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ONLINE CERTIFICATIONS DIRECTORY

XHBN.WW-D-1037
Joint Systems

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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 Listed or Classified products, equipment, systems, 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 manner encountered in the field.
- When field issues arise, it is recommended that 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 as Classified, Listed, or Recognized.

Joint Systems

See General Information for Joint Systems

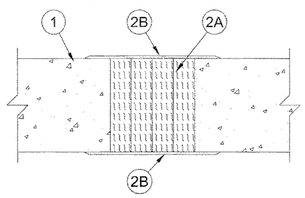
System No. WW-D-1037

April 15, 2009

Assembly Rating—3 Hr

Nominal Joint Width—4 In.

Class II Movement Capabilities—25% Compression



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1. **Wall Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Wall may also be construction of any UL Classified **Concrete Blocks***.

See **Concrete Blocks** (CAFT) category in the Fire Resistance Directory for names of manufacturers.

2. **Joint System — Max width of joint (at time of installation of joint system) is 4 in. (102 mm). The joint system is designed to accommodate a max 25 percent compression or extension from its installed width.** The joint system shall consist of framing and fill materials, as follows:

A. **Forming Material*** — Min 4 pcf (64 kg/m³) density mineral wool batt insulation installed in joint opening as a permanent form. Form is built up to a max width of 4 (102 in. (104 mm)) and installed edge-first in the joint opening, parallel with joint direction, such that batt sections are compressed min 50 percent in thickness and each that the compressed batt sections are flush with each surface of the wall. Adjoining lengths of batt to be tightly butted with butted seams spaced min 16 in. (406 mm) apart along the length of the joint.

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL ASIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — Type SAF

B. **Fill, Void or Cavity Material* — Sealant** — Min 1/8 in. (3.2 mm) wet thickness or (1/16 in. (1.6 mm) dry) thickness of fill material applied to cover the surface of the mineral wool batt forming material and to lap min 1 in. (25 mm) onto the concrete on each side of the joint opening on both sides of the wall.

SPECIFIED TECHNOLOGIES INC — Specseal AS200 Elastomeric Spray

*Bearing the UL Classification Mark

Last Updated on 2009-04-15

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NTS

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ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL ASIA SDN BHD — Safe

ROXUL INC — Safe

THERMAFIBER INC — Type SAF

4. **Wall Assembly** — The 2 or 2 hr fire rated gypsum board stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Ceiling Runners** — Floor and ceiling runners of wall assembly shall consist of gale steel channels sized to accommodate steel studs. Ceiling runner to be provided with min 1-1/4 in. (32 mm) long legs (Item 2A). Ceiling runner installed parallel to direction of fluted steel floor units, directly beneath steel stacks, and secured to straps with min two No. 8 self-drilling, self-tapping steel screws per strap.

A1. **Light Gauge Framing* — Slotted Ceiling Runner** — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner consisting of gale steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Ceiling runner installed parallel to direction of fluted steel floor units, directly beneath steel stacks, and secured to straps with two No. 8 self-drilling, self-tapping steel screws per strap.

BRADY CONSTRUCTION INNOVATIONS INC,

DBA SLIPTRACK SYSTEMS — SLP-TRK

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST

CLARKWESTERN BUILDING SYSTEMS INC — Type SLT, SLT-In

METAL-LITE INC — The System

STEELER INC — Steeler Slotted Ceiling Runner

B. **Studs** — Steel studs to be min 2-1/4 in. (64 mm) wide. Studs cut 1/2 in. to 1/4 in. (13 to 19 mm) less in length than assembly height with bottom resting in and resting on the floor runner and with top resting in ceiling runner without attachment. When slotted ceiling runner (Item 4A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (12 mm) long wafer head steel screws at midheight of stud on each side of wall. Stud spacing not to exceed 24 in. (610 mm) OC.

B1. **Light Gauge Framing* —Slotted Studs** — Slotted steel stud to be used in conjunction with **Light Gauge Framing* — Floor and Ceiling Runners** (Item 4A1). Slotted steel stud to be min 2-1/2 in. (64mm) wide. Slotted steel studs cut 1/2 in. to 1/4 in. (13 to 19 mm) less in length than assembly height with bottom resting in and secured to both ceiling and floor runners. Ceiling runner secured to partitioned slot within steel stud by means of No. 10-32 x 1/4 in. (19 mm) long hex head self-drilling, self-tapping steel screws. Floor runner secured to adjacent stud by means of No. 8 by 1/2 in. (12 mm) long pan head steel screw. Slotted steel stud spacing not to exceed 24 in. (610 mm) OC.

STEELER INC — Steeler Slotted Stud

C. **Gypsum Board*** — Gypsum board sheets installed to a min total 5/8 in. (16 mm) or 1-1/4 in. (31 mm) thickness on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Designs in the UL Fire Resistance Directory. Gypsum board to be cut to fit tightly between the floor and ceiling runners. Edges of the gypsum board and the underside of the steel floor or roof deck runners. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. (25 mm) below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner.

5. **Joint System** — Max separation between bottom of floor and top of gypsum board is 3/4 in. (19 or 25 mm). The joint system is designed to accommodate a max 25 or 100 percent compression or extension from its installed width.

*Bearing the UL Classification Mark

Last Updated on 2009-08-04

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When Item 5A1 is used in lieu of the strips of mineral wool described in Item 5A, the maximum joint width is 3/4 in. (19 mm) and the movement capabilities are 100% compression or extension. The joint system consists of a forming material and a fill material between the top of the gypsum board and the bottom of the floor, as follows:

A. **Forming Material*** — Min 4 pcf (64 kg/m³) density mineral wool batt insulation cut into strips to fill the gap between the top of gypsum board and bottom of the floor units. The width of the strips shall be equal to the total thickness of the gypsum board. The strips of mineral wool are compressed 50 percent in the knees and firmly packed into the gap between the top of the gypsum board and bottom of the mineral wool batt sections or steel floor units

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL ASIA SDN BHD — Safe

ROXUL INC — Safe

THERMAFIBER INC — Type SAF

A1. **Forming Material*** — (Not Shown) - As an option to Item 5A, even 3/16 in. (4.8 mm) thick by 4 in. (102 mm) high joint flanged material profile installed on both sides of the wall assembly. Profile installed by first marking a line across the top of the wall 2 in. (76 mm) below the bottom plane of the steel floor or roof deck runner. Joint profile material positioned with its top edge against the underside of the floor and with its bottom edge on the line scribed on the wall assembly. Profile to be installed in the joint opening with a min 1/4 in. (6.35 mm) long steel fasteners spaced not greater than 8 in. (203 mm) OC. Adjoining lengths of profile to overlap approx 3/4 in. (19 mm) at shiplapped ends.

SPECIFIED TECHNOLOGIES INC — Specseal Speed Flex Joint Profile

B. **Fill, Void or Cavity Material* - Sealant** — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) applied to cover forming material (Item 3A) with a min 1/2 in. (13 mm) coverage onto the approach board, steel shapping and steel deck on both sides of wall.

SPECIFIED TECHNOLOGIES INC — Specseal AS200 Elastomeric Spray

*Bearing the UL Classification Mark

Last Updated on 2009-08-04

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Joint Systems

See General Information for Joint Systems

System No. HW-D-0456

August 04, 2009

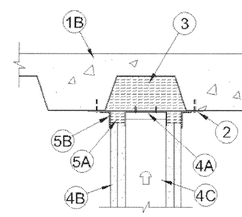
Assembly Ratings — 1 and 2 Hr (See Items 1 and 4C)

Nominal Joint Width — 3/4 or 1 In. (See Item 5)

L Rating At Ambient — Less Than 1 CFM/Lin Ft

L Rating At 400°F — Less Than 1 CFM/Lin Ft

Class II Movement Capabilities — 19% or 100% Compression or Extension (See Item 5)



1. **Floor Assembly** — The fire-rated fluted steel floor and concrete floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Designs in the Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Form Units*** — Min 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete** — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units

1A. **Roof Assembly** — (Not Shown) — As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Designs in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck** — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation** — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the steel roof deck.

C. **Roof Covering*** — Hot mopped or cold application material; compatible with insulating concrete.

2. **Steel Straps** — Min 2 in. (51 mm) wide 16 MSG (0.059 in. or 1.5 mm thick) galv steel straps cut to a length to span the flute and lip overlap min 1-1/2 in. (38 mm) on the adjacent sidlers of fluted floor units. Straps spaced max 24 in. (610 mm) OC and fastened to floor assembly with 3/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel concrete anchors.

3. **Forming Material*** — Mineral wool batt insulation, min 4 pcf (64 kg/m³), cut to the shape of the fluted floor units, friction fit to completely fill the flutes above the steel straps. Adjacent lengths of batts to be tightly butted with butted seams spaced min 24 in. (610 mm) apart along the length of the joint.

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — MinWool-1200 Safing

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NTS

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D. **Gypsum Board*** — Gypsum board sheets, 1/2 or 5/8 in. (13 or 16 mm) thick, applied over the steel floor or roof deck runner. Wall to be constructed as specified in the individual U400 or V400 Series Wall and Partition Design. A min 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the concrete floor. The screws attaching the gypsum board begins the first stud shall be located 1 in. (25 mm) below the bottom of the slotted ceiling track (Item 2B). No gypsum board attachment screws are to penetrate the slotted ceiling track.

Configuration A

3. **Joint System** — Max separation between bottom of floor and top of liner panel (Item 2D) and between bottom of floor and top of gypsum board sheets (Item 3E) at time of installation of joint system is 3/4 in. (19 or 25 mm). The joint system is designed to accommodate a maximum 25 percent compression over from its installed width. The joint system consists of head breaker tape and sealant, as follows:

A. **Forming Material*** — In place or roll assembly constructed with sized fluted fiber units, compressed to a minimum 1 in. (25 mm) depth of min 4 pcf (64 kg/m³) mineral wool batt insulation into for centre of flute valley as a permanent form. Strips of mineral wool batt installation cut to width of gypsum board sheet (Item 2E) and compressed 50 percent in thickness. Strip installed between top of gypsum liner panel and bottom of steel ceiling runner.

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — MinWool 1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL ASIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* - Sealant** — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.5 mm dry thickness) of spray applied to cover mineral wool batt insulation on finished side of wall assembly flush with the wall surface.

SPECIFIED TECHNOLOGIES INC — Specseal AS200 Elastomeric Spray

C. **Forming Material*** — Sections of min 4 pcf (64kg/m³) density mineral wool batt insulation cut to fit flute area (when present). Batts will adhere on face of wall after installation of spray (Item 3B). Strips of mineral wool batt installation cut to width of gypsum board sheet (Item 2E) and compressed 50 percent in thickness. Strips installed on one gypsum board layers on finished side of wall assembly flush with the wall surface.

FIBREX INSULATIONS INC — FBX Safing Insulation

IIG MINWOOL L L C — MinWool 1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL ASIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

D. **Fill, Void or Cavity Material* - Sealant** — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.5 mm dry thickness) of spray applied to cover forming material (Item 3C) on finished side of wall. Minimum min 1/2 in. (13 mm) coverage onto surrounding substrates.

SPECIFIED TECHNOLOGIES INC — Specseal AS200 Elastomeric Spray

*Bearing the UL Classification Mark

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Joint Systems

See General Information for Joint Systems

System No. HW-D-0548

October 26, 2009

Assembly Rating — 2 Hr

Maximum Joint Width — 3/4 or 1 In. (See Item 3)

Class II Movement Capabilities — 25 or 100 Percent Compression or Extension (See Item 3)

L Rating At Ambient — Less Than 1 CFM/Lin Ft

L Rating At 400 F — Less Than 1 CFM/Lin Ft

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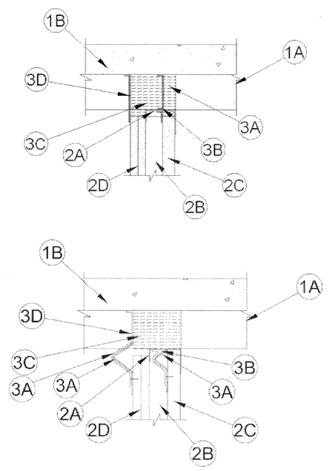

1. **Floor Assembly** — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual P900 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:

A. **Steel Floor and Form Units*** — Min 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete** — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

1A. **Roof Assembly** — (Not Shown) - As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Designs in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck** — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation** — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the steel roof deck.

1B. **Floor Assembly** — As an alternate to the floor assembly (Item 1), min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any UL Classified hollow core **Precast Concrete Units***.

See **Precast Concrete Units** (CFTV) in the Fire Resistance Directory for names of manufacturers.

2. **Shaft Wall Assembly** — The 2 hr fire rated shaft wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Floor and Ceiling Runners** — "T"-shaped runner, min 2-1/2 in. (64 mm) wide with unequal legs of min 1-1/2 in. (38 mm) and min 1 in. (25 mm), fabricated from min 24 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to walls and floor with steel fasteners spaced max 24 in. (610 mm) OC. As an alternate to the "T"-shaped runner, a min 2-1/2 in. (64 mm) wide by 1 in. (25 mm) deep channel formed from min 24 MSG galv steel may be used for the floor runner.

A1. **Floor And Ceiling Runners** — As an alternate to Item 2A, floor and ceiling runners of wall assembly shall consist of gale steel channels sized to accommodate steel "C-H" studs. Flange height of ceiling runner shall be min 1-1/2 in. (32 mm) greater than stud joint width. Ceiling runner secured with steel masonry anchors spaced max 24 in. (610 mm) OC.

A2. **Light Gauge Framing* - Slotted Ceiling Track** — As an alternate to Item 2A, slotted ceiling track shall consist of gale steel channels with slotted flanges. Slotted ceiling track sized to accommodate steel "C-H" studs (Item 2C). Attached to concrete or ceiling with steel fasteners spaced max 12 in. (305 mm) OC.

BRADY CONSTRUCTION INNOVATIONS INC,

DBA SLIPTRACK SYSTEMS — SLP-TRK

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST

CLARKWESTERN BUILDING SYSTEMS INC — Type SLT, SLT-In

SCAFCO STEEL STUD MANUFACTURING CO

B. **Steel Studs** — "C-H" shaped steel studs to be min 2-1/2 in. (64 mm) wide and formed of min 24 MSG galv steel. For configuration A studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height; or for configuration B studs cut 1 to 1-1/2 in. (25 to 38 mm) less in length than assembly height with bottom resting in and resting on floor runner and with top resting in ceiling runner or slotted ceiling track. Studs spaced 24 in. (610 mm) OC. After installation of gypsum board liner panels (Item 2D), studs secured to flange of floor runner on finished side of wall with No. 8 by 1/2 in. (13 mm) long self-drilling, self-tapping steel screws. Studs secured in flange of slotted ceiling track on finished side of wall only with No. 8 by 1/2 in. (13 mm) long self-drilling, self-tapping wafer head steel screws at slot midheight.

C. **Gypsum Board*** — 5 in. (125 mm) thick by 24 in (610 mm) wide gypsum board liner panels. Panels cut 1 in. (25 mm) less in length than floor to ceiling height. Vertical edges inserted in "H"-shaped section of "C-H" studs. Free edge of end panels attached to long leg of "T" runner (Item 2A) with 1-5/8 in. (41 mm) long Type S steel screws spaced max 12 in. (305 mm) OC.

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A2 UL DESIGN HW-D-0548
NTS

FKP Architects

ARCHITECT OF RECORD

Paul C. Gloriod

LICENSED ARCHITECT PAUL CHRISTOPHER GLORIOD C-31500 4/30/2011 RENEWAL DATE STATE OF CALIFORNIA

01/27/2010

REVISIONS

APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR APPROVED JAN 28 2010

Office of Statewide Health Planning & Development FACILITIES DEVELOPMENT DIVISION

PROJECT NAME

CHILDREN'S HOSPITAL OF ORANGE COUNTY
455 S. Main St.
Orange, CA 92868-3874

TOWER II

CHOC HOSPITAL

PROJECT NUMBER

12011.00
Increment #7

OSHPD - PROJECT NUMBER

IL 072072-30

ISSUE

OSHPD PERMIT

DATE

01/27/2010

SCALE

NTS

DRAWING TITLE

TYPICAL PARTITION DETAILS

DRAWING NUMBER

A11.3.6

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1/25/2010
AMEHTA