



- EXCERPT -

**Preliminary Engineering Report**  
**Terminal Pump Station Improvements**  
**Binghamton-Johnson City Joint Sewage Treatment Board**

**GHD** | One Remington Park Drive Cazenovia NY 13035 USA|

8618134 | March 2018 (Revised October 2018)

**PRELIMINARY ENGINEERING REPORT**  
**TERMINAL PUMP STATION IMPROVEMENTS**

Prepared for

**BINGHAMTON-JOHNSON CITY  
JOINT SEWAGE TREATMENT BOARD**



A handwritten signature in black ink, appearing to read "Bruce G. Munn", positioned below the professional seal.

Prepared by

**GHD CONSULTING SERVICES INC.**  
One Remington Park Drive  
Cazenovia, NY 13035

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## 4. Recommendations

### 4.1 Process/Mechanical

The recommendations for the process/mechanical equipment are noted in Figure 4.

#### 4.1.1 Slide Gates

It is recommended that the existing slide gates be replaced under this project. Both stainless steel and cast iron (replacement in kind) gates were considered. Due to the corrosive nature of raw wastewater, stainless steel gates are recommended for this application. It is proposed that the upstream slide gates, where the stems are longer, be installed with a motorized operator which will be suitable for use in a Class I, Division 1 area. The downstream gates will utilize manual operators because the stems are shorter and because of their location in the wet well, which is prone to flooding. Extending the downstream gate operators to grade is not feasible due to conflicts with the existing stairs.

The existing gates are wall mounted. In order to minimize or eliminate bypass pumping to replace these gates, it is proposed the new gates be installed on the opposite side of the wall from where the existing gates are installed. The existing gates could be used to isolate the channels while the new gates are being installed on the opposite face of the wall. It should be noted that bypass pumping may still be required during demolition of the existing gates.

#### 4.1.2 Screenings and Grit

Several alternatives were considered to address the inadequate screenings removal, including replacement of the existing channel grinders in kind, installation of new manual bar screens, and installation of new mechanical bar screens.

##### **Grinders**

A preliminary evaluation was performed based on manufacturer's literature and the proposed new improvements. With the suggested new hoist, swing gate, and floor curb removals discussed in more detail in later sections, it is expected the clearance from the hoist to the finished floor at the opening would be approximately 9 feet.

The channel grinder height is limited by the width of the channel, which appears to be 4 feet according to record drawings. The existing grinders are approximately 2 feet 10 inches wide. The Taskmaster® Model 14060D as manufactured by Franklin Miller matches the existing grinder width; the overall grinder height would be 5 feet 7 inches. This would provide approximately an additional 19 inches of grinder height in comparison to the existing equipment. A hydraulic motor to match existing is recommended as the grinders are not always submerged.

##### **Manual Bar Screens**

Manual bar screens are currently being utilized to provide solids removal since wastewater bypasses the existing grinders. The process to remove screenings from the entire depth of the



channel and dispose of them from the wet well is a more labor-intensive process than a mechanical system. As discussed later in this report, it is recommended to raise the intermediate floor of the wet well by 3 feet, which would further compound the labor required to rake the entire depth of the channel. The installation of manual bar screens only is not recommended.

#### ***Mechanical Bar Screens***

Mechanical bar screens were evaluated to replace the existing grinders; however, several concerns were identified. The intermediate wet well floor is proposed to be raised by 3 feet, making the total channel depth 12 feet 6 inches. A mechanical bar screen would then extend a couple feet above the new floor elevation, making the total length longer than the existing clearances on the upper level. Additionally, the roof would require a new skylight to accommodate the removal of the screens and equipment. This is a significant structural modification.

Washing and removal of the screenings themselves also presents an issue. The limited space in the wet well presents a challenge to install a washer compactor for the screens while also having adequate access to the equipment. Additionally, a discharge chute from the washer compactor to convey the washed screenings up to grade would need to be almost completely vertical.

Due to the limited space available and the high costs associated with this work, the use of mechanical bar screens at the facility is not recommended.

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