MECHANICAL SHEET INDEX

DWG NO.	DRAWING TITLE
M-1	GENERAL INFORMATION - MECHANICAL
M-2	FIRST FLOOR PROPOSED PLAN - MECHANICAL
M-3	FIRST FLOOR PROPOSED PLAN - MECHANICAL
M-4	SECOND FLOOR PROPOSED PLAN - MECHANICAL
M-5	ROOF PROPOSED PLAN - MECHANICAL
M-6	MECHANICAL SCHEDULES
M-7	MECHANICAL DETAILS
M-8	MECHANICAL DETAILS
M-9	MECHANICAL SPECIFICATIONS

INSULATION AND FENESTRATON VALUES USED FOR ENERGY CALCULATIONS

ROOF = R-30

WALLS = R-5.0

GLASSES = U-VALUE: 1.05 FIXED SHGC:0.34

U-VALUE: 1.05 OPERABLE SHGC: 0.34

*ARCH DRAWINGS TO BE UPDATED AS PER VALUES USED IN ENERGY CALCULATIONS.

DESIGN PARAMETERS

	LOCATION:	MIAMI, FL
	ASHRAE 90.1 CLIMATE ZONE	1A
	ASHRAE DATABASE LOCATION:	MIAMI INTL, FL
	DESIGN CONDITIONS:	
A.	OUTDOOR DESIGN TEMP (SUMMER):	92.2 F DB AND 78.1 F WB
B.	OUTDOOR DESIGN TEMP (WINTER):	47.5 F
C.	INDOOR DESIGN TEMP (SUMMER):	72 F DB AND 50% RH
D.	INDOOR DESIGN TEMP (WINTER):	72 F

GOVERNING CODES AND STANDARDS

THE SCOPE OF WORK CARRIED OUT ON THIS PROJECT SHALL CONFORM TO ALL APPLICABLE CODES AND STANDARDS INCLUIDING BUT NOT LIMITED TO:

1. BUILDING CODE: FLORIDA BUILDING CODE (2023) 8TH EDITION
2. MECHANICAL CODE: FLORIDA BUILDING CODE, MECHANICAL (2023) 8TH EDITION
3. PLUMBING CODE: FLORIDA BUILDING CODE, PLUMBING (2023) 8TH EDITION

MECHANICAL DESIGN REQUIRES

	YES	NO
DUCT SMOKE DETECTOR		X
FIRE DAMPER (S)		X
SMOKE DAMPER (S)		X
FIRE RATED ENCLOSURE		X
FIRA RATED ROOF/FLOOR CEILING ASSEMBLY		X
FIRE STOPPING		X
SMOKE CONTROL		X

MECHANICAL SYMBOLS

SYMBOL	DESCRIPTION
T (XXX-X)	THERMOSTAT (ASSOCIATED UNIT)
	POINT OF CONNECTION TO EXISTING DUCTWORK OR PIPING
	START POINT OF DEMOLITION WORK FOR DUCTWORK OR PIPING
XXX / #CFM	DIFFUSER GRILLE DESIGNATION
XX-XX	EQUIPMENT DESIGNATION
12x12 DUCT SIZE	NEW WORK
12x12 DUCT SIZE	EXISTING TO REMAIN
12x12	DUCT SIZE, FIRST FIGURE IS SIDE SHOWN (CLEAR INSIDE, ADJUST FOR LINER)
12ø	ROUND DUCT SIZE, (ACTUAL SIZE INDICATED)
12 x 10ø	SPIRAL FLAT-OVAL DUCT SIZE, FIRST FIGURE IS SIDE SHOWN (ACTUAL SIZE INDICATED)
AP	ACCESS PANEL, TOP OR SIDE
	FLEXIBLE DUCT CONNECTION
R	CHANGE OF ELEVATION - RISE (R) OR DROP (D)
	TURNING VANES
	DEMO TO BE REMOVED
M	MOTORIZED DAMPER
G	GRAVITY BACKDRAFT DAMPER
	MANUAL VOLUME DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	FIRE/SMOKE DAMPER
	FLEXIBLE DUCT
	SUPPLY AND OUTSIDE AIR SECTION UP
	SUPPLY AND OUTSIDE AIR SECTION DOWN
	RETURN AIR SECTION UP
	RETURN AIR SECTION DOWN
	EXHAUST AIR SECTION UP
	EXHAUST AIR SECTION DOWN
	FLOW ARROW DOWNSTREAM OF FAN
	FLOW ARROW UPSTREAM OF FAN
	SUPPLY DIFFUSER AS SCHEDULED. ARROWS INDICATE DIRECTION OF AIR DISCHARGE. IF NO ARROWS ARE SHOWN ON PLAN, DEFAULT IS A 4-WAY THROW.
	RETURN GRILLE OR REGISTER AS SCHEDULED
	EXHAUST GRILLE OR REGISTER AS SCHEDULED
	SLOT DIFFUSER AS SCHEDULED. ARROWS INDICATE DIRECTION OF AIR DISCHARGE. IF NO ARROWS ARE SHOWN ON PLAN, DEFAULT IS 2-WAY THROW.
	SIDEWALL DIFFUSER AS SCHEDULED
	SIDEWALL RETURN OR EXHAUST AS SCHEDULED

MECHANICAL EQUIPMENT DESIGNATIONS

IDU	INDOOR UNIT
ERV	ENERGY RECOVERY VENTILATOR
AHU	AIR HANDLING UNIT
CP	CONDENSATE WATER PUMP
ODU	OUTDOOR CONDENSING UNIT
TEF	CEILING EXHAUST FAN
EF	EXHAUST FAN

GENERAL MECHANICAL ABBREVIATIONS

ACC	ACCESSORIES	GPM	GALLONS PER MINUTE
AD	ACCESS DOOR	H	HEIGHT
AFF	ABOVE FINISHED FLOOR	HD	HEAD
AFS	AIR FLOW SWITCH	HORIZ	HORIZONTAL
AHRI	AIR CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE	HP	HORSEPOWER
AI	ANALOG SIGNAL INPUT	HR	HOUR
AMB	AMBIENT	HTG	HEATING DUCT
AO	ANALOG SIGNAL OUTPUT	HVAC	HEATING, VENTILATING & AIR CONDITIONING
AP	ACCESS PANEL	HW	HOT WATER
APD	AIR PRESSURE DROP	HZ	HERTZ
APLV	APPLICATION PART LOAD VALUE	IN	INCH/INCHES
APPROX	APPROXIMATE	KW	KILOWATTS
ARCH	ARCHITECTURE/ARCHITECT	L	LENGTH
AUX	AUXILIARY	LAT	LEAVING AIR TEMPERATURE
AV	AUTOMATIC VENT	LBS	POUNDS
AVG	AVERAGE	LF	LINEAR FEET
BDD	BACK DRAFT DAMPER	LWT	LEAVING WATER TEMPERATURE
BFC	BELOW FINISHED CEILING	MAN	MANUAL
BFP	BACKFLOW PREVENTER	MAX	MAXIMUM
BHP	BRAKE HORSEPOWER	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BI	BINARY SIGNAL OUTPUT	MECH	MECHANICAL
BMS	BUILDING MANAGEMENT SYSTEM	MERV	MINIMUM EFFICIENCY REPORTING VALUE (ASHRAE 52.2)
BOB	BOTTOM OF BEAM	MFR	MANUFACTURER
BOD	BOTTOM OF DUCT	MIN	MINIMUM OR MINUTE
BS	BEAM SPACE	NC	NOISE CRITERIA
BTU	BRITISH THERMAL UNIT	NOM	NOMINAL
BTUH	BRITISH THERMAL UNIT PER HOUR	NPLV	NON-STANDARD PART LOAD VALUE
BWE	BAKED WHITE ENAMEL	NPSH	NET POSITIVE SUCTION HEAD
CAP	CAPACITY	NTS	NOT TO SCALE
CAV	CONSTANT AIR VOLUME	OA	OUTSIDE AIR
CFH	CUBIT FEET PER HOUR	OBD	OPPOSED BLADE DAMPER
CFM	CUBIC FEET PER MINUTE	OD	OUTSIDE DIAMETER
CI	CAST IRON	PBD	PARALLEL BLADE DAMPER
CLG	COOLING DUCT	PD	PRESSURE DROP
CO	CLEAN OUT	PENT	PENTHOUSE
CONC	CONCRETE	PH	PHASE
COND	CONDENSATE	PHC	PREHEAT COIL
CONN	CONNECTION	PNEU	PNEUMATIC
CORR	CORRIDOR	PPD	POUNDS PER HOUR
CV	CONTROL VALVE	PSI	POUNDS PER SQUARE INCH
D	DEPTH	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
DB	DRY BULB	PSIG	POUNDS PER SQUARE INCH GAUGE
DBA	A-WEIGHTED DECIBELS	QTY	QUANTITY
DEFL	DEFLECTION	RA	RETURN AIR
DEG	DEGREES	RAD	RADIATED
DEG F	DEGREES FAHRENHEIT	REFR	REFRIGERANT
DES	DESIGN	REQ	REQUIRED
DIA	DIAMETER	RH	RELATIVE HUMIDITY
DIM	DIMENSION	RLA	RUNNING LOAD AMPS
DISCH	DISCHARGE	RM	ROOM
DIV	DIVISION	RPM	REVOLUTIONS PER MINUTE
DN	DOWN	SA	SUPPLY AIR
DP	DIFFERENTIAL PRESSURE SENSOR	SENS	SENSIBLE
DPS	DIFFERENTIAL PRESSURE SWITCH	SF	SQUARE FOOT
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	SH	SENSIBLE HEAT
DTL	DETAIL	SND	SOUND
DWG(S)	DRAWING(S)	SP	STATIC PRESSURE
EA	EXHAUST AIR	SQ	SQUARE FOOT
EAT	ENTERING AIR TEMPERATURE	SS	STAINLESS STEEL
EER	ENERGY EFFICIENT RATIO	STM	STEAM
EFF	EFFICIENCY	TC	TEMPERATURE CONTROL
ELEC	ELECTRIC	TDH	TOTAL DYNAMIC HEAD
ELEV	ELEVATION	TEMP	TEMPERATURE
EQ	EQUAL	TOT	TOTAL
ESP	EXTERNAL STATIC PRESSURE	TYP	TYPICAL
EWB	ENTERING AIR WET BULB TEMPERATURE	UC	UNDERCUT DOOR
EWT	ENTERING WATER TEMPERATURE	V	VOLTS
EXH	EXHAUST AIR	VAC	VACUUM
EXIST, EX	EXISTING	VD	VOLUME DAMPER
EXT	EXTERNAL STATIC PRESSURE	VEL	VELOCITY
F	FAHRENHEIT	VFD	VARIABLE FREQUENCY DRIVE
FC	FLEXIBLE CONNECTION	VOL	VOLUME
FIN	FINISHED	W/	WITH
FLR	FLOOR	W/O	WITHOUT
FPI	FINS PER INCH	WB	WET BULB
FPM	FEET PER MINUTE	WG	WATER GAUGE
FT	FEET PER MINUTE	WPD	WATER PRESSURE DIFFERENTIAL
GA	GAUGE	WT	WEIGHT

GENERAL MECHANICAL NOTES

1. SUBMISSION OF PROPOSAL DIRECTLY OR INDIRECTLY IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
2. CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL DIMENSIONS IN THE FIELD, AND SHALL ADVISE THE ARCHITECT/ENGINEER AND THE OWNER OF ANY DISCREPANCIES BEFORE PERFORMING THE WORK.
3. ALL WORK SHALL CONFORM TO ALL STATE AND LOCAL CODES, RULES AND REGULATIONS AND ORDINANCES.
4. CONTRACTOR SHALL SECURE AND PAY ALL FEES AND PERMITS PERTAINING TO THE CONTRACT.
5. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE ALL HANGERS AND SUPPORTS REQUIRED FOR A COMPLETE INSTALLATION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR WORKMEN'S IDENTIFICATION AND BADGING, SAFETY AND FIRE PROTECTION, CONTRACTOR'S LIABILITY INSURANCE, BARRICADES, WARNING SIGNS, TRASH REMOVAL, CUTTING AND PATCHING.
7. CONTRACTOR SHALL SCHEDULE ALL SHUTDOWNS THAT AFFECT UTILITIES AND PORTIONS OF THE BUILDING THAT MUST REMAIN IN OPERATION WITH THE OWNER.
8. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING AND PROTECTION OF MATERIALS.
10. CONTRACTOR SHALL PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT AND TRANSFER TO POINT OF INSTALLATION, OWNER FURNISHED ITEMS.
11. WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY THE BUILDING DEPARTMENT AND FIRE DEPARTMENT AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOW CORNING CORP., SILICONE ELASTOMER, DOW CORNING 3-6548 SILICONE RTV FOAM, OR APPROVED EQUAL. THIS MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUFACTURER TO MAINTAIN THE FIRE RATING OF THE PENETRATED WALL OR FLOOR.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING AS IT RELATES TO HIS WORK.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BEAM PENETRATIONS AS IT RELATES TO HIS WORK. CONTRACTOR SHALL SUBMIT SIZE AND LOCATION TO THE STRUCTURAL ENGINEER FOR REVIEW AND DETAIL.
14. UPON COMPLETION OF CONSTRUCTION CONTRACTOR SHALL SUPPLY THE ENGINEER WITH (1) COMPLETE SET OF MYLAR AS-BUILT DOCUMENTS AND (3) COMPLETE COPIES OF OPERATIONS AND MAINTENANCE MANUALS. MYLARS SHALL BE OBTAINED AT CONTRACTOR'S EXPENSE.
15. MECHANICAL FLOOR PLANS ARE DIAGRAMMATIC IN NATURE AND HAVE TO BE READ IN CONJUCTION WITH ARCHITECTURAL FLOOR PLANS AND ELEVATIONS. PLUMBING, FIRE PROTECTION, ELECTRICL AND STRUCTURAL PLANS SHALL BE CONSIDERED AS ONE SET OF DOCUMENTS. DUCTS AND PIPING OFFSETS, BENDS AND TRANSITIONS WILL BE REQUIRED TO PROVIDE AND INSTALL A FULLY FUNCTIONAL SYSTEM AND THESE SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITOIONAL COST TO THE OWNER.
16. PRIOR OF CLOSING OF WALL AND CEILINGS, CONTRACTOR TO SCHEDULE A FIELD VISITBY EOR TO CONDUCT A SITE INVESTIGATION OF DUCTWORK AND ALL RELATED HVAC SYSTEMS AND EQUIPMENTS TO VERIFY THAT THE COMPLETED INSTALLATION MEETS THE DESIGN INTENT. FAILURE TO DO SO WILL NOT BE ACCEPTED AS A REASON FOR EXTRA PAY REQUESTING. WHERE THE CONDITIONS ADVERSELY AFFECT THE DESIGN INTENT ANY DEFECTS SHALL BE CORRECTED WITHOUT ADDITIONAL CHARGES AND SHALL INCLUDE REPLACEMENTS OR REPAIRS OF ANY OTHER PHASE OF THE INSTALLATION.
17. ALL COMPRESSOR MOTORS ON NEW EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL HAVE A 5 YEAR PRODUCT GUARANTEE FROM DATE OF START.
18. BALANCE AIR SYSTEM TO DELIVER QUANTITIES AT EACH OUTLET WITHIN 5% USING A.A.B.C. PROCEDURES AND TESTS. SUBMIT AIR BALANCE TEST RESULTS FOR APPROVAL PRIOR TO FINAL INSPECTION.
19. AIR TIGHTNESS OF THE BUILDING SHALL BE VERIFIED THROUGH A BLOWER TEST PERFORMED AND CERTIFIED BY A CLASS I ENERGY RATED. COPIES OF TEST REPORT SHALL BE SUBMITTED TO ENGINEER OF RECORDS FOR VERIFICATION AND TO BUILDING DEPARTMENT DESIGNATED AUTHORITIES HAVING JURISDICTION. BUILDING SHALL BE TESTED AT PRESSURE OF 50 Pa AND ANY DEVICE WORKING WITH FLAME OR WITH THE DANGER OF SPREAD ASHES SHALL BE TURN OFF AND OF COVERED. HEATERS AND WATER HEATERS SHALL BE DISABLE TURNING DOWN THEIR THERMOSTATS. BUILDING CRACKS SHALL BE CAREFULLY SEALED BEFORE THE TEST BE APPLIED.
20. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION AND IN STRICT COMPLIANCE WITH ALL APPLICABLE CODES AND STANDARDS.
21. CONTRACTOR TO SUBMIT DUCTWORK SHOP DRAWINGS ACCORDING TO EXISTING FIELD CONDITIONS FOR ENGINEERING REVISION AND APPROVAL PREVIOUS PURCHASING, FABRICATION OR INSTALLATION PROCESSES OR REQUIRED DUCTWORK. SHOP DRAWINGS SHALL MEET SMACNA'S FIBROUS GLASS DUCT CONSTRUCTION, SMACNA'S HVAC DUCT CONTRUCTION STANDARDS METAL AND FLEXIBLE AND ANY RELATED LOCAL AND STATE CODE AND NATIONAL REGULATION.
22. PRIOR OR CLOSING OF WALL AND CEILINGS, CONTRACTOR TO SCHEDULE A FIELD VISIT BY E.O.R. TO CONDUCT A SITE INVESTIGATION OF DUCTWORK AND ANY RELATED HVAC SYSTEMS AND EQUIPMENTS TO VERIFY THAT THE COMPLETED INSTALLATION MEETS THE DESIGN INTENT. FAILURE TO DO SO WILL NOT BE ACCEPTED AS A REASON FOR ADDITIONAL PAYMENTS REQUESTS. WHERE THE CONDITIONS ADVERSELY AFFECT THE DESIGN INTENT, ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGES AND SHALL INCLUDE REPLACEMENTS OR REPAIRS OR ANY OTHER PHASE OF INSTALLATION.
23. AIR TIGHTNESS OF THE BUILDING SHALL BE VERIFIED THRU A BLOWER DUCT TEST PERFORMED AND CERTIFIED BY A CLASS I ENERGY RATER. COPIES OF TEST REPORT SHALL BE SUBMITTED TO ENGINEER OF RECORDS FOR VERIFICATION AND TO BUILDING DEPARTMENT DESIGNATED AUTHORITIES HAVING JURISDICTION. BUILDING SHALL BE TESTED AT A PRESSURE OF 50 Pa AND ANY DEVICE WORKING WITH FLAME OR WITH THE DANGER OF SPREAD OF ASHES SHALL BE TURN OFF AND OR COVERED. HEATERS AND WATER HEATERS SHALL BE DISABLED TURNING DOWN THEIR THERMOSTATS. BUILDING CRACKS SHALL BE CAREFULLY SEALED BEFORE THE TEST BE APPLIED.
24. BALANCE AIR SYSTEM TO DELIVER QUANTITIES AT EACH OUTLET WITHIN 5% USING A.A.B.C. PROCEDURES AND TESTS. SUBMIT AIR BALANCE TEST RESULTS FOR APPROVAL PRIOR TO FINAL INSPECTION.
25. SHOULD THE DISTANCE OF REFRIGERANT LINES BETWEEN ANY CONDENSING UNIT AND AIR HANDLING BE GREATER THAN 80 FEET, THE OUTDOOR CONDENSING UNIT WILL REQUIRE A LONG LIQUID LINE SOLENOID. APPLY LONG LINE APPLICATION AS PER MANUFACTURER'S RECOMMENDATIONS.
26. FOR INSTALLATION OF EQUIPMENT IN EXTERIOR, REFER TO ADDITIONAL SUBMITTED INFORMATION (NOA's, STRUCTURAL CALCULATIONS, ETC.)
27. CONTRACTOR SHALL BE RESPONSIBLE IN OBTAINING AND CONSERVING THE ABOVE DESCRIBED INFORMATION LIKE GUIDANCE FOR INSTALLATION AND INSPECTION.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
+1 786 708 0880
hello@mikarch.com

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
agdmiami.com
developers@agdmiami.com

R&D ENGINEERS, LLC

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
rd-engineers.com
arivas@rd-engineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO LICENSE No. 86717 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:27:11 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

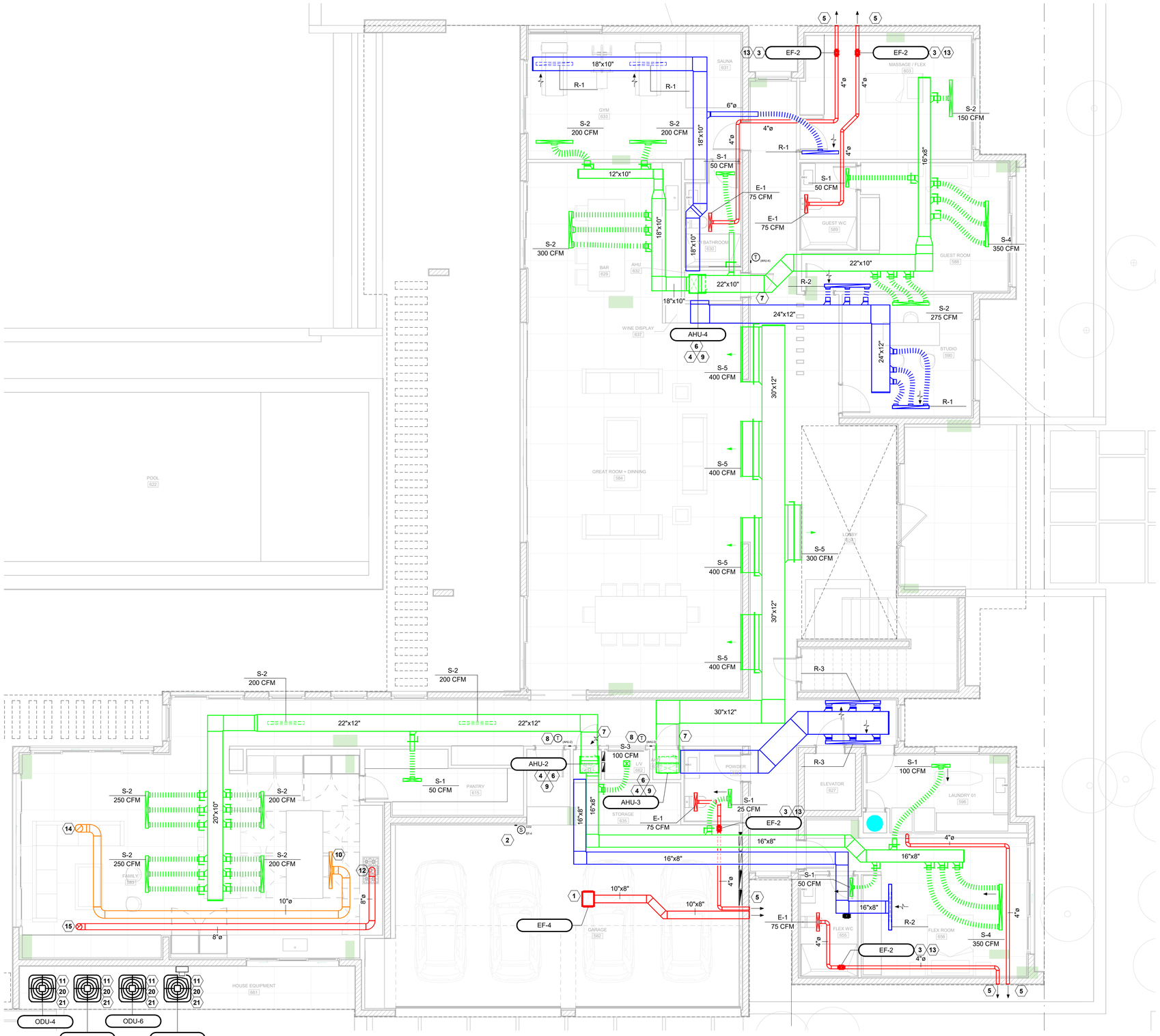
THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-1

GENERAL INFORMATION , MECHANICAL



1 FIRST FLOOR PROPOSED PLAN - MECHANICAL - PART A

SCALE: 3/16" = 1'-0"

GENERAL NOTES

A. COORDINATE SYSTEMS INSTALLATION WITH ALL OTHER TRADES (EQUIPMENT, ARCHITECTURAL, MEP, ETC.) AND ADJUST INSTALLATION AS NECESSARY TO ACCOMMODATE ALL TRADES.
B. ALL DUCTWORK SHALL BE INSTALLED RIGHT BELOW ROOF DECK, UNLESS AND OFFSET IS NECESSARY TO AVOID CONFLICT WITH STRUCTURAL/MEP SYSTEM. OFFSET DUCTS UP / DOWN AS NECESSARY TO ACCOMPLISH GENERAL ROUTING SHOWN ON PLANS.
C. ALL DUCT TAPS TO BE MADE VIA TAPERED/TRANSITION FITTINGS. ALL DUCT ELBOWS TO BE PROVIDED WITH DIRECTIONAL VANES.
D. FOR ALL NEW SUPPLY AIR DIFFUSERS, RETURN AIR GRILLES AND EXHAUST AIR GRILLES CONTRACTOR TO PROVIDE SHEET METAL NEW BRANCH DUCT, SIZED PER AIR DEVICE SCHEDULE ON SHEET M-6.
E. ALLOWED MAXIMUM FLEXIBLE DUCT LENGTH IS 14 FT.
F. PROVIDE BALANCING DAMPER AT EACH DIFFUSER, REGISTER, GRILLE, AND BRANCH TAKEOFFS IN ALL SUPPLY, EXHAUST, AND RETURN DUCTWORK. LOCATE DAMPERS AS CLOSE TO BRANCH TAKEOFF AS POSSIBLE.
G. FOR ALL DIFFUSERS AND GRILLES, INSULATE ASSOCIATED BACKPAN AS WELL AS SEALING INSULATION TO DUCT AND CEILING WITH VAPOR BARRIER TAPE.
H. DO NOT INSTALL ANY DUCTWORK, PIPING, ETC. IN THE SPACE OVER ANY ELECTRICAL PANEL.
I. THERMOSTATS TO BE LOCATED 48 INCHES ABOVE FINISHED FLOOR. FINAL LOCATION TO BE COORDINATED WITH ARCHITECTURE.
J. ALL MATERIALS WITHIN RETURN AIR PLENUM SHALL BE PLENUM RATED IN COMPLIANCE WITH 2023 FBC AND NFPA REQUIREMENTS WITH A FLAME INDEX OF NO MORE THAN 25 AND SMOKE DEVELOPED INDEX OF NO MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL723.
K. BATHROOM EXHAUST FANS TO BE PROVIDED WITH TIMERS TO REGULATE OPERATION TIME IN ORDER TO MEET DWELLING UNIT MINIMUM VENTILATION REQUIREMENTS AS SHOWN ON SHEET M-4.
L. PROVIDE CABLE OPERATED DAMPER FOR ANY DIFFUSER INSTALLED WITHIN A SEALED AND INACCESSIBLE CEILING CAVITY.
M. REFER TO PLUMBING PLANS FOR CONDENSATE DRAIN ROUTING AND DISPOSAL.
N. ALL DUCTWORK TO BE SEPARATED FROM ALL SURFACES BY 1" MINIMUM.

PLAN KEYNOTES

1. NEW GARAGE EXHAUST FAN (EF-4) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN SHALL BE CONTROLLED AND ACTIVATED BY CARBON MONOXIDE DETECTOR AND NITROGEN DIOXIDE DETECTOR. FAN CAPACITY SHALL BE PROVIDED SUCH THAT MEETS AIRFLOW REQUIREMENTS AS PER 2023 FBC-M-404.1 REQUIREMENTS.
2. CARBON MONOXIDE DETECTOR TO BE INSTALLED 3 TO 5 FEET ABOVE FLOOR LEVEL AND NITROGEN DIOXIDE DETECTOR TO BE INSTALLED 1 FOOT BELOW CEILING LEVEL.
3. NEW EXHAUST FAN (EF-1,2,3) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN TO BE FURNISHED WITH BACKDRAFT DAMPER. CONTRACTOR TO COORDINATE FINAL LOCATION WITH ARCHITECTURE.
4. NEW AIR HANDLING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENTS. SEE DETAIL #1 ON SHEET M-6 FOR FURTHER INFORMATION. TYPICAL. A/C CLOSET DOOR TO BE LOUVERED. SEE ARCHITECTURAL SHEET FOR FURTHER DETAILS.
5. ROUND EXHAUST AIR DUCT OUT THROUGH EXTERIOR WALL. PROVIDE EXHAUST TERMINATION WITH WALL CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-5 FOR FURTHER DETAILS.
6. P-TRAP FOR AHU CONDENSATE DRAIN SHALL BE PROVIDED WITH 1" AIR GAP AT TERMINATION. ALL PIPING SHALL BE INSULATED WITH 3/4" K-FLEX FLEXIBLE FOAM INSULATION. TYPICAL.
7. PROVIDE SOLID AIR TIGHT DOOR TO CREATE EFFECTIVE RETURN AIR PLENUM. ENSURE THAT NO COMBUSTIBLE MATERIAS ARE LOCATED WITHIN AC CLOSET PLENUM.
8. FINAL THERMOSTAT LOCATION TO BE COORDINATED BY ARCHITECT AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
9. AHU CONDENSATE DRAIN TO DISCHARGE ON DEDICATED A/C CLOSET CONDENSATE DRAIN PIPING. COORDINATE WITH PLUMBING AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
10. KITCHEN MAKEUP AIR DUCT(S) CONCEALED WITHIN CEILING TO BE INSULATED.
11. ALL UTILITIES AND EQUIPMENT AND ACCESSORIES (ELECTRICAL, MECHANICAL AND PLUMBING) SERVICING THE BUILDING SHALL BE INSTALLED ABOVE THE DESIGN FLOOD ELEVATION DFE.
12. PROVIDE 8" EXHAUST DUCT FOR NEW KITCHEN RANGE HOOD. EXHAUST DUCT TO BE PROVIDED AND INSTALLED IN COMPLIANCE WITH 2023-FBC-M-505.1 REQUIREMENTS.
13. PROVIDE ACCESS PANEL 3" LARGER IN EACH DIMENSION OF INLINE FAN FOOTPRINT WITHIN CEILING CAVITY TO ENSURE PROPER ACCESS FOR MAINTENANCE AND REPLACEMENT IF NEEDED AS PER 2023 FBC REQUIREMENTS.
14. 10" KITCHEN MAKEUP AIR DUCT UP.
15. 8" KITCHEN EXHAUST AIR DUCT UP.
16. 4" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
17. 6" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
18. 4" DRYER EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
19. SELECTED DRYER SHALL NOT EXCEED 200 CFM
20. NEW OUTDOOR CONDENSING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENT. CONTRACTOR TO COORDINATED FINAL UNIT LOCATION BASED ON MANUFACTURER RECOMMENDED CLEARANCES. SEE DETAIL #2 ON SHEET M-7 FOR FURTHER INFORMATION.
21. CONTRACTOR TO COORDINATE FINAL REFRIGERANT PIPING ROUTES WITH SITE CONDITIONS. CONTRACTOR TO SIZE REFRIGERANT PIPING AS PER MANUFACTURER RECOMMENDATIONS. CONTRACTOR TO ENSURE THAT PIPING PENETRATION THROUGH BUILDING ENVELOPE IS PROTECTED AND SEALED WATER TIGHT.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agd@agdmi.com
dev-ops@agdmiami.com

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
info@rndengineers.com
drv-ops@rndengineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No. 2025.512
DRAWN BY ARP
CHECKED BY ARP
SCALE AS NOTED
R&D ENGINEERS REGISTRY No. 37312
SEAL

ALEJANDRO LUIS RIVAS PRIETO LICENSE No. 86717 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:27:22 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-2

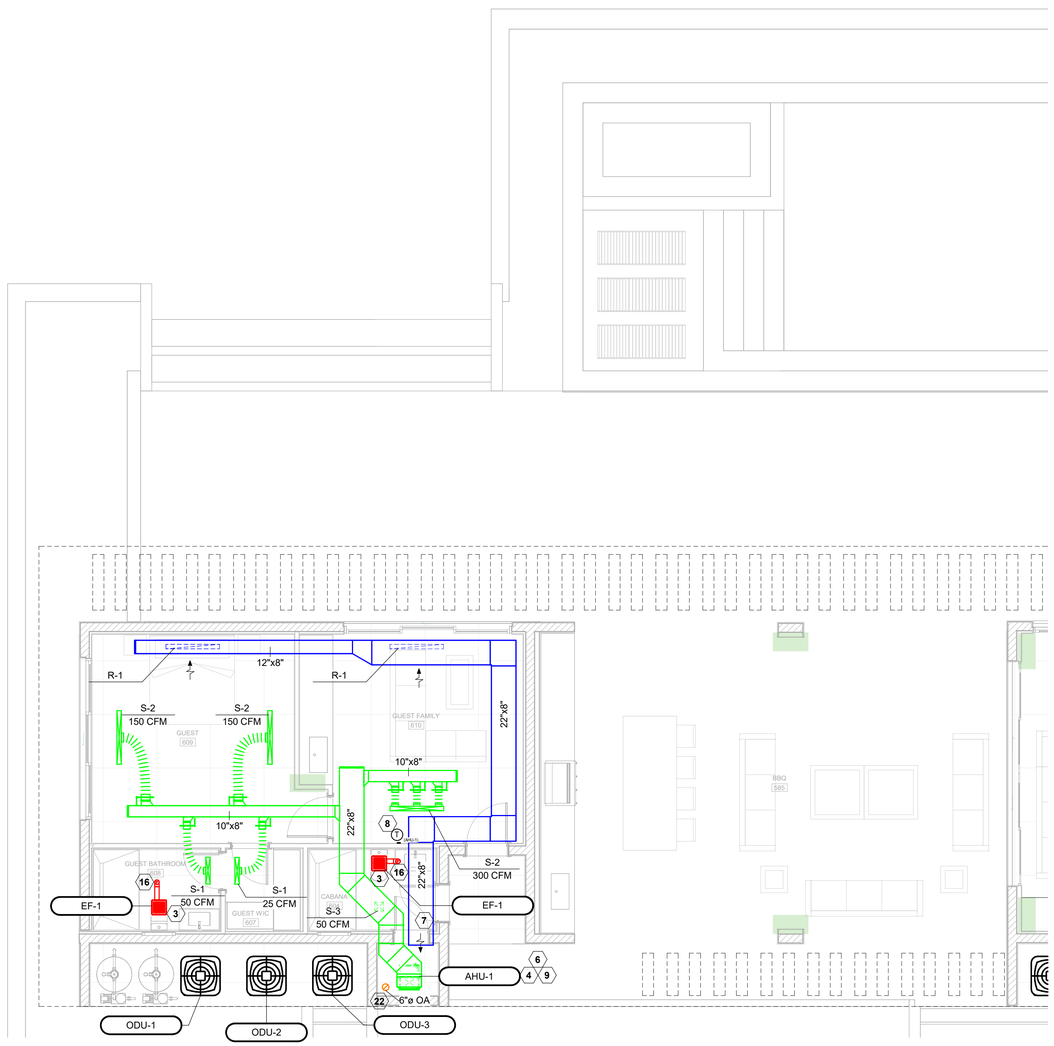
FIRST FLOOR PROPOSED PLAN - MECHANICAL

GENERAL NOTES

A. COORDINATE SYSTEMS INSTALLATION WITH ALL OTHER TRADES (EQUIPMENT, ARCHITECTURAL, MEP, ETC.) AND ADJUST INSTALLATION AS NECESSARY TO ACCOMMODATE ALL TRADES.
B. ALL DUCTWORK SHALL BE INSTALLED RIGHT BELOW ROOF DECK, UNLESS AND OFFSET IS NECESSARY TO AVOID CONFLICT WITH STRUCTURAL/MEP SYSTEM. OFFSET DUCTS UP / DOWN AS NECESSARY TO ACCOMPLISH GENERAL ROUTING SHOWN ON PLANS.
C. ALL DUCT TAPS TO BE MADE VIA TAPERED/TRANSITION FITTINGS. ALL DUCT ELBOWS TO BE PROVIDED WITH DIRECTIONAL VANES.
D. FOR ALL NEW SUPPLY AIR DIFFUSERS, RETURN AIR GRILLES AND EXHAUST AIR GRILLES CONTRACTOR TO PROVIDE SHEET METAL NEW BRANCH DUCT, SIZED PER AIR DEVICE SCHEDULE ON SHEET M-6.
E. ALLOWED MAXIMUM FLEXIBLE DUCT LENGTH IS 14 FT.
F. PROVIDE BALANCING DAMPER AT EACH DIFFUSER, REGISTER, GRILLE, AND BRANCH TAKEOFFS IN ALL SUPPLY, EXHAUST, AND RETURN DUCTWORK. LOCATE DAMPERS AS CLOSE TO BRANCH TAKEOFF AS POSSIBLE.
G. FOR ALL DIFFUSERS AND GRILLES, INSULATE ASSOCIATED BACKPAN AS WELL AS SEALING INSULATION TO DUCT AND CEILING WITH VAPOR BARRIER TAPE.
H. DO NOT INSTALL ANY DUCTWORK, PIPING, ETC. IN THE SPACE OVER ANY ELECTRICAL PANEL.
I. THERMOSTATS TO BE LOCATED 48 INCHES ABOVE FINISHED FLOOR. FINAL LOCATION TO BE COORDINATED WITH ARCHITECTURE.
J. ALL MATERIALS WITHIN RETURN AIR PLENUM SHALL BE PLENUM RATED IN COMPLIANCE WITH 2023 FBC AND NFPA REQUIREMENTS WITH A FLAME INDEX OF NO MORE THAN 25 AND SMOKE DEVELOPED INDEX OF NO MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL723.
K. BATHROOM EXHAUST FANS TO BE PROVIDED WITH TIMERS TO REGULATE OPERATION TIME IN ORDER TO MEET DWELLING UNIT MINIMUM VENTILATION REQUIREMENTS AS SHOWN ON SHEET M-4.
L. PROVIDE CABLE OPERATED DAMPER FOR ANY DIFFUSER INSTALLED WITHIN A SEALED AND INACCESSIBLE CEILING CAVITY.
M. REFER TO PLUMBING PLANS FOR CONDENSATE DRAIN ROUTING AND DISPOSAL.
N. ALL DUCTWORK TO BE SEPARATED FROM ALL SURFACES BY 1" MINIMUM.

PLAN KEYNOTES

1. NEW GARAGE EXHAUST FAN (EF-4) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN SHALL BE CONTROLLED AND ACTIVATED BY CARBON MONOXIDE DETECTOR AND NITROGEN DIOXIDE DETECTOR. FAN CAPACITY SHALL BE PROVIDED SUCH THAT MEETS AIRFLOW REQUIREMENTS AS PER 2023 FBC-M-404.1 REQUIREMENTS.
2. CARBON MONOXIDE DETECTOR TO BE INSTALLED 3 TO 5 FEET ABOVE FLOOR LEVEL AND NITROGEN DIOXIDE DETECTOR TO BE INSTALLED 1 FOOT BELOW CEILING LEVEL.
3. NEW EXHAUST FAN (EF-1,2,3) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN TO BE FURNISHED WITH BACKDRAFT DAMPER. CONTRACTOR TO COORDINATE FINAL LOCATION WITH ARCHITECTURE.
4. NEW AIR HANDLING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENTS. SEE DETAIL #1 ON SHEET M-6 FOR FURTHER INFORMATION. TYPICAL. A/C CLOSET DOOR TO BE LOUVERED. SEE ARCHITECTURAL SHEET FOR FURTHER DETAILS.
5. ROUND EXHAUST AIR DUCT OUT THROUGH EXTERIOR WALL. PROVIDE EXHAUST TERMINATION WITH WALL CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-5 FOR FURTHER DETAILS.
6. P-TRAP FOR AHU CONDENSATE DRAIN SHALL BE PROVIDED WITH 1" AIR GAP AT TERMINATION. ALL PIPING SHALL BE INSULATED WITH 3/4" K-FLEX FLEXIBLE FOAM INSULATION. TYPICAL.
7. PROVIDE SOLID AIR TIGHT DOOR TO CREATE EFFECTIVE RETURN AIR PLENUM. ENSURE THAT NO COMBUSTIBLE MATERIAS ARE LOCATED WITHIN AC CLOSET PLENUM.
8. FINAL THERMOSTAT LOCATION TO BE COORDINATED BY ARCHITECT AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
9. AHU CONDENSATE DRAIN TO DISCHARGE ON DEDICATED A/C CLOSET CONDENSATE DRAIN PIPING. COORDINATE WITH PLUMBING AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
10. KITCHEN MAKEUP AIR DUCT(S) CONCEALED WITHIN CEILING TO BE INSULATED.
11. ALL UTILITIES AND EQUIPMENT AND ACCESSORIES (ELECTRICAL, MECHANICAL AND PLUMBING) SERVICING THE BUILDING SHALL BE INSTALLED ABOVE THE DESIGN FLOOD ELEVATION DFE.
12. PROVIDE 8" EXHAUST DUCT FOR NEW KITCHEN RANGE HOOD. EXHAUST DUCT TO BE PROVIDED AND INSTALLED IN COMPLIANCE WITH 2023-FBC-M-505.1 REQUIREMENTS.
13. PROVIDE ACCESS PANEL 3" LARGER IN EACH DIMENSION OF INLINE FAN FOOTPRINT WITHIN CEILING CAVITY TO ENSURE PROPER ACCESS FOR MAINTENANCE AND REPLACEMENT IF NEEDED AS PER 2023 FBC REQUIREMENTS.
14. 10" KITCHEN MAKEUP AIR DUCT UP.
15. 8" KITCHEN EXHAUST AIR DUCT UP.
16. 4" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
17. 6" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
18. 4" DRYER EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
19. SELECTED DRYER SHALL NOT EXCEED 200 CFM
20. NEW OUTDOOR CONDENSING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENT. CONTRACTOR TO COORDINATED FINAL UNIT LOCATION BASED ON MANUFACTURER RECOMMENDED CLEARANCES. SEE DETAIL #2 ON SHEET M-7 FOR FURTHER INFORMATION.
21. CONTRACTOR TO COORDINATE FINAL REFRIGERANT PIPING ROUTES WITH SITE CONDITIONS. CONTRACTOR TO SIZE REFRIGERANT PIPING AS PER MANUFACTURER RECOMMENDATIONS. CONTRACTOR TO ENSURE THAT PIPING PENETRATION THROUGH BUILDING ENVELOPE IS PROTECTED AND SEALED WATER TIGHT.
22. PROVIDE OUTSIDE AIR INTAKE WITH MOTORIZED DAMPER. MOTORIZED DAMPER SHALL BE INTERLOCKED TO CLOSE OFF UPON UNIT DE-ENERGIZING.



1 FIRST FLOOR PROPOSED PLAN - MECHANICAL - PART B
SCALE: 3/16" = 1'-0"

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agdmiami.com
dev-engineers@agdmiami.com

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
rdengineers.com
dev-te@rd-engineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CAULSTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO — No. 86717 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:27:32 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

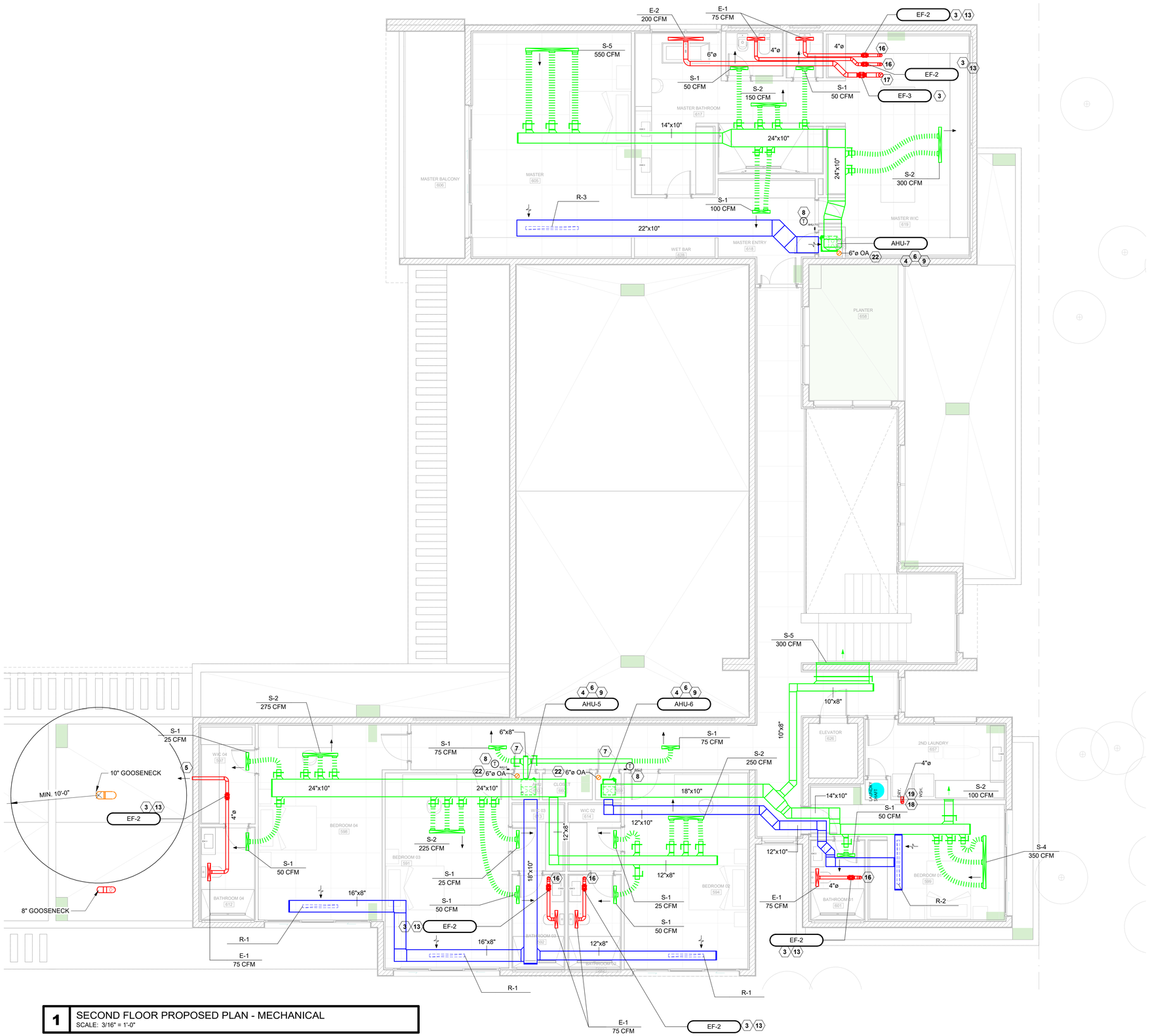
THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-3

FIRST FLOOR PROPOSED PLAN - MECHANICAL



1 SECOND FLOOR PROPOSED PLAN - MECHANICAL
SCALE: 3/16" = 1'-0"

GENERAL NOTES

A. COORDINATE SYSTEMS INSTALLATION WITH ALL OTHER TRADES (EQUIPMENT, ARCHITECTURAL, MEP, ETC.) AND ADJUST INSTALLATION AS NECESSARY TO ACCOMMODATE ALL TRADES.
B. ALL DUCTWORK SHALL BE INSTALLED RIGHT BELOW ROOF DECK, UNLESS AND OFFSET IS NECESSARY TO AVOID CONFLICT WITH STRUCTURAL/MEP SYSTEM. OFFSET DUCTS UP / DOWN AS NECESSARY TO ACCOMPLISH GENERAL ROUTING SHOWN ON PLANS.
C. ALL DUCT TAPS TO BE MADE VIA TAPERED/TRANSITION FITTINGS. ALL DUCT ELBOWS TO BE PROVIDED WITH DIRECTIONAL VANES.
D. FOR ALL NEW SUPPLY AIR DIFFUSERS, RETURN AIR GRILLES AND EXHAUST AIR GRILLES CONTRACTOR TO PROVIDE SHEET METAL NEW BRANCH DUCT, SIZED PER AIR DEVICE SCHEDULE ON SHEET M-6.
E. ALLOWED MAXIMUM FLEXIBLE DUCT LENGTH IS 14 FT.
F. PROVIDE BALANCING DAMPER AT EACH DIFFUSER, REGISTER, GRILLE, AND BRANCH TAKEOFFS IN ALL SUPPLY, EXHAUST, AND RETURN DUCTWORK. LOCATE DAMPERS AS CLOSE TO BRANCH TAKEOFF AS POSSIBLE.
G. FOR ALL DIFFUSERS AND GRILLES, INSULATE ASSOCIATED BACKPAN AS WELL AS SEALING INSULATION TO DUCT AND CEILING WITH VAPOR BARRIER TAPE.
H. DO NOT INSTALL ANY DUCTWORK, PIPING, ETC. IN THE SPACE OVER ANY ELECTRICAL PANEL.
I. THERMOSTATS TO BE LOCATED 48 INCHES ABOVE FINISHED FLOOR. FINAL LOCATION TO BE COORDINATED WITH ARCHITECTURE.
J. ALL MATERIALS WITHIN RETURN AIR PLENUM SHALL BE PLENUM RATED IN COMPLIANCE WITH 2023 FBC AND NFPA REQUIREMENTS WITH A FLAME INDEX OF NO MORE THAN 25 AND SMOKE DEVELOPED INDEX OF NO MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL723.
K. BATHROOM EXHAUST FANS TO BE PROVIDED WITH TIMERS TO REGULATE OPERATION TIME IN ORDER TO MEET DWELLING UNIT MINIMUM VENTILATION REQUIREMENTS AS SHOWN ON SHEET M-4.
L. PROVIDE CABLE OPERATED DAMPER FOR ANY DIFFUSER INSTALLED WITHIN A SEALED AND INACCESSIBLE CEILING CAVITY.
M. REFER TO PLUMBING PLANS FOR CONDENSATE DRAIN ROUTING AND DISPOSAL.
N. ALL DUCTWORK TO BE SEPARATED FROM ALL SURFACES BY 1" MINIMUM.

PLAN KEYNOTES

1. NEW GARAGE EXHAUST FAN (EF-4) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN SHALL BE CONTROLLED AND ACTIVATED BY CARBON MONOXIDE DETECTOR AND NITROGEN DIOXIDE DETECTOR. FAN CAPACITY SHALL BE PROVIDED SUCH THAT MEETS AIRFLOW REQUIREMENTS AS PER 2023 FBC-M-404.1 REQUIREMENTS.
2. CARBON MONOXIDE DETECTOR TO BE INSTALLED 3 TO 5 FEET ABOVE FLOOR LEVEL AND NITROGEN DIOXIDE DETECTOR TO BE INSTALLED 1 FOOT BELOW CEILING LEVEL.
3. NEW EXHAUST FAN (EF-1,2,3) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN TO BE FURNISHED WITH BACKDRAFT DAMPER. CONTRACTOR TO COORDINATE FINAL LOCATION WITH ARCHITECTURE.
4. NEW AIR HANDLING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENTS. SEE DETAIL #1 ON SHEET M-6 FOR FURTHER INFORMATION. TYPICAL. A/C CLOSET DOOR TO BE LOUVERED. SEE ARCHITECTURAL SHEET FOR FURTHER DETAILS.
5. ROUND EXHAUST AIR DUCT OUT THROUGH EXTERIOR WALL. PROVIDE EXHAUST TERMINATION WITH WALL CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-5 FOR FURTHER DETAILS.
6. P-TRAP FOR AHU CONDENSATE DRAIN SHALL BE PROVIDED WITH 1" AIR GAP AT TERMINATION. ALL PIPING SHALL BE INSULATED WITH 3/4" K-FLEX FLEXIBLE FOAM INSULATION. TYPICAL.
7. PROVIDE SOLID AIR TIGHT DOOR TO CREATE EFFECTIVE RETURN AIR PLENUM. ENSURE THAT NO COMBUSTIBLE MATERIAS ARE LOCATED WITHIN AC CLOSET PLENUM.
8. FINAL THERMOSTAT LOCATION TO BE COORDINATED BY ARCHITECT AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
9. AHU CONDENSATE DRAIN TO DISCHARGE ON DEDICATED A/C CLOSET CONDENSATE DRAIN PIPING. COORDINATE WITH PLUMBING AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
10. KITCHEN MAKEUP AIR DUCT(S) CONCEALED WITHIN CEILING TO BE INSULATED.
11. ALL UTILITIES AND EQUIPMENT AND ACCESSORIES (ELECTRICAL, MECHANICAL AND PLUMBING) SERVICING THE BUILDING SHALL BE INSTALLED ABOVE THE DESIGN FLOOD ELEVATION DFE.
12. PROVIDE 8" EXHAUST DUCT FOR NEW KITCHEN RANGE HOOD. EXHAUST DUCT TO BE PROVIDED AND INSTALLED IN COMPLIANCE WITH 2023-FBC-M-505.1 REQUIREMENTS.
13. PROVIDE ACCESS PANEL 3" LARGER IN EACH DIMENSION OF INLINE FAN FOOTPRINT WITHIN CEILING CAVITY TO ENSURE PROPER ACCESS FOR MAINTENANCE AND REPLACEMENT IF NEEDED AS PER 2023 FBC REQUIREMENTS.
14. 10" KITCHEN MAKEUP AIR DUCT UP.
15. 8" KITCHEN EXHAUST AIR DUCT UP.
16. 4" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
17. 6" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
18. 4" DRYER EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
19. SELECTED DRYER SHALL NOT EXCEED 200 CFM
20. NEW OUTDOOR CONDENSING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENT. CONTRACTOR TO COORDINATED FINAL UNIT LOCATION BASED ON MANUFACTURER RECOMMENDED CLEARANCES. SEE DETAIL #2 ON SHEET M-7 FOR FURTHER INFORMATION.
21. CONTRACTOR TO COORDINATE FINAL REFRIGERANT PIPING ROUTES WITH SITE CONDITIONS. CONTRACTOR TO SIZE REFRIGERANT PIPING AS PER MANUFACTURER RECOMMENDATIONS. CONTRACTOR TO ENSURE THAT PIPING PENETRATION THROUGH BUILDING ENVELOPE IS PROTECTED AND SEALED WATER TIGHT.
22. PROVIDE OUTSIDE AIR INTAKE WITH MOTORIZED DAMPER. MOTORIZED DAMPER SHALL BE INTERLOCKED TO CLOSE OFF UPON UNIT DE-ENERGIZING.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agd@miami.com
dev-engineer@agdmiami.com

R&D ENGINEERS, LLC

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
info@rndengineers.com
drn-bd@rndengineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES	
JUN 2024	1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO — LICENSE No. 86717 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:27:44 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

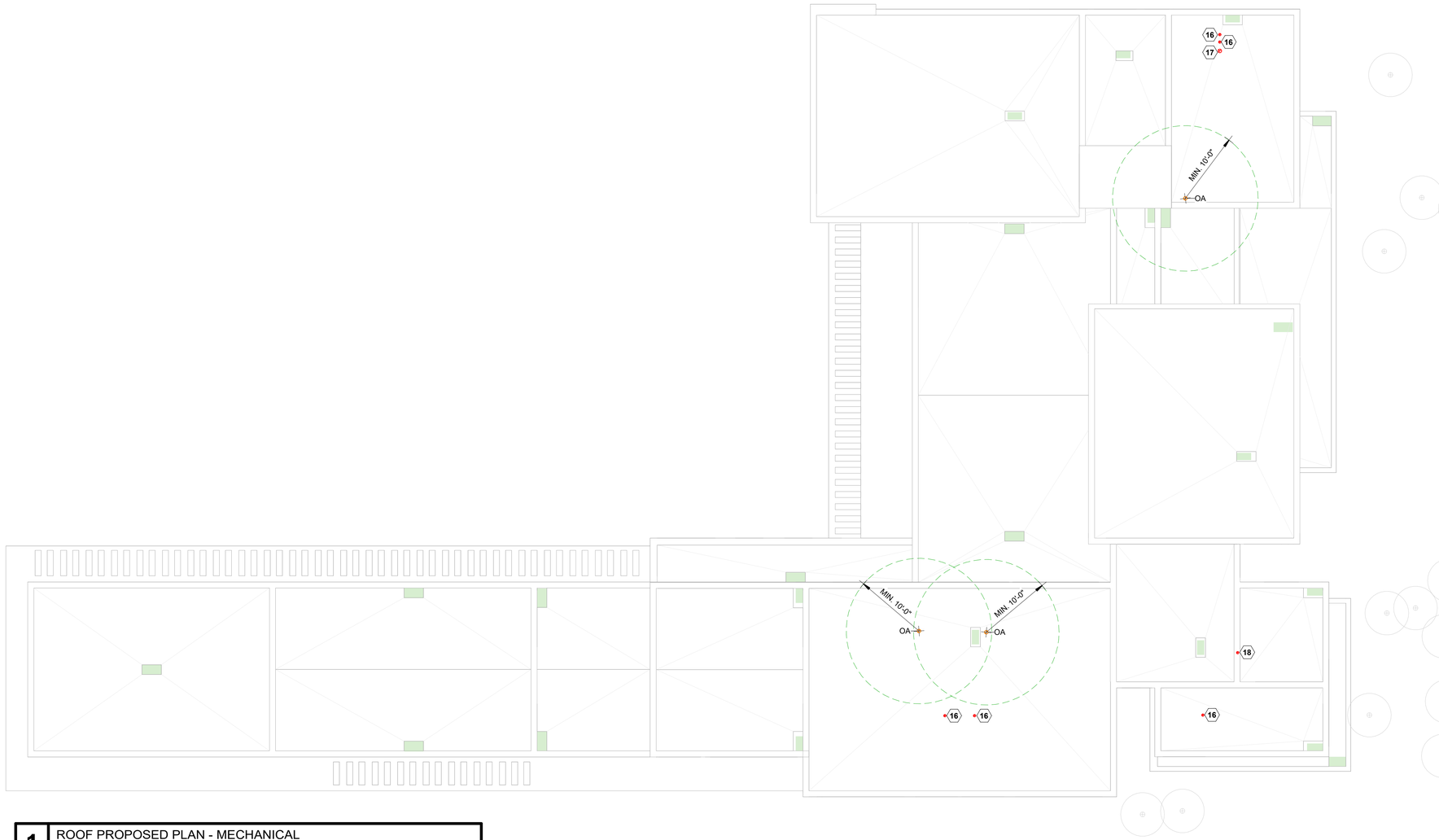
THIS IS A DIGITALLY SIGNED SHEET, PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-4

SECOND FLOOR PROPOSED PLAN - MECHANICAL



1 ROOF PROPOSED PLAN - MECHANICAL
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. COORDINATE SYSTEMS INSTALLATION WITH ALL OTHER TRADES (EQUIPMENT, ARCHITECTURAL, MEP, ETC.) AND ADJUST INSTALLATION AS NECESSARY TO ACCOMMODATE ALL TRADES.
B. ALL DUCTWORK SHALL BE INSTALLED RIGHT BELOW ROOF DECK, UNLESS AND OFFSET IS NECESSARY TO AVOID CONFLICT WITH STRUCTURAL/MEP SYSTEM. OFFSET DUCTS UP / DOWN AS NECESSARY TO ACCOMPLISH GENERAL ROUTING SHOWN ON PLANS.
C. ALL DUCT TAPS TO BE MADE VIA TAPERED/TRANSITION FITTINGS. ALL DUCT ELBOWS TO BE PROVIDED WITH DIRECTIONAL VANES.
D. FOR ALL NEW SUPPLY AIR DIFFUSERS, RETURN AIR GRILLES AND EXHAUST AIR GRILLES CONTRACTOR TO PROVIDE SHEET METAL NEW BRANCH DUCT, SIZED PER AIR DEVICE SCHEDULE ON SHEET M-6.
E. ALLOWED MAXIMUM FLEXIBLE DUCT LENGTH IS 14 FT.
F. PROVIDE BALANCING DAMPER AT EACH DIFFUSER, REGISTER, GRILLE, AND BRANCH TAKEOFFS IN ALL SUPPLY, EXHAUST, AND RETURN DUCTWORK. LOCATE DAMPERS AS CLOSE TO BRANCH TAKEOFF AS POSSIBLE.
G. FOR ALL DIFFUSERS AND GRILLES, INSULATE ASSOCIATED BACKPAN AS WELL AS SEALING INSULATION TO DUCT AND CEILING WITH VAPOR BARRIER TAPE.
H. DO NOT INSTALL ANY DUCTWORK, PIPING, ETC. IN THE SPACE OVER ANY ELECTRICAL PANEL.
I. THERMOSTATS TO BE LOCATED 48 INCHES ABOVE FINISHED FLOOR. FINAL LOCATION TO BE COORDINATED WITH ARCHITECTURE.
J. ALL MATERIALS WITHIN RETURN AIR PLENUM SHALL BE PLENUM RATED IN COMPLIANCE WITH 2023 FBC AND NFPA REQUIREMENTS WITH A FLAME INDEX OF NO MORE THAN 25 AND SMOKE DEVELOPED INDEX OF NO MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL723.
K. BATHROOM EXHAUST FANS TO BE PROVIDED WITH TIMERS TO REGULATE OPERATION TIME IN ORDER TO MEET DWELLING UNIT MINIMUM VENTILATION REQUIREMENTS AS SHOWN ON SHEET M-4.
L. PROVIDE CABLE OPERATED DAMPER FOR ANY DIFFUSER INSTALLED WITHIN A SEALED AND INACCESSIBLE CEILING CAVITY.
M. REFER TO PLUMBING PLANS FOR CONDENSATE DRAIN ROUTING AND DISPOSAL.
N. ALL DUCTWORK TO BE SEPARATED FROM ALL SURFACES BY 1" MINIMUM.

PLAN KEYNOTES

1. NEW GARAGE EXHAUST FAN (EF-4) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN SHALL BE CONTROLLED AND ACTIVATED BY CARBON MONOXIDE DETECTOR AND NITROGEN DIOXIDE DETECTOR. FAN CAPACITY SHALL BE PROVIDED SUCH THAT MEETS AIRFLOW REQUIREMENTS AS PER 2023 FBC-M-404.1 REQUIREMENTS.
2. CARBON MONOXIDE DETECTOR TO BE INSTALLED 3 TO 5 FEET ABOVE FLOOR LEVEL AND NITROGEN DIOXIDE DETECTOR TO BE INSTALLED 1 FOOT BELOW CEILING LEVEL.
3. NEW EXHAUST FAN (EF-1,2,3) TO BE INSTALLED AS INDICATED BY MANUFACTURER'S GUIDELINE. EXHAUST FAN TO BE FURNISHED WITH BACKDRAFT DAMPER. CONTRACTOR TO COORDINATE FINAL LOCATION WITH ARCHITECTURE.
4. NEW AIR HANDLING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENTS. SEE DETAIL #1 ON SHEET M-6 FOR FURTHER INFORMATION. TYPICAL. A/C CLOSET DOOR TO BE LOUVERED. SEE ARCHITECTURAL SHEET FOR FURTHER DETAILS.
5. ROUND EXHAUST AIR DUCT OUT THROUGH EXTERIOR WALL. PROVIDE EXHAUST TERMINATION WITH WALL CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-5 FOR FURTHER DETAILS.
6. P-TRAP FOR AHU CONDENSATE DRAIN SHALL BE PROVIDED WITH 1" AIR GAP AT TERMINATION. ALL PIPING SHALL BE INSULATED WITH 3/4" K-FLEX FLEXIBLE FOAM INSULATION. TYPICAL.
7. PROVIDE SOLID AIR TIGHT DOOR TO CREATE EFFECTIVE RETURN AIR PLENUM. ENSURE THAT NO COMBUSTIBLE MATERIAS ARE LOCATED WITHIN AC CLOSET PLENUM.
8. FINAL THERMOSTAT LOCATION TO BE COORDINATED BY ARCHITECT AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
9. AHU CONDENSATE DRAIN TO DISCHARGE ON DEDICATED A/C CLOSET CONDENSATE DRAIN PIPING. COORDINATE WITH PLUMBING AND GENERAL CONTRACTOR IN FIELD. TYPICAL.
10. KITCHEN MAKEUP AIR DUCT(S) CONCEALED WITHIN CEILING TO BE INSULATED.
11. ALL UTILITIES AND EQUIPMENT AND ACCESSORIES (ELECTRICAL, MECHANICAL AND PLUMBING) SERVICING THE BUILDING SHALL BE INSTALLED ABOVE THE DESIGN FLOOD ELEVATION DFE.
12. PROVIDE 8" EXHAUST DUCT FOR NEW KITCHEN RANGE HOOD. EXHAUST DUCT TO BE PROVIDED AND INSTALLED IN COMPLIANCE WITH 2023-FBC-M-505.1 REQUIREMENTS.
13. PROVIDE ACCESS PANEL 3" LARGER IN EACH DIMENSION OF INLINE FAN FOOTPRINT WITHIN CEILING CAVITY TO ENSURE PROPER ACCESS FOR MAINTENANCE AND REPLACEMENT IF NEEDED AS PER 2023 FBC REQUIREMENTS.
14. 10" KITCHEN MAKEUP AIR DUCT UP.
15. 8" KITCHEN EXHAUST AIR DUCT UP.
16. 4" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
17. 6" BATHROOM EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
18. 4" DRYER EXHAUST AIR DUCT OUT TROUGH ROOF. PROVIDE EXHAUST TERMINATION WITH CAP. FINISH TO BE COORDINATED WITH ARCHITECTURAL. REFER TO CAPS SCHEDULE ON SHEET M-6 FOR FURTHER DETAILS.
19. SELECTED DRYER SHALL NOT EXCEED 200 CFM
20. NEW OUTDOOR CONDENSING UNIT TO BE INSTALLED IN COMPLIANCE WITH 2023 FBC REQUIREMENT. CONTRACTOR TO COORDINATED FINAL UNIT LOCATION BASED ON MANUFACTURER RECOMMENDED CLEARANCES. SEE DETAIL #2 ON SHEET M-7 FOR FURTHER INFORMATION.
21. CONTRACTOR TO COORDINATE FINAL REFRIGERANT PIPING ROUTES WITH SITE CONDITIONS. CONTRACTOR TO SIZE REFRIGERANT PIPING AS PER MANUFACTURER RECOMMENDATIONS. CONTRACTOR TO ENSURE THAT PIPING PENETRATION THROUGH BUILDING ENVELOPE IS PROTECTED AND SEALED WATER TIGHT.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agdmiami.com
dev-engineers@agdmiami.com

R&D ENGINEERS, LLC

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
randdengineers.com
dev-br@rd-engineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO LICENSE No. 86717 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:27:55 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-5

ROOF PROPOSED PLAN - MECHANICAL

FAN SCHEDULE

TAG	EF-1	EF-2	EF-3	EF-4
MANUFACTURER	PANASONIC	SOLER&PALAU	SOLER&PALAU	LOREN COOK
MODEL	RG-R811A	TD100	TD150	GC-720
APPLICATION	EXHAUST	EXHAUST	EXHAUST	EXHAUST
SERVES	BATHROOM	BATHROOM	BATHROOM	GARAGE
AIRFLOW (CFM)	50	50	250	420
MAX ESP (IN.WG)	0.10	0.40	0.50	0.25
TYPE	CEILING	INLINE	INLINE	CEILING
FAN RPM	905	2516	2289	1,070
DRIVE	DIRECT	DIRECT	DIRECT	DIRECT
HP (W)	(7.1)	(26.0)	(65.0)	(224)
EFFICACY (CFM/WATT)	11.26	3.85	3.84	1.91
VOLTAGE	120/1	120/1	120/1	120/1
WEIGHT (LBS)	9.5	4.0	9.0	31
MAX NOISE LEVEL (SONES)	0.4	0.4	0.4	6.0
NOTES	1, 2	1, 2	1, 2	3

NOTES:
1. FAN TO BE CONTROLLED BY TIMER.
2. U.L. LISTED FOR BATHTUBS AND SHOWERS WHEN CONNECTED TO GFCI PROTECTED BRANCH CIRCUIT.
3. EXHAUST FAN TO BE ACTIVATED BY CARBON MONOXIDE DETECTOR.
4. FAN TO BE INTERLOCKED WITH KITCHEN EXHAUST HOOD THROUGH PRESSURE SWITCH ON KITCHEN HOOD EXHAUST DUCT.

PIPING INSULATION SCHEDULE

PIPING	DESCRIPTION	SIMILAR TO
REFRIGERANT VAPOR LINE	EXPOSED IN A/C CLOSET	CLOSED-CELL, FLEXIBLE ELASTOMERIC FOAM INSULATION 3/4" THICK SIMILAR K-FLEX "INSUL-TUBE". MINIMUM R=3.0.
	CONCEALED	
	WEATHER EXPOSED	
	UNDERGROUND	
CONDENSATE DRAIN	EXPOSED IN A/C CLOSET	CLOSED-CELL, FLEXIBLE ELASTOMERIC FOAM INSULATION 3/4" THICK SIMILAR K-FLEX "INSUL-TUBE". MINIMUM R=3.0.

CAPS SCHEDULE

APPLICATION	MANUFACTURER	MODEL	DUCT SIZE (Ø")	SCREEN
ROOF CAPS				
DRYER EXHAUST	INOVATE TECHNOLOGIES INC.	DJK477	4	
GENERAL EXHAUST	MIAMI TECH INC.	GRV4TD	4	X
		GRV6TD	6	
		GRV8TD	8	
KITCHEN RANGE HOOD EXHAUST		GRV10TCD	8	X
		GRV10TD	10	
MAKEUP/FRESH AIR INTAKE		GRV6XT	6	X
		GRV10XTC	8	
		GRV10XT	10	
		GRV12XT	12	
WALLS CAPS				
DRYER EXHAUST	INOVATE TECHNOLOGIES INC.	DWV4W	4	
GENERAL EXHAUST	XVENT BOX	4SEB-S	4	X
		6SEB-S	6	
		8-SEB-S	8	
KITCHEN RANGE HOOD EXHAUST	MIAMI TECH INC.	ASWCD08	8	X
		ASWCD10	10	
MAKEUP/FRESH AIR INTAKE	XVENT BOX	6SEB-S	6	X
		8-SEB-S	8	

NOTES:
1. EXHAUST AND INTAKE OPENINGS SHALL BE PROTECTED ACCORDING TO 2023 FBC-RESIDENTIAL SECTION 303.6.
2. DRYER EXHAUST TERMINATION SHALL COMPLY WITH REQUIREMENTS OF 2023 FBC-RESIDENTIAL SECTION M1502.3 AND HAVE AT LEAST 12.5 SQ.IN. OF FREE AREA.
3. KITCHEN EXHAUST SHALL BE PROVIDED WITH BACKDRAFT DAMPER PER REQUIREMENTS OF 2023 FBC-RESIDENTIAL SECTION M1503.1.
4. EXHAUST OPENINGS LOCATION SHALL COMPLY WITH 2023 FBC-RESIDENTIAL SECTION 1506.3 REQUIREMENTS.
5. CONTRACTOR TO COORDINATE FINISH COLOR WITH ARCHITECTURAL.

CONDENSATE DRAIN SIZING*

EQUIPMENT CAPACITY (TONS)	MINIMUM CONDENSATE PIPE DIAMETER (INCH)
UP TO 20	3/4
20 TO 40	1
40 TO 90	1-1/4
90 TO 125	1-1/2
125 TO 250	2

(*) ADAPTED FROMTABLE 307.2.2 OF 2023 FBC-M.

HEAT PUMP UNIT SCHEDULE

UNIT		AHU-1,6 / ODU-1,6	AHU-2,3/ ODU-2,3	AHU-4 / ODU-4	AHU-5,7 / ODU-5,7
AREA SERVED		FIRST/SECOND LEVEL	FIRST/SECOND LEVEL	FIRST/SECOND LEVEL	FIRST/SECOND LEVEL
INDOOR UNIT	SUPPLY AIRFLOW (CFM)	800	1700	1350	1200
	TOTAL/SENSIBLE CAPACITY (MBH) DESIGN	20.8 / 17.3	55.5 / 40.1	40.5 / 29.5	32.1 / 26.1
	EAT °F DB / WB	80.0 / 67.0	80.0 / 67.0	80.0 / 67.0	80.0 / 67.0
	LAT °F DB / WB	58.7 / 57.4	58.7 / 57.4	58.7 / 57.4	58.7 / 57.4
	ESP (IN WG)	0.5	0.5	0.5	0.5
	UNIT MODEL #	FMA5L24	FE5BNBD60	FE5BNXD48	FMA5L36
	FAN POWER HP (W)	3/4	3/4	3/4	7/8
	MCA / MOCP	7.1 / 15	7.1 / 15	7.1 / 15	7.1 / 15
	ELECTRIC HEATER SIZE (KW)	3.6	7.5	7.5	3.6
	WEIGHT (LBS)	110	203	168	128
	W" x D" x H"	21 x 15 x 37	22 x 25 x 60	22 x 22 x 53	22 x 19 x 40
OUTDOOR UNIT	AMBIENT TEMP (F)	95	95	95	95
	COOLING CAPACITY (MBH)	20.8	55.5	40.5	32.1
	HEATING CAPACITY (MBH)	23.2	60.5	49	36.3
	TYPE	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP
	POWER SUPPLY (V / PH)	208/1	208/1	208/1	208/1
	MCA / MOCP	13.5 / 20	36.9 / 50	30.6 / 40	19.2 / 30
	SEER2	14.5	20	22	14.5
	HSPF2	7.5	8.5	9.5	7.5
	UNIT MODEL #	GH5SAN524	27VNA360-3	27VNA348-3	GH5SAN536
	WEIGHT (LBS)	195	399	379	192
	W" x D" x H"	32 x 32 x 36	35 x 35 x 48	35 x 35 x 48	32 x 32 x 32
FILTER EFFICIENCY (ASHRAE 52)		MERV 8	MERV 8	MERV 8	MERV 8
DESIGN OUTSIDE AIR (CFM)		150	150	150	150
BASIS OF DESIGN MANUFACTURER		CARRIER	CARRIER	CARRIER	CARRIER
AHRI REFERENCE #		214423973	215931481	215934614	214424253

NOTES:
1. VARIABLE SPEED COMMUNICATING ECM MOTOR.
2. MULTI POSITION THREE (3) SPEED.
3. PROVIDE SIGNED AND SEALED WIND LOAD CERTIFICATION PER FBC-2023 AND MIAMI DADE COUNTY REQUIREMENTS FOR OUTDOOR UNIT.
4. INDOOR AND OUTDOOR UNITS TO BE POWERED SEPARATELY. COORDINATE WITH DIVISION 26.
5. REFRIGERANT: R410-A
6. INSULATE SUCTION LINE WITH 3/4" K-FLEX CLOSED CELL FOAM INSULATION. BELOW GROUND PIPING SHALL BE INSTALLED WITHIN PVC PIPE. SEE MECHANICAL DETAILS FOR FURTHER INFORMATION.
7. PROVIDE DRYER AND STRAINER IN REFRIGERANT LIQUID LINES
8. CONDENSER COILS TO BE PHENOLIC COATED AT FACTORY
9. REFRIGERANT LINE SIZES TO BE PER MANUFACTURER RECOMMENDATION
10. PROVIDE COASTAL CORROSION PROTECTION FOR ALL OUTDOOR EQUIPMENT
11. PROVIDE WITH SCROLL COMPRESSOR
12. CONTRACTOR TO PROVIDE BACK-UP DRAIN STAINLESS STEEL DRAIN PAN. DRAN PAN SHALL HAVE MINIMUM DEPTH 1-1/2" AND SHALL NOT BE LESS THAN 3" INCHES LARGER THAN THE UNIT.
13. PROVIDE WITH INTERNAL CONDENSATE PUMP.
14. PROVIDE WITH PROGRAMMABLE NETWORKABLE THERMOSTAT.
15. PROVIDE UNIT WITH REPLACEABLE HIGH QUALITY FILTERS.

DAMPER SCHEDULE

TAG	LEGEND	DESCRIPTION	SIMILAR TO
V	VOLUME DAMPER	DUCT MOUNTED RADIAL SLIDING DAMPER FOR SUPPLY AND RETURN AIR DISTRIBUTION. SHUTTER WITH INCREMENTAL CLOSURE CONTROLLED THROUGH FLEXIBLE SHAFT. DAMPER OPERATED THROUGH TERMINATION LOCATION AT LINEAR DIFFUSER OPENING USING A SOCKET WRENCH. MILL FINISH. FLEXIBLE STEEL SHAFT. BOW TIE STEEL SHUTTERS.	YOUNG REGULATO R RAD
BDD	BACKDRAFT DAMPER	DUCT MOUNTED TWO-BLADE DESIGN BACKDRAFT DAMPER. GALVANIZED STEEL FRAME AND ALUMINIMUM BRADES. MILL GALVANIZED FRAME FINISH. 2000 FPM MAXIMUM VELOCITY FOR STATIC PRESSURE UP TO 2" W.G. BLADES SHALL BE RETAINED IN CLOSED POSITION WITH TENSIONED SPRING. SPRING SHALL BE EASILY ADJUSTABLE FOR ANY ORIENTATION MOUNTING. DAMPER SHALL INCLUDE VINYL FOAM BLADE SEAL. FRAMES SHALL HAVE NO HOLES OR OPENINGS.	RUSKIN BDR2
M	MOTORIZED CONTROL	ROUND DUCT MOUNTED AUTOMATIC CONTROL DAMPER IN 20 GAUGE GALVANIZED STEEL FRAME. LEAKAGE CLASS 2. FACTORY MOUNTED AND COMMISSIONED 24 VAC, SPRING RETURN ACTUATOR TO BE SET IN FIELD TO POWER OPEN AND SPRING OR "FAIL" CLOSE. MAXIMUM STATIC PRESSURE UP TO 2" WG AND VELOCITIES UP TO 1500 FPM. MOLDED SYNTHETIC SLEEVE TYPE BEARINGS.	RUSKIN MDRS15

AIR DISTRIBUTION DEVICE SCHEDULE

TAG	S-1	S-2	S-3	S-4	S-5	R-1	R-2	R-3	E-1	E-2
MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS
MODEL	FL-15-1 SLOT	FL-15-2 SLOT	250-AA	FL-15-2 SLOT	FL-10-2 SLOT	FL-15-2 SLOT	FL-15-2 SLOT	FL-10-2 SLOT	FL-15-1 SLOT	FL-15-2 SLOT
SIZE	24X3-3/4	48X7-3/16	8X8	60X5-3/16	72X5-3/16	48X3-3/16	60X5-3/16	72X5-3/16	24X3-3/4	48X7-3/16
BORDER TYPE	TYPE 77	TYPE 77	SURFACE	TYPE 77	TYPE 77	TYPE 77	TYPE 77	TYPE 77	TYPE 77	TYPE 77
PLENUM	FBP	FBP	FBP	FBP	FBP	N/A	N/A	N/A	N/A	N/A
NECK SIZE	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN	PER PLAN
OPPOSED BLADE DAMPER	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
FINISH	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
THROW	HIGHTHROW	HIGHTHROW	-	HIGHTHROW	JETTHROW	-	-	-	-	-
TYPE	LINEAR	LINEAR	LOUVERED	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR	LINEAR
LOCATION	CEILING	CEILING	CEILING	CEILING	WALL	CEILING/WALL	CEILING/WALL	CEILING/WALL	CEILING/WALL	CEILING/WALL
NOTES	3, 4, 6, 7, 8, 9, 10, 11	3, 4, 6, 7, 8, 9, 10, 11	3, 4, 6, 7, 8, 9, 10, 11	3, 4, 6, 7, 8, 9, 10, 11	3, 4, 6, 7, 8, 9, 10, 11	3, 4, 5, 6, 7, 9	3, 4, 5, 6, 7, 9	3, 4, 5, 6, 7, 9	3, 4, 5, 6, 7, 9	3, 4, 5, 6, 7, 9

NOTES:
1. ALL DEVICES SHALL BE FULLY GASKETED.
2. CONTRACTOR TO COORDINATE FRAME FINISH & STYLE WITH ARCHITECTURAL PLANS.
3. PROVIDE FACTORY FURNISHED SQUARE TO ROUND COLLAR FOR SQUARE NECKOUTLETS CONNECTED TO A ROUND FLEXIBLE AND RIGID DUCT.
4. MOUNTING BORDER TO BE CONSISTENT WITH ACTUAL CEILING/SURFACE TYPECOORDINATE WITH OTHER DISCIPLINES REFLECTED CEILING PLANS.
5. BRANCH SIZE EQUAL TO NECK SIZE.
6. PROVIDE WITH FACTORY FURNISHED AIRFLOW FLOW ADJUSTMENT DEVICE.
7. 30 MAX NOISE CRITERIA.
8. PROVIDE WITH 10" LOW PROFILE INSULATED DISTRIBUTION PLENUM FOR SLOT DIFFUSER.
9. PROVIDE WITH END BORDER ON BOTH SIDES. COORDINATE WITH ARCHITECTURALBEFORE ORDERING.
10. PROVIDE WITH 10" LOW PROFILE RETURN PLENUM FOR SLOT DIFFUSER.
11. SUPPLY BRANCH SIZE:
    - 4" Ø 0 - 35 CFM
    - 5" Ø 36 - 65 CFM
    - 6" Ø 66 - 95 CFM
    - 7" Ø 96 - 140 CFM
    - 8" Ø 141 - 195 CFM
    - 9" Ø 196 - 260 CFM
    - 10" Ø 261 - 350 CFM
    - 12" Ø 351 - 500 CFM

DUCT CONSTRUCTION SCHEDULE

DUCTWORK	LOCATION	SHAPE	MATERIAL	INSULATION	CONSTRUCTION STANDARD
SUPPLY/ RETURN AIR	CONCEALED WITHIN FIRST/SECOND FLOOR CEILING (CONDITIONED PLENUM)	SQUARE	RIGID DUCT BOARD TYPE INSULATION, 1.5 INCHES, MICRO-AIRE TYPE 800 JOHNS MANVILLE, MINIMUM R-6.0, GLASS FABRIC & MASTIC ALL JOINTS.	R6.0	SMACNA FIBROUS GLASS DUCT CONSTRUCTION STANDARD 7TH EDITION
OUTSIDE AIR	CONCEALED WITHIN FIRST FLOOR CEILING (CONDITIONED PLENUM)	ROUND	GALVANIZED SHEET STEEL; LOCK-FORMING QUALITY; ASTM A653/A653M, G90 COATING DESIGNATION. BLANKET TYPE 150 INSULATION 1-1/2" THICK, 1.5 PCF, JOHNS MANVILLE, FOIL FACED KRAFT VAPOR BARRIER; GLASS FABRIC & MASTIC ALL JOINTS.	R4.3	SMACNA METAL AND FLEXIBLE DUCT CONSTRUCTION STANDARD +/- 2" WG
FLEX DUCTS	CONCEALED WITHIN FIRST/SECOND FLOOR CEILING (CONDITIONED PLENUM)	ROUND	COMPLY UL 181 CLASS 1, FACTORY FABRICATED, INSULATED, ROUND DUCT, WITH A POLYETHYLENE FILM OUTER JACKET ENCLSOING GLASS FIBER INSULATION AROUND A CONTINUOUS POLYETHYLENE INNER ,LINER. THE INNER LINER SHALL HAVE AN ENCAPSULATED STEEL WIRE HELIX.	R6.0	SMACNA METAL AND FLEXIBLE DUCT CONSTRUCTION STANDARD +/- 2" WG

NOTES:
1. ALL INSULATION SHALL HAVE A FIRE / SMOKE RATING LESS THAN 25/50.
2. ALL OUTSIDE AIR DUCT INTAKES SHALL BE LOCATED BEYOND 10'-0" OF ANY EXHAUST OUTLET OF SANITARY VENT PIP AND SHALL BE SCREENED WITH A CORROSION RESISTANT MATERIAL NOT LATER THAN 1/2" MESH PER 2023 FBC-MECHANICAL.
3. ALL BRANCH TAKE-OFFS TO BE PROVIDE WITH MANUAL VOLUME DAMPERS. ALL ELBOEWS AND TEE'S MUST BE FURNISHED WITH TURNING VANES. PROVIDE MANUAL DAMPER WITH EXTRACTOR AT ALL FLEX TAKE-OFFS.

MINIMUM VENTILATION REQUIREMENT*

DWELLING UNIT FLOOR AREA (SF)	NUMBER OF BEDROOMS				
	0 - 1	2 - 3	4 - 5	6 - 7	> 7
	AIRFLOW IN CFM				
< 1,500	30	45	60	75	90
1,501 - 3,000	45	60	75	90	105
3,001 - 4,500	60	75	90	105	120
4,501 - 6,000	75	90	105	120	135
6,001 - 7,500	90	105	120	135	150
> 7,000	105	120	135	150	165

(*) ADAPTED FROM TABLE M1507.3.3(1) OF 2023 FBC-RESIDENTIAL

PROJECT VENTILATION REQUIREMENT

Floor Area (SF): 6,211

Number of Bedrooms: 6

Required ventilation (CFM): 135 CFM

Provided ventilation (CFM): AHU-1+2+3+4 = 600CFM

SYSTEM DESIGN CONCEPT

WHOLE-HOUSE MECHANICAL VENTILATION IS PROVIDED BY AIR HANDLING UNITS WITH OUTDOOR AIR INTAKES.

SYSTEMS ARE PROVIDED WITH PROGRAMMABLE THERMOSTATS.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
+1 786 708 0880
hello@mikarch.com

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
agdmiami.com
developers@agdmiami.com

R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
rd-engineers.com
arivas@rd-engineers.com

NEW SINGLE FAMILY RESIDENCE
AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO LICENSE No. 86717 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto Date: 2025.05.05 14:28:05 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

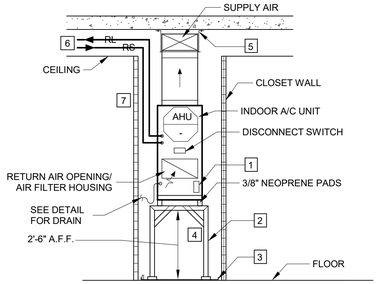
THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-6

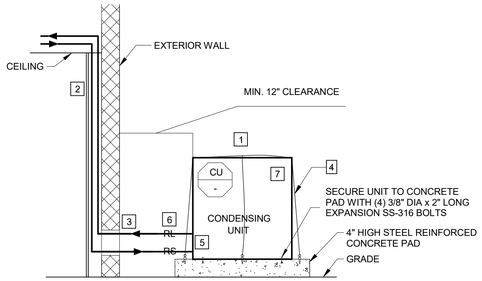
MECHANICAL SCHEDULES



NOTES:

1. AUX. FLOAT SWITCH INLINE EQUAL EZ TRAP. INC, MODEL "EZT-225" FLOAT SWITCH SHALL STOP INDOOR A/C UNIT IF INDICATED.
2. ALL WELDED, HOT DIP GALVANIZED STEEL ANGLE FRAME SUPPORT WITH DIAGONAL BRACING. STEEL ANGLES SHALL BE 2" X 2" X 1/2", AND BASE PLATES SHALL BE 4" X 4" X 1/8".
3. GALVANIZED AUXILIARY DRAIN PAN WITH FLOAT SWITCH (WATER LEVEL DETECTION DEVICE) WIRED TO SHUT DOWN INDOOR A/C UNIT. PAN SHALL BE MIN. 1.5" DEEP AND BE AT LEAST 3" LARGER THAN THE UNIT ON ALL DIRECTIONS. GALVANIZED SHEET STEEL PAN SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN No. 24 GAGE.
4. NO COMBUSTIBLES OR DETERGENTS ALLOWED WITHIN A/C CLOSET.
5. INDOOR A/C UNIT CONNECTION TO SUPPLY AIR PLENUM SHALL BE COMPLETED PER SMACNA G.G.PAG#2.14 DETAIL.
6. REFRIGERANT PIPING FROM CONDENSING UNIT. PIPING TO BE SIZED PER MANUFACTURER RECOMMENDATION.
7. PROVIDE MINIMUM WORKING SPACE CLEARANCE OF 4 INCHES ALONG SIDES, BACK, AND TOP WITH A TOTAL WIDTH OF THE ENCLOSING SPACE BEING NOT LESS THAN 12 INCHES WIDER THAN THE AHU IN COMPLIANCE WITH 2023 FBC-M-306.1.1 REQUIREMENTS.

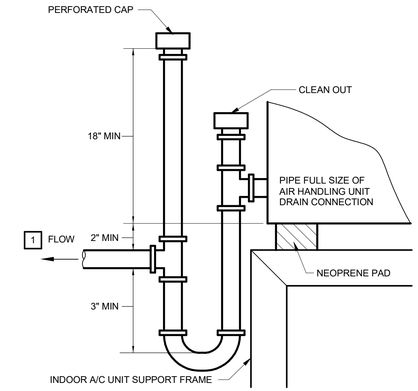
1 INDOOR AIR CONDITIONING UNIT IN CLOSET DETAIL
N.T.S.



NOTES:

1. MAINTAIN MINIMUM CLEARANCE FOR AIR DISCHARGE BY MANUFACTURER'S RECOMMENDATION.
2. RUN REFRIGERANT PIPING INSIDE WALL CAVITY. SECURE TO WALL STRUCTURE AS REQUIRED.
3. PROVIDE SCH. 40 PVC PIPE SLEEVE AT WALL PENETRATION AND SEAL WATERTIGHT.
4. CABLE SYSTEM: (2) 1/8" 316-STAINLESS STEEL CABLES WRAPPED AROUND THE LENGTH AND WIDTH OF THE UNIT; CABLES ARE CROSS-CONNECTED. PROVIDE ONE TURNBUCKLE PER CABLE. SECURE CABLES TO CONCRETE PAD WITH 3/8" 316-STAINLESS STEEL EYE BOLT SCREEWED INTO CONCRETE EXPANSION ANCHOR; TOTAL OF (4) EYE BOLTS AND EXPANSION ANCHORS.
5. REFRIGERANT CIRCUIT ACCESS PORTS SHALL BE FITTED WITH LOCKING-TYPE TAMPER-RESISTANT CAPS.
6. SIZING OF SUCTION AND LIQUID REFRIGERANT PIPES SHALL BE AS RECOMMENDED BY EQUIPMENT MANUFACTURER.
7. CONDENSING UNIT TO BE PROVIDED WITH REQUIRED WIND LOAD CERTIFICATE SHOWING THAT UNIT IS DESIGNED TO WITHSTAND HIGH WIND VELOCITIES AS REQUIRED BY MIAMI-DADE. UNIT MUST BE INSTALLED TO WITHSTAND 175 MPH HURRICANE FORCE WINDS.

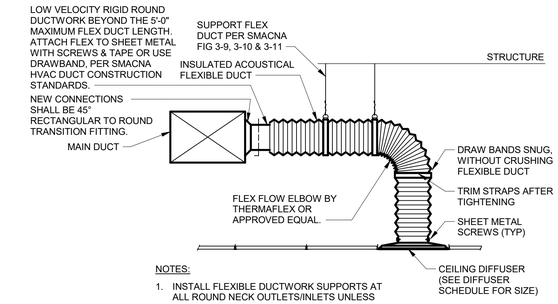
2 CONDENSING UNIT SUPPORT DETAIL
N.T.S.



NOTE:

1. ROUTE TO NEAREST SANITARY (FLOOR) DRAIN OR ROOF DRAIN. SLOPE AT 1/4" PER FOOT.

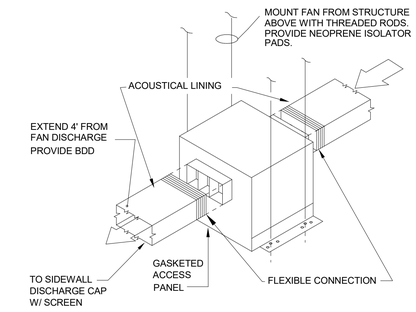
3 CONDENSATE DRAIN TRAP
N.T.S.



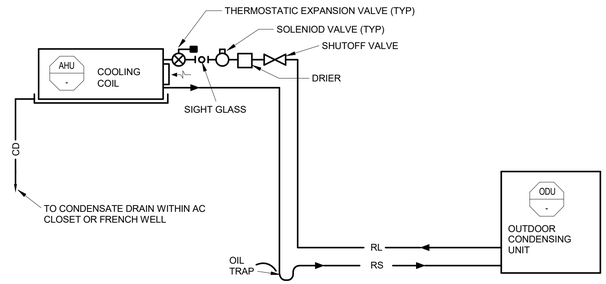
NOTES:

1. INSTALL FLEXIBLE DUCTWORK SUPPORTS AT ALL ROUND NECK OUTLETS/INLETS UNLESS OTHERWISE NOTED ON DRAWINGS.
2. FLEXIBLE DUCT LENGTH SHALL BE A MINIMUM 3'-0" AND A MAXIMUM OF 5'-0".
3. CONNECT FLEXIBLE DUCTWORK TO DIFFUSER WITH MINIMUM FOUR(4) SHEET METAL SCREWS.

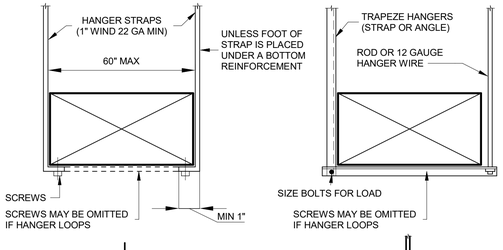
6 FLEXIBLE DUCT CONNECTION TO AIR OUTLET/INLET
N.T.S.



4 INLINE FAN MOUNTING DETAIL
N.T.S.



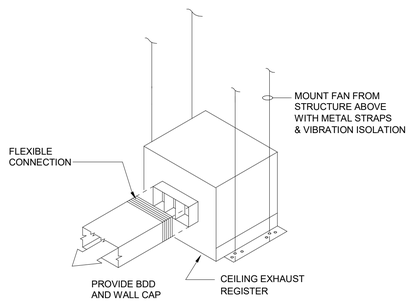
5 SPLIT REFRIGERANT CIRCUIT DETAIL
N.T.S.



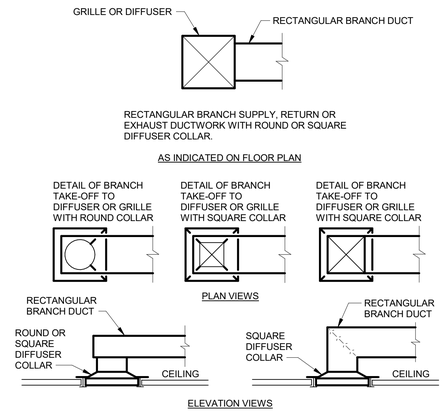
NOTES:

1. MINIMUM 1-1/4" STRAP HANGER.
2. POWDER ACTUATED FASTENERS ARE NOT ALLOWED.
3. GALVANIZED SHEET METAL DUCT TO BE A MINIMUM 26 GA. ALL DUCTWORK REINFORCING SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE.

9 DUCT HANGER AND SUPPORTS DETAILS
N.T.S.



7 GARAGE EXHAUST FAN INSTALLATION DETAIL
N.T.S.



8 RIGID DUCTWORK CONNECTION DETAIL
N.T.S.

MIK ARCHITECTURE

MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agd@agdmi.com
dev-engineer@agdmiami.com

R&D ENGINEERS, LLC

R&D ENGINEERS LLC
7920 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
info@rndengineers.com
drn-br@rndengineers.com

NEW SINGLE FAMILY RESIDENCE

AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO LUIS RIVAS PRIETO — LICENSE — No. 86717 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:28:17 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

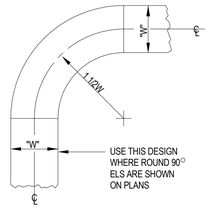
THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS.

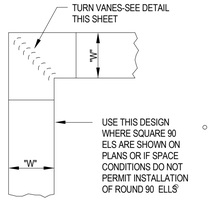
SHEET No.

M-7

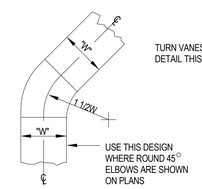
MECHANICAL DETAILS



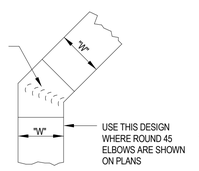
ROUND 90° ELBOW



SQUARE 90° ELBOW



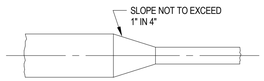
ROUND 45° ELBOW



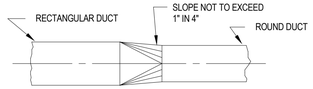
SQUARE 45° ELBOW

CONSTRUCTION OF 90° ELBOWS

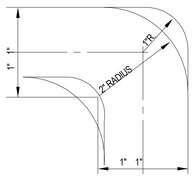
CONSTRUCTION OF 45° ELBOWS



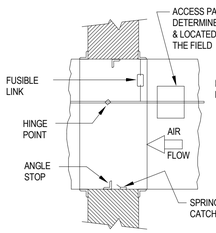
TYPICAL RECTANGULAR TRANSITION



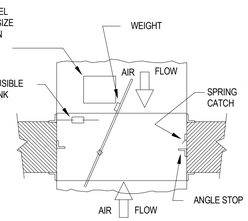
TYPICAL RECTANGULAR TO ROUND TRANSITION



DETAIL OF TURN VANES

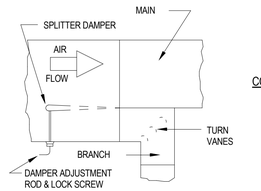


HORIZONTAL

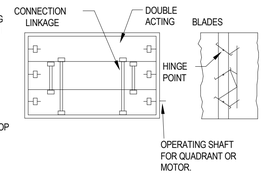


VERTICAL

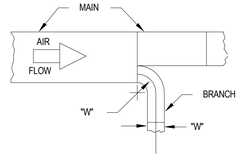
TYPICAL FIRE DAMPER



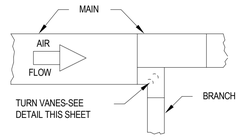
TYPICAL SPLITTER DAMPER



TYPICAL VOLUME DAMPER



ROUND BRANCH TAKEOFF



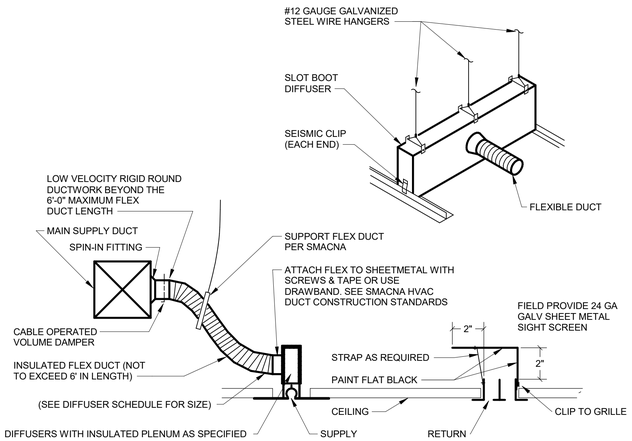
SQUARE BRANCH TAKEOFF

CONSTRUCTION OF BRANCH TAKEOFFS FROM MAIN

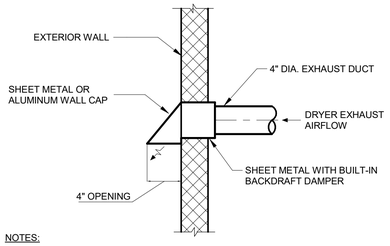
INSTALLATION NOTES

1. ALL DUCTS SHALL BE CONSTRUCTED AND ERECTED IN A NEAT AND WORKMANLIKE MANNER.
2. DUCTS SHALL BE CONSTRUCTED OF THE WEIGHTS, GAGES AND MATERIAL SHOWN IN THE SCHEDULE ON THESE DRAWINGS.
3. THE DIMENSION SHOWN FOR ALL DUCTS SHOWN IN PLAN GIVE THE WIDTH FIRST AND THEN THE HEIGHT.
4. DUCT RISERS SHOULD BE SUPPORTED BY ANGLES AT EVERY FLOOR.
5. AIR TURN SHALL BE INSTALLED IN ALL ABRUPT ELBOWS TO PREVENT TURBULENCE.
6. DUCTS SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION IN AN APPROVED MANNER.
7. DIVERGING TRANSITION PIECES SHALL BE MADE AS GRADUAL AS POSSIBLE.
8. INSTALL FIRE DAMPERS IN ACCORDANCE WITH UL 555.
9. ACCESS PANELS SHOULD BE PLACED BEFORE AND/OR AFTER EQUIPMENT INSTALLED IN THE DUCT.
10. DUCT AREA SHOULD NOT BE DECREASED MORE THAN 10 PERCENT WHEN OBSTRUCTIONS CANNOT BE AVOIDED, AND THEN A STREAMLINED FITTING SHOULD BE USED.
11. FLEXIBLE FABRIC CONNECTIONS (OR EQUAL) SHOULD BE USED ON BOTH INLETS AND OUTLETS OF ALL FANS AND AIR HANDLING UNITS.
12. JOINTS AND SEAMS OF SUPPLY DUCTS SHALL BE FASTENED SECURELY AND MADE AIR TIGHT.

1 TYPICAL DUCTWORK DETAILS
N.T.S.



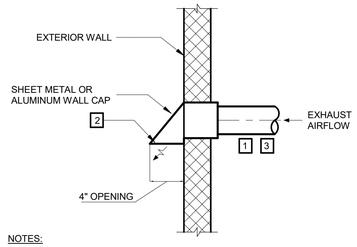
2 LINEAR DIFFUSER INSTALLATION DETAIL
N.T.S.



NOTES:

1. DRYER DUCT SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF FLORIDA BUILDING CODE - M - SECTION 504.
2. DRYER EXHAUST DUCT SHALL BE CONSTRUCTED OF A MIN. 26 GA. SHEET METAL, HAVING A SMOOTH INTERIOR SURFACE WITH JOINTS RUNNING IN THE DIRECTION OF AIRFLOW. DUCT JOINTS SHALL NOT BE ASSEMBLED WITH SHEET METAL SCREWS OR OTHER FASTENED WHICH WOULD EXTEND INTO THE DUCT.
3. DRYER EXHAUST DUCT SHALL TERMINATE NOT LESS THAN 3 FEET IN ANY DIRECTION FROM OPENINGS INTO THE BUILDING.
4. DRYER EXHAUST TERMINATION SHALL COMPLY WITH REQUIREMENTS OF 2020 FBC-RESIDENTIAL SECTION M1502.3 AND HAVE AT LEAST 12.5 SQ.IN. OF FREE AREA.

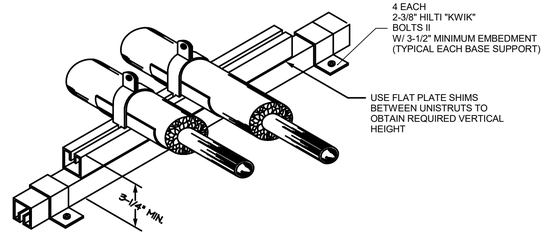
3 DRYER EXHAUST WALL CAP
N.T.S.



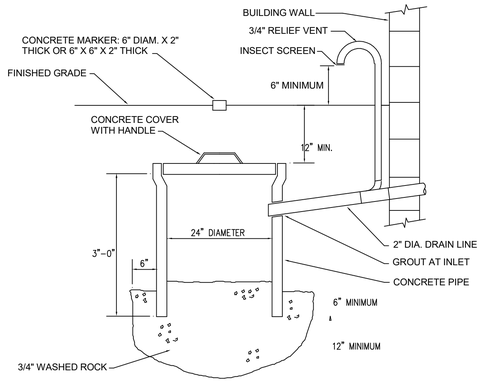
NOTES:

1. EXHAUST DUCT SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF 2020 FLORIDA BUILDING CODE - R - SECTION 1601.
2. OPENING SHALL BE PROTECTED WITH CORROSION RESISTANT SCREEN SIZED NOT LESS THAN 1/4" AND NOT LARGER THAN 1/2".
3. EXHAUST DUCT SHALL INCLUDE BACKDRAFT DAMPER. SEE MECHANICAL FLOOR PLAN FOR LOCATION.

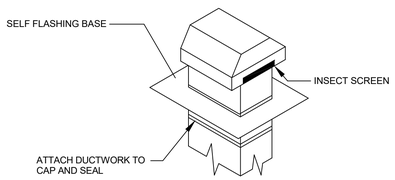
4 EXHAUST WALL CAP
N.T.S.



5 PIPE SUPPORT DETAIL
N.T.S.



6 PIPE SUPPORT DETAIL
N.T.S.



7 ROOF CAP DETAIL
N.T.S.

MIK ARCHITECTURE
MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
+1 786.738.0880
hello@mikarch.com

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 302
MIAMI, FLORIDA 33145
agd@miami.com
dev-engineer@agdmiami.com

R&D ENGINEERS LLC
7920 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
(786) 615-3991
dev-br@rndengineers.com

NEW SINGLE FAMILY RESIDENCE
AGD CALLISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES
JUN 2024 1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

Digitally signed by Alejandro L Rivas Prieto
Date: 2025.05.05 14:29:30 -04'00'

THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.

M-8

MECHANICAL DETAILS

BASIC MECHANICAL REQUIREMENTS
SUBMITTALS: FOLLOW THE PROCEDURES SPECIFIED IN DIVISION 01. PDF-FORMAT ELECTRONIC SUBMISSIONS ARE PREFERRED. FOR PRINTED SUBMISSIONS, INCREASE BY TWO (2) THE QUANTITY OF COPIES REQUIRED BY THE GENERAL CONDITIONS FOR SUBMITTALS. PRODUCT DATA SHALL BE MARKED TO IDENTIFY THE EXACT MODEL NUMBER AND OPTIONS THAT ARE TO BE PROVIDED. SUBMIT LINE-BY-LINE SPECIFICATION VERIFICATION FOR EQUIPMENT OTHER THAN THE “BASIS OF DESIGN”. ANY DEVIATION FROM SPECIFIED ITEMS IS CONSIDERED A SUBSTITUTION.

RECORD DOCUMENTS: FOLLOW THE PROCEDURES SPECIFIED IN DIVISION 01. INCLUDE DUCTWORK MAINS AND BRANCHES, LOCATIONS OF DAMPERS, FILTERS, BOXES, AND TERMINAL UNITS, MAINS AND BRANCHES OF PIPING SYSTEMS WITH VALVES AND CONTROL DEVICES LOCATED, VALVE LOCATION DIAGRAMS AND VALVE TAG CHART, EQUIPMENT LOCATIONS (EXPOSED AND CONCEALED) DIMENSIONED FROM PROMINENT BUILDING LINES, APPROVED SUBSTITUTIONS, CONTRACT MODIFICATIONS, AND ACTUAL EQUIPMENT AND MATERIALS INSTALLED.

OPERATION AND MAINTENANCE (O&M) MANUALS: PREPARE IN ACCORDANCE WITH ASHRAE GUIDELINE 4 AND SUBMIT FOUR (4) COPIES. THESE MANUALS SHALL BE A VINYL THREE RING BINDER WHICH SHALL BE LABELLED WITH THE OWNER'S PROJECT NAME AND NUMBER ON THE BINDER. THE O&M MANUALS SHALL INCLUDE PRODUCT DATA CUT SHEETS, MAINTENANCE REQUIREMENTS, PROGRAMMING INSTRUCTIONS AND WARRANTIES OF ALL EQUIPMENT.

IAQ: DURING CONSTRUCTION, MEET OR EXCEED THE RECOMMENDED DESIGN APPROACHES OF SMACNA *IAQ GUIDELINE FOR OCCUPIED BUILDINGS UNDER CONSTRUCTION*. PROTECT STORED ON-SITE OR INSTALLED ABSORPTIVE MATERIALS FROM MOISTURE DAMAGE. MATERIALS DIRECTLY EXPOSED TO MOISTURE VIA PRECIPITATION, WATER LEAKS, OR CONDENSATION SHALL BE REMOVED FROM THE JOBSITE AND REPLACED. IF PERMANENT BUILDING DUCTWORK AND AIR HANDLING EQUIPMENT ARE USED FOR TEMPORARY VENTILATION DURING CONSTRUCTION, FILTRATION MEDIA WITH A MERV-8 OR BETTER SHALL BE USED AT EACH AND EVERY RETURN AIR OPENING FOR THE DURATION OF OPERATION. LIST EACH AIR FILTER USED DURING CONSTRUCTION.

TEMPORARY VENTILATION: PROVIDE TEMPORARY DUCTWORK AND FAN SYSTEMS TO EXHAUST THE CONSTRUCTION AREAS, PROVIDING NEGATIVE PRESSURES IN RELATION TO ADJACENT NON-CONSTRUCTION (OCCUPIED) AREAS, OF 0.05-INCH W.C. ADJUSTABLE. ROUTE THROUGH OPENINGS TO THE EXTERIOR, SUCH AS WINDOWS, AND DISCHARGED AT A SAFE LOCATION. SIZE FOR 0.5 CFM PER SQUARE FOOT OF CONSTRUCTION ZONE SERVED. MONITOR NEGATIVE PRESSURE WITH MODEL SPM-5100 BY TEK-AIR SYSTEMS, INC. OR APPROVED EQUAL.

BUILDING FLUSH-OUT: AFTER CONSTRUCTION ENDS BUT PRIOR TO OCCUPANCY, CONDUCT A MINIMUM TWO-WEEK BUILDING FLUSH-OUT USING PERMANENT BUILDING DUCTWORK AND AIR HANDLING EQUIPMENT. FLUSH-OUT SHALL USE 100% OUTDOOR AIR AND MERV-13 OR BETTER FILTRATION MEDIA. REPLACE ALL FILTRATION MEDIA IMMEDIATELY PRIOR TO OCCUPANCY.

MOTORS
MOTORS ½ HP AND LARGER: THREE-PHASE, ODP, “PREMIUM EFFICIENCY” AS DEFINED IN NEMA MG 1 PART 31. 1.15 SERVICE FACTOR, RATED FOR CONTINUOUS DUTY AT 104 DEGF AND 3300 FEET ALTITUDE. MEDIUM INDUCTION MOTOR, DESIGN E, COPPER WINDINGS, REGREASABLE SHIELDED ANTI-FRICTION BALL BEARINGS, AND CLASS F INSULATION. IF VFD IS INDICATED, MOTOR SHALL BE INVERTER-DUTY OR INVERTER-READY AND SHALL NOT REQUIRE THE USE OF EXTERNAL COOLING FANS. IF VFD IS INDICATED, INCLUDE A SHAFT GROUNDING RING ON THE DRIVE END OF THE MOTOR, “AEGIS SGR” BY ELECTRO STATIC TECHNOLOGY OR APPROVED EQUAL. MOTORS SHALL BE UL-LABELED.

MOTORS SMALLER THAN ½ HP: SINGLE PHASE, ECM, ODP, VARIABLE-SPEED, DC BRUSHLESS MOTOR WITH HEAVY-DUTY PERMANENTLY-LUBRICATED BALL BEARINGS AND ELECTRIC COMMUTATION. THE ECM SHALL BE SPEED-CONTROLLABLE DOWN TO 20% OF FULL SPEED VIA EXTERIOR-MOUNTED FIELD-ADJUSTABLE POTENTIOMETER DIAL OR DDC CONTROL SIGNAL INPUT. MINIMUM 70% EFFICIENCY AT ALL SPEEDS. SYNCHRONOUS ROTOR, PERMANENT MAGNET TYPE, BUILT-IN SOFT START, AND 1.35 SERVICE FACTOR RATED FOR CONTINUOUS DUTY AT 104 DEGF AND 3300 FEET ALTITUDE. INCLUDE AUTO-RESET THERMAL PROTECTION.

INSTALLATION: USE ADJUSTABLE MOTOR MOUNTING BASES FOR BELT-DRIVEN MOTORS. ALIGN MOTORS, BASES, SHAFTS, PULLEYS, AND BELTS. TENSION BELTS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

HANGERS AND SUPPORTS
PIPE HANGERS AND SUPPORTS: MSS SP-58, TYPES 1 THROUGH 58, CONTINUOUS-THREAD ROD, NUTS, AND WASHER MADE OF CARBON STEEL. COMPLY WITH MSS SP-69 FOR PIPE HANGER AND TRAPEZE SELECTIONS AND APPLICATIONS. COMPLY WITH MFMA-102 FOR METAL FRAMING SYSTEM SELECTIONS AND APPLICATIONS.
TRAPEZE PIPE HANGERS: MSS SP-69, TYPE 59, SHOP- OR FIELD-FABRICATED PIPE-SUPPORT ASSEMBLY MADE FROM STRUCTURAL CARBON-STEEL SHAPES WITH MSS SP-58 CARBON-STEEL HANGER RODS, NUTS, SADDLES, AND U-BOLTS.
METAL FRAMING SYSTEMS: SHOP- OR FIELD-FABRICATED PIPE-SUPPORT ASSEMBLY FOR SUPPORTING MULTIPLE PARALLEL PIPES, ACCORDING TO STANDARD MFMA-4. CONTINUOUS SLOTTED STEEL CHANNEL WITH INTURNED LIPS, AND FORMED OR STAMPED STEEL NUTS OR OTHER DEVICES DESIGNED TO FIT INTO CHANNEL SLOT AND, WHEN TIGHTENED, PREVENT SLIPPING ALONG CHANNEL.

ROOF CURB-TYPE EQUIPMENT RAILS: 18-GAUGE GALVANIZED STEEL, UNITIZED CONSTRUCTION WITH INTEGRAL BASE PLATE, CONTINUOUS WELDED CORNER SEAMS, PRESSURE-TREATED WOOD NAILER, COUNTER-FLASHING WITH SCREWS. INTERNALLY REINFORCED TO CONFORM WITH LOAD BEARING FACTORS. WOOD NAILER SHALL INCLUDE 1-INCH OVERHANG UNLESS OTHERWISE NOTED. THE PATE COMPANY'S MODEL ES-5B OR APPROVED EQUAL.

FOR PIPING OPERATING ABOVE AMBIENT AIR TEMPERATURE, CLEVIS- AND CLAMP-TYPE SUPPORTS SHALL PROJECT THROUGH INSULATION, WITH PIPE SUPPORT MAKING DIRECT CONTACT WITH PIPE. FOR PIPING OPERATING BELOW AMBIENT AIR TEMPERATURE, CLEVIS- AND CLAMP-TYPE SUPPORTS SHALL BE SIZED FOR THE OUTSIDE DIAMETER OF THE INSULATION INCLUDING JACKET. INSTALL MSS SP-58, TYPE 40 PROTECTIVE METAL SHIELDS. SHIELDS SHALL SPAN AN ARC OF 180 DEGREES.

INSTALLATION: DO NOT SUSPEND PIPE HANGERS AND SUPPORTS FROM ROOF DECK. SUSPEND SUCH LOADS FROM STRUCTURAL STEEL ONLY, AND PROVIDE STRUCTURAL STEEL SUB-FRAMING AS REQUIRED. DO NOT SUSPEND PIPING LOADS EXCEEDING 500 POUNDS WITHIN ANY 100 SQUARE FEET OF CONTIGUOUS AREA FROM SUPPORTED CONCRETE FLOOR SLABS. SUSPEND SUCH LOADS FROM STRUCTURAL MEMBERS ONLY, AND PROVIDE STRUCTURAL STEEL SUB-FRAMING AS REQUIRED. TRIM EXCESS LENGTH OF CONTINUOUS-THREAD HANGER AND SUPPORT RODS TO 1½-INCHES.

TESTING, ADJUSTING, AND BALANCING (TAB)
AGENT QUALIFICATIONS: ENGAGE A TAB AGENT CERTIFIED BY EITHER AABC OR NEBB. CERTIFY THE TESTING, ADJUSTING, AND BALANCING FIELD DATA REPORTS AND USE STANDARD FORMS AND PROCEDURES FROM AABC OR FROM NEBB.

EXAMINE CONTRACT DOCUMENTS, APPROVED SUBMITTAL DATA, FAN AND PUMP CURVES, ETC., TO BECOME FAMILIAR WITH PROJECT. EXAMINE HVAC SYSTEM AND EQUIPMENT INSTALLATIONS TO VERIFY THAT INDICATED BALANCING DEVICES, SUCH AS TEST PORTS, GAGE COCKS, THERMOMETER WELLS, FLOW-CONTROL DEVICES, BALANCING VALVES AND FITTINGS, AND MANUAL VOLUME DAMPERS, ARE PROPERLY INSTALLED, AND THEIR LOCATIONS ARE ACCESSIBLE AND APPROPRIATE FOR EFFECTIVE BALANCING.

SET ALL HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN PLUS OR MINUS 5 PERCENT TOLERANCE, EXCEPT THAT INDIVIDUAL AIR INLETS AND AIR OUTLETS MAY BE SET WITHIN PLUS OR MINUS 10 PERCENT TOLERANCE. MEASURE AND VERIFY WATER FLOW RATES AT EACH TERMINAL EVEN IF BALANCE VALVE ADJUSTMENT IS NOT APPLICABLE.
SUBMIT FINAL REPORT INCLUDING A SIGNED AND SEALED CERTIFICATION SHEET, A LIST OF THE INSTRUMENTS USED, PROOF OF CALIBRATION, PUMP CURVES, FAN CURVES, AND DATA FOR ALL TESTED SYSTEMS AND EQUIPMENT.

MECHANICAL INSULATION
REGULATORY: INSULATION AND RELATED MATERIALS SHALL HAVE FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS, AS DETERMINED BY ASTM E84.

FLEXIBLE ELASTOMERIC: CLOSED-CELL, ASTM C534, TYPE I FOR TUBULAR MATERIALS AND TYPE II FOR SHEET MATERIALS, WITH THERMAL CONDUCTIVITY OF 0.28 AT 75 DEGF. “AP ARMAFLEX” BY ARMACELL LLC OR APPROVED EQUAL.

PVC FIELD JACKET: ASTM C921, TYPE I, HIGH-IMPACT-RESISTANT, UV-RESISTANT PVC MEETING ASTM D1784, CLASS 16354-C. USE ON ALL OUTDOOR MINERAL-FIBER PIPING AND INDOOR MINERAL-FIBER FITTINGS.

DUCT INSULATION INSTALLATION: INSULATE ALL OUTDOOR AIR DUCTS WITH 2-INCH THICK BLANKET UNO. FOR EXPOSED RECTANGULAR DUCTS USE 2-INCH THICK BOARD. FOR OUTDOOR DUCTS, INCREASE THICKNESS TO 2-INCH AND INCLUDE ALUMINUM FIELD JACKET OF ASTM B209 ALLOY 3003, STUCCO EMBOSSED WITH Z-SHAPED LOCKING SEAM, 0.024-INCH THICK, WITH 3-MIL-THICK HEAT-BONDED POLYETHYLENE MOISTURE BARRIER AND KRAFT PAPER. SECURE ALL INSULATION ON DUCTS AND PLENUMS WITH INSULATION PINS. FOR DUCTS AND PLENUMS WITH SURFACE TEMPERATURES BELOW AMBIENT, INSTALL A CONTINUOUS UNBROKEN VAPOR BARRIER.

REFRIGERANT PIPING
COPPER TUBE: ASTM B280, TYPE ACR. WROUGHT-COPPER FITTINGS: ASME B16.22. WROUGHT-COPPER UNIONS: ASME B16.22. SOLDER FILLER METALS: ASTM B 32. USE 95-5 TIN ANTIMONY OR ALLOY HB SOLDER TO JOIN COPPER SOCKET FITTINGS ON COPPER PIPE. SUCTION LINES, HOT-GAS AND LIQUID LINES: COPPER, TYPE ACR, DRAWN-TEMPER TUBING AND WROUGHT-COPPER FITTINGS WITH SOLDERED JOINTS. SAFETY-RELIEF-VALVE DISCHARGE PIPING: COPPER, TYPE ACR, DRAWN-TEMPER TUBING AND WROUGHT-COPPER FITTINGS WITH SOLDERED JOINTS. CONDENSATE DRAIN: DWV COPPER TUBING, ASTM B306.

INSTALLATION: DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS; INDICATED LOCATIONS AND ARRANGEMENTS WERE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON SHOP DRAWINGS. INSTALL REFRIGERANT PIPING ACCORDING TO ASHRAE STANDARD 15-2016. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL. INSTALL PIPING ADJACENT TO MACHINES TO ALLOW SERVICE AND MAINTENANCE. INSTALL PIPING FREE OF SAGS AND BENDS. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS. SELECT SYSTEM COMPONENTS WITH PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.

INSTALL PIPING AS SHORT AND DIRECT AS POSSIBLE, WITH A MINIMUM NUMBER OF JOINTS, ELBOWS, AND FITTINGS. ARRANGE PIPING TO ALLOW INSPECTION AND SERVICE OF REFRIGERATION EQUIPMENT.

VALVES AND SPECIALTIES: INSTALL IN ACCESSIBLE LOCATIONS TO ALLOW FOR SERVICE AND INSPECTION. INSTALL ACCESS DOORS OR PANELS AS SPECIFIED IN DIVISION 08 SECTION “ACCESS DOORS AND FRAMES” IF VALVES OR EQUIPMENT REQUIRING MAINTENANCE IS CONCEALED BEHIND FINISHED SURFACES.

UNDERGROUND PIPING: INSTALL REFRIGERANT PIPING IN PROTECTIVE CONDUIT WHERE INSTALLED BELOWGROUND. INSTALL REFRIGERANT PIPING IN RIGID OR FLEXIBLE CONDUIT IN LOCATIONS WHERE EXPOSED TO MECHANICAL INJURY.

SLOPE REFRIGERANT PIPING AS FOLLOWS:INSTALL HORIZONTAL HOT-GAS DISCHARGE PIPING WITH A UNIFORM SLOPE DOWNWARD AWAY FROM COMPRESSOR. INSTALL HORIZONTAL SUCTION LINES WITH A UNIFORM SLOPE DOWNWARD TO COMPRESSOR. INSTALL TRAPS AND DOUBLE RISERS TO ENTRAIN OIL IN VERTICAL RUNS. LIQUID LINES MAY BE INSTALLED LEVEL.

WHEN BRAZING OR SOLDERING, REMOVE SOLENOID-VALVE COILS AND SIGHT GLASSES; ALSO REMOVE VALVE STEMS, SEATS, AND PACKING, AND ACCESSIBLE INTERNAL PARTS OF REFRIGERANT SPECIALTIES. DO NOT APPLY HEAT NEAR EXPANSION-VALVE BULB.

INSTALL PIPE SLEEVES AT PENETRATIONS IN EXTERIOR WALLS AND FLOOR ASSEMBLIES. SEAL PENETRATIONS THROUGH FIRE AND SMOKE BARRIERS ACCORDING TO DIVISION 07 SECTION “THROUGH-PENETRATION FIRESTOP SYSTEMS.” SEAL PIPE PENETRATIONS THROUGH EXTERIOR WALLS ACCORDING TO DIVISION 07 SECTION “JOINT SEALANTS” FOR MATERIALS AND METHODS INSTALL PIPING WITH ADEQUATE CLEARANCE BETWEEN PIPE AND ADJACENT WALLS AND HANGERS OR BETWEEN PIPES FOR INSULATION INSTALLATION.

INSTALL SLEEVES THROUGH FLOORS, WALLS, OR CEILINGS, SIZED TO PERMIT INSTALLATION OF FULL-THICKNESS INSULATION.

HVAC DUCTWORK
ANSI/SMACNA STANDARD 006-2006 *HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE*, AS PUBLISHED BY SMACNA, 3RD ED. 2005. COMPLY WITH REQUIREMENTS FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE-ROD APPLICATIONS, DEFLECTION LIMITS, AND JOINT TYPES AND INTERVALS, EXCEPT AS NOTED. NO MATERIAL THINNER THAN 26-GAGE IS PERMITTED FOR SPIRAL-SEAM ROUND DUCT, AND NO MATERIAL THINNER THAN 24-GAGE IS PERMITTED FOR ALL OTHER DUCTS.

ALL MATERIALS SPECIFIED IN THIS SECTION SHALL HAVE A MAXIMUM FLAME-SPREAD INDEX OF 25 AND SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO ASTM E84.

GALVANIZED SHEET DUCT: COMPLY WITH ASTM A653, WITH COATING DESIGNATION G60 OR G90 AND WITH MILL-PHOSPHATIZED FINISH FOR SURFACES EXPOSED TO VIEW.

SUPPLY AND RETURN AIR DUCTWORK SHALL BE CLASS 1 FIBERGLASS DUCT BOARD WITH A MINIMUM R-6.0 INSULATION VALUE UNLESS OTHERWISE INDICATED ON MECHANICAL SCHEDULES OR PLANS, CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE LATEST SMACNA FIBROUS DUCT AND CONSTRUCTION STANDARDS. ALL DUCT JOINTS SHALL BE SEALED AND TAPED.

OUTSIDE AIR, TOILET AND KITCHEN HOOD EXHAUST DUCTWORK SHALL BE SMOOTH GALVANIZED SHEET METAL CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA'S LOW PRESSURE DUCT MANUAL. UNDERGROUND DOWNDRAFT HOOD DUCT SHALL BE PROVIDED IN SCH 40 PVC PIPE.

FIBROUS-GLASS DUCT LINER: ASTM C1071 FLEXIBLE BONDED MAT OF GLASS FIBER; SURFACES EXPOSED TO AIRSTREAM SHALL BE COATED TO PREVENT EROSION OF GLASS FIBERS. COMPLY WITH NFPA 90A AND WITH NAIMA AH124. 1-INCH THICKNESS; 1½-POUND DENSITY; K-VALUE NOT MORE THAN 0.26 AT 75ºF; RATED FOR 4000 FPM AND 150°F AIR TEMPERATURE; 0.60 NOISE REDUCTION COEFFICIENT. DUCT SIZES SHOWN ON PLANS ARE FREE AREA SIZES AND DO NOT INCLUDE THE THICKNESS OF INTERNAL DUCT LINER, IF ANY. FOR INTERNALLY LINED DUCTWORK, INCREASE THE INDICATED DUCT DIMENSIONS TO ACCOUNT FOR THE LINER THICKNESS. THE FIRST 10 TO 20 FEET (OR TO THE FIRST DIFFUSER TAP) OF DUCTWORK DOWNSTREAM OF EACH FAN TERMINAL UNIT OR VAV BOX WILL BE INTERNALLY LINED WITH 1-INCH THICK, 1½-POUND DENSITY COATED FIBERGLASS DUCT LINER.

CROSS BREAKING OR CROSS BEADING: CROSS BREAK OR CROSS BEAD DUCT SIDES 19 INCHES AND LARGER AND 0.0359-INCH THICK OR LESS, WITH MORE THAN 10 SF OF UNBRACED PANEL AREA, UNLESS DUCTS ARE LINED.

LONGITUDINAL SEAMS: CONTRACTOR'S CHOICE OF PITTSBURGH LOCK (SMACNA FIGURE 2-2 TYPE L-1) OR BUTTON PUNCH SNAP LOCK (SMACNA FIGURE 2-2 TYPE L-2) SHALL BE USED ON ALL LONGITUDINAL SEAMS.

ALL SQUARE-THROAT ELBOWS OF ANGLE GREATER THAN 45° SHALL INCLUDE TURNING VANES. DIVIDED FLOW BRANCHES SHALL BE TYPE 1 OR TYPE 2 PER SMACNA FIGURE 4-5. TYPE 3 DIVIDED FLOW BRANCHES ARE PERMITTED ONLY WHERE EXPRESSLY SHOWN. SEEK ENGINEER'S APPROVAL OF TYPE 3 WHERE SPACE AND/OR LAYOUT CLEARANCES PROHIBIT TYPE 1 OR TYPE 2.
BRANCH CONNECTIONS SHALL BE PER SMACNA FIGURE 4-6, EXCEPT THAT STRAIGHT TAPS ARE NOT PERMITTED ON ANY DUCTS 2-INCH PRESSURE CLASS OR ABOVE. STRAIGHT-TAP “SPIN-IN” FITTINGS ARE PERMITTED ON ½-INCH AND 1-INCH PRESSURE CLASS DUCTWORK ONLY.

OFFSETS AND TRANSITIONS SHALL BE PER SMACNA FIGURE 4-7, EXCEPT THAT OFFSET TYPE 2 (MITERED) IS LIMITED TO AN ANGLE OF 45°.

FITTINGS AT OBSTRUCTIONS SHALL BE PER SMACNA FIGURE 4-8, EXCEPT THAT FIGURE D IS NOT PERMITTED. USE FIGURE 4-8.B IN LIEU OF FIGURE 4-8.D. SEEK ENGINEER'S APPROVAL OF FIGURE 4-8.D WHERE SPACE AND/OR LAYOUT CLEARANCES PROHIBIT USE OF FIGURE 4-8.B.

LONGITUDINAL-SEAM ROUND DUCTS (“STOVEPIPE”) OF A MINIMUM 24-GAGE THICKNESS, WILL BE PERMITTED ON ½-INCH AND 1-INCH PRESSURE CLASSIFICATIONS ONLY; AND ONLY IF THE SEAL CLASS SPECIFIED CAN BE ACHIEVED.

HANGER MATERIALS: GALVANIZED SHEET STEEL OR THREADED STEEL ROD. SUPPORTS FOR STAINLESS-STEEL DUCTS SHALL BE STAINLESS-STEEL; SUPPORTS FOR ALUMINUM DUCTS SHALL BE ALUMINUM UNLESS MATERIALS ARE ELECTROLYTICALLY SEPARATED FROM DUCTS.

ALL SUPPORTING MATERIAL SURFACES IN DIRECT CONTACT WITH SUPPORTED DUCTWORK (OR FLEXIBLE DUCT, OR DUCT INSULATION, AS APPLICABLE) SHALL BE DESIGNED TO MAINTAIN A MINIMUM OF ONE-INCH CONTACT WIDTH ALONG FULL LENGTH OF CONTACT.

STATIC-PRESSURE CLASSES:
CONSTANT-VOLUME SUPPLY DUCTS: 2-INCH WG.
VARIABLE-VOLUME SUPPLY DUCTS UPSTREAM OF VAV BOXES: 3-INCH WG.
VARIABLE-VOLUME SUPPLY DUCTS DOWNSTREAM OF VAV BOXES: 1-INCH WG.
OUTDOOR AIR DUCTS: 2-INCH WG, POSITIVE OR NEGATIVE PRESSURE AS APPLICABLE.
RETURN DUCTS: 2-INCH WG, POSITIVE OR NEGATIVE PRESSURE AS APPLICABLE.
TRANSFER DUCTS: 1/2-INCH WG.
EXHAUST DUCTS: 2-INCH WG, POSITIVE OR NEGATIVE PRESSURE AS APPLICABLE.
SEAL CLASS SCHEDULE: SEAL CLASS A AND LEAKAGE CLASS 4 IS REQUIRED FOR ALL DUCTS EXCEPT THAT SPIRAL LOCK-SEAMS, TRANSFER AIR DUCTS, AND TRANSFER AIR BOOTS NEED NOT BE SEALED.

DUCT ACCESSORIES
REGULATORY: COMPLY WITH AMCA 500-D TESTING FOR DAMPER RATING. COMPLY WITH SMACNA “HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE” FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. ADHESIVES, SEALERS, MATERIALS, AND ACCESSORY MATERIALS SHALL HAVE FIRE RATINGS NOT EXCEEDING 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED WHEN TESTED ACCORDING TO ASTM E84.

APPLICATION: USE GALVANIZED-STEEL ACCESSORIES IN GALVANIZED-STEEL DUCTS, STAINLESS-STEEL ACCESSORIES IN STAINLESS-STEEL DUCTS, AND ALUMINUM ACCESSORIES IN ALUMINUM DUCTS.

BACKDRAFT DAMPERS: GRAVITY BALANCED, SUITABLE FOR HORIZONTAL OR VERTICAL INSTALLATIONS. RATE FOR 3000 FPM AND 2-INCH WG. MULTIPLE SINGLE-PIECE BLADES, MAXIMUM 6-INCH WIDTH, MINIMUM 18-GAGE COMPONENTS, WITH EXTRUDED VINYL OR NEOPRENE SEALS MECHANICALLY LOCKED INTO BLADE EDGE AND WITH PARALLEL ACTION. INCLUDE NONFERROUS BLADE AXLES OF DIAMETER 0.20-INCH, ALUMINUM TIE BARS AND BRACKETS, ADJUSTABLE-TENSION RETURN SPRING, STEEL BALL BEARINGS OR SYNTHETIC PIVOT BUSHINGS, 90-DEGREE STOPS, AND DUCT MOUNTING FLANGES. INCLUDE COUNTERWEIGHTS AND SPRING-ASSIST KITS IF VERTICAL AIRFLOW INSTALLATION.

MANUAL VOLUME DAMPERS: FACTORY-MANUFACTURED OR CONTRACTOR-FABRICATED PER SMACNA FIG. 7-4/7-5, STANDARD LEAKAGE RATING, WITH LINKAGE OUTSIDE AIRSTREAM, SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS. INSTALL VOLUME DAMPERS AT ALL BRANCHES ON SUPPLY, RETURN, AND EXHAUST SYSTEMS.

AUTOMATIC CONTROL DAMPERS: LOW-LEAKAGE RATING OF NOT MORE THAN 10 CFM PER SQUARE FOOT OF DAMPER AREA AT 1-INCH PRESSURE, WITH LINKAGE OUTSIDE AIRSTREAM, AND BEARING AMCA'S CERTIFIED RATINGS SEAL FOR BOTH AIR PERFORMANCE AND AIR LEAKAGE. MINIMUM 20 GAGE GALVANIZED SHEET STEEL FRAME FORMED INTO A STRUCTURAL HAT CHANNEL REINFORCED AT THE CORNERS; WITH MITERED AND WELDED CORNERS. AIRFOIL-SHAPED OR TRIPLE-V-GROOVE 16-GAGE BLADES OF GALVANIZED STEEL CONSTRUCTION. MULTI-BLADE WITH MAXIMUM BLADE WIDTH OF 6-INCHES. BLADE AXLES SHALL BE ½-INCH-DIAMETER; GALVANIZED STEEL; SQUARE OR HEX-SHAPE MECHANICALLY LOCKED TO BLADE; AND BLADE-LINKAGE HARDWARE OF ZINC-PLATED STEEL AND BRASS; ENDS SEALED AGAINST BLADE BEARINGS. BEARINGS SHALL BE HIGH IMPACT MOLDED SYNTHETIC, OR STAINLESS-STEEL SLEEVE TYPE, WITH THRUST BEARINGS AT EACH END OF EVERY BLADE. DAMPERS SHALL HAVE AXLES FULL LENGTH OF DAMPER BLADES AND BEARINGS AT BOTH ENDS OF OPERATING SHAFT. DAMPER MOTORS ARE INTENDED TO BE FURNISHED AS PART OF THE TEMPERATURE CONTROL SYSTEM.

TURNING VANES: EITHER CONTRACTOR-FABRICATED OR FACTORY-MANUFACTURED TURNING VANES MEETING THESE SPECIFICATIONS WILL BE ACCEPTABLE. SINGLE-THICKNESS TYPE, 2-INCH RADIUS, 1.5-INCH SPACING, AT LEAST 24-GAUGE THICKNESS, AND CURVED THROUGH AN ARC MATCHING THE CHANGE OF DIRECTION. INCLUDE VANE RAILS OR RUNNERS FOR ATTACHMENT OF VANE BLADES TO DUCT. WHERE TWO OR MORE CHANGES OF DIRECTION OCCUR WITH LESS THAN FOUR DUCT WIDTHS (MEASURED IN THE PLANE OF THE CHANGE OF DIRECTION) BETWEEN EACH ELBOW, EACH TURNING VANE SHALL ALSO INCLUDE A STRAIGHT TRAILING EDGE EXTENSION OF 1-INCH.

DUCT-MOUNTED ACCESS DOORS: FACTORY-MANUFACTURED DOORS, AIRTIGHT AND SUITABLE FOR DUCT PRESSURE CLASS; DOUBLE WALL, RECTANGULAR, GALVANIZED SHEET METAL WITH 1-INCH THICK, FIBROUS-GLASS OR POLYSTYRENE-FOAM BOARD INSULATION FILL AND THICKNESS AS INDICATED FOR DUCT PRESSURE CLASS. USE TWO 1-BY-1-INCH BUTT HINGE OR CONTINUOUS PIANO HINGE AND TWO CAM LATCH SASH LOCKS. FRAME SHALL BE GALVANIZED SHEET STEEL, WITH BEND-OVER TABS AND FOAM GASKETS. SEAL AROUND FRAME ATTACHMENT TO DUCT AND DOOR TO FRAME WITH NEOPRENE OR FOAM RUBBER. INSTALL DUCT ACCESS DOORS ADJACENT TO AND CLOSE ENOUGH TO FIRE DAMPERS TO RESET OR REINSTALL FUSIBLE LINKS, AND DOWNSTREAM OF IN-DUCT COILS. SIZE 18 BY 10-INCHES UNLESS NOTED OTHERWISE

FLEXIBLE CONNECTORS: GLASS FABRIC DOUBLE COATED WITH NEOPRENE OR POLYCHLOROPRENE COMPLYING WITH UL 181 CLASS 1. FACTORY FABRICATE WITH A FABRIC STRIP 5-INCHES WIDE ATTACHED TO 2 STRIPS OF 2-INCH-WIDE, 0.028-INCH-THICK, GALVANIZED SHEET STEEL OR 0.032-INCH-THICK ALUMINUM SHEETS. FABRIC MINIMUM WEIGHT SHALL BE 26 OZ./SQ. YD. WITH A TENSILE STRENGTH OF 480 LBF/INCH IN THE WARP AND 360 LBF/INCH IN THE FILLING; AND -40 TO +200 DEGF SERVICE TEMPERATURE.

FLEXIBLE DUCTS: UL 181, CLASS 1, FACTORY-FABRICATED, INSULATED, ROUND DUCT, WITH AN OUTER POLYETHYLENE VAPOR-BARRIER FILM JACKET ENCLOSING GLASS-FIBER R-6.0INSULATION AROUND A CONTINUOUS INNER CPE FILM LINER ACOUSTICALLY TRANSPARENT TO MID-RANGE SOUND ENERGY. REINFORCE WITH GALVANIZED STEEL WIRE HELIX ENCAPSULATED IN INNER LINER. RATE FOR -20 DEGF TO +250 DEGF TEMPERATURE, 4000 FPM VELOCITY, 8-INCH POSITIVE AND 1-INCH NEGATIVE PRESSURE WITH BURST RATING OF 2.5 TIMES THESE FIGURES. CONNECTOR CLAMPS SHALL BE STAINLESS-STEEL BAND WITH CADMIUM-PLATED HEX SCREW TO TIGHTEN BAND WITH A WORM-GEAR ACTION. SUPPORT FLEXIBLE DUCT SO THAT IT DOES NOT CONTACT NOR REST UPON LIGHT FIXTURES, SPRINKLER AND OTHER PIPING, CEILINGS AND CEILING HANGER WIRES, ELECTRICAL CONDUITS AND CABLE TRAY, AND SIMILAR ITEMS. ALL FLEX DUCT SUPPORTS SHALL MAINTAIN A MINIMUM OF ONE-INCH CONTACT WIDTH ALONG FULL LENGTH OF CONTACT.
INSTRUMENT TEST HOLES: CAST IRON OR CAST ALUMINUM TO SUIT DUCT MATERIAL, INCLUDING SCREW CAP AND GASKET. SIZE TO ALLOW INSERTION OF PITOT TUBE AND OTHER TESTING INSTRUMENTS AND OF LENGTH TO SUIT DUCT-INSULATION THICKNESS.

DIFFUSERS, REGISTERS AND GRILLES
REGULATORY: NFPA COMPLIANCE: INSTALL DIFFUSERS, REGISTERS, AND GRILLES ACCORDING TO NFPA 90A-2015 STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS. WHERE LOCATED LESS THAN 84 INCHES ABOVE FINISH FLOOR, DIFFUSERS, REGISTERS AND GRILLES SHALL BE DESIGNED TO PROHIBIT PASSAGE OF A ½-INCH SPHERE.

SINGLE-SOURCE: UNLESS NOTED OTHERWISE, A SINGLE MANUFACTURER SHALL FURNISH ALL DIFFUSERS, REGISTERS, AND GRILLES.

INTEGRAL BALANCING DAMPER: WHERE DAMPERS ARE SCHEDULED AS AN INTEGRAL PART OF DIFFUSERS AND GRILLES (REGISTERS), PROVIDE MULTI-BLADE GANG-OPERATED OPPOSED-BLADE TYPE, RADIAL-STYLE IF USED WITH ROUND DUCTS; 24 GAGE GALVANIZED STEEL, EXCEPT THAT ALUMINUM DAMPERS SHALL BE USED WITH ALUMINUM DIFFUSERS AND REGISTERS. INTEGRAL DAMPERS SHALL BE OPERABLE FROM THE ROOM SIDE OF THE DIFFUSER OR REGISTER WITHOUT SPECIAL TOOLS.

DIFFUSERS, REGISTERS, AND GRILLES MOUNTING: PROVIDE BORDER FRAME MOUNTING TYPE AS SCHEDULED. IF NOT SCHEDULED, PROVIDE BORDER FRAME MOUNTING TYPE COMPATIBLE WITH CEILING OR WALL TYPE INDICATED ON ARCHITECTURAL DRAWINGS. DISTINGUISH BETWEEN FLUSH FLAT-TEE LAY-IN CEILINGS, DROP-FACE LAY-IN CEILINGS, AND THE NARROW-TEE OR SCREW-SLOT LAY-IN CEILINGS BY PROVIDING A BORDER TYPE SPECIFICALLY DESIGNED FOR EACH AS APPLICABLE; A GENERIC STANDARD LAY-IN BORDER FRAME WILL NOT BE ACCEPTABLE FOR MULTIPLE LAY-IN CEILING TYPES.

EXAMINE AREAS WHERE DIFFUSERS, REGISTERS, AND GRILLES ARE TO BE INSTALLED FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE OF EQUIPMENT. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

CEILING-MOUNTED OUTLETS AND INLETS: DRAWINGS INDICATE GENERAL ARRANGEMENT OF DUCTS, FITTINGS, AND ACCESSORIES. AIR OUTLET AND INLET LOCATIONS HAVE BEEN INDICATED TO ACHIEVE DESIGN REQUIREMENTS FOR AIR VOLUME, NOISE CRITERIA, AIRFLOW PATTERN, THROW, AND PRESSURE DROP. MAKE FINAL LOCATIONS WHERE INDICATED, AS MUCH AS PRACTICABLE. AFTER INSTALLATION, ADJUST DIFFUSERS, REGISTERS, AND GRILLES TO AIR PATTERNS INDICATED, OR AS DIRECTED, BEFORE STARTING AIR BALANCING.

AFTER INSTALLATION OF DIFFUSERS, REGISTERS, AND GRILLES, INSPECT EXPOSED FINISH. CLEAN EXPOSED SURFACES TO REMOVE BURRS, DIRT, AND SMUDGES. REPLACE DIFFUSERS, REGISTERS, AND GRILLES THAT HAVE DAMAGED FINISHES.

SPLIT SYSTEM AIR CONDITIONERS

INDOOR UNITS

CONCEALED, DUCTED CABINET: GALVANIZED STEEL WITH FLANGED EDGES, REMOVABLE PANELS FOR SERVICING, AND FACED GLASS-FIBER DUCT LINER INSULATION ON BACK OF PANEL.

DUCTLESS CONSOLE CABINET: GALVANIZED STEEL FRAME WITH ENAMELED STEEL OR EXTRUDED THERMOPLASTIC PANELS; WITH REMOVABLE PANELS ON FRONT AND ENDS IN COLOR SELECTED BY ARCHITECT. INSULATE INTERIOR WITH FACED GLASS-FIBER DUCT LINER INSULATION. INCLUDE INTEGRAL, USER-ADJUSTABLE DISCHARGE GRILLE.

EVAPORATOR COIL: SEAMLESS COPPER TUBE, WITH MECHANICALLY BONDED ALUMINUM FINS AND ELECTRONIC EXPANSION VALVE. COMPLY WITH AHRI 210/240.

ELECTRIC HEATING COIL: HELICAL, NICKEL-CHROME, RESISTANCE-WIRE HEATING ELEMENTS; WITH REFRACTORY CERAMIC SUPPORT BUSHINGS, AUTOMATIC-RESET THERMAL CUTOUT, BUILT-IN MAGNETIC CONTACTORS, MANUAL-RESET THERMAL CUTOUT, AIRFLOW PROVING DEVICE, AND ONE-TIME FUSES IN TERMINAL BOX FOR OVERCURRENT PROTECTION.

FAN: DIRECT-DRIVE, CENTRIFUGAL. THE FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED, WITH PERMANENTLY LUBRICATED BEARINGS.

FAN MOTORS: COMPLY WITH NEMA DESIGNATION, TEMPERATURE RATING, SERVICE FACTOR, ENCLOSURE TYPE, AND EFFICIENCY REQUIREMENTS SPECIFIED IN DIVISION 23 SECTION “MOTORS.” MULTI-TAPPED, MULTISPEED WITH INTERNAL THERMAL PROTECTION AND PERMANENT LUBRICATION. WIRING TERMINATIONS: CONNECT MOTOR TO CHASSIS WIRING WITH PLUG CONNECTION. CONTROLLERS, ELECTRICAL DEVICES, AND WIRING: COMPLY WITH REQUIREMENTS FOR ELECTRICAL DEVICES AND CONNECTIONS SPECIFIED IN DIVISION 26 SECTIONS.

AIRSTREAM SURFACES: SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1-2013.

CONDENSATE DRAIN PANS: SINGLE-WALL, STAINLESS-STEEL SHEET, FABRICATED WITH NOT LESS THAN ONE-PERCENT SLOPE IN AT LEAST TWO PLANES TO COLLECT CONDENSATE FROM COOLING COILS (INCLUDING COIL PIPING CONNECTIONS, COIL HEADERS, AND RETURN BENDS), AND TO DIRECT WATER TOWARD DRAIN CONNECTION. DRAIN CONNECTION SHALL BE LOCATED AT LOWEST POINT OF PAN AND SIZED TO PREVENT OVERFLOW. TERMINATE WITH THREADED NIPPLE ON ONE END OF PAN.

DISPOSABLE PANEL FILTERS: COMPLY WITH NFPA 90A; MERV-6 ACCORDING TO ASHRAE 52.2. MEDIA SHALL BE INTERLACED GLASS FIBERS SPRAYED WITH NONFLAMMABLE ADHESIVE.

OUTDOOR UNITS

CASING: STEEL, FINISHED WITH BAKED ENAMEL IN COLOR SELECTED BY ARCHITECT, WITH REMOVABLE PANELS FOR ACCESS TO CONTROLS, WEEP HOLES FOR WATER DRAINAGE, AND MOUNTING HOLES IN BASE. PROVIDE BRASS SERVICE VALVES, FITTINGS, AND GAGE PORTS ON EXTERIOR OF CASING.

SCROLL COMPRESSOR: HERMETICALLY SEALED WITH CRANKCASE HEATER AND MOUNTED ON VIBRATION ISOLATION DEVICE. COMPRESSOR MOTOR SHALL HAVE THERMAL- AND CURRENT-SENSITIVE OVERLOAD DEVICES, START CAPACITOR, RELAY, AND CONTACTOR. RECIPROCATING COMPRESSORS WILL NOT BE ACCEPTED.

REFRIGERANT CHARGE: R-410A.

CONDENSER COIL: SEAMLESS COPPER TUBE, WITH MECHANICALLY BONDED ALUMINUM FINS AND LIQUID SUBCOOLER; OR MICROCHANNEL COIL OF ALL-ALUMINUM ASSEMBLED VIA BRAZING. COMPLY WITH AHRI 210/240. THE COIL SHALL BE PROTECTED WITH AN INTEGRAL METAL GUARD.

REFRIGERANT CIRCUIT: EACH CIRCUIT SHALL INCLUDE A THERMAL EXPANSION VALVE, REFRIGERANT CHARGING CONNECTIONS, COMPRESSOR SUCTION AND DISCHARGE SHUTOFF VALVES, A LIQUID-LINE SHUTOFF VALVE, A REPLACEABLE-CORE FILTER DRIER, A SIGHT GLASS WITH MOISTURE INDICATOR, A LIQUID-LINE SOLENOID VALVE, AND AN INSULATED SUCTION LINE; ALL OF WHICH ARE SPECIFIED ELSEWHERE IN THIS SECTION.

HEAT-PUMP COMPONENTS: REVERSING VALVE AND LOW-TEMPERATURE-AIR CUTOFF THERMOSTAT.
CONDENSER FAN: ALUMINUM-PROPELLER TYPE, DIRECTLY CONNECTED TO MOTOR. THE FAN SHALL
BE PROVIDED WITH A SAFETY GUARD TO PREVENT HUMAN CONTACT WITH MOVING PARTS
FAN MOTOR: PERMANENTLY LUBRICATED, WITH INTEGRAL THERMAL-OVERLOAD PROTECTION.
MOUNTING BASE: POLYETHYLENE
ENCLOSURE: FURNISH AND SHIP LOOSE FOR FIELD INSTALLATION, MANUFACTURER'S HEAVY-GAGE WIRE-MESH SCREEN OR LOUVERED SKIRT TO PROTECT MACHINE FROM ENTRY BY UNAUTHORIZED PERSONNEL. SUCH SCREEN OR SKIRT SHALL MOUNT DIRECTLY TO THE MACHINE AND COMPLETELY ENCLOSE OR PROTECT ALL EXPOSED PARTS, INCLUDING BUT NOT LIMITED TO FANS, COMPRESSORS, PIPING, CONTROLS, AND ACCESSORIES.

INSTALLATION: INSTALL GROUND-MOUNTED, COMPRESSOR-CONDENSER COMPONENTS ON 4-INCH-THICK, REINFORCED CONCRETE BASE THAT IS 4 INCHES (100 MM) LARGER, ON EACH SIDE, THAN UNIT. CONCRETE, REINFORCEMENT, AND FORMWORK ARE SPECIFIED IN DIVISION 03 SECTION “CAST-IN-PLACE CONCRETE.” COORDINATE ANCHOR INSTALLATION WITH CONCRETE BASE. INSTALL GROUND-MOUNTED, COMPRESSOR-CONDENSER COMPONENTS ON POLYETHYLENE MOUNTING BASE. INSTALL COMPONENTS ON RESILIENT MOUNTINGS AS FURTHER SPECIFIED IN DIVISION 23 SECTION “MECHANICAL VIBRATION ISOLATION.”

FANS AND VENTILATORS

CEILING-MOUNTING VENTILATORS

DESCRIPTION: CENTRIFUGAL FANS DESIGNED FOR INSTALLING IN CEILING OR WALL OR FOR CONCEALED IN-LINE APPLICATIONS.

HOUSING: 20-GAUGE GALVANIZED STEEL HOUSING ON 14-GAUGE GALVANIZED STEEL CHANNEL FRAME, LINED WITH ACOUSTICAL INSULATION.

FAN WHEEL: FORWARD CURVED, GALVANIZED STEEL OR ALUMINUM, CENTRIFUGAL WHEELS DIRECTLY MOUNTED ON MOTOR SHAFT. FAN SHROUDS, MOTOR, AND FAN WHEEL SHALL BE REMOVABLE FOR SERVICE.

GRILLE: FINISH BY ARCHITECTURAL, LOUVERED GRILLE WITH FLANGE ON INTAKE AND THUMBSCREW ATTACHMENT TO FAN HOUSING. GRILLE MOUNTING SHALL BE ADJUSTABLE TO ACCOMMODATE DIFFERENT CEILING THICKNESSES.

BACKDRAFT DAMPER: OUTLET DUCT COLLAR SHALL INCLUDE A REINFORCED ALUMINUM DAMPER WITH CONTINUOUS ALUMINUM HINGE ROD AND BRASS BUSHINGS.

CONFIGURATION: RIGHT-ANGLE FOR CEILING APPLICATIONS, AND STRAIGHT-THROUGH FOR INLINE APPLICATIONS; FIELD CONVERTIBLE.

ELECTRICAL REQUIREMENTS: JUNCTION BOX FOR ELECTRICAL CONNECTION ON HOUSING AND RECEPTACLE FOR MOTOR PLUG-IN.

IN-LINE CENTRIFUGAL FANS

DESCRIPTION: IN-LINE CENTRIFUGAL FANS CONSISTING OF HOUSING, WHEEL, OUTLET GUIDE VANES, FAN SHAFT, BEARINGS, MOTOR AND DISCONNECT SWITCH, DRIVE ASSEMBLY, MOUNTING BRACKETS, AND ACCESSORIES. PROVIDE DIRECT-DRIVE OR BELT-DRIVE AS INDICATED VIA SCHEDULE ON DRAWINGS.

HOUSING: TOUGH REINFORCED PLASTIC CONSTRUCTION, CORROSION-RESISTANT FASTENERS, ACCESS DOORS, STRAIGHTENING VANES, INLET AND OUTLET FLANGES, AND SUPPORT BRACKET ADAPTABLE TO FLOOR, SIDE WALL, OR CEILING MOUNTING. BOLTED ACCESS DOORS SHALL BE PROVIDED ON THREE SIDES, SEALED WITH CLOSED CELL NEOPRENE GASKETS.

FAN WHEELS: MIXED FLOW IMPELLER BLADES MOLDED IN TOUGH ABS PLASTIC.
DIRECT-DRIVEN UNITS: MOTOR MOUNTED IN AIRSTREAM, FACTORY WIRED TO DISCONNECT SWITCH LOCATED ON OUTSIDE OF FAN HOUSING.

MIK ARCHITECTURE
MIK ARCHITECTURE LLC
MATIAS DAROCH
AR-100480
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
+1 786 708 0880
hello@mikarch.com

AGD DEVELOPERS LLC
1385 CORAL WAY, SUITE 202
MIAMI, FLORIDA 33145
agdmiami.com
developers@agdmiami.com

R&D ENGINEERS, LLC
R&D ENGINEERS LLC
7925 NW 12TH ST, SUITE 227
DORAL, FLORIDA 33126
rd-engineers.com
arivas@rd-engineers.com

NEW SINGLE FAMILY RESIDENCE
AGD CALISTONE LLC
10840 SW 67 Ave MIAMI, FL 33156

ISSUES		
	JUN 2024	1ST ISSUED

R&D Project No.	2025.512
DRAWN BY	ARP
CHECKED BY	ARP
SCALE	AS NOTED
R&D ENGINEERS REGISTRY No.	37312

SEAL
ALEJANDRO LUIS RIVAS PRIETO LICENSE No. 86717 STATE OF FLORIDA PROFESSIONAL ENGINEER
Digitally signed by Alejandro L Rivas Prieto Date: 2025.05.05 14:28:42 -04'00'

ALEJANDRO L RIVAS PRIETO
PROFESSIONAL ENGINEER
PE 86717

THIS IS A DIGITALLY SIGNED SHEET. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE CONTENT OF THIS SHEET AND ALL OTHER DRAWINGS ISSUED IN THIS SET ARE PROTECTED BY U.S. AND INTERNATIONAL COPYRIGHT LAWS. REPRODUCTION OR USE WITHOUT PROPER WRITTEN CONSENT IS PROHIBITED BY LAW. SEE A-001 FOR DETAILS

SHEET No.
M-9

MECHANICAL SPECIFICATIONS