

STANDARD LIMITATIONS

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1.0 LIFT STATION INFORMATION

Station Name:	<u>Burrows Lift Station</u>
Location of Station:	<u>2080 Burrows Avenue</u>
Date of Inspection:	<u>January 22, 2010</u>
Inspected By:	<u>Damir Muhurdarevic, EIT</u>
Inspecting Firm:	<u>MMM Group Limited (MMM)</u>
Client:	<u>City of Winnipeg – Water and Waste Department</u>

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2.0 OBSERVATIONS

2.1 General

Burrows Lift Station is a combined conventional and Dakota type station. The station was originally a Dakota Lift station located completely underground with access to through a manhole. The manhole is constructed of prefabricated steel section and the underground chamber is constructed of cast-in-place concrete. An upgrade to station was the construction of a single above ground floor built around the manhole. The main floor is constructed masonry and wood framing, and it has a cast-in-place concrete floor. The main floor contains typical lift station components and controls, while the original lift station is a single round chamber station that contains two identical wastewater and land drainage pumps. The condition and operation of the pumps was not observed.

2.2 Lifting Devices

The main floor has an S200x27 lifting beam that spans 3600mm along the entire width of the room. The wall connections of this beam are not visible due exposed insulation. A sliding trolley is mounted on the beam and has a posted rating of 1.0 ton.

The floor below ground, the Dakota chamber room, has a semi-circular S75x8 lifting beam whose upper flange is welded to three (3) sections of HSS 38x38x4.8mm, which are in turn welded to anchor plates that have been cast into the cast-in-place concrete slab at the top of the chamber. The anchor plate is not visible and was not inspected. The lifting beam has a sliding trolley mounted on it with a posted rating of 0.5 ton. Significant corrosion but no loss of structural area was observed in the beam during the inspection.

3.0 ANALYSIS AND LOAD RATING

The lifting beam on the main floor was analyzed for moment resistance. The connections to the wall were assumed to be bolted connections, a shelf angle welded to the bottom flange of the lifting beam at each end, and anchored to the wall with two (2) 12.4mm A307 bolts. This assumed connection was analyzed for shear resistance of the bolts which was governed with a resistance of 3.0 tons. However, due to the fact that the connection was assumed and the actual condition of the connection is completely unknown, a safety factor of 3 was applied to yield a **load rating of 1.0 ton**. It is recommended that the currently posted trolley rating is acceptable.

Analysis of the lifting beam system in the Dakota chamber was done; the S-beam was checked for moment resistance, and the S-beam to HSS weld connection as well as the HSS to cast-in-place concrete slab weld connection. The governing factor was the moment resistance in the beam, which was calculated to be 1.25 tons. However, it is recommended that a safety factor of 2.5 be applied to beam, to yield a **load rating of 0.5 ton**. It is recommended that the currently posted trolley rating is acceptable.

Table 3.1 below is a summary table of lifting device load ratings:

Table 3.1 Load Rating Summary

Type	Quantity	Location	Calculated Resistance	Safety Factor	Load Rating
S200x27 Lifting Beam	1	Main Floor	3 tons	3.0	1.0 ton
S75x8 Lifting Beam	1	Dakota Chamber Room	1.25 tons	2.5	0.5 tons

4.0 CONCLUSIONS AND RECOMMENDATIONS

Below is a summary of deficiencies and items requiring further attention.

Table 4.1 Deficiencies

Ref.	Description	Priority
4.1	Paint S75x8 Beam in the Dakota Chamber room, to prevent further corrosion	B

Items denoted as Priority A are Must Do Work items and should be addressed immediately.

Items denoted as Priority B are One (1) Year Deferrable items and should be addressed as soon as possible within one (1) year.

Items denoted as Priority C are Three (3) Year Deferrable items and should be addressed within three (3) years.

MMM, through this inspection, does not warrant the lifting devices installation or warrant that the design complies with current codes or standards. As per our analysis it was concluded that the current load ratings of trolleys on both lifting beams are acceptable, the main floor S200x27 beam's trolley is **load rated at 1 ton**, and the Dakota chamber S75x8 beam's trolley is **load rated at 0.5 ton**.

This lift station inspection is limited to a visual inspection lifting members and connections. The inspection pertains to surface material condition only.

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Photograph No. 1

Lifting beam located in the Dakota component of the lift station



Photograph No. 2

Sliding hook detail of the lifting beam located in the Dakota component of the lift station