


| NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA | | Ref: 10/8641 |
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| <p>Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. Mandatory fields are marked with an asterisk (*).</p> | | |
| 1 | <p>Equipment or System to be approved * Delkor Alt.1 Resilient Baseplate</p> | |
| 2 | <p>Originator Name: George Stamboulis Company: Delkor Rail Pty Ltd</p> | |
| 3 | <p>Introduction * The Delkor Alt.1 Resilient Baseplate is a one-piece rail faster that ensures the necessary resilience in all six degrees of movement required on ballast-less track forms. It reduces the dynamic stress on the anchoring elements and the base structure.</p> | |
| 4 | <p>Determination of Need * The product is currently in use in ARTC on load bearing ballast logs. It is proposed to use the base plates in conjunction with Boral Bridgewood as a continuous deck to replace transoms. The Bridgewood claims a life of 50 years and the base plates claim in excess of 30 years of maintenance free life.</p> | |
| 5 | <p>Significant Change or Not * This change in equipment or system is assessed as MINOR.</p> | |
| 6 | <p>Review Panel *</p> <ul style="list-style-type: none"> • John Furness - Manager Standards • Abbie Thomas – Track and Civil Standards Engineer • Daniel O'Hara - Structures Manager | |
| 7 | <p>Safety</p> <ul style="list-style-type: none"> • The Alt.1 Baseplate incorporates a fail-safe design. • The use of the product results in attenuation of noise and vibration. | |
| 8 | <p>Performance and Suitability</p> <p>The item is a bonded one-piece unit with no wearing parts. The profiled rubber on the bottom side of the Alt.1 Baseplate is only exposed to compression loads, with its spring characteristic becoming more progressive as the load increases. This avoids excessive deflections in the event of overloading the fastener. The rubber boot is not subjected to any preload, which ensures resistance to aging and provides long maintenance free performance (in excess of 30 years) across a wide variety of applications.</p> | |
| (i) | <p>Use in other rail networks The Alt. 1 Baseplate has been used extensively within the RailCorp Network (including Glenbrook Tunnel, City Underground, various rail bridges) for many years.</p> | |
| (ii) | <p>Use in the ARTC network Hanbury Dive, various rail bridges.</p> | |
| (iii) | <p>Issues arising from usage of the equipment/system Due to the height of the base plates, conventional guard rails will have reduced effectiveness.</p> | |
| (iv) | <p>Changes required to infrastructure or systems for use of the equipment Nil.</p> | |

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| 9 | Reliability | <p>These units have been installed in NSW since 1991. The units have performed satisfactorily and have no reported failures. Some units installed at Hanbury Dive in the late 90's debonded due to poor initial installation, poor drainage which caused accelerated corrosion. These units were replaced in 2008.</p> | | | | | | |
| 10 | Maintainability | <p>The baseplates provide a maintenance free track form providing there is no build up of dirt / water ponding over the baseplates which can cause corrosion.</p> <p>The baseplates are designed to be fail safe in that the Top Plate which holds the rail can not separate from the baseframe that is secured to the sleeper / concrete.</p> | | | | | | |
| 11 | Approval * | <p>The Delkor Alt.1 Resilient Baseplate Type RF 192 is to be approved for use across the ARTC Network.</p> | | | | | | |
| 12 | Conditions of Approval * | <p>Nil.</p> | | | | | | |
| 13 | Does the Originator accept the additional Conditions of Approval as set by the Review Panel: | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">Yes</td> <td style="width: 15%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 15%; text-align: center;">No</td> <td style="width: 15%; text-align: center;"><input type="checkbox"/></td> <td style="width: 15%; text-align: center;">N/A</td> <td style="width: 15%; text-align: center;"><input type="checkbox"/></td> </tr> </table> | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> | N/A | <input type="checkbox"/> |
| Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> | N/A | <input type="checkbox"/> | | | |

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| 14 | Sign off | | ARTC office use only |
| | Review Panel: | | |
| | John Furness |  | Date: <u>16/03/2010</u> |
| | Abbie Thomas |  | Date: <u>16/03/2010</u> |
| | Daniel O'Hara |  | Date: <u>16-03-2010</u> |

Delkor ALT.1



**Highly Robust
Rail Fastener for
Maintenance-Free Operation**



- Vibration and noise attenuation
- Bonded one-piece unit: no wearing parts
- Single rubber dampening element
- Proven fatigue life
- High electrical insulation
- Fail-safe design
- Maintenance-free long life performance in excess of 30 years

www.delkorrail.com



Highly Robust Rail Fastener for Maintenance-Free Operation



The Delkor ALT.1 is a one-piece, highly robust rail fastener consisting of a top plate and frame, which are durably vulcanised together by means of a natural rubber boot.

The underside of this rubber component is specially profiled and designed to allow movement of the top plate holding the rail. The outer frame of the ALT.1 rail fastener encompasses the top plate at both ends making the unit totally fail-safe.

The ALT.1 rail fastener ensures the necessary resilience in all six degrees of movement required in ballastless track forms. This feature also reduces the dynamic stress on the anchoring elements and the base structure. The profiled rubber on the bottom side of the ALT.1 is only exposed to compression loads, with its spring characteristic becoming more progressive as the load increases. This avoids excessive deflections in the event of overloading the fastener.

Another feature of the ALT.1 is that the rubber boot is not subjected to any preload, which ensures resistance to aging and provides long maintenance-free performance across a wide variety of applications.

Visit www.delkor.com.au for further details and specifications.



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| Static Stiffness (Cstat): | 12-30 KN/mm |
| Material: | Metal Parts, SG Iron Elastomer, Natural Rubber |
| Lateral Adjustment: | Up to +/- 15mm |
| Vertical Adjustment: | Up to 25mm (by packers) |
| Rail Clips: | Pandrol, Vossloh, etc |
| Electrical Insulation: | >1 MOhm |
| Deflection: | Up to 3.5mm |
| Ratio Cdyn:Cstat: | <1.4@20Hz |