

Engineering Site Standard

GPC-GSS-002

Lifting Equipment

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Brief description

This standard outlines the site requirements for lifting equipment use at Gladstone Ports Corporation RG Tanna site.

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Custodian	Systems and Planning Specialist

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1. Scope

This standard details the general requirements for lifting equipment to be used on GPC's RG Tanna Site.

2. References

The references contained in this document

2.1. Australian Standards

AS 1000	The international system of units (SI) and its application.
AS 1065	Non-destructive testing – Ultrasonic testing of carbon and low alloy steel forgings.
AS 1100.201	Technical drawing – Mechanical engineering drawing.
AS 1171	Non-destructive testing – Magnetic particle testing of ferromagnetic products, components and structures.
AS 1319	Safety Signs for the Occupational Environment.
AS 1353	Flat Synthetic Webbing Slings
AS 1418	Cranes, hoists and winches.
AS 1418.18	Crane Runways and Monorails
AS 1438	Wire Coil Flat Slings
AS 1666	Wire rope slings.
AS 1891	Industrial Fall Arrest
AS 2574	Non-destructive testing - Ultrasonic testing of ferritic steel castings.
AS 2740	Lifting Tackle – Wedge Type Sockets.
AS 2741	Shackles.
AS 2759	Steel Wire Ropes – Application Guide.
AS 3569	Steel wire ropes.
AS 3775	Chain Slings for Lifting Purposes
AS 4497	Roundslings – Synthetic Fibre
AS 4991	Lifting Devices

2.2. GPC Standards and Specifications

GSS-001	Drafting Standard
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GSS-002	Protective Coatings
MSS-101	General Mechanical
MSS-112	Mechanical Design Criteria
HB# 123483	Working at Heights
111-0722	Standard Lifting Lugs

2.3. Queensland Codes of Practice

Plant Code of Practice 2005

Noise Code of Practice 2004

2.4. Regulations and Acts

Queensland Workplace Health and Safety Act 1995

Queensland Workplace Health and Safety Regulation 2008

3. Definitions

Engineer	GPCL Engineering Superintendent or nominated representative
GPCL	Gladstone Ports Corporation Limited or its nominated representative
RGTCT	RG Tanna Coal Terminal
RGTES RGT	Engineering Services

4. Service Conditions and Criteria

The equipment covered by this Specification will be used both indoors and outdoors. All equipment will be subject to coal erosion, coal fines and coal dust build-ups. Fixed equipment and lugs may be subject to high pressure water wash down operations using raw water. All assemblies will be exposed to a potentially salt laden atmosphere given the proximity of the RGTCT GPCL site to a marine environment.

5. General Requirements

5.1. Identification

5.1.1. Identification Tags

All lifting equipment shall have durable identification tags as detailed in their respective Australian Standards;

Chain Slings	AS 3775.1 Clause 7
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Flat Synthetic Webbing Slings	AS 1353.1 Clause 7
Wire Coil Flat Sling	AS 1438.1 Clause 7
Wire Rope Slings	AS 1666.1 Clause 8
Hoisting Equipment	AS 1418.1 Clause 14.2
Harnesses	AS 1891.1 Clause 6.2
Roundslings	AS 4497 Clause 2.2.10
Monorails	AS 1418.18 Clause 5.12.6

Monorails shall be marked in a permanent manner with a unique identifying number and rated capacity. Marking shall be of sufficient size to be legible from the working area below the beam. When the rated capacity of a hoist is not matched to that of the beam, the hoist and the beam shall be marked with the lesser-rated capacity, as appropriate.

In addition to the required identification as listed above, all lifting equipment shall have GPC's unique register number affixed via a durable metal tag or marked in a permanent manner in the case of lifting lugs and monorails. The register number shall be supplied by the GPC representative upon request.

5.2. GPC Preferred Equipment

Items supplied and used under this Specification must conform to the Preferred/ Prohibited equipment list. The list is subject to change, with required parties being notified of any changes.

If preferred equipment brand is not available, a direct equivalent may be used upon approval of GPC representative.

5.2.1. Lifting Equipment

- Lever and Chain Blocks to be Pacific Hoists Vital Brand.
- Lever and Chain Blocks are to have overload protection.
- Pacific Hoists Vital lever blocks to be VR series.
- Round synthetic slings preferred over flat slings.

5.2.2. Heights Safety

- Spanset harnesses are preferred.
- Quick buckle harnesses are preferred.
- Karabiners to be triple-lock.

5.2.3. Commonly Used Equipment

- a) Vital Chain Blocks
 - VCB101
 - VCB151
 - VCB201
 - VCB301

- b) Vital Lever Blocks
 - VLB107L
 - VLB115L
 - VLB130L
- c) Round Slings
 - 1T x 1m, 2m, 3m, 4m & 5m
 - 2T x 1m, 2m, 3m, 4m & 5m
 - 3T x 1m, 2m, 3m, 4m & 5m
 - 4T x 1m, 2m, 3m, 4m & 5m
 - 5T x 1m, 2m, 3m, 4m & 5m
- d) Spanset Harness: 1100 Ergo with Quick Buckle
- e) Spanset Lanyard: 3057 – 1.8m
- f) Spanset Energy Absorber: 3051
- g) Spanset Anchorage Line: 3108-3050-H1K4X3.0
- h) Spanset Web Tie Off: 3502 X 2m, 3m & 6m

5.3. GPC Banned Equipment

Beaver branded chain and lever blocks are prohibited on site.

5.4. Lifting Lugs

Lifting lugs shall comply with GPC Drawing 111-0722 or be a suitable Rud Lug equivalent installed as per manufacturer specifications.

Lifting lugs/ lifting points installed in concrete shall be certified by a suitably qualified RPEQ Engineer. Unless approved otherwise by a GPC Engineering representative, the lug shall be welded to a backing plate, with 4x mechanically or chemically anchored studs installed as per Engineer and manufacturer specifications to affix lug to concrete. See example layout in Figure 1 below.

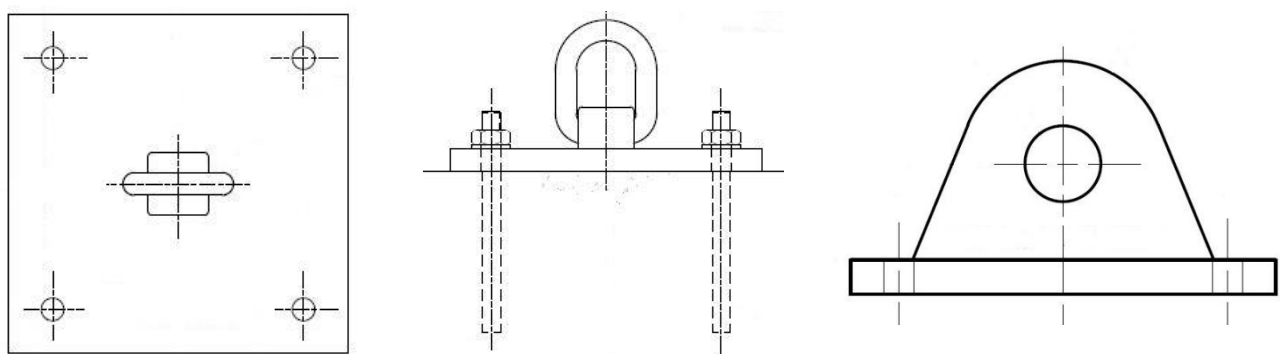


Figure 1 – Example Lug Arrangement – Rud and Welded Plate Style

5.5. Monorails

Monorails shall be designed as per AS 1418.18 and painted yellow as per GPC Protective Coating Specification.

5.6. Inspection

5.6.1. Pre-Use Inspection

Before use, visual inspection by a competent person shall be carried out in a clean, well-lit area, and where required the sling/accessory is to be cleaned and laid out flat to make sure damage and defects are more easily seen. Persons undertaking an inspection must have adequate near and middle vision. When inspecting chain slings, special attention must be given to the weld areas of the links. Checking for marking and/or cracks on the weld areas of any portions of the link is required - transverse (cross ways) markings are the most dangerous.

Inspections shall include but are not limited to the following:

- checking for excessive wear of the item; for example, worn or stretched links and webbing, broken or worn stitching, cuts, nicks, tears and punctures
- checking for obvious damage or defects; for example, distorted, twisted, gouged, cracked, split, bent or broken links and components, heat damage or excessive corrosion
- checking all rigging accessories for damage and compatibility including hooks, shackles, rings, swivels, lifting eyes and inserts
- checking the lifting gear is tagged and all relevant information listed for example rated capacity, grade of chain, and any relevant Australian Standards markings is legible
- signs of overloading - deformation of components, checking the length of reach of each leg against reach shown on tag. If reach is greater than that shown on tag, there is a possibility that the sling has been subject to overloading or excessive wear
- lifting hooks are provided with operable safety latches
- lifting lugs, monorails and other fixed equipment shall be inspected for any damage, corrosion, defects and cracks. If issues are identified, GPC Technical Services shall be consulted prior to use.

Any GPC owned portable equipment found to be defective shall not be used and shall be tagged and placed in the tagout bin located in the RGT workshop at the tool store. Any fixed or large equipment found to be defective shall not be used and shall be tagged, with the area owner notified prior to end of shift. Contractor owned/ supplied equipment that is found to be defective shall not be used, shall be tagged immediately and removed from site by end of shift.

Contractor owned/ supplied lifting equipment shall be subject to the aforementioned inspection requirements.

5.6.2. Third Party Inspection

All equipment shall be inspected and tested as required by the relevant Australian Standards by a qualified third party.

- a) Where possible, the equipment shall be inspected on GPC site, however may be taken offsite by contractor for further inspection and testing where required.

- b) Inspection and testing is to be completed as per applicable Australian Standards.
- c) New items being supplied to site shall be inspected and tagged appropriately and added to the lifting equipment register prior to issuing for site use.
- d) Items are to be tagged using the quarterly 'Red, Green, Blue, and Yellow' tags.

6. Technical Requirements

6.1. Proof Testing

Lifting equipment shall be proof tested to 110% of WLL or RC by a qualified third party in addition to requirements listed in 6.1.1, 6.1.2 and 6.1.3.

6.1.1. General Lifting Devices

Except as determined by 6.1.3, lifting devices shall be proof loaded in accordance with the following;

- a) Up to 10t – 2x WLL or RC
- b) 10 – 160t – (1.04x WLL or RC) + 9.6t
- c) Above 160t – 1.1x WLL or RC

6.1.2. Specific Application Lifting Devices

Where lifting devices are designed for a specific application, the lifting device shall be proof loaded as per the relevant parts of AS1418.

6.1.3. Alternative Verification

A low-load-applying test regime involving;

- a) Third party design
- b) Material identification and NDT of welds

Low-load-applying testing requires RPEQ Engineer inspection and signoff.

6.2. Materials

In addition to this Specification the Supplier shall also refer to the latest revisions of GPC Drawings 805-0075 and 805-0076 GPC Standard Mechanical Notes and Project Drawings. All discrepancies in design data shall be immediately referred to RGES for resolution prior to purchasing materials or fabrication.

6.3. Welding

All welding, welder qualification and weld procedures shall be in accordance with AS1554.1

6.4. Mechanical Equipment

All mechanical components shall be in accordance with MSS-101 General Mechanical and MSS-112 Mechanical Design Criteria.

6.4.1. Chain Hoists for Monorail and Jib Cranes



All chain hoists shall have the chain bag fitted with no clearance between the chain hoist and bag.

All chain ends shall be secured to attachment bolts with a suitably rated D-shackle.

All new chain hoists supplied to GPC shall be assembled and inspected to meet the above requirements by an approved contractor before installation on site.

6.5. Guarding

All moving equipment shall be designed to incorporate guarding to control hazards in accordance with AS4024, AS1755 and GPC Specification MSS – 114.

6.6. Painting

Protective coatings shall be in accordance with CSS-107 Protective Coatings. When possible, all painting shall be done in the workshop. Areas where site welds are to be undertaken shall be only primed (as per the paint specification appropriate to the item) to stop corrosion until installation. The painting shall be touched up on site as in accordance with CSS-107 Protective Coatings.

6.7. Signage

All signage shall be in accordance with AS1319.

6.8. Lifting Points

All lifting points shall be designed in accordance with the AS4100 and shall be clearly shown in the Installation Manual.

As a minimum, all lifting points shall be:

- Fit for purpose
- 100% NDT tested
- Certified by RPEQ engineer
- Clearly shown on RPEQ approved Installation Drawings showing all relevant data for safe lifting and installation. – i.e. WLL, sling angle and lifting arrangement.

7. Documentation

7.1. Datasheets and Test Certificates

All equipment shall be supplied with their relevant Operation and Maintenance manuals, as well as any relevant datasheets. Information to be supplied with the equipment shall be as detailed in the equipment's respective Australian Standard.

Post inspection and testing, GPC shall be provided with a report detailing which items passed and failed, and their next inspection date. If an item fails, the reasoning shall also be included in the report, and the replacement option identified.

7.2. Equipment Register

7.2.1. GPC Equipment

All new and existing equipment shall be listed on the GPC Lifting Equipment Register. Portable equipment, such as chain blocks and slings shall be managed by the GPC Tool Store. All fixed equipment, such as monorails, lifting beams and lifting lugs shall be managed by the Technical Services Lifting Equipment Register.

- a) The equipment register includes the following information;
 - Full description
 - Last test date
 - Next test date
 - Location
 - Serial number
 - Item number
 - If item failed last inspection, reasoning.
- b) The register shall be updated by the third-party inspector at time of inspection.
- c) The third-party inspector and authorised GPC Employees shall mark equipment as 'removed from service' in register when deemed no longer safe to use and is disposed of.
- d) All new equipment shall be added to the register prior to dispatch to site.

7.2.2. Contractor Equipment

Contractors shall be required to maintain a lifting equipment register displaying at a minimum, the applicable information listed above. This register and information shall be made available to GPC upon request. All contractor equipment shall display tags or a suitable identifier that displays inspection status