

3411M METALCRAFT PURLINS, GIRTS AND FLOOR JOISTS

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Masterspec sections must be customised to suit the project being specified, by removing irrelevant information and adding project-specific information and selections.

1. GENERAL

This section relates to the fabrication, erection and finishing of the Metalcraft MSS Purlin, MC Section and MS Tophats, cold formed, galvanized steel purlin and girt system; incorporating Metalcraft Camlok™ or Standard bracing system.

Modify or extend the above description to suit the project being specified.

For most interior situations, the standard finish of Z275 galvanizing is acceptable. However where purlins or girts are exposed to the weather, or they are located in an exposed environment such as a severe marine or industrial environment, refer to Metalcraft Industries for specialist advise on either a heavier galvanizing finish (Z450 supplied by special order) or painted finish.

Related work

1.1 RELATED SECTIONS

Refer to ~ for ~.

Include cross references to other sections where these contain related work. Refer to PROTECTIVE COATINGS - STEELWORK for any specialist paint finishes. For any standard finishes refer to PAINTING.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1 Structures

NZBC B2 Durability

NZBC F5/AS1 Construction and demolition hazards

AS/NZS 1252 High strength steel bolts with associated nuts and washers for structural engineering

NZS 3404.1 Steel structures Standard - Steel structures Standard

AS/NZS 4600 Cold formed steel structures

AS/NZS 4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

AS/NZS ISO 9001 Quality 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

Delete from the DOCUMENTS clause any document not cited. List any additional cited documents.

RELATED DOCUMENTS

Refer to the following related documents when preparing this section:

NZBC B1/VM1 Structure General

2.0 Loadings

5.0 Steel

AS/NZS 1170 Structural steel actions

NZS 3404.2 Steel structures Standard - Commentary to the Steel structures Standard

1.3 MANUFACTURER'S DOCUMENTS

Metalcraft Technical Manual and Load Tables

Copies of the above literature are available from Metalcraft Industries Ltd

Web: <http://www.metalcraftstructural.co.nz>

Metalcraft area office details are available through the web site.

It is important to ensure that all personnel on site have access to accurate, up to date technical information on the many products, materials and equipment used on a project. In most cases individual products are not used in isolation, but form part of a building process. Also a particular manufacturer's and/or supplier's requirements for handling, storage, preparation, installation, finishing and protection of their product can vary from what might be considered the norm. Access to technical information can help overcome this potential problem.

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

1.5 SHOP DRAWINGS

Provide shop drawings.

Refer to the general section DOCUMENTATION for requirements for submission and review and the provision of final shop drawings.

Add further detail on the form and extent of shop drawings where appropriate.

1.6 CO-ORDINATION

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

1.7 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Performance

1.8 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.

1.9 DURABILITY

Metalcraft MSS purlins, girts and bracing systems comply with NZBC B2 Durability, providing the products are kept free from moisture.

For adverse conditions, including use within 1 km of marine locations or in severe industrial and corrosive environments, refer to Metalcraft for specialist advice.

1.10 INSPECTION

Inspect stages of fabrication and construction of the structure to NZS 3404. Refer to NZS 3404.2, clauses C14.5 and C15.6 and extend this clause to state who shall be responsible and for which parts of the fabrication and erection.

2. PRODUCTS

Materials

The galvanised coating used on the steel to manufacture MSS Purlins and Girts and Bracing systems is designed for internal use only. The coating must be kept clear of corrosive environments and should not be in contact with chemically treated timber or other treated products in the presence of moisture. A heavier galvanizing finish, to suit exposed or severe environments, is available by special order.

For bracing the purlins and girts select from either the Metalcraft Camlok™ bracing system or alternatively select Metalcraft Standard bracing system.

2.1 MSS PURLINS AND GIRTS

Metalcraft MSS roll formed purlins and girts, pre-punched for installation of bracing channels and for connection to the purlin cleats. Manufactured from G500 <1.5 mm, G450 > 1.5 mm base metal, and Z275 galvanized steel to AS 1397. Size for the various locations as scheduled / as detailed on the drawings.

Sizes range from MSS 150/12 to MSS 400/20. Refer to the Metalcraft Technical Manual. Available cut to size, up to 25 metres long. Amend clause wording if using Metalcraft Camlok™ instead of Standard bolted channel bracing.

2.2 MC SECTION PURLINS, GIRTS AND FLOOR JOISTS

Metalcraft MC Section roll formed channels for purlins, girts and floor joists, manufactured from G500 <1.5 mm, G450 > 1.5 mm base metal, and Z275 galvanized steel to AS 1397. Size for the various locations as scheduled / as detailed on the drawings.

Sizes range from MC 100/10 to MC 400/30. Refer to the Metalcraft Technical Manual. The MC Section purlin single span chart can be readily adapted for floor joist design.

Available cut to size, up to 25 metres long. Amend clause wording if using Metalcraft Camlok™ instead of Standard bolted channel bracing.

2.3 METALCRAFT CAMLOK™ PURLIN BRACING SYSTEM

Metalcraft Camlok™ roll formed channels complete with clamp / bracing brackets, locator / bracing brackets both standard and adjustable, and complete with apex rods. Camlok™ braces manufactured from G250, Z275 galvanized steel to AS 1397. Apex rods zinc plated to AS 1789 or galvanised to AS 1640. Channel length for the various locations as scheduled/as detailed on the drawings.

Delete this section if using Standard bolted channel bracing. Refer to SELECTIONS for Apex rod finish.

2.4 STANDARD BOLTED CHANNEL BRACING

Metalcraft Standard roll formed channels, complete with Standard and Adjustable bracing brackets pre-punched for bolting and apex rods. Standard bracing channels manufactured from G250, Z275 galvanized steel to AS 1397. Apex and Sag rods zinc plated to AS 1789 or galvanised to AS 1640. Channel length for the various locations as detailed on the drawings. Fully bolt between all MSS purlins up the rafter length.

Delete this section if using Camlok. Refer to SELECTIONS for Apex rod / Sag rod finish.

2.5 MS TOPHATS PURLINS, GIRTS AND FLOOR JOISTS

Metalcraft MS Tophats roll formed channels for purlins, girts and floor joists, designed to AS/NZS 4600: Cold formed steel structures. Manufactured from G550 < 0.95 mm, G500 > 0.95 mm base metal, and Z275 galvanized steel to AS 1397. Size for the various locations as scheduled / as detailed on the drawings.

MS Tophats are an economical alternative to timber and C section purlins for spans up to 7 metres. Ideal for carports and fencing.

Components

2.6 BOLTS, NUTS AND WASHERS

Grade 4.6 bolts to comply with AS 1111. Grade 4.6 nuts to comply with AS 1112. Grade 8.8 bolts, nuts and washers (high strength structural quality only) to comply with AS/NZS 1252. Hot-dip galvanized to AS/NZS 4680, bolts, nuts and washers forming a permanent part of a structure subject to a protective coating. Alternatively electrogalvanize to AS 1897. Sizes to engineering details.

Bolts nuts and washers normally supplied by the installer.

3. EXECUTION

Conditions

3.1 GENERALLY

Construct to NZS 3404.1, section 14, Fabrication and section 15, Erection. Identify steel to NZS 3404. To AS/NZS 4600 Cold formed steel structures and NZBC B1 Structures

3.2 DEFECTS

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

3.3 DELIVERY, STORAGE AND HANDLING

Care should be taken to 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.

Protect edges and surfaces from damage and ensure that section shape is not damaged during handling, storage or installation.

3.4 ERECTION GENERALLY

Carry out the erection of MSS 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.

3.5 NO GAS CUTTING OR WELDING

Gas cutting of holes or welding of MSS purlins and girts is not permitted. Use of abrasive disc blades is not recommended. For cutting use a hacksaw or snips.

3.6 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.

Application

3.7 BOLTING

Bolting to NZS 3404: section 14.3.6.

3.8 INSTALLATION OF MSS PURLINS

Install and bolt into position as detailed on the drawings.

Refer to Metalcraft installation instructions. Add further details to describe the installation of purlins, refer to further details on drawings, or refer to STRUCTURAL STEELWORK.

3.9 INSTALLATION OF MSS GIRTS

Install and bolt into position as detailed on the drawings.

Refer to Metalcraft installation instructions. Add further details to describe the installation of girts, refer to further details on drawings, or refer to STRUCTURAL STEELWORK.

Select from the following alternative clauses for using either fully bolted channel bracing or Metalcraft Camlok bracing system. Modify/extend to describe bracing of girts.

3.10 INSTALLATION OF MC SECTION PURLINS, GIRTS AND FLOOR JOISTS

Install and bolt into position as detailed on the drawings.

Refer to Metalcraft installation instructions. Add further details to describe the installation of purlins, refer to further details on drawings. With screwed down sheet flooring the fully restrained condition would apply otherwise lateral braces are required. The purlin load span charts will apply for the calculated linear loading on each joist.

3.11 INSTALLATION OF METALCRAFT CAMLOK™ BRACING

Install Camlok™ bracing channels with clamp / locator brackets fitted between purlins.

Install apex rods to ridge purlins as detailed.

Install Metalcraft Camlok™ bracing channels progressively from ridge to eaves in locations shown on the drawings.

Refer to Metalcraft installation instructions. Design engineers should give consideration to the bolt diameter, washer size and cleat material and thickness and reaction caused by double and continuous spans and high loads.

3.12 INSTALLATION OF STANDARD BOLTED CHANNEL BRACING

Install bracing channels and bolt between alternate purlins, as shown on the drawings.

Install apex rods to ridge purlins as detailed. Standard bracing and Sag rods are fitted to alternative bays with the channel located adjacent to both the ridge and eave purlin. Fit Sag rods to the lower pre-punched fixing holes.

Install Metalcraft Standard bracing channels progressively from ridge to eaves in locations shown on the drawings.

Completion

3.13 LEAVE

Leave work to the standard required by following procedures.

3.14 REMOVE

Remove all debris, unused materials and elements from the site.

4. SELECTIONS

4.1 MSS PURLINS

Size: MSS ~

Size options: 150/12, 150/15, 150/18, 200/12, 200/15, 200/18, 250/13, 250/15, 250/18, 275/15, 275/18, 300/15, 300/18, 325/15, 325/18, 350/18, 400/20

4.2 MSS GIRTS

Size: MSS ~

Size options: 150/12, 150/15, 150/18, 200/12, 200/15, 200/18, 250/13, 250/15, 250/18, 275/15, 275/18, 300/15, 300/18, 325/15, 325/18, 350/18, 400/20

4.3 MC SECTIONS

Size: MC ~

Size options: 100/10, 100/12, 100/16, 100/19, 150/12, 150/15, 150/19, 150/24, 200/15, 200/19, 200/24, 250/15, 250/19, 250/24, 300/24, 300/30, 400/24, 400/30.

4.4 BRACING

Type: ~

Select either bolted bracing channel or Metalcraft Camlok™.

4.5 APEX RODS

Diameter: ~ mm

Finish: ~

Used only to tie across the ridge. Apex rods are available in 12 mm and 16 mm diameter. Finishes available are black, zinc plated (to AS 1789) and galvanized (to AS 1640).

4.6 SAG RODS

Diameter: ~ mm

Finish: ~

Used only with Standard bracing system to tie purlins together. Sags rods are available in 12 mm and 16 mm diameter. Finishes available are black, zinc plated (to AS 1789) and galvanized (to AS 1640).

4.7 BOLTS, NUTS AND WASHERS

Grade: ~

Coating: Galvanized

Size: ~ mm

Alternative coating electrogalvanized.

4.8 MS TOPHATS

Size: MC ~

Size options: 60 X 0.75 BMT, 60 X 0.95 BMT, 100 X 0.75 BMT, 100 X 0.95 BMT, 120 X 0.75 BMT, 120 X 0.95 BMT, 150 X 0.95 BMT, 150 x 1.15 BMT, 150 X 1.55 BMT.