5311A ACOUSTICAL USG BORAL/DONN® SUSPENDED CEILINGS

1. GENERAL

This section relates to the manufacture, supply and installation of USG Boral suspended ceiling systems, including all elements offered by the manufacturer to complete the system.

1.1 RELATED WORK
Refer to ~ for ~.

1.2 ABBREVIATIONS
The following abbreviations are used throughout this part of the specification:

NRC	Noise reduction coefficient
CAC	Ceiling attenuation class
STC	Sound transmission class
AWCINZ	Association of Wall and Ceiling Industries of New Zealand Inc

Documents

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

NZBC C/AS1-AS7	Protection from fire
NZBC C/VM2	Protection from fire
AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1530.3	Methods for fire tests on building materials, components and structures - Simultaneous determination of ignitability, flame propagation, heat release and smoke release
AS 1530.4	Methods for fire tests on building materials, components and structures - Methods of tests on building materials, components and structures - Fire-resistance test of elements of construction
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2785	Suspended ceilings - Design and installation
AS 2946	Suspended ceilings, recessed luminaires and air diffusers - Interface requirements for physical compatibility
AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter (cone test)
NZS 4219	Seismic performance of engineering systems in buildings
NZS 4221	Fibrous plaster sheet
ISO 6308	Gypsum plasterboard - Specification
ASTM C423	Test method for sound absorption and sound absorption coefficients by the reverberation room method
ASTM C 635	Standard specification for the manufacture, performance and testing of metal suspension systems for acoustical tile and lay-in panel ceilings
ASTM E1414	Standard test method for airborne sound attenuation between rooms sharing a common ceiling plenum (two room method)
ASTM E1477	Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

1.4 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
USG Boral Lifetime Warranty
USG Boral Clean Room ClimaPlus
USG Boral Eclipse ClimaPlus
USG Boral Impressions ClimaPlus
USG Boral Mars ClimaPlus
USG Boral Mars Healthcare ClimaPlus
USG Boral Mars Hi-NRC ClimaPlus
USG Boral Olympia Micro ClimaPlus

USG Boral Olympia II Micro ClimaPlus
USG Boral Premier Hi-Lite ClimaPlus
USG Boral Radar ClimaPlus
USG Boral Radar ClimaPlus High CAC/High NRC
USG Boral Radar Illusion ClimaPlus
USG Boral Rock Face ClimaPlus
USG Boral Donn® Brand Grid Suspension Systems
USG Boral Fire Rated Exposed Grid Ceiling System
USG Boral Early Fire Reaction - AS/NZS 3837 or ISO 5660.1
USG Boral Seismic Design Guide
USG Boral ScrewFix® Plasterboard Suspension System
USG Boral Sheetrock® Ceiling Batten System
USG Boral Drywall Grid Suspension System
USG Boral Maintenance Guidelines
USG Boral Geometrix™ Metal Pan

Copies of the above literature, information and technical support are available from USG
Telephone: 0-9-270 2595 (upper North Island)
0-4-560 4528 (lower North Island)
0-3-365 4245 (South Island)
Web: www.usgboral.com

Pricing and availability are available from:
Telephone: 0800 POTTER (0800 768 837)
0800 666 556, T&R Interiors

Requirements

1.5 NO SUBSTITUTIONS
Substitutions are not permitted to any specified USG system, or associated components and products.

1.6 SAMPLE SECTION
Allow to erect a sample section of the suspended ceiling system offered. Subject to confirmation in writing, the sample section may form part of the completed installation. Refer to SELECTIONS for location.

1.7 INSTALLATION
To AS/NZS 2785. Installation by a manufacturer's approved installer, using the manufacturer's technical services. Installers must be members of the AWCINZ. Provide evidence of experience, listing completed projects of similar size and complexity.

Installation to comply with the requirements of NZS 4219; with related building services installations complying specifically with clauses 5.13 and 5.14.

1.8 CLEANING INSTRUCTIONS
Supply information on the materials and method of cleaning the ceiling system over its expected life.

1.9 SPARES
Provide spare matching ceiling elements in the quantities specified below. Deliver into a dry store at the site or elsewhere as directed and at agreed times. Refer to SELECTIONS for quantity.

1.10 SUPPLY WARRANTY
Supply a warranty as follows:
Type: USG Boral's System Lifetime Warranty
(maximum 30 years - exposed grid and acoustical panel)
Donn® suspension system (15 years)
USG Boral acoustical ceiling panels (15 years)
USG Boral Drywall Grid suspension system (15 years)
USG Boral ScrewFix suspension system (15 years)

Performance

1.11 LOADING CODE REQUIREMENT
Comply with the requirements of NZS 1170, section 8.

1.12 CERTIFICATION
Provide:
- certification of compliance with NZS 1170, section 8 for evaluation
- certificates and other evidence that the system offered complies with the standards of performance specified
- a Producer Statement on completion.

1.13 ACOUSTIC REQUIREMENTS
Use an independent testing authority to test a specimen of the ceiling system to ASTM C423 and ASTM E1414. Refer to SELECTIONS for acoustic performance requirements. Submit the results if requested.

1.14 FIRE GROUP NUMBERS
The Group Number Classification to NZBC C/AS2-C/AS7, table 4.1, has been determined in accordance with NZBC C/VM2 Appendix A, following testing and data reduction to ISO 5660.1.

TILE	GROUP NUMBER
Clean Room ClimaPlus	1-S
Eclipse ClimaPlus	1-S
Impressions ClimaPlus	1-S
Mars/Mars Healthcare/ Mars Hi NRC ClimaPlus	1-S
Olympia Micro ClimaPlus	1-S
Olympia ll Micro ClimaPlus	1-S
Radar ClimaPlus	1-S
Radar ClimaPlus Firecode	1-S
Radar ClimaPlus High NRC/High CAC	1-S
Radar Ceramic ClimaPlus	1-S
Rock Face ClimaPlus	1-S

All other products tested to AS/NZS 1530.3

1.15 FIRE RATING REQUIREMENT, EXPOSED GRID SUSPENSION SYSTEM
Design the ceiling system so that together with the floor or roof is to NZBC C/AS1-C/AS7, when tested to AS 1530.4.

Location	**FRR (minimum)**	**Ceiling design**	**Floor or roof system**
~	60/60/60	USG FC-61	Timber floor, timber joists
~	60/60/60	USG FC-62	Reinforced concrete
~	60/60/60	USG FC-63	Timber floor, concrete joists
~	30/30/30	USG FC-31	Timber floor, timber joists
~	30/30/30	USG FC-32	Timber floor, steel joists
~	60/60/60	USG RC-61	Timber roof sarking, timber structure
~	60/60/60	USG RC-62	Concrete roof, timber structure
~	30/30/30	USG RC-31	Any roof, timber structure
~	30/30/30	USG RC-32	Any roof, steel structure

1.16 FIRE RATING REQUIREMENT, FLUSH SUSPENSION SYSTEM
Design the ceiling system so that together with the floor or roof is to NZBC C/AS1-C/AS7, when tested to AS 1530.4.

Location	**FRR (minimum)**	**Ceiling design**	**Floor or roof system**
~	60/60/60	USGDG FC-61	Timber floor, timber joists
~	60/60/60	USGDG FC-62	Reinforced concrete

~	60/60/60	USGDG FC-63	Timber floor, concrete joists
~	30/30/30	USGDG FC-31	Timber floor, timber joists
~	30/30/30	USGDG FC-32	Timber floor, steel joists
~	60/60/60	USGDG RC-61	Timber roof sarking, timber structure
~	60/60/60	USGDG RC-62	Concrete roof, timber structure
~	30/30/30	USGDG RC-31	Any roof, timber structure
~	30/30/30	USGDG RC-32	Any roof, steel structure

1.17 ENVIRONMENTAL REQUIREMENTS
Design the ceiling system for use over its expected life without deterioration within the required temperature and humidity range. Refer to SELECTIONS for details.

1.18 REFLECTANCE
To ASTM E1477. Refer to SELECTIONS for reflectance and colour.

2. PRODUCTS
Substitutions are not permitted to the following, unless stated otherwise.

Materials - exposed grid systems

2.1 GRID SUSPENSION SYSTEM
Manufactured in New Zealand by USG Boral Building products NZ. Hot-dip galvanized steel elements to ASTM C635 for carrying ceiling panels, light fixtures and air distribution elements and complying with NZS 1170, section 8.
Brand: USG Boral Donn®
Grid finish/colour: Pacific White

2.2 PERIMETER TRIM
Manufactured by USG Boral Building products NZ. Hot-dip galvanized pre-painted steel.
Brand/form: USG Boral Donn®
Material: Hot-dip galvanized steel
Finish/colour: Pacific White

2.3 CEILING TILES
Brand: USG Boral
Edge profile: to suit grid
Performance: ASTM C423, ASTM E1414

Materials - suspended flush ceilings

2.4 SUSPENSION SYSTEM
System: USG Boral Drywall Grid suspension system or USG Boral ScrewFix™ plasterboard suspension system
Finish: Hot-dip galvanized steel
Compliance: AS/NZS 2785, AS/NZS 1170, NZS 1170.5, ASTM C635

2.5 PLASTERBOARD SHEET
Manufactured by a member of the AWCI drywall division. Gypsum plaster core encased in a durable face and backing papers to ISO 6308.

2.6 FIBROUS PLASTER SHEET
Manufactured by a member of the AWCI Fibrous Plaster Association. Gypsum plaster, casting grade reinforced with fibreglass or sisal hemp to NZS 4221.

Materials - specialty ceilings

2.7 METAL PAN
Manufactured from pre-painted aluminium
Brand: USG Boral Geometrix 3D Metal Ceiling
Colour: Flat white/silver satin/custom
Grid system: USG Boral Donn Centricitee.

Components

2.8 SCREWS
Screws to suit the lining manufacturer.

3. EXECUTION

Conditions

3.1 CO-ORDINATE SERVICES
Co-ordinate and co-operate with electrical and mechanical work to avoid conflict between suspension members and luminaires, diffusers, pipework and ducting. Confirm the provision of extra hangers and fixings.

Ensure co-operation with work in and above the ceiling, including the marking of specific ceiling tiles below major access points to above-ceiling services. Colour coded markings to follow the standards laid down by mechanical and electrical services.

3.2 SITE CONDITIONS
Do not begin installation until the building is closed in, fully glazed, the roof watertight, and mechanical and electrical duct work above the ceiling completed.

3.3 COMPLY
Comply with AS 2946 for interface requirements for physical compatibility.

3.4 RESPONSIBILITY
Ensure that conditions are suitable for the ceiling installation. Arrange for the programming of the work to suit required practice.

Application

3.5 INSTALL
Install the system to AS/NZS 2785 minimum standards and the ceiling manufacturer's requirements.

3.6 ACCESSIBILITY
Provide access to the ceiling system and the in-ceiling and above-ceiling services so that maintenance and removal of any part can be carried out without damage to the ceiling system or panels.

3.7 PENETRATIONS
Accommodate recessed light fittings, air conditioning outlets and other electrical and/or mechanical services that are fixed to or pass through the ceiling system. Provide independent support for these as necessary. Such fittings are not to be supported by the acoustical ceiling panels.

3.8 RETURN AIR PLENUM
Tiles to prevent release of fibres into the ceiling space, air conditioning or ventilation system. Clip tile down to the grid to stop lifting if required.

3.9 FLUSH CEILING
Install the suspension system to USG Boral Building products NZ requirements and AS/NZS 2785 minimum standards. Screw-fix sheets to sections at the centres required by the ceiling lining manufacturer to AS/NZS 2589. Stagger joints and fully support on sections, at centres to suit the load and the ceiling system manufacturer's requirements. Refer to 5112 FIBROUS PLASTER LININGS for fibrous plaster stopping, or to 5113 PLASTERBOARD LININGS for plasterboard stopping.

3.10 PROTECT EXISTING WORK
Protect adjacent existing work from damage during the installation.

Completion

3.11 REPLACE
Replace damaged or marked elements.

3.12 LEAVE
Leave work to the standard required by following procedures.

3.13 REMOVE
Remove debris, unused elements and elements from the site.

3.14 CLEAN
Clean soiled or marked units.

4. SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

Requirements

4.1 SAMPLE SECTION
Location: ~

Performance

4.2 ACOUSTIC REQUIREMENTS
NRC: ~ minimum
CAC: ~ minimum room to room

4.3 ENVIRONMENTAL REQUIREMENTS
Range: ~ - ~°C
Relative humidity: ~ % maximum

4.4 REFLECTANCE
Reflectance: ~ % minimum
For (colour): ~

Materials

4.5 SCHEDULE
Area: ~
Reference: ~
Fire rating: ~
Acoustical rating: NRC: ~
CAC: ~
STC: ~

Materials - exposed grid system

4.6 SUSPENSION SYSTEM - ACOUSTICAL
Type: Donn® ~
Module: ~mm x ~mm
Rail face: ~mm

4.7 SUSPENSION SYSTEM - FIRE RATED
Type: Donn® DXL Fire rated 24mm face
Module: ~mm x ~mm

4.8 PERIMETER TRIM - ACOUSTIC
Type: ~

4.9 PERIMETER TRIM - FIRE RATED
Type: ~

4.10 CEILING TILES
Type: ~
Pattern: ~
Thickness: ~mm
Size: ~ x ~mm

4.11 CEILING TILES - FIRE RATED
Type/pattern: ~
Thickness: ~mm
Size: ~mm x ~mm

Materials - suspended flush ceilings

4.12 SUSPENSION SYSTEM
Ceiling lining: ~

4.13 CEILING LINING
Brand: ~
Thickness: ~mm
Type: ~

4.14 ACCESS HATCHES
Brand/type: ~
Material: ~
Finish/colour: ~
Size: ~mm x ~mm to suit grid

Materials - specialty ceilings

4.15 METAL PAN
Panel size: 600mm x 600mm
Panel type: ~
Perforations: ~
Acoustibond backer: ~

Spares

4.16 SPARES
Panels: ~