

CONSTRUCTION NOTES

DUCT ACCESSORIES

PART 1 GENERAL

REFERENCES

- A. NFPA 90A - STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS; NATIONAL FIRE PROTECTION ASSOCIATION; 2012.
- B. SMACNA (DCS) - HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE; SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION; 2005.

PART 2 PRODUCTS

AIR TURNING DEVICES/EXTRACTORS

- A. MULTI-BLADE DEVICE WITH BLADES ALIGNED IN SHORT DIMENSION; STEEL CONSTRUCTION; WITH INDIVIDUALLY ADJUSTABLE BLADES, MOUNTING STRAPS.

FLEXIBLE DUCT CONNECTIONS

- B. FABRICATE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, AND AS INDICATED.
- C. FLEXIBLE DUCT CONNECTIONS: FABRIC CRIMPED INTO METAL EDGING STRIP.

PART 3 EXECUTION

INSTALLATION

- A. INSTALL ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, NFPA 90A, AND FOLLOW SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE. REFER TO SECTION 15810 FOR DUCT CONSTRUCTION AND PRESSURE CLASS.
- B. AT FANS AND MOTORIZED EQUIPMENT ASSOCIATED WITH DUCTS, PROVIDE FLEXIBLE DUCT CONNECTIONS IMMEDIATELY ADJACENT TO THE EQUIPMENT.
- C. AT EQUIPMENT SUPPORTED BY VIBRATION ISOLATORS, PROVIDE FLEXIBLE DUCT CONNECTIONS IMMEDIATELY ADJACENT TO THE EQUIPMENT.

DUCTS

PART 1 GENERAL

QUALITY ASSURANCE

- A. MANUFACTURER QUALIFICATIONS: COMPANY SPECIALIZING IN MANUFACTURING THE TYPE OF PRODUCTS SPECIFIED IN THIS SECTION, WITH MINIMUM THREE YEARS OF DOCUMENTED EXPERIENCE.

REGULATORY REQUIREMENTS

- A. CONSTRUCT DUCTWORK TO NFPA 90A STANDARDS.

PART 2 PRODUCTS

MATERIALS - LOW AND MEDIUM VELOCITY

- A. GALVANIZED STEEL DUCTS: HOT-DIPPED GALVANIZED STEEL SHEET, ASTM A 653/A 653M FS TYPE B, WITH G60/Z180 COATING.
- B. STEEL DUCTS: ASTM A 1008/A 1008M, DESIGNATION CS, COLD-ROLLED COMMERCIAL STEEL.

DUCTWORK FABRICATION - LOW AND MEDIUM VELOCITY

- A. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR OPERATING PRESSURES INDICATED.
- B. CONSTRUCT T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1-1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION.
- C. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE; MAXIMUM 30 DEGREES DIVERGENCE UPSTREAM OF EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM.
- D. ALL DUCTWORK, REGARDLESS OF SERVICE OR PRESSURE CLASS, SHALL BE SEALED AND CHECKED FOR AIR TIGHTNESS; ALL TRANSVERSE AND LONGITUDINAL SEAMS, GAPS, OPENINGS, ETC. SHALL BE SEALED WITH MASTIC.
- E. ALL DUCTWORK OUTSIDE OF THE MECHANICAL ROOM SHALL BE EXTERNALLY WRAPPED WITH R6 VAPOR SEALED DUCT INSULATION WRAP.
- F. ALL DUCTWORK INSIDE OF THE MECHANICAL ROOM SHALL BE INTERNALLY LINED GALVANIZED SHEET METAL WITH R6 DUCT LINER.

PART 3 EXECUTION

INSTALLATION

- A. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. FOR LINED DUCTS, MAINTAIN SIZES INSIDE LINING.
- B. INSTALL AND SEAL METAL AND FLEXIBLE DUCTS IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
- C. LOCATE DUCTS WITH SUFFICIENT SPACE AROUND EQUIPMENT TO ALLOW NORMAL OPERATING AND MAINTENANCE ACTIVITIES.
- D. PROVIDE RESIDUE TRAPS IN KITCHEN HOOD EXHAUST DUCTS AT BASE OF VERTICAL RISERS WITH PROVISIONS FOR CLEAN OUT.
- E. DURING CONSTRUCTION PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.

EQUIPMENT IDENTIFICATION

- A. IDENTIFY EACH UNIT BY ITS SYSTEM NUMBER AND OTHER APPROPRIATE DESIGNATION BY STENCILING IN LETTERS OF APPROVED SIZE AND WORDING. EQUIPMENT REQUIRING IDENTIFICATION SHALL INCLUDE PACKAGED AND SPLIT SYSTEM AIR CONDITIONING UNITS, VAV BOXES AND HEATING UNIT. FIELD COORDINATE BEFORE ORDERING SO THAT EQUIPMENT NAME PLATES MATCH EXISTING.

HVAC ABBREVIATIONS AND SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	EXISTING PIPING/EQUIPMENT TO REMAIN
	NEW PIPING/EQUIPMENT
	FLEXIBLE DUCT
	CONDENSATE DRAIN PIPE.
	PIPE TURNING DOWN
	PIPE TURNING UP
	FIRE DAMPER
	MOTORIZED VOLUME DAMPER
	MANUAL OPERATED DAMPER
	DUCT (SIZE IN INCHES, FIRST FIGURE SIDE SHOWN)
	MANUAL OPERATED DAMPER
	SQUARE ELBOW W/ TURNING VANES
	AIR EXTRACTOR
	DUCT TRANSITION
	DUCT SMOKE DETECTOR
	THERMOSTAT
	HUMIDISTAT
	CEILING DIFFUSER.
	EXHAUST OR RETURN AIR GRILLE.
	OPPOSED BLADE DAMPER.
	OUTSIDE AIR INTAKE.
	SUPPLY AIR
	RETURN AIR.
	EXHAUST FAN.
	EXISTING TO REMAIN
	CONDENSING UNIT AIR COOLED
	AIR HANDLING UNIT
	OUTSIDE AIR INTAKE
	EXISTING
	VARIABLE AIR VOLUME BOX
	SOUND ALIENATOR
	NORMALLY CLOSED
	EXISTING TO BE RELOCATED / NEW LOCATION OF RELOCATED DEVICE

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PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA			DRAWING NO.	M-001
MECHANICAL LEGEND AND CONSTRUCTION NOTES			SHEET NO.	

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

GENERAL HVAC NOTES

1. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT FOR VENTILATION SYSTEMS COMPLETE INCLUDING, CONTROLS, CONTROL PROGRAMING, CONTROL WIRING, GALVANIZED SHEET METAL PLENUMS AND ALL FITTINGS, SPECIALTIES, ANCHORING/SUPPORTING OF EQUIPMENT, AUXILIARY MATERIALS AND ACCESSORIES AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE OF THE WORK AND BECOME FAMILIAR WITH ALL AVAILABLE INFORMATION REGARDING THE LOCATION OF EXISTING FACILITIES. FAILURE OF THE CONTRACTOR TO FULLY INFORM HIMSELF OF ALL EXISTING CONDITIONS WILL NOT BE CAUSE FOR ADDITIONAL COMPENSATION.

3. ALL EQUIPMENT AND MATERIALS USED IN THIS INSTALLATION SHALL BE NEW, OF APPROVED QUALITY AND MANUFACTURE AND, UNLESS OTHERWISE NOTED, SHALL BE STANDARD CATALOG ITEMS OF THE VARIOUS MANUFACTURERS. EACH COMPONENT OF THE WORK SHALL BE COMPLETE, CONNECTED AND CAPABLE OF SATISFACTORY FUNCTIONAL OPERATION.

4. FOLLOW REQUIREMENTS OF THE FLORIDA BUILDING CODES, REGULATIONS, ORDINANCES, ETC., OF THE STATE, COUNTY, AND/OR MUNICIPALITY, IN WHICH THE CONSTRUCTION IS LOCATED, AND ANY GOVERNMENT ENTITY HAVING JURISDICTION OVER THIS WORK.

5. ALL EQUIPMENT SHALL FIT THE ALLOTTED SPACE AND SHALL LEAVE REASONABLE ACCESS ROOM FOR SERVICING AND REPAIRS. GREATER SPACE AND ROOM REQUIRED BY SUBSTITUTED EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR AND AT HIS EXPENSE AND MEETING THE APPROVAL OF THE CONSTRUCTION MANAGER.

6. IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES BETWEEN EQUIPMENT DIMENSIONS AND SPACE ALLOTMENTS THEREFORE; HE SHALL NOTIFY THE CONSTRUCTION MANAGER IN WRITING AND SHALL NOT PROCEED WITH THE WORK UNTIL HE HAS RECEIVED WRITTEN INSTRUCTIONS FROM THE CONSTRUCTION MANAGER.

7. THE CONTRACTOR SHALL DO NO CUTTING THAT MAY IMPAIR STRENGTH OF BUILDING CONSTRUCTION. NO HOLES, EXCEPT FOR SMALL SCREWS, MAY BE DRILLED IN BEAMS, DOUBLE-TEES OR OTHER STRUCTURAL MEMBERS WITHOUT OBTAINING PRIOR APPROVAL OF THE CONSTRUCTION MANAGER.

8. CUTTING AND PATCHING - UNLESS OTHERWISE INDICATED, PERFORM ALL CUTTING AND PATCHING NECESSARY FOR THE WORK. PATCH AND PAINT AFFECTED AREAS TO MATCH EXISTING CONDITIONS INCLUDING MATERIAL OF CONSTRUCTION. WHERE INTERFERENCES OCCUR, AND DEPARTURES FROM INDICATED ARRANGEMENTS ARE REQUIRED, COORDINATE THE MECHANICAL/ELECTRICAL/STRUCTURAL WORK WITH THE OTHER TRADES INVOLVED AND MAKE A DETERMINATION AS TO CHANGES AND SHALL OBTAIN APPROVAL FROM THE DEPARTMENT FOR THE PROPOSED CHANGES.

9. ALL ROTATING EQUIPMENT SHALL BE STATICALLY AND DYNAMICALLY BALANCED. UNLESS OTHERWISE SPECIFIED, THE VIBRATION ALLOWANCE IN THE UNITS SHALL NOT EXCEED THE UPPER LIMITS AS ESTABLISHED BY THE EQUIPMENT MANUFACTURER.

10. THE CONTRACTOR SHALL FURNISH ALL ELECTRICAL WORK ASSOCIATED WITH MECHANICAL EQUIPMENT, INCLUDING ELECTRICAL CONTROLS, SWITCHES, CONTACTORS AND STARTERS FOR ALL EQUIPMENT ITEMS REQUIRING SAME. ALL ELECTRICAL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE CURRENT NATIONAL ELECTRICAL CODE.

11. UNLESS OTHERWISE INDICATED, METAL FASTENERS AND RELATED PARTS SHALL BE OF ALUMINUM OR STAINLESS STEEL AND SHALL BE OF ADEQUATE STRENGTH FOR THE PURPOSE INTENDED.

12. LEAVE CONCEALED WORK UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED, BUT IF NECESSARY TO MAKE TESTS ON PORTIONS OF THE WORK, THOSE PORTIONS OF THE WORK MAY BE CONCEALED AFTER BEING INSPECTED AND APPROVED. REPAIR DEFECTS THAT ARE DISCOVERED AS A RESULT OF INSPECTIONS OR TESTS WITH NEW MATERIALS. CAULKING, PEELING OR SOLDERING OF SCREWED JOINTS, CRACKS, OR HOLES WILL NOT BE ACCEPTED. REPEAT TESTS AFTER DEFECTS HAVE BEEN CORRECTED.

13. VERIFY ALL SPACE CONDITIONS AT JOB SITE PRIOR TO FABRICATION OF PIPING AND PURCHASE OF EQUIPMENT. NOTIFY ENGINEER OF ANY SPATIAL CONFLICTS THAT COULD AFFECT THE PROJECT. DO NO WORK UNTIL ALL CONFLICTS ARE RESOLVED. BEGINNING OF INSTALLATION WILL BE CONSTRUED AS ACCEPTANCE OF SPATIAL CONDITIONS.

14. VERIFY ALL CONNECTION TO EQUIPMENT WITH MANUFACTURER'S CERTIFIED DRAWINGS. DO NOT SCALE DRAWINGS. PROVIDE TRANSITIONS TO ALL EQUIPMENT AS REQUIRED.

15. COORDINATE PIPING WITH OTHER DISCIPLINES PRIOR TO FABRICATION AND INSTALLATION. PROVIDE ANY OFFSETS AND TRANSITIONS TO COORDINATE WITH OTHER TRADES AS REQUIRED. PIPING IS SHOWN DIAGRAMMATICALLY AND SHALL BE ADJUSTED AS REQUIRED TO SUIT EXISTING OR FIELD CONDITIONS.

16. COORDINATE AVAILABLE ELECTRICAL CHARACTERISTICS AT JOB SITE WITH MECHANICAL EQUIPMENT'S ELECTRICAL REQUIREMENTS INDICATED IN MECHANICAL SCHEDULES PRIOR TO SUBMITTING SHOP DRAWINGS AND ORDERING EQUIPMENT.

17. ALL EQUIPMENT, PIPING, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.

18. COMBUSTIBLE MATERIAL

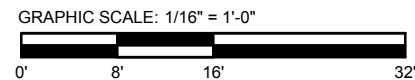
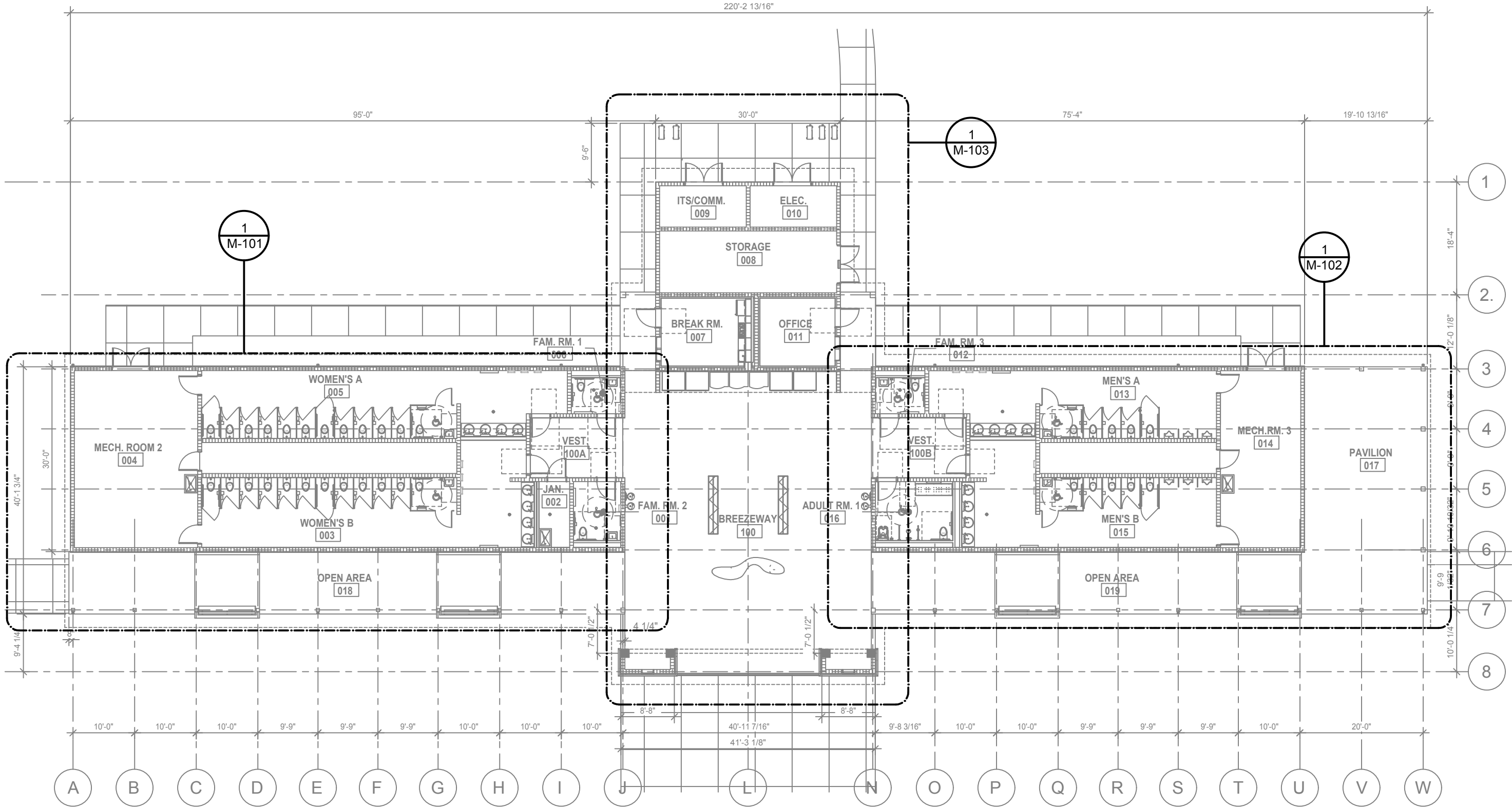
A. COMBUSTIBLE MATERIAL SHALL NOT BE USED IN RETURN AIR PLENUM UNLESS IT IS PROPERLY PROTECTED OR MEETS STANDARDS OF CLASS 1 DUCT MATERIAL AS DEFINED BY UL 181.

B. MATERIAL SHALL HAVE A SPREAD INDEX OF NO MORE THAN 25 AND A SMOKE-DEVELOED INDEX OF NOT MORE THAN 50.

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REVISIONS						PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA	DRAWING NO.
										M-002
<div><div><div><div></div><div></div><div></div><div></div></div><div>BOBES ASSOCIATES CONSULTING ENGINEERS 180 CIRCLE DRIVE, MAITLAND, FL 32751 TELEPHONE: 407.628.0902 E-MAIL: INFO@BOBES.COM FLORIDA STATE P.E. NUMBER: 5131 GUS BOBES JR. P.E., P.E. NUMBER 39410</div></div><div>Augusto E. Bobes Jr., P.E. No. 39410</div></div>						ROAD NO.	COUNTY	FINANCIAL PROJECT ID	M-002 GENERAL HVAC NOTES	
						SR 8	COLUMBIA	438609-1-52-01		

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M-100 HVAC OVERALL PLAN

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



PROJECT NORTH

PHASE 2 - 90% SUBMITTAL

REVISIONS					
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA

M-100 HVAC OVERALL PLAN

DRAWING NO.

M-100

SHEET NO.

EXHAUST AIR CALCULATION - WOMEN'S RR			
26 WATER CLOSETS AT 50 CFM/WC	=	1300 CFM	
1 MOP SINK AT 50 CFM/WC	=	50 CFM	
1 SHOWER AT 50 CFM/SHOWER	=	50 CFM	
TOTAL REQUIRED EXHAUST AIR	=	1400 CFM	
100% O.A. UNIT AHU-1.1 IS RATED AT 1600 CFM OF SUPPLY AIR AND EXHAUST AIR. THEREFORE THE CODE REQUIRED EXHAUST AIR RATE IS MET AND EXCEEDED BY 200 CFM.			

HVAC KEY NOTES

- 1

EXHAUST AIR WALL LOUVER WITH INSECT SCREEN AND 12" DEEP E.A. PLENUM. MINIMUM FREE AREA = 3.2 SQ. FT. - SEE ARCHITECTURAL DRAWINGS FOR EXACT LOUVER SIZE AND LOCATION.
- 2

OUTSIDE AIR WALL LOUVER WITH INSECT SCREEN AND 12" DEEP O.A. PLENUM. MINIMUM FREE AREA = 3.2 SQ. FT. - SEE ARCHITECTURAL DRAWINGS FOR EXACT LOUVER SIZE AND LOCATION.
- 3

AIR COOLED CONDENSING UNIT MOUNTED ON 6" TALL REINFORCED CONCRETE HOUSEKEEPING PAD - SEE DETAIL.
- 4

COMBINATION AHU/ERV INTEGRATED UNIT (AHU-1.2/ERV-1.2) SEE SCHEDULE.
- 5

SPLITTER DAMPER.
- 6

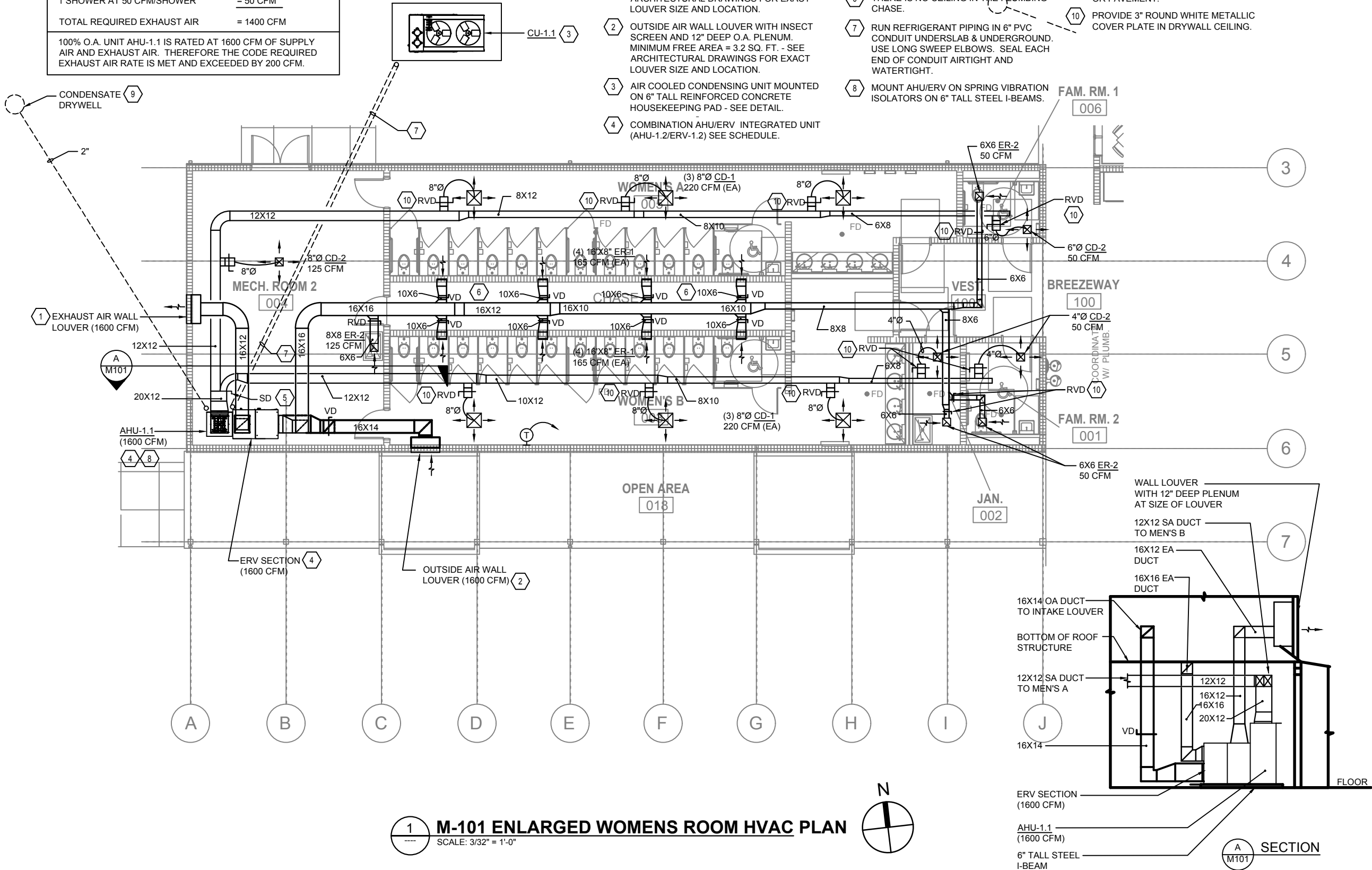
THERE IS NO CEILING IN THE PLUMBING CHASE.
- 7

RUN REFRIGERANT PIPING IN 6" PVC CONDUIT UNDERSLAB & UNDERGROUND. USE LONG SWEEP ELBOWS. SEAL EACH END OF CONDUIT AIRTIGHT AND WATERTIGHT.
- 8

MOUNT AHU/ERV ON SPRING VIBRATION ISOLATORS ON 6" TALL STEEL I-BEAMS.
- 9

COORDINATE EXACT LOCATION OF DRYWELL WITH SITE PLAN - DO NOT LOCATE DRYWELL BENEATH SIDEWALKS OR PAVEMENT.
- 10

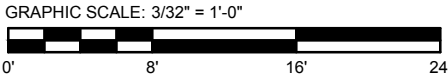
PROVIDE 3" ROUND WHITE METALLIC COVER PLATE IN DRYWELL CEILING.



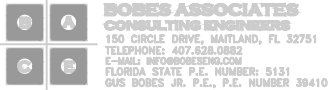
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M-101 ENLARGED WOMENS ROOM HVAC PLAN

SCALE: 3/32" = 1'-0"



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA	DRAWING NO. M-101
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	M-101 ENLARGED WOMENS ROOM HVAC PLAN	SHEET NO.
SR 8	COLUMBIA	438609-1-52-01		

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HVAC KEY NOTES

- 1 EXHAUST AIR WALL LOUVER WITH INSECT SCREEN AND 12" DEEP E.A. PLENUM. MINIMUM FREE AREA = 3.2 SQ. FT. - SEE ARCHITECTURAL DRAWINGS FOR EXACT LOUVER SIZE AND LOCATION.
- 2 OUTSIDE AIR WALL LOUVER WITH INSECT SCREEN AND 12" DEEP O.A. PLENUM. MINIMUM FREE AREA = 3.2 SQ. FT. - SEE ARCHITECTURAL DRAWINGS FOR EXACT LOUVER SIZE AND LOCATION.

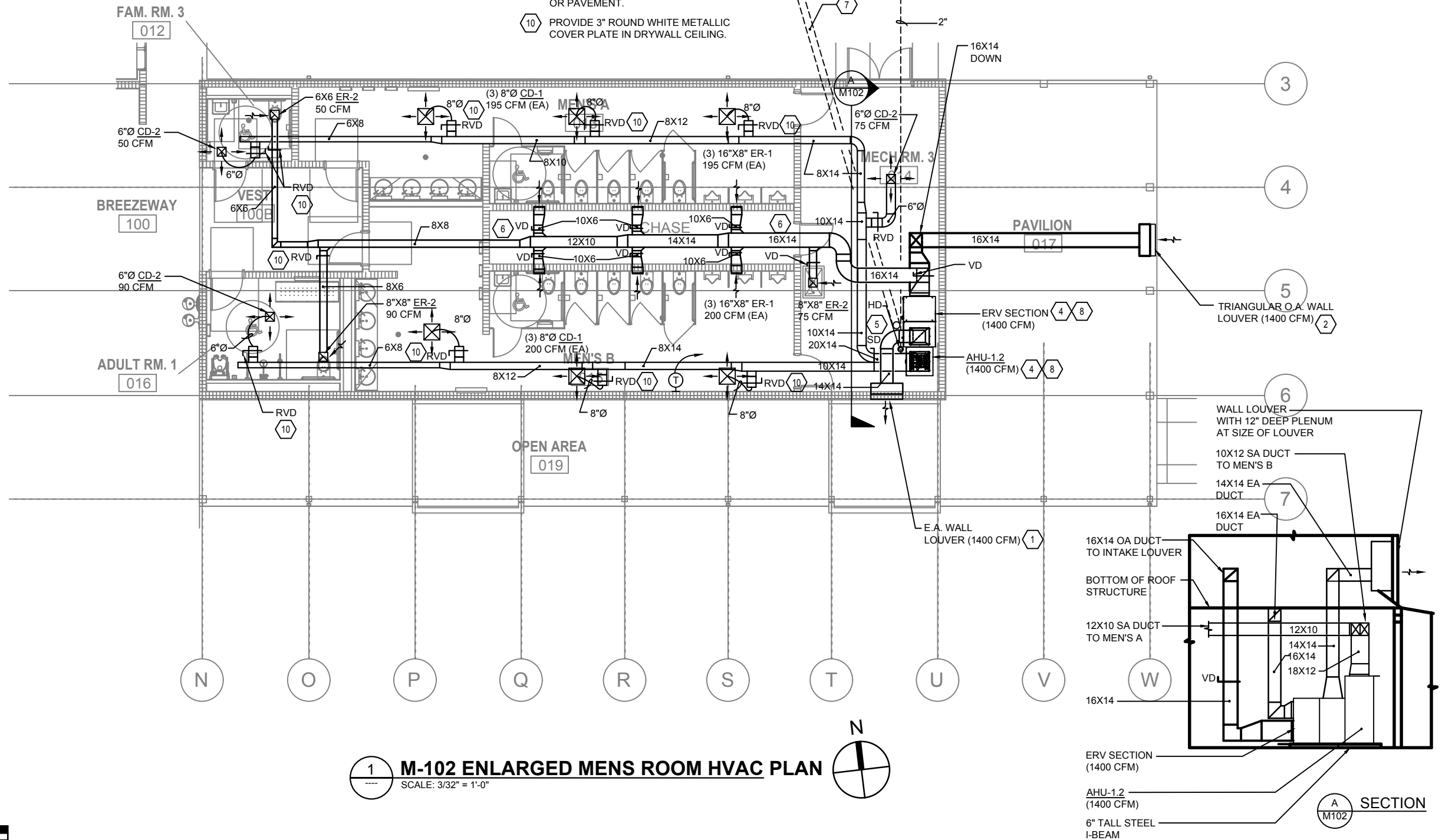
- 3 AIR COOLED CONDENSING UNIT MOUNTED ON 6" TALL REINFORCED CONCRETE HOUSEKEEPING PAD - SEE DETAIL.
- 4 COMBINATION AHU/ERV INTEGRATED UNIT (AHU-1.2/ERV-1.2) SEE SCHEDULE.
- 5 SPLITTER DAMPER.
- 6 THERE IS NO CEILING IN THE PLUMBING CHASE.

- 7 RUN REFRIGERANT PIPING IN 6" PVC CONDUIT UNDERSLAB & UNDERGROUND. USE LONG SWEEP ELBOWS. SEAL EACH END OF CONDUIT AIRTIGHT AND WATERTIGHT.
- 8 MOUNT AHU/ERV ON SPRING VIBRATION ISOLATORS ON 6" TALL STEEL I-BEAMS.
- 9 COORDINATE EXACT LOCATION OF DRYWELL WITH SITE PLAN - DO NOT LOCATE DRYWELL BENEATH SIDEWALKS OR PAVEMENT.
- 10 PROVIDE 3" ROUND WHITE METALLIC COVER PLATE IN DRYWALL CEILING.

EXHAUST AIR CALCULATION - MEN'S RR

12 WATER CLOSETS AT 50 CFM/WC	= 600 CFM
1 MOP SINK AT 50 CFM/WC	= 50 CFM
1 SHOWER AT 50 CFM/SHOWER	= 50 CFM
TOTAL REQUIRED EXHAUST AIR	= 700 CFM

100% O.A. UNIT AHU-1.2 IS RATED AT 1400 CFM OF SUPPLY AIR AND EXHAUST AIR. THEREFORE THE CODE REQUIRED EXHAUST AIR RATE IS MET AND EXCEEDED BY 700 CFM.



1 M-102 ENLARGED MENS ROOM HVAC PLAN

SCALE: 3/32" = 1'-0"

GRAPHIC SCALE: 3/32" = 1'-0"



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

PROJECT NORTH

PHASE 2 - 90% SUBMITTAL

SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA

M-102 ENLARGED MENS ROOM HVAC PLAN

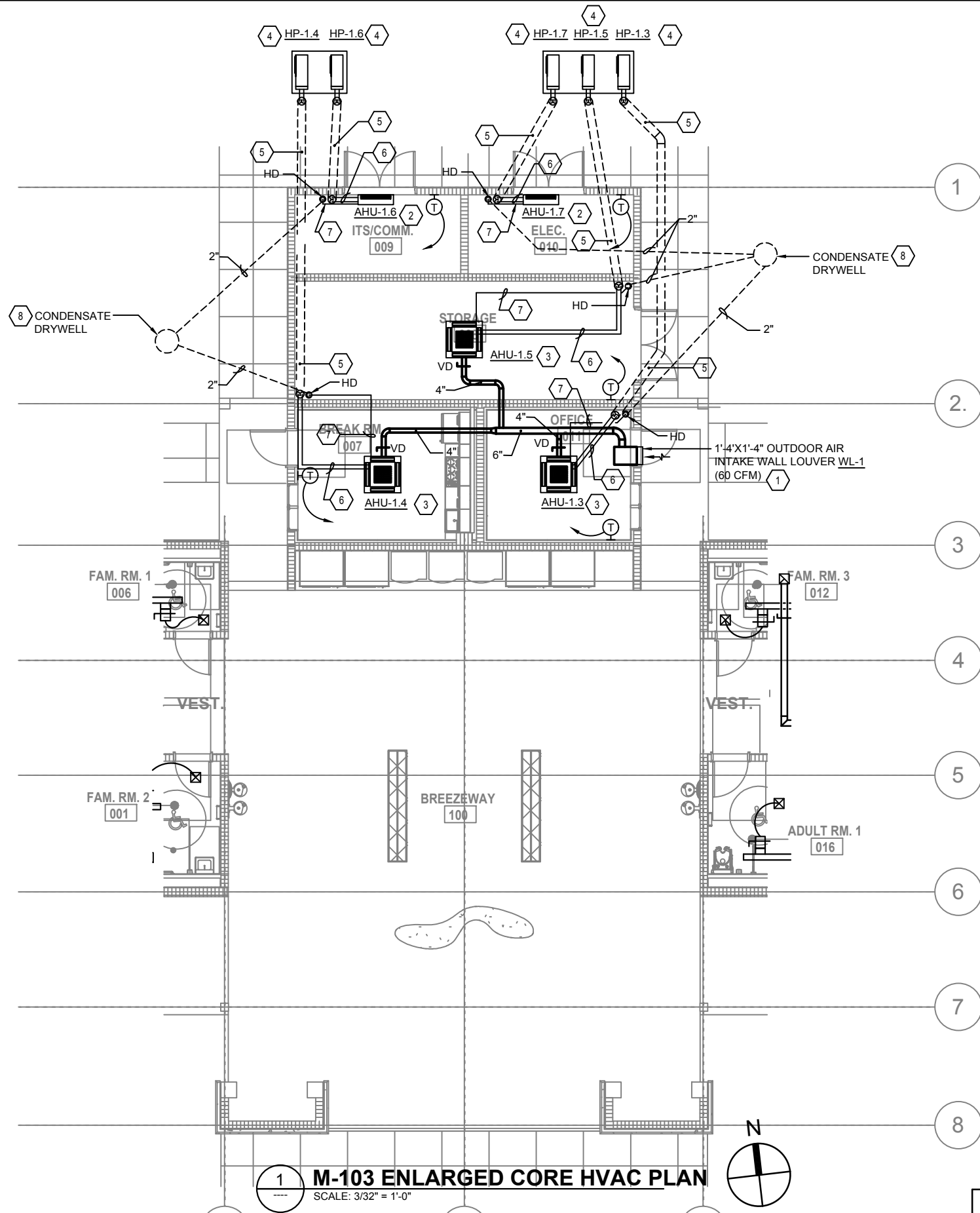
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M-102

SHEET NO.

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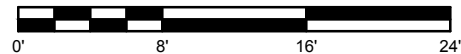
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HVAC KEY NOTES

- 1 WALL LOUVER WITH INSECT SCREEN AND 12" DEEP PLENUM. MINIMUM FREE AREA = 3.2 SQ. FT. - SEE ARCHITECTURAL DRAWINGS FOR EXACT LOUVER SIZE AND LOCATION.
- 2 WALL MOUNTED CARTRIDGE TYPE AIR HANDLING UNIT WITH PUMPED CONDENSATE.
- 3 CEILING MOUNTED CASSETTE TYPE AIR HANDLING UNIT WITH PUMPED CONDENSATE AND OUTSIDE AIR CONNECTION.
- 4 AIR COOLED HEAT PUMP UNIT ON 4" TALL REINFORCED CONCRETE HOUSKEEOING PAD.
- 5 RUN REFRIGERANT LINES IN 4" PVC CONDUIT UNDERGROUND AND UNDER SLAB - USE LONG SWEEP ELBOWS. SEAL EACH END OF CONDUIT AIRTIGHT AND WATERTIGHT.
- 6 RUN INSULATED REFRIGERANT PIPING IN CEILING SPACE TO AHU.
- 7 RUN PUMPED CONDENSATE IN CEILING SPACE TO HUB BRAIN (HD).
- 8 COORDINATE EXACT LOCATION OF DRYWELL WITH SITE PLAN - DO NOT LOCATE DRYWELL BENEATH SIDEWALKS OR PAVEMENT.

GRAPHIC SCALE: 3/32" = 1'-0"



1 M-103 ENLARGED CORE HVAC PLAN

SCALE: 3/32" = 1'-0"



PROJECT NORTH

PHASE 2 - 90% SUBMITTAL

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA

M-103 ENLARGED CORE HVAC PLAN

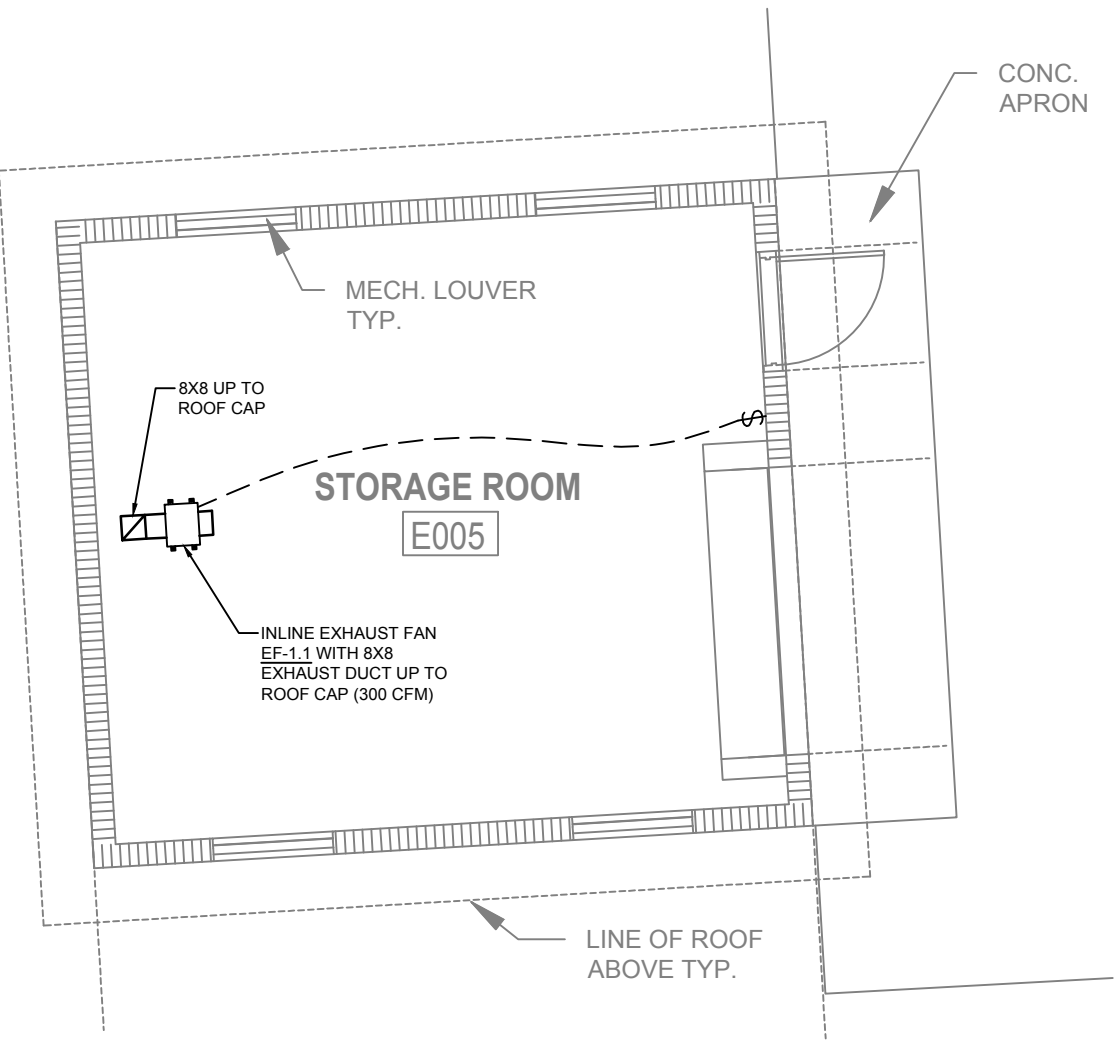
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M-103

SHEET NO.

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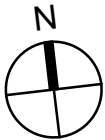
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1

M-104 ENLARGED STORAGE BUILDING HVAC PLAN

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



GRAPHIC SCALE: 3/32" = 1'-0"



PROJECT NORTH		PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA		DRAWING NO.	
		M-104	
M-104 ENLARGED STORAGE BUILDING HVAC PLAN		SHEET NO.	
		XX	

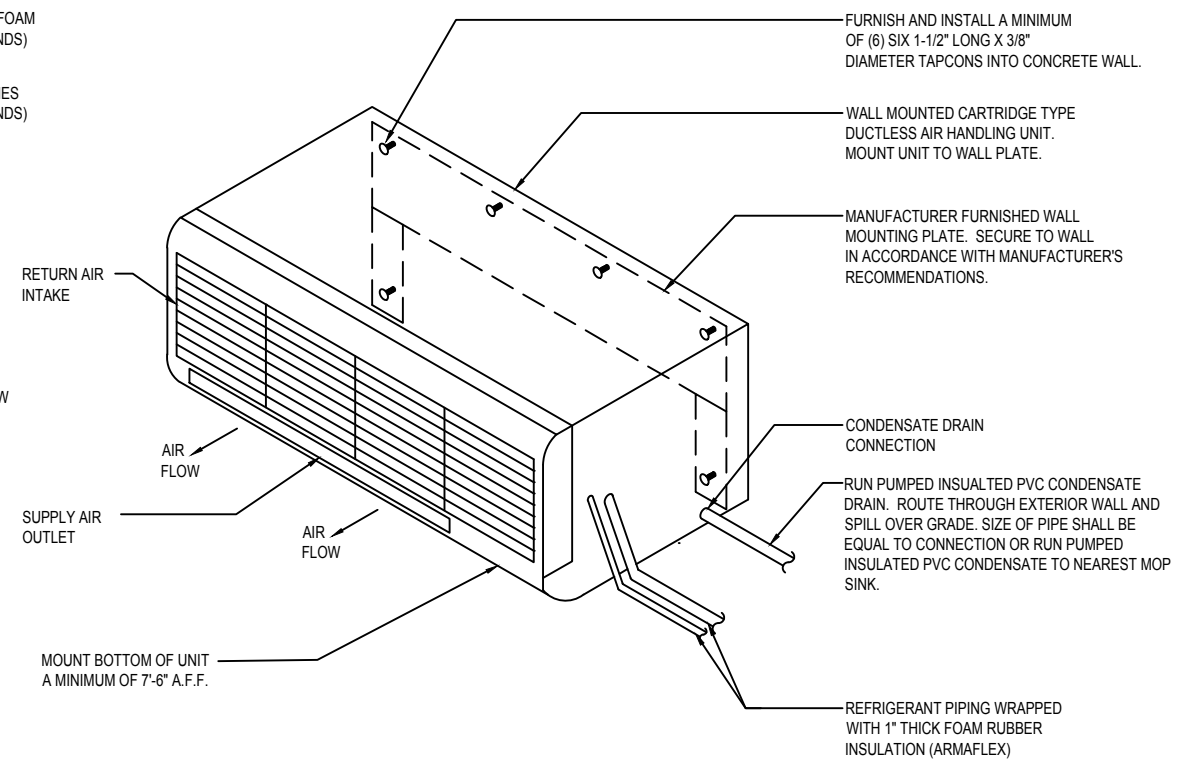
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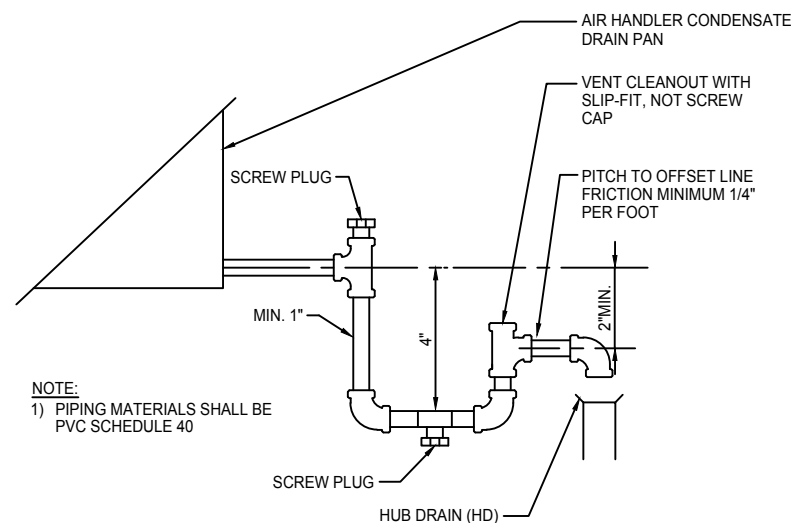
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

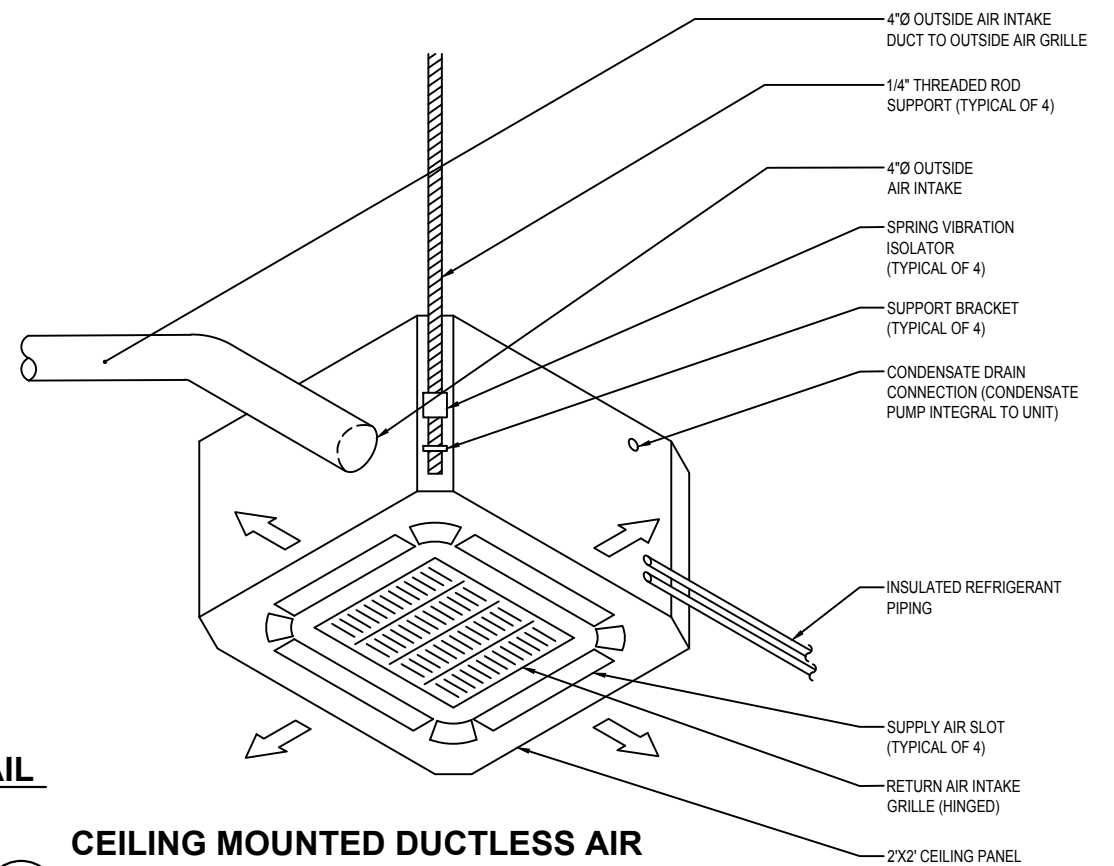


<u>PIPE CHASE SIZES</u>	
SUCTION PIPE SIZE	PVC REFRIGERANT PIPE CHASE SIZE
5/8" TO 1 5/8"	4"
1 7/8" TO 2 5/8"	6"
3 1/8" TO 4 1/8"	8"

- ## 3 REFRIGERANT PIPING CONDUIT DETAIL



4 M-501 AIR HANDLING UNIT CONDENSATE TRAP DETAIL SCALE: NTS



2 HANDLING UNIT MOUNTING DETAIL (MINI SPLIT)
M-501 SCALE: NTS


5 VOLUME DAMPERS-SINGLE BLADE TYPE
M-501 SCALE: NTS

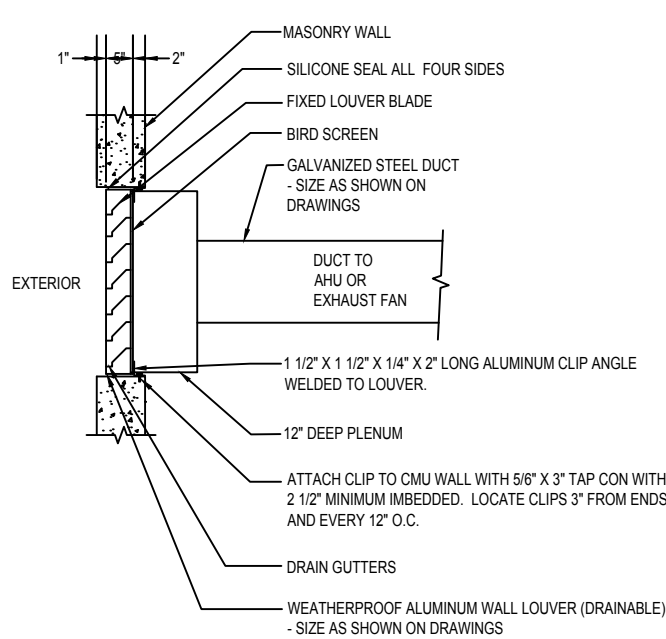
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



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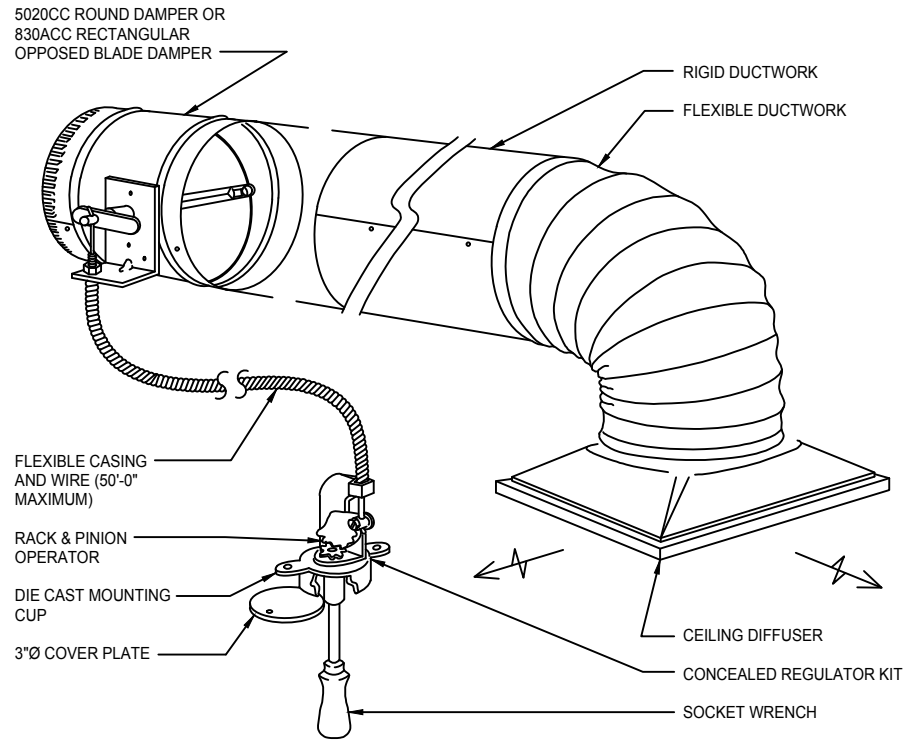
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

 PROJECT NORTH	PHASE 2 - 90% SUBMITTAL	
	SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA	DRAWING NO. M-501
		SHEET NO.
M-501 HVAC DETAILS		



4 WALL LOUVER/DUCTWORK MOUNTING DETAIL

4
M-502
SCALE: NTS

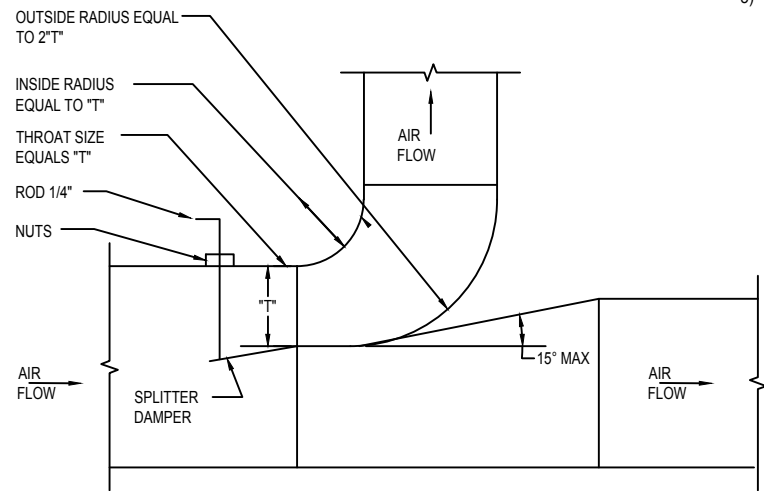


NOTE:

- COORDINATE EXACT LOCATION OF CEILING MOUNTED CONCEALED REGULATOR WITH ARCHITECT PRIOR TO INSTALLATION.
- THE 270-301 BOWDEN CABLE CONTROL SYSTEM IS DESIGNED TO BE IMBEDDED IN THE CEILING FLUSH WITH THE FINISHED SURFACE.
- CABLE SHALL CONSIST OF BOWDEN CABLE 0.054" STAINLESS STEEL CONTROL WIRE ENCAPSULATED IN 1/16" FLEXIBLE GALVANIZED SPIRAL WIRE SHEATH.
- LOCKING RACK AND PINION GEAR DRIVE SHALL BE CONSTRUCTED OF 14 GAUGE STEEL AND SHALL BE USED TO CONVERT ROTARY MOTION INTO PUSH-PULL MOTION.
- CONTROL SHAFT SHALL BE "D"-STYLE FLATTENED 1/4" DIAMETER WITH 265° ROTATION PROVIDING 1-1/2" LINEAR TRAVEL CAPABILITY.

3 REMOTE VOLUME DAMPER MOUNTING DETAIL (SQUARE DIFFUSER)

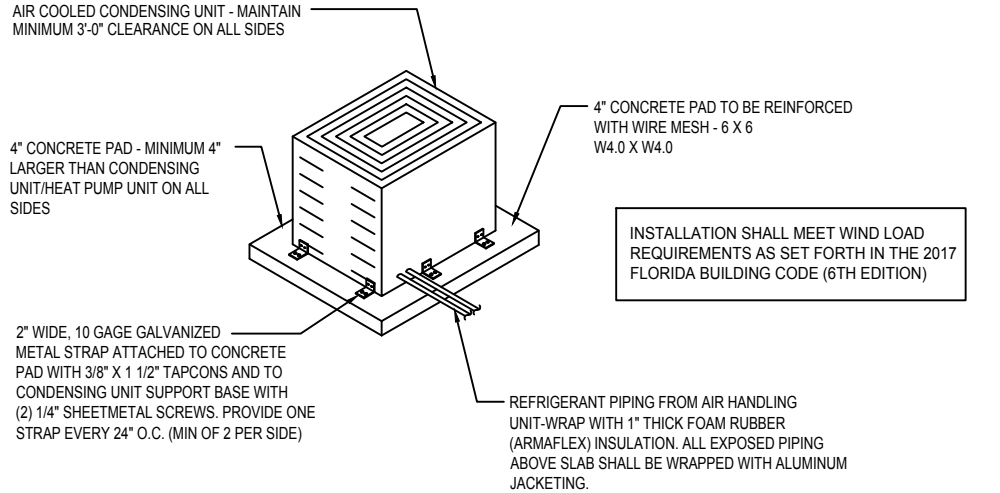
3
M-502
SCALE: NTS



NOTE
DAMPER TO BE NOT LESS THAN 1 1/2" X "T", MINIMUM LENGTH 12".

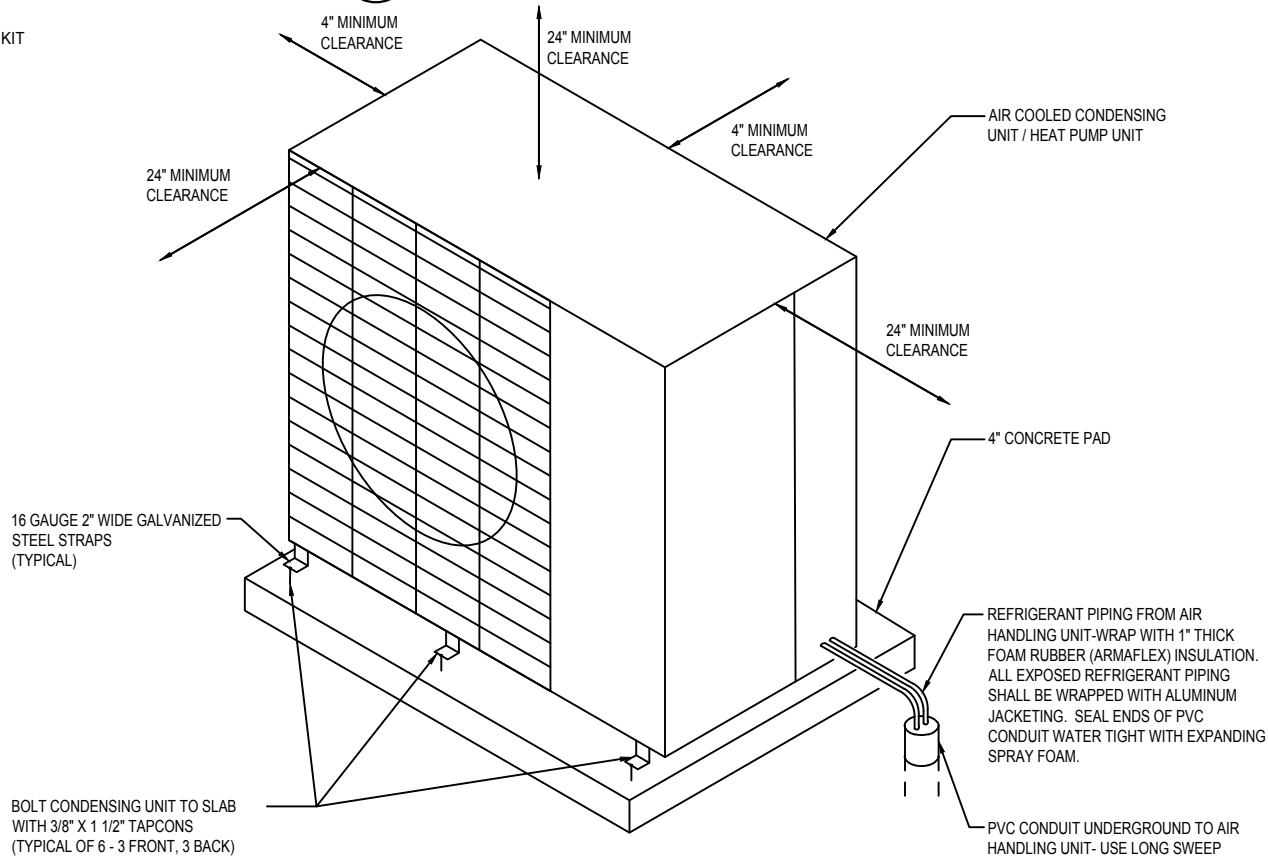
5 SPLITTER DAMPER DETAIL

5
M-502
SCALE: NTS



1 CONDENSING UNIT/HEAT PUMP UNIT MOUNTING DETAIL

1
M-502
SCALE: NTS



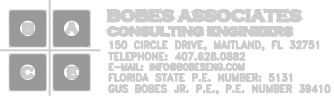
2 VERTICAL CONDENSING UNIT MOUNTING DETAIL (MINI SPLIT)

2
M-502
SCALE: NTS

PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA			DRAWING NO.	
			M-502	
			SHEET NO.	

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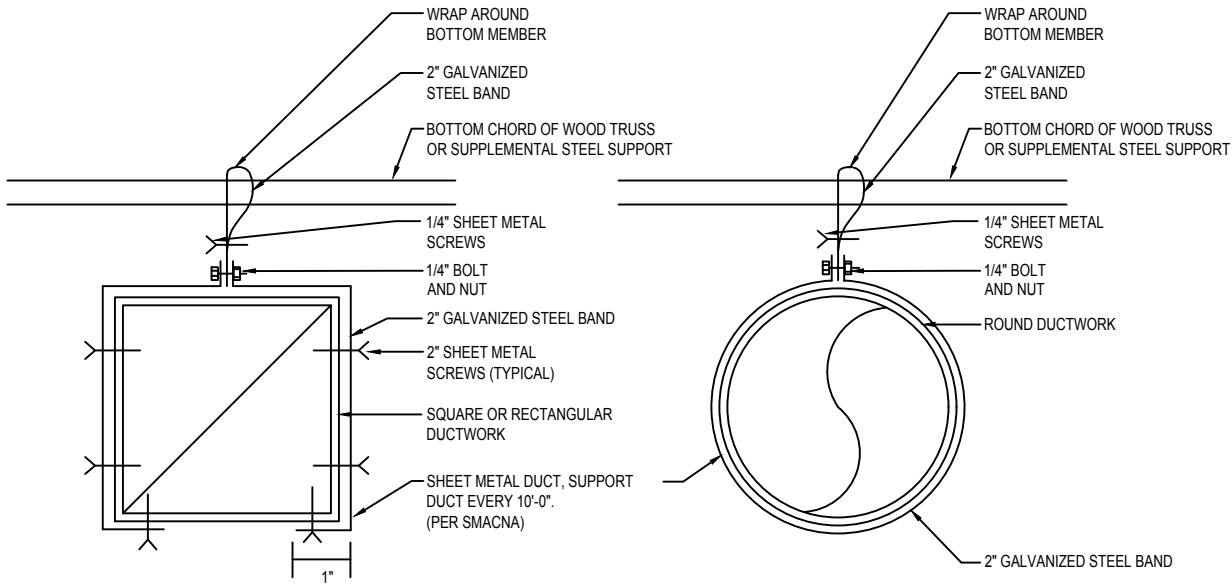
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



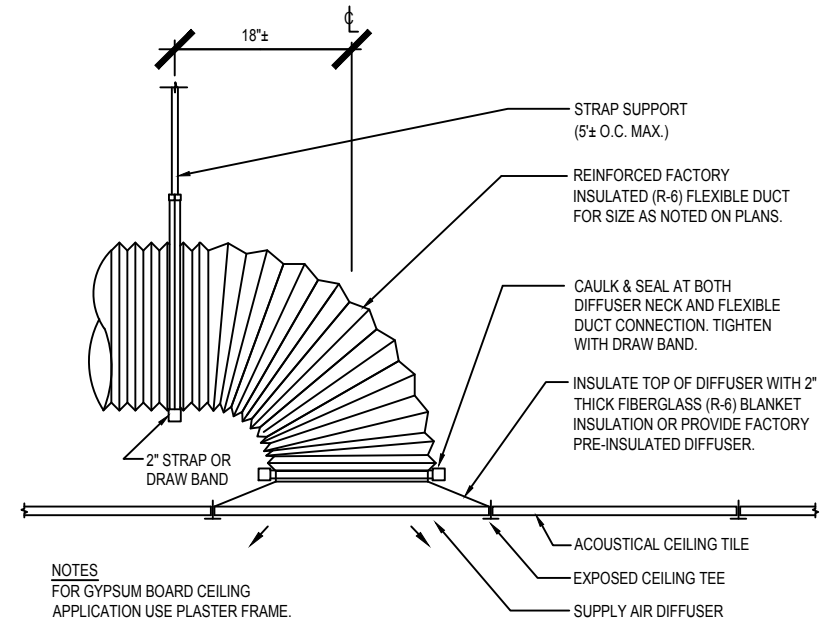
Augusto E. Bobes Jr., P.E. No. 39410

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	COLUMBIA	438609-1-52-01

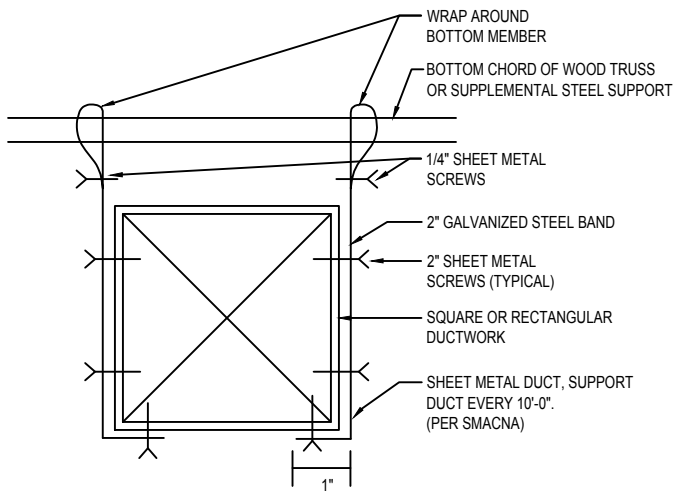
M-502 HVAC DETAILS



3
M-503
TYPICAL EXHAUST AIR DUCT CONNECTION DETAIL
SCALE: NTS

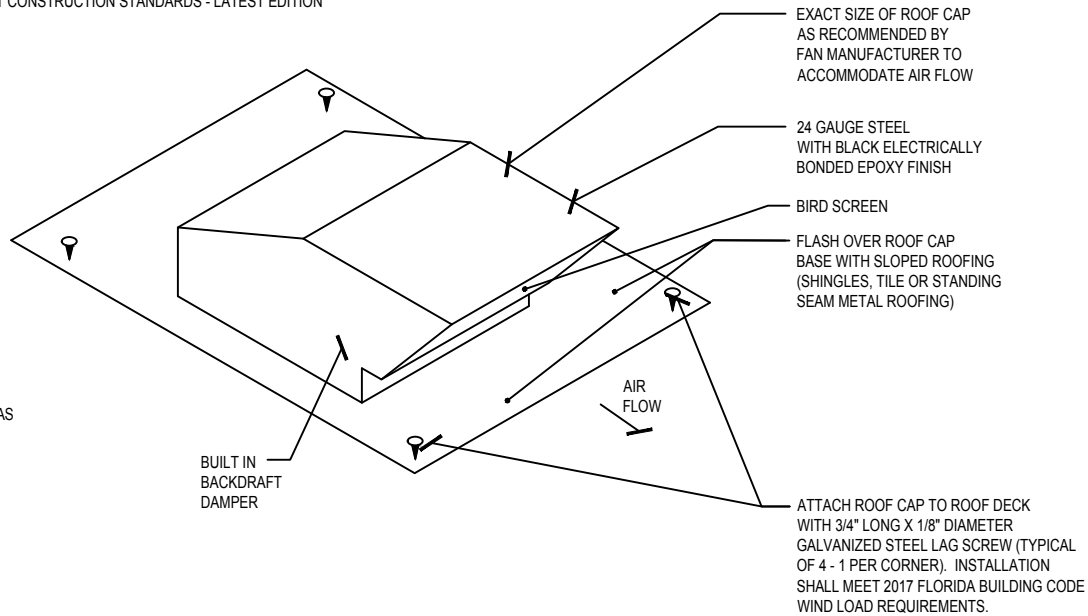


1
M-503
SUPPLY AIR DIFFUSER CONNECTION DETAIL
SCALE: NTS

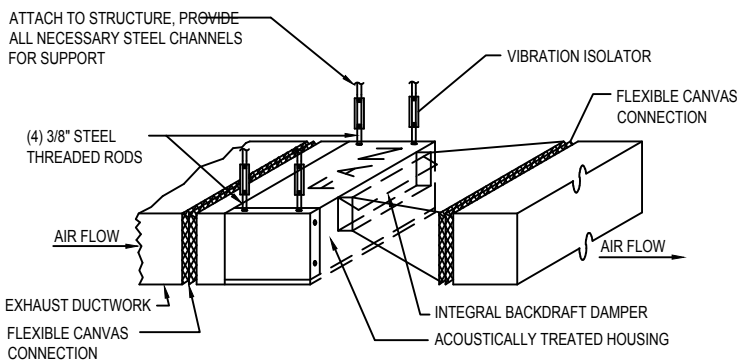


5
M-503
SHEET METAL DUCT HANGING DETAIL
SCALE: NTS

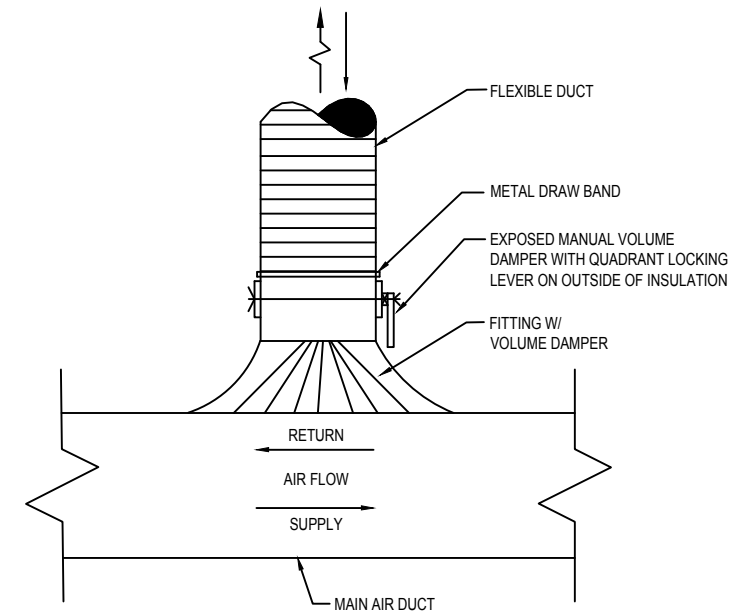
NOTES
1. INSTALLATION SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS - LATEST EDITION



4
M-503
ROOF CAP DETAIL (EXHAUST/SLOPED ROOF)
SCALE: NTS



6
M-503
INLINE EXHAUST FAN DETAIL
SCALE: NTS



2
M-503
FLEXIBLE DUCT CONNECTION DETAIL (SUPPLY & RETURN)
SCALE: NTS

PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA			DRAWING NO.	
			M-503	
			SHEET NO.	

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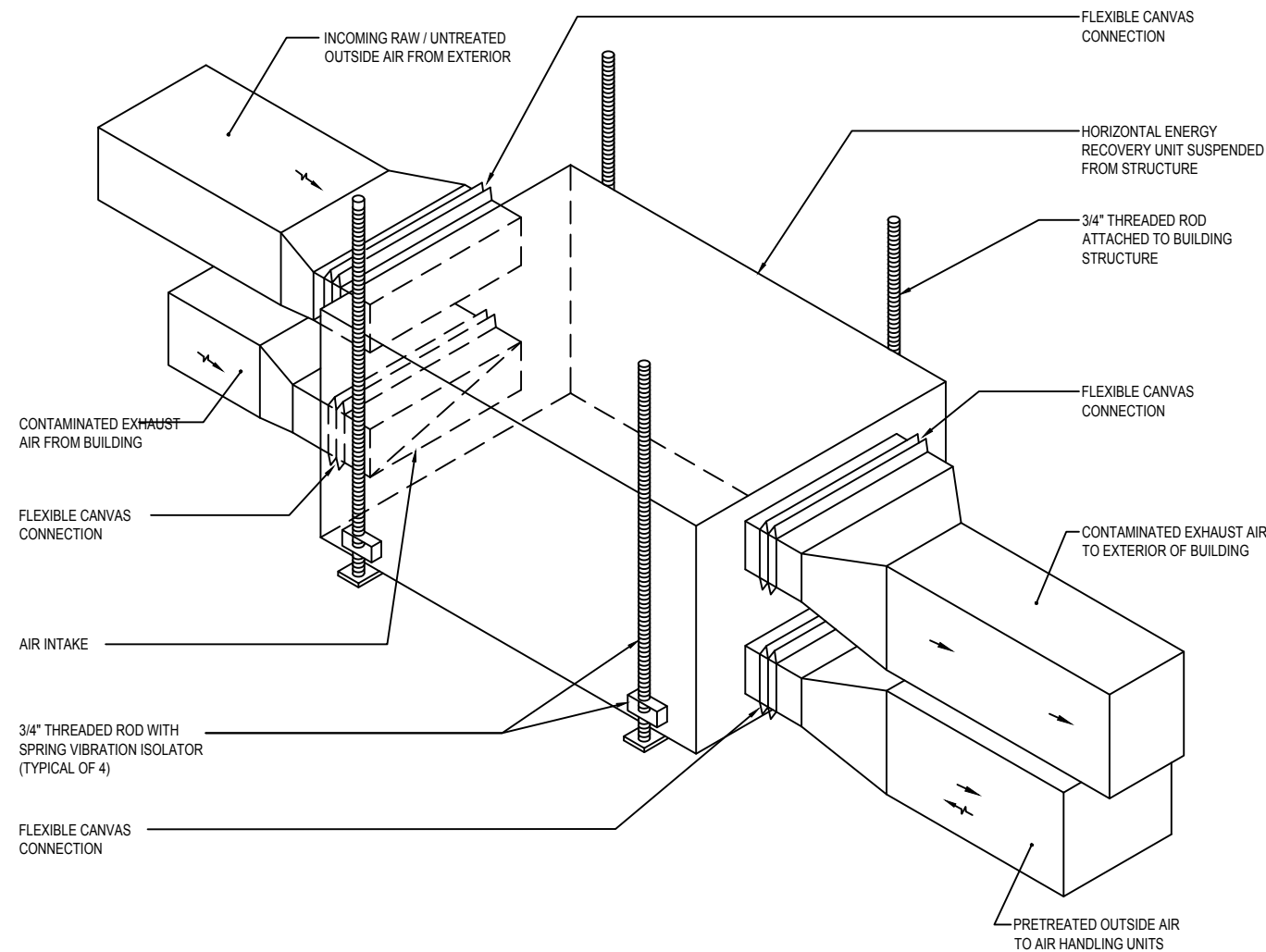
REVISIONS					
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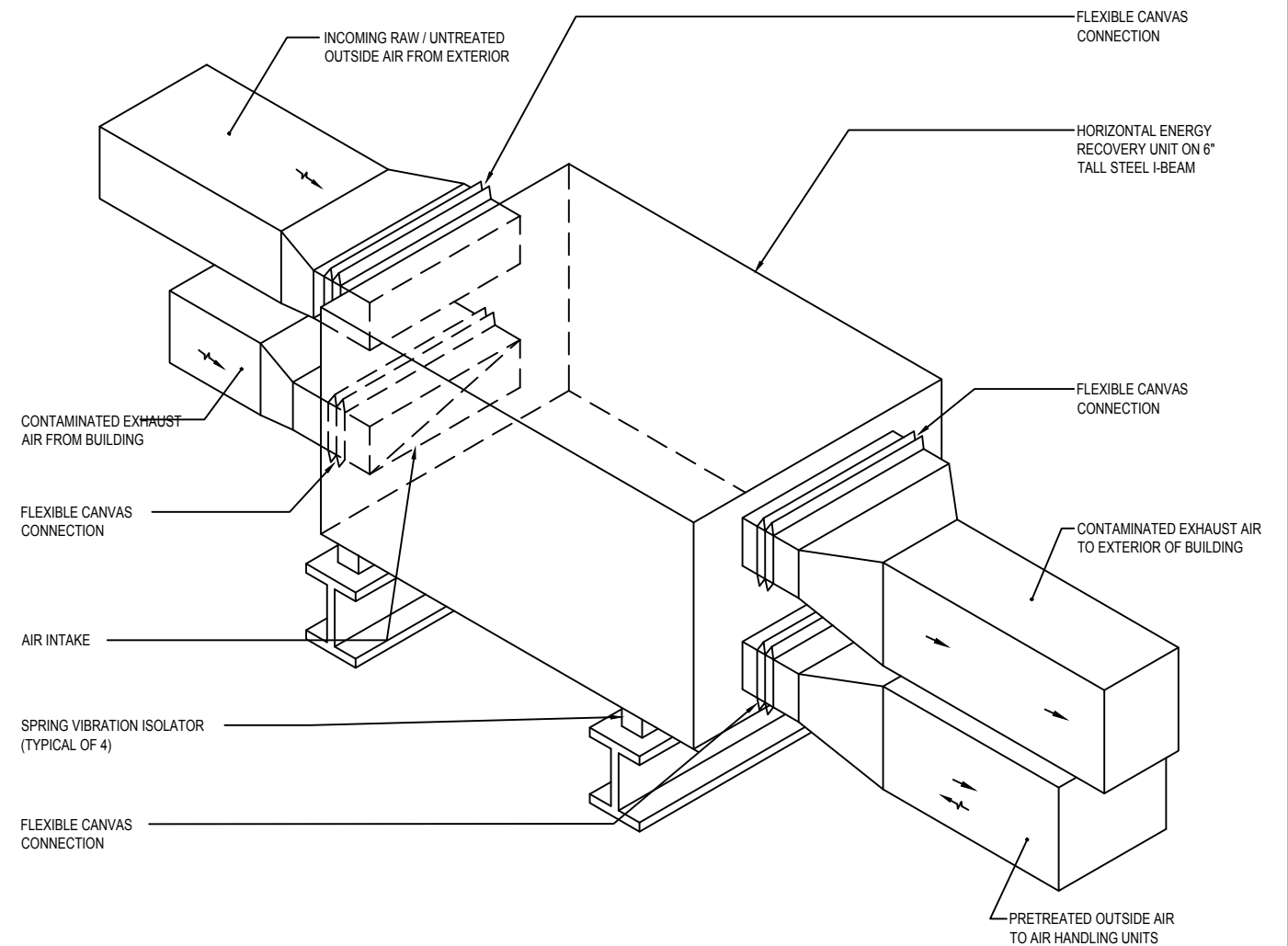
Augusto E. Bobes Jr., P.E. No. 39410

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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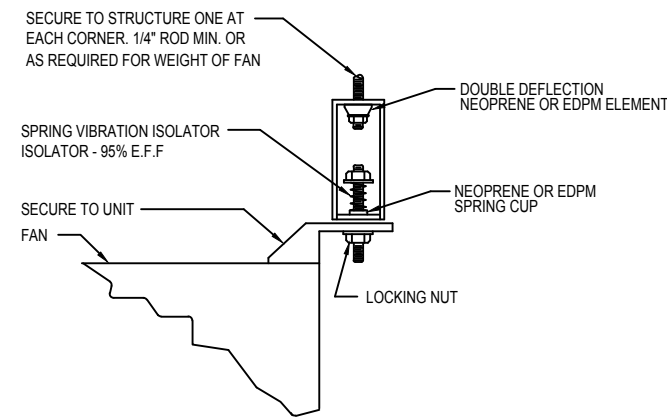
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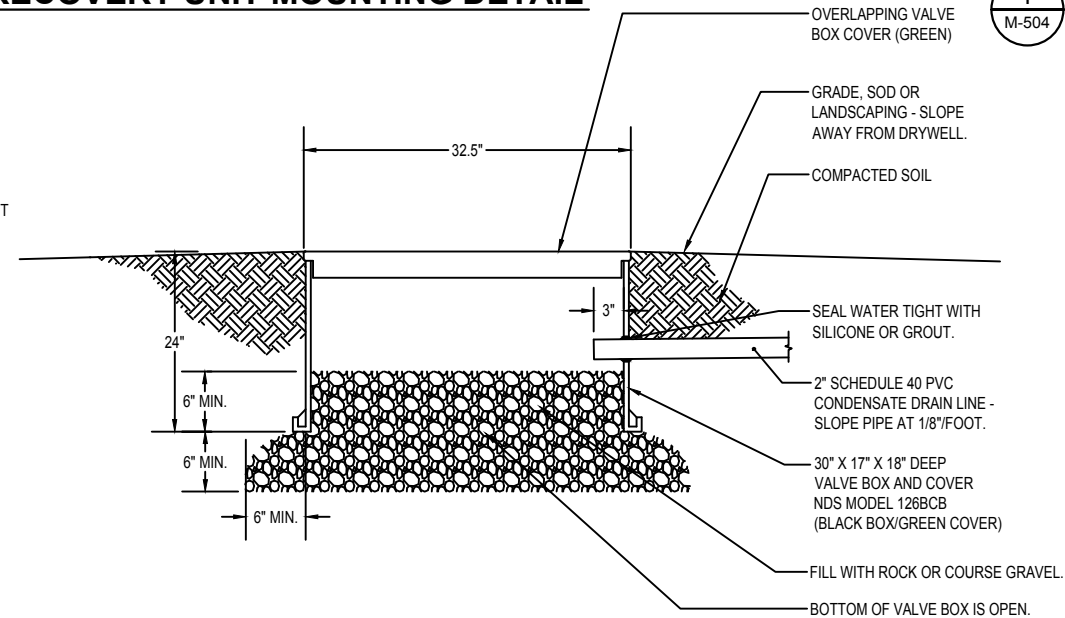
3 PLATE TYPE ENERGY RECOVERY UNIT MOUNTING DETAIL
M-504 SCALE: NTS



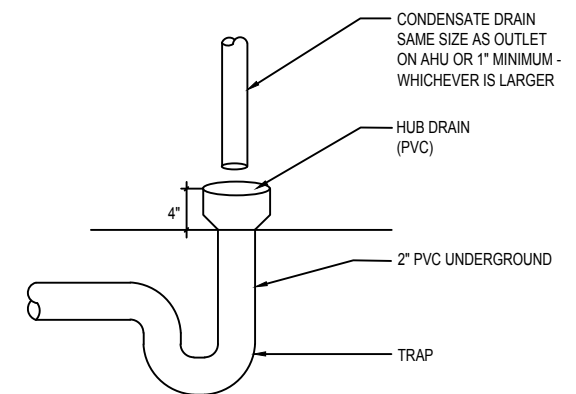
1 PLATE TYPE ENERGY RECOVERY UNIT MOUNTING DETAIL
M-504 SCALE: NTS



5 FAN SUSPENSION DETAIL
M-504 SCALE: NTS



4 CONDENSATE DRYWELL DETAIL
M-504 SCALE: NTS



2 CONDENSATE HUB DRAIN DETAIL
M-504 SCALE: NTS

PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA				DRAWING NO. M-504
M-504 HVAC DETAILS				SHEET NO.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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SPLIT SYSTEM AIR CONDITIONING UNIT WITH ENERGY RECOVERY VENTILATOR UNIT/SECTION SCHEDULE		
AIR HANDLING UNIT		
MARK	AHU-1.1	AHU-1.2
TOTAL CAPACITY	83.79	64.73
SENSIBLE CAPACITY	52.18	41.02
TOTAL SUPPLY AIR	1600	1400
OUTSIDE AIR	1600	1400
ENTERING AIR	80.7/69.4	80.2/68.0
LEAVING AIR (COIL)	49.45/49.24	54.8/53.2
HOT GAS REHEAT	YES/34.0 MBH	YES/27.0 MBH
ELECTRIC HEATER (MIN)	15.0 KW/11.3KW	15.0 KW/11.3KW
EXTERNAL STATIC PRESSURE (IN H ₂ O)	1.5	1.5
FAN MOTOR (HP)	2.3	2.3
ELECTRICAL CHARACTERISTICS	208/3/60	208/3/60
FLA	42.1	39.9
MCA	53	50
FUSE	60	50
FILTER		
WEIGHT		
MANUFACTURER	AAON	AAON
MODEL	V3-BRB-8-0-162C-5Q2	V3-BRB-8-0-162C-5Q2
CONDENSING UNIT		
MARK	CU-1.1	CU-1.2
NO. OF COMPRESSORS / CIRCUITS	2	1
ELECTRICAL SERVICE	208/3/60	208/3/60
SYSTEM EER/SEER	11.9/	12.1/
FLA	35	23
MCA	39	26
FUSE (MOCP)	50	45
WEIGHT (lbs)		474
MANUFACTURER	AAON	AAON
MODEL	CFA-009-B-A-8-DC00H	CFA-007-B-A-8-DC00H
ENERGY RECOVERY VENTILATOR		
MARK		
TYPE	ERV-1	ERV-2
EXHAUST FAN		
EXHAUST VOLUME (CFM)	1600	1400
EXTERNAL S.P. (IN H ₂ O)	1.5	1.5
MOTOR (HP)	2.3	2.3
SUPPLY FAN		
SUPPLY VOLUME (CFM)	1600	1400
MOTOR (HP)	0.05	0.05
ELECTRICAL		
(V/PH/Hz)	208/3/60	208/3/60
SUMMER CONDITIONS		
E.A.T. (F) (D. B./W.B.)	94.0/78.0	94.0/78.0
L.A.T. (F) (D. B./W.B.)	50.4/50.1	50.4/50.1
EFF. (%)	68%	68%
WINTER CONDITIONS		
E.A.T. (F) (D. B./W.B.)	38.0/34.0	38.0/34.0
L.A.T. (F) (D. B./W.B.)	85.8/83.1	88.8/64.2
EFF. (%)		
MANUFACTURER	AAON	AAON
MODEL	ERC-3019C	ERC-3019C
NOTES: 1. AHU AND ERV SHALL BE AN INTEGRATED UNIT. 2. FURNISH WITH HOT GAS REHEAT. 3. FAN MOTORS SHALL BE ECM.		

FAN SCHEDULE																			
UNIT NUMBER	AREA SERVED	PERFORMANCE DATA					CONSTRUCTION DATA			MOTOR DATA				ELECTRICAL			MANUFACTURER/MODEL	WEIGHT (LBS)	NOTES
		CFM	SP	RPM	SONES	BHP	FAN TYPE	DRIVE TYPE	DISCH	RPM	HP	WATTS	START TYPE	VOLTS	PHASE	CYCLES			
EF-1.1	STORAGE BUILDING	300	.325"	1350	2.8	--	INLINE CENTRIFUGAL	DIRECT	HORIZ	1350	--	161.0	--	115	1	60	GREENHECK CSP-A390	23	1-4

- NOTES:
1. FURNISH FAN WITH BACKDRAFT DAMPER
2. FURNISH FAN WITH ROOF CAP.
3. FURNISH FAN WITH SOLID STATE VARIABLE SPEED CONTROLLER. MOUNT CONTROLLER TO FAN CABINET IN AN ACCESSIBLE LOCATION. CONTROLLER TO BE USED FOR SYSTEM BALANCING.
4. FURNISH FAN WITH INTEGRAL ELECTRICAL DISCONNECT.

SPLIT SYSTEM HEAT PUMP AIR CONDITIONING UNIT SCHEDULE																	
AIR HANDLING UNIT/EVAPORATOR																	
MARK	LOCATION	MANUF.	UNIT TYPE	MODEL NO.	NOM. COOLING CAP.(BTUH)	NOM. HEATING CAP.(BTUH) @47°	FAN CFM MIN/MAX	FAN WATTS/FLA	POWER V/PH/Hz	LIQUID INCH	GAS INCH	MCA/MOCP	WEIGHT LBS	COMMENTS		NOTES	
AHU-1.3	OFFICE 011	LG	CEILING MOUNTED CASSETTE TYPE UNIT	AM012NNNDCH	MAX 12000 MIN 3400	MAX 13500 MIN 3000	263/335/371	65/33	208/1/60	1/4	1/2	26/15	32	PROVIDE UNIT WITH 15 CFM OF OUTSIDE AIR		1-5,7,8	
AHU-1.4	BREAK RM 007	LG	CEILING MOUNTED CASSETTE TYPE UNIT	AM012NNNDCH	MAX 12000 MIN 3400	MAX 13500 MIN 3000	263/335/371	65/33	208/1/60	1/4	1/2	26/15	32	PROVIDE UNIT WITH 15 CFM OF OUTSIDE AIR		1-5,7,8	
AHU-1.5	STORAGE RM 008	LG	CEILING MOUNTED CASSETTE TYPE UNIT	AM012NNNDCH	MAX 12000 MIN 3400	MAX 13500 MIN 3000	263/335/371	65/36	208/1/60	1/4	1/2	26/15	32	PROVIDE UNIT WITH 30 CFM OF OUTSIDE AIR		1-8	
AHU-1.6	ITS / COMM. RM 099	LG	WALL MOUNTED	AC012MNADCH/A	MAX 12000 MIN 3400	MAX 14000 MIN 3000	194/247/300	—/33	208/1/60	1/4	1/2	1.0/—	17	NO OUTSIDE AIR		1-7	
AHU-1.7	ELECTRICAL ROOM 010	LG	WALL MOUNTED	AC012MNADCH/A	MAX 12000 MIN 3400	MAX 14000 MIN 3000	194/247/300	—/33	208/1/60	1/4	1/2	1.0/—	17	NO OUTSIDE AIR		1-7	
HEAT PUMP - CONDENSING UNIT																	
MARK	LOCATION	MANUF.	UNIT TYPE	MODEL NO.	NOM. COOLING	SEER/SEER	HSPF/COP @47°	FAN MTR	POWER V/PH/Hz	LIQUID INCH	GAS INCH	WEIGHT LBS	MCA / MOCP	REFR.	COMMENTS		NOTES
HP-1.3	GROUND	LG	AIR COOLED HEAT PUMP	AC012KX ADCH/AA	MAX 12000 MIN 5800	20.8/12.0	10.2/4.31	--	208/1/60	1/4	1/2	104	11/28	R-410A	PROVIDE VARIABLE SPEED INVERTER-DRIVEN COMPRESSOR		1-5,7,8
HP-1.4	GROUND	LG	AIR COOLED HEAT PUMP	AC012KX ADCH/AA	MAX 12000 MIN 5800	20.8/12.0	10.2/4.31	--	208/1/60	1/4	1/2	104	11/28	R-410A	PROVIDE VARIABLE SPEED INVERTER-DRIVEN COMPRESSOR		1-5,7,8
HP-1.5	GROUND	LG	AIR COOLED HEAT PUMP	AC012KX ADCH/AA	MAX 12000 MIN 8000	24.6/14.4	11.0/4.28	--	208/1/60	1/4	1/2	100	11/28	R-410A	PROVIDE VARIABLE SPEED INVERTER-DRIVEN COMPRESSOR		1-8
HP-1.6	GROUND	LG	AIR COOLED HEAT PUMP	AC012KX ADCH/AA	MAX 12000 MIN 3400	18.0/9.84	9.5/2.44	--	208/1/60	1/4	1/2	80	10.7/15	R-410A	PROVIDE VARIABLE SPEED INVERTER-DRIVEN COMPRESSOR		1-7
HP-1.7	GROUND	LG	AIR COOLED HEAT PUMP	AC012KX ADCH/AA	MAX 12000 MIN 3400	18.0/9.84	9.5/2.44	--	208/1/60	1/4	1/2	80	10.7/15	R-410A	PROVIDE VARIABLE SPEED INVERTER-DRIVEN COMPRESSOR		1-7

NOTES:

- UNIT IS FED FROM OUTDOOR UNIT.
- HEAT PUMP UNIT SHALL UTILIZE R-410A REFRIGERANT.
- PROVIDE FACTORY FABRICATED HAIL GUARD ON HEAT PUMP UNIT COIL.
- PROVIDE VANDAL PROOF CAPS ON ALL REFRIGERANT PIPING SERVICE VALVES TO PREVENT UNAUTHORIZED RELEASE OF REFRIGERANT.
- CONTRACTOR SHALL SECURE THE HEAT PUMP UNIT TO THE 4" TALL CONCRETE SERVICE PAD TO MEET THE WIND LOAD REQUIREMENTS AS SET FORTH IN THE 2017 FLORIDA BUILDING CODE (6TH EDITION).
- CONTRACTOR SHALL DISABLE THE HEATING MODE.
- FURNISH SYSTEM WITH WIRED REMOTE CONTROLLER WITH TIME CLOCK.
- FURNISH WITH 4 WAY CASSETTE FASCIA PANEL.

AIR DISTRIBUTION SCHEDULE									
SYMBOL	DESCRIPTION	MODULE SIZE	MATERIAL	FINISH	NECK SIZE	DAMPER	BORDER DIMENSIONS	MANUFACTURER	MODEL NUMBER
CD-1	SQUARE SUPPLY AIR DIFFUSER WITH THREE CONE ONE PIECE CONSTRUCTION. ROUND NECK. VERTICAL-TO-HORIZONTAL DISCHARGE PATTERN. NO CORNER JOINTS IS MOVABLE INNER CONES	10"X10"	ALUMINUM	WHITE	SEE DWG	NO	SURFACE CEILING	METALAIR	5700
CD-2	SQUARE SUPPLY AIR DIFFUSER WITH THREE CONE ONE PIECE CONSTRUCTION. ROUND NECK. VERTICAL-TO-HORIZONTAL DISCHARGE PATTERN. NO CORNER JOINTS REMOVABLE INNER CONES	12"X12"	ALUMINUM	WHITE	SEE DWG	NO	SURFACE CEILING	METALAIR	5700
ER-1	EXHAUST - SIDEWALL, SURFACE MOUNTED, ECC CRATE	SEE DWG	ALUMINUM	WHITE	SEE DWG	NO	SURFACE WALL	METALAIR	CC5
ER-2	EXHAUST - CEILING, SURFACE MOUNTED	SEE DWG	ALUMINUM	WHITE	SEE DWG	NO	SURFACE CEILING	METALAIR	CC5

WL-1 WALL LOUVER: EXTRUDED ALUMINUM, WEATHERPROOF, WIND DRIVEN RAIN RESISTANT, BIRD SCREEN, BRONZE ANODIZED FINISH, FLORIDA PRODUCT APPROVED. GREENHECK MODEL EHH 501X OR EQUAL.

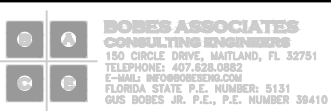
OAD-1 OUTSIDE AIR DAMPER: SIZE AS REQUIRED FOR DUCTWORK IT IS SERVING. RATED FOR HIGH HUMIDITY. ALUMINUM CONSTRUCTION (FRAME AND BLADES), LOW LEAKAGE WITH LINKAGE, AXLE AND BEARINGS MANUFACTURED FROM TYPE 304 STAINLESS STEEL. GREENHECK MODEL VCD-40 OR EQUAL RUSKIN DAMPER.

DESIGN CONDITIONS SCHEDULE			
GAINSVILLE FLORIDA	SUMMER		WINTER
	DB(°F)	WB(°F)	DB(°F)
INDOOR	75	62.5	70
OUTDOOR*	94.0	77.0	30.0

*PER ASHRAE FUNDAMENTALS HANDBOOK

PROJECT NORTH			PHASE 2 - 90% SUBMITTAL	
SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA			DRAWING NO.	
			M-601	
			SHEET NO.	

REVISIONS					
DATE	BY	DESCRIPTION		DATE	BY



Augusto E. Bobes Jr., P.E. No. 39410

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
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SR 8 (I-10) WESTBOUND (COLUMBIA COUNTY) REST AREA		M-601 HVAC SCHEDULES	
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