DM WALK

Typical FRP Boardwalks

Installation Manual

Structured field guide for installing FRP boardwalk posts, bearers, joists, bracing, decking panels, handrails and final inspection requirements.

SYSTEM	MATERIAL	FORMAT
DM WALK	FRP	Installation Manual

MANUAL OBJECTIVE

This manual provides a practical installation sequence for typical FRP boardwalk works. It is structured for site crews, supervisors and project teams to review the main installation stages, required checks and completion requirements before handover.

INSTALLATION WORKFLOW

01 Footings

02 Posts

03 Bearers

04 Joists

05 Bracing

06 Decking

07 Rails

08 Review

Use with approved drawings

All final dimensions, member sizes, fixings, anchor systems, torque settings and installation tolerances must be confirmed against the approved project drawings, engineering documentation and manufacturer recommendations.

Project Overview and Site Readiness

Base information and readiness checks before starting the FRP boardwalk installation.

BOARDWALK TYPE
Composite FRP

DESIGN LOAD
5 kPa

MAX VELOCITY
2.17 m/s

PROJECT OVERVIEW

The FRP boardwalk installation involves the design, supply and installation of a composite boardwalk using Fiberglass Reinforced Polymer decking, supported by concrete footings and steel base plates. The structure is intended for pedestrian traffic, with no log loads anticipated under the stated project basis.

BEFORE STARTING

1 Confirm layout and controls

Review the approved site layout, structural drawings, footing locations, elevations, clear widths, stanchion locations, rail offsets and nominated member profiles before starting installation.

2 Inspect materials

Check all FRP posts, bearers, joists, decking panels, brackets, base plates, anchors and fixings for damage, contamination, incorrect sizing or missing components.

3 Prepare tools and PPE

Prepare measuring equipment, string line, laser level, cutting tools, FRP-rated blades, drills, M-clips, self-drilling screws, resin kit, gloves, eye protection and dust mask.

4 Control tolerances

Check alignment, level, verticality, clearances and support conditions at each stage. Correct discrepancies before continuing to the next installation activity.

IMPORTANT Do not proceed where site conditions differ from the approved drawings without confirming the required adjustment or hold point.

Footings | Posts | Bearers | Joists | Bracing | Stanchions | Decking | Handrails | Inspection

STEP 01

Pre-Drill Footing Holes and Install Base Plates

Establish the foundation interface before FRP members are installed.

PROCEDURE

1 Mark footing locations

Accurately transfer footing hole locations from the approved site layout to the ground using survey equipment, reference points and boundaries. Double-check markings before drilling.

2 Pre-drill footing holes

Drill holes to the specified depth and diameter in accordance with the engineering design. Confirm the hole dimensions are suitable for the required loads and site conditions.

3 Install base plates

Position base plates as the primary interface between the foundation and the FRP structure. Keep plates level, correctly aligned and within specified tolerances.

4 Secure anchors

Use appropriate chemical or mechanical expansion anchors based on load requirements and environmental conditions. Follow manufacturer recommendations for holding strength.

INSPECTION CHECKS

- Footing marks match the approved layout and reference points.
- Hole depth and diameter match the engineering design.
- Base plates are level and correctly oriented.
- Anchors are tightened and inspected before structural assembly.
- Any discrepancy is resolved before proceeding.

Manual note

Periodic verification measurements should be completed during this stage to maintain positional accuracy and structural integrity.

STEP 02

FRP Post Installation

Install the FRP posts onto the prepared base plates and verify vertical alignment.

PROCEDURE

1 Inspect and handle posts

Inspect posts for defects or irregularities. Use proper handling during transport and lifting to avoid chipping, deformation or surface damage.

2 Slide posts onto base plates

Guide the stock FRP post onto the base plate without excessive force. Confirm the post sits flush and aligns with the intended structural layout.

3 Secure side bolt

Insert and tighten the side hex head bolt through the designated connection point. Tighten to the required torque without over-compressing the FRP member.

4 Confirm anti-crush requirement

Anti-crush tubes are not required for this specific post-to-base-plate connection, provided the connection is installed as designed and not over-tightened.

POST SIZE GUIDE

Post condition	Required FRP profile	Reason
Posts over 1.5 m high	127 mm × 8 mm SHS	Higher bending and lateral stability
Posts under 1.5 m high	102 mm × 8 mm SHS	Adequate support with reduced material use

IMPORTANT Final checks must confirm each post is stable, vertical, flush at the base connection and free from gaps before bearer installation.

STEP 03

Post Height Adjustment

Measure, calculate, cut and finish FRP posts to achieve a level deck line.

HEIGHT ADJUSTMENT SEQUENCE

1 Measure deck height

Record the distance from the top of the concrete base to the intended top level of the deck for each installed post. Measure multiple points where required.

2 Deduct deck build-up

Subtract the grating thickness and joist depth from the measured height to determine the final post cut height. Double-check all calculations before cutting.

3 Mark cutting line

Use a straight edge and marker or chalk to draw a clear cutting line around each post. Ensure the mark is visible and square to the post face.

4 Cut and finish

Use an angle grinder with a suitable FRP cutting disc. Cut with steady movements, then smooth the cut edge with a sanding disc or file.

FIELD CALCULATION

Required post height = measured concrete-to-deck height - grating thickness - joist depth

Use actual site measurements and confirmed product dimensions from the approved project documentation.

IMPORTANT Wear safety glasses, gloves and a dust mask when cutting FRP. Clean and finish all cut edges before moving to the next assembly stage.

STEP 04

FRP Bearer Installation

Install the primary load-bearing bearers onto the posts.

PROCEDURE

1 Verify alignment

Confirm bearer placement against the approved marking plan using a laser level, measuring tape or string line before fastening.

2 Position C-channel bearers

Set the C-channel bearers onto either end of the posts at the pre-measured points. Temporarily clamp members to hold alignment during fastening.

3 Fasten bearers

Use the specified high-strength bolts or fasteners. Tighten to the recommended torque and confirm each bearer remains level and secure.

4 Install anti-crush tubes

Where bolts pass through hollow FRP sections, insert anti-crush tubes where required by the marking plan or engineering drawings.

QUALITY CHECKPOINTS

- Bearers are installed at the correct elevation and orientation.
- Load transfer path is continuous through the posts and base plates.
- Anti-crush tubes are in place at nominated bolted connections.
- Fasteners are tightened without crushing the FRP profile.
- Final inspection confirms all bearers are aligned, level and secure.

Purpose

Bearers distribute deck and imposed loads evenly across the supporting posts and are critical to the finished structure performance.

STEP 05

FRP Joist Installation

Install internal and external joists to create the decking support framework.

PROCEDURE

1 Set a string line

Stretch a string line across the tops of installed posts to identify any height differentials before joist installation.

2 Adjust packers

Identify gaps between joists and bearers and install suitable packers to create a flush, stable connection and proper load transfer.

3 Fix internal joists

Install internal joists first. Confirm spacing, alignment and packer positions before securing all connection points.

4 Mark lateral bracing

Measure and mark lateral bracing locations according to the structural plans before external joists are completed.

5 Install external joists

Fit external joists to complete the framework. Maintain a level outer edge and confirm alignment with the internal joists.

6 Fix lateral bracing

Install equal angle brackets at the marked positions to secure bracing, improve rigidity and reduce lateral movement.

INSTALLATION OUTCOME

At completion of this stage, the framework should have a consistent joist level, aligned supports, secure connection points and bracing locations prepared for the next installation stage.

STEP 06

FRP Tie-Brace Installation

Install tie bracing under the joists before grating or mesh is installed.

PROCEDURE

1 Assemble before decking

Tie bracing should be assembled underneath the joists before FRP mesh or decking panels are installed.

2 Match stanchion width

Extend the tie brace outward to the external joist while matching the stanchion width and spacing shown on the layout.

3 Install diagonal bracing

Install diagonal bracing between posts to control horizontal movement and improve frame stability.

4 Install longitudinal bracing

Install longitudinal bracing parallel with the posts and joists. Maintain required clearance for access, installation and maintenance.

CLEARANCE AND ACCESSIBILITY

Bracing should not obstruct access to other structural components or interfere with subsequent installation of decking panels, mesh, stanchions, handrails or maintenance access. Confirm all bracing components are correctly oriented, securely fastened and aligned to the marked positions.

Purpose

Tie bracing improves rigidity by distributing forces across the framework and reducing the risk of lateral movement under wind or dynamic pedestrian loading.

STEP 07

Stanchion Installation

Fit stanchions into the tie brace and bearer framework.

PROCEDURE

1 Slot stanchions into position

Align each stanchion vertically and slot it into the tie brace and bearer framework using the designed fitment locations.

2 Check vertical alignment

Use a level or plumb line to confirm that stanchions are perpendicular to the bearers and tie brace before final fastening.

3 Secure with fasteners

Fasten stanchions to the tie brace and bearers using the specified bolts or fixings tightened to the required torque.

4 Install anti-crush tubes

Where bolted stanchion connections require anti-crush tubes, insert tubes correctly before tightening to prevent local compression or deformation.

FINAL CHECKS

- Stanchions are vertical, aligned and positioned correctly.
- Fasteners are secure and tightened without damaging the FRP.
- Anti-crush tubes are installed wherever nominated by the design.
- The framework remains straight, stable and ready for decking panel installation.

STEP 08

Grating and Decking Panel Installation

Measure, cut, lay and secure FRP decking panels.

PROCEDURE

1 Measure clear width

Measure the clear width between stanchions and factor in the 150 mm grab rail offset so decking panels and handrails do not conflict.

2 Cut panels to size

Cut FRP decking panels to the required width and size using suitable tools for composite materials. Smooth edges and remove burrs.

3 Lay panels in sequence

Position panels on joists in the correct orientation. Keep gaps consistent and confirm alignment with stanchions and pre-installed components.

4 Secure with clips and screws

Fix panels using M-clips and self-drilling screws into the joists. Use regular fixing intervals and confirm every connection is tight.

DECKING QUALITY CHECKS

The finished decking surface must be even, stable and free from loose panels or sharp edges. Each screw and M-clip should be checked to confirm proper engagement without damaging the FRP material.

IMPORTANT FRP cutting can generate fine dust. Wear gloves, goggles and a dust mask, and clean the work area before continuing.

STEP 09

Handrail and Balustrade Installation

Install handrail chords, balustrade slats, top caps, grab rails and tube joiners.

PROCEDURE

1 Install top and bottom chords

Install the top and bottom handrail steel chords using EA brackets. Keep chords straight, level and evenly supported along the handrail run.

2 Fix PFC C-channel slats

Fix PFC C-channel slats onto the top and bottom rails using the appropriate fasteners. Maintain even spacing and alignment.

3 Orient the PFC face

Position the PFC face on the outside of the boardwalk, with the inside face forming the balustrade safety barrier.

4 Install top caps and grab rails

Weld top caps and grab rails on-site using suitable welding techniques. Confirm height, access and user stability requirements.

5 Use tube joiners

Use tube joiners at corners, junctions and transition points where handrail sections need to be securely connected.

6 Inspect connections

Check welds, bolts, brackets, slats and joiners for movement, cracks, misalignment or visible defects before handover.

HANDRAIL OUTCOME

Handrails and balustrades must provide a secure pedestrian safety barrier while maintaining the intended exterior appearance of the boardwalk. Confirm all components are stable and correctly positioned.

STEP 10

Final Inspection and Client Showcase

Complete final inspection, cleaning, resin sealing and handover preparation.

STRUCTURAL INTEGRITY CHECKS

1 Post and rail stability

Confirm all posts, rails and structural members are securely fastened and aligned. Check that no posts are leaning and rails are supported along their length.

2 Decking and joist connections

Inspect decking panels, joists and bearers. Confirm screws, clips and fasteners are tight, complete and evenly spaced.

3 Bracing and supports

Confirm lateral bracing, diagonal braces and supports are firmly in place and aligned according to the design.

4 Specification compliance

Review the completed works against project specifications, approved drawings, AS 2156 walkway requirements and relevant regulations.

PRESENTATION BEFORE REVIEW

Clean decking panels, handrails and exposed surfaces using a mild cleaning solution that does not damage FRP. Remove tools, packaging, construction debris and waste. Complete minor cosmetic touch-ups and confirm safety labels, signage and markings are correctly positioned.

STEP 11

Cut-End Sealing and Project Handover

Seal all cut FRP edges and complete the client handover process.

RESIN SEALING PROCEDURE

1 Identify cut edges

Identify all cut edges on decking panels, posts, bearers and any other FRP components modified during installation.

2 Prepare resin kit

Prepare the resin kit according to manufacturer instructions. Confirm resin compatibility with the FRP materials used.

3 Apply resin

Apply resin evenly to all cut ends using a brush or roller, forming a continuous protective layer over exposed FRP fibres.

4 Allow curing time

Allow resin to cure for the time stated by the manufacturer before final approval or use. Do not disturb sealed areas during curing.

HANDOVER REQUIREMENTS

- Conduct a guided walkthrough with the client and highlight key features.
- Provide relevant documentation, including as-built drawings, warranties, maintenance instructions and safety information.
- Record client feedback and complete any agreed minor adjustments.
- Obtain formal sign-off once the client is satisfied and the structure meets project requirements.

Completion note

Sealing cut ends helps protect exposed FRP fibres from moisture ingress and extends the service life of the boardwalk.

Installation Completion Checklist

Editable checklist for site review before client inspection and handover.

SITE COMPLETION CHECKLIST

Area	Check item	Status
Footings and base plates	Locations confirmed, holes drilled to required depth, plates level, anchors secure	☐
FRP posts	Posts inspected, correct size used, seated flush, vertically aligned and secured	☐
Bearers	Bearers aligned, level, bolted and checked against marking plan	☐
Joists	Internal and external joists fixed, packers installed where required, level confirmed	☐
Bracing	Tie, lateral, diagonal and longitudinal bracing installed with clearance maintained	☐
Stanchions	Stanchions slotted, plumb, fastened and anti-crush tubes installed where required	☐
Decking panels	Panels cut, laid, clipped, screwed, aligned and free from loose edges	☐
Handrails and balustrades	Chords, slats, top caps, grab rails and tube joiners installed and inspected	☐
Cut ends	All cut FRP edges sealed with compatible resin kit and allowed to cure	☐
Final presentation	Boardwalk cleaned, debris removed, touch-ups completed and documentation ready	☐

MANUAL CLOSE-OUT NOTE

The project can be formally closed once the completed structure has passed inspection, required documentation has been handed over and formal client sign-off has been received.