENERAL CONTRACTOR PRIOR TO START OF WORK.
3. EXPOSED GAS PIPING SHALL BE COVERED WITH A RUST INHIBITING PAINT SUCH AS RUST-OLEUM 5200. PAINT COLOR SHALL MATCH STRUCTURE. ROOF MOUNTED GAS PIPING COLOR SHALL BE YELLOW.
4. CONTROL WIRING FOR HEATERS BY EC. COORDINATE REQUIRED WIRE GAUGE WITH EC. SEE CONTROLS PLAN AND ELECTRICAL DRAWINGS, (TYP.).



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08/15/25

**CHICK-FIL-A**  
Beech Grove FSU

5151 E Thompson Rd  
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**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE

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REVISION SCHEDULE

NO. DATE DESCRIPTION

**M-001**

IECC COMMISSIONING REQUIREMENTS FOR MECHANICAL

IECC COMMISSIONING REQUIREMENTS

C408.1 MECHANICAL SYSTEMS SHALL BE DOCUMENTED IN ACCORDANCE WITH THE FOLLOWING SECTIONS.

C408.1.1 - PROVIDE AN OPERATION AND MAINTENANCE MANUAL WHICH INCLUDES THE FOLLOWING:

1. PROVIDE HVAC EQUIPMENT SUBMITTAL DATA.
2. PROVIDE MANUFACTURER'S OPERATION AND MAINTENANCE MANUALS FOR HVAC EQUIPMENT. ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
3. PROVIDE THE NAME AND ADDRESS OF AT LEAST ONE HVAC SERVICE AGENCY.
4. PROVIDE HVAC CONTROL SYSTEM MAINTENANCE AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCES. TENANT DESIRED DRAWINGS AT CONTROL DEVICES OR IN SYSTEM PROGRAMMING INSTRUCTIONS.
5. PROVIDE A NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING RECOMMENDED SETPOINTS.

C408.2 COMMISSIONING OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS.

C408.2.1 - A COMMISSIONING PLAN SHALL BE DEVELOPED IN ACCORDANCE WITH THIS SECTION AND SHALL INCLUDE THE FOLLOWING ITEMS.

1. A NARRATIVE DESCRIPTION OF THE ACTIVITIES TO BE PERFORMED.
2. A LIST OF THE SYSTEMS AND EQUIPMENT REQUIRED TO BE COMMISSIONED.
3. A LIST OF THE TEST FUNCTIONS TO BE PERFORMED ON THE CORRESPONDING EQUIPMENT.
4. CONDITIONS UNDER WHICH THE TEST WILL BE PERFORMED.
5. MEASURABLE CRITERIA FOR PERFORMANCE.

C408.2.2 - MECHANICAL SYSTEMS SHALL UNDERGO TEST AND BALANCE AND SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS AS WELL AS THE 2018 IECC. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE CONSTRUCTION SPECIFICATIONS.

C408.2.2.1 - CONDUCT AIR SYSTEMS TEST AND BALANCE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION AND THE CONSTRUCTION SPECIFICATIONS.

C408.2.2.2 - CONDUCT WATER SYSTEMS TEST AND BALANCE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION AND THE CONSTRUCTION SPECIFICATIONS.

C408.2.3 - PERFORM FUNCTIONAL PERFORMANCE TESTING IN ACCORDANCE WITH THE FOLLOWING SECTIONS.

C408.2.3.1 - PERFORM FUNCTIONAL PERFORMANCE TESTING FOR HVAC EQUIPMENT IN ORDER TO DEMONSTRATE THE OPERATION OF COMPONENTS, SYSTEM AND SYSTEM-TO-SYSTEM INTERACTION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER REQUIREMENTS. TESTING SHALL INCLUDE FULL-LOAD, PART-LOAD, AND EMERGENCY OPERATING CONDITIONS AND SHALL COVER ALL OPERATING MODES LISTED IN THE SEQUENCE OF OPERATIONS AS DEFINED IN THE CONSTRUCTION DOCUMENTS.

C408.2.3.2 - HVAC SYSTEMS SHALL BE TESTED IN ORDER TO DOCUMENT THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT AND SYSTEMS ARE CALIBRATED AND ADJUSTED TO OPERATE IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS. HVAC CONTROL SYSTEMS SHALL BE TESTED FOR ALL OPERATING MODES LISTED IN THE SEQUENCE OF OPERATIONS AS DEFINED IN THE CONSTRUCTION DOCUMENTS.

C408.2.3.3 - AIRSIDE ECONOMIZERS SHALL UNDERGO FUNCTIONAL PERFORMANCE TESTING IN ORDER TO ENSURE OPERATIONAL MODES ARE FUNCTIONING IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

C408.2.4 - COMPLETE A PRELIMINARY COMMISSIONING REPORT OUTLINING TEST PROCEDURES AND RESULTS IN ACCORDANCE WITH THIS SECTION. THE REPORT SHALL IDENTIFY:

1. ITEMIZATION OF DEFICIENCIES FOUND DURING TESTING REQUIRED BY THIS SECTION THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION.
2. DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF THE REPORT PREPARATION DUE TO CLIMATIC CONDITIONS.
3. CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.
4. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
5. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS, INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE.

C408.2.4.1 - THE OWNER SHALL RECEIVE A COPY OF THE PRELIMINARY COMMISSIONING REPORT BEFORE FINAL INSPECTION BY THE CODE OFFICIAL OCCURS.

C408.2.4.2 - THE PRELIMINARY COMMISSIONING REPORT SHALL BE MADE AVAILABLE TO THE PROJECT CODE OFFICIAL UPON REQUEST.

C408.2.5 - COMMISSIONING DOCUMENTATION OUTLINED IN SECTION C408 SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.

C408.2.5.1 - PROVIDE AIR AND WATER SYSTEM TEST AND BALANCE REPORTS IN ACCORDANCE WITH SECTION C408.2.2.

C408.2.5.2 - PROVIDE A FINAL COMMISSIONING REPORT TO THE OWNER INCLUDING THE FOLLOWING:

1. RESULTS OF THE FUNCTIONAL TESTS.
2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
3. FUNCTIONAL PERFORMANCE TESTING PROCEDURES USED DURING THE COMMISSIONING PROCESS, INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED FOR REPEATABILITY.
4. LIST OUT ANY DEFERRED TESTS STILL OUTSTANDING DUE TO CLIMATIC CONDITIONS.

E

D

C

B

A

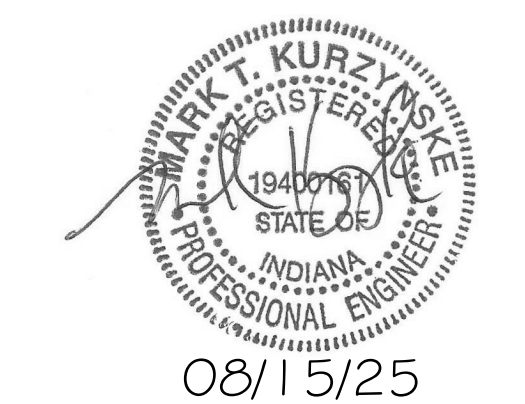


Chick-fil-A

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**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR:  
CONSTRUCTION

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT # 25048.EH.S  
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SHEET  
COMMISSIONING  
REQUIREMENTS -  
MECHANICAL  
SHEET NUMBER

**M-002**

**KEY NOTES**

- 1 10" DIA. DUCT UP THRU ROOF.
- 4 AIR CURTAIN MOUNTED OVER DOOR HEADER AT 7'-2" AFF TO BOTTOM OF UNIT. PROVIDE BLOCKING IN WALL BEHIND AIR CURTAIN. USE FACTORY PRE-PUNCHED MOUNTING HOLES ON BACK SIDE OF AIR CURTAIN ONLY. ATTACH AIR CURTAIN TO WALL USING 3/8" LAG BOLTS. LENGTH AS REQUIRED TO FULLY PENETRATE BLOCKING. LOCATE MAGNETIC CONTACT TYPE MICROSWITCH IN DOOR FRAME ON STRIKE SIDE.
- 9 BRANCH TAKE-OFFS ARE NOT TO BE LOCATED CLOSER THAN 3'-0" FROM ANY OFFSET OR ELBOW INCLUDING THE SUPPLY AIR DROP FROM CURB.
- 21 HALTON KBD DAMPER AT HOOD COLLAR BY MECHANICAL CONTRACTOR. SEE HOOD ELEVATIONS ON M-201 FOR LOCATION.
- 27 MECHANICAL CONTRACTOR TO CLOSE THE AIR PATTERN DEFLECTORS ON SHADED SIDE.
- 29 MOUNT AIR CURTAIN ABOVE CEILING. REFER TO SECTION ON SHEET M-301. LOCATE MAGNETIC CONTACT TYPE MICROSWITCH IN DOOR FRAME ON STRIKE SIDE.
- 35 MOUNT HUMIDITY SENSOR ON WALL ABOVE SPACE TEMP SENSOR AND ROUTE WIRING TO UNIT ON ROOF.
- 38 MOUNT REMOTE SENSOR ON WALL AT 5'-0" AFF U.N.O. AND ROUTE WIRING BACK TO SUNCOAST TEMP CONTROL PANEL. FOR SENSOR SERVING AC#1, COORDINATE EXACT LOCATION WITH KITCHEN EQUIPMENT.
- 43 ROUTE DUCT WITHIN STRUCTURE.
- 45 TRANSFER AIR DUCT, NO BALANCING DAMPERS AT GRILLES.
- 47 TRANSITION IN VERTICAL DROP FROM FULL SIZE OF CURB OPENING TO SIZE SHOWN. TRANSITION WITHIN CURB WHERE REQUIRED TO AVOID STRUCTURE. WHERE SUPPLY DUCT, PROVIDE ELBOWS WITH TURNING VANES. WHERE RETURN DUCT, NO TURNING VANES IN ELBOWS. HORIZONTAL DUCT MINIMUM 10" ABOVE CEILING TO BOTTOM OF DUCT.
- 54 SEE ELEVATIONS ON M-201 FOR CJ FAN DUCTING REQUIREMENT.
- 60 MOUNT THERMOSTAT FOR TRANSFER FAN AT 4'-0" AFF.
- 61 PROVIDE RUSKIN CD35 MANUAL BALANCING DAMPER WITH 6" MAXIMUM BLADE WIDTH. OPPOSED BLADE ACTION. LOCKING QUADRANT HANDLE WITH 2" STANDOFF AND 16 GA GALVANIZED BLADE AND FRAME CONSTRUCTION.
- 62 RETURN DUCT FULL SIZE DOWN FROM CURB OPENING. TAP 28"x26" RETURN DUCT INTO SIDE OF PLENUM DROP. NO TURNING VANES.
- 65 TO AC#4, SENSOR #1. SEE 2/M-701.
- 66 TO AC#4, SENSOR #2. SEE 2/M-701.
- 67 TO AC#4, SENSOR #3. SEE 2/M-701.
- 71 CONTROL DAMPER SHALL BE INSTALLED FACING THE ACT CEILING FOR ACCESS.
- 79 PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT, OCCUPIED/UNOCCUPIED TERMINALS. MOUNT THERMOSTAT ON WALL AT 4'-0" AFF. OCCUPIED SETPOINTS: 75 DEG. F COOLING, 69 DEG. F HEATING; UNOCCUPIED SETPOINTS: 85 DEG. F COOLING, 55 DEG. F HEATING.
- 80 CEILING MOUNTED RECIRCULATING FAN. DUCT AND DISCHARGE TO TYPE 'A' DIFFUSER AS SHOWN.
- 81 MOUNT AIR DOOR IN CEILING. CENTERED ON DRIVE-THRU/MFA DOOR OPENING. REFER TO WIRING DIAGRAM ON SHEET M-702 FOR MORE INFORMATION.
- 82 ELECTRIC HEATER. MC TO MOUNT ON WALL PER MANUFACTURER'S RECOMMENDATIONS.
- 93 MAXIMUM HEATING AND COOLING AIRFLOWS INDICATED. SET MINIMUM AIRFLOW TO 25 CFM.
- 94 TAKE OFF WITH DAMPER AT THE BOTTOM OF DUCTWORK, TYP.

SEAL PENETRATIONS IN DRAFTSTOPPING CURTAIN AIR-TIGHT. REFER TO ARCH DRAWINGS FOR LOCATION AND CONSTRUCTION OF DRAFTSTOPPING CURTAIN.

MEAL DELIVERY CANOPY. SEE ARCHITECTURAL.

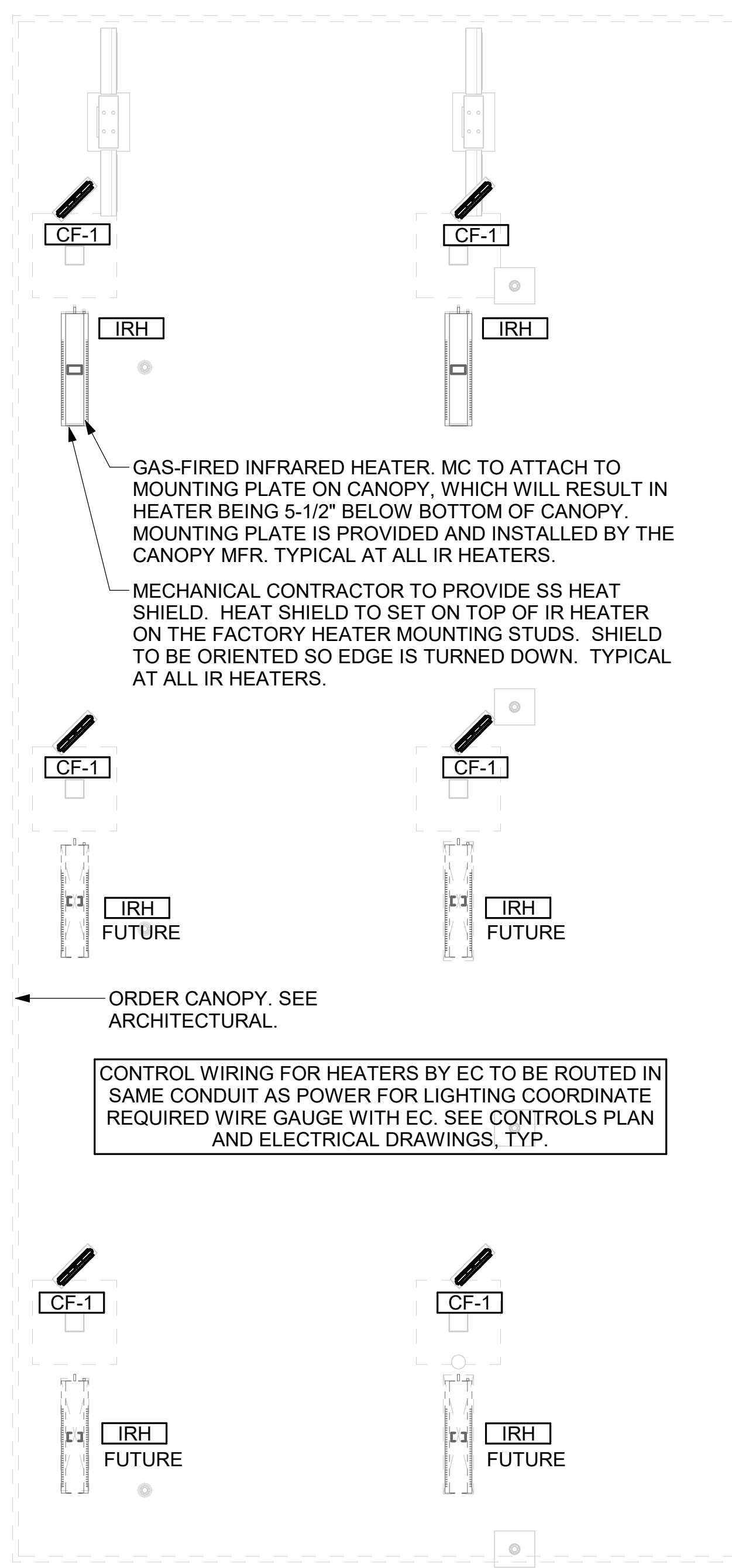
HOOD-1R  
21/54

HOOD-1L  
21/54

HOOD-2  
21/54

HOOD-3  
21/54

**1 EQUIPMENT AND DUCTWORK PLAN**  
1/4" = 1'-0"



GAS-FIRED INFRARED HEATER. MC TO ATTACH TO MOUNTING PLATE ON CANOPY, WHICH WILL RESULT IN HEATER BEING 5'-1/2" BELOW BOTTOM OF CANOPY. MOUNTING PLATE IS PROVIDED AND INSTALLED BY THE CANOPY MFR. TYPICAL AT ALL IR HEATERS.

MECHANICAL CONTRACTOR TO PROVIDE SS HEAT SHIELD. HEAT SHIELD TO SET ON TOP OF IR HEATER ON THE FACTORY HEATER MOUNTING STUDS. SHIELD TO BE ORIENTED SO EDGE IS TURNED DOWN. TYPICAL AT ALL IR HEATERS.

ORDER CANOPY. SEE ARCHITECTURAL.

CONTROL WIRING FOR HEATERS BY EC TO BE ROUTED IN SAME CONDUIT AS POWER FOR LIGHTING COORDINATE REQUIRED WIRE GAUGE WITH EC. SEE CONTROLS PLAN AND ELECTRICAL DRAWINGS, TYP.

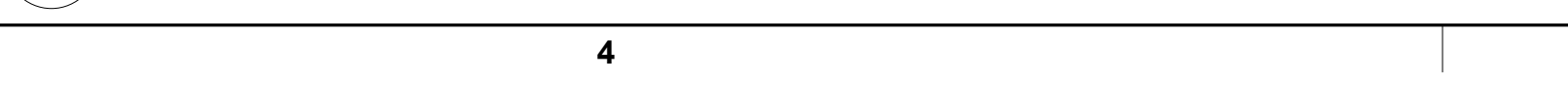
**AIR BALANCE SCHEDULE CFA - TRANE**

Mark	SUPPLY AIR	RETURN AIR	OUTSIDE AIR	EXHAUST AIR	BUILDING POSITIVE PRESSURE
AC-1T	8,125	6,360	1,765	0	
AC-2T	4,375	3,450	925	0	
AC-3T	5,250	3,975	1,275	0	
AC-4T	1,400	1,200	200	0	
AC-5T	1,300	1,150	150	0	
EF-1	0	0	0	1,913	
EF-2	0	0	0	1,402	
EF-3	0	0	0	360	
	20,450	16,135	4,315	3,675	640

**H.E.S. SYSTEM**

MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL SUNCOAST H.E.S. SYSTEM FOR ALL HOODS. SEE HOOD FAN/EQUIPMENT INTERLOCK WIRING DIAGRAM ON M-702 FOR MORE INFORMATION.

**2 MECHANICAL FLOOR PLAN - ORDER CANOPY**  
1/4" = 1'-0"



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**CHICK-FIL-A**  
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**FSR#05357**  
BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR: CONSTRUCTION  
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NO. DATE DESCRIPTION

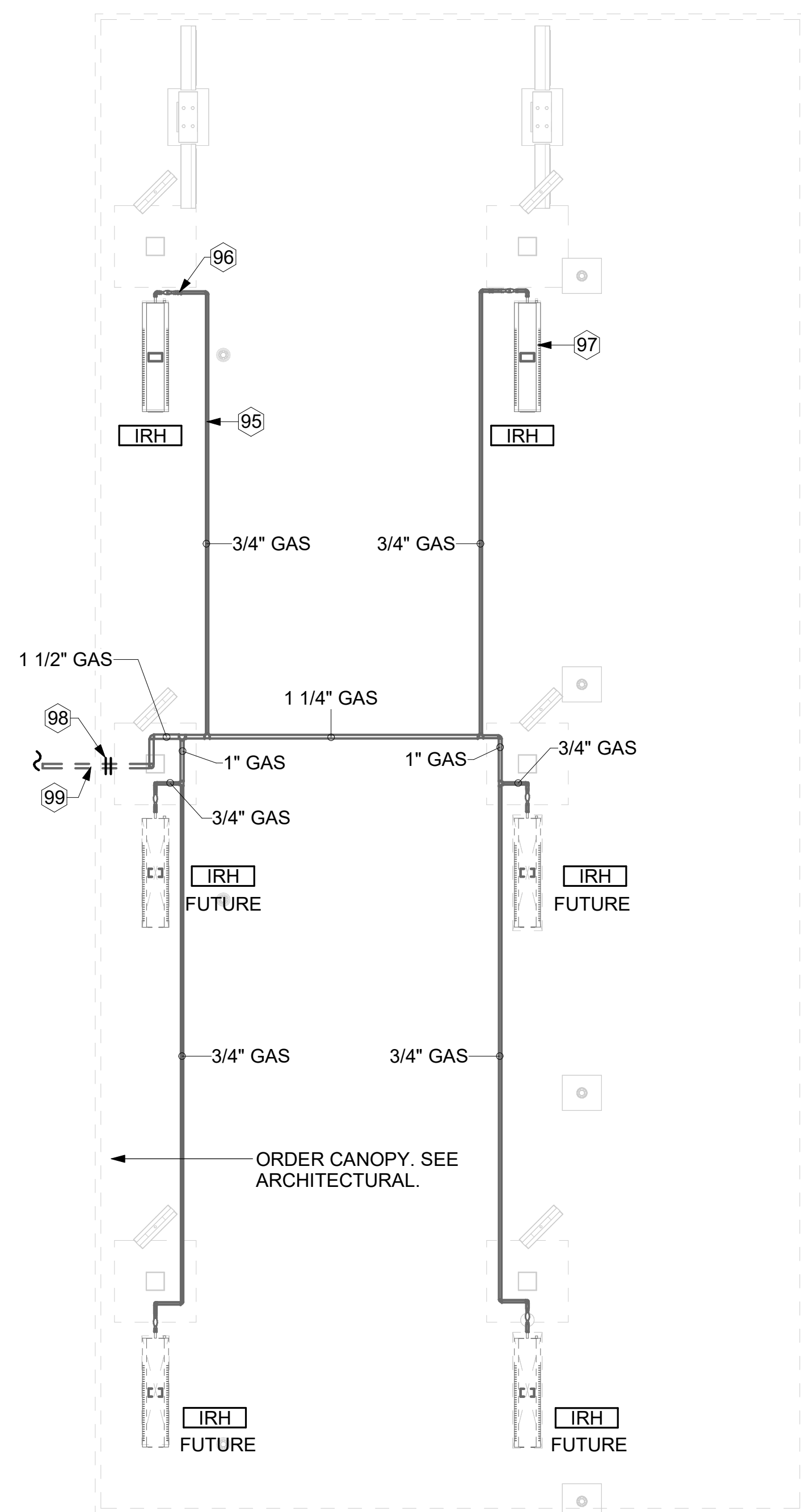
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DATE 05/29/2025  
DRAWN BY BLM  
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SHEET  
EQUIPMENT AND DUCTWORK PLAN - TRANE  
SHEET NUMBER

**M-101T**

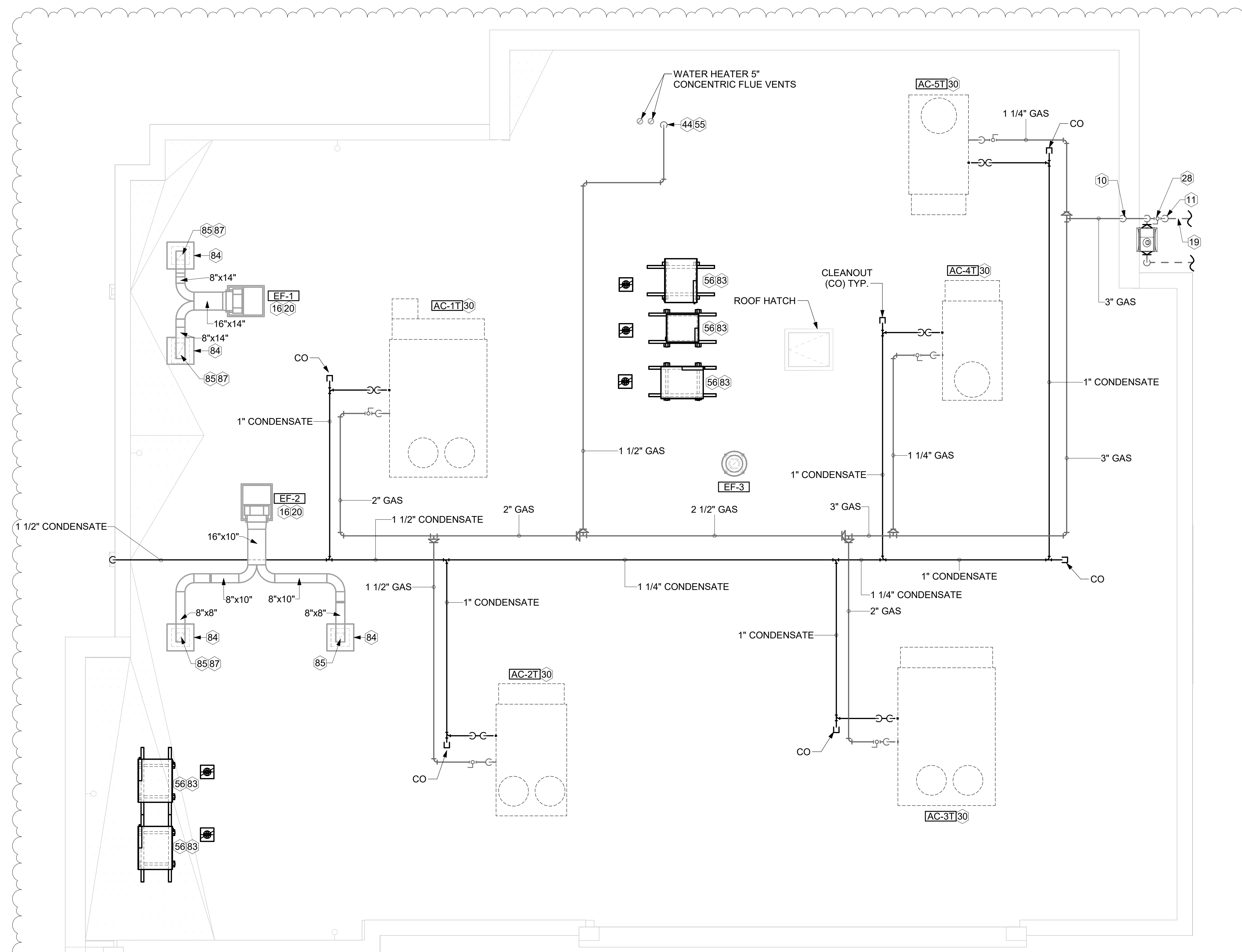
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30-SE-05357-M-101T-EQUIPMENT AND DUCTWORK PLAN - TRANE

**KEY NOTES**

- 10 TURN 3" GAS UP WITHIN WALL, THRU PARAPET AND ONTO ROOF.
- 11 ROUTE POLYETHYLENE GAS BELOW GRADE FROM THE METER. FOR TRANSITION FROM POLYETHYLENE PIPING BELOW GRADE TO STEEL AT THE METER, INSTALL ANODELESS RISER WITH INTEGRAL CONSTAB PE-TO-IPS TRANSITION FITTING BY CONTINENTAL INDUSTRIES OR EQUAL BY ELSTER.
- 16 VERIFY EXHAUST TERMINATION IS A MINIMUM 10'-0" FROM PARAPETS AND OUTSIDE AIR INTAKES. MINIMUM TERMINATION 40" ABOVE ROOF SURFACE. REFER TO MH-1.4 AND MH-1.5 FOR DETAILS.
- 19 1-1/2" GAS BELOW GRADE TO ORDER CANOPY. SEE DETAIL 2 SHEET M-102.
- 20 GREASE EXHAUST DUCT LOCATED ON ROOF SHALL SLOPE 1/4" PER FOOT TOWARDS THE HOOD, THE FAN, OR A COMBINATION OF THE TWO SUCH THAT NO PORTION OF THE RADIUS ELBOW AT THE CURB IS BELOW THE CURB CAP AND SUCH THAT THE FAN BASE SETS DIRECTLY ON THE CURB RAILS. THE BOTTOM OF THE RADIUS ELBOW MAY BE EVEN OR FLUSH WITH THE CURB CAP, BUT NOT BELOW THE CAP. THE DUCT AT THE FAN MUST BE CENTERED ON THE FAN INLET.
- 28 PROVIDE FULL PORT BALL VALVE EQUAL TO APOLLO 50GB SERIES WITH WINGS HANDLE OPTION ABOVE GRADE AT THE METER. PROVIDE BRASS VALVE TAGS WITH JACK CHAIN AT VALVE MARKED "SERVICE SHUTOFF FOR CANOPY HEATERS."
- 30 MECHANICAL CONTRACTOR TO SEE ARCHITECTURAL ROOF PLAN FOR NOTES REGARDING LEVELING FRAMES FOR RTUS. COORDINATE WITH GENERAL CONTRACTOR EXACT LOCATIONS AND SIZE NEEDED.
- 44 1-1/2" GAS DOWN THRU ROOF TO WATER HEATER. SEE DETAIL 2/M-502 FOR MORE INFORMATION ON CONSTRUCTION AND PENETRATION.
- 55 SEE ARCHITECTURAL DETAILS FOR ROOFTOP PIPE PENETRATIONS.
- 56 GC SHALL PROVIDE EQUIPMENT STANDS AS MANUFACTURED BY AVCOA OR EQUAL. STANDS SHALL BE INSTALLED PRIOR TO ROOF INSULATION SO THAT THE INSULATION IS CONTINUOUS UP TO THE PIPE POSTS. POSTS SHALL BE FLASHED IN ACCORDANCE WITH ROOFING MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE BLOCKING BELOW THE ROOF DECK AS REQUIRED.
- 83 DO NOT DISCHARGE OF CONDENSING UNITS INTO CONDENSER SECTION OF ROOFTOP UNITS, TYP.
- 84 ROOF CURB FOR DUCT PENETRATION. REFER TO MH-1.4 AND MH-1.5 FOR DETAILS.
- 85 TURN DOWN THRU ROOF. SEE M-101 FOR CONTINUATION.
- 87 DUCT PENETRATIONS ON ROOF MUST BE AT LEAST 18" FROM ADJACENT PARAPETS. GAS PIPING TO BE ROUTED ABOVE CANOPY, ON TOP OF STRUCTURAL MEMBERS, EXCEPT WHERE ROUTED DOWN THROUGH PENETRATIONS AS INDICATED.
- 96 GAS PIPING DOWN THROUGH DECK. WEATHERPROOF DECK PENETRATION PER DETAIL 6/M-502, TYPICAL.
- 97 SEE DETAIL 1/M-502 FOR PIPING AT IRH, TYPICAL.
- 98 GAS TRANSITION FITTING TO GAS PIPE STUB-OUT. GAS PIPING INSIDE COLUMN AND STUB-OUTS BY CANOPY MFR. JOIN UNDERGROUND POLYETHYLENE GAS PIPING TO TRANSITION FITTING WITH ELSTER PERMASERT COUPLING. CANOPY MFR'S EXPOSED STEEL PIPING BELOW GRADE SHALL BE PROTECTED WITH TWO COATS ASPHALT TUM BASE PAINT AND POLY SLEEVE.
- 99 1-1/2" GAS B/G TO METER SEE 1/M-102.



**2 ORDER CANOPY GAS PIPING PLAN**  
1/4" = 1'-0"

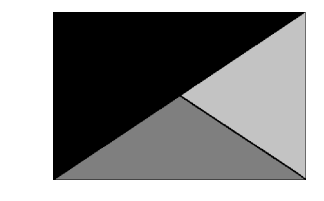


**1 EQUIPMENT ROOF PLAN - TRANE**  
1/4" = 1'-0"

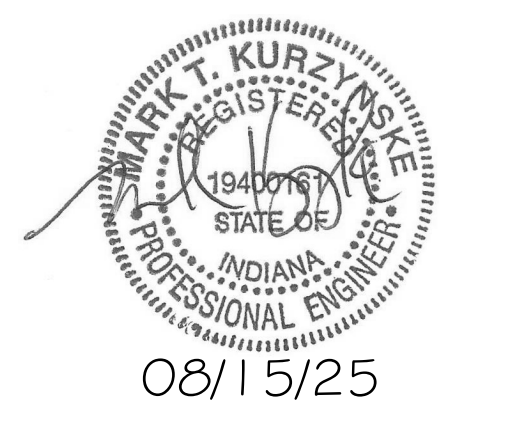
3. GAS LOAD SCHEDULE	
EQUIPMENT	GAS LOAD
AC-1T	400,000 BTUS
AC-2T	250,000 BTUS
AC-3T	400,000 BTUS
AC-4T	130,000 BTUS
AC-5T	130,000 BTUS
IRH (2 @ 50,000 BTU EA.)	100,000 BTUS
IRH (FUTURE 4 @ 50,000 BTU EA.)	200,000 BTUS
WATER HEATER	398,000 BTUS
<b>TOTAL FUTURE CONNECTED LOAD</b>	<b>2,008,000 BTUS</b>
REMARKS:	<ol style="list-style-type: none"> <li>1. EQUIVALENT TO 2,008.0 CFH</li> <li>2. 7" W.C. DELIVERY PRESSURE</li> <li>3. DEVELOPED LENGTH: 200 FT. (METER TO WATER HEATER)</li> <li>4. GAS PIPING SIZED FOR FUTURE LOAD</li> <li>5. SIZED PER IFGC TABLE 402.4.2.</li> </ol>



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**CHICK-FIL-A**  
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**FSR#05357**  
BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR:  
CONSTRUCTION  
REVISION SCHEDULE  
NO. DATE DESCRIPTION  
2 06/16/2025 LL COORD.

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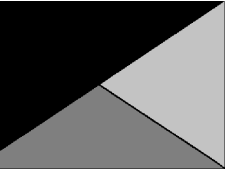
SHEET EQUIPMENT ROOF PLAN - TRANE

SHEET NUMBER  
**M-102T**

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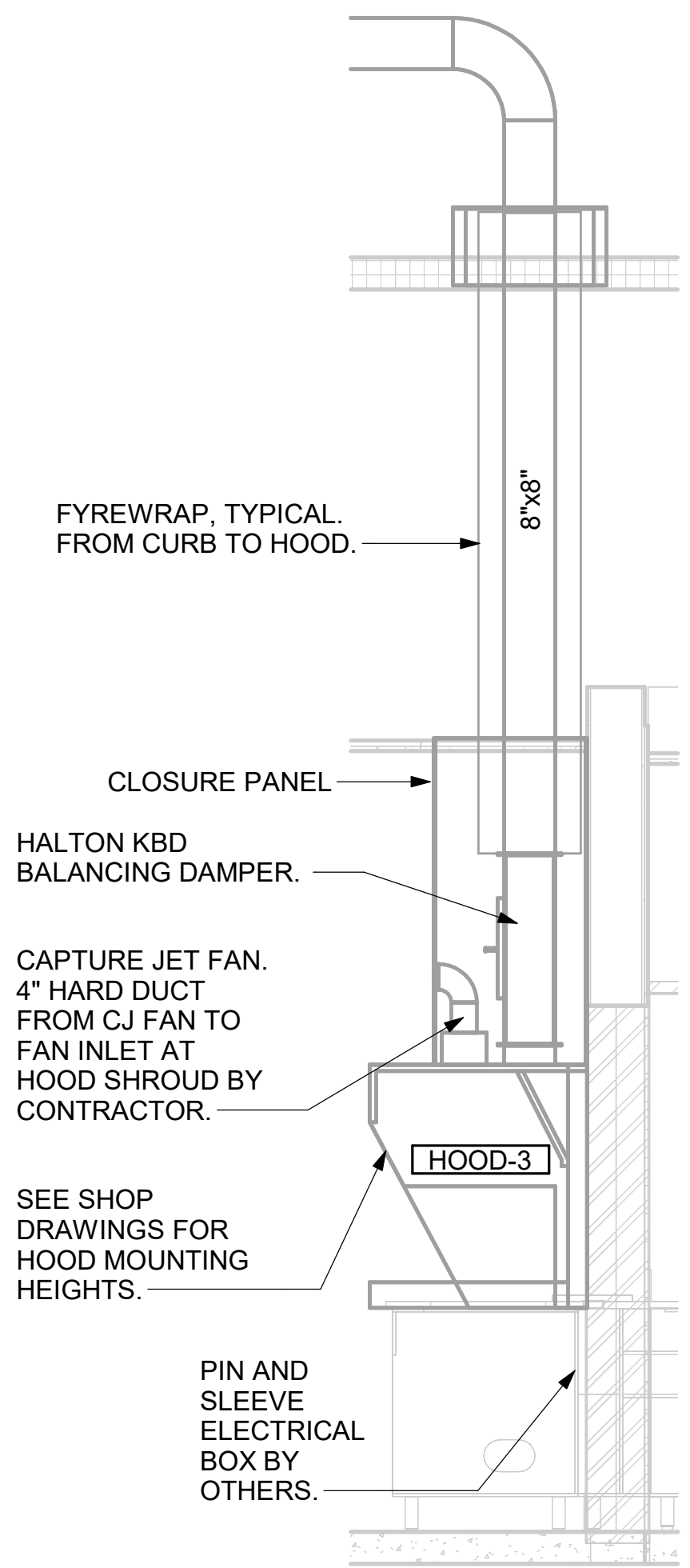
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**GREASE EXHAUST DUCT CLEARANCE NOTE:**  
CLEARANCES ABOVE CEILING ARE TIGHT. MECHANICAL CONTRACTOR TO FIELD VERIFY EXACT ROUTING AND CLEARANCES PRIOR TO FABRICATING GREASE EXHAUST DUCT.

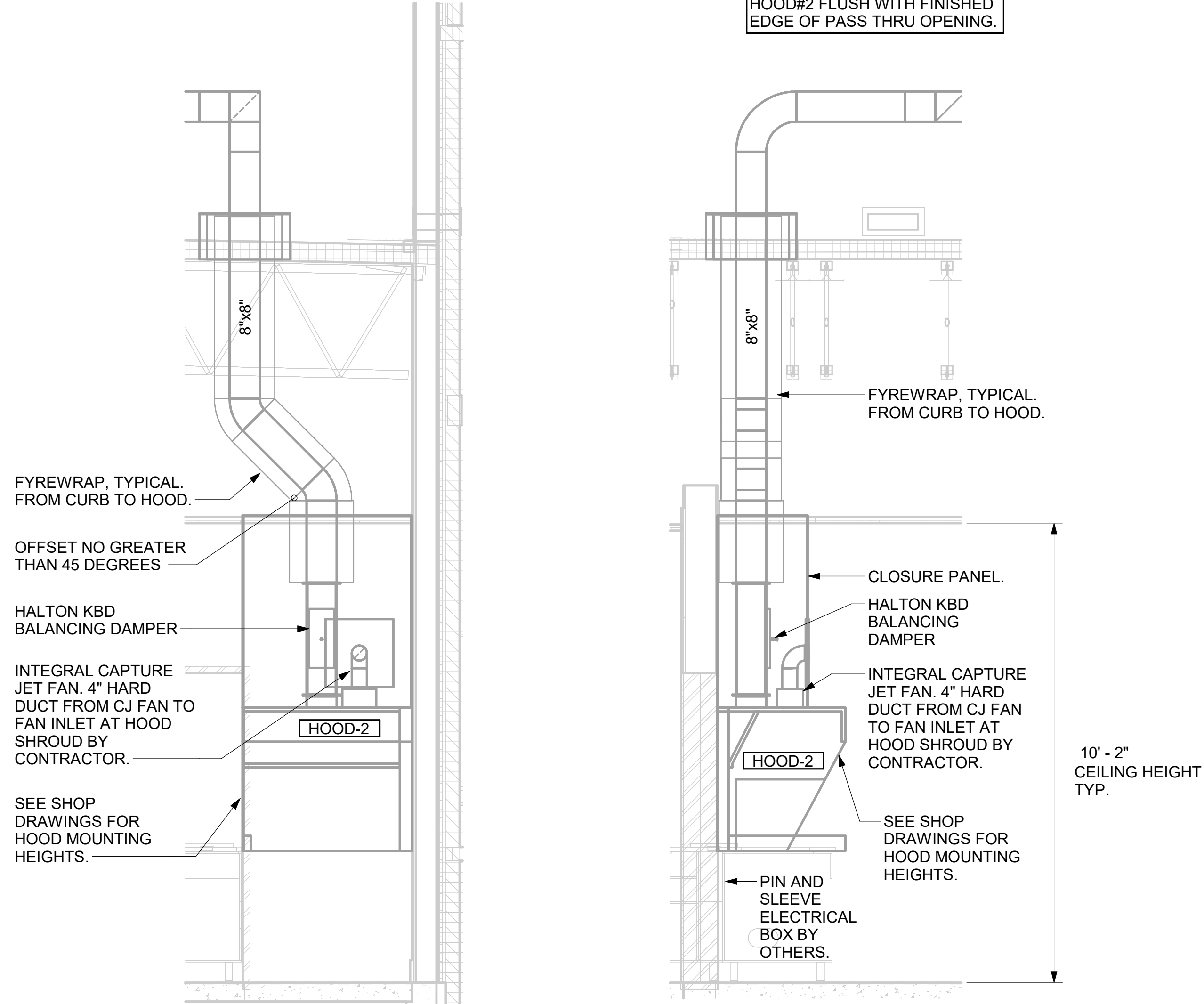
**CLEANOUT DOOR NOTE:**  
DUCT WRAP SHALL BE APPLIED TO THE CLEANOUT DOOR PER THE WRAP MFR'S INSTALLATION INSTRUCTIONS. NO EXCEPTIONS. ALSO, THE CLEANOUT DOOR MUST BE REMOVABLE WITHOUT TOOLS AND MUST BE CLEARLY AND PERMANENTLY LABELED.

CRITICAL: MOUNT RIGHT SIDE OF HOOD#3 FLUSH WITH FINISHED EDGE OF PASS THRU OPENING.



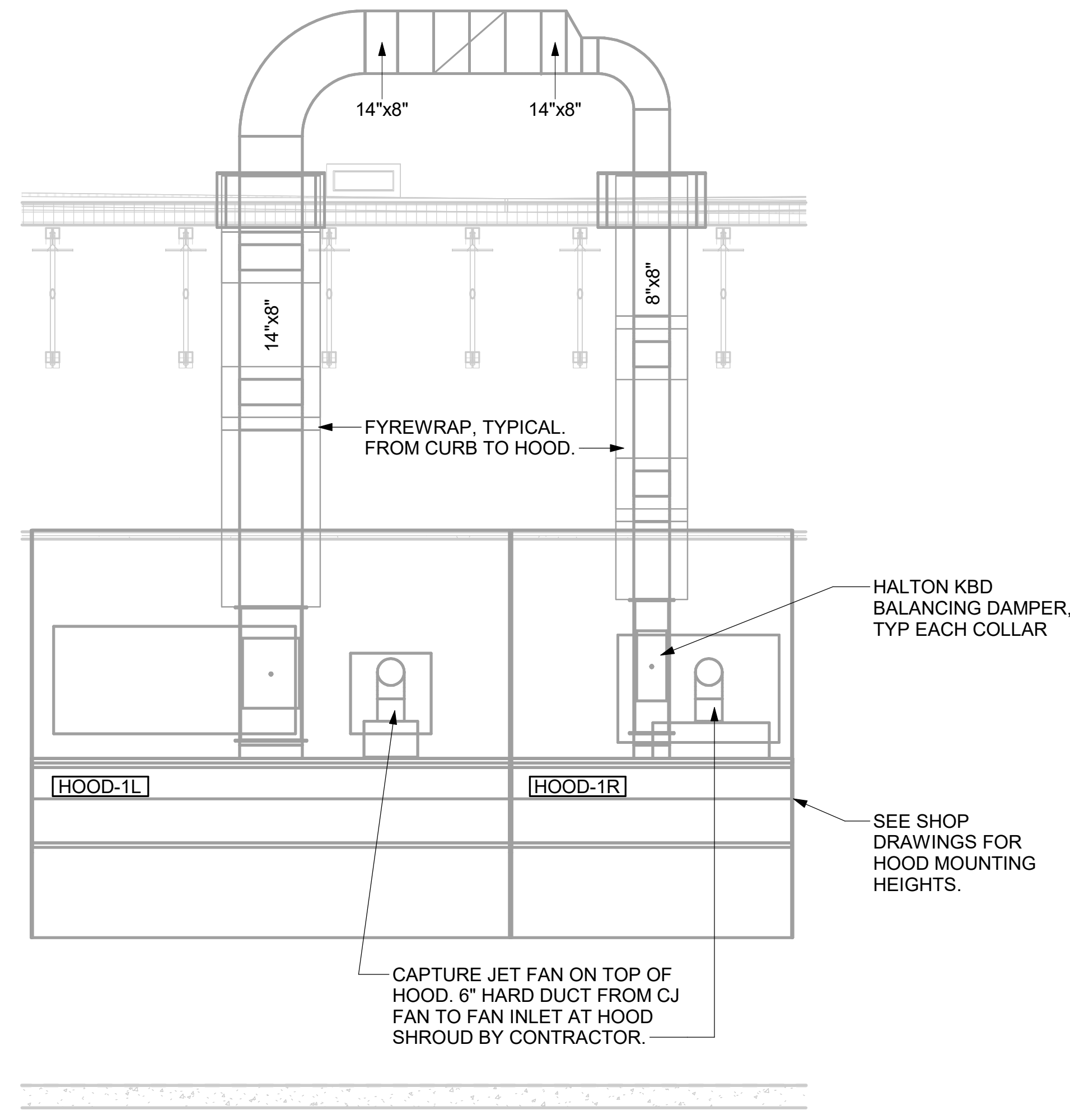
**6 HOOD ELEVATION - HOOD#3**  
NOT TO SCALE

CRITICAL: MOUNT LEFT SIDE OF HOOD#2 FLUSH WITH FINISHED EDGE OF PASS THRU OPENING.

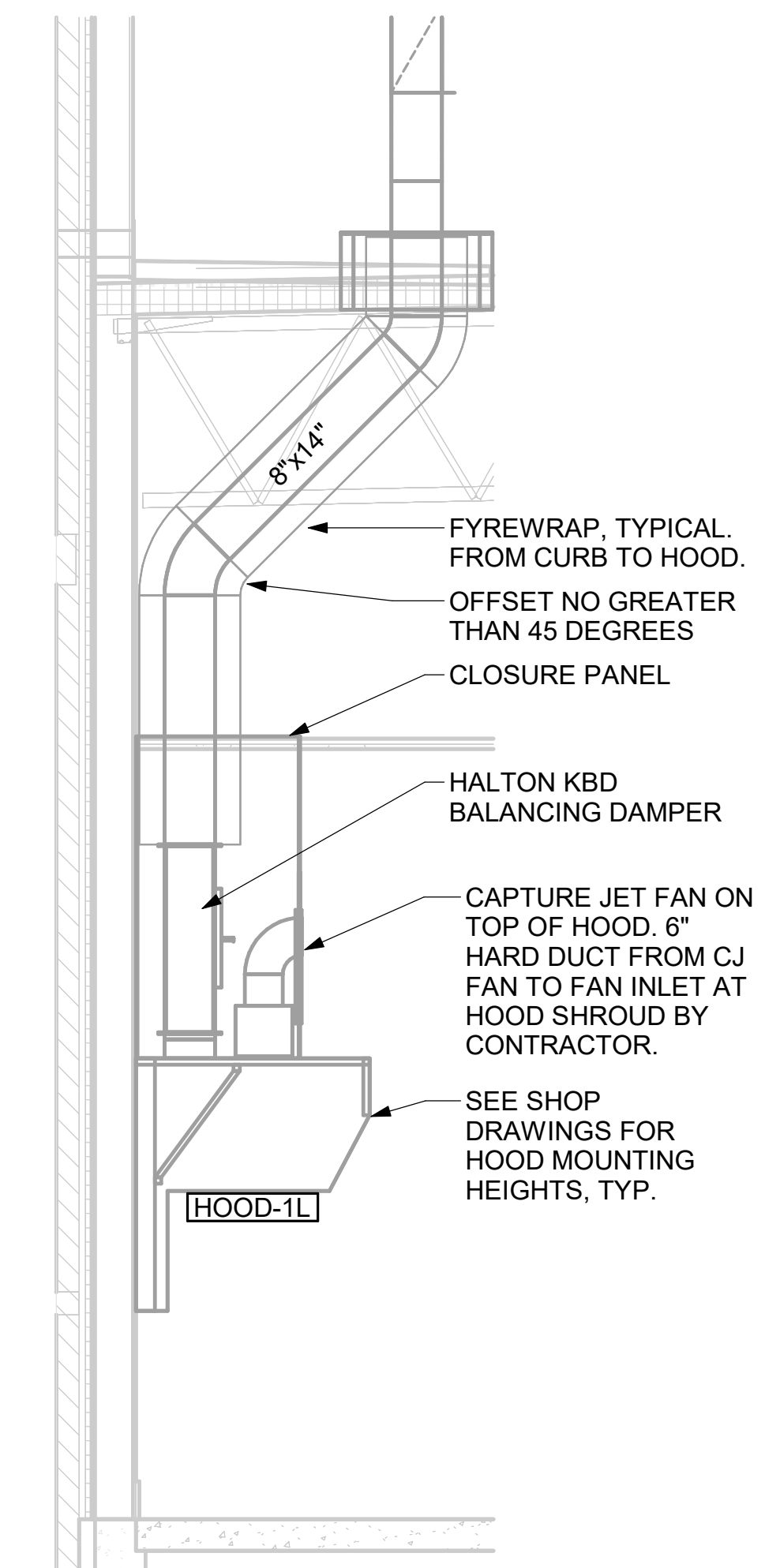


**5 HOOD ELEVATION - HOOD#2 - FRONT**  
NOT TO SCALE

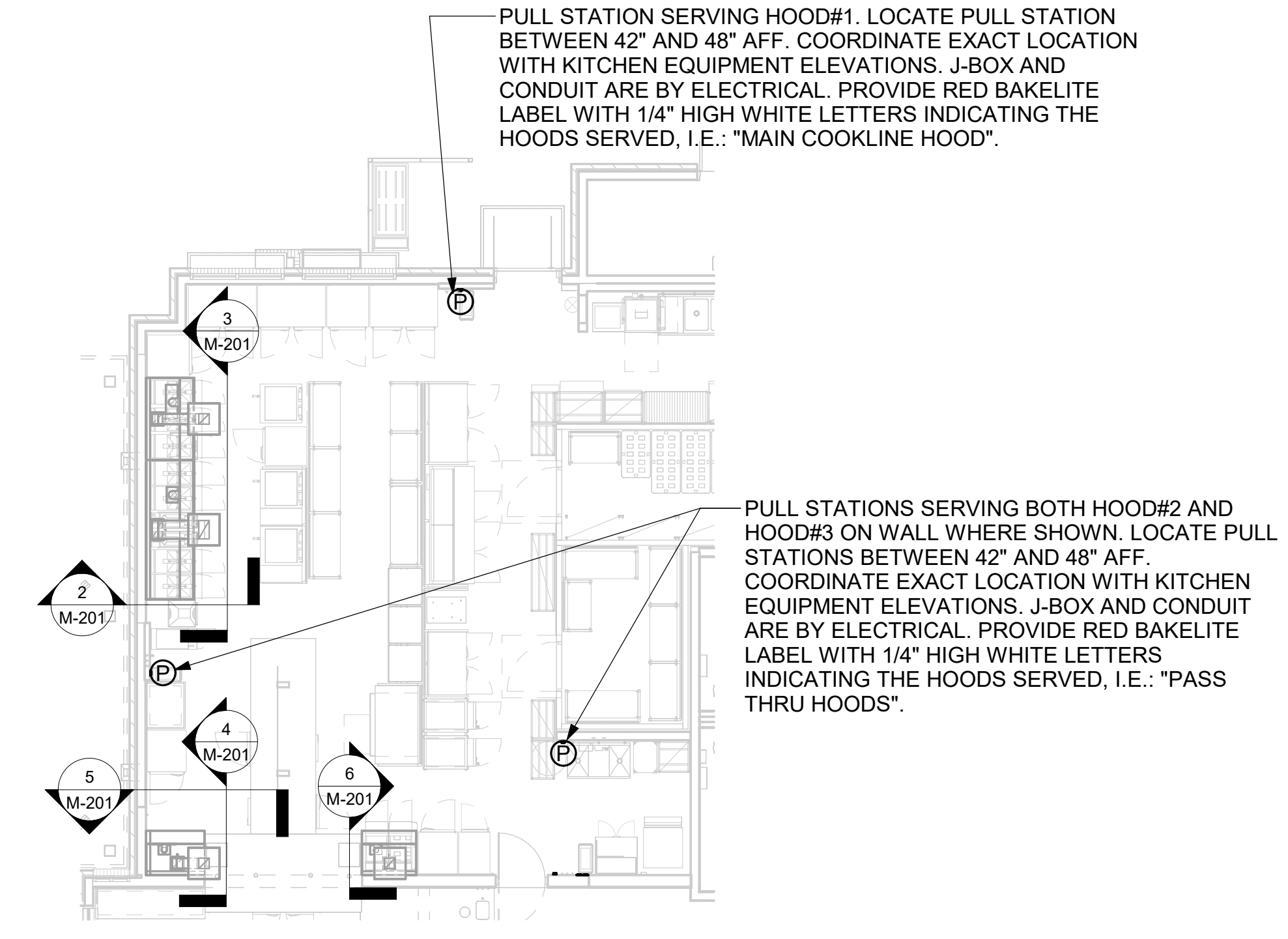
**4 HOOD ELEVATION - HOOD#2 - SIDE**  
NOT TO SCALE



**3 HOOD ELEVATION - HOOD#1 - FRONT**  
NOT TO SCALE



**2 HOOD ELEVATION - HOOD#1 - SIDE**  
NOT TO SCALE



**1 HOOD LAYOUT**  
1/8" = 1'-0"

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**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
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REVISION SCHEDULE

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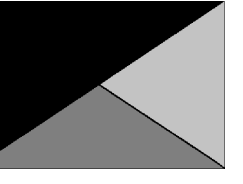
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SHEET  
EXHAUST HOOD ELEVATIONS

SHEET NUMBER  
**M-201**



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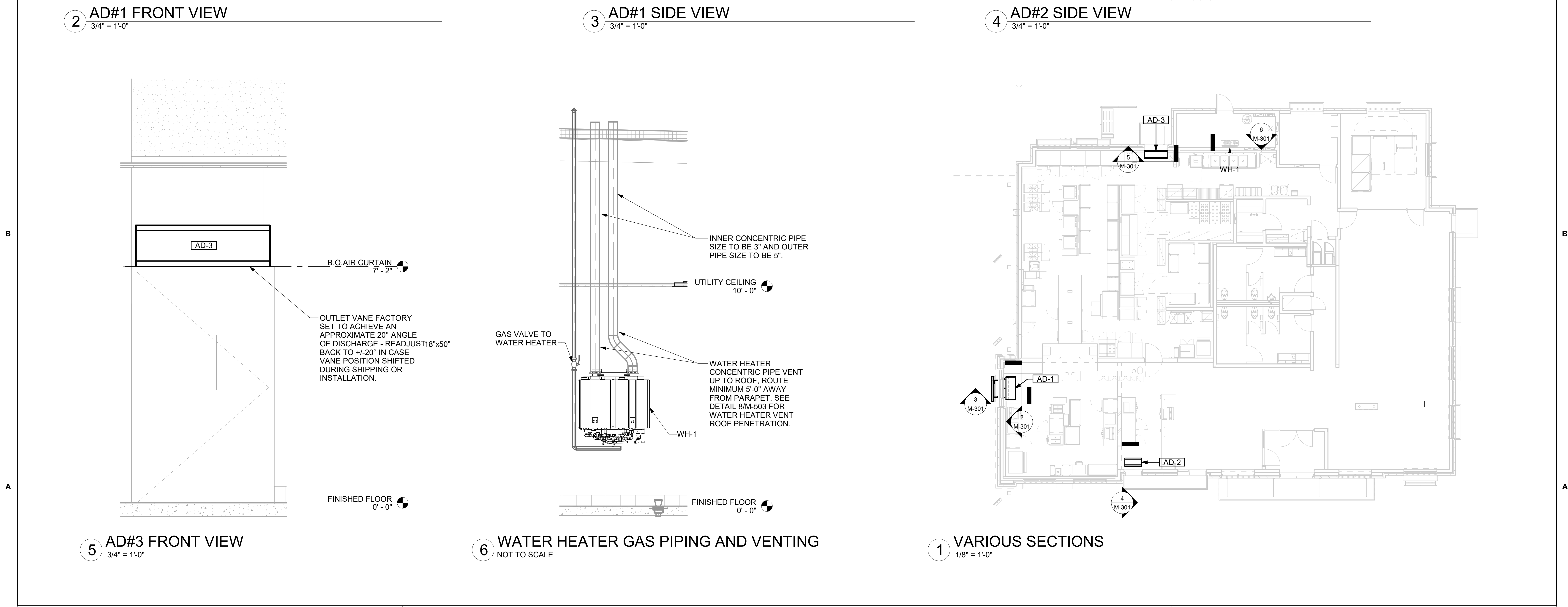
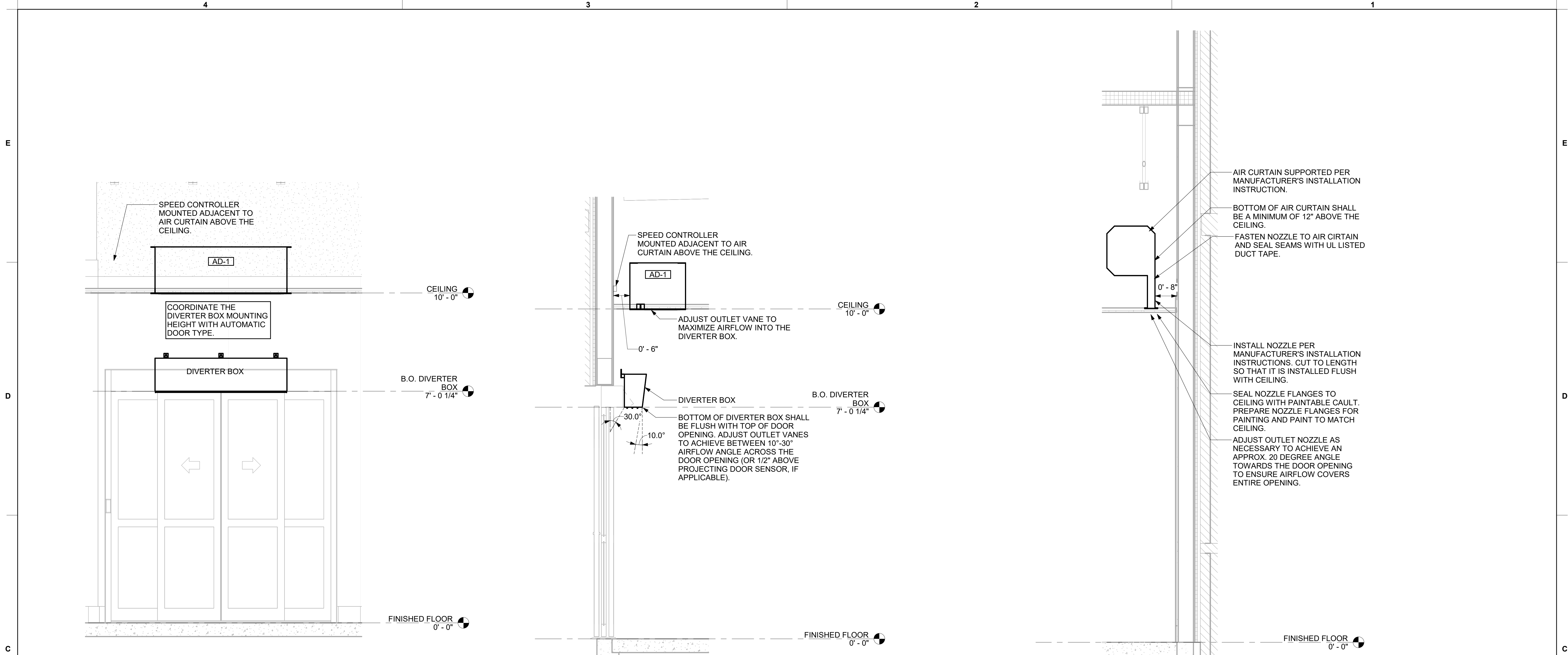
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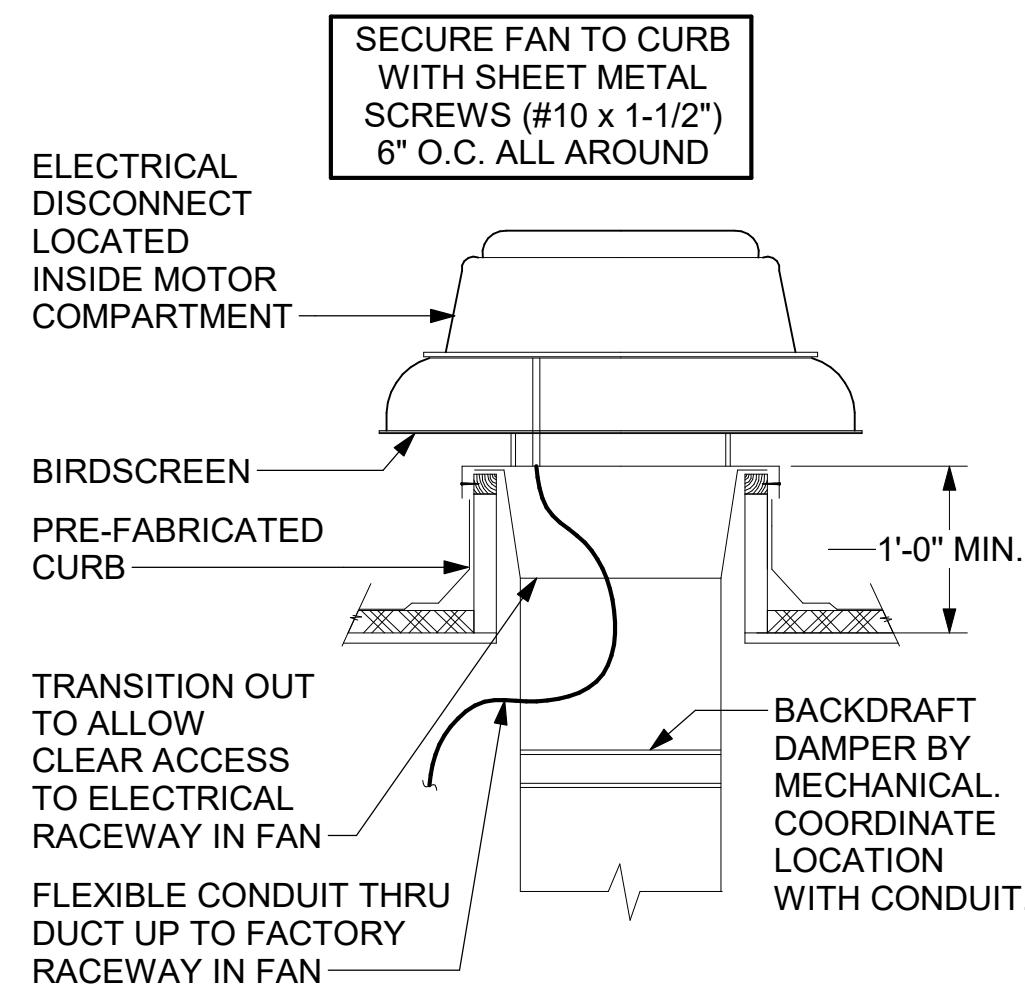
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 SHEET SECTIONS

SHEET NUMBER  
**M-301**

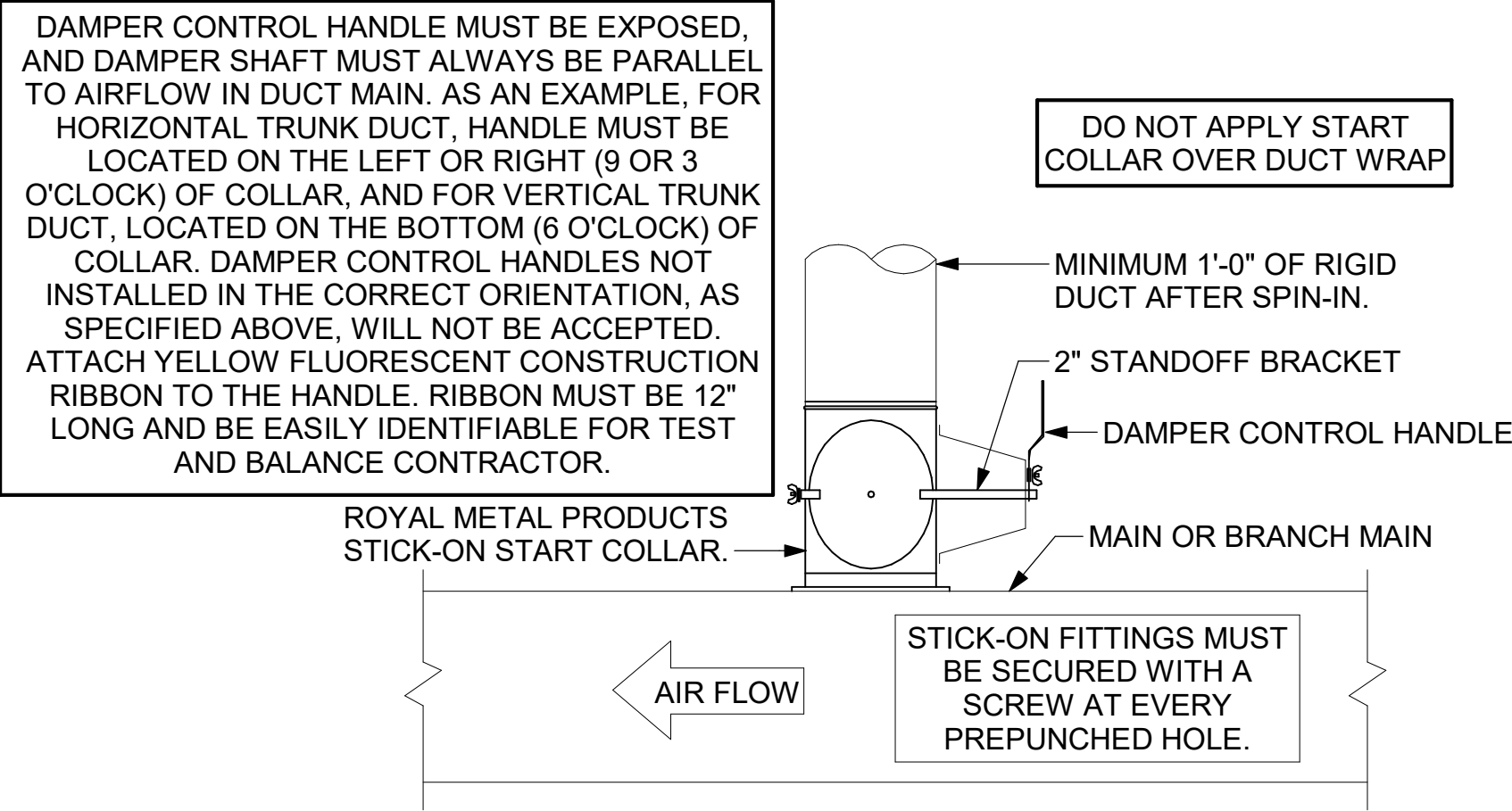


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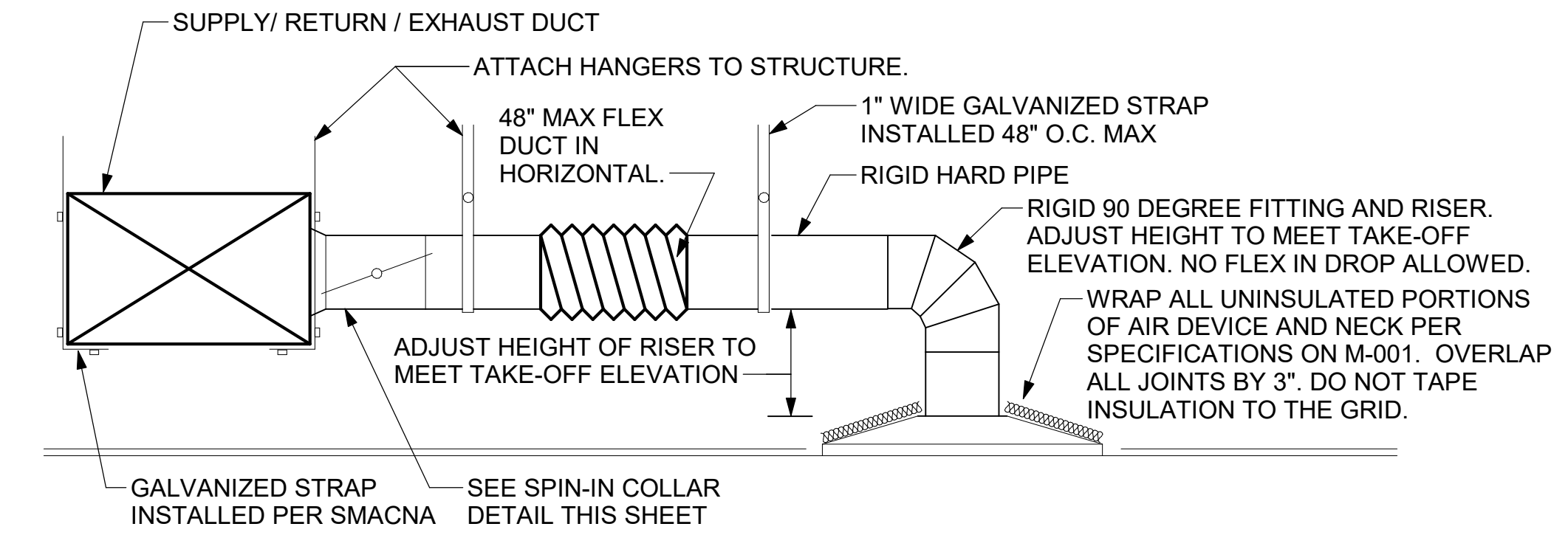


3 RESTROOM EXHAUST FAN  
NTS

CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE ROYAL METAL PRODUCTS START COLLARS FOR BOTH WITH AND WITHOUT A MANUAL BALANCING DAMPER. THE MECHANICAL CONTRACTOR IS REQUIRED TO PURCHASE THE ROYAL METAL PRODUCTS START COLLARS DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010 FOR PRICING AND AVAILABILITY. ROYAL METAL PRODUCTS START COLLARS NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

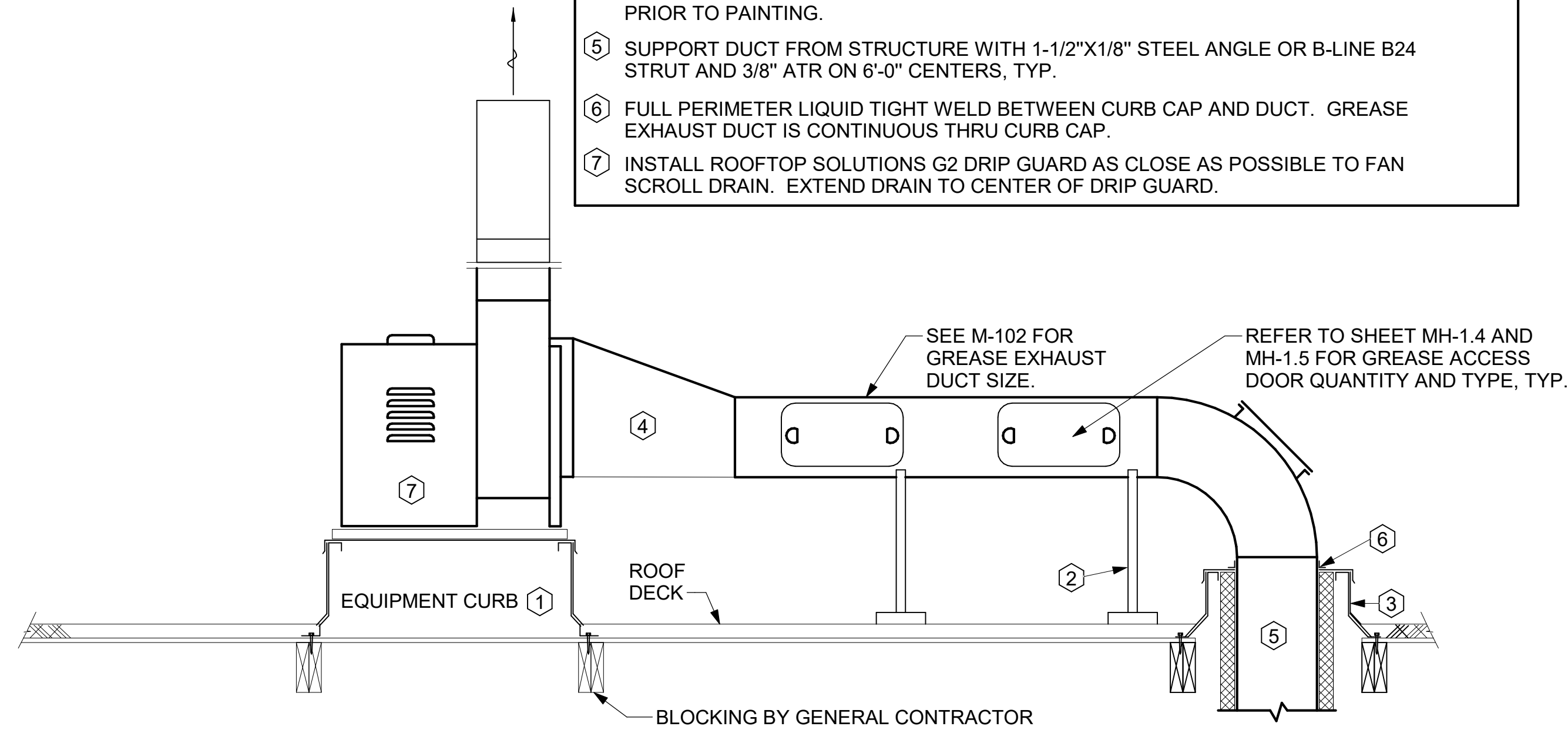


2 START COLLAR  
NTS

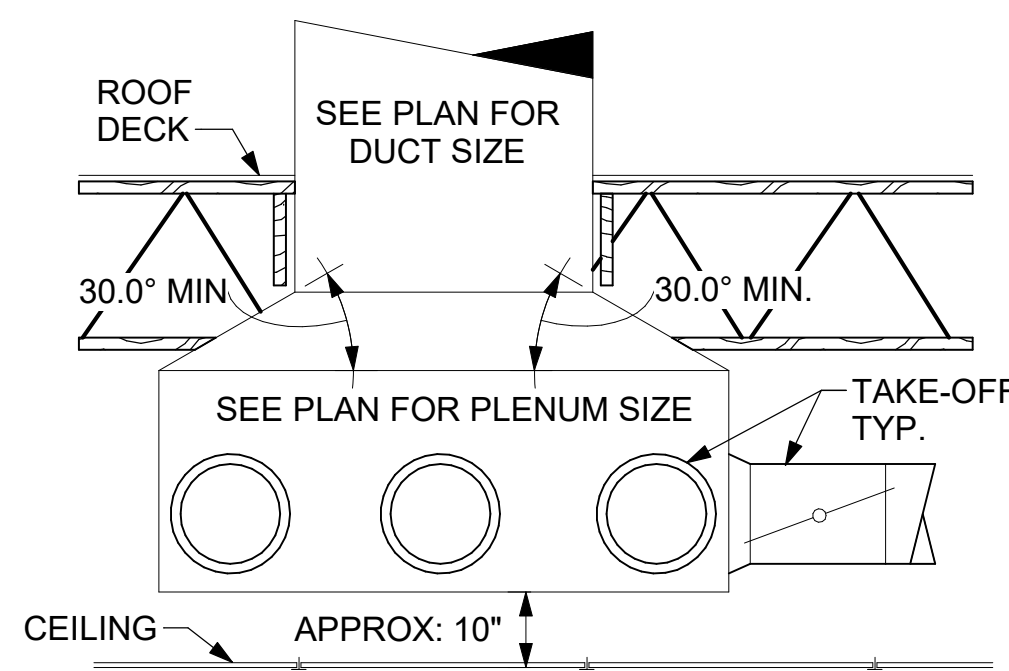


1 SAG/RAG/GRILLE TAKE-OFF  
NTS

- KEYED NOTES:
- 22" EQUIPMENT CURB FURNISHED BY HALTON.
  - DUCT SUPPORT SHALL BE PROVIDED EVERY 8', AND WITHIN 12" OF ANY FITTING OR WELD SEAM. SUPPORTS SHALL BE SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY, WIND, AND SEISMIC LOADS PER CODE.
  - 12" HIGH INSULATED CURB FURNISHED BY HALTON. MECHANICAL CONTRACTOR TO PROVIDE MINIMUM 18 GA STAINLESS STEEL CURB CAP AND FLASHING.
  - ALL DUCTWORK AND UNFINISHED METAL ON ROOF EXCEPT STAINLESS SHALL BE PREPARED WITH TWO COATS OF SHERWIN WILLIAMS B66-200 SERIES DTM WHITE ACRYLIC SEMI-GLOSS INDUSTRIAL MAINTENANCE COATING. DEGREASE AND PRIME BARE METAL SURFACE WITH ONE COAT OF SHERWIN WILLIAMS DTM ACRYLIC PRIMER PRIOR TO PAINTING.
  - SUPPORT DUCT FROM STRUCTURE WITH 1-1/2"x1/8" STEEL ANGLE OR B-LINE B24 STRUT AND 3/8" ATR ON 6'-0" CENTERS, TYP.
  - FULL PERIMETER LIQUID TIGHT WELD BETWEEN CURB CAP AND DUCT. GREASE EXHAUST DUCT IS CONTINUOUS THRU CURB CAP.
  - INSTALL ROOFTOP SOLUTIONS G2 DRIP GUARD AS CLOSE AS POSSIBLE TO FAN SCROLL DRAIN. EXTEND DRAIN TO CENTER OF DRIP GUARD.



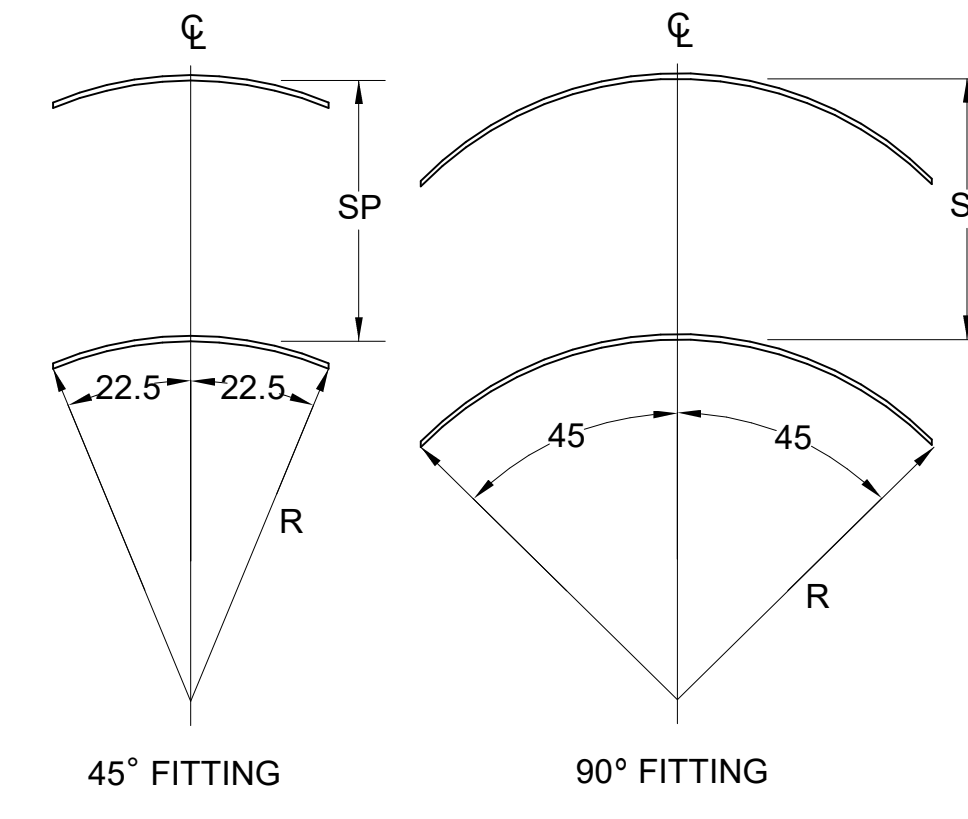
6 KITCHEN HOOD EXHAUST FAN - UTILITY SET  
NTS



5 RETURN DROP GEOMETRY  
NTS

TURNING VANE SCHEDULE		
R	SP	GA
2"	1.5"	24

1. NO TRAILING EDGE.  
2. SINGLE THICKNESS CONSTRUCTION.



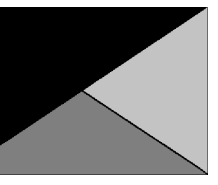
4 TURNING VANES  
NTS

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30-SE-05357-M-501-DETAILS



Chick-fil-A

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**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR CONSTRUCTION

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT # 25048.EH.S  
DATE 05/29/2025  
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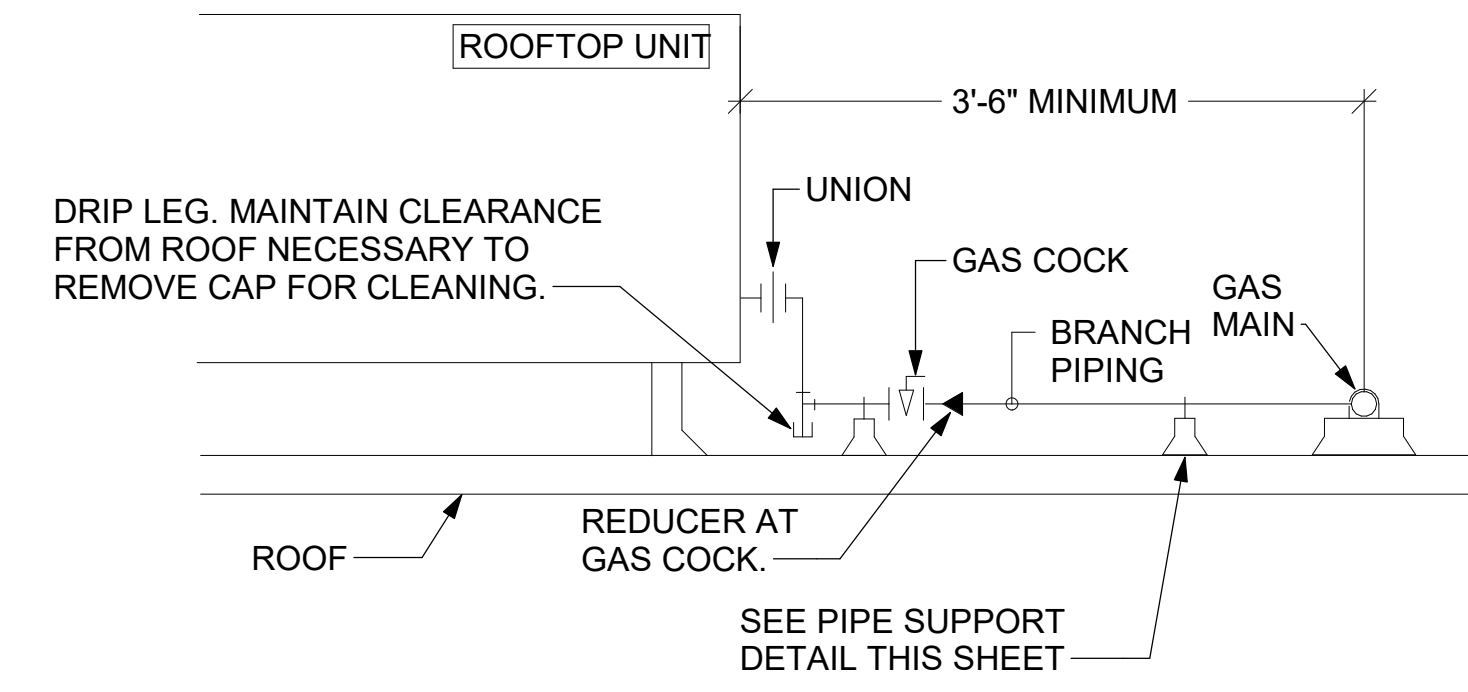
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SHEET DETAILS

SHEET NUMBER

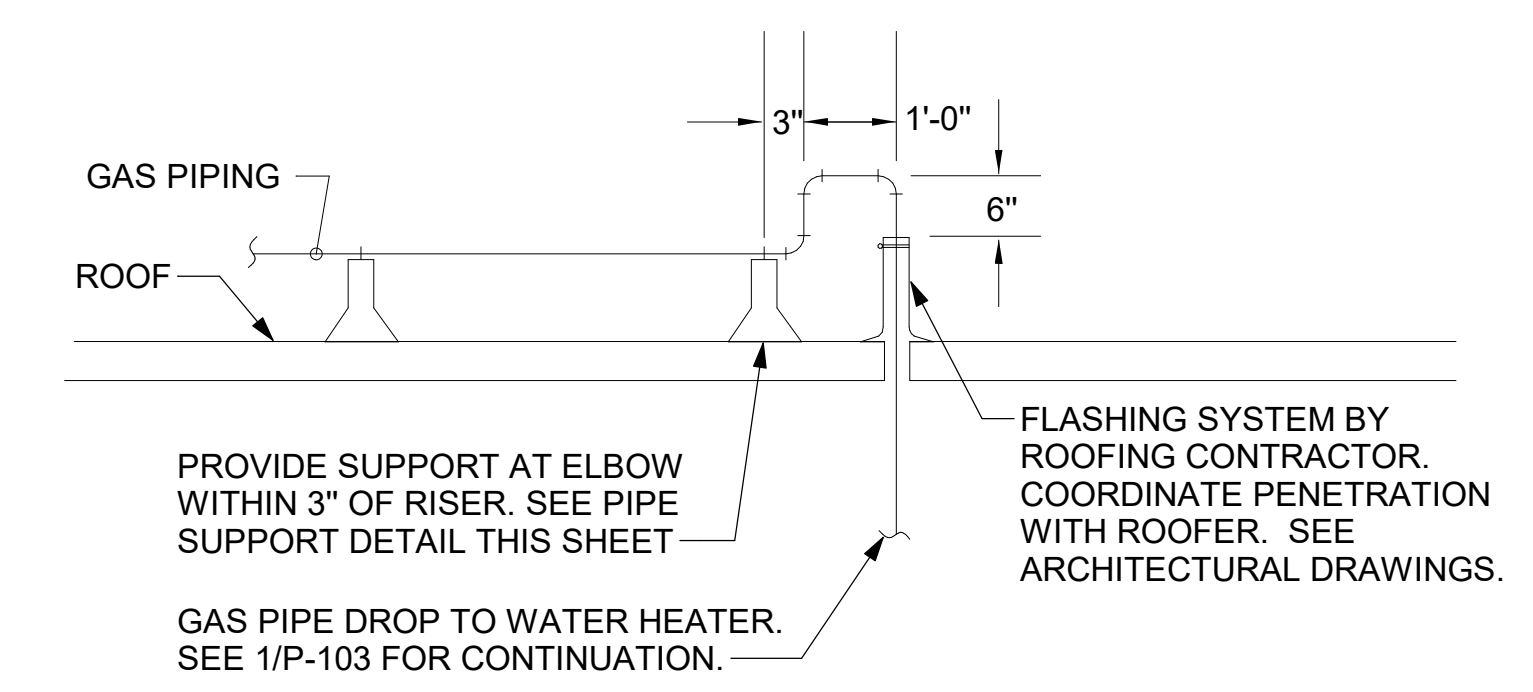
**M-501**

- NOTES:**
1. INSTALL GAS PIPING SUCH THAT HVAC EQUIPMENT ACCESS PANELS AND/OR DOORS ARE IN NO WAY OBSTRUCTED BY PIPING, VALVES, OR SUPPORTS.
  2. TO AVOID CONFLICT WITH AC UNIT ACCESS DOORS, INSTALL GAS PIPING NO CLOSER THAN 3'-6" FROM AC UNIT. (EXCEPT FOR BRANCH LINE CONNECTED TO AC UNIT.)
  3. ROUTE BRANCH TAKE-OFF DIRECTLY FROM MAIN TO ROOFTOP UNIT AS SHOWN ON PLAN AND DETAILS WITHOUT LATERAL OFFSETS WHICH MAY OBSTRUCT UNIT ACCESS DOORS.

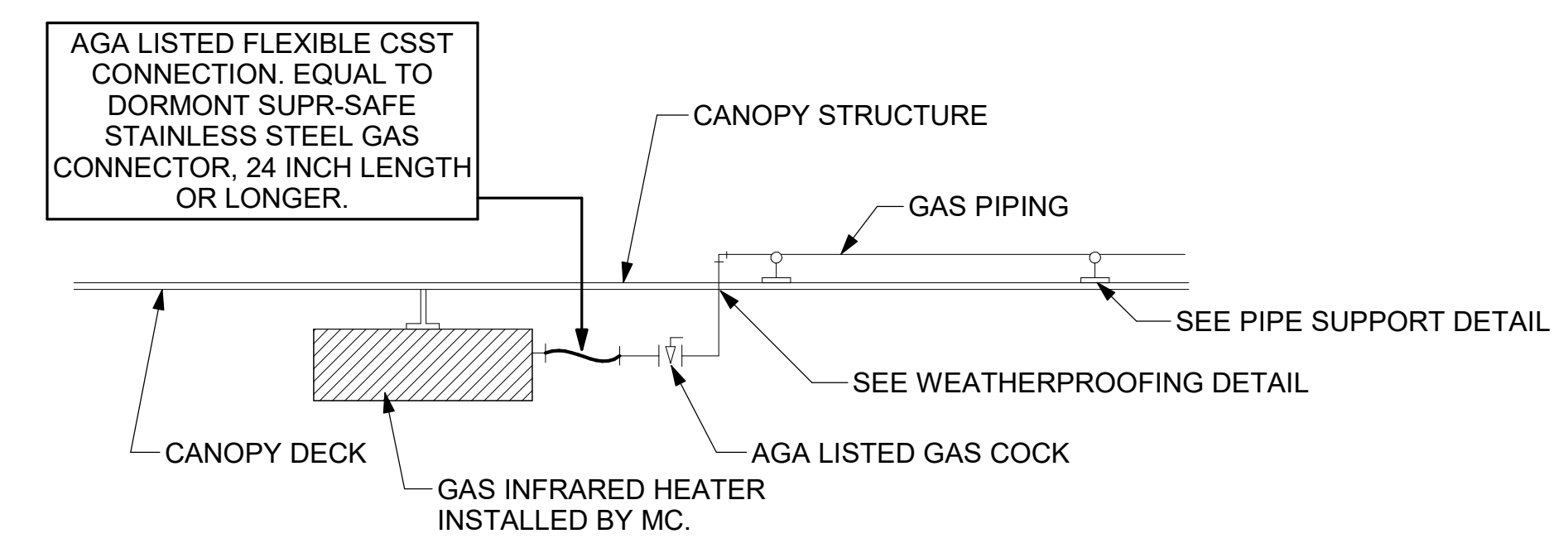


**3 GAS PIPING AT RTU**  
NTS

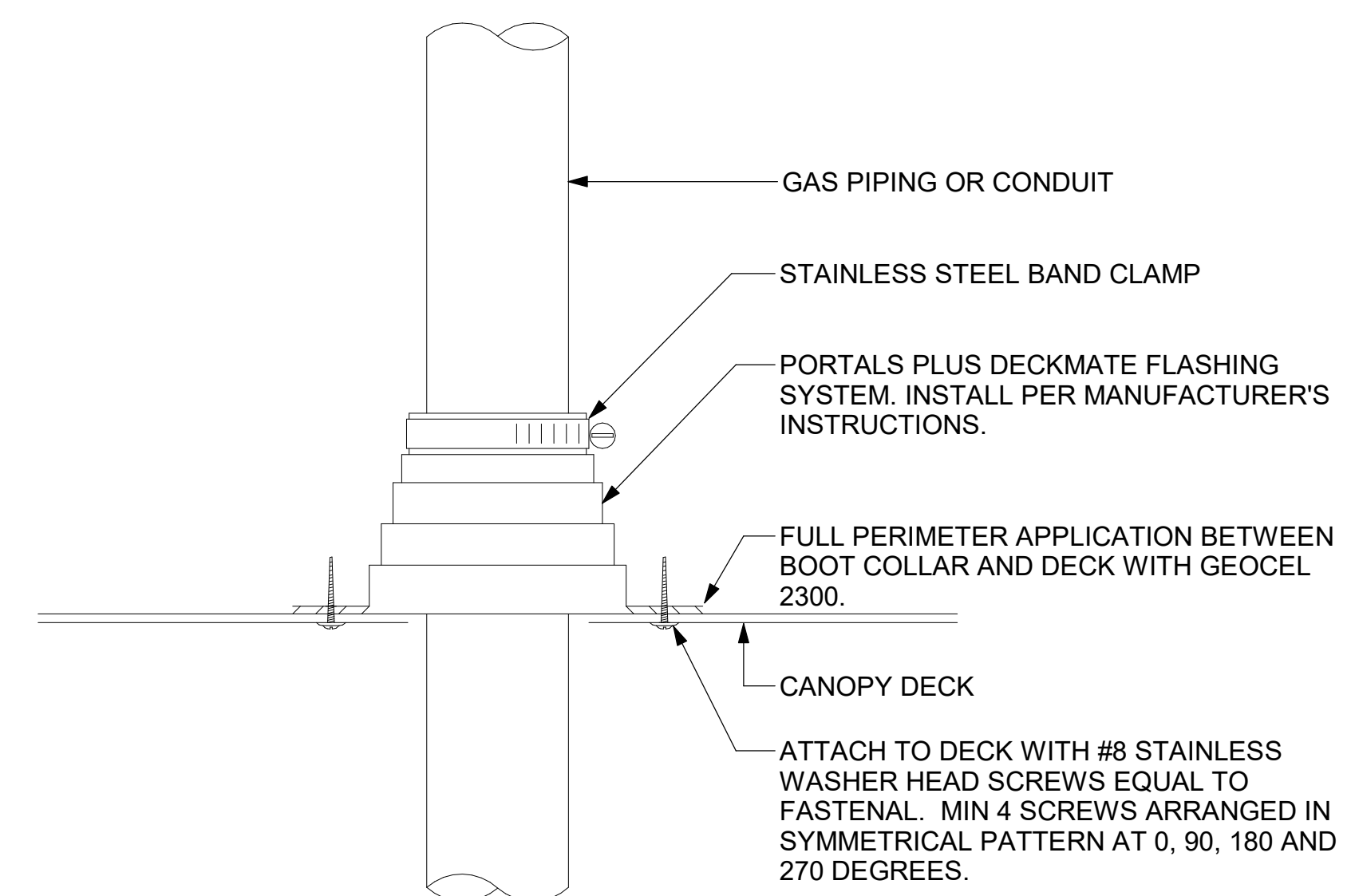
OFFSET PIPING A MINIMUM OF 6" ABOVE TOP EDGE OF FLASHING.



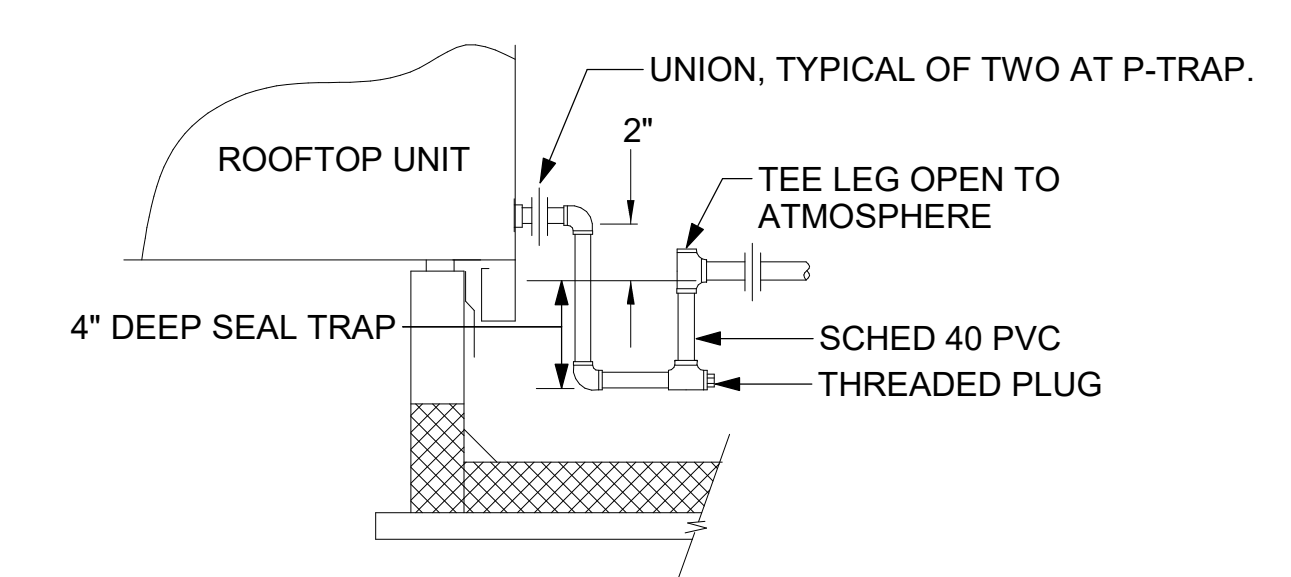
**2 GAS PIPE DROP TO WATER HEATER**  
NTS



**1 GAS CONNECTION AT APPLIANCE**  
NTS

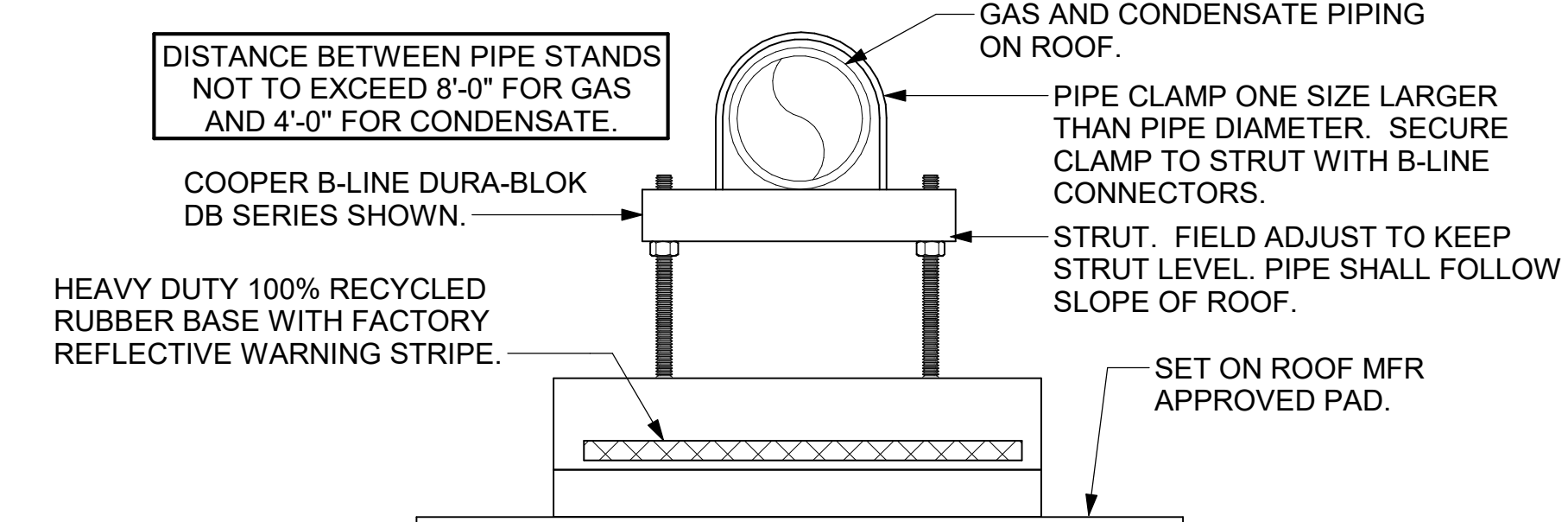


**6 WEATHERPROOFING AT CANOPY PENETRATION**  
NTS

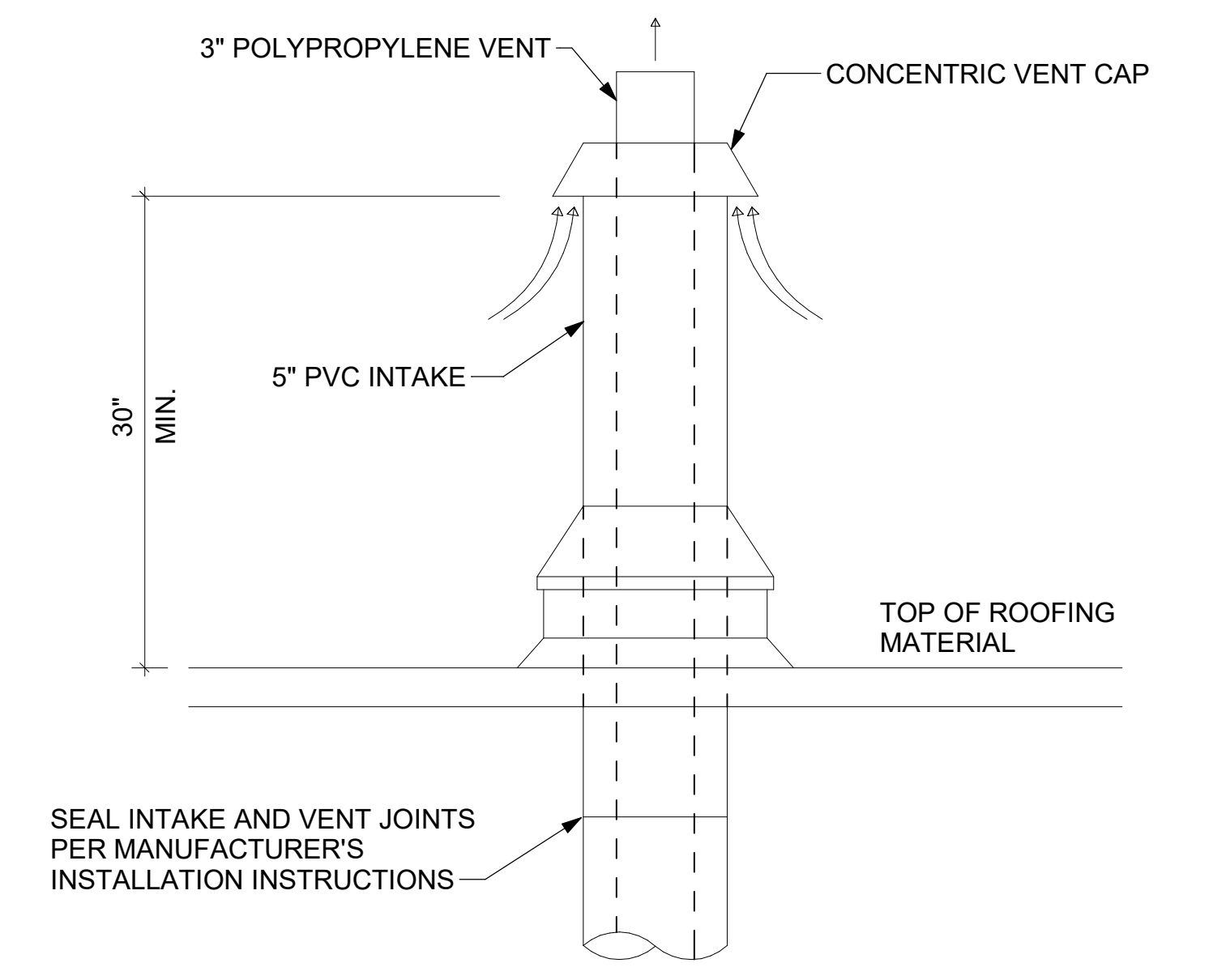


**5 CONDENSATE DRAIN PIPING**  
NTS

- NOTES:**
1. NON ADJUSTABLE MODEL DB610 PIPE STAND TO BE USED FOR NON-ELEVATED PIPING INSTALLED FLAT ON ROOF DECK.
  2. PROVIDE MODEL DBE 10-8 OR DBE 10-12 OR DBE 10-16 AS NEEDED FOR ELEVATING CONDENSATE PIPING TO MAINTAIN PROPER SLOPE AND FOR GAS PIPING CROSSING OVER CONDENSATE PIPING.
  3. ENSURE GAS AND CONDENSATE PIPING DO NOT OBSTRUCT ROOFTOP EQUIPMENT ACCESS OPENINGS. RE-PIPING OF SYSTEMS DUE TO CONFLICTS WITH EQUIPMENT ACCESS OPENINGS SHALL BE DONE AT PLUMBING CONTRACTOR'S EXPENSE.



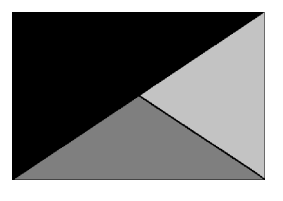
**4 PIPING SUPPORT ON ROOF**  
NTS



**7 WATER HEATER VENT ROOF PENETRATION**  
NTS



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 5151 E Thompson Rd  
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**FSR#05357**  
 BUILDING TYPE / SIZE: P14 SE BASE  
 RELEASE: 25.02  
 PRINTED FOR CONSTRUCTION

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT # 25048.EH.S  
 DATE 05/29/2025  
 DRAWN BY BLM

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 SHEET  
 DETAILS

SHEET NUMBER  
**M-502**

ROOFTOP UNIT SCHEDULE - TRANE

MARK	MANUFACTURER	MODEL	EER/IEER	SEER	TOTAL WEIGHT	SUPPLY AIRFLOW (CFM)	OA (CFM)	HP	ESP (in-wg)	TOTAL COOLING MBH	SENSIBLE COOLING MBH	HEATING INPUT MBH	HEATING OUTPUT MBH	VOLTAGE (V)	PHASE	MCA (A)	MOCP (A)	REMARKS
AC-1T	TRANE	YSK300A3	9.8/13.0		2731.00 lb	8,125	1,765	6	0.80	274.9	195.3	400	324	208	3	124	150	1,3-15
AC-2T	TRANE	YSK150A3	10.8/14		1559.00 lb	4,375	925	4.6	0.80	148.3	98.9	250	202	208	3	73	100	1,3-15
AC-3T	TRANE	YSK180A3	10.8/14		2471.00 lb	5,250	1,275	6	0.80	189.4	117.8	400	324	208	3	85	110	1,3-15
AC-4T	TRANE	YHK048A3	13.0	17.1	1186.00 lb	1,400	200	3	0.80	47.3	32	130	105.3	208	3	32	45	2-15
AC-5T	TRANE	YHK048A3	13.0	17.1	1228.00 lb	1,300	150	3	0.80	47.3	32	130	105.3	208	3	38	50	1,3-15

NOTES

- MECHANICAL CONTRACTOR TO VERIFY TRANE SUBMITTAL WITH CONSTRUCTION DOCUMENTS. NATIONAL ACCOUNTS - NO SUBSTITUTIONS PERMITTED - SEE DRAWING G-004.

REMARKS

- DIFFERENTIAL ENTHALPY ECONOMIZER WITH POWER EXHAUST.
- DIFFERENTIAL ENTHALPY ECONOMIZER WITH BAROMETRIC EXHAUST.
- 14" HIGH ROOF CURB.
- SEE DETAIL 2/M-701 FOR SETTING OF CONTROL PARAMETERS BY MC.
- FACTORY INSTALLED 115V GFI SERVICE OUTLET. SEPERATE 115V CIRCUIT PROVIDED BY ELECTRICAL CONTRACTOR.
- FACTORY INSTALLED RETURN AIR SMOKE DETECTOR.
- FACTORY INSTALLED NON-FUSED DISCONNECT.
- 2" MERV 8 THROW AWAY FILTERS.
- HINGED PANELS FOR ACCESS TO FILTER(S), FAN BLOWER & MOTOR, COMPRESSOR(S) ACCESS AND CONTROLS.
- FACTORY INSTALLED COIL HAIL GUARD.
- HOT GAS DEHUMIDIFICATION OPTION WITH WALL MOUNTED HUMIDITY SENSOR.
- FACTORY HIGH FAULT SCOR (65%).
- FACTORY CONFIGURED PHASE LOSS PROTECTION.
- FACTORY INSTALLED CONDENSATE PAN DRAIN OVERFLOW SWITCH.
- FACTORY PROVIDED, FIELD INSTALLED FRESH AIR TEMPERING KIT.

HOOD SCHEDULE

MARK	MANUFACTURER	MODEL	EXHAUST CFM	SP @ TAB PORT (in-wg)	CAPTURE JET CFM & S.P.	TYPE	COLLAR SIZE	WIDTH	DEPTH	HEIGHT	REMARKS
HOOD-1L	HALTON	KVL-2-IC	1,204	0.13	80 @ 0.30"	BACKSHELF	14"X8"	107"	37"	40"	1
HOOD-1R	HALTON	KVL-2-IC	709	0.13	47 @ 0.30"	BACKSHELF	8"X8"	63"	37"	40"	1
HOOD-2	HALTON	KVL-C-IC	701	0.3	30 @ 0.29"	BACKSHELF	8"X8"	45"	34"	38"	1
HOOD-3	HALTON	KVL-C-IC	701	0.3	30 @ 0.29"	BACKSHELF	8"X8"	42"	34"	38"	1

NOTES

DIMENSIONS OF HOODS INCLUDE BACK AND SIDE SPACERS (HEIGHT DOES NOT INCLUDE CLOSURE PANELS). NATIONAL ACCOUNTS - NO SUBSTITUTIONS PERMITTED - SEE DRAWING G-004.

REMARKS

- REFER TO HOOD SHOP DRAWINGS FOR HOOD OPTIONS AND CONSTRUCTION. HOOD SHOP DRAWINGS ARE INCLUDED FOR REFERENCE ON SHEETS MH-1.1, MH-1.2, AND MH-1.3.

HEATER SCHEDULE

MARK	MANUFACTURER	MODEL	HEATING INPUT		FRAME LENGTH	FRAME WIDTH	FRAME HEIGHT	MOUNTING TYPE	VOLTAGE (V)	PHASE	FLA (A)	MOCP (A)	REMARKS
			INPUT (KW)	INPUT (MBH)									
EIH-1	BROMIC	BH0420035	6.00	0.0	56"	8.5"	3.5"	WALL BRACKET	208	1	28.9	40	1, 2, 3, 4
IRH	SPACE-RAY	WB50	0.00	50.0	48"	13.37"	9.5"	BRACKET	120	1	0.4	20	1, 5, 6, 7

NOTES

- CONFIRM HEATER QUANTITY WITH CANOPY SHOP DRAWINGS.
- NATIONAL ACCOUNT NO SUBSTITUTIONS PERMITTED - SEE DRAWING G-004.

REMARKS

- STAINLESS STEEL LENS WITH BLACK EMISSIVE COATING.
- PROVIDE ENGRAVED PLASTIC LABEL AT EACH UNIT WITH UNIT DESIGNATION IN 1" HIGH WHITE LETTERS ON A BLACK BACKGROUND.
- PROVIDE BLACK HEATER WITH HIGH TEMPERATURE COATING, AND MANUFACTURER MOUNTING BRACKETS.
- PROVIDE BROMIC WALL MOUNTED ELECTRIC HEATER MODEL: BH0420033 FOR 220-240V SITES.
- STEEL BURNER WITH CERAMIC BURNER TILES.
- PROVIDE ENGRAVED PLASTIC LABEL AT EACH UNIT WITH UNIT DESIGNATION IN 1" HIGH WHITE LETTERS ON A BLACK BACKGROUND. MOUNT TO CANOPY DECK, FACING FORWARD, 12" Laterally FROM THE LONG SIDE OF THE HEATER.
- STAINLESS STEEL HEAT SHIELDS.

FAN SCHEDULE

MARK	AREA SERVED	MANUFACTURER	MODEL	TOTAL WEIGHT	FAN CFM	ESP (in-wg)	HP	MOTOR RPM	VOLTAGE (V)	PHASE	FLA (A)	MOCP (A)	REMARKS
CF-1	OUTDOOR CANOPY	TPI	U-18-TE-HD	20,00 lb	1,900	0.01	0.1	1,625	120	1	1.1	20	20,21,22
EF-1	HOOD#1	HALTON	KEFB-14-CFA	393.00 lb	1,913	0.75	0.75	1,620	115	1	13.8	25	1,2,3,4,5,6,7,8,9,10,11
EF-2	HOOD#2 & HOOD#3	HALTON	KEFB-14-CFA	393.00 lb	1,402	0.95	0.75	1,410	115	1	13.8	25	1,2,3,4,5,6,7,8,9,10,11
EF-3	RESTROOMS	ACCUREX	XRED-095-VG	49.00 lb	360	0.375	0.167	1,725	115	1	2.2	20	1,3,11,12,13,14,15,16
TF-1	TECH CLOSET	GREENHECK	SP-A510-VG	33.00 lb	450	0.3	0.127	1,144	120	1	2.5	20	1,17,18,19
TF-2	VESTIBULE	ACCUREX	XID-7-VG	41.00 lb	350	0.3	0.067	1,725	115	1	1.3	20	1,17,20

NOTES

- GREASE EXHAUST FAN RPM BASED ON 80 DEGREE F AIR AT 1000 FEET ABOVE SEA LEVEL.

REMARKS

- FANS SUPPLIED BY HALTON. PURCHASED BY OWNER. WIRING DIAGRAMS PROVIDED BY HALTON.
- U.L. 705 LISTED AND LABELED FOR RESTUARANT APPLICATIONS.
- FACTORY INSTALLED PREWIRED DISCONNECT SWITCH.
- 22" HIGH ROOF CURB.
- INSTALL ROOFTOP SOLUTIONS G2 DRIP GUARD. MECHANICAL CONTRACTOR TO CONTACT ROOFTOP SOLUTIONS AT 800-913-7034.
- FACTORY WEATHER HOUSING W/ HINGED ACCESS DOOR.
- FACTORY DRAIN CONNECTION.
- FACTORY BOLTED ACCESS DOOR ON SCROLL.
- FACTORY INSTALLED BELT DRIVE WITH ADJUSTABLE MOTOR SHEAVE, SPARE BELT, AND BELT TENSIONER.
- FACTORY INSTALLED OUTLET WITH QUICK RELEASE, HINGED ACCESS, AND GRAVITY BACKDRAFT DAMPER.
- INTEGRAL THERMAL OVERLOAD.
- BIRDSCREEN.
- BACKDRAFT DAMPER IN DUCT BY MECHANICAL CONTRACTOR AS SHOWN ON 5/M-501.
- STARTER BY ELECTRICAL CONTRACTOR. INTERLOCK WITH LIGHTS BY ELECTRICAL CONTRACTOR.
- 12" HIGH CURB.
- FACTORY INSTALLED AND WIRED SPEED CONTROLLER.
- PROVIDE NEMA 1 PREWIRED DISCONNECT.
- INTEGRAL POTENTIOMETER ON FAN MOTOR. SET TO FULL SPEED.
- PROVIDE THERMOSTAT / TEMPERATUR CONTROLLER, SET TO 76°F.
- INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE WITH ON/OFF SWITCH.
- FAN SUPPLIED BY TOM BARROR OR POWERS OF ARKANSAS FOR THE SOUTHWEST REGION.

AIR DOOR SCHEDULE

MARK	AREA SERVED	MANUFACTURER	MODEL	CFM	VELOCITY (FPM)	HEATING (KW)	MOTOR HP	MCA (A)	MOCP (A)	VOLTAGE (V)	PHASE	REMARKS
AD-1	DRIVE THRU	POWERED AIRE	CHA-1-48E	1,543	2,338	10	0.75	42	45	208	3	1,2,3,5
AD-2	SERVING	POWERED AIRE	ETA-1-36E	1,197	2,443	10	0.75	42	45	208	3	1,2,3,4,6
AD-3	REAR DOOR	POWERED AIRE	RBT-1-48	3,867	4,218	0	0.75	10	15	120	1	4

NOTES

- NATIONAL ACCOUNT - NO SUBSTITUTIONS PERMITTED - SEE DRAWING G-004

REMARKS

- FACTORY PROVIDED, WIRED, AND UNIT MOUNTED SPEED CONTROLLER ABOVE CEILING.
- FACTORY WIRED DISCONNECT.
- FACTORY PROVIDED, FIELD INSTALLED BY MC, REMOTE WALL SWITCHES FOR HEATING ON/OFF AND FAN ON/AUTO SWITCH. SEE DETAILS ON M502.
- FACTORY PROVIDED MAGNETIC DOOR CONTACT WITH FACTORY INSTALLED LOW VOLTAGE CONTROLS LOCATED IN AIR DOOR CABINET.
- PROVIDE WITH A DIVERTER BOX. PROVIDE WITH MOUNTING BRACKETS PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE WITH NOZZLE EXTENSION, SEE DETAIL M502.

AIR DEVICE SCHEDULE

MARK	AREA SERVED	DESCRIPTION	NECK SIZE	FACE SIZE	FRAME TYPE	REMARKS
E1	RESTROOMS	PRICE MODEL APDDR ALUMINUM PERFORATED FACE RETURN AIR GRILLE.	8"	12"x12"	LAY-IN	1,3,4,9
R1	KITCHEN / MFA / BOH / PLAY	PRICE MODEL 80 EGGCRATE RETURN AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	VARIES	24"x24"	LAY-IN	1,5,6
R2	MFA	PRICE MODEL 80 EGGCRATE RETURN AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	VARIES	24"x24"	LAY-IN	1,5,6,10
R3	DINING	PRICE MODEL 80 EGGCRATE RETURN AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	VARIES	24"x24"	LAY-IN	1,5,6,9
S1	RESTROOMS	PRICE MODEL APDC ALUMINUM SUPPLY AIR DIFFUSER WITH INDIVIDUALLY ADJUSTABLE CURVED AIR PATTERN CONTROLLERS.	VARIES	12"x12"	LAY-IN	1,2,4,6,9
S2	VESTIBULE	PRICE MODEL APDC ALUMINUM SUPPLY AIR DIFFUSER WITH INDIVIDUALLY ADJUSTABLE CURVED AIR PATTERN CONTROLLERS.	10"	16"x16"	LAY-IN	1,2,4,6,9
S3	DINING/KITCHEN/ MFA/BOH/PLAY	PRICE MODEL APDC ALUMINUM SUPPLY AIR DIFFUSER WITH INDIVIDUALLY ADJUSTABLE CURVED AIR PATTERN CONTROLLERS.	VARIES	24"x24"	LAY-IN	1,2,4,6
S4	DINING	PRICE MODEL TBDI2150 T-BAR SUPPY DIFFUSERS	12"	48"x5"	LAY-IN	1,8
S5	OFFICE	PRICE VARITHERM PLAQUE DIFFUSER	10"	24"x24"	LAY-IN	1,6,7
S6	TEAM MEMBERS	PRICE VARITHERM PLAQUE DIFFUSER	8"	24"x24"	LAY-IN	1,6,7
T1	OFFICE	PRICE MODEL 80 EGGCRATE TRANSFER AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	14"	24"x24"	LAY-IN	1,5,6
T2	SERVING	PRICE MODEL 80FF STEEL FILTER TRANSFER AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	18"	24"x24"	LAY-IN	1,5,6

NOTES

- NATIONAL ACCOUNT - NO SUBSTITUTIONS PERMITTED - SEE DRAWING G-004

REMARKS

- STANDARD OFF WHITE FINISH.
- PROVIDE 4-WAY BLOW UNLESS OTHERWISE NOTED. REFER TO M-101(T) FOR THROW.
- PROVIDE MODEL VCR7 NECK DAMPER ON GRILLES IN RESTROOMS SERVING EXHAUST FAN.
- PROVIDE BACKPAN, MC TO SEAL JOINTS WITH MASTIC AND INSULATE EXTERNALLY.
- PROVIDE SQUARE TO ROUND ADAPTOR.
- FACTORY INSULATED R-6 BACKPAN.
- PROVIDE RELIEF COLLAR ACCESSORY FOR VAV DIFFUSER.
- PROVIDE 2 SLOTS, CENTER NOTCH, AND ONE WAY DISCHARGE.
- PROVIDE ALUMINUM PLASTER FRAME.
- PROVIDE MODEL VCS3 NECK DAMPER.



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**FSR#05357**  
 BUILDING TYPE / SIZE: P14 SE BASE  
 RELEASE: 25.02  
 PRINTED FOR: CONSTRUCTION  
**REVISION SCHEDULE**  
 NO. DATE DESCRIPTION  
 2 06/16/2025 LL COORD.

CONSULTANT PROJECT # 25048.EH.S  
 DATE 05/29/2025  
 DRAWN BY BLM  
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 SHEET EQUIPMENT SCHEDULES - TRANE  
 SHEET NUMBER

**M-601T**

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 30-SE-05357-M-601T-EQUIPMENT SCHEDULES - TRANE

VENTILATION SCHEDULE																										
General			Ventilation														Exhaust									
Room #	Room Name	Area Az ft2	People			Area								Toilet			Served by									
			Occupant Density People/1,000 ft2	Occupants Pz	Outdoor Airflow Rate CFM/Person Rp	Outdoor Airflow CFM Pz x Rp	Outdoor Airflow Rate CFM/R2 Ra	Outdoor Airflow CFM Az x Ra	Breathing Zone Outdoor Airflow CFM Vbz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Airflow CFM Voz	Primary Zone Airflow CFM Vpz	Primary Outdoor Air Fraction Zp	Actual Outdoor Airflow CFM	Required Exhaust Rate CFM/R2	Total Required Exhaust CFM	Exhaust Control/Operation	Fixture Exhaust Rate CFM/Fixture	Required Fixture Exhaust CFM	Actual Exhaust CFM	Supply	Exhaust				
1	Kitchen	1,067	20	22	7.5	165	0.12	128	293	0.8	366	8,125	0.05	1,765	1	747	-	-	-	3,315	AC-1L / AC-1T	EF-1 / EF-2				
Total Area 1,067						Total Vbz 293			Total Supply Airflow 8,125			1,765 Actual Outdoor Airflow														
						Diversity (D) 1.00			Maximum Zp 0.05																	
			Uncorrected Outdoor Air Intake (You) 293			System Ventilation Efficiency (Ev) 1.00																				
			Required Outdoor Air Intake (CFM) 293																							

VENTILATION SCHEDULE																										
General			Ventilation														Exhaust									
Room #	Room Name	Area Az ft2	People			Area								Toilet			Served by									
			Occupant Density People/1,000 ft2	Occupants Pz	Outdoor Airflow Rate CFM/Person Rp	Outdoor Airflow CFM Pz x Rp	Outdoor Airflow Rate CFM/R2 Ra	Outdoor Airflow CFM Az x Ra	Breathing Zone Outdoor Airflow CFM Vbz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Airflow CFM Voz	Primary Zone Airflow CFM Vpz	Primary Outdoor Air Fraction Zp	Actual Outdoor Airflow CFM	Required Exhaust Rate CFM/R2	Total Required Exhaust CFM	Exhaust Control/Operation	Fixture Exhaust Rate CFM/Fixture	Required Fixture Exhaust CFM	Actual Exhaust CFM	Supply	Exhaust				
1	Meal Fulfillment Area	428	15	7	7.5	52.5	0.18	77	130	0.8	162	4,375	0.04	925	-	-	-	-	-	-	AC-2L / AC-2T	-				
Total Area 428						Total Vbz 130			Total Supply Airflow 4,375			925 Actual Outdoor Airflow														
						Diversity (D) 1.00			Maximum Zp 0.03																	
			Uncorrected Outdoor Air Intake (You) 130			System Ventilation Efficiency (Ev) 1.00																				
			Required Outdoor Air Intake (CFM) 129																							

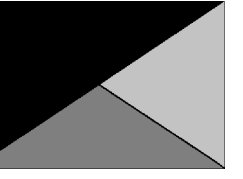
VENTILATION SCHEDULE																										
General			Ventilation														Exhaust									
Room #	Room Name	Area Az ft2	People			Area								Toilet			Served by									
			Occupant Density People/1,000 ft2	Occupants Pz	Outdoor Airflow Rate CFM/Person Rp	Outdoor Airflow CFM Pz x Rp	Outdoor Airflow Rate CFM/R2 Ra	Outdoor Airflow CFM Az x Ra	Breathing Zone Outdoor Airflow CFM Vbz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Airflow CFM Voz	Primary Zone Airflow CFM Vpz	Primary Outdoor Air Fraction Zp	Actual Outdoor Airflow CFM	Required Exhaust Rate CFM/R2	Total Required Exhaust CFM	Exhaust Control/Operation	Fixture Exhaust Rate CFM/Fixture	Required Fixture Exhaust CFM	Actual Exhaust CFM	Supply	Exhaust				
1	Dining	1,086	100	109	7.5	818	0.18	195	1,013	0.8	1,266	4,025	0.32	978	-	-	-	-	-	-	AC-3L / AC-3T	-				
2	Serving	522	15	8	7.5	60	0.12	63	123	0.8	154	975	0.16	237	-	-	-	-	-	-	AC-3L / AC-3T	-				
3	Men's RR	156	-	-	-	-	-	-	-	0.8	-	100	-	24	-	-	Continuous	50	150	180	AC-3L / AC-3T	EF-3				
4	Women's RR	174	-	-	-	-	-	-	-	0.8	-	100	-	24	-	-	Continuous	50	150	180	AC-3L / AC-3T	EF-3				
5	RR Vestibule	73	-	-	-	-	0.06	4	4	0.8	6	50	0.10	12	-	-	-	-	-	-	AC-3L / AC-3T	-				
Total Area 2,011						Total Vbz 986			Total Supply Airflow 5,250			1,275 Actual Outdoor Airflow														
						Diversity (D) 0.83			Maximum Zp 0.32																	
			Uncorrected Outdoor Air Intake (You) 986			System Ventilation Efficiency (Ev) 0.80																				
			Required Outdoor Air Intake (CFM) 1,233																							

VENTILATION SCHEDULE																										
General			Ventilation														Exhaust									
Room #	Room Name	Area Az ft2	People			Area								Toilet			Served by									
			Occupant Density People/1,000 ft2	Occupants Pz	Outdoor Airflow Rate CFM/Person Rp	Outdoor Airflow CFM Pz x Rp	Outdoor Airflow Rate CFM/R2 Ra	Outdoor Airflow CFM Az x Ra	Breathing Zone Outdoor Airflow CFM Vbz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Airflow CFM Voz	Primary Zone Airflow CFM Vpz	Primary Outdoor Air Fraction Zp	Actual Outdoor Airflow CFM	Required Exhaust Rate CFM/R2	Total Required Exhaust CFM	Exhaust Control/Operation	Fixture Exhaust Rate CFM/Fixture	Required Fixture Exhaust CFM	Actual Exhaust CFM	Supply	Exhaust				
1	Flex	57	-	-	-	-	0.12	7	7	0.8	9	100	0.09	14	-	-	-	-	-	-	AC-4L / AC-4T	-				
2	Beverage Corridor	108	-	-	-	-	0.06	6	6	0.8	9	350	0.03	50	-	-	-	-	-	-	AC-4L / AC-4T	-				
3	Team Member Room	94	50	5	5	25	0.06	6	31	0.8	39	250	0.16	36	-	-	-	-	-	-	AC-4L / AC-4T	-				
4	Office	37	5	1	5	5	0.06	2	7	0.8	10	300	0.03	43	-	-	-	-	-	-	AC-4L / AC-4T	-				
5	Utility Room	109	-	-	-	-	0.12	13	13	0.8	17	400	0.04	57	-	-	-	-	-	-	AC-4L / AC-4T	-				
Total Area 405						Total Vbz 64			Total Supply Airflow 1,400			200 Actual Outdoor Airflow														
						Diversity (D) 1.00			Maximum Zp 0.16																	
			Uncorrected Outdoor Air Intake (You) 64			System Ventilation Efficiency (Ev) 0.90																				
			Required Outdoor Air Intake (CFM) 71																							

VENTILATION SCHEDULE																										
General			Ventilation														Exhaust									
Room #	Room Name	Area Az ft2	People			Area								Toilet			Served by									
			Occupant Density People/1,000 ft2	Occupants Pz	Outdoor Airflow Rate CFM/Person Rp	Outdoor Airflow CFM Pz x Rp	Outdoor Airflow Rate CFM/R2 Ra	Outdoor Airflow CFM Az x Ra	Breathing Zone Outdoor Airflow CFM Vbz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Airflow CFM Voz	Primary Zone Airflow CFM Vpz	Primary Outdoor Air Fraction Zp	Actual Outdoor Airflow CFM	Required Exhaust Rate CFM/R2	Total Required Exhaust CFM	Exhaust Control/Operation	Fixture Exhaust Rate CFM/Fixture	Required Fixture Exhaust CFM	Actual Exhaust CFM	Supply	Exhaust				
1	Play Area	257	7	2	20	40	0.18	46	86	0.8	108	1,300	0.08	150	-	-	-	-	-	-	AC-5L / AC-5T	-				
Total Area 257						Total Vbz 86			Total Supply Airflow 1,300			150 Actual Outdoor Airflow														
						Diversity (D) 1.00			Maximum Zp 0.08																	
			Uncorrected Outdoor Air Intake (You) 86			System Ventilation Efficiency (Ev) 1.00																				
			Required Outdoor Air Intake (CFM) 86																							



**Chick-fil-A**  
5200 Buffington Road  
Atlanta, Georgia  
30349-2998



**Kurzynske & Associates**  
2705 Lebanon Pike - Suite One  
Nashville, Tennessee 37214  
Telephone: (615) 255-5203



**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR: CONSTRUCTION

NO.	DATE	DESCRIPTION

CONSULTANT PROJECT # 25048.EH.S  
DATE 05/29/2025  
DRAWN BY BLM

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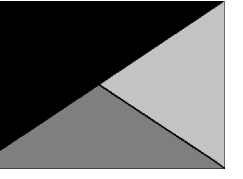
SHEET VENTILATION SCHEDULES

SHEET NUMBER **M-602**





**Chick-fil-A**  
5200 Buffington Road  
Atlanta, Georgia  
30349-2998



**Kurzynske & Associates**  
2705 Lebanon Pike - Suite One  
Nashville, Tennessee 37214  
Telephone: (615) 255-5203



08/15/25

**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**

BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02

PRINTED FOR CONSTRUCTION

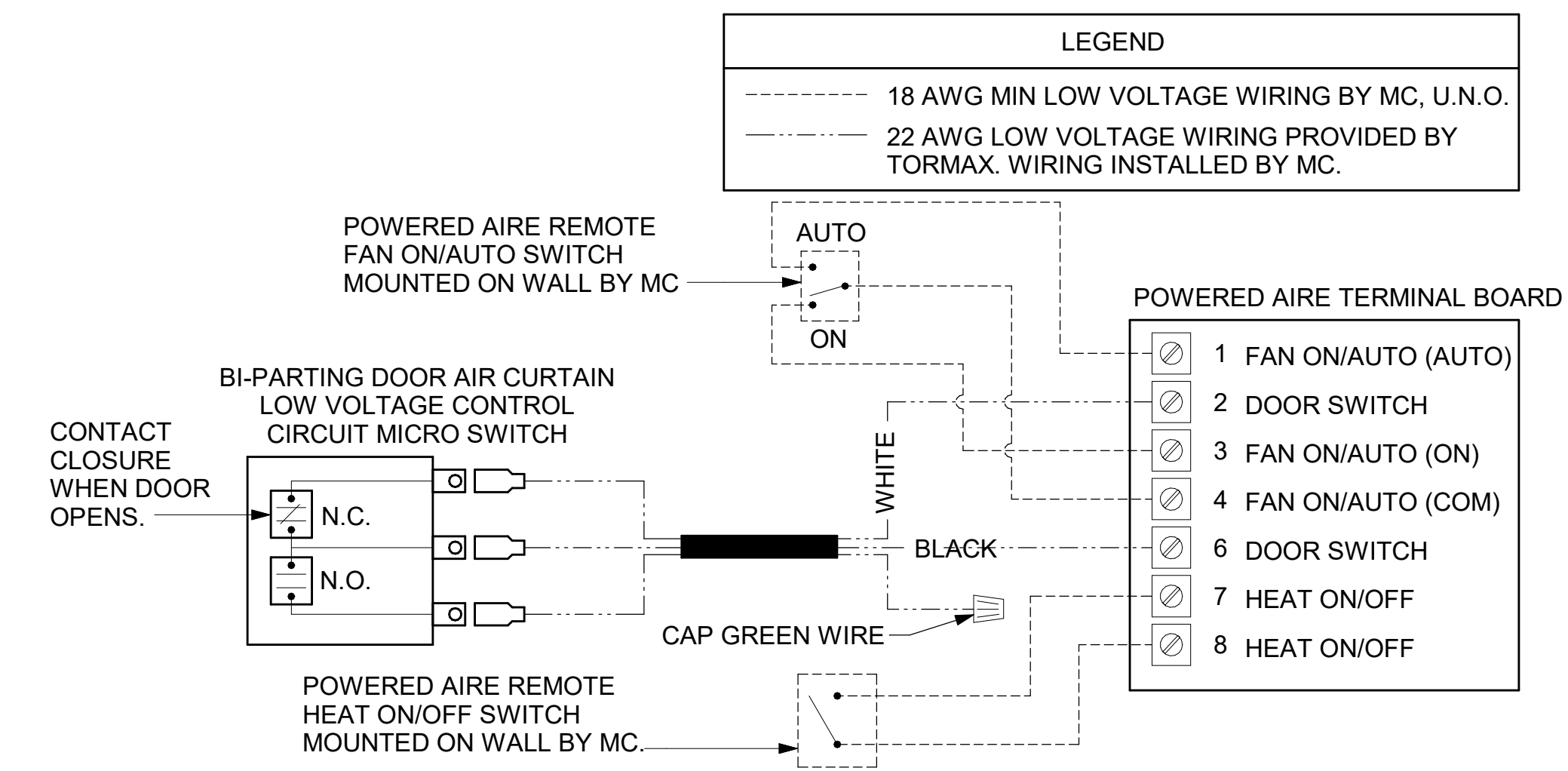
REVISION SCHEDULE  
NO. DATE DESCRIPTION

CONSULTANT PROJECT # 25048.EH.S  
DATE 05/29/2025  
DRAWN BY BLM

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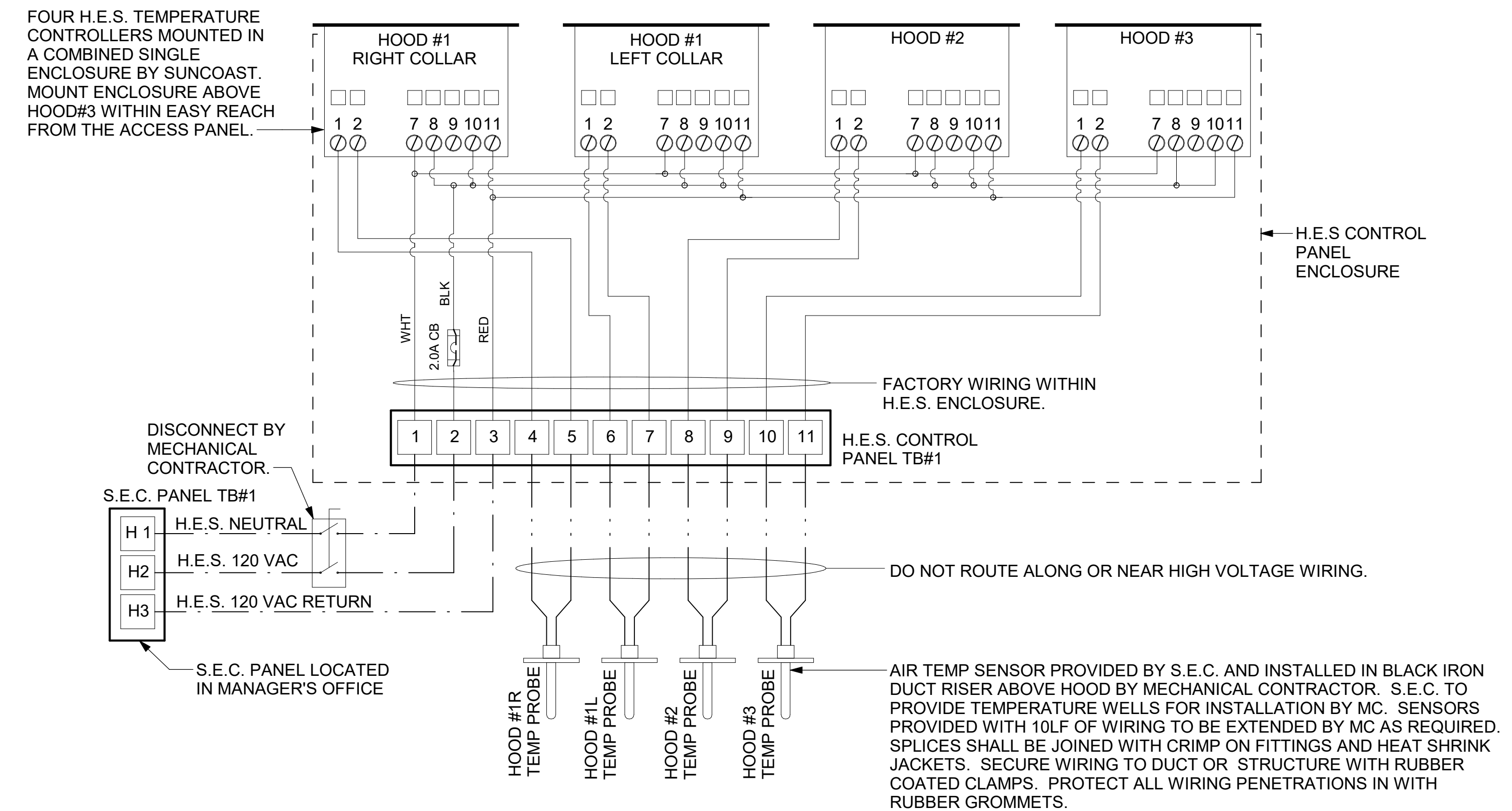
SHEET CONTROL WIRING DIAGRAMS  
SHEET NUMBER

**M-702**



**2 AIR CURTAIN WIRING DIAGRAM**  
NTS

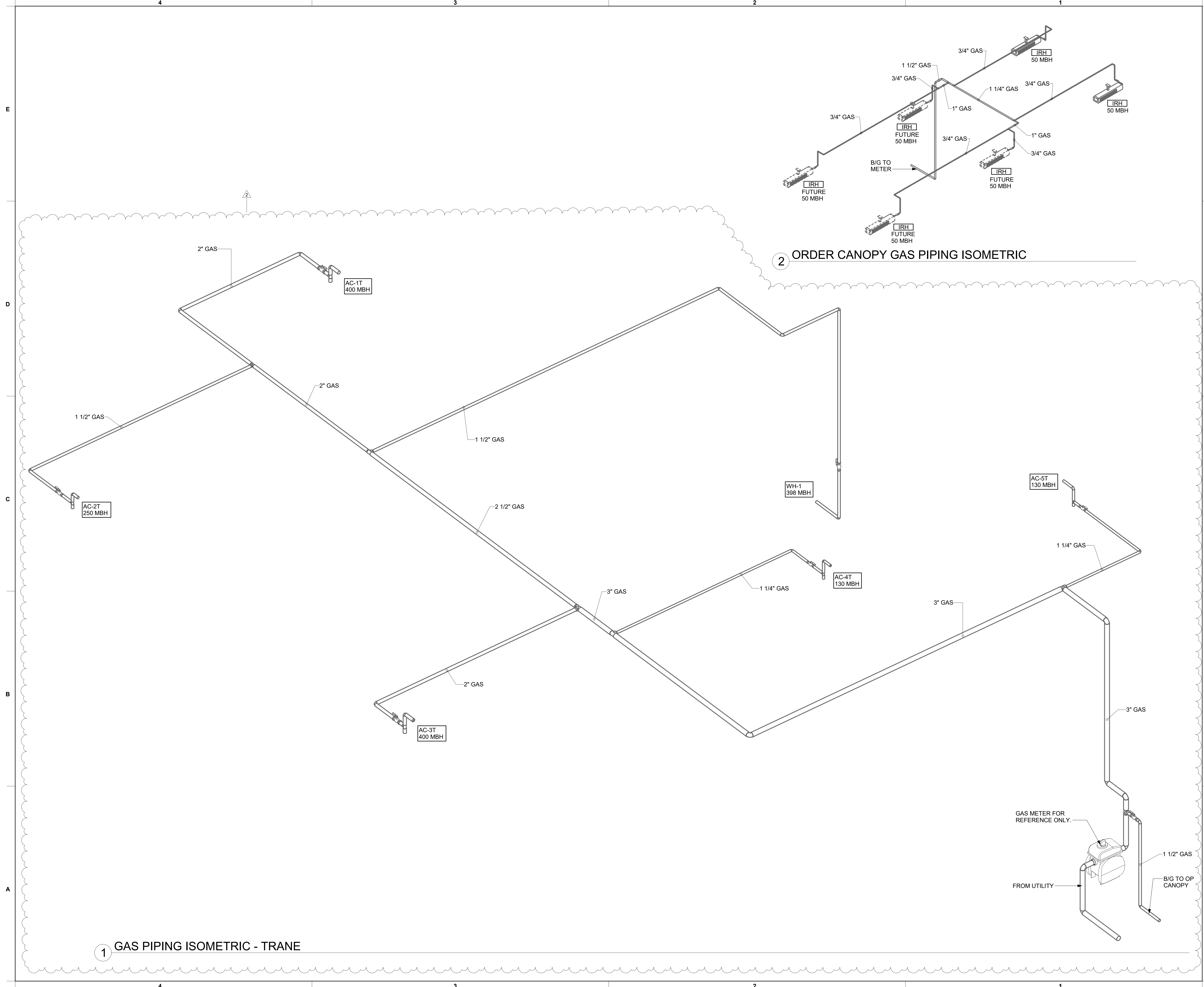
LEGEND		GENERAL NOTES	S.E.C. H.E.S. OPERATION
S.E.C.	SUNCOAST ENVIRONMENTAL CONTROLS CFA-500 ENERGY MGT PANEL	1. MECHANICAL CONTRACTOR TO PURCHASE THE H.E.S. CONTROL PANEL AND COMPONENTS FROM SUNCOAST ENVIRONMENTAL CONTROLS. TELEPHONE 877-544-6679. 2. CONTROLS COMPONENTS TO BE FACTORY MOUNTED IN LABELED NEMA-1 ENCLOSURES. 3. MECHANICAL CONTRACTOR TO PROVIDE A PROFESSIONALLY LAMINATED COPY OF THIS DETAIL ATTACHED TO THE ENCLOSURE CONTACT ENGINEER OF RECORD FOR A REPRODUCIBLE COPY OF THE DETAIL.	IN THE EVENT THAT ANY COOKING EQUIPMENT ITEM BENEATH ANY HOOD IS STARTED WITHOUT THE 'STORE SWITCH' BEING IN THE 'OCCUPIED' POSITION, THE H.E.S. CONTROLLER WILL SENSE THE HEAT RISE WITHIN THE HOOD CANOPY AND ENERGIZE THE EXHAUST FANS.
H.E.S.	SUNCOAST ENVIRONMENTAL CONTROLS HOOD EXHAUST SAFETY CONTROLLER		
M.C.	MECHANICAL CONTRACTOR		
—	18 AWG MIN UNSHIELDED LOW VOLTAGE WIRING BY MC, U.N.O.		
- - -	120 VAC WIRING BY MECHANICAL CONTRACTOR		



**1 HOOD EXHAUST SAFETY SYSTEM WIRING - INTEGRATED**  
NTS

Autodesk Docs://IN\_05357\_Beech Grove (IN) FSU\_2025.3\_FSR#05357\_Beech Grove (IN) FSU\_K&A\_MEC.rvt  
8/14/2025 7:57:00 AM  
30-SE-05357-M-702-CONTROL WIRING DIAGRAMS

Autodesk Docs://IN\_05357\_Beech Grove (IN) FSU\_2025.3\_FSR#05357\_Beech Grove (IN) FSU\_K&A\_MEC.rvt  
8/14/2025 7:57:02 AM  
30-SE-05357-M-901T-GAS PIPING ISOMETRIC - TRANE



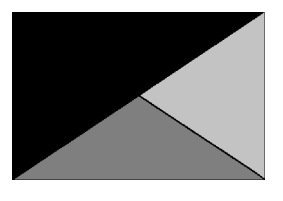
1 GAS PIPING ISOMETRIC - TRANE

2 ORDER CANOPY GAS PIPING ISOMETRIC



*Chick-fil-A*

**Chick-fil-A**  
5200 Buffington Road  
Atlanta, Georgia  
30349-2998



**Kurzynske & Associates**  
2705 Lebanon Pike - Suite One  
Nashville, Tennessee 37214  
Telephone: (615) 255-5203



**CHICK-FIL-A**  
Beech Grove FSU  
5151 E Thompson Rd  
Indianapolis, IN 46237

**FSR#05357**  
BUILDING TYPE / SIZE: P14 SE BASE  
RELEASE: 25.02  
PRINTED FOR:  
CONSTRUCTION

NO.	DATE	DESCRIPTION
2	06/16/2025	LL COORD.

CONSULTANT PROJECT # 25048.EH.S  
DATE 05/29/2025  
DRAWN BY BLM

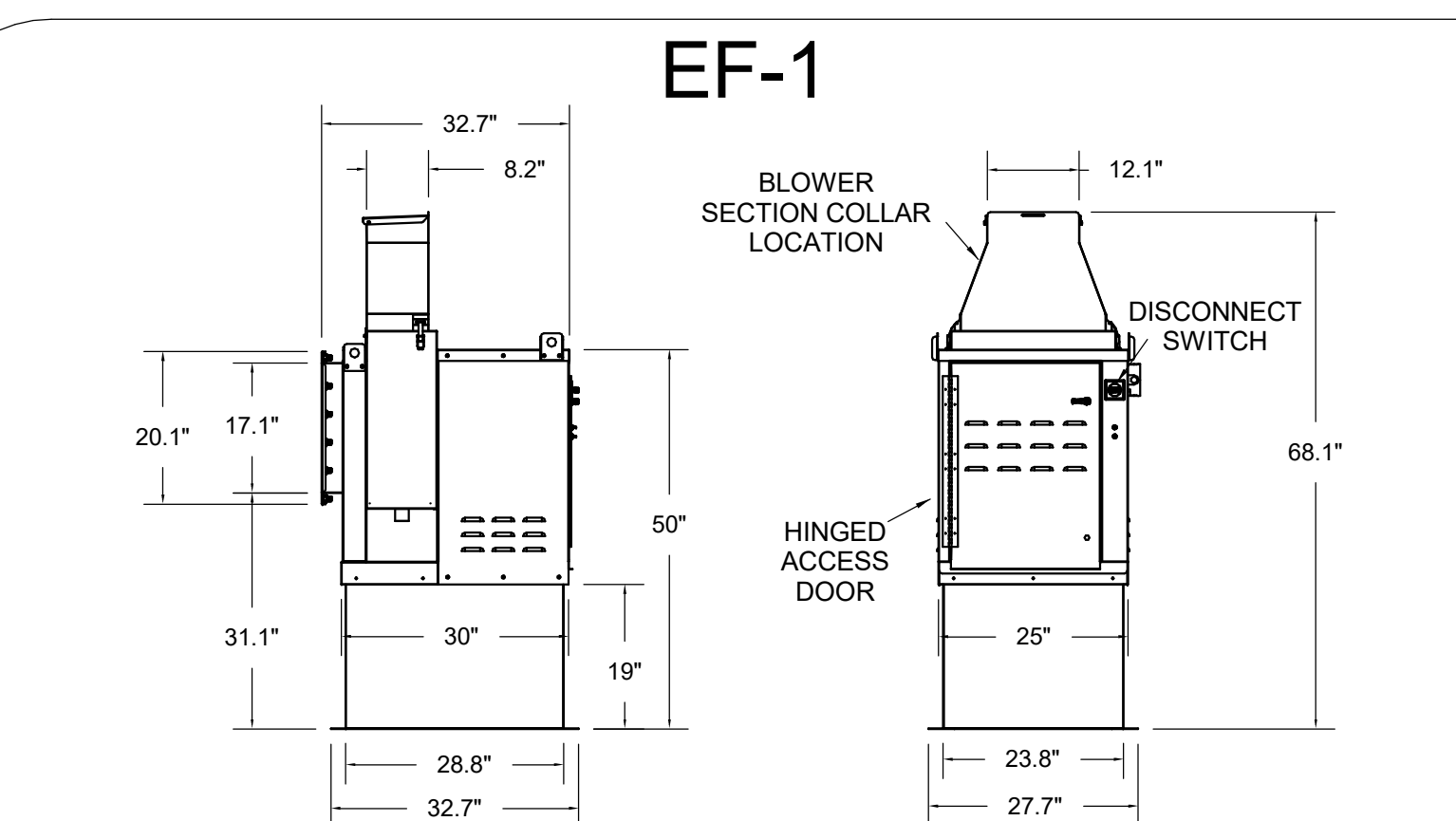
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SHEET  
GAS PIPING ISOMETRIC - TRANE

SHEET NUMBER  
**M-901T**



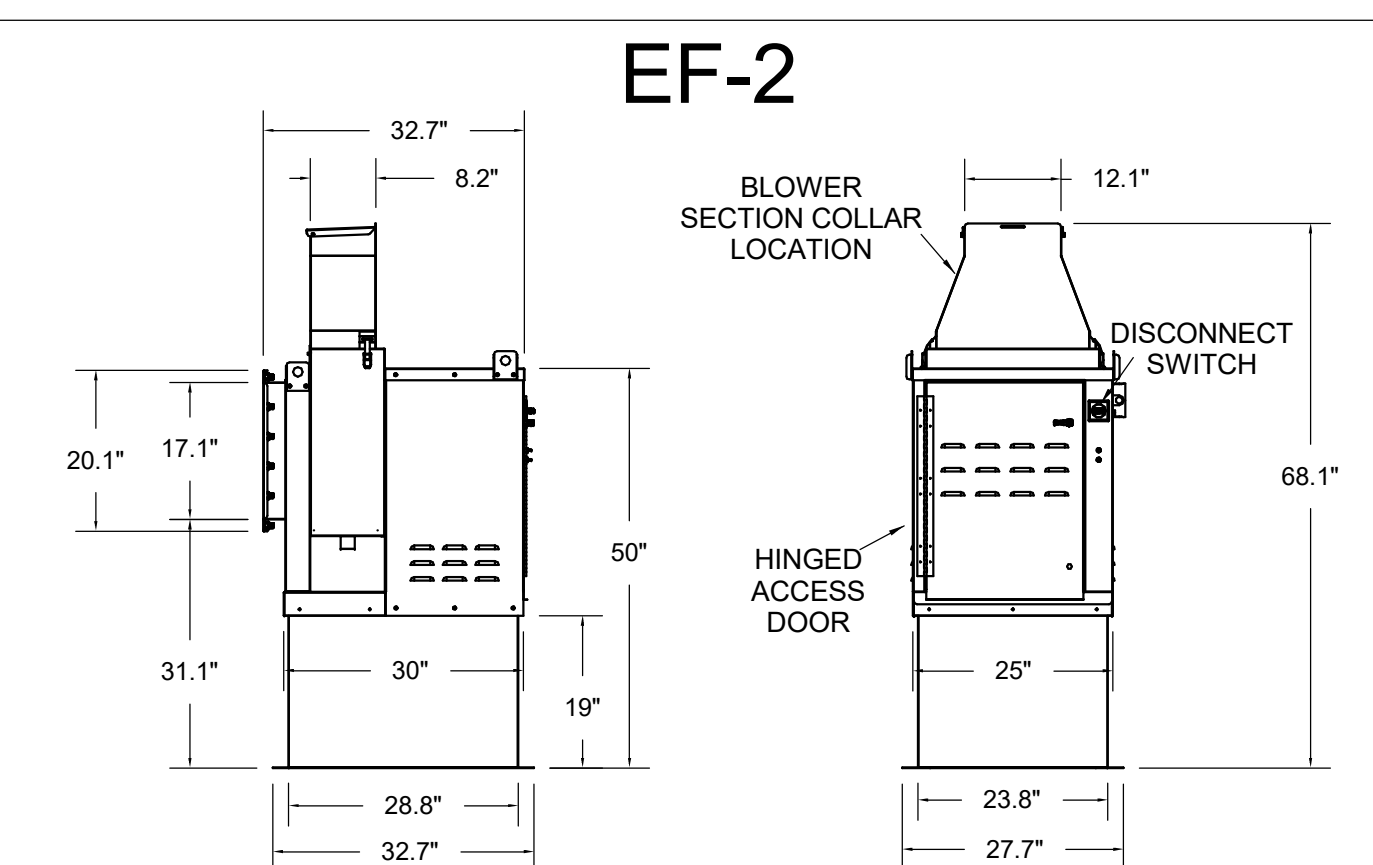
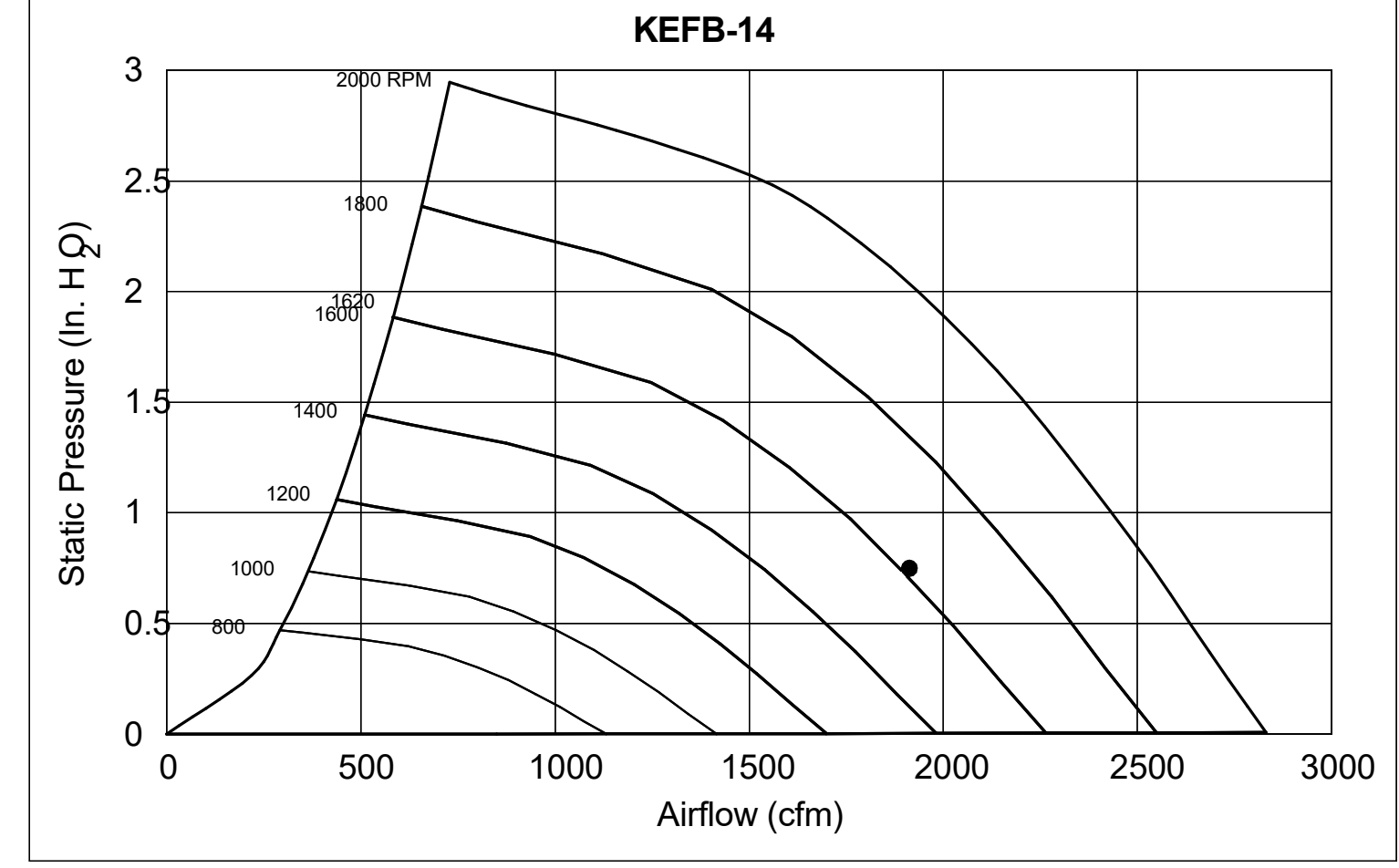






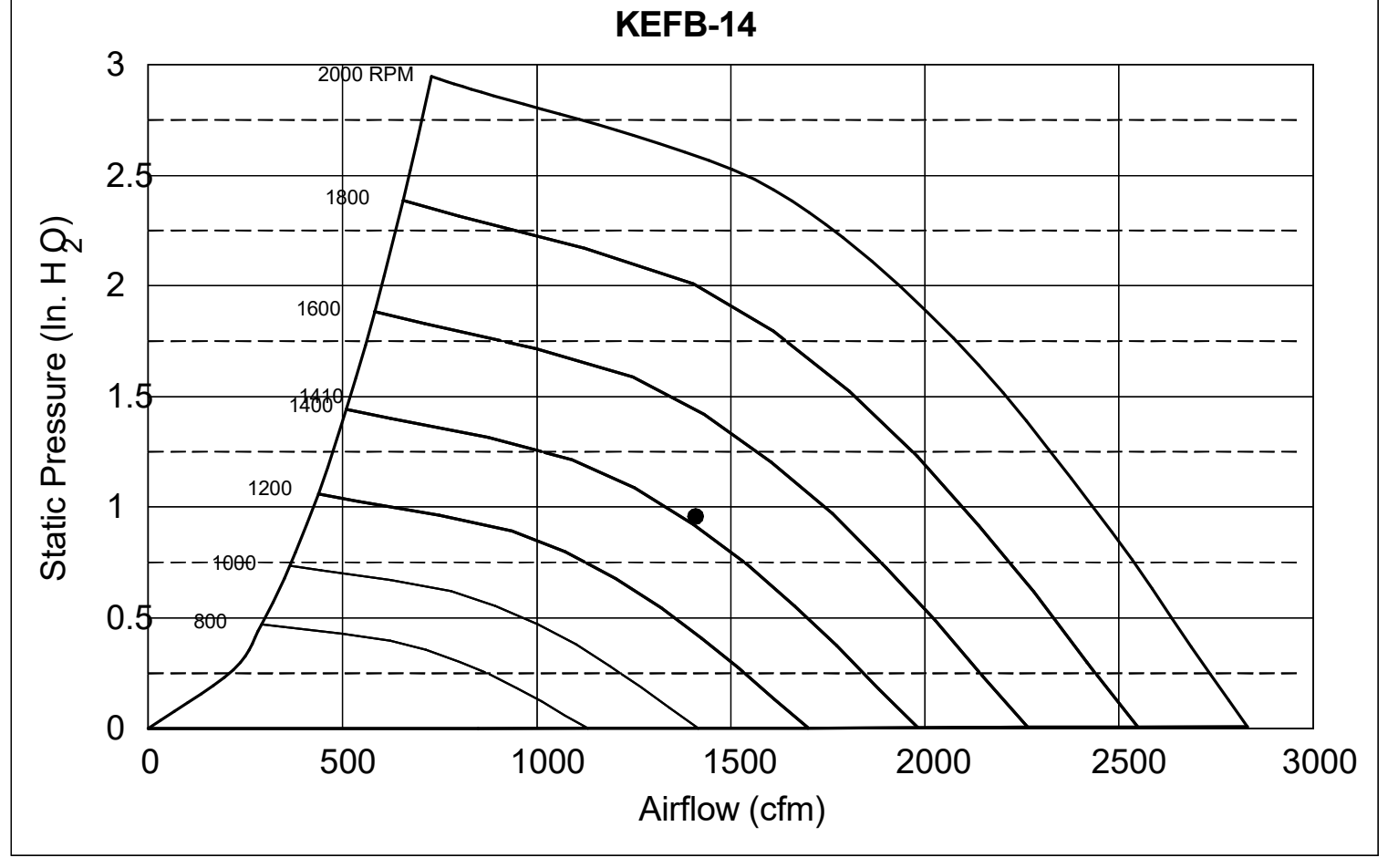
Halton KEFB Exhaust Fan

Job Name	Chick-FLA	Location	EF-1	Item No	1.820	Qty	115/180
Date	1/28/2023	Model	KEFB-14	Fan RPM	1820	Volts/Ph/Amperes	115/1/80
Airflow, cfm	1,912	Fan BHP	0.55	Motor HP	0.75	Static Pressure, in WC	0.75
Static Pressure, in WC	0.75	dB	85.3	TAB Port, in WC	4.8		



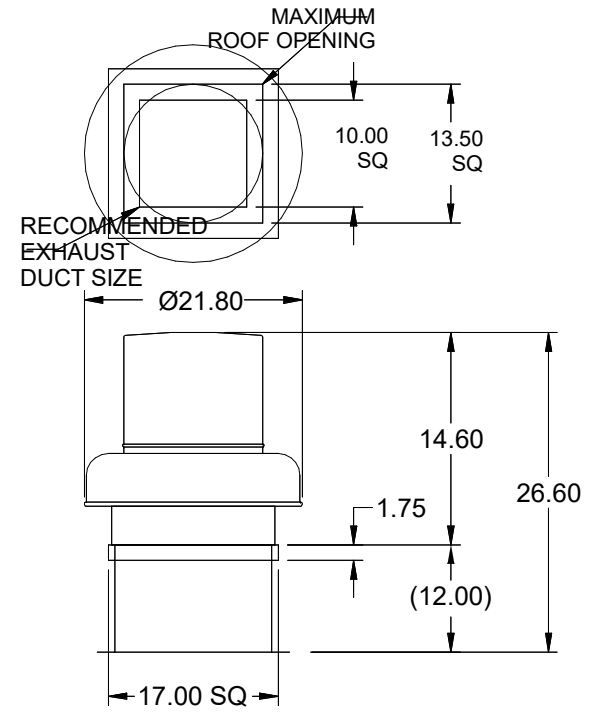
Halton KEFB Exhaust Fan

Job Name	Chick-FLA	Location	EF-2	Item No	1.410	Qty	115/180
Date	1/28/2023	Model	KEFB-14	Fan RPM	1410	Volts/Ph/Amperes	115/1/80
Airflow, cfm	1,402	Fan BHP	0.38	Motor HP	0.75	Static Pressure, in WC	0.95
Static Pressure, in WC	0.95	dB	81.6	TAB Port, in WC	2.1		



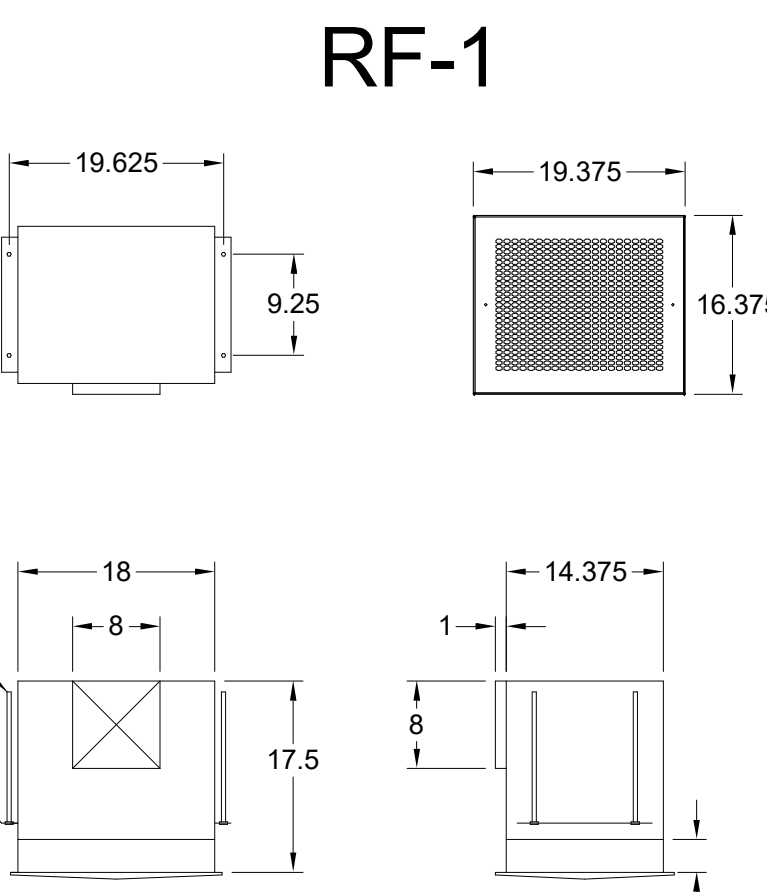
Model: XRED-095-VG  
Direct Drive Centrifugal Roof Exhaust Fan

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	28
Weight w/ Acc's (lb)	35
Weight w/ Acc's and Curb (lb)	49
Standard Curb Cap Size (in.)	17 x 17
Optional Damper (in.)	10 x 10
Roof Opening (in.)	13.5 x 13.5

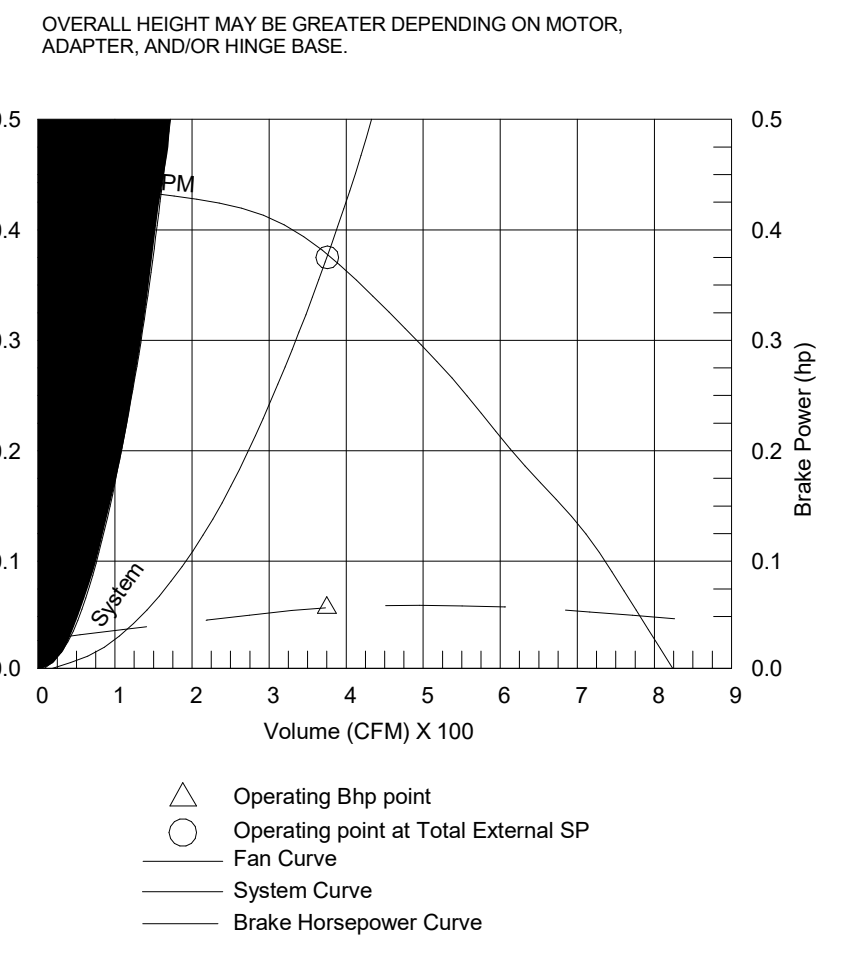


Model: SP-A510-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	31
Weight w/ Acc's (lb)	40

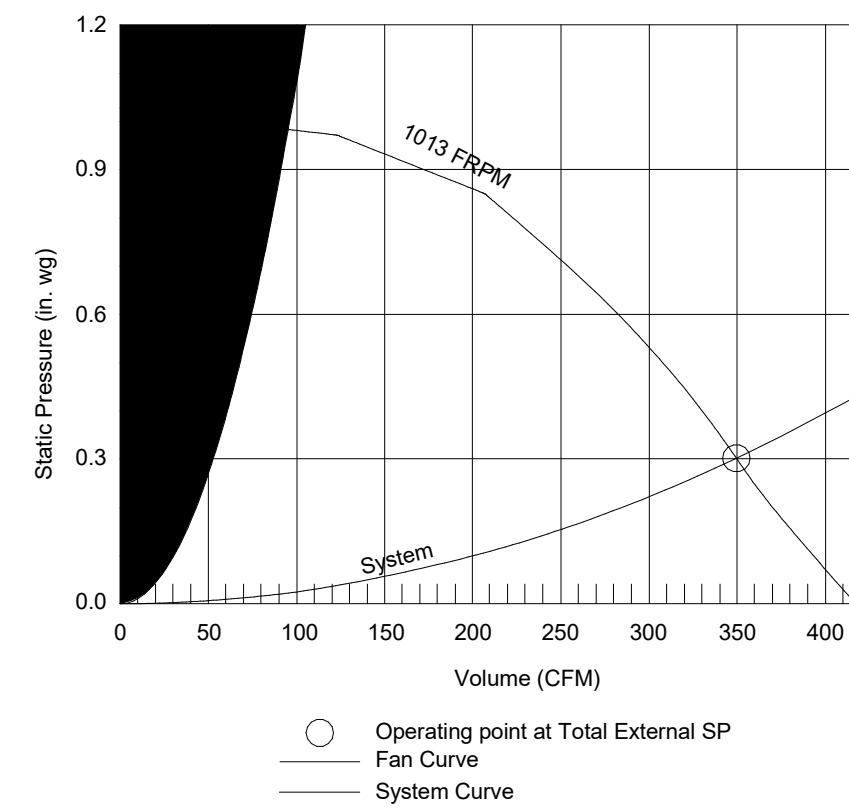
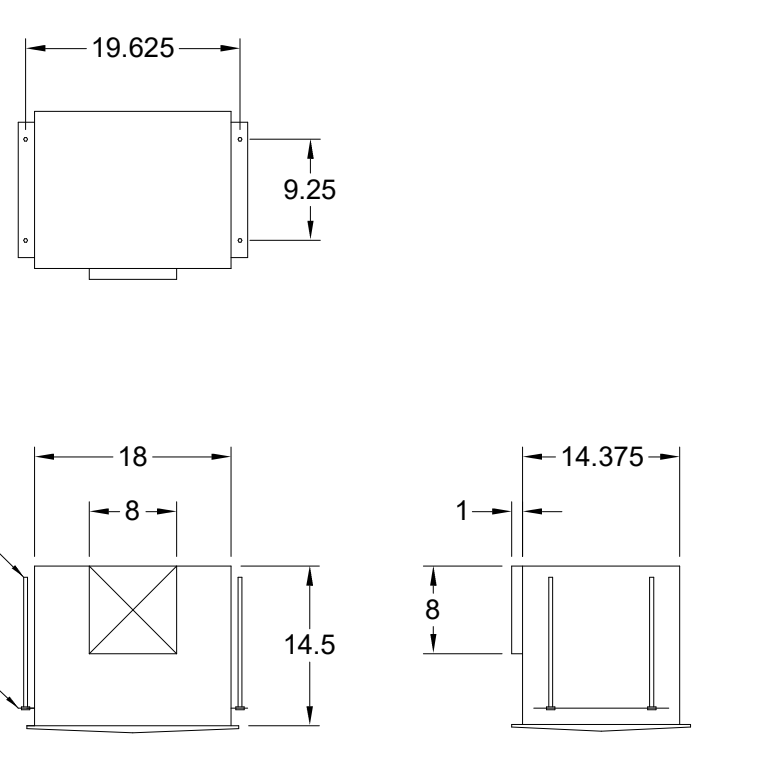


EF-3



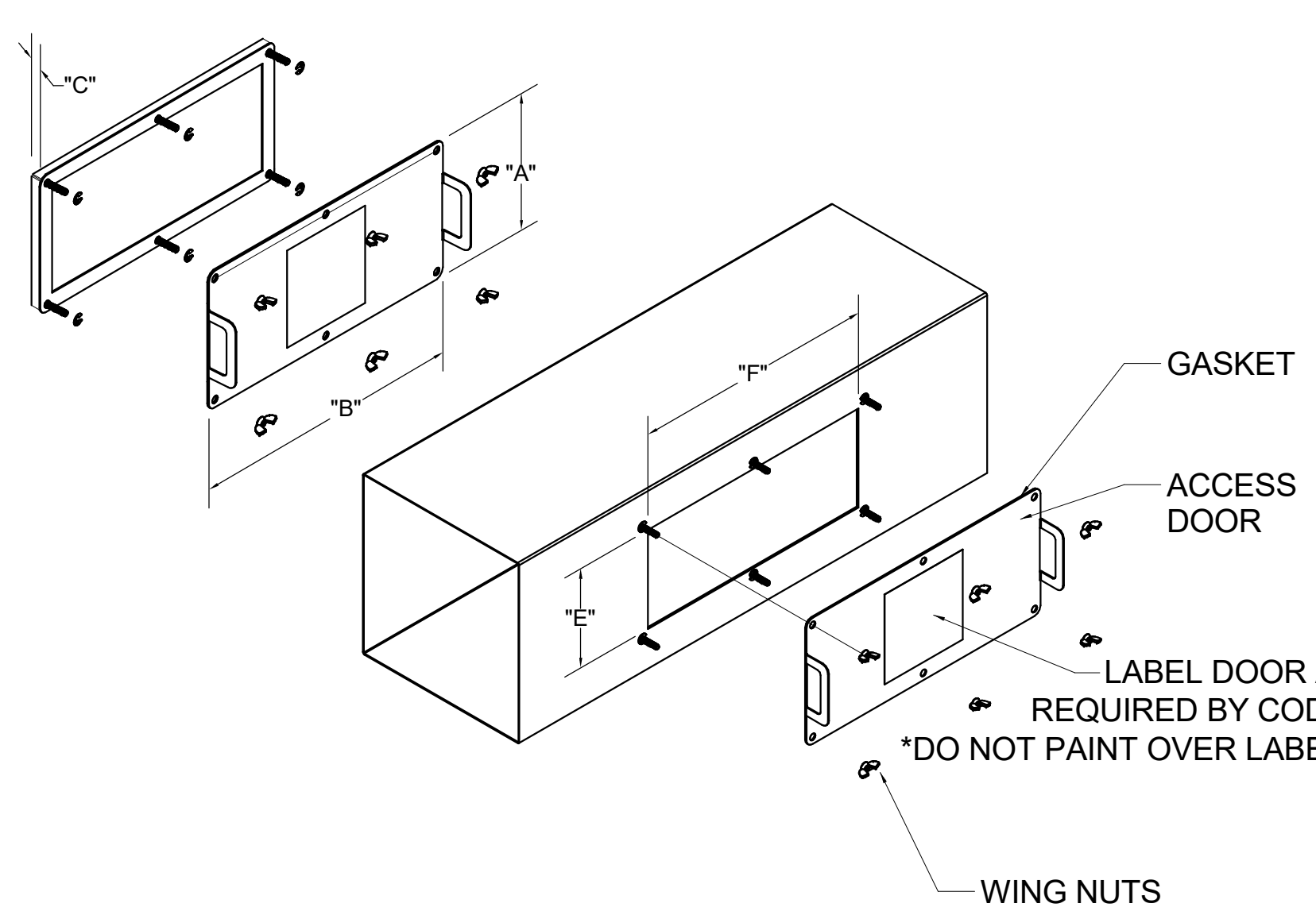
Model: SP-A510-VG

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	31
Weight w/ Acc's (lb)	32



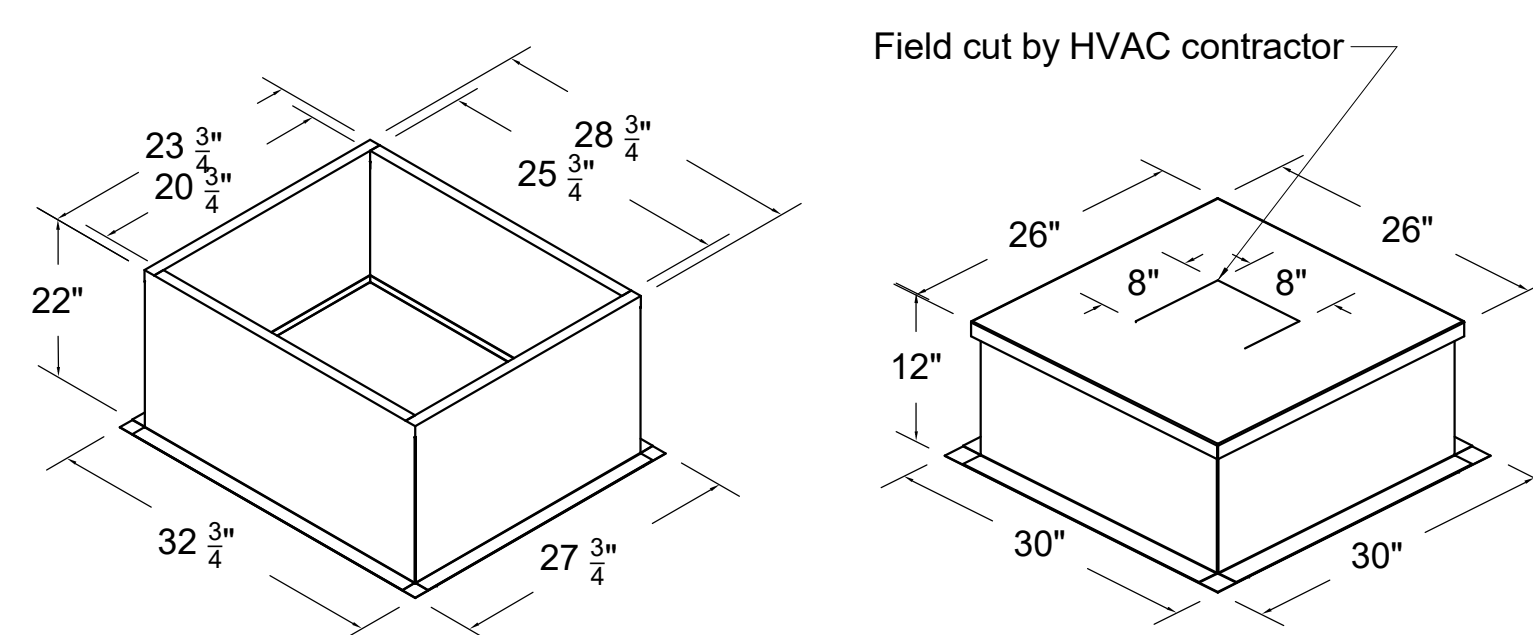
GREASE ACCESS DOOR SCHEDULE				
MODEL	"A"	"B"	OPTIONAL FLANGE	OPENING SIZE
KAP0715	7	15	FLAT	5.5 13.5
KAP1015	10	15	1/2	7 12

ACCESS DOORS SHALL BE U.L. 1978 LISTED OR FIELD FABRICATED, REQUIRE NO TOOLS FOR REMOVAL AND MEET THE REQUIREMENTS OF THE CURRENT EDITION OF THE IMC. ACCESS DOOR SHALL BE SECURED WITH THUMB SCREWS. ACCESS DOORS SHALL BE SEALED WITH A MINIMUM 1500 DEGREE GASKET MATERIAL.



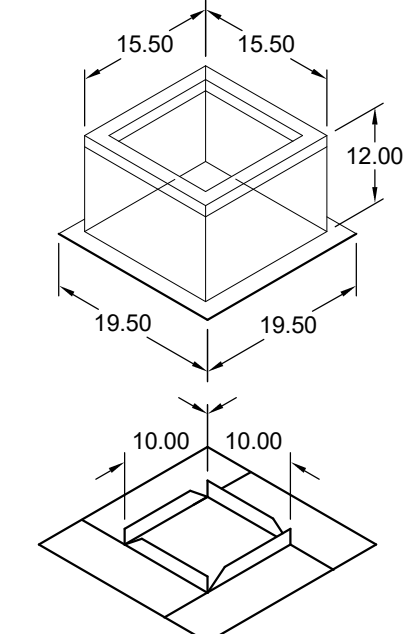
INSTALL PER MANUFACTURER'S INSTRUCTIONS

Halton Kitchen Exhaust Fan Curb Insulated Duct Curb



**Kitchen Exhaust Fan Roof Curb**  
Standard Construction Features:  
- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure  
- Constructed of 18 ga aluminumized steel  
- Straight Sided without a cant  
- 2 in. mounting flange  
- Height is 22 in.

**Insulated Duct Curb**  
Standard Construction Features:  
- Duct Curb fits between the building roof and the fan mounted directly to the roof support structure  
- Constructed of 18 ga aluminumized steel  
- Straight Sided without a cant  
- 2 in. mounting flange  
- Height is 12 in.  
- 16 ga. cap



Model: GPI  
For Model: XRED-090-VG  
Curb & Damper Tray

ACCESSORIES			
MATERIAL	SECURITY BARS	INSULATION LINER	INSULATION R VALUE
GALVANIZED	NO	NO	1 R4.3

GENERAL						
TAG	QTY	MODEL	SIZING METHOD	UNDERSIZING (in.)	WEIGHT (lb)	SHIPPED ASSEMBLED
EF-3	1	GPI-17	NOMINAL	1.5	14	YES

DIMENSIONS										
CURB HEIGHT (in.)	NOMINAL OUTSIDE WIDTH (in.)	NOMINAL OUTSIDE LENGTH (in.)	ACTUAL OUTSIDE WIDTH (in.)	ACTUAL OUTSIDE LENGTH (in.)	ACTUAL INSIDE WIDTH (in.)	ACTUAL INSIDE LENGTH (in.)	FLANGE WIDTH (in.)	FLANGE LENGTH (in.)	HINGE BASE WIDTH (in.)	HINGE BASE LENGTH (in.)
12	17	17	15.5	15.5	12	12		19.5	16	

\*MAY NOT BE APPLICABLE

FOR REFERENCE ONLY

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY. BELOW WEBSITE: WWW.HALTONCOMPANY.COM

PROJECT: **CHICK-FLA**

LOCATION: **Beech Grove FSU**

DRAWN BY: **NTS** DATE: **05/29/2025**

SCALE: **NTS**

Halton  
CARE FOR INDOOR AIR

REVISION DESCRIPTION

REV.	DATE	BY
1		
2		
3		
4		
5		
6		
7		

HALTON CO. (CANADA)  
1021 BREVIK PLACE  
MISSISSAUGA, ON L4W 3R7  
1-905-624-0301

HALTON CO. (USA)  
101 INDUSTRIAL DRIVE  
SCOTTSDALE, AZ 85264  
1-270-237-5600

REVISION DESCRIPTION

APPROVED FOR FABRICATION

WITH CHANGES AS NOTED

DATE

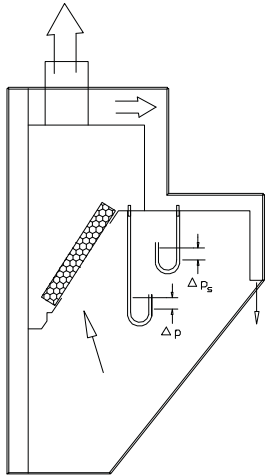
Sheet **MH-1.4**



# Balancing of Capture Jet<sup>®</sup> Hoods

Exhaust Airflow (CFM) vs. Pressure Differential (inches H<sub>2</sub>O)

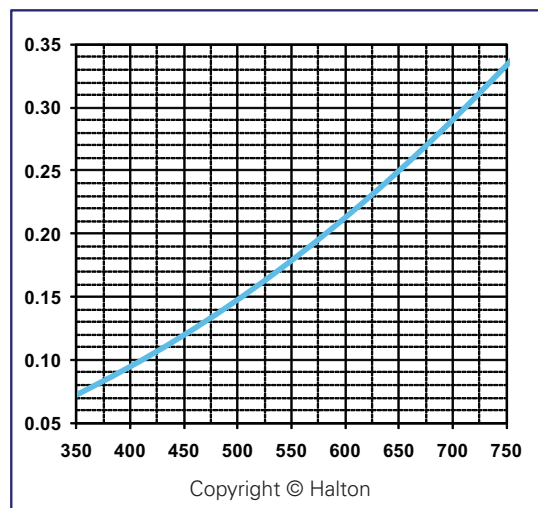
## Model KVL, KVL2 with Plate Shelf, KVL2 with Under Hang and KVM Hybrid



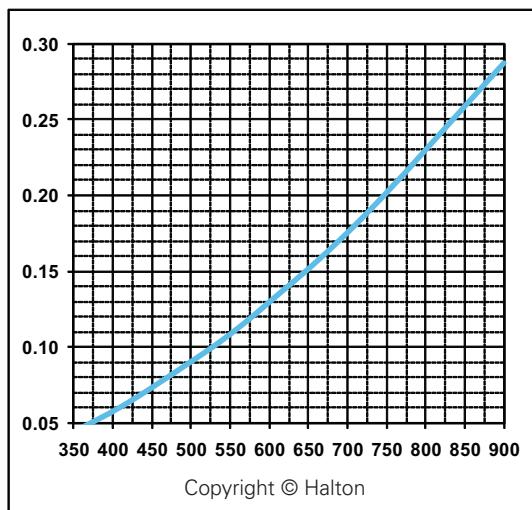
The capture jet and exhaust air flows are easily and accurately determined by measuring the pressure difference from the T.A.B. ports mounted in each plenum. Corresponding air flows can be read from the diagrams provided.

All T.A.B. readings assume cold conditions. To adjust for an exhaust temperature of 110 °F, multiply the readings by a factor of 0.93.

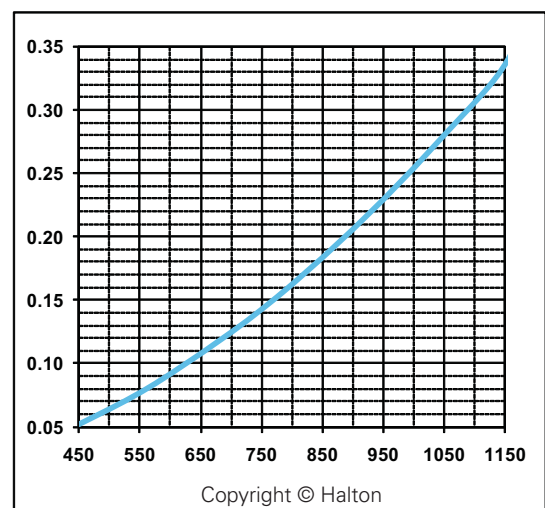
### KVL, KVL2 and KVM - 2 Filters



### KVL, KVL2 and KVM - 2.5 Filters

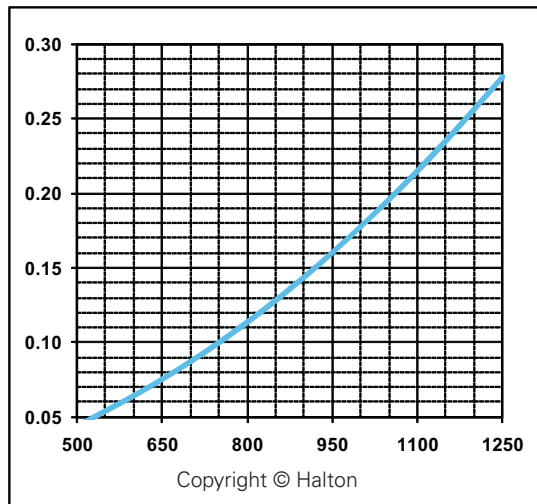


### KVL, KVL2 & KVM - 3 Filters

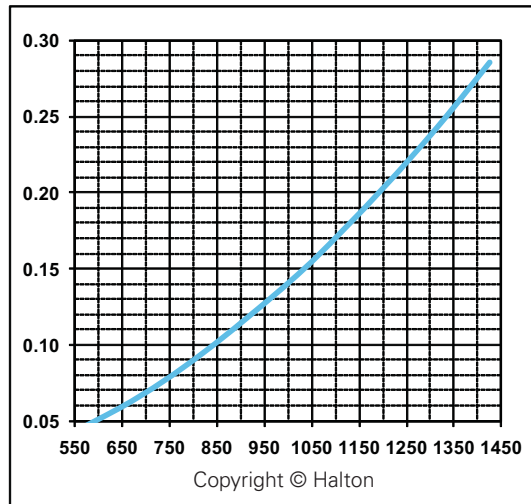


# Model KVL, KVL2 with Plate Shelf, KVL-E with Under Hang and KVM Hybrid

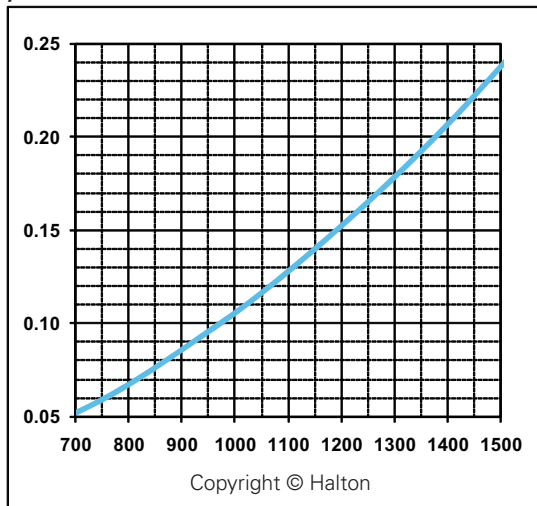
**KVL, KVL2 & KVM - 3.5 Filters**



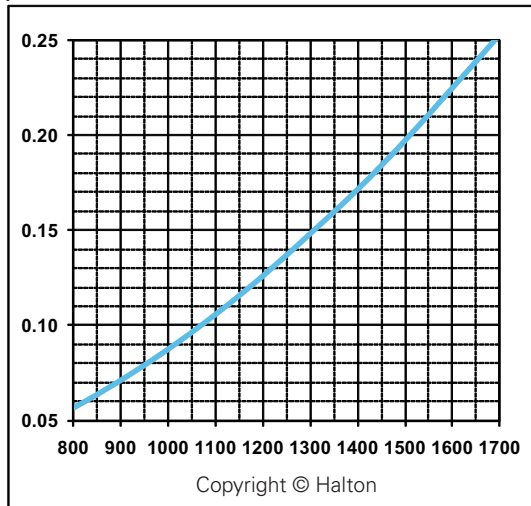
**KVL, KVL2 & KVM - 4 Filters**



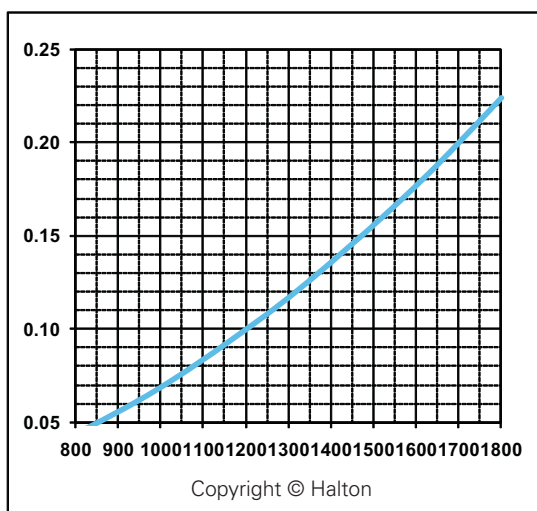
**KVL, KVL2 & KVM - 4.5 Filters**



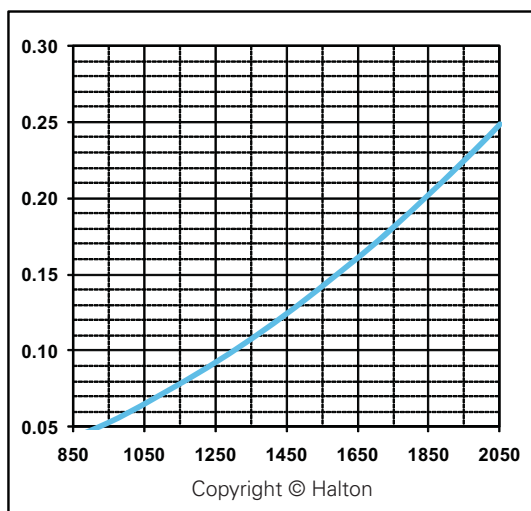
**KVL, KVL2 & KVM - 5 Filters**



**KVL, KVL2 & KVM - 5.5 Filters**

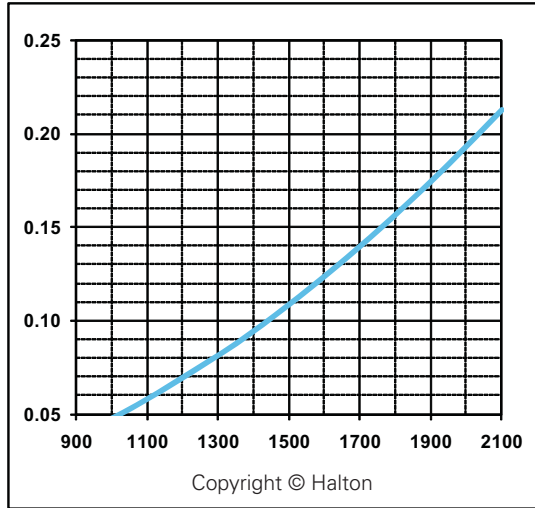


**KVL, KVL2 & KVM - 6 Filters**

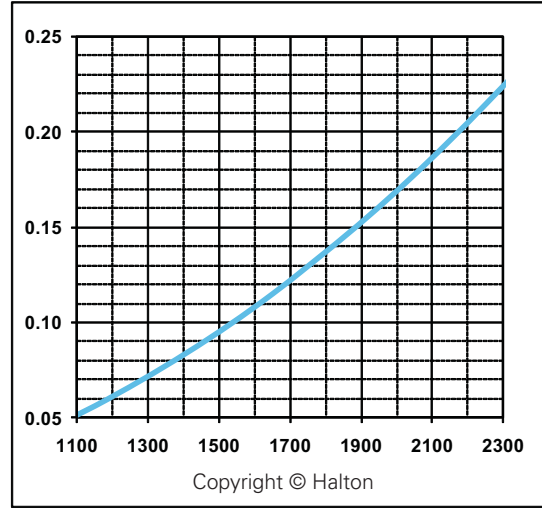


# Model KVL, KVL2 with Plate Shelf, KVL-E with Under Hang and KVM Hybrid

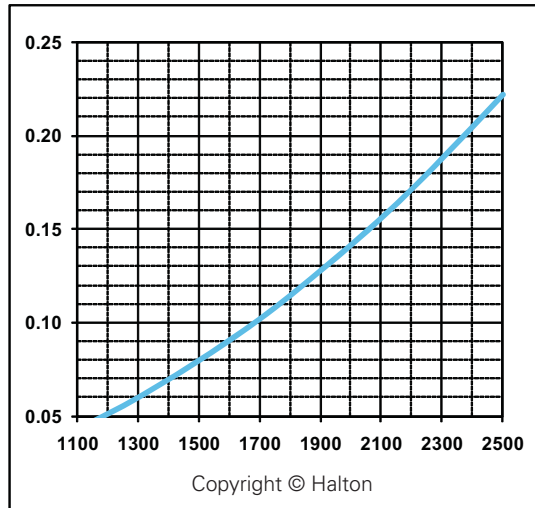
### KVL, KVL2 & KVM - 6.5 Filters



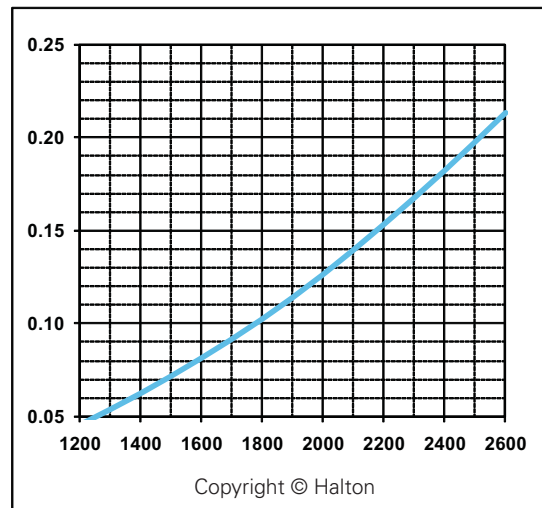
### KVL, KVL2 & KVM - 7 Filters



### KVL, KVL2 & KVM - 7.5 Filters



### KVL, KVL2 & KVM - 8 Filters



# TEST & BALANCE DEFICIENCY CLASSIFICATION

## SITE CONDITIONS



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• Building does not have permanent power.</li> <li>• Site conditions: i.e. Ceiling tiles are not installed, ceiling grid is not installed, glass is not installed around play space, no doors on building, too many trades working at once, etc.</li> <li>• No ladders on site, or roof ladder not yet installed on building.</li> <li>• Electrical circuit serving equipment not connected, finalized and/or not per NEC and/or IOM.</li> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>		<ul style="list-style-type: none"> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## EXHAUST SYSTEM



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• Loose or missing access doors on the grease ductwork.</li> <li>• Grease exhaust duct dampers (Halton – Kitchen Volume Damper (Model K) or Manual Volume Damper (Model MBD) not installed or in wrong locations.</li> <li>• Symmetrical duct wye at hoods not installed per plans.</li> <li>• RR fans are not operational.</li> <li>• Wrong HP motor in rooftop exhaust equipment.</li> <li>• Short radius or mitered (Square 90's) type ells on the grease ductwork.</li> <li>• Exhaust Fan Motors Burn-out due to improper start-up.</li> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>	<ul style="list-style-type: none"> <li>• Exhaust fans and RTUs on the wrong curbs</li> <li>• Capture Jet duct not installed per plans and/or shops.</li> <li>• Side Capture Jet plenum not installed per plans and/or shops.</li> <li>• Hood(s) installed at incorrect height.</li> <li>• Grease duct not sloped per plans.</li> </ul>	<ul style="list-style-type: none"> <li>• Grease drip trays at grease EF's not installed per plans and/or IOM.</li> <li>• Cabinet penetration in capture jet fan not sealed.</li> <li>• Grease duct insulation not per specifications.</li> <li>• HVAC or grease duct Insulation not per local AHJ requirements. R6 vs R8, 1 or 2 layers, etc.</li> <li>• Hood trim angles not installed.</li> <li>• Hood hangers not installed per plans and shop dwgs.</li> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## ROOF TOP UNIT



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• Wrong HP motor in rooftop equipment.</li> <li>• RTU fan motors burn-out due to improper startup.</li> <li>• Economizers sticking or do not open in unison.</li> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>	<ul style="list-style-type: none"> <li>• RTU leaking air into curb due to base pan bent, or gasket not installed.</li> <li>• AC P Traps incorrectly constructed.</li> <li>• Incorrect options on equipment.</li> <li>• Barometric and/or power relief damper assembly not functioning.</li> </ul>	<ul style="list-style-type: none"> <li>• Extra set of AC filters not provided per specs.</li> <li>• Equipment not secured to curbs and/or structure per plans or due to High Wind and/or Seismic designs per plans.</li> <li>• Deck not cut at duct penetrations per plans.</li> <li>• RTU's not level.</li> <li>• RTU filters are dirty and/or incorrect type.</li> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## AIR DISTRIBUTION



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• No turning vanes or incorrect turning vanes installed.</li> <li>• No dampers installed in the run-outs on an AC system.</li> <li>• Ductwork leaking enough air to drop below the 10% allowance. (System)</li> <li>• In-line manual volume damper jammed and restricting airflow.</li> <li>• Run-outs not attached to diffusers/missing. ductwork or diffusers, no end cap installed on trunk main.</li> <li>• Duct sizes not per plans.</li> <li>• Damper handles on top of ductwork.</li> <li>• Missing the transition in the supply drop.</li> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>	<ul style="list-style-type: none"> <li>• Dampers are not opening or closing due to obstructions in the start collars.</li> <li>• Excessive amounts of flex/flex in drops.</li> <li>• Diffusers air pattern deflectors are not field adjusted to prints. Either the 2x2 diffusers in kitchen, office or drive thru, or the hard ceiling supply grills.</li> <li>• Flex ducts are not installed per the M-5.1 print instructions.</li> <li>• 36" gap between the drop and 1st tap was not maintained.</li> <li>• Missing mastic on the runout to diffusers and air devices or duct not sealed per specs and/or SMACNA.</li> <li>• Duct hangers at RTU duct drops must be installed so as to minimize duct weight hanging from curb duct rails.</li> </ul>	<ul style="list-style-type: none"> <li>• Missing or improperly located flex connector in drop.</li> <li>• Duct hangers not installed per SMACNA.</li> <li>• Duct construction not per SMACNA.</li> <li>• HVAC insulation not installed per specs, SMACNA and/or IOM.</li> <li>• Duct insulation damaged due to exposure to elements or due to other trades.</li> <li>• Duct smoke detectors not located per plans and/or sample tubes plugged and/or not operational.</li> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## CONTROLS



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• Hard ceilings electronic dampers are not operational/no diagram of diffuser-damper layout relative to centralized control panel.</li> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment controls not installed or configured per plans.</li> <li>• Incorrect control wiring type/gauge used and/or wiring not installed per plans and/or equipment IOM.</li> </ul>	<ul style="list-style-type: none"> <li>• Sensors not installed as shown on plans.</li> <li>• Thermostat control sensors out of calibration.</li> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## MISC EQUIPMENT



<b>CRITICAL</b> <i>Unable to Perform T&amp;B Scope until GC corrects</i>	<b>REVIEW + RECTIFY</b> <i>Review Deficiency w/ EOR, Owner, GC to determine Action Required</i>	<b>NON-CRITICAL</b> <i>Proceed with T&amp;B Scope &amp; Note as Deficiency</i>
<ul style="list-style-type: none"> <li>• Incorrect MFR of devices or equipment Installed-Non-National Accounts Approved Brands.</li> </ul>		<ul style="list-style-type: none"> <li>• Air curtains not installed per plans and IOM.</li> <li>• Air curtain controls not installed or adjusted per plans/IOM.</li> <li>• Equipment and device labels not installed per plans. Includes RTUs, EFs, T-Stats, Ansul Pull Station, Annunciators.</li> </ul>

## DEFINITIONS:

**System or Zone:** Roof Top Unit (RTU)/Exhaust Fan (EF) and inter-connected air distribution network (Ductwork).

**Building System:** All associated individual systems/zones in function with one another to achieve design requirements.

**TAB:** Testing, Adjusting and Balancing Firm

**GC:** General Contractor

**OR:** 3rd Party Owners Representative Construction Manager

**Owner:** Chick-fil-A, Inc. Program Manager

### NOTES:

Mechanical Contractor present and capable of resolving issues while T&B in process can shift status of deficiency.