



Onsite Engineering, Inc.

>1998 DIGITAL CLOSURE

Water, Wastewater and Stormwater Specialists

July 19, 2016

Mr. William Depietri
Capital Group Properties
259 Turnpike Road, Suite 100
Southborough, MA 01772

Re: Old Marlborough Road Wastewater Pump Station Evaluation
129 Parker Street Development

Dear Bill:

As requested by the Town of Maynard Department of Public Works, Capital Group Properties retained the services Onsite Engineering, Inc. to evaluate the Old Marlborough Road Pump Station in regard to the station servicing flows from the planned 129 Parker Street development. The new development, as proposed, is planned to include a supermarket, retail suites, sit down style and fast food restaurants, commercial space, residential dwelling units and senior living dwelling units. The building schedule associated with this development results in a projected maximum day sewage generation of 93,403 gallons based on maximum day flow criteria established by 310 CMR 15.000, Title 5.

In general, our evaluation consisted of a review of the pump station's condition, an inventory of the areas currently connected to the pump station, including the addition of the 129 Parker Street development, and the station's ability to comply with minimum design standards in accordance with Technical Release 16 (TR-16). Summaries of our findings are presented below.

EXISTING CONDITIONS

The Old Marlborough Road Pump Station is shown as Lot 32 on Map 29 of the Town of Maynard Assessor Maps. The station is located along the southern side of Old Marlborough Road between 54 and 56 Old Marlborough Road, and is approximately 330 feet from the intersection of Old Marlborough Road and Parker Street. The pump station is located within a Town owned parcel that is approximately 50-feet wide by 50-feet long. Sewage flows from the northeast and southwest of the pump station are combined in the sewer manhole to the north of the station. The sewage discharged from the station is directed to the Town's WWTF via a 10-inch force main.

The existing pump station utilizes an alternating duplex flooded suction pump system, contained within a 7'-6" diameter below grade fiberglass vessel as manufactured by Gorman-Rupp, and a concrete wet well with an approximate diameter of 10 feet. The station, which according to the Gorman-Rupp purchase order, was installed circa 1987. In addition to these features, the pump

279 East Central Street - PMB 241

Franklin, Massachusetts, 02038

Phone: 508-553-0616

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station's ancillary equipment includes a standby generator within an enclosure and a free standing electrical panel that includes the electrical service entrance, main panel board, and automatic transfer switch. The pumps are Gorman-Rupp model T6A3-B with 20 horsepower, 1,750 rpm motors capable of delivering 325 gallons per minute (gpm) at 28 feet total dynamic head (TDH).

Based on information obtained from the Maynard Sewer Department, the Old Marlborough Road Pump Station services the section of Old Marlborough Road between its intersections with Parker Street and Tobin Drive; Parker Street from its intersections with Field Street/North Street and Old Marlborough Road; Field Street; North Street; South Street; Balcom Lane; Woodbridge Road; B Street; and Marlborough Road from the intersection of North Street/Balcom Lane to Old Marlborough Road. The station also services flows from the Town's Puffer Road, Dettling Road, and Tobin Road pump stations and receives backwash water flow from the Quirk Well water treatment facility (approximately 15,000 gpd).

The proposed 129 Parker Street development is to be sited to the northwest of the pump station along the western side of Parker Street. The location of the sewer system within the 129 Parker Street was not evaluated as part of our work, however, we anticipate that the development would be serviced by new collection systems as needs as well as the existing 30,000 gpd pump station that previously served the site. It is our understanding that the existing pump station will be upgrade or repaired as necessary to make it fully functioning within the Town's requirements. As noted the existing site was previously configured with a pump station that fed wastewater from the 600,000 square feet of office space to the Old Marlborough Road pump station. A development of this size would be expected to generate approximately 30,000 gpd of maximum daily flow, based on Title 5 flow criteria, which is flow that the pump station was designed to accommodate.

In order to estimate the existing flows from outside the Parker Street development, available information from the Town of Maynard Assessor Office database for the service area described above was used in concert with with Title 5 (310 CMR 15.000) sewage design flow criteria of 110 gpd per bedroom to determine the sewage volume from existing residential dwellings. Given that the Old Marlborough Road pump station service area also includes the Puffer Road, Dettling Road, and Tobin Road pump stations, flows from those areas are represented in the next section using the design pumping rate rather than calculated theoretical design flow. The inventories of existing flows and flow from the 129 Parker Street development are summarized in Table 1.



Table 1
Sewer Service Area Flow Summary – Title 5 Flows
Old Marlborough Road Pump Station
Maynard, Massachusetts

Use	Unit	Title 5 Design Flow (gpd/unit)	Total (gpd)
Existing Old Marlborough Road Pump Station			
Residential Uses	578 bedrooms	110 gpd/bedroom	63,580
		Total	63,580
Proposed Parker Street Development			
Supermarket	68,000 sf	97 gpd/1,000 sf	6,596
Retail	152,242 sf	50 gpd/1,000 sf	7,612
Restaurant	557 seats	35 gpd/seat	19,495
Fast Food Restaurant	84 seats	20 gpd/seat	1,680
Commercial - Office	20,000 sf	75 gpd/1,000 sf	1,500
Commercial - Gym	250 lockers	25 gpd/locker	6,250
Residential	262 bedrooms	110 gpd/bedroom	28,820
Senior Living	143 units	150 gpd/unit	21,450
		Total	93,403

We wish to note that Title 5 sewage design flow criteria represents the maximum 24 hour flow for a parcel based on its use and includes an estimated 200-percent factor of safety based on the actual average day sewage generation. Therefore, the anticipated average day flow (i.e., the actual sewage generated by a particular site) should be 50 percent of the calculated Title 5 flow (exclusive of Inflow & Infiltration I/I).

As shown in the Table 1, the Title 5 design flow for the existing service area is approximately 63,580 gpd. Adjusting this maximum day flow volume to an average flow, we anticipate that the average daily sewage flow generated for the existing service area, not including the flow from the three connected pump stations that contribute flow from outside the service area, would be approximately 31,790 gpd.

The 129 Parker Street development, as proposed, is planned to include a supermarket, retail, restaurants, office space, a gym, residential and senior living housing. Using Title 5 sewage design flow criteria for these uses, the estimated maximum day flow for the 129 Parker Street development would be 93,403 gpd. Combining this estimated flow with the present service area flow, this results in a theoretical maximum day flow of 156,983 gpd and an average calculated flow of approximately 78,492 gpd.

PUMP STATION EVALUATION & CONCLUSIONS

The evaluation of the Old Marlborough Road Pump Station involved assessing the pump station's ability to accommodate the proposed increases in incoming sewage flows in order to verify that no problematic flow issues exist that would preclude the station from operating properly when the new flows from the proposed 129 Parker Street development are brought online. In addition, we completed a review of the condition of the pump station to identify any deficiencies that may prevent the pump station from operating properly when receiving the additional flow.

On July 8, 2016, Onsite Engineering met with a representative from the Maynard Sewer Department to observe the existing pump station. During our visit, the existing operating conditions of the station were discussed with the Town's staff. Based on the discussion, it is our understanding that the station is generally functioning properly and is capable of handling present day peak flows without surcharging the system, however the pump station is also showing signs of its age and requires selected maintenance/repairs to address aging components.

It was explained to us that there are several already identified deficient items that need to be addressed at the station. These include; the replacement of 10-inch plug valve, the replacement of two check valves, the replacement of the 1-inch steel pipe from check valves to the air release valves, the replacement of two air release valves, and the replacement of gate valve for pump #2. Based on a proposal provided by Weston & Sampson Services, the repair work is estimated to be \$30,750.00. The staff also indicated to us that the pump station has not experienced an overflow event for at least the past 10 years. In addition to the repair work noted by Weston & Sampson, we also noted as part of our observations that the frame and cover to the wet well is not securely mounted to the wet well structure and that there is a loose LB socket in the wet well that should be addressed.

Following the review of pump station's existing conditions, the pump station's record information was reviewed at the Sewer Department Office and the Department of Public Works. Unfortunately, the available information regarding the pump station, including the original design drawings and operation and maintenance manual, were not available. We did, however, review the pump run time data available for the Old Marlborough Road and the Tobin Drive, Puffer Lane and Dettling Road pump stations. However, like the missing design information, the data is limited and only covered the periods from April 2015 to June 2016 (Puffer Lane PS) and May 2016 to June 2016 (for the remaining stations).

Using the information obtained from our review of the pump station, review of existing available information from the Town, and an inventory of the existing service area, we completed an analysis of the pump station's ability to accommodate the increased sewage flow from the 129 Parker Street Development, based on TR-16 minimum design requirements. In determining the infiltration component of the incoming flows associated with the present and future expansion of the sewage collection system, a rate of 250 gpd/in-dia-mile was assumed using 8-inch sewer pipe. A summary

of the applicable TR-16 design requirements, using flows reflecting the existing service area and the addition of the 129 Parker Street development is detailed in Table 2.

Table 2
TR-16 Evaluation Summary
Old Marlborough Road Pump Station
Maynard, Massachusetts

	Existing Service Area	Existing Service Area w/ Parker Street Re-Development
Service Area Flow – Average Day (Gallons)⁽¹⁾	31,790	78,492
Service Area Flow – Average Day (GPM)	22.1	54.5
Peak Hour Flow Rate (GPM)⁽²⁾	81.8	201.7
Contributing Pump Stations' Flow Rate (GPM)⁽³⁾	445	445
I/I Contribution (Gallons)⁽⁴⁾	3,523	3,636
Total I/I Contribution (GPM)	2.4	2.5
Peak Hour Design Flow (GPM)	529.2	649.2
Existing Station Capacity (GPM)	325 - 650	325 - 650
Force Main Velocity (Ft/Sec)⁽⁵⁾	1.33 – 2.66	1.33 – 2.66

- (1) Average day flow allocation based on 50 percent of Title 5 Design Flow.
- (2) Applied an interpolated peak hour factor of 3.7 using TR-16 "Relation of Extreme Discharges on Maximum and Minimum Days to the Average Daily Discharge of Domestic Sewage" based on average day to maximum day ratio of 1:2.
- (3) Combined flow rates Puffer Lane, Dettling Road, and Tobin Drive pump stations, and includes backwash flow rate into sewer from nearby water treatment facility (10 gpm).

- (4) I/I flow into system based on 9,300 linear feet of 8-inch diameter gravity sewer at 250 gpd/inch-diameter-mile for existing conditions, and 9,600 linear feet of 8-inch diameter gravity sewer at 250 gpd/inch-diameter-mile for existing conditions and Parker Street development addition.
- (5) Based upon the existing 10" diameter force main.

In accordance with present day standards based on TR-16, a duplex sewage pump station should handle peak wastewater flows from the tributary collection system with one pump out of service. For both the existing and proposed service area flows, the Old Marlborough Road pump station would be capable of meeting the peak hour flow rate with one pump out of service for the station's tributary service area. However, under a scenario where flow from each of the satellite pump stations (Puffer Lane, Dettling Road, and Tobin Drive) and backwash water from the water treatment facility is simultaneously introduced into the collection system, the station would need both pumps to be operating to meet that peak hour flow rate.

As, it was indicated to us that the pump station has not experienced an overflow event in over 10 years and that there has not been any historic issues with elevated levels within the wet well. In our opinion, a scenario where all three pump stations contribute flow simultaneously, the water treatment facility was backwashing and one pump at the Parker Street Station is out of service is highly unlikely and overly conservative and impractical to include in our analysis.

RECOMMENDATIONS

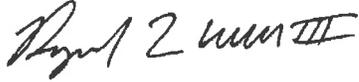
Based on our observation of the pump station and discussions with the Maynard Sewer Department staff, the Old Marlborough Road pump station has been effective in accommodating sewage flows from the contributing area and should be capable of accommodating flow from the expanded 129 Parker Street development without any adverse effects on the existing sewer system or users. However, that said, the pump station is approximately 30 years old and its overall condition is indicative of its age, thereby requiring selective maintenance to replace components that have reached their useful life.

A summary of recommended repairs by Weston & Sampson, which include replacement of a 10-inch plug valve, replacement of two check valves, new 1-inch steel piping between the check valves and air release valves, replacement of the air release valves, and replacement of the suction gate valve for pump #2, as well as addressing the loose frame and cover and LB box, should be undertaken prior to the 129 Parker Street development connecting to the municipal sewer.

We trust that this evaluation has met your current needs. If you have any questions or require any additional information, please feel free to contact us.

Sincerely,

Onsite Engineering, Inc.

A handwritten signature in black ink, appearing to read "Raymond L. Willis, III". The signature is written in a cursive, slightly stylized font.

Raymond L. Willis, III, P.E.
Vice President

Enclosures

EXHIBIT A

**OLD MARLBOROUGH ROAD PUMP STATION
SERVICE AREA**

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
1	B ST	3	330
3	B ST	3	330
4	B ST	4	440
5	B ST	3	330
6	B ST	3	330
8	B ST	4	440
3	BALCOM LN	4	440
5	BALCOM LN	3	330
7	BALCOM LN	8	880
8	BALCOM LN	4	440
9	BALCOM LN	4	440
10	BALCOM LN	0	0
1	DETLING RD	4	440
3	DETLING RD	4	440
5	DETLING RD	4	440
7	DETLING RD	4	440
2	FIELD ST	4	440
3	FIELD ST	3	330
4	FIELD ST	4	440
6	FIELD ST	3	330
8	FIELD ST	4	440
9	FIELD ST	4	440
10	FIELD ST	3	330
11	FIELD ST	3	330
12	FIELD ST	4	440
14	FIELD ST	3	330
15	FIELD ST	3	330
16	FIELD ST	3	330
17	FIELD ST	4	440
18	FIELD ST	3	330
19	FIELD ST	3	330
20	FIELD ST	3	330
21	FIELD ST	1	110
23	FIELD ST	3	330
25	FIELD ST	3	330
0	GREAT RD	0	0
253	GREAT RD	2	220
257	GREAT RD	4	440
263	GREAT RD	3	330
265	GREAT RD	3	330
267	GREAT RD	3	330
269	GREAT RD	3	330
271	GREAT RD	3	330
273	GREAT RD	3	330
275	GREAT RD	3	330
9	MARLBORO ST	4	440

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
10	MARLBORO ST	3	330
14	MARLBORO ST	2	220
15	MARLBORO ST	4	440
18	MARLBORO ST	4	440
21	MARLBORO ST	2	220
22	MARLBORO ST	4	440
23	MARLBORO ST	3	330
24	MARLBORO ST	2	220
28	MARLBORO ST	3	330
29	MARLBORO ST	4	440
30	MARLBORO ST	3	330
31	MARLBORO ST	3	330
33	MARLBORO ST	3	330
34	MARLBORO ST	2	220
37	MARLBORO ST	3	330
1	NORTH ST	4	440
2	NORTH ST	3	330
3	NORTH ST	3	330
4	NORTH ST	4	440
6	NORTH ST	3	330
8	NORTH ST	4	440
14	NORTH ST	4	440
16	NORTH ST	2	220
18	NORTH ST	2	220
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
15	OLD MARLBORO RD	3	330
17	OLD MARLBORO RD	3	330
19	OLD MARLBORO RD	4	440
20	OLD MARLBORO RD	3	330
21	OLD MARLBORO RD	3	330
22	OLD MARLBORO RD	4	440
23	OLD MARLBORO RD	3	330
24	OLD MARLBORO RD	2	220
25	OLD MARLBORO RD	4	440
26	OLD MARLBORO RD	3	330
27	OLD MARLBORO RD	3	330
28	OLD MARLBORO RD	3	330
29	OLD MARLBORO RD	3	330
30	OLD MARLBORO RD	5	550
31	OLD MARLBORO RD	3	330
32	OLD MARLBORO RD	3	330
33	OLD MARLBORO RD	4	440
34	OLD MARLBORO RD	3	330

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
35	OLD MARLBORO RD	3	330
36	OLD MARLBORO RD	3	330
37	OLD MARLBORO RD	4	440
38	OLD MARLBORO RD	3	330
39	OLD MARLBORO RD	4	440
40	OLD MARLBORO RD	3	330
41	OLD MARLBORO RD	4	440
42	OLD MARLBORO RD	3	330
43	OLD MARLBORO RD	3	330
44	OLD MARLBORO RD	3	330
45	OLD MARLBORO RD	4	440
46	OLD MARLBORO RD	4	440
47	OLD MARLBORO RD	3	330
48	OLD MARLBORO RD	2	220
49	OLD MARLBORO RD	3	330
50	OLD MARLBORO RD	3	330
51	OLD MARLBORO RD	3	330
52	OLD MARLBORO RD	4	440
53	OLD MARLBORO RD	4	440
54	OLD MARLBORO RD	4	440
55	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
63	OLD MARLBORO RD	0	0
0	PARKER ST	0	0
0	PARKER ST	0	0
0	PARKER ST	0	0
110	PARKER ST	3	330
112	PARKER ST	4	440
113	PARKER ST	3	330
115	PARKER ST	2	220
118	PARKER ST	3	330
119	PARKER ST	4	440
120	PARKER ST	2	220
122	PARKER ST	3	330
124	PARKER ST	8	880
126	PARKER ST	2	220
128	PARKER ST	3	330
129	PARKER ST	0	0
130	PARKER ST	4	440
132	PARKER ST	3	330
136	PARKER ST	3	330
138	PARKER ST	3	330
140	PARKER ST	2	220
141	PARKER ST	4	440

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
142	PARKER ST	6	660
145	PARKER ST	3	330
147	PARKER ST	3	330
155	PARKER ST	4	440
157	PARKER ST	4	440
159	PARKER ST	4	440
161	PARKER ST	3	330
163	PARKER ST	3	330
1	SOUTH ST	3	330
2	SOUTH ST	2	220
3	SOUTH ST	2	220
4	SOUTH ST	4	440
5	SOUTH ST	3	330
6	SOUTH ST	2	220
8	SOUTH ST	3	330
9	SOUTH ST	4	440
10	SOUTH ST	3	330
1	TIGER DR	0	0
0	TOBIN DR	0	0
23	TOBIN DR	3	330
1	VOSE HILL RD	4	440
2	VOSE HILL RD	4	440
3	VOSE HILL RD	4	440
4	VOSE HILL RD	4	440
6	VOSE HILL RD	4	440
8	VOSE HILL RD	4	440
1	WOODRIDGE RD	4	440
2	WOODRIDGE RD	3	330
3	WOODRIDGE RD	3	330
4	WOODRIDGE RD	3	330
5	WOODRIDGE RD	3	330
6	WOODRIDGE RD	3	330
7	WOODRIDGE RD	3	330
8	WOODRIDGE RD	3	330
9	WOODRIDGE RD	3	330
10	WOODRIDGE RD	3	330
11	WOODRIDGE RD	3	330
12	WOODRIDGE RD	3	330
13	WOODRIDGE RD	3	330
14	WOODRIDGE RD	3	330
15	WOODRIDGE RD	3	330
16	WOODRIDGE RD	3	330
17	WOODRIDGE RD	4	440
18	WOODRIDGE RD	3	330
19	WOODRIDGE RD	3	330
20	WOODRIDGE RD	3	330

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
22	WOODRIDGE RD	3	330
23	WOODRIDGE RD	3	330
25	WOODRIDGE RD	4	440

Total

574

63140

APPENDIX B

PUMP STATION PURCHASE ORDERS

ENGINEERING ORDER

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 9/4/87 DH:mr
Revisions _____

Location: MAYNARD, MASS.

MARLBORO ROAD

Station Serial 87-2670

Owner: _____ Engrg. Firm _____

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6' Outline Drawing No. 45533-005

Entrance Tube: 36" Dia. 5-1/2' long with standard parkway cover

Modification: STATION SHELL IS ADEQUATE FOR A BURIAL DEPTH OF 15 FEET

PIPING AND VALVE DATA

Suction Pipe Size 6 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 10 " Cast Iron

Located: (Side) RIGHT

Common Discharge Pipe Size 10 " Cast Iron

SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	6"	6"		
Valve, Plug	6"	6"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded (Increasing)	6" X 10"	6" X 10"		
Valve, Plug (3-Way)	N/R	10"		
Elbow	10"	N/R		

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	10"
Discharge Outlet F/G Polyester M. J. Fitting	10"

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ENGINEERING ORDER

GR WASTE WATER EQUIPMENT
 GORMAN-RUPP
 MANSFIELD, OHIO 44902

Date 9/4/87
 Revisions _____
 Serial 87-2670

PUMP AND MOTOR DATA

PUMP DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)	325 @ 28'	325 @ 28'		
Priming lift	6'	6'		
Total dynamic suction lift	7'	7'		
NPSH required	5'	5'		
NPSH available EXCESS WITH 3' S.F.	18.9	18.9		
Pump Model	T6A3-B	T6A3-B		
Pump Serial No.	861222	861223		
Impeller diameter	12-3/8"	12-3/8"		
G-R Mech. seal, tungsten-titanium carbide	YES	YES		
Base, V-Belt	YES	YES		
Pump speed				
Horizontal Electrical MOTOR DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	20	20		
RPM (FULL LOAD)	1750	1750		
Electrical characteristics: Phase/Hertz/Volts (WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)	B	B		
Enclosure, open drip-proof	YES	YES		
Manufacturer GORMAN RUPP	7500437	7500438		
Code letter	G	G		
Frame size	256T	256G		
Full load amps.	51.2	51.2		
V-BELT DRIVE DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance	19"	19"		
Sheave on Pump	Section 3V	Section 3V		
BUSHING # 2517	O.D. 14.0"	O.D. 14.0"		
BORE 1-1/2" KEY 3/8"	Grooves 2	Grooves 2		
Sheave on Motor	Section 3V	Section 3V		
BUSHING # 1610	O.D. 6.5"	O.D. 6.5"		
BORE 1-5/8" KEY 3/8"	Grooves 2	Grooves 2		
V-Belt Size (2) BELTS PER PUMP	3VX710	3VX710		
MANUFACTURER	DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

CERTIFIED RECIRCULATION PORT DRAWINGS INCLUDED IN SUBMITTAL DATA

CERTIFIED PUMP REPRIME PERFORMANCE TEST ARE REQUIRED FOR BOTH PUMPS FOR RECORD. TEST WILL BE CONDUCTED AFTER SUBMITTAL DATA IS APPROVED AND STATION IS RELEASED TO PRODUCTION.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/480 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

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ENGINEERING ORDER



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 9/4/87

Revisions _____

Serial 87-2670

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current ~~(is)~~ ^{XX} (is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04630

Main conduit size: _____ Motor branch circuit conduit: _____

Ground wire size: (MTR. BR.) # 8 Motor branch wire size: # 4 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL 22015 INT. CAP SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

MOTOR CONTROL	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	20	20		
Full load amps.	51.2	51.2		
Motor branch circuit breakers, Frame size	FAL	FAL		
Mfg. SQ "D" Amp rating	100	100		
Number	FAL32100	FAL32100		
Magnetic starters, Size	3	3		
Mfg. ALLEN BRADLEY Number	509-DOD	509-DOD		
3 overload coils per starter	W-69	W-69		
MOTOR BR. C/B INTER. CAP. AMPS RMS	10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS
Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNM)	SUMP PUMP C/B (QC)	LIGHTS & (QC) BLOWER C/B	DEHUMIDI-FIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. 15	2.8	15	15	15	15

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

12' Bull Scale	LEAD PUMP	LAG PUMP	HIGH WATER ALARM
Cut-in feet	AS REQUIRED	AS REQUIRED	AS REQUIRED
Cut-out feet	AS REQUIRED	AS REQUIRED	MANUAL RESET

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ENGINEERING ORDER



GR WASTE
GORMAN-RUPP WATER
EQUIPMENT
MANSFIELD, OHIO 44902

Date 9/4/87

Revisions _____

Serial 87-2670

BELOW GROUND FIBERGLASS LIFT STATION

STANDARD CONTROL AND AUXILIARY APPARATUS

Automatic alternator
Air Pump, (2)
Air flow indicator
Humidistat
Thermostat
Convenience Outlet
Built-in dehumidifier
Digital

Panel Meter

High Pump Temperature Shutdown

Wet Well Liquid Level Transducer

Illuminated H-O-A Pump Mode Selectors
Air Pump Flow Indicator

AUH Enpo Sump Pump

Blower timer

Touch-up kit

Cabinet, storage

1 set Spare Parts, As follows:

- a) tungsten-titanium carbide mech. seal
- b) shaft sleeve
- c) inspection cover plate O-ring gasket
- d) rotating assembly O-ring gasket
- e) set impeller adjusting shims
- f) set rotating assembly adjusting shims
- g) Quart SAE 30 non-detergent(motor oil) seal lubricant

Elapsed Time Meters

Air Release Valves

Pump Drain Kits

SPECIAL MODIFICATIONS

THE MOTOR CONTROL WILL INCLUDE A LAG PUMP DELAY CIRCUIT TO PREVENT

SIMULTANEOUS MOTOR STARTS.

A STATION ALARM RELAY WILL BE PROVIDED TO MONITOR THE FOLLOWING ALARM CONDITIONS:

- A) HIGH WATER ALARM
- B) HIGH PUMP TEMPERATURE SHUTDOWN #1
- C) HIGH PUMP TEMPERATURE SHUTDOWN #2

ALARM LIGHT - 115VAC WEATHERPROOF LIGHT WITH RED GLOBE, GLOBE GUARD, JUNCTION BOX AND MOUNTING FIXTURE (SHIPPED LOOSE).

SUCTION AND DISCHARGE GAUGES - CONSISTS OF A RESILIENT MOUNTED PANEL WITH A 4" DIA. GLYCERIN FILLED PRESSURE GAUGE GRADUATED 0-140" WC AND A 4" DIA. GLYCERIN FILLED COMPOUND GAUGE GRADUATED -34" TO 34" WC, SHUT OFF VALVES AND FITTINGS. ONE GAUGE PANEL ASSEMBLY PROVIDED FOR EACH PUMP.

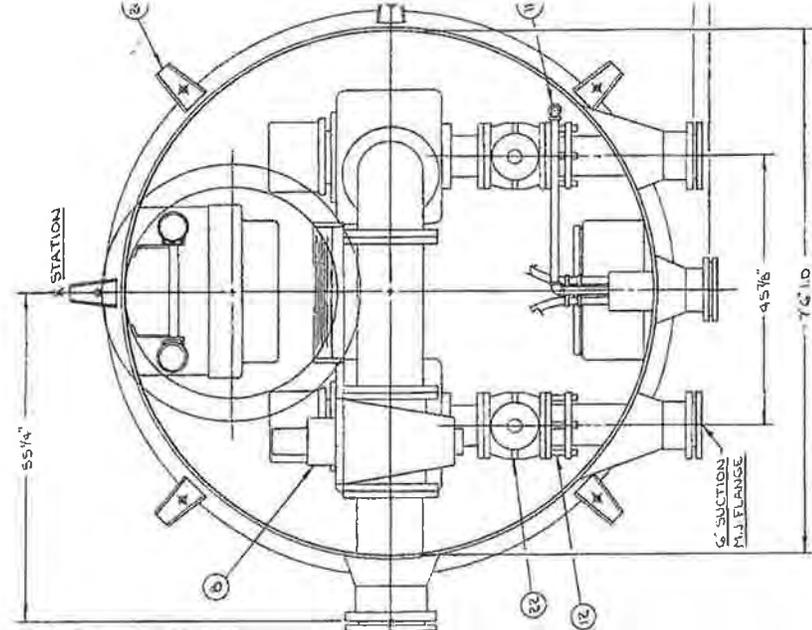
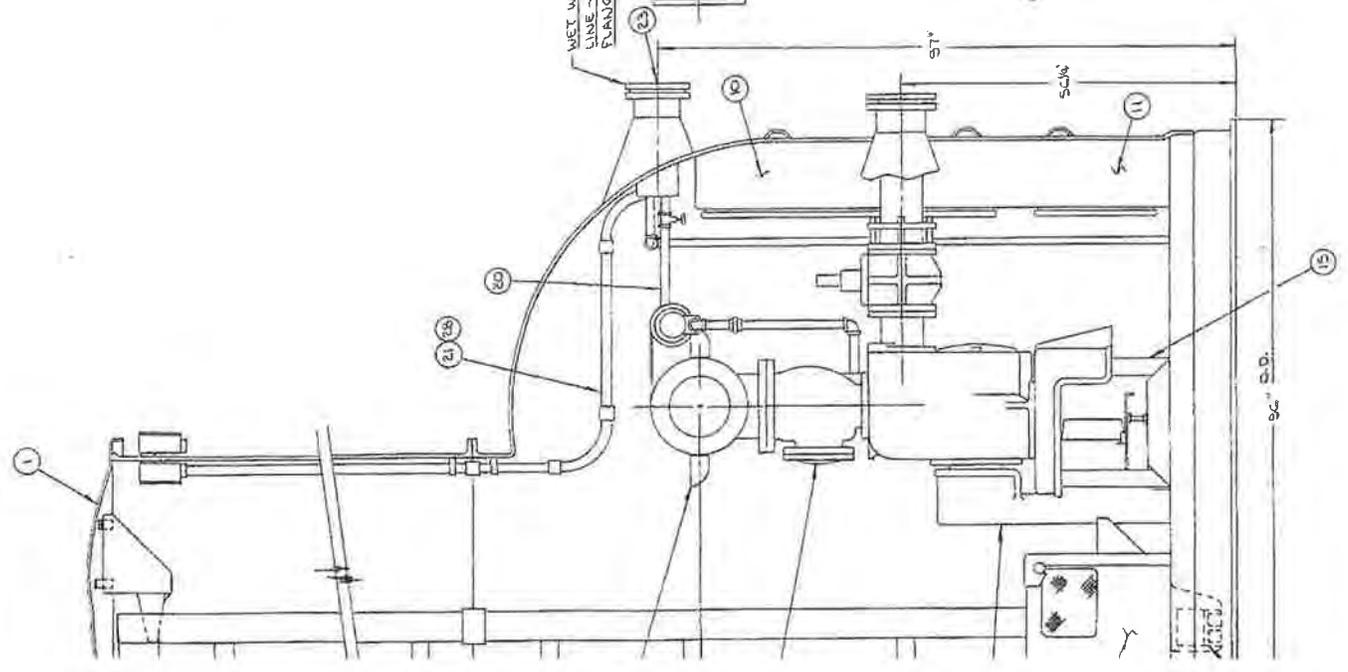
STATION HEATER 1300/1500 WATT - 1300/1500 WATT 115VAC, SPACE HEATER WITH CORD AND GROUNDING PLUG.

MASTER FILE COPY
DO NOT REMOVE

DATE	REV
11-17-70	1
11-17-70	2

ITEM	NAME	MAT'L & SIZE
1	ENTRANCE TUBE COVER	FRP 41" O.D.
2	DISCH. AIR DUCT	PVC 5" DIA.
3	FRESH AIR DUCT	PVC 5" DIA.
4	LADDER RAIL	FRP 1 1/2" x 3/4" L
5	LADDER RUNG	ALUM. 1 1/2" DIA.
6	ENTRANCE TUBE	FRP 36" I.D.
7	FLUORESCENT LIGHT	2-20 W. TUBES
8	DISCH. PLUG VALVE	C.I. 10" 5-WAY
9	DISCH. CHECK VALVE	C.I. 6" x 10"
10	CONTROL PANEL	FRP 26" x 19" x 12"
11	STORAGE COMPARTMENT	FRP 26" x 19" x 12"
12	FLANGED ADAPTER	C.I. 6" STYLE 1B7
13	PUMP	C.I. T6A3-B
14	BELT GUARD	STEEL
15	PUMP & MOTOR BASE	STEEL
16	MOTOR	FR. 25GT HP. 20 RPM. 1750

ITEM	NAME	MAT'L & SIZE
17	SUMP PUMP	C.I. 10006 P.H. @ 20"
18	SUMP PUMP DISCHARGE	PVC 1/2"
19	AIR RELEASE VALVE	C.I. 1"
20	AIR RELEASE DISCH.	PVC 1/2"
21	ENTRANCE CONDUIT	PVC 2"
22	SUCTION PLUG VALVE	C.I. 6"
23	BUBBLER CONNECTION	3/8" N.P.T.
24	HOLD DOWN BRACKET	SS.
25	STATION SHELL	FRP 7 1/2" I.D.
26	BOWMER (DEHUMID. HSG.)	FRP
27	DRIPSHELD	FRP
28	ALARM CONDUIT	PVC 3/4"



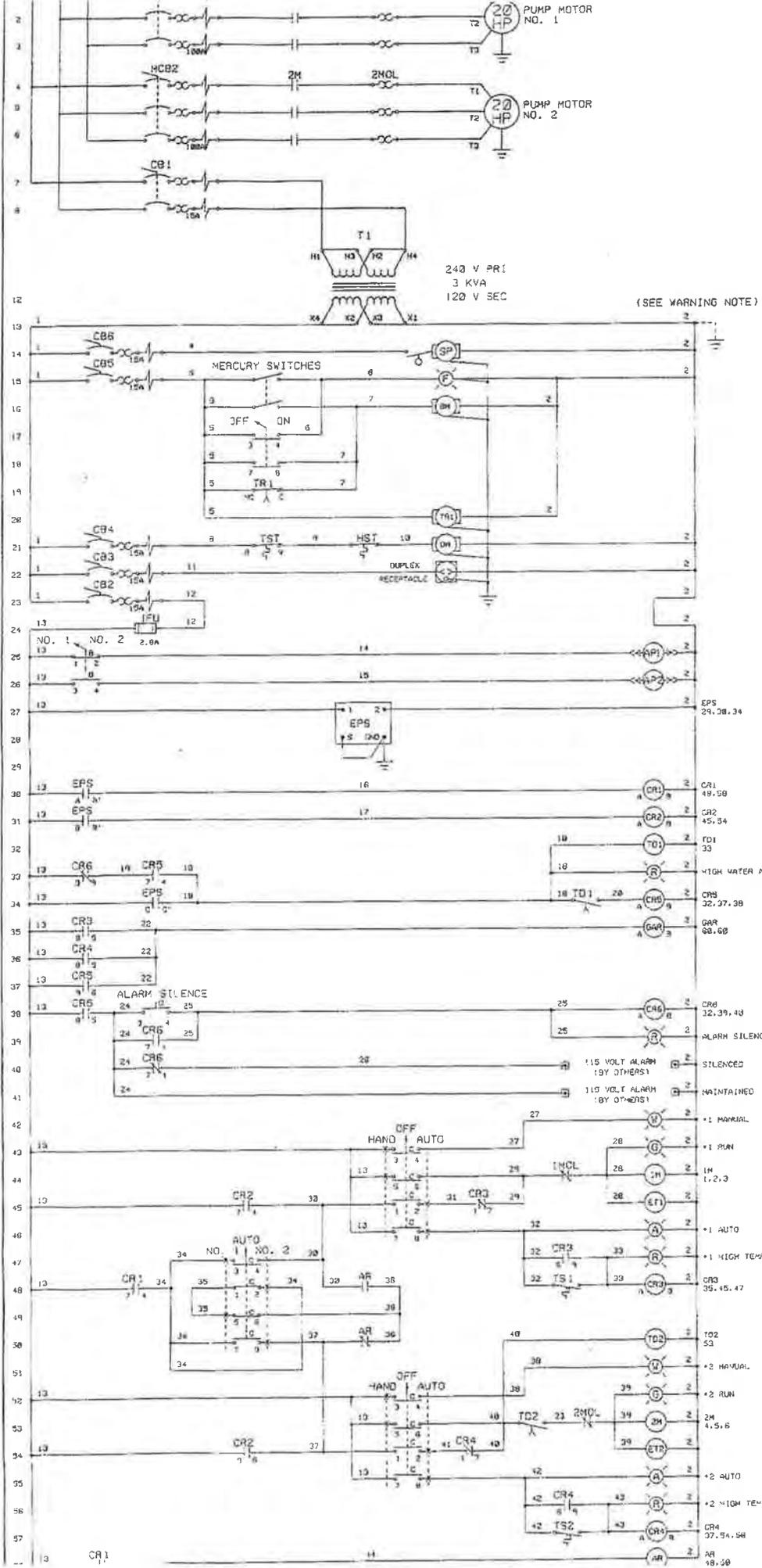
6" I.D. 10 RIGHT HAND

MARLBORO RD.
MAYNARD, MASS.
SERIAL NO. 87-2670

45533-005

THE GO
CORPORATION
MANNINGFIELD, MASS.

NAME: 7 1/2" DIA. FRP UN
LIFT STATION WITH D
DWG. C.H. CHK. D.L.W.
D 45533



LEGEND	DESCRIPTION
MCB1, MCB2	MOTOR CIRCUIT BREAKER *1.2
1M, 2M	MOTOR STARTER *1.2
1MOL, 2MOL	MOTOR OVERLOAD RELAY *1.2
CB1	120 VOLT SERVICE DISCONNECT
T1	POTENTIAL TRANSFORMER
CB2-CB6	120 VOLT CIRCUIT BREAKERS
SP	SUMP PUMP
F	STATION LIGHT-FLUORESCENT
BM	BLOWER MOTOR
TR1	BLOWER TIMER
DM	DEHUMIDIFIER
TST	THERMOSTAT
HST	HUMIDISTAT
FU	120 VOLT CONTROL FUSE
AP1, AP2	AIR PUMP *1.2
EPS	ELECTRONIC PRESSURE SWITCH
CR1	LEVEL RELAY-LEAD
CR2	LEVEL RELAY-LAG
TD1	TIME DELAY-POWER UP RESET
R	INDICATING LIGHT-RED
CR5	LEVEL RELAY-HIGH WATER
CR6	ALARM SILENCE RELAY
W	INDICATING LIGHT-WHITE
G	INDICATING LIGHT-GREEN
ET1, ET2	ELAPSED TIME METER *1.2
A	INDICATING LIGHT-AMBER
CR3, CR4	HIGH TEMP SHUTOFF RELAY *1.2
TS1, TS2	HIGH TEMP SENSORS *1.2
AR	ALTERNATOR RELAY
GAR	GENERAL ALARM RELAY
TD2	SECOND PUMP DELAY RELAY
----- WIRING BY OTHERS	
□ TERMINAL CONNECTION BY OTHERS	

WARNING
 CONNECT TO CONTROL PANEL GROUND LUG
 BEFORE APPLYING LINE POTENTIAL.
 CONTROL CIRCUIT TO BE GROUNDED BY
 USER IF CONDITIONS PERMIT.

ENGINEERING ORDER

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 8/24/88 DH:mr
Revisions 11/2/88 DH:mr

Location: MAYNARD, MASS.

VOSS HILL FARMS PUMP STATION

Station Serial 88-2867

Owner: TOWN OF MAYNARD

Engrg. Firm DUFRESNE-HENRY
WESTFORD, MA.

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6 Outline Drawing No. 45513-012 - REV "E"

Entrance Tube: 36" Dia. 5'6" long with standard parkway cover

Modification:

PIPING AND VALVE DATA

Suction Pipe Size 3 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 4 " Cast Iron

Located: (Side) LEFT HAND

Common Discharge Pipe Size 4 " Cast Iron

SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	3"	3"		
Valve, Plug	3"	3"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded	4"	4"		
Valve, Plug (3-Way)	4"	N/R		
Elbow	N/R	4"		
CONCENTRIC INCREASER	3" X 4"	3" X 4"		

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	4"
Discharge Outlet F/G Polyester M. J. Fitting	4"

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ENGINEERING ORDER

GR WASTE WATER EQUIPMENT
 GORMAN-RUPP
 MANSFIELD, OHIO 44902

Date 8/24/88
 Revisions 11/2/88
 Serial 88-2867

PUMP AND MOTOR DATA

PUMP DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)	165 @ 91'	165 @ 91'		
Priming lift	FLOODED	FLOODED		
Total dynamic suction lift	3'	3'		
NPSH required	4.5	4.5		
NPSH available <u>EXCESS W/3' S.F.</u>	23.4	23.4		
Pump Model	T3A3-B	T3A3-B		
Pump Serial No.	905120	905121		
Impeller diameter	8-3/4"	8-3/4"		
G-R Mech. seal, tungsten-titanium carbide	YES	YES		
Base, V-Belt	YES	YES		
Pump speed	1960	1960		
Horizontal Electrical MOTOR DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	15	15		
RPM (FULL LOAD)	1765	1765		
Electrical characteristics: Phase/Hertz/Volts (WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)	B	B		
Enclosure, open drip-proof <u>W/1.15 S.F.</u>	YES	YES		
Manufacturer <u>GORMAN-RUPP</u>	8401040B	8401041B		
Code letter	G	G		
Frame size	254T	254T		
Full load amps.	39.2	39.2		
V-BELT DRIVE DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance	15"	15"		
Sheave on Pump	Section 3V	Section 3V		
BUSHING # 1610	O.D. 4.50	O.D. 4.50		
BORE 1-1/2" KEY 3/8"	Grooves 4	Grooves 4		
Sheave on Motor	Section 3V	Section 3V		
BUSHING # 1610	O.D. 5.00"	O.D. 5.00"		
BORE 1-5/8" KEY 3/8"	Grooves 4	Grooves 4		
V-Belt Size (4) BELTS PER PUMP	3VX450	3VX450		
MANUFACTURER	DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/460 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

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ENGINEERING ORDER



Date 8/24/88
 Revisions 11/2/88
 Serial 88-2867

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current ~~is~~ (is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04934

Main conduit size: 2 Motor branch circuit conduit: 1-1/4

Ground wire size: (MTR. BR.) # 8 Motor branch wire size: # 6 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL22015 INT. CAP. SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

THE LIQUID LEVEL WILL BE MONITORED BY THE ELECTRONIC PRESSURE

MOTOR CONTROL		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower		15	15		
Full load amps.		39.2	39.2		
Motor branch circuit breakers, Mfg. <u>SQ "D"</u>	Frame size	FAL	FAL		
	Amp rating	70	70		
	Number	FAL32070	FAL32070		
Magnetic starters, Mfg. <u>ALLEN BRADLEY</u>	Size	2	2		
	Number	509-COD	509-COD		
3 overload coils per starter		W68	W68		
MOTOR BR. C/B INTER. CAP. AMPS RMS		10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS

Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNN)	SUMP PUMP C/B (QC)	LIGHTS & BLOWER C/B (QC)	DEHUMIDIFIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. <u>15</u>	<u>2.8</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

	LEAD PUMP	LAG PUMP	HIGH WATER ALARM
12 Full Scale	AS	AS	AS
Cut-in feet	REQUIRED	REQUIRED	REQUIRED
Cut-out feet	AS REQUIRED	AS REQUIRED	MANUAL RESET

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ENGINEERING ORDER



Date 8/24/88
Revisions 11/2/88
Serial 88-2867

BELOW GROUND FIBERGLASS LIFT STATION

STANDARD CONTROL AND AUXILIARY APPARATUS

- | | |
|---------------------------------------|---|
| Automatic alternator | AUH Enpo Sump Pump |
| Air Pump, (2) | Blower timer |
| Air flow indicator | Touch-up kit |
| Humidistat | Cabinet, storage |
| Thermostat | 1 set Spare Parts, As follows: |
| Convenience Outlet | a) tungsten-titanium carbide mech. seal |
| Built-in dehumidifier | b) shaft sleeve |
| Digital Panel Meter | c) inspection cover plate O-ring gasket |
| High Pump Temperature Shutdown | d) rotating assembly O-ring gasket |
| Wet Well Liquid Level Transducer | e) set impeller adjusting shims |
| Illuminated H-O-A Pump Mode Selectors | f) set rotating assembly adjusting shims |
| Air Pump Flow Indicator | g) Quart SAE 30 non-detergent(motor oil) seal lubricant |
| | Elapsed Time Meters |
| | Air Release Valves |
| | Pump Drain Kits |

SPECIAL MODIFICATIONS

A GENERAL ALARM RELAY WILL BE PROVIDED WITH ONE (1) SPDT CONTACT WIRED TO T/B'S TO MONITOR THE FOLLOWING ALARM CONDITIONS:

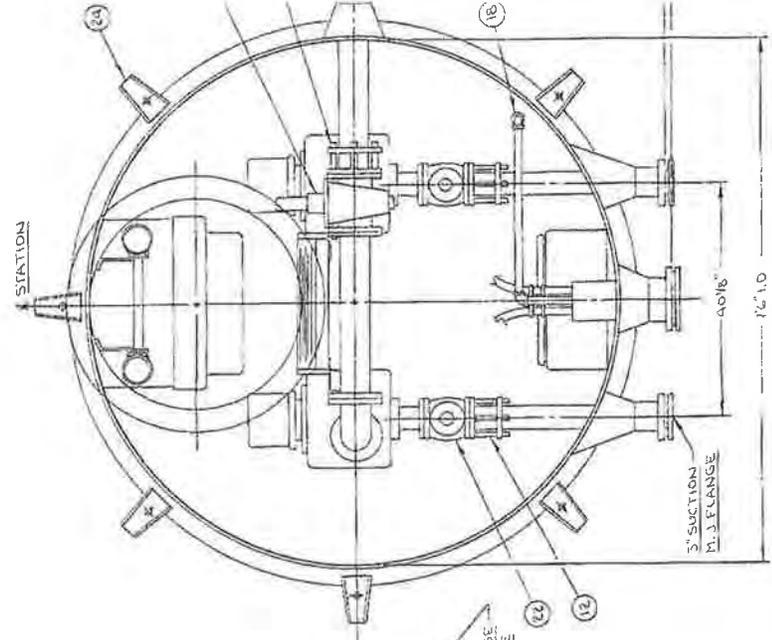
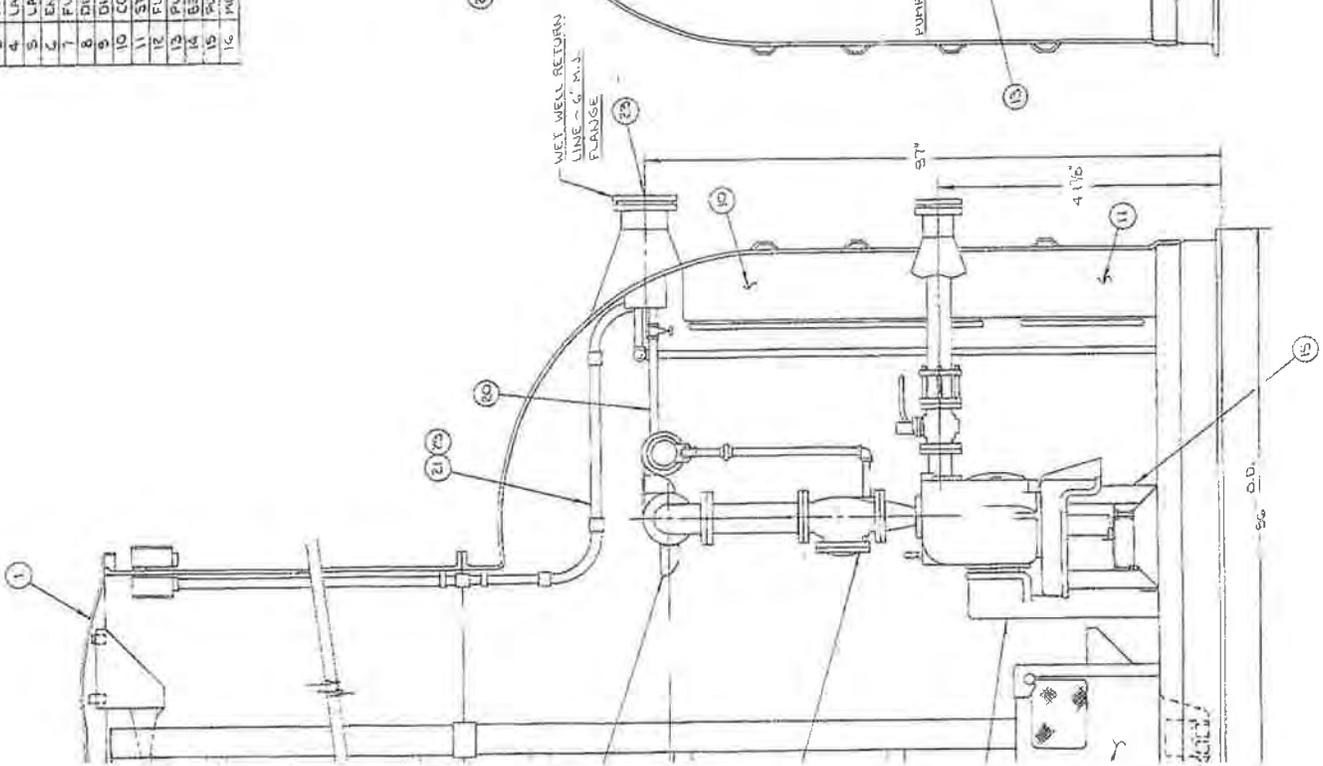
- A) HIGH WATER ALARM
- B) HIGH PUMP TEMPERATURE SHUTDOWN PUMPS #1 AND #2
- C) 120 V POWER FAILURE

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ITEM	DRAWING	DATE
1	10/15/80	10/15/80
2	11/20/80	11/20/80
3	12/20/80	12/20/80
4	1/28/81	1/28/81

ITEM	NAME	MAT'L & SIZE
17	SUMP PUMP	C.I. 1000G.P.M. @ 20
18	SUMP PUMP DISCHARGE	PVC 1 1/2"
19	AIR RELEASE VALVE	C.I. 1"
20	AIR RELEASE DISCH.	PVC 1 1/4"
21	ENTRANCE CONDUIT	PVC 2"
22	SUCTION PUMP VALVE	C.I. 3"
23	BUBBLER CONNECTION	3/8" ALPT.
24	HOLD DOWN BRACKET	SSY.
25	STATION SHELL	FRP 76" I.D.
27	DRIPSHIELD	FRP
28	FLANGED ADAPTER	C.I. 4" STYLE 127
29	ALARM CONDUIT	PVC 3/4"

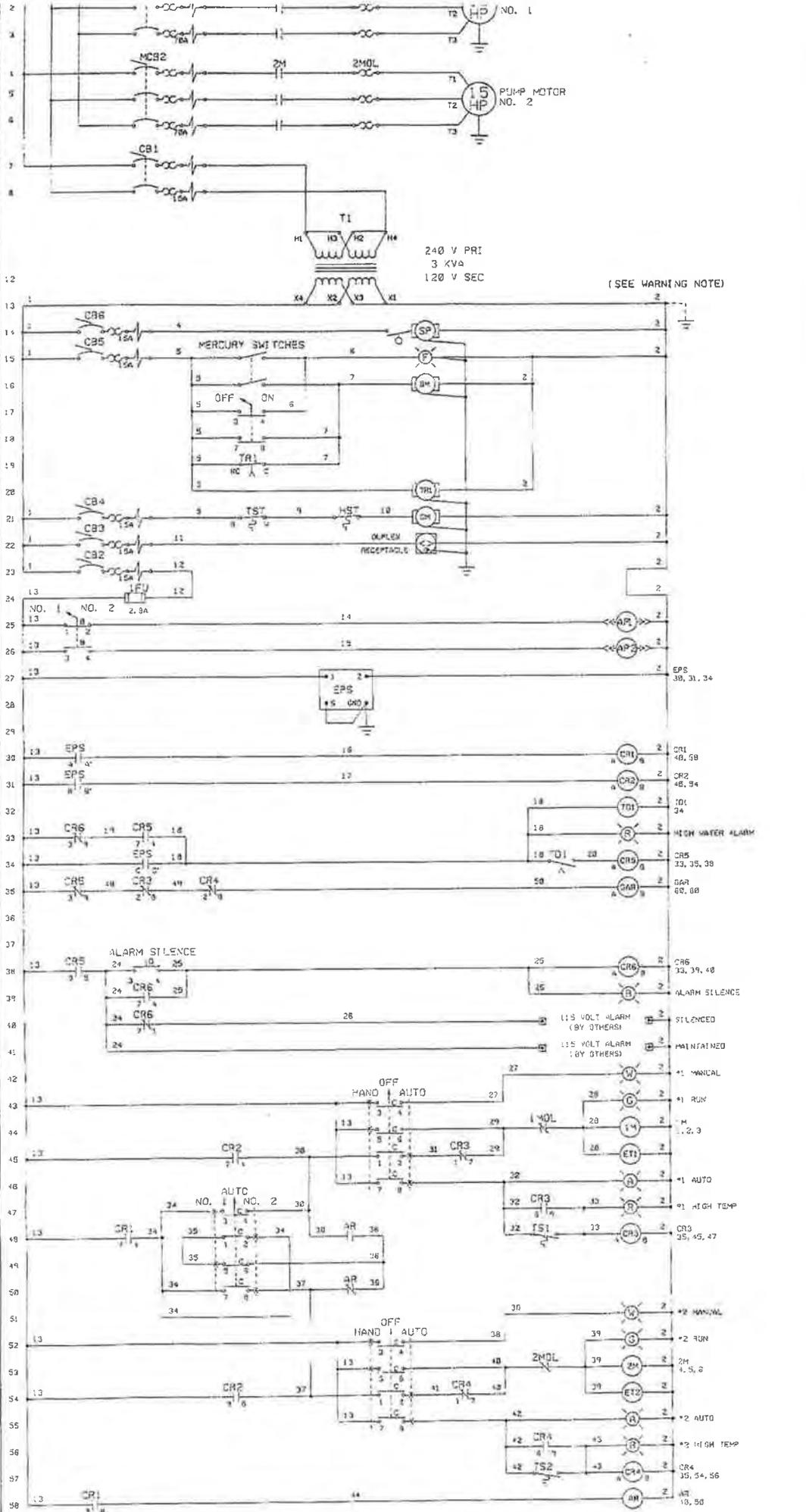
ITEM	NAME	MAT'L & SIZE
1	ENTRANCE TUBE COVER	FRP 41" O.D.
2	DISCH. AIR DUCT	PVC 5" DIA.
3	FRESH AIR DUCT	PVC 5" DIA.
4	LADDER RAIL	FRP 1/2" x 3/8" L
5	LADDER RUNG	ALUM. 1 1/2" DIA.
6	ENTRANCE TUBE	FRP 36" I.D.
7	FLUORESCENT LIGHT	2-TUB. TUBES
8	DISCH. PUMP VALVE	C.I. 4" 3-WAY
9	DISCH. CHECK VALVE	C.I. 4"
10	CONTROL PANEL	FRP 56" x 24" x 12"
11	STORAGE COMPARTMENT	FRP 24" x 19" x 12"
12	PUMP	C.I. 3" STYLE 127
13	PUMP	C.I. 3" STYLE 127
14	BELT GUARD	FRP
15	PUMP & MOTOR BASE	STEEL
16	MOTOR	FR. 2.5HP 115/230V 1750 RPM. 1750



NOSS HILL FARMS PUMP STATION
 MAYNARD, MASS.
 SERIAL NO. 8872867
 3.4.4. LEFT HAND DIS

THE GOR
 MANUFACTURING
 NAME: 76" DIA. FRP UNIT
 LIFT STATION WITH DC
 DRW: EN
 CHK: J.W.
 D 45513-012

4 5513-012 D



LEGEND	DESCRIPTION
MCB1, MCB2	MOTOR CIRCUIT BREAKER #1, 2
1M, 2M	MOTOR STARTER #1, 2
1MOL, 2MOL	MOTOR OVERLOAD RELAY #1, 2
CB1	120 VOLT SERVICE DISCONNECT
T1	POTENTIAL TRANSFORMER
CB2-CB6	120 VOLT CIRCUIT BREAKERS
SP	SUMP PUMP
F	STATION LIGHT-FLUORESCENT
BM	BLOWER MOTOR
TR1	BLOWER MOTOR
DM	DEHUMIDIFIER
TST	THERMOSTAT
HST	HUMIDISTAT
1FU	120 VOLT CONTROL FUSE
AP1, AP2	AIR PUMP #1, 2
EPS	ELECTRONIC PRESSURE SWITCH
CR1	LEVEL RELAY-LEAD
CR2	LEVEL RELAY-LAG
TD1	TIME DELAY-POWER UP RESET
R	INDICATING LIGHT-RED
CR5	LEVEL RELAY-HIGH WATER
CR6	ALARM SILENCE RELAY
W	INDICATING LIGHT-WHITE
G	INDICATING LIGHT-GREEN
ET1, ET2	ELAPSED TIME METER #1, 2
A	INDICATING LIGHT-AMBER
CR3, CR4	HIGH TEMP SHUTDOWN RELAY #1, 2
TS1, TS2	HIGH TEMP SENSORS #1, 2
AR	ALTERNATOR RELAY
GAR	GENERAL ALARM RELAY

--- WIRING BY OTHERS
 [] TERMINAL CONNECTION BY OTHERS

WARNING
 CONNECT TO CONTROL PANEL GROUND LUG
 BEFORE APPLYING LINE POTENTIAL.
 CONTROL CIRCUIT TO BE GROUNDED BY
 USER IF CONDITIONS PERMIT.

ENGINEERING ORDER

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 10/10/88 DH:cb

Revisions _____

Location: MAYNARD, MA.

TOBIN RD. LIFT STATION

Station Serial 88-2905

Owner: DEPT. OF PUBLIC WORKS

Engrg. Firm DUFRESNE - HENRY

MAYNARD, MA.

WESTFORD, MA.

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6' Outline Drawing No. 45521-001

Entrance Tube: 36" Dia. 6-1/2' long with standard parkway cover

Modification: STATION SHELL DESIGNED FOR A MAX BURY OF 15'.

PIPING AND VALVE DATA

Suction Pipe Size 4 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 4 " Cast Iron

Located: (Side) LEFT

Common Discharge Pipe Size 4 " Cast Iron

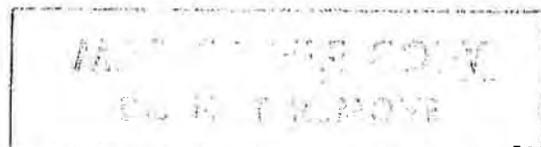
SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	4"	4"		
Valve, Plug	4"	4"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded	4"	4"		
Valve, Plug (3-Way)	4"	N/R		
Elbow (Increasing)	N/R	4"		
Increaser, Concentric				

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	4"
Discharge Outlet F/G Polyester M. J. Fitting	4"



ENGINEERING ORDER



Date 10/10/88

Revisions _____

Serial 88-2905

PUMP AND MOTOR DATA

PUMP DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)		160 @ 31'	160 @ 31'		
Priming lift		8'	8'		
Total dynamic suction lift		10'	10'		
NPSH required		4'	4'		
NPSH available	EXCESS w/3' S.F.	16.9'	16.4'		
Pump Model		T4A3-B	T4A3-B		
Pump Serial No.		910939	910940		
Impeller diameter		9-3/4	9-3/4		
G-R Mech. seal, tungsten-titanium carbide		YES	YES		
Base, V-Belt		1035	1035		
Pump speed					
Horizontal Electrical MOTOR DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower		5	5		
RPM	(FULL LOAD)	1720	1720		
Electrical characteristics: Phase/Hertz/Volts	(WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)		B	B		
Enclosure, open drip-proof	w/1.15 S.F.				
Manufacturer	GORMAN-RUPP	8700525B	8700536B		
Code letter		J	J		
Frame size		184T	184T		
Full load amps.		13.4	13.4		
V-BELT DRIVE DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance		21.3	21.3		
Sheave on Pump	Section	3V	3V		
BUSHING # 1610	O.D.	6.90"	6.90"		
BORE 1-1/2" KEY 3/8"	Grooves	2	2		
Sheave on Motor	Section	3V	3V		
BUSHING # 1610	O.D.	4.12"	4.12"		
BORE 1-1/8" KEY 1/4"	Grooves	2	2		
V-Belt Size	(2) BELTS PER PUMP	3VX600	3VX600		
MANUFACTURER		DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/460 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

MAILED COPY
10/11/88

ENGINEERING ORDER



Date 10/10/88
Revisions _____
Serial 88-2905

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current (is/ is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04967

Main conduit size: 2 Motor branch circuit conduit: 3/4

Ground wire size: (MTR. BR.) # 10 Motor branch wire size: # 10 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL22015 INT. CAP. SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

THE LIQUID LEVEL WILL BE MONITORED BY THE ELECTRONIC PRESSURE SWITCH CONTROL.

A GENERAL ALARM RELAY WILL BE PROVIDED TO MONITOR THE FOLLOWING ALARM CON-
DITIONS:

1. HIGH WATER ALARM
2. HIGH PUMP TEMPERATURE SHUTDOWN PUMPS #1 and #2

MOTOR CONTROL	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	5	5		
Full load amps.	13.4	13.4		
Motor branch circuit breakers, Frame size	FAL	FAL		
Mfg. I.T.E. Amp rating	30	30		
Number	FAL32030	FAL32030		
Magnetic starters, Size	1	1		
Mfg. ALLEN BRADLEY Number	509-B0D	509-B0D		
3 overload coils per starter	W55	W55		
MOTOR BR. C/B INTER. CAP. AMPS RMS	10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS
Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNM)	SUMP PUMP C/B (QC)	LIGHTS & (QC) BLOWER C/B	DEHUMIDIFIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. 15	2.8	15	15	15	15

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

0-12" Full Scale	LEAD PUMP	LAG PUMP	HIGH WATER ALARM
Cut-in feet	AS REQ	AS REQ	AS REQ
Cut-out feet	AS REQ	AS REQ	MANUAL RESET

MADE IN U.S.A.
 BO 103 10/10/88



Onsite Engineering, Inc.

>1998 DIGITAL CLOSURE

Water, Wastewater and Stormwater Specialists

July 19, 2016

Mr. William Depietri
Capital Group Properties
259 Turnpike Road, Suite 100
Southborough, MA 01772

Re: Old Marlborough Road Wastewater Pump Station Evaluation
129 Parker Street Development

Dear Bill:

As requested by the Town of Maynard Department of Public Works, Capital Group Properties retained the services Onsite Engineering, Inc. to evaluate the Old Marlborough Road Pump Station in regard to the station servicing flows from the planned 129 Parker Street development. The new development, as proposed, is planned to include a supermarket, retail suites, sit down style and fast food restaurants, commercial space, residential dwelling units and senior living dwelling units. The building schedule associated with this development results in a projected maximum day sewage generation of 93,403 gallons based on maximum day flow criteria established by 310 CMR 15.000, Title 5.

In general, our evaluation consisted of a review of the pump station's condition, an inventory of the areas currently connected to the pump station, including the addition of the 129 Parker Street development, and the station's ability to comply with minimum design standards in accordance with Technical Release 16 (TR-16). Summaries of our findings are presented below.

EXISTING CONDITIONS

The Old Marlborough Road Pump Station is shown as Lot 32 on Map 29 of the Town of Maynard Assessor Maps. The station is located along the southern side of Old Marlborough Road between 54 and 56 Old Marlborough Road, and is approximately 330 feet from the intersection of Old Marlborough Road and Parker Street. The pump station is located within a Town owned parcel that is approximately 50-feet wide by 50-feet long. Sewage flows from the northeast and southwest of the pump station are combined in the sewer manhole to the north of the station. The sewage discharged from the station is directed to the Town's WWTF via a 10-inch force main.

The existing pump station utilizes an alternating duplex flooded suction pump system, contained within a 7'-6" diameter below grade fiberglass vessel as manufactured by Gorman-Rupp, and a concrete wet well with an approximate diameter of 10 feet. The station, which according to the Gorman-Rupp purchase order, was installed circa 1987. In addition to these features, the pump

279 East Central Street - PMB 241

Franklin, Massachusetts, 02038

Phone: 508-553-0616

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www.onsite-eng.com

station's ancillary equipment includes a standby generator within an enclosure and a free standing electrical panel that includes the electrical service entrance, main panel board, and automatic transfer switch. The pumps are Gorman-Rupp model T6A3-B with 20 horsepower, 1,750 rpm motors capable of delivering 325 gallons per minute (gpm) at 28 feet total dynamic head (TDH).

Based on information obtained from the Maynard Sewer Department, the Old Marlborough Road Pump Station services the section of Old Marlborough Road between its intersections with Parker Street and Tobin Drive; Parker Street from its intersections with Field Street/North Street and Old Marlborough Road; Field Street; North Street; South Street; Balcom Lane; Woodbridge Road; B Street; and Marlborough Road from the intersection of North Street/Balcom Lane to Old Marlborough Road. The station also services flows from the Town's Puffer Road, Dettling Road, and Tobin Road pump stations and receives backwash water flow from the Quirk Well water treatment facility (approximately 15,000 gpd).

The proposed 129 Parker Street development is to be sited to the northwest of the pump station along the western side of Parker Street. The location of the sewer system within the 129 Parker Street was not evaluated as part of our work, however, we anticipate that the development would be serviced by new collection systems as needs as well as the existing 30,000 gpd pump station that previously served the site. It is our understanding that the existing pump station will be upgrade or repaired as necessary to make it fully functioning within the Town's requirements. As noted the existing site was previously configured with a pump station that fed wastewater from the 600,000 square feet of office space to the Old Marlborough Road pump station. A development of this size would be expected to generate approximately 30,000 gpd of maximum daily flow, based on Title 5 flow criteria, which is flow that the pump station was designed to accommodate.

In order to estimate the existing flows from outside the Parker Street development, available information from the Town of Maynard Assessor Office database for the service area described above was used in concert with with Title 5 (310 CMR 15.000) sewage design flow criteria of 110 gpd per bedroom to determine the sewage volume from existing residential dwellings. Given that the Old Marlborough Road pump station service area also includes the Puffer Road, Dettling Road, and Tobin Road pump stations, flows from those areas are represented in the next section using the design pumping rate rather than calculated theoretical design flow. The inventories of existing flows and flow from the 129 Parker Street development are summarized in Table 1.



Table 1
Sewer Service Area Flow Summary – Title 5 Flows
Old Marlborough Road Pump Station
Maynard, Massachusetts

Use	Unit	Title 5 Design Flow (gpd/unit)	Total (gpd)
Existing Old Marlborough Road Pump Station			
Residential Uses	578 bedrooms	110 gpd/bedroom	63,580
		Total	63,580
Proposed Parker Street Development			
Supermarket	68,000 sf	97 gpd/1,000 sf	6,596
Retail	152,242 sf	50 gpd/1,000 sf	7,612
Restaurant	557 seats	35 gpd/seat	19,495
Fast Food Restaurant	84 seats	20 gpd/seat	1,680
Commercial - Office	20,000 sf	75 gpd/1,000 sf	1,500
Commercial - Gym	250 lockers	25 gpd/locker	6,250
Residential	262 bedrooms	110 gpd/bedroom	28,820
Senior Living	143 units	150 gpd/unit	21,450
		Total	93,403

We wish to note that Title 5 sewage design flow criteria represents the maximum 24 hour flow for a parcel based on its use and includes an estimated 200-percent factor of safety based on the actual average day sewage generation. Therefore, the anticipated average day flow (i.e., the actual sewage generated by a particular site) should be 50 percent of the calculated Title 5 flow (exclusive of Inflow & Infiltration I/I).

As shown in the Table 1, the Title 5 design flow for the existing service area is approximately 63,580 gpd. Adjusting this maximum day flow volume to an average flow, we anticipate that the average daily sewage flow generated for the existing service area, not including the flow from the three connected pump stations that contribute flow from outside the service area, would be approximately 31,790 gpd.

The 129 Parker Street development, as proposed, is planned to include a supermarket, retail, restaurants, office space, a gym, residential and senior living housing. Using Title 5 sewage design flow criteria for these uses, the estimated maximum day flow for the 129 Parker Street development would be 93,403 gpd. Combining this estimated flow with the present service area flow, this results in a theoretical maximum day flow of 156,983 gpd and an average calculated flow of approximately 78,492 gpd.

PUMP STATION EVALUATION & CONCLUSIONS

The evaluation of the Old Marlborough Road Pump Station involved assessing the pump station's ability to accommodate the proposed increases in incoming sewage flows in order to verify that no problematic flow issues exist that would preclude the station from operating properly when the new flows from the proposed 129 Parker Street development are brought online. In addition, we completed a review of the condition of the pump station to identify any deficiencies that may prevent the pump station from operating properly when receiving the additional flow.

On July 8, 2016, Onsite Engineering met with a representative from the Maynard Sewer Department to observe the existing pump station. During our visit, the existing operating conditions of the station were discussed with the Town's staff. Based on the discussion, it is our understanding that the station is generally functioning properly and is capable of handling present day peak flows without surcharging the system, however the pump station is also showing signs of its age and requires selected maintenance/repairs to address aging components.

It was explained to us that there are several already identified deficient items that need to be addressed at the station. These include; the replacement of 10-inch plug valve, the replacement of two check valves, the replacement of the 1-inch steel pipe from check valves to the air release valves, the replacement of two air release valves, and the replacement of gate valve for pump #2. Based on a proposal provided by Weston & Sampson Services, the repair work is estimated to be \$30,750.00. The staff also indicated to us that the pump station has not experienced an overflow event for at least the past 10 years. In addition to the repair work noted by Weston & Sampson, we also noted as part of our observations that the frame and cover to the wet well is not securely mounted to the wet well structure and that there is a loose LB socket in the wet well that should be addressed.

Following the review of pump station's existing conditions, the pump station's record information was reviewed at the Sewer Department Office and the Department of Public Works. Unfortunately, the available information regarding the pump station, including the original design drawings and operation and maintenance manual, were not available. We did, however, review the pump run time data available for the Old Marlborough Road and the Tobin Drive, Puffer Lane and Dettling Road pump stations. However, like the missing design information, the data is limited and only covered the periods from April 2015 to June 2016 (Puffer Lane PS) and May 2016 to June 2016 (for the remaining stations).

Using the information obtained from our review of the pump station, review of existing available information from the Town, and an inventory of the existing service area, we completed an analysis of the pump station's ability to accommodate the increased sewage flow from the 129 Parker Street Development, based on TR-16 minimum design requirements. In determining the infiltration component of the incoming flows associated with the present and future expansion of the sewage collection system, a rate of 250 gpd/in-dia-mile was assumed using 8-inch sewer pipe. A summary

of the applicable TR-16 design requirements, using flows reflecting the existing service area and the addition of the 129 Parker Street development is detailed in Table 2.

Table 2
TR-16 Evaluation Summary
Old Marlborough Road Pump Station
Maynard, Massachusetts

	Existing Service Area	Existing Service Area w/ Parker Street Re-Development
Service Area Flow – Average Day (Gallons)⁽¹⁾	31,790	78,492
Service Area Flow – Average Day (GPM)	22.1	54.5
Peak Hour Flow Rate (GPM)⁽²⁾	81.8	201.7
Contributing Pump Stations' Flow Rate (GPM)⁽³⁾	445	445
I/I Contribution (Gallons)⁽⁴⁾	3,523	3,636
Total I/I Contribution (GPM)	2.4	2.5
Peak Hour Design Flow (GPM)	529.2	649.2
Existing Station Capacity (GPM)	325 - 650	325 - 650
Force Main Velocity (Ft/Sec)⁽⁵⁾	1.33 – 2.66	1.33 – 2.66

- (1) Average day flow allocation based on 50 percent of Title 5 Design Flow.
- (2) Applied an interpolated peak hour factor of 3.7 using TR-16 "Relation of Extreme Discharges on Maximum and Minimum Days to the Average Daily Discharge of Domestic Sewage" based on average day to maximum day ratio of 1:2.
- (3) Combined flow rates Puffer Lane, Dettling Road, and Tobin Drive pump stations, and includes backwash flow rate into sewer from nearby water treatment facility (10 gpm).

- (4) I/I flow into system based on 9,300 linear feet of 8-inch diameter gravity sewer at 250 gpd/inch-diameter-mile for existing conditions, and 9,600 linear feet of 8-inch diameter gravity sewer at 250 gpd/inch-diameter-mile for existing conditions and Parker Street development addition.
- (5) Based upon the existing 10" diameter force main.

In accordance with present day standards based on TR-16, a duplex sewage pump station should handle peak wastewater flows from the tributary collection system with one pump out of service. For both the existing and proposed service area flows, the Old Marlborough Road pump station would be capable of meeting the peak hour flow rate with one pump out of service for the station's tributary service area. However, under a scenario where flow from each of the satellite pump stations (Puffer Lane, Dettling Road, and Tobin Drive) and backwash water from the water treatment facility is simultaneously introduced into the collection system, the station would need both pumps to be operating to meet that peak hour flow rate.

As, it was indicated to us that the pump station has not experienced an overflow event in over 10 years and that there has not been any historic issues with elevated levels within the wet well. In our opinion, a scenario where all three pump stations contribute flow simultaneously, the water treatment facility was backwashing and one pump at the Parker Street Station is out of service is highly unlikely and overly conservative and impractical to include in our analysis.

RECOMMENDATIONS

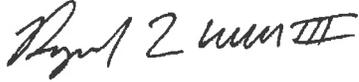
Based on our observation of the pump station and discussions with the Maynard Sewer Department staff, the Old Marlborough Road pump station has been effective in accommodating sewage flows from the contributing area and should be capable of accommodating flow from the expanded 129 Parker Street development without any adverse effects on the existing sewer system or users. However, that said, the pump station is approximately 30 years old and its overall condition is indicative of its age, thereby requiring selective maintenance to replace components that have reached their useful life.

A summary of recommended repairs by Weston & Sampson, which include replacement of a 10-inch plug valve, replacement of two check valves, new 1-inch steel piping between the check valves and air release valves, replacement of the air release valves, and replacement of the suction gate valve for pump #2, as well as addressing the loose frame and cover and LB box, should be undertaken prior to the 129 Parker Street development connecting to the municipal sewer.

We trust that this evaluation has met your current needs. If you have any questions or require any additional information, please feel free to contact us.

Sincerely,

Onsite Engineering, Inc.

A handwritten signature in black ink, appearing to read "Raymond L. Willis, III". The signature is written in a cursive, slightly stylized font.

Raymond L. Willis, III, P.E.
Vice President

Enclosures

EXHIBIT A

**OLD MARLBOROUGH ROAD PUMP STATION
SERVICE AREA**

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
1	B ST	3	330
3	B ST	3	330
4	B ST	4	440
5	B ST	3	330
6	B ST	3	330
8	B ST	4	440
3	BALCOM LN	4	440
5	BALCOM LN	3	330
7	BALCOM LN	8	880
8	BALCOM LN	4	440
9	BALCOM LN	4	440
10	BALCOM LN	0	0
1	DETLING RD	4	440
3	DETLING RD	4	440
5	DETLING RD	4	440
7	DETLING RD	4	440
2	FIELD ST	4	440
3	FIELD ST	3	330
4	FIELD ST	4	440
6	FIELD ST	3	330
8	FIELD ST	4	440
9	FIELD ST	4	440
10	FIELD ST	3	330
11	FIELD ST	3	330
12	FIELD ST	4	440
14	FIELD ST	3	330
15	FIELD ST	3	330
16	FIELD ST	3	330
17	FIELD ST	4	440
18	FIELD ST	3	330
19	FIELD ST	3	330
20	FIELD ST	3	330
21	FIELD ST	1	110
23	FIELD ST	3	330
25	FIELD ST	3	330
0	GREAT RD	0	0
253	GREAT RD	2	220
257	GREAT RD	4	440
263	GREAT RD	3	330
265	GREAT RD	3	330
267	GREAT RD	3	330
269	GREAT RD	3	330
271	GREAT RD	3	330
273	GREAT RD	3	330
275	GREAT RD	3	330
9	MARLBORO ST	4	440

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
10	MARLBORO ST	3	330
14	MARLBORO ST	2	220
15	MARLBORO ST	4	440
18	MARLBORO ST	4	440
21	MARLBORO ST	2	220
22	MARLBORO ST	4	440
23	MARLBORO ST	3	330
24	MARLBORO ST	2	220
28	MARLBORO ST	3	330
29	MARLBORO ST	4	440
30	MARLBORO ST	3	330
31	MARLBORO ST	3	330
33	MARLBORO ST	3	330
34	MARLBORO ST	2	220
37	MARLBORO ST	3	330
1	NORTH ST	4	440
2	NORTH ST	3	330
3	NORTH ST	3	330
4	NORTH ST	4	440
6	NORTH ST	3	330
8	NORTH ST	4	440
14	NORTH ST	4	440
16	NORTH ST	2	220
18	NORTH ST	2	220
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
0	OLD MARLBORO RD	0	0
15	OLD MARLBORO RD	3	330
17	OLD MARLBORO RD	3	330
19	OLD MARLBORO RD	4	440
20	OLD MARLBORO RD	3	330
21	OLD MARLBORO RD	3	330
22	OLD MARLBORO RD	4	440
23	OLD MARLBORO RD	3	330
24	OLD MARLBORO RD	2	220
25	OLD MARLBORO RD	4	440
26	OLD MARLBORO RD	3	330
27	OLD MARLBORO RD	3	330
28	OLD MARLBORO RD	3	330
29	OLD MARLBORO RD	3	330
30	OLD MARLBORO RD	5	550
31	OLD MARLBORO RD	3	330
32	OLD MARLBORO RD	3	330
33	OLD MARLBORO RD	4	440
34	OLD MARLBORO RD	3	330

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
35	OLD MARLBORO RD	3	330
36	OLD MARLBORO RD	3	330
37	OLD MARLBORO RD	4	440
38	OLD MARLBORO RD	3	330
39	OLD MARLBORO RD	4	440
40	OLD MARLBORO RD	3	330
41	OLD MARLBORO RD	4	440
42	OLD MARLBORO RD	3	330
43	OLD MARLBORO RD	3	330
44	OLD MARLBORO RD	3	330
45	OLD MARLBORO RD	4	440
46	OLD MARLBORO RD	4	440
47	OLD MARLBORO RD	3	330
48	OLD MARLBORO RD	2	220
49	OLD MARLBORO RD	3	330
50	OLD MARLBORO RD	3	330
51	OLD MARLBORO RD	3	330
52	OLD MARLBORO RD	4	440
53	OLD MARLBORO RD	4	440
54	OLD MARLBORO RD	4	440
55	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
56	OLD MARLBORO RD	3	330
63	OLD MARLBORO RD	0	0
0	PARKER ST	0	0
0	PARKER ST	0	0
0	PARKER ST	0	0
110	PARKER ST	3	330
112	PARKER ST	4	440
113	PARKER ST	3	330
115	PARKER ST	2	220
118	PARKER ST	3	330
119	PARKER ST	4	440
120	PARKER ST	2	220
122	PARKER ST	3	330
124	PARKER ST	8	880
126	PARKER ST	2	220
128	PARKER ST	3	330
129	PARKER ST	0	0
130	PARKER ST	4	440
132	PARKER ST	3	330
136	PARKER ST	3	330
138	PARKER ST	3	330
140	PARKER ST	2	220
141	PARKER ST	4	440

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
142	PARKER ST	6	660
145	PARKER ST	3	330
147	PARKER ST	3	330
155	PARKER ST	4	440
157	PARKER ST	4	440
159	PARKER ST	4	440
161	PARKER ST	3	330
163	PARKER ST	3	330
1	SOUTH ST	3	330
2	SOUTH ST	2	220
3	SOUTH ST	2	220
4	SOUTH ST	4	440
5	SOUTH ST	3	330
6	SOUTH ST	2	220
8	SOUTH ST	3	330
9	SOUTH ST	4	440
10	SOUTH ST	3	330
1	TIGER DR	0	0
0	TOBIN DR	0	0
23	TOBIN DR	3	330
1	VOSE HILL RD	4	440
2	VOSE HILL RD	4	440
3	VOSE HILL RD	4	440
4	VOSE HILL RD	4	440
6	VOSE HILL RD	4	440
8	VOSE HILL RD	4	440
1	WOODRIDGE RD	4	440
2	WOODRIDGE RD	3	330
3	WOODRIDGE RD	3	330
4	WOODRIDGE RD	3	330
5	WOODRIDGE RD	3	330
6	WOODRIDGE RD	3	330
7	WOODRIDGE RD	3	330
8	WOODRIDGE RD	3	330
9	WOODRIDGE RD	3	330
10	WOODRIDGE RD	3	330
11	WOODRIDGE RD	3	330
12	WOODRIDGE RD	3	330
13	WOODRIDGE RD	3	330
14	WOODRIDGE RD	3	330
15	WOODRIDGE RD	3	330
16	WOODRIDGE RD	3	330
17	WOODRIDGE RD	4	440
18	WOODRIDGE RD	3	330
19	WOODRIDGE RD	3	330
20	WOODRIDGE RD	3	330

**Old Marlborough Road Pump Station
Service Area**

Address Number	Street	Bedrooms	Flow
22	WOODRIDGE RD	3	330
23	WOODRIDGE RD	3	330
25	WOODRIDGE RD	4	440

Total

574

63140

APPENDIX B

PUMP STATION PURCHASE ORDERS

ENGINEERING ORDER



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH

Date 9/4/87 DH:mr
Revisions _____

Location: MAYNARD, MASS.
MARLBORO ROAD

Station Serial 87-2670

Owner: _____ Engrg. Firm _____

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6' Outline Drawing No. 45533-005

Entrance Tube: 36" Dia. 5-1/2' long with standard parkway cover

Modification: STATION SHELL IS ADEQUATE FOR A BURIAL DEPTH OF 15 FEET

PIPING AND VALVE DATA

Suction Pipe Size 6 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 10 " Cast Iron

Located: (Side) RIGHT

Common Discharge Pipe Size 10 " Cast Iron

SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	6"	6"		
Valve, Plug	6"	6"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded (Increasing)	6" X 10"	6" X 10"		
Valve, Plug (3-Way)	N/R	10"		
Elbow	10"	N/R		

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	10"
Discharge Outlet F/G Polyester M. J. Fitting	10"

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ENGINEERING ORDER

GR WASTE WATER EQUIPMENT
 GORMAN-RUPP
 MANSFIELD, OHIO 44902

Date 9/4/87
 Revisions _____
 Serial 87-2670

PUMP AND MOTOR DATA

PUMP DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)	325 @ 28'	325 @ 28'		
Priming lift	6'	6'		
Total dynamic suction lift	7'	7'		
NPSH required	5'	5'		
NPSH available EXCESS WITH 3' S.F.	18.9	18.9		
Pump Model	T6A3-B	T6A3-B		
Pump Serial No.	861222	861223		
Impeller diameter	12-3/8"	12-3/8"		
G-R Mech. seal, tungsten-titanium carbide	YES	YES		
Base, V-Belt	YES	YES		
Pump speed				
Horizontal Electrical MOTOR DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	20	20		
RPM (FULL LOAD)	1750	1750		
Electrical characteristics: Phase/Hertz/Volts (WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)	B	B		
Enclosure, open drip-proof	YES	YES		
Manufacturer GORMAN RUPP	7500437	7500438		
Code letter	G	G		
Frame size	256T	256G		
Full load amps.	51.2	51.2		
V-BELT DRIVE DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance	19"	19"		
Sheave on Pump	Section 3V	Section 3V		
BUSHING # 2517	O.D. 14.0"	O.D. 14.0"		
BORE 1-1/2" KEY 3/8"	Grooves 2	Grooves 2		
Sheave on Motor	Section 3V	Section 3V		
BUSHING # 1610	O.D. 6.5"	O.D. 6.5"		
BORE 1-5/8" KEY 3/8"	Grooves 2	Grooves 2		
V-Belt Size (2) BELTS PER PUMP	3VX710	3VX710		
MANUFACTURER	DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

CERTIFIED RECIRCULATION PORT DRAWINGS INCLUDED IN SUBMITTAL DATA

CERTIFIED PUMP REPRIME PERFORMANCE TEST ARE REQUIRED FOR BOTH PUMPS FOR RECORD. TEST WILL BE CONDUCTED AFTER SUBMITTAL DATA IS APPROVED AND STATION IS RELEASED TO PRODUCTION.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/480 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

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ENGINEERING ORDER



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 9/4/87

Revisions _____

Serial 87-2670

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current ^{XX} (is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04630

Main conduit size: _____ Motor branch circuit conduit: _____

Ground wire size: (MTR. BR.) # 8 Motor branch wire size: # 4 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL 22015 INT. CAP SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

MOTOR CONTROL	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	20	20		
Full load amps.	51.2	51.2		
Motor branch circuit breakers, Frame size	FAL	FAL		
Mfg. SQ "D" Amp rating	100	100		
Number	FAL32100	FAL32100		
Magnetic starters, Size	3	3		
Mfg. ALLEN BRADLEY Number	509-DOD	509-DOD		
3 overload coils per starter	W-69	W-69		
MOTOR BR. C/B INTER. CAP. AMPS RMS	10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS
Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNM)	SUMP PUMP C/B (QC)	LIGHTS & (QC) BLOWER C/B	DEHUMIDI-FIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. 15	2.8	15	15	15	15

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

12' Bull Scale	LEAD PUMP	LAG PUMP	HIGH WATER ALARM
Cut-in feet	AS REQUIRED	AS REQUIRED	AS REQUIRED
Cut-out feet	AS REQUIRED	AS REQUIRED	MANUAL RESET

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ENGINEERING ORDER



GR WASTE
GORMAN-RUPP WATER
EQUIPMENT
MANSFIELD, OHIO 44902

Date 9/4/87

Revisions _____

Serial 87-2670

BELOW GROUND FIBERGLASS LIFT STATION

STANDARD CONTROL AND AUXILIARY APPARATUS

Automatic alternator
Air Pump, (2)
Air flow indicator
Humidistat
Thermostat
Convenience Outlet
Built-in dehumidifier
Digital

Panel Meter

High Pump Temperature Shutdown

Wet Well Liquid Level Transducer

Illuminated H-O-A Pump Mode Selectors
Air Pump Flow Indicator

AUH Enpo Sump Pump

Blower timer

Touch-up kit

Cabinet, storage

1 set Spare Parts, As follows:

- a) tungsten-titanium carbide mech. seal
- b) shaft sleeve
- c) inspection cover plate O-ring gasket
- d) rotating assembly O-ring gasket
- e) set impeller adjusting shims
- f) set rotating assembly adjusting shims
- g) Quart SAE 30 non-detergent(motor oil) seal lubricant

Elapsed Time Meters

Air Release Valves

Pump Drain Kits

SPECIAL MODIFICATIONS

THE MOTOR CONTROL WILL INCLUDE A LAG PUMP DELAY CIRCUIT TO PREVENT

SIMULTANEOUS MOTOR STARTS.

A STATION ALARM RELAY WILL BE PROVIDED TO MONITOR THE FOLLOWING ALARM CONDITIONS:

- A) HIGH WATER ALARM
- B) HIGH PUMP TEMPERATURE SHUTDOWN #1
- C) HIGH PUMP TEMPERATURE SHUTDOWN #2

ALARM LIGHT - 115VAC WEATHERPROOF LIGHT WITH RED GLOBE, GLOBE GUARD, JUNCTION BOX AND MOUNTING FIXTURE (SHIPPED LOOSE).

SUCTION AND DISCHARGE GAUGES - CONSISTS OF A RESILIENT MOUNTED PANEL WITH A 4" DIA. GLYCERIN FILLED PRESSURE GAUGE GRADUATED 0-140" WC AND A 4" DIA. GLYCERIN FILLED COMPOUND GAUGE GRADUATED -34" TO 34" WC, SHUT OFF VALVES AND FITTINGS. ONE GAUGE PANEL ASSEMBLY PROVIDED FOR EACH PUMP.

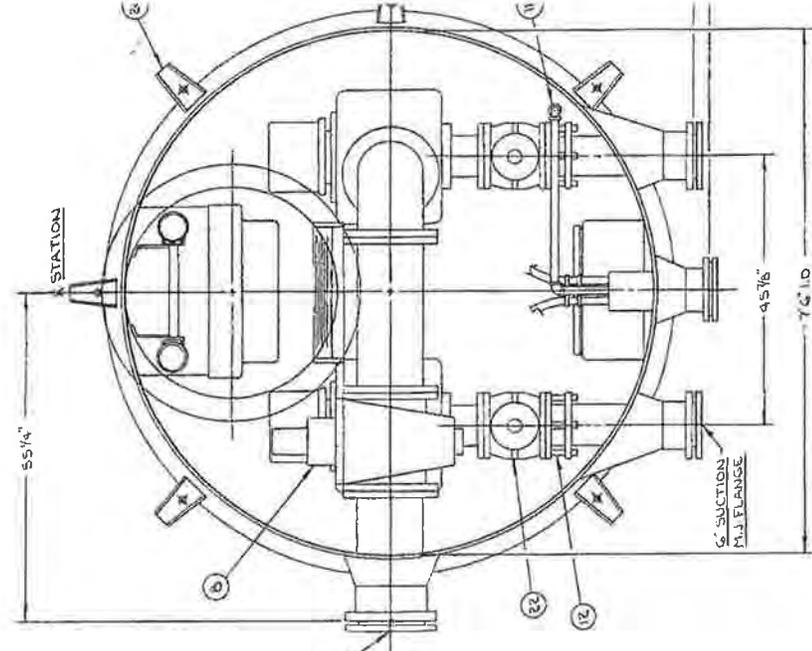
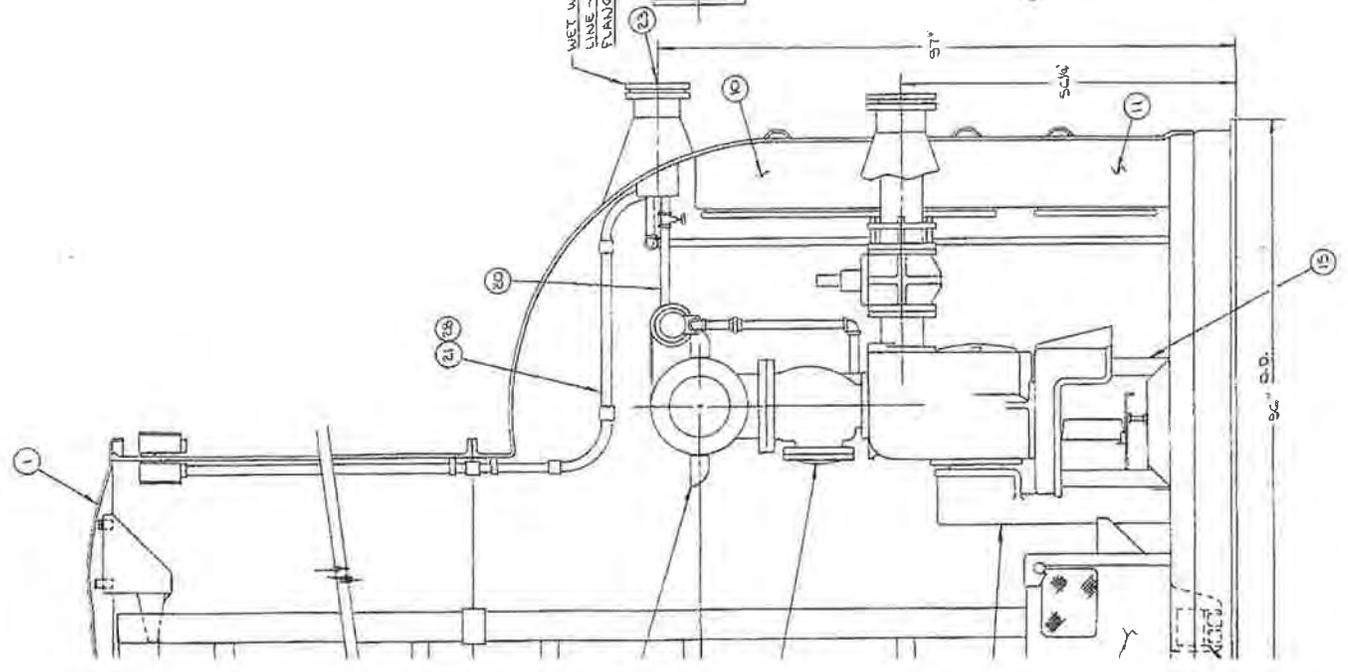
STATION HEATER 1300/1500 WATT - 1300/1500 WATT 115VAC, SPACE HEATER WITH CORD AND GROUNDING PLUG.

MASTER FILE COPY
DO NOT REMOVE

DATE	
BY	
CHK	

ITEM	NAME	MAT'L & SIZE
1	ENTRANCE TUBE COVER	FRP 41" O.D.
2	DISCH. AIR DUCT	PVC 5" DIA.
3	FRESH AIR DUCT	PVC 5" DIA.
4	LADDER RAIL	FRP 1 1/2" x 3/4" L
5	LADDER RUNG	ALUM. 1 1/2" DIA.
6	ENTRANCE TUBE	FRP 36" I.D.
7	FLUORESCENT LIGHT	2-20 W. TUBES
8	DISCH. PLUG VALVE	C.I. 10" 5-WAY
9	DISCH. CHECK VALVE	C.I. 6" x 10"
10	CONTROL PANEL	FRP 56" x 26" x 12"
11	STORAGE COMPARTMENT	FRP 26" x 19" x 12"
12	FLANGED ADAPTER	C.I. 6" STYLE 1B7
13	PUMP	C.I. T6A3-B
14	BELT GUARD	STEEL
15	PUMP & MOTOR BASE	STEEL
16	MOTOR	FR. 25GT HP. 20 RPM. 1750

ITEM	NAME	MAT'L & SIZE
17	SUMP PUMP	C.I. 10006 P.H. @ 20"
18	SUMP PUMP DISCHARGE	PVC 1/2"
19	AIR RELEASE VALVE	C.I. 1"
20	AIR RELEASE DISCH.	PVC 1/2"
21	ENTRANCE CONDUIT	PVC 2"
22	SUCTION PLUG VALVE	C.I. 6"
23	BUBBLER CONNECTION	3/8" N.P.T.
24	HOLD DOWN BRACKET	SS.
25	STATION SHELL	FRP 7 1/2" I.D.
26	BOWMER (DEHUMID. HSG.)	FRP
27	DRIPSHELD	FRP
28	ALARM CONDUIT	PVC 3/4"



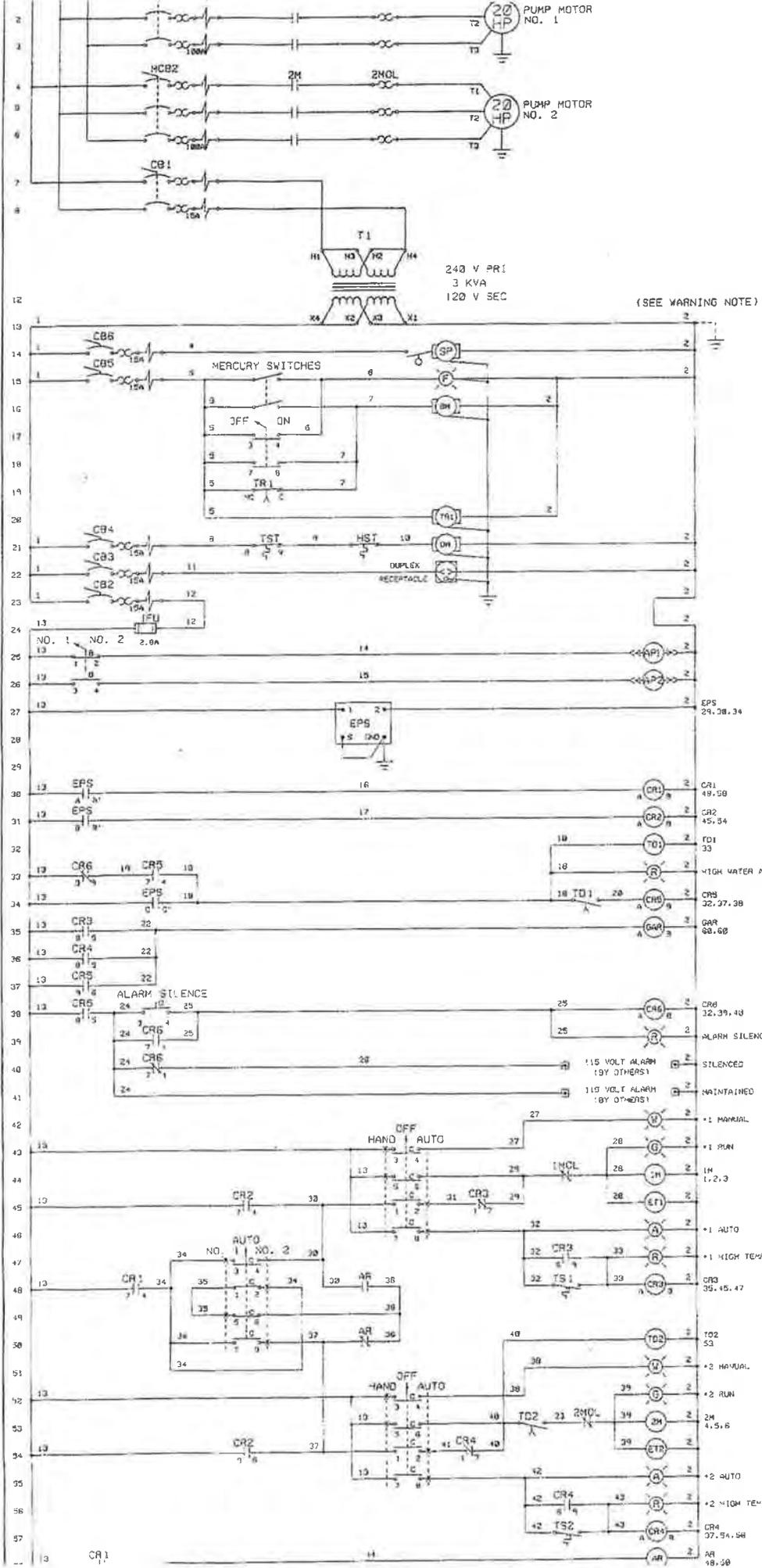
6" I.D. 10 RIGHT HAND

MARLBORO RD.
MAYNARD, MASS.
SERIAL NO. 87-2670

45533-005

THE GO
CORPORATION
MANNINGFIELD, MASS.

NAME: 7 1/2" DIA. FRP UN
LIFT STATION WITH D
DWG. C.H. CHK. D.L.W.
D 45533



LEGEND	DESCRIPTION
MCB1, MCB2	MOTOR CIRCUIT BREAKER *1.2
1M, 2M	MOTOR STARTER *1.2
1MOL, 2MOL	MOTOR OVERLOAD RELAY *1.2
CB1	120 VOLT SERVICE DISCONNECT
T1	POTENTIAL TRANSFORMER
CB2-CB6	120 VOLT CIRCUIT BREAKERS
SP	SUMP PUMP
F	STATION LIGHT-FLUORESCENT
BM	BLOWER MOTOR
TR1	BLOWER TIMER
DM	DEHUMIDIFIER
TST	THERMOSTAT
HST	HUMIDISTAT
FU	120 VOLT CONTROL FUSE
AP1, AP2	AIR PUMP *1.2
EPS	ELECTRONIC PRESSURE SWITCH
CR1	LEVEL RELAY-LEAD
CR2	LEVEL RELAY-LAG
TD1	TIME DELAY-POWER UP RESET
R	INDICATING LIGHT-RED
CR5	LEVEL RELAY-HIGH WATER
CR6	ALARM SILENCE RELAY
W	INDICATING LIGHT-WHITE
G	INDICATING LIGHT-GREEN
ET1, ET2	ELAPSED TIME METER *1.2
A	INDICATING LIGHT-AMBER
CR3, CR4	HIGH TEMP SHUTOFF RELAY *1.2
TS1, TS2	HIGH TEMP SENSORS *1.2
AR	ALTERNATOR RELAY
GAR	GENERAL ALARM RELAY
TD2	SECOND PUMP DELAY RELAY

WIRING BY OTHERS
 TERMINAL CONNECTION BY OTHERS

WARNING
 CONNECT TO CONTROL PANEL GROUND LUG
 BEFORE APPLYING LINE POTENTIAL.
 CONTROL CIRCUIT TO BE GROUNDED BY
 USER IF CONDITIONS PERMIT.

ENGINEERING ORDER

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH



GR WASTE WATER EQUIPMENT
GORMAN-RUPP
MANSFIELD, OHIO 44902

Date 8/24/88 DH:mr
Revisions 11/2/88 DH:mr

Location: MAYNARD, MASS.

VOSS HILL FARMS PUMP STATION

Station Serial 88-2867

Owner: TOWN OF MAYNARD

Engrg. Firm DUFRESNE-HENRY
WESTFORD, MA.

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6 Outline Drawing No. 45513-012 - REV "E"

Entrance Tube: 36" Dia. 5'6" long with standard parkway cover

Modification:

PIPING AND VALVE DATA

Suction Pipe Size 3 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 4 " Cast Iron

Located: (Side) LEFT HAND

Common Discharge Pipe Size 4 " Cast Iron

SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	3"	3"		
Valve, Plug	3"	3"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded	4"	4"		
Valve, Plug (3-Way)	4"	N/R		
Elbow	N/R	4"		
CONCENTRIC INCREASER	3" X 4"	3" X 4"		

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	4"
Discharge Outlet F/G Polyester M. J. Fitting	4"

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ENGINEERING ORDER

GR WASTE WATER EQUIPMENT
 GORMAN-RUPP
 MANSFIELD, OHIO 44902

Date 8/24/88
 Revisions 11/2/88
 Serial 88-2867

PUMP AND MOTOR DATA

PUMP DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)	165 @ 91'	165 @ 91'		
Priming lift	FLOODED	FLOODED		
Total dynamic suction lift	3'	3'		
NPSH required	4.5	4.5		
NPSH available	EXCESS W/3' S.F. 23.4	23.4		
Pump Model	T3A3-B	T3A3-B		
Pump Serial No.	905120	905121		
Impeller diameter	8-3/4"	8-3/4"		
G-R Mech. seal, tungsten-titanium carbide	YES	YES		
Base, V-Belt	YES	YES		
Pump speed	1960	1960		
Horizontal Electrical MOTOR DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	15	15		
RPM (FULL LOAD)	1765	1765		
Electrical characteristics: Phase/Hertz/Volts (WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)	B	B		
Enclosure, open drip-proof	W/1.15 S.F. YES	YES		
Manufacturer	GORMAN-RUPP	8401040B	8401041B	
Code letter	G	G		
Frame size	254T	254T		
Full load amps.	39.2	39.2		
V-BELT DRIVE DATA	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance	15"	15"		
Sheave on Pump	Section 3V	3V		
BUSHING # 1610	O.D. 4.50	4.50		
BORE 1-1/2" KEY 3/8"	Grooves 4	4		
Sheave on Motor	Section 3V	3V		
BUSHING # 1610	O.D. 5.00"	5.00"		
BORE 1-5/8" KEY 3/8"	Grooves 4	4		
V-Belt Size (4) BELTS PER PUMP	3VX450	3VX450		
MANUFACTURER	DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/460 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

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ENGINEERING ORDER



Date 8/24/88
 Revisions 11/2/88
 Serial 88-2867

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current ~~is~~ (is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04934

Main conduit size: 2 Motor branch circuit conduit: 1-1/4

Ground wire size: (MTR. BR.) # 8 Motor branch wire size: # 6 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL22015 INT. CAP. SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

THE LIQUID LEVEL WILL BE MONITORED BY THE ELECTRONIC PRESSURE

MOTOR CONTROL		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower		15	15		
Full load amps.		39.2	39.2		
Motor branch circuit breakers, Mfg. <u>SQ "D"</u>	Frame size	FAL	FAL		
	Amp rating	70	70		
	Number	FAL32070	FAL32070		
Magnetic starters, Mfg. <u>ALLEN BRADLEY</u>	Size	2	2		
	Number	509-COD	509-COD		
3 overload coils per starter		W68	W68		
MOTOR BR. C/B INTER. CAP. AMPS RMS		10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS

Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNN)	SUMP PUMP C/B (QC)	LIGHTS & BLOWER C/B (QC)	DEHUMIDIFIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. <u>15</u>	<u>2.8</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

	LEAD PUMP	LAG PUMP	HIGH WATER ALARM		
12 Full Scale	AS	AS	AS		
Cut-in feet	REQUIRED	REQUIRED	REQUIRED		
Cut-out feet	AS REQUIRED	AS REQUIRED	MANUAL RESET		

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ENGINEERING ORDER



Date 8/24/88
Revisions 11/2/88
Serial 88-2867

BELOW GROUND FIBERGLASS LIFT STATION

STANDARD CONTROL AND AUXILIARY APPARATUS

- | | |
|---------------------------------------|---|
| Automatic alternator | AUH Enpo Sump Pump |
| Air Pump, (2) | Blower timer |
| Air flow indicator | Touch-up kit |
| Humidistat | Cabinet, storage |
| Thermostat | 1 set Spare Parts, As follows: |
| Convenience Outlet | a) tungsten-titanium carbide mech. seal |
| Built-in dehumidifier | b) shaft sleeve |
| Digital Panel Meter | c) inspection cover plate O-ring gasket |
| High Pump Temperature Shutdown | d) rotating assembly O-ring gasket |
| Wet Well Liquid Level Transducer | e) set impeller adjusting shims |
| Illuminated H-O-A Pump Mode Selectors | f) set rotating assembly adjusting shims |
| Air Pump Flow Indicator | g) Quart SAE 30 non-detergent(motor oil) seal lubricant |
| | Elapsed Time Meters |
| | Air Release Valves |
| | Pump Drain Kits |

SPECIAL MODIFICATIONS

A GENERAL ALARM RELAY WILL BE PROVIDED WITH ONE (1) SPDT CONTACT WIRED TO T/B'S TO MONITOR THE FOLLOWING ALARM CONDITIONS:

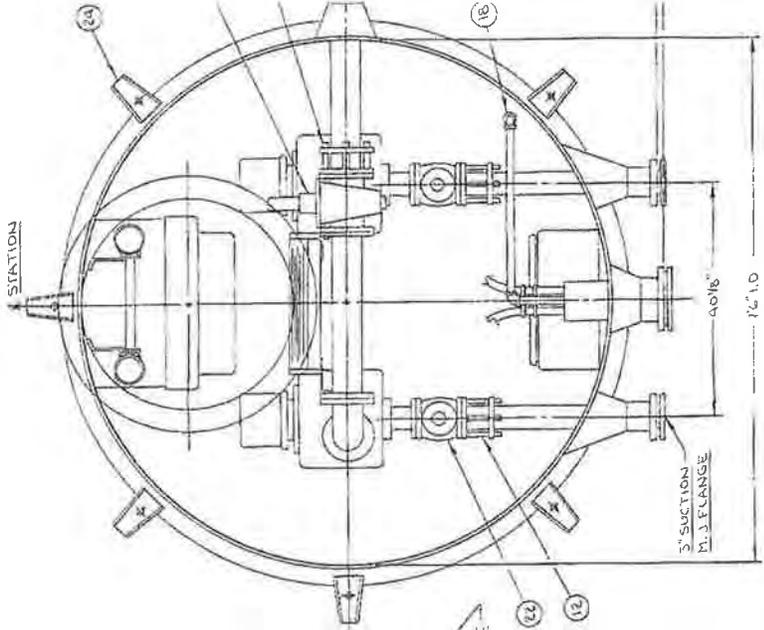
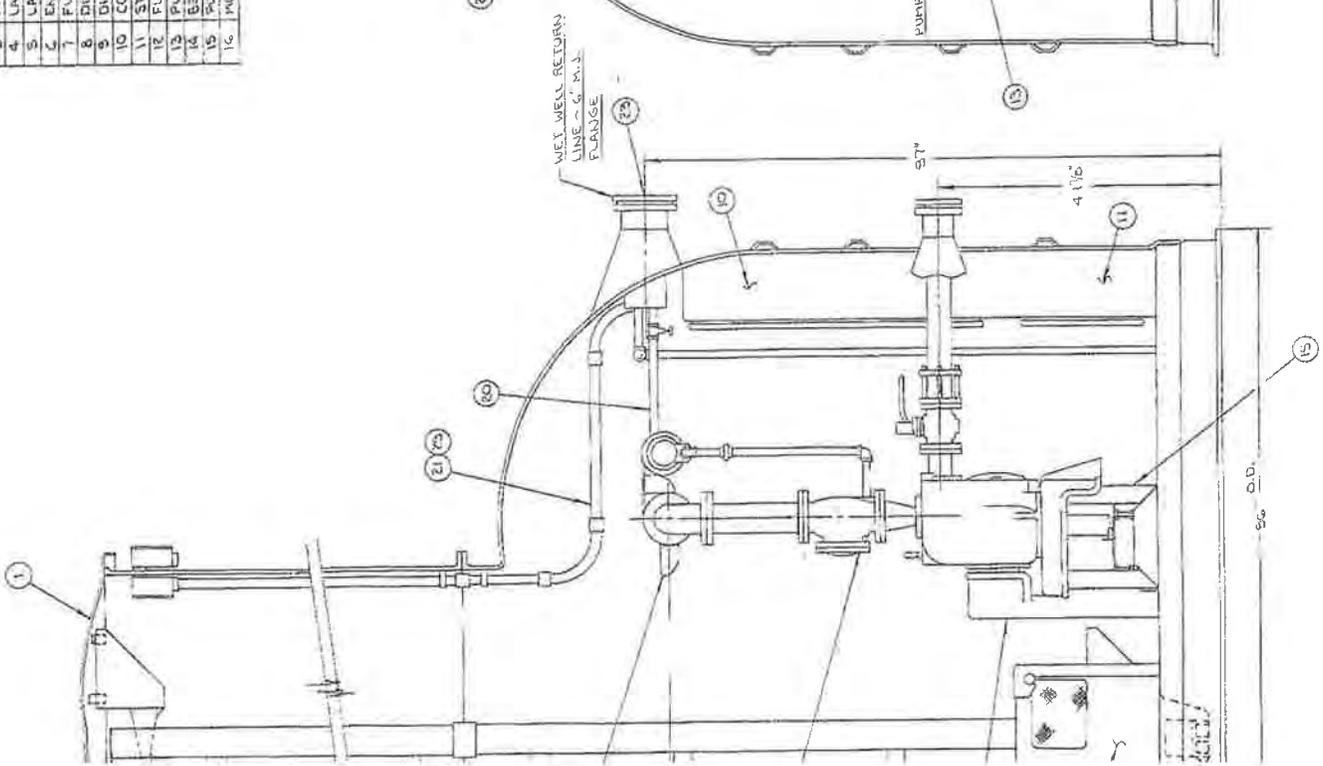
- A) HIGH WATER ALARM
- B) HIGH PUMP TEMPERATURE SHUTDOWN PUMPS #1 AND #2
- C) 120 V POWER FAILURE

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ITEM	QTY	UNIT	DESCRIPTION
1	1	EA	ENTRANCE TUBE COVER
2	1	EA	DISCH. AIR DUCT
3	1	EA	FRESH AIR DUCT
4	1	EA	LADDER RAIL
5	1	EA	LADDER RUNG
6	1	EA	ENTRANCE TUBE
7	1	EA	FLUORESCENT LIGHT
8	1	EA	DISCH. PLUG VALVE
9	1	EA	DISCH. CHECK VALVE
10	1	EA	CONTROL PANEL
11	1	EA	STORAGE COMPARTMENT
12	1	EA	PUMP
13	1	EA	BELT GUARD
14	1	EA	PUMP & MOTOR BASE
15	1	EA	STEEL
16	1	EA	MOTOR FR. 234T

ITEM	NAME	MAT'L & SIZE
17	SUMP PUMP	C.I. 1000G.P.M. @ 20'
18	SUMP PUMP DISCHARGE	PVC 1 1/2"
19	AIR RELEASE VALVE	C.I. 1"
20	AIR RELEASE DISCH.	PVC 1 1/4"
21	ENTRANCE CONDUIT	PVC 2"
22	SUCTION PLUG VALVE	C.I. 3"
23	BUBBLER CONNECTION	3/8" ALPT.
24	HOLD DOWN BRACKET	SSY.
25	STATION SHELL	FRP 76" I.D.
27	DRIPSHIELD	FRP
28	FLANGED ADAPTER	C.I. 4" STYLE 127
29	ALARM CONDUIT	PVC 3/4"

ITEM	NAME	MAT'L & SIZE
1	ENTRANCE TUBE COVER	FRP 41" O.D.
2	DISCH. AIR DUCT	PVC 5" DIA.
3	FRESH AIR DUCT	PVC 5" DIA.
4	LADDER RAIL	FRP 1/2" x 3/4" x 1"
5	LADDER RUNG	ALUM. 1 1/2" DIA.
6	ENTRANCE TUBE	FRP 36" I.D.
7	FLUORESCENT LIGHT	2-20W. TUBES
8	DISCH. PLUG VALVE	C.I. 4" 3-WAY
9	DISCH. CHECK VALVE	C.I. 4"
10	CONTROL PANEL	FRP 56" x 24" x 12"
11	STORAGE COMPARTMENT	FRP 24" x 12" x 12"
12	PUMP	C.I. 3" STYLE 127
13	BELT GUARD	FRP
14	PUMP & MOTOR BASE	STEEL
15	MOTOR	FR. 234T 1/2 H.P. 15 RPM. 1750

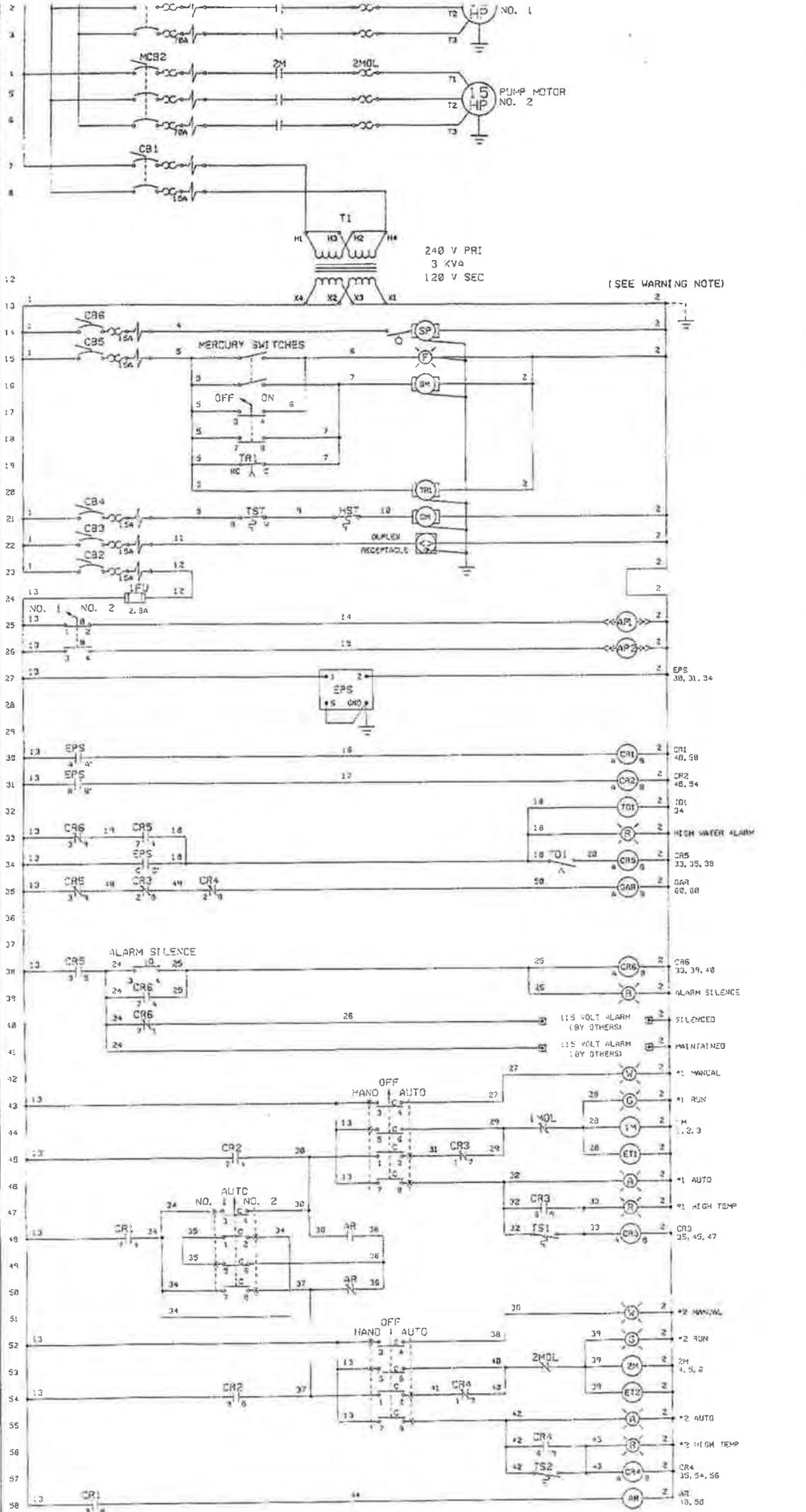


NOSS HILL FARMS PUMP STATION
 MAYNARD, MASS.
 SERIAL NO. 887267

3.4 x 4 LEFT HAND DIS

4 5513-012

THE GOR
 MANUFACTURING CO.
 NAME: 76" DIA. FRP UNIT
 LIFT STATION WITH DC
 DRW. EN. CIR. D.W.
 D 45513-012



LEGEND	DESCRIPTION
MCB1, MCB2	MOTOR CIRCUIT BREAKER #1, 2
1M, 2M	MOTOR STARTER #1, 2
1MOL, 2MOL	MOTOR OVERLOAD RELAY #1, 2
CB1	120 VOLT SERVICE DISCONNECT
T1	POTENTIAL TRANSFORMER
CB2-CB6	120 VOLT CIRCUIT BREAKERS
SP	SUMP PUMP
F	STATION LIGHT-FLUORESCENT
BM	BLOWER MOTOR
TR1	BLOWER MOTOR
DM	DEHUMIDIFIER
TST	THERMOSTAT
HST	HUMIDISTAT
1FU	120 VOLT CONTROL FUSE
AP1, AP2	AIR PUMP #1, 2
EPS	ELECTRONIC PRESSURE SWITCH
CR1	LEVEL RELAY-LEAD
CR2	LEVEL RELAY-LAG
TD1	TIME DELAY-POWER UP RESET
R	INDICATING LIGHT-RED
CR5	LEVEL RELAY-HIGH WATER
CR6	ALARM SILENCE RELAY
W	INDICATING LIGHT-WHITE
G	INDICATING LIGHT-GREEN
ET1, ET2	ELAPSED TIME METER #1, 2
A	INDICATING LIGHT-AMBER
CR3, CR4	HIGH TEMP SHUTDOWN RELAY #1, 2
TS1, TS2	HIGH TEMP SENSORS #1, 2
AR	ALTERNATOR RELAY
GAR	GENERAL ALARM RELAY

--- WIRING BY OTHERS
 [] TERMINAL CONNECTION BY OTHERS

WARNING
 CONNECT TO CONTROL PANEL GROUND LUG
 BEFORE APPLYING LINE POTENTIAL.
 CONTROL CIRCUIT TO BE GROUNDED BY
 USER IF CONDITIONS PERMIT.

ENGINEERING ORDER

BELOW GROUND FIBERGLASS LIFT STATION
WITH ELECTRONIC PRESSURE SWITCH



GR WASTE WATER
GORMAN-RUPP EQUIPMENT
MANSFIELD, OHIO 44902

Date 10/10/88 DH:cb

Revisions _____

Location: MAYNARD, MA.

TOBIN RD. LIFT STATION

Station Serial 88-2905

Owner: DEPT. OF PUBLIC WORKS

Engrg. Firm DUFRESNE - HENRY

MAYNARD, MA.

WESTFORD, MA.

GENERAL DATA

Station Enclosure & Entrance Tube: Fiberglass Reinforced Isophthalic Polyester Resins

Station Nominal Dia. 7'6" Height 10.6' Outline Drawing No. 45521-001

Entrance Tube: 36" Dia. 6-1/2' long with standard parkway cover

Modification: STATION SHELL DESIGNED FOR A MAX BURY OF 15'.

PIPING AND VALVE DATA

Suction Pipe Size 4 " Cast Iron

Station Discharge Outlet Location As Viewed
From Shaft End of Pumps

Pump Discharge Pipe Size 4 " Cast Iron

Located: (Side) LEFT

Common Discharge Pipe Size 4 " Cast Iron

SUCTION STATION INLETS TO PUMPS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4
Suction Inlet F/G Polyester M. J. Fitting	4"	4"		
Valve, Plug	4"	4"		

DISCHARGE, CAST IRON PUMPS TO COMMON HEADER

Check Valve, Spring Loaded	4"	4"		
Valve, Plug (3-Way)	4"	N/R		
Elbow (Increasing)	N/R	4"		
Increaser, Concentric				

DISCHARGE, CAST IRON COMMON HEADER AND STATION OUTLET

SPOOL PIECE	4"
Discharge Outlet F/G Polyester M. J. Fitting	4"



ENGINEERING ORDER



Date 10/10/88

Revisions _____

Serial 88-2905

PUMP AND MOTOR DATA

PUMP DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Design characteristics (GPM @ TDH)		160 @ 31'	160 @ 31'		
Priming lift		8'	8'		
Total dynamic suction lift		10'	10'		
NPSH required		4'	4'		
NPSH available	EXCESS w/3' S.F.	16.9'	16.4'		
Pump Model		T4A3-B	T4A3-B		
Pump Serial No.		910939	910940		
Impeller diameter		9-3/4	9-3/4		
G-R Mech. seal, tungsten-titanium carbide		YES	YES		
Base, V-Belt		1035	1035		
Pump speed					
Horizontal Electrical MOTOR DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower		5	5		
RPM	(FULL LOAD)	1720	1720		
Electrical characteristics: Phase/Hertz/Volts	(WIRED)	3/60/230	3/60/230		
Electrical design: (standard NEMA unless otherwise indicated)		B	B		
Enclosure, open drip-proof	w/1.15 S.F.				
Manufacturer	GORMAN-RUPP	8700525B	8700536B		
Code letter		J	J		
Frame size		184T	184T		
Full load amps.		13.4	13.4		
V-BELT DRIVE DATA		Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Center Distance		21.3	21.3		
Sheave on Pump	Section	3V	3V		
BUSHING # 1610	O.D.	6.90"	6.90"		
BORE 1-1/2" KEY 3/8"	Grooves	2	2		
Sheave on Motor	Section	3V	3V		
BUSHING # 1610	O.D.	4.12"	4.12"		
BORE 1-1/8" KEY 1/4"	Grooves	2	2		
V-Belt Size	(2) BELTS PER PUMP	3VX600	3VX600		
MANUFACTURER		DODGE	DODGE		

RELATED MODIFICATION/DATA/COMMENTS, ETC.

NOTE: Standard motor rated voltages will not agree with rated system voltages. For example, new NEMA motor voltages for 3 phase current will be 230 VAC/460 VAC. Related system voltage would be 240 VAC or 480 VAC. Standard motors are guaranteed to operate satisfactorily within plus or minus 10% of standard nameplate voltage ratings. It is rarely necessary to apply motors specially wound for odd voltages (at additional cost). When special voltage motors are required, it should be so noted.

MAILED COPY
10/11/88

ENGINEERING ORDER



Date 10/10/88
Revisions _____
Serial 88-2905

ELECTRICAL DATA

ELECTRICAL SERVICE SYSTEM

Phase: 3 Cycle: 60 Volts: 240 Wire: _____

115 volt, single phase current (is/ is not) available for control & auxiliary circuits.

MOTOR CONTROL CENTER

Enclosure, NEMA type #1 FIBERGLASS

Wiring Diagram No. D4-04967

Main conduit size: 2 Motor branch circuit conduit: 3/4

Ground wire size: (MTR. BR.) # 10 Motor branch wire size: # 10 AWG THW

Power transformer 3 KVA, 230 volts, primary to 115 volts, AC

Control transformer breaker, frame size: FAL22015 INT. CAP. SYM RMS AMPS 10,000

Motor control circuits are 115 volt, single phase current.

Modification: _____

THE LIQUID LEVEL WILL BE MONITORED BY THE ELECTRONIC PRESSURE SWITCH CONTROL.

A GENERAL ALARM RELAY WILL BE PROVIDED TO MONITOR THE FOLLOWING ALARM CON-
DITIONS:

1. HIGH WATER ALARM
2. HIGH PUMP TEMPERATURE SHUTDOWN PUMPS #1 and #2

MOTOR CONTROL	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
Horsepower	5	5		
Full load amps.	13.4	13.4		
Motor branch circuit breakers, Frame size	FAL	FAL		
Mfg. I.T.E. Amp rating	30	30		
Number	FAL32030	FAL32030		
Magnetic starters, Size	1	1		
Mfg. ALLEN BRADLEY Number	509-B0D	509-B0D		
3 overload coils per starter	W55	W55		
MOTOR BR. C/B INTER. CAP. AMPS RMS	10,000	10,000		

DISTRIBUTION BRANCH CIRCUIT BREAKERS AND/OR FUSES

FUSE INTER. CAP. 10,000 AMPS RMS
Circuit breaker interrupting cap. 10,000amps. RMS WESTINGHOUSE CIRCUIT BREAKERS/BUSSMAN FUSES

CONTROL C/B (QC)	CONTROL FUSE (FNM)	SUMP PUMP C/B (QC)	LIGHTS & (QC) BLOWER C/B	DEHUMIDIFIER C/B (QC)	RECEPTACLE C/B (QC)
Trip rating amps. 15	2.8	15	15	15	15

LIQUID LEVEL BUBBLER CONTROL COMPARATOR SET POINTS

0-12" Full Scale	LEAD PUMP	LAG PUMP	HIGH WATER ALARM
Cut-in feet	AS REQ	AS REQ	AS REQ
Cut-out feet	AS REQ	AS REQ	MANUAL RESET

MADE IN U.S.A.
 BO 103 11/1/88