

Lister Industries Ltd.
7410 – 68 Avenue
Edmonton Alberta T6B 0A1

Attn: Arnie Stephens, General Manager

Our File: 13-3030
Date: January 8, 2014

Dear Mr. Stephens,

Re: Load Rating of Lister Industries All-Steel Mats

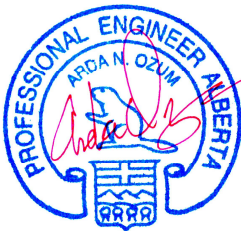
At your request, Acius Engineering Ltd. performed a detailed structural analysis for the Lister Industries All-Steel mat. The purpose of the analysis was to determine the performance capability of the mat. The following is a summary of our findings and analysis parameters.

The All-Steel mat was modeled as a series of HSS6x6x1/4 rectangular tube sections welded together to form an 8' x 40' mat steel mat. The grade of steel used in the model was W350. The soil support under the mat was modeled with a soil modulus $k=20,000 \text{ kN/m}^3$ which is a measure of the soil stiffness. A load of 600,000 lbs was placed along the mat at various locations. The load was spread out over a 4' x 8' area of the mat.

Based on the noted parameters and loading, our analysis indicates that the Lister All-Steel mat has approximately 1.9 factor of safety. Our analysis model also indicates that there will be approximately 4" of deflection in the mat but the stresses remain in the elastic yield stress range for the steel and the mat will recover its shape provided the design parameters are not exceeded.

We trust this letter meets your needs. Please let us know if we may be of further assistance.

Yours truly,



Arda Ozum, PEng.
Director, Acius Engineering Ltd.