

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
 - Authorities Having Jurisdiction should be consulted before construction.
 - Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
 - When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
 - Only products which bear UL's Mark are considered Certified.
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BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

Design No. **L541**

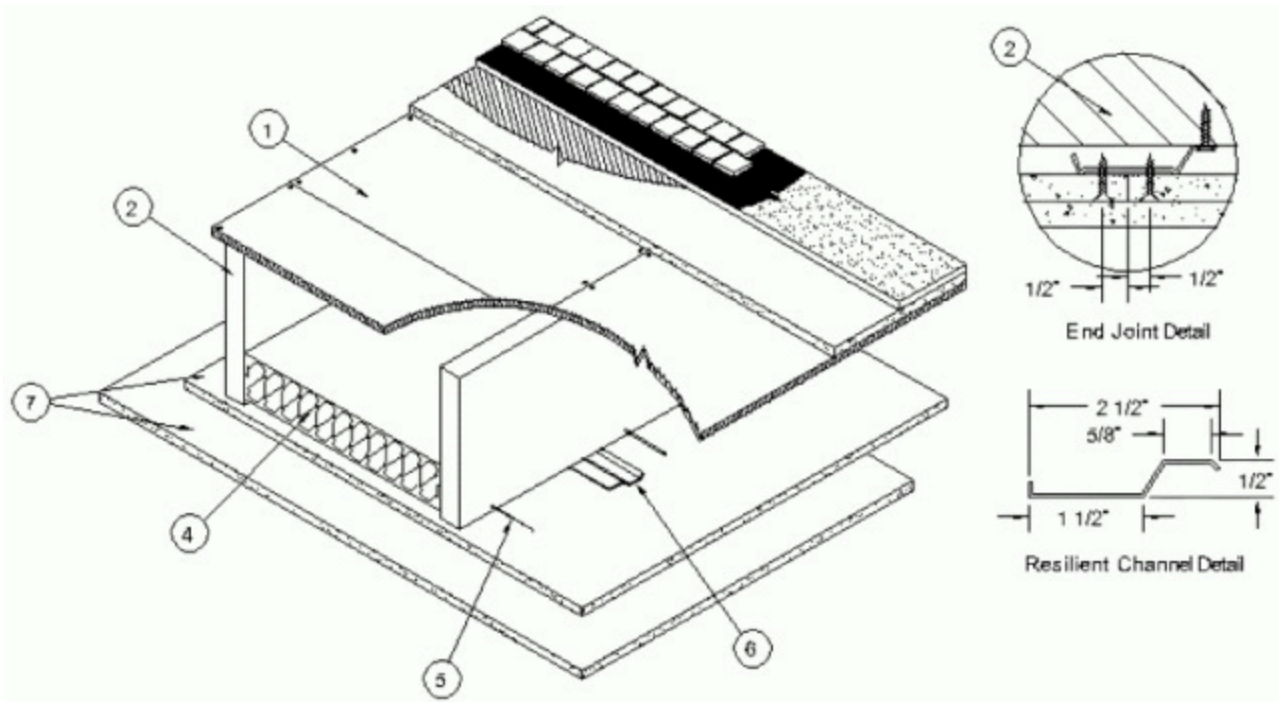
June 30, 2025

Unrestrained Assembly Rating — 2 Hr.

Finish Rating — 74 Min.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Flooring Systems** — The flooring system shall consist of one of the following:

System No. 1

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Liner Panels - Gypsum Board* — Nom 1 in. thick gypsum board liner panels, supplied in 24 in. widths, to be loosely laid over subflooring with end joints centered over wood joists and staggered min 16 in. between adjacent lengths. Side joint offset 12 in. from subflooring side joints.

CGC INC — Type SLX

UNITED STATES GYPSUM CO — Type SLX

USG BORAL DRYWALL SFZ LLC — Type SLX

USG MEXICO S A DE C V — Type SLX

Damping Compound - (Optional) — Applied to top surface of 1 in. thick gypsum board liner panels with a 1/4 in. square notched trowel for sound control.

Cementitious Backer Units* — Nom 1/2 or 5/8 in. thick, square edge backer units attached to wood joists with 2-5/8 in. long Type S, corrosion resistant, wafer-head steel screws spaced 8 in. OC at the perimeter and in the field. End joints to be centered over wood joists and staggered min 32 in. between adjacent lengths. Side joints offset 12 in. from those of the gypsum board liner panels. Joints covered with glass fiber mesh tape.

UNITED STATES GYPSUM CO — Type DCB

Bond Coat for Setting Tile-Latex — Modified Portland cement mortar or ANSI AI36.1 Type I organic adhesive applied with a 1/4 in. square notched trowel.

Ceramic Tile — Nom 1/4 in. thick ceramic tile with joints filled with grout.

System No. 2

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Liner Panels - Gypsum Board* — Nom 1 in. thick gypsum board liner panels, supplied in 24 in. widths, to be loosely laid over subflooring with end joints centered over wood joists and staggered min 16 in. between adjacent lengths. Side joint offset 12 in. from subflooring side joints.

CGC INC — Type SLX

UNITED STATES GYPSUM CO — Type SLX

USG MEXICO S A DE C V — Type SLX

Damping Compound - (Optional) — Applied to top surface of 1 in. thick gypsum board liner panels with a 1/4 in. square notched trowel for sound control.

Finish Flooring - (Not Shown) — Min 7/16 in. thick oriented strand board (OSB), min grade Exposure 1 bearing the marking "NER-QA 397, HUD-MR 1050". Oriented strand board end joints centered over wood joists and staggered min 16 in. between adjacent lengths. Side joints offset 12 in. from gypsum board liner panel side joints. OSB secured with 2-5/8 in. long Type S bugle head steel screws spaced 12 in. OC at the perimeter and in the field.

System No. 3

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* - (Optional) — Nom 1/4 in. thick floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under **Floor Topping Mixture**.

GRASSWORX L L C — Type SC50

Alternate Floor Mat Material* — (Optional) - Floor mat material nominal 3/8 in. thick loose laid over the subfloor. Floor topping shall be a min 1-1/2 in. thick.

System No. 4

Structural Cement-Fiber Units* — Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to wood trusses with end joints staggered a min of 2 ft and centered over the trusses. Panels secured to wood trusses with 1-5/8 in. long, No. 8, self-countersinking wood screw spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the end edges of the panel.

UNITED STATES GYPSUM CO — Types STRUCTO-CRETE, USGSP

Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

Floor Mat Materials* — (Optional) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

System No. 5

Structural Cement-Fiber Units* — For use with UNITED STATES GYPSUM CO Types C, IP-X2, IPC-AR and ULIX gypsum boards only. Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to wood trusses with end joints staggered a min of 2 ft and centered over the trusses. Panels secured to wood trusses with 1-5/8 in. long, No. 8, self-countersinking wood screw spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the end edges of the panel.

UNITED STATES GYPSUM CO — Types STRUCTO-CRETE, USGSP

System No. 6

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Floor Mat Materials* - (Optional) — Floor mat material nom 1/8 in. (3mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 1/4 in. (6mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 250 and FIRM-FILL SCM 250+

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 3/8 in. (10mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 400 and FIRM-FILL SCM 400+

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 3/4 in. (19mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38mm)

HACKER INDUSTRIES INC — Types FIRM-FILL SCM 750 and FIRM-FILL SCM 750+

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 5/64 in. (2mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of floor-topping mixture. When floor mat material is used, min thickness of floor topping mixture is 1-1/2 in (38mm).

HACKER INDUSTRIES INC — Type Hacker Sound-Mat

Alternate Floor Mat Materials - (Optional) — Floor mat material nom 1/4 in. (6mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/2 in. (38mm) of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat II.

Metal Lath (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring - Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant

System No. 7

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Mixture shall consist of 5 to 8 gal of water to 80 lbs of floor topping mixture to 2.1 cu ft of sand. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

ULTRA QUIET FLOORS — UQF-A, UQF-Super Blend, UQF-Plus 200

System No. 8

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement - (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) - 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 9

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Floor - Mineral and Fiber Board* — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

System No. 10

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC .

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.4 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

ELASTIZELL CORP OF AMERICA — Type FF

System No. 11

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade C-D. Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound — (Optional) Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

FORMULATED MATERIALS LLC — Types FR-25, FR-30, SiteMix, and Treadstone Advantage

Alternate Floor Mat Material* — (Optional) Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 1-1/2 in.

FORMULATED MATERIALS LLC — Types M1, M2, M3, Elite, Duo, R1, and R2

System No. 12

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ARCOSA SPECIALTY MATERIALS — AccuCrete® Types NexGen, Green, Prime and PrePour, AccuRadiant®, AccuLevel® Types G40, G50 and SD30

Alternate Floor Mat Material* - (Optional) - Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 1-1/2 in.

ARCOSA SPECIALTY MATERIALS — AccuQuiet® Types D13, D-18, D25, DX38, EM.125, EM.125S, EM.250, EM.250S, EM.375, EM.375S, EM.750, and EM.750S.

System No. 13

Subflooring Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 or 1 in. thickness of floor topping mixture having a min compressive strength of 2100 psi. Refer to manufacturer's instructions accompanying the material for specific mix design. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

System No. 14

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional) - Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 15

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound — (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

DEPENDABLE LLC — GSL M3.4, GSL K2.6, GSL-CSD and GSL RH

Floor Mat Materials* — (Optional) - Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) - Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 16

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Finish Flooring - Floor Topping Mixture* — — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

SIKA DEUTSCHLAND GMBH — Type SCHONOX AP Rapid Plus

System No. 17

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound — (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

Freudenberg Performance Materials LP — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750, and 750 Plus.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 18

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ALPHAGYP, LLC — Type AlphaGyp

System No. 19

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Floor Mat Materials* — (Optional) — Any Floor Mat Material bearing the UL Classification Marking as to Fire Resistance. See Floor Mat Materials (CCQU) category for names of Classified Companies. Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

Metal Lath — (Optional) — 3.4 lbs/sq yd expanded galvanized steel diamond lath. Refer to manufacturer's instructions regarding installation recommendations.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 2500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

LATICRETE INTERNATIONAL INC — Type LAT

System No. 20

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Damping Compound - (Optional) — Applied to top surface of subfloor with a 1/4 in. square notched trowel for sound control.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

BoldStep — Types BoldStep Regular and BoldStep High Strength

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

BoldStep — Type Sound Mat

Floor Mat Reinforcement — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) - 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement — (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 21

Subflooring — Min 15/32 in. thick plywood wood structural panels, min grade "C-D". Face grain of plywood to be perpendicular to joists with end joints located over wood joists and staggered min 32 in. between adjacent lengths. Plywood secured to wood joists with 6d common nails spaced 6 in. OC at the ends and 10 in. OC in the field.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 2500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

Apex Minerals LLC — Type Apex Multi Underlayment

2. **Wood Joists** — Min 2 by 10, spaced 16 in. OC and effectively fireblocked in accordance with local codes.

3. **Cross Bridging - (Not Shown)** — Min 1 by 3 in. or min 2 by 10 solid blocking.

4. **Batts and Blankets*** — Nom 3 in. thick batts, supplied in 48 in. lengths, cut to nom 14-3/4 in. widths and installed 1 in. from bottom surface of wood joists.

THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

ROCKWOOL — Type SAFEnSOUND, min. 1.8 pcf.

5. **Insulation Clips** — Nom 0.087 in. diam steel wire supplied in 15-7/16 in. lengths, friction fitted between wood joists. Four clips are used per 48 in. length of batt, installed 4 and 17-5/8 in. from each end of the batt.

6. **Resilient Channels** — Resilient channels, 2-1/2 in. wide by 1/2 in. deep, formed from No. 25 MSG galv steel and shaped as shown, spaced 16 in. OC perpendicular to joists. Channels overlapped 4 in. at splices and secured to each joist with one 1-7/8 in. long Type S bugle head steel screws. Additional resilient channels positioned so as to coincide with end joints of gypsum board (Item 7). Additional channels shall extend min 3 in. beyond each side of board.

6A. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 6 — Furring channels and Steel Framing Members as described below:

a. **Furring Channels** — Formed of No. 25 ga galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to trusses. Channels secured to trusses as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Additional resilient channels positioned so as to coincide with end joints of gypsum board (Item 7). Additional channels shall extend min 3 in. beyond each side of board.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 32 in. OC and secured to the bottom chord to alternating joist with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item a. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.

PLITEQ INC — Type Genie Clip

6B. Alternate Steel Framing Members* — (Optional, Not Shown) — As an alternate to Items 6 and 6A, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to joists. Channels secured to joists as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to the wood joists (Item 2). Clips spaced a max of 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 7.

PAC INTERNATIONAL L L C — Types RSIC-1 or RSIC-1 (2.75)

6C. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 6.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to the joists. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels positioned 3 in. OC, 1-1/2 in. on each side of gypsum board (Item 7) end joints, each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels** — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to joists, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Cc) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Steel Framing Members*** — Spaced 48 in. OC. max along joist, and secured to the joist on alternating joists with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6D. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 6.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to joists and friction fit into Steel Framing Members (Item 6Db). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels positioned 6 in. OC, 3 in. on each side of gypsum board (Item 7) end joints. Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Steel Framing Members*** — Used to attach furring channels (Item 6Da) to joists. Clips spaced 48 in. OC and secured along joist webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.

PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

6E. **Steel Framing Members*** — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 16 in. O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in. OC and base layer Gypsum Board screws spaced 8 in. OC when used.

PAC INTERNATIONAL L L C — Types RC-1 Boost

6F. **Steel Framing Members** — (Optional, Not Shown) — As an alternate to Item 6, main runners, cross tees, cross channels and wall angle as listed below.

a. **Main Runners** — Nom 10 or 12 ft long, 1-1/2 in. wide face, spaced 48 inches. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 24 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of joists at least 5 in. above the bottom face.

b. **Cross Tees or Channels** — Nom 4 ft long cross tees, with 1-1/2 in. wide face, or nom 4 ft long cross channels, with 1-1/2 in. wide face, either spaced 16 in. OC, installed perpendicular to the main runners. Additional cross tees or channels used 8 in. from each side of butted gypsum board end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

CGC INC — Type DGL or RX

7. **Gypsum Board*** — Nom 5/8 in. thick, 4 ft wide gypsum board. Base layer installed with long dimension perpendicular to resilient/furring channels and side joints centered between wood joists. Butted end joints in adjacent rows staggered min 32 in. Base layer secured to resilient/furring channels with 1 in. long Type S bugle head steel screws spaced 16 in. OC in the field. End joints of base layer similarly fastened to additional pieces of resilient/furring channel positioned at end joint locations with 1 in. long Type S bugle head steel screws spaced 8 in. OC. Face layer installed with long dimension perpendicular to resilient/furring channels. Face layer secured to resilient/furring channels with 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC in the field. Butted end joints secured to base layer with 1-1/2 in. long Type G bugle head steel screws spaced 8 in. OC. Face layer side joints offset min 24 in. from base layer side joints. Face layer end joints offset min 16 in. from end joints of base layer. When **Steel Framing Members** (Item 6A or 6B) are used, the butt joints in the gypsum board shall be supported by two furring channels. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one RSIC-1, RSIC-1 (2.75) or Genie clip at each end of the channel.

When **Steel Framing Members** (Item 6C) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 6D) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 6F) are used, Nom 5/8 in. thick, 4 ft wide gypsum board. Base layer installed with long dimension perpendicular to cross tees and side joints centered between wood joists. Butted end joints in adjacent rows staggered min 32 in. Base layer secured to cross tees with 1 in. long Type S bugle head steel screws spaced 16 in. OC in the field. End joints of base layer similarly fastened to 16 in OC and additional cross tees channels positioned at end joint locations with 1 in. long Type S bugle head steel screws spaced 8 in. OC. Face layer installed perpendicular to cross tees with side joints offset min 24 in from base layer side joints and end joints offset min 16 in. from end joints of base layer. Face layer secured to cross tees with 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC. Butt joints in the gypsum board face layer shall be secured to the 16 in OC and additional steel framing members installed at butt joints.

AMERICAN GYPSUM CO — Type AG-C

CABOT MANUFACTURING ULC — 5/8 in. Type C.

CERTAINTED GYPSUM INC — Type C

CGC INC — Types C, IP-X2

CERTAINTED GYPSUM INC — Types LGFC-C, LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C.

NATIONAL GYPSUM CO — Types FSK-C, FSW-C, FSW-G

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C.

PANEL REY S A — Type PRC2

UNITED STATES GYPSUM CO — Types C, IP-X2

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2

8. **Finishing System - (Not Shown)** — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

9. **Acoustical Sealant - (Optional)** — A bead of acoustical sealant applied to the top surface of the wood joists for sound-control sealing.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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