

4852AA ACMF HANDRAILS, GRABRAILS, ALUMINIUM & GLASS BALUSTRADES

1 GENERAL

If you have pre-customised this work section using the "questions and answers" provided as part of the downloading process, it may be necessary to amend some clauses to suit the final project- specific version.

The section must still be checked and customised to suit the project being specified, by removing any other irrelevant details and adding project-specific details and selections.

This section relates to the fabrication and installation of ACMF proprietary balustrade and handrail systems. It includes:

- Aluminium balustrade system
- Aluminium / Steel / Stainless Steel balustrade system
- Glass balustrade systems
- Handrail Systems
- Grabrail Systems

Modify / expand this clause to suit requirements of the final version of the section

1.1 RELATED WORK

Refer to ACMF PS1

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

ABS	Acrylonitrile Butadiene Styrene
CHS	Circular Hollow Section
EPDM	Ethylene propylene Diene Monomer
EVA	Ethylene Vinyl Acetate
HDPE	High-density polyethylene
LDPE	Low-density polyethylene
LSG	Laminated Safety Glass
PVB	Polyvinyl Butyral
SGP	Sentry Glass Plus
SHS	Square Hollow Section
SS	Stainless Steel
TLSG	Toughened Laminated Safety Glass
TPV	Thermoplastic Vulcanizate
TSG	Toughened Safety Glass

Documents

1.3 DOCUMENTS

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

NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
NZBC D1/AS1	Accessible routes
NZBC F2/AS1	Hazardous Building Materials

NZBC F4/AS1	Safety from falling
NZBC F9	Means of restricting access to residential pools
AS/NZS 1163	Cold-formed structural steel hollow sections
AS/NZS 1170.0	Structural design actions -General Principles
AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
AS/NZS 1664.1	Aluminium structures - Limit state design
NZS 4121	Design for access and mobility: Buildings and associated facilities
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
NZS 8500	Safety barriers and fences around swimming pools, spas and hot tubs

Delete from the DOCUMENTS clause any document not cited. List any additional cited documents. The following are related documents and if referred to in the work section need to be added to the list of DOCUMENTS.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

- ACMF Balustrade Brochures
- ACMF Panel Assembly Drawings, Standard Fixing Details and PS1 - Design Producer Statements
- ACMF NZBC B2 Durability Statement
- ACMF Care and Maintenance Manual

List documents relating to this part of the work, i.e. technical product/system specifications, test reports, appraisals, certification, etc. Normally they will be referred to in the text by the abbreviated title.

Manufacturer/supplier contact details

Company: ACM Fabricators LTD.

Web: www.acmf.co.nz

Email: info@acmf.co.nz , marius.koen@acmf.co.nz

Telephone: 09 442 5062

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.

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Aluminium, Galvanized Steel or Stainless Steel profiles
10 or 20 years	For powder coating / or anodizing, dependent on product application and environment Refer to powder coating / or anodizing manufacturer for warranty details and conditions
10 years	For accessories, gaskets and synthetic profiles
10 years	For glass and glazing

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Modify or expand the clause to suit project or manufacturer/supplier requirements, options include:

- *Modify the form to be used*
- *Commence the warranty from the date of purchase (check with the manufacturer/supplier)*

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For installation of ACMF Handrails, Grabrails, Aluminium & Glass Balustrades
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- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Modify or expand the clause to suit project or installer/applicator requirements, options include:

- *Modify the form to be used*
- *Commence the warranty from the date of installation (check with the installer/applicator)*

Requirements

1.7 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be accredited by ACMF. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

Modify clause to suit project and manufacturer / supplier requirements.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the ACMF specified systems, components and associated products listed in this section.

1.9 ACMF FIXING METHODS

Contact ACMF for advice on site specific fixing methods to suit ACMF Handrail, Grabrail, Aluminium and Glass Balustrade systems and project application

1.10 SHOP DRAWINGS

Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Provide shop drawings to show the general arrangement including, but not be limited to: TBC - ALLOW FOR ALL

If requested provide the following additional information: TBC - ALLOW FOR ALL

Submit shop drawings for review to ARCHITECT

- 14 working days (at least) before fabrication is planned to commence, provide shop drawings for review.
- Complete shop drawing review before commencing fabrication.

The general section 1235 SHOP DRAWINGS describes the process of submission and review of shop drawings. Use this clause to describe the specific requirements of what the required shop drawings are to include.

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

Add appropriate time for review (1 - 4 weeks). Modify this clause with the appropriate timing for the project. In some cases, preliminary details may need to be supplied at the pricing stage, with final shop drawings by the successful supplier/fabricator only.

1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents: ACMF Maintenance Instructions

Use this clause to list requirements of information that is required but which does not warrant a separate specialist operation and maintenance manual. Amend the clause if hard copy documents are required.

Provide this information prior to practical completion.

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
 - Installer / applicator warranty
 - Producer Statement - Construction from the applicator / installer
 - Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

List the Producer Statements - Construction (PS3) required from installers that are required as a condition of carrying out this work.

List also Producer Statements - Construction Review (PS4) required from consultants to be engaged by the Contractor. Producer Statement - Design (PS1), may be required where certain design work is undertaken by the Contractor or manufacturer / importer / distributor. ACMF Fabricators Ltd can provide this on request, subject to individual project requirements

1.13 COMPLIANCE STATEMENT

ACMF Standard Handrails, Grabrails, Aluminium & Glass Balustrades system designs prepared in accordance with:

- NZBC B1/VM1
- NZBC B2/AS1
- NZBC D1/AS1
- NZBC F2/AS1
- NZBC F4/AS1
- NZBC F9
- AS/NZS 1163
- AS/NZS 1170.0
- AS/NZS 1170.1
- AS/NZS 1170.2: 2021
- AS/NZS 1664.1
- NZS 4121
- NZS 4223.3
- NZS 4680
- NZS 8500

Modify clause to suit project and manufacturer / supplier requirements.

Performance – Wind (design by contractor)

1.14 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

Certification

1.15 CERTIFICATION - PROTECTIVE COATINGS

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to AS/NZS 1580.108.1 or AS 3894.3, and retest where any dispute arises as to the thickness provided.

Coating to be applied by an approved applicator who can certify that the coating has been applied in accordance with the WGANZ PQAS system.

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

This can be provided on request, contact ACMF Fabricators Ltd. for assistance.

Quality control and assurance

1.16 INSPECTIONS

Work may not proceed until the work in question has been inspected.	TBC
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Modify clause to suit project and manufacturer / supplier requirements.

2 PRODUCTS

Materials - Baluster Infill

2.1 ACMF ELEGRA Classic / Pioneer - BALUSTRade SYSTEM

Aluminium balusters in an ELEGRA aluminium frame (including posts, handrails, subrails), associated components and fixings. Material types include:

- 6061 T6 Aluminium for Post, Hanrail, Balusters and H-Rails
- 6063 T5 Aluminium for various clips
- Stainless Steel Fixings
- Chemset Adhesive
- HDPE and Aluminium endcaps

Refer to SELECTIONS for finishes and component options.

Modify clause to suit project and manufacturer / supplier requirements.

Materials - Glass Infill

2.2 ACMF ELEGRA Infinity / Horizon / Aurora / Zenith / Mirage / Crystal / Lumina - BALUSTRade SYSTEM

Glass infill in an ELEGRA aluminium frame (including posts, handrails, subrails), associated components and fixings. Material types include:

- 6061 T6 Aluminium for Post, Hanrail, and H-Rails
- 6063 T5 Aluminium for various clips
- Stainless Steel Fixings
- Chemset Adhesive
- HDPE and Aluminium endcaps
- Various Glass Types (LSG, TSG, TSG, SGP) ranging from 6mm to 18mm
- Glass support blocks with a shore hardness of 80

Refer to SELECTIONS for finishes and component options.

Modify clause to suit project and manufacturer / supplier requirements.

Materials - Fin Infill

2.3 ACMF FINesse -FIN BALUSTRADE SYSTEM

Aluminium fins attached to a FINesse Aluminium Subrail for face fix or Base Rail for top fix (including handrails, subrails), associated components and fixings. Material types include:

- 6061 T6 Aluminium for Fins, Top-Rail, Mid-Rail and Sub-Rail
- 5005 H32 / 5052 H32 Aluminium
- 6063 T5 Aluminium for various clips
- Stainless Steel fixings
- Chemset Adhesive
- HDPE and Aluminium endcaps

Refer to SELECTIONS for finishes and component options.

Modify clause to suit project and manufacturer / supplier requirements.

Materials – Handrails

2.4 ACMF - HANDRAIL SYSTEM

Stainless Steel handrail section ranging from 32-50mm Outer Diameter attached to a Balustrade System or Wall, associated components and fixings. Material types include:

- Material: 304SS / 316SS depending on the corrosive environment
- Stainless Steel fixings
- Chemset Adhesive / Fisher Plugs depending on application
- Stainless Steel End Caps, Brackets, Elbows, Bends and Joiners

Refer to SELECTIONS for finishes and component options.

Modify clause to suit project and manufacturer / supplier requirements.

Accessories

2.5 PLASTIC PACKERS / SPACERS

EPDM / SS / Aluminium spacers and packers as required for specific applications.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Use this standard generic clause and if appropriate add additional special requirements.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

Use this standard generic clause and if appropriate add additional special requirements

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out or existing substrates and confirm it is of the required standard for this part of the work.

Use this standard generic clause and if appropriate add additional special requirements

Installation – ACMF Systems

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Use this standard generic clause and if appropriate add additional special requirements

3.5 INSTALLATION GENERAL

Install ACMF balustrade systems to ACMF Assembly Drawings, ACMF Standard Fixing Details, producer statement requirements and ACMF requirements.

Use this standard generic clause and if appropriate add additional special requirements

Completion & Commissioning

3.6 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

Use this standard generic clause and if appropriate add additional special requirements

3.7 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

TBC	TBC
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Modify clause to suit project and manufacturer / supplier requirements.

4 SELECTIONS

For further details on selections go to www.acmf.co.nz Substitutions are not permitted to the following, unless stated otherwise.

Materials - Baluster Infill

4.1 ACMF ELEGRA Classic / Pioneer - BALUSTRADE SYSTEM

Location:	To all stairs and external covered area (refer drawings).
Type/Brand:	ACMF ELEGRA Classic / Pioneer Framed Balustrade
Fixing arrangement:	Face / Top Fixed
Fixing detail:	Face / Top Fixed to steel PFC / Concrete / Timber
Substrate type:	Steel / Concrete / Timber
Post centers:	2000mm max (dependent on structure, refer to PS1 and drawings)
Post height:	1000mm / 1100mm from FFL (refer to NZBC F4/AS1 and drawings)
Post Type:	60mm Square (ST-S6060)
Baluster type:	20mm Square (BL-S20)
Top Rail type:	Rectangular 30mm x 85mm (TR-B3085) Elliptical 30mm x 85mm (TR-E3085) Round 40mm x 80mm (TR-R4080)
Mid Rail type:	Rectangular 40mm x 26mm (HR-C2725)
End caps:	Aluminium
Aluminium finish/colour:	Powder coated - colour TBC

Modify clause to suit project and manufacturer / supplier requirements.

Materials - Glass Infill**4.2 ACMF ELEGRA Infinity / Horizon / Aurora / Zenith / Mirage / Crystal / Lumina - BALUSTRADE SYSTEM**

Location:	To all stairs and external covered area (refer to drawings).
Type/Brand:	ACMF ELEGRA Infinity / Horizon / Aurora / Zenith / Mirage / Crystal / Lumina Semi-Frameless Balustrade
Fixing arrangement:	Face / Top Fixed
Fixing detail:	Face / Top Fixed to steel PFC / Concrete / Timber
Substrate type:	Steel / Concrete / Timber
Post centers:	2000mm max (dependent on structure, refer to PS1 and drawings)
Post height:	1000mm / 1100mm from FFL (refer to NZBC F4/AS1 and drawings)
Post Type:	60mm Square (ST-S6060)
Glass type:	Various Glass Types (LSG, TSG, TLSG, SGP) ranging from 6mm to 18mm (refer to NZS 4223.3 and drawings)
Top Rail type:	Rectangular 30mm x 85mm (TR-B3085) Elliptical 30mm x 85mm (TR-E3085) Round 40mm x 80mm (TR-R4080) None for Infinity
Mid Rail type:	Rectangular 40mm x 26mm (HR-C2725) None for Mirage, Crystal, Infinity
End caps:	Aluminium on Side Fix Post Aluminium / HDPE
Aluminium finish/colour:	Powder coated - colour TBC <i>Modify clause to suit project and manufacturer / supplier requirements.</i>

Materials - Fin Infill**4.3 ACMF FINEsse FACE HUNG FIN - BALUSTRADE SYSTEM**

Location:	To all stairs and external covered areas (refer drawings).
Type/Brand:	ACMF FINEsse Fin Balustrade
Fixing arrangement:	Face / Top Fixed
Fixing detail:	Face / Top fixed to steel PFC / Concrete / Timber
Substrate type:	Steel / Concrete / Timber
Face-Fix Rail type:	ACMF proprietary continuous 2-part self-leveling rail for face fix configuration
Top-Fix Base type:	ACMF continues Aluminium base plate for top fix configuration
Fin nominal openings:	≤ 100mm
FIN height:	1000mm / 1100mm from FFL (refer to NZBC F4/AS1 and drawings)
Fin type:	ACMF proprietary Rectangular 50mm x 20mm
Top handrail type:	Rectangular / None
Mid-Rail type:	None / Rectangular >760mm from (refer to NZBC F4/AS1 and drawings)
End caps:	Aluminium / HDPE
Aluminium finish/colour:	Powder coated - colour TBC <i>Modify clause to suit project and manufacturer / supplier requirements.</i>

Materials - Handrails**4.4 ACMF - HANDRAIL SYSTEM**

Location:	To all stairs and external covered areas (refer drawings).
Type/Brand:	ACMF Handrails
Fixing arrangement:	Balustrade / Wall
Fixing detail:	(refer to NZBC D1/AS1 and drawings)
Substrate type:	Steel / Concrete / Timber
Handrail height:	Between 900mm-1000mm above pitchline (refer to NZBC D1/AS1 and drawings)
Handrail type:	Stainless Steel CHS 38mm / 50mm Aluminium
Accessories type:	End Caps, Brackets, Elbows, Bends and Joiners
Material Type / Finish:	Bright Polished / Brushed / Powder Coated - Finish TBC 304SS / 316SS / Aluminium – Type TBC (refer to NZBC B2/AS1)

Modify clause to suit project and manufacturer / supplier requirements.