EQUIPMENT TABLE

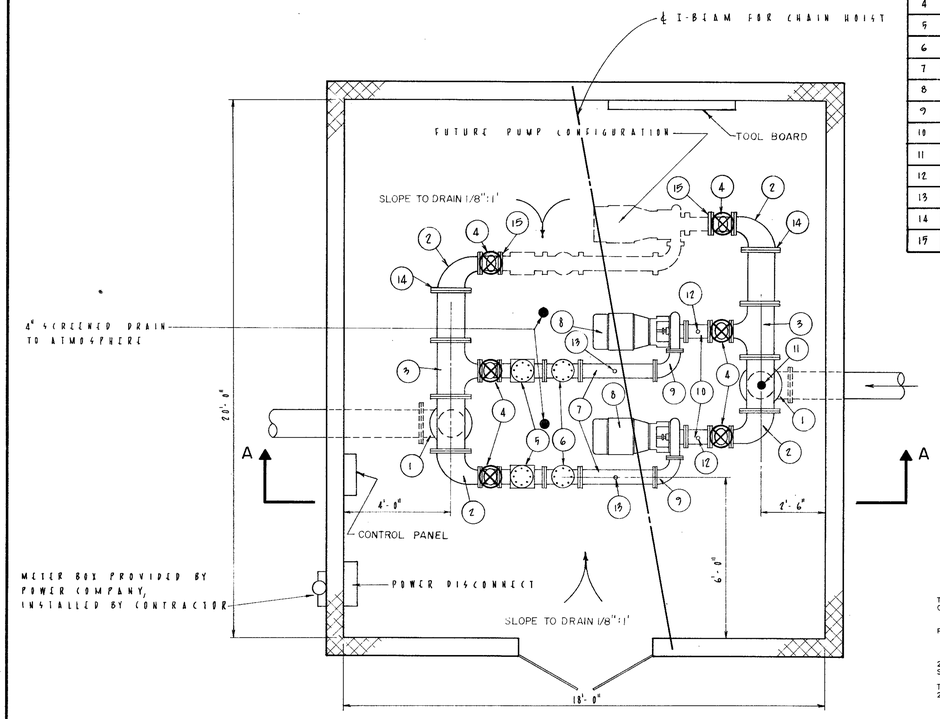
Nº	DESCRIPTION	QUANTITY
1	12" TEE	2
2	12" x 6" REDUCING ELBOW	4
3	12" x 6" TEE	2
4	6" GATE VALVE (O.S.&Y)	6
5	6" PUMP CONTROL VALVE	2
6	6" CHECK VALVE	2
7	6" PIPE (LENGTH - 55"±)	2
8	BOOSTER PUMP	2
9	6" x 5" ELBOW	2
10	6" PIPE (LENGTH = 12")	2
11	PRESSURE SWITCH (LOW SUCTION)	1
12	SUCTION PRESSURE GAUGE	2
13	DISCHARGE PRESSURE GAUGE	2
14	12" FLANGE PIPE (12" LENGTH)	2
15	6" BLIND FLANGE	2

PANELBOARD 120/240, 3ϕ, 4W, S/N, GROUND BUS — Surface Mounted
TYPE SQ "D" QO CIRCUIT BREAKER LOAD CENTER — 22,000 AC
CONNECTED LOAD 39 KW — 27 Poles, PUMPING STATION

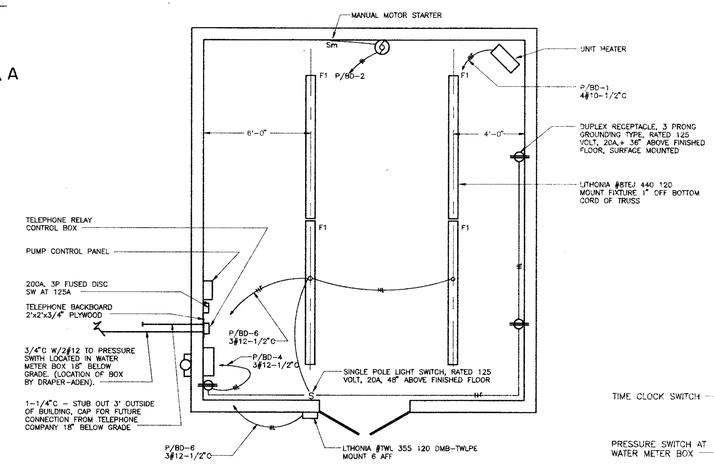
CIRCUIT NO	CONNECT TO	CIRCUIT BREAKER POLES	AMPS	FRAME	60A MCB (Note A)	CIRCUIT BREAKER FRAME	AMP	POLES	CONNECT TO	CIRCUIT NO
1	UNIT HEATER	3	25	QD		QD	15	1	EXHAUST FAN	2
3	PUMP CONTROLS	1	20	QD		QD	20	1	RECEPTACLE	4
5	SPARE	1	20	QD		QD	20	1	LIGHTING	6
7	SPARE	1	20	QD		QD	20	1	SPARE	

ϕA ϕB ϕC

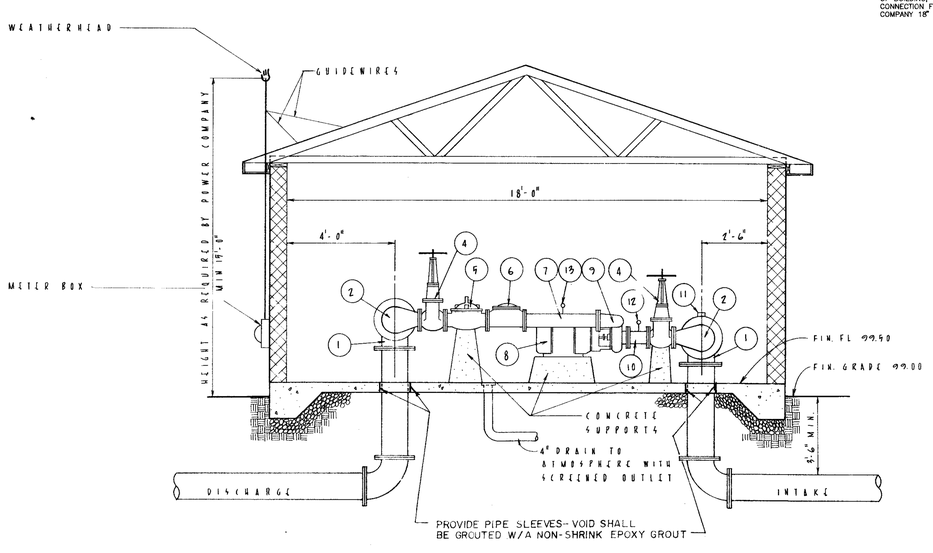
NOTE A: Do not use phase "B" for any single pole branch circuit. Phase "B" is the high leg.



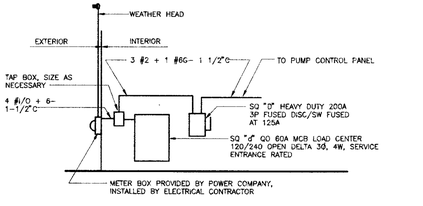
PLAN
SCALE: 3/8" = 1'-0"



POWER & LIGHTING PLAN
(NOT TO SCALE)

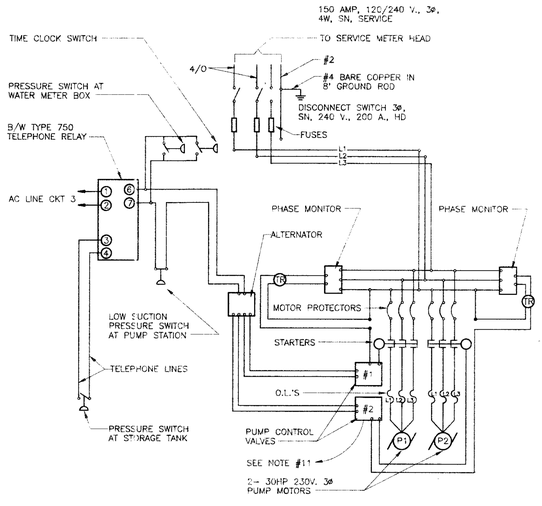


SECTION A-A
SCALE: 3/8" = 1'-0"



PUMPING STATION RISER DIAGRAM
(NOT TO SCALE)

GROUNDING
1/2"C W/ 1 #4 TO GROUNDING ROD (5/8" O x 8'
1/2"C W/ 1 #4 TO WATER MAIN



CONTROL SCHEMATIC
(NOT TO SCALE)

PUMP STATION NOTES:

1. MINIMUM CLEARANCE BETWEEN FLOOR AND PUMP MOTORS, GATE VALVES, CONTROL VALVES, CHECK VALVES AND/OR HORIZONTAL PIPING SHALL BE 12 INCHES.
2. PUMP MOTORS, VALVES SHALL BE SUPPORTED ON CONCRETE PEDESTALS.
3. CONTRACTOR SHALL PROVIDE NON-CORROSIVE DRAIN PIPING FROM SOLENOID VALVE EXHAUST PORTS ON THE PUMP CONTROL VALVES TO THE FLOOR DRAIN.
4. PRESSURE GAGES SHALL BE AS MANUFACTURED BY HELICOID DIVISION, BRISTOL BABCOCK, INC. OR EQUAL, AS DESCRIBED IN THE SPECIFICATIONS. GAGES INSTALLED ON THE SUCTION SIDE OF THE PUMPS SHALL BE COMPOUND GAGES.
5. PRESSURE SWITCHES SHALL BE AN ASCO TRIPOINT PRESSURE SWITCH, SERIES SA. SWITCH UNIT AT PUMP STATION SHALL BE CATALOG NO. SA10A. SWITCH UNIT AT TANK SHALL BE CATALOG NO. SA21A. PRESSURE TRANSDUCER SHALL BE CATALOG NO. TE20A11.
6. CONTRACTOR SHALL PROVIDE THE FOLLOWING ALARMS FOR THE PUMP STATION: POWER FAILURE, PUMP FAILURE. DETAILS OF THE ALARM SYSTEM ARE INCLUDED IN THE SPECIFICATIONS.
7. THE FLOOR SHALL SLOPE 1/8 PER FOOT TO THE FLOOR DRAINS.

PUMP STATION OPERATION

The storage tank level is sensed by a pressure switch located at the tank. When the water level falls below a set point, the pressure switch closes. The signal is sent to the pump station via telephone lines where it is received by a telephone relay. The telephone relay activates the pump starter, designated by the pump alternator, and the solenoid pilot valve is actuated, which activates the pump control valve. When the tank reaches full elevation, the pressure switch opens and deactivates the circuit to the pump station. The solenoid pilot valve is de-energized and the pump control valve begins to close slowly. When the valve is closed, the limit switch assembly on the pump control valve releases the pump starter and the pump stops. The pump suction line is equipped with a pressure switch which prevents the pumps from operating when the pressure is below 10 p.s.i.

In addition, a backup control system will be utilized. A pressure switch will be located just outside the pumping station in a water meter box. When the pressure at this point equals the low level set point for the water storage tank, the pump starter will be activated, designated by the pump alternator, and the solenoid pilot valve is activated, which activates the pump control valve. When the pressure outside the pump station is approximately 5 psi higher than the tank cut-off, the pressure switch opens and deactivates the circuit. The solenoid pilot valve is de-energized and the pump control valve begins to close slowly. When the valve is closed, the limit switch assembly on the pump control valve releases the pump starter and the pump stops. This control system shall be used only as a backup and shall be adjusted in the field to operate as described above. The control system shall also be set up so that the station can be operated on a time-clock basis if required. The time clock and switch shall be provided as part of this project.

ELECTRICAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE LATEST REVISION AND ALL LOCAL BUILDING CODES.
2. ALL WIRING SHALL BE RUN IN RIGID CONDUIT; MINIMUM SIZE SHALL BE 3/4 INCH. ALL EQUIPMENT CONNECTIONS SHALL BE MADE IN LIQUID-TIGHT FLEXIBLE CONDUIT.
3. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.
4. ALL WIRE SHALL HAVE INSULATION EQUAL TO TYPE THWN.
5. EQUIPMENT INSTALLATION SHALL COMPLY WITH ALL EQUIPMENT MANUFACTURERS' RECOMMENDATIONS.
6. CONTRACTOR SHALL COORDINATE ELECTRIC SERVICE WITH THE POWER COMPANY PAY HOOKUP FEES, AND PROVIDE ANY ADDITIONAL EQUIPMENT REQUIRED TO MAKE THE PUMP STATION OPERATIONAL.
7. CONTRACTOR SHALL COORDINATE WITH TELEPHONE COMPANY TO PROVIDE CONTROL CIRCUITS AND PAY ALL CONSTRUCTION AND CONNECTION FEES UNDER THIS CONTRACT.
8. PUMP CONTROL VALVES SHALL BE CONNECTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
9. PRESSURE SWITCHES SHALL BE ASCO TRIPOINT ADJUSTABLE DEADBAND SERIES SA OR EQUAL.
10. MOTOR STARTERS SHALL BE PROVIDED WITH HAND-OFF AUTOMATIC SWITCHES AND HOUR METERS.
11. PUMP CONTROL VALVE SHALL BE SUPPLIED WITH 2-POLE LIMIT SWITCH.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROLS AND OPERATION ASSOCIATED WITH THE PUMP STATION. CONTRACTOR SHALL CONNECT TO THE PRESSURE SWITCH AT THE WATER STORAGE TANK - CONTRACT II.

COMMONWEALTH OF VIRGINIA
FREDERICK T. M. PRIBBLE
No. 10055
PROFESSIONAL ENGINEER

DRAPER - ADEN ASSOCIATES, INC. CONSULTING ENGINEERS RICHMOND, VIRGINIA	DESIGNED FTP DRAWN HLJ CHECKED JNL DATE 3/16/88	TEMPLE AVENUE WATER LINE EXTENSION MECHNICAL EQUIPMENT LAYOUT, ELECTRICAL PLAN & DETAILS COUNTY OF PRINCE GEORGE, VIRGINIA	REVISIONS: 7/19/88 10/3/88
SCALE: AS NOTED	PLAN Nº T-20057 III	SHEET 3 OF 3	

american blueprint of columbia