

Railway Coal Wagon: Brunner Mine Q

This is a method of providing for the long term stabilisation of a metal artefact outdoors. The Q wagon was a type of railway wagon designed to carry coal and used from 1873 to 1986. This is the method used to stabilise a Q wagon that is displayed at the Brunner Mine site near Greymouth. The cost was around \$10,000 in 2003. With suitable maintenance the result should last 100 years.

- Key Work Steps:**
- ▶ Conservation plan
 - ▶ Work specification
 - ▶ On-site work controls
 - ▶ Engage specialist contractor
 - ▶ Transport wagon to work site
 - ▶ Dismantle
 - ▶ Abrasion blast
 - ▶ Thermo electro zinc-plate
 - ▶ Seal joints and apply priming paint
 - ▶ Apply epoxy resin coating
 - ▶ Reassemble
 - ▶ Transport wagon to display site
 - ▶ Interpretation
 - ▶ Publicity

Specifications: Take digital photos of every component, how things fit together and general views of the wagon, record all markings on the wagon. Note size, font and structure of the lettering, where it is located. And, write down a general description as you see it.

Dismantle: *Removal of any fitting should be recorded on a plan, and punch marked if identical items are sited at either end of the wagon, they will fit back together better if placed back on the same location.*

In the case of a Q wagon, overlapping thin plates riveted together pose a logistical dilemma, if severely rusted will require replacement, these are sited at the corners of the bin, if a timber bin all timbers are to be removed and those recoverable treated with Koppers CN Emulsion. If a steel bin all surfaces to be abrasion blasted and treated as per below, any severely decayed material will have to be replaced.

Two areas of the chassis require special attention on a Q wagon, the springs and the inside members at both ends of the chassis. The springs will have to be removed and dealt to individually, the safe removal and replacement of springs requires specialist equipment and should only be done by engineering contractors.

The spring keepers form a box section shape approx 230mm long, the inside of this box must be dealt with as per the specs below, this will require inspection prior to priming if practical.

The inside of the chassis members at both ends of the wagon will require inspection prior to priming, this may be carried out by the engineering firm involved, a torch and mirror are needed to get into the internals, wear gloves and a beanie to protect the metal surfaces already abrasion blasted. (The structural members of this part of the chassis form acute angles and hidden pockets, if these pockets are not treated they will lead to the eventual demise of the structural integrity of the wagon).

Preparation: Before sending any metal objects to the abrasion blasters hand chip all accessible loose rust, this will reduce the abrasion blast process time, therefore overall cost considerably.

Abrasion blast: To white metal at 50 microns

Thermo electro zinc-plate to 75 microns dry fine thickness, (DFT).

Prior to priming it is essential that the joints are clear of abrasion medium deposits, where the joint is, or has been expanded by rust between plates this will have to be driven out with punches and/or hammering. You can ask to inspect the surfaces before the primer is applied, though priming is usually done as soon as possible after abrasion blasting to ensure no moisture is allowed to settle. If you can inspect between the abrasion blast and priming stages ensure you do not touch the metal surface as your skin carries acids that will immediately restart the rust process.

Prime paint: Interguard 269 to 50 microns DFT

▶ Seal joints:

These joints are usually riveted parallel joints that are not economic to dismantle, and the contractor will not be able to replicate the rivet shape and form unless the engineering company are skilled at this work. Your chosen contractor will use a sealant product of their preference here – it is immaterial which product they use.

▶ Top coating: Ameron 152 marine epoxy to 150 microns DFT

▶ Colour: Black, unable to get matt colours in epoxy resins, the colour will flatten out after a few months.

▶ Stencilling: Not applicable in this case.

▶ Reassemble:

The engineering contractor will reconstruct the wagon, as per the plans supplied. To place back on site will require 10 sleepers and the appropriate lengths of rail at a minimum of 45lb, complete with the fishplates and rail fasteners, These should be treated as above. The only difference being to top-coat with a dull red/brown coloured paint coat to imitate rust!

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