

Crushed by landscaping blocks—Insp # 1670069 **Frerichs Sawmill**

In that a 44 year old male employee was crushed by several 3500 pound concrete landscaping blocks when a retaining wall collapsed. The wall was approximately 40' long x 8' tall x 2' wide and comprised of interlocking concrete V-Lock Blocks that were approximately 2' high x 2' deep x 6' long and stacked 4 high.

The retaining wall is used as a loading dock to fill trailers of semi- trucks with various wood byproducts from sawmill operations, such as chips, sawdust, and bark. A Volvo Wheel Loader is used to scoop up the products from a pile, carry them to the loading dock, and dump them in the trailer. Also, the retaining wall area is used to unload logs from tractor trailers by using a Knuckle boom Log Loader.

At the time of the incident, an empty tractor-trailer was picking up a load of bark. The driver of the semi-truck, who had not been to this location before, had trouble backing the truck exactly parallel to the wall.

The truck, trailer, and wall need to be aligned so the load can be evenly distributed in the trailer. The driver had trouble because the area was extremely muddy making steering the rig difficult. Also, there was heavy equipment parked in the truck driver's way which made navigating around the yard challenging. Despite several tries, the driver could only manage to get the truck's cab parallel to the wall, but not the trailer. Sawmill employees and the truck driver decided to work together to push the tail-end of the trailer near the wall with a skidder (Caterpillar 518C) to where it could be loaded effectively from above.

The victim and the truck driver were standing on the ground close to the south end of the retaining wall near the trailer's end while another employee operating a skidder, used the skidder's blade to push the corner of the trailer towards the wall. The victim was giving ground guidance so the skidder operator would know how far to push the trailer. As the trailer was being pushed closer to the wall, a Wheel Loader operator, began to load the trailer with bark from top part of the retaining wall. As he approached the trailer with a scoop of bark, the block right in front of the loader's wheels completely dislodged from the wall and tumbled to the ground below.

The company owner was standing outside near the office at this time; he stated that he saw the loader operator abruptly apply the brakes prior to the block tumbling. The blocks on both sides of the dislodged block began to fall like dominos. The wall partially collapsed, striking the victim, and narrowly missing the truck driver.

The wall was installed by sawmill employees approximately 20 years ago. The company owner informed the CSHO that he erected the retaining wall with the specific intention of using it as a loading dock.

Research was conducted on retaining walls, in particular those constructed of V-Lock Blocks. Retaining walls comprised of V-Lock Blocks are gravity walls, where the block wall uses its

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own weight to hold back the soil it is retaining. In other words, the weight of the concrete blocks is *greater* than the force required to hold back the soil.

Retaining walls can fail when the opposite is true, when the force required to hold the soil is greater than the weight of the blocks. This wall had additional, transient loads on the fill side of the wall exerted by the weight of the Wheel Loader and Knuckle boom Log Loader.

During the inspection, it was noted that there were copious amounts of mud and standing water scattered about the site. Evidence of moisture on the blocks themselves were also observed. Extra moisture in the fill materials behind the retaining wall adds additional weight, which could further degrade the wall's stability. Also, the fill materials behind the wall are not a typical fill material like clay, sand, or loam. It is a mixture of sawdust, bark, and wood chips; it absorbs water readily and can become saturated after a significant rain event. These wood byproducts do not compact well, they absorb moisture, and overall degrades the stability of the retaining wall. Soil compaction is critical to the stability of structure like retaining walls and foundations.

**Citation(s) as Originally Issued**

A complete inspection was conducted at the accident scene. Some of the items cited may not directly relate to the fatality.

**Citation 1 Item 1**

**Type of Violation:**

**Serious**

**\$4000**

**TCA 50-3-105(1):** The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees:

In that an employee working at the sawmill's retaining wall was killed when the modular retaining wall system collapsed and two 2' x 2' x 6' V-Lock concrete blocks weighing approximately 3500 pounds fell from the wall, crushing him.

**Citation 2 Item 1 a**

**Type of Violation: Other-than-Serious**

**\$300**

**TDLWD Rule 0800-01-03-.03(27)(a):** The log of all work-related injuries and illnesses (OSHA Form 300), and/or the summary of work-related injuries and illnesses, (OSHA Form 300-A), and/or the injury and illness incident report (OSHA Form 301) or equivalent forms were not maintained by the establishment:

In that the employer did not maintain OSHA 300 Logs and OSHA 300A Summaries for the years 2020 and 2022.

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**Citation 2 Item 1 b**

**Type of Violation: Other-than-Serious**

**\$0**

**TDLWD Rule 0800-01-03-.04(3)(b)3:** A company executive did not certify that he or she had examined the OSHA 300 Log and that he or she reasonably believes, based on his or her knowledge of the process by which the information was recorded, that the annual summary was correct and complete:

In that there were two OSHA 300A Summaries for 2023 and there were missing OSHA 300A Summaries for years 2022 and 2020.



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