CONSTRUCTION OF ROLLING STOCK

PURPOSE AND SCOPE

The purpose of this Procedure is to advise Laing O'Rourke personnel involved in the Construction of rolling stock that is to be constructed specifically to Laing O'Rourke's specifications (above the Original Equipment Manufacturers (OEM) standard specification), and the need to manage the manufacture of the rolling stock. This may be undertaken by Select (or by third parties contracted by Select to act on their behalf).

1.0 PROCEDURES

When a decision is made that an item of rolling stock needs to be constructed Select will discuss the requirements with the relevant stakeholders as identified through the Management of Change (MoC) process. Once there is agreement of its structure, they will apply the design management processes contained in **Element 17F Design Management of Rolling Stock**.

When the design has been determined it will be necessary for Select to source an organisation who will undertake the manufacture and supply of the item of rolling stock.

Prior to manufacture, a detailed technical specification will be formulated and agreed with the supplier and Laing O'Rourke and will be incorporated in any supply contract. The technical specification will include as appropriate:

TECHNICAL SPECIFICATION

1. Introduction .....

1.1. Purpose of the Specification .....

1.2. Background .....

1.3. Terms and Definitions .....

1.4. Scope of the Specification.....

1.5. Machine Specification.....

1.6. Applicable Standards .....

2. Technical Specification .....

2.1. Hi Rail System - May need to make it generic as in rail system Design/type (On Track Machine Engineering Acceptance)

2.2. Travel and Work Configuration .....

2.3. On-Track Travel Capability (Speed) .....

2.4. On and Off Tracking (Approach and Departure Angles) .....

2.5. On-Track Working Capability (Steering) .....

2.6. On-Track Stability/Performance .....

2.7. Electrical Wiring, Wiring Enclosures and Insulation .....

2.8. Track Signal Circuit Isolation .....

2.9. Electrical Control Function Indications .....

2.10. Safety Devices and Interlock Controls.....

2.11. Hydraulic System.....

2.12. Emergency Recovery System
2.13. Machine Maintainability
2.14. Operator Cab Noise Environment/Crash worthiness
2.15. Locks and Security
2.16. Operator Field of Vision
3. Rail Specific Design Requirements
3.1. Rolling Stock Outline
3.2. Height Restrictions
3.3. Slew Restrictions
3.4. Load/Reach Restrictions
3.5. Body and Underframe
3.6. Protective Structures
3.7. Lights and Warning Lights
3.8. Audible Warning Device
3.9. Speed Indicating Device
3.10. On-Track Braking Capability
3.11. Rail Wheel Design
3.12. Bogie Frame/Suspension Design
3.13. External Markings and Signage
3.14. Instruction Signs, Safety Warnings and Decals
3.15. Compliance Plates
3.16. Rail Registration
4. Rail Industry Acceptance Testing
5. Engineering Certification
5.1. Structural Certification
5.2. Operational Certification
6. Documentation
6.1. Operation and Maintenance Manual
6.2. Parts and Schematics Manual
6.3. Load Charts from Stability Tests
6.4. Plant Hazard Assessment
6.5. Operator's Visibility Diagram
6.6. Operator's Noise Exposure
6.7. Main Frame Design, Stress and Life Cycle Calculations
6.8. Axle Bearings
6.9. Wheel design, approved manufacture and assembly certification
6.10. Bogie design and approval
6.11. Vehicle on - track test results

6.12. Draw Gear and Coupler Design
6.13. Braking Systems
6.14. Air Vessel & Hydraulic Accumulator Vessels
6.15. Welding Standard
6.16. Driving Cab design
6.17. Driving & Operational Cab Sound Proofing
6.18. Windscreens
6.19. Fire Safety System
6.20. Driver Safety System Data Logger
6.21. Audible Warning Devices...
7 Acceptance Criteria and Commissioning
7.1. Conceptual Design
7.2. Finite Element Analysis (FEA)
7.3. Manufacture (complete to delivery phase)
7.4. Commissioning Process
8. Delivery Schedule
Appendices
Appendix 1: Unit drawings
Appendix 2: Rolling Stock outline drawings
Appendix 3: Vehicle Details
Appendix 4: Electrical Safety Signs
Appendix 5: Rail Registration Label

Select will ensure that construction of the rolling stock or modification of existing rolling stock complies with the approved design configuration and the following standards as appropriate:

STANDARDS	APPROVED DESIGN CONFIGURATION
AS-1269.1	Occupational Noise Measure and management
AS1418.8	Cranes, Hoists & Winches
AS 1418.10	Mobile Elevating Work Platforms
AS 1554	Welding of Steel Structures
AS1906.1	Retroreflective materials and devices for road traffic control purposes - Retroreflective materials
AS62262	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IKP Code)
AS 2294.1-1997	Earth-moving machinery - Protective structures - General
AS2671-2021	Hydraulic fluid power - General requirements for systems (ISO 4413:1998, MOD)
AS/NZS 3000:2018	Australian/New Zealand Wiring Rules
AS3791-1991	Hydraulic hose
AS4024.1	Safeguarding of machinery – Part 1 – General Principles
ISO4413- 2010	Hydraulic fluid power - General rules and safety requirements for systems and their components
AS 7501	Rolling Stock compliance certification
AS 7502	Road Rail Vehicles
AS 7531-4	Lighting and Visibility
AS7500	Other RISSB Standards relevant to specific aspects of the item of rolling stock

In addition to complying with the relevant standards identified in the chart above it will also be necessary for Select to comply with the specific requirements set by the Rail Infrastructure Manager on whose railway the item of rolling stock will operate.

All variances from the approved configuration that become necessary during the construction phase are to be approved by Select in conjunction with the Independent Competent Person (ICP) approved by the respective network owner on whose railway the item of rolling stock is to operate. All variances from the approved design will be documented at the time the variance is approved, and will become part of the "as-built" documentation.

Select will ensure that, prior to the use of new or significantly altered rolling stock, commissioning will be completed appropriate to the intended use, standards and alterations made.

- **Element 16A Procurement of Rolling Stock**
- **Element17A Commissioning of Rolling Stock**

Registration of Rolling Stock will be in accordance with **Element 17J Registration of Rolling Stock**.

2.0 LEGISLATION, GUIDES AND STANDARDS

- Rail Safety National Law
- ONRSR Guideline Preparation of a Safety Management System
- AS 7501 Certification of Rolling Stock
- AS 7502 Road Rail Vehicles
- AS-7472 2018 Railway operations management of change
- **Element 11 Management of Change (MoC)**
- Additional RISSB Rolling Stock Standards relevant to respective aspects of the rolling stock