

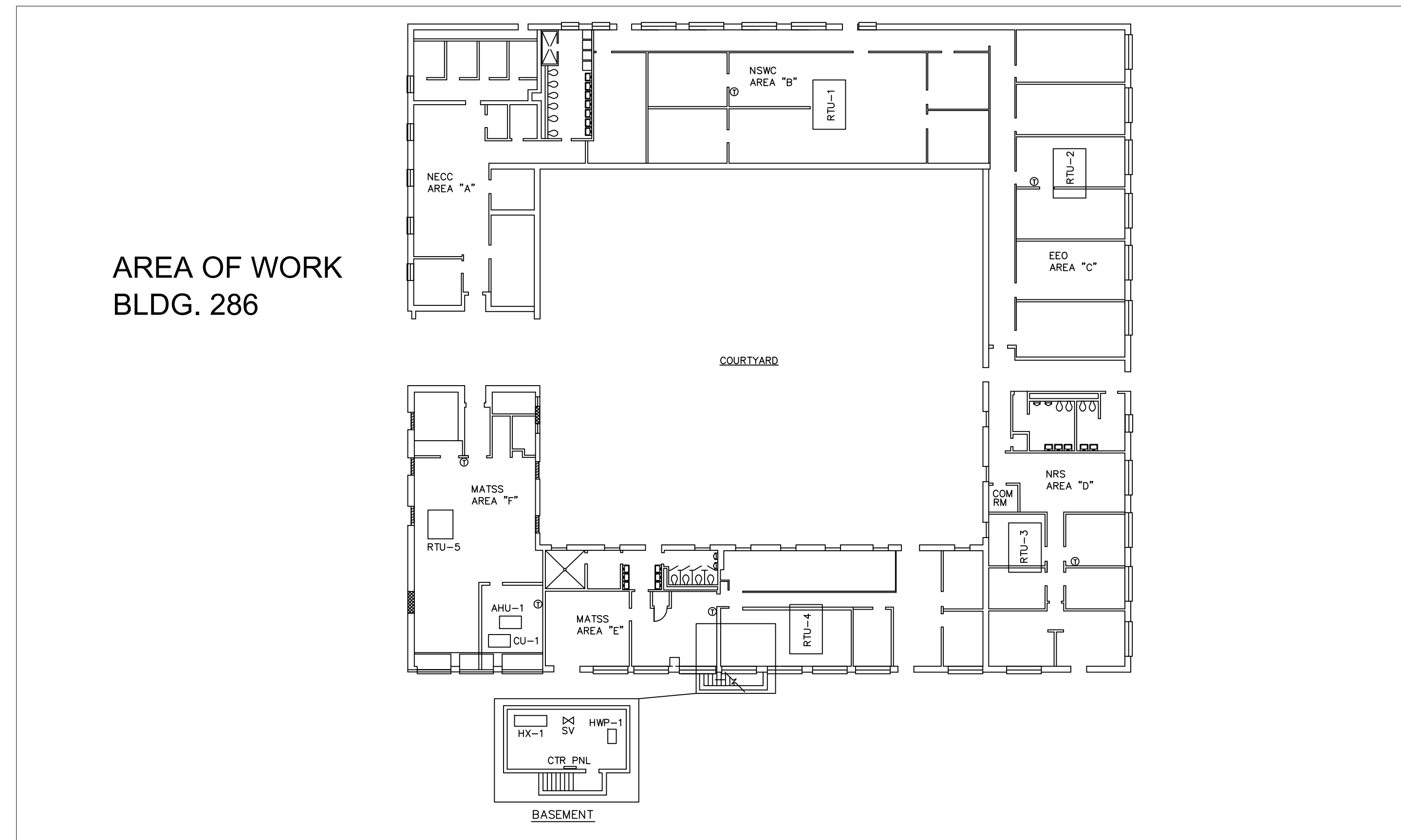
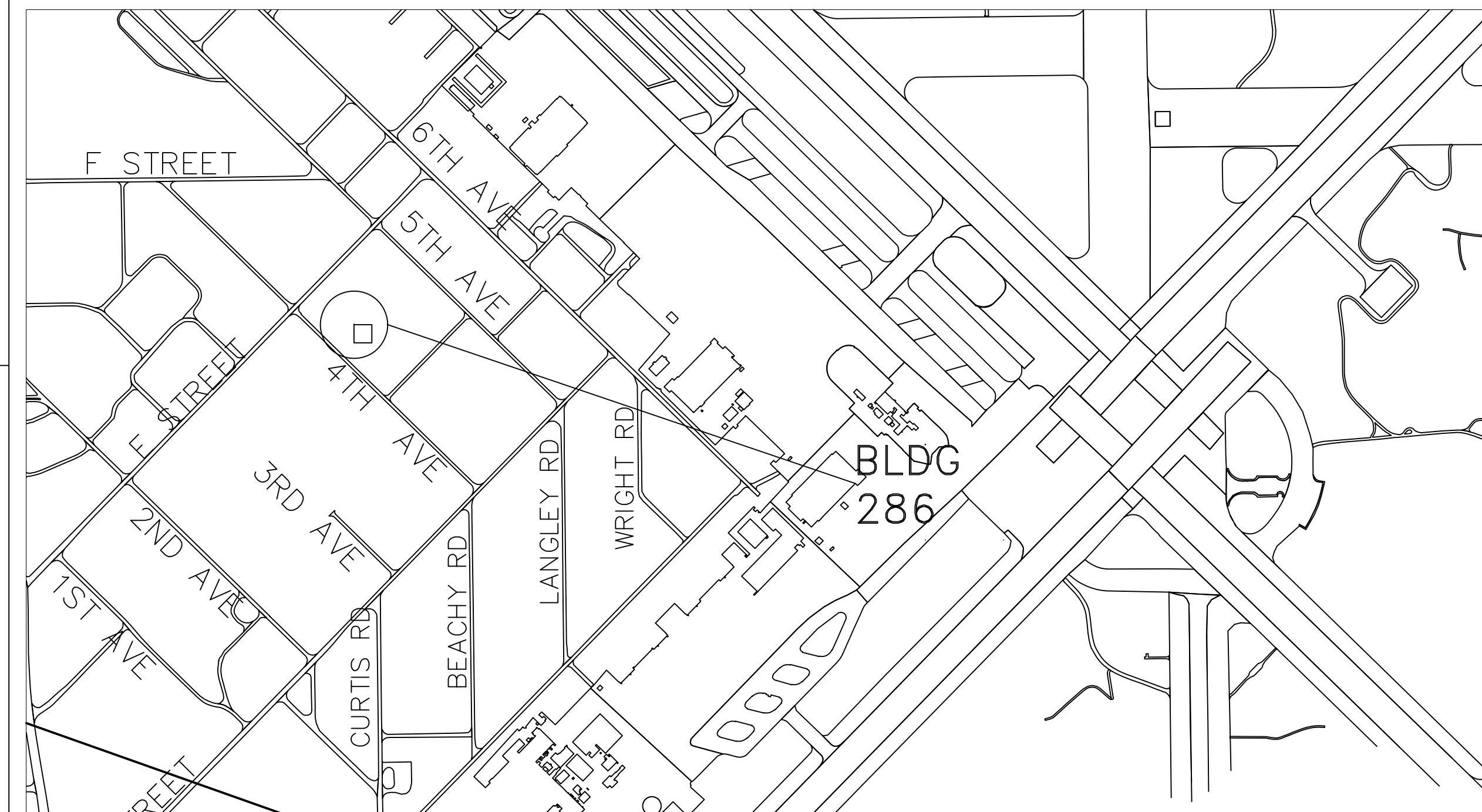
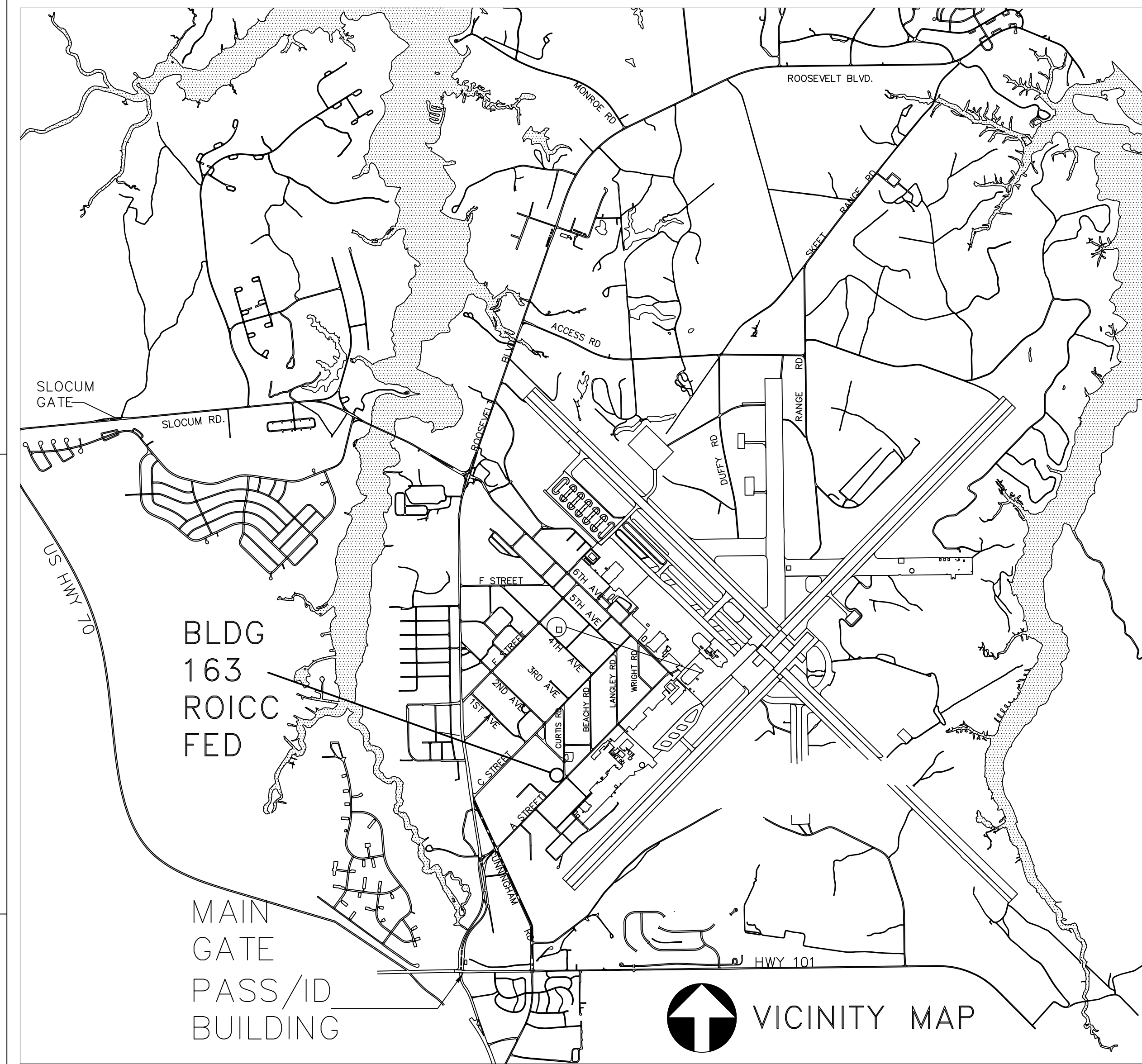
HVAC CONTROLS UPGRADE, BLDG. 286

MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA

WO# 6903649

INDEX OF DRAWINGS

NAVFAC NO.	SHEET NO.	TITLE
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LOCATION MAP

DATE	DESCRIPTION	APP'D

DESIGNED & ENGINEERED BY:
FACILITIES ENGINEERING
MECHANICAL

U.S. DEPARTMENT OF THE NAVY
UNITED STATES MARINE CORPS

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**FINAL
DESIGN**

APPROVED	SEAL
ACTIVITY - SATISFACTORY TO	
DATE	
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DATE	
A/E	EFD
DESIGN	MHE
DRAWN	MHE
REVIEW	NAH
OC	LPF
CHEF ARCH/ENGR.	MHE
PROJECT MANAGER	MHE
FIRE PROTECTION	LPF
BRANCH MANAGER	LPF
DESIGN DIRECTOR	LPF

NAVAC ENGINEERING COMMAND
MARINE CORPS AIR STATION, CHERRY POINT, N.C.

HVAC CONTROLS
UPGRADE, BLDG. 286

TITLE SHEET

CODE ID. NO. 80091	SIZE D
SCALE:	
FED NO.	
STA. PROJ. NO. 6903649	
SPEC. NO.	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12766622	
SHEET 1 OF 7	
G-001	

DRAWFORM REVISION JULY 2003

ABBREVIATIONS

L	ANGLE	LDB	LEAVING DRY BULB
AD	ACCESS DOOR	LWB	LEAVING WET BULB
AFF	ABOVE FINISHED FLOOR	LWT	LEAVING WATER TEMPERATURE
AFG	ABOVE FINISHED GRADE	MAX	MAXIMUM
APD	AIR PRESSURE DROP	MOC	MAXIMUM OVER CURRENT PROTECTION
APPROX	APPROXIMATELY	MIN	MINIMUM
AS-1	AIR SEPARATOR MARK - SEE SCHEDULE	MBH	THOUSAND BTU/HR
BD	BALANCING DAMPER	MCA	MINIMUM CIRCUIT AMPS
BDD	BACK DRAFT DAMPER	MFS	MAXIMUM FUSE SIZE
BTUH	BRITISH THERMAL UNIT PER HOUR	NOM	NOMINAL
CFH	CUBIC FEET PER HOUR	NO	NUMBER
CFM	CUBIC FEET PER MINUTE	OA	OUTSIDE AIR
CHLR-1	CHILLER MARK - SEE SCHEDULE	OD	OUTSIDE DIAMETER
COP	COEFFICIENT OF PERFORMANCE	PD	PRESSURE DROP
CP-1	CONDENSATE PUMP MARK - SEE SCHEDULE	PH	PHASE
CU-1	CONDENSING UNIT MARK - SEE SCHEDULE	PSIG	POUNDS PER SQUARE INCH GAGE
CWR	CHILLED WATER RETURN	%RH	PERCENT RELATIVE HUMIDITY
CWS	CHILLED WATER SUPPLY	PRV	PRESSURE RELIEF VALVE
DN	DOWN	RA	RETURN AIR
DSS-1	DUCTLESS SPLIT SYSTEM MARK - SEE SCHEDULE	RAJ	RUN BETWEEN JOIST
EAT	ENTERING AIR TEMPERATURE	RIH-1	ROOF INTAKE HOOD MARK - SEE SCHEDULE
EDB	ENTERING DRY BULB	RLA	RATED LOAD AMPS
EMD	END OF MAIN DRIP	RPM	REVOLUTIONS PER MINUTE
EWB	ENTERING WET BULB	RTJ	RUN THRU JOIST
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
ESP	EXTERNAL STATIC PRESSURE	SCT	SATURATED CONDENSING TEMPERATURE
EXIST	EXISTING	SEER	SEASONAL ENERGY EFFICIENCY RATING
FD	FIRE DAMPER WITH ACCESS DOOR	SF	SQUARE FEET
FDB	DEGREE FAHRENHEIT DRY BULB	SP	STATIC PRESSURE
FF	FINISHED FLOOR	SST	SATURATED SUCTION TEMPERATURE
FPM	FEET PER MINUTE	TS	TIP SPEED
FT	FEET	T*STAT	THERMOSTAT
FWB	DEGREE FAHRENHEIT WET BULB	TYP	TYPICAL
GA	GAUGE	UH-1	UNIT HEATER MARK - SEE SCHEDULE
GPH	GALLONS PER HOUR	VAV-1	VARIABLE AIR VOLUME UNIT AND MARK - SEE SCHEDULE
GPM	GALLONS PER MINUTE	WC	INCHES WATER COLUMN
"HG	INCHES OF MERCURY	WPD	WATER PRESSURE DROP
HP	HORSE POWER	SCR	SILICON CONTROLLED RECTIFIER
HWC	HOT WATER CONVERTER MARK - SEE SCHEDULE	RTAC	ROOF TOP AIR CONDITIONER
HWR	HOT WATER RETURN	OA	OUTSIDE AIR
HWS	HOT WATER SUPPLY	SA	SUPPLY AIR
ID	INSIDE DIAMETER	MOAD-S	MINIMUM OUTDOOR AIR DAMPER STATUS
KW	KILOWATT	DA-T	DISCHARGE AIR TEMPERATURE
L-1	LOUVER MARK - SEE SCHEDULE	RA-Q	RETURN AIR QUALITY
LAT	LEAVING AIR TEMPERATURE	FFILT-S	FINAL FILTER STATUS
LBS/HR	POUND PER HOUR	DA-SD	DISCHARGE AIR SMOKE ALARM

MECHANICAL LEGEND

NOTE: HEAVY LINE WEIGHT INDICATES NEW EQUIPMENT OR EQUIPMENT TO BE REMOVED, LIGHT LINE WEIGHT INDICATES EQUIPMENT WHICH IS EXISTING TO REMAIN

	HWS	HOT WATER SUPPLY PIPING		PIPE SLOPE (DOWN IN ARROW DIRECTION)		(AD) ACCESS DOOR
	HWR	HOT WATER RETURN PIPING		FLOW CONTROL BALANCING VALVE WITH PRESSURE TAPS (GPM NOTED)		MOTORIZED CONTROL DAMPER
	CHS	CHILLED WATER SUPPLY PIPING		GAS SHUT-OFF COCK		POINT OF CONNECTION-NEW TO EXISTING AND POINT OF DEMOLITION TERMINATION
	CHR	CHILLED WATER RETURN PIPING		RELIEF VALVE		DUCT SMOKE DETECTOR
	RL	REFRIGERANT LIQUID PIPING		ECCENTRIC PIPE REDUCER		PUMP MARK - SEE SCHEDULE
	RS	REFRIGERANT SUCTION PIPING		PIPE CAP		EXHAUST FAN MARK - SEE SCHEDULE
	D	CONDENSATE DRAIN PIPING		DIRECTION OF FLOW		AHU-1 AIR HANDLING UNIT MARK - SEE SCHEDULE
		BACKFLOW PREVENTER		THERMOMETER WELL		VAV-1 VARIABLE AIR VOLUME BOX MARK - SEE SCHEDULE
		BALANCING VALVE (GLOBE VALVE/SQUARE HEAD COCK)		PIPE ANCHOR		B-1 BOILER MARK - SEE SCHEDULE
		BALL VALVE		SUPPLY DUCT SECTION		CU-1 CONDENSING UNIT MARK - SEE SCHEDULE
		CHECK VALVE		EXHAUST DUCT SECTION		DSS-1 DUCTLESS SPLIT SYSTEM MARK - SEE SCHEDULE
		BUTTERFLY VALVE		RETURN DUCT SECTION		GRILLE OR DIFFUSER MARK - SEE SCHEDULE OR SPECIFICATION (CFM NOTE)
		STRAINER WITH BLOW DOWN VALVE		BOILER EMERGENCY SHUT-OFF SWITCH		NEW WORK NOTE MARK
		3-WAY AUTO CONTROL VALVE		FIRE DAMPER WITH ACCESS DOOR		DEMOLITION WORK NOTE MARK
		PRESSURE REDUCING VALVE		THERMOSTAT/SENSOR MOUNT 60" ABOVE FLOOR SUBSCRIPT INDICATES EQUIPMENT BEING CONTROLLED		FLEXIBLE DUCT CONNECTION WITH BALANCING DAMPER
		2-WAY AUTO CONTROL VALVE		ELBOW WITH TURNING VANES		EMERGENCY BOILER SHUT-OFF SWITCH
		THERMOMETER		CONTROL VALVE		LOW PRESSURE SUPPLY OR RETURN DUCT WORK
		FLEXIBLE PIPING CONNECTION		MEDIUM PRESSURE SUPPLY DUCT WORK		
		PRESSURE GAUGE SHUT-OFF COCK				
		AUTOMATIC AIR VENT				
		UNION				

GENERAL NOTES

- SCOPE OF WORK INCLUDES PROVIDING A FIRST CLASS WORKING SYSTEM IN COMPLIANCE WITH THESE DRAWINGS AND SPECIFICATIONS, TESTED READY FOR OPERATION COMPLETE WITH LABOR, MATERIALS, APPARATUS, TRANSPORTATION, AND TOOLS REQUIRED FOR THE INSTALLATION.
- COORDINATE WORK WITH THAT OF OTHER TRADES. INSTALL THE NEW EQUIPMENT IN THE EXACT LOCATIONS OF THE EXISTING EQUIPMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MODIFICATIONS, CHANGES, ETC. FOR THE EQUIPMENT HE PROVIDES, EVEN IF APPROVED AS AN EQUAL.
- MISCELLANEOUS ITEMS NOT SHOWN ON THE PLANS BUT NECESSARY FOR A COMPLETE OPERABLE SYSTEM, SHALL BE SUPPLIED AND INSTALLED.
- INSTALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. MAINTAIN ALL RECOMMENDED CLEARANCES.
- REPAIR ANY MATERIAL OR WORK WHICH THE CONTRACTOR HAS DAMAGED.
- BALANCE AIR AND WATER SYSTEMS WITHIN $\pm 5\%$ OF THE VALUES INDICATED. SEE SHEET M-700, FOR DETAILS, SCHEDULE AND LOCATION OF CONTROL VALVES.
- TEST EACH SYSTEM IN ALL MODES OF OPERATION TO INSURE PROPER OPERATION.
- FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS FOR A COMPLETE INSTALLATION IN ALL RESPECTS READY OF INTENDED USE AND IN STRICT ACCORDANCE WITH ALL STATE AND LOCAL CODES AND MANUFACTURER'S RECOMMENDATIONS. INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY PRECAUTIONS AND PROCEDURES.

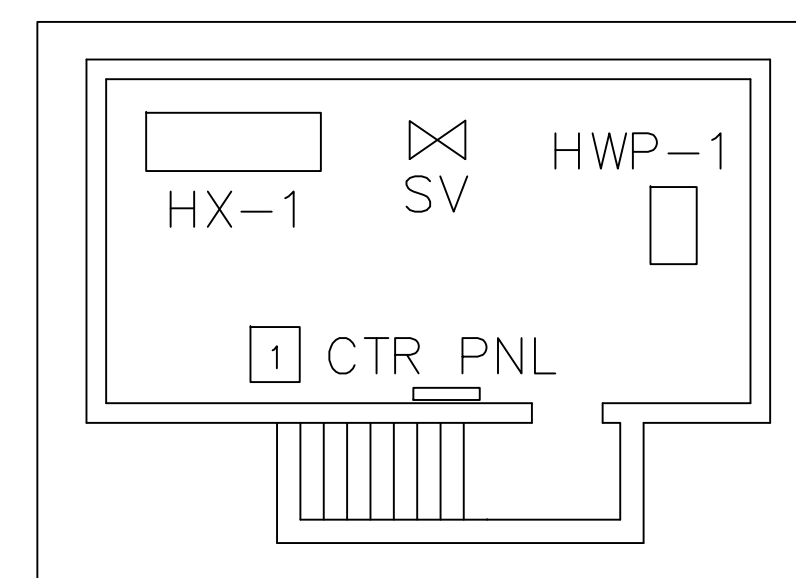
SIGNAL DESCRIPTION

TYPE	NAME	DESCRIPTION	SIGNAL
AI	AI1-SPARE	ANALOG INPUT SPARE 1	0-10VDC
BO	CLG1-C	COOLING STAGE 1 COMMAND	24VAC MAINTAINED
BO	CLG2-C	COOLING STAGE 2 COMMAND	24VAC MAINTAINED
BI	DA-SD	DISCHARGE AIR SMOKE ALARM	DRY CONTACT MAINTAINED
AI	DA-T	DISCHARGE AIR TEMPERATURE	PLATINUM 1K RTD
BI	FFILT-S	FINAL FILTER STATUS	DRY CONTACT MAINTAINED
BI	LT-A	LOW TEMPERATURE ALARM	DRY CONTACT MAINTAINED
AI	MA-T	MIXED AIR TEMPERATURE	PLATINUM 1K RTD
AO	MOAD-O	MIN. OUTDOOR AIR DAMPER OUTPUT	0-10VDC
BI	MOAD-S	MIN. OUTDOOR AIR DAMPER STATUS	DRY CONTACT MAINTAINED
MO	OCC-MODE	OCCUPANCY STATUS DISPLAY	SAB
AI	RA-Q	RETURN AIR QUALITY	0-10VDC
AO	RH-O	REHEAT OUTPUT	0-10VDC
BO	SF-C	SUPPLY FAN COMMAND	24VAC MAINTAINED
BI	SF-S	SUPPLY FAN STATUS	DRY CONTACT MAINTAINED
AI	WC-ADJ	WARMER/COOLER ADJUST	SAB
AI	ZN-H	ZONE HUMIDITY	SAB
AI	ZN-T	ZONE TEMPERATURE	SAB
BI	ZN-TOCC	ZONE TEMPERATURE OCCUPANCY	SAB

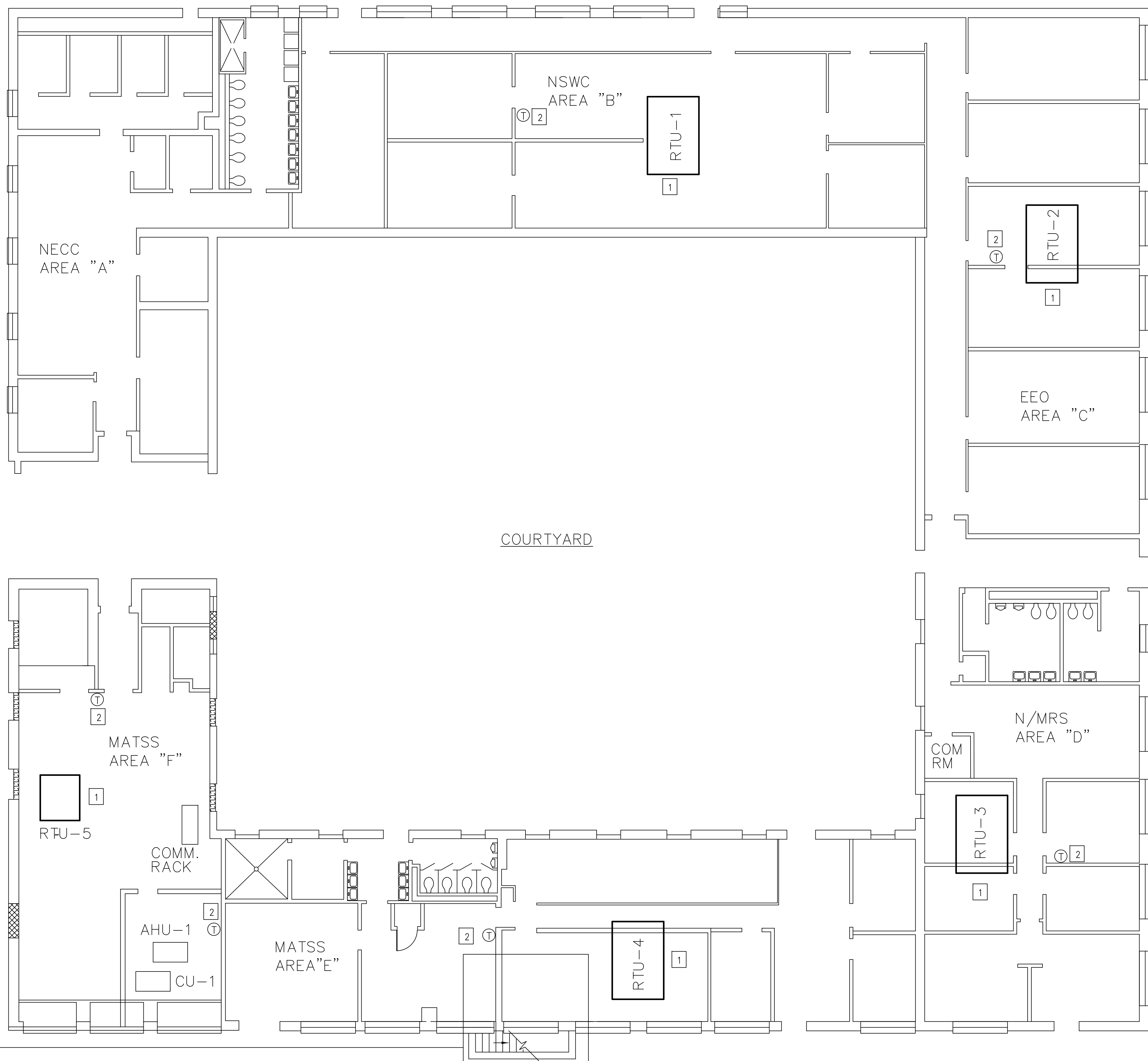
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DESCRIPTION		DESIGNED & ENGINEERED BY:	
		FACILITIES ENGINEERING	
		MECHANICAL	
		U.S. DEPARTMENT OF THE NAVY	
		NAVY ENGINEERING CENTER	
		3333 SHELBY DRIVE	
		STATIONERS MARINE BUILDING	
		AVES USE THIS SPACE FOR YOUR ADDRESS INFO.	
		FINAL DESIGN	
		APPROVED	
		ACTIVITY - SATISFACTORY TO	
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		APPROVED	
		FOR EFD FOR COMMANDER NAVAC	
		DATE	
		A/E	EFD
		DESIGN	MHE
		DRAWN	MHE
		REVIEW	NAH
		OC	LPF
		CHEF ARCH/ENGR	MHE
		PROJECT MANAGER	MHE
		FIRE PROTECTION	
		BRANCH MANAGER	LPF
		DESIGN DIRECTOR	LPF
		NAVAC DRAWING NO.	
		12766623	
		SHEET 2 OF 7	
		M-001	
		DRAWING REVISION JULY 2003	

DEMO NOTES:

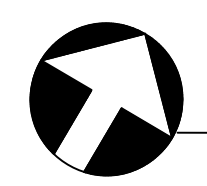
- 1 REMOVE ALL STAND ALONE CONTROLS FOR UNITS, REMOVE SUPERVISORY CONTROLLER (NAC-0298-01) IN BASEMENT. BUT LEAVE EXISTING WIRING FOR NEW CONTROLS.
- 2 REMOVE ALL WALL MOUNTED THERMOSTATS CONTROLLERS, LEAVE EXISTING WIRING FOR NEW THERMOSTAT WITH HUMIDITY SENSOR.



BASEMENT




COURTYARD



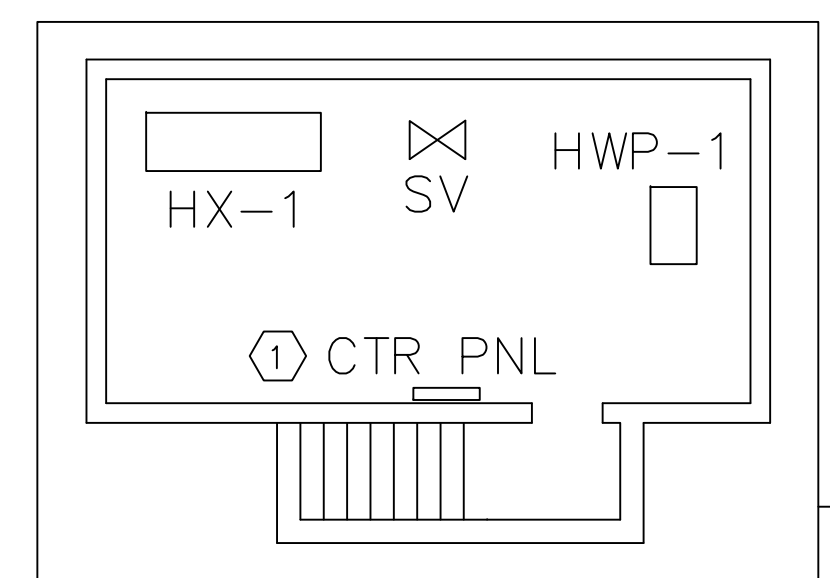
DEMOLITION FLOOR PLAN

NO SCALE:

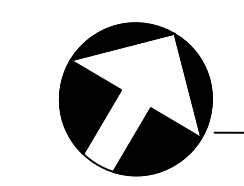
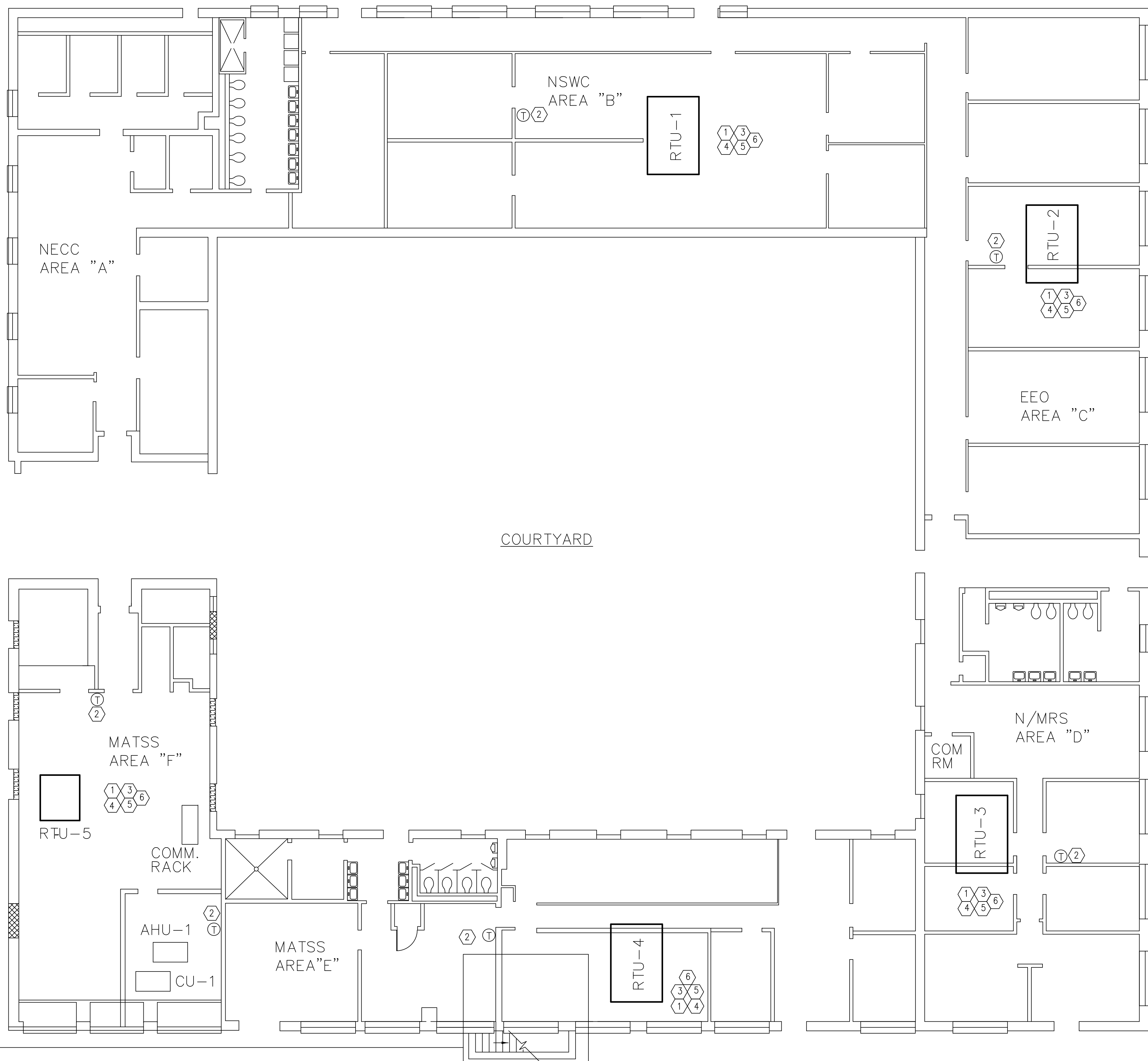
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DESCRIPTION	
DESIGNED & ENGINEERED BY: FACILITIES ENGINEERING MECHANICAL	
	
U.S. DEPARTMENT OF THE NAVY UNITED STATES MARINE CORPS	
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ACTIVITY - SATISFACTORY TO	
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REVIEW	NAH
OC	LPF
CHEF	ARCH/ ENGR.
PROJECT MANAGER	MHE
FIRE PROTECTION	
BRANCH MANAGER	LPF
DESIGN DIRECTOR	LPF
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS AIR STATION, CHERRY POINT, N.C.	
HVAC CONTROLS UPGRADE, BLDG. 286	
DEMOLITION WORK FLOOR PLAN	
CODE ID. NO. 80091	SIZE D
SCALE: AS SHOWN	
FED. NO.	
STA. PROJ. NO. 6903649	
SPEC. NO.	
CONSTR. CONTR. NO.	
NAVAC DRAWING NO. 1276624	
SHEET 3 OF 7	
MD-101	
<small>DRAWING REVISION JULY 2003</small>	

NEW WORK NOTES:

- ① INSTALL ALL NEW CONTROLS FOR UNITS INSTALL NEW SUPERVISORY BUILDING CONTROLLER IN BASEMENT. RE-USE EXISTING WIRING FOR NEW CONTROLS. REFERENCE SPECIFICATION SECTION 23 09 23.1320.
- ② INSTALL NEW WALL MOUNTED THERMOSTAT WITH HUMIDITY SENSOR, RE-USE EXISTING WIRING. EXISTING THERMOSTAT CONTROLLER IS 54" AFF.
- ③ INSTALL NEW TEMPERATURE SENSOR IN THE DUCTWORK BETWEEN THE COOLING COIL AND THE HOT WATER COIL. INSTALL THE THE TEMPERATURE SENSOR CENTER WAY BETWEEN THE TWO COILS AT LEAST (1 FOOT) AWAY FROM EACH. REFERENCE RTU FLOW DIAGRAM ON NAVFAC DRAWING 12766627.
- ④ CLEAN ALL EXISTING METAL DUCTWORK FOR RTU'S & RTAC 1,2,3,4 & 5. REFERENCE NAVFAC DRAWING 12766626, FOR DUCTWORK LAYOUT. REFERENCE SPECIFICATION 23 01 30.41.
- ⑤ SEAL ALL THE JOINTS BETWEEN THE RTU'S AND THE DUCTWORK.
- ⑥ REPLACE ANY BROKEN OR STAINED CEILING TILES IN THE BUILDING.



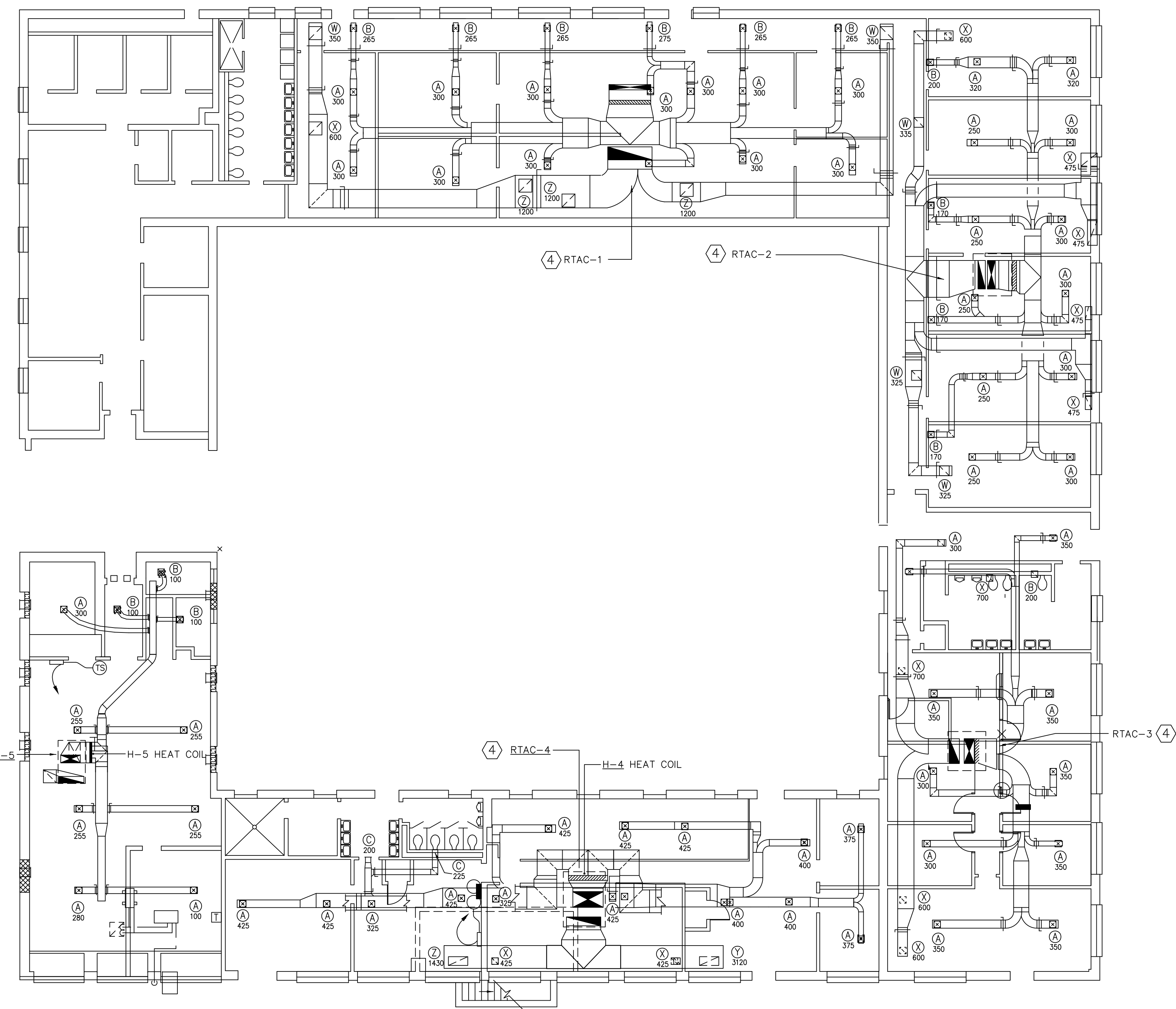
BASEMENT



NEW WORK FLOOR PLAN

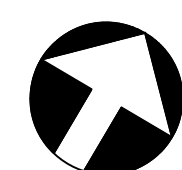
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A/E: _____ EFD: _____									
DESIGN: <u>MHE</u>									
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REVIEW: <u>NAH</u>									
QC: <u>LPF</u>									
CHIEF ARCH/ ENGR: _____									
PROJECT MANAGER: <u>MHE</u>									
FIRE PROTECTION: _____									
BRANCH MANAGER: <u>LPF</u>									
DESIGN DIRECTOR: <u>LPF</u>									
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS AIR STATION, CHERRY POINT, N.C.									
HVAC CONTROLS UPGRADE, BLDG. 286									
NEW WORK FLOOR PLAN									
CODE ID. NO. 80091 SIZE: D									
SCALE: AS SHOWN									
FED. NO.									
STA. PROJ. NO. 6903649									
SPEC. NO.									
CONSTR. CONTR. NO.									
NAVFAC DRAWING NO. 12766625									
SHEET 4 OF 7									
M-101 <small>DRAWING REVISION JULY 2005</small>									



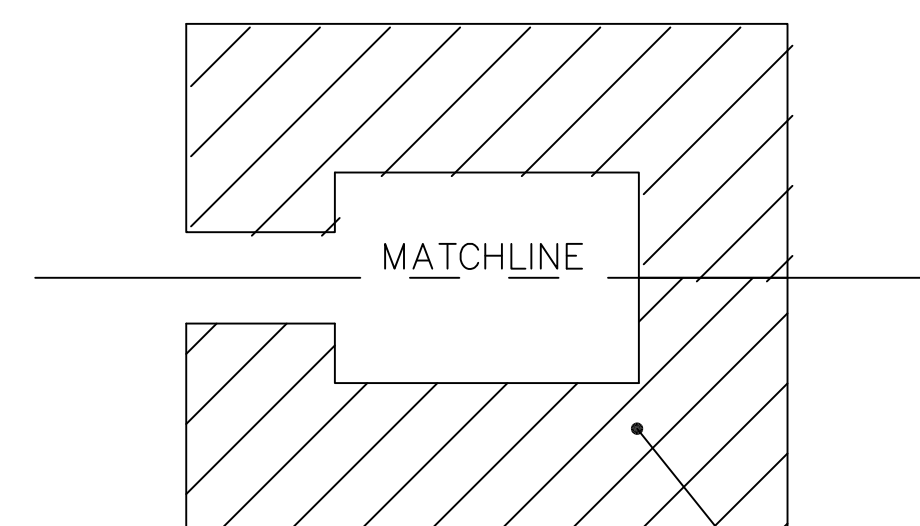
GENERAL WORK NOTES:

- SEE NEW WORK NOTE 4 ON NAVFAC DRAWING 12766625, ALSO REFERENCE SPECIFICATION 23 01 30.41, ON DUCTWORK CLEANING.



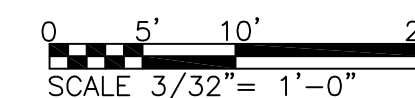
BLDG.286 MECHANICAL DUCTWORK LAYOUT PLAN FOR RTU'S & RTAC'S 1-5

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



KEY PLAN

NO SCALE



DATE	APPR.
DESCRIPTION	SYN.
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FINAL DESIGN

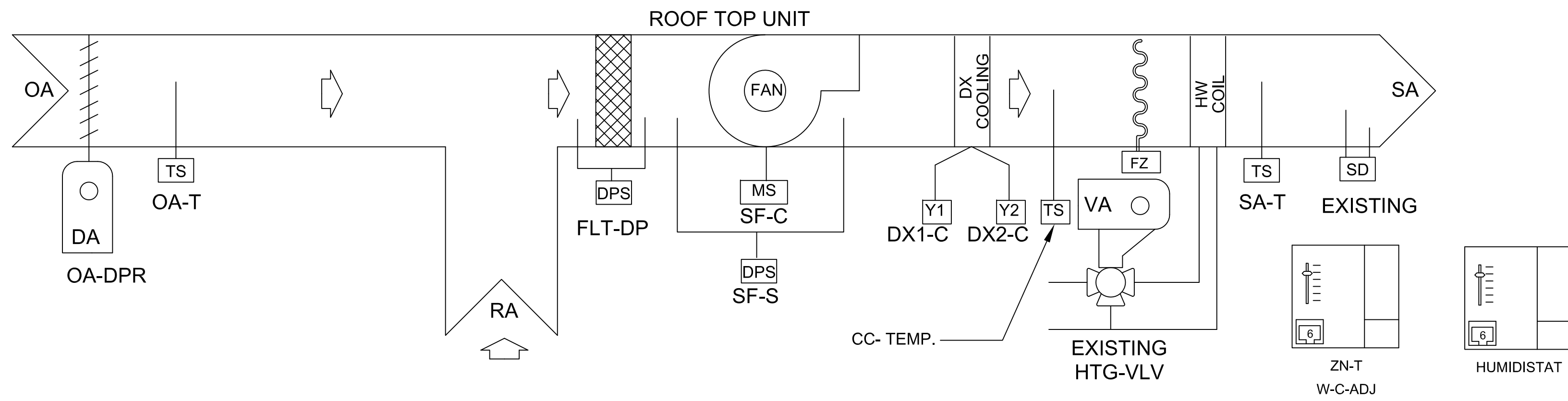
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DRAWN	MHF
REVIEW	NAH
QC	LPF
CHEF	ARCH/ENGR.
PROJECT MANAGER	MHE
FIRE PROTECTION	
BRANCH MANAGER	LPF
DESIGN DIRECTOR	LPF

NAVAL FACILITIES ENGINEERING COMMAND
MARINE CORPS AIR STATION, CHERRY POINT, N.C.
**HVAC CONTROLS
UPGRADE, BLDG. 286**
DUCTWORK LAYOUT PLAN FOR RTU'S & RTAC 1 - 5

CODE ID. NO.	80091	SIZE	D
SCALE:	AS SHOWN		
FED. NO.			
STA. PROJ. NO.	6903649		
SPEC. NO.			
CONSTR. CONTR. NO.			
NAVFAC DRAWING NO.	12766626		
SHEET	5	OF	7
M-102			
DRAWING REVISION JULY 2003			

RTU & RTAC FLOW DIAGRAM

NO SCALE:



SEQUENCE OF OPERATION

RTU SYSTEMS:

OCCUPIED MODE:

THE NAE SHALL INDEX THE UNIT CONTROLLER TO EITHER OCCUPIED OR UNOCCUPIED MODE AND ADJUST THE OPERATIONAL SETPOINT FOR HEATING (70 DEG F ADJUSTABLE) OR COOLING (75 DEG ADJUSTABLE) MODES.

THE OCCUPIED ZONE CONTROL SETPOINT SHALL ACTIVATE AND THE SUPPLY FAN SHALL START AND RUN CONTINUOUSLY. THE OA DAMPPER SHALL OPEN FROM INTERLOCK TO THE FAN MOTOR.

OCCUPIED HEATING:

UPON A CALL FOR HEATING, ZONE TEMPERATURE BELOW 70 DEG. ADJUSTABLE, THE HOT WATER VALVE SHALL MODULATE TO OPEN. WHEN THE SPACE TEMPERATURE IS SATISFIED, THE HOT WATER VALVE SHALL MODULATE CLOSE.

OCCUPIED COOLING DX:

UPON PROOF OF FAN AND A CALL FOR COOLING, ZONE TEMPERATURE ABOVE 75 DEG. F ADJUSTABLE, THE DX STAGE SHALL INDEX ON TO MAINTAIN SPACE SETPOINT. WHEN THE SPACE TEMPERATURE IS SATISFIED, THE DX STAGES SHALL INDEX OFF.

UNOCCUPIED MODE:

THE NAE SHALL INDEX THE UNIT CONTROLLER TO UNOCCUPIED MODE AND ADJUST THE NIGHT SETPOINT FOR HEATING (60 DEG. F ADJUSTABLE) OR (80 DEG. F ADJUSTABLE).

WHEN THE SPACE TEMPERATURE IS ABOVE THE NIGHT HIGH LIMIT (SUMMER) THE FAN SHALL INDEX ON AND ASSOCIATED COOLING EQUIPMENT SHALL BE ENERGIZED. WHEN THE TEMPERATURE IS LOWERED PAST THE COOLING DIFFERENTIAL (5 DEG. F ADJUSTABLE) THE FAN SHALL INDEX OFF AND THE COOLING EQUIPMENT SHALL BE INDEXED OFF.

WHEN THE SPACE TEMPERATURE IS BELOW THE NIGHT LOW LIMIT (WINTER) THE FAN SHALL INDEX ON AND THE HOT WATER VALVE SHALL BE ENERGIZED. THE HOT WATER VALVE SHALL MODULATE TO HEAT THE SPACE. WHEN THE TEMPERATURE IS RAISED PAST THE HEATING DIFFERENTIAL (5 DEG. F ADJUSTABLE) THE FAN SHALL INDEX OFF AND THE HEATING EQUIPMENT SHALL BE INDEXED OFF.

DEHUMIDIFICATION:

WHEN THE SPACE HUMIDITY IS ABOVE 65% (ADJ.) AND ZN-T IS SATISFIED BOTH DX STAGES SHALL INDEX ON. UPON PROOF OF FAN AND THE HOT WATER VALVE SHALL MODULATE TO MAINTAIN SA-T AT 75 DEG. (ADJ.).

TIME OVERRIDE:

WHEN IN UNOCCUPIED MODE, THE UNIT MAY BE INDEXED FOR 1 HOUR (ADJUSTABLE) OCCUPIED OPERATION BY PRESSING THE OVERRIDE BUTTON ON THE ROOM SENSOR.

SAFETY:

THE INTERGRAL SAFETY SWITCHES AND SENSORS SHALL BE MAINTAINED.

EXISTING SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION	ANALOG		BINARY		SYSTEMS FEATURES																NOTES																													
	INPUT		OUTPUT		ALARMS				PROGRAMS																																									
	TEMPERATURE	PRESSURE	MODULATING VALVE POSITION	SETPOINT ADJ.	PNEU. TRANSDUCER	STATUS ON/OFF	STATUS OPEN/CLSD.	STATUS PRESSURE	AIR FLOW	OFF/ON	OPEN/CLOSE	LOCK OUT	ENABLE/DISABLE	START/STOP	HIGH ANALOG	LOW ANALOG	BINARY	PROOF	SENSOR FAIL	FLOW FAIL		COMM. FAIL	DIAGNOSTICS	TIME SCHEDULING	OP. T. START/STOP	DEMAND LIMITING	RESET	EVENT PROGRAM	DDC	ALARM INSTRUCT	MAINT. WK. ORD.	RUN TIME	EXP. MESSAGE	SET BACK/SET UP	NIGHT PURGE	TENANT BILLING	CHILLER SEQUENCING	TOTALIZING	TIMED OVERRIDE											
BUILDING 286	GRAPHIC																																																	

GENERAL NOTES: EXISTING RTU IS MANUFACTURED BY COGGINS. EXIST. SENSING DEVICES SHALL BE REUSED & RE-WIRED TO EXISTING TERMINALS IN EXISTING RTU. EXIST. DDC WIRING SHALL BE RE-USED IF APPLICABLE.

CONTROL VALVE SCHEDULE

MARK	EQUIPMENT SERVED	NOMINAL VALVE SIZE INCHES	CAPACITY		PRESSURE DROP PSI	C _v	TYPE	REMARKS
			GPM	#/HR				
V-1	H-1	1	16	-	2.7	10.0	MODULATING	
V-1	H-2	1	12	-	1.5	10.0	MODULATING	
V-1	H-3	1	11.8	-	1.4	10.0	MODULATING	
V-1	H-4	1	16.9	-	2.9	10.0	MODULATING	
V-1	H-5	3/4	8.9	-	2.0	6.3	MODULATING	
V-2	HX-1	2	-	688.7	10.0	40.0	MODULATING	

DESIGNED & ENGINEERED BY: FACILITIES ENGINEERING MECHANICAL

DEPARTMENT OF THE NAVY
UNITED STATES MARINE CORPS

FINAL DESIGN

ACTIVITY - SATISFACTORY TO

DATE

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FOR EFD FOR COMMANDER NAVAC

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A/E DESIGN MHE EFD MHE
DRAWN MHE
REVIEW NAH
QC LPF
PROJECT MANAGER ARCH/ENGR MHE
FIRE PROTECTION LPP
BRANCH MANAGER LPP
DESIGN DIRECTOR LPP

NAVAC DRAWING NO. 12766627
SHEET 6 OF 7
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DRAWING REVISION JULY 2003

CONTROLS:

SUPPLY FAN CONTROL:

THE CONSTANT SPEED SUPPLY FAN (SF-C) WILL BE STARTED BASED ON OCCUPANCY SCHEDULE. WHEN THE SUPPLY FAN STATUS (SF-S) INDICATES THE FAN STARTED, THE CONTROL SEQUENCE WILL BE ENABLED. UPON A LOSS OF AIRFLOW (SF-S), THE SYSTEM WILL ATTEMPT TO AUTOMATICALLY RESTART UNTIL POSITIVE STATUS IS RECEIVED.

MINIMUM OUTSIDE AIR CONTROL:

THE MINIMUM OA DAMPER (MOAD-O) WILL OPEN TO THE PRESELECTED POSITION WHEN THE UNIT IS IN OCCUPIED MODE. THE FRESH AIR INTAKE OF THE UNIT WILL BE LIMITED TO PREVENT THE MIXED AIR TEMPERATURE (MA-T) FROM FALLING BELOW THE LOW LIMIT SETPOINT (OALT-SP).

TEMPERATURE CONTROL:

THE UNIT WILL CONTROL TO MAINTAIN THE LOCALLY ADJUSTABLE ZONE TEMPERATURE SETPOINT (ZN-SP) AS SENSED BY THE ZONE TEMPERATURE SENSOR (ZN-T). THE UNIT WILL CONTROL TO MAINTAIN THE ZONE TEMPERATURE SETPOINT (ZNT-SP) AS SENSED BY THE ZONE TEMPERATURE SENSOR (ZN-T).

OCCUPIED MODE:

THE OCCUPANCY MODE WILL BE CONTROLLED VIA A NETWORK INPUT (OCC-SCHEDULE). THE OCCUPANCY MODE CAN ALSO BE OVERRIDDEN BY A NETWORK INPUT (OCC-OVERRIDE) OR A TEMPORARY OCCUPANCY SWITCH (ZN-TOCC) ON THE ZONE TEMPERATURE SENSOR (ZN-T).

UNOCCUPIED MODE:

THE UNITS WILL REMAIN OFF DURING UNOCCUPIED PERIODS

COOLING COIL:

THE COOLING COIL (CLGX-C) WILL BE STAGED IN SEQUENCE TO MAINTAIN THE TEMPERATURE SETPOINT.

REHEAT COIL:

THE REHEAT COIL (RH-O) WILL MODULATE TO MAINTAIN THE TEMPERATURE SETPOINT. WHEN THE UNIT IS SHUTDOWN, THE REHEAT COIL WILL BE COMMANDED TO A PRESET POSITION SHOULD THE OUTDOOR AIR TEMPERATURE (OA-T) FALL BELOW THE LOW OUTDOOR AIR TEMPERATURE SETPOINT (OALT-SP). UPON A LOSS OF AIRFLOW (SF-S), THE REHEAT COIL WILL REMAIN IN CONTROL.

DEHUMIDIFICATION:

ON A RISE IN THE ZONE HUMIDITY (ZN-H), THE COOLING COIL OUTPUT WILL BE OVERRIDDEN TO MAINTAIN THE ZONE HUMIDITY BELOW THE ZONE DEHUMIDIFICATION SETPOINT (DEHUM-SP). THE REHEAT CONTROL WILL MAINTAIN THE TEMPERATURE AT SETPOINT.

UNIT ENABLE:

A NETWORK UNIT ENABLE SIGNAL (UNITEN-MODE), WILL CONTROL THE MODE OF THE UNIT.

UNIT PROTECTION:

LOW TEMPERATURE ALARM (LT-A), WHEN IN "ALARM", THE CONTROL SEQUENCE WILL STOP RUNNING, THE VALVE(S) WILL OPEN AND THE FAN(S) WILL BE DISABLED VIA A HARD WIRED SHUTDOWN CIRCUIT.

DISCHARGE AIR SMOKE DETECTOR (DA-SD), DISABLES THE FAN(S) VIA A HARD WIRED SHUTDOWN CIRCUIT.

DUCT MOUNTED HEATING COIL SCHEDULE

MARK	NOMINAL SIZE	AIR FLOW CFM	TOTAL MBH	EAT °FDB	LAT °FDB	APD °WC	WPD FT	WATER FLOW GPM	REMARKS
H-1	72/18	5500	160	63.2	90	0.2	5.0	16	SEE NOTES
H-2	54/18	4100	120	63.1	90	0.2	5.0	12	SEE NOTES
H-3	48/18	3900	118	62.2	90	0.2	5.0	11.8	SEE NOTES
H-4	66/18	6000	169	64.0	90	0.2	5.0	16.9	SEE NOTES
H-5	40/18	2000	89	59.7	90	0.2	5.0	8.9	SEE NOTES

NOTE:

- HEATING COIL MOUNTED IN PARALLEL WITH EXISTING BY-PASS DAMPERS.
- HEATING CAPACITY BASED ON 180°F ENTERING WATER TEMPERATURE & 20°F DROP IN WATER TEMPERATURE.
- CONTRACTOR SHALL VERIFY THE CORRECT HEATING COIL FOR ALL RTU & RTAC.

RTU POINT SUMMARY

AS-UNT141-1 CONTROLLER POINT SUMMARY TABLE FOR CONTROL OF RTU SYSTEMS *WIRE PART NUMBER FOR REFERENCE ONLY

SYSTEM	DESCRIPTION	POINT TYPE	POINT #	POINT IDENTIFIER	END DEVICE	DEVICE TYPE	DEVICE RANGE	WIRE PART NUM*	WIRE COLOR	NOTES
RTU	ZONE TEMP	AI	1	ZN-T	TE-67PT-1B00	METASTAT	-50 250 1K PT	EXISTING		EXISTING METASTAT MOUNTED IN SPACE
RTU	WARM COOL ADJ	AI	2	W-C-ADJ	(SEE AI 1)	METASTAT	0-2K OHM			EXISTING METASTAT MOUNTED IN SPACE
RTU	SA TEMP	AI	3	SA-T	TE-6321P-1	D SENSOR	-50 250 1K PT	EXISTING		
RTU	CC TEMP	AI	4	CC-T	TE-6321P-1	D SENSOR	-50 250 1K PT			NEW DEVICE + POINT
RTU	OA TEMP	AI	5	OA-T						OA TEMP AVAILABLE USE VALVE IN METASYS
SPARE		AI	6							
RTU	SHUTDOWN	BI	1	SHUTDOWN	SM DETECTOR	SD	ON/OFF	EXISTING		EXISTING DEVICE
RTU	AIR FLOW INTERLK	BI	2	SF-S	P32AF-1C					EXISTING ACROSS FAN
RTU	FILTER STATUS	BI	3	FLT-DP	P32AF-1C					EXISTING ACROSS FILTER
RESERVED	OCCUPANCY	BI	4	OCCUPIED	SOFTWARE					
RTU	OA DAMPER	AO	1	DMP-CMD	M9216-HGA-2	ACT SPR RTN	0-10Vdc	EXISTING		
RTU	HEATING CMD	AO	2	HTG-VLV						
RTU	SUPPLY FAN	BO	1	SF-C	UNIT TERMINALS			EXISTING		
RTU	COOL STAGE 1	BO	2	DX1-C	UNIT TERMINALS			EXISTING		
RTU	COOL STAGE 2	BO	3	DX2-C	UNIT TERMINALS			EXISTING		
SPARE		BO	4							
SPARE		BO	5							
SPARE		BO	6							

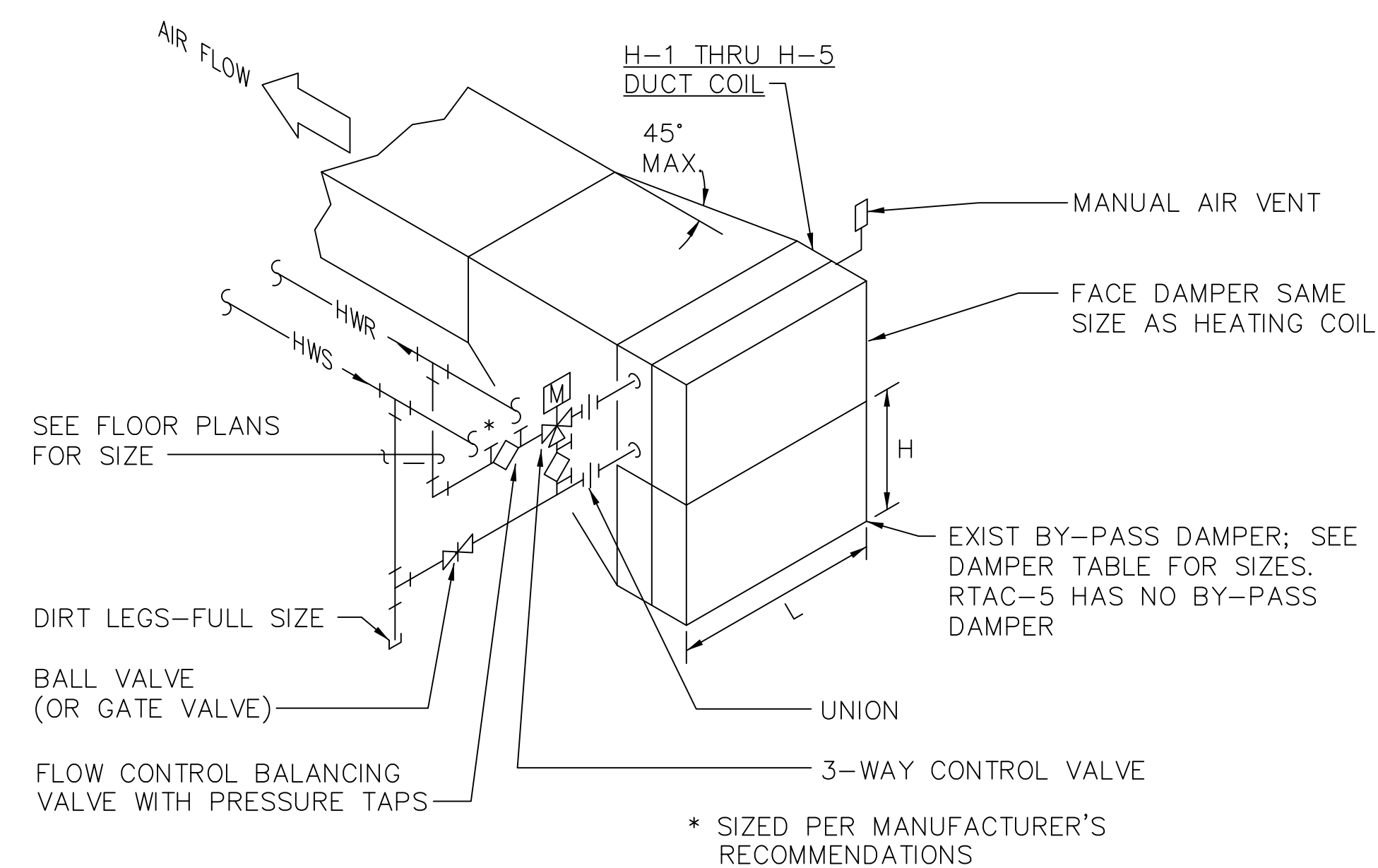
ROOF TOP HVAC UNIT SCHEDULE (FOR REFERENCE ONLY)

MARK	FAN DATA					COOLING COIL DATA (DIRECT EXPANSION) ①				HEATING COIL DATA					ELECTRICAL DATA				REMARKS		
	AIR FLOW CFM	OA CFM	ESP °WC	MOTOR HP	FAN RPM	SENSIBLE MBH	TOTAL MBH	EAT		TOTAL MBH	EAT °FDB	LAT °FDB	APD °WC	WPD FT	WATER FLOW GPM	TOTAL FLA	MCA	MFS		VOLTS	PH
								°FDB	°FWB												
RTAC-4	6000	600	0.8	3	679	113.0	130.7	76.3	64.4						②	40	50	460	3	③ COOLING ONLY	
RTAC-5	2000	360	0.7	1	865	34.9	54.3	77.7	65.8						②	24.2	25	460	3	③ COOLING ONLY	

NOTES:

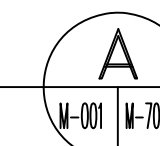
- BASED ON 95°F DB AMBIENT TEMPERATURE
- UNITS RUN LOAD/FULL LOAD AMPS;
- EXISTING AHU'S TO REMAIN. RE-TAB RTAC 4 & 5.

HEATING PROVIDED BY DUCT-MOUNTED HOT WATER COILS, SEE SCHEDULE THIS SHEET.

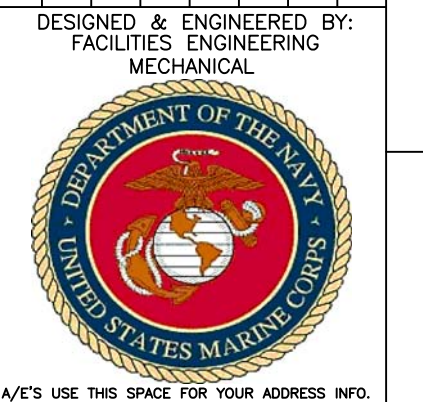


HOT WATER DUCT COIL DETAIL

NO SCALE



ALL EQUIPMENT AND ASSOCIATED COMPONENTS SCHEDULED OR OTHERWISE INDICATED ON DRAWINGS BY MANUFACTURER'S NAME AND ASSOCIATED MODEL NUMBER SERVE AS THE BASIS OF DESIGN AND ARE INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS, AND/OR SUPPORT FOR EQUIPMENT OR SYSTEMS SPECIFIED WITH RELATION TO THE OTHER BUILDING SYSTEMS. THERE IS NO INTENT TO LIMIT COMPETITION. SEE SPECIFICATIONS FOR TECHNICAL REQUIREMENTS PERTAINING TO THE PRODUCTS.



FINAL DESIGN

APPROVED

ACTIVITY - SATISFACTORY TO

DATE

APPROVED

FOR EFD FOR COMMANDER NAVAC

DATE

A/E

DESIGN MHE

DRAWN MHE

REVIEW NAH

oc LPF

CHEF ARCH/ENGR MHE

PROJECT MANAGER MHE

FIRE PROTECTION

BRANCH MANAGER LPF

DESIGN DIRECTOR LPF

NAVAC ENGINEERING COMMAND
MARINE CORPS AIR STATION, CHERRY POINT, N.C.
HVAC CONTROLS
UPGRADE, BLDG. 286
CONTROLS & DETAILS

CODE ID. NO. 80091 SIZE D
SCALE: AS SHOWN
FED. NO.
STA. PROJ. NO. 6903649
SPEC. NO.
CONSTR. CONTR. NO.
NAVAC DRAWING NO. 12766628
SHEET 7 OF 7
M-700
DRAWING REVISION JULY 2003