

Category 1: Work Health and Safety

Hot Bitumen Shield

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Hiway Stabilizers



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Protecting the public from hot bitumen

When working out in the public arena, it is vital that we take steps to protect the public from our work.

The hazards of working with hot bitumen are well known by our employees and the controls are well known and followed, things like additional PPE and exclusion areas.

However, what happens when a member of the public unwittingly enters the work area from a side street, their house, or ignores footpath closed signs?

They would be in a hazardous area without any training, understanding of the hazards or PPE. If a member of the public was in the work area when there was an uncontrolled release of hot bitumen, they would not be protected from the product and could be seriously injured.

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The innovation

There is no way to induct the public about the hazards of working near bitumen and supplying them with PPE is not practical, so we needed another solution.

When applying the hierarchy of control: the hot bitumen could not be eliminated, so the next step was an engineering control.

This control was a metal barrier over the area where hot bitumen could be released under pressure, thus protecting the public in the event of a uncontrolled loss of containment and also reducing the risk and reliance on PPE as a protection mechanism for the Hiways workforce at the same time.



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The solution



Guard fitted to provide a barrier for uncontrolled release of bitumen

The solution was a metal guard that covers the areas where loss of containment of hot bitumen could occur. These covers form a barrier between the people in the area and the hot bitumen causing it to hit the barrier and fall safely to the ground and not fly uncontrolled through the air and potentially hit a passer-by or an employee.

Concealed hot bitumen hoses

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The challenges

The main challenge was to develop a shield that was large enough to cover the area of potential release and not be too large from a placement and manual handling point of view.

To achieve this, a risk assessment was conducted focusing on the most likely failure points where hot bitumen could be released in an uncontrolled manner.

The other challenge was to make the guard easily removable for cleaning and maintenance purposes.

Once these had been determined, a local engineering firm was engaged to design and manufacture a shield that would protect the public from our work while still being practical for the work being done.

Protective barrier on the other side of the machine



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Additional guarding



There is also additional guarding at the front of the machine to protect flexible hoses in the event that they should rupture and have an uncontrolled release of hot bitumen.

Additional cylindrical guarding to protect the main supply hose at the front of the machine

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Key points

The Bitumen Shield is a simple solution to a potentially critical event that could cause a member of the public to be badly burnt.

The solution also reduces the reliance on PPE in the event of a loss of containment, while the PPE control will remain in place, it will no longer be the only line of defence.

The solution is cost effective and does not require large scale changes to either the way we interact with the public, or to the processes that we use.

The solution eliminated the potential for hot bitumen to become uncontrolled, therefore has a high level of control effectiveness.

The Shield can be easily adapted to other machines and processes if the need arises.

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Summary

This is a cost effective way to eliminate a major hazard when working around the general public, at any time a member of the public could be in the work area without warning, likewise at any time a pressure system could fail without warning.

If these two events happened simultaneously, then there is the potential to have an event that would cause serious injury to passers by.

The Bitumen Shield protects the public and employees with a simple, cost effective solution that has eliminated the potential for people to become badly injured.



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