

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.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

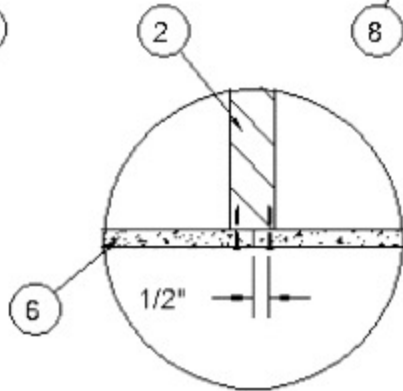
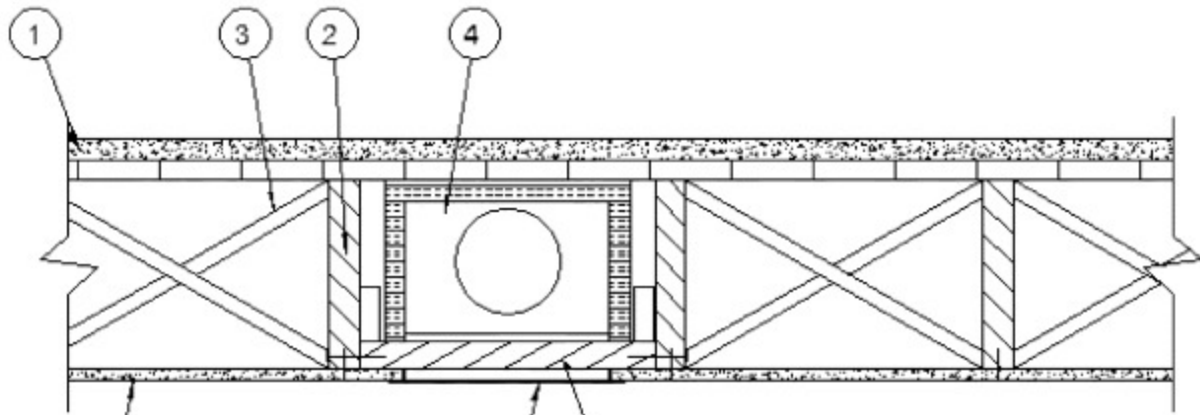
Design No. **L523**

June 30, 2025

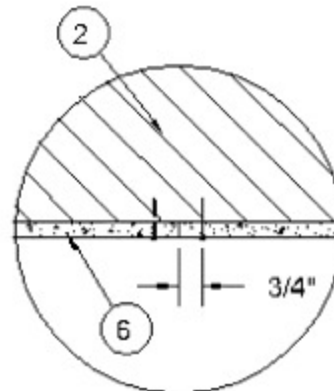
Unrestrained Assembly Rating — 1 Hr.**Finish Rating — 21 Min. or (16 Min. See Item 6A)**

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](#)

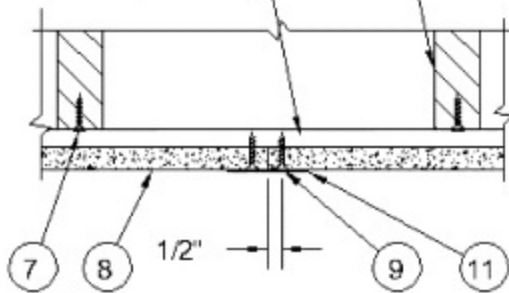
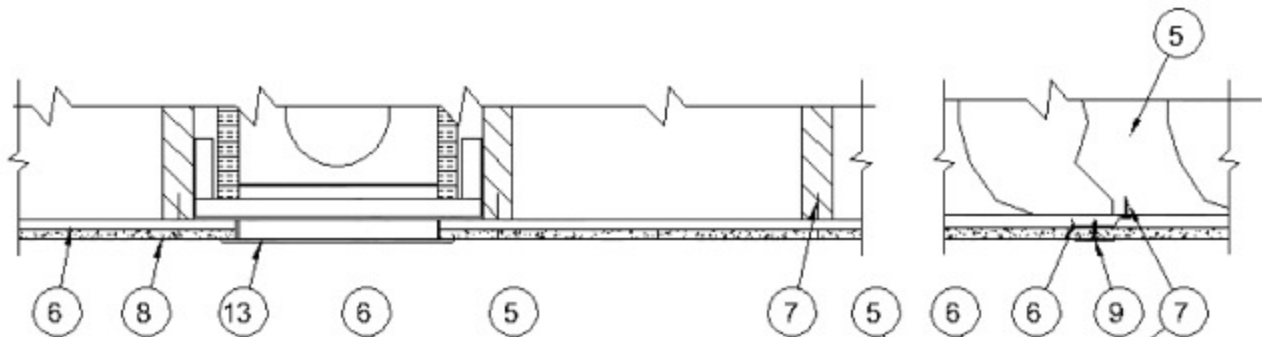
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



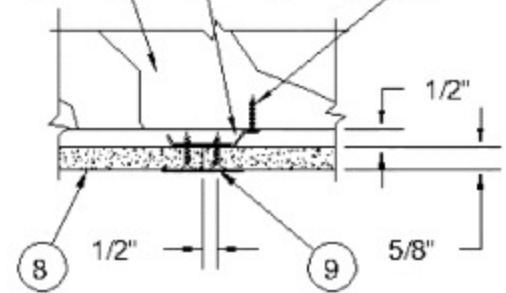
End Joint Detail



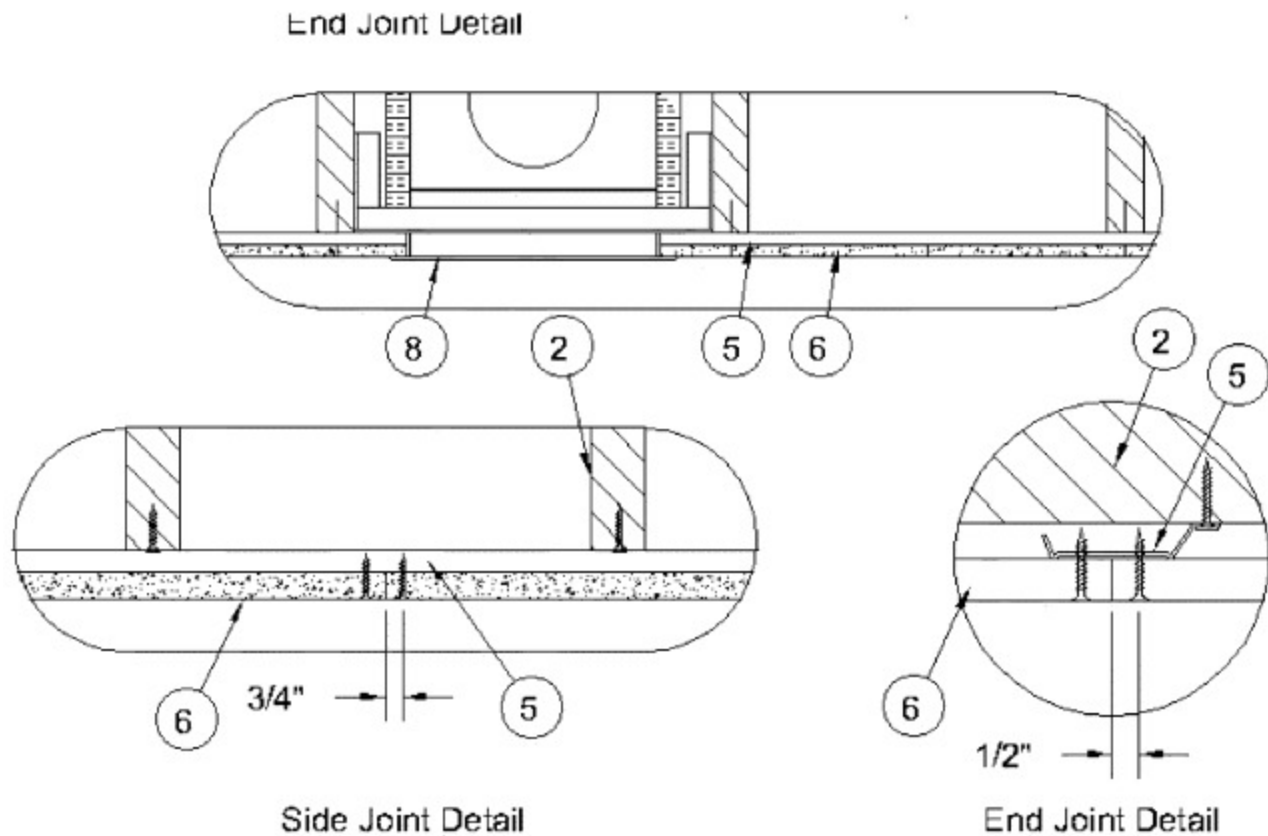
Side Joint Detail



Side Joint Detail



End Joint Detail



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

System No. 1

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial asphalt saturated felt.

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 D E C V — Types LRK, HSLRK, CSD

Floor Mat Materials* — (Optional) - Floor mat material nom 1/16 in. 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 3/8 in. thick floor mat material loose laid over the subfloor.

GRASSWORX L L C — Type SC50

System No. 2

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

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 in. (25mm)

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 in. (25mm)

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 1-1/4 in. (32mm)

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 a min 1-1/4 in. of floor-topping mixture.

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 1-1/4 in. (32mm) 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 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. 3

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring - Floor Topping Mixture* — Min 1 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.

ULTRA QUIET FLOORS — Types UQF-A, UQF-Super Blend, UQF-Plus 2000.

System No. 4

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

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 — Type 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. 5

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

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. 6

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

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. 7

Subflooring — Nom 5/8 in. thick wood structural panels, min grade C-D. Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) Nom 0.030 in. thick commercial asphalt saturated felt.

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.

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 in.

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

System No. 8

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) - Nom 0.030 in. thick commercial asphalt saturated felt.

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.

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 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. 9

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 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. 10

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. 11

Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

Floor Mat Materials* — (As an alternate to the single layer gypsum board) - Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat.

Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

System No. 12

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

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.

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. 13

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

Finish Flooring* — Floor Topping Materials — Min 3/4 in. to 1-1/2 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance with a minimum compressive strength of 1500 psi.

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) — Floor mat material nom 1/8 in. to 3/4 in. thick. Loose laid over the subfloor. When used, Acousti-flor CSM (crack suppression mat) is loose laid over the floor mat material. Floor topping material thickness is dependent on thickness of floor mat used.

WALFLOR INDUSTRIES INC — Type Acousti-flor, Acousti-flor CSM. Floor topping thickness depends on products used as follows:

Acousti-flor (1/8 in. thick) - Floor topping thickness shall be a minimum of 3/4 in.

Acousti-flor (1/4 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/8 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/4 in. thick) - Floor topping thickness shall be a minimum of 1-1/2 in.

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. 14

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

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. 15

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

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

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial asphalt saturated felt.

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. 16

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

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. 17

Subflooring — Nom 5/8 in. thick wood structural panels, min grade "C-D". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Plywood or panels secured to trusses with No. 6d cement coated nails spaced 6 in. OC at end joints and 10 in. OC along the remainder of the joists. Nails spaced 1/2 in. from side and end joints.

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** — Min 1 by 3 in. or min 2 by 10 solid blocking from side and end joints.

3A. **Horizontal Bridging** — Used in lieu of Item 3 in same joist bay as ceiling damper (Item 4), when ceiling damper is employed. Wood 2 by 4 in. secured between joists with nails.

4. **Ceiling Damper*** — (Optional) - Max nom area shall be 198 sq in. Max rectangular size shall be 12 in. wide by 16-1/2 in. long. Max height of damper shall be 8-3/4 in. Aggregate damper openings shall not exceed 99 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 8) shall be installed in accordance with installation instructions.

AIR BALANCE INC — Type 299 (See Item 6A)

CENTRAL VENTILATION SYSTEMS CO L L C — Models C-S/R-HC(-A), C-RD-HC(-A)

JAMIL ALI NASSER AL-ZADJALI FOR INDUSTRY — Models C-S/R-HC(-A), C-RD-HC(-A)

BADR & ASFOUR COMPANY FOR ENGINEERING AND METAL INDUSTRIES — Models C-S/R-HC(-A), C-RD-HC(-A)

GREENHECK FAN CORP — Model CRD-1WJ

METAL-FAB INC — Models MSCDHC, MRCDHC

BRISK MFG INC — Model BMI-50-CRD-S/R-WT

PRICE INDUSTRIES LTD — Models CD-S/R-HC, CD-RD-HC

RUSKIN COMPANY — Model CFD7

UNITED ENERTECH CORP — Models C-S/R-HC(-A), C-RD-HC(-A)

5. **Resilient Channels** — (Optional, Not Shown) - Nom 1/2 in. deep resilient channels, formed of No. 25 MSG galv steel and shaped as shown, spaced 24 in. OC perpendicular to joists. Channels overlapped at splice 4 in. at ends and secured to each joist with one 1-1/4 in. long Type S bugle head screw. Additional resilient channels positioned so as to coincide with end joints of gypsum board (Item 6). Additional channels shall extend min 3 in. beyond each side edge of board.

5A. **Steel Framing Members*** — (Optional, Not Shown) - As an alternate to Item 5, 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 24 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 joists (Item 2). Clips spaced 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. RSIC-V and RSIC-V (2.75) clips secured to alternating joists with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (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 gypsum board butt joints, as described in Item 6.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

5B. **Steel Framing Members*** — (Optional, Not Shown) - As an alternate to Item 5, furring channels and Steel Framing Members* as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24 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 joists (Item 2). Clips spaced 48 in. OC. GenieClips 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. 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 gypsum board butt joints, as described in Item 6.

PLITEQ INC — Type GENIECLIP

5C. **Alternate Steel Framing Members*** — (Not Shown) - As an alternate to item 5, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in deep, spaced 24 in OC, perpendicular to joists. Channels secured to joists as described in Item b.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to the wood joists (Item 2). Clips spaced at 48" OC and secured to the bottom of the joists with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in item 6.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

5D. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 5.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 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 6) 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 5Dc) 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

5E. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 5.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to joists and friction fit into Steel Framing Members (Item 5Eb). 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 6) 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 5Ea) 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

5F. **Steel Framing Members*** — (Optional - Not Shown) — Used to attach resilient channels (Item 5) to joists (Item 2). Clips spaced 48 in. OC and secured to joists with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent joist where it is secured with a clip.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

5G. **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 spaced minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC when used.

PAC INTERNATIONAL L L C — Types RC-1 Boost

6. **Gypsum Board*** — Nom 5/8 in. thick, 4 ft wide gypsum board. When resilient channels (Item 5) are used, gypsum board installed with long dimension perpendicular to resilient channels and the side edges of the board located between joists. Gypsum board fastened to resilient channels with 1-1/4 in. long Type S bugle head screws spaced 12 in. OC. End joints of gypsum board similarly fastened to additional resilient channels positioned at end joint locations. Screw located 3/4 in. from sides and 1/2 in. from ends of gypsum board sheets. When resilient channels (Item 5) are not used, the gypsum board shall be installed with long dimension perpendicular to wood joists. Screw located 3/4 in. from sides and 1/2 in. from ends of gypsum board sheets. When **Steel Framing Members*** (Item 5A, 5B) are used, gypsum board installed with long dimension perpendicular to furring channels and side joints of sheet located beneath joists. Gypsum board screws are driven through channel spaced 12 in. OC in the field. Gypsum board butt joints shall be staggered min 2 ft. within the assembly, and occur between the main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in.

on each end. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the joist with one clip at each end of the channel. Screw spacing along the butt joint to attach the wallboard to the furring channels shall be 8 in. OC. When **Steel Framing Members*** (Item 5C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel.

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

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

AMERICAN GYPSUM CO — Type AG-C.

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

CERTAINTED GYPSUM INC — Type C.

CGC INC — Type C, IP-X2.

CERTAINTED GYPSUM INC — Type LGFC-C/A.

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

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

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

THAI GYPSUM PRODUCTS PCL — Type C.

UNITED STATES GYPSUM CO — Type C, IP-X2.

USG BORAL DRYWALL SFZ LLC — Type C

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

6A. **Gypsum Board*** — (Finish Rating - 16 min.) Required when Air Balance Inc. Type 299 ceiling damper (Item 4) is installed. Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in item 6.

UNITED STATES GYPSUM CO — Type C

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Type C

6B. **Gypsum Board* (As an alternative to Items 6 and 6A)** — Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Items 6 and 6A with max screw spacing 8 in. OC.

CGC INC — Type ULIX

UNITED STATES GYPSUM CO — ULIX

6C. **Gypsum Board* (As an alternative to Item 6)** — Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Item 6 with max screw spacing 8 in. OC.

NATIONAL GYPSUM CO — Type FSLX

7. **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.

8. **Grille** — Steel grille, installed in accordance with the installation instructions provided with the ceiling damper.

9. **Discrete Products Installed in Air-handling Spaces*** — Automatic Balancing Valve/Damper — (Not Shown - Optional) — For use with item 4, Ruskin Company's Model CFD7 damper (CABS). Ceiling damper to be provided with plenum box per damper manufacturer's instructions with side outlet only. Entire assembly to be installed into any UL Class 0 or Class 1 flexible air duct in accordance with the instructions provided by the automatic balancing valve/damper manufacturer.

METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

*** 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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