

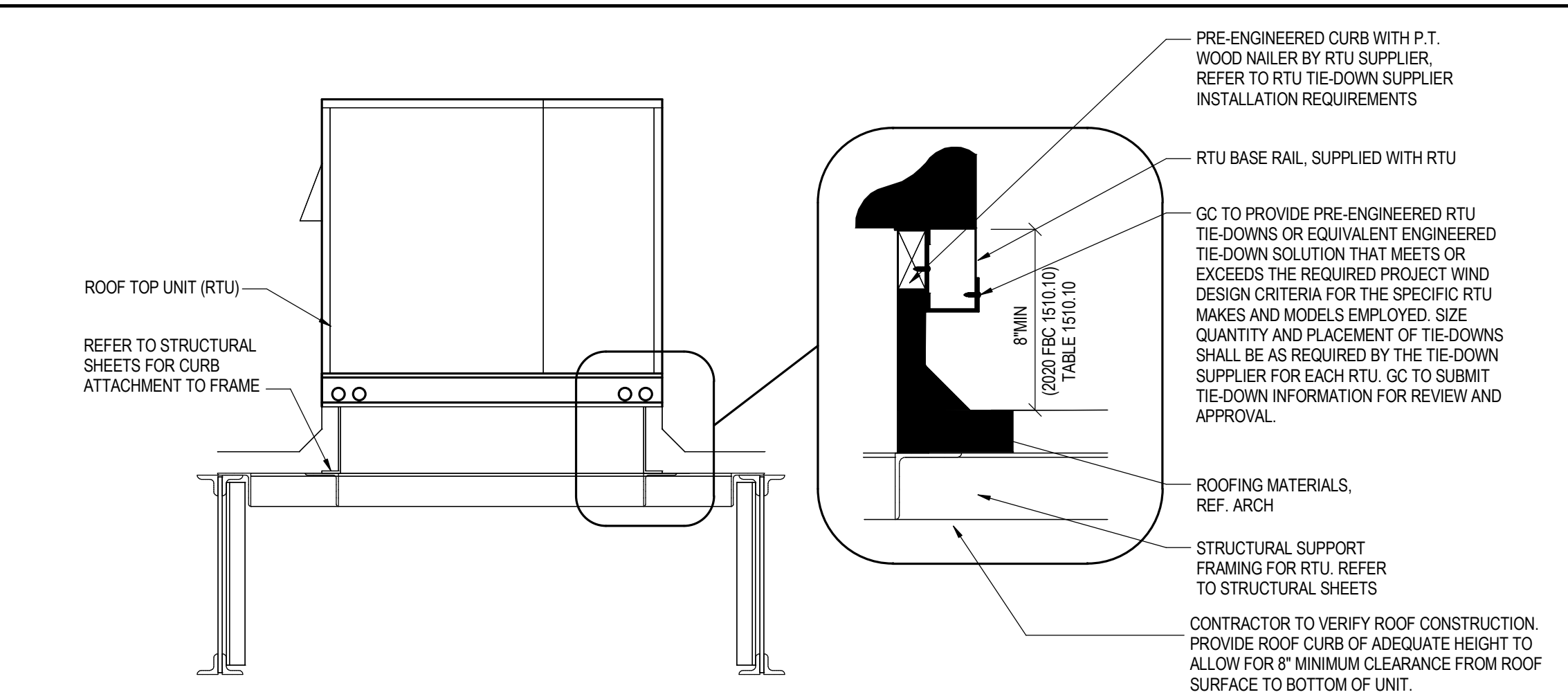
PIPING MATERIAL SCHEDULE					
SERVICE	SIZE	MATERIAL	SCHEDULE / TYPE	INSULATION TYPE THICK	REMARKS
A/C CONDENSATE	ALL	PVC	SCH. 40	NONE	-
NOTES:					
1. FIBERGLASS PIPE INSULATION: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. SEMIRIGID BOARD MATERIAL WITH FACTORY-APPLIED ASJ. COMPLYING WITH ASTM C 1383, OR WITH PROPERTIES SIMILAR TO ASTM C 612. NOMINAL DENSITY IS 2.5 LB/CU. FT. OR MORE. THERMAL CONDUCTIVITY (K VALUE) AT 100 DEG. F (65 DEG. C) IS 0.028 BTU X IN. H X SQ. FT. X DEG. F (0.042 WM X K) OR LESS. ALL SERVICE JACKET (ASJ): WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRM WITH ALUMINUM-FOL BACKING, COMPLYING WITH ASTM C 138, TYPE I MANUFACTURERS: A. CERTANTEED CORP., B. JOHNS MANVILLE, C. KNAUF INSULATION, D. OWENS CORNING.					
2. FLEXIBLE ELASTOMERIC PIPE INSULATION: CLOSED CELL, SPONGE OR EXPANDED - RUBBER MATERIALS, COMPLY WITH ASTM C-634, TYPE I FOR TUBULAR MATERIALS. PROVIDE SEALANT COMPATIBLE WITH MATERIAL. MANUFACTURERS: ARMAFLEX BY ARMACELL OR EQUIVA.					

DRAWING INDEX	
SHEET	TITLE
M001	MECHANICAL GENERAL INFORMATION
M201	MECHANICAL ROOF PLAN

HVAC SYMBOLS	
SYMBOL	DESCRIPTION
	NEW DUCT WORK
	FLEXIBLE DUCT
	SUPPLY AIR DUCT WORK UP THRU PLAN
	RETURN AIR OR EXHAUST DUCT WORK UP THRU PLAN
	DUCT WORK TRANSITION
	90° ELBOW WITH TURNING VANES
	MANUAL AIR VOLUME CONTROL DAMPER
	SUPPLY AIR DEVICE
	RETURN AIR DEVICE
	EXHAUST AIR DEVICE
	WALL MOUNTED THERMOSTAT
	TEMPERATURE SENSOR
	DUCT SMOKE DETECTOR
	MOTORIZED DAMPER
	DIFFUSER DEVICE TYPE - AIR QUANTITY
	EQUIPMENT DESIGNATION TAG
	REFRIGERATION PIPING
	CONDENSATE PIPING
	FIRE DAMPER

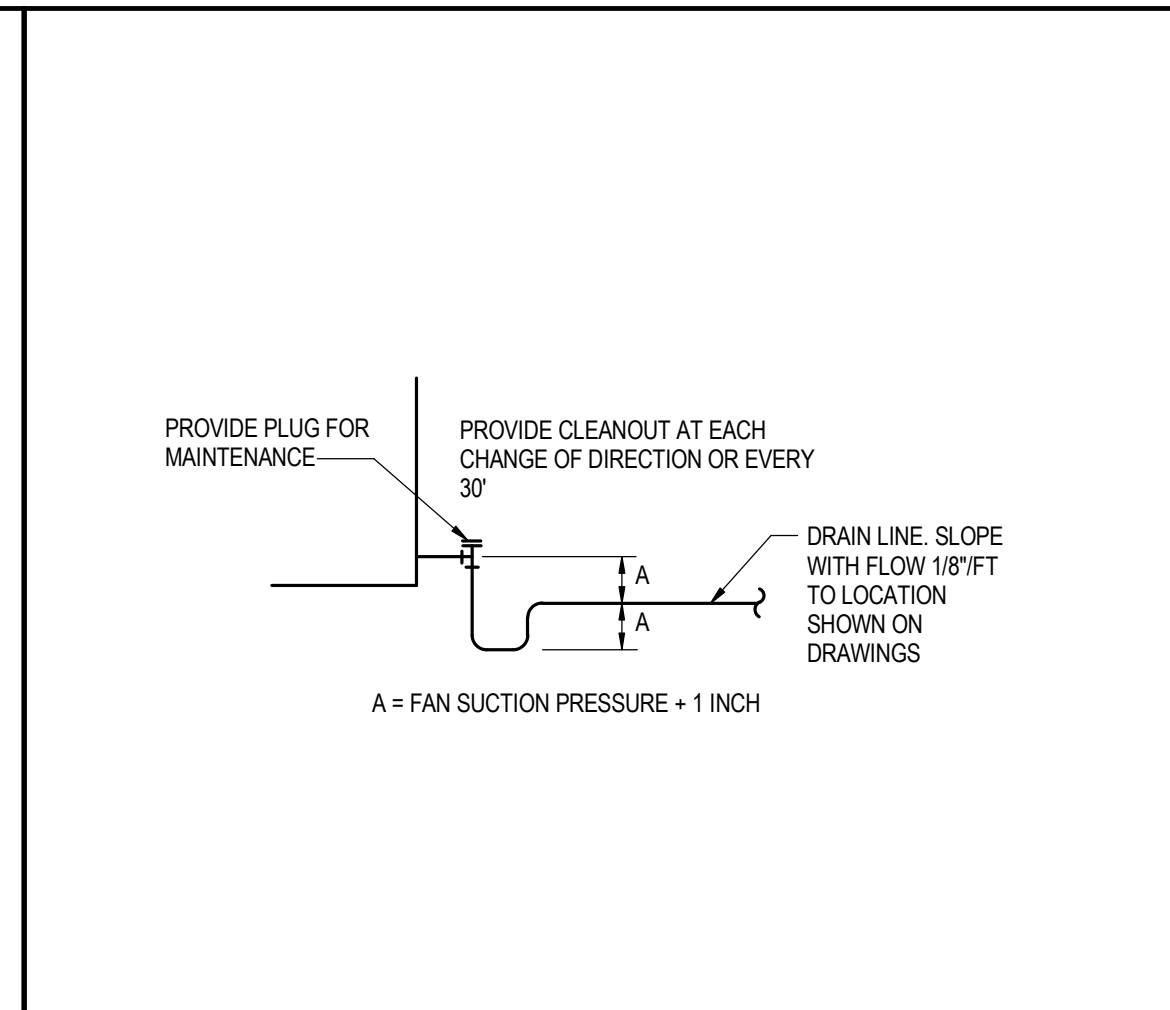
TESTING AND BALANCING NOTES	
1. CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE TESTING, ADJUSTING AND BALANCING FOR THIS PROJECT. TESTING, ADJUSTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THESE NOTES.	
2. THE FOLLOWING MECHANICAL (HVAC) SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED:	
A. ROOFTOP AIR CONDITIONING UNITS AND RELATED SUPPLY AND RETURN DUCTWORK, INCLUDING ALL AIR INLETS AND OUTLETS AND ROOFTOP UNIT OUTSIDE AIR.	
B. AIR HANDLING UNITS AND RELATED SUPPLY AND RETURN DUCTWORK, INCLUDING ALL AIR INLETS AND OUTLETS AND AIR HANDLING UNIT OUTSIDE AIR.	
C. EXHAUST FANS.	
D. COMMERCIAL KITCHEN HOODS, COMMERCIAL KITCHEN HOOD EXHAUST FANS, COMMERCIAL KITCHEN HOOD MAKEUP AIR FANS.	
1. PROVIDE A COMMERCIAL KITCHEN HOOD PERFORMANCE TEST AND CAPTURE AND CONTAMINANT TEST. PERFORM THESE TESTS PER SECTION 507.6 & 507.6.1 OF THE FLORIDA BUILDING CODE 2023-MECHANICAL CODE.	
3. PRIOR TO COMMENCING ANY WORK, REVIEW CONTRACT DOCUMENTS, TESTING, ADJUSTING AND BALANCING STRATEGIES AND STEP-BY-STEP PROCEDURES.	
4. CONTRACTOR PROVIDING TESTING, ADJUSTING AND BALANCING SHALL BE CERTIFIED BY EITHER AABC OR NEBB.	
5. TESTING, ADJUSTING AND BALANCING REPORT FORMS SHALL BE STANDARD FORMS FROM EITHER AABC OR NEBB.	
6. CONTRACTOR SHALL COORDINATE THE EFFORTS OF FACTORY-AUTHORIZED SERVICE REPRESENTATIVES FOR SYSTEMS AND EQUIPMENT. HVAC CONTROLS INSTALLERS, AND OTHER MECHANICS TO OPERATE HVAC SYSTEMS AND EQUIPMENT TO SUPPORT AND ASSIST THE TESTING, ADJUSTING AND BALANCING ACTIVITIES.	
7. CONTRACTOR SHALL VERIFY QUANTITIES AND LOCATIONS OF BALANCING DEVICES. CONTRACTOR SHALL VERIFY THAT THESE BALANCING DEVICES ARE ACCESSIBLE AND APPROPRIATE FOR BALANCING AND FOR EFFICIENT SYSTEM EQUIPMENT OPERATION PRIOR TO COMMENCEMENT OF WORK.	
8. CONTRACTOR SHALL PERFORM TESTING AND BALANCING PROCEDURES IN EACH AIR AND DUCT SYSTEM.	
9. HVAC SYSTEM AIR AND WATER FLOW RATES SHALL BE WITHIN THE FOLLOWING TOLERANCES:	
A. SUPPLY: PLUS 5 TO PLUS 10 PERCENT	
B. RETURN: PLUS 5 TO PLUS 10 PERCENT	
C. EXHAUST FANS: PLUS 5 TO PLUS 10 PERCENT	
D. EQUIPMENT WITH FANS: PLUS 5 TO PLUS 10 PERCENT	
E. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT	
F. DOMESTIC HOT WATER RECIRCULATING FLOW RATE: 0 TO MINUS 10 PERCENT.	
10. FINAL BALANCING REPORT SHALL INCLUDE THE FOLLOWING:	
A. TEST CONDITIONS FOR FANS AND PUMPS	
B. SYSTEMS DIAGRAMS	
C. AIR CONDITIONING UNIT TEST REPORTS	
D. APPARATUS COIL TEST REPORTS	
E. GAS-FIRED HEAT APPARATUS TEST REPORTS	
F. ELECTRICAL-COIL TEST REPORTS	
G. FAN TEST REPORTS	
H. DUCT TRANSVERSE REPORTS	
I. AIR-TERMINAL DEVICE REPORTS	
J. SYSTEM COIL REPORTS	
K. PUMP TEST REPORTS	
11. ADDITIONAL TESTING AND BALANCING SHALL BE MADE AS DIRECTED BY THE DESIGN ENGINEER TO CORRECT UNUSUAL CONDITIONS. ADDITIONAL TESTING WILL NOT EXCEED THREE DAYS DURING THE FIRST SIX MONTHS OF OPERATION.	
12. IF INITIAL TESTING AND BALANCING PROCEDURES WERE NOT PERFORMED DURING THE NEAR-PEAK SUMMER AND WINTER CONDITIONS, PERFORM ADDITIONAL TESTING, ADJUSTING DURING NEAR-PEAK SUMMER AND WINTER CONDITIONS.	
13. CONTRACTOR TO PROVIDE THREE (3) COPIES OF THE TESTING, ADJUSTING AND BALANCING REPORT FOR REVIEW.	

MECHANICAL GENERAL NOTES	
1. ALL MECHANICAL WORK SHALL MEET ALL THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2023-MECHANICAL CODE.	
2. CONTRACTOR TO VISIT SITE AND VERIFY ALL CLEARANCES BEFORE FABRICATION OF DUCTWORK AND PROVIDE ADDITIONAL OFFSET AND/OR CHANGES IN DUCT SIZES TO MEET FIELD CONDITIONS AND COORDINATE WITH ELECTRICAL, PLUMBING AND FIRE PROTECTION SUBCONTRACTOR BEFORE ANY CONSTRUCTION WORK.	
3. PROVIDE EQUIPMENT GUARDS AT ALL EQUIPMENT WITHIN 10 FEET OF A ROOF EDGE OR OPEN SIDE OF WALKING SURFACE THAT IS OVER 30" ABOVE FLOOR GRADE.	
4. OUTSIDE AIR INTAKES (ROOFTOP UNITS, GRAVITY ROOF VENTS, LOUVERS) SHALL MAINTAIN A MINIMUM OF 10'-0" FROM ANY EXHAUST OUTLET OR SANITARY VENT.	
5. PROVIDE ALL MECHANICAL EQUIPMENT WITH MANUFACTURERS RECOMMENDED SERVICE AREA CLEARANCES.	
6. ALL ROOF TOP UNITS SHALL BE CONSTRUCTED AND INSTALLED TO WITHSTAND LOCAL WIND LOAD DESIGN.	
7. DUCT SMOKE DETECTORS SHALL BE FURNISHED BY THE FIRE ALARM CONTRACTOR, INSTALLED IN DUCT BY THE MECHANICAL CONTRACTOR AND WIRED BY THE FIRE ALARM CONTRACTOR. SMOKE DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72, NATIONAL FIRE ALARM CODE, NFPA 90A, STANDARD FOR INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS, FLORIDA BUILDING CODE 2023-MECHANICAL CODE AND THE MANUFACTURERS INSTALLATION INSTRUCTIONS. COORDINATE LOCATION OF SMOKE DETECTORS WITH FIRE ALARM CONTRACTOR. PROVIDE A VISIBLE/AUDIBLE NOTIFICATION PANEL. NAME: SYSTEM SENSOR RTS2 OR EQUAL, COMPATIBLE WITH BUILDING FIRE ALARM SYSTEM.	
8. PLANS AND DIAGRAMS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED.	
9. PROVIDE EXTERNAL DUCT INSULATION FOR SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK. DUCTWORK INSULATION SHALL BE FOIL FACED FIBERGLASS DUCT WRAP WITH A MINIMUM THERMAL RESISTANCE (R) OF 6.0. INSULATION SHALL HAVE VAPOR BARRIER. INSTALL PER MFR. REQUIREMENTS.	
10. COORDINATE CEILING MOUNTED DIFFUSERS, REGISTERS, AND GRILLES AND OTHER CEILING MOUNTED EQUIPMENT WITH OTHER CEILING MOUNTED EQUIPMENT. SEE REFLECTED CEILING PLAN.	
11. DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, AND OTHER ITEMS OF THE AIR HANDLING SYSTEM SHALL NOT BE SUPPORTED BY THE CEILING OR CEILING SUSPENSION SYSTEM.	
12. CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT & MATERIALS. INSTALLATION OF EQUIPMENT SHALL COMPLY WITH MANUFACTURERS SPECIFICATIONS AND CLEARANCE REQUIREMENTS FOR SERVICING OF EQUIPMENT.	
13. MECHANICAL, PLUMBING AND ELECTRICAL CONTRACTOR SHALL COORDINATED ELECTRICAL VOLTAGE, AMPERAGE, OVER CURRENT PROTECTION AND ALL OTHER ELECTRICAL COMPONENTS AND ACCESSORIES OF THE HVAC AND PLUMBING EQUIPMENT BEFORE ORDERING.	
14. PROVIDE A TRAP IN ALL CONDENSATE PIPING SERVING AIR HANDLING UNITS AND ROOFTOP UNITS. SLOPE CONDENSATE LINE 1/8" PER FOOT. ALL CONDENSATE DRAIN PIPING SHALL BE PROPERLY SUPPORTED.	
15. GUARANTEE, FOR ONE YEAR AFTER DATE OF ACCEPTANCE BY THE OWNER, ALL EQUIPMENT, MATERIALS AND WORKMANSHIP TO BE FREE FROM DEFECT.	
16. DO NOT CUT STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.	
17. FLEXIBLE AND RIGID ROUND DUCT TAKE-OFFS FOR DIFFUSERS SHALL BE THE SAME SIZE AS DIFFUSER NECK. MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 8'-0". FLEXIBLE DUCT SHALL BE THERMAFLEX TYPE MKC OR EQUAL. FLEXIBLE DUCT SHALL BE INSULATED FIBERGLASS, R-6, CLASS 1, UL181 LISTED AND COMPLY WITH NFPA 90A AND NFPA 90B.	
18. ALL WALL MOUNTED THERMOSTATS AND HUMIDISTATS SHALL BE INSTALLED AT AN ELEVATION OF 54" ABOVE FINISHED FLOOR TO THE TOP UNLESS OTHERWISE NOTED ON DRAWINGS. LOCATION OF THE WALL MOUNTED THERMOSTAT SHALL BE COORDINATED WITH OTHER TRADES FOR A NEAT APPEARANCE. FINAL LOCATION OF THERMOSTAT SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER OR HIS REPRESENTATIVE IN THE FIELD.	
19. PROVIDE FLEXIBLE NEOPRENE DUCT CONNECTORS ON THE DISCHARGE AND ENTERING SIDES OF ROOFTOP UNITS, AIR HANDLING UNITS, FANS AND OTHER VIBRATING EQUIPMENT TO WHICH DUCTWORK IS ATTACHED.	
20. PROVIDE ACCESS DOORS IN HARD CEILINGS OR WALLS REQUIRING ACCESS TO VALVES, FIRE DAMPERS, BALANCING DAMPERS, VOLUME DAMPERS OR OTHER PARTS OF THE SYSTEM WHICH REQUIRE OPERATION OR MAINTENANCE AND ARE LOCATED AT INACCESSIBLE LOCATIONS.	
21. COORDINATION: CONTRACTOR SHALL COORDINATE ITS CONSTRUCTION OPERATIONS WITH THOSE OF OTHER CONTRACTORS AND ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK. CONTRACTOR SHALL COORDINATE ITS OPERATIONS WITH OTHER CONTRACTORS OPERATIONS, THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION AND OPERATION.	
22. REFER TO ARCHITECTURAL DRAWINGS FOR ALL RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. CHASE AND WALL PENETRATIONS INTENDED FOR DUCTWORK AND PIPING SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.	
23. MECHANICAL EQUIPMENT, DUCTWORK AND PIPING IS SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENT AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. FIELD VERIFY FINAL LOCATIONS TO INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.	
24. WHEN THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS NOT CLEAR, OR IS CAPABLE OF MORE THAN ONE INTERPRETATION, SUCH MATTERS WILL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER IN WRITING BEFORE THE SUBMISSION OF BIDS. THE ARCHITECT/ENGINEER SHALL MAKE CORRECTION OR EXPLANATION IN WRITING.	
25. PLANS AND SPECIFICATIONS ARE INTENDED AS A GENERAL DESCRIPTION OF THE WORK TO BE PERFORMED. ALL ITEMS NOT SPECIFICALLY MENTIONED OR SHOWN, BUT NECESSARY FOR THE COMPLETION OF THE INSTALLATION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. THIS CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE MECHANICAL, ARCHITECTURAL, STRUCTURAL AND ELECTRICAL PLANS BEFORE SUBMITTING HIS FINAL BID. NO ADDITIONAL COMPENSATION WILL BE ALLOWED DUE TO THE CONTRACTOR'S FAILURE TO FAMILIARIZE HIMSELF/ HERSELF WITH THE PLANS.	
26. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, PROCEDURES, TECHNIQUES OR SEQUENCES OF CONSTRUCTION, NOR FOR THE SAFETY ON THE JOB SITE. NOR SHALL THE ENGINEER BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.	
27. CONTRACTOR SHALL ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE FOR START-UP TO INSPECT, TEST AND ADJUST FIELD ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS AND PERFORMANCE THE FOLLOWING FIELD TESTS AND INSPECTIONS:	
1. LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEM AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.	
2. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.	
3. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.	
4. REPORT TESTING RESULTS IN WRITTEN REPORT.	



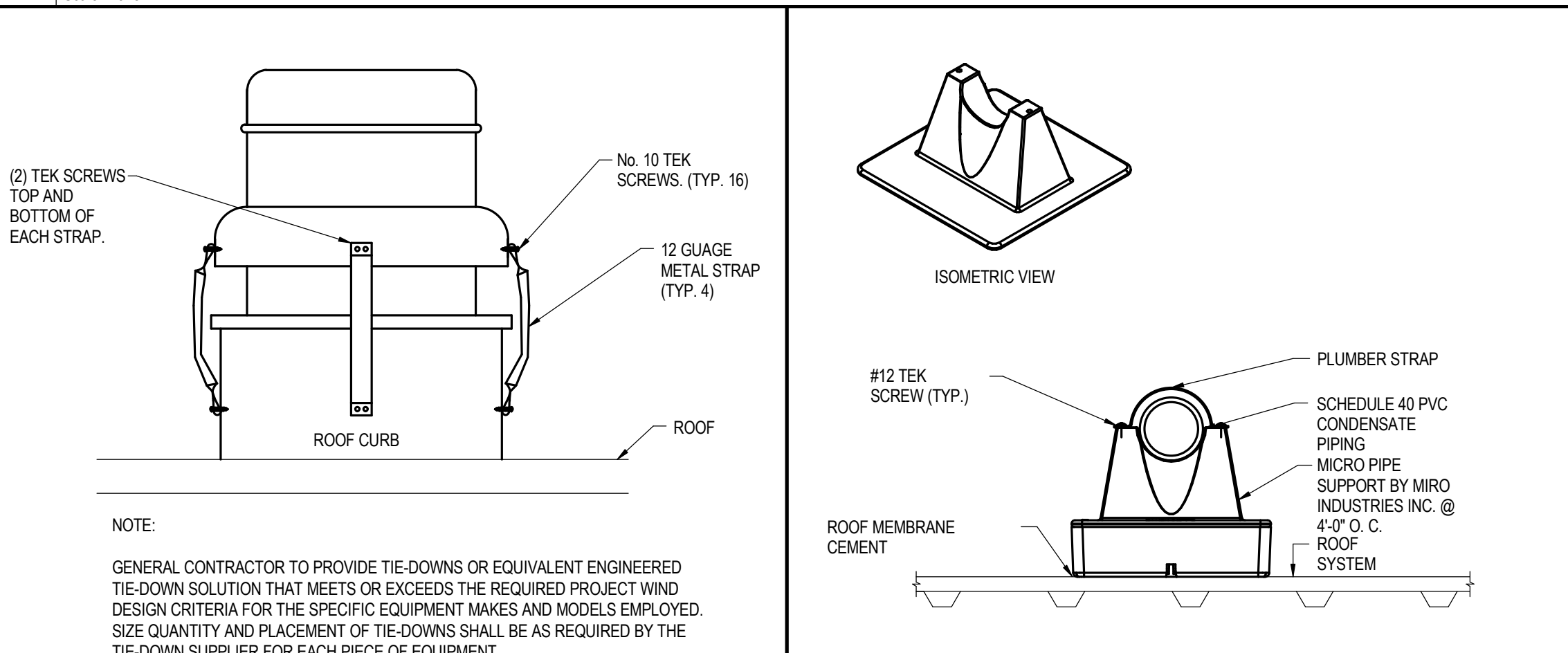
1 RTU TIE DOWN DETAIL

Scale: None



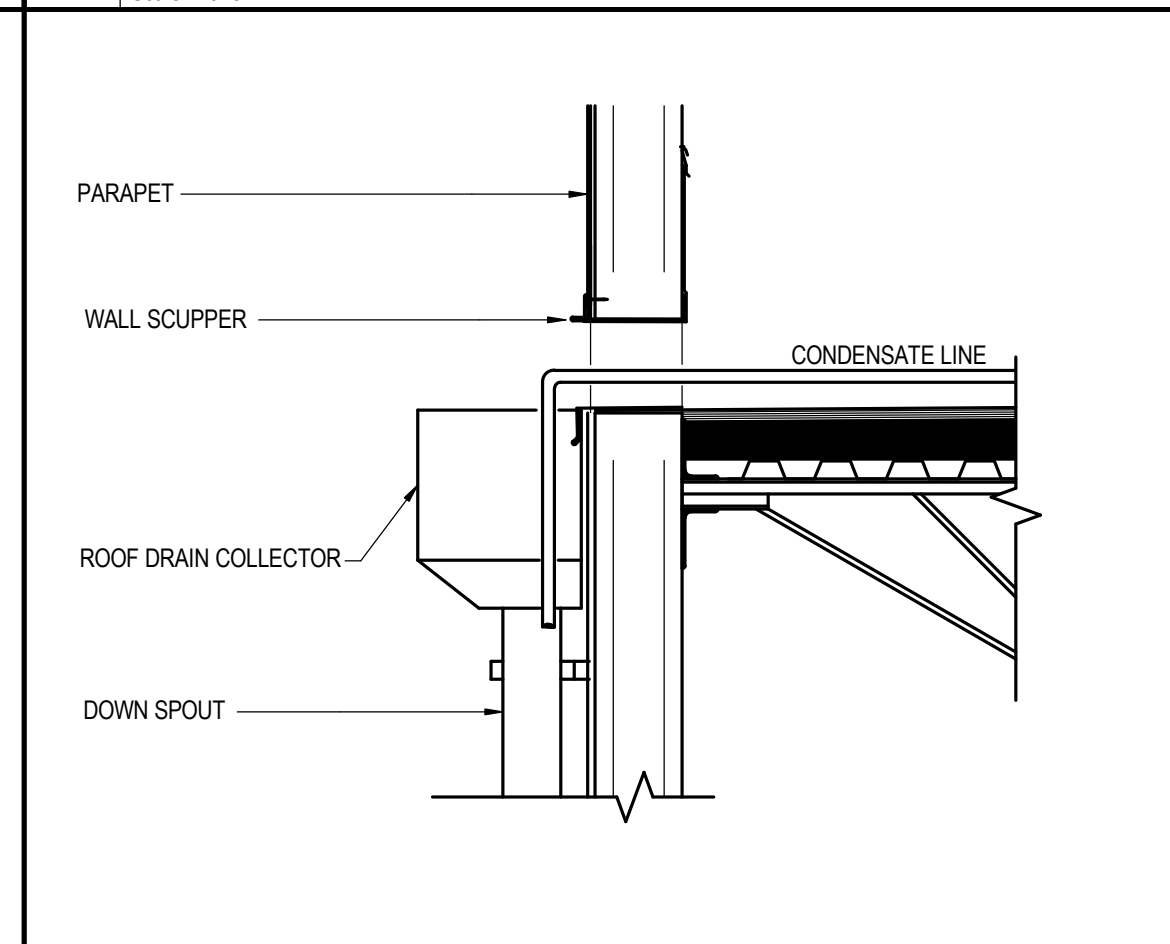
2 CONDENSATE DRAIN TRAP DETAIL

Scale: None



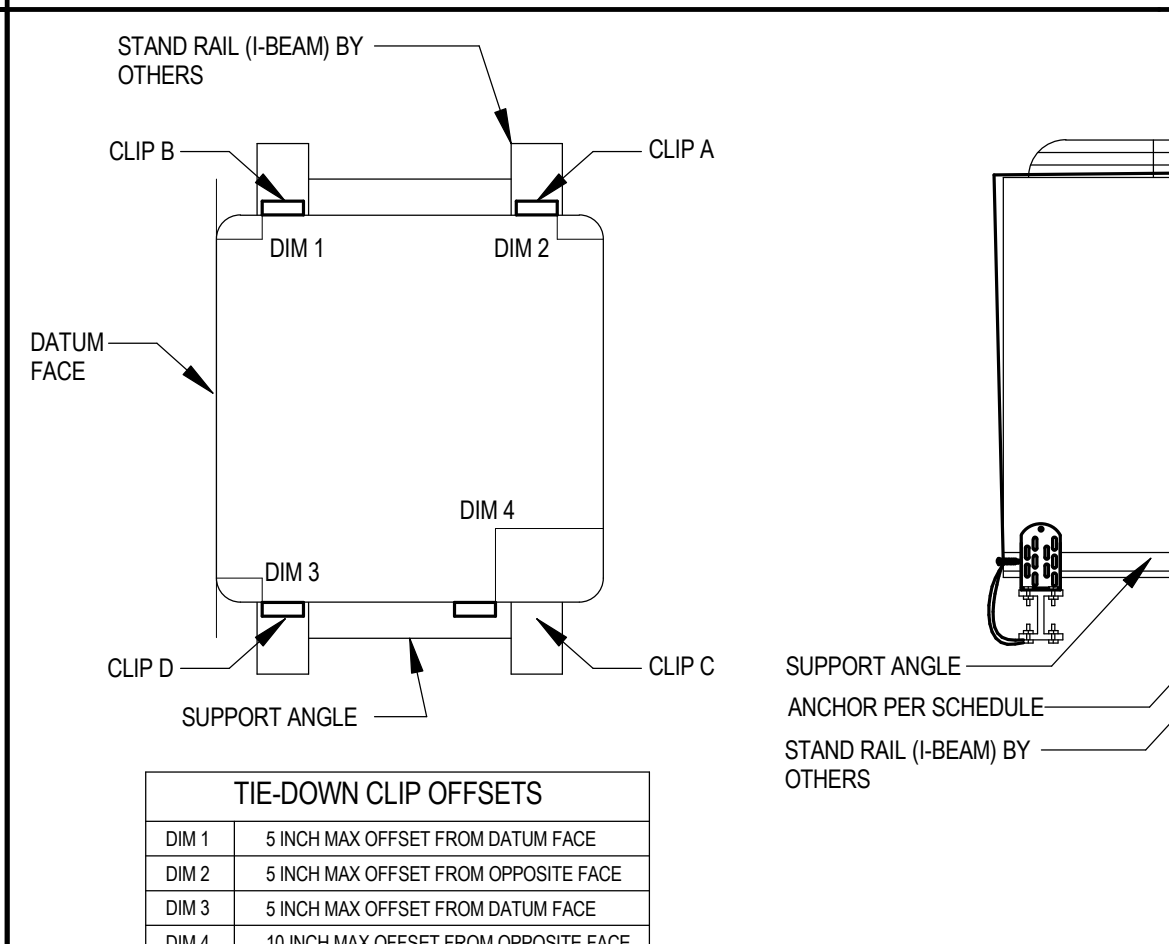
3 EXHAUST FAN TIE DOWN DETAIL

Scale: None



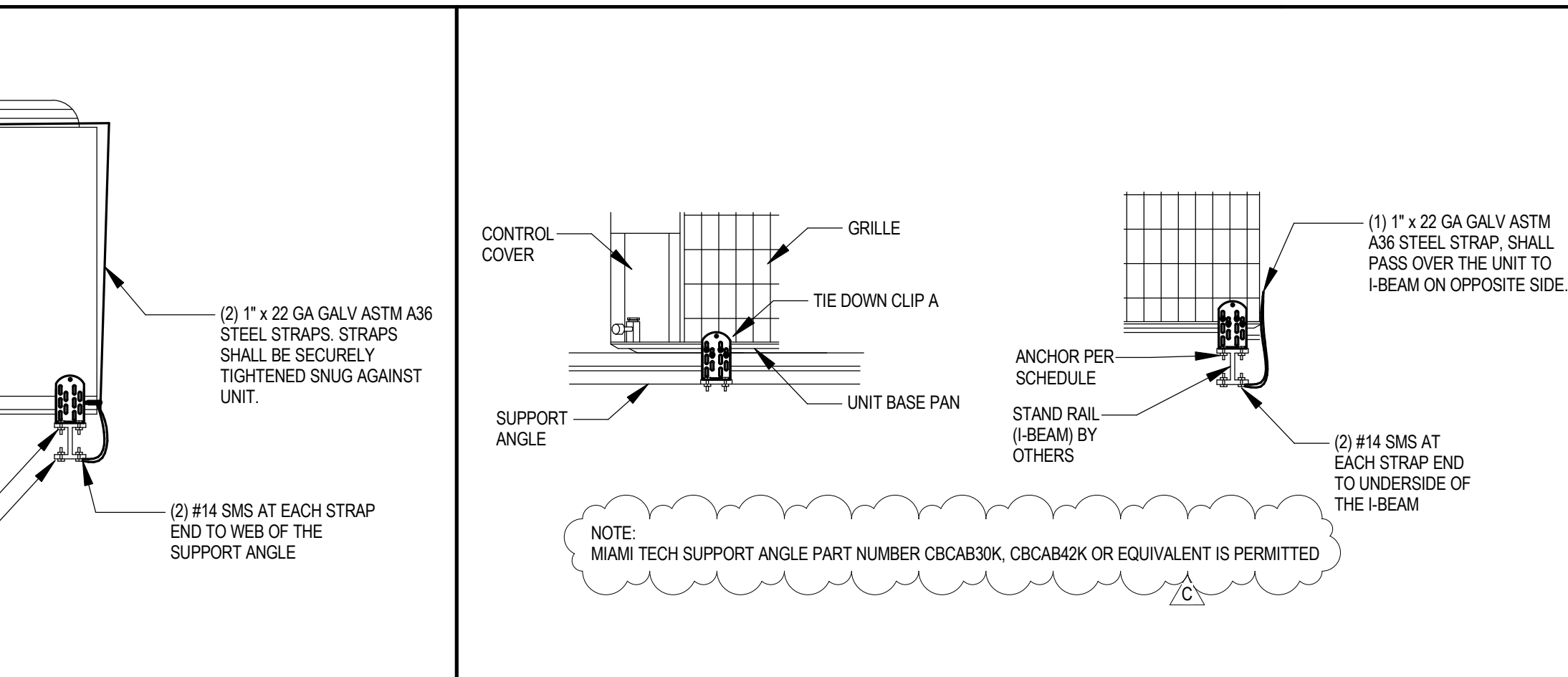
5 CONDENSATION TERMINATION WALL SCUPPER DETAIL

Scale: None



6A CONDENSING UNIT ROOFTOP SUPPORT DETAIL

Scale: None



6B CONDENSING UNIT ROOFTOP SUPPORT DETAIL

Scale: None

SECTION 05100

2023 FLORIDA BUILDING CODE - TABLE 1510.10
CLEARANCE BELOW RAISED ROOF MOUNTED MECHANICAL UNITS

WIDTH OF MECHANICAL UNIT (INCHES)	MINIMUM CLEARANCE ABOVE SURFACES (INCHES)
< 24	14
24 < 36	18
36 < 48	24
48 < 60	30
> 60	48

TIE-DOWN CLIP (1)

TIE-DOWN CLIP (2)

MIAMI TECH CLIP 1" WIDE ASTM A633 GALVANIZED STEEL, 0.07" THICK GALVANIZED LENGTH 18" (10) 3" 2" OR EQUIVALENT FOR ALL CABINETS TIED DOWN TO A ROOF OR GROUND STRUCTURE. FASTEN CLIP TO STRUCTURE USING ANCHOR FROM ANCHOR SCHEDULE TO HOST STRUCTURE TABLE AND (2) #10 SS-40 SELF-DRILLING SCREW TO FASTEN CLIP TO UNIT BASE PLATE. INSTALL IN UNIT WITH QUANTITIES SHOWN IN THE TIE-DOWN STRAP & CLIP SCHEDULE. LOCATE CLIPS AT 3" MINIMUM AWAY FROM THE APPROPRIATE CORNER USING FOUR CLIPS PER SIDE (TWO AT EACH CORNER AND FOUR CLIPS OPPOSITE SIDE IN THE SAME CONFIGURATION. MIAMI TECH KIT #CBCLTD4KG FOR GROUND & KIT #CBCLTD4KGK OR ROOF APPLICATION.

TIE-DOWN STRAP & CLIP SCHEDULE				
CABINET	GROUND OR ROOF HEIGHT	ANCHOR TYPE		
		TIE-DOWN STRAP IN UNIT	TIE-DOWN CLIPS (1)	TIE-DOWN CLIPS (2)
MINI	GROUND	NA	8	4
SMALL	UP TO 200'	NA	8	4
MEDIUM		LARGE	2	8

ANCHOR TO HOST STRUCTURE SCHEDULE				
CABINET	GROUND OR ROOF HEIGHT	ANCHOR TYPE		
		CONCRETE 3000 PSI	18" MIN. ASTM STEEL	18" MIN. 6061-T6 ALUMINUM
MINI	GROUND	A	NA	NA
SMALL	UP TO 200'	NA	NA	NA
MEDIUM		LARGE	NA	8

ANCHOR TYPES TO HOST STRUCTURE:

- A - 1/4" ELOD ULTRACON SS4 ANCHOR EMBEDDED 1-3/4" IN 3000 PSI CONCRETE. 2-1/2" FROM EDGE MIN. NOA NO. 13-1205.05
- B - 1/4" 20 UNC SAE GRADE 5 BOLT MIN. 1/2" FROM EDGES WITH NUT & WASHER OD 1".
- NA - NO ANCHORS APPLY.

BMP CLIPS 1" WIDE ASTM A633 (GRADE 6) STEEL 0.113" THICK OF VARYING LENGTH FOR ALL CABINETS TIED DOWN TO A ROOF STRUCTURE OR GROUND STRUCTURE OR EQUIVALENT CLIPS. FASTEN CLIP TO STRUCTURE USING (2) ANCHOR FROM ANCHOR SCHEDULE TO HOST STRUCTURE TABLE AND (4) #12 SAE GRADE 5 SHEET METAL SCREW TO FASTEN CLIP TO UNIT BASE PLATE. INSTALL IN UNIT WITH QUANTITIES SHOWN IN TIE-DOWN STRAP & CLIP SCHEDULE. LOCATE CLIPS AT 3" FROM THE APPROPRIATE CORNER. BMP PART NUMBER TD-042.

CONDENSING UNIT TIE-DOWN CLIP DETAIL

Scale: None

6C

1 MECH_ROOF PLAN
SCALE: 1/4" = 1'-0"