



Ironmaster Multi

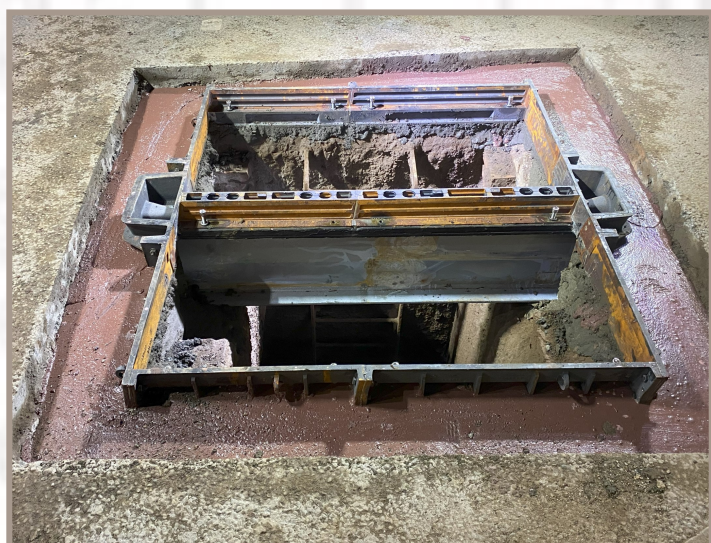


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Replacing Large Modular Multi-Span Access Covers & Frames



The Ironmaster system from Rhino delivers an engineering solution to replace, rebuild and re-bed multi-span access covers and frames.



A frame collapse was patched over with asphalt & needed inspecting & measuring for replacement



The original 4 lid solid top unit



Patched following a frame collapse



Uncovered, shows frame failure



The temporary patch prior to replacement works commencing

Failure of multi-span access covers: There are various factors that can lead to the failure of multi-span access covers. Some of the possible causes include:

- supporting structure
- mortars
- frame
- surround
- lids

Ultimately it doesn't matter. By the time we are alerted to the failure, it's difficult to tell the original cause, nevertheless our solution is to tackle each of the failure mechanisms on every job and ensure they are all repaired, reinstated, rebuilt and up to standard.

Patching over the collapse with asphalt: As a holding measure, the covers have been patched on one or more occasions with asphalt, pending a permanent resolution.

Eventually the stresses placed on the frame will result in a total collapse which means it is time to look for a permanent solution.

Rhino Asphalt Solutions have developed a specialist team to resolve these issues with large modular multi-span access covers and frames.

An inspection visit to open the lids and ascertain the correct sizing for a replacement is needed. The lids require opening to determine the clear opening size of the frame, as this is not necessarily the same as the cover/lid size, or the internal dimensions of the pit/chamber.

A quote for this visit is provided which necessitates a Hiab lorry, a Rhino installation lorry, a lift plan & RAMS, temporary patching and of course traffic management.

Inspected in February 2023

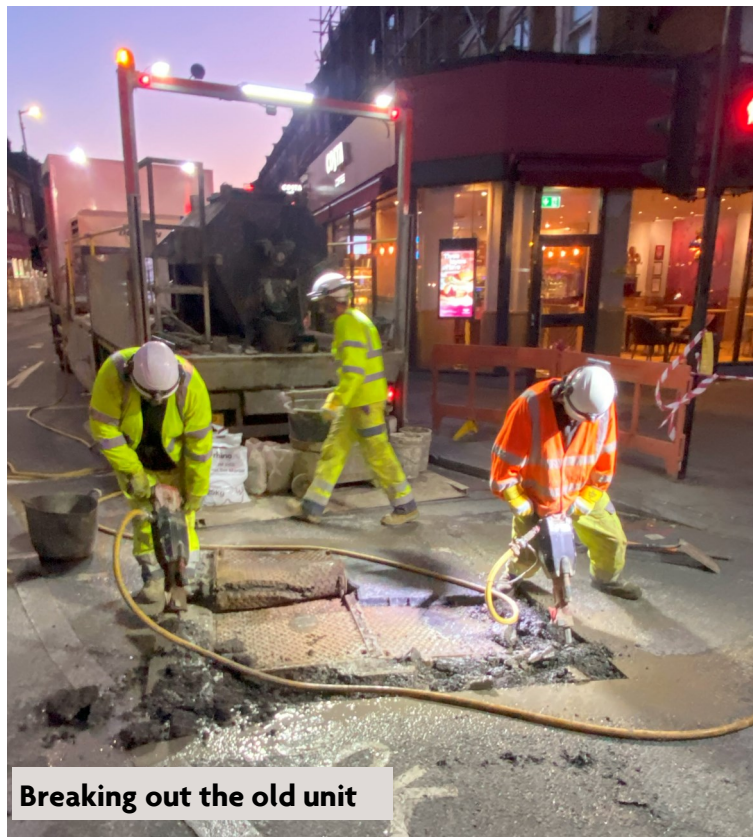
BBA HAPAS approved reinstatement materials will be used for temporary patching.

Jointmaster IMP material (HAPAS certificate 09/H149) will give you assurances of a safe temporary reinstatement prior to the main works commencing.

We can then issue a quotation for the manufacture and replacement of the unit. Following acceptance of this we can order the manufacture of the bespoke ironwork and the replacement works are planned. All this can be done whilst leaving the site safe for traffic.



The replacement works begin with breaking out and removing the old unit



Fitting the new beam and frame into the prepared cavity



The new 500mm deep beam lifted into place

The Hiab lorry & the Rhino installation lorry need access alongside the works area simultaneously.

Replaced in May 2023

“ We rely on Rhino because of their system, certification, workmanship & reliability. They applied the same skills and attention to detail in getting the multi-span cover correct. It is a specialist job for which they are ideally suited. ”

Lee Pickering, Senior Network Supervisor
TfL Highway Maintenance & Project Framework, Tarmac Kier JV



The frame is bolted together in place and CD534 approved bedding mortar packed under the frame.



A rapid-set, flowable, modified concrete bedding mortar is used for bedding the frame and flange reaching 25N/mm² compressive strength in one hour.



Safety

Lift plans & RAMS are submitted for approval prior to works commencing.

A sufficient working window of minimum 8 hours needs to be allowed for the installation works.

Installation timescales vary according to size & complexity.

Backfill with rapid-set fibre-modified concrete to encase the unit reaching 20N/mm² compressive strength in 90 minutes, ready to receive the surface course layer.





The completed works ready to be opened to traffic



The hot applied Jointmaster IMP surface course material is applied by hand from the Rhino installation lorry into the remaining recess around the new ironwork and then granite aggregate applied for a skid resistant finish. Once cooled & swept, the site can be safely opened to traffic.



Medway Tunnel Work

Multi-lid units are commonly found in tunnels and contain apparatus such as pumps. They can also have concrete filled lids. The measuring process is the same and installation work is unchanged. When planning the works, please take into account the timeframe for tunnel closure constraints, particularly the reopening times.



Replaced in January 2021

“Rhino Asphalt Solutions Ltd were in all aspects of planning very professional, and the quality of their products at the Medway Tunnel are great.”



Dave Hazelton, Volker Highways
Medway Tunnel Operations Project Manager

Two distinct quotations are provided for the two separate operations

1). The Site Inspection Quotation	2). The Repair & Replace Quotation
Plant & Equipment • Hiab lorry • Rhino installation lorry • Traffic Management (optional)	Plant & Equipment • Hiab lorry • Rhino installation lorry • Traffic Management (optional)
Materials included • Temporary surface course reinstatement with Jointmaster IMP • Aggregate for skid resistant finish	Materials included • Frame Bedding mortar • Infill mortar to encase the unit • Surface course Jointmaster IMP • Aggregate for skid resistant finish • New frame, beam/s & lids
The process elements • Remove lids • Measure clear opening, beams and frame • Replace existing lids • Reinstatement temporary surface course as required	The process elements • Remove old lids, beam and frame and dispose for recycling • Rebuild the supporting structure using high-strength, quick-setting mortar. • Install the new beam/s and frame onto the surround and level • Fit the new lids into the unit • Encase the new elements in cementitious infill mortar and allow to cure • Apply the new surface course of Jointmaster IMP to bring the surfacing level with the surrounding road • Apply granite aggregate for skid resistant finish



Ironmaster is a BBA HAPAS approved ironwork reinstatement system covered by certificate 06/H123 which covers testing and inspection of bedding & infill mortars as well as the surface course material.

Originally approved in 2006, Ironmaster has become the industry standard for durable ironwork repairs & reinstatements.

Using the knowledge and materials gained from this experience we have successfully utilised the system to deliver a durable replacement of failed large & multi-span units in highways & tunnels.

Material Test Parameters

Bedding mortar (LN550 & LN320 compliant & conforms to CD534)

Thickness	Minimum 10mm	Maximum 50mm	
Compressive Strength N/mm ²	@ 1 hour 25.0	@ 3 hours 44.0	@ 28 days 60.0
Tensile Strength N/mm ²	@ 3 hour 5.2	@ 24 hours 5.5	@ 28 days 5.8

Infill mortar

Thickness	Minimum 20mm	Maximum 200mm	
Compressive Strength N/mm ²	@ 90 mins 20.0	@ 2 hours 25.0	@ 28 days 60.0

Jointmaster IMP surface course

Wheel tracking rate	6.3 mm/hr
Rut depth	10.3mm
Skid resistance after wheel tracking	88 SRV
Texture depth after wheel tracking	1.0mm