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June 7, 2019

Debra Hilmerson
Hilmerson Safety Services, Inc.
8678 Eagle Creek Circle
Savage, MN 55378

DHG Job No.: **2018-301, MS 07**

Subject: **OSHA Compliance Review of Safety Rail System**

Reference: **"2018-301 Safety Rail System Calculations Review Report Revised 08-28-2018" by DH Glabe & Associates, by Michael Klein, Colorado PE License #47417, prepared for Hilmerson Safety Services, dated August 28, 2018.**

Dear Ms. Hilmerson:

As requested, DH Glabe & Associates have performed an engineering compliance review for the Hilmerson Safety Rail Systems. The following presents DH Glabe & Associates' scope of work, discussion, and conclusion:

SCOPE OF WORK

The review was limited to an OSHA compliance review of the Hilmerson Safety Guardrail System, which consists of the anchored railing system, railing accessories, and cart rack. DH Glabe & Associates have not assessed the structural capacity of any building where the safety rail system may be implemented. The purpose of this reports is to review the referenced safety systems for general compliance will the required OSHA 1926 Construction and 1910 General Industry regulations for Guardrail Rails and Fall Protection. DH Glabe & Associates has not approved or sealed the railing design by others; this shall be the responsibility of the railing designer.

DISCUSSION

Based upon our review of the engineering drawings of the safety systems, we have identified the following items:

1. The top rail and midrail meet the requirement of OSHA 1926.502(b)(9)/1910.29(b)(9) – "*Top rails and midrail shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations.*"
2. The top rails meet the requirements of OSHA 1926.502(b)(1)/1910.29(b)(1) – "*Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level.*"
3. The midrail meet the requirements of OSHA 1926.502(b)(2)/1910.29(b)(2) – "*Midrail, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high."*
4. The toeboards meet the requirements of OSHA 1926.502(j)(3)/1910.29(k)(1)(ii-iv) – "*Toeboards shall be a minimum of 3 1/2 inches (9 cm) in vertical height from their top edge to the level of the walking/working surface. They shall have not more than 1/4-inch (0.6 cm) clearance above the walking/working surface. They shall be solid or have openings not over 1 inch (2.5 cm) in greatest dimension.*"
5. The screens or mesh meet the requirements of OSHA 1926.502(b)(2)(ii)/1910.29(b)(ii) – "*Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports*."
6. Based on the previous review of the structural calculations as referenced above, the guardrail system meets the following OSHA Requirements for strength:
    a. 1926.502(b)(3)/1910.29(b)(3) - *Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge."*
    b. 1926.502(b)(4)/1910.29(b)(4) - *When the 200 pound (890 N) test load specified in paragraph (b)(3) of this section is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level.*"
    c. 1926.502(b)(5)/1910.29(b)(5) – *"Midrail, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail or other member*."
    d. 1926.502(j)(2)/ 1910.29(k)(1)(vi) – *"Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toeboard."*

CONCLUSION

Based upon our engineering review of the referenced drawings, DH Glabe & Associates have determined that the Hilmerson Safety Rail System design is acceptable for use in its current configuration and compliant with all applicable OSHA Fall Protection Standards. Please note DH Glabe & Associates have not assessed the structural capacity of any building where the safety rail system may be implemented. The client/contractor is responsible for confirming adequacy of implementing safety railing products on a project by project basis.

Limitations: This report should not be considered a guarantee or warranty of the proposed structure or system. The structure or system is dependent upon the recommendations provided by others. DH Glabe & Associates was limited to the scope of work provided herein. DH Glabe & Associates cannot assume liability from any damage associated with unknown conditions or inaccurate documentation. Please call with any questions or concerns.

Thank you for this opportunity to provide our engineering services.

Respectfully Submitted,

DH GLABE & ASSOCIATES

Nathan Anderson, EIT
Engineer I

Reviewed by:

Michael Klein, PE, P. Eng., LEED AP
Senior Engineer