



**BEDFORD COUNTY PUBLIC SERVICE AUTHORITY  
OPERATING POLICY MANUAL**

Chapter: Engineering  
Document Number: 10.54  
Page 2 of 5

Issue (Effective) Date: October 1, 2008  
Approval Date: October 1, 2008  
Approved By: Executive Director

**LIFT STATION REVIEW CHECKLIST**

- | <b>B. <u>Plans</u></b>  | <b><u>YES</u></b> | <b><u>NO</u></b> | <b><u>N/A</u></b> |
|---|-------------------|------------------|-------------------|
| 1. Station is capable of pumping 30 gallons per minute or more, and/or is intended to be Authority owned and operated.          | _____             | _____            | _____             |
| 2. Bioxide is provided where necessary to slow the wastewater degradation (based on length of forcemain and/or detention time). | _____             | _____            | _____             |
| 3. Design calculations were submitted with plans, showing the pump curve and system head calculations.                          | _____             | _____            | _____             |

**II. Plan Review**

- | <b>A. <u>Building</u></b>  | <b><u>YES</u></b> | <b><u>NO</u></b> | <b><u>N/A</u></b> |
|--|-------------------|------------------|-------------------|
| 1. A secure control building is provided within a distance of 20 feet from edge of wet well.   | _____             | _____            | _____             |
| 2. All electrical panels, control panels, motor starters, and generator transfer switches (if so equipped) are shown mounted inside this building.   | _____             | _____            | _____             |
| 3. The control building is a minimum of 8-foot wide by 8-foot deep. If the building also houses items other than the electrical panels and controls (i.e. a bioxide tank, generator, equipment storage, or suction lift pumps), additional space is allocated.                               | _____             | _____            | _____             |
| 4. A wall mounted space heater adequately sized adequately is provided with a thermostat mounted 4-feet off the floor.   | _____             | _____            | _____             |
| 5. A ventilation fan is provided on the top of one side of the building, and a mechanical louver on the bottom of the other side of the building; the fan is equipped with a Hand/Off/Auto switch, where the auto switch is controlled by a thermostat that is mounted 4-feet off the floor. | _____             | _____            | _____             |
| 6. Lockset is specified as mortise style lock deadbolt lock and handle, equivalent to Corbin Russwin model ML2051 BHMA 630.  | _____             | _____            | _____             |
| 7. A minimum of 2 fluorescent lighting fixtures with electronic ballasts are shown for an 8-foot x 8-foot building; proportionately more fixtures are shown if the building is larger.   | _____             | _____            | _____             |

- | <b>B. <u>Pumps</u></b>   | <b><u>YES</u></b> | <b><u>NO</u></b> | <b><u>N/A</u></b> |
|--|-------------------|------------------|-------------------|
| 1. Submersible pumps are retrievable, with stainless steel chain as the lifting equipment.               | _____             | _____            | _____             |
| 2. Pumps shall have independent Variable Frequency Drives (VFD) for soft starting and stopping.          | _____             | _____            | _____             |
| 3. Pumps shall not have trimmed impellers; the full size impellers flow rate is controlled with the VFD. | _____             | _____            | _____             |
| 4. Manufacturer is Hydromatic, KSB, Gorman-Rupp pumps or approved equal.                                 | _____             | _____            | _____             |

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 Page 3 of 5

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<b>C. <u>Controls, Sensors, and Equipment</u></b>	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>N/A</u></b>
1. An Allen Bradley SLC-505 PLC is shown to control the pumps and to control the alarming.	_____	_____	_____
2. An Allen Bradley Panelview 550 or greater, with an ethernet connection, is shown as the display panel for the site.	_____	_____	_____
3. A sensor is provided on the incoming side of the VFD to monitor the voltage and phase of the utility power.	_____	_____	_____
4. An uninterruptible power supply (UPS) is provided for the PLC, flow meter, and any other key components in the control cabinet.	_____	_____	_____
5. A 4 port rail mounted ethernet switch is provided in the cabinet.	_____	_____	_____
6. The following manual controls and indicators are provided:	_____	_____	_____
▪ Hand / Off / Auto Switch for each pump	_____	_____	_____
▪ Push button to acknowledge all alarms	_____	_____	_____
▪ Push button to reset all alarms	_____	_____	_____
▪ Red indicator light	_____	_____	_____
7. A submersible pressure transducer is provided to monitor wet well level. The transducer is retrievable, mounted inside of a straight stilling well (no bends or deflections) of at least 4-inch diameter PVC.	_____	_____	_____
8. A mercury float switch is provided for high level backup and alarming. Float is located near the invert in elevation for the lowest gravity sewer pipe.	_____	_____	_____
9. A mercury float switch is provided for low level backup and alarming. Float is located near the top of the motor for the submersible pump, or at least 18-inches above the end of the suction line for suction lift pumps.	_____	_____	_____
10. Mercury float switches are mounted where they can be easily accessed for retrieval, and attached to a stainless steel chain to allow for adjustment.	_____	_____	_____
11. Alarm light and horn are mounted on the outside of the controls building, in a location that is easily visible from the nearest street and/or structure.	_____	_____	_____
12. Magnetic Flow meter is provided with both analog (4-20mA) and digital (pulse) outputs.	_____	_____	_____
13. Where generators are required by the DEQ regulations, they should have remote alarming capability that is tied into the PLC as an alarm condition.	_____	_____	_____
14. Where generators are not required, an emergency portable generator connection is required, with a Crouse Hinds female connection compatible with the Authority's generator.	_____	_____	_____

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 Page 4 of 5

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**D. Wet Well and Valve Vault**

	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>N/A</u></b>
1. Plans shall show the following elevations, and distance (in feet) off of the wet well floor, in the section view of the wet well:			
▪ Floor elevation	_____	_____	_____
▪ Low Float switch location	_____	_____	_____
▪ All Pumps Off	_____	_____	_____
▪ Lag Pump Off	_____	_____	_____
▪ Lead Pump On	_____	_____	_____
▪ Lag Pump On	_____	_____	_____
▪ High Alarm Setting	_____	_____	_____
▪ High Float switch location	_____	_____	_____
▪ Invert in of all gravity pipes	_____	_____	_____
▪ Top of wet well	_____	_____	_____
2. A retrievable stainless steel basket screen with vertical guide rails is provided at all locations where gravity sewer enters the wet well. If the pump hoist cannot be used to directly lift the basket, then a separate hoist is provided for the basket.	_____	_____	_____
3. Bilco style hatches with locking mechanisms are provided on the wet well and valve vault.	_____	_____	_____
4. One large hatch provides access to all the pumps.	_____	_____	_____
5. A separate hatch provides access to the floats, transducer, and basket screen (unless the pump hatch can provide access to these items).	_____	_____	_____
6. The hatch on the valve vault is a minimum size of 36-feet by 36 feet.	_____	_____	_____
7. There is at least 1 vent mounted on the top of the wet well, with a removable stainless steel screen on the vent.	_____	_____	_____
8. An emergency pump connection consisting of a 4-inch quick disconnect hose fitting is provided on the discharge side of the check valve in the valve vault.	_____	_____	_____
9. One check valve, one gate valve, and one diaphragm pressure gauge (located on the influent side of the check valve) is provided in the valve vault (submersible) or building (suction lift) for each of the discharge lines from the pumps. A ball valve is provided between the pressure gauge and the tap to the pipe.	_____	_____	_____
10. All slide rails, chains, brackets, bolts, and other appurtenances are stainless steel.	_____	_____	_____
11. Limit switches are provided on all check valves.	_____	_____	_____

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<b>E. <u>Site Requirements</u></b>	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>N/A</u></b>
1. Site is a minimum of 75-foot wide by 75-foot deep, unless otherwise approved by the Authority.	_____	_____	_____
2. If the site does not border a public right of way, a dedicated Authority right of way is provided to the site.	_____	_____	_____
3. A trolley beam (W6x12 I-beam) shall be provided directly above the hoist connection point for the pumps. The beam is supported by at least 2 posts, which are tall enough to allow the hoist to lift the bottom of the pump off the ground at least 4-feet. A trolley and hoist are provided to run along this trolley beam.	_____	_____	_____
4. At least 12 feet of ground clear space shall be provided beside the wet well (submersibles) or building (suction lift).	_____	_____	_____
5. Site lighting consists of at least 2 site lights.	_____	_____	_____
6. One pole mounted 200 watt mercury vapor light with a dusk to dawn sensor is located as close as possible to being directly over top of the pumps in the wet well. The light operates off a wall mounted switch that is located in the control building.	_____	_____	_____
7. A fence is provided 8-feet tall with 3 strands of barbed wire. The main driveway entry gate shall be a double swing gate of at least 20-feet total width.	_____	_____	_____

**Section 1. REVISIONS**

- A. This policy was approved and adopted by the Authority's Executive Director on October 1, 2008.