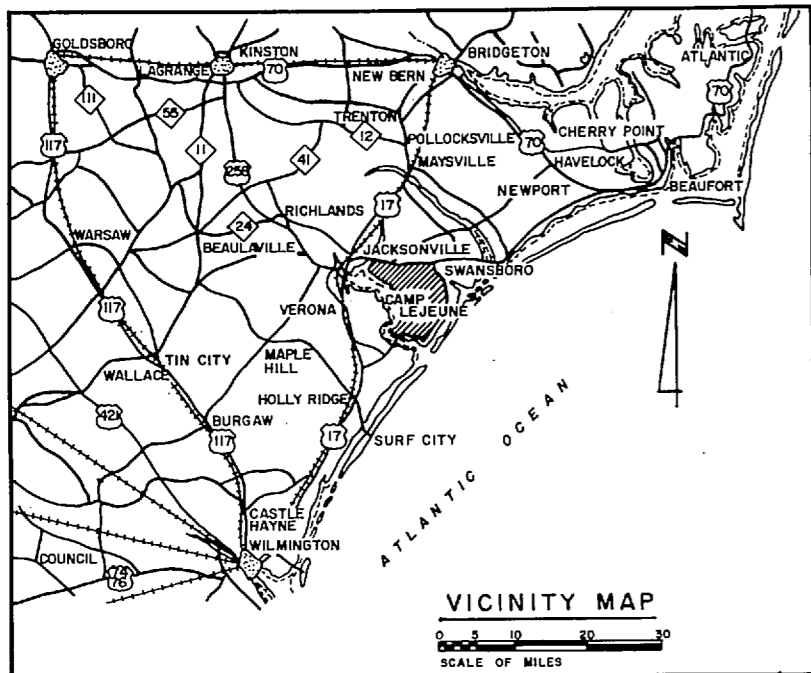


5799

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



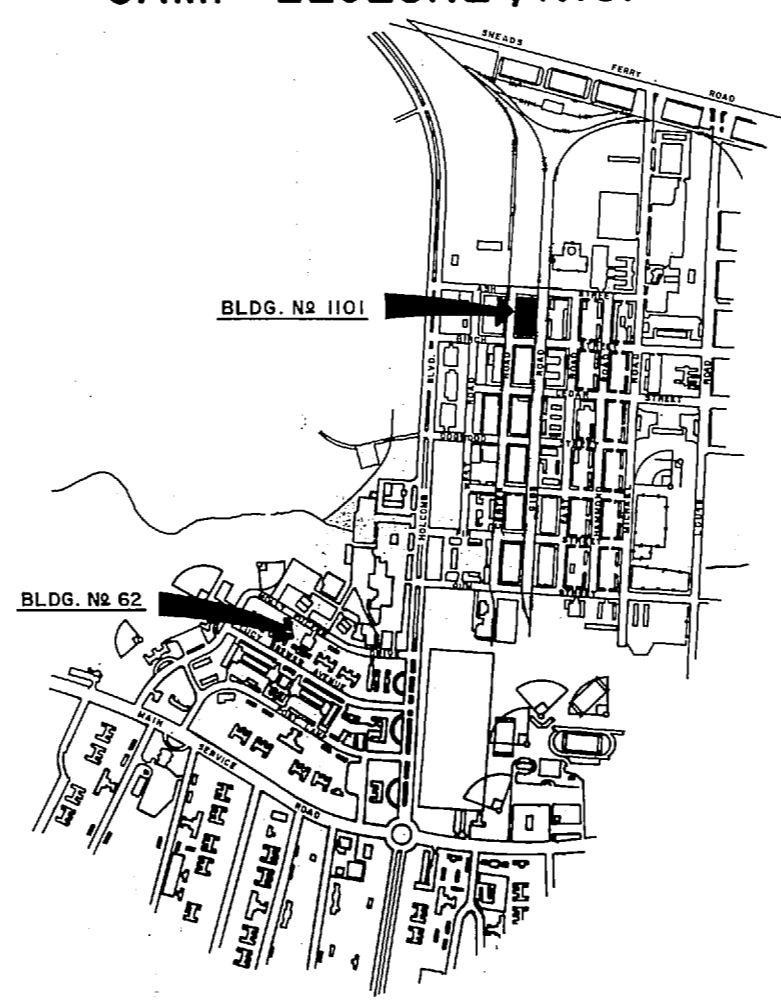
# REPLACE EXISTING CHILLERS

## BLDG. NOS 62 & 1101

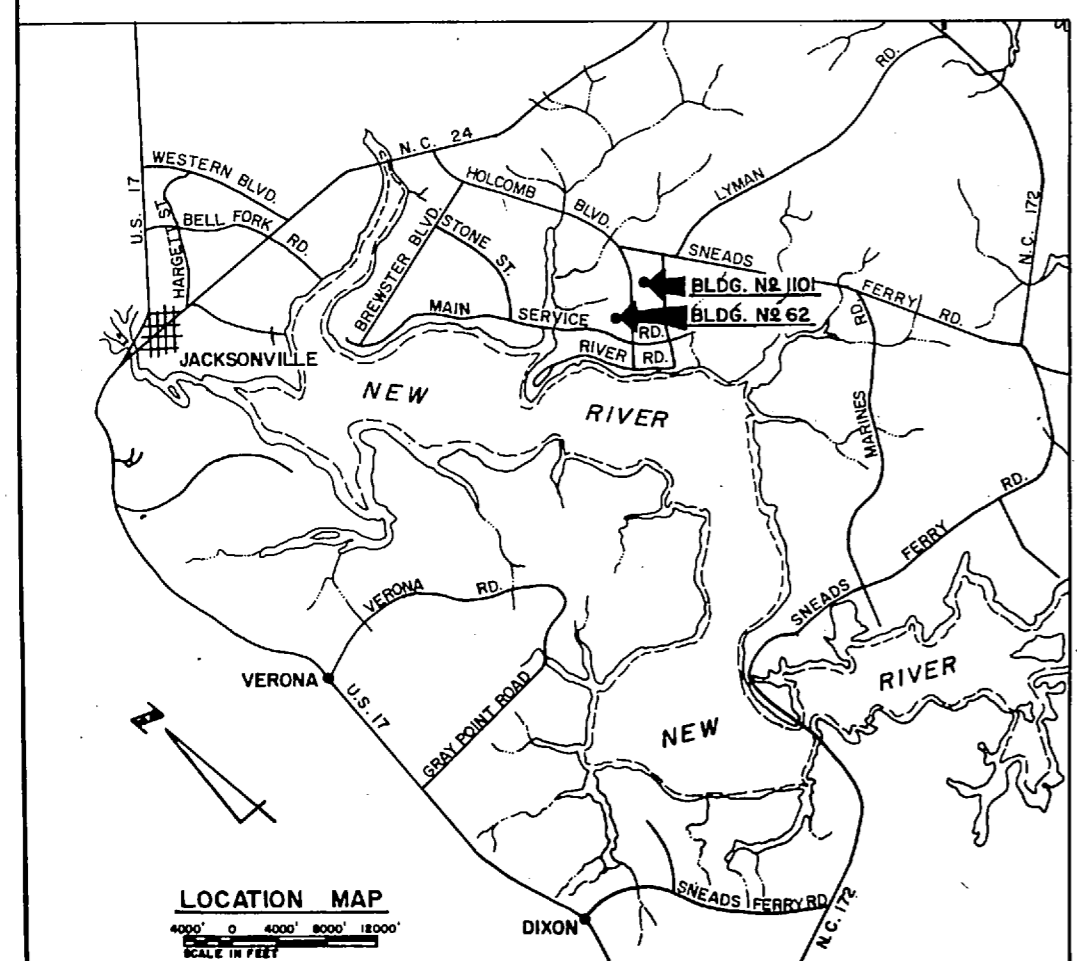
LE528R

MARINE CORPS BASE  
CAMP LEJEUNE, N.C.

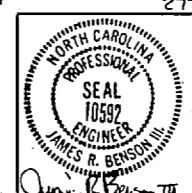
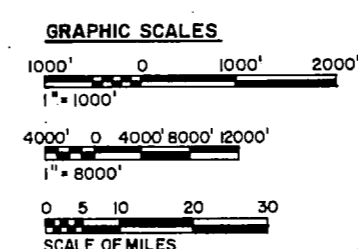
SCHEDULE OF DRAWINGS		
SHT. NO.	NAVAFAC DWG. NO.	TITLE
CS-1	4126717	COVER SHEET
M-1	4126718	PLANS & DETAILS - BLDG. NO 62
M-2	4126719	PLANS & DETAILS - BLDG. NO 62
M-3	4126720	DEMOLITION WORK - BLDG. NO 1101
M-4	4126721	NEW WORK - EQPT. RM / MEZZ. - BLDG. NO 1101
M-5	4126722	PIPING ISOMETRICS & DETAILS - BLDG. NO 1101
M-6	4126723	PARTIAL ROOF PLAN - BLDG. NO 1101
M-7	4126724	PLANS & DETAILS - BLDG. NO 1101
M-8	4126725	SCHEDULES & DETAILS - BLDG. NO 1101
E-1	4126726	ELECTRICAL WORK - BLDG. NO 62
E-2	4126727	ELECTRICAL WORK - BLDG. NO 1101
E-3	4126728	ELECTRICAL WORK - EQPT. RM. / MEZZ. - BLDG. NO 1101



PARTIAL SITE PLAN  
SCALE 1" = 1000'



LOCATION MAP  
SCALE IN FEET



HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA 28520	
DES. DER. DR. SMC CHK. DER SUBMITTED BY REVIEWED BY APPROVED BY SATISFACTORY TO:	2771 <i>[Signature]</i> 2771 <i>[Signature]</i> 2771 <i>[Signature]</i> 2771 <i>[Signature]</i> 2771 <i>[Signature]</i>	MARINE CORPS BASE CAMP LEJEUNE, N.C. REPLACE EXISTING CHILLERS BLDG. NOS 62 & 1101	COVER SHEET NAVAFAC DRAWING NO. 4126717 CONSTR. CONTR. NO. N62470-84-B-7911 SCALE: GRAPHIC SPEC. 05-84-7911 SHEET 1 OF 12

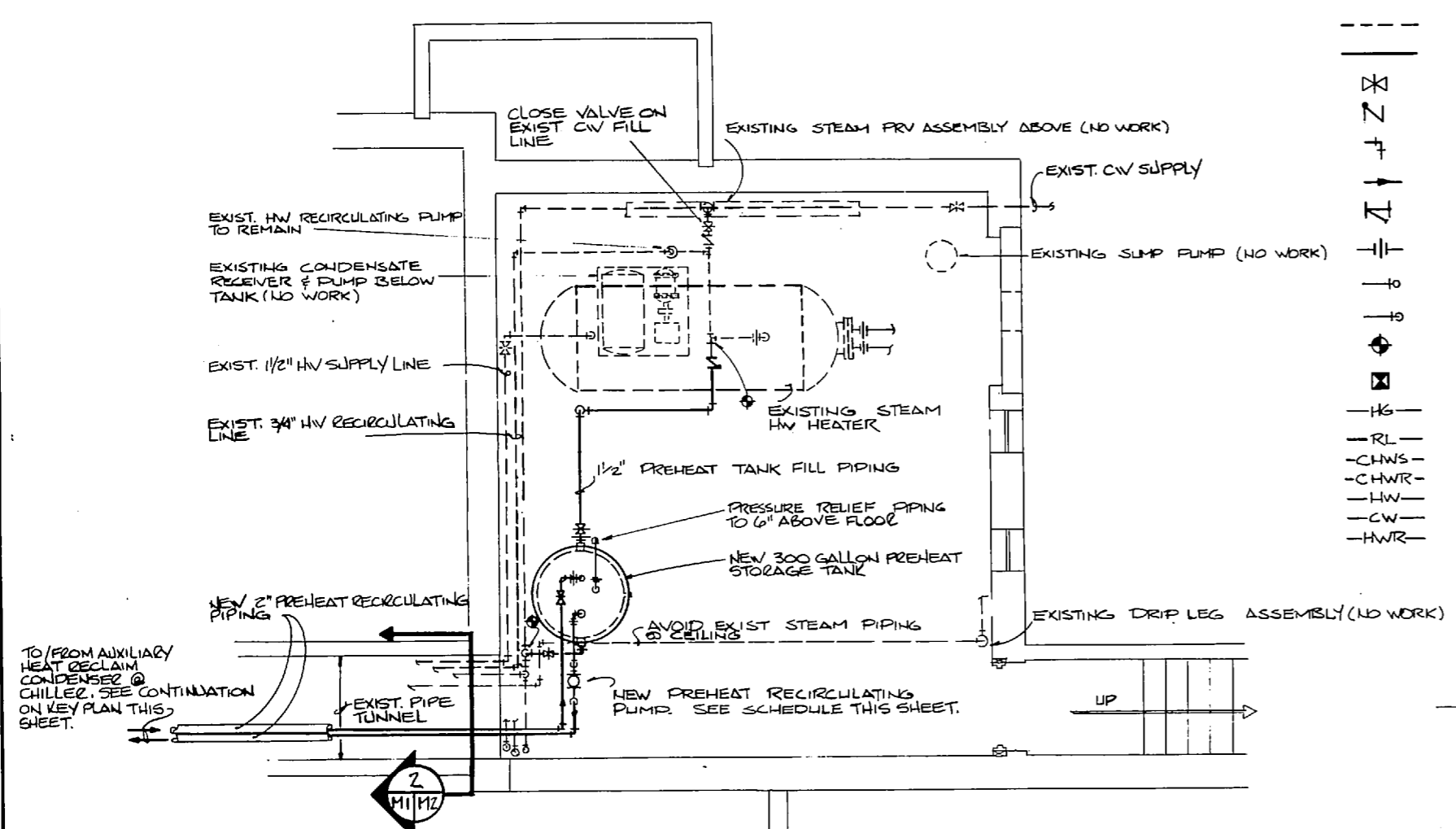
62  
1101



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

**LEGEND-BLDG.#62**

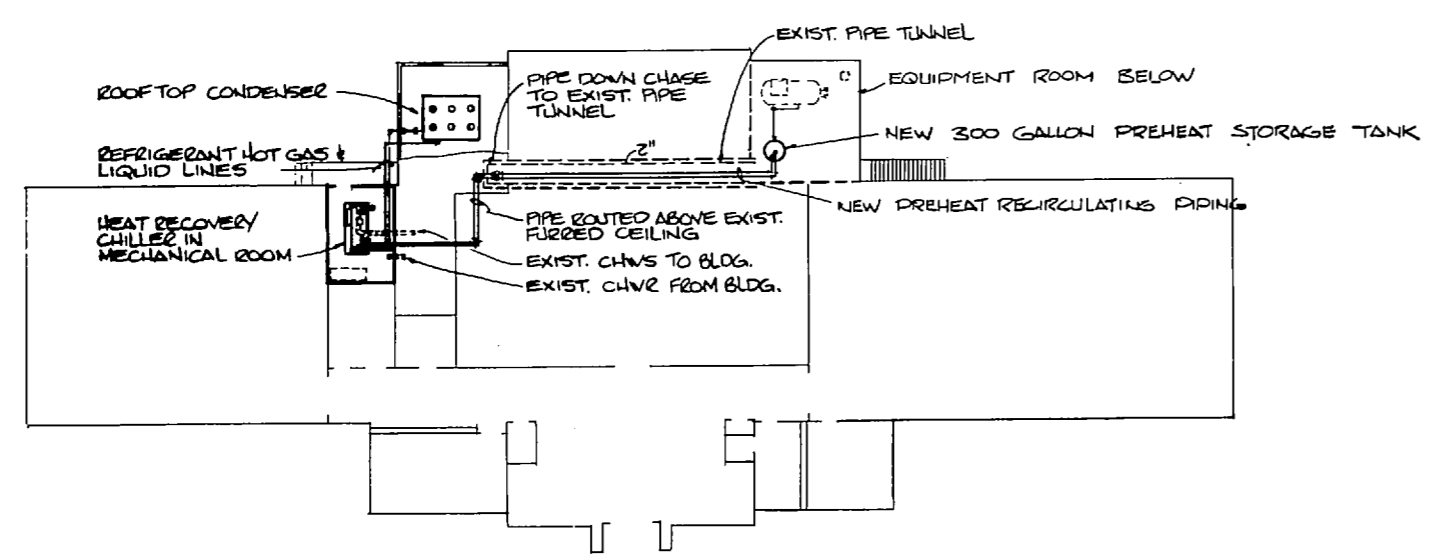
- EXISTING PIPING & EQUIPMENT (UNLESS NOTED OTHERWISE)
- NEW PIPING & EQUIPMENT (UNLESS NOTED OTHERWISE)
- ⊗ GATE VALVE
- ⊕ CHECK VALVE
- ⌒ ELBOW
- DIRECTION OF FLOW
- ⊥ STRAINER
- ⊕ UNION
- ⊕ PIPE UP
- ⊖ PIPE DOWN
- ⊕ CONNECT NEW TO EXISTING
- ⊖ TERMINATE DEMOLITION
- ⊖ HOT GAS (REFRIGERANT)
- ⊖ RL REFRIGERANT LIQUID
- ⊖ CHWS CHILLED WATER SUPPLY
- ⊖ CHWR CHILLED WATER RETURN
- ⊖ HW HOT WATER
- ⊖ CW COLD WATER
- ⊖ HWR HOT WATER RECIRCULATING



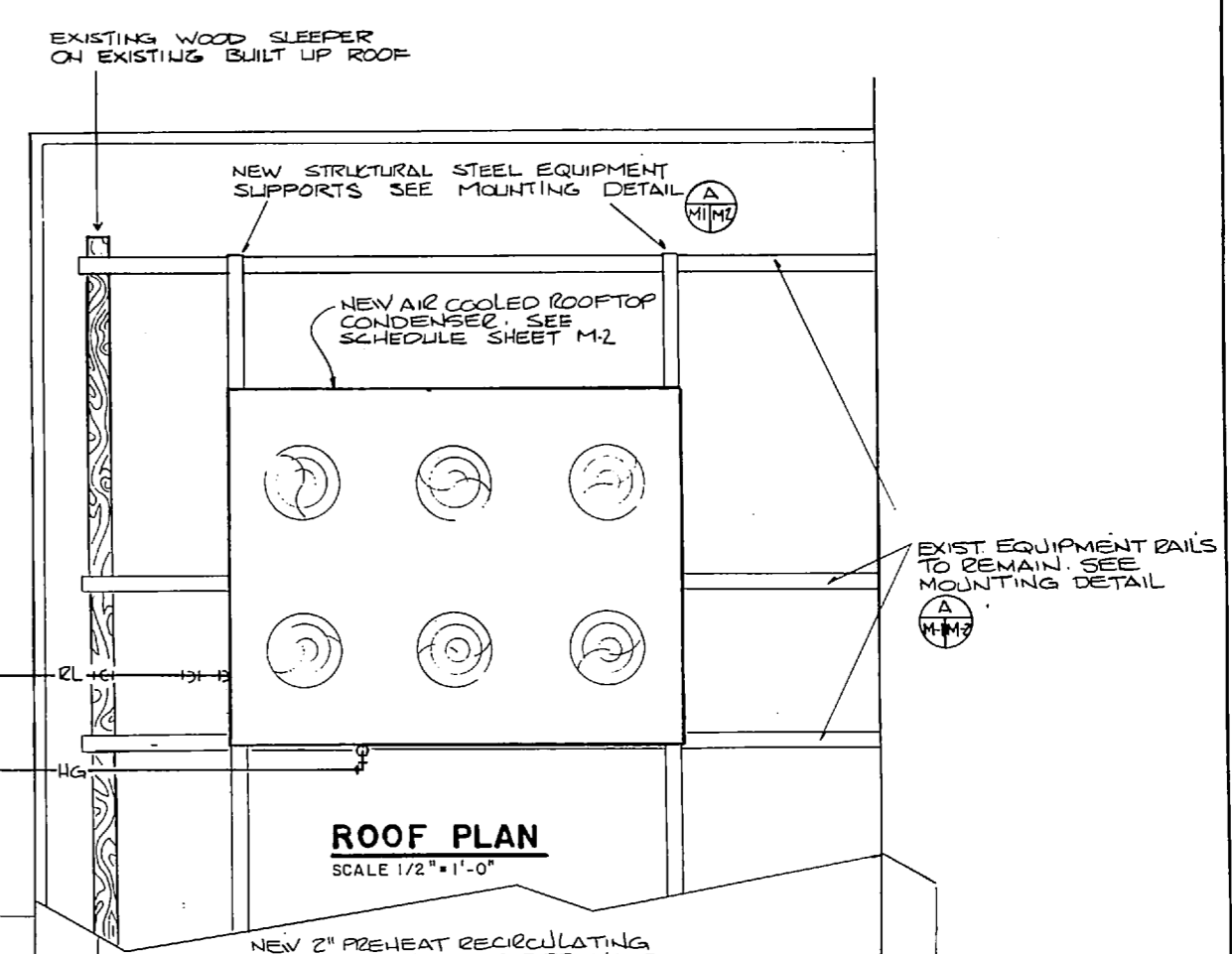
NOTE:  
 1) REFER TO ISOMETRIC PIPING DRAWING SHEET M-2 FOR PIPE ROUTING, CONNECTIONS, ETC.  
 2) STEAM SUPPLY, CONDENSATE RETURN, & CHW SUPPLY & RETURN PIPING OMITTED FOR CLARITY. SEE SECTION FOR EXIST. PIPE IN TUNNEL.

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

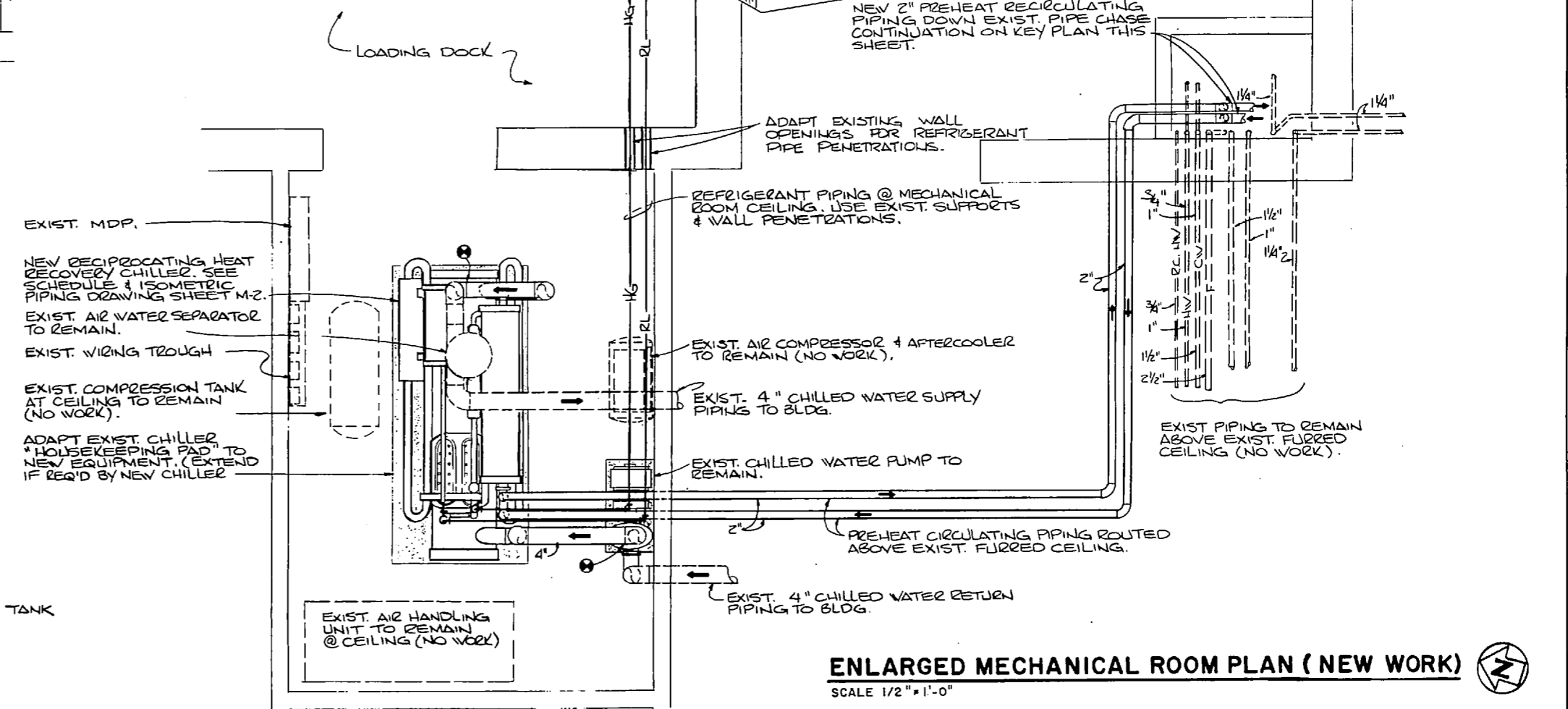
PREHEAT RECIRCULATING PUMP SCHEDULE						
GPM	FEET PRESS. DROP	HP	VOLTAGE	SERVICE	TEMP. °F.	REMARKS
36	22	1/2	120/10	HW	60-110	BRONZE FITTED BOOSTER



**KEY PLAN - BLDG.#62**  
 SCALE 1/16" = 1'-0"

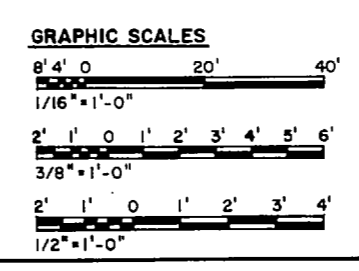


**ROOF PLAN**  
 SCALE 1/2" = 1'-0"



**ENLARGED MECHANICAL ROOM PLAN (NEW WORK)**  
 SCALE 1/2" = 1'-0"

NOTE: STEAM SUPPLY & CONDENSATE RETURN PIPING, CONDENSATE & CHILLED WATER QUANTITY OMITTED FOR CLARITY. NEW WORK SHALL NOT AFFECT THESE.



		<b>M-1</b>	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402	REG. TMH BR. SMC CHK. DER	MARINE CORPS BASE REPLACE EXISTING CHILLERS BLDG. NO. 62 & 1101	CAMP LEJEUNE, N.C. PLANS & DETAILS - BLDG. NO. 62
SUBMITTED BY: <i>[Signature]</i> DESIGN BY: <i>[Signature]</i> APPROVED: PRO. AR. SUCC. DATE: <i>[Signature]</i>	DATE: <i>[Signature]</i>	SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	NAVFAC DRAWING NO.: 4126718 CONSTR. CONTR. NO. NC2470-04-B-7911
SATISFACTORY TO:		SCALE: GRAPHIC SPEC. 05-04-7911	SHEET 2 OF 12



**PACKAGED RECIPROCATING HEAT RECOVERY CHILLER SCHEDULE \***

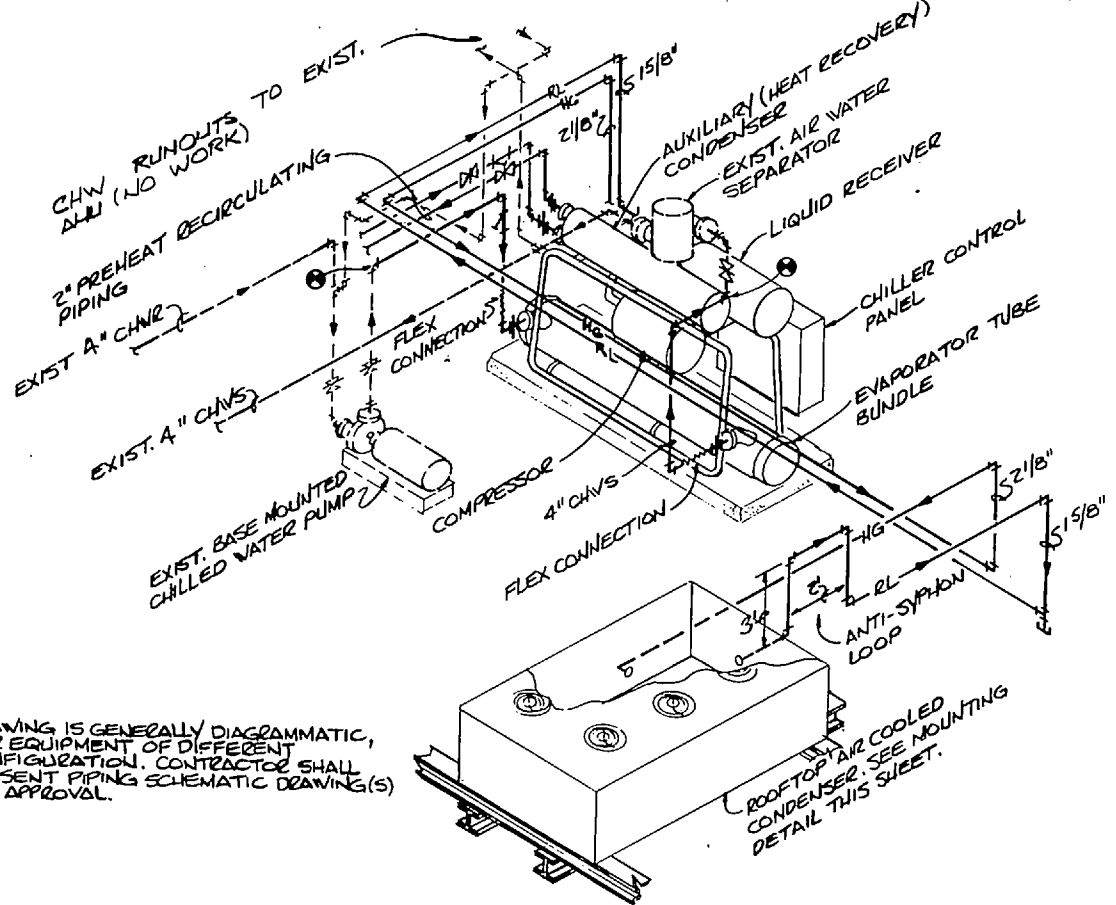
NOMINAL CAPACITY TONS	EVAPORATOR				COMPRESSOR				AUXILIARY (HEAT RECOVERY) CONDENSER						
	GPM	EWT	LWT	WPD	STEPS UNLOADING	RLA	VOLTAGE	REF. SST	GPM	MBH	EWT	WTR	PULL FACTOR	WPD	
65	156	54	44	5.7	2	2.25	208Y/30	2.22	40	30	341	63	40	0.005	7.3

\* CHILLER & CONDENSER SHALL BE MATCHED SECTIONS PROVIDED AS PACKAGE BY MANUFACTURER W/ CONTROL PANEL FEATURINGS FACTORY CONTROLS SUITABLE FOR INTERLOCKS V/ FIELD INSTALLED DEVICES.

**REMOTE AIR COOLED CONDENSER SCHEDULE \***

MBH HT REJECTION	TEMP. DIFF. †	CFM	NO. FANS	DRIVE	DIA.	VOLTAGE	FLA	CONTROL VOLTAGE	REMARKS
780	25	3900	6	DR.	22"	208Y/30	4.1	1.5	

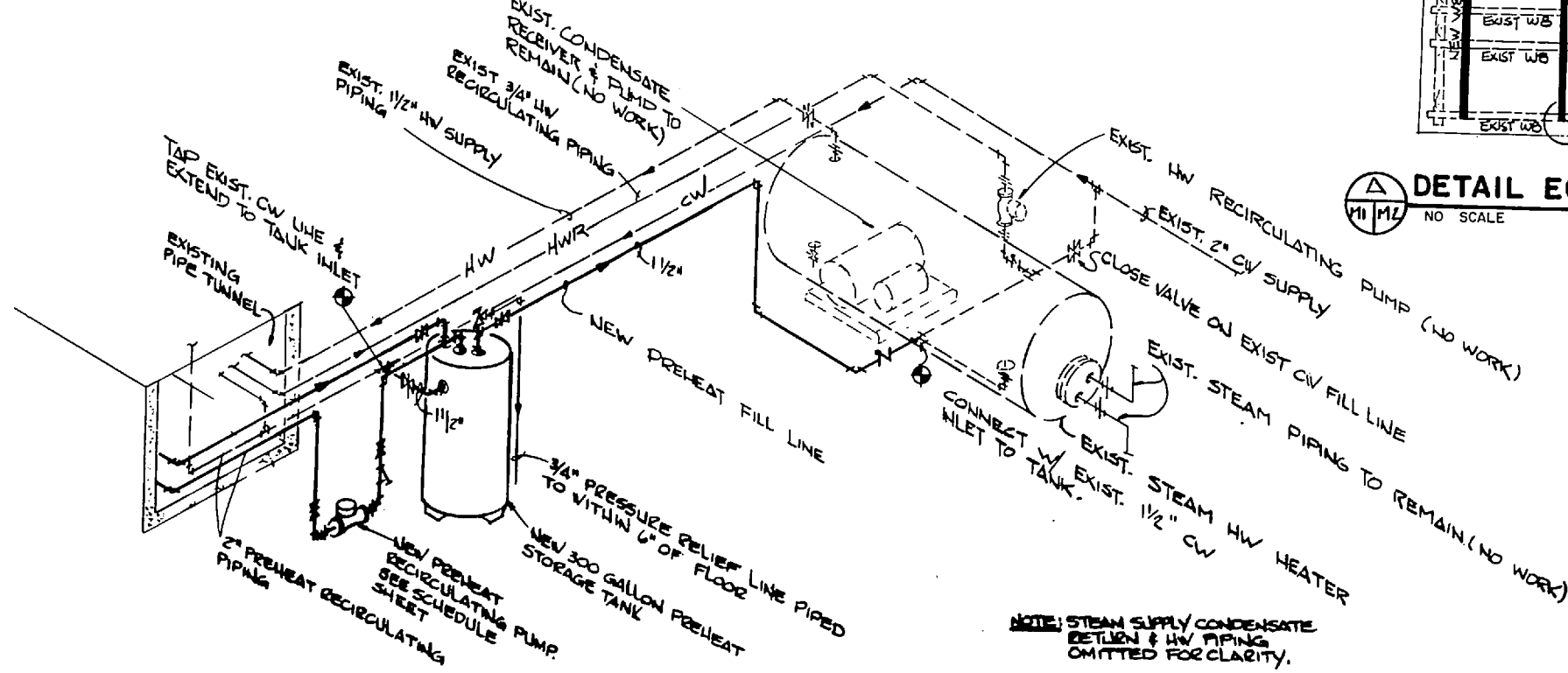
\* CHILLER & CONDENSER SHALL BE MATCHED SECTIONS PROVIDED AS PACKAGE BY MANUFACTURER W/ CONTROL PANEL FEATURINGS FACTORY CONTROLS SUITABLE FOR INTERLOCKS V/ FIELD INSTALLED DEVICES.  
† COND. TEMP. MINUS ENT. AIR TEMP.



NOTE: DRAWING IS GENERALLY DIAGRAMMATIC, FOR EQUIPMENT OF DIFFERENT CONFIGURATION, CONTRACTOR SHALL PRESENT PIPING SCHEMATIC DRAWING(S) FOR APPROVAL.

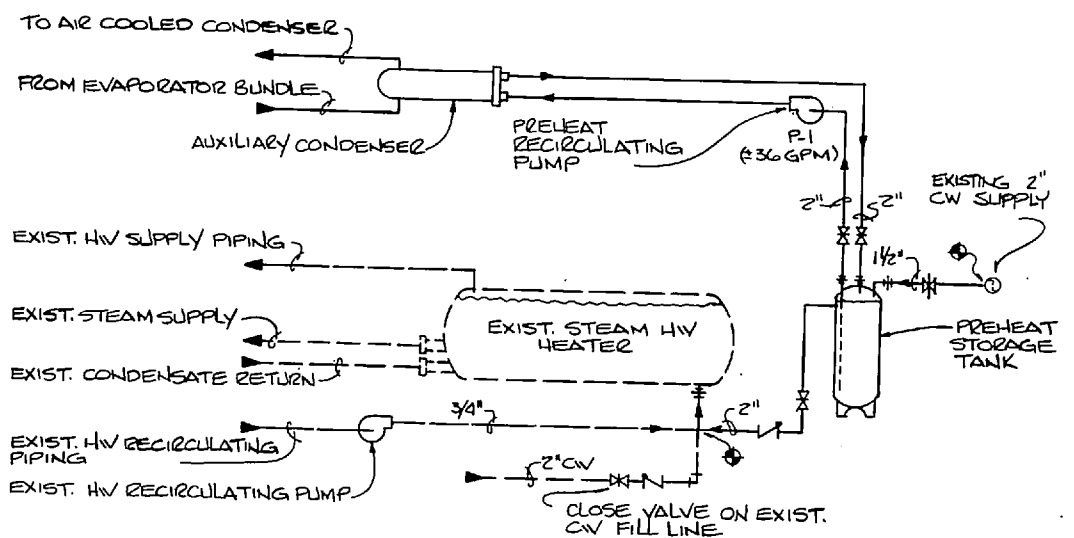
**CHILLER / CONDENSER CONNECTION PIPING ISOMETRIC**

NO SCALE

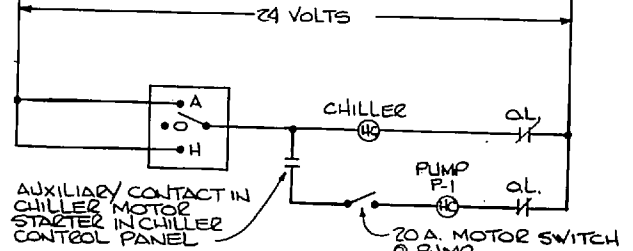


**PREHEAT TANK & WATER PIPING ISOMETRIC**

NO SCALE



**SYSTEM SCHEMATIC**

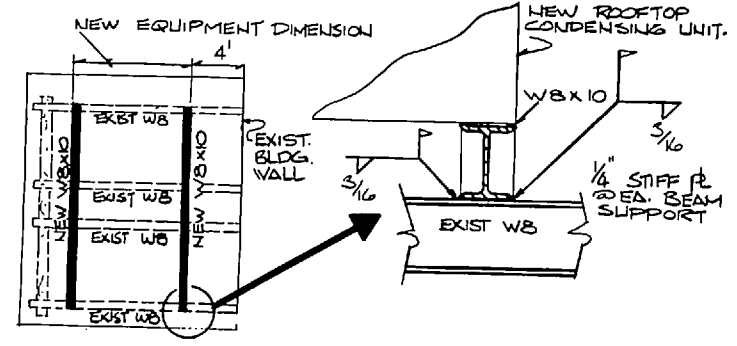


**WIRING DIAGRAM**

**SEQUENCE OF OPERATION**

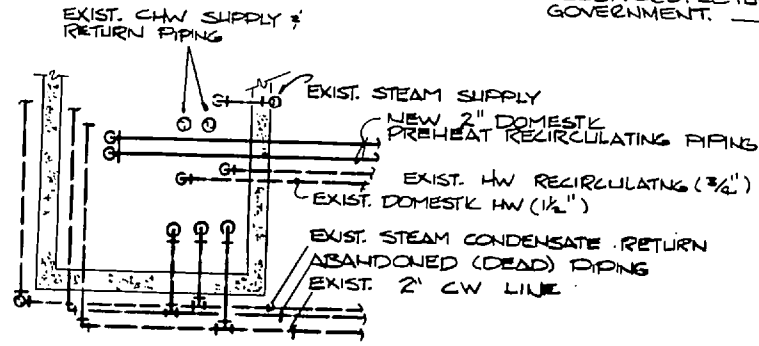
PREHEAT CIRCULATING PUMP P.1 SHALL BE WIRED THROUGH AUXILIARY TO A CONTACT IN CHILLER MOTOR STARTER TO CYCLE CONTINUOUSLY WHILE CHILLER IS IN OPERATION. STAGED HEAT RECOVERY THERMOSTAT ON PREHEAT CIRCULATING LINE SHALL INTERLOCK WITH PACKAGED CHILLER CONTROLS TO PERFORM AS FOLLOWS:

WATER CIRCULATING THRU AUXILIARY CONDENSER SHALL BE PREHEATED BY REFRIGERANT CIRCUIT AHEAD OF AIR COOLED CONDENSER ALLOWING CIRCULATING PREHEAT WATER TO CONDENSE REFRIGERANT & ACQUIRE REJECTED HEAT. RISING TO SETPOINT, ROOFTOP CONDENSER FANS SHALL BE STAGED TO COMPENSATE FOR CONDENSING OCCURRING IN TUBE BUNDLE & TO ENHANCE IN SEQUENCE WITH EXISTING PREHEAT WATER TEMPERATURE. ALL LIQUID & HOT GAS REGULATORS SHALL BE MANAGED TO REGULATE CONDENSING MODES OF REFRIGERATION CIRCUIT.



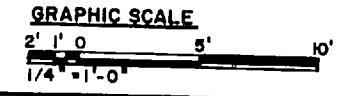
**DETAIL EQUIPMENT MOUNTING**

NO SCALE



**SECTION PIPING IN TUNNEL**

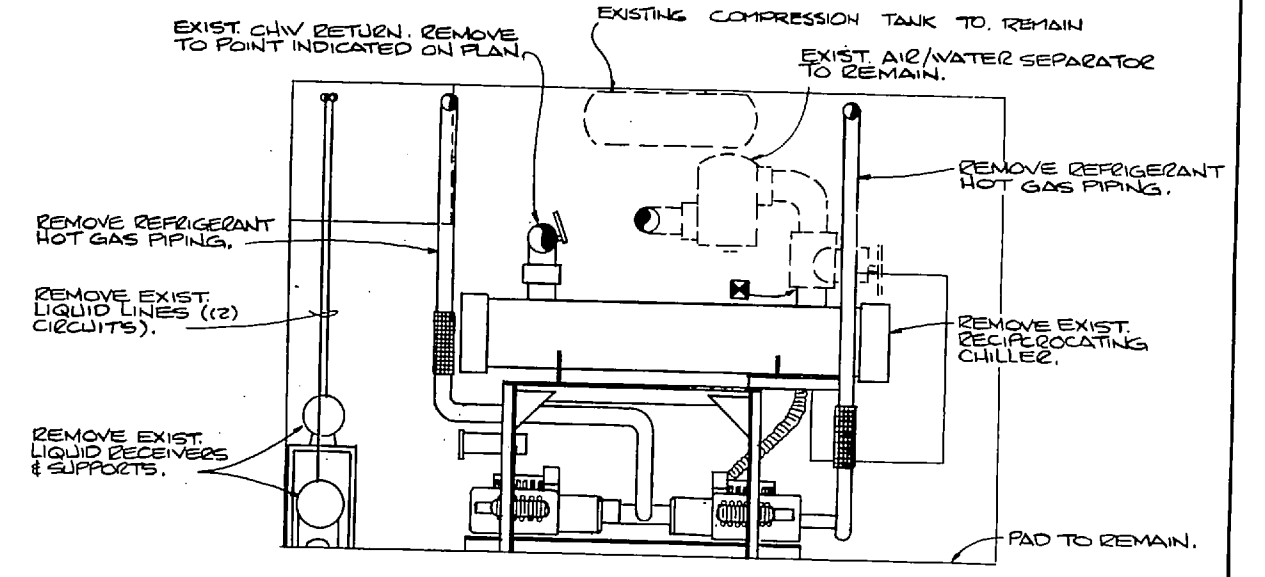
NO SCALE



**GRAPHIC SCALE**

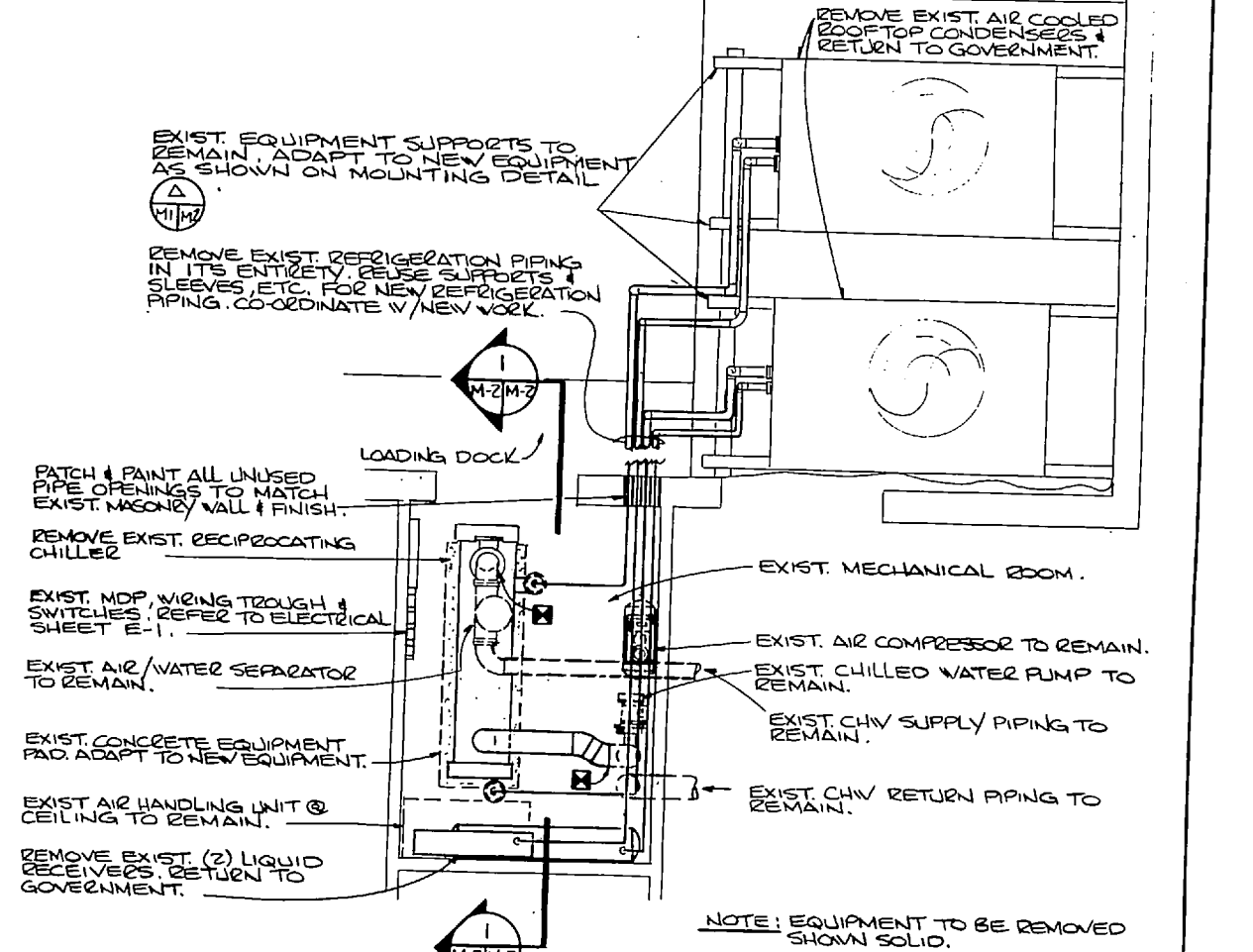
2' 1" 0 5' 10'

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



**SECTION**

NO SCALE



**MECHANICAL ROOM DEMOLITION PLAN**

SCALE 1/4" = 1'-0"

<b>M-2</b>	
HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402	
DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
MARINE CORPS BASE CAMP LEJEUNE, N.C. <b>REPLACE EXISTING CHILLERS</b> BLDG. NOS 62 & 101	
PLANS & DETAILS - BLDG. NR 62	
DATE: 2/77	SIZE: F
BY: SMC	CODE IDENT. NO.: 80091
CHECKED BY:	NAVYAC DRAWING NO.: 4126719
SUBMITTED BY:	CONSTR. CONTR. NO. NS2470-84-B-7911
DESIGN DIV.:	SCALE: GRAPHIC 8 Pcs.
APPROVED BY: [Signature]	DATE:
SATISFACTORY TO:	DATE:



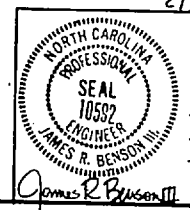
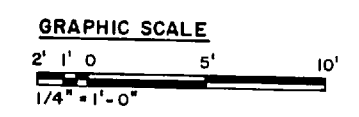
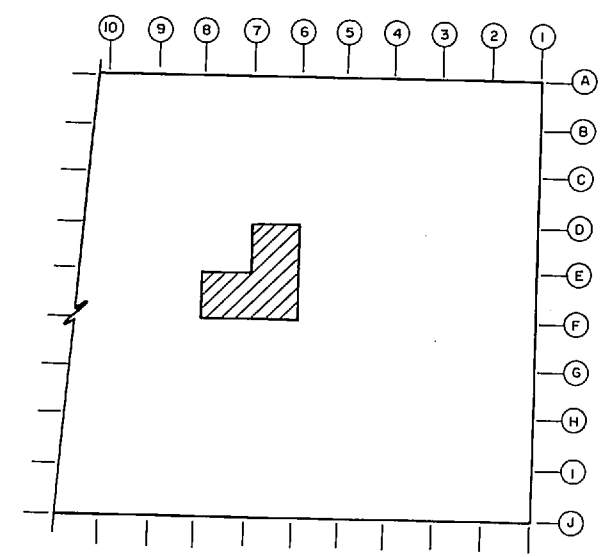
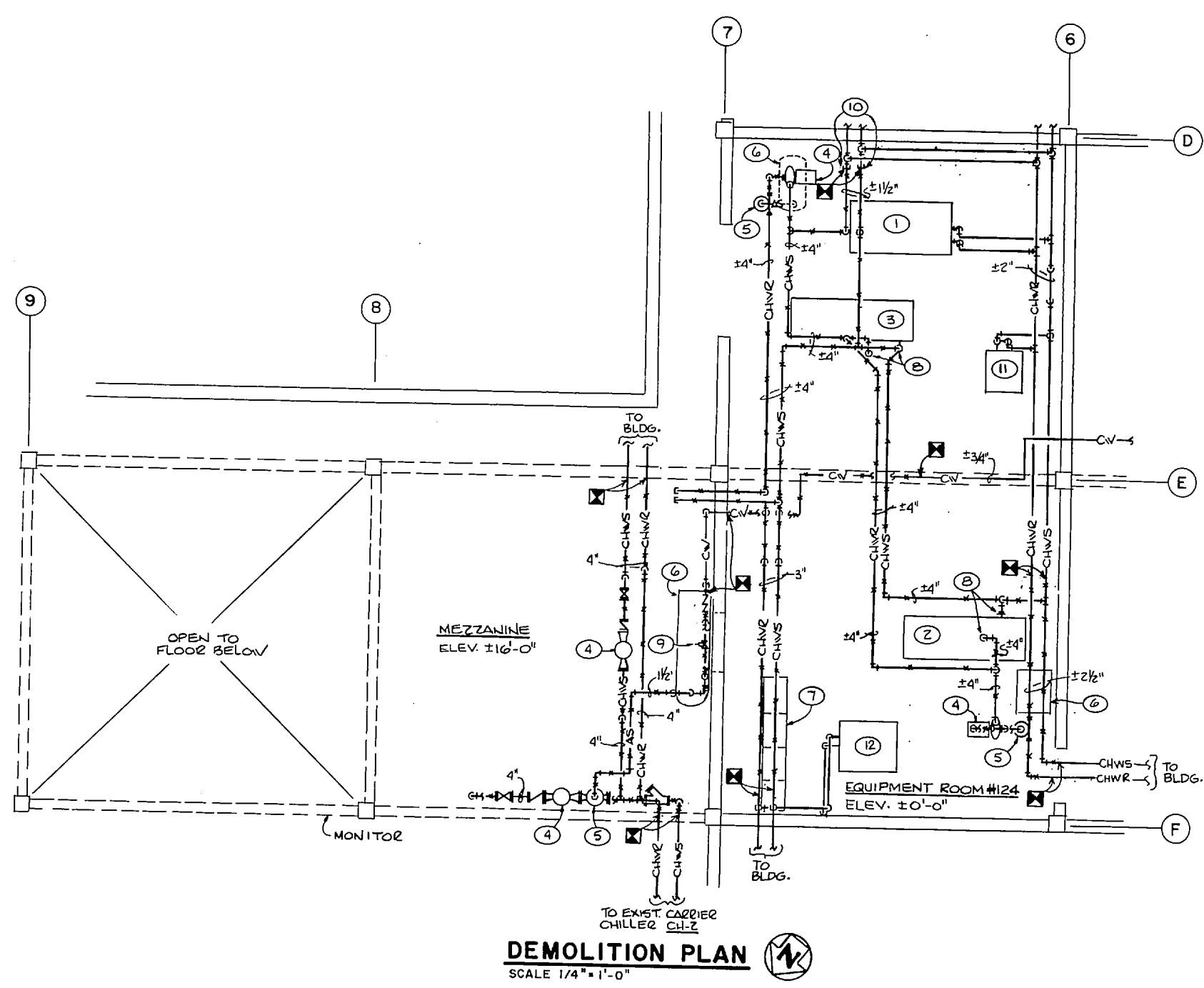
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVER

**KEYED NOTES - DEMOLITION**

- ① EXIST. AHU#2 TO REMAIN
- ② EXIST. WESTINGHOUSE CHILLER CH#4 TO REMAIN.
- ③ EXIST. DUNHAM-BUSH CHILLER CH#3 TO REMAIN.
- ④ REMOVE EXIST. CHW PUMP.
- ⑤ REMOVE EXIST. AIR SEPARATOR.
- ⑥ REMOVE EXIST. COMPRESSION TANK & PIPING TO AIR SEPARATOR.
- ⑦ ELECTRICAL EQUIPMENT
- ⑧ REMOVE EXIST. CHW PIPING TO CHILLER INLET & OUTLET.
- ⑨ REMOVE CV MAKE-UP WATER PIPING TO AIR SEPARATOR TO BE REMOVED, INCLUDING BACKFLOW PREVENTER, PRESSURE REDUCING VALVE, VALVES & FITTINGS.
- ⑩ CAP EXIST. LINES WHERE INDICATED.
- ⑪ EXIST. AHU#8 TO REMAIN
- ⑫ EXIST. AHU#6 TO REMAIN

**DEMOLITION LEGEND-BLDG.1101**

- CHWS— CHILLED WATER SUPPLY PIPING.
- CHWR— CHILLED WATER RETURN PIPING.
- AS— AIR SEPARATOR PIPE.
- ⊠ LIMIT OF DEMOLITION.
- X—X—X— REMOVE PIPE IN ENTIRETY (INCLUDING, INSULATION, VALVES, FITTINGS, STEAINERS, SUPPORTS, ETC.)
- CV— COLD WATER PIPING



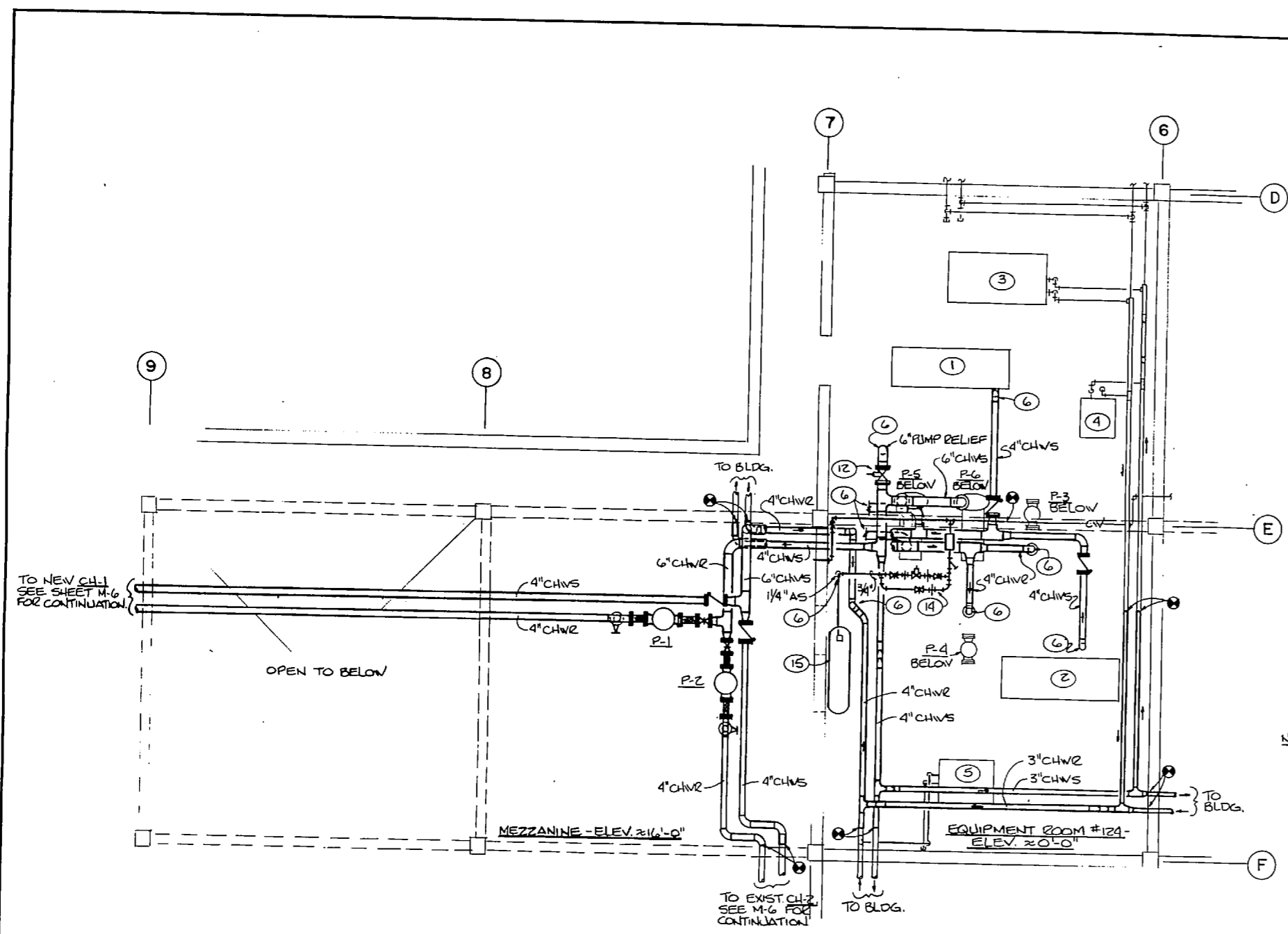
HENRY VON OEGEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
DR. JRB III CHK. JRB III		MARINE CORPS BASE CAMP LEJEUNE, N.C. REPLACE EXISTING CHILLERS BLDG. NOS 62 & 1101	
SUBMITTED BY: <i>James R. Benson</i>		DEMOLITION WORK - BLDG. #1101	
DESIGN DIR. <i>James R. Benson</i>	DATE	SIZE <b>F</b>	CORE IDENT. NO. <b>80091</b>
APPROVED BY: <i>James R. Benson</i>	DATE	NAVFAC DRAWING NO. <b>4126720</b>	
SATISFACTORY TO:	DATE	COMBTR. CONTR. NO. M62470-04-B-7911	
		SCALE: GRAPHIC	SPEC. 05-84-7911 SHEET 4 OF 12

**M-3**

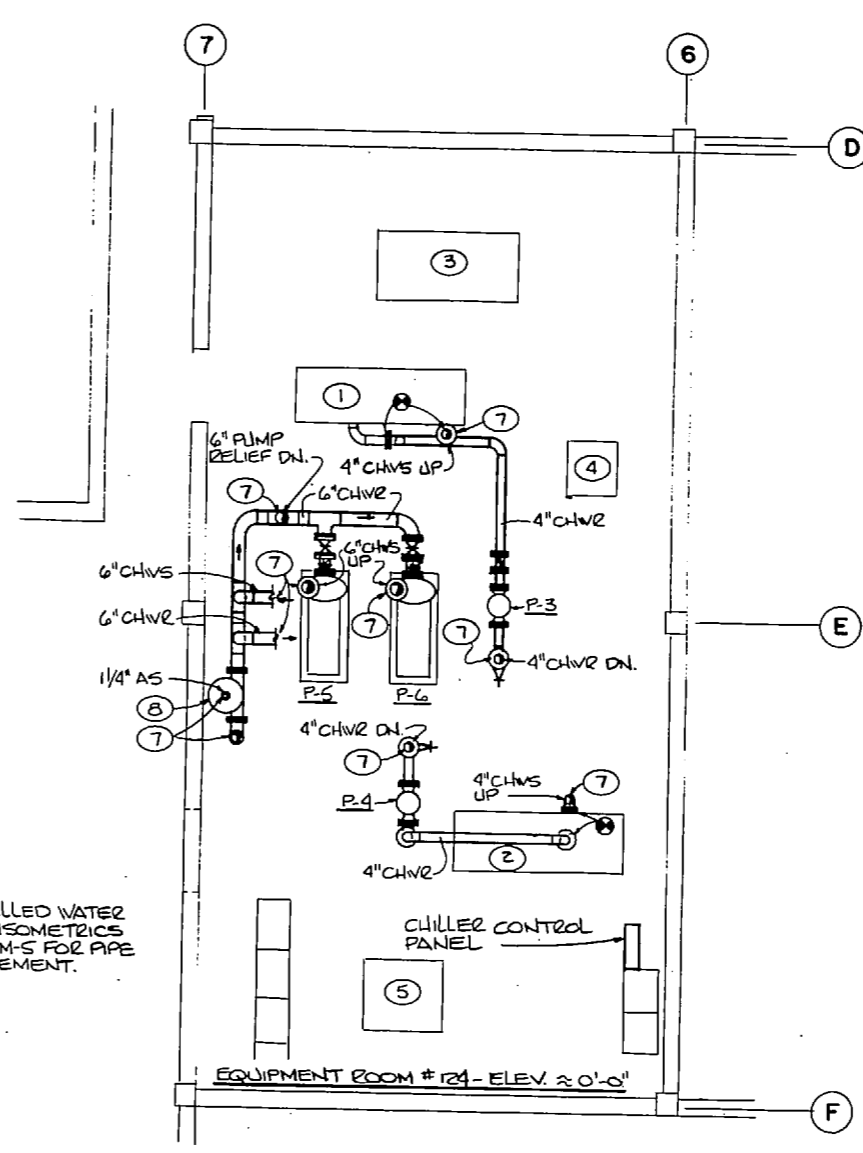




REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



**NEW WORK PLAN - MECHANICAL ROOM UPPER LEVEL**  
SCALE 1/4" = 1'-0"



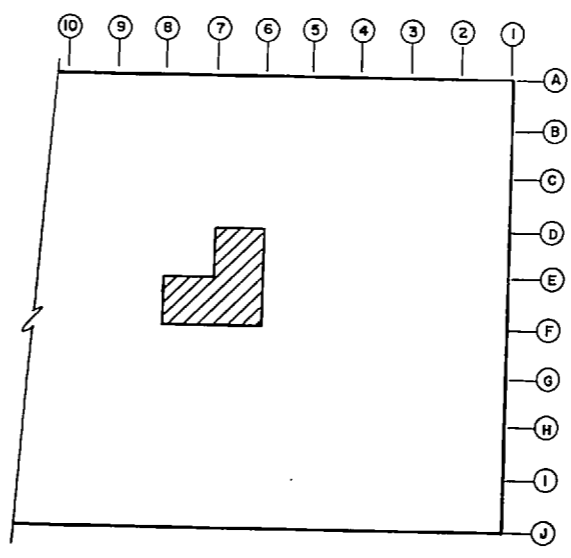
**NEW WORK PLAN - MECHANICAL ROOM FLOOR LEVEL**  
SCALE 1/4" = 1'-0"

**LEGEND - BLDG. #1101**

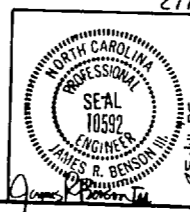
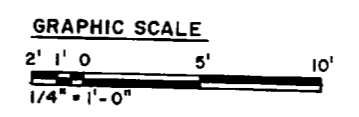
—	NEW
—	EXISTING
⊙	TIE-IN TO EXISTING
⑦	KEYED NOTE NUMBER
—○—	FLEXIBLE CONNECTOR
⊕	CHECK VALVE
⊕	GATE VALVE
⊕	PRESSURE RELIEF VALVE
→	DIRECTION OF FLOW
↑	PIPE UP
↓	PIPE DOWN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
S	STEAM
C	CONDENSATE
—AS—	AIR SEPARATOR PIPING

- KEYED NOTES (SHEETS M-4 & M-5)**
- ① EXIST. DUNHAM-BUSH CHILLER, CH-3.
  - ② EXIST. WESTINGHOUSE CHILLER, CH-4.
  - ③ EXIST. AIR HANDLER, AHU #9.
  - ④ EXIST. AIR HANDLER, AHU #8.
  - ⑤ EXIST. AIR HANDLER, AHU #6.
  - ⑥ SEE EQPT. RM. LEVEL PLAN FOR CONTINUATION.
  - ⑦ SEE MEZZANINE LEVEL PLAN FOR CONTINUATION.
  - ⑧ AIR SEPARATOR - 480 GPM CAPACITY.
  - ⑨ NEW AIR-COOLED CHILLER, CH-1. SEE PLAN SHEET M-6.
  - ⑩ EXIST. CARRIER CHILLER, CH-2.
  - ⑪ EXTEND TO COMPRESSION TANK. SEE MAKE-UP WATER ISOMETRIC.
  - ⑫ PUMP PRESSURE RELIEF VALVE. SET TO RELIEVE @ 30 P.S.I.
  - ⑬ NEW ELECTRICAL EQPT. SEE SHTS. E-2 & E-3.
  - ⑭ NEW MAKE-UP WATER SUPPLY. SEE ISOMETRIC SHEET M-5.
  - ⑮ NEW 80 GAL. COMPRESSION TANK W/ TANK FITTING.

**NOTE:**  
EQUIPMENT AND PIPING NOT INVOLVED WITH THIS WORK HAS BEEN OMITTED FOR CLARITY ON NEW WORK PLANS. COORDINATE NEW WORK WITH EXISTING PIPING AND EQUIPMENT TO AVOID INTERFERENCE.



**KEY PLAN - BLDG. # 1101**  
NO SCALE



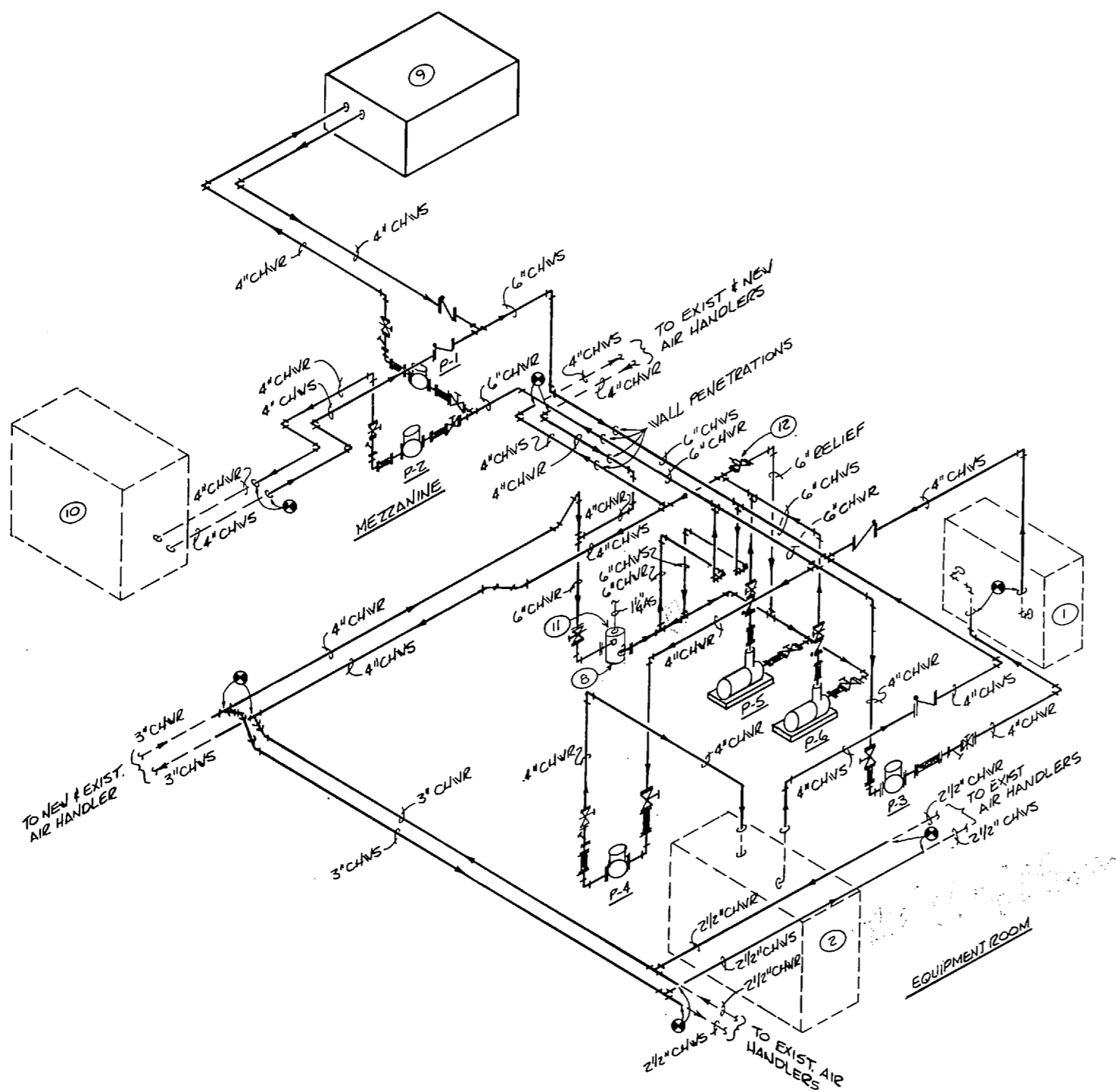
HENRY VON DEESEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJUNE, NORTH CAROLINA	
DR. JRB III	DR. SMC	MARINE CORPS BASE	CAMP LEJUNE, N.C.
CHK. JRB III	DESIGNED BY: [Signature]	REPLACE EXISTING CHILLERS BLDG. NR 62 & 1101	
APPROVED: [Signature]	DATE: [Date]	NEW WORK - EQPT. RM. / MEZZ. - BLDG. NR 1101	
SATISFACTORY TO:	DATE:	SIZE: F	CODE IDENT. NO.: 80091
			NAVAFAC DRAWING NO.: 4126721
			CONSTR. CONTR. NO. NS2470-64-B-7911
		SCALE: GRAPHIC	SPEC. 05-64-7911

**M-4**

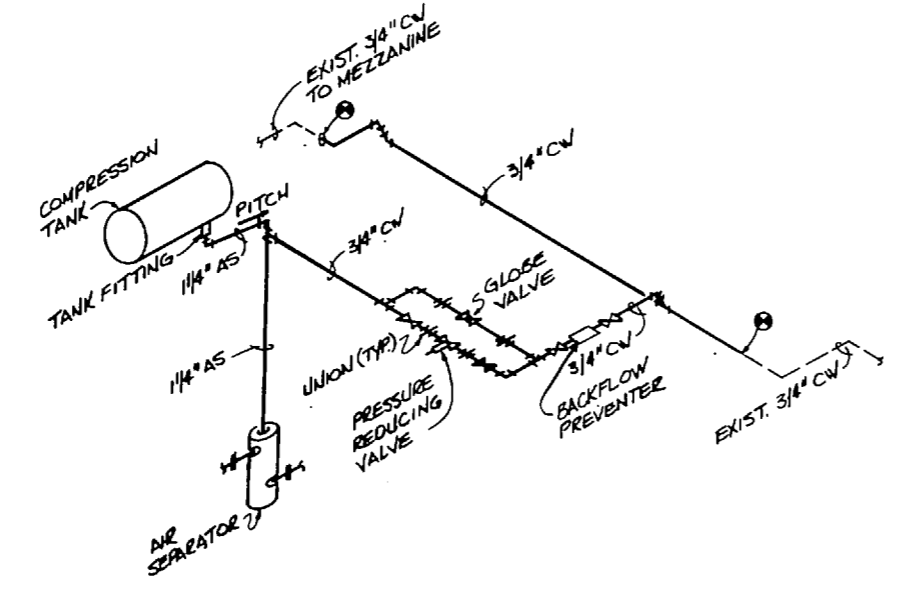
SHEET 5 OF 12



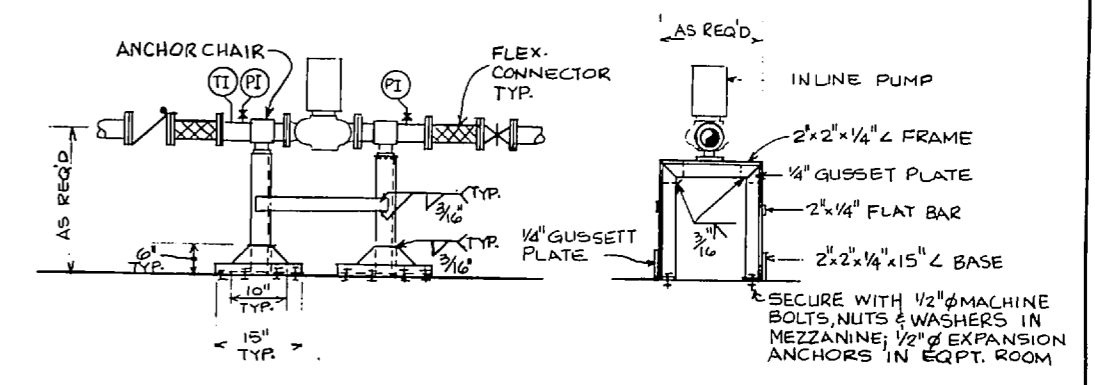
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



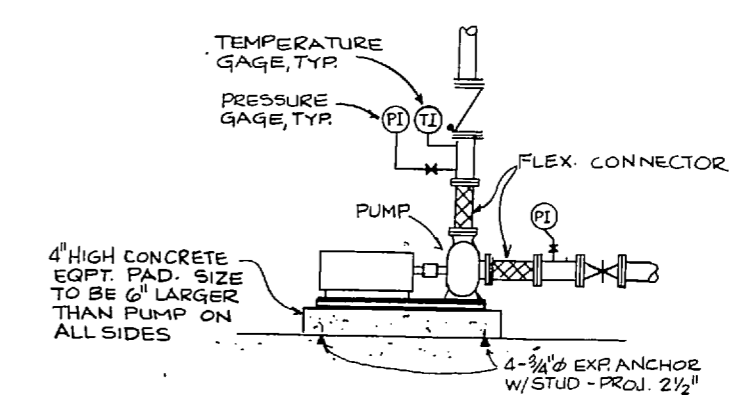
**CHILLED WATER PIPING ISOMETRIC**  
NO SCALE



**AIR CONTROL & MAKE - UP WATER PIPING ISOMETRIC**  
NO SCALE



**INLINE PUMP DETAIL**  
NO SCALE

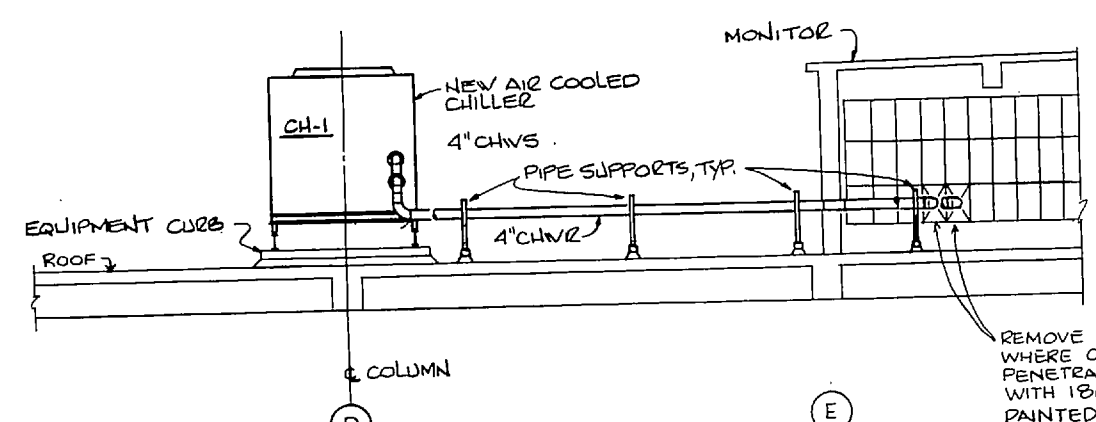
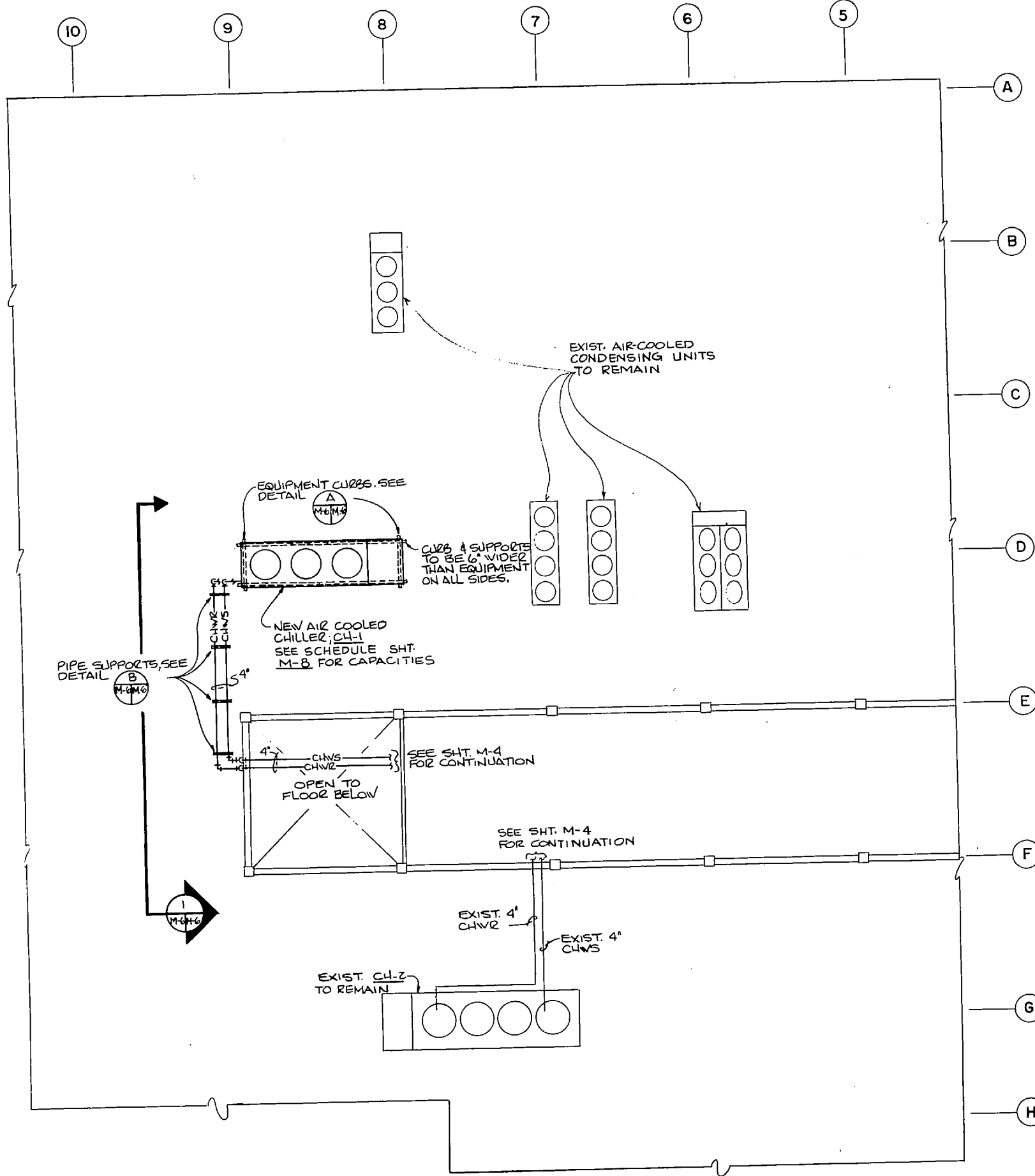


**TYPICAL END SUCTION PUMP DETAIL**  
NO SCALE

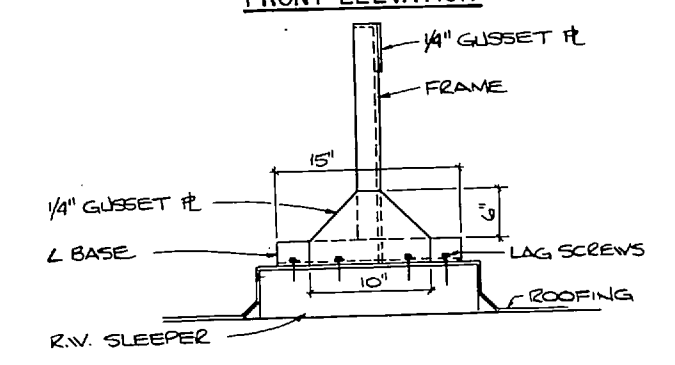
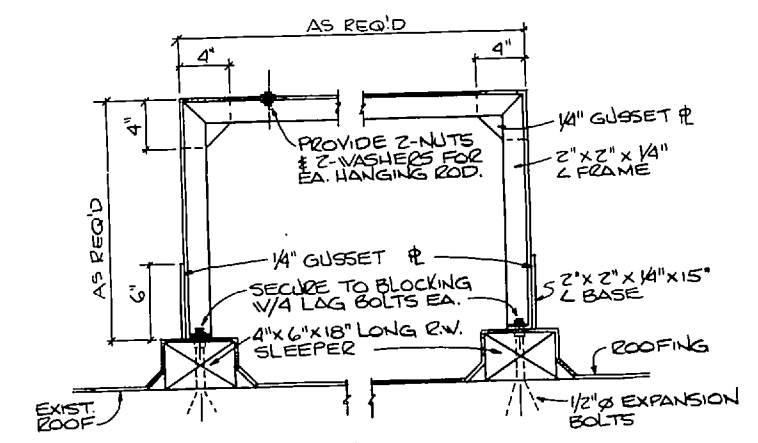
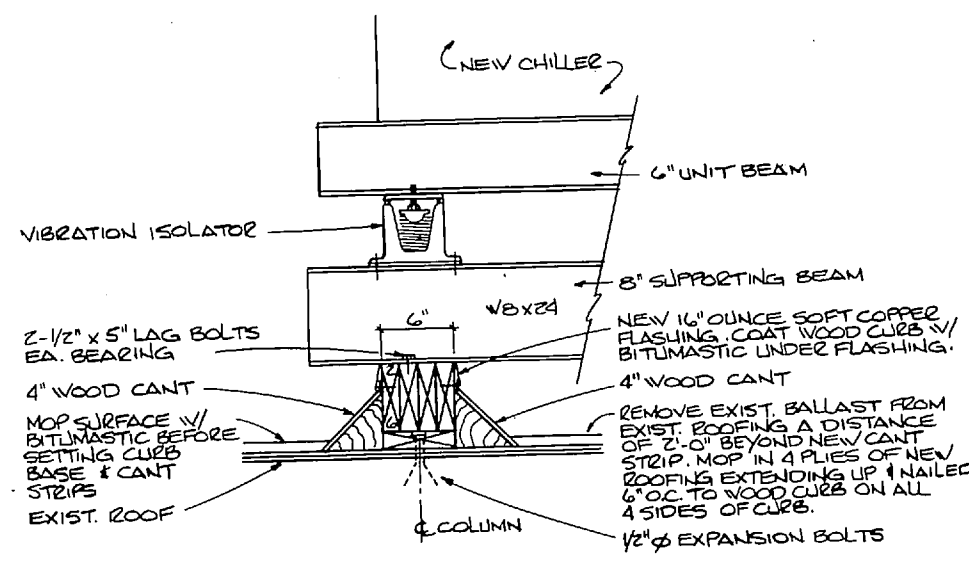
		<b>M-5</b>	
		HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28403	
DES. JRB II DR. SMC CHK. JRB III SUBMITTED BY: [Signature] DESIGN DIR. [Signature] APPROVED: [Signature] SATISFACTORY TO: [Signature]		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA MARINE CORPS BASE CAMP LEJEUNE, N.C. <b>REPLACE EXISTING CHILLERS</b> BLDG. NOS 62 & 1101 PIPING ISOMETRICS & DETAILS - BLDG. NO 1101	
DATE: [Date] DATE: [Date]		SIZE: <b>F</b> CORE IDENT. NO.: 80091	NAVFAC DRAWING NO.: 4126722 CONTR. CONTR. NO. M62470-04-B-7911 SCALE: GRAPHIC SPEC. 05-84-7911 SHEET 6 OF 12



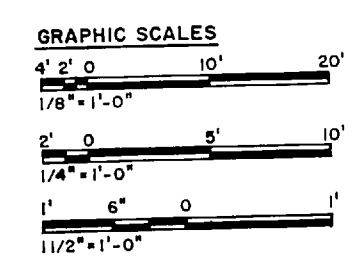
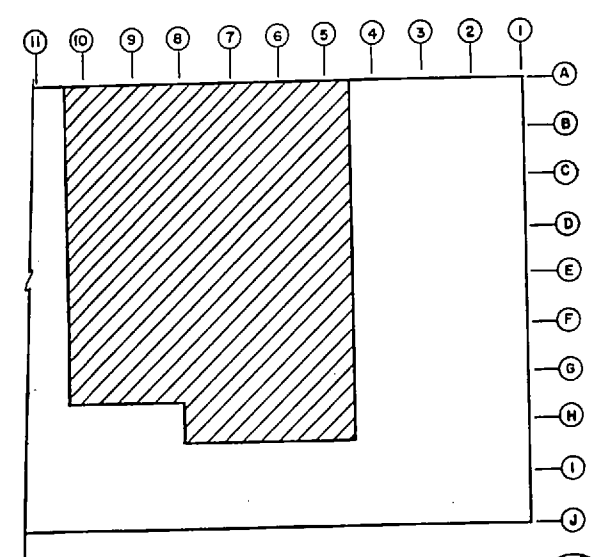
REVISIONS		
SYM.	DESCRIPTION	DATE



REMOVE EXIST. GLASS PANELS WHERE CHILLED WATER PIPING PENETRATES AND REPLACE WITH 18 GAUGE STEEL SHEET PAINTED TO MATCH BLDG. SEAL ALL WORK WEATHERTIGHT



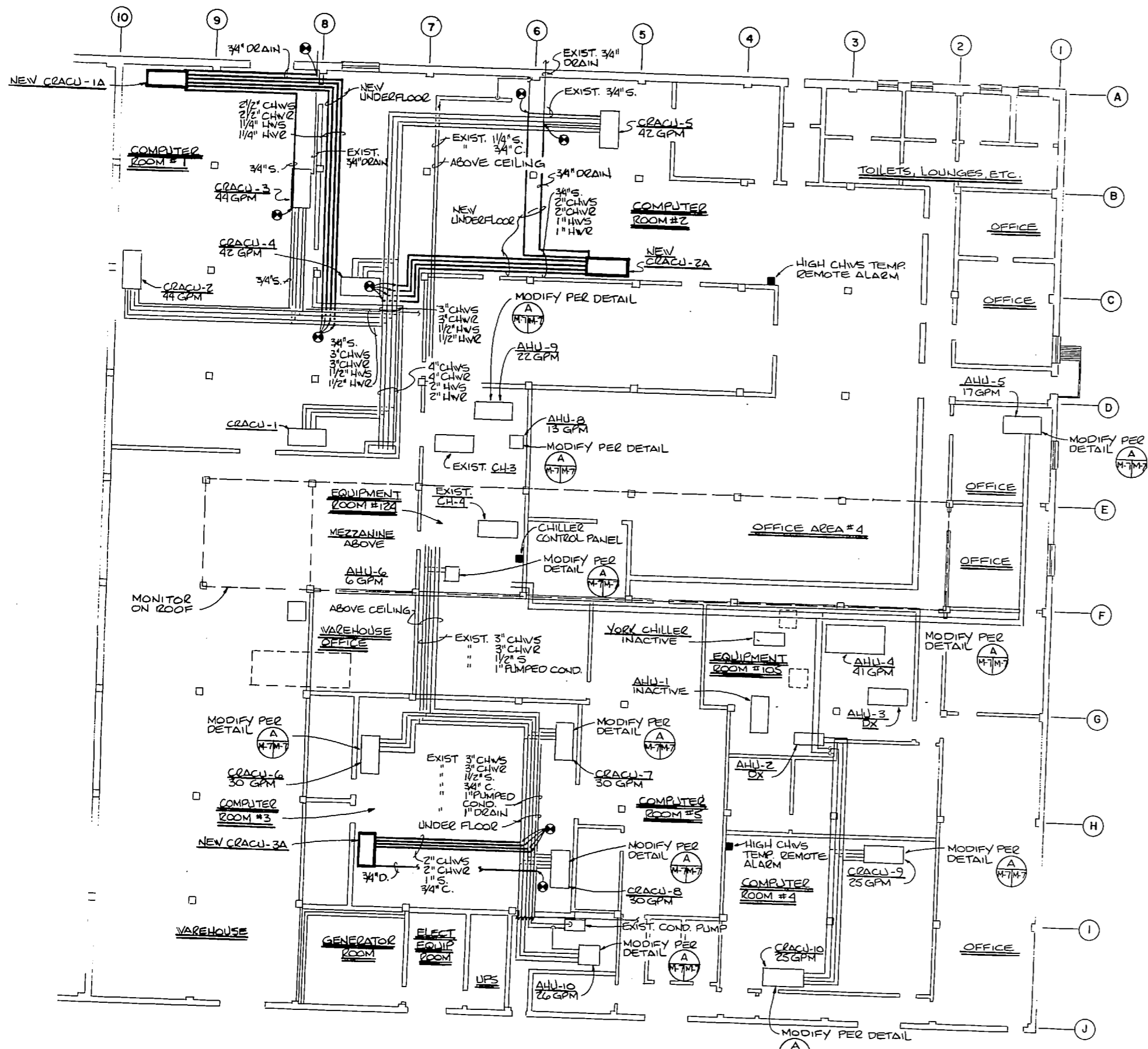
**ROOF PIPE SUPPORT DETAIL**  
NO SCALE



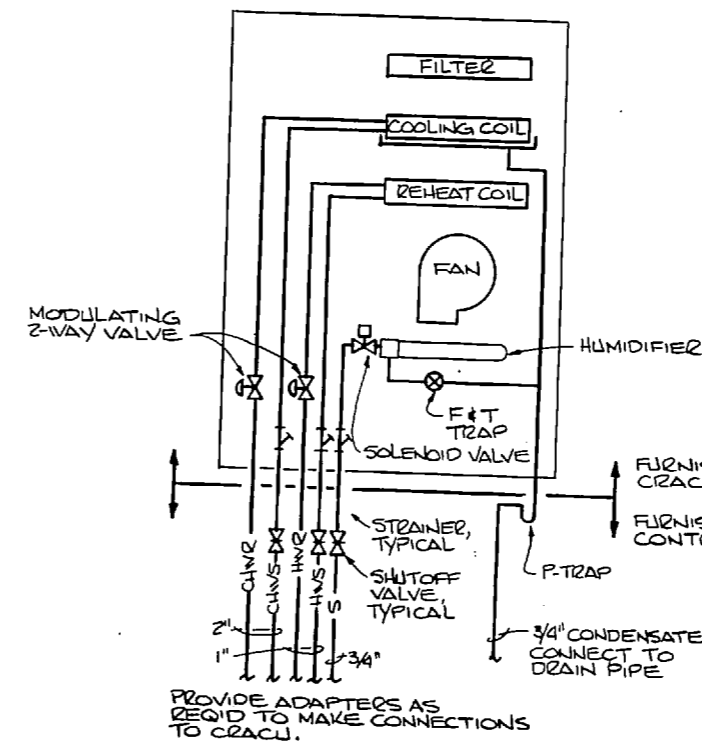
		<b>M-6</b>	
		HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402	
DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA		NAVAL FACILITIES ENGINEERING COMMAND CAMP LEJEUNE, N.C.	
DESIGNED BY: JRB III CHECKED BY: SMC SUBMITTED BY: JRB III DESIGN DATE: 10/27/84 APPROVED BY: [Signature] SATISFACTORY TO: [Signature]		MARINE CORPS BASE REPLACE EXISTING CHILLERS BLDG. NOS 62 & 1101 PARTIAL ROOF PLAN - BLDG. NO 1101	
SHEET NO. 80091	NAVFAC DRAWING NO. 4126723	CONSTRUCTION CONTRACT NO. N62470-84-D-7911 SHEET 7 OF 12	



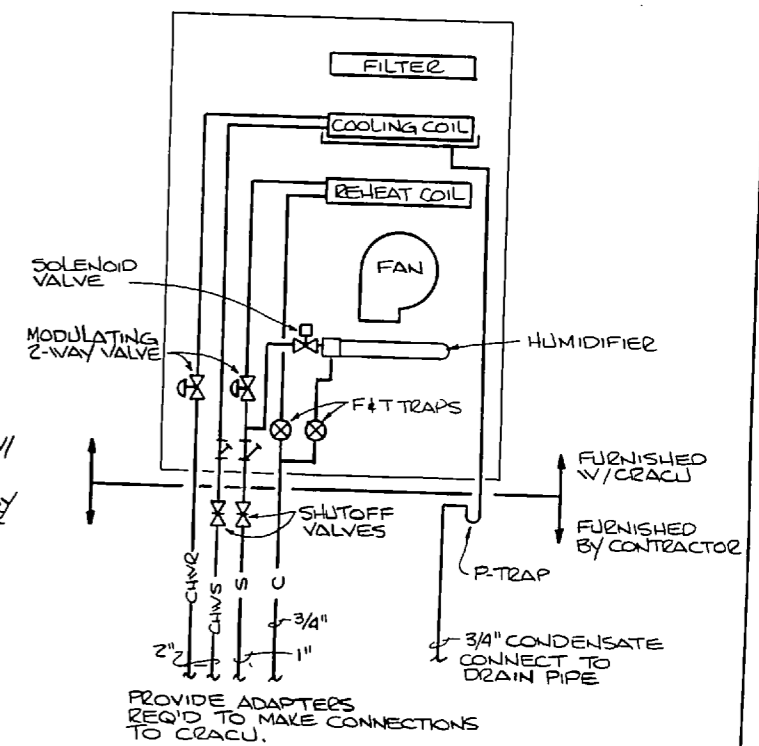
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



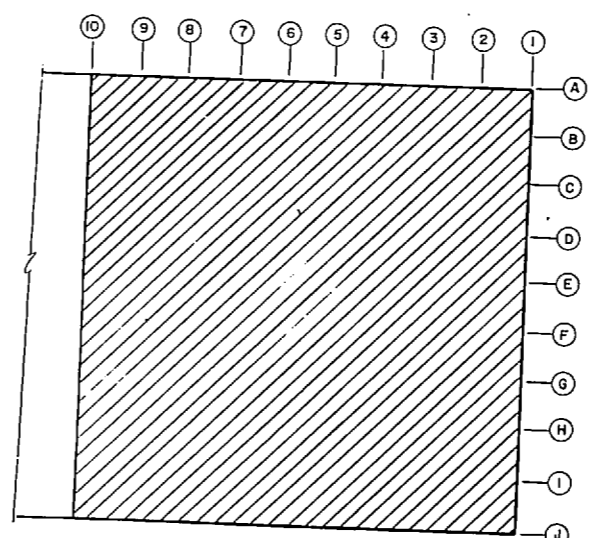
**MECHANICAL PLAN**  
SCALE 3/32" = 1'-0"



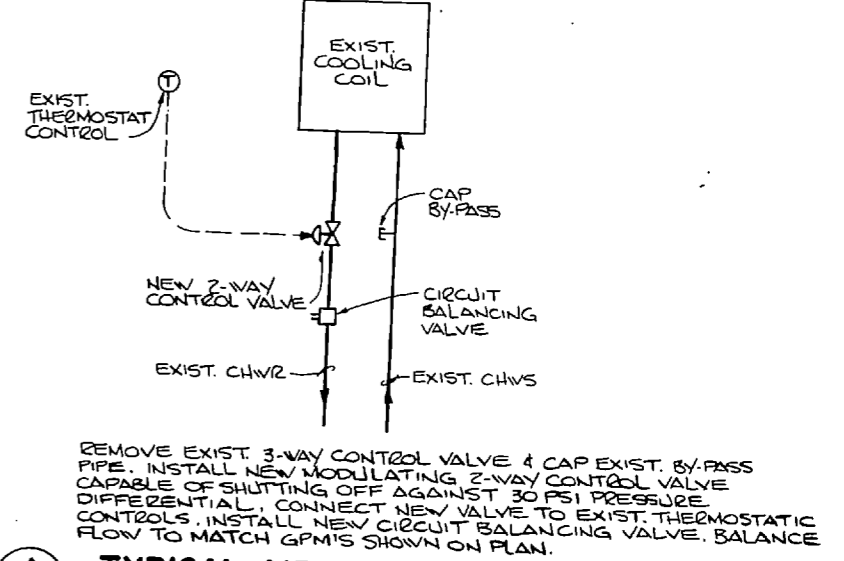
**TYPICAL CRACU PIPING - HW REHEAT**  
NO SCALE



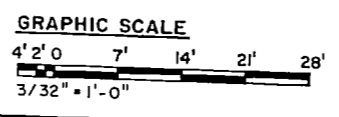
**TYPICAL CRACU PIPING - STEAM REHEAT**  
NO SCALE



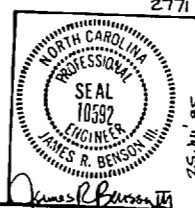
**KEY PLAN - BLDG. #1101**  
NO SCALE



**TYPICAL AIR HANDLER - MODIFICATION**  
NO SCALE



**GRAPHIC SCALE**  
4" = 20'  
7" = 14'  
14" = 28'  
3/32" = 1'-0"

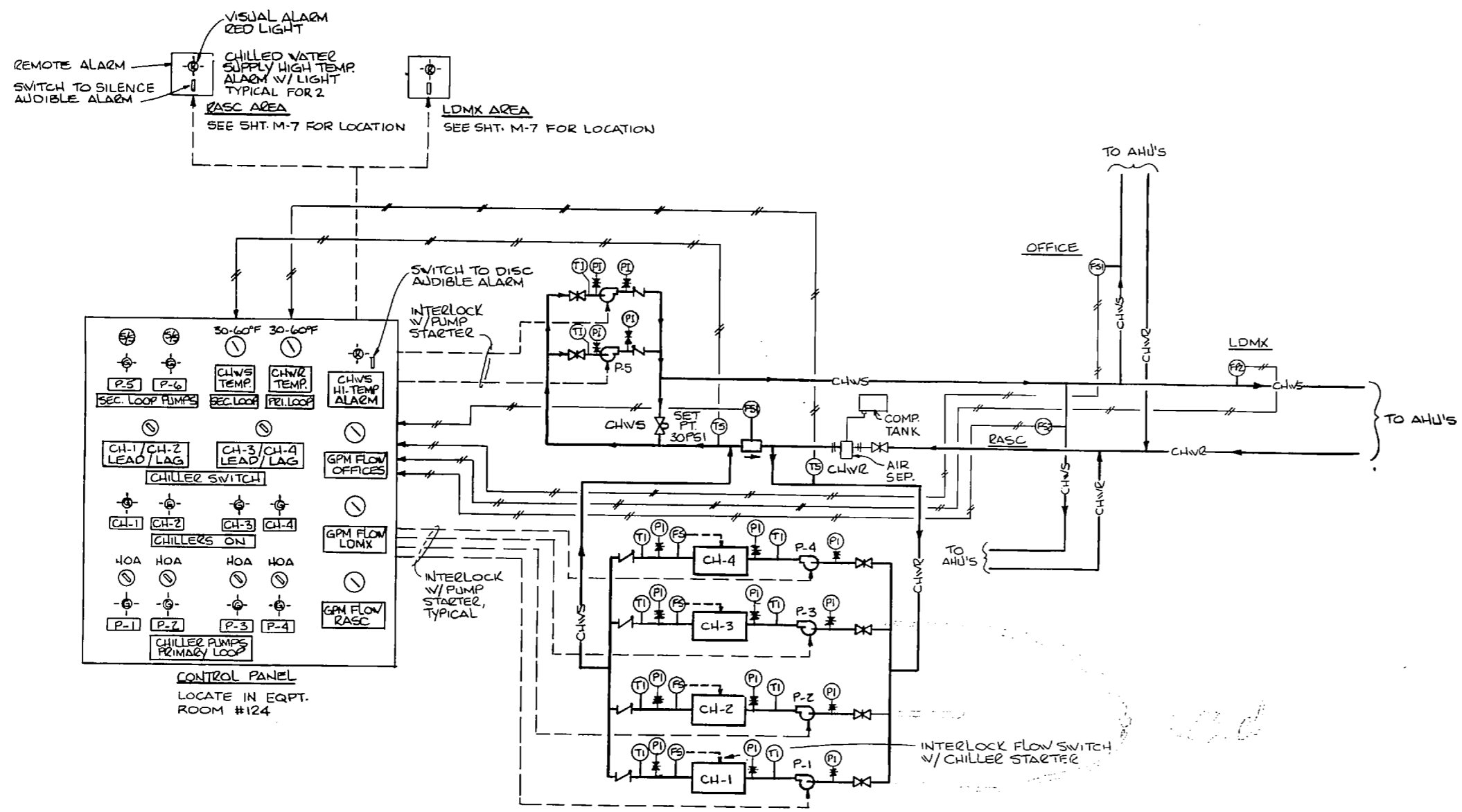


HENRY VON DESEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DR. JRB III		DR. SMC	
CHK. JRB III		CHK. JRB III	
SUBMITTED BY: <i>[Signature]</i>		SUBMITTED BY: <i>[Signature]</i>	
DESIGN DATE: <i>2/16/84</i>		DATE: <i>2/16/84</i>	
SATISFACTORY TO: <i>[Signature]</i>		DATE: <i>2/16/84</i>	
M-7		M-7	
MARINE CORPS BASE		CAMP LEJEUNE, N.C.	
REPLACE EXISTING CHILLERS		BLDG. NOS 62 & 1101	
FLOOR PLAN & DETAILS - BLDG. NR 1101		FLOOR PLAN & DETAILS - BLDG. NR 1101	
SIZE: <b>F</b>	CODE IDENT. NO.: <b>80091</b>	NAVFAC DRAWING NO.: <b>4126724</b>	CONSTR. CONTR. NO. <b>062470-84-B-7911</b>
SCALE: GRAPHIC	SPEC.:	06-84-7911	SHEET 8 OF 12





REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



**CONTROL LEGEND**

- FS1 FLOW SENSOR
- FS2 FLOW SENSOR
- TS TEMP SENSOR
- FI FLOW GAUGE
- FS FLOW SWITCH
- DPC DIFF. PRESS. CONTROLLED
- HOA HAND OFF AUTO SWITCH
- SS SELECTOR SWITCH
- Panel Mounted Pilot Light (GREEN)
- Panel Mounted Pilot Light (RED)
- Pneumatic Control Signal
- Elect. Control Signal
- CHWS CHILLED WATER SUPPLY PIPING
- CHWR CHILLED WATER RETURN PIPING
- Control Valve
- Manual Valve
- Check Valve
- Panel Mounted Gauge
- Panel Mounted Switch
- Pressure Relief Valve
- Pressure Indicator
- TI TEMPERATURE INDICATOR

**SEQUENCE OF OPERATION**

START PUMP P-1 (OR P-2 STANDBY). SET LEAD/LAG SELECTORS AS DESIRED (IN FOLLOWING SEQUENCE CH-1 & CH-2 ARE LEADS). SET P-1, P-2, P-3 & P-4 TO AUTOMATIC. IF P-1 IS LESS THAN 50 GPM P-1 SHALL START. CH-1 WILL START WHEN CHILLER FLOW IS ESTABLISHED. ON AN INCREASE IN BLDG. LOAD FLOW THROUGH P-1 WILL DECREASE. WHEN P-1 FLOW DECREASES TO 50 GPM P-2 SHALL START FOLLOWED BY CH-2 WHEN CHILLER FLOW IS ESTABLISHED. ON FURTHER INCREASE IN BUILDING LOAD P-1 FLOW DECREASES AGAIN TO 50 GPM P-3 SHALL START FOLLOWED BY CH-3 WHEN CHILLER FLOW IS ESTABLISHED. ON STILL FURTHER INCREASE IN BUILDING LOAD P-1 FLOW DECREASES AGAIN TO 50 GPM P-4 SHALL START FOLLOWED BY CH-4 WHEN CHILLER FLOW IS ESTABLISHED. ON A DECREASE IN BUILDING LOAD P-1 FLOW INCREASES TO 200 GPM P-4 & CH-4 SHALL STAGE OFF. ON A FURTHER DECREASE IN BUILDING LOAD P-1 FLOW INCREASES TO 190 GPM P-3 & CH-3 SHALL STAGE OFF. ON A FURTHER DECREASE IN BUILDING LOAD P-1 FLOW INCREASES TO 180 GPM P-2 & CH-2 SHALL STAGE OFF. CH-1 SHALL MODULATE TO ACCOMMODATE ANY FURTHER REDUCTION IN BUILDING LOAD. SHOULD CHWS TEMPERATURE REACH 60°F LOCAL & REMOTE ALARMS SHALL SOUND UNTIL CHWS REACHES 45°F. AUDIBLE ALARMS SHALL BE CAPABLE OF BEING SWITCHED OFF. SILENCED BY SWITCH, VISUAL ALARMS SHALL NOT BE CAPABLE OF BEING SWITCHED OFF.

**SYSTEM DESCRIPTION**

THE CHILLED WATER SYSTEM CONSISTS OF TWO HYDRAULICALLY ISOLATED (PRIMARY-SECONDARY) PIPING LOOPS. THE SECONDARY LOOP IS CIRCULATED BY PUMP P-5 OR STANDBY PUMP P-6. TWO-WAY CONTROL VALVES @ EACH AIR HANDLER MODULATE THE FLOW IN THIS LOOP PROPORTIONALLY TO THE BUILDING LOAD. THE PRIMARY LOOP CONSISTS OF A PARALLEL ARRANGEMENT OF CHILLERS CH-1, CH-2, CH-3 & CH-4; EACH WITH ITS OWN CIRCULATING PUMP P-1, P-2, P-3 & P-4 RESPECTIVELY. THE PRIMARY LOOP SHARES COMMON PIPING WITH THE SECONDARY LOOP JUST UPSTREAM OF PUMP P-5. A FLOW SENSOR P-5 MEASURES THE FLOW RATE IN THE COMMON PIPING. P-5 SEQUENCES THE CHILLER PUMPS ON & OFF AS REQUIRED TO MAINTAIN A DESIRED RANGE OF FLOW RATES IN THE COMMON PIPING. THIS ARRANGEMENT INSURES A CONSTANT SUPPLY WATER TEMP. TO THE SECONDARY LOOP.

**CONTROL DIAGRAM**  
NO SCALE

**AIR COOLED WATER CHILLER SCHEDULE**

MARK	LOCATION	CAPACITY TONS	EVAPORATOR				CONDENSER				COMPRESSOR				CONTROL KW	CAPACITY REDUCTION (MIN. STAGES) % FULL LOAD	REMARKS	
			GPM	EWT	LWT	MAX. P.D.	NO. FAN	KW EA.	VOLTAGE	FLA EA.	EAT	NO.	VOLTAGE	FLA EA.				REL. EFF.
CH-1	ROOF	100	240	55°F	45°F	20 FT	3	5.5	208V/3Ø/60HZ	25.3	35°F	Z	208V/3Ø/60HZ	228	.60	1.30	100-75-50-25	NEW UNIT
CH-2	ROOF	88	212	55°F	45°F	—	—	—	—	—	—	—	—	—	—	—	—	EXISTING CARRIER UNIT
CH-3	MECH RM.	60	120	55°F	45°F	—	—	—	—	—	—	—	—	—	—	—	—	EXISTING DUNHAM-BUSH UNIT
CH-4	MECH RM.	51	110	55°F	45°F	—	—	—	—	—	—	—	—	—	—	—	—	EXISTING WESTINGHOUSE UNIT

① KW/TON = TOTAL INPUT KW/TONS CAPACITY @ DESIGN CONDITIONS (INCL. COMPRESSORS, FANS, CONTROLS, ETC.)  
 ② DATA ON EXISTING CHILLERS PROVIDED FOR INFORMATION ONLY.

**COMPUTER ROOM AIR CONDITIONING UNIT SCHEDULE**

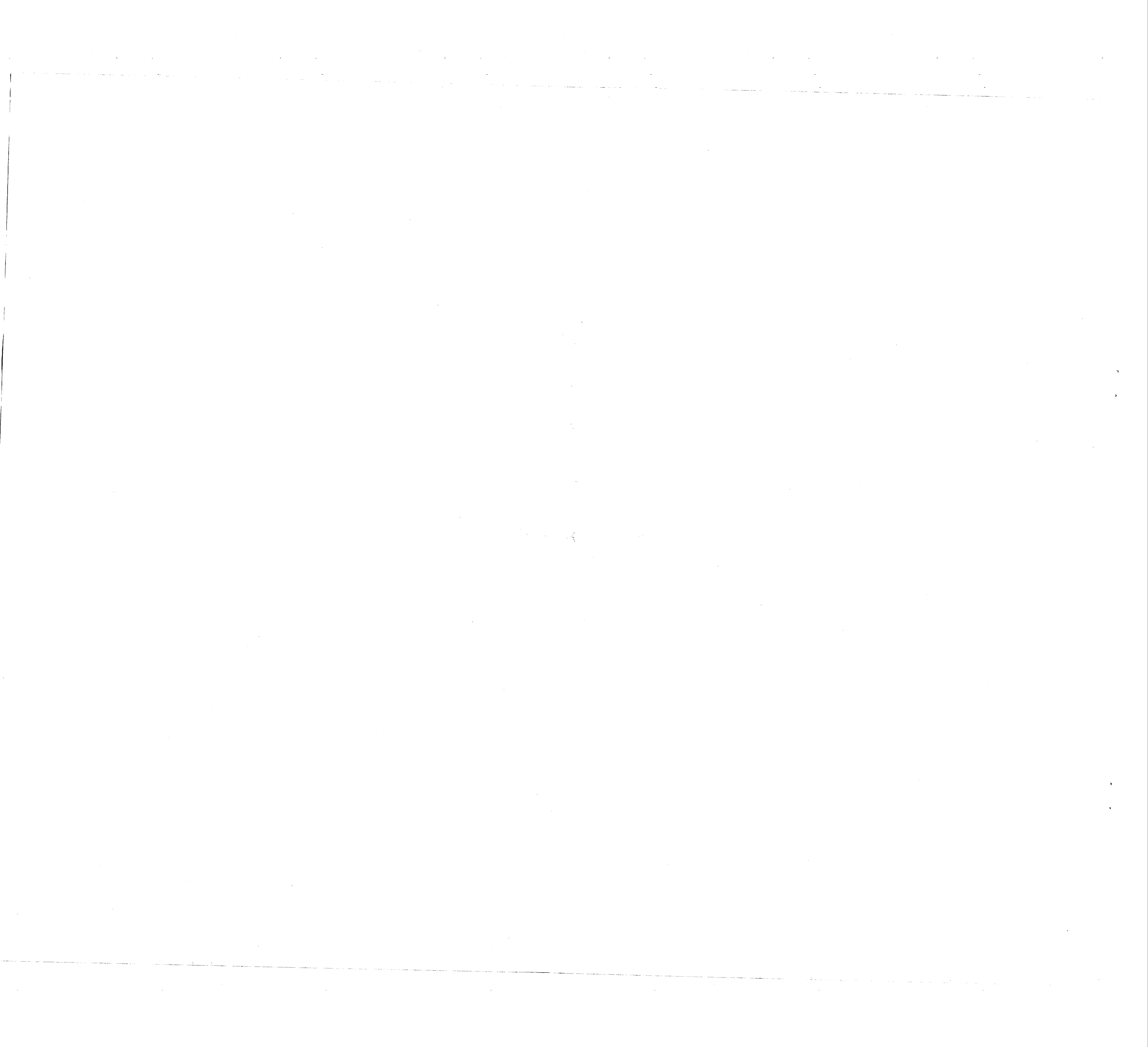
UNIT NO.	LOCATION	MBH COOLING CAPACITIES			REHEAT CAPACITY			STEAM GRID HUMIDIFIER			BLOWER			CHILLED WATER COIL				FILTERS		REMARKS
		TOTAL	SENSIBLE	MBH	FLOW	TYPE	STEAM PSIG	LB/HR	CFM @ ESP	HP	EAT °F <sub>db</sub>	EAT °F <sub>wb</sub>	GPM	P.D. (FT)	MAX. FACE VEL. (PPM)	TYPE	NBS EFF %			
CRACU-1A	COMPUTER ROOM #1	230.20	199.40	299	8 GPM	HOT WATER	5	14	9100	7 1/2	72	60	45	46	9	471	T.A.	60	208V/3Ø	
CRACU-2A	COMPUTER ROOM #2	230.20	199.40	299	8 GPM	HOT WATER	5	14	9100	7 1/2	72	60	45	46	9	471	T.A.	60	208V/3Ø	
CRACU-3A	COMPUTER ROOM #3	151.40	130.40	266	7.5 GPM	STEAM 5 PSIG	—	—	—	—	—	—	—	—	—	—	—	—	—	

**PUMP SCHEDULE**

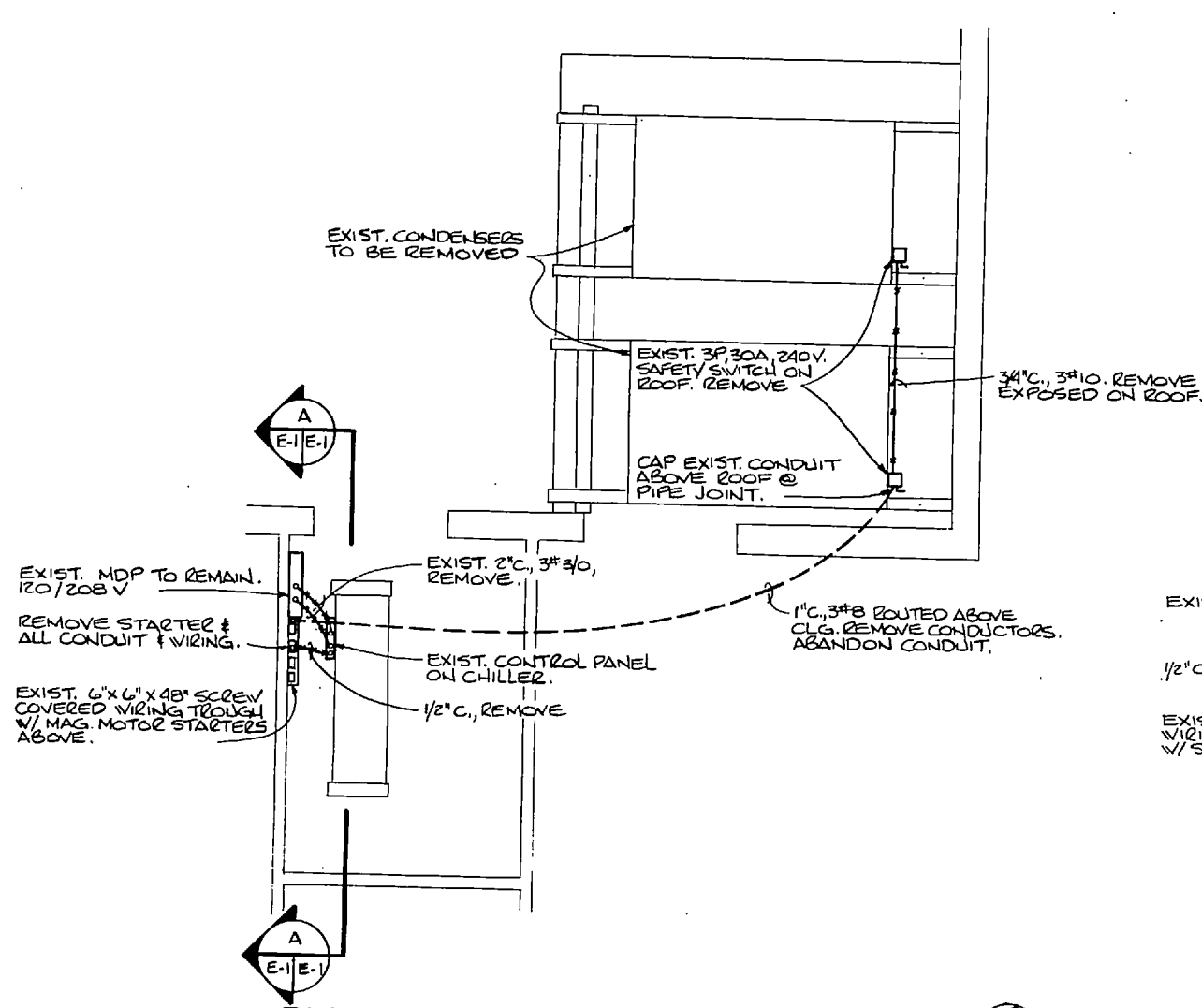
MARK	LOCATION	SERVICE	GPM	HEAD FT.	MOTOR			TYPE	SUCTION SIZE	DISCH. SIZE	MIN. EFF.
					HP	RPM	VOLTAGE				
P-1	MEZZANINE	CHILLED WATER	240	30	5	1750	208V/3Ø/60HZ	INLINE	4"	4"	68%
P-2	MEZZANINE		212	25	3				4"	4"	62%
P-3	MECH. RM.		120	30	2				3"	3"	65%
P-4			110	20	1 1/2				3"	3"	57%
P-5			680	70	20			BASE MOUNT END SUCTION	5"	4"	75%
P-6		STANDBY CHILLED WATER	680	70	20			BASE MOUNT END SUCTION	5"	4"	75%

**M-8**

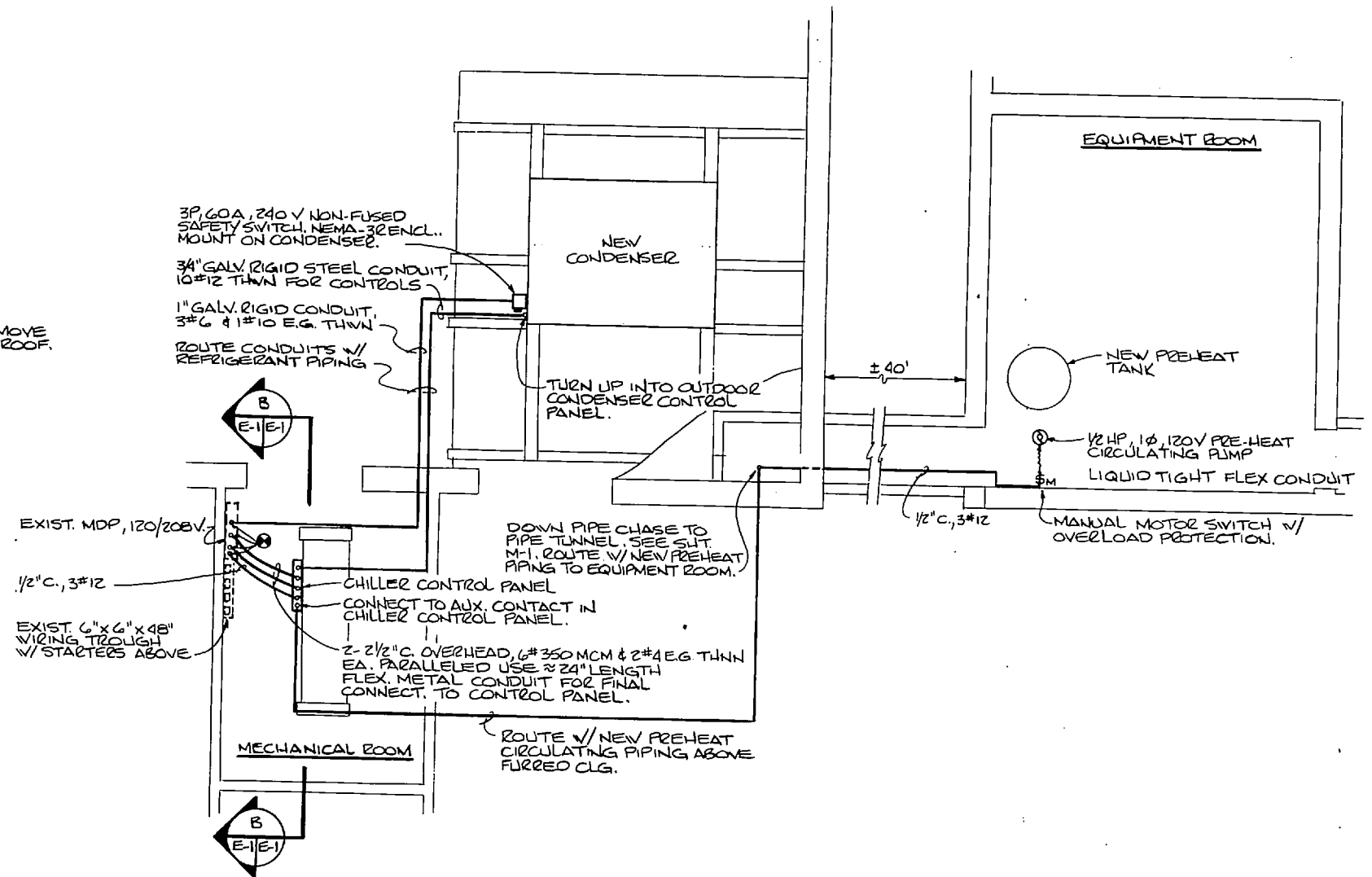
HENRY VON OESSEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
DR. JRB III	DATE	MARINE CORPS BASE	CAMP LEJEUNE, N.C.
DR. WPU	DATE	REPLACE EXISTING CHILLERS	BLDG. N# 62 & 1101
DESIGN DIR. [Signature]	DATE	SCHEDULES & DETAILS - BLDG. N# 1101	
APPROVED [Signature]	DATE	SIZE	CODE IDENT. NO.
SATISFACTORY TO: [Signature]	DATE	<b>F</b>	<b>80091</b>
SCALE: GRAPHIC SPEC.		NAVAC DRAWING NO. 4125725	
CONTR. CONT. NO. N62270-84-B-7911		06-84-7911 SHEET 9 OF 12	



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



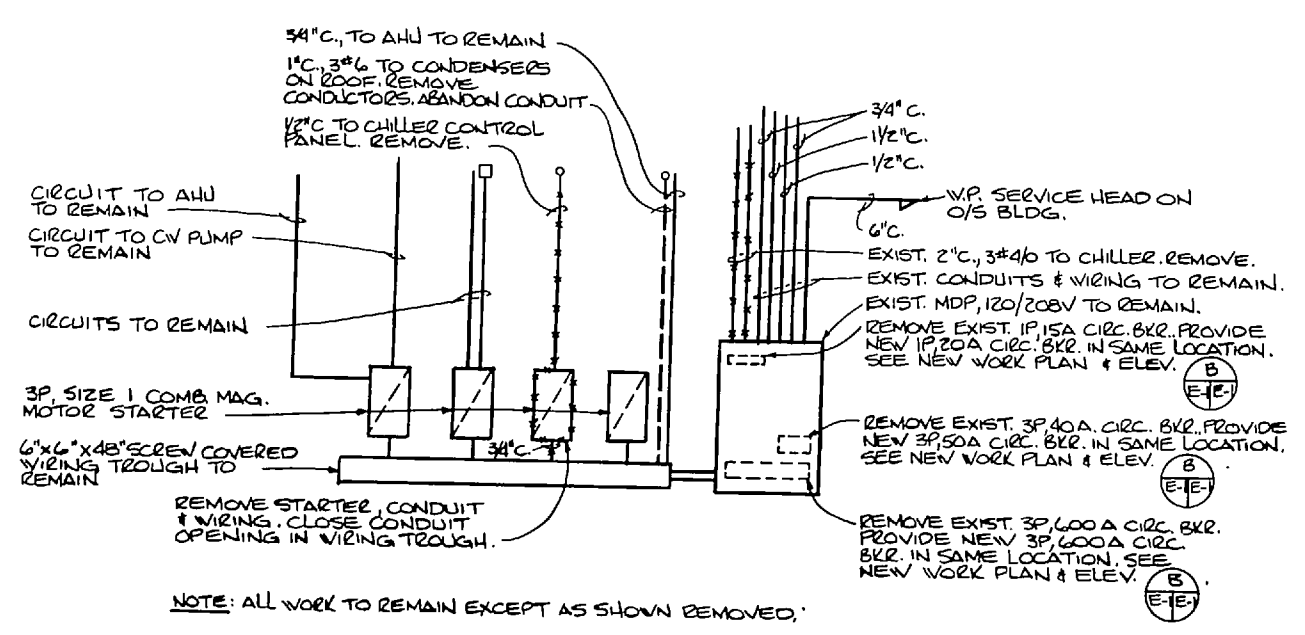
**ELECTRICAL FLOOR PLAN - DEMOLITION**  
SCALE 1/4" = 1'-0"



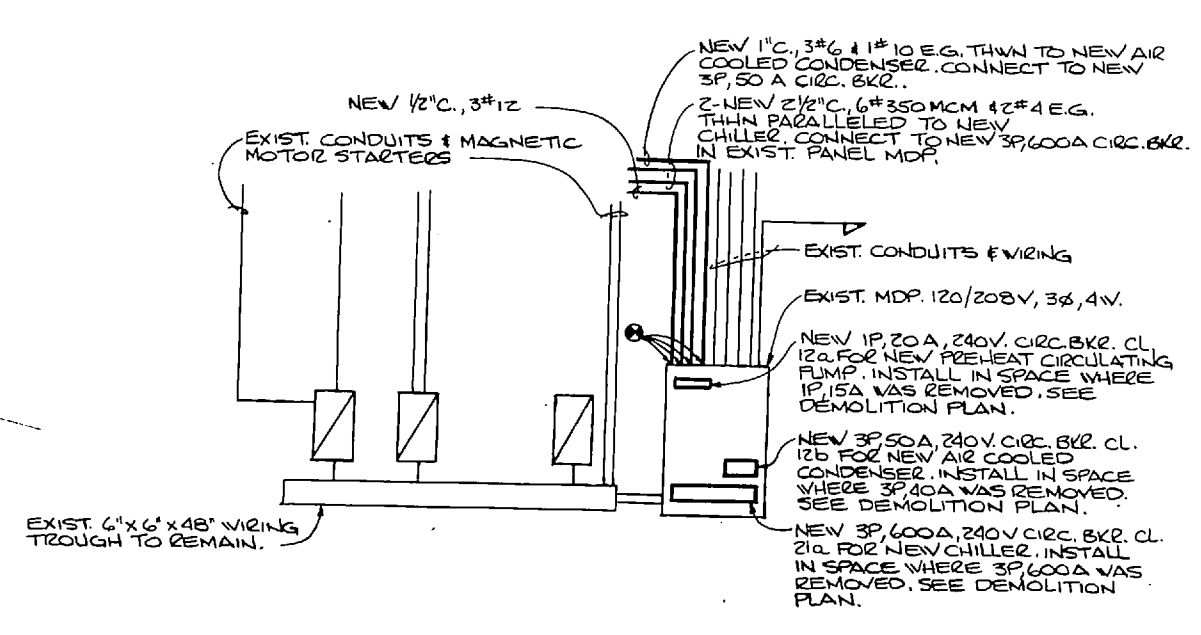
**ELECTRICAL FLOOR PLAN - NEW WORK**  
SCALE 1/4" = 1'-0"

**ELECTRICAL LEGEND**

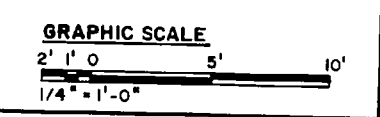
- NEW CONDUIT & WIRING AS SHOWN &/OR INDICATED.
- - - EXIST. CONDUIT & WIRING AS SHOWN, REMOVE.
- - - EXIST. CONDUIT & WIRING AS SHOWN, LEAVE CONDUIT IN PLACE, REMOVE CONDUCTORS.
- NEW HEAVY DUTY SAFETY SWITCH, SIZE, ETC. AS SHOWN.
- ⊙ MOTOR OUTLET, SIZE, VOLTAGE, ETC. AS SHOWN.
- ⊕ MANUAL MOTOR SWITCH V/OVERLOAD PROTECTION.
- ⊙ POINT OF CONNECTION, NEW TO EXIST.



**ELEVATION - DEMOLITION WORK**  
NO SCALE



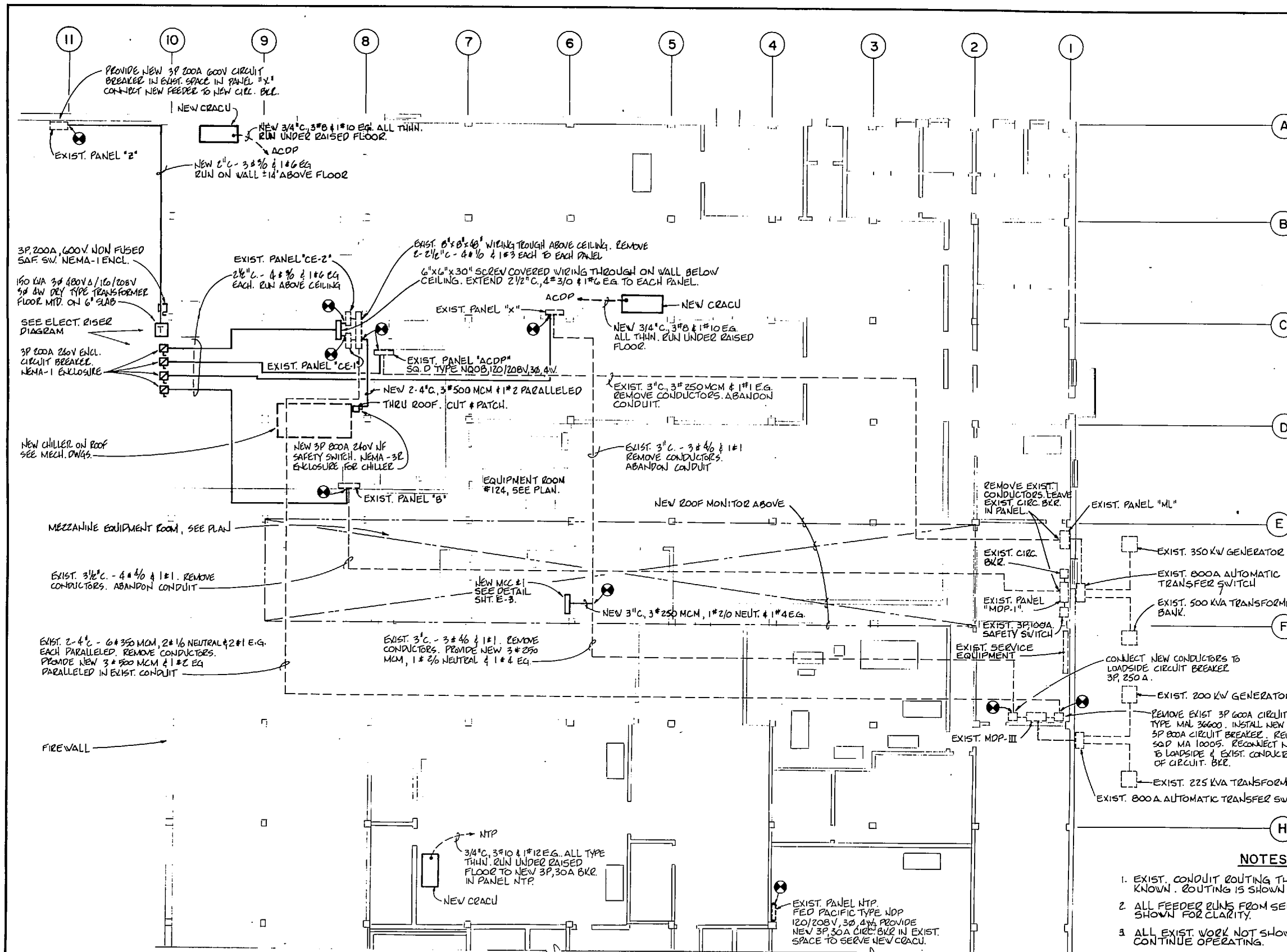
**ELEVATION - NEW WORK**  
NO SCALE



		<b>1E-1</b>	
		HENRY VON OEBEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402	
DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJUNE, NORTH CAROLINA		NAVAL FACILITIES ENGINEERING COMMAND CAMP LEJUNE, NORTH CAROLINA	
DES. DER DR. SMC CHK. DER		MARINE CORPS BASE REPLACE EXISTING CHILLERS BLDG. NO. 62 & 1101	
SUBMITTED BY: <i>[Signature]</i> REVIEWED BY: <i>[Signature]</i> DATE:		ELECTRICAL WORK - BLDG. NO. 62	
NAVFACTORY TO:		SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	NAVFAC DRAWING NO.: <b>4126726</b>
SCALE: GRAPHIC SPEC.		CONSTR. CONTR. NO. <b>NO2470-84-B-7911</b>	SHEET 10 OF 12



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

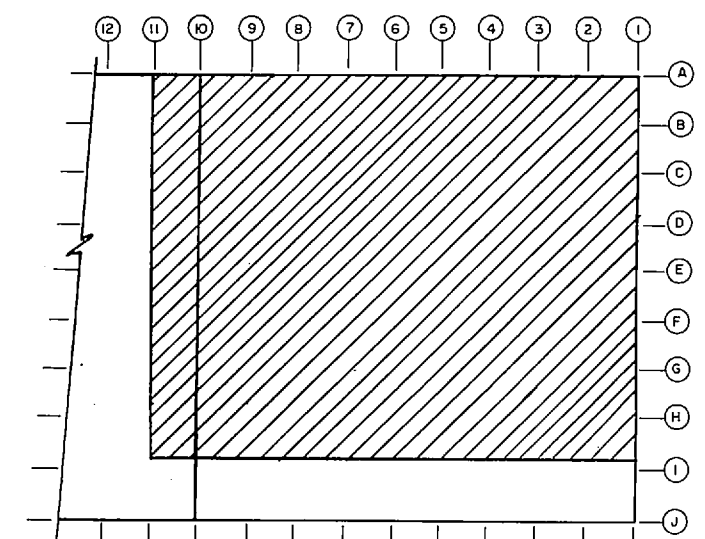


### ELECTRICAL LEGEND

- EXISTING FEEDER AND/OR BRANCH CIRCUIT CONDUIT & WIRING. SEE INDICATION FOR EACH RUN.
- - - EXISTING FEEDER AND/OR BRANCH CIRCUIT CONDUIT & WIRING. REMOVE.
- NEW FEEDER AND/OR BRANCH CIRCUIT CONDUIT & WIRING. SIZES, ETC. AS SHOWN.
- NEW HOME RUN TO PANEL, MCC, ETC. INDICATED.
- EXISTING EQUIPMENT, ETC. AS SHOWN.
- NEW EQUIPMENT, ETC. AS SHOWN.
- HEAVY DUTY SAFETY SWITCH. SIZE, ETC. AS SHOWN.
- ⊗ COMBINATION MAGNETIC MOTOR STARTER AS SHOWN.
- ⊙ MOTOR CONNECTION. HP, ETC. AS SHOWN.
- ~ SHORT LENGTH FLEXIBLE METAL CONDUIT. SAME SIZE AS FEEDER, BRANCH CIRCUIT, ETC.
- CONNECTION POINT, NEW WORK TO EXISTING WORK.

### NOTES

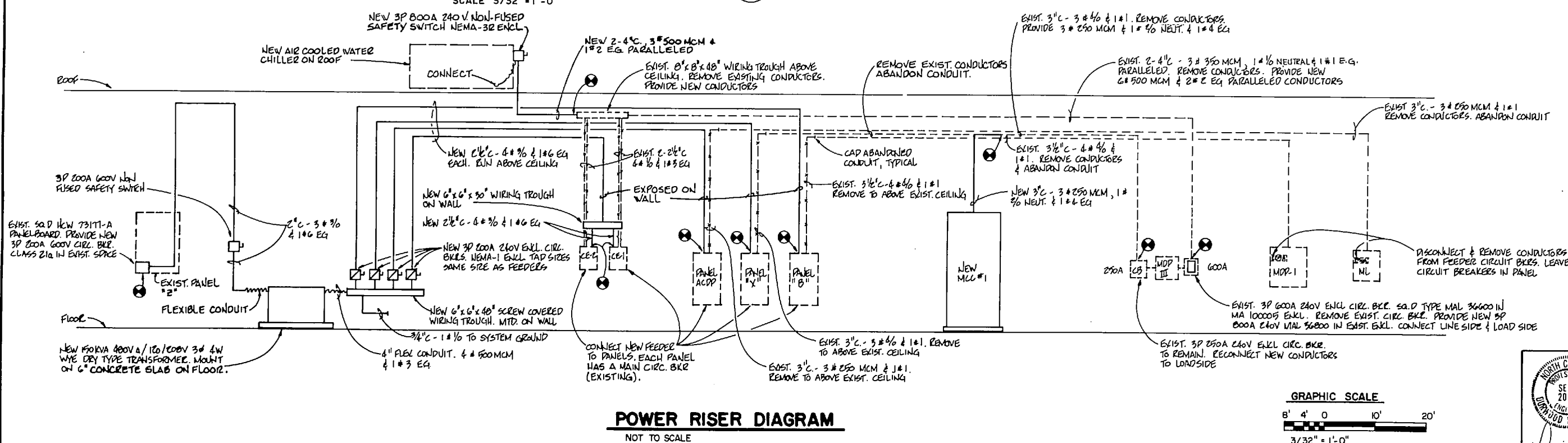
1. EXIST. CONDUIT ROUTING THROUGH BUILDING NOT KNOWN. ROUTING IS SHOWN SCHEMATICALLY.
2. ALL FEEDER RUNS FROM SERVICE EQUIPMENT NOT SHOWN FOR CLARITY.
3. ALL EXIST. WORK NOT SHOWN SHALL REMAIN & CONTINUE OPERATING.



KEY PLAN - BLDG. # 1101  
NOT TO SCALE

### ELECTRICAL FLOOR PLAN

SCALE 3/32" = 1'-0"



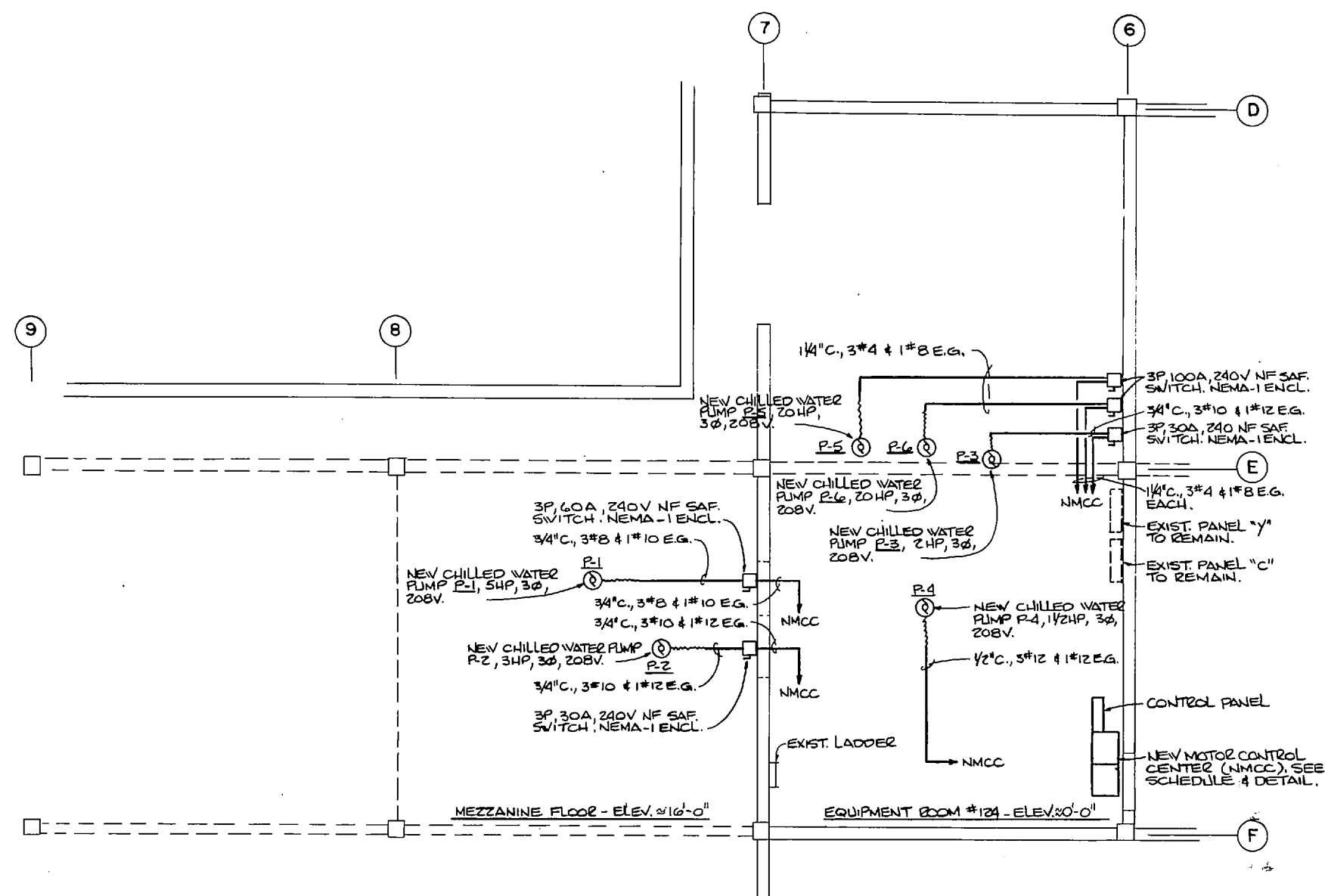
### POWER RISER DIAGRAM

NOT TO SCALE

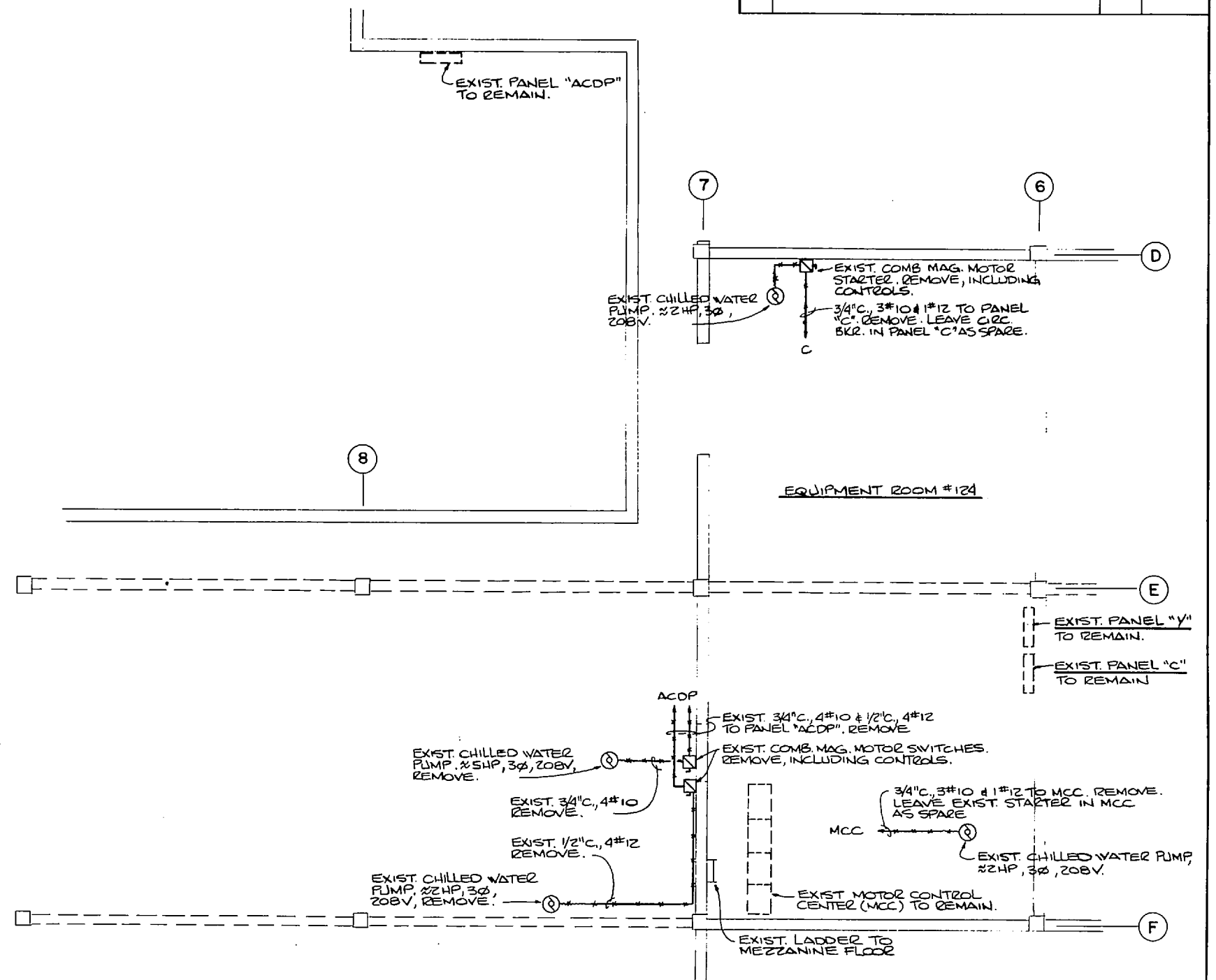
		<b>E-2</b>	
		DEPARTMENT OF THE NAVY <b>MARINE CORPS BASE</b> CAMP LEJEUNE, NORTH CAROLINA	
DES. DER BR. WPU CHK. DER	MARINE CORPS BASE CAMP LEJEUNE, N.C. REPLACE EXISTING CHILLERS BLDG. NO. 62 B 1101	ELECTRICAL WORK - BLDG. NO. 1101	NAVFAC DRAWING NO. 4126727
SUBMITTER BY: <i>[Signature]</i> REGION DIR. <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> SATISFACTORY TO: <i>[Signature]</i>	DATE: _____	SIZE: <b>F</b> CODE IDENT. NO.: <b>80091</b>	CONSTR. CONTR. NO. NS2470-04-B-7911 SCALE: GRAPHIC SPEC. 05-04-7911 SHEET 11 OF 12



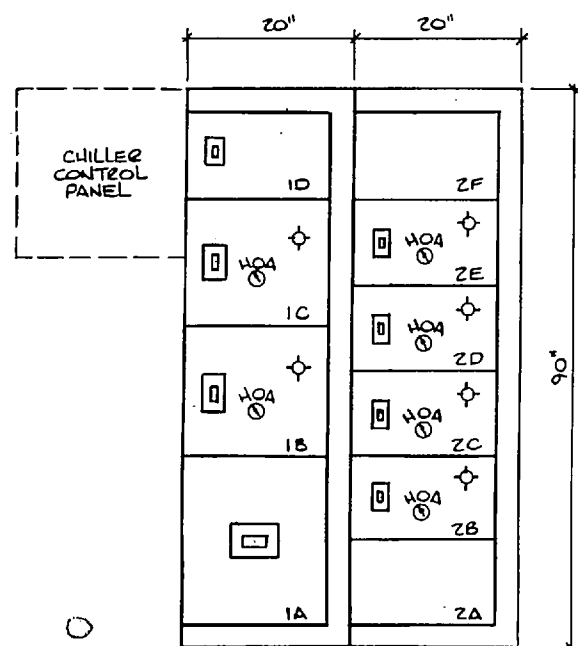
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



**ELECTRICAL NEW WORK PLAN**  
SCALE 1/4" = 1'-0"



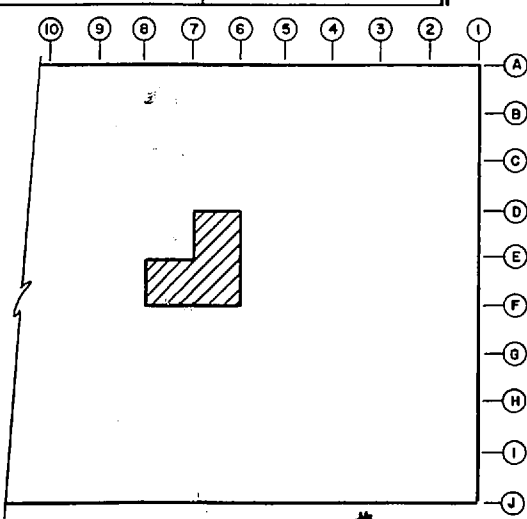
**ELECTRICAL DEMOLITION PLAN**  
SCALE 1/4" = 1'-0"



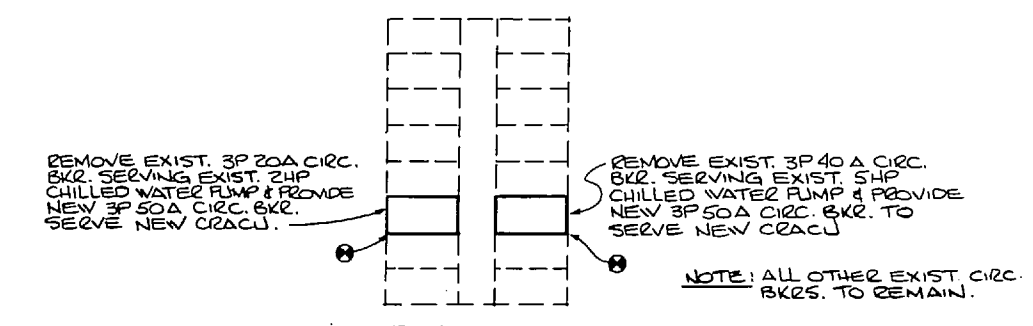
**DETAIL - NEW MOTOR CONTROL CENTER (NMCC)**  
NO SCALE

NEW MOTOR CONTROL CENTER SCHEDULE (NMCC)						
SECTION	DESIGNATION	PUMP	STARTER/CIRC. BKR. ETC.	HP	LOAD CONDUIT & WIRING	REMARKS
1A	INCOMING LINE & MAIN C.B.	-	3P, 250A, 240V MAIN C.B.	-	3" C, 3# 250, 1# 2/0 N, 1# 2 E.G.	
1B	CHILLED WATER PUMP	P-6	FVNR SIZE 3 C.B. COMB.	20	1 1/2" C, 3# 4 & 1# 8 E.G.	HOA SW. & GREEN ON PILOT LIGHT
1C	CHILLED WATER PUMP	P-5	FVNR SIZE 3 C.B. COMB.	20	1 1/2" C, 3# 4 & 1# 8 E.G.	HOA SW. & GREEN ON PILOT LIGHT
1D	CONTROL PANEL POWER	-	1P 20A CIRC. BKR.	-	1/2" C, 2# 12 & 1# 12 E.G.	120V POWER TO CONTROL PANEL
2A	SPACE	-	-	-	-	
2B	CHILLED WATER PUMP	P-1	FVNR SIZE 1 C.B. COMB.	5	3/4" C, 3# 8 & 1# 10 E.G.	HOA SW. & GREEN ON PILOT LIGHT
2C	CHILLED WATER PUMP	P-2	FVNR SIZE 1 C.B. COMB.	3	3/4" C, 3# 10 & 1# 12 E.G.	
2D	CHILLED WATER PUMP	P-3	FVNR SIZE 1 C.B. COMB.	2	3/4" C, 3# 10 & 1# 12 E.G.	
2E	CHILLED WATER PUMP	P-4	FVNR SIZE 1 C.B. COMB.	1/2	1/2" C, 3# 12 & 1# 12 E.G.	
2F	SPACE	-	-	-	-	

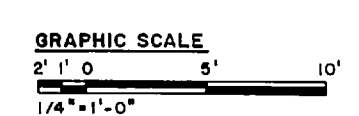
CB CIRCUIT BREAKER  
 COMB. COMBINATION  
 HOA HAND-OFF-AUTO MOTOR SWITCH  
 SW SWITCH  
 FVNR FULL VOLTAGE NON-REVERSING  
 E.G. EQUIPMENT GROUND



**KEY PLAN - BLDG. #1101**  
NO SCALE



**DETAIL - EXISTING PANEL ACDP**  
NO SCALE



HENRY VON OEBEN & ASSOCIATES CONSULTING ENGINEERS & PLANNERS WILMINGTON, NORTH CAROLINA 28402		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DES. DER. 2771 CHK. DER. SUBMITTED BY DESIGN DIR. APPROVED SATISFACTORY TO:		MARINE CORPS BASE CAMP LEJEUNE, N.C. REPLACE EXISTING CHILLERS BLDG. NOS. 62 & 1101 ELECTRICAL WORK - EQPT. RM / MEZZ. - BLDG. NO 1101 SIZE CODE IDENT. NO. F 80091 NAVFAC DRAWING NO. 4126728 CONSTR. CONTR. NO. N62470-64-B-7911 SCALE: GRAPHIC SPEC. 05-84-7911 SHEET 12 OF 12	

BUDG. 62

1101