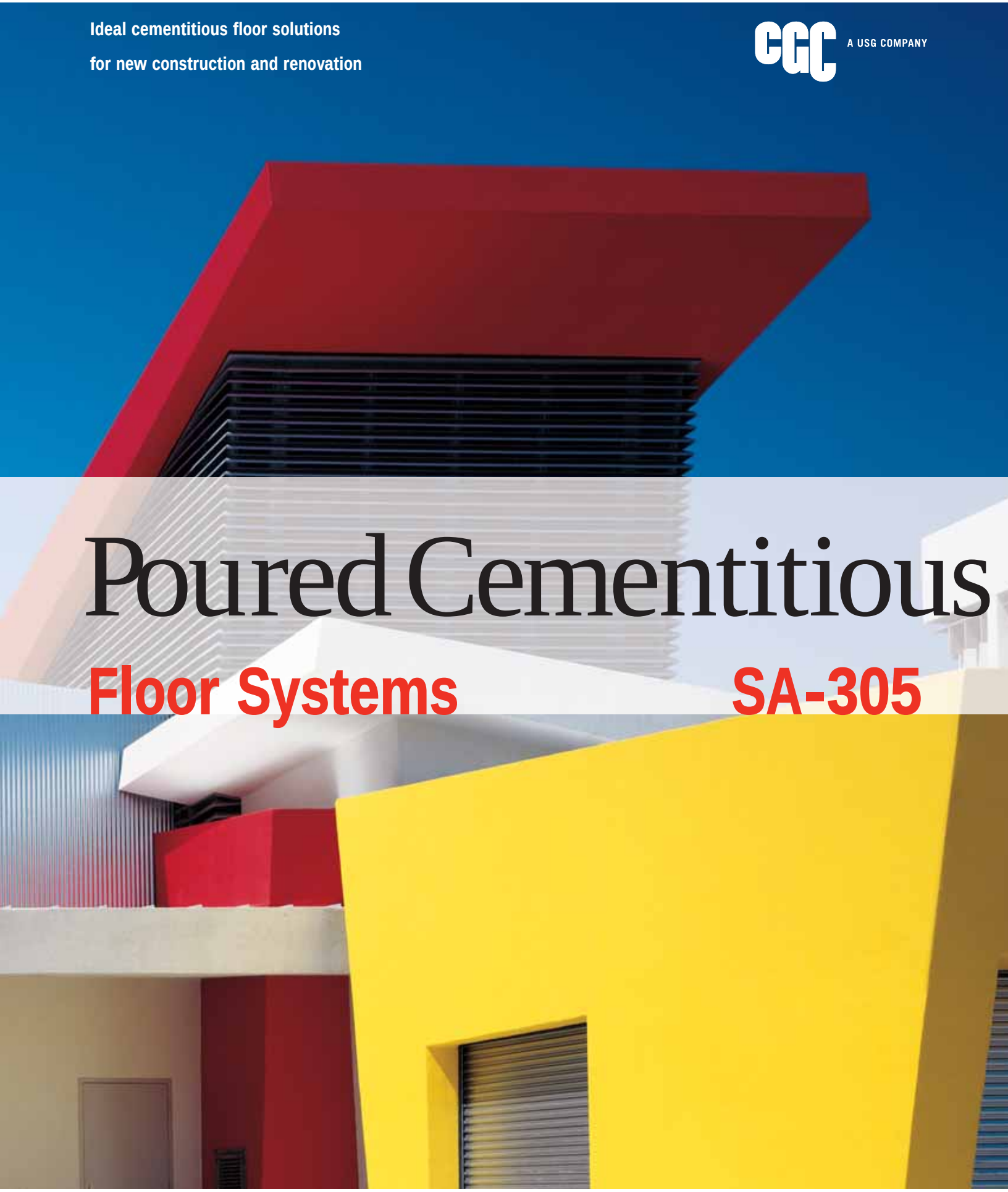
Ideal cementitious floor solutions

for new construction and renovation

CGC A USG COMPANY



Poured Cementitious

Floor Systems SA-305

CGC's floor underlayment systems are the choice for more residential and commercial construction projects because they offer a full product line of gypsum, portland, and engineered cements to meet all types of job conditions. These products and systems are designed to meet the National Building Code requirements and the first to ensure that all sound systems are easily specifiable by a cUL Design number without negating the fire rating.

Versatile Poured Floors

User's Guide

This brochure explains:

- The benefits of lightweight cementitious floor underlayments
- The different types of floor underlayments
- How to select and specify the appropriate components for floor underlayment systems

Overview

The LEVELROCK® brand family of floor underlayments offers an extensive line featuring gypsum and engineered cements and acoustic components—each designed to meet the specific requirements for a wide range of commercial, residential, renovation and institutional applications.

Performance

Our gypsum cement underlayments are available in compressive strengths ranging from 17 to 54 MPa (2500-8000 psi), and require no shot blasting, (a method of preparing existing concrete floors by using round iron shots as the abrasive). This line includes the first "green" underlayments in the industry made from recaptured gypsum, a byproduct of flue gas desulfurization (FGD), a process used by coal-fired electrical power plants to limit emissions of sulphur dioxide. Our engineered cement underlayment offerings include an industry standard Portland-based cement underlayment, as well as state-of-the-art high-alumina cement underlayments, all of which can be decorated with an approved coating or stain.

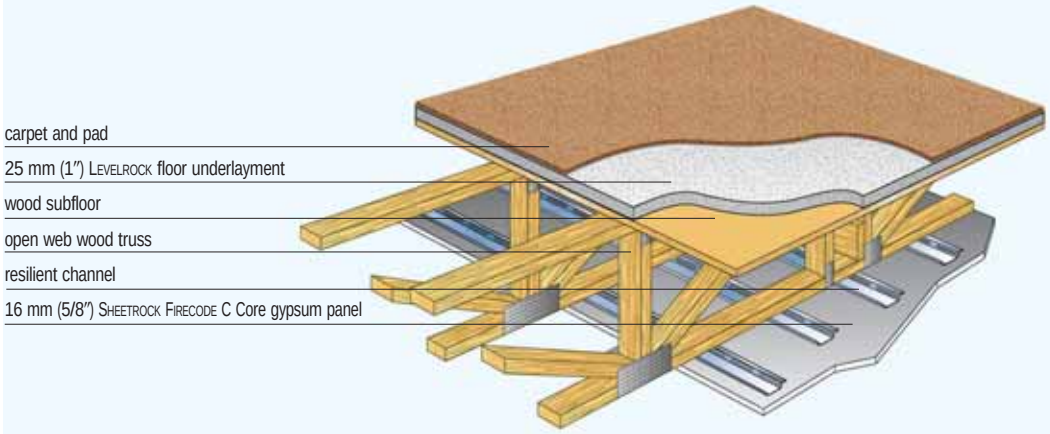
Testing

Products and systems undergo third-party testing to ensure that they meet exacting standards for fire resistance, sound and durability. Because elements used to improve sound performance may adversely affect the fire rating, floor underlayment systems are specifically designed to address both fire and sound ratings.

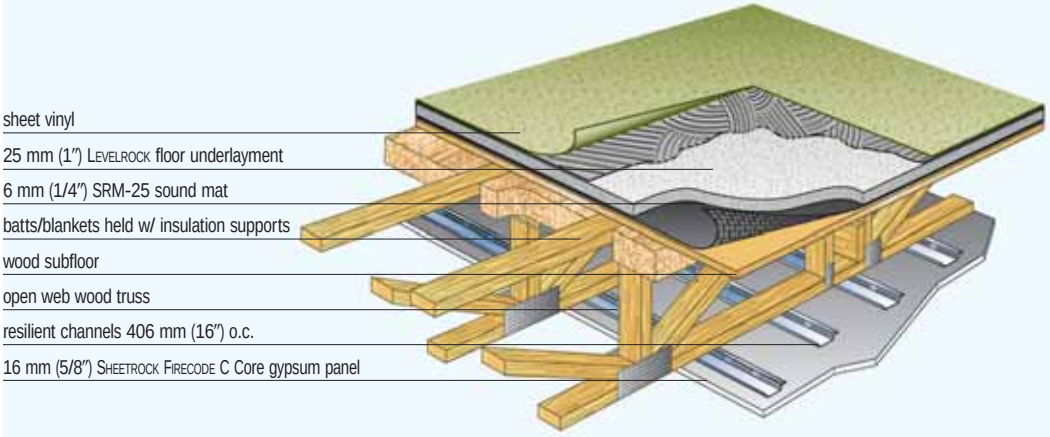
Quality

To further maintain quality control from design to manufacturing to installation, all LEVELROCK floor underlayments are expertly installed by authorized applicators who receive and maintain certification following comprehensive onsite and field training from CGC Inc. Our single-source responsibility for your entire system, including primer, sealer, surface enhancer and LEVELROCK floor underlayment, assures a quality system that meets your needs.

Typical Fire-Rated Floor Underlayment Assembly



Typical Sound Install Floor Underlayment Assembly



Applications

Lightweight LEVELROCK floor underlayments provide a virtually self-leveling monolithic surface for use in residential, commercial, institutional and renovation projects. Our low water demand underlayments can be poured up to 2800 square meters (30,000 square feet) per day while setting to a smooth, flat surface in just 2 to 3 hours, allowing light trade traffic to resume within 24 hours.

LEVELROCK floor underlayment accepts all types of floor coverings, including vinyl, composition tile, ceramic tile, natural stone, wood laminate, hardwood and carpet.

To enhance sound performance and meet the National Building Code (NBC) requirement of 50 STC, a sound reduction mat or sound reduction board can be applied before pouring LEVELROCK floor underlayment.

Gypsum Cement

Gypsum cement underlayments can be used in fire-rated, sound-rated and radiant heat applications; over wood, concrete and concrete plank—without shot blasting; as well as in an innovative corrugated steel deck application. Our POURABLE BEFORE DRYWALL™ feature allows LEVELROCK floor underlayment to be applied prior to installation of drywall walls, substantially speeding up the construction process and minimizing the potential for mold and mildew.

Engineered Cement

Self-drying, wear-resistant engineered cement underlayments, which include Portland-based and high-alumina cements, are ideal for concrete, concrete planks and wood with metal lath applications. In addition, all of our engineered cements and PROFLOW™ underlayment can be decorated with an approved coating or stain.

Components

LEVELROCK floor underlayment systems have been comprehensively tested for fire and sound ratings. Components used in the system have been classified by Underwriters Laboratories of Canada (ULC), and Underwriters Laboratories Inc., (ULI) to Canadian standards; substitutions are not recommended or supported by CGC Inc.

All LEVELROCK floor underlayment products are available presanded; PROFLOW floor underlayment and engineered cements are only available presanded.

Refer to the appropriate product material safety data sheet for complete health and safety information.

Residential/ Light Commercial Products

LEVELROCK® 2500™ Floor Underlayment

- Recommended for residential construction (single and multi-family)
- Compressive strength of 17 to 22 MPa (2500-3200 psi)
- Minimum 19 mm (3/4″) thickness over wood, 13 mm (1/2″) over concrete
- Refer to product submittal sheet IG1450 for more information

LEVELROCK® 2500™ Green Floor Underlayment

- Industry's first poured underlayment made with recaptured gypsum
- Compressive strength of 17 to 22 MPa (2500-3200 psi)
- May be eligible for CaGBC LEED Credits (MR 4.1 & 4.2)

LEVELROCK® 3500™ Floor Underlayment

- Ideal for both residential and light commercial applications
- Compressive strength of 24 to 27 MPa (3500-4000 psi)
- Minimum 19 mm (3/4″) thickness over wood, 10 mm (3/8″) over concrete
- Can be used as an upgrade in hard-surface areas in residential projects or as a topping to correct uneven floors in light commercial applications
- Meets resilient commercial floor covering industry standards
- Refer to product submittal sheet IG1448 for more information

LEVELROCK® 3500™ Green Floor Underlayment

- Industry's first poured underlayment made with recaptured gypsum
- Compressive strength of 24 to 27 MPa (3500-4000 psi)
- May be eligible for CaGBC LEED Credits (MR 4.1 & 4.2)
- Meets resilient commercial floor covering industry standards

Components

LEVELROCK® RH Floor Underlayment

– Specifically designed for use with radiant heat systems
– Compressive strength of 17 to 22 MPa (2500-3200 psi)
– Minimum 19 mm (3/4″) thickness over the top of radiant tubes or cables
– Provides an efficient thermal mass to maximize the effectiveness of the radiant heat system
– Suitable for use in radiant heat systems designed to meet the requirements of the Radiant Panel Association
– Refer to product submittal sheet IG1459 for more information

LEVELROCK® RH Green Floor Underlayment

– Industry's first poured underlayment made with recaptured gypsum
– Minimum 19 mm (3/4″) thickness over the top of radiant tubes or cables
– Compressive strength of 17 to 22 MPa (2500-3200 psi)
– Suitable for use in radiant heat systems designed to meet the requirements of the Radiant Panel Association
– May be eligible for CaGBC LEED Credits (MR 4.1 & 4.2)
– Refer to product submittal sheet IG1663 for more information

Commercial/Institutional Products

LEVELROCK® 4500™ Floor Underlayment

– Ideal for heavy traffic, commercial, institutional and renovation projects, as well as floor corrections over concrete substrate
– Compressive strength of 31 to 38 MPa (4500-5500 psi)
– Minimum 10 mm (3/8″) thickness over concrete, 6 mm (1/4″) for presanded product
– Can be applied at variable thickness up to 75 mm (3″)
– Refer to product submittal sheet IG1449 for more information

LEVELROCK® Commercial RH Floor Underlayment

– Specifically designed for use with radiant heat systems
– Compressive strength of 24 to 27 MPa (3500-4000 psi)
– Minimum 19 mm (3/4″) thickness over the top of radiant tubes or cables
– Suitable for use in radiant heat systems designed to meet the requirements of the Radiant Panel Association
– Meets resilient commercial floor covering industry standards
– Refer to product submittal sheet IG1541 for more information

LEVELROCK® PROFLOW™ Floor Underlayment

– Self-leveling, premium underlayment or topping designed for use in residential, commercial, institutional and rehab construction
–Compressive strength of 41 to 55 MPa (6000-8000 psi)
– Provides a smooth, hard underlayment surface over concrete or other LEVELROCK floor underlayments
– May be decorated or coated with an approved coating system to provide a finished floor
– Minimum 6 mm (1/4″) thickness over concrete and over 19 mm (3/4″) of 3500 underlayment over wood
– Refer to product submittal sheet IG1504 for more information

LEVELROCK® CSD™ Floor Underlayment

– Compressive strength of 24 to 27 MPa (3500-4000 psi)
– Minimum 25 mm (1″) thickness over top of flute (or highest point on corrugated steel deck)
– Specifically designed for use as a non-structural underlayment in corrugated steel deck systems
– Up to 55% lighter than 75 mm (3″) of concrete with 1900 kg/m^3 (120 lb./cu.ft.) density
– Refer to product submittal sheet IG1648 for more information

LEVELROCK® SLC™ 200 Floor Underlayment

– Premium self-leveling Portland-based cement
– Installs from feather edge to 50 mm (2″)
– May be decorated, stained or coated with an approved coating system to provide a finished floor
– Refer to product submittal sheet IG1642 for more information

LEVELROCK® SLC™ 300 Floor Underlayment

– Premium self-drying and -leveling engineered cement
– Installs from feather edge to 32 mm (1-1/4″)
– Install final floor covering in 24 hours
– May be decorated, stained or coated with an approved coating system to provide a finished floor
– Refer to product submittal sheet IG1645 for more information

LEVELROCK® SLC™ 400 Floor Underlayment

– Premium self-leveling engineered cement
– Installs from feather edge to 16 mm (5/8″)
– High traffic, wear-resistant surface suitable for warehouse and industrial applications
– No floor covering or coating required
– Refer to product submittal sheet IG1646 for more information

Related Products

LEVELROCK™ SRB™ Sound Board

– Economical sound control material used in systems to meet or exceed minimum NBC code criteria of 50 STC
– 10 mm (3/8″) thick board made of mineral fibers
– Lightweight, cuts easily with a utility knife
– Refer to product submittal sheet IG1523 for more information

LEVELROCK™ SRM-25™ Sound Mat

– High-performance sound control material used in thinner profile systems to meet or exceed NBC code criteria of 50 STC
– 6 mm (1/4″) thick mat made of polypropylene with polyethylene cones
– Refer to product submittal sheet IG1619 for more information

Components

LEVELROCK™ Perimeter Isolation Strip

– Required to create an acoustical break between underlayment and walls
– Isolates floors from walls and columns to minimize cracking due to building movement and vibration
– Light and flexible

LEVELROCK™ Floor Primer

– Seals and improves adhesion of LEVELROCK floor underlayment to wood subfloors
– Can be used between multiple pours of LEVELROCK floor underlayment to enhance bonding
– Refer to product submittal sheet IG1505 for more information

LEVELROCK™ Concrete Primer

– Applied as a sealer over concrete subfloors prior to the installation of LEVELROCK floor underlayment
– Seals porous concrete surfaces
– Used over 4500 floor underlayment to enhance bond to finished floor adhesive
– Refer to product submittal sheet IG1574 for more information

LEVELROCK™ SE-100™ Surface Enhancer

– Designed to enhance bond between underlayment and floor covering
– Unique identifier (visible only under a blacklight) reduces risk of improper underlayment preparation
– For use on 2500, 3500, RH and commercial RH floor underlayments
– Refer to product submittal sheet IG1618 for more information

LEVELROCK™ CSD Primer

– Improves adhesion of LEVELROCK underlayment over corrugated steel deck
– Pigmented to ensure uniform coverage
– Refer to product submittal sheet IG1648 for more information

Performance Testing

LEVELROCK floor underlayment systems have been thoroughly tested to meet performance requirements for fire resistance, sound control and durability.

Performance Tests

USG performs LEVELROCK testing in laboratories, not as field tests. Laboratory sound tests provide a laboratory-controlled, standard environment, whereas field tests provide a measure of the acoustical environment only for the specific space tested. (Field tests are labeled FIIC and FSTC, while laboratory tests are labeled IIC and STC.)[a] Other product and system elements tested are durability, strength and surface drying or moisture content.

LEVELROCK floor underlayment systems are compatible with floor systems which have been designed to limit deflections to L/360.

Sand analysis is provided by CGC Inc. for LEVELROCK authorized applicators. Because 60-70% of the mix is sand, which varies tremendously from region to region, it is extremely important to test sand to prevent excess fine or coarse particles from affecting application rates and finish product performance.

Loading Conditions

All load bearing assemblies, with exception of steel columns, are required to be loaded to their full design capacity during tests for fire resistance as required in CAN/ULC S101 and ASTM E119. The 2005 edition of the National Building Code of Canada now references the Third Edition of CAN/ULC S101-04 that requires applied loads be calculated under Limit States design principles. The previous edition referenced in the 1995 National Building Code of Canada permitted the use of Working Stress or Limit States principles for calculation of applied loads. In some cases there may be a significant difference between these calculations of applied loads. In these cases ULC and UL are amending their on-line and subsequent printed directories to provide guidance in the "Guide Information" section and notating individual designs that may require investigation as to "Load Restriction" or "Reduction" of the design. **This applies to both ULC and UL designs as well as assemblies certified by other Standards Council of Canada recognized agencies such as Intertek (Warnock-Hersey International)**

Testing Methods

All CGC's products and systems undergo exhaustive testing to ensure that they meet exacting standards. Products are Classified as to fire resistance and fire-hazard properties. As part of this protocol, Underwriters Laboratories (UL) periodically audits production of these materials to ensure compliance with necessary properties. UL is an independent, not-for-profit product safety testing and certification organization that has tested products for public safety for more than a century.

Products are manufactured and tested in accordance with ASTM standards. ASTM International is one of the largest voluntary standards development organizations in the world, and is a trusted source for technical standards for materials, products, systems and services.

The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). Test results of acoustical assemblies are verified by an independent lab. Sound testing is conducted according to ASTM E90 and ASTM E492 and verified by a NVLAP-accredited laboratory.

(a) STC/IIC Disclaimer: Published STCs (Sound Transmission Class) are based on laboratory tests per ASTM E90 "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements" and classed per ASTM E413 "Classification for Rating Sound Insulation." Published IICs (Impact Insulation Class) are based on laboratory tests run per ASTM E492 "Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies using the Tapping Machine" and classed per ASTM E89 "Standard Classification for Determination of Impact Insulation Class (IIC)." The STC and IIC are tests of the partitions and/or floor-ceiling assemblies installed in the test opening of an idealized test facility with highly reverberant and diffuse sound fields in the test rooms and where the only significant path for the transfer of sound energy is through the assembly under test. Actual performance under field conditions may differ significantly based upon the installation quality, existence of flanking paths, leakage paths in the assembly, existing room conditions and expertise of the testing agency. These test methods are not intended for field tests, but if necessary, field test should be performed per ASTM E336 or E1007 (FSTC (ASTC) and FIIC). The field test standards allow for greater variations in the room and test conditions and in procedures, which can affect the final result and make comparison between field tests difficult. It is generally considered acceptable for field test results to be up to 5 points less than laboratory results. The above limitations notwithstanding, these methods have been used successfully for a number of years to rank order assemblies, and the test results are commonly used for this purpose.

Performance Testing

Sustainability

The LEED® (Leadership in Energy and Environmental Design) program is a guideline for building solutions established by the U.S. Green Building Council (USGBC) and endorsed by the Canada Green Building Council (CaGBC). LEED's mission is to transform the building industry by establishing a common standard of measurement to define what constitutes a "green building." To this end, LEED provides a framework for assessing building performance and meeting sustainability goals. This framework assigns points for certain sustainability criteria, such as sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Specific products cannot be LEED-certified because there are many contingent factors on each project that must be considered. However, LEVELROCK green floor underlayment products may be eligible for LEED Credits MR 4.1 and 4.2.

CaGBC LEED Credits

Construction Waste Management	**MR 2**	
	2.1	Divert 50% of project waste (by weight or volume) from landfill (1 point)
	2.2	Divert another 25% of project waste (by weight or volume) from landfill (1 point)
Recycled Content	**MR 4**	
	4.1	If sum of project materials by value have 7.5% post-consumer or 15% post-industrial (1 point)
	4.2	If sum of project materials by value have 15% post-consumer or 30% post-industrial (1 point)
Local/Regional Materials	**MR 5**	
	5.1	If 10% of project materials are shipped less than 800 km (500 miles) by truck, or less than 2400 km (1500 miles) by rail (1 point)
	5.2	If 20% of project materials are shipped less than 800 km (500 miles) by truck, or less than 2400 km (1500 miles) by rail (1 point)
Low-Emitting Materials	**EQ .4**	
	4.2	Drywall installation (less than 50g/L per CSCAQM, Table 1) (1 point)

Testing Results

Fire Protection

UL Classifications appear on LEVELROCK floor underlayment packaging. To ensure that installed systems' fire ratings are not compromised, only use products that are marked as cUL Classified or are approved by CGC Inc.

Sound Control

Sound control data verified by a NVLAP-accredited third-party demonstrates the effectiveness of LEVELROCK floor underlayment systems in attenuating sound. LEVELROCK floor underlayment systems limit airborne and impact (STC and IIC) noise between stacked units. This improves the value per square foot for developers and owners, as occupants are less likely to be disturbed by impact or transmitted noise from adjacent units.

LEVELROCK sound systems are designed to meet or exceed the National Building Code's (NBC) minimum requirement of 50 STC.

The addition of the SRM-25 sound mat or the SRB sound board can increase IIC up to 25 points.

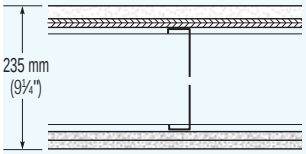
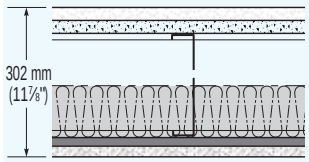
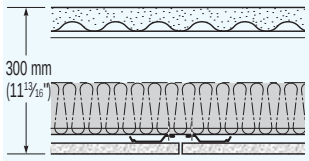
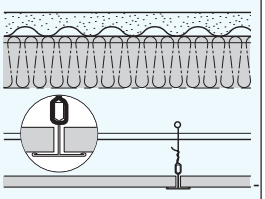
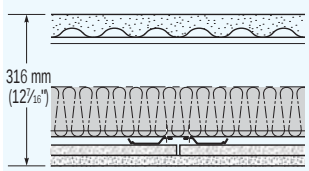
Moisture/Mold

The best way to minimize damage from mold is to minimize or eliminate exposure to water before, during and after construction.

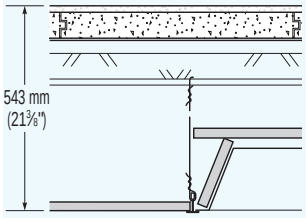
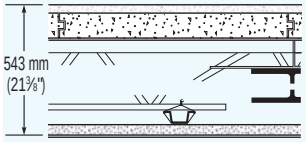
LEVELROCK floor underlayment has a very low water demand and chemically sets in 2-3 hours. Faster drying time on the job site — due to improved air circulation and reduced contact of the wet underlayment with a water-sensitive substrate — help minimize the potential for mold and mildew.

Performance Selector

Steel Framed

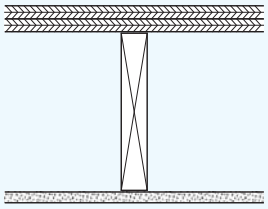
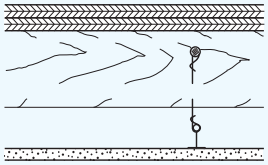
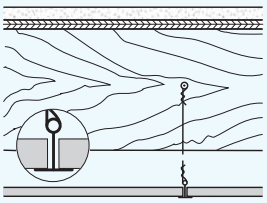
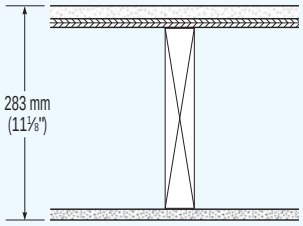
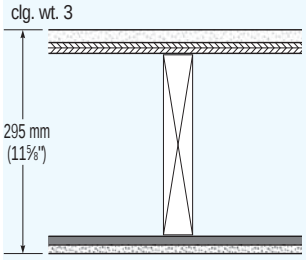
1 Hour Fire-rated Construction	Steel C-Joist Framing (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance			Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**ARL**	**Index**
clg. wt. 4  	– 12 mm (15/32″) wood subfloor – 178 mm (7″) 1.3 mm (18 gauge) steel joist, 610 mm (24″) o.c. • 2 layers 13 mm (1/2″) SHEETROCK® FIRECODE® C Core gypsum panel • 19 mm (3/4″) LEVELROCK floor underlayment • optional SRM-25 sound mat or SRB sound board • CGC DGL drywall suspension system	**UL Des L524**				SA305	**1**
 	• 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – 19 mm (3/4″) structural cement fiber units – 235 mm (9-1/4″) 1.6 mm (16 gauge) steel joist, 610 mm (24″) o.c. – Resilient channel spaced 305 mm (12″) o.c. – 92 mm (3-5/8″) minimum insulation • optional 19 mm (3/4″) LEVELROCK floor underlayment • optional SRM-25 sound mat only	**UL Des L564**				SA305	**2**
 	• 40 mm (1-9/16″) LEVELROCK floor underlayment • 16 mm (5/8″) SHEETROCK FIRECODE Core gypsum panel – 235 mm (9-1/4″) 0.85 mm (22 gauge) steel joist, 610 mm (24″) o.c. – Resilient channel spaced 305 mm (12″) o.c. – 92 mm (3-5/8″) minimum insulation • optional SRM-25 sound mat only • CGC DGL drywall suspension system	**UL Des G551**				SA305	**3**
	• 40 mm (1-9/16″) LEVELROCK Floor Underlayment • 16 mm (5/8″) SHEETROCK FIRECODE Core Gypsum Panel – 235 mm (9-1/4″) 0.85 mm (22 gauge) steel joist, 610 mm (24″) o.c. – Resilient channel spaced 305 mm (12″) o.c. – 92 mm (3-5/8″) minimum insulation • optional SRM-25 sound mat only • CGC DGL drywall suspension system	**UL Des G551 w/ suspended ceiling**	64	55	**RAL-TL-04-031 & RAL-IN-04-004** 25 mm (1″) LEVELROCK underlayment, vinyl, SRM-25 sound mat, 90 mm (3-1/2″) insulation	SA305	**4**
			63	81	**RAL-TL-04-032 & RAL-IN-04-005** 25 mm (1″) LEVELROCK underlayment, carpet and pad, SRM-25 sound mat, 90 mm (3-1/2″) insulation		
			63	58	**RAL-TL-04-034 & RAL-IN-04-007** 25 mm (1″) LEVELROCK underlayment, engineered wood laminate, SRM-25 sound mat, 90 mm (3-1/2″) insulation		
			65	51	**RAL-TL-04-067 & RAL-IN-04-009** 25 mm (1″) LEVELROCK underlayment, ceramic tile, SRM-25 sound mat, 90 mm (3-1/2″) insulation		
2 Hour Fire-rated Construction	(Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)						
 	• 40 mm (1-9/16″) LEVELROCK floor underlayment • 2 layers 16 mm (5/8″) SHEETROCK FIRECODE Core gypsum panel – 235 mm (9-1/4″) 0.85 mm (22 gauge) steel joist, 610 mm (24″) o.c. – Resilient channel spaced 305 mm (12″) o.c. – 92 mm (3-5/8″) minimum insulation • optional SRM-25 sound mat only • CGC DGL drywall suspension system	**UL Des G551**				SA305	**5**

Steel Framed

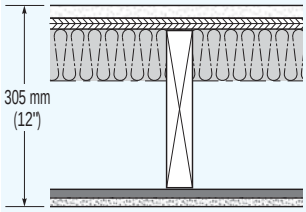
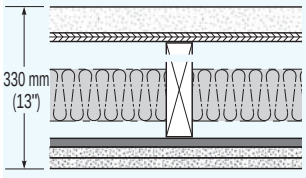
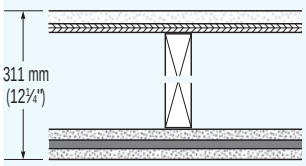
2 Hour Fire-rated Construction	Steel Bar Joist Framing (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance		Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**ARL**	**Index**
	• 13 mm (1/2″) LEVELROCK floor underlayment – type 10J2 steel joist spaced maximum 1220 mm (4′) o.c. • 16 mm (5/8″) or 19 mm (3/4″) FR-83, 19 mm (3/4″) FR-X1 or 19 mm (3/4″) Astro-FR • DXL, DXLA, DXLZ, DXLZA, SDXL, SDXLA or ZXLA susp exp grid system – 50 mm (2″) T&G building units – steel bar joists, 1220 mm (4′) o.c. – W8x31 beam	**UL Des G230**			SC2000 SA305	**6**
	• 13 mm (1/2″) LEVELROCK floor underlayment – 50 mm (2″) deep T&G building units – W8x20 steel beam – steel bar joists, 1220 mm (4′) o.c • 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel	**UL Des G516**			SA305	**7**

Performance Selector

Wood Framed

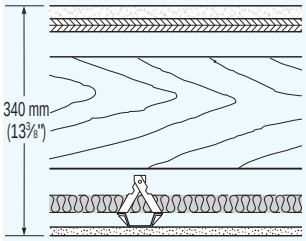
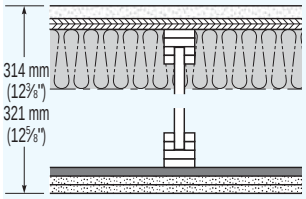
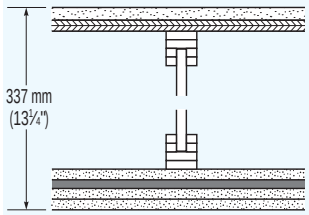
1 Hour Fire-rated Construction	Dimensional Lumber (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance			Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**ARL**	**Index**
clg. wt. 3 	• 13 mm (1/2″) or 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel, ceiling – 25 mm (1″) nominal wood sub and finished floor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. – joints finished • optional 19 mm (3/4″) LEVELROCK floor underlayment • optional SRM-25 sound mat or SRB sound board • optional veneer plaster	**ULC Des L512,** or **UL Des L512**				SA305 SA920	**8**
clg. wt. 3 	• 13 mm (1/2″) or 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel, ceiling – 25 mm (1″) nominal wood sub and finished floor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. • CGC DGL drywall suspension system – joints finished • optional 19 mm (3/4″) LEVELROCK floor underlayment in lieu of second layer of plywood • optional SRM-25 sound mat or SRB sound board	**UL Des L525**				SC2000 SA305	**9**
	• 19 mm (3/4″) LEVELROCK floor underlayment • 16 mm (5/8″) FR-83 or 19 mm (3/4″) FR-X1 lay-in acoustical panels • DXL™, DXLA™, DXLZ, DXLZA, SDXL or SDXLA susp exp grid system or 13 mm (1/2″) FC-CB gypsum panel – 15 mm (19/32″) T&G wood subfloor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c.	**UL Des L206**				SC2000 SA305	**10**
clg. wt. 3 	• 19 mm (3/4″) LEVELROCK floor underlayment • 16 mm (5/8″) SHEETROCK FIRECODE Core gypsum panel – joints finished – damper optional – 15 mm (19/32″) T&G wood subfloor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. • optional SRM-25 sound mat or SRB sound board	**UL Des L501**				SA305	**11**
clg. wt. 3 	• 13 mm (1/2″) SHEETROCK FIRECODE C Core gypsum panel – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. – Resilient channel spaced 610 mm (24″) o.c. – 15 mm (19/32″) T&G wood subfloor perpendicular • optional SRM-25 sound mat or SRB sound board • 19 mm (3/4″) LEVELROCK floor underlayment – insulation optional	**UL Des L502, L514**				SA305	**12**

Wood Framed

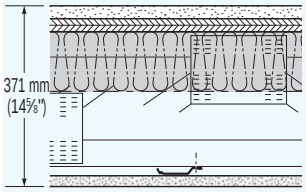
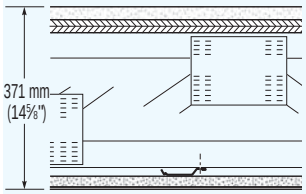
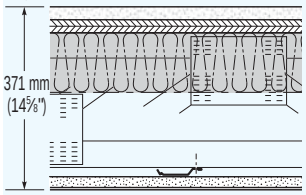
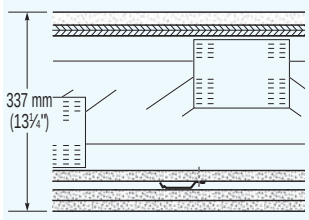
1 Hour Fire-rated Construction	Dimensional Lumber (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance			Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**ARL**	**Index**
	• 19 mm (3/4″) LEVELROCK floor underlayment – 12 mm (15/32″) wood structural panel perpendicular – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. – Resilient channel – Insulation optional-check UL Directory for proper placement over gypsum ceiling or under plywood subflooring • 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panels • optional SRB sound board or SRM-25 sound mat • CGC DGL drywall suspension system	**UL Des L569**	58	51	**RAL-TL-04-031 & RAL-IN-04-004** 25 mm (1″) LEVELROCK, vinyl, SRM-25 sound mat, 89 mm (3-1/2″) insulation	SA305	**13**
			59	54	**RAL-TL-04-033 & RAL-IN-04-006** 25 mm (1″) LEVELROCK, cushion vinyl, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			59	77	**RAL-TL-04-032 & RAL-IN-04-005** 25 mm (1″) LEVELROCK, carpet and pad, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			58	55	**RAL-TL-04-034 & RAL-IN-04-007** 25 mm (1″) LEVELROCK underlayment, engineered wood laminate, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			59	52	**RAL-TL-04-067 & RAL-IN-04-009** 25 mm (1″) LEVELROCK, ceramic tile, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			58	50	**RAL-TL-04-100 & RAL-IN-04-013** 19 mm (3/4″) LEVELROCK, cushion vinyl, SRB sound board, 89 mm (3-1/2″) insulation		
			59	73	**RAL-TL-04-097 & RAL-IN-04-010** 19 mm (3/4″) LEVELROCK, carpet and pad, SRB sound board, 89 mm (3-1/2″) insulation		
			58	51	**RAL-TL-04-099 & RAL-IN-04-012** 19 mm (3/4″) LEVELROCK underlayment, engineered wood laminate, SRB sound board, 89 mm (3-1/2″) insulation		
2 Hour Fire-rated Construction	(Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)						
	• 38 mm (1-1/2″) LEVELROCK floor underlayment • 2 layers 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel • optional SRM-25 sound mat or SRB sound board – 12 mm (15/32″) wood subfloor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. – 75 mm (3″) THERMAFIBER SAFB – Resilient channel	**UL Des L541**				SA305	**14**
	• 2 layers 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – 12 mm (15/32″) T&G wood subfloor – 50 mm x 250 mm (2x10) wood joist 406 mm (16″) o.c. – Resilient channel spaced 610 mm (24″) o.c. – joints finished • optional 19 mm (3/4″) minimum LEVELROCK floor underlayment • optional SRM-25 sound mat or SRB sound board	**UL Des L511**				SA305	**15**

Performance Selector

Wood Framed

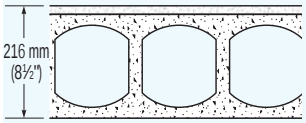
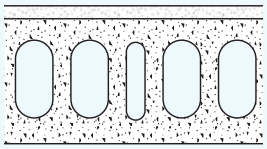
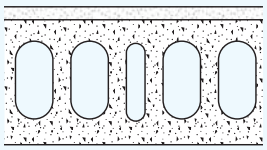
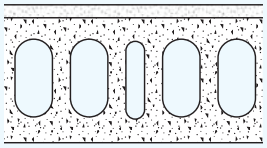
1 Hour Fire-rated Construction	Engineered Joist (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance			Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**ARL**	**Index**
clg. wt. 3  	• 13 mm (1/2″) or 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel • 19 mm (3/4″) LEVELROCK floor underlayment – 19 mm (3/4″) plywood perpendicular – 241 mm (9-1/2″) "I" wood joist spaced maximum 610 mm (24″) o.c. – metal furring channel 610 mm (24″) o.c. – 32 mm (1-1/4″) THERMAFIBER insulation laid over channel below joist – joints finished	**UL Des L530**				SA305	**16**
 	• 2 layers 13 mm (1/2″) SHEETROCK FIRECODE C Core gypsum panel • optional SRM-25 sound mat or SRB sound board – 15 mm (19/32″) wood subfloor – 241 mm (9-1/2″) deep "I" shaped wood joist 610 mm (24″) o.c. – Resilient channel spaced 406 mm (16″) o.c. • 19 mm (3/4″) minimum LEVELROCK floor underlayment	**UL Des L570**	64	58	**RAL-OT-03-05/06** 25 mm (1″) LEVELROCK underlayment, vinyl, SRM-25 sound mat, 89 mm (3-1/2″) insulation	SA305	**17**
			64	62	**RAL-OT-03-07/08** 25 mm (1″) LEVELROCK underlayment, engineered wood laminate, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			66	54	**RAL-OT-03-09/10** 25 mm (1″) LEVELROCK underlayment, ceramic tile, SRM-25 sound mat, 89 mm (3-1/2″) insulation		
			65	54	**RAL-OT-03-01/02** 19 mm (3/4″) LEVELROCK underlayment, vinyl, SRB sound board, 89 mm (3-1/2″) insulation		
			66	51	**RAL-OT-03-03/04** 19 mm (3/4″) LEVELROCK underlayment, ceramic tile, SRB sound board, 89 mm (3-1/2″) insulation		
			65	61	**RAL-OT-02-03/04** 19 mm (3/4″) LEVELROCK underlayment, engineered wood laminate, SRB sound board, 89 mm (3-1/2″) insulation		
2 Hour Fire-rated Construction	(Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)						
 	• 3 layers SHEETROCK FIRECODE C Core gypsum panel – 16 mm (5/8″) thick wood structural panels – 241 mm (9-1/2″) deep "I" shaped wood joist spaced 488 mm (19.2″) o.c. – Resilient channel spaced 406 mm (16″) o.c. • optional 19 mm (3/4″) LEVELROCK floor underlayment • optional SRB sound board or SRM-25 sound mat	**UL Des L538**				SA305	**18**

Wood Framed

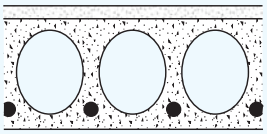
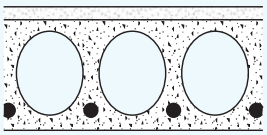
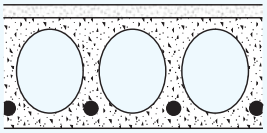
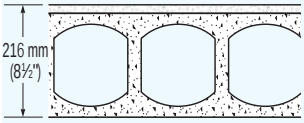
1 Hour Fire-rated Construction	Truss (Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)		Acoustical Performance			Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**IIC**	**Test Number**	**ARL**	**Index**
clg. wt. 3  	• 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – minimum 305 mm (12″) deep parallel chord wood truss, 610 mm (24″) o.c. – 19 mm (3/4″) plywood floor – Resilient channels spaced 406 mm (16″) o.c. – joints finished – optional ceiling damper • optional 19 mm (3/4″) minimum LEVELROCK floor underlayment • CGC DGL drywall suspension system – insulation optional – check UL Directory for Resilient channel spacing and proper placement over gypsum ceiling or under plywood subflooring	**UL Des L521, L550, L563**	62	53	**RAL-0T-04-01 & 02** 25 mm (1″) LEVELROCK underlayment, vinyl, SRM-25 sound mat, 89 mm (3-1/2″) insulation, 305 mm (12″) joist	SA305	**19**
			62	55	**RAL-0T-04-03 & 04** 25 mm (1″) LEVELROCK underlayment, cushion vinyl, SRM-25 sound mat, 89 mm (3-1/2″) insulation, 305 mm (12″) joist		
			62	80	**RAL-0T-04-05 & 06** 25 mm (1″) LEVELROCK underlayment, carpet and pad, SRM-25 sound mat, 89 mm (3-1/2″) insulation 305 mm (12″) joist		
			61	55	**RAL-0T-04-07 & 08** 25 mm (1″) LEVELROCK, engineered wood laminate, SRM-25 sound mat, 89 mm (3-1/2″) insulation, 305 mm (12″) joist		
			62	54	**RAL-0T-04-11 & 12** 25 mm (1″) LEVELROCK underlayment, ceramic tile, SRM-25 sound mat, 89 mm (3-1/2″) insulation, 305 mm (12″) joist		
			58	48	**RAL-TL-97-340 & IN-97-47** 19 mm (3/4″) LEVELROCK underlayment, vinyl, 89 mm (3-1/2″) insulation, 457 mm (18″) joist		
				76	**RAL-IN-97-48** 19 mm (3/4″) LEVELROCK underlayment, carpet and pad, 457 mm (18″) joist		
 	• 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – 18 mm (23/32″) T&G wood subfloor – parallel chord wood truss 610 mm (24″) o.c. – Resilient channel spaced 406 mm (16″) o.c. • 19 mm (3/4″) LEVELROCK floor underlayment	**UL Des L528**	53	60	**RAL-TL-04-321 & RAL-IN-04-019** 19 mm (3/4″) LEVELROCK underlayment, carpet and pad, resilient channel spaced 406 mm (16″) o.c., 24 oz. carpet, 305 mm (12″) joist	SA305	**20**
clg. wt. 3  	• 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – 18 mm (23/32″) T&G wood subfloor – 302 mm (11-7/8″) parallel chord wood truss 610 mm (24″) o.c. – Resilient channel spaced maximum 305 mm (12″) – 89 mm (3-1/2″) glass fiber insulation • 19 mm (3/4″) LEVELROCK floor underlayment	**UL Des L555**				SA305	**21**
2 Hour Fire-rated Construction	(Refer to ULC/UL Design Directory listings for loading conditions. See page 11.)						
 	• 19 mm (3/4″) LEVELROCK floor underlayment • 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel – parallel chord wood truss min. 305 mm (12″) depth, 610 mm (24″) o.c. – 18 mm (23/32″) T&G wood subfloor – Resilient channels – joints finished • optional SRM-25 sound mat or SRB sound board – insulation optional – check UL directory for proper placement over gypsum ceiling or under plywood subflooring	**UL Des L577**				SA305	**22**

Performance Selector

Precast Concrete Units (Unrestrained)

2 Hour Fire-rated Construction	Non-Load Bearing		Acoustical Performance		Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**ARL**	**Index**
	• 13 mm (1/2") LEVELROCK floor underlayment • optional SRM-25 sound mat or SRB sound board – 200 mm (8") minimum thick normal weight precast concrete units	**UL Des J991, J994**			SA305	**23**
	• 19 mm (3/4") LEVELROCK floor underlayment – 150, 200, 250, or 305 mm (6", 8", 10" or 12") thick precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping thickness should be a minimum of 25 mm (1") if using SRM-25 sound mat, 19 mm (3/4") for SRB sound board	**UL Des J927**			SA305	**24**
	• 19 mm (3/4") LEVELROCK floor underlayment – 150, 200, 250, or 305 mm (6", 8", 10" or 12") thick precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping thickness should be a minimum of 25 mm (1") if using SRM-25 sound mat, 19 mm (3/4") for SRB sound board	**UL Des K906**			SA305	**25**
3 Hour Fire-rated Construction						
	• 13 mm (1/2") LEVELROCK floor underlayment – 200-250 mm (8-10") thick precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping thickness should be a minimum of 25 mm (1") if using SRM-25 sound mat, 19 mm (3/4") for SRB sound board	**UL Des J924**			SA305	**26**

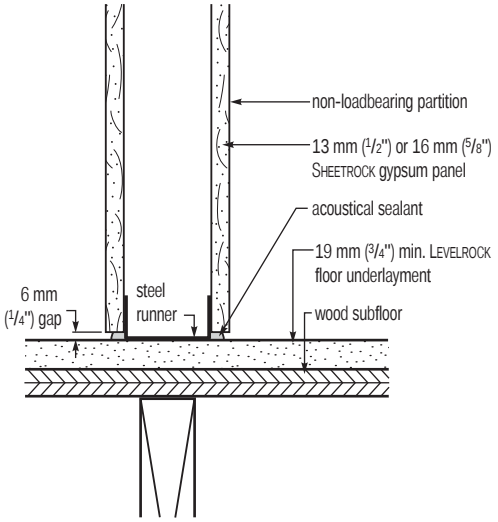
Precast Concrete Units (Restrained)

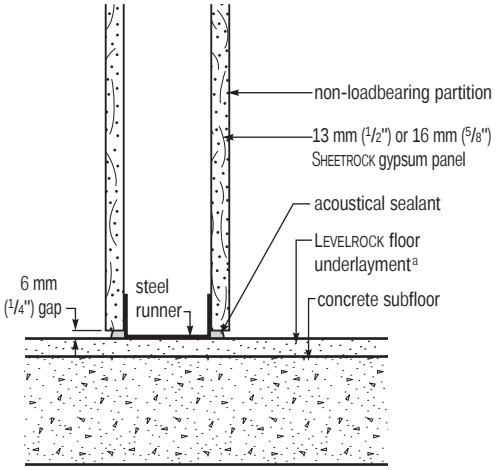
3 Hour Fire-rated Construction	Non-Load Bearing		Acoustical Performance		Reference	
Construction Detail	**Description**	**Test Number**	**STC**	**Test Number**	**ARL**	**Index**
	• 13 mm (1/2″) LEVELROCK floor underlayment – 200, 250 or 305 mm (8″, 10″ or 12″) thick precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping thickness should be a minimum of 25 mm (1″) if using SRM-25 sound mat, 19 mm (3/4″) sound board	**UL Des J931, J957**			SA305	**27**
	• 19 mm (3/4″) LEVELROCK floor underlayment – 200 mm (8″) thick precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping thickness should be a minimum of 25 mm (1″) if using SRM-25 sound mat, 19 mm (3/4″) sound board	**UL Des J966**			SA305	**28**
	• 19 mm (3/4″) LEVELROCK floor underlayment – precast concrete units • optional SRM-25 sound mat or SRB sound board – floor topping tickness should be a minimum of of 25 mm (1″) if using SRM-25 sound mat, 19 mm (3/4″) sound board	**UL Des J919, J920**			SA305	**29**
	• 25 mm (1″) LEVELROCK floor underlayment • optional SRM-25 sound mat or SRB sound board – 200 mm (8″) minimum thick normal weight precast concrete units	**UL Des J991, J994**			SA305	**30**

Flooring Details

Installed Before Drywall

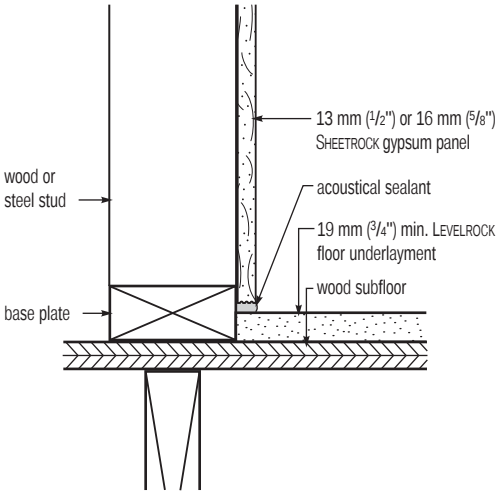
No Framing Open Floor

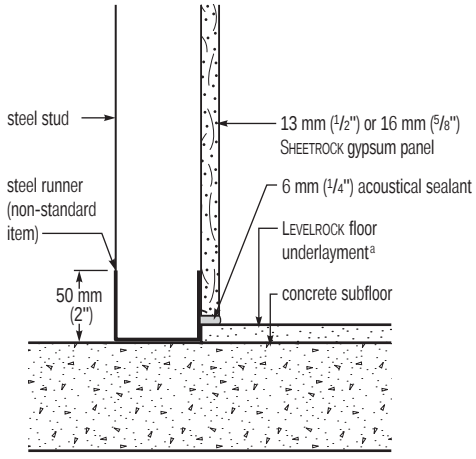




(a) Refer to product information for minimum thickness.

Without Sound Barrier

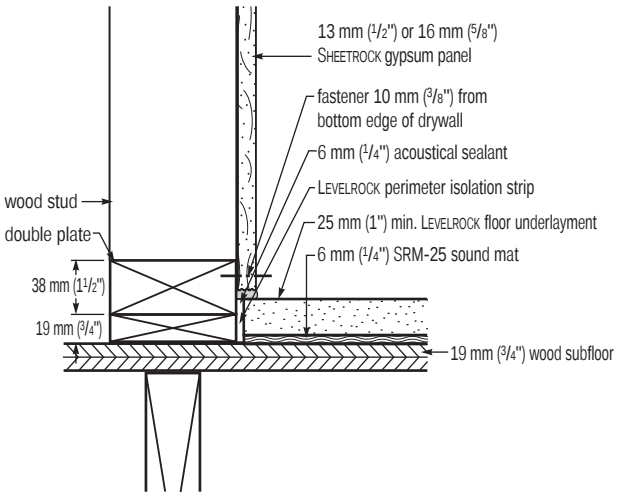


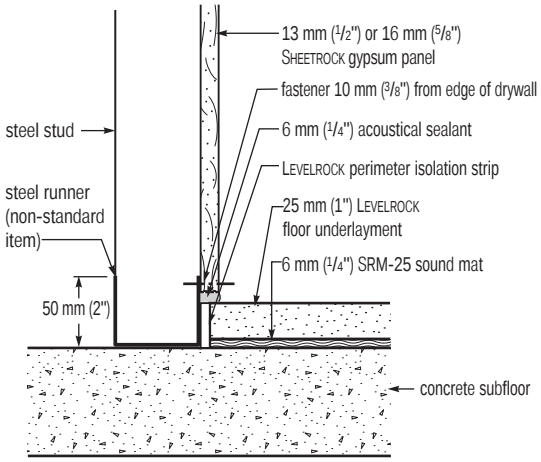


(a) Refer to product information for minimum thickness.

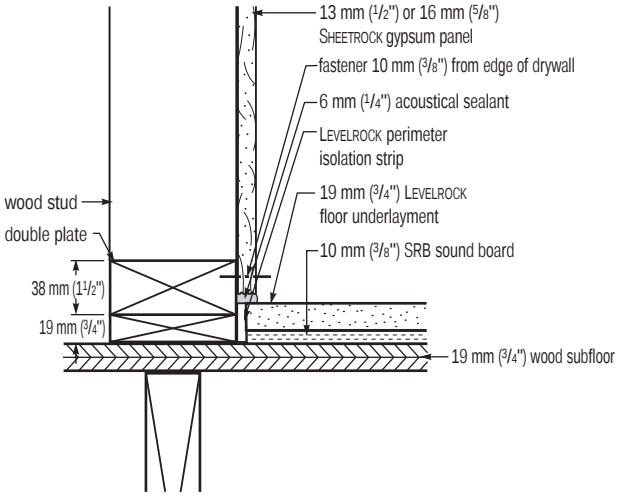
Installed Before Drywall

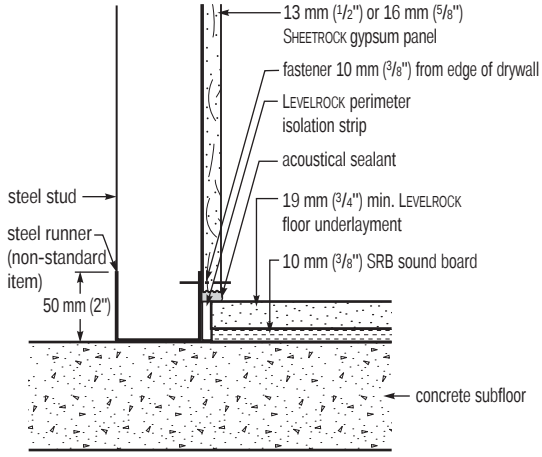
Over LEVELROCK SRM-25 Sound Mat





Over LEVELROCK SRB Sound Board

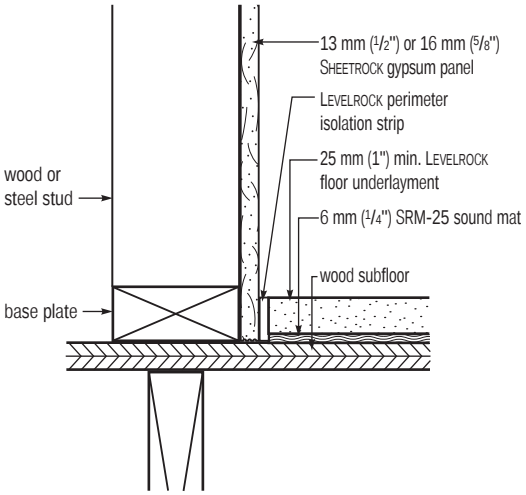


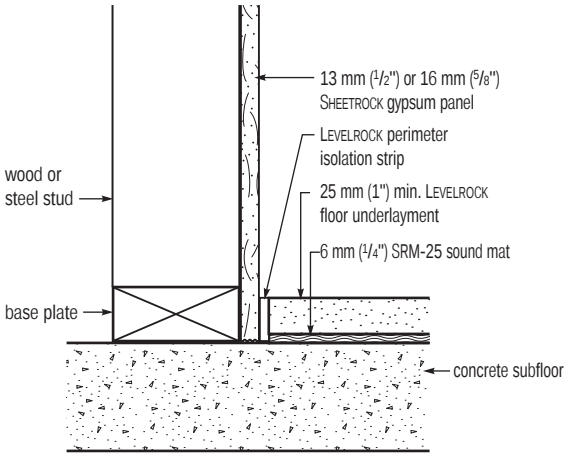


Flooring Details

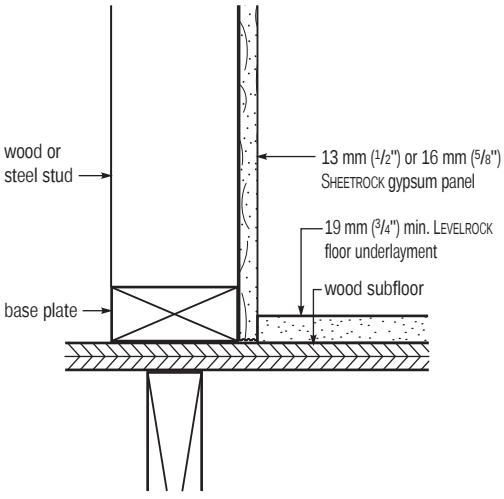
Installed After Drywall

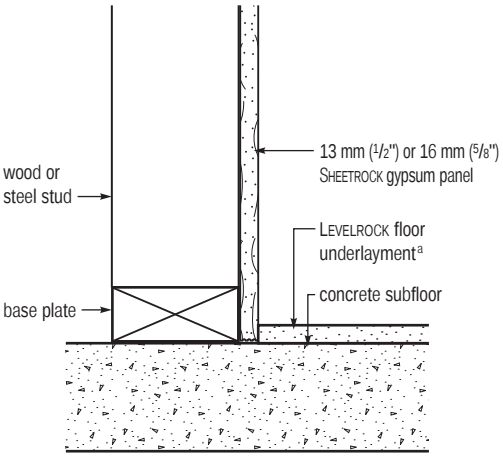
Over LEVELROCK SRM-25 Sound Mat





Without Sound Barrier

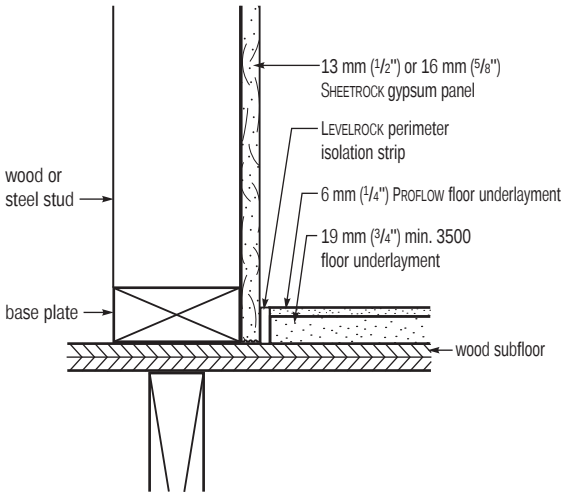


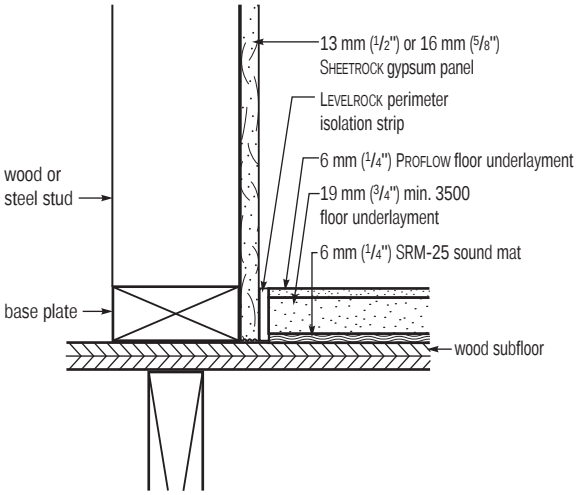


(a) Refer to product information for minimum thickness.

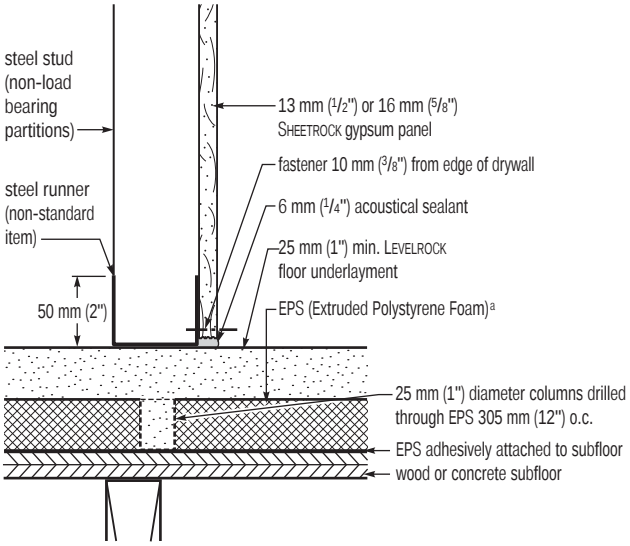
Installed After Drywall

LEVELROCK PROFLOW Over Wood Subfloor

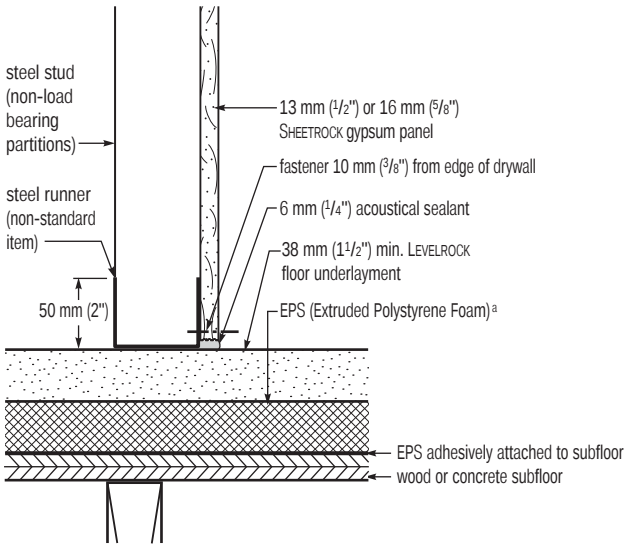




LEVELROCK Over EPS Foam



(a) EPS must meet physical properties of ASTM C578-85 for Type IV or Type IX Board

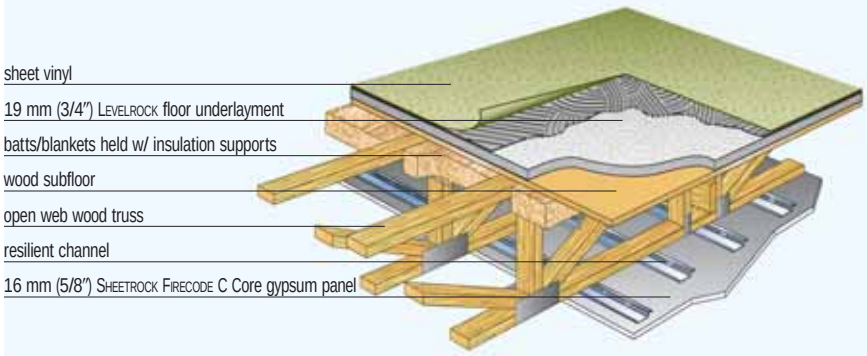


(a) EPS must meet physical properties of ASTM C578-85 for Type IV or Type IX Board

Design Details

Sound Control Systems

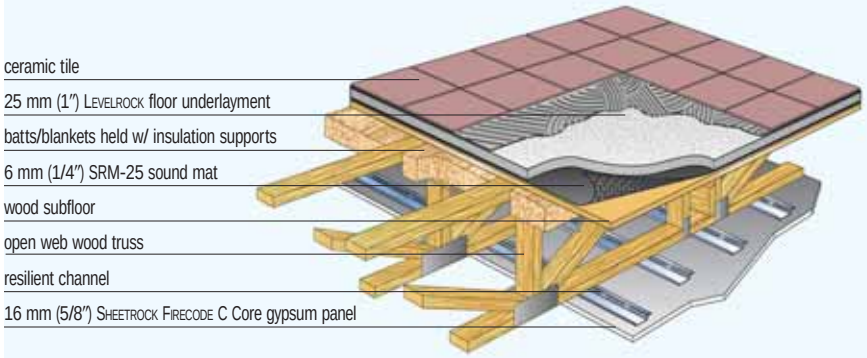
Sound System 1 (no sound mat) – UL Des L521



Open Web Wood Truss	Floor Covering	STC	IIC
	None	55	
	Sheet vinyl	58	48
	Carpet and pad		76

Note
Refer to UL Directory for proper resilient channel spacing based on placement of insulation. Sound test evaluated with 450 mm (18″) truss spaced 610 mm (24″) o.c.

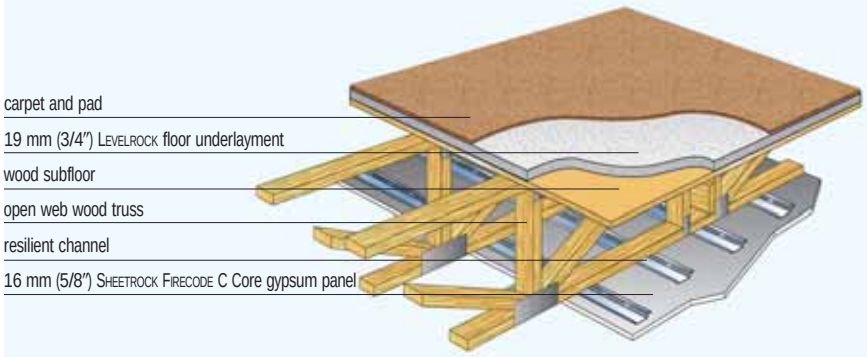
Sound System 2 (SRM-25 sound mat) – UL Des L521



	Sheet vinyl	62	53
	Cushioned vinyl	62	55
	Carpet and pad	62	81
	Ceramic tile	62	54
	Engineered wood laminate	61	55

Note
Refer to UL Directory for proper resilient channel spacing based on placement of insulation. Sound test evaluated with 305 mm (12″) truss spaced 610 mm (24″) o.c. Tile requires the use of crack isolation membrane.

Sound System 3 (no sound mat) – UL Des L528



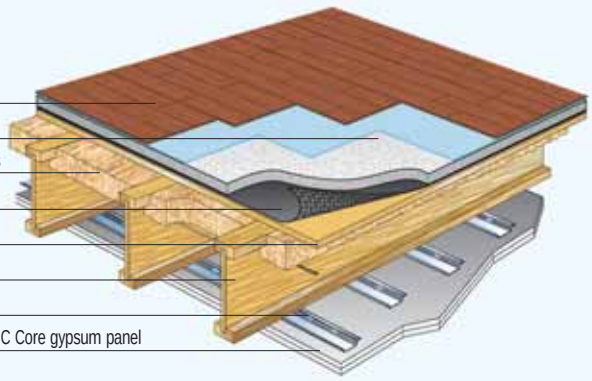
	24 oz. carpet and pad	53	60

Note
Sound test evaluated with 305 mm (12″) truss spaced 610 mm (24″) o.c.

Engineered Wood I-Joist	Floor Covering	STC	IIC

Sound System 4 (SRM-25 sound mat) – UL Des L570

engineered wood laminate
25 mm (1″) LEVELROCK floor underlayment
batts/blankets held w/ insulation supports
6 mm (1/4″) SRM-25 sound mat
wood subfloor
engineered wood I-joist
resilient channel
2 layers 13 mm (1/2″) SHEETROCK FIRECODE C Core gypsum panel

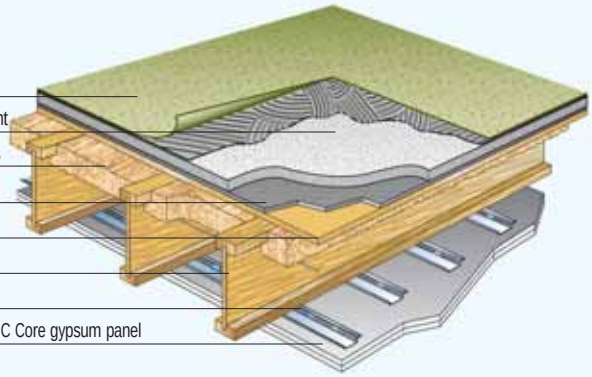


Floor Covering	STC	IIC
Sheet vinyl	64	58
Ceramic tile	66	54
Engineered wood laminate	64	62

Note
Refer to UL Directory for proper resilient channel spacing based on placementof insulation. Sound test evaluated with 240 mm (9-1/2″) engineered wood i-joist spaced 610 mm (24″) o.c.

Sound System 5 (SRB sound board) – UL Des L570

sheet vinyl
19 mm (3/4″) LEVELROCK floor underlayment
batts/blankets held w/ insulation supports
10 mm (3/8″) SRB sound board
wood subfloor
engineered wood I-joist
resilient channel
2 layers 13 mm (1/2″) SHEETROCK FIRECODE C Core gypsum panel



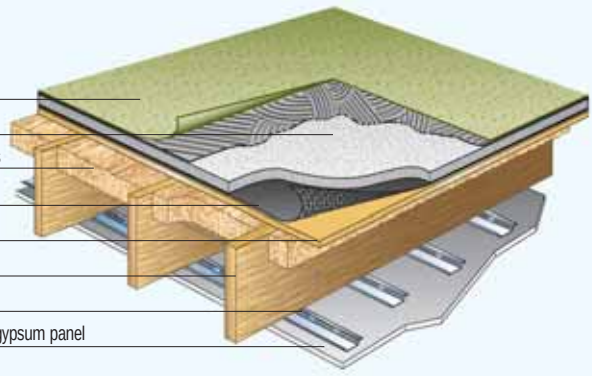
Floor Covering	STC	IIC
None	65	
Sheet vinyl	65	54
Ceramic tile	66	51
Engineered wood laminate	65	61

Note
Refer to UL Directory for proper resilient channel spacing based on placement of insulation. Sound test evaluated with 240 mm (9-1/2″) engineered wood i-joist spaced 610 mm (24″) o.c.

50 x 250 mm (2 x 10) Wood Joist	Floor Covering	STC	IIC

Sound System 6 (SRM-25 sound mat) – UL Des L569

sheet vinyl
25 mm (1″) LEVELROCK floor underlayment
batts/blankets held w/ insulation supports
6 mm (1/4″) SRM-25 sound mat
wood subfloor
50 x 250 mm (2 x 10) wood joist
resilient channels
16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel



Floor Covering	STC	IIC
Sheet vinyl	58	51
Cushioned vinyl	59	54
Carpet and pad	59	77
Ceramic tile	59	52
Engineered wood laminate	58	55

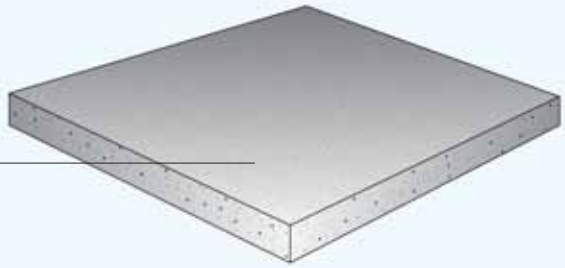
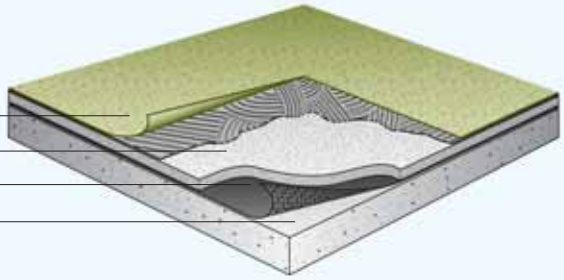
Note
Refer to UL Directory for proper resilient channel spacing based on placement of insulation. Sound test evaluated with 50 x 250 mm (2x10) wood joist spaced 406 mm (16″) o.c.

Design Details

Sound Control Systems

50 x 250 mm (2 x 10) Wood Joist	Floor Covering	STC	IIC
Sound System 7 (SRB sound board) – UL Des L569			
cushioned vinyl 19 mm (3/4″) LEVELROCK floor underlayment batts/blankets held w/ insulation supports 10 mm (3/8″) SRB sound board wood subfloor 50 x 250 mm (2 x 10) wood joist resilient channels 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel	Cushioned vinyl	58	50
	Carpet and pad	59	73
	Engineered wood laminate	58	51
	Note Refer to UL Directory for proper resilient channel spacing based on placement of insulation. Sound test evaluated with 50 x 250 mm (2x10) wood joist spaced 406 mm (16″) o.c.		

Steel Joist	Floor Covering	STC	IIC
Sound System 8 (SRM-25 sound mat) – UL Des G551			
25 mm (1″) LEVELROCK floor underlayment batts/blankets held w/ insulation supports 6 mm (1/4″) SRM-25 sound mat LEVELROCK floor underlayment corrugated steel deck minimum 0.85 mm (22 gauge) 356 mm (14″) 1.8 mm (14 gauge) steel joist CGC drywall suspension system 16 mm (5/8″) SHEETROCK FIRECODE C Core gypsum panel	Sheet vinyl	64	55
	Carpet and pad	63	81
	Ceramic tile	65	51
	Engineered wood laminate	63	58

Concrete Slab	Floor Covering	STC	IIC
Sound System 9 (no sound mat) – Concrete slab			
150 mm (6″) concrete slab 	None		26
Sound System 10 (SRM-25 sound mat) – Concrete slab and LEVELROCK Floor Underlayment			
sheet vinyl 25 mm (1″) LEVELROCK floor underlayment 6 mm (1/4″) SRM-25 sound mat 150 mm (6″) concrete slab 	Sheet vinyl	56	49
	Carpet and pad		77
	Ceramic tile	56	51
	Engineered wood laminate	54	50
	25 mm (1″) LEVELROCK bare floor		50

Good Design Practices

Use this section as a reference if questions arise during the design or application of LEVELROCK floor underlayment systems.

This section is an overview of design, application, installation and safety considerations that should be addressed when CGC Inc's products and systems are used. This section outlines some major issues, but is not intended to be a comprehensive review.

CGC Inc. recommends that architects and contractors seek the assistance of safety professionals, especially at the construction site, because there are many factors to consider that are not included here. For more information on safety and material handling, please refer to Chapter 13 of *The Gypsum Construction Handbook, Centennial Edition.*

1	**System Performance**	CGC Inc. conducts tests on products and systems to establish that products meet performance requirements of various jurisdictional agencies. Upon written request we will provide test certification for published fire, sound, durability and other pertinent data covering systems designed and constructed according to our published specifications. Substitutions of any components are not recommended or supported by CGC Inc. Systems covered herein have been tested and evaluated for use as described. For other system applications, consult your local representative. All details, specifications and data contained in this literature are intended as a general guide. These products must not be used in a design or construction of any structure without complete and detailed evaluation by a qualified structural engineer or architect to verify suitability of a particular product for use in the structure. Information in this publication should be used only for LEVELROCK floor underlayment, as physical properties of competitive products may vary. CGC Inc. assumes no liability for failure resulting from the use of alternative materials or application or installation not specified herein.
2	**Floor Design**	Subfloor systems shall be designed for a deflection limit of L/360 for the span. The design live loads and dead loads shall be included in the deflection calculation.
3	**Building Joints**	Carry joints through the underlayment at the same width and configuration as the building joints.

4	**Standards**	The following standards apply to LEVELROCK poured gypsum underlayments: – 24 MPa (3500 psi) minimum compressive strength for commercial vinyl – Compressive strengths are tested in accordance with ASTM C472-99 for gypsum cement and ASTM C109 modified for engineered cement – Sand analysis determining proper particle distribution tested in accordance with ASTM C136-01 – Surface drying or moisture content tested in accordance with ASTM F1869 Calcium Chloride for engineered cement, ASTM D4263 for gypsum cement – Robinson Floor tested in accordance with ASTM C627 for ceramic tile
5	**Runner Track Attachment**	Gas-charged systems have performed well for fastening of runner track to LEVELROCK floor underlayment products. Powder-actuated systems are not recommended; refer to fastener manufacturer recommendations for embedment depths.

Application Guide Specifications

This guide is provided to assist you in specification of LEVELROCK Floor Underlayments. If you have additional questions or would like more information regarding this or other CGC products and systems, please contact CGC at 800 387.2690.

Part 1: General

1.1 Scope

Specify to meet project requirements.

1.2 Qualifications

All materials, unless otherwise indicated, shall be manufactured by CGC Inc. or United States Gypsum Company and shall be installed in accordance with its current printed directions by LEVELROCK floor underlayment authorized applicators.

1.3 Delivery and Storage of Materials

All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure from the elements. Damaged or deteriorated materials shall be removed from the premises.

1.4 Site Conditions

Before, during and after installation of product, building interior shall be enclosed and maintained at a temperature above 10 °C (50 °F). Do not install when ambient air temperatures exceed 49 °C (120 °F).

Part 2: Mixing

2.1 Products

A. Gypsum Cement

- LEVELROCK 2500 floor underlayment 17 - 22 MPa (2500-3200 psi)
- LEVELROCK 2500 green floor underlayment 17 - 22 MPa (2500-3200 psi)
- LEVELROCK 3500 floor underlayment 24 - 27 MPa (3500-4000 psi)
- LEVELROCK 3500 green floor underlayment 24 - 27 MPa (3500-4000 psi)
- LEVELROCK 4500 floor underlayment 31 - 38 MPa (4500-5500 psi)
- LEVELROCK RH floor underlayment 17 - 22 MPa (2500-3200 psi)
- LEVELROCK RH green floor underlayment 17 - 22 MPa (2500-3200 psi)
- LEVELROCK commercial RH floor underlayment 24 - 27 MPa (3500-4000 psi)
- LEVELROCK commercial RH green floor underlayment 24 - 27 MPa (3500-4000 psi)
- LEVELROCK PROFLOW floor underlayment 41 - 55 MPa (6000-8000 psi)
- LEVELROCK CSD floor underlayment 24 - 27 MPa (3500-4000 psi)

B. Engineered Cement

- LEVELROCK SLC 200 floor underlayment (38 MPa (5500 psi) @ 28 days)
- LEVELROCK SLC 300 floor underlayment (30 MPa (4350 psi) @ 28 days)
- LEVELROCK SLC 400 floor underlayment (30 MPa (4350 psi) @ 28 days)

C. Floor Primer

Use LEVELROCK floor primer (ready mix, powdered and concentrate) over approved subfloor as specified by manufacturer.

D. Concrete Primer

Use LEVELROCK concrete primer over concrete substrates as specified.

E. CSD Primer

Use LEVELROCK CSD primer over corrugated steel deck substrate as specified by manufacturer.

F. Sand

Washed sand complying with specifications published in the LEVELROCK floor underlayment applicator's manual.

Note: PROFLOW underlayment and engineered cements are presanded at the factory. Other LEVELROCK floor underlayments may be ordered presanded for jobsite convenience.

G. Water

Potable, free from impurities.

H. Surface Enhancer

Use LEVELROCK SE-100 surface enhancer over applications of LEVELROCK floor underlayment excluding 4500 floor underlayment.

I. Sound Reduction Board

LEVELROCK SRB sound board.

J. Sound Reduction Mat

LEVELROCK SRM-25 sound mat.

K. Perimeter Isolation Strip

LEVELROCK perimeter isolation strip.

2.2 Mixing Proportions—Gypsum Cement

General Note: Do not over water. Refer to submittal sheet for additional information.

2500 Floor Underlayment

Add 17 L to 19 L (4.5 to 5.0 US gallons) of water, one 36 kg. (80 lb.) bag of 2500 floor underlayment and sand volume not to exceed .05 cu m (1.9 cu. ft.) For POURABLE BEFORE DRYWALL process, add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of 2500 floor underlayment and sand volume not to exceed .045 cu m (1.6 cu. ft.)

2500 Green Floor Underlayment

Add 17 L to 19 L (4.5 to 5.0 US gallons) of water, one 36 kg. (80 lb.) bag of 2500 green floor underlayment and sand volume not to exceed .05 cu m (1.9 cu. ft.) For POURABLE BEFORE DRYWALL process, add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of 2500 green floor underlayment and sand volume not to exceed .045 cu m (1.6 cu. ft.)

3500 Floor Underlayment

Add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of 3500 floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

3500 Green Floor Underlayment

Add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of 3500 green floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

4500 Floor Underlayment

Add 13 L to 15 L (3.5 to 4.0 US gallons) of water, one 36 kg. (80 lb.) bag of 4500 floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

RH Floor Underlayment

Add 17 L to 19 L (4.5 to 5.0 US gallons) of water, one 36 kg. (80 lb.) bag of LEVELROCK RH floor underlayment and sand volume not to exceed .05 cu m (1.9 cu. ft.)

RH Green Floor Underlayment

Add 17 L to 19 L (4.5 to 5.0 US gallons) of water, one 36 kg. (80 lb.) bag of LEVELROCK RH green floor underlayment and sand volume not to exceed .05 cu m (1.9 cu. ft.)

Application Guide Specifications

Commercial RH Floor Underlayment

Add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of LEVELROCK commercial RH floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

Commercial RH Green Floor Underlayment

Add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of LEVELROCK commercial RH green floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

PROFLOW Floor Underlayment

Use only 4 L to 5 L (1.1 to 1.3 US gallons) of water for the 27 kg. (60 lb.) bag. Do not over water, as it will greatly impact product performance.

CSD Floor Underlayment

Add 15 L to 17 L (4.0 to 4.5 US gallons) of water, one 36 kg. (80 lb.) bag of CSD floor underlayment and sand volume not to exceed .04 cu m (1.4 cu. ft.)

2.3 Mixing Proportions—Engineered Cement

SLC 200 Floor Underlayment

Add 4 L to 5 L (1.1 to 1.3 US gallons) of water, one 27 kg. (60 lb.) bag of SLC 200 floor underlayment.

SLC 300 Floor Underlayment

Add 4 L to 5 L (1.1 to 1.3 US gallons) of water, one 25 kg. (55 lb.) bag of SLC 300 floor underlayment.

SLC 400 Floor Underlayment

Add 4 L to 5 L (1.1 to 1.3 US gallons) of water, one 25 kg. (55 lb.) bag of SLC 400 floor underlayment.

2.4 Mixing Proportions—Primers and Sealers

LEVELROCK Floor Primer (Ready Mix)

Apply LEVELROCK floor primer (ready mix) with a short nap paint roller, coarse fiber broom or a HUDSON® sprayer. Apply material at a rate of 10 sq m per liter (400 sq. ft. per US gallon) and do not allow puddles to form or remain on surface. Allow material to dry for 1 hour minimum prior to application of underlayments. Always use full strength. Clean tools with water before material dries.

LEVELROCK Floor Primer (Powdered)

Mix LEVELROCK floor primer (11 kg. (25 lb.) powdered bag) with 53 L (14 US gallons) of water and apply material with a short nap paint roller, coarse broom or HUDSON sprayer. Apply at a rate of 7 sq m per liter (300 square feet per US gallon) for a total coverage of 479 sq m (5,150 square feet.)

LEVELROCK Floor Primer (Concentrate)

Before applying LEVELROCK floor primer (concentrate) to the floor, mix with equal portions of water. For example, mix 10 liters concentrate to 10 liters of water in a 20 liter pail. Follow application instructions for LEVELROCK floor primer (ready mix).

LEVELROCK Concrete Primer

Mix by volume 1 part LEVELROCK concrete primer with 4 parts potable water in a clean mixing container. It is recommended that the LEVELROCK concrete primer be added to water. Stir gently to achieve a homogenous state. To prevent inducement of air and subsequent bubbles, do not over stir or use high-speed mixers.

LEVELROCK CSD Primer

Before applying LEVELROCK floor primer (concentrate) to the floor, mix with equal portions of water. For example, mix 10 liters concentrate to 10 liters of water in a 20 liter pail. Follow application instructions for LEVELROCK floor primer (ready mix).

Part 3: Execution

3.1 Preparation

A. Application shall not begin until the building is enclosed, including roof, windows, doors and other apertures.

B. Subfloor shall be structurally sound. Contractor shall clean subfloor to remove mud, oil, grease and other contaminating factors before arrival of the underlayment crew. Check that substrates are dry, smooth and clean. Apply leak prevention material to openings and voids. (Set temporary dams as needed.) Treat cracks with a premium latex-modified cementitious patching material. Concrete subfloors to receive SLC 200, SLC 300 and SLC 400 must be shot blasted or scarified following recommendations as outlined in the International Concrete Repair Institute Guideline No. 03732, Concrete Surface Profile 4 (CSP4).

C. **Wood Substrate**

When SLC 200 or SLC 300 floor underlayment is to be installed over wood framing, use galvanized metal lath for crack resistance. Apply LEVELROCK floor primer prior to application of LEVELROCK floor underlayment. Mix until primer is uniform. Apply primer with a short nap paint roller, coarse fiber broom or a HUDSON sprayer. Apply material at a rate of 10 sq m per liter (400 sq. ft. per US gallon) and do not allow puddles to form or remain on surface. Allow material to dry for 45 minutes prior to application of LEVELROCK floor underlayment. Use from mixed container. Do not further dilute. Clean tools with water before material dries.

D. **Concrete Substrate**

Apply LEVELROCK concrete primer prior to application of LEVELROCK floor underlayment. As a primer for porous concrete broom or spray, apply a coat of materials made by blending 1 part concrete primer to 4 parts water and apply at a rate of 7 sq m per liter (300 sq. ft. per US gallon). The second coat consists of concrete primer diluted 1 to 1 with water and applied at a rate of 7 sq m per liter (300 sq. ft. per US gallon). For extremely porous floors, an additional coat of concrete primer diluted 1 to 1 may be needed.

E. **LEVELROCK Perimeter Isolation Strip**

When sound system is required, Apply LEVELROCK perimeter isolation strip against the wall by stapling using spray adhesive or taping to the wall. **Note:** Excess material, depending on floor thickness, will be cut flush and staples removed.

3.2 Application of Sound Boards and Mats

During the entire installation process, the building must be enclosed and the subfloor protected from rain and snow. The subfloor must be clean, dry and free of debris. SRB sound board or SRM-25 sound mat must be clean, dry and free of debris. SRB sound board or SRM-25 sound mat are applied to the subfloor with edges tightly fit. Cut board or mat with a utility knife to fit tightly against LEVELROCK perimeter isolation strip. Offset joints 203 mm-305 mm (8″-12″) from the subfloor joints. Joints and LEVELROCK perimeter isolation strip should be taped to prevent leakage. Apply LEVELROCK floor primer to the entire surface to provide maximum bond between the SRB sound board or SRM-25 sound mat and the LEVELROCK floor underlayment. For SRB sound board only, stagger the joints a minimum of 406 mm (16″) o.c. so that four panel corners never meet. Refer to submittal sheet IG1619 for more information on SRM-25 sound mat installation.

3.3 Application of Gypsum Cement Flooring

A. Place cementitious flooring 19 mm (3/4″) minimum thickness over wood subfloor; 6 mm (1/4″) minimum thickness over concrete subfloor depending on product being used. Apply 25 mm (1″) over SRM-25 sound mat, and 19 mm (3/4″) over SRB sound board. Immediately spread and screed product to a smooth surface. Except at building joints, place product as continuously as possible until application is complete, so that no slurry is placed against product that has obtained its initial set.

B. General contractor shall provide continuous ventilation and adequate heat to remove moisture from the area until the underlayment is dry. Rate of moisture removal is .02 kg/sq m/day (0.5 lbs./sq.ft./day.)

Application Guide Specifications

3.4 Application of Engineered Cement Flooring

A. Place desired thickness from feather edge minimum up to 50 mm (2″) over properly prepared subfloor. Immediately spread and screed product to a smooth surface without overworking the material. Except at building joints, place product as continuously as possible until application is complete, so that no slurry is placed against product that has obtained its initial set.

B. General contractor shall provide continuous ventilation and adequate heat to remove moisture from the area until the underlayment is dry. Rate of moisture removal is .02 kg/sq m/day (0.5 lbs./sq.ft./day.)

3.5 Alternate: Application of Flooring Prior to Drywall Installation

A. Subfloor shall be structurally sound. Subfloor shall be clean and free of mud, oil, grease and other contaminating factors before underlayment installation. Substrates shall be dry, smoothed and clean. All cracks and voids shall be filled to reduce leaking of wet underlayment material before drying (use of temporary dams is acceptable).

B. Combine water, 2500 floor underlayment and sand, volume not to exceed .045 cu m (1.6 cu. ft.) Do not over water. Water amount will change with wetness of sand. 3500 floor underlayment may also be used for this application applied under manufacturer's standard mixing proportions.

C. At substrate expansion, isolation and other moving joints, allow joint of same width to continue through underlayment.

D. For heavy and prolonged trade traffic, areas should be protected with plywood.

3.6 Preparation for Installation of Glue-Down Floor Goods

After the underlayment has set, apply SE-100 surface enhancer to the gypsum cementitious underlayment. For 4500 floor underlayment, apply LEVELROCK concrete primer as a sealer. Where floor goods manufacturers require special adhesive or installation systems, the requirements of the manufacturer supersede these ecommendations. Damaged underlayment areas need to be repaired prior to the application of the surface enhancer to the underlayment. All LEVELROCK floor underlayment must be dry prior to sealing. Determine dryness by manufacturer's recommendations.

3.7 Field Quality Control

A. Gypsum cementitious underlayment mix shall be tested for slump as it is being pumped using a 50 mm (2″) (i.d.) x 100 mm (4″) cylinder resulting in a patty size of 216 mm to 241 mm (8-1/2″ to 9-1/2″) diameter.

B. Engineered cementitious underlayment mix due to its flowability shall be tested for a slump as it is being pumped using a 50 mm (2″) (i.d.) x 25 mm (1″) cylinder resulting in a patty size of 140 mm to 152 mm (5-1/2″ to 6″) diameter.

C. Samples should be tested according to manufacturer's requirements for compressive strength and durability.

About the cover:

Project

IN-N-OUT Burger Restaurant

Los Angeles, CA

Recipient of the 2002 AIA Honor Award

Architects

Kanner Architects

Los Angeles, CA

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CGC Inc., will provide metric conversions on its products and systems to help specifiers match metric design sizes. In addition, some products are available in metric dimensions from selected manufacturing plants. Refer to SA100, *Fire-Resistant Assemblies,* for additional information and a Table of Metric Equivalents.

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