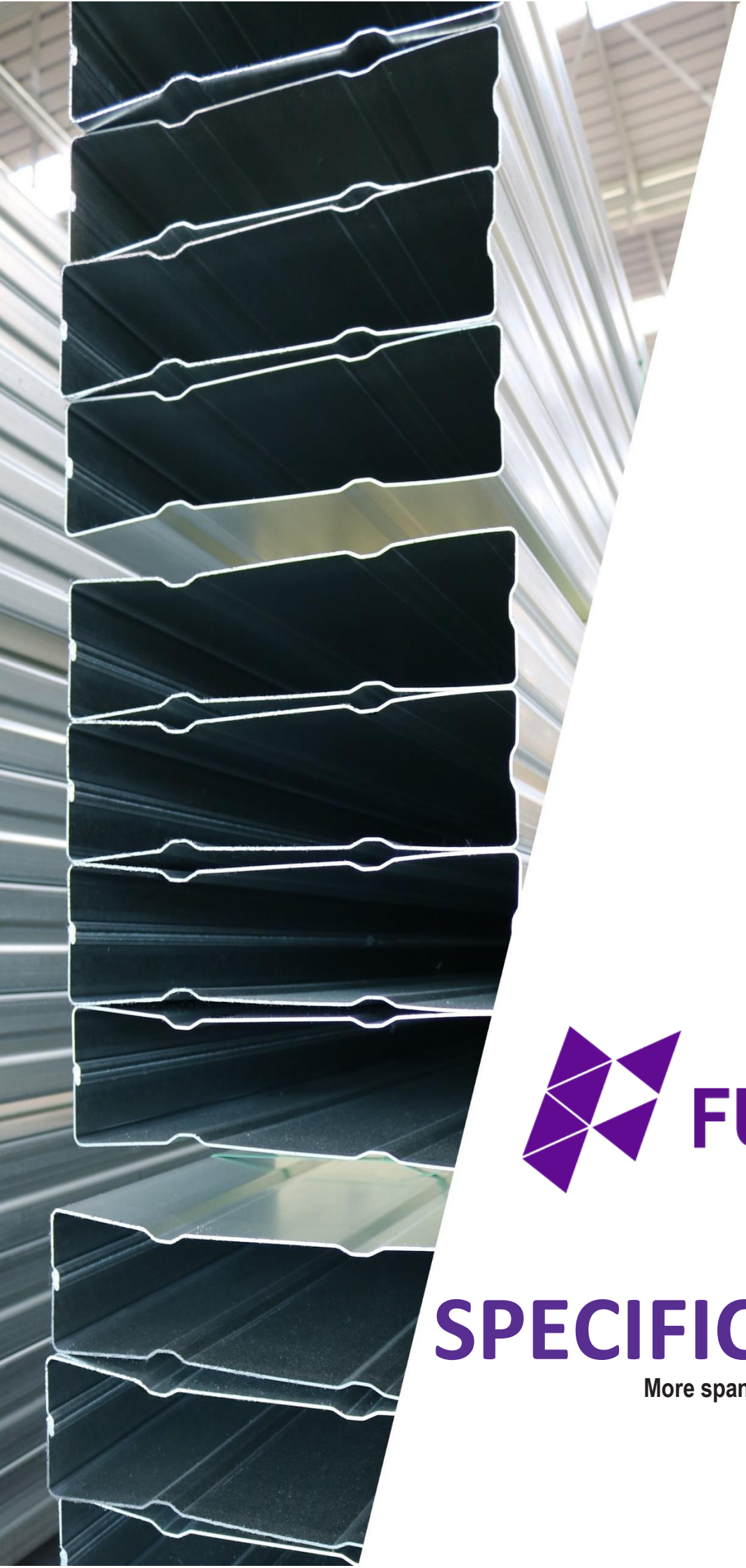

FUTURA

SPECIFICATION

More span, more strength, less cost.

FUTURA® BOX-BEAM RANGE

World-first, gravity defying technology

The construction of steel framed buildings for commercial, agricultural and residential purposes has changed forever.

The incredible strength of the Futura® Box-Beam range allows gravity defying spans that make the impossible possible.

The galvanized steel profile roll-forms into a rectangular hollow section forming the ultimate Box-Beam for rafters, purlins, girts and other structural applications.

The Futura® Box-Beam range starts at 150mm high with incremental increases up to 540mm, perfect for almost any building requirement and span size.

Full Futura® Box-Beam portal

Structural steel columns with Futura® rafters and purlins

Futura® purlins and girts on structural steel columns and rafters

About Futura®

Futura® was established by a team of forward-thinking, sustainably-minded engineers and designers with the goal of delivering game-changing building systems.

We supply pre-engineered building systems and cold-formed steel members to construction industry leaders.

We're designing the future, using next generation steel technology.

FUTURA

A game-changing building system.

- Deceptively strong - using next generation steel technology.
- Exceptionally cost effective - achieve maximum strength with less steel, plus lightweight construction.
- Saves time - one of the fastest and most efficient ways to design and build strong steel framed buildings.
- Food safe - enables bird-proof structure.
- Reduces environmental impact - by using less steel, less carbon is required to produce a Futura Box-Beam. It can also be recycled again and again without losing its qualities.
- Future-proofed - the patent pending design of the Futura Box-Beam will stand the test of time in all building uses, big or small.
- Reliable - cold formed steel doesn't twist, bow or shrink. You can always count on Futura Box-Beams to be the right size and length.

Contents

Preliminary

Refer to the Preliminary and General Clauses of the Architects Specification and to the General Conditions of Contract which are equally binding on all trades. This section of the Specification shall be read in conjunction with all other sections.

Scope

This section relates to the fabrication, erection and finishing of the cold formed, galvanized steel portal frames, structural beams & columns, purlins & girts, and associated connectors.

Related Documents

In this section of the specification, reference is made to the latest revisions of the following documents:

AS/NZS 4600 Cold-formed steel structures
NZBC F5/AS1 Construction and demolition hazards
AS/NZS 1252 High strength steel bolts with associated nuts and washers for structural engineering
NZS 3404 (1997) Steel Structures Standard
AS/NZS 4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles ISO 9001 Quality management systems - requirements
AS 1111 ISO metric hexagon bolts and screws
AS 1112 ISO metric hexagon nuts
AS 1397 Steel sheet and strip - hot-dipped, zinc-coated or aluminium-zinc coated
AS 1897 Electroplated coatings on threaded components (metric coarse series)
AS 3828 Guidelines for the erection of building steelwork
OSH Guidelines for the provision of facilities and general safety in the construction industry

Manufacturers Documents

All cold-formed steel sections shall be supplied by Futura, refer to the manufacturer's website for details: www.futura.nz

Requirements

No Substitutions

Substitutions are not permitted to any specified system, or associated components and products without the written permission of the Engineer.

Shop Drawings

Refer to the GENERAL sections for the requirements for submission and review and the provision of final shop drawings.

Coordination

Refer to architectural, electrical and services drawings to ensure details and fixings required are provided for in the structural steel work.

Verify Dimensions

Verify dimensions against site measurements prior to fabrication.

Tolerances

The tolerances on all structural member dimensions shall be +/- 2mm unless otherwise specified.

A structural member before erection shall not deviate from straightness or the specified configuration by more than the following:

(i) Struts L/1000
(ii) Plates b/200
(iii) Tubes L/600
(iv) Other members L/500

Where L is the length of the finished member, unless some other length is specified by the engineer, and b is the lesser dimension of the web panel.

The length of a member shall not deviate from the specified length by more than +0 or -5mm.

In erecting a structure a beam/rafter shall remain within +/- 10mm of its correct level, have its web within +/- 3mm of its correct position at connections and any bow in the beam is less than L/500.

The difference in lateral measurements between two adjacent frames measured at the eave and apex of the frame shall not be greater than +/- 10mm.

Performance

Quality Assurance

Maintain quality assurance programmes to AS/NZS ISO 9001 for both fabrication and erection as necessary to ensure that work is performed in accordance with this specification and the qualifying requirements of the contract documents.

Inspection

Inspect stages of fabrication and construction of the structure to NZS 3404

Products

Futura Box Beams

All Futura box beams to be supplied by Futura, to be fabricated of the following materials

Section	Steel Grade	Base Metal Thickness (mm)
FB15008	G550	0.75
FB20008	G550	0.75
FB25010	G550	0.95
FB30010	G550	0.95
FB30020	G550	0.95
FB35012	G500	1.15
FB40015	G500	1.45
FB45020	G450	1.95
FB54020	G450	1.95

Connection brackets

All proprietary connection brackets for Futura box beams to be supplied by Futura.

Brackets shall be manufactured with the material and thickness as specified on the drawings. Connectors shall be galvanised to at least the same coating thickness as the members being connected.

Connector plates will generally be of the following steel grades:

Thickness	Steel Grade
≤ 3 mm	G450
4-5 mm	HA350
> 6 mm	G300

Fasteners

14g hexagon head or 10g pan head self-tapping screws 20mm min long Builder as noted on the drawings.

Use fasteners supplied by Futura only.

Actual length shall be selected so that at least 3 threads protrude beyond the metal being fastened to.

Minimum spacing between adjacent tek screws shall be no less than 20mm.

Strap Bracing

Strap bracing were specified shall be 50/100mm x 0.95mm G550 steel strap as noted on the drawings.

Material shall be galvanised to at least the same coating thickness as the members connected to.

Durability of Materials

Only materials shall be used for which the supplier gives a warranty in terms of the New Zealand building Code with regard to the life of the product as it relates to the purpose of its use and the environment it is situated in. Where such warranties are subject to assessment by the supplier, these shall be obtained in writing before any material is delivered to the site. If any doubt exists, the supplier shall be contacted.

It shall be permissible to use a material in a specific location where that particular material has been assessed by the New Zealand Building Authority as complying with the durability provisions of the New Zealand Building Code in that location.

It shall be permissible to use a material if technical information is available which would enable the material to pass sub-clauses above.

Execution

Generally

Construct to NZS 3404.1, section 14, Fabrication and section 15, Erection. Identify steel to AS/NZS 4600 or NZS 3404.

Defects

Discard material showing visual defects affecting its structural integrity and/or appearance.

Delivery, Storage and Handling

Keep components dry in transit. Store on a level firm base, clear of the ground, protected from weather, contamination and damage and away from current work areas. Prevent water and condensation from being trapped between adjacent surfaces.
Do not drag components across each other and other materials. Protect edges and surfaces from damage and ensure that section shape is not damaged during handling, storage or installation.

Repairs to Coatings

Repairs to coatings should be only undertaken to materials after consultation with the supplier of the coil product. Repairs shall be strictly in accordance with the supplier's recommendations and some record of such shall be kept. Under no circumstances shall any work be carried out which will void the warranty given by the supplier with regards to any material product.

Coatings which have been damaged by welding or other causes should be restored before the structure is put into service. The damaged are should be dry and clean, free from dirt, grease, loose or heavy scale rust before the protective coating is applied. When preparing welded assemblies for painting, care should be taken that the area at and near welds is thoroughly cleaned down to base metal. The protective coating should be applied as soon as practicable and before noticeable oxidation of clean surfaces occurs.

Damaged zinc coating should be restored by a suitable zinc paint.

Erection Generally

Carry out the erection of purlins, girts or associated bracing to the requirements of AS 3828. Comply with NZBC F5 1: Construction and demolition hazards, NZS 3404 and the OSH publication: Guidelines for the provision of facilities and general safety in the construction industry.

No Gas Cutting or Welding

Gas cutting of holes or welding of purlins and girts is not permitted.

No Premature Loading

Correctly position and complete bracing and connections to primary structure before any loads are applied. Do not rely on bracing to perform structurally during craneage or pre-assembly.

Provide additional temporary bracing as required.

Fasteners

Fixings shall be installed strictly in accordance with the manufacturer's recommendations.

Installation of Cold-Formed Steel

Install and tek-screw into place as detailed on the drawings.

Installation of Blocking/Bracing

Install blocking/bracing and tek-screw between alternate purlins, as shown on the drawings, progressively from ridge to eaves in locations shown on the drawings.