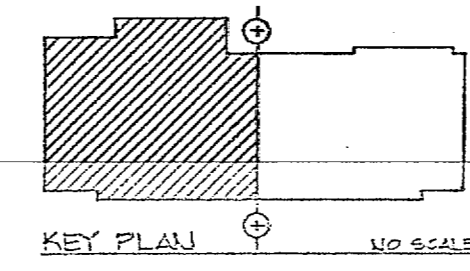


REVISIONS		
NO.	DESCRIPTION	DATE



### HEATING LEGEND

SYMBOL	DESCRIPTION
[Symbol]	HV UNIT HEATING & VENTILATION UNIT
[Symbol]	UH HORIZ. UNIT HEATER
[Symbol]	UH VERT. UNIT HEATER
[Symbol]	FT FINNED TUBE RADIATION
[Symbol]	SUPPLY DIFFUSER
[Symbol]	RETURN GRILLE OR O/A INTAKE
[Symbol]	HWC DUCT MTD. OR UNIT MTD. HOT WATER COIL
[Symbol]	HWS HOT WATER SUPPLY PIPING
[Symbol]	HWR HOT WATER RETURN PIPING
[Symbol]	SPLITTER DAMPER
[Symbol]	AIR EXTRACTOR
[Symbol]	WALL MOUNTED THERMOSTAT @ 5'-0" A.F.F.
[Symbol]	MANUAL BALANCE VALVE
[Symbol]	PIPING TURNING DOWN
[Symbol]	PIPING TURNING UP

ALL DUCTWORK SHOWN IS 1" W.G. PRESSURE CLASS

- #### MECHANICAL GENERAL NOTES:
- FOR ADDITIONAL A/C EQUIPMENT AND DUCTWORK W/ DUCT MTD. HOT WATER COIL, ETC. SEE DRAWINGS "M-2", "M-3" & "M-4".
  - FOR LOCATIONS AND SIZES OF WALL LOUVERS, EDGE LOUVERS AND DOOR GRILLES; SEE DRAWINGS "M-3" & "M-4" AND ARCHITECTURAL DRAWINGS.
  - FOR ENLARGED PLAN OF MECHANICAL ROOM SHOWING EQUIPMENT AND PIPING LAYOUT, SEE SHEET "M-10".
  - COORDINATE LOCATIONS AND ROUTING OF ALL EQUIPMENT AND PIPING WITH LOCATION AND ROUTING OF PLUMBING EQUIPMENT AND PIPING SHOWN ON "P" DRAWING SHEETS.
  - FOR LOCATION AND ROUTING OF LOW PRESSURE STEAM AND CONDENSATE PIPING TO STEAM CLEAN BAYS, SEE DWG. SHEETS "M-1" & "M-2".
  - FOR ADDITIONAL PIPING LEGEND, SEE DRAWING SHEET "M-10".
  - PROVIDE MANUAL AIR VENTS @ HIGH POINTS OF "HWS" & "HWR" PIPING.
  - ALL SUPPLY RETURN AND OUTSIDE AIR DUCTWORK SERVING ALL AIR CONDITIONING UNITS SHALL BE INSULATED. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK CONDENSED ABOVE CEILING SERVING HEATING AND VENTILATING UNITS & ROOFTOP AIR HEAT EXCHANGER RECOVERY UNIT SHALL BE INSULATED. ALL HEATING & VENTILATING UNIT DUCTWORK EXPOSED TO BLDG. SPACE & ALL EXH. FAN DUCTWORK SHALL NOT BE INSULATED.
  - FOR DESIGN CONDITIONS SEE SCHEDULE ON SHEET "M-2".

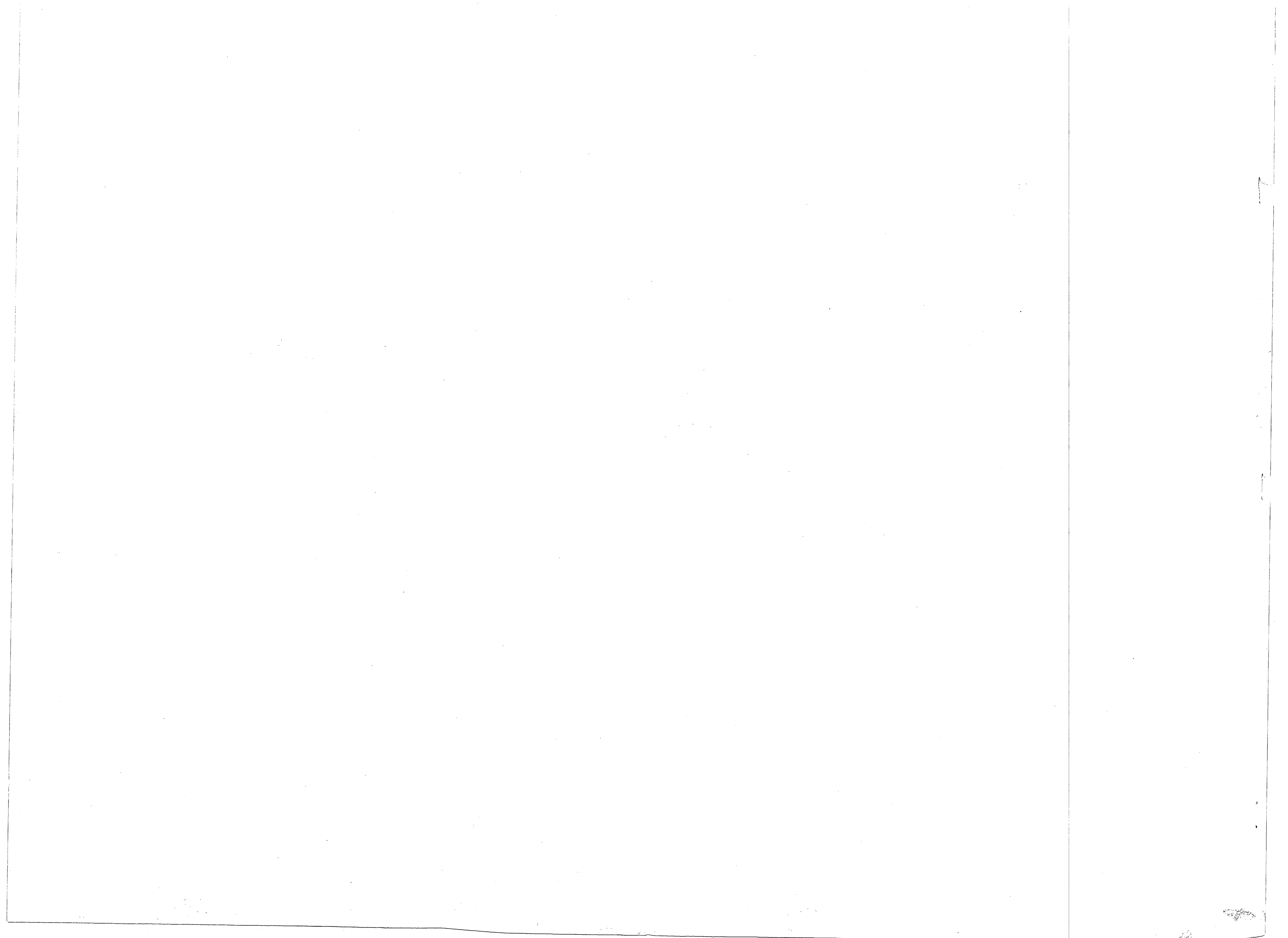
**PARTIAL HEATING PLAN**  
SCALE = 1/8" = 1'-0"

CONSULTANT <b>DELTA ENGINEERING, INC.</b> 700 N. 25th ST. WENDELL, N.C. 28090 PHONE: (813) 271-7343		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>ATLANTIC DIVISION</b> NAVAL STATION NORFOLK, VIRGINIA <b>CAMP LEJEUNE, N.C.</b>	
ETD DWG. NO. 281833 JOB NO. 281833 ETD PROJ. NO. F-808 DES. BY: [Signature] CHK. BY: [Signature] ETD-REVISED TO: [Signature] REV. NO. [Signature]	MCB NAVAC DATE: 11/27/76 NAVAC DRAWING NO. 4144803	SIZE: F CODE IDENT. NO. 80091 CONSTR. CONTR. NO. 88470-85-1-0140 SCALE: AS SHOWN SPEC. 05-84-142	SHEET 54 OF 67

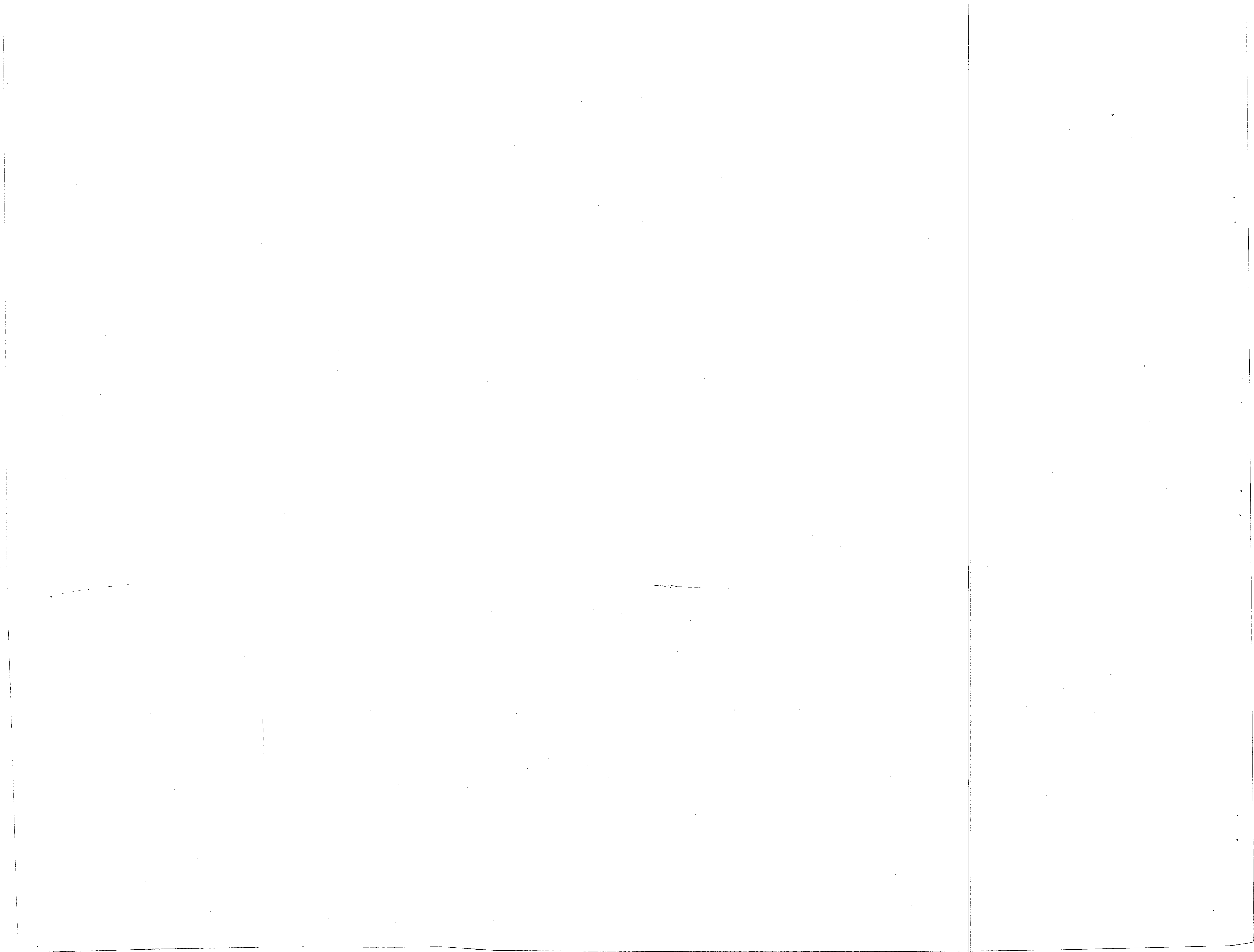
NOTE: INTERLOCK THIS "H-V-G" UNIT TO OPERATE WHEN ROOF MTD. ENGINE EXHAUST SYSTEM EXHAUST FAN "E-1" (SHOWN ON DWG. "M-5") IS IN OPERATION.

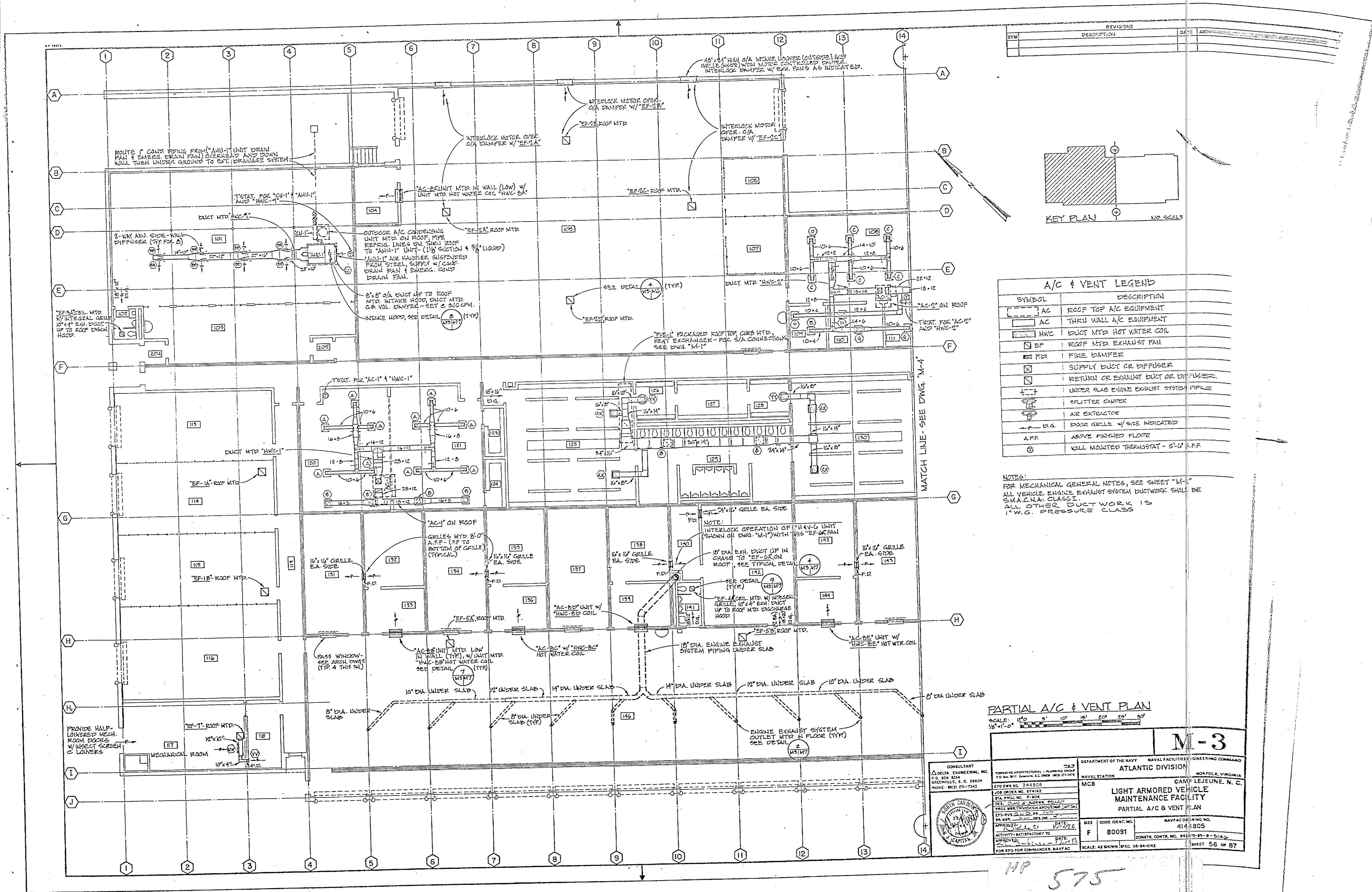
NOTE: FOR ENLARGED PLAN OF MECHANICAL ROOM SHOWING PIPING AND EQUIPMENT, SEE DWG. "M-10"

48 575

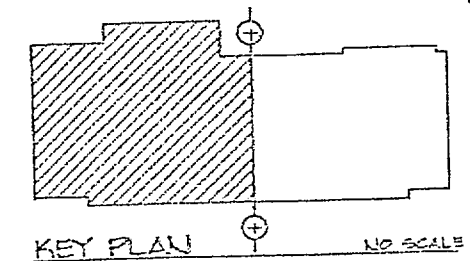








SYMBOL	DESCRIPTION	DATE	BY



A/C & VENT LEGEND	
SYMBOL	DESCRIPTION
[Symbol]	AC ROOF TOP A/C EQUIPMENT
[Symbol]	THRU WALL A/C EQUIPMENT
[Symbol]	DUCT MTD HOT WATER COIL
[Symbol]	ROOF MTD EXHAUST FAN
[Symbol]	FIRE DAMPER
[Symbol]	SUPPLY DUCT OR DIFFUSER
[Symbol]	RETURN OR EXHAUST DUCT OR DIFFUSER
[Symbol]	UNDER SLAB ENGINE EXHAUST SYSTEM PIPELINE
[Symbol]	FLUTTER DAMPER
[Symbol]	AIR EXTRACTOR
[Symbol]	DOOR GRILLE W/ GATE INDICATED
[Symbol]	ABOVE FINISHED FLOOR
[Symbol]	WALL MOUNTED THERMOSTAT - SLO. EFF.

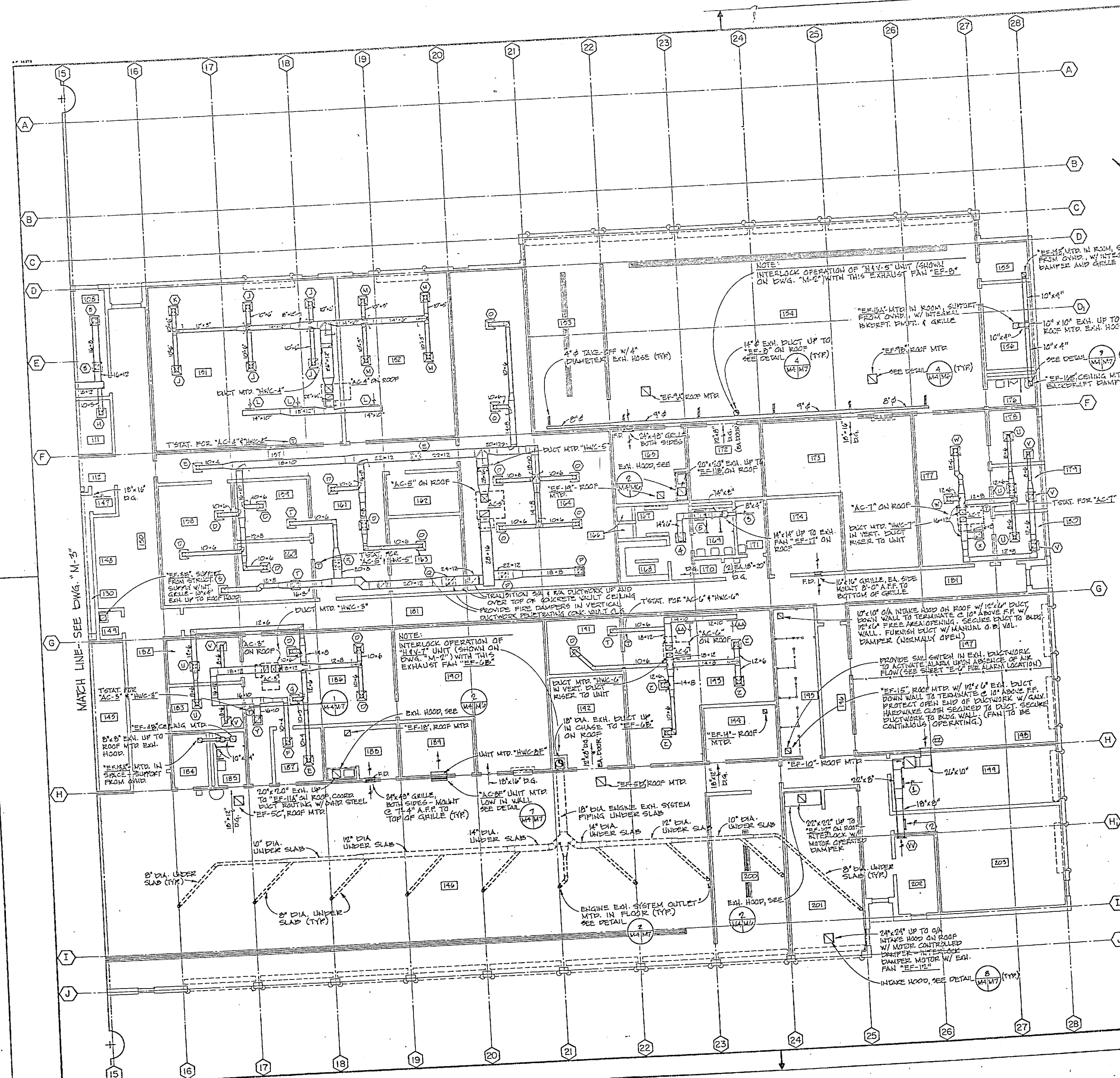
NOTES:  
FOR MECHANICAL GENERAL NOTES, SEE SHEET "M-1"  
ALL VEHICLE ENGINE EXHAUST SYSTEM DUCTWORK SHALL BE  
S.W.A.C.H.A. CLASS I  
ALL OTHER DUCT WORK IS  
1" W.G. PRESSURE CLASS

PARTIAL A/C & VENT PLAN  
SCALE: 1/8" = 1'-0"

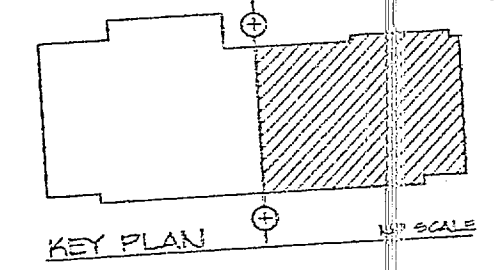
<b>M-3</b>	
CONSULTANT A. DELTA ENGINEERING, INC. 1100 W. 10TH ST. SUITE 200 GREENVILLE, S.C. 29601 PHONE: (803) 771-7343	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION CANAL LEAFLETINE, N. C. NAVY STATION LIGHT ARMORED VEHICLE MAINTENANCE FACILITY PARTIAL A/C & VENT PLAN
PROJECT NO. 244803 JOB ORDER NO. 244803 DESIGNED BY: [Name] DRAWN BY: [Name] CHECKED BY: [Name] APPROVED BY: [Name]	SIZE: 11x17 CODE IDENT. NO.: 80081 NAVY DRAWING NO.: 414-805 CONTR. CENTER NO. 414-805 SCALE: AS SHOWN SPEC. 04-84-1142 SHEET 56 OF 87

HP 575





REV	DESCRIPTION	DATE



NOTES:  
 FOR MECHANICAL GENERAL NOTES, REFER TO ENG. SHEET "M-1"  
 ALL VEHICLE ENGINE EXHAUST SYSTEM DUCTWORK SHALL BE  
 S.M.A.G.A. CLASS 2  
 ALL OTHER DUCTWORK IS  
 "W.G. PRESSURE" CLASS

PARTIAL A/C & VENT PLAN  
 SCALE: 1/8" = 1'-0"

<b>M-4</b>	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING DIVISION ATLANTIC DIVISION	
NAVAL STATION CAMP LEJEUNE, N. C.	
MCB LIGHT ARMORED VEHICLE MAINTENANCE FACILITY PARTIAL A/C & VENT PLAN	
NAVAC DRAWING NO. 4144806	SIZE F 80081
DATE 2/1/71	BY F 80081
FOR PEO FOR COMMANDER, NAVFAC	SCALE: AS SHOWN (SPEC. 10-64-142)

CONSULTANT  
 DELTA ENGINEERS, INC.  
 200 S. 10th St.  
 WYOMING, S.C. 29604  
 PHONE: (803) 271-7343

APPROVED: [Signature]  
 DATE: 2/1/71



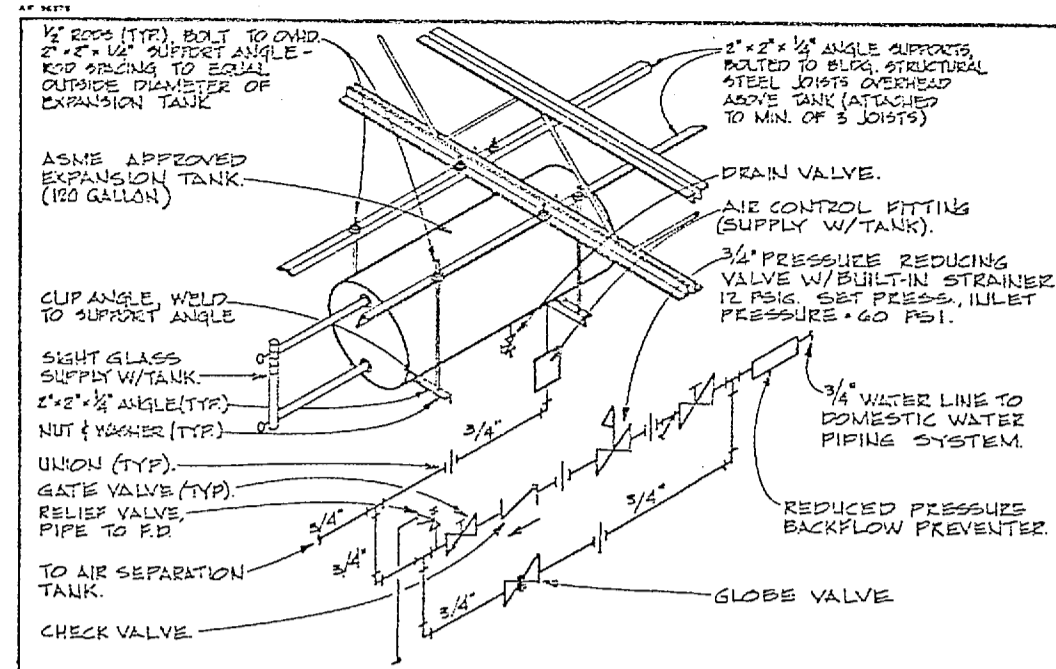
575



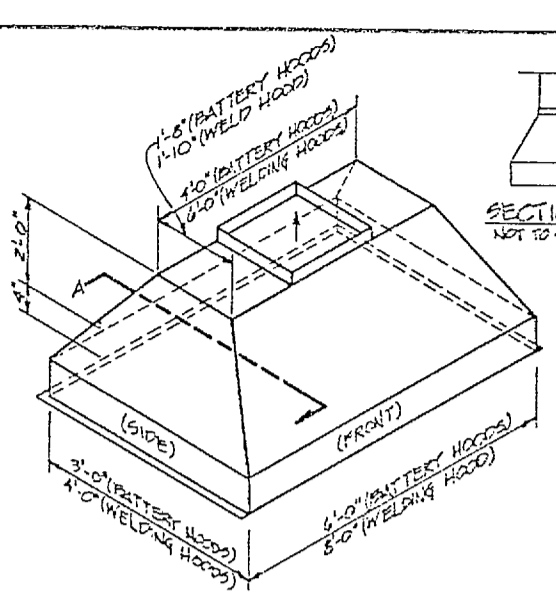




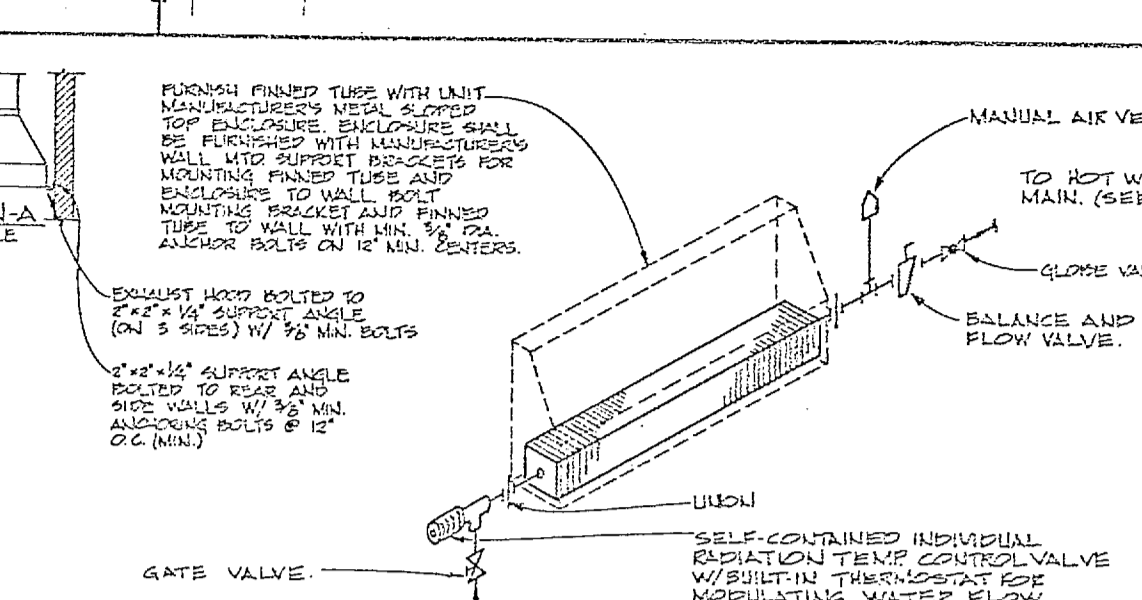




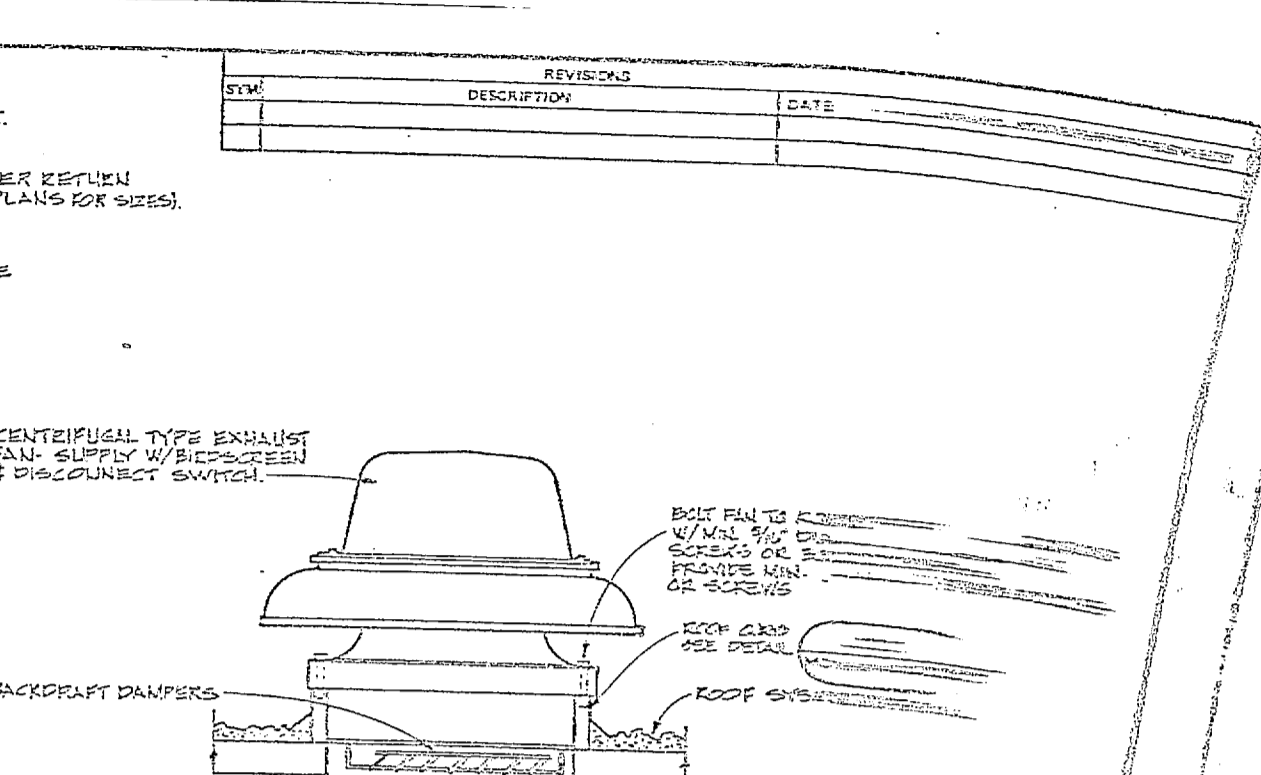
1 EXPANSION TANK REDUCING VALVE ASSEMBLY DETAIL  
NOT TO SCALE



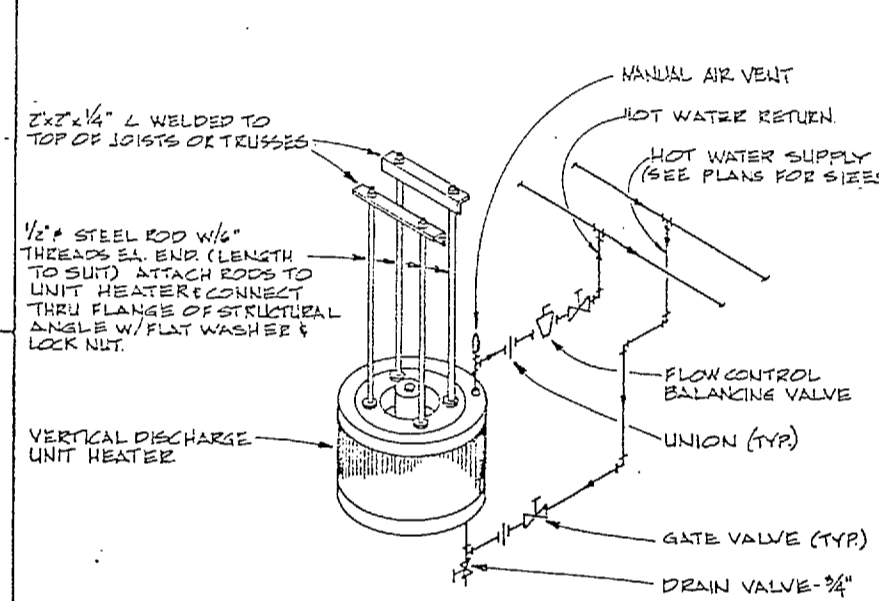
2 BATTERY SINK EXHAUST HOOD DETAIL  
NOT TO SCALE



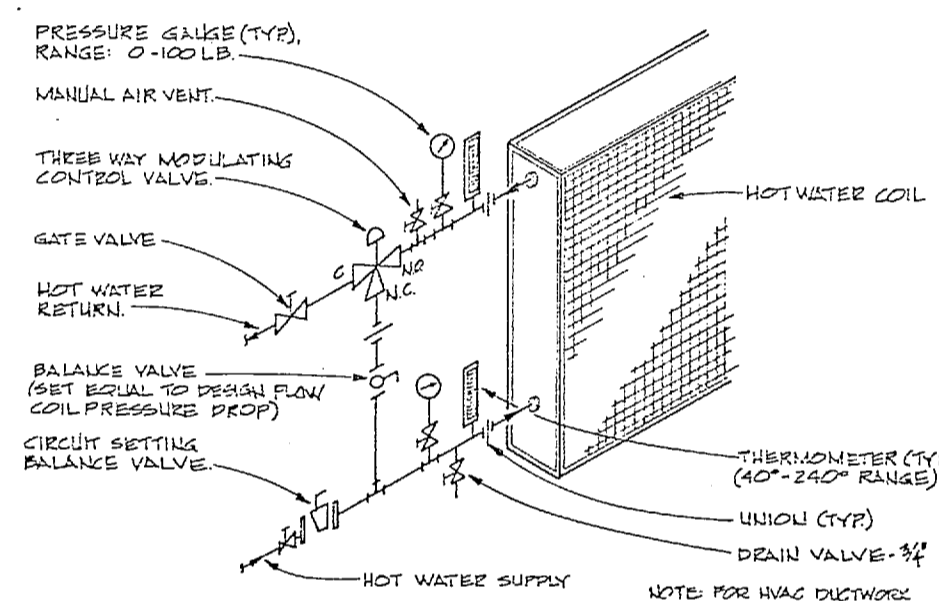
3 FIN TUBE RADIATION PIPING DETAIL  
NOT TO SCALE



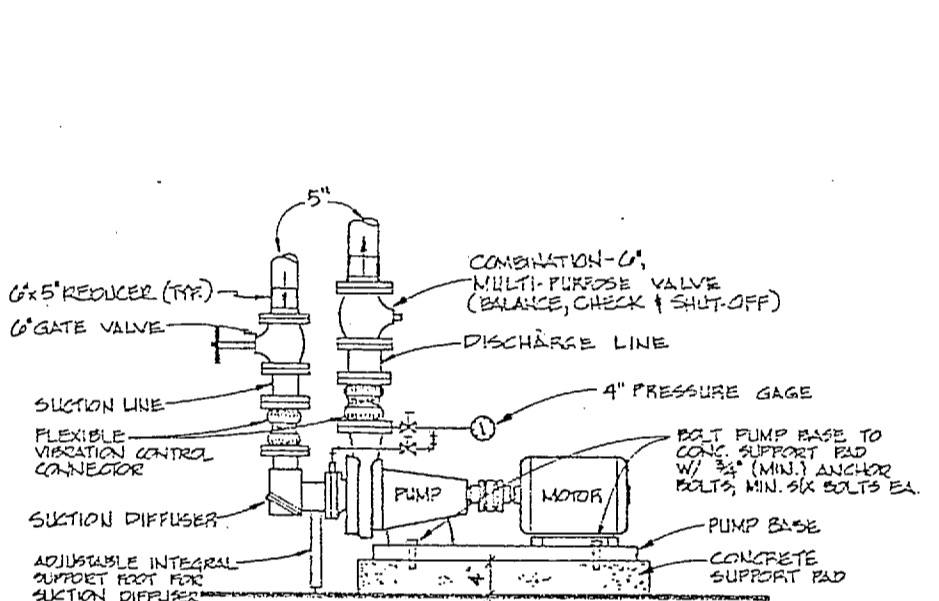
4 EXHAUST FAN DETAIL  
NOT TO SCALE



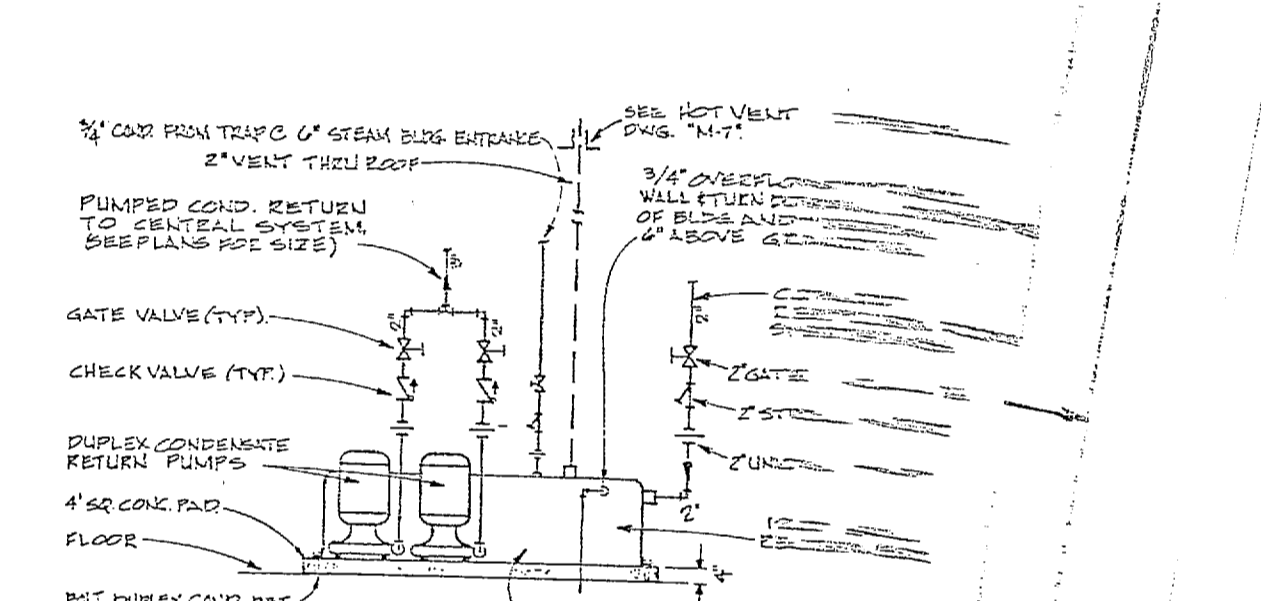
5 VERTICAL HOT WATER UNIT HEATER DETAIL  
NOT TO SCALE



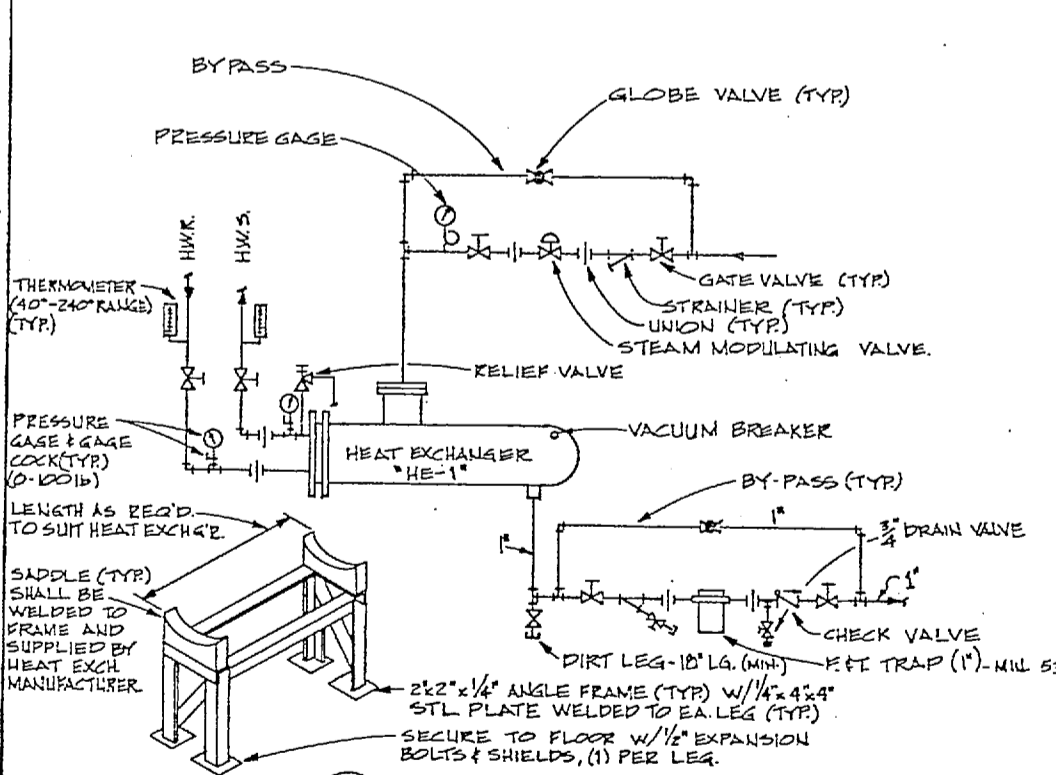
6 TYPICAL DUCT MOUNTED HOT WATER COIL PIPING DETAIL  
NOT TO SCALE



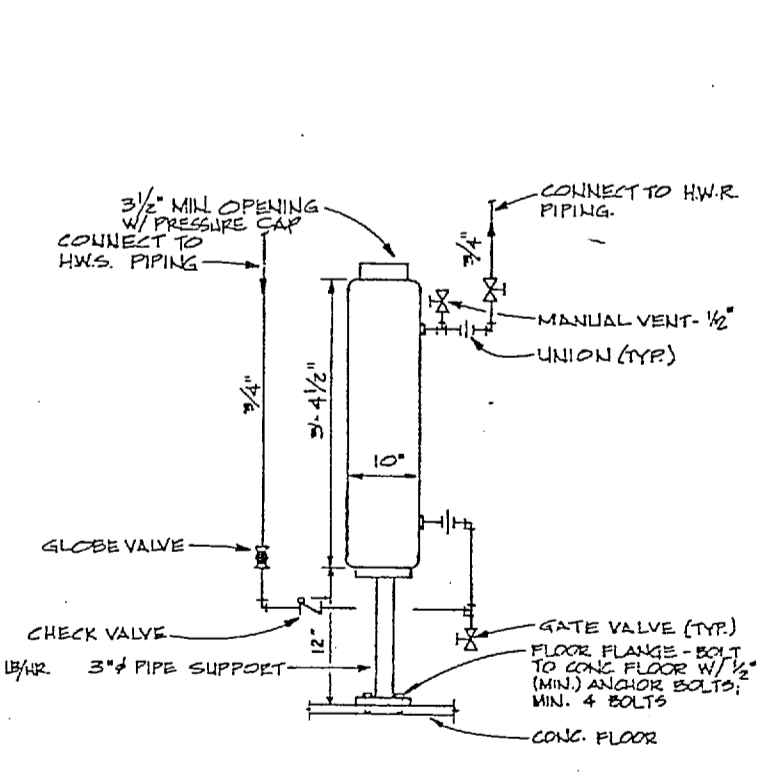
7 BASE MOUNTED PUMP "P-1" PIPING DETAIL  
NOT TO SCALE



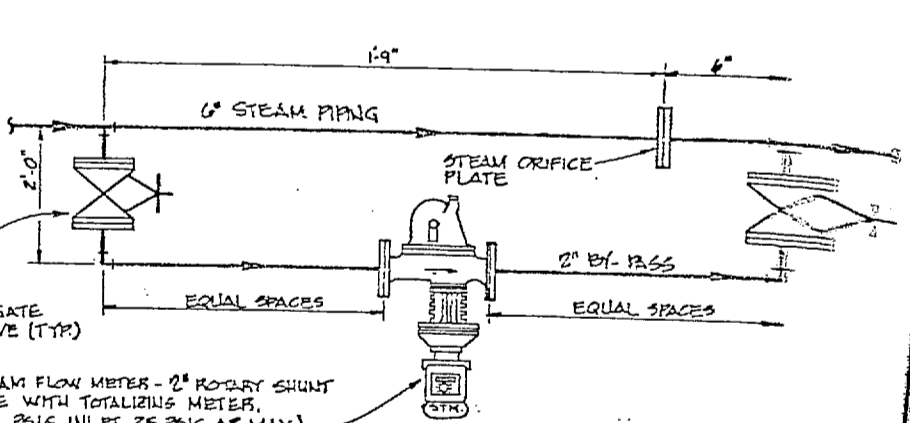
8 PIPING SCHEMATIC DUPLEX CONDENSATE RETURN LINE  
NOT TO SCALE



9 HEAT EXCHANGER DETAIL  
NOT TO SCALE



10 SHOT FEEDER DETAIL  
NOT TO SCALE



11 STEAM FLOW METER DETAIL  
NOT TO SCALE

REV.	DESCRIPTION	DATE

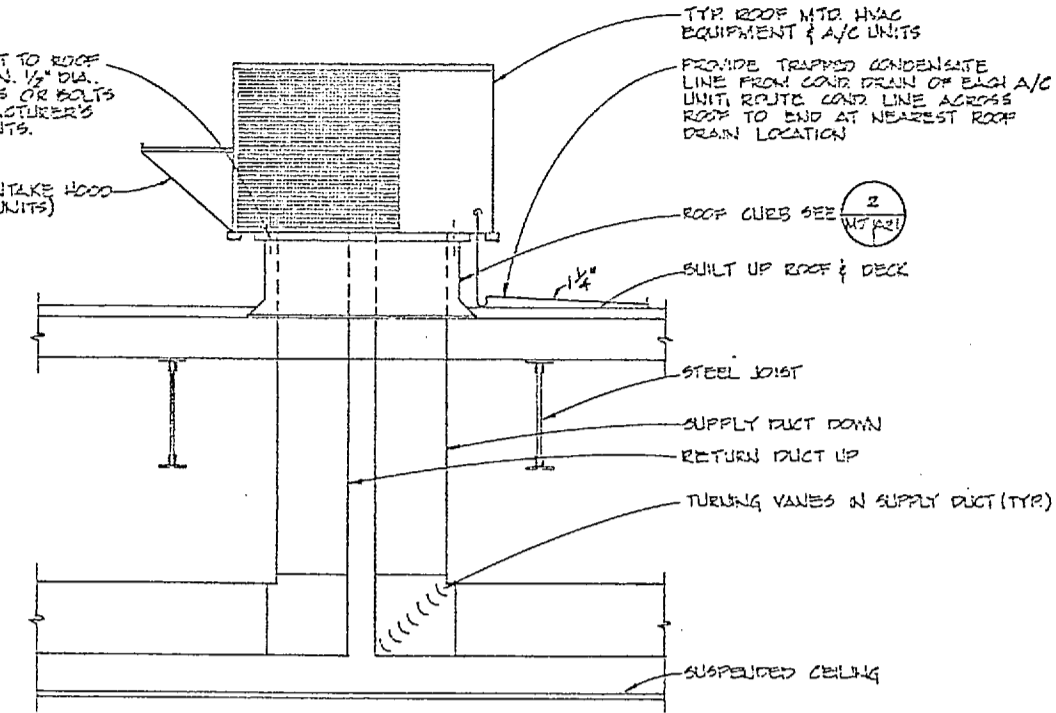
CONSULTANT DELTA ENGINEERS, INC. P. O. BOX 2334 GREENVILLE, S.C. 29604 PHONE: (803) 771-7343		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING ATLANTIC DIVISION NAVALESTATION CAMP LEJEUNE, N. C.	
PROJECT: LIGHT ARMORED VEHICLE MAINTENANCE FACILITY DRAWING NO.: 4144808 SHEET NO.: 55 OF 87		M-6 MECHANICAL DETAILS	

HP 575

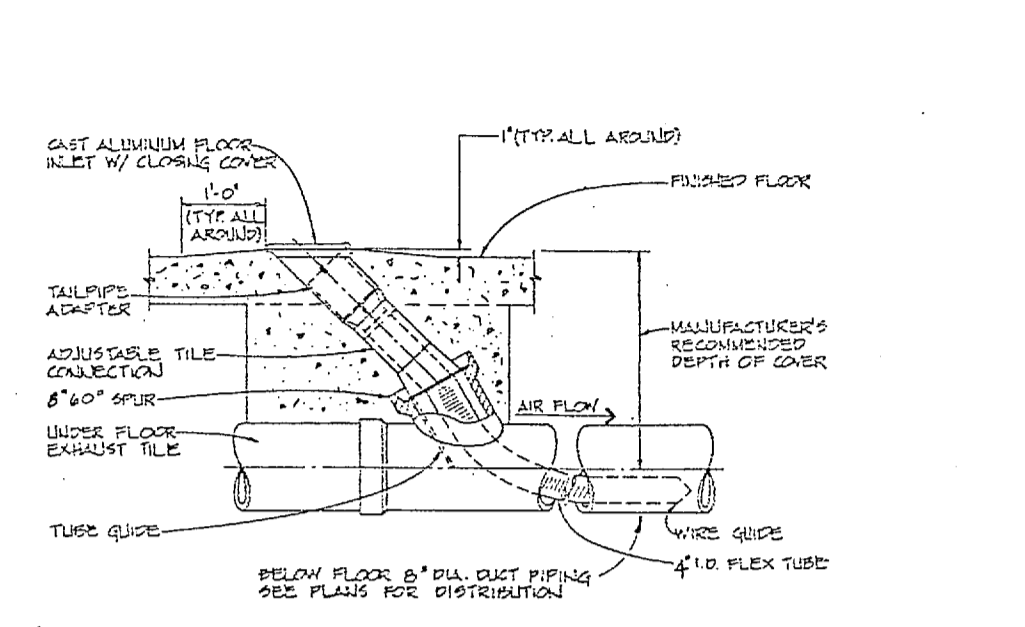


NO.	DESCRIPTION	DATE	APPROVED

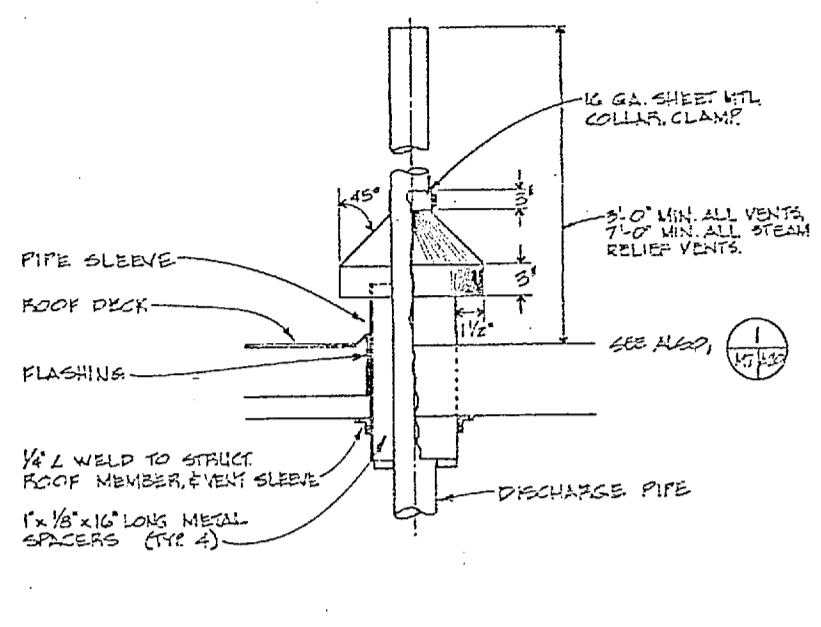
NOTE: PACKAGED AIR HEAT RECOVERY UNIT (PHRU) SHALL BE ROOF CURB MOUNTED SIMILAR TO THIS DETAIL WITH EXHAUST DUCT ROOF PENETRATIONS PROVIDED WITH WEATHERTIGHT FLASHED ROOF CURBS.



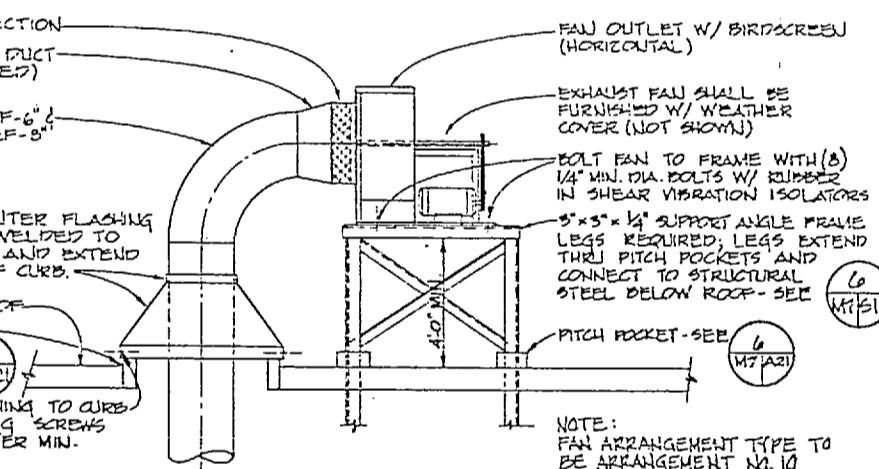
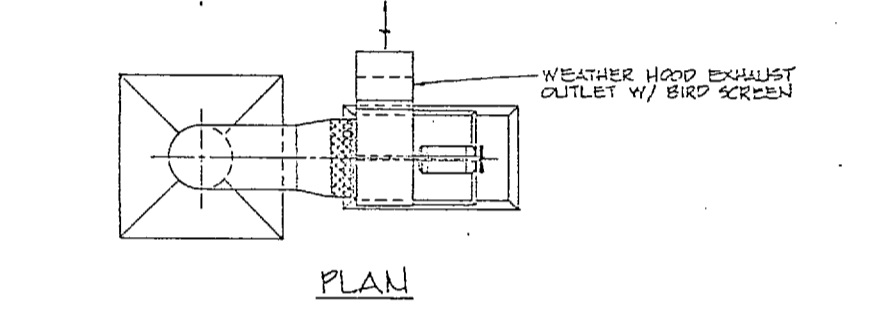
TYPICAL HVAC ROOF MOUNTED UNITS SECTION (1) 3/4" = 1'-0" (TYP. FOR 'AC-1' THRU 'AC-11')



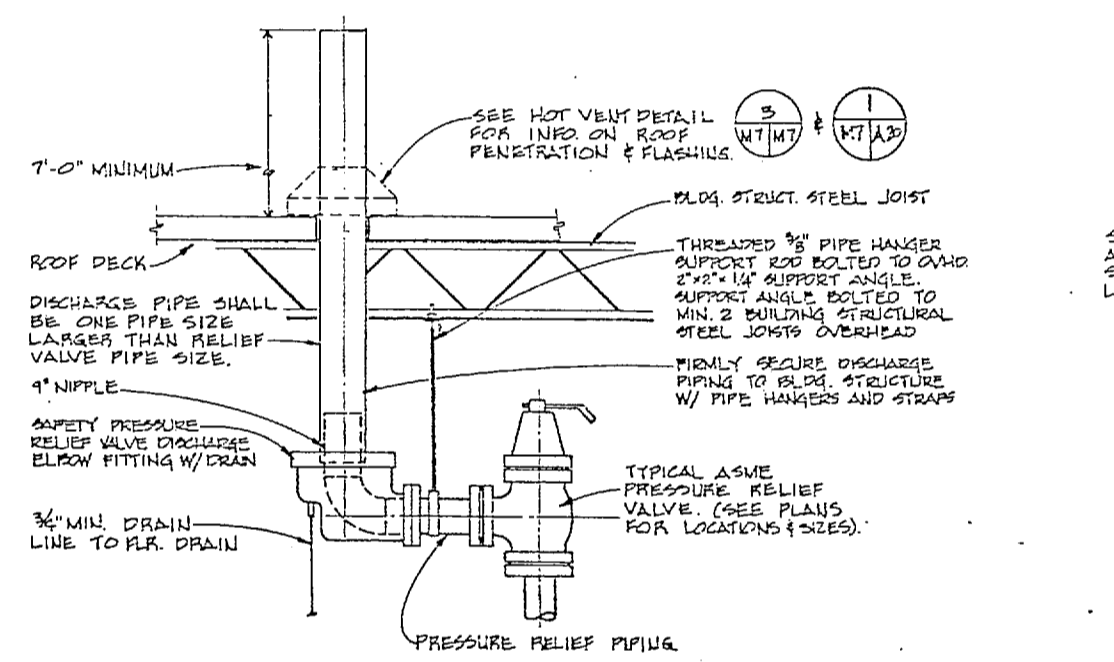
ENGINE EXHAUST SYSTEM CONNECTION PORT DETAIL (2) NOT TO SCALE



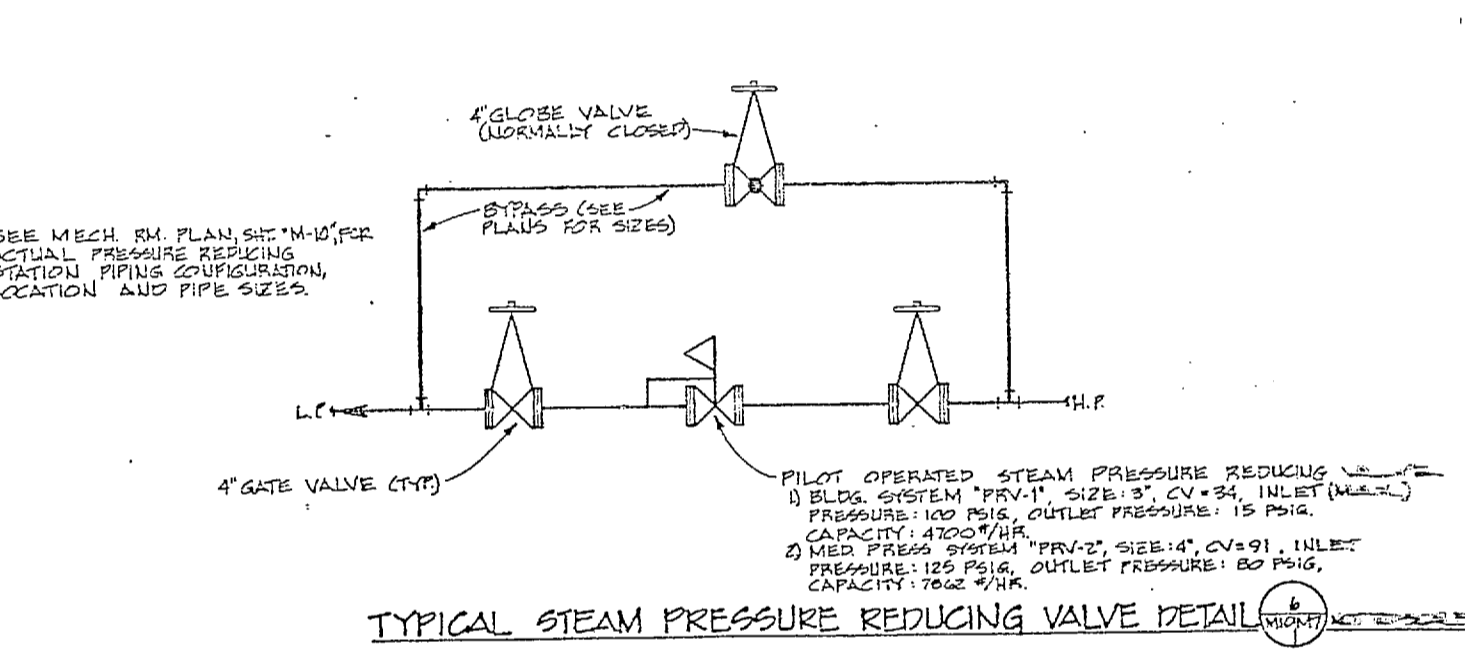
TYPICAL HOT VENT DETAIL (3) NOT TO SCALE



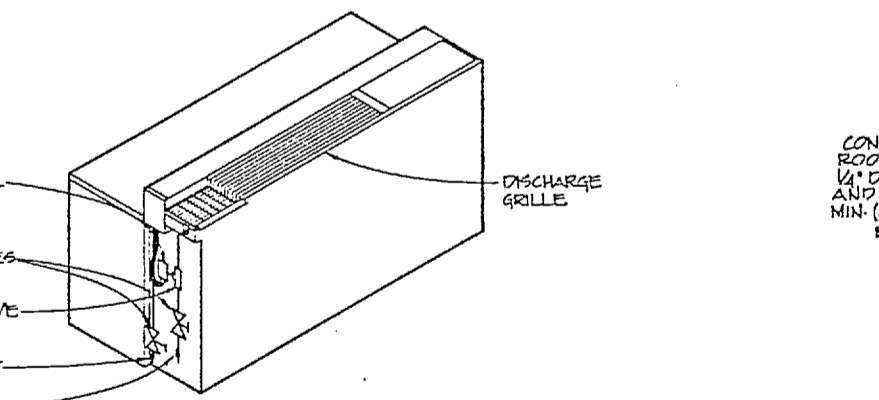
TYP. ROOF MOUNTED EXHAUST FAN DETAIL (4) NOT TO SCALE (TYP. FOR 'EF-6A', 'EF-6B' & 'EF-8')



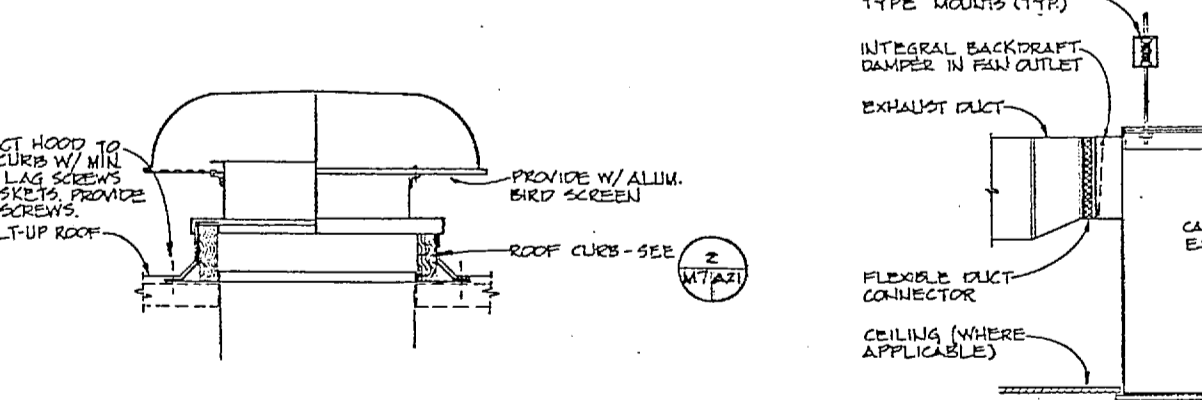
PRESSURE RELIEF VALVE DISCHARGE DETAIL (5) NOT TO SCALE



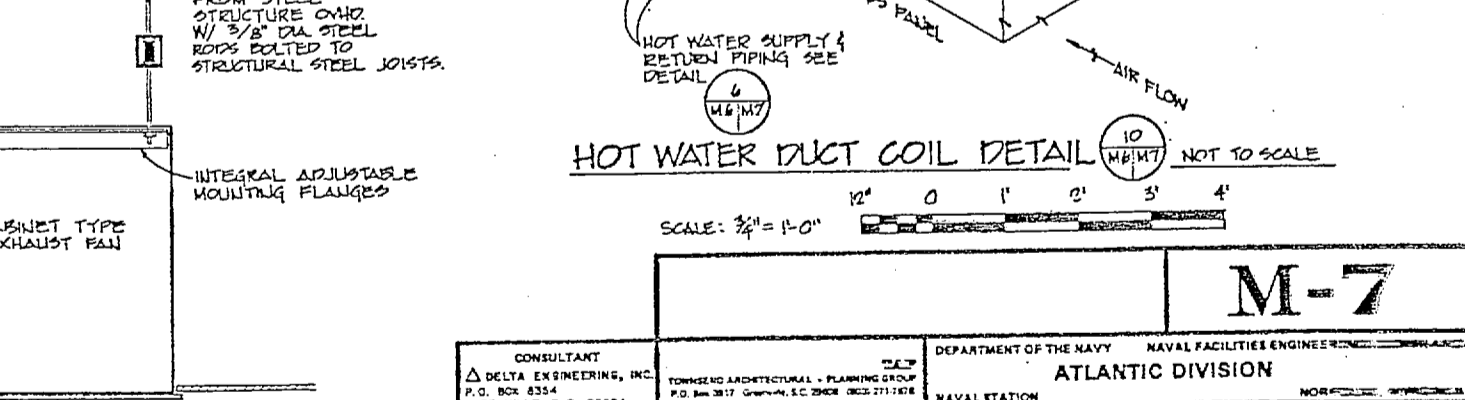
TYPICAL STEAM PRESSURE REDUCING VALVE DETAIL (6) NOT TO SCALE



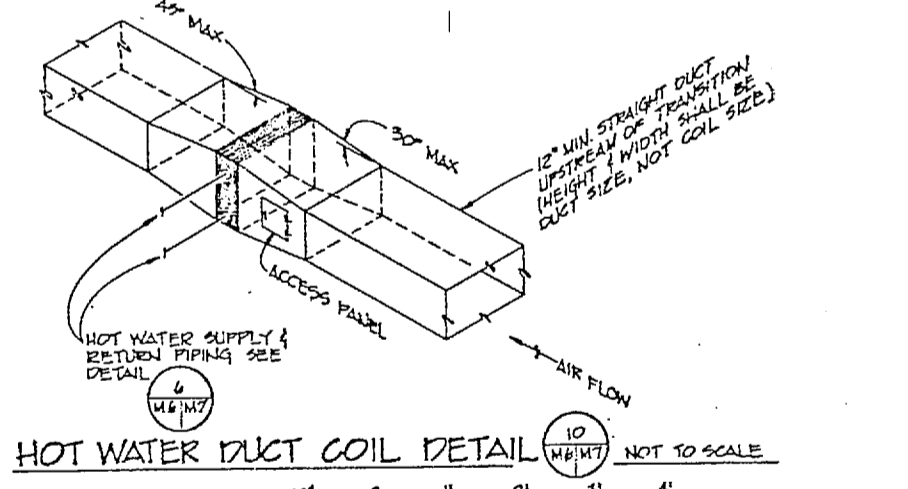
TYP. THRU WALL A/C UNIT DETAIL (7) NOT TO SCALE WITH HOT WATER COIL (TYP. FOR 'AC-8')



OUTSIDE AIR INTAKE/EXHAUST OUTLET HOOD DETAIL (8) NOT TO SCALE



CEILING OR CABINET TYPE EXHAUST FAN DETAIL (9) NOT TO SCALE

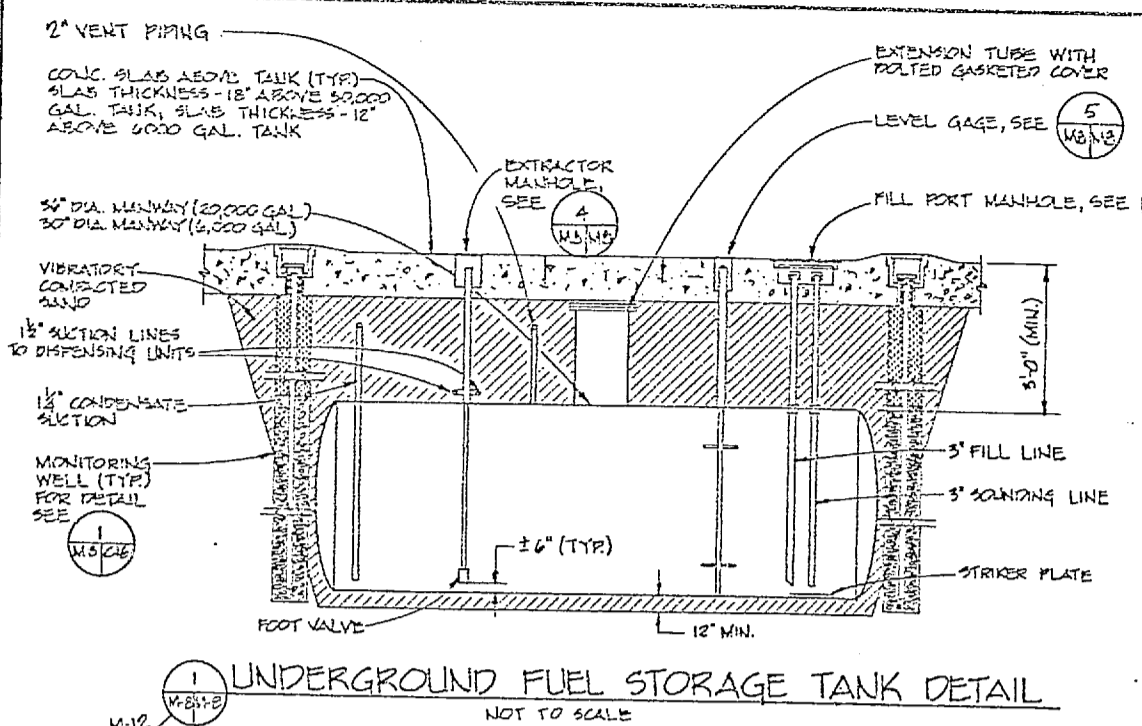


HOT WATER DUCT COIL DETAIL (10) NOT TO SCALE

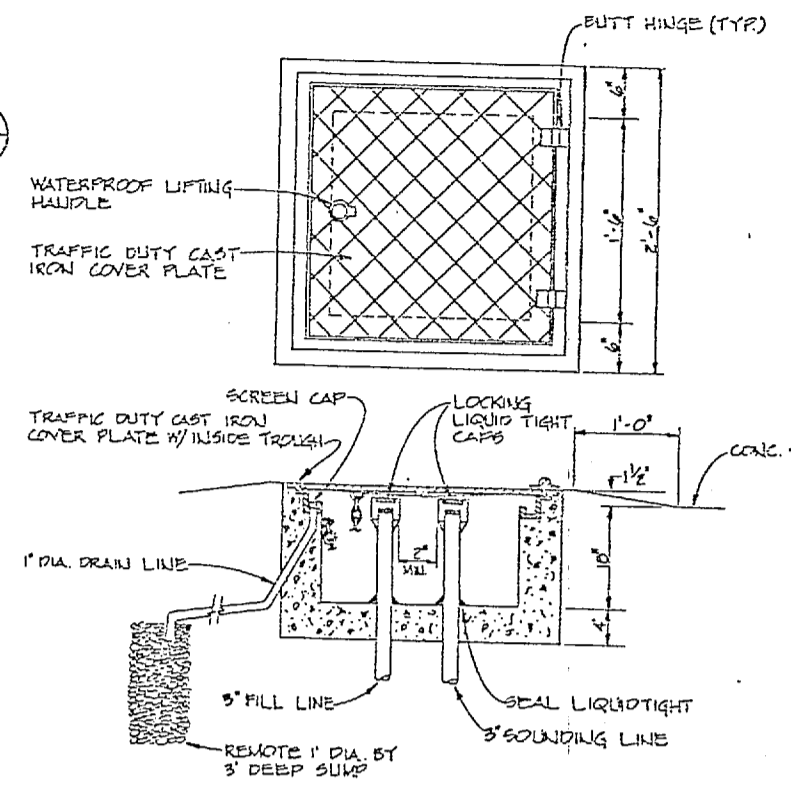
<p>CONSULTANT          DELTA ENGINEERS, INC.          100 N. 10th St.          BREKIDALE, S.C. 29604          PHONE: (803) 271-2345</p>		<p>DEPARTMENT OF THE NAVY          NAVAL FACILITIES ENGINEERING DIVISION          ATLANTIC DIVISION</p>	
<p>PROJECT NO. 244809          JOB ORDER NO. 874142          DEL. PROJ. NO. 7-200          DEL. PROJ. NO. 244809          PROJ. WORK ORDER NO. 244809-001          EXP. DATE: 12/31/80          BR. NO. 12/31/80          DATE: 12/31/80          APPROVED: [Signature]          AUTHORITY: [Signature]          FOR EFO FOR COMMANDER, NAVFAC</p>		<p>NAVAL STATION          CAMP LEJEUNE, N. C.          LIGHT ARMORED VEHICLE          MAINTENANCE FACILITY          MECHANICAL DETAILS</p>	
SIZE: F	CODE IDENT. NO.: 80091	NAVFAC DRAWING NO.: 4144809	CONST. CONTR. NO.: 182470-85-B
SCALE: AS SHOWN SPEC. 05-84-4142		SHEET 575 OF 57	

575

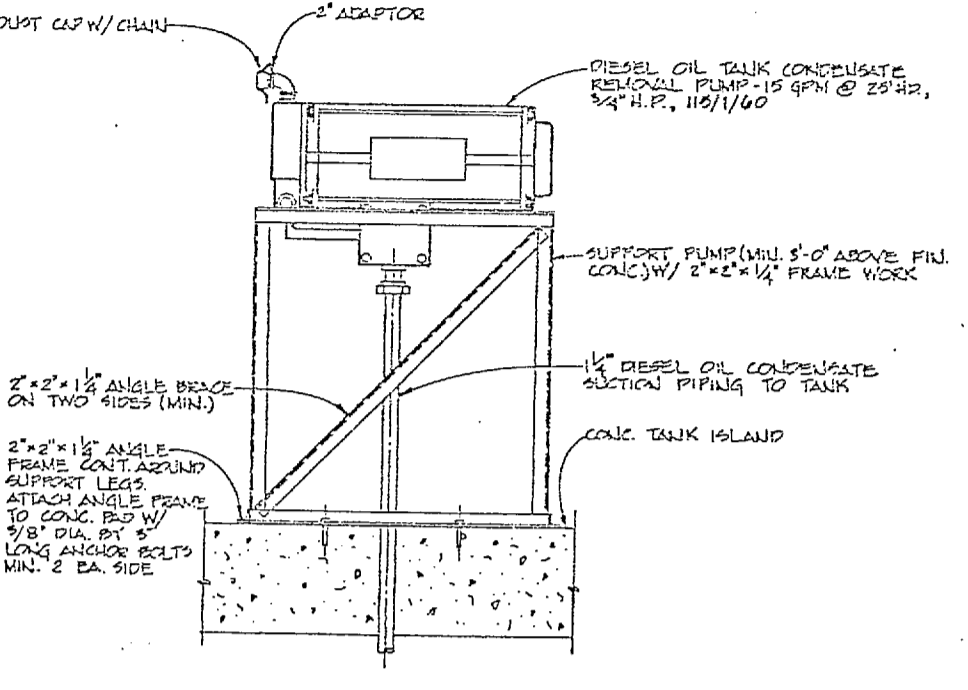




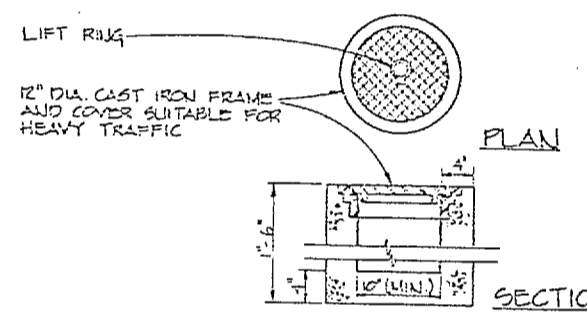
1 UNDERGROUND FUEL STORAGE TANK DETAIL  
NOT TO SCALE



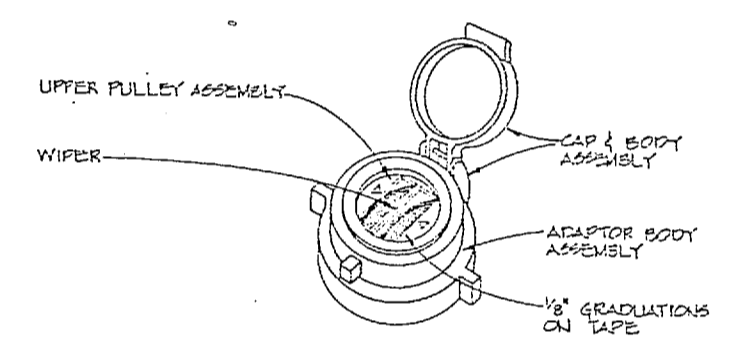
2 FILL PORT MANHOLE DETAIL  
NOT TO SCALE



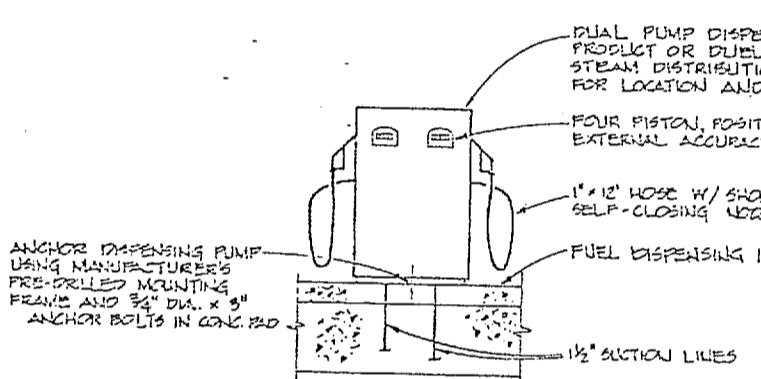
3 DIESEL OIL TANK CONDENSATE REMOVAL PUMP  
NOT TO SCALE



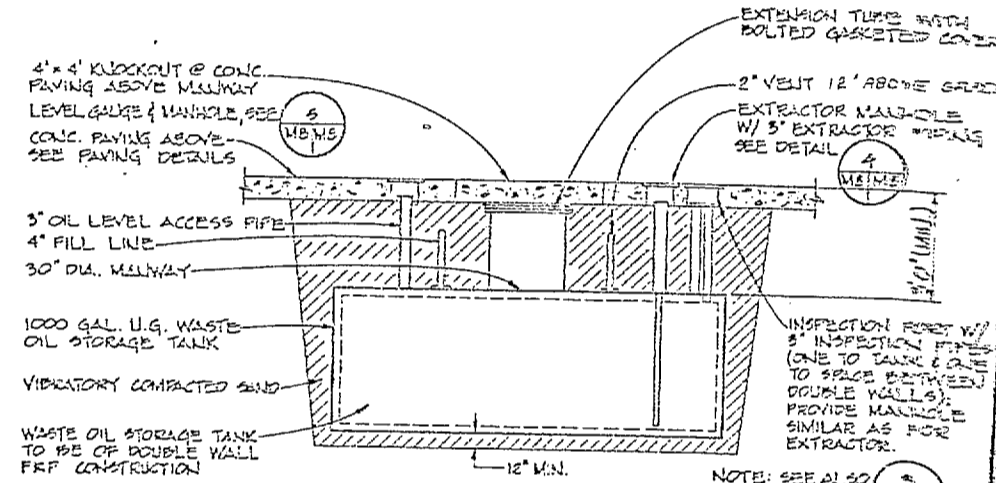
4 EXTRACTOR & LEVEL GAGE M.H. DETAIL  
NOT TO SCALE



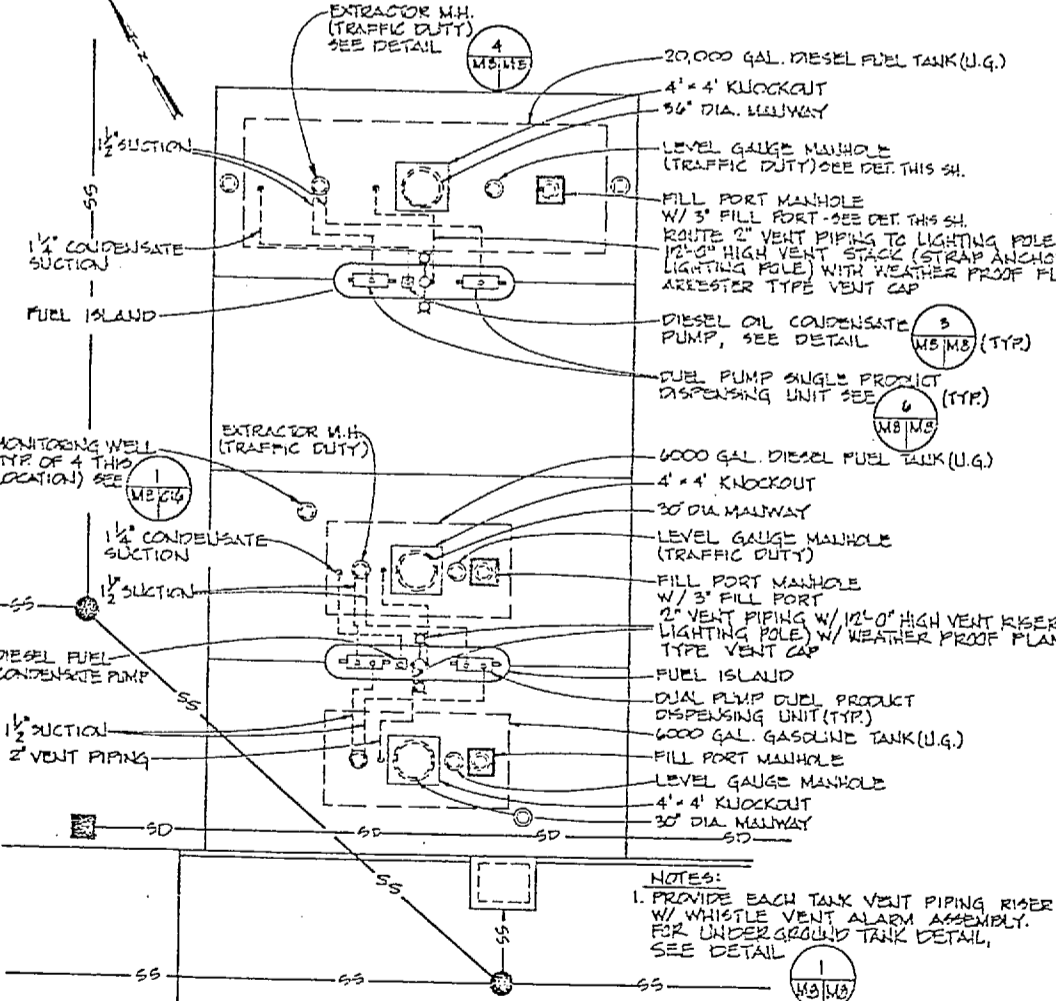
5 LEVEL GAGE DETAIL  
NOT TO SCALE



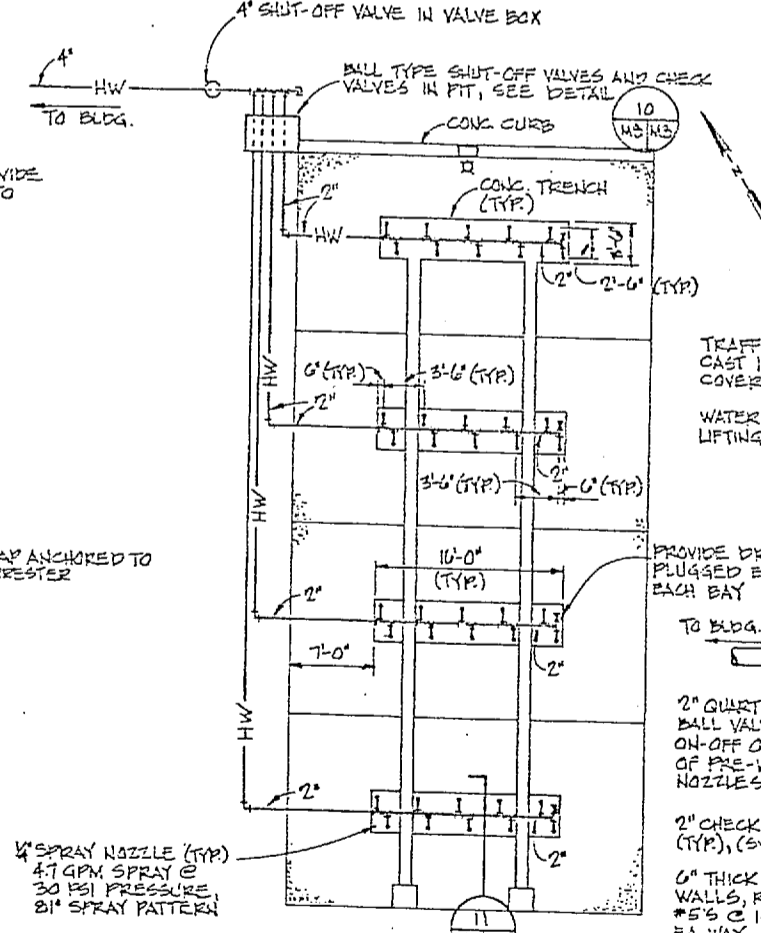
6 FUEL DISPENSING UNIT DETAIL  
NOT TO SCALE



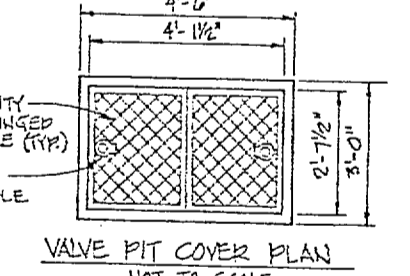
7 WASTE OIL STORAGE TANK DETAIL  
NOT TO SCALE



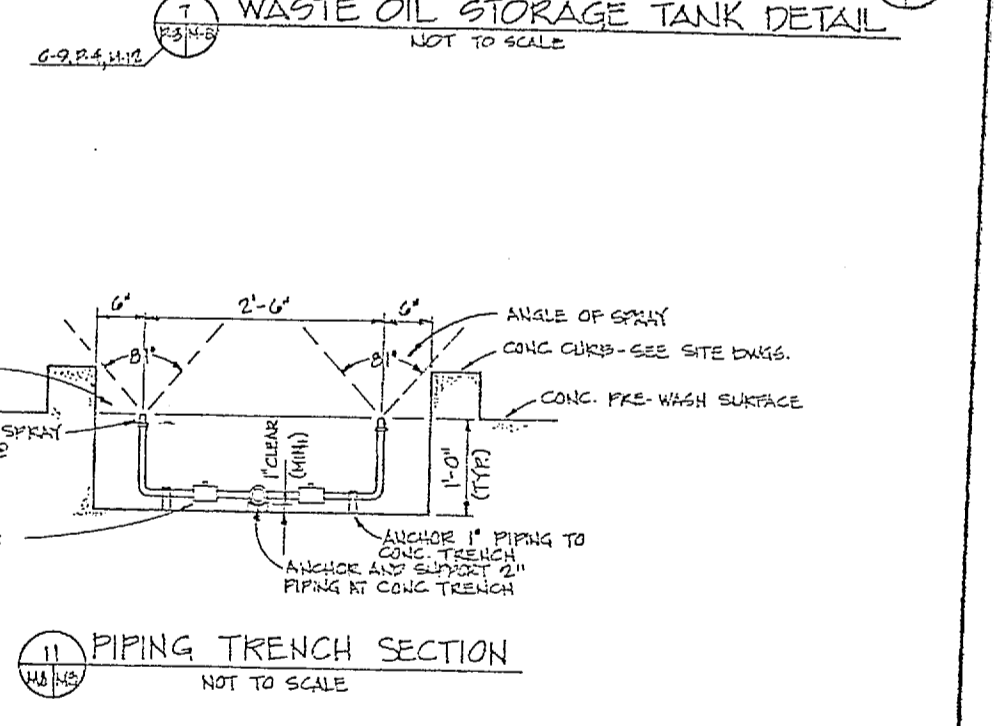
8 FUEL DISPENSING ISLAND PLAN  
NOT TO SCALE



9 PRE-WASH BAYS PLAN  
NOT TO SCALE



10 PRE-WASH VALVE PIT DETAIL  
NOT TO SCALE



11 PIPING TRENCH SECTION  
NOT TO SCALE

REV.	DESCRIPTION	DATE	APPROVED

		<b>M-8</b>	
CONSULTANT DELTA ENGINEERING, INC. P.O. BOX 8334 FARMERSVILLE, S.C. 29540 PHONE: (803) 271-7343		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VIRGINIA	
PROJECT NO. 41448 JOB ORDER NO. 87442 DATE: 10/1/78 DRAWN BY: J. L. BROWN CHECKED BY: J. L. BROWN APPROVED BY: J. L. BROWN		CAMP LEJEUNE, N. C. LIGHT ARMORED VEHICLE MAINTENANCE FACILITY MECHANICAL DETAILS	
SIZE: 11" x 17" CODE IDENT. NO.: F 80091 NAVY DRAWING NO.: 4144810 SHEET: 61 OF 67		SCALE: AS SHOWN (SPEC. 68-8-4144)	

40 575



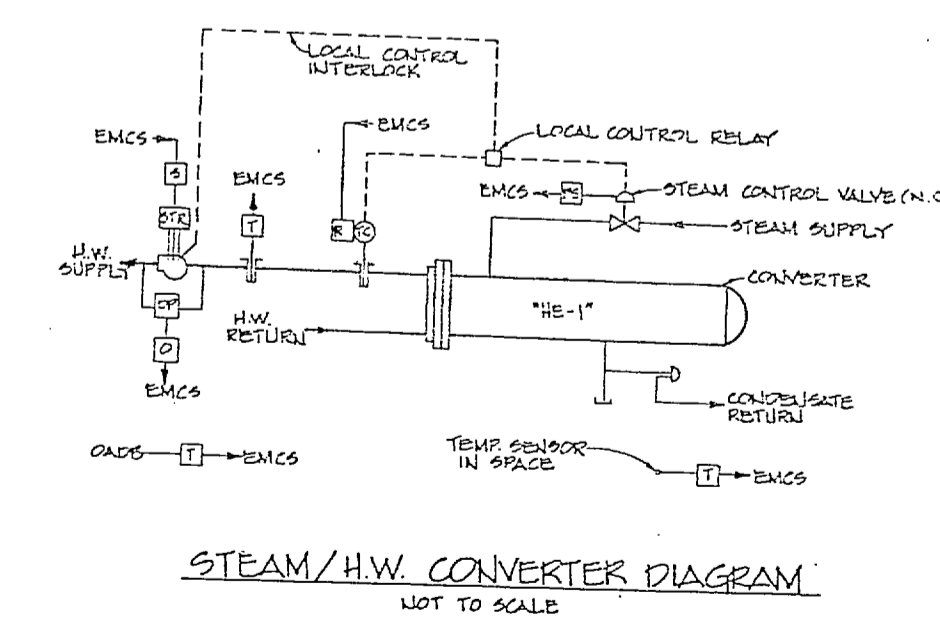
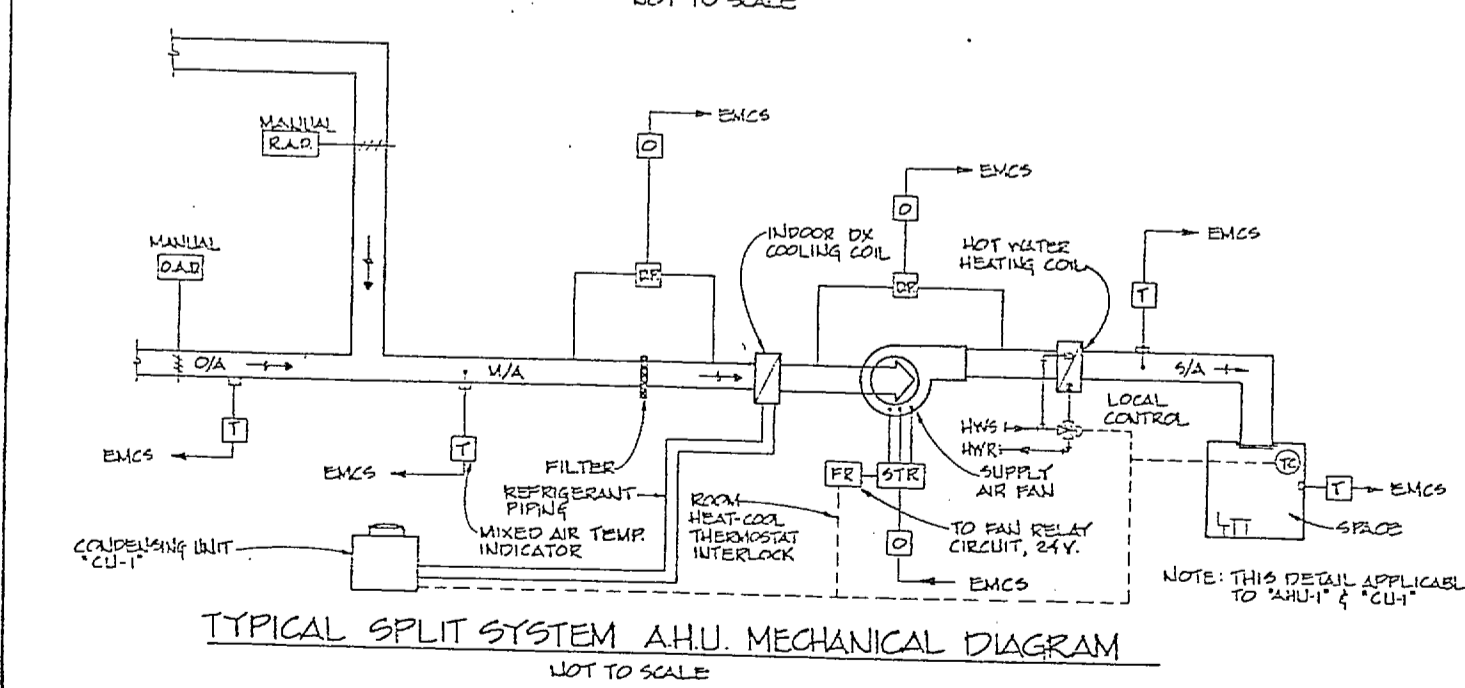
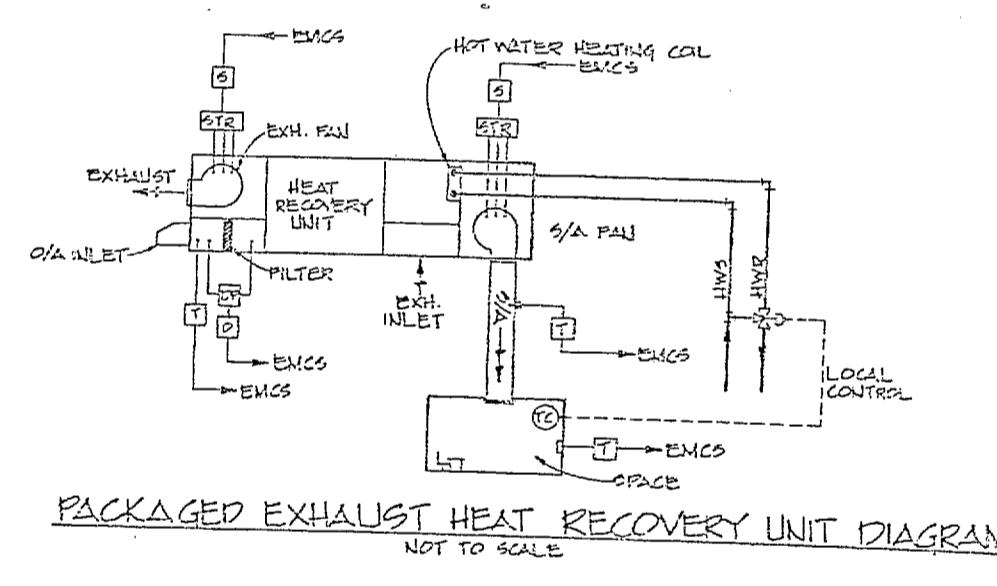
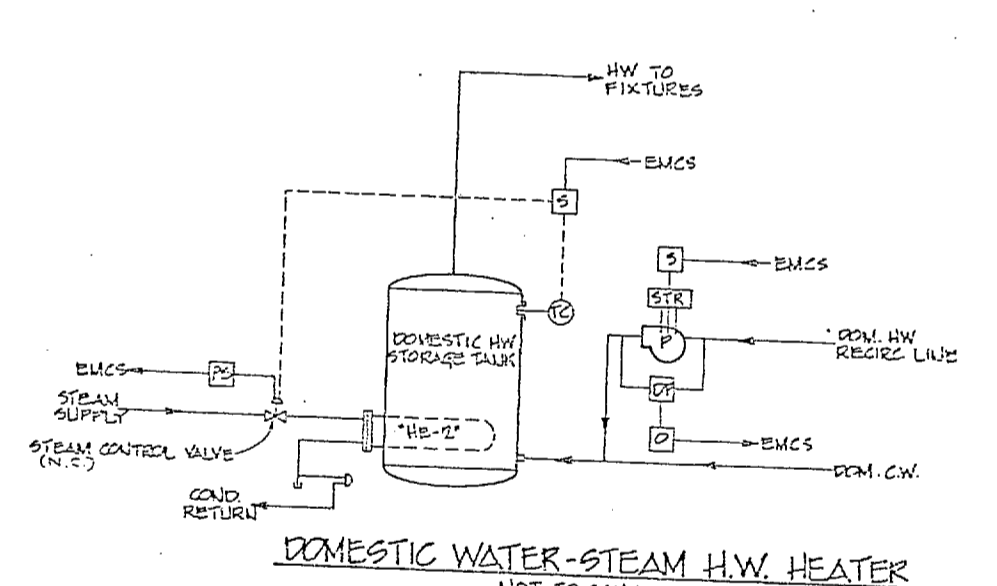
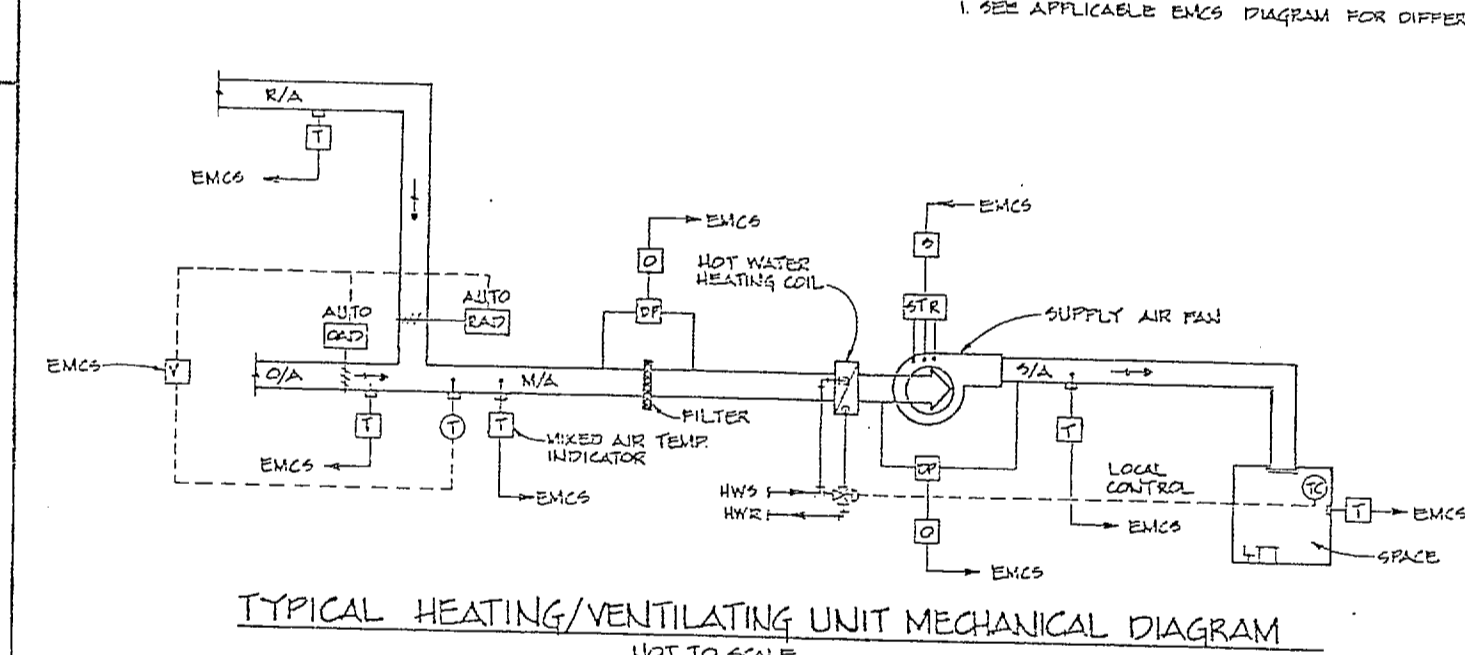
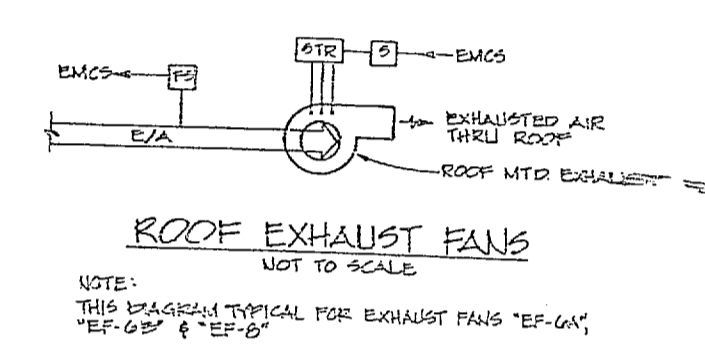


EMCS LEGEND	
SYMBOL	DESCRIPTION
—EMCS	SIGNAL RECEIVED FROM EMCS
—EMCS	SIGNAL TRANSMITTED TO EMCS
DP	DIFFERENTIAL PRESSURE SWITCH
M/A	MIXED AIR
O	ON-OFF STATUS SIGNAL
PI	POSITION INDICATOR
R	CONTROLLER RESET INTERFACE
S	START-STOP INTERFACE
T	TEMPERATURE INDICATION W/ TRANSMITTER
STR	MOTOR STARTER W/H.O.A.
PC	PRESSURE CONTROLLER
TC	TEMPERATURE CONTROLLER (THERMOSTAT)
—	SENSOR INSTALLED IN THERMOMETER WELL
—	SENSOR INSTALLED IN DUCT OR PLENUM
(4-9)	EQUIPMENT TERMINAL BLOCK NUMBERS
DB	DRY BULB
EA	EXHAUST AIR
EAD	EXHAUST AIR DAMPER
HW	HOT WATER
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
RA	RETURN AIR
RAD	RETURN AIR DAMPER
SA	SUPPLY AIR
FOR	FUEL OIL RETURN
F.O.S.	FUEL OIL SUPPLY
FS	FLOW SWITCH
FR	FAN RELAY
V	VENTILATION/ RECIRCULATION CONTROL

ITEM DESCRIPTION	EMCS LOGIC SCHEDULE											SPECIAL NOTES				
	HARDWARE						SOFTWARE									
	OUTPUT FROM EMCS			INPUT TO EMCS			ALARMS		APPLICATION PROGRAMS							
	DIGITAL	ANALOG	ANALOG	DIGITAL	ANALOG	ANALOG	DIGITAL	ANALOG								
GRAPHIC DISPLAY																
SUPPLY FAN																
OUTSIDE AIR DAMPER																
MIXED AIR																
SUPPLY AIR																
RETURN AIR																
SPACE																
FILTER																
BLDG. HOT WATER PUMP																
SPACE SENSOR																
ROOM HW HEATER																
HOT WATER UNIT HEATER																
HOT WATER RADIATION																
PACKAGED EXH. HEAT REC.																NO APPLICATION TO EMCS
DOM. HW RECIRC PUMP																
ROOF TOP EXHAUST FAN																
BLDG. HWS, SW, HW, CONV.																
WASH RACK/STW/HW CONV.																

C - LAST COMMAND  
 O - ON (OPEN)  
 N - LOCAL  
 NOTES:  
 1. SEE APPLICABLE EMCS DIAGRAM FOR DIFFERENT SYSTEMS UTILIZING THESE SCHEDULED DEVICES.

SYMBOL	REVISION	DATE

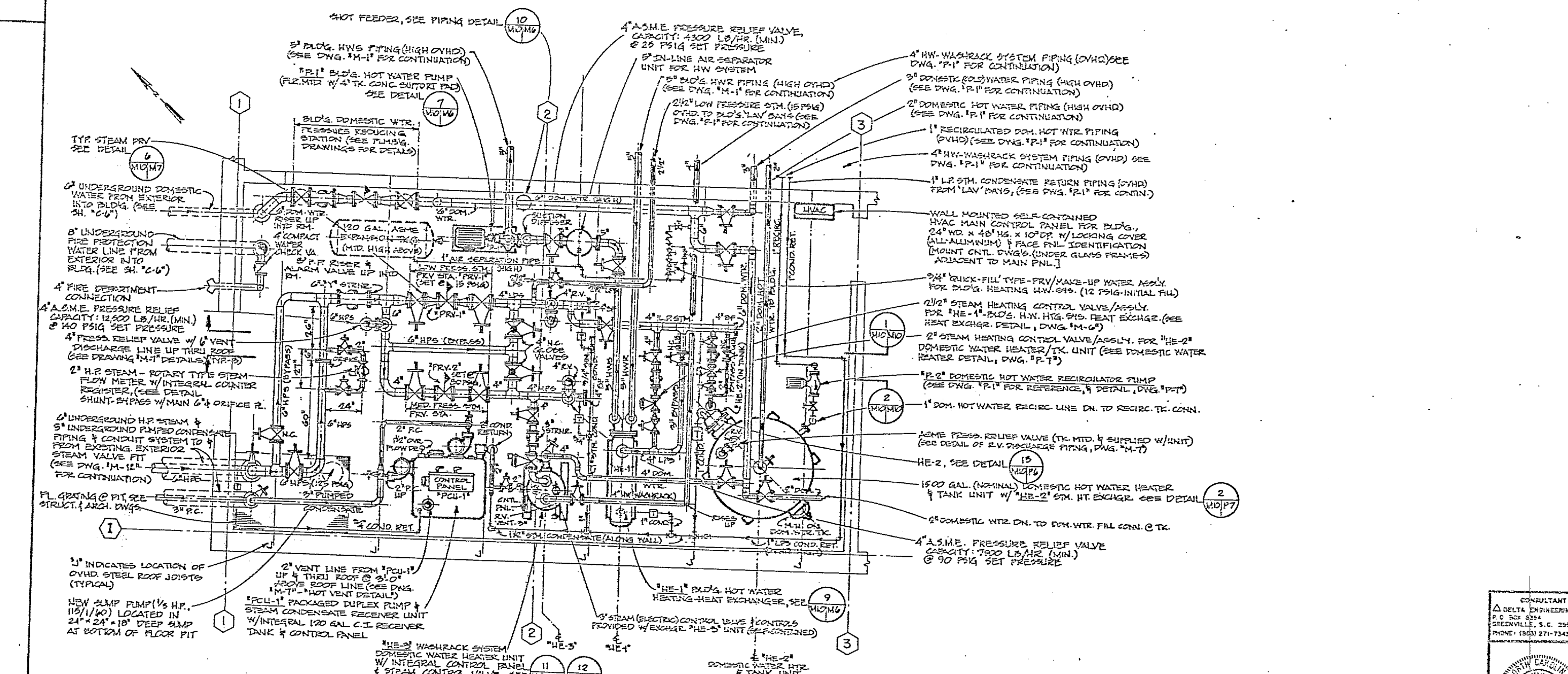
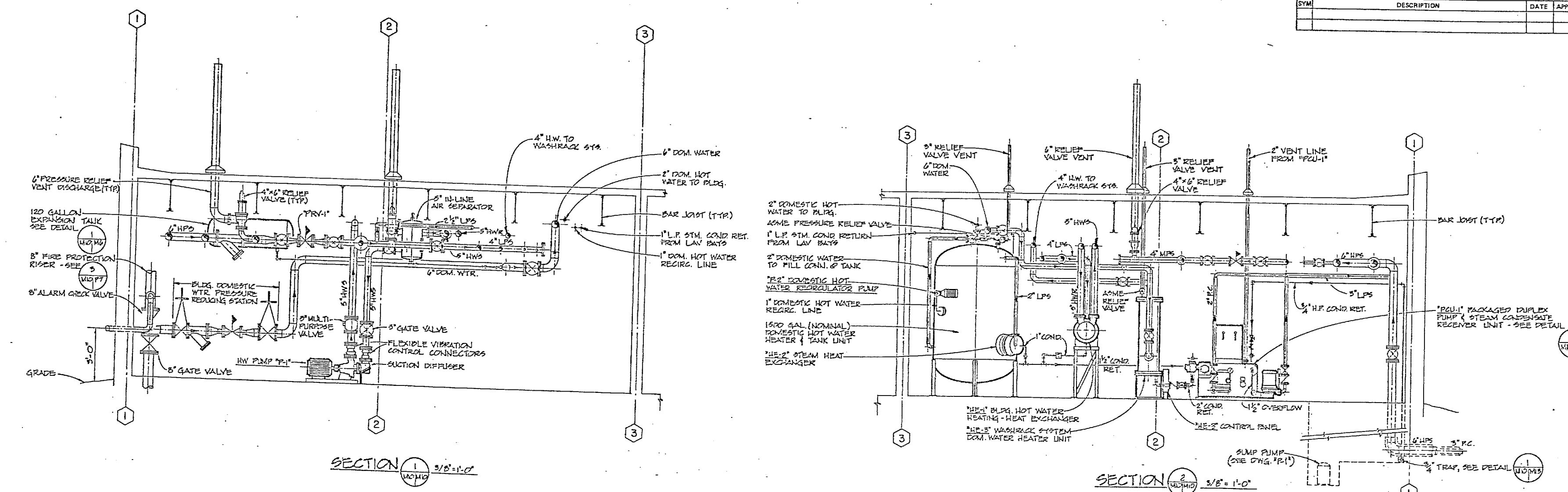


CONSULTANT DELTA ENGINEERING, INC. P.O. BOX 8384 GREENVILLE, S.C. 29604 PHONE: (803) 271-7240	TITLE MECHANICAL EMCS DIAGRAMS	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION	
		NAVAL STATION MCB CAMP LEJEUNE, N.C.	NAVY FAC. DRAWING NO. 4144811
APPROVED C. C. S.	SIZE F	CODE IDENT. NO. 80091	NAVY FAC. DRAWING NO. 4144811
SCALE: AS SHOWN (SPEC. DS-84-4182)			SHEET 62 OF 87

575

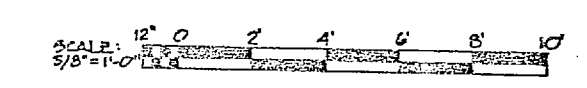


REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



**PIPING LEGEND**

SYMBOL	DESCRIPTION
	GATE VALVE
	MULTI-PURPOSE VALVE
	PRESSURE REDUCING
	CHECK VALVE
	GLOBE VALVE
	STEAMER
	CONTROL VALVE (2-WAY)
	CONTROL VALVE (3-WAY) C-COMMON
	NO-NORMALLY OPEN
	N.C.-NORMALLY CLOSED
	UNION
	PIPING TURNING DOWN (PLAN)
	PIPING TURNING UP (PLAN)
	RV. RELIEF VALVE

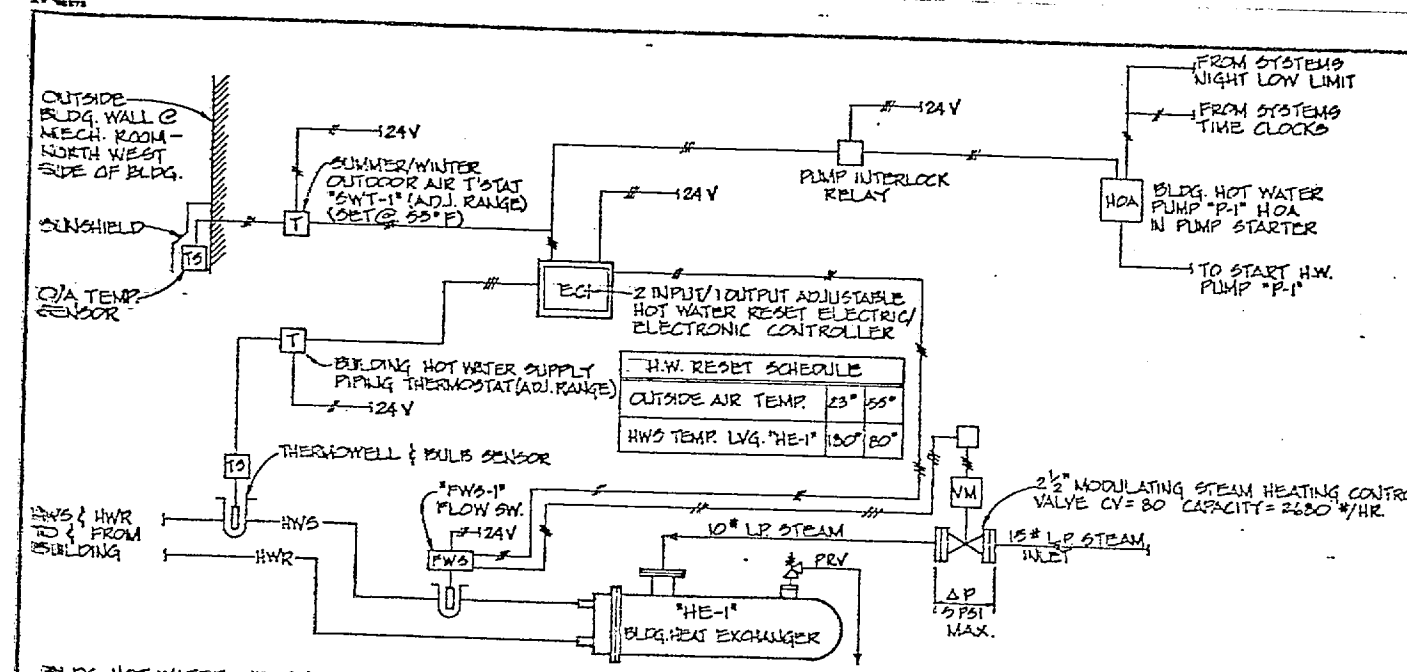


**MECHANICAL EQUIPMENT ROOM - PIPING PLAN**  
SCALE: 3/8" = 1'-0"

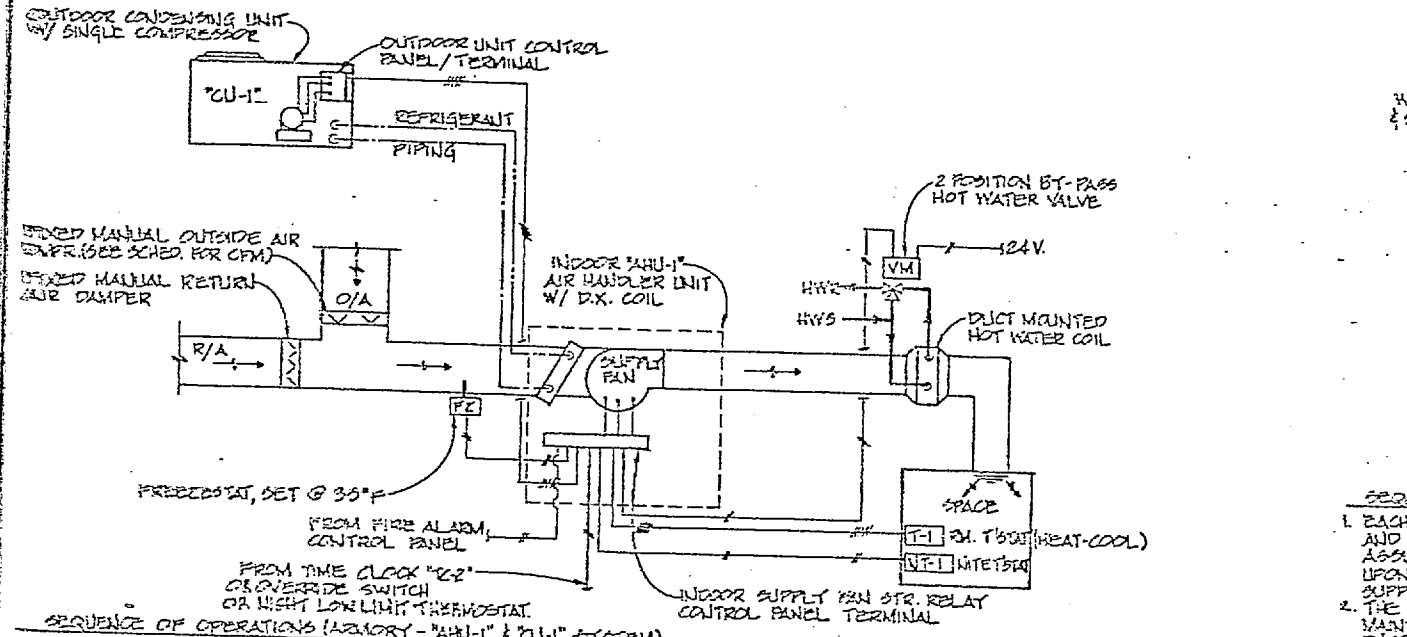
CONSULTANT DELTA ENGINEERING, INC. 7500 W. BAYVIEW BLVD., SUITE 200 GREENVILLE, S.C. 29604 PHONE: (803) 271-7342		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK VIRGINIA CAMP LEJEUNE, N. C.	
DRAWN BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]	DATE: 11/14/87 ACTIVITY: NAVAL STATION PROJECT: [Blank]	DRAWING NO.: 80091	SHEET NO.: 63 OF 87

MP 575

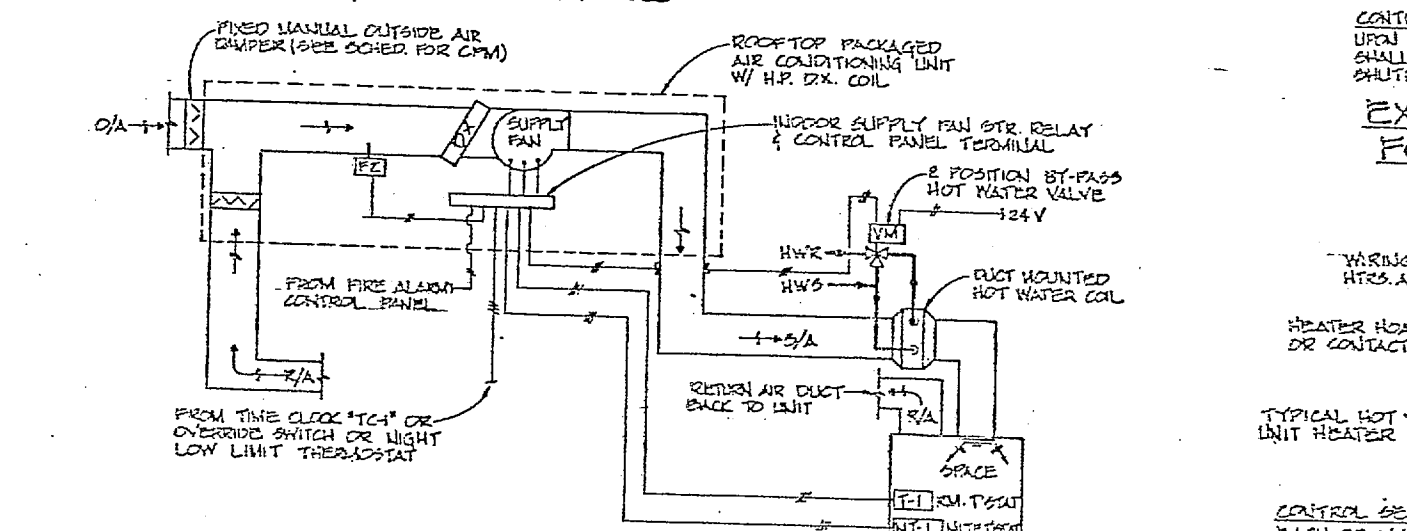




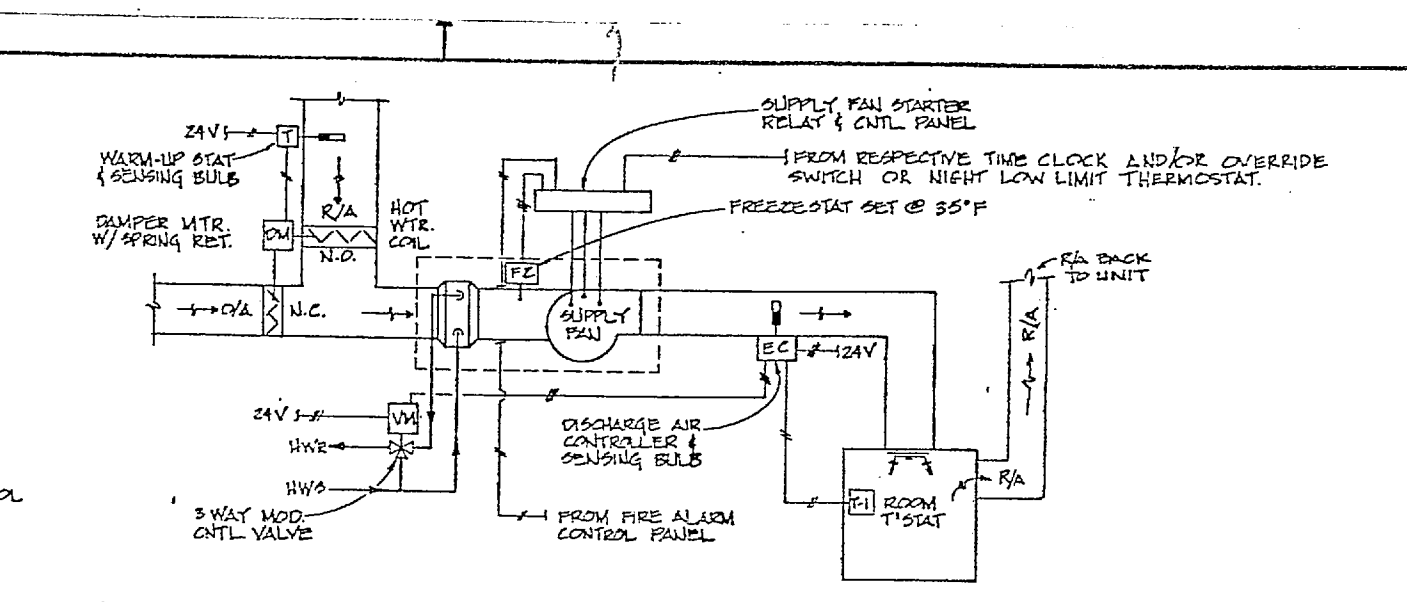
**BUILDING HOT WATER HEATING SYSTEM CONTROL DIAGRAM**  
(FOR HEAT EXCHANGER HE-1 & HOT WATER PUMP P-1)  
NOT TO SCALE



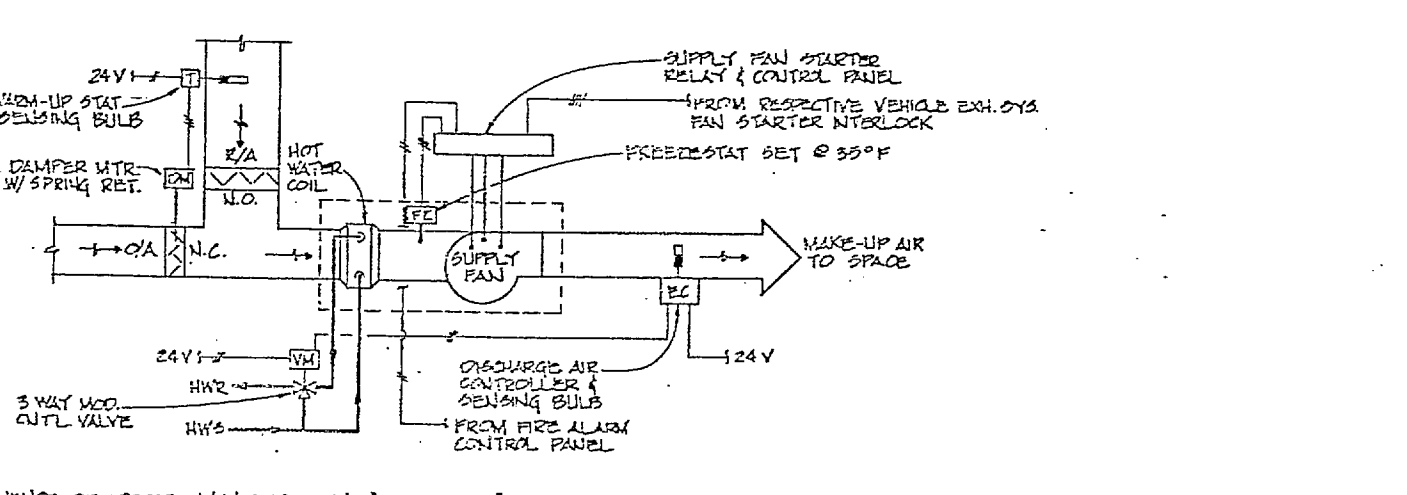
**ARMORY - HEATING & COOLING CONTROL DIAGRAM (AHU-1 & CU-1)**  
NOT TO SCALE



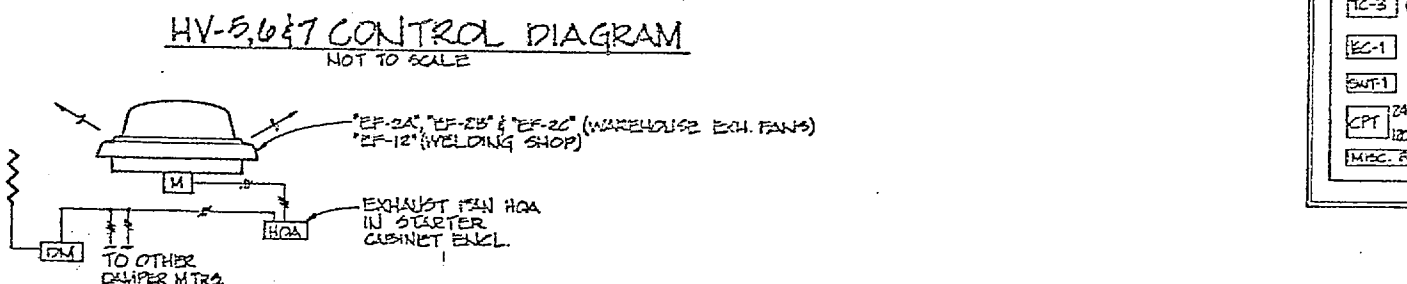
**PACKAGED ROOFTOP A/C UNITS 'AC-1' THRU 'AC-7' HEATING & COOLING CONTROL DIAGRAM**  
NOT TO SCALE



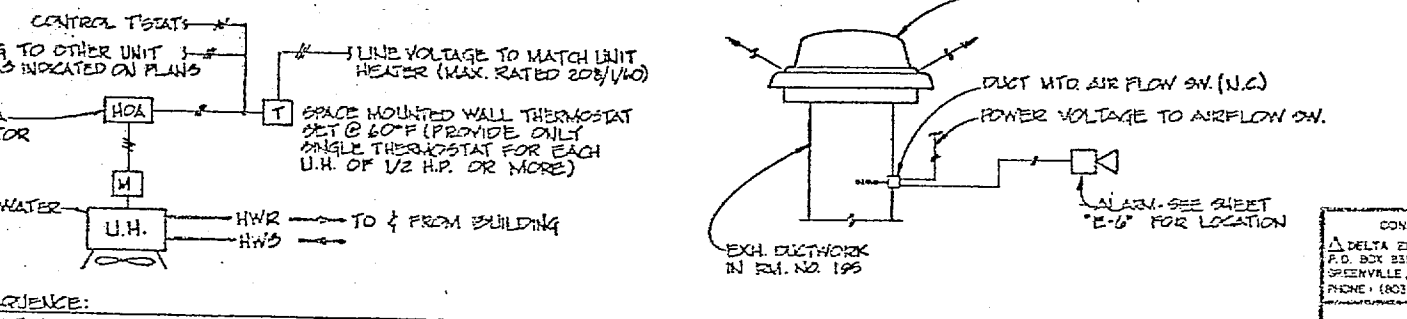
**HV-1, 2, 3, & 4 CONTROL DIAGRAM**  
NOT TO SCALE



**HV-5, 6, & 7 CONTROL DIAGRAM**  
NOT TO SCALE



**EXHAUST FAN CONTROL DIAGRAM FOR EF-2A, EF-2B, EF-2C & EF-12**  
NOT TO SCALE

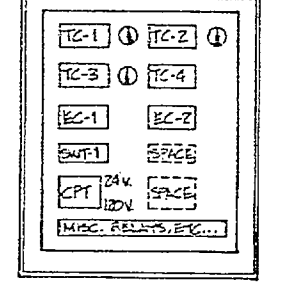


**TYPICAL UNIT HEATER CONTROL DIAGRAM**  
NOT TO SCALE

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

**CONTROLS LEGEND**

- TS THERMOSTAT
- EC ELECTRIC/ELECTRONIC TIME CLOCK
- TS TIMED OVERSIDE SWITCH
- TS TEMPERATURE SENSOR (SPACE OR PIPE)
- NT NIGHT LOW LIMIT THERMOSTAT
- SWNT SUMMER WINTER AIDED THERMOSTAT
- EC ELECTRIC/ELECTRONIC CONTROLLER
- HWA HAND-OFF-AUTOMATIC SWITCH
- DM DAMPER MOTOR OPERATOR
- VM VALVE MOTOR OPERATOR
- M MOTOR
- CR CONTROL RELAY
- IR INTERLOCK RELAY
- INDICATES "PANEL MOUNTED DEVICE"
- INDICATES "SPACE MOUNTED DEVICE"

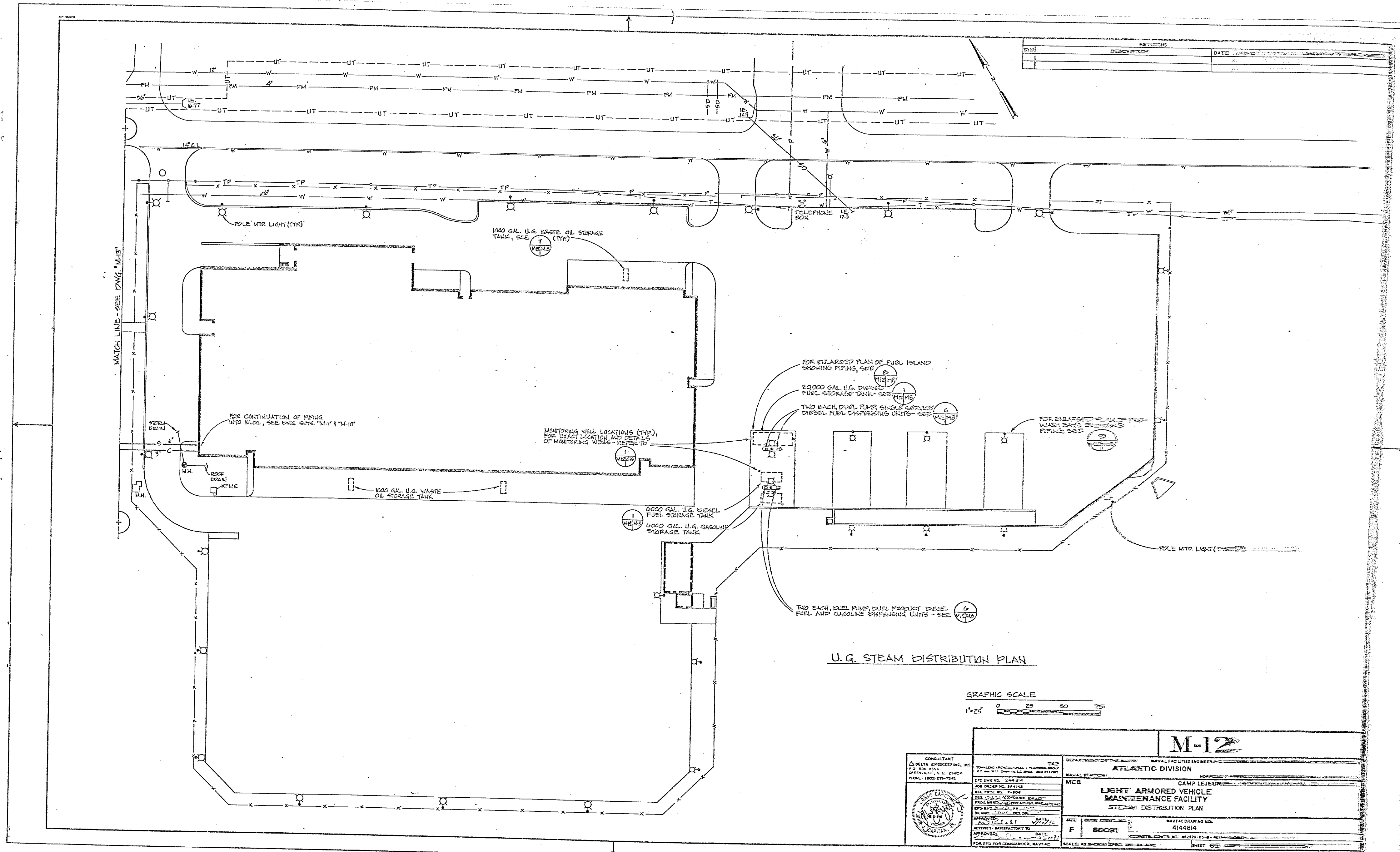


**BUILDING HVAC CONTROL PANEL DETAIL**  
NOT TO SCALE

<b>M-11</b> DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION CAMP LEJEUNE, N. C.	
CONSULTANT DELTA ENGINEERING, INC. P.O. BOX 1554 SHREVEPORT, LA 70564 PHONE: (504) 835-2244	DRAWING NO. 4162815 SHEET NO. 54 OF 87
PROJECT NO. 4162815 SHEET NO. 54 OF 87	DRAWING NO. 4162815 SHEET NO. 54 OF 87

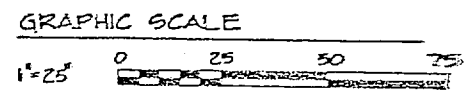
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NO.	REVISIONS	DATE

**U.G. STEAM DISTRIBUTION PLAN**



CONSULTANT DELTA ENGINEERING, INC. P.O. BOX 834 GREENVILLE, S.C. 29604 PHONE (803) 271-7242		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING ATLANTIC DIVISION MCB CAMP LEJEUNE LIGHT ARMORED VEHICLE MAINTENANCE FACILITY STEAM DISTRIBUTION PLAN	
PROJECT NO. 114142 STA. PROJ. NO. F-804 DES. SCALE 1/8"=1'-0" PROJ. WASH. DIS. PLAN, C-101 U.G. STEAM DISTRIBUTION PLAN BY: J. L. L. (JLL) APPROVED: E. L. I. (ELI) ACTIVITY: SATISFACTORY TO DATE: 10/1/71 FOR: EX-100 FOR COMMANDER, NAVFAC		NAVFAC DRAWING NO. 41448/4 SHEET 65	

575

