# 5311TR T&R INTERIOR SYSTEMS - 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 **T&R Interior Systems Limited** ceiling systems.

 It includes

 - acoustic suspended ceiling systems

 - high performance acoustic suspended ceiling systems

 - direct fixed acoustic ceiling systems

 - specialty suspended ceiling systems

 - specialty acoustic tiles and panels

 - all elements offered by the manufacturer to complete the systems

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

### 1.1 RELATED WORK

 Refer to ~ for ~.

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

### 1.2 ABBREVIATIONS AND DEFINITIONS

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

 FRR Fire resistance rating

 NRC Noise reduction coefficient

 CAC Ceiling attenuation class

 CBI CBI Europe: Hi-Tech Interiors

 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

 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=224)/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 test on building materials, components and structures - Simultaneous determination of ignitability, flame propagation, heat release and smoke release

 AS 1530.4 Methods for fire test on building materials, components and structures - Methods of tests on building materials, components and structures - Fire-resistance test of elements of construction

 [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

 [NZS 3604](http://www.masterspec.co.nz/redirect.aspx?pl=301) Timber-framed buildings

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

 AS ISO 354 Acoustics - Measurement of sound absorption in a reverberation room

 ASTM E413 Classification for rating sound insulation

 ASTM C423 Test method for sound absorption and sound absorption coefficients by the reverberation room method

 ASTM C635 Standard specification for the manufacture, performance and testing of metal suspension systems for acoustical tile and lay-in panel ceilings

 ASTM E1477-98 Standard test method for luminous reflectance of acoustical materials by use of integrating-sphere reflectometers

 JC/T670-2005 Mineral wool decorating and acoustic ceilings

 ISO 5660.1 Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)

 ISO 9705 Fire tests - Full-scale room test for surface products

 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.

 BRANZ BU 369 Fitting tolerances

 BRANZ BU 426 Achieving acoustic separation

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

 Daiken New NDF Product specification details

 Daiken Plain Product specification details

 Daiken Constellation Product specification details

 Daiken Harmony Product specification details

 Daiken NDF Co-ordinate Series Product specification details

 Daiken Venus Product specification details

 Daiken Venus Max Product specification details

 Daiken Dai Lotone T & G Product specification details

 C Max Direct Fix Product specification details BRANZ

 C Max Absorb Product specification details

 C Max Impact Product specification details

 C Max Combo Product specification details

 C Max Sound Cloud Panel Product specification details

 C Max Reflect Product specification details

 Jeillouver Tile Product specification details

 NEO dEco Product specifications details

 OROQI 3D Product specifications details

 T&R Vinyl Faced Gypsum Product specification details

 Fenta Product specification details

 T&R 15mm & 24mm Two Way Exposed CBI Grid Product specification details

 BRANZ Fire Test Report FH 5070 T&R Interior Systems C MAX

 BRANZ Fire Test Report FH 5072 T&R Interior Systems DAIKEN

 BRANZ Fire Test Report FH 5074 T&R Interior Systems VINYL

 BRANZ Fire Test Report FH 4906 T&R Interior Systems OROQI

 Manufacturer/supplier contact details

 Company: **T&R Interior Systems Limited**

 Web: [www.tr-interiorsystems.co.nz](http://www.tr-interiorsystems.co.nz)

 Email: info@tr-interiorsystems.co.nz

 Telephone: 04 499 5915 Wellington

 09 571 0395 Auckland

 03 366 2507 Christchurch

 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:

 30 years: For Daiken Acoustical Ceiling Panels

 30 years: For C Max Acoustical Ceiling Panels

 30 years: For OROQI 3D Acoustical tiles

 30 years: For C Max Gypsum Vinyl tiles

 30 years: For T&R Two Way Exposed CBI Grid System

 - Provide this warranty on T&R Interior Systems Limited standard form.

 - 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:

 - Change the standard form to be used (check with the manufacturer/supplier, use the general section 1237WA WARRANTY AGREEMENT if required)

 - Commence the warranty from the date of purchase (check with the manufacturer/supplier)

 **Requirements**

### 1.6 NO SUBSTITUTIONS

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

### 1.7 QUALIFICATIONS

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

### 1.8 SAMPLE SECTION

 Allow to erect a sample section of the 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.

### 1.9 ACCEPTABLE INSTALLERS

 Installation to be by T&R Interior Systems Limited accredited installer, using the manufacturer's technical services. Accredited installers must be members of the AWCINZ or provide evidence of experience, listing completed projects of similar size and complexity.

 Installation to comply with the requirements of [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785), [NZS 4219](http://www.masterspec.co.nz/redirect.aspx?pl=318); with related building services installations complying specifically with clauses 5.9 **Ducting**, 5.14 **Luminaires**, and 5.13 **Ceiling-suspended equipment and equipment in ceiling voids**.

### 1.10 INFORMATION FOR OPERATION AND MAINTENANCE

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

### 1.11 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 10. 600mm x 600mm tiles come in packs of 12 or 20. 2% is a reasonable allowance for routine minor repairs.

 **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.

### 1.12 LOADING CODE REQUIREMENT

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

### 1.13 CERTIFICATION

 Provide the following:

 - PS1 (site specific design) Certification of Compliance with [NZS 1170](http://www.masterspec.co.nz/redirect.aspx?pl=292), section 8 for evaluation

 - PS4 Statement on Completion (Construction review)

 - Certificates and other evidence that the system offered complies with the standards of performance specified.

### 1.14 ACOUSTIC REQUIREMENTS

 Use an independent testing authority to test a specimen of the ceiling system to ASTM C423 and ASTM E1477-98. NEO Panels are tested to AS ISO 354. Refer to SELECTIONS for acoustic performance requirements. Submit the results if requested.

### 1.15 T&R PRODUCT FIRE GROUP NUMBERS

 The Group Number Classification to [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224)/AS2-C/AS6, 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 to ISO 5660.1.

|  |  |
| --- | --- |
| Product | Group Number |
| T&R Interior Systems C MAX | 1 - S |
| T&R Interior Systems DAIKEN | 1 - S |
| T&R Interior Systems VINYL | 1 - S |
| T&R Interior Systems OROQI | 1 - S |
| Neo dECO | 1 - S |

 All other T&R Interior Systems products tested to [AS/NZS 1530.3](http://www.masterspec.co.nz/redirect.aspx?pl=964).

 The balance of the ceiling systems are undergoing fire testing to the new standards required by [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224)/AS2-AS6, 4.17.1. Until the results are available treat these as an Alternative Solution. Contact the manufacturer for more details.

### 1.16 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.

### 1.17 REFLECTANCE

 To ASTM E1477-98. Refer to SELECTIONS for reflectance and colour.

## 2. PRODUCTS

 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 - two way exposed grid systems**

### 2.1 GRID SUSPENSION SYSTEM - ACOUSTIC CEILINGS

 Distributed by T&R Interior Systems Limited throughout New Zealand. CBI Main and Cross Tees manufactured from hot dip galvanized steel in a double web, balanced tee design in 3700mm lengths and finished with a pre-painted steel cap. Main Tee is punched at 100mm centres and includes suspension points in both the bulb and web. Hold down clips are available as required.

 Tested to [NZS 4219](http://www.masterspec.co.nz/redirect.aspx?pl=318). Heavy Duty Grid.

 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. Refer to SELECTIONS for options.

 Brand: CBI 15mm and 24mm Two Way Exposed Grid

 Grid finish/colour: White, Black and other powdercoat colours on indent. Contact T&R Interior Systems for details.

 Edge fixing: Refer to T&R Interior Systems Installation Guide and Seismic Calculator for details

 Edge fixing: 2 sides fixed, 2 sides floating or float 4 sides where back bracing is required. Options to fix all sides where ceiling area is less than 25m².

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid (seismic compatibility/design).

### 2.2 PERIMETER TRIM

 Hot-dip galvanized pre-painted steel perimeter trim, supplied by T&R Interior Systems Limited.

 Brand/form: CBI Perimeter Trim

 Material: Hot-dip galvanized steel

 Size: ~

 Finish/colour: White or Black

 Size: 20mm x 40mm or 20mm x 20mm, other sizes available on request.

 Colours: White Black, and other powdercoat colours on indent. Contact T&R Interior Systems for details

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid (seismic compatibility/design).

### 2.3 T&R SEISMIC SEPARATION JOINT

 Aluminium Extrusion to seismically separate a suspended ceiling.

 Used in conjunction with CBI grid as part of the T&R Seismic Design System. Available in White, Black, and other powder coat colours on indent. New Zealand Registered design to Design Registration #: 420992.

### 2.4 T&R T-RAIL LIGHT

 Cetram T-Rail, an extruded aluminium light fitting that replaces the crosstee of a suspended ceiling grid. LED longlife lights, low glare rating (UGR=19) and Variable Light levels, to produce a suitable lighting for work surfaces. Engineered to be part of Seismic suspended ceiling system. Supplied with LED driver with fixed or variable outputs. Also compatible with DALI. Runs on 240V. Must be used in conjunction with CBI grid as part of the T&R Seismic Design System or with USG Heavy Duty grid (38mm). Can be supplied in black or white and powdercoated to any colour on indent. New Zealand Registered design.

 **Materials - suspended ceiling tiles**

### 2.5 MINERAL FIBRE - FINE, MONOLITHIC SURFACE

 Daiken Harmony, Excel - Tone, a suspended ceiling tile with a subtle fibre texture and monolithic finish.Tested to ASTM E413, ASTM C423, ISO 5660.1. Available in 19mm thick square edge and 19mm thick reveal edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 15mm or 24mm grid suspension system. Refer to SELECTIONS for options.

 Meets most standard acoustic specifications.

### 2.6 MINERAL FIBRE - NON DIRECTIONAL FISSURED SURFACE

 Daiken New NDF, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a non-directional fissured surface and a clean white finish.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1. Available in 12mm thick square edge and 13mm thick rebated edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 15mm or 24mm grid suspension system. Refer to SELECTIONS for options.

 Most economical tile in Daiken range.

### 2.7 MINERAL FIBRE - SMOOTH SURFACE

 Daiken Plain, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a non-fissured Bright White surface finish.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1. Available in 12mm thick square edge and 13mm reveal edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 24mm grid suspension system. Refer to SELECTIONS for options.

 Suitable for replacement of Pinex Tiles.

### 2.8 MINERAL FIBRE - PINHOLE SURFACE

 Daiken Constellation, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a pinhole fissured and clean white surface.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1. Available in 12mm thick square edge and 13mm thick reveal edge, in sizes 1200mm x 600mm, reveal edge tile also available in 600mm x 600mm. Suits a 24mm grid suspension system. Refer to SELECTIONS for options.

 Most economical tile in Daiken range.

### 2.9 MINERAL FIBRE - NON DIRECTIONAL FISSURED SCORED BOARD SURFACE

 Daiken Co-ordinate, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a non-directional fissured scored board surface.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1. Available in 15mm thick reveal edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 15mm or 24mm grid suspension system. Refer to SELECTIONS for options.

### 2.10 MINERAL FIBRE - STIPPLE/ PINHOLE SURFACE

 Daiken Venus, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a stipple texture and a random pinhole finish.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1. Available in 12mm thick square edge and 13mm thick bevelled reveal edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 24mm grid suspension system. Refer to SELECTIONS for options.

### 2.11 MINERAL FIBRE - STIPPLE/ PINHOLE SURFACE, HIGH PERFORMANCE

 Daiken Venus Max, Excel - Tone MR Mineral Fibre, a suspended ceiling tile with a stipple texture and a random pinhole finish.

 Tested to ASTM C423, ASTM E1477-98, ISO 5660.1 with high sound absorption qualities. Available in 19mm thick square edge and bevelled reveal edge, in sizes 1200mm x 600mm and 600mm x 600mm. Suits a 24mm grid suspension system. Refer to SELECTIONS for options.

 Meets most standard acoustic specifications.

### 2.12 GLASS-WOOL - HIGH PERFORMANCE, ACOUSTIC

 C Max Absorb, a glass wool acoustic suspended ceiling tile with a high noise reduction coefficient (NRC) 0.9+.and high sound absorption and thermal qualities.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available in 15mm thick, to multiple edge details, in sizes 1200mm x 600mm and 600mm x 600mm. Other thicknesses and sizes available on indent. Suits a 15mm or 24mm grid suspension system. Refer to SELECTIONS for options.

 Suitable for large spaces such as open plan offices, modern learning environments, restaurants, medical offices, reception areas and other commercial interiors.

### 2.13 GLASS-WOOL WITH FIBREGLASS FACE - HIGH PERFORMANCE, ACOUSTIC

 C Max Impact, a glass wool acoustic suspended ceiling tile with a fibreglass face to withstand knocks, a high noise reduction coefficient (NRC) 0.9+.and thermal qualities.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available in 40mm thick, with a square edge detail, in sizes 1200mm x 600mm and 600mm x 600mm. Other thicknesses and sizes available on indent. Suits a 15mm or 24mm grid suspension system. Refer to SELECTIONS for options.

 Suitable for large spaces such as sports centres, gymnasiums, community halls and schools.

### 2.14 GLASS-WOOL / PLASTERBOARD COMBO - HIGH PERFORMANCE, ACOUSTIC

 C Max Combo, a glass wool and plasterboard acoustic suspended ceiling tile with a high noise reduction coefficient (NRC) 0.75+ (depending on depth), a high CAC rating and thermal qualities.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available in 35mm and 50mm thick, with multiple edge details, in sizes 1200mm x 600mm and 600mm x 600mm. Other thicknesses and sizes available on indent. Suits a 24mm grid suspension system and tiles for 15mm grid available on indent. Refer to SELECTIONS for options.

 Suitable for use in reverberant spaces where sound transfer is an issue.

### 2.15 GLASS-WOOL WITH FRR FABRIC COVER - HIGH PERFORMANCE, ACOUSTIC

 C Max Silence Sound Cloud Panel, a glass wool acoustic suspended ceiling tile with a high noise reduction coefficient (NRC) 1. Covered in a fire rated fabric.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available in 40mm thick, with multiple edge details, in size 2200mm x 1200mm. Other sizes available on indent. Suspension system includes braided wire and adjustable clips. Refer to SELECTIONS for options.

 Suitable for use in reverberant spaces.

### 2.16 GYPSUM TILES - SPECIAL ACOUSTIC APPLICATION

 C Max Reflect, a plasterboard tile with a finish identical to C Max Absorb.

 Tested to ISO 5660.1. Tiles 10mm thick with square edge availabe in size 1200mm x 600mm. For a 24mm grid system only. Refer to SELECTIONS for options.

 Suitable for enclosed classrooms to add reflective surfaces in the ceiling. Finish matches C Max Absorb. Can be used in the 40% - 60% configuration.

### 2.17 PERFORATED METAL CEILING TILES - SPECIAL ACOUSTIC APPLICATION

 Jeillouver Tile, a perforated metal pan ceiling tile made to order. Jeillouver Tiles have a black Soundex Acoustic Cloth backing to improve sound absorption. Sound Absorption Coefficient (NRC) is dependant on the size and configuration of the perforations. Can be used outdoors. Refer to SELECTIONS for options.

 Jeillouver Tiles made to order offer a quality ceiling system with aesthetic appeal. Contact T&R Interior Systems for information on customization options available.

 Suitable for use in reverberant spaces, reception areas, hotel lobbies, as well as executive and high specification installations.

### 2.18 EXTRUDED ALUMINIUM BAFFLE - SPECIAL ACOUSTIC APPLICATION

 T&R Aluminium Baffle is an extruded aluminium section made to order. Baffles have polyester acoustic absorption behind to reduce reverberation time. Sound Absorption Coefficient (NRC) is dependent on the size and configuration of the baffles. Can be used outdoors. Refer to SELECTIONS for options.

 Aluminium Baffles made to order offer a quality ceiling system with aesthetic appeal. Contact T&R Interior Systems for information on customization options available.

 Suitable for use in reverberant spaces, reception areas, hotel lobbies, as well as executive and high specification installations.

### 2.19 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 OROQI 3D tiles with a high noise reduction coefficient (NRC) 0.75 or with insulation behind 0.9.

 Refer to SELECTIONS for options.

 Suitable for use in reverberant spaces, reception areas, hotel lobbies, as well as executive and high specification installations.

 **Components - suspended ceiling tiles**

### 2.20 TWO WAY EXPOSED GRID

 Supplied by T&R Interior Systems Limited. Hot-dip galvanized pre-painted steel.

 Brand/form: CBI Two Way Exposed Grid

 Material: Hot-dip galvanized steel

 Finish/colour: White

 Grid finish/colour: White or Black. Other colours available on indent.

### 2.21 PERIMETER TRIM

 Hot-dip galvanized pre-painted steel perimeter trim, supplied by T&R Interior Systems Limited.

 Brand/form: CBI Perimeter Trim

 Material: Hot-dip galvanized steel

 Finish/colour: White or Black. Other colours available on indent.

 **Materials - direct fix ceiling tiles**

 Daiken Dai-Lotone tongue & groove, C Max Direct Fix ceiling tiles and OROQI 3D panels are designed for direct fix applications to new and existing plasterboard, or timber/steel battens.

### 2.22 MINERAL FIBRE - DIRECT FIX,T & G

 Daiken Dai Lotone T & G, a high density tongue and groove mineral fibre ceiling tile.

 Tested to ASTM E1477-98, ISO 5660.1. Available in 9mm Non Rib and 12mm Rib tiles with tongue and groove edge detail. Tile size 606mm x 303mm. For direct fix applications to new and existing plasterboard and timber/steel battens. Refer to SELECTIONS for options.

 Suitable for schools and retrofitting over existing plasterboard ceiling.

### 2.23 GLASS WOOL - DIRECT FIX, HIGH PERFORMANCE

 C Max Direct Fix, a white painted, textured glass wool acoustic tile with a high noise reduction coefficient (NRC) 0.7 to 0.95+

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1.

 Tiles 20mm thick with square edge available in size 600mm x 600mm. For direct fix applications to new and existing plasterboard and timber/steel battens. Refer to SELECTIONS for options.

 Suitable for large spaces such as gymnasiums, exhibition halls, museums, offices, schools and shopping centres.

### 2.24 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 OROQI 3D tiles with a high noise reduction coefficient (NRC) 0.75 or with insulation behind 0.9. Suitable for use as wall panels or suspended in a direct fix clip ceiling grid systems.

 Refer to SELECTIONS for options.

 **Components - direct fix ceiling tiles**

### 2.25 CEILING BATTENS - TIMBER

 No.1 framing radiata pine gauged, kiln dried, moisture content below 14%.

 Treatment: H1.1

 Dimensions: 40mm x 25mm

 Spacing: 303mm centre to centre

### 2.26 CEILING BATTENS - STEEL

 Metal ceiling battens, batten joiners and perimeter channel.

 **Materials - direct fix wall and ceiling panels**

### 2.27 GLASS-WOOL WITH FIBREGLASS FACE - HIGH PERFORMANCE, ACOUSTIC

 C Max Impact, a glass wool acoustic tile with a fibreglass face to withstand knocks, a high noise reduction coefficient (NRC) 1.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available in 40mm thick, with a square edge detail, in sizes 1200mm x 600mm and 600mm x 600mm. Other thicknesses and sizes available on indent. Refer to SELECTIONS for options.

 Suitable for large spaces such as sports centres, gymnasiums, community halls and schools.

### 2.28 GLASS-WOOL WITH FRR FABRIC COVER - HIGH PERFORMANCE, ACOUSTIC

 C Max Silence Sound Cloud Panel, a glass wool acoustic suspended ceiling tile with a high noise reduction coefficient (NRC) 1. Covered in a fire rated fabric. Standard colours are White, Black, Timber, Red, Blue. Other fabric covers available on request.

 Tested to ASTM E1477-98, JC/T670-2005, ISO 5660.1. Available 40mm thick, in size 2200mm x 1200mm. Other sizes available on indent (limited to 2200mm x 1200mm). This includes ovals, circles, squares, etc. Suspension system includes braided wire and adjustable clips. Refer to SELECTIONS for options.

 Suitable to retrofit reverberant spaces or as a solution to combat flutter echo. Can be printed with logos or images.

### 2.29 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 OROQI 3D tiles with a high noise reduction coefficient (NRC) 0.75 or with insulation behind 0.9. Refer to SELECTIONS for options.

 Suitable for use in reverberant spaces, reception areas, hotel lobbies, as well as executive and high specification installations.

### 2.30 POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 NEO dEco Sound Panel, a high performance acoustic panel. Has inherent self-healing properties when used as a pinboard. Can be laminated with a variety of textiles to produce NEO dEco Sound Panel Custom. Other sizes available on indent (limited to 2400mm x 1200mm). This includes ovals, circles, squares, etc. Suspension system includes braided wire and adjustable clips. Refer to SELECTIONS for options.

 Applications include commercial interiors and furniture, work station panels, acoustic solutions and other decorative features. A cost effective panel can be achieved when laminated with textiles (dEco Panel Custom).

 **Materials - specialty suspended tile ceilings**

### 2.31 HIGH PERFORMANCE ACOUSTIC HYGIENE TILE - SPECIAL APPLICATION

 Genus Acoustic Hygiene tile, a roto moulded hollow form which creates a lightweight, tough, dirt resistant tile. Resonant panel absorber designed to target low frequency sound. Variable depths allow for frequency specific absorption. Non porous surface for high-end hygiene application. Polyethylene base polymer with intumescing flame retardant and anti-dripping additive with a sealed surface for ease of cleaning. Can be washed clean, water blasted if necessary. Wide range of surface textures and colours available.

 Refer to SELECTIONS for options

 Contact T&R Interior Systems for further information.

### 2.32 VINYL FACED GYPSUM TILES - SPECIAL APPLICATION

 C Max Gypsum Vinyl, Vinyl Faced Gypsum, a foil backed plasterboard tile with a factory applied, moisture resistant white vinyl finish.

 Tested to ISO 5660.1. Tiles 10mm thick with square edge available in size 1200mm x 600mm. For a 24mm grid suspension system only. Refer to SELECTIONS for options.

 Suitable for commercial and hygiene applications such as retail, fast food outlets, medical and sports facilities.

### 2.33 FENTA TILES - SPECIAL APPLICATION

 Fenta Ceiling Tiles, a fibre cement based, high pressure steam cured tile, coated with a two pack, non-yellowing, high gloss polyurethane finish.

 Tested to [AS/NZS 1530.3](http://www.masterspec.co.nz/redirect.aspx?pl=964). Tiles supplied 4.5mm thick with square edge available in size 1200mm x 600mm. For a 24mm grid suspension system only. Refer to SELECTIONS for options.

 Fenta Ceiling Tiles in terms of [NZBC C](http://www.masterspec.co.nz/redirect.aspx?pl=224) is regarded as an Alternative Solution.

 Suitable for hygiene applications such as kitchens, fast food outlets, medical and sports changing areas.

 **Components - specialty suspended tile ceilings**

### 2.34 TWO WAY EXPOSED GRID

 Distributed by T&R Interior Systems Limited. Hot-dip galvanized pre-painted steel.

 Brand/form: CBI Two Way Exposed Grid

 Material: Hot-dip galvanized steel

 Finish/colour: White

 Grid/finish/colour: White or Black. Other colours available on indent.

### 2.35 PERIMETER TRIM

 Hot-dip galvanized pre-painted steel perimeter trim, supplied by T&R Interior Systems.

 Brand/form: CBI Perimeter Trim

 Material: Hot-dip galvanized steel

 Finish/colour: White or Black. Other colours available on indent.

 **Accessories**

### 2.36 ACCESS HATCHES

 T&R Interior Systems Limited access panels and ceiling access hatches. Refer to SELECTIONS for type and finish.

## 3. EXECUTION

 **Conditions**

### 3.1 DELIVERY, STORAGE AND HANDLING

 Take delivery of materials and goods and store on site and protect from damage.

 Protect finished surfaces, edges and corners from damage.

 Move/handle goods in accordance with manufacturer's requirements.

 Reject and replace goods that are damaged or will not provide the required finish.

 The general section 1270 CONSTRUCTION describes how deliveries are to be managed and the goods stored.

### 3.2 PRE-INSTALLATION REQUIREMENTS

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

### 3.3 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.

### 3.4 SITE CONDITIONS

 Do not begin installation until the building is closed in, fully glazed, the roof watertight, the atmospheric conditions within the manufacturer's guidelines, 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.

### 3.5 COMPLY

 Comply with AS 2946 for interface requirements for physical compatibility.

### 3.6 RESPONSIBILITY

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

 **Installation - general**

### 3.7 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.

### 3.8 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.

### 3.9 RETURN AIR PLENUM

 Tiles to prevent release of fibre 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.

### 3.10 PROTECT EXISTING WORK

 Protect adjacent existing work from damage during the installation.

 **Installation - suspended tile systems**

### 3.11 INSTALL SUSPENDED CEILING TILES

 Install the system in accordance to [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785) and T&R Interior Systems Limited installation requirements.

 - Main contractor must install a continuous nog at the ceiling height where suspended ceilings are fixed to the perimeter walls. Refer to T&R Interior Systems for installation details.

 - For Seismic Design, Float two sides minimum, or float entire ceiling when back bracing is required.

 - Where floating ceiling is selected a T&R 'Z Rail' is to be used in conjunction with perimeter ceiling grid.

 Note: Cross nogging is not permitted..

 **Installation - direct fix tile systems**

 Daiken Dai-Lotone tongue & groove and C Max Direct Fix ceiling tiles are designed for direct fix applications to new and existing plasterboard, or timber/steel battens.

 Confirm suitability of existing ceiling. The surface must be true and level in order to achieve a good finish.

### 3.12 INSTALL DIRECT FIX CEILING TILES

 Install the system in accordance with T&R Interior Systems Limited installation requirements.

 Confirm suitability of existing ceiling. The surface must be true and level in order to achieve a good finish.

### 3.13 BATTEN LAYOUT

 Establish layout of battens from centre of room. Fix the first batten over the centre line or spaced one half of a panel to one side depending on the room overall size.

 - For Daiken Dai Lotone fix battens at 303mm centres with the probable exception of the perimeter batten.

 - For C Max Direct Fix, fix battens at 300mm centres with the probable exception of the perimeter batten.

 - Secure battens the wall.

### 3.14 FIX BATTENS - TIMBER

 Rigidly fix battens in place in straight lines to [NZS 3604](http://www.masterspec.co.nz/redirect.aspx?pl=301), clause 13.2 Ceiling lining supports, with nails to existing ceiling framing to [NZS 3604](http://www.masterspec.co.nz/redirect.aspx?pl=301), table 13.3 Nailing schedule for hand driven and power driven nails.

### 3.15 FIX BATTENS - STEEL

 Fix battens to T&R Ceiling Batten Systems requirements.

### 3.16 TILE SET OUT

 Fix to selected pattern. Refer to SELECTIONS for pattern type and direction.

 T&R Interior Systems Limited recommend the size of the cut tile be identical at opposing sides of the room. Ensure allowance is made for clearance from the wall.

### 3.17 FIX TILES

 Staple or screw and glue each tile to the battens or plasterboard lining to T&R Interior Systems Limited requirements.

 **Installation - direct fix wall and ceiling panels**

 For OROQI, NEO dEco, Sound Panel, Sound Cloud and Impact Panels different fixing methods are available. Contact T&R Interior Systems for installation information.

### 3.18 INSTALL DIRECT FIX WALL AND CEILING PANELS

 Install the system in accordance to [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785) and T&R Interior Systems Limited installation requirements.

 **Installation - specialty suspended tile systems**

### 3.19 INSTALL SPECIALTY SUSPENDED CEILING TILES

 Install the system in accordance to [AS/NZS 2785](http://www.masterspec.co.nz/redirect.aspx?pl=785) and T&R Interior Systems Limited installation requirements.

 **Completion**

### 3.20 ROUTINE CLEANING

 Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

 Use this standard generic clause and add additional specific requirements.

 ESD note: Re-cycling is addressed in the general section 1256 WASTE MANAGEMENT; amend this clause if it is to apply to this section.

### 3.21 DEFECTIVE OR DAMAGED WORK

 Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

 Use this standard generic clause and add additional specific requirements.

### 3.22 PROTECTION

 Provide the following temporary protection of the finished work:

 ~

 Amend this clause if protection is required from, weather, water, dust, damage, etc. Refer to the general section 1270 CONSTRUCTION for removal as part of final clean.

 If special protection is required or protection is to be supplied by others, make reference in this clause to the general section 1250 TEMPORARY WORKS & SERVICES clause SPECIAL PROTECTION.

## 4. SELECTIONS

 For further details on selections go to [www.tr-interiorsystems.co.nz](http://www.tr-interiorsystems.co.nz)

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

 If substitutions are permitted modify the statement above, ensure the NO SUBSTITUTIONS clause from GENERAL is treated the same.

 Select the options to suit the project and delete options not specified.

 **Requirements**

### 4.1 SAMPLE SECTION

 Location: ~

 **Performance**

### 4.2 ACOUSTIC REQUIREMENTS

 NRC: ~ minimum

 CAC: ~ minimum room to room

 Delete when cross referencing to other sections.

### 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: ~

 Identify areas and where required acoustical ratings.

 **Materials - two way exposed grid system**

### 4.6 CBI GRID SUSPENSION SYSTEM

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: CBI Two Way Exposed Grid

 Module sizes: ~mm x ~mm

 Grid finish/colour: ~

 Edge fixing: ~

 Options:

 Module sizes: 1200mm x 600mm, 1200mm x 300mm, 600mm x 600mm. Other module sizes available on indent

 Colour: White, Black and other powdercoat colours on indent. Contact T&R Interior Systems for details

 Edge fixing: 2 sides fixed, 2 sides floating, or

 Float 4 sides. Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid (seismic compatibility/design). Refer to T&R Interior Systems Installation Guide for details.

### 4.7 T&R SEISMIC SEPARATION JOINT

 Location: ~

 Distributor: T&R Interior Systems Limited

 Brand/form T&R Aluminium Seismic Separation Joint

 Material: Extruded aluminium

 Colour: ~

 Options:

 Colours: White, Black and other powdercoat colours on indent. Contact T&R Interior Systems for details.

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid (seismic compatibility/design).

### 4.8 T&R CETRAM T BAR

 Location: ~

 Distributor: T&R Interior Systems Limited

 Brand/form T&R Cetram T Bar

 Material: Extruded aluminium and LED chips with Optic reflectors

 UGR 19

 Modusle size: ~

 Colours: White Black, and other powdercoat colours on indent. Contact T&R Interior Systems for details

 Option:

 Module size: 1200mm, 600mm

 Confirm the compatibility of recessed lighting, air conditioning unit and ventilation outlets to the ceiling grid (seismic compatibility/design).

 **Materials - suspended ceiling tiles**

 Contact T&R Interior Systems Installation Guide for indent items or special requests.

### 4.9 T&R MINERAL FIBRE - MONOLITHIC SURFACE

 Location: ~

 Distributor: T & R Interior Systems Limited

 Type: Daiken Harmony

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 5.3kg/m²

 NRC: 0.70

 CAC 36

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Group number: 1 - S

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Thickness: 19mm square edge, 19mm reveal edge

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.10 T&R MINERAL FIBRE – NON DIRECTIONAL FISSURED SURFACE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken New NDF

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 4.2kg/m²

 NRC: 0.55 - 0.60

 CAC: 36

 Group number: 1 - S

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Thickness: 12mm square edge, 13mm reveal edge

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.11 T & R MINERAL FIBRE - SMOOTH SURFACE

 Location: ~

 Distributor: T & R Interior Systems Limited

 Type: Daiken Plain

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 3.3kg/m²

 NRC: 0.35 - 0.40

 CAC: 36

 Group number: 1 - S

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Thickness: 12mm square edge, 13mm reveal edge

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.12 T&R MINERAL FIBRE - PINHOLE SURFACE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken Constellation

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 3.3kg/m²

 NRC: 0.55 - 0.60

 CAC: 36

 Group number: 1 - S

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Thickness: 12mm square edge, 13mm reveal edge

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.13 T&R MINERAL FIBRE - NON DIRECTIONAL FISSURED SCORED BOARD SURFACE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken Co-ordinate

 Grid system: ~

 Thickness: 15mm

 Edge detail: Reveal edge

 Size: ~mm x ~mm

 Weight: 4.2kg/m²

 NRC: 0.55 - 0.60

 CAC: 36

 Group number: 1 - S

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid systems: 15mm or 24mm grid suspension system

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.14 T&R MINERAL FIBRE - STIPPLE / PINHOLE SURFACE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken Venus

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 3.3kg/m²

 NRC: 0.55 - 0.60

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Thickness: 12mm square edge or 13mm reveal edge

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.15 T&R MINERAL FIBRE - STIPPLE/ PINHOLE SURFACE, HIGH PERFORMANCE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken Venus Max

 Grid system: ~

 Thickness: 19mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 5.48kg/m²

 NRC: 0.75

 CAC: 36

 Group number: 1 - S

 Light reflectance: LR 1 > 75%

 Relative humidity: 99%

 Thermal: 0.045 kcal/mh°C

 Options:

 Grid system: Square Edge: 15mm or 24mm grid suspension system, or

 Reveal Edge: 24mm grid suspension system

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm, other sizes available on indent

### 4.16 T&R GLASS-WOOL - HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Absorb

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: 1.5kg/m²

 Colour: ~

 NRC: 0.95

 CAC: 20

 Group number: 1 - S

 Light reflectance: > 85%

 Relative humidity: 99%

 Options:

 Grid system: 15mm or 24mm grid suspension system

 Thickness: 15mm standard, up to 80mm by indent

 Edge detail: Square edge or reveal edge,

 Concealed edge on indent

 Size: 600mm x 600mm, 1200mm x 600mm

 2400mm x600mm, 1500mm x 300mm, 1200m x 300mm by indent

 Colour: White or Black

### 4.17 T&R GLASS-WOOL / PLASTERBOARD COMBO- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Combo

 Grid system: ~

 Thickness: ~mm

 Edge detail: ~

 Size: ~mm x ~mm

 Weight: ~

 Colour: ~

 NRC: 0.75

 CAC: 53

 Group number: 1 - S

 Light reflectance: > 85%

 Relative humidity: 99%

 Options:

 Grid system: 15mm or 24mm grid suspension system

 Thickness: 35mm and 50mm standard, others available on indent

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm

 2400mm x600mm, 1500mm x 300mm, 1200m x 300mm by indent

 Weight: 35mm: 10.5kg/m², 50mm: 11.5kg/m²

 Colour: White or Black

### 4.18 T&R GLASS-WOOL WITH FIBREGLASS FACE- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Impact

 Grid system: ~

 Thickness: 40mm

 Edge detail: Square Edge

 Size: ~mm x ~mm

 Weight: 2kg/m²

 Colour: ~

 NRC: > 0.95

 CAC: 20

 Group number: 1 - S

 Light reflectance: > 84% (White Panel)

 Relative humidity: 99%

 Options:

 Grid system: 15mm or 24mm grid suspension system

 Edge detail: Square edge or reveal edge

 Size: 600mm x 600mm, 1200mm x 600mm

 2400mm x600mm, 1500mm x 300mm, 1200m x 300mm by indent

 Colour: White, Black, Beige or Blue

### 4.19 T&R GLASS-WOOL WITH FRR FABRIC COVER- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Silence Cloud Sound Panel

 Suspension system: Refer to T&R Interior Systems Installation Guide

 Thickness: 40mm

 Edge detail: Square Edge

 Size: ~mm x ~mm

 Colour: ~

 NRC: > 1

 CAC: 20

 Group number: 1 - S

 Light reflectance: > 84% (White Panel only)

 Relative humidity: 99%

 Options:

 Size: Any size (limited to 2200mm x 1200mm) available on indent. This includes ovals, circles, squares, etc. Contact T&R Interior Systems for further information

 2400mm x 600mm, 1500mm x 300mm, 1200m x 300mm by indent

 Colour: White, Black, Beige, Timber, Red or Blue. Other fabric covers available on request. Contact T&R Interior Systems for further information.

 Note: For customization (e.g. panels can be printed) contact T&R Interior Systems for further information.

### 4.20 T&R GYPSUM TILES - SPECIAL ACOUSTIC APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Reflect

 Grid system: ~

 Thickness: 10mm

 Edge detail: Square edge

 Size: 1200mm x 600mm

 Weight: 7.1kg/m²

 NRC: 0.05

 CAC: 45

 Light reflectance: 84%

 Group number: 1 - S

 Options:

 Grid system: 15mm or 24mm grid suspension system

### 4.21 T&R PERFORATED METAL TILES - SPECIAL APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Jeillouver

 Grid system: 24mm grid suspension system

 Edge detail: ~

 Size: ~mm x ~mm

 NRC: 0.6 - 0.8

 CAC: 20

 Colour: ~

 Options:

 Edge detail: Square edge or reveal edge

 Size: Any size (limited to 3000mm x 1200mm) available on indent. This includes ovals, circles, squares, etc. Contact T&R Interior Systems for further information.

 2400mm x 600mm, 1500mm x 300mm, 1200m x 300mm by indent

 Colour: White, Black, and other powder coat colours on request. Contact T&R Interior Systems for further information.

 Note: Jeil factory able to supply these products for exterior cladding. For customization contact T&R Interior Systems for further information.

### 4.22 T&R ALUMINIUM BAFFLE - SPECIAL ACOUSTIC APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Ceiling Baffle

 Grid system: ~

 Thickness: 10mm

 Edge detail: Square edge

 Size: ~

 NRC: ~

 CAC: ~

 Light reflectance: 84% (only if powder coated white)

 Options:

 Grid system: 100mm x 30mm or 150mm x 30mm

 Size: Custom made to order

 NRC: Dependent on size and configuration of baffle. Contact T&R Interior Systems for further information.

 CAC: Dependent on size and configuration of baffle. Contact T&R Interior Systems for further information.

 Can be installed with integrated lighting options. Available in any powder coated colour and a large range of wood look laminates.

### 4.23 T&R 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: OROQI 3D tiles

 Grid system: 24mm grid suspension system

 Design: ~

 Orientation: Tiles can be reversed

 Size: ~mm x ~mm

 Colour: ~

 NRC: 0.75 - 0.90

 Group Number: 1 - S

 Options:

 Design: Standard designs - Chevron, Arrow or Fractile

 Size: 600mm x 600mm or 1200mm x 600mm

 Colour: Avocado, Blush, Stately, Civic, Fawn, Bark, Porcelain, Stonewash, Silver, Charcoal, Noir, Granny Smith, Blazing Red, Brilliant Orange, Electric Blue (Autex Workstation Range). Others available on request. Contact T&R Interior Systems for further information.

 Note: For higher NRC specify insulation behind to increase NRC to 0.9. Bespoke designs available. Contact T&R Interior Systems for further information. MOQ applies.

 **Materials - direct fix ceiling tiles**

### 4.24 T&R MINERAL FIBRE - DIRECT FIX,T & G

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Daiken Dai Lotone T&G

 Pattern: ~

 Thickness: ~

 Size: 606mm x 303mm

 NRC: 0.70

 CAC: variable

 Group number: 1 - S

 Thermal: 0.045 kcal/mh° C

 Edge profile: Tongue and groove

 Set out direction: As shown on drawings

 Set out pattern: As shown on drawings

 Options:

 Pattern: Ribbed, non-ribbed

 Thickness: 9mm (non-ribbed) or 12mm (ribbed)

 Set out direction: State direction or show on drawings

 Set out pattern: Ashlar or Rectangular or as shown on drawings

 T&R Interior Systems Limited recommend the size of the cut tile be identical at opposing sides of the room. Ensure allowance is made for clearance from the wall.

### 4.25 T&R GLASS WOOL - DIRECT FIX, HIGH PERFORMANCE

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Direct Fix

 Thickness: 20mm

 Size: 600mm x 600mm

 Weight: 4kg/m²

 NRC: 0.75 - 0.95

 CAC: variable

 Edge profile: Square edge

 Set out direction: As shown on drawings

 Set out pattern: Ashlar

 Options:

 Set out direction: State direction or show on drawings

### 4.26 T&R 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: OROQI 3D tiles

 Grid system: Direct Fix Clip System

 Design: ~

 Size: ~mm x ~mm

 Colour: ~

 NRC: 0.75 - 0.90

 CAC: N/A

 Options:

 Design: Standard designs: - Swish, Fibonacci, Fibonaci Complicated, Chevron, Squares, Fractile, Wander Wall or Zero Point Five

 Size: 500mm x 250mm, 500mm x 500mm, 575mm x 575mm, (to match 600mm x 600mm ceiling tile)

 Colour: Avocado, Blush, Stately, Civic, Fawn, Bark, Porcelain, Stonewash, Silver, Charcoal, Noir, Granny Smith, Blazing Red, Brilliant Orange, Electric Blue (Autex Workstation Range). Others available on request. Contact T&R Interior Systems for further information.

 Note: For higher NRC specify insulation behind to increase NRC to 0.9. Bespoke designs available. Contact T&R Interior Systems for further information. MOQ applies.

 **Materials - direct fix wall and ceiling panels**

### 4.27 T&R GLASS-WOOL WITH FIBREGLASS FACE- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Impact

 Thickness: 40mm

 Edge detail: Square edge

 Size: ~mm x ~mm

 Weight: 2kg/m²

 Colour: ~

 NRC: >0.95

 CAC: 20

 Light reflectance: > 84% (White Panel)

 Relative humidity: 99%

 Set out direction: As shown on drawings

 Set out pattern: As shown on drawings

 Options:

 Size: 600mm x 600mm, 1200mm x 600mm

 2400mm x600mm, 1500mm x 300mm, 1200m x 300mm on indent

 Colour: White, Black, Beige or Blue

 Set out direction: State direction or show on drawings

### 4.28 T&R GLASS-WOOL WITH FRR FABRIC COVER- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: C Max Silence Cloud Sound Panel

 Thickness: 40mm

 Edge detail: Square Edge

 Size: ~mm x ~mm

 Weight: 4kg/m²

 Colour: ~

 NRC: 1

 CAC: 20

 Relative humidity: 99%

 Options:

 Size: Any size (limited to 2200mm x 1200mm) available on indent . This includes ovals, circles, squares, etc. Contact T&R Interior Systems for further information.

 Colour: White, Black, Beige, Timber, Red or Blue. Other fabric covers available on request. Contact T&R Interior Systems for further information.

 Note: For customization (e.g. panels can be printed) contact T&R Interior Systems for further information.

### 4.29 T&R POLYESTER FIBRE- HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: NEO dEco Sound Panel

 Thickness: 25mm

 Edge detail: Square edge

 Size: ~mm x ~mm

 Colour: ~

 NRC: 50mm: 0.95

 0.85 with 25mm air cavity

 Relative humidity: 95%

 Options:

 Thickness: 25mm, 50mm

 Size: Standard Size: 1210 x 2420 Any size (limited to 2420mm x 1210mm) available on indent

 Colour: PLUSH RANGE: Wheat, Citrus, Pomegranate, Ocean, Plam, Apple, Ice, Granite, Platinum, Ash, Midnight

 1 Laminate: White and Black Other colours available on request. Contact T&R Interior Systems for further information.

### 4.30 T&R 3D PRESSED POLYESTER FIBRE - HIGH PERFORMANCE, ACOUSTIC

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: OROQI 3D tiles

 Grid system: Direct Fix Clip System

 Design: ~

 Size: ~mm x ~mm

 Weight: lightweight

 Colour: ~

 NRC: 0.75

 Options:

 Design: Standard designs - Swish, Fibonacci, Fibonaci Complicated, Chevron, Squares, Fractile, Wander Wall or Zero Point Five

 Size: 500mm x 250mm, 500mm x 500mm or 575mm x 575mm

 Colour: Avocado, Blush, Stately, Civic, Fawn, Bark, Porcelain, Stonewash, Silver, Charcoal, Noir, Granny Smith, Blazing Red, Brilliant Orange, Electric Blue (Autex Workstation Range). Others available on request. Contact T&R Interior Systems for further information.

 Note: For higher NRC specify insulation behind to increase NRC to 0.9. Bespoke designs available. Contact T&R Interior Systems for further information. MOQ applies.

 **Materials - specialty suspended ceiling tiles**

### 4.31 T&R GENUS HIGH PERFORMANCE ACOUSTIC HYGIENE TILE - SPECIAL APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: T&R GENUS hygiene

 Grid system: ~

 Thickness: 10mm

 Edge profile: ~

 Size: 600mm x 600mm

 Weight: 4.2kg/m²

 NRC: variable

 CAC: 20

 Group number: 1 - S

 Light relectance: 84%

 Options:

 Grid system: 15mm or 24mm grid suspension system

 Edge profile: Reveal edge, square edge, concealed or direct fix

 Note: Specially developed to target low frequency sound. Available in a range of colours.

### 4.32 T&R VINYL FACED GYPSUM TILES - SPECIAL APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: T&R Gypsum Vinyl

 Grid system: ~

 Thickness: 10mm

 Size: 1200mm x 600mm

 Weight: 7.1kg/m²

 Edge profile: Square edge

 Option:

 Grid system: 15mm or 24mm grid suspension system

### 4.33 T&R FENTA TILES - SPECIAL APPLICATION

 Location: ~

 Distributor: T&R Interior Systems Limited

 Type: Fenta

 Grid system: ~

 Thickness: 4.5mm

 Size: 1200mm x 600mm

 Weight: 6.9kg/m²

 Edge profile: Square edge

 Option:

 Grid system: 15mm or 24mm grid suspension system

 **Access hatches**

### 4.34 ACCESS HATCHES

 Location: ~

 Brand/type: T&R Interior Systems Limited

 Finish/colour: ~

 Size: ~mm x ~mm

 Options:

 Finish/colour: Aluminium white powder coated slimline flanged ceiling hatch

 Galvanized stop in flush hatch

 Size: 565mm x 565mm

 450mm x 450mm

 300mm x 300mm

 **Spares**

### 4.35 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 10,12, 15, 20. 2% is a reasonable allowance for routine minor repairs.