**SPECIFICATION**

 of work to be done and materials to be used in carrying

 out the works shown on the accompanying drawings

 **~**

 (project name)

 **~**

 (project address)

 **~**

 (owners name)

 Job Number: ~

 Date: ~

# 5311A ACOUSTICAL USG/DONN® SUSPENDED CEILINGS

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

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

 Suspended ceilings fall into two distinct types; those comprising individual tiles supported on an exposed or concealed grid system, and alternately, those comprising a concealed suspension grid supporting screw-fixed flush-finished plasterboard. Check the selected manufacturer's data sheets and modify this section accordingly. Some common speciality ceilings have also been included.

### 1.1 RELATED WORK

 Refer to ~ for ~.

 Include cross references to other sections where these contain related work.

### 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

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

 **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](http://www.masterspec.co.nz/redirect.aspx?pl=1194)/AS1-AS7 Protection from fire

 [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224)/VM2 Protection from fire

 [AS/NZS 1170.1](http://www.masterspec.co.nz/redirect.aspx?pl=860) Structural design actions - Permanent, imposed and other actions

 [NZS 1170.5](http://www.masterspec.co.nz/redirect.aspx?pl=872) Structural design actions - Earthquake actions - New Zealand

 [AS/NZS 1530.3](http://www.masterspec.co.nz/redirect.aspx?pl=964) 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](http://www.masterspec.co.nz/redirect.aspx?pl=360) Gypsum linings - Application and finishing

 [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785) Suspended ceilings - Design and installation

 AS 2946 Suspended ceilings, recessed luminaires and air diffusers - Interface requirements for physical compatibility

 [AS/NZS 3837](http://www.masterspec.co.nz/redirect.aspx?pl=1120) Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter (cone test)

 [NZS 4219](http://www.masterspec.co.nz/redirect.aspx?pl=318) Seismic performance of engineering systems in buildings

 [NZS 4221](http://www.masterspec.co.nz/redirect.aspx?pl=679) 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.

 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 listof DOCUMENTS.

 ASTM C636 Standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels

 BRANZ BU 369 Fitting tolerances

 BRANZ BU 402 Levels of finish for flush-stopped linings

 BRANZ BU 426 Achieving acoustic separation

### 1.4 MANUFACTURER'S DOCUMENTS

 Manufacturer's and supplier's documents relating to work in this section are:

 USG Lifetime Warranty

 USG Clean Room ClimaPlus

 USG Eclipse ClimaPlus

 USG Frost ClimaPlus

 USG Impressions ClimaPlus

 USG Mars ClimaPlus

 USG Olympia Micro ClimaPlus

 USG Premier Hi-Lite ClimaPlus

 USG Radar ClimaPlus

 USG Radar ClimaPlus High CAC/High NRC

 USG Radar Illusion ClimaPlus

 USG Rock Face ClimaPlus

 USG Donn® Brand Grid Suspension Systems

 USG Fire Rated Exposed Grid Ceiling System

 USG Early Fire Reaction - [AS/NZS 3837](http://www.masterspec.co.nz/redirect.aspx?pl=1120)

 USG Seismic Design Guide

 USG ScrewFix™ Plasterboard Suspension System

 USG Sheetrock® Ceiling Batten System

 USG Drywall Grid Suspension System

 USG Maintenance Guidelines

 USG Geometrix™

 USG Transparencies™

 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/South Island)

 Web: [www.usg.co.nz](http://www.usg.co.nz)

 Pricing and availability are available from:

 Telephone: 0800 POTTER (0800 768 837)

 0800 666 556, T&R Distributors

 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**

### 1.5 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.

 Amend or expand this clause as appropriate to the project, including requirements for incorporating other elements - luminaires, diffusers, surrounding surfaces - into the sample section.

### 1.7 INSTALLATION

 To [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785). 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](http://www.masterspec.co.nz/redirect.aspx?pl=318); 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.

 Ask for packs of tiles.1200mm x 600mm tiles come in packs of 6, 8, or 16. 600mm x 600mm tiles come in packs of 12 or 16. 2% is a reasonable allowance for routine minor repairs.

### 1.10 SUPPLY WARRANTY

 Supply a warranty as follows:

 Type: USG's System Lifetime Warranty

 (maximum 30 years - exposed grid and acoustical panel)

 Donn® suspension system (15 years)

 USG acoustical ceiling panels (15 years)

 USG Drywall Grid suspension system (15 years)

 USG ScrewFix suspension system (15 years)

 Delete those options that do not apply to this project.

 **Performance**

 Use these clauses if specifying by performance.

 NOTE: Even when specifying by brand it may still be necessary to include some reference to performance.

### 1.11 LOADING CODE REQUIREMENT

 Comply with the requirements of [NZS 1170](http://www.masterspec.co.nz/redirect.aspx?pl=292), section 8.

### 1.12 CERTIFICATION

 Provide:

 - certification of compliance with [NZS 1170](http://www.masterspec.co.nz/redirect.aspx?pl=292), 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](http://www.masterspec.co.nz/redirect.aspx?pl=224)/AS2-C/AS7, table 4.1, has been determined in accordance with [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224)/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 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](http://www.masterspec.co.nz/redirect.aspx?pl=964)

 Products only tested to [AS/NZS 1530.3](http://www.masterspec.co.nz/redirect.aspx?pl=964) are an Alternative Solution. Contact the manufacturer for more details.

### 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](http://www.masterspec.co.nz/redirect.aspx?pl=1194)/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 |

 Note here the floor or roof system specified elsewhere.

### 1.16 FIRE RATING REQUIREMENT, FLUSH SUSPENSION SYSTEM

 Design the ceiling system so that together with the floor or roof is to [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224)/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 |

 Note here the floor or roof system specified elsewhere.

### 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.

 If this clause is not used and the SITE CONDITIONS clause cannot be complied with, then allowance needs to be made for a tile that will not sag over the construction period.

### 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.

 Select the proprietary system to suit the brief. Use the PRODUCTS clauses to get the desired finish and required fire and acoustic characteristics. Use the EXECUTION clauses required for the selected system.

 **Materials - exposed grid systems**

### 2.1 GRID SUSPENSION SYSTEM

 Manufactured in New Zealand by USG Interiors Pacific Limited. Hot-dip galvanized steel elements to ASTM C635 for carrying ceiling panels, light fixtures and air distribution elements and complying with [NZS 1170](http://www.masterspec.co.nz/redirect.aspx?pl=292), section 8.

 Brand: USG Donn®

 Grid finish/colour: Pacific White

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid.

 State also if the system is to be fire-rated.

### 2.2 PERIMETER TRIM

 Manufactured by USG Interiors Pacific Limited. Hot-dip galvanized pre-painted steel.

 Brand/form: USG Donn®

 Material: Hot-dip galvanized steel

 Finish/colour: Pacific White

### 2.3 CEILING TILES

 Brand: USG

 Edge profile: to suit grid

 Performance: ASTM C423, ASTM E1414

 **Materials - suspended flush ceilings**

### 2.4 SUSPENSION SYSTEM

 System: USG Drywall Grid suspension system or USG

 ScrewFix™ plasterboard suspension system

 Choose preferred system.

 Finish: Hot-dip galvanized steel

 Compliance: [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785), [AS/NZS 1170](http://www.masterspec.co.nz/redirect.aspx?pl=268), [NZS 1170.5](http://www.masterspec.co.nz/redirect.aspx?pl=872), ASTM C635

 Check the supplier's data sheets and expand this clause to describe project requirements.

### 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](http://www.masterspec.co.nz/redirect.aspx?pl=679).

 **Materials - specialty ceilings**

### 2.7 METAL PAN

 Manufactured from pre-painted aluminium

 Brand: USG Geometrix 3D Metal Ceiling

 Colour: Flat white/silver satin/custom

 Grid system: USG 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.

 If fast track construction is used, this may not be possible and tiles must be selected accordingly.

### 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](http://www.masterspec.co.nz/redirect.aspx?pl=785) 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.

 As full access in all areas is clearly impractical, any special requirements for clear access will need to be defined; either by description here, or on the drawings.

### 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.

 While this clause is written specifically for projects where the ceiling space is being used as a plenum, it may also be modified to suit particular projects which require some degree of assurance against the release of fibres, and/or the use of panel clips.

### 3.9 FLUSH CEILING

 Install the suspension system to USG Interiors Pacific Limited requirements and [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785) minimum standards. Screw-fix sheets to sections at the centres required by the ceiling lining manufacturer to [AS/NZS 2589](http://www.masterspec.co.nz/redirect.aspx?pl=360). 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

 If this clause is not used and the SITE CONDITIONS clause cannot be complied with, then allowance needs to be made for a tile that will not sag over the construction period.

### 4.4 REFLECTANCE

 Reflectance: ~ % minimum

 For (colour): ~

 **Materials**

### 4.5 SCHEDULE

 Area: ~

 Reference: ~

 Fire rating: ~

 Acoustical rating: NRC: ~

 CAC: ~

 STC: ~

 Identify areas and where required fire and acoustical ratings.

 **Materials - exposed grid system**

### 4.6 SUSPENSION SYSTEM - ACOUSTICAL

 Type: Donn® ~

 Module: ~mm x ~mm

 Rail face: ~mm

 Two face dimensions are available - 15mm Donn Centricitee QRC and 24mm Donn DX QRC. Select preferred design option.

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid.

### 4.7 SUSPENSION SYSTEM - FIRE RATED

 Type: Donn® DXL Fire rated 24mm face

 Module: ~mm x ~mm

### 4.8 PERIMETER TRIM - ACOUSTIC

 Type: ~

 Select preferred option:

 MT45-3600 22mm x 19mm Standard

 MT55-3600 22mm x 19mm Standard (Heavy)

 MXT3600 22mm x 14mm Centricitee

 ML3600 40mm x 19mm Long Leg

 MSL3600 Shadowline Long Leg

 US3600 Seismic Wall Channel

### 4.9 PERIMETER TRIM - FIRE RATED

 Type: ~

 Select preferred option:

 MT55-3600 22mm x 19mm Standard (Heavy)

 US3600 Seismic Wall Channel

### 4.10 CEILING TILES

 Type: ~

 Pattern: ~

 Thickness: ~mm

 Size: ~ x ~mm

 A wide range of ceiling panels are available, depending on personal preference and usage. Standard colour white. Specify edge profile to suit grid type FLB/FL/ILT (Donn Centricitee) SLT/SL/SLB/SQ (Donn DX). Consult brochures for exact size/edge profile combinations.

 Ceiling tile types

 Select preferred type:

 High NRC acoustic ceiling tiles (sound absorption)

 Mars ClimaPlus

 Eclipse ClimaPlus

 Premier Hi-Lite ClimaPlus

 Frost ClimaPlus

 Radar ClimaPlus High NRC

 Mid range acoustic ceiling tiles (good NRC and CAC combinations)

 Frost ClimaPlus

 Radar ClimaPlus

 Impressions ClimaPlus

 Olympia Micro ClimaPlus

 Specialist acoustic ceiling tiles

 Clean Room Class 100 ClimaPlus (clean room/hygiene applications)

 Clean Room Class 10M - 100M ClimaPlus (durability, cleanability)

 Radar ClimaPlus Illusions (face cut designs)

 Radar ClimaPlus High CAC (attenuation)

 Rock Face ClimaPlus (impact resistance)

### 4.11 CEILING TILES - FIRE RATED

 Type/pattern: ~

 Thickness: ~mm

 Size: ~mm x ~mm

 Select preferred type:

 Mid range acoustic ceiling tiles (good combinations)

 Radar ClimaPlus FC

 Specialist acoustic ceiling tiles

 Clean Room Class 100 ClimaPlus (clean room/hygiene applications)

 Clean Room Class 10M - 100M Climaplus (durability, cleanability)

 Rock Face ClimaPlus (impact resistance)

 Radar ClimaPlus High NRC

 Radar ClimaPlus High CAC

 **Materials - suspended flush ceilings**

### 4.12 SUSPENSION SYSTEM

 Ceiling lining: ~

### 4.13 CEILING LINING

 Brand: ~

 Thickness: ~mm

 Type: ~

 Select from plasterboard, fibrous plaster, particleboard, fibre cement board, or other suitable ceiling lining material.

### 4.14 ACCESS HATCHES

 Brand/type: ~

 Material: ~

 Finish/colour: ~

 Size: ~mm x ~mm to suit grid

 Access hatches can be needed if using a flush finish ceiling.

 **Materials - specialty ceilings**

### 4.15 METAL PAN

 Panel size: 600mm x 600mm

 Panel type: ~

 Perforations: ~

 Acoustibond backer: ~

 Consult Geometrix brochure for specific options.

 Standard pan designs: Wedges: GW3 (82mm), GW2 (57mm), GW1 (32mm)

 Flats: GF3 (82mm), GF2 (57mm), GF1 (32mm), GF0 (8mm)

 Perforations: C375, D250, D375, C062, C062A

 Acoustical backer: Black, white

 **Spares**

### 4.16 SPARES

 Panels: ~

 Ask for packs of tiles. 1200mm x 600mm tiles come in packs of 6, 8, or 10. 600mm x 600mm tiles come in packs of 12 - 16. 2% is a reasonable allowance for routine minor repairs.