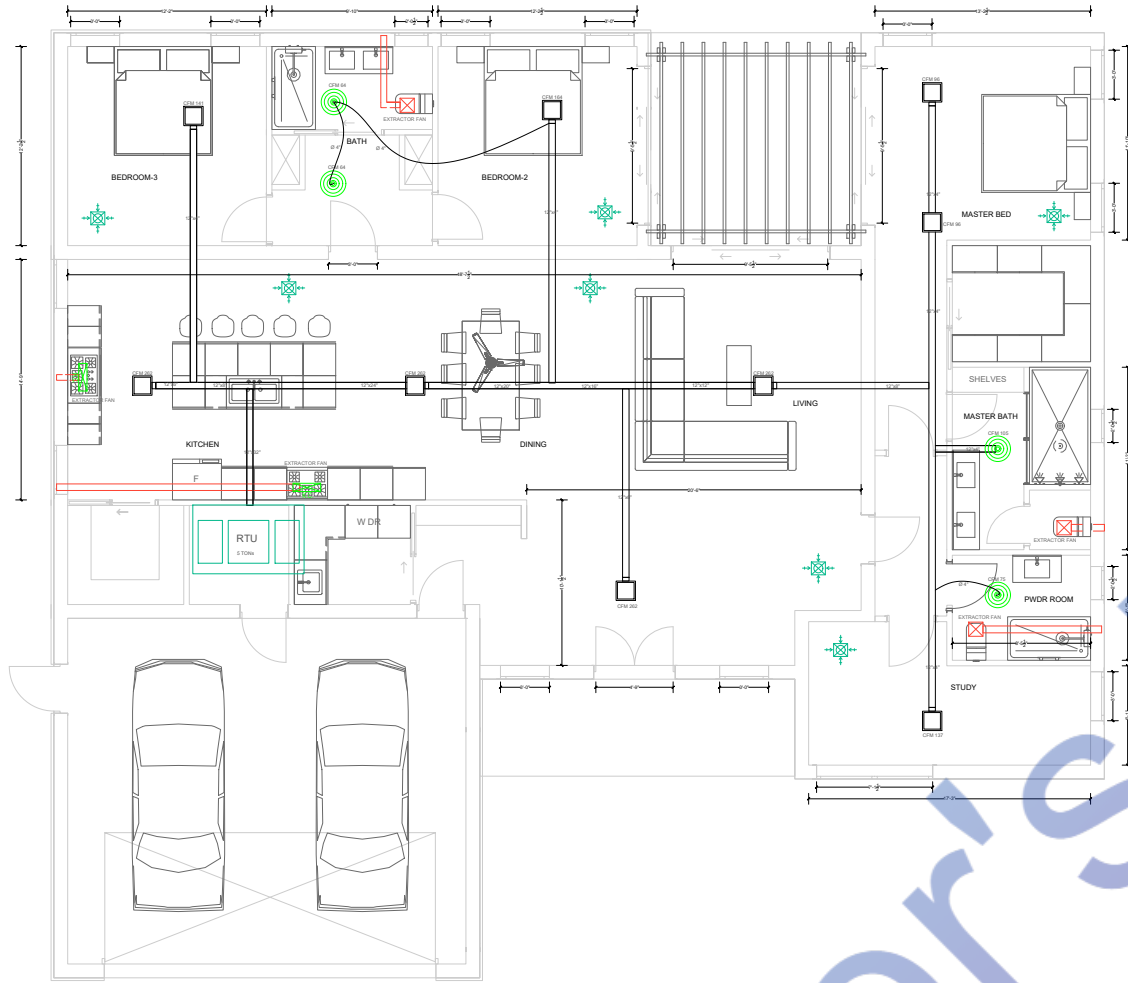


Mechanical Legends	
	ROOF TOP UNIT
	SUPPLY AIR DIFFUSER
	EXHAUST AIR DIFFUSER
	KITCHEN CHIMNEY
	EXHAUST FAN
	SUPPLY AIR DUCT



NOTE

This HVAC layout plan has been meticulously designed in full compliance with all updated codes and regulations applicable to Palm Bay, Florida 32909.

The following codes and standards were followed to ensure the highest quality and efficiency:
Florida Building Code (FBC) - Mechanical, 2023 Edition
International Energy Conservation Code (IECC), 2023
ASHRAE 90.1-2022 - Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Standard 62.1-2022 - Ventilation for Acceptable Indoor Air Quality
In addition to adhering to the above codes, the design also accounts for the specific thermal properties of the building materials and components.

Specifically, the plan considers:
Insulated Concrete Forms (ICF) on walls
Concrete roof construction
Windows and sliding doors with a U-value of 0.20 and a Solar Heat Gain Coefficient (SHGC) of 0.21
The type of flooring and its impact on thermal performance
These considerations ensure that the HVAC system is optimized for energy efficiency, indoor air quality, and occupant comfort, reflecting the latest industry standards and local requirements.

EXHAUST FAN SCHEDULE

MARK	SERVING	CFM	SP	WATTS	RPM	VOLTAGE	MAKE MODEL	NOTES	FAN TYPE
EF-1	BATHROOM	50	-	50	460	120/60/1	Broan-NuTone 688		IN-LINE
EF-2	KITCHEN	375	-	78	460	120/60/1	Broan-NuTone BCSQ130SS		IN-LINE

NOTES
1. COMPLETE W/BACKDRAFT DAMPER.
2. PROVIDE THERMOSTATIC CONTROL DEVICES
3. INTERLOCK TO OPERATE WHENEVER RTU'S OPERATE.
4. MAINTAIN A MINIMUM CLEARANCE OF 10'-0" FROM ALL INTAKE AIR FANS AND ALL ROOF TOP UNITS OUTSIDE AIR INTAKE OPENINGS.

Bathroom Exhaust fans must be capable of providing the min. rate of 25 cubic feet per minute [12L/s] continuous ventilation. Ventilation air from space shall be exhausted directly to the outside. Exhaust fans shall be energy star compliant w/ humidistat.

DUCTWORK

A. DUCT MATERIAL AND CONSTRUCTION: USE LOCK FORMING QUALITY PRIME GALVANIZED STEEL SHEETS OR COILS UP TO 60" WIDE. STENCIL EACH SHEET WITH GAUGE AND MANUFACTURER'S NAME. STENCIL COILS OF SHEET STEEL THROUGHOUT ON 10 CENTERS WITH GAUGE AND MANUFACTURER'S NAME. PROVIDE CERTIFICATION OF DUCT GAUGE AND MANUFACTURER FOR EACH SIZE DUCT.
B. RECTANGULAR LOW AND MEDIUM PRESSURE DUCT CONSTRUCTED OF SHEET METAL IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
C. LOW PRESSURE ROUND DUCTS SHALL BE SHOP FABRICATED WITH SNAP LOCK LONGITUDINAL SEAMS. DUCTS SHALL BE CONSTRUCTED FOR A MINIMUM OF 2" W.G. STATIC PRESSURE. MEDIUM PRESSURE ROUND DUCTWORK SHALL BE WELDED SPIRAL SEAM SUCH AS MANUFACTURED BY UNITED SHEET METAL COMPANY. SEAMS AND JOINTS OF ALL MEDIUM PRESSURE DUCTWORK SHALL BE CONTINUOUSLY WELDED.
D. KITCHEN EXHAUST DUCT: WELDED BLACK STEEL, MINIMUM 16 GAUGE, SHOWER EXHAUST DUCT: WELDED 304 STAINLESS STEEL. DISHWASHER EXHAUST DUCT: WELDED 304 STAINLESS STEEL.
E. FLEXIBLE DUCT LOW PRESSURE SHALL BE A CONTINUOUS GALVANIZED SPRING STEEL WIRE HELIX, WITH REINFORCED METALIZED COVER, REINFORCED VAPOR BARRIER JACKET RATED FOR USE AT SYSTEM PRESSURE (6" WCMINIMUM), THERMAL CHARACTERISTICS OF R8 BTU/IN. FT. J F AND 2" WALL THICKNESS INSULATION WITH 1" OVERLAP ACCEPTABLE MANUFACTURERS: FLEXMASTER, HART & COOLEY OMNIAR.
F. FLEXIBLE DUCT MEDIUM PRESSURE SHALL BE CONSTRUCTED OF A HEAVY COATED FIBERGLASS CLOTH FABRIC SUPPORTED BY HELICAL WOUND GALVANIZED STEEL. THE INTERNAL WORKING PRESSURE RATING SHALL BE AT LEAST AS FOLLOWS WITH A BURSTING PRESSURE OF AT LEAST TWO TIMES THE WORKING PRESSURE: POSITIVE: 12" W.G., NEGATIVE: 5" W.G. THE DUCT SHALL BE RATED FOR A VELOCITY OF AT LEAST 5500 PM. FACTORY INSULATE THE FLEXIBLE DUCT WITH FIBERGLASS INSULATION. THE R-VALUE SHALL BE AT LEAST R-8 AT A MEAN TEMPERATURE OF 75 DEGREES Fahrenheit. ACCEPTABLE MANUFACTURERS: FLEXMASTER, OMNIAR.
G. DUCT LINING SHALL BE 1" THICK, 1 1/2 LB. DENSITY, FLEXIBLE LINING COATED ON THE AIR STREAM SIDE TO REDUCE ATTRITION. LINER SHALL BE SCHULER LINA-COUSTIC, CERTAIN TEED ULTRALITE, OR EQUAL MEETING REQUIREMENTS OF NFPA DO A PROVIDE LA O. RATED LINER.
H. FIRE DAMPERS: FIRE DAMPERS FOR REQUIRED WALL RATINGS THAT ARE 95 % MINIMUM FREE AREA PROVIDE TYPE B OR TYPE C UL DAMPERS FOR LOW, MEDIUM AND HIGH PRESSURE RECTANGULAR, SQUARE OR ROUND DUCTS. DAMPERS SHALL BE ACTIVATED BY A FUSIBLE LINK DESIGNED TO REACT AT 165°F. INSTALL PER MANUFACTURER'S RECOMMENDATIONS TO PROVIDE A UL ASSEMBLY. PROVIDE SEALED SLEEVE TO MEET DESIRED LEAKAGE PERFORMANCE.

CONDENSATE PIPING

A. TYPE "L" COPPER WITH DRAINAGE PATTERN FITTINGS IN RETURN PLENUM AREAS, PVC WITH DRAINAGE PATTERN FITTINGS IN NON-PLENUM AREAS.
B. INSTALL THE SYSTEM TO FACILITATE EASY REMOVAL, USE THREADED PLUGGED TEE AT EACH CHANGE OF DIRECTION TO PERMIT CLEANING, INSTALL A CLEANOUT EVERY 50 FEET OF STRAIGHT RUN PIPING, MAINTAIN A POSITIVE SLOPE ON ALL PIPINGS.
C. INSTALL A WATER SEAL TRAP LEG BASED ON THE FAN PRESSURE. SIZE THE LENGTH OF THE TRAP LEG 1 INCH LARGER THAN THE ACTUAL SYSTEM PRESSURE.
D. DO NOT INSTALL PIPING SIZED SMALLER THAN THE UNIT DRAIN CONNECTION SIZE.
E. INSULATE PIPING WITH 3/4" ELASTOMERIC INSULATION FOR ALL PIPE BELOW ROOF INSULATION TO BE 25/50 FLAME AND SMOKE RATING.

DUCTWORK INSULATION

A. FURNISH AND INSTALL EXTERNAL INSULATION ON SUPPLY, RETURN, EXHAUST AND FRESH AIR DUCTWORK.
B. ALL DUCT INSULATION USED ON THE PROJECT INSIDE THE BUILDING MUST HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 AS DETERMINED BY TEST PROCEDURES AST E81, NFPA 255 AND UL 723.
C. CONDENSATION ON ANY INSULATED SYSTEM IS NOT APPROVED.
D. WHERE EXISTING INSULATED DUCTWORK OR OTHER SERVICES ARE TAPPED, REMOVE EXISTING INSULATION BACK TO UNDAIMAGED SECTIONS AND REPLACE WITH NEW INSULATION OF THE SAME TYPE AND THICKNESS AS EXISTING INSULATION.
E. INSULATION: GLASS FIBER BLANKET DUCT INSULATION. ACCEPTABLE MANUFACTURERS ARE: MANVILLE R-SERIES MICROLITE FSKL, OWENS-CORNING ED 100 RKF, KNAUF 1.0 PCF FSK.
F. FIREBOARD INSULATION: TOTALLY ENCAPSULATED WITH FOIL FACING, TWO HOUR RATED FIRE PROTECTION, ZERO CLEARANCE TO COMBUSTIBLE PROTECTION. ACCEPTABLE MANUFACTURERS ARE: PARTAK INSULATION, INC., PAROC FIREBOARD, THERMAL CERAMICS FIREMASTER 3M, PREIMER REFACTORIES INTERNATIONAL, PYROSCAT.
G. REINFORCED FOIL TAPE: ACCEPTABLE MANUFACTURERS ARE: VENTURE 1525CW, 3 FSK.

AIR DEVICES

A. FURNISH AND INSTALL AIR DISTRIBUTION DEVICES, INCLUDING GRILLES, DIFFUSERS, REGISTERS, DAMPERS, AND EXTRACTORS.
B. ACCEPTABLE MANUFACTURERS: TUTTLE AND BAILEY, TITUS, KRUEGER, METAL-AIRE, NAILOR INDUSTRIES, PRICE.

AIR FILTERS

A. AIR FILTERS: FURNISH AND INSTALL A DISPOSAL MEDIA AND FRAME FILTER WITH RESISTANCE TO AIR FLOW OF A CLEAN FILTER NOT TO EXCEED.
B. INSTALL THE FILTERS AND FILTER GAUGES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

ARCH

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OWNER:

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SEAL:

Release for construction

HVAC

Drawn by: Engr. Al Amin

Checked:

Date: MAY, 24.

H-1

Scale: