GENERAL

Is Rocla still offering the M-Lock® system for sale in Australia ? Where is it available ?

The system is available for sale from any Rocla location. Rocla is committed to the Australian small bridge market, and is currently updating the systems design in accordance with AS5100-2017 specification

How many M-Lock® bridges have been installed to date ?

The system sold in Australia is based off a system originally sold in the USA. Since introduction into Australia in 1995, over 300 M-Lock® bridges have been installed across Australia, including locations in QLD, NSW, VIC, SA and WA.

What support does Rocla provide to customers ?

Through our Product Application Design team, Rocla provides support to designers, installers and asset owners through the entire design and installation process. Rocla provides complimentary concept assembly drawings of proposed bridge options, with component details and quantities, and provides complimentary training to installers prior to bridge assembly. For technical enquiries, Rocla can be contacted at solutions@rocla.com.au

Can Rocla provide site-specific design services ?

Rocla does not provide site-specific design services such as geotechnical or hydraulic investigations, or bridge construction drawings, however we can provide contact details of recommended bridge consulting engineers familiar with the M-Lock® system, or engage them for services on behalf of our customers.

DESIGN

What specifications is the M-Lock® system designed to ?

The system is designed and certified by Cardno (NSW/ACT) Pty Ltd in accordance with AS5100-2004, and manufactured in accordance with AS3600 and within Rocla's ISO 9001 certified quality management system. All components are designed to accommodate SM1600 traffic loadings, with a design life of major components of 100 years.

What is the difference between 'Bolted' and 'Post-Tensioned' M-Lock® ?

The system is available in two design types, the more common 'Bolted' design, and optional 'Post-Tensioned' design. Typically for locations with fewer than 1000 vehicles AADT, the original 'Bolted' assembly is the fastest and easiest to install and cost-effective to installers and asset owners. For bridge locations with higher traffic volumes, higher speeds, or when precast 'regular performance' barriers are required, the 'Post-Tensioned' design option provides additional durability via post-tensioning through the width of the bridge assembly.

Can M-Lock® designs be modified ?

As the system is designed and certified for a standard range of components, if a bridge proposal requires changes to the standard design, Rocla recommends that it be contacted to discuss the proposed modifications as early in the design process as possible.

What types of piles can be used with the M-Lock system ?

Whilst the systems standard design uses Rocla® Duraspun® piles, the system can be used in combination with other types of piles, including octagonal solid pre-stress piles, in-situ piles, or other types. If ground conditions are deemed sufficient, piles may not be required at all - a suitably designed footing may be sufficient.

What pile specification should be used ? How many piles are required ?

Rocla cannot confirm pile specifications, this must be confirmed by the consulting design engineers, in conjunction with the project engineers. When specifying Duraspun® piles, the Duraspun® Technical Manual should be referred to. Pile length should be carefully considered as Duraspun® piles cannot be extended in length once manufactured. Pile quantity & position should suit the standard Headstock design, and this is based on the overall bridge width and pile installation type. Changes to the standard pile quantity will result in a non-standard Headstock design to be used.

Can in-situ Headstocks be used ?

M-Lock® precast decking Planks can be used in combination with in-situ headstocks/footings, however these structures must be designed by a suitably qualified bridge engineer, and must accommodate correctly positioned connection points for the Plank connection bolts.

What types of barriers can be used ?

As per AS5100, barriers are deemed 'low performance' (steel Thrie barriers) or 'regular performance' (precast barriers). Both types of barriers can be sourced through Rocla and used with M-Lock®. Please note that when precast barriers are used, the 'Post-Tensioned' design option must be specified.

What options are available with M-Lock® ?

M-Lock® bridges are available in straight, or 30 degree left or right hand skewed layouts. Protruding reinforcement is available for in-situ kerbing, or precast kerbing (castellated or full) is also available. Protruding reinforcement is also available for in-situ walkways over the bridge deck. Precast headstocks are available in both 1-way and 2-way crossfall configurations, and End Protection Beams are optional.

What are End Protection Beams (EPB's) ?

When bridges are installed on non-sealed roads, the 'wearing down' of the adjacent road surface creates an edge to the bridge structure which vehicles will come into contact with first. Without protection, or prescribes ongoing maintenance, this edge can become damaged over time. Rocla offers optional End Protection Beams (EPB's) with a cast-in protective edge, for added bridge longevity.

What does Rocla recommend for abutment structures when using M-Lock® ?

Rocla's MassBloc® wall system is a fast-install, adaptable retaining system, and has been used in combination with M-Lock® on multiple projects in the past. The permeable nature of MassBloc® reduces the risk of hydrostatic pressure build-up within the abutment area - more information can be found on the MassBloc® webpage.

Is Asphalt topping of M-Lock® required ?

Whilst it is generally accepted that a correctly installed topping material (semi-seal, asphalt, etc) assists in bridge structure longevity, (and the M-Lock® system has been designed to support topping dead loads), the system has also been designed to be used without the need for any topping materials.

PURCHASE / INSTALLATION

What should be confirmed prior to component purchase ?

Rocla recommends that a site-specific design be completed by a selected, suitably qualified bridge engineer, taking into consideration factors such geotechnical and hydraulic conditions, including bore logs at proposed pile locations to confirm piling requirements.

What crane equipment is required to install an M-Lock® Bridge ?

Generally the systems modular design results in lower individual component mass, therefore likely reducing on-site crane requirements. Rocla cannot advise on specific crane requirements as this can be dictated by factors such as crane positioning and other site constraints. Rocla will always provide a component listings with quantity and mass prior to delivery, to assist in determining crane requirements.

How long does it take to install an M-Lock® Bridge ? How much labour is required on site ?

All major components of the system are precast and bolt-together, resulting in minimal on-site wet mix and very low on-site labour required. The 'Bolted' system is very fast to install - once piles/footings have been successfully installed, the remaining segments can be placed in a matter of days and the bridge is ready for vehicle traffic, assuming no topping material is being placed. For the Post-tensioned design, the bridge can be operational once the Planks and Barriers have been grouted and tensioned.

What materials are required on site ?

Rocla supplies the appropriate bolting kit and elastomeric bearing strips with all M-Lock® Planks and Headstocks. It is the responsibility of the installation contractor to allow for supply of all in-situ materials, such as grouts and sealants, and when installing post-tensioned bridge assemblies, all required post-tensioning materials and equipment.

HOW CAN I LEARN MORE ?

More information can be obtained from the M-Lock® webpage, or you can contact the Rocla 'Bridge and Earth' team at solutions@rocla.com.au for any technical assistance, or to book a 'lunch and learn' session at a location of your choosing.