SmartWork

Form Name: **SST Best Practice Submission**

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Responses

Submitter Name (optional)

Jay Anderson

Submission Date

November 14, 2017

Basis For Submission

Best Practice - Positive Observation

Work Area

Facility Wide / General

Other

Site Decommissioning

Severity Potential

2 - Moderate Hurt (Weeks-Months)

Work Category

Construction

Work Activity

Demolitiion

Other

No Response

Hazard to be mitigated

LIne of Fire

Incident Brief

A Komatsu 450 excavator, configured for demolition activities, was shearing an 8 inch structural steel beam from previously demolished structure. The operator was using the shear approximately 12 to 18 inches from a 6 bolt splice plate. As the hydraulic shear head began cutting the beam, 3 bolts in splice connection failed and traveled approximately 8 feet with considerable force.

Details

Metal demo screens are used on all demo equipment however; an inherent weakness is size of screen versus operator visibility that still affords sufficient protection. One bolt head was small enough to penetrate through the metal demo screen (2" x 2") shattering the window and striking the operator in the abdomen. Fortunately, the operator suffered no injury from the bolt or shattered glass fragments.

Lesson Learned / Best Practice

While the process of shearing next to splice plates was changed to help mitigate this hazard, a more proactive solution following the hierarchy of controls was required. An engineering control was proposed and contractor ultimately installed security film laminate on all demo equipment front windshields. Most buildings or offices to meet FEMA standards typically use a laminate of 7mm, the contractor elected to use 8mm laminate The contractor elected to use 8mm laminate on the interior front windows of all demolition equipment. The use of the laminate has benefits beyond demolition applications.

Pictures or supporting documents Laminate

Summaryrev2.docx (attached)

For SST Vetting Team Use Only

Review Date

Submission Accepted (meets criteria)

Classification

Reviewer Name

Reviewer Recommendation

For SST Best Practices Governance

Communication Plan

Responsible person

Upload final BP Communication

Initial Incident Description:

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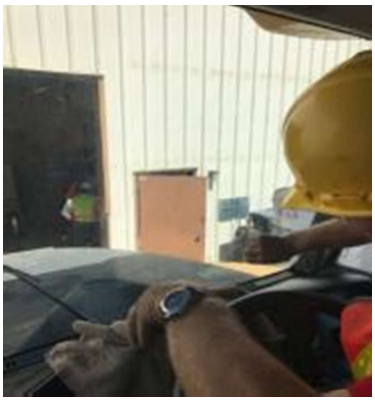
While the process of shearing next to splice plates was changed to help mitigate this hazard, a more proactive solution following the hierarchy of controls was required. After consideration an engineering control was proposed and contractor ultimately installed security film laminate on all demo equipment front windshields. This included excavator with shear or grapple attachments, front end loaders, off road haul trucks, and skid steers. The use of the laminate is same type used for police stations, and store fronts to eliminate and or mitigate flying glass and projectiles due to explosions, weather events, and vandalism. It adds additional protections to operator and significantly reduces the velocity of projectiles. Most buildings or offices to meet FEMA standards typically use a laminate of 7mm, the contractor elected to use 8mm laminate on all the interior windows. Manufacturer # SCL SR PS8.

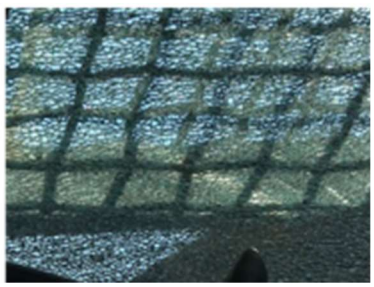




The new engineering controls installed after the initial incident were "battle tested" several weeks later. The contractor had two separate incidents involving projectiles small enough to get through the mesh of the demo screens. The description of the events is below but in both cases the projectiles did not go through the windshield and the shattered glass was held in place. This type of technology most people recognize as protective films applied to smart phones and tablets but initially began for building protection. Thinking "outside the box" allows for new applications for emerging technologies.

Incident 1: Employee was operating a Komatsu PC 400 excavator with a bucket and thumb attachment (grapple). The operator was sorting heavy metal out of a stock pile in preparation to rail car loading. As the employee was sorting through the stock pile, a small piece of metal from the grapple became airborne and struck the upper left corner of the windshield and shattered it. The excavator had a demo screen and the windshield with installed laminate. The laminate prevented the projectile and glass shards from entering the operators compartment. There was no injury to the operator. The windshield is scheduled to be replaced and the laminate re-installed.



Incident 2: Employee was operating a Komatsu PC 400 excavator with a bucket and thumb attachment (grapple). The operator was pulling debris from the drop zone of the coal hopper implosion area. The equipment was moving a 60’ length of carbon steel pipe 12” in diameter and 2’ thickness. The pipe slipped from the bucket and thumb dropping to the ground; where a rock was displaced becoming airborne. The rock went through the larger demo screen and struck the windshield. The rock projectile did not penetrate the window; the glass was shattered, but remained intact, held in place by the installed laminate. There was no injury to the operator. The windshield is scheduled to be replaced and the laminate re-installed.