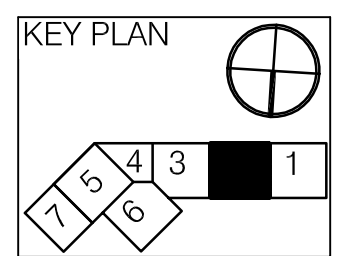


Item	Date
Bid	032117
Permit	032417
Exhaust Fans	053017



Great American Bagel Renovations
 Portland Int'l Airport P/W/M
 1001 Westbrook Street
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Job #: 16414
 Scale: As noted
 Issued: 032117

MECHANICAL PLAN

M100

MECHANICAL SPECIFICATIONS

PART 1: GENERAL

- 1.1 DESCRIPTION OF WORK
 A. WORK INCLUDED: PROVIDE LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK OF THIS SECTION.
- 1.2 REGULATORY REQUIREMENTS
 A. COMPLY WITH ALL APPLICABLE FEDERAL AND STATE LAWS, AND ALL LOCAL CODES, BY-LAWS AND ORDINANCES.
 B. REQUEST INSPECTIONS FROM AUTHORITIES HAVING JURISDICTION. OBTAIN ALL PERMITS AND PAY FOR ALL FEES AND INSPECTION CERTIFICATES AS APPLICABLE AND/OR REQUIRED. ALL PERMITS AND CERTIFICATES SHALL BE TURNED OVER TO THE OWNERS UPON COMPLETION OF THE WORK.
 C. ALL WORK, EQUIPMENT AND MATERIALS SHALL CONFORM TO THE BUILDING CONSTRUCTION RULES AND REGULATIONS.
- 1.3 SUBMITTALS
 A. PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO:
 1. EXHAUST FANS.
- 1.4 COORDINATION
 A. WORK SHALL BE PERFORMED IN COOPERATION WITH OTHER TRADES ON THE PROJECT AND SO SCHEDULED AS TO ALLOW SPEEDY AND EFFICIENT COMPLETION OF THE WORK.
 B. FURNISH TO OTHER TRADES ADVANCE INFORMATION ON LOCATIONS AND SIZES OF ALL FRAMES, BOXES, SLEEVES AND OPENINGS NEEDED FOR THEIR WORK, AND ALSO FURNISH INFORMATION AND SHOP DRAWINGS NECESSARY TO PERMIT TRADES AFFECTED BY THE WORK TO INSTALL SAME.
 C. IF ANY HVAC WORK HAS BEEN INSTALLED BEFORE COORDINATION WITH OTHER TRADES SO AS TO CAUSE INTERFERENCE WITH THE WORK OF SUCH TRADES, ALL NECESSARY ADJUSTMENTS AND CORRECTIONS SHALL BE MADE BY THE HVAC TRADES INVOLVED WITHOUT EXTRA COST TO THE OWNERS.
 D. PROTECT ALL MATERIALS AND WORK OF OTHER TRADES FROM DAMAGE WHICH MAY BE CAUSED BY THE HVAC WORK AND REPAIR ALL DAMAGES WITHOUT EXTRA COST TO OWNERS.
- 1.5 MECHANICAL AND ELECTRICAL COORDINATION
 A. ALL POWER WIRING SHALL BE BY ELECTRICAL CONTRACTOR, CONTROL WIRING BY MECHANICAL CONTRACTOR.
 B. THE HVAC AND ELECTRICAL SUBCONTRACTOR SHALL COORDINATE THEIR RESPECTIVE PORTIONS OF THE WORK, AS WELL AS THE ELECTRICAL CHARACTERISTICS OF THE HVAC EQUIPMENT.
- 1.6 INSTALLATION REQUIREMENTS
 A. THE ARRANGEMENT OF ALL HVAC WORK SHOWN ON THE DRAWINGS IS DIAGRAMMATICAL ONLY AND INDICATES THE MINIMUM REQUIREMENTS OF THE WORK. CONDITION AT THE BUILDING INCLUDING ACTUAL MEASUREMENTS SHALL DETERMINE THE DETAILS OF THE INSTALLATION.
- 1.7 RECORD DRAWINGS/PROJECT CLOSEOUT
 A. PROVIDE RECORD AS-BUILT DRAWINGS AT COMPLETION OF INSTALLATION.
- 1.8 GUARANTEE/WARRANTY
 A. ALL NEW MATERIALS, ITEMS OR EQUIPMENT AND WORKMANSHIP FURNISHED UNDER THIS SECTION SHALL CARRY STANDARD WARRANTY AGAINST ALL DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE OF WORK. ANY FAULT DUE TO DEFECTIVE OR IMPROPER MATERIAL, EQUIPMENT, WORKMANSHIP OR MANUFACTURING DESIGN WHICH MAY DEVELOP WITHIN THAT PERIOD SHALL BE MADE GOOD, FORTHWITH, BY AND AT THE EXPENSE OF THIS CONTRACTOR, INCLUDING ALL OTHER DAMAGES DONE TO AREAS, MATERIALS AND OTHER SYSTEMS RESULTING FROM THIS FAILURE.
 B. THIS CONTRACTOR SHALL GUARANTEE THAT ALL NEW ELEMENTS OF THE SYSTEMS MEET THE SPECIFIED PERFORMANCE REQUIREMENTS AS SET FORTH HEREIN OR AS INDICATED ON THE DRAWINGS.

PART 2: PRODUCTS

- 2.1 DUCTWORK
 A. GENERAL: MATERIAL, CONSTRUCTION AND INSTALLATION SHALL MEET THE REQUIREMENTS OF THE MOST RECENT EDITIONS OF THE FOLLOWING STANDARDS AND REFERENCES, EXCEPT FOR MORE STRINGENT REQUIREMENTS SHOWN ON THE DRAWINGS:
 1. SMACNA HVAC DUCT CONSTRUCTION STANDARDS
 2. SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL
 3. NFPA 90A
 4. SMACNA GUIDELINES FOR WELDING SHEETMETAL
 PROVIDE SUPPORTING AND HANGING DEVICES NECESSARY TO INSTALL THE ENTIRE HVAC SYSTEM INDICATED ON THE DRAWINGS. DUCTWORK SHALL BE FREE FROM VIBRATION UNDER ALL CONDITIONS OF OPERATION. DIMENSIONS SHOWN ON THE DRAWINGS ARE NET INSIDE DIMENSIONS. NO PIPES, CONDUITS, HANGERS, OR ARCHITECTURAL ELEMENTS SHALL PASS THROUGH DUCTWORK.
- B. RATINGS:
 1. DUCT CONSTRUCTION CLASS 2" OR LESS AND STATIC PRESSURE RATINGS OF 2" OR LESS POSITIVE AND NEGATIVE SHALL BE SMACNA SEAL CLASS B AND LEAKAGE CLASS 12 FOR ALL VELOCITIES OF 2500 FEET/MIN. OR LESS.
- C. SEALING REQUIREMENTS:
 1. CLASS B/LEAKAGE CLASS 12: GALVANIZED, NON-WELDED ALUMINUM OR NON-WELDED STAINLESS STEEL DUCTWORK TRAVERSE JOINTS SHALL BE MADE WITH SEALING TAPE EQUAL TO HARDCAST MODEL 1902-FR, CORNERS SHALL BE SEALED AS DESCRIBED BY SMACNA. SEAL ALL NON-FLANGED TRAVERSE JOINTS WITH HARDCAST VERSA MODEL 102 OR APPROVED EQUAL. LONGITUDINAL SEAMS SHALL BE SEALED WITH HARDCAST COLD SEAL MODEL 1001.
- D. SUPPORT: SPACE HANGERS AS REQUIRED BY SMACNA (8 FT. MAX.) FOR HORIZONTAL ON 8 FT. CENTERS, UNLESS CONCENTRATED LOADINGS REQUIRE CLOSER SPACING. SUPPORT VERTICAL DUCT AT ROOF PENETRATIONS. SUPPORTS FOR DUCTWORK AND EQUIPMENT SHALL BE GALVANIZED UNLESS SPECIFIED OTHERWISE.
- E. CONSTRUCTION:
 1. NO SHARP METAL EDGES SHALL EXTEND INTO AIR STREAMS. INSTALL DRIVE SLIPS ON AIR-LEAVING SIDE OF DUCT WITH SHEETMETAL SCREWS ON 6" CENTERS.

PART 3: EXECUTION

- 3.1 TESTING AND CLOSEOUT
 A. CLEANING
 1. UPON COMPLETION ALL SHEET METAL WORK SPECIFIED UNDER THIS SECTION IS TO BE CLEANED. ALL EQUIPMENT IS TO BE CLEANED, ALL TRIM INSTALLED, ALL PROTECTIVE OIL, TAPE OR OTHER MATERIALS USED TO PROTECT WORK ARE TO BE REMOVED.
 2. ALL DUCTS, FANS, AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUTSIDE AND BLOWN OUT TO PREVENT AND DEBRIS FROM DAMAGING FAN SHIELDS OR DEBRIS HANGING THROUGH REGISTERS OR DIFFUSERS WHEN SYSTEMS ARE PLACED IN OPERATION. ALL TEMPORARY CONNECTIONS REQUIRED FOR BLOWING OUT THE SYSTEMS, CHEESECLOTH FOR ALL DUCT OPENINGS, AND ANY OTHER EQUIPMENT OR LABOR FOR CLEANING, SHALL BE PROVIDED BY THE HVAC CONTRACTOR. THE ENTIRE HVAC SYSTEM SHALL BE KEPT CLEAN UNTIL FINAL ACCEPTANCE. ANY DAMAGE TO CEILINGS BY THE HVAC CONTRACTOR SHALL BE RECTIFIED BY HIM AT NO ADDITIONAL CHARGE TO THE OWNER, TO THE SATISFACTION OF THE DESIGNER.
- 3.2 OPERATING AND MAINTENANCE INSTRUCTIONS
 A. PRIOR TO COMPLETION OF THE CONTRACT, PROVIDE FIELD AND WRITTEN OPERATING INSTRUCTIONS TO THE OWNER'S DESIGNATED REPRESENTATIVE WITH RESPECT TO OPERATION FUNCTIONS AND MAINTENANCE PROCEDURES FOR ALL EQUIPMENT AND SYSTEMS INSTALLED.
 B. PRIOR TO SCHEDULING THE PROJECT FINAL INSPECTION AND AFTER COMPLETION OF ALL INSTALLATION AND RUNNING EQUIPMENT AND AUTOMATIC CONTROL ADJUSTMENTS, PERFORM AIR BALANCING AND ANY OTHER WORK REQUIRED TO PLACE THE EQUIPMENT IN COMPLETE OPERATING CONDITION TO MEET ALL REQUIREMENTS UNDER THIS SPECIFICATION. DURING THIS RUNNING TEST PERIOD, DELIVER TO THE DESIGNER TWO COMPLETE SETS OF OPERATING, SERVICE, MAINTENANCE AND REPLACEMENT DATA FOR ALL EQUIPMENT WHICH WILL REQUIRE OPERATING MAINTENANCE OR REPLACEMENT AND ONE COPY OF THIS LITERATURE SHALL BE AVAILABLE DURING THE INSTRUCTION OF THE OPERATING PERSONNEL WHILE THE OTHER IS CHECKED FOR COMPLETENESS BY THE DESIGNER. DURING ALL WORKING HOURS OF THE "OPERATING TEST", THIS CONTRACTOR'S PERSONNEL SHALL BE AVAILABLE FOR GIVING FIELD INSTRUCTION, SHALL COVER OPERATION, MAINTENANCE AND ADJUSTING OF ALL EQUIPMENT INSTALLED.
- 3.3 HOISTING, SCAFFOLDING, STAGING AND PLANKING
 A. PROVIDE, SETUP AND MAINTAIN ALL REQUIRED DERRICKS, HOISTING MACHINERY, SCAFFOLDS AND STAGING, PLANKING AND PERFORM ALL HOISTING REQUIRED TO COMPLETE THE WORK OF THIS FILED SUB-BID AS INDICATED AND SPECIFIED.
 B. SCAFFOLDS SHALL HAVE SOLID BACKS AND FLOORS TO PREVENT DROPPING MATERIALS FROM THERE TO THE FLOORS OR GROUND.
- 3.4 TESTING AND BALANCING
 A. TOTAL SYSTEM BALANCE SHALL BE PERFORMED IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE OR ASHRAE SYSTEMS HANDBOOK.

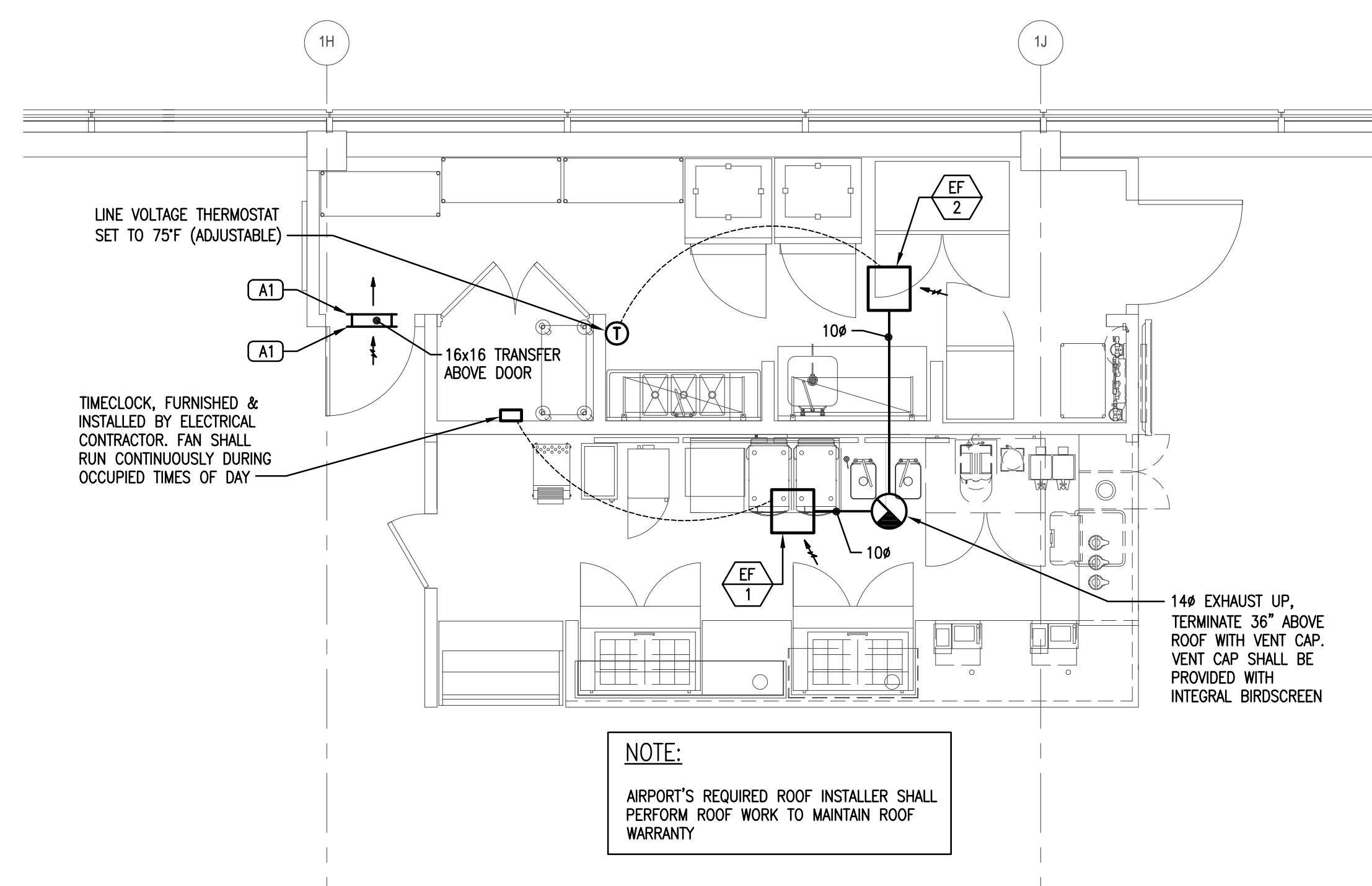
FAN SCHEDULE

GENERAL		PERFORMANCE				ELECTRICAL					PHYSICAL		REMARKS			
TAG	LOCATION	CFM	ESP (IN WG)	RPM	SONES	FLA	WATTS	VOLTAGE	PHASE	HERTZ	APPROX WEIGHT (LBS)	MANUFACTURER MODEL	TYPE	RATINGS	FEATURES	INSTALL
EF-1	SALES/SERVICE	350	0.15	846	2.0	3.4	224	115	1	60	40	GREENHECK SP-AS10-VG	①	① ②	① ② ③	①
EF-2	BACK OF HOUSE	350	0.15	846	2.0	3.4	224	115	1	60	40	GREENHECK SP-AS10-VG	①	① ②	① ② ③ ④	②

① CEILING EXHAUST FAN ① AIR PERFORMANCE CERTIFIED IN ACCORDANCE TO AMCA 211
 ② SOUND PERFORMANCE CERTIFIED IN ACCORDANCE TO AMCA 311

① VARI-GREEN EC MOTOR WITH MOUNTED POTENTIOMETER DIAL
 ② ALUMINUM GRILLE WITH WHITE ENAMEL FINISH
 ③ ISOLATION KIT
 ④ LINE VOLTAGE THERMOSTAT

① FAN TO BE CONTROLLED BY TIMECLOCK, TIME CLOCK TO BE FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR
 ② FAN TO BE CONTROLLED BY LINE VOLTAGE THERMOSTAT



1 MECHANICAL FLOOR PLAN
 1/4"=1'-0"

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
⊙	ROUND EXHAUST AIR DUCTWORK UP
↖	AIR ENTERING OPENING
↗	AIR LEAVING OPENING
Ⓢ	THERMOSTAT
CFM	CUBIC FEET OF AIR PER MINUTE
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
FLA	FULL LOAD AMPS
IN WG	INCHES WATER GAUGE
LBS	POUNDS
RPM	REVOLUTIONS PER MINUTE

TAG LEGEND

EQUIPMENT (REQUIRING POWER)	 EQUIPMENT DESIGNATION NUMBER
REGISTERS, GRILLES & DIFFUSERS	 TYPICAL FOR # DESIGNATION BALANCE TO CFM INDICATED

DIFFUSER AND GRILLE SCHEDULE

GENERAL		PHYSICAL		REMARKS	
TAG	NECK SIZE (IN)	MANUFACTURER MODEL	TYPE	FEATURES	
A1	16x16	TITUS 350RL	①	①	

① RETURN/EXHAUST/TRANSFER GRILLE, 35" FIXED BLADES ON 3/4" CENTERS, BLADES PARALLEL TO LONG DIMENSION, STEEL, WHITE

① SURFACE MOUNT