

REFER TO SHEET E303 AND E304 FOR EMS CONTROL SYSTEM DETAILS. MECHANICAL CONTRACTOR TO PROVIDE ALL REQUIRED SCOPE OF CONTROLS SYSTEM AS SPECIFIED BY RESPONSIBILITY MATRIX ON SHEET E303 AND MANUFACTURER RECOMMENDATIONS.

### HVAC CONTROLS

ROOFTOP HEAT PUMP:

**THERMOSTAT**  
REFER TO SHEET E303 AND E304 FOR EMS CONTROL SYSTEM DETAILS.

**SEQUENCE OF OPERATION**  
**COOLING CYCLE - OCCUPIED HOURS:**  
UPON A RISE IN SPACE TEMPERATURE ABOVE THE OCCUPIED COOLING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND THE OUTDOOR AIR DAMPER SHALL BE OPEN TO THE MINIMUM POSITION.

**HEATING CYCLE - OCCUPIED HOURS:**  
UPON A DROP IN SPACE TEMPERATURE BELOW THE OCCUPIED HEATING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND THE OUTDOOR AIR DAMPER SHALL BE OPEN TO THE MINIMUM POSITION.

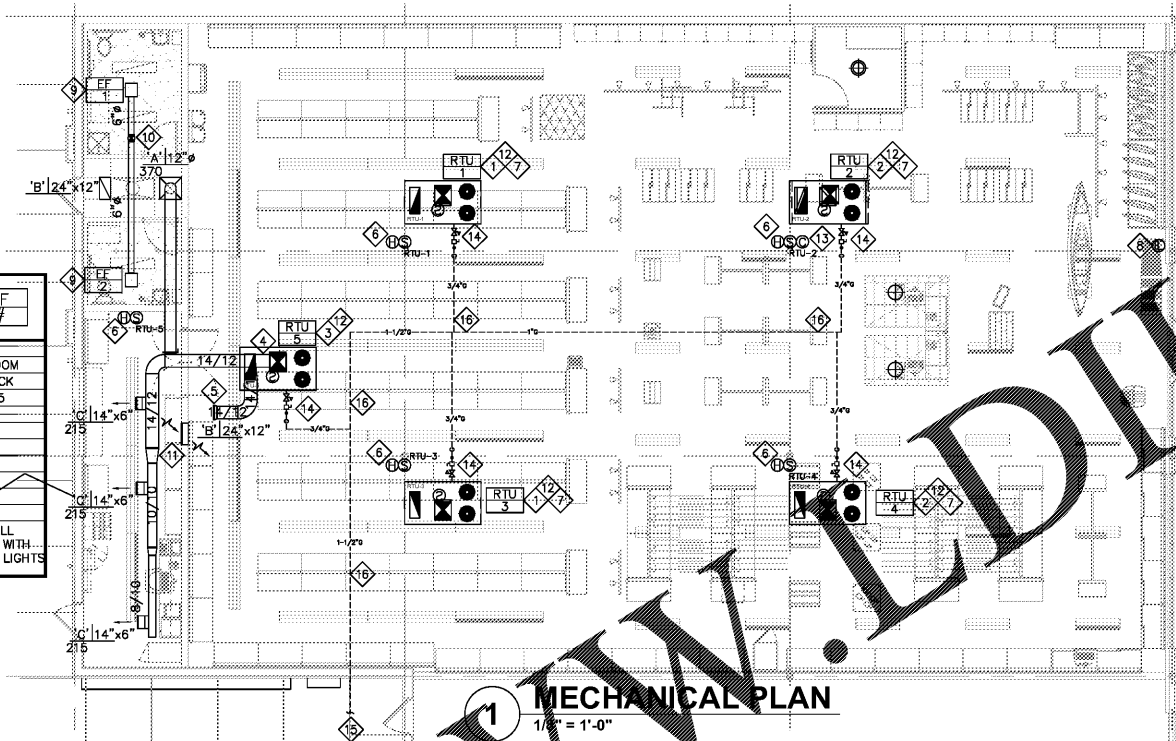
**COOLING CYCLE - UNOCCUPIED HOURS:**  
UPON A RISE IN SPACE TEMPERATURE ABOVE THE UNOCCUPIED COOLING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL CYCLE AS REQUIRED AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

**HEATING CYCLE - UNOCCUPIED HOURS:**  
UPON A DROP IN SPACE TEMPERATURE BELOW THE UNOCCUPIED HEATING SETPOINT OF THE THERMOSTAT, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SETPOINT. THE SUPPLY FAN SHALL CYCLE AS REQUIRED AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

**ECONOMIZER CYCLE:**  
WHEN, UPON A CALL FOR COOLING, THE OUTDOOR AIR ENTHALPY IS BELOW THE RETURN AIR ENTHALPY, THE REFRIGERATION SYSTEM OPERATION SHALL BE CONTROLLED BY THE ECONOMIZER. THE ECONOMIZER SHALL MODULATE THE OUTDOOR AIR AND RETURN AIR DAMPERS IN ORDER TO INTRODUCE UP TO 100% OUTDOOR AIR TO SATISFY THE COOLING LOAD IN THE SPACE. IF THE COOLING EFFECT OF THE OUTDOOR AIR IS NOT SUFFICIENT TO COOL THE SPACE, THE REFRIGERATION SYSTEM SHALL CYCLE AS REQUIRED TO SUPPLEMENT THE ECONOMIZER.

### EXHAUST FAN SCH.

UNIT TAG	EF-1	EF-2
AREA SERVED	TOILET ROOM	TOILET ROOM
MANUFACTURER	GREENHECK	GREENHECK
MODEL NUMBER	SP-A125	SP-A125
DRIVE (BELT, DIRECT)	DIRECT	DIRECT
FAN DATA		
CFM	100	100
ESP	0.25	0.25
RPM	1100	1100
WATTS	53	53
WEIGHT (LBS)	15	15
REMARKS	E.C. SHALL INTERLOCK WITH TOILET ROOM LIGHTS	E.C. SHALL INTERLOCK WITH TOILET ROOM LIGHTS

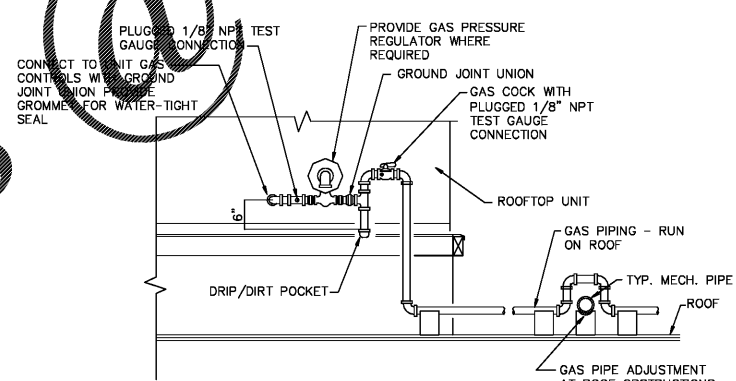


#### KEY NOTES

- FURNISH AND INSTALL NEW ROOFTOP HVAC UNIT (LENNOX, KDB048H4E, 4 TON). VERIFY APPROVED LOCATION OF NEW UNIT WITH LANDLORD. USE LANDLORD-APPROVED ROOFING CONTRACTOR FOR ALL ROOFING WORK ASSOCIATED WITH INSTALLATION OF NEW UNIT.
- FURNISH AND INSTALL NEW ROOFTOP HVAC UNIT (LENNOX, KDB061H4E, 5 TON). VERIFY APPROVED LOCATION OF NEW UNIT WITH LANDLORD. USE LANDLORD-APPROVED ROOFING CONTRACTOR FOR ALL ROOFING WORK ASSOCIATED WITH INSTALLATION OF NEW UNIT.
- FURNISH AND INSTALL NEW ROOFTOP HVAC UNIT (LENNOX, KDB036H4E, 2 TON). VERIFY APPROVED LOCATION OF NEW UNIT WITH LANDLORD. USE LANDLORD-APPROVED ROOFING CONTRACTOR FOR ALL ROOFING WORK ASSOCIATED WITH INSTALLATION OF NEW UNIT.
- CONNECT TO FULL SIZE SUPPLY DUCT FROM RTU.
- BELL MOUTH RETURN AIR INLET WITH VOLUME DAMPER. COVER AIR INLET WITH 1' X 1' W/M.
- TEMPERATURE SENSOR FOR UNIT INDICATED. MOUNT AT 6'-0" AFF. MOUNT EXISTING HUMIDITY SENSOR ABOVE TEMPERATURE SENSOR. MOUNT EXISTING DUCT SMOKE DETECTOR TEST SWITCH/ANNUNCIATOR ABOVE TEMPERATURE SENSOR AT 7'-6" AFF. LABEL TEMPERATURE SENSOR WITH UNIT NUMBER. REFER TO SHEET E303 FOR EMS RESPONSIBILITY MATRIX.
- DUCT TEMPERATURE SENSOR FOR UNIT INDICATED. INSTALL IN MAIN SUPPLY DUCT OFF OF ROOFTOP UNIT. REFER TO SHEET E303 FOR EMS RESPONSIBILITY MATRIX.
- MOUNT INDOOR LIGHT SENSOR PER MANUFACTURER RECOMMENDATIONS. RELOCATE AS REQUIRED TO PROVIDE ADEQUATE CONTROL OF LIGHTING FIXTURES IN THE DAY LIT AREA. REFER TO SHEET E303 FOR EMS RESPONSIBILITY MATRIX.
- PROVIDE CEILING-MOUNTED TOILET EXHAUST FAN WITH INTEGRAL BACKDRAFT DAMPER.
- 8" TOILET EXHAUST DUCT UP THRU ROOF. TERMINATE WITH RAIN CAP AND BIRDSCREEN. EXHAUST OUTLET SHALL BE A MINIMUM OF 10 FEET FROM ANY OUTDOOR AIR INTAKE.
- PROVIDE AIR TRANSFER GRILLE AS HIGH AS POSSIBLE ON BOTH SIDES OF WALL.
- INSTALL DUCT SMOKE DETECTORS FURNISHED BY ELECTRICAL CONTRACTOR IN MAIN RETURN AND MAIN SUPPLY AIR DUCT. INTERLOCK WITH HVAC UNIT FOR AUTOMATIC SHUTDOWN OF UNIT UPON DETECTION OF SMOKE. CONNECTION OF DUCT DETECTOR TO FIRE ALARM SYSTEM, IF REQUIRED, WILL BE BY ELECTRICAL CONTRACTOR.
- CO2 SENSOR FOR UNIT INDICATED. MOUNT CO2 SENSOR IMMEDIATELY ABOVE TEMPERATURE SENSOR. LABEL SENSOR WITH UNIT NUMBER. REFER TO SHEET E303 FOR EMS RESPONSIBILITY MATRIX.
- CONNECT GAS PIPING TO RTU. PROVIDE SHUT-OFF VALVE, DIRT LEG AND UNION. IF INCOMING GAS PRESSURE EXCEEDS UNIT MANUFACTURER'S MAXIMUM ALLOWABLE GAS SUPPLY PRESSURE, PROVIDE MAXITROL 325 SERIES GAS PRESSURE REGULATOR. SEE DETAIL 5/M101.
- EXTEND 1-1/2" GAS PIPING AND GAS METER TO CONNECT TO EXISTING GAS BANK. APPROXIMATELY 100 EQUIVALENT FEET OF PIPE LENGTH FROM FARTHEST UNIT. PIPE SIZES BASED ON LESS THAN 2 PSIG GAS PRESSURE AND TOTAL PRESSURE DROP OF 0.5 IN WC. COORDINATE POINT OF CONNECTION TO EXISTING PIPING WITH LANDLORD. COORDINATE METERING REQUIREMENTS WITH UTILITY CO. AND ARRANGE FOR NEW METER.
- SUPPORT GAS PIPING ON ROOF 10' ON CENTER WITH PRE-MANUFACTURED SUPPORTS. SEE DETAIL 6/M101.

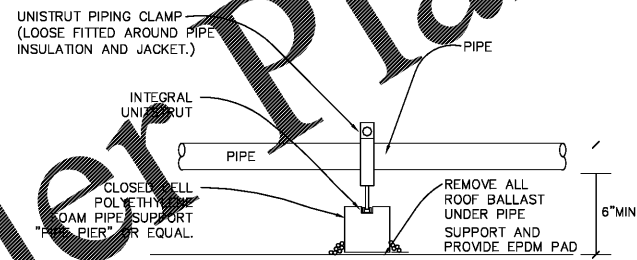
### GRILLE AND DIFFUSER SCHEDULE

TYPE	A	B	C
ITEM	SUPPLY	TRANSFER	SUPPLY
DESCRIPTION	LAY-IN	WALL MOUNT	CEILING MOUNT
MANUFACTURER	TITUS	TITUS	TITUS
MODEL NUMBER	TMSA	350FL	272FL
REMARKS	STD. WHITE FINISH 24"x24" FACE W/EQUALIZING GRID & OBD	STD. WHITE FINISH 24"x24" FACE W/EQUALIZING GRID & OBD	STD. WHITE FINISH 24"x24" FACE W/EQUALIZING GRID & OBD



### 5 ROOF TOP UNIT GAS PIPING DETAIL

NO SCALE



### 6 PIPE SUPPORT DETAIL

NO SCALE

#### GENERAL MECHANICAL NOTES

- ALL REFERENCES ON THE DRAWINGS AND IN THE SPECIFICATIONS TO 'CONTRACTOR' AND 'MECHANICAL CONTRACTOR' REFER TO THE TENANT'S MECHANICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
- ALL WORK SHOWN AND SPECIFIED HEREIN SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.
- THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID, INCLUDING ALL EXISTING EQUIPMENT, DUCTWORK, PIPING, STUB-INS, TAPS, ETC. NO CLAIMS FOR EXTRAS DUE TO LACK OF FAMILIARITY WITH SITE CONDITIONS WILL BE APPROVED.
- THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS FOR ALL DIVISIONS OF WORK AND SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL HIS SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.
- THESE DRAWINGS ARE SCHEMATIC IN NATURE AND SHALL NOT BE SCALED. THE CONTRACTOR SHALL FIT THE WORK TO THE JOB, CAREFULLY INVESTIGATING STRUCTURAL, MECHANICAL, ELECTRICAL AND FINISH CONDITIONS AFFECTING THE WORK, AND SHALL FURNISH AND INSTALL ALL NECESSARY BENDS, OFFSETS, FITTINGS, JUNCTIONS, ETC. WHETHER OR NOT SPECIFICALLY SHOWN OR CALLED FOR, AND SEE THAT THERE ARE NO INTERFERENCES BETWEEN THIS WORK AND THE WORK OF OTHER TRADES.
- PROVIDE ALL EQUIPMENT AND MATERIALS, AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY APPLICABLE CODES.
- INSTALL ALL MECHANICAL EQUIPMENT, MATERIALS AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, THE CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- ALL EQUIPMENT, MATERIALS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LANDLORD CRITERIA.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS THAT ARE NOT DIMENSIONED ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS SHALL BE BASED ON SITE CONDITIONS. INSTALL ALL EQUIPMENT AS REQUIRED TO MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCES.
- COORDINATE DIFFUSER, REGISTER AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN, LIGHTING, AND OTHER CEILING-MOUNTED ITEMS, AND MAKE MINOR ADJUSTMENTS IN DIFFUSER LOCATIONS AND DUCTWORK AS REQUIRED.
- ALL ROOF CUTTING, PATCHING AND FLASHING REQUIRED TO INSTALL THE MECHANICAL SYSTEMS SHALL BE BY A LANDLORD-APPROVED ROOFING CONTRACTOR AT THIS CONTRACTOR'S EXPENSE. COORDINATE ROOF PENETRATIONS WITH LANDLORD AND GENERAL CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINAL CONNECTIONS TO LANDLORD'S BASE BUILDING SYSTEMS. RE-USE EXISTING CONNECTION POINTS WHERE POSSIBLE. COORDINATE ALL REQUIREMENTS IN FIELD WITH LANDLORD.
- NOTIFY TENANT'S PROJECT MANAGER IF ANY EXISTING DUCTWORK OR PIPING CONNECTION POINTS ARE SMALLER THAN SIZES SHOWN ON DRAWINGS.
- CONTRACTOR SHALL BALANCE ALL NEW MECHANICAL EQUIPMENT. REPLACE UNIT COMPONENTS AS REQUIRED BALANCE UNIT, INCLUDING BUT NOT LIMITED TO: FANS, MOTORS, DRIVES AND BELTS. CHANGE FILTERS UPON COMPLETION OF SERVICE WORK AND JUST PRIOR TO JOB TURNOVER.
- FIBERGLASS DUCTBOARD IS NOT ALLOWED.
- BRANCH DUCT RUNOUTS TO DIFFUSERS SHALL BE SAME SIZE AS DIFFUSER NECK, UNLESS SHOWN OTHERWISE.
- RIGID DUCTWORK SHALL BE UTILIZED FOR ALL RUNOUTS TO DIFFUSERS IN OPEN CEILING AREAS.
- ADJUST DISCHARGE PATTERN OF ADJUSTABLE-THROW DIFFUSERS TO FULL VERTICAL POSITION.
- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS IN ACCORDANCE WITH THE MECHANICAL SPECIFICATIONS. SUBMIT COPIES OF TEST & BALANCE REPORT TO TENANT, LANDLORD AND ENGINEER.

ROBERT E. VANNEY ARCHITECT

201 WEST STREET STE. 201  
ST. PAUL, MINNESOTA 55101  
TEL: 612.442.4842 FAX: 612.442.3038

HALLBERG ENGINEERING  
Mechanical/Electrical Consulting Engineers  
1750 Commerce Court  
White Bear Lake, MN 55110  
(651) 748-1100 • Fax (651) 748-9370

West Marine  
500 Westridge Drive  
Watsonville, California 95076  
p: 831.728.2700 f: 831.761.4220

ISLAND WALK @ PALM COAST  
250 PALM COAST PKWY NE  
PALM COAST, FL 32137  
STORE #1BD

commission number R17-2777.003

WM 75% 07/07/2017  
LL Final  
Permit 07/24/2017  
Bidding 10/02/2017

MECHANICAL PLAN

sheet number M101