

4531 STEEL WINDOWS & DOORS

1. GENERAL

This section relates to the manufacture, supply, and installation of:

- steel windows
- steel doors
- hardware and furniture

1.1 RELATED WORK

Refer to glazing section/s for glass type and thickness.

Refer to painting section/s for paint finishes.

1.2 ABBREVIATIONS AND TERMS

SLS Serviceability limit state

ULS Ultimate limit state

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1 External moisture

NZBC F4/AS1 Safety from falling.

NZBC H1/VM1 Energy efficiency

NZBC H1/AS1 Energy efficiency

AS/NZS 1170.2 Structural design actions - Wind loads

NZS 1170.5 Structural design actions - Earthquake actions - New Zealand

AS/NZS 2312:2002 Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

NZS 3604 Timber-framed buildings

AS 3894.3 Site testing of protective coatings - Determination of dry film thickness

NZS 4211 Specification for performance of windows

NZS 4223.3 Glazing in buildings - Human impact safety requirements

BS 6510 Steel framed windows, and glazed doors

ISO 2063 Thermal spraying - Metallic and other inorganic coatings - Zinc, aluminium and their alloys

Warranties

1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials, water tightness and execution

Installation warranty: 1 year

Product warranty: 1 year

Warrant the powder coating / epoxy coating under normal environmental and use conditions against failure of materials and execution

Warranty period: 1 years

Warranties to be joint warranties by both the window manufacturer and the window installer.

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Requirements

1.5 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the required samples for the Architects to review.

1.6 SUBSTITUTIONS

Substitutions are not permitted to any Steelguard Limited systems, or associated components and products.

1.7 SHOP DRAWINGS

Provide drawn profiles and preliminary installation details for review. Refer to the general section 1235 SHOP DRAWINGS for details of requirements.

Shop drawings to show, but not be limited to:

- Design calculations
- Fully dimensioned elevations of all elements (minimum scale 1:20)
- Complete details of construction, connections and all support systems (minimum scale 1:5)
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Co-ordination requirements with other work
- A full schedule of materials, finishes, componentry, hardware and fittings.

1.8 PROTOTYPES - TESTING

To be Confirmed.

1.9 QUALIFICATIONS

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

Performance

1.10 STRUCTURAL/WEATHER-TIGHTNESS

The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window manufacturer.

Refer to SELECTIONS.

Performance - Wind

1.11 DESIGN PARAMETERS - SPECIFIC DESIGN

Design the installation to the wind pressure parameters of AS/NZS 1170.2 Refer to SELECTIONS for ULS and SLS

Finishes

1.12 EXTERNAL EPOXY COAT FINISH

Refer to epoxy coating section for epoxy coat finish.

The coating to be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

2. PRODUCTS

Materials

2.1 STEEL WINDOW, DOOR AND FRAME AND DOORSET SECTIONS

To BS 6510.

2.2 GLAZING BEADS

Interior or exterior fitted. Refer to SELECTIONS for type.

Corrosion Protection

2.3 ZINC METAL SPRAY

Steel frame to be steel grit blasting prior to application of 75 - 100 microns minimum zinc metal spraying with coating thickness when measured to AS 3894.3. Refer to SELECTIONS for details.

Components

2.4 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the steel window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable hardware able to be keyed alike.

2.5 GLAZING

To NZS 4232.2. Refer to glazing section/s for glass type and thickness.

2.6 FLASHINGS GENERALLY

Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Finishes

2.7 EXTERNAL EPOXY COAT FINISH

Refer to epoxy coating section for epoxy coat finish.

2.8 PAINT FINISH

Refer paint section/s for details.

3. EXECUTION

Conditions – generally

3.1 DELIVERY

Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

3.2 UNLOAD

Unload, handle and store elements in accordance with the window manufacturer's requirements, without distortion, avoiding prefinished surfaces rubbing together and avoiding contact with mud, plaster and cement.

Store windows, doors and frames under cover. Place units in a vertical position with heads up, spaced by timber blocking, on minimum 100mm high timber blocking. Avoid using non vented plastic or canvas shelters that could create a humidity chamber. Keep paper and cardboard wrappings dry. Provide 6mm minimum space between each stacked door to permit air circulation.

3.3 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.4 FIXINGS AND FASTENINGS

Use fixings and fastenings recommended by the manufacturer of the component being fixed.

Assembly

3.5 FABRICATION

Fabricate frames as detailed on the shop drawings. Frame and sash joints to be welded, dressed square and flat. Install hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.6 CORROSION PROTECTION

To AS/NZS 2312:2002. Positively rust proof all frames and ancillary profiles by steel grit blasting before applying zinc metal spraying.

3.7 ANCHORAGES

Install all required anchorages for the steel windows and doors, including sleeves, concrete inserts, anchor bolts and items with integral anchors that are to be embedded in concrete and/or masonry.

3.8 FINISH COAT APPLICATION

Finish all significant surfaces with either a polyester powder coat or a two-coat epoxy coat finish. Refer to SELECTIONS.

3.9 HARDWARE GENERALLY

Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.

Installation – generally

3.10 CHECK ALL OPENINGS

Check all openings prior to manufacture for size and standard of execution before installing door frames.

3.11 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the

installation of window and door frames to NZBC E2/AS1:9.1.5 Wall underlays to wall openings.

- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).
- application of waterproof sealer to all door and windowsills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer.

3.12 INSTALLATION

Fix to comply with the reviewed shop drawings and manufacturer's installation details, including flashings, bedding compounds and sealants.

3.13 TOLERANCES

Install the finished prehung door to a dimensional accuracy of ± 2 mm.

3.14 CONCRETE MASONRY WALLS - STEEL FRAMES

Fix in place with 10mm expanding masonry anchors with countersunk heads. At hinge side fix direct to opening and pack on the other side to wedge in place. Fix at hinges and opposite, with one fixing in the vicinity of the lock.

3.15 TIMBER STUD WALLS - STEEL FRAMES

Using a pilot hole in the frame, fix to timber studs with countersunk self-drilling corrosion proof screws. Fix at hinges and opposite, with one fixing in the vicinity of the lock.

3.16 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail jamb facings by 30mm at each end. Refer to 4821 FLASHINGS section for supply and installation. Refer to manufacturer for appropriate installation details.

3.17 COMPLETE AIR SEAL

To NZBC E2/AS1:9.1.6 Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.18 GLAZING

Install selected glazing to NZS 4232.2 into the specified window, door or door set system assembly. Refer to the glazing section/s for details for glass types, thickness and glazing method.

3.19 MANIFESTATIONS

To NZS 4223.3, 2.2 Manifestation (making glass visible).

3.20 INSTALL HARDWARE

Install sash and door hardware as scheduled.

Application – jointing and sealing

3.21 PREPARATION

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask any adjoining surfaces which would be difficult to clean if smeared with sealant.

3.22 BACKING

Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

3.23 POINTING

Tool sealant to form a smooth fillet, with profile and dimensions required by the sealant manufacturer.

3.24 FINISHING

Remove excess sealant from adjoining surfaces, using cleaning materials required by the sealant manufacturer and to leave frames unstained and clean.

Completion

3.25 PROTECTION

Protect finishes against damage from adjacent and following work. Protect glass from damage by crossing clearly visible reinforced paper or plastic tape between jamb liners and clear of the glass.

3.26 CHECK

Check and adjust operation of all doors and windows.

3.27 REPLACE

Replace damaged, cracked or marked elements.

3.28 LEAVE

Leave work to the standard required for following procedures.

3.29 REMOVE

Remove safety indicators and protective coverings, and wipe down all joinery thoroughly to leave it perfectly clean, using the method required by the window manufacturer. Remove debris, unused materials and elements from the site.

4. SELECTIONS

Performance

4.1 AIR INFILTRATION

For NZS 4211, table 3 **Air infiltration.**

Non-air conditioned zones: To be Confirmed

Performance - Wind

4.2 DESIGN PARAMETERS - SPECIFIC DESIGN

The design wind pressures are to AS/NZS 1170.2.

ULS Refer to Structural Engineer's Wind map

Windows, doors and door sets

4.3 STEEL GLAZING W20

Manufacturer: Steelguard Ltd

Profile: W20 (single glazed) - refer to the detailed drawings

Thickness: 32mm

Weather seals: Self adhesive EPDM

Glazing beads: Galvanised mild steel glazing beads to Architect's Approval

Glazed: 6mm Toughened glass - to Architect's Approval

Fixings: Stainless steel to Architect's approval

Finish: Galvanised mild steel joinery sections

Colour: Non-standard RAL colour factory applied spray finish to Architect's Approval

4.4 STEEL FRAMED GLAZED DOOR W20 (NON-FIRE RATED)

Manufacturer: Steelguard Ltd

Profile: W20 (single glazed) - refer to the detailed drawings

Type / Leaf size: Galvanised Mild Steel, Hinged Single Leaf / Refer to the Door Schedule

Thickness: 32mm

Weather seals: Self adhesive EPDM

Glazing beads: Galvanised mild steel glazing beads to Architect's Approval

Glazed: 6mm Toughened glass - to Architect's Approval

Fixings: Stainless steel to Architect's approval

Finish: Galvanised mild steel joinery sections

Colour: Non-standard RAL colour factory applied spray finish to Architect's Approval

4.5 STEEL GLAZING W40 (NON-FIRE RATED)

Manufacturer: Steelguard Ltd

Profile: W40 (Double glazed) - refer to the detailed drawings

Thickness: 47mm

Weather seals: Self adhesive EPDM

Glazing beads: Galvanised mild steel glazing beads to Architect's Approval

Glazed: 16mm IGU glass - to Architect's Approval

Fixings: Stainless steel to Architect's approval

Finish: Galvanised mild steel joinery sections

Colour: Non-standard RAL colour factory applied spray finish to Architect's Approval

4.6 STEEL FRAMED GLAZED DOOR W40 (NON-FIRE RATED)

Manufacturer: Steelguard Ltd

Profile: W40 (Double glazed) - refer to the detailed drawings

Type / Leaf size: Galvanised Mild Steel, Hinged Single Leaf / Refer to the Door Schedule

Thickness: 47mm

Weather seals: Self adhesive EPDM

Glazing beads: Galvanised mild steel glazing beads to Architect's Approval

Glazed: 16mm IGU glass - to Architect's Approval

Fixings: Stainless steel to Architect's approval

Finish: Galvanised mild steel joinery sections

Colour: Non-standard RAL colour factory applied spray finish to Architect's Approval

Components

4.7 GLAZING

Refer to glazing section/s for glass type and thickness.

4.8 HARDWARE AND FURNITURE

To Architect's Approval.

4.9 FLASHINGS

Material/type: System to be inclusive of EPDM spacers and EPDM gutter flex, weather seals, flashings and sealants all as required to meet the performance criteria.

Pattern: Formed to suit details provided

4.10 PUTTY

XHP Steel Sash Putty

Finishes

4.11 EXTERNAL EPOXY COAT FINISH - STEEL WINDOW JOINERY

Refer to RESENE paint sections for epoxy coat finish details.

4.12 INTERNAL POWDER COAT FINISH - STEEL WINDOW JOINERY

Refer to POWDER COATING sections for powder coating finish.

Website: www.steelguard.co.nz