

Concrete floor assembly shall be constructed by the construction of the UL Fire Decomposition of the in the manner described in the shall include the following con

shall include the following construction features: A. Steel Floor And Form Units'— Max 3 in, (76 mm) deep galv steel fluted units. B. Concrete — Min 2-12 in, (64 mm) thick reinforced concrete, as measured from the top plane of the floor units. C. Spray-Applied Fire Resistive Materials' — (Optional, Not Shown)—Prior to or after the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B, respectively) the steel floor units may be spraved with a min 5/fi in (8 mm) to max 1-34 in. (45 mm) thickness of fire resistive material. W R GRACE & CO - CONN — Type MK-6+HY 1A. Roof Assembly — (Not Shown) — As an alternate to the floor assembly, 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 P9005 Series Roof-Ceiling Desgin in the U. Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly 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 meas

1B. Roof Assembly — As an alternate to Items 1 and 1A, a fire rated protected fluted steel deck roof assembly may be used. The control as which within the constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL. Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction

b or greater than the hourly rating of the wall assembly. The root assembly shall include the following construction features:
B Steel Root Deck — Max 3 in (76 mm) deep galv steel fluider root deck.
B. Steel Pool Deck — Max 3 in (76 mm) deep galv steel fluider root deck.
B. Steel Pool Pick = Resister Materials — (Not Shown)—Froit or or after the installation of the steel ceiling runners. Forming Material and Fill, Viol or Cavity Material (Idems 2A, 3A, 3B), the root assembly shall be sprayed with the type and thickness of fire resister material indicated in the individual PTOS deres design.
Wall Assembly — The 1 or 2 hr fire rated grysum board/steel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL. Fire Resistance Directory and shall include the flowing construction features:
A. Wall Assembly — The 1 or 2 hr fire rated grysum board/steel stud wall assembly shall be constructed of the materials and the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL. Fire Resistance Directory and shall include the following construction features:
A. Saver (Poon Adoding) and the steels times of the ingen hight of caling runner in 14 in (6 mm) 12 notes that a secured to valley with steel macrony anchors, steel fasteners or welds speed max 24 in, (60 mm) Oc. before or after optional spray-applied fire resistive material is used. The use of welds to secure to ceiling runner in the 2A, slotted ceiling runner in the collowing ground channel with siteel fasteners or welds speed max 24 in, (6 mm) occ. before or after optional spray-applied fire resistive material is used. The use of welds to secure to a selling runner in the 3L shotted ceiling runner in the ceiling runner in the 3L shotted ceiling runner in stalled perpendicular to flux steel fastel deck and secure to valleys with steel fasteners or welds spreaded to valleys

pray-applied material. RADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

BRADY CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORNIA EXPANDED METAL PRODUCTS CO — CST CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H CONSOLIDATED FABRICATORS CORP. BUILDING PRODUCTS DIV — SDT250, SDT300 MARINOWARE, DIV OF WARE INDUSTRIES INC — Type SLT METAL-LITE INC — The System OLMAR SUPPLY INC — STT280, STT300 SCAPCO STELE STUD MANUFACTURING CO

SCAFCO STEEL STUD MANUFACTURING CO TELLING NDUSTRIES LL C — True-Action Deflection Track A2. Light Gauge Framing²-Vertical Deflection Ceiling Runner — When the nom joint width is less than or equal to 34 in. (19 mm), vertical deflection ceiling runner may be used as an alternate to the ceiling runner sin Items 2A and 2A1. Vertical deflection ceiling runner in consist of galv steel channel with adotted vertical deflection ceiling mechanically alterned within runner. Slotted clips provided with step bushings for permanent fastening of steel studs. Fanges sized to accommodate steel studs (Item 2C). Vertical deflection ceiling runner risidated speperdiculat to direction of fluid steel dext and secured to valesy with steel masciny archors, steel fasteners or webs speaced max 24 in (610 mm) CC. Defores or after optional spray-applied fire resistive material sued. The unstrivietids to secure the ceiling runner may only bus optional spray-applied fire resistive material sued.

material. THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800

THE STEEL NETWORK INC — VeriTirack VTD250, VTD362, VTD400, VTD600 and VTD600 AS. Light Gauge Framing'- Notched Caling Runner – As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped gaiv steel channel with notched return flanges sized to accommodel sets dusk (Item 2-0). Notched ceiling runner installed perpendicular to telection of flutd steel deci and secured to valleys with steel masony anchors, steel fasteners or welds spaced max 24 in. (610 mm) O.C. before or after colond spara-papiled fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material. OLMAR SUPPLY INC — Type SCR 8. Steel Attachment Clips – (Optional - Not Shown) - When spray appled fregroting is used ceiling runner may be secured to devise with Z-shaped reins formed from mit in 10.75 mm) iono critics of mit 200, a rais steel langth 0.

Code Addatation Copies (Cuppedia **rock) and the standard addatation of the standard addatation of the standard code addatation of the standard addatation o

materials) and top of celling runner with skel masonry anchors, steel fasteners or welds. Clips spaced max 24 in. (610 mm) OC. C. Studs — Steel studs to be min 2-12 in. (64 mm) wide. Studs cut 1/2 to 34 in. (13 to 13 mm) less in heigh than assembly height with bottom nesting in and resting on floor runner and with to nesting in celling runner without attachment. When slotted celling runner (flem 2A1) is used, steel studs secured to slotted celling runner without attachment. When slotted celling runner (flem 2A1) is used, steel studs secured to slotted celling runner without. A by 1/2 in. (13 mm) long wafer head steel scores at multicelity of slot on each side of wall. When vertical deflection celling runner (flem 2A2) is used, steel studs secured to slotted vertical deflection cips, through the bushings, with steel scores at indhelpid related score slot. Slott spacing not to exceed 24 in. (610 nm) OC. D. Gypsum Board — Gypsum board installed to a min total thickness of 56 in. and 1-14 in. (16 and 32 mm) on each side of waters water and the assemblies, respectively. Wall be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1 in. (25 mm) gap shall be maintained heaven hit hog of the orosum board and the bottom of the self edic waits and the top row of scores

Wail and Partition Design in the UL Fire Resistance Directory, except that a max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom of the steel deck units and the top: ow of screws shall be installed into the studs 3-1/21 o 4 in. (80 to 102 mm) below the lower surface of the floor or root. The hourly rating of the pion its system is dependent on the hourly rating of the vall. A stress of the steel deck units of the steel deck units of piont system is designed to accommodate a max 50 percent compression or extension from the installed width. The joint system is designed to accommodate a max 50 percent compression or extension from the installed width. The joint system is designed to accommodate a max 50 percent compression or extension from the installed width. The joint system is designed to accommodate a max 50 percent compression or extension from the sinstalled width. The joint system is designed to accommodate a max 50 percent compression or extension from the installed width. The joint system is designed to accommodate a max 50 percent compression or extension from the sinstalled width. The joint system is designed to accommodate a max 50 percent compression or extension from the sinstalled width. The joint system is designed to accommodate a max 50 percent compression or extension from the sinstalled width. The joint system is designed to accommodate a max 50 percent compression or extension from the sinstalled and then compressed 50 percent in thickness and the wall. Multiple pieces stacked on top of each fust with wall suffaces. Additional 56 in and 1-14 in (16 and 32 mm) wide strips for 1 and 2 n rated assemblies, percentively of one A dot (if akm33 minoral world bet in stallant on the but to filt the on the filter of the sind the on the filter of the sind the on the filter of the sind the one them one the sind the filter of the sind the one them one the sind the one them one the sind the one them one the sind the filter of the sind the one of the ma flush with wall surfaces. Additional 58 in . and -11/4 in . (16 and 32 mm) wide strips for 1 and 2 hr rated assembles respectively, of non 4 pc (64 kg/ms) mineral wool batt insulation are to be cut to fill the gap between the top of th gypsum board and bottom of the steel deck. The strips of mineral wool are compressed 50 percent and tightly packed, cut degl first, into the gap between the top of the gypsum board and bottom of the steel deck on both sides of the wall. ROCK WOOL MANUFACTURING CO — Delta- Board ROXULINC — SAFE THERMAFIBER INC — Type SAF



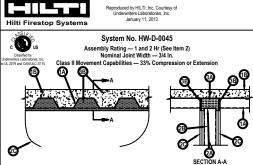
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System No. HW-D-0042 (cont.)

Ö

A.1. Forming Material¹—Plugs — (Optional, Not Shown) Preformed mineral wool plugs, formed to the shape of the fluted floor units, firction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, fluts with will assist access. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of gysum board and bottom of steel floor units. HLTI CONSTRUCTION CHEMCALS, DIV OF HLTI NC — CPT7 Speed Plugs
 A.2. Forming Material^{1—} Ships — (Optional) - Nom 56 in. and 1-14 in. (16 and 32 mm) wide by 2 in. (31 mm) high firmly packed out edge first, into the gap between the top of the gysum board and bottom of the steel floor units on both sides of the valit.
 B. Fill, Void or Cavity Material^{1—} Ships — (Monten, Flutt, Ships), the flutt and bottom of the steel floor units on both sides of the valit.
 Fill, Void or Cavity Material^{1—} Divide gap between the top of the gysum board and bottom of the steel floor units on both sides of the valit.
 Fill, Void or Cavity Material^{1—} Divide gap and steel deck on both sides of valit. When Spray-Applied the Resistive Material¹ is agained to the solite of and and steel deck on both sides of valit. When Spray-Applied the Resistive material and to overlap a min of 12 in. (13 mm) onto gysum board and steel deck on both sides of valit. When Spray-Applied the Resistive spray-applied the resistive material a min of 2 in. (11 mm) on the side of the resistive material a min of 12 in. (15 mm) not 12 in. (15 mm) of the side of the resistive material a min of 12 in. (15 mm) not a gysum board and the side of the sole of the side of the sole of the resistive material a min of 12 in. (16 mm) not side so def the valit.
 Spray-applied the resistive material a min of 2 in. (16 mm) not sole sides of the valit.
 MITI CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP 672 Firestop Spray or CFS-

aring the UL Classification Mar



. Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Design in the Fire Resistance Directory and shall include the following construction features: A Steel Floor and Form Units' — Max 3 in. (76 mm) deep galv steel fluted floor units. B. Concrete — Min 2-1/2 in. (46 mm) hick reinforced concrete, as measured from the top plane of the floor units.

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

s: k — Max 3 in. (76 mm) deep galv steel fluted roof deck. — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as mea

red from the top plane of the

Ideor units. 2. Wall Assembly — The 1 or 2 hr fire-rated gypsum board /stud wall assembly shall be constructed of the materials an in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features: A. Steel Floor and Ceiling Runners — Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Flange height of ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint with ... Ceiling runner installed perpendicular to direction of flued steel deck and secured to valleys with steel fasterees of the wides specified max 24 in. (610 mm)

OC. A1. Light Gauge Framing⁴-Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel fasteners or steeling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel fasteners

A1 Light Gauge Framing' Skitled Celling Runner — As an attemate to the celling runner in Item 2A, stotted celling runner to consist of gai veter channel with skitled flanges sized to accommodate setes tubus (Item 2B). Skitled celling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel fasteners or welds spaced max 24 in. (610 mm) OC. BRADY CONSTRUCTION INNOVATIONS INC, IDBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORNE AEXAPADED METAL PRODUCTS CO — CST CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H MARRINOVARE, DIVO F WARE, BNUDSTRIES IND. C — Type SLT SLELLING INDUSTRIES LL C — Ture Action Deflection Track A2 Light Gauge Framing'-Vertical Deflection Celling Runner — As an alternate to the celling runners in Item 2A and 2A1, vertical deflection celling runner to consist of gai vised channel with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanically tastened within runner. Stotted cips provided with slotted vertical deflection cips mechanicaling tastened within runner. Stotted cips provided valleys with slo

THE STEEL NE WORK NWC — Vehi riack V 1020, V 1020, V 1030, V 10400, V 10600 and V 10600 A3. Lpht Gauge Framing⁻ Notched Celling Runner – As an alternate to the celling runners in Items 2A through 2A3, notched celling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 23). Notched celling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel fasteners or welds spaced max 24 in. (610 mm) O.C.

2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studis (item 25). Notched ceiling runner installed prependicular to direction of fluide steel dedek and secured to valleys with steel flasteness or welds spaced max 24 in. (1610 mm) OC. OLMAR SUPPLY INC — Types SCR (B mm) wide. Studis cut 12 to 34 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and resising on floor runner and with top nesting in ceiling runner without 8 by a studie of the studies of

construction of the matching of the point system consists of a packing material and a fill material between the top of the gypsum board and the bottom of the floor or cof, as follows:

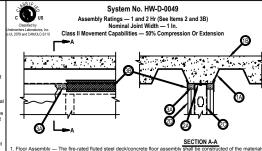
1, as billows: Forming Material" — Nom 4 pcf (64 kg/m3) mineral wool batt insulation, cut to the shape of the fluted deck, approx 20 percent larger than the area of the flutes and compressed into the flutes of the steel deck flutes above the ceiling runner. The mineral wool insulation is to project beyond each side of the ceiling runner, recessed 1/2 in. (13 mm) from both wall surfaces. For 2 hr assembly, an additional 1-1/2 in. (38 mm) thick by 3/4 in. (19 mm) escions of mineral wool batt insulation compressed 50 percent and installed cut edge fresh to fill the 3/4. In (19 mm) material cut and percent to fill the 3/4. sections or initie at work part installation contripressed by percent and installed cut edge in sit to initiate any init, (a) find gap between the top of gypsen board and bottom of the steel deck. The forming material shall be recessed 1/2 in (13 mm) from each side of the wall. ROCK WOOL MANUFACTURING CO — Delta Board

ROCK WOOL MANUFACTURING CO — Denta board ROXUL INC — SAFE THERMARIBER INC — Type SAF AL Forming Material — Pulse — (Optional, Not Shown) - Preformed mineral wool plugs, formed to the shape of the fluted floor units, friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner and shall be recessed 12 in. (13 mm) floor bodh wall suffaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and both of steel deck. HILTI CONSTRUCTION OFHEMICALS, DIV OF HILT INC — CP777 Speed Plugs

In LT LONG TRUE TO INSTRUCT ON CHEMICALS, UN OF HILT INC — OF 17 OpeoP ortugerial installed on each side of the value of Cavity Material — Sealan — Min 12 in (13 mm) thickness of fill material installed on each side of the value in the flutes of the steel deck and between the top of the gypsum board and the bottom of the steel deck, flush with each surface of the value of the steel deck. HILTI CONSTRUCTION CHEMICALS, DIV OF HILT I INC — CP606 Flexible Firestop Sealant







Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed on the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire forevariant shall include the following construction generatives:

Directory and shall include the following construction features: A. Steef Foor And Form Units² — Max3 in .(76 mm) deep gait steel fluted units. B. Concrete — Min 2-172 in .(64 mm) thick reinforced concrete, as measured from the top plane of the floor units. C. Spray-Applied Fire Resistive Metariatis⁴ — (Optional) - (Not Show)—Prior to or after the installation of the stee ceiling runners. Forming Material and Fill, Void or Cavly Material (Items 2A, 3A, 3B) the steel floor units may be sprayed with a min 516 in .(6 mm) to max 1-34 in .(4 mm) thickness of fine resistive material. W R GRACE & CO - CONN — Type MK-EHY A Rock Assembly – Not Show) — As an alternate to the floor assembly, a fire rated fluted steel deck roof asseming may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual more than the roof assembly shall be constructed of the materials and in the manner described in the individual more to even the roof assembly shall be constructed of the materials and in the manner described in the individual

P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following

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 mer

oor units. B Roof Assembly — As an alternative to lemms 1 and 1A, a fire rated protected flueto stored deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Celling Design in the ULF ice Resistance Directory. The houry rating of the roof assembly shall be equa to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

Series Rodr-Celling Lesgin in the ULF rife reastance bulk. The roof assembly shall note the following construction for increase. The reason of the ward assembly the roof assembly shall note the following construction for increase. A Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluider roof deck. B. Signar—Applied Fire Resistive Materiaist — (Mol Show)—Firot or or after the installation of the steel ceiling runners. Forming Materiai and Fill. Void or Cavity Materiai (Items 2A, 3A, 3B), the roof assembly shall be sprayed with the type and thickness of the resistive material indicated in the individual P700 Series design. 2. Wall Assembly — The 2 ht file rated gypsum board /ateel stud wall assembly shall be constructed of the materiais and in the manner described in the individual P400 Series (Mol Signar). 2. Wall Assembly — The 2 ht file rated gypsum board /ateel stud wall assembly shall be constructed of the materiais and in the manner described in the individual P400 Series (Mol Signar). 2. Wall Assembly — The 2 ht file rated gypsum board /ateel stud wall assembly shall consist of min 25 ga galv steel channels stoed to accommodate steel studies (Items 2C). Paging present wall wall and a stead to accommodate steel studies (Items 2A) and a steel statemes and a steel studies (Item 2C). Paging applied for denling runner shall be accured with steel murner may only be used prior to the installation of the optional spray-applied material. 2. 1. Light Gauge Franning-Stotted Ceiling Runner — As an alternate to the ceiling runner in a steel studies (Item 2A). Stotted ceiling runner installed parallel to direction of fluid steel deck, centered beneath valley, and accured with steel fire resistive material is used. The use of welds spaced marker and the material is used to accommodate steel studies (Item 2A). Stoted ceiling runner material is used. BRADY CONSTRUCTION INNOVATIONS INNO, ROB ALS LIPTRACK SYSTEMS — SLP-TRK CALFORNA EXPANDED METAL PRODUCTS CO — CST CLARKONERTEL (HOL UDR SYSTEMS — Type

STEELER INC — Steeler Slotted Ceiling Runn

STEELER INC — Steeler Stotted Ceiling Runner TELLING INDUSTRIES LL C — True-Action Deflection Track A2. Light Gauge Framing'-Vertical Deflection Ceiling Runner — As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galv steel channel with stotted vertical deflection clips mechanically fastened within runner. Stotted dips, provided with step bushings, for permanent fastening of steel studs. Flanges sized to accommodate steel studs (Ime 2C). Vertical deflection ceiling numer installed parallel to direction of fluted steel deck, centered beneath deck, and secured with steel masony anchors, steel fasteness o welds spaced max 24 in. (61 om)0C. before or a ther optional spara)pilof for resistive material is used. The used o veided to secure the ceiling runner may only be used prior to the installation of the optional spray-appilod reatorial

material. THE STEEL NETWORK INC – VeriITrack VTD250. VTD362, VTD400. VTD600 and VTD800 A3. Light Gauge Framing —Floor and Ceiling Runners — As an alternate to the ceiling and floor runners in Item 241. A22 and 243. floor and ceiling runners to consist of gait steel channel sized to accommodate the Light Ga Framing "Stotted Stud (Item 2C1) or Light Gauge Framing" Stider C-Clip System (Item 2C2). Floor and ceiling parallel to direction of fluided steel deck, centered beneath deck, and secured with steel masony anchors, steel fasteners or vedwed with min 1-14 in (32 mm) and 3 in (76 mm) fluides, respectively. Ceiling runner installe parallel to direction of fluide steel deck, centered beneath deck, and secured with steel masony anchors, steel fasteners or vedwed to secure the ceiling runner may only be used prior to the installation of the optional stora-applied material.

spray-applied material. STEELER INC — Floor and Ceiling Runners

STEELER INC — Floor and Ceiling Runners AL Light Gauge Framing-Nothder Ceiling Runners 2A4, nothed ceiling runners to consist of C-shaped galv sele Ichannel with nothed return flanges sized to accommodate steel studs (Item 2C). Nothched ceiling runner installed parallel to direction of fluted steel deck, centered beneath valley, and secured with steel masony anchors, steel fasteners or welds spaced max 24 in. (61 mm) OC. before or after optional steps-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied firedread DLMAR SUPPLY INC — Type SCR B. Site Altachment Clips — (Optional - No Show) - When spray applied fireproding is used ceiling runner may b secured to deck with 2-shaped clips formed from min 1 in. (25 mm) long strips of mm 20 ag apis steel. Length of spray-applied fire-resistive materials on the bottom of the steel deck with 1-12 or 21 n. (36 or 51 mm) long upper a fiver floor. Leos of clips for discover of clips for the spray optied fireproding is used coiling runner may b spray-applied fire-resistive material on the bottom of the steel deck with 1-12 or 21 n. (36 or 51 mm) long upper a

ower legs. Legs of clips fastened perpendicular to valleys of steel deck (prior to application of spray-applik fire-resistive materials) and top of ceiling runner with steel fasteners or welds. Clips spaced max 24 in. (61

C. Studs — Steel studs to be min 2-1/2 in. (64 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length that ... suusa — steet studs to eem in 2-1/2 in. (64 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length that assembly height with bottom nesting in and resting on floor runner and with top nesting in coinging runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner without by 1/2 in. (13 mm) long water head set screws at minipight of slot on each side of wall. Studs spacing not to exceed 24 in. (610 mm) OC. When vertical deflection ceiling runner (Item 2A2) is used, steel studs secured to slotted vertical deflection clips, through the bushings, with steel screws at midheight of each slot. Stud spacing not to exceed 24 in. (610 mm) OC.

to exceed 24 in. (610 mm) CC. 11. Lipht Gauge Framing — Solited Studs — Solited steel stud to be used in conjunction with Lipht Gauge Framing —Floor and Ceiling Runners (Item 2A4). Solited steel studs to be min 2-1/2 in. (64 mm) wide. Stoted steel studs cut 1 in. less in length than assembly height with bothom nesting in and secured to both coming and floor numers. Ceiling runner secured to preformed slot within steel stud by means of No. 10 by 34 in. (19 mm) long low profile head steel screw. Stoted steel stud spacing not to exceed 24 in. (610 mm) CC. STELER INC — Solited Stud. 22. Light Gauge Framing — Solited C-Clip System — As an alternate to the Light Gauge Framing — Solited Steel screw.

STEELER NIC — Sloted Stud C2. Light Gauge Framing" —Sloter C-Clip System — As an alternate to the Light Gauge Framing" —Sloted Steel Studie (tem 2C1), a Slider C-Clip System — As an alternate to the Light Gauge Framing" —Sloted Steel Studie (tem 2C1), a Slider C-Clip System — As an alternate to the Light Gauge Framing and a steel stud to be used in conjunction with Light Gauge Framing —Floor and Cetting Framers (item 2A1). Steel dips and studs to be min 2.12 In (64 mm) vide. Steel dip insertied into inside tange of steel stud without attachment. Total length manner. Floor runner attachet to bottom of steel studie by means of No. 10 by 34 In (19 mm) long pan head steel screw. Celling runner secured to steel C-Clip by means of No. 10 by 34 In (19 mm) long pan head steel screw. Celling runner secured to steel C-Clip by means of No. 10 by 34 In (19 mm) long pan head steel screw. Celling runner secured to steel C-Clip by means of No. 10 by 34 In (19 mm) long pan head steel screw. Celling runner steachet bottom of steel screw located 38 in (-) Smith C- Slider C-Clip System D. Opseum Board" — Gysum Ibadra installed to a min total thickness of 58 in. (16 mm) and 1-1/4 in. (32 mm) on sach side of valif or 1 and 2 if rated assemblase respectively. Wall to be constructed as specified in the individual maintained between the top of the gystem board and the bottom of the skeel floor units and the top cov of screws shall be installed in the study 51/28 (80 mm) board in (102 mm) board with the top cov of screws shall be installed in the study 51/28 (80 mm) board and the bottom of the valit. Joint System — Max separation between bottom of floor and top of wall at time of installation of joint system is 1 in. (25 mm) The joint system is designed to accommodate a max 50 percent compression or extension from its installed with. The joint system is designed to accommodate a max 50 percent compression from the installation with the system consists of forming material and all in materina scilobox: A. Forming Material" ~ Nom S6 in, (

A. Forming Material" — Nom 58 in. (16 mm) and 1-1/a in. (32 mm) wide strips of min 4 pcf (64 kg/m3) mineral wo batt insulation for 1 and 2 hr rated assemblies respectively, out to thickness, compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the steel floor units on both sides of the wall. Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in. (1 2 m) apar along the length of the joint. ROCK WOOL MANUFACTURING CO — Delta- Board ROXULINC — SAFE THERMAFIBER INC — Type SAF A1, Forming Material" - Strips — (Optional) - Nom 5/8 in. (16 mm) and 1-1/4 in. (32 mm) wide precut mineral wood A1, between the reserved to represent the componence of Expenses in theirance rend final-

strips for 1 and 2 hr rated assemblies respectively. The strips are compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the steel floor units on both sides of the wall. Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in (12 m) apart along the

walk. Adjoining lengths of strips to be tightly builder with builder same not owner in the time bin owner build stoles of the temp. A second the plant.
Walk Adjoining lengths of strips to be tightly builder with builder same spaced min 48 in (12 m) apartal atom the temp.
B FIL Void to Crevel Naterial" – Min 116 in (16 min 16 m



Notes:

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SECTION A-A

System No. HW-D-0080

Assembly Rating - 2 Hr Nominal Joint Width - 3/4 In.

. Floor Assembly — The fire-rated fluted steel floor until/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Floor-Ceiling Design in the Fire Resistance Directory at shall include the following construction features:

A sever how after Provincing — what a in: every gain sever inter into units. 5. Concrete — Mi-1212. in: thick reinforced concrete, as measured from the top plane of the floor units. 3. Spray-Applied Fire Resistive Materials — (Optional, Not Shown) — Prior to the installation of the Forming Materia and Fill, Void or Cavity Materials (Imers 3A, 38, respectively). The steel floor units may be sprayed with a min 5/16 in. thickness to a max 11/16 in. thickness of fire resistive material.

In: Indoletes to a final r 10 of in unclusions in the reasover maintain. W R GRACE CO - CONN — To pMK-SHYT AND A Start (Section 1) and the section of the individual POO Series Root Calling Design in the U. IF here testings because the houry raining of the root assembly shall equal to or greater than the hourly rating of the wall assembly. The root assembly shall include the following roothrules.

construction features: A Steel Roof Deck — Max 3 in. deep galv steel fluted roof deck. B. Roof Insulation — Min 2-1/4 in. thick poured insulating concrete, as measured from the top plane of the floor unit: Roof Assembly — As an alternate butters 1 and 1A, a fire rated protected fluted steel deck roof assembly shall be constructed of the materials and the materials and in the manner described in the individual P700 effects Roof-Calling Design in the UL. If Re Resistance Directory. The hordy rating of the roof assembly shall be equal

or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction

to or greater than the houtly raining of the wail assembly. The roof assembly shall include the following construction features: A. Steel Roof Deck — Max 3 in. deep galv steel fluider foor deck. B. Srgar — Applied Fine Resistive Materialsi — (Mors Shown) — Prior to the installation of the steel ceiling runners, Forming Material and FII. Void or Carvity Material (Items 2A. 3A, 3B), the roof Saesmbly shall be sprayed with the type and hickness of fire resistive material indicated in the individual Froof Saesmbly shall be sprayed with the type and hickness of fire resistive material indicated in the individual Froof Saesmbly shall be sprayed with the be constructed of a LI. Classified Concrete Blooks¹. See Concrete Blook (CA2T) category in the Fire Resistance Directory for names of manufacturers. Joint System — Max separation between bottom of or roof floor and top d wall is 34 in. The joint system is designed to accommodate a max 33 percent compression or route sinsitialed width. The joint system is designed to accommodate a max 33 percent nucleosms for main installed width. The joint system is designed the fluide deck, approximately 20 percent larger than the area of the fluides and compressed in the base of the fluide deck, approximately 20 percent larger than the area of the fluides and installed edge first into joint percent, in thickness of 4 percent, in thickness of 4 percent, in thickness of 4 percent, in the section of the solid and be decided and by a dwall and a fluide deck, approximately 20 percent larger than the area of the fluides and installed edge first into joint recessed 14 in. from both wall surfaces. Adjoining lengths of bast to be rightly butted with butted seasm spaced 14. Forming Material — Minerial — Minerial max and percent, in thicknesse d bast ecclores recessed 14 in. from both wall surfaces. Adjoining lengths of bast to be rightly butted with butted seams spaced 14. Forming Material — Minerial — Minerial Material and allow otheres formed to the shane of the 14. For

recessed 144 in: from both wall surfaces. Appointing targets to version to service and the service of the point. min 48 in: apart along the length of the point. A1. Forming Material—Plugs— (Optional-Not Shown) Performed mineral wool plugs, formed to the shape of the steel deck units, friction fit to completely ill the fulles. The plugs shall be recessed 144 in. from both wall surfaces. Additional forming material, described in Item 2A, to be used in conjunction with the plugs to fill the gap between

Additional torming material, described in the tore used in transmission terms and the profile wail and bottion of steel deck. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP777 Speed Plugs FIII, Void or Carly Material — Sealant — Min 14 in incinces of fill material installed on each side of the wail in the flutes of the steel deck and between the top of the wail and the bottom of the steel deck, flush with each

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surface of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S Elastomeric Firestop Sealant

ring the UL Classification Mar

lilti Firestop Systems

A. Steel Floor and Form Units* — Max 3 in. deep galv steel fluted floor units.

Capabilities - 33% Compression or Extension

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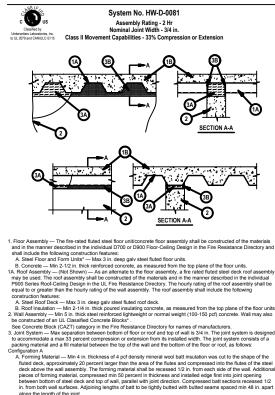
the materials an

ed from the top plane of th

(A B

- . Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- . If alternate details matching the field conditions are not available, Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating.
- . All rated assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""></notes>	 Any modification to these details could result in an application/system not meeting the UL or Intertek Classification or the intended temperature or fire ratings. Details shown are up to date as of February 2015. For additional information on the details, refer to the most current "Underwriter's Laboratories Fire Resistance Directory (volume 2.)" 			
	IB NUMBER:			
CHECKED:				
TY FIF JO	REVISIONS: TYPICAL FIRESTOP JOINT DETAILS			
SH	IEET NAME:			
SH				



In from both wall surfaces. Adjoining lengths or batt to be lightly concerned to the source of the plant. along the length of the plant. FIBREX INSULATIONS INC — FBX Safing insulation Alf. Forming Material—Flugs. = (Obtona-Net Shown) Performed mineral wool plugs, formed to the shape of the flated deck, friction fit to completely fill the flutes. The plugs shall be recessed 1/2 in. from both wall surfaces. Additional forming material, described in tem 34, to be used in computing with the sub-thermal pluge to the sub-thermal surfaces.

Padiational forming interfairs, escalade in two, to be used in conjunction with the page to in the gap between the top of the wall and bottom of steel deck. HILT CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP777 Speed Plugs 5. FIII Void or Carly Material * Sealant — Min 1/2 in trickness of fill material installed on each side of the wall in the flutes of the steel deck and between the top of the wall and the bottom of the steel deck, flush with each

surface of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Flexible Firestop Seala iourration B

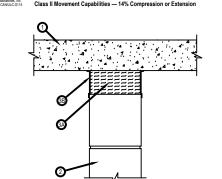
onfiguration B A. Forming Material — Min 4 in. thickness of 4 pcf density mineral wool batt insulation compressed min 50 percent in thickness and installed dege first into joint opening between bottom of steel deck and top of wal, parallel with joint direction. Compresse batt sections recessed 172 in from both wall surfaces. Adjoining lengths of batt to be tightly butted with butted seams spaced min 48 in. apart along the length of the joint. FIBREX INSULTIONS INC — FEX Safing Insulated Between the top of the wall and the bottom of the seate lock, lush with each surface of the wall. HILT CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP006 Flexible Firestop Seatant Bearing the UL Classification Mark

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System No. HW-D-0097 Assembly Rating — 2 Hr ominal Joint Width — 2 In.



Floor Assembly — Min 4-1/2 in. thick steel-reinforced lightweight or normal weight (100-150 pcf) struct
 Wall Assembly — Min 8 in. thick steel-reinforced lightweight or normal weight (100-150 pcf) structural

van assentuty — kmi on it must steer-teninoteu nginweigin on normal weigin (too- top Log souccut a continue) and also be constructed of any LL Cassified Concrete Blocks*.
 See Concrete Blocks (CA2T) category in the Fire Resistance Directory for names of manufacturers.
 Joint System — Max width of joint (at time of installation of joint system) is 2 in. The joint system is design accommodate and a top 4 control compression or extension from its installed width. The joint system shares the provided of the provided of

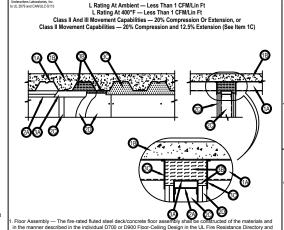
the following: A Forming Material – Min 4.0 primeral wool batt insulation installed in joint opening as a permanent form. Batt cut to min width of 8 in, and installed cut edge-first into joint opening, parallel with joint direction, such that batt sections are compressed inni 50 percent in thickness and that the compressed batt sections are flush with both surfaces / vall. Adjoining lengths of batt to be lightly butted with butted seams spaced min 46 in, apart along

ne lengths of the joint. ROCK WOOL MANUFACTURING CO — Delta Board

RUCK WOOL MANUFACTURING CO — Detat Board B. Fill, Void or Cavity Material* — Min 1/8 in, wet hickness of fill material sprayed or trovelled on each side of wall to completely cover mineral wool forming material and to overlap a min 1/2 in, onto concrete floor and concrete wall. IILITI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CPG7 Eriestop Sprav CFS-SP WB Eriestop Joint Spray aring the UL Classification Mark



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System No. HW-D-0087

bly Rating — 1 And 2 Hr (See Items 2 And 3B) Nominal Joint Width — 2 In.

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System No. HW-D-0087 (cont.)

32. Forming Material" - Strips — (Optional) - Nom 5/8 In. (16 mm) and 1-1/4 in. (32 mm) wide by 4 in. (102 mm) thick precut mineral wool strips for 1 and 2 hr rated assemblies, respectively. The strips are compressed 50 percent in thickness and frimity packed in the tage between the top of the gypsum board and bottom of the steel floor units on both sides of the wall. HLIT CONSTRUCTION OF HEMCALS, DIV OF HILT INC — CP 767 Speed Strips

HLIT CONSTRUCTION CHEMICALS, DIV OF HLIT INC — CP 767 Speed Strips C. Fill Void of Carly Wateriat¹ — Mh 1176 in. (16 mm) dy thickness (im) inf 8in. or 32 mm wet thickness) of fill material sprayed or toweled on each aide of the wall to completely cover mineral wool forming material and to overlap a min of 12 in. (13 mm) ond og psysmi board and steel deck on bot sides of wall. When spray-applied fire resistive material is applied to the steel deck, the fill material is to overlap the gypsum board a min of 12 in. (13 mm) and the spray-applied fire resistive material and to 21 n. (51 mm) to obti sides of wall. When spray-applied fire resistive materials are used, the CP672 firestop spray shall overlap the wall a min 12 in. (13 mm) and overlap the spray-applied fire resistive material a min of 2 n. (51 mm) to obti sides of the wall. HLIT CONSTRUCTION CHEMICALS, DIV OF HLIT INC — CP672 Firestop Spray or CF5-SP WB Firestop Joint Spray

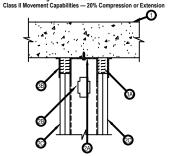
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ring the UL Classification Mark

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System No. HW-D-0106 Assembly Ratings — 1 and 2 Hr (See items 2 and 3) Nominal Joint Width — 2 in. L Rating At Ambient - Less Than 1 CFM/Lin Ft L Rating At 400°F - Less Than 1 CFM/Lin F



Floor Assembly — Min 4-1/2 in. (114 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 600-2400 kg/m3) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified oliow-core Precast Concrete Units.

1600-2400 kg/m3) structural concrete. Floor may also be constructed of any 6 in. (152 mm) hick UL Classified hollow-core Freeast Concrete Units' See Precast Concrete Units'.
2 wall Assembly — The 1 or 2 mH re-rated grysum band and fast wall assembly shall acconstructed of the materials an in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shares may also be constructed of the materials an in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shares may band be constructed of the materials an in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shares individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shares individual U400 or V400 Series Wall assembly shall acconsist of min No. 25 gauge galv steel channels sized to accommodate setal study (ther 28). Finange height of coling runner shall be min 14 in (6 mm) greater than max extended joint width. Celling runner secured to concrete floor slab with seed Rainener sagazed ta i. (610 nm) OC.
A1. Light Gauge Fraining'-Stotted Celling Runner — (For use in applications where the nominal joint width does not concrete floor slab with seed manony anchors or steel flashener sagaced spaced max 2011, (610 nm) OC.
BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORMUS REPARADED INEE MALL PRODUCTS CO — CST CLAINOURTIFIC IN QUE WARE REPRED TO RESIDENC — Type SLT
METAUL DIR WARE PRODUCTS CO — CST CLAINOURTIFIC IN QUE WARE REPRED NECH PRODUCTS CO THE CLAINOURTHER LING — THE SYMENT
ScAPCO STEEL STUD MANUFACTURING CO TELLING NOUSTFIELS INC — True-Action Deflection Track
K2. Light Gauge Fraining'-Vertical Deflection Cleing Runner — (For use in applications where the nominal joint width does not sub with does not sected 1 in (25 mm). As an alterate to

TELLING INDUSTRIES L L C — True-Action Deflection Track AC. Light Gauge Fraiming'-Vertical Deflection Celling Runner — (For use In applications where the nominal joint width does not exceed 1 in. or 25 mm). As an alternate to the celling runners in Items 2A and 2A1, vertical deflection celling runner to consist of galv setel channel with stoted vertical deflection celling mechanically fastent within runner. Slotted cilips provided with step bushings for permanent fastening of steel studs. Itemapes isade to accommodate setel studs (Item 2B), Vertical deflection celling runner masony anchors spaced max 24 in. (610 mm) CC. THE STEEL NETWORK INC — VertiTack VTD260, VTD362, VTD400, VTD600 and VTD800 AS1. Light Gauge Framing' - Notherd Celling Runner — As an alternate to the celling runners in Items 2A through 2A5, notched celling runners to consist of C-shaped gaix steel channel with notched return flanges sized to accommodate spaced and act and the celling runner secure disconcelle floor slab with steel mission of UMAB SIGPT VINC — Twee STER 4.

accommodate seed assume (successful and set of the set

maintained between the top of the grysum board and the bottom of concrete flow. The screws altaching the grysum board to the studie at the top of the first jayer shall be located 4. In (120 mm) from the floor assembly. The hourly fire raining of the joint system is dependent on the hourly rating of the wall. J. Joint System — Max width of joint (at time of installation of joint system) is 2 in. (51 mm). The joint system is designed to accommodate a max 20 percent compression or extension from the installation width. The joint system is consist of the following: A. Forming blatteriat — whom 5/8 or 1.14 in. (16 or 32 mm) bick strigs of min 4.pd (64 kg/m3) mineral wob back A. Forming blatteriat — whom 5/8 or 1.14 in. (16 or 32 mm) bick strigs of min 4.pd (64 kg/m3) mineral wob back too fill the optimized back on the top of the strigger back on the top of the strigger back on the top of the top of the strigger back on the strigger back on the top of the top of the strigger back on the top of the strigger back on the top of the top of the strigger back on the strigger back on the strigger back on the strigger back on the top of the strigger back on the strigger ba

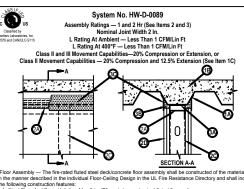
insulation for 1 and 2 Hr rated tively, cut to width, com rcent in width and firm nowward, to 1 are 2 rm rate assembles, respectively, cut to width, compressed 33 percent in width and firmi packed into gap between top of the gypsum board and bottom of the floor assembly, flush with both surfaces of wall. Adjoining lengths of batt to be tightly butted with butted seams spaced min 48 in. (1.2 m) apart along the length of the joint. length of the joint. ROCK WOOL MANUFACTURING CO — Delta Board ROXUL INC — SAFE THERMAFIBER INC — Type SAF A1. Forming Material* - Strips — (Optional) - Nom 5/8 in. (16 mm) and 1-1/4 in. (32 mm) wide precut mineral wor bit to the thermal science of the Material Science and the Materials compressed 50 percent in

A1. Forming Material" - Strips — (Optional) - Nom 5/8 in, (16 mm) and 1-1/4 in, (32 mm) wide preat mineral wool strips for 1 and 2 har related assemblies, respectively. The strips are cut to thickness, compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the floor assembly flash with both surfaces of the walk adjoining lengths of strips to be tightly butted with bluetd seams spaced min in. (12 m) apart along the length of the joint. IILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Speed Strips B. Fill, Void or Cavity Material — Min 1/16 in. (1.6 mm) dry thickness (im 1/8 in. or 3.2 mm wet thickness) of fill material sprayed to toweld or nead side of the wait to completely cover mineral wool forming material and to compare 10 toweld or the ach side of the wait to completely cover mineral wool forming material and to optimum 1/2 in. (15 RVCTINO CHEMCHALS, DV OF HILTI INC — CP 767 testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI INC — CP 767 Testeds pary or CFS-SP WB Firestop Join HILTI CONSTRUCTION CHEMCHALS, DV OF HILTI WC HILTI PARKER HILTI DONSTRUCTION CHEMCHALS, DV OF HILTI PARKER HILTI DONSTRUCTION CHEMCHALS, DV OF HILTI WC HILTI PARKER HILTI D

Bearing the UL Classification Mark



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In the manner described in the individual Floor-Ceiling Uesgin in the UL-Fire Resistance Directory and shall include A Signific possible from tuber SMAs 3 in (76 mm) deep galv step fluted floor units. B. Concrete — Min 2-12 In: (64 mm) thick reinforced concrete, as measured from the top plane of the floor units. C. Spray-Applied Fire Resistive Materials — (or plana), Not Shown—Pirro for a fleth the installation of the deflection channel, Forming Material and Fill, Vold or Cavity Material (Items 3A, 3B, 3C) the steel floor units may be sprayed with a min 5/16 in. In was 1-34 in. Inthickness of fire resistive material. W R GRACE & CO - CONN — Type MrK-8-HY ISOLATEK INTERNATIONAL — Type a MrK-8-HY ISOLATEK INTERNATIONAL — Type

onstruction 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

floor units. 18. Roof Assembly — As an alternate to items 1 and 1A, a fire rated protected 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 P700 Series Roof-Celling Design in the ULF ire Resistance Directory. The houry rating of the roof assembly shall be equa to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

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

B. Spray—Applied Fire Resistive Materials" — (Not Shown)—Prior to or after the installation of the steel or runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B), the roof assembly shall b with the type and thickness of fire resistive material indicated in the Individual P700 Series design.

with the type and thickness of fire resistive material indicated in the individual P700 Series design. Nail Assemby — The 1 or 2 hr fire rated gyspur board Xetel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall or Partition Design 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 galv steel channe sized to accommodate steel studies (tem 2C). Ceiling runner to be provided with 11, c25 mm) flanges. Ceiling runner installed within the U-shaped deflection channel (tem 3A) with a 1-1/2 in. (38 mm) gap maintained betwee the top of ceiling runners and top of deflection plate.

the top of celling runner and top of deflection plates A1. Light Gauge Framing"-Slotted Celling Runner — (For use in applications where the nom joint width does not exceed 1-12 in, or 38 mm). As an alternate to the celling runner in Inter A2, slotted celling runner in toral parallel to direction of fluids detailed dex, centred beneath valley, and secured with sleet in manory anchors, steel fasteners or welds spaced max 24 in (610 mm) OC before or after optional sparay-applied material. When slotted celling runner is used, deflection channel (Item A3, shotted celling larger-applied material. When slotted celling runner is used, deflection channel (Item A3, shott) celling and spray-applied material. When slotted celling runner is used, deflection channel (Item A3, shat) and to be used. When optional spray-applied material to direct larger spray celling that min 376 is (15 mm) dam steel mascrug anchors, steel fasteners or welds that min 376 is (5 mm) dam steel mascrug anchors, steel fasteners or welds that the celling runner is used, deflection channel (Item A3, shat) and to be used. When optional spray-applied material when slotted celling turner is used, deflection channel (Item A3, shat) and to be used. When optional spray-applied material walking of the steel larker, when the well disk, stored to celling turner is used. Steel celling turner is used, deflection channel (Item A3, shat) and the used lask stored to celling turner is used. Steel celling turner is used, deflection channel (Item A3, shat) and the used lask stored to celling turner is used. Steel celling turner is used, deflection channel (Item A3, shat) and the used lask stored to celling turner is used. Steel steel steel stored to celling turner is used. Steel steel steel steel steel steel stored to celling turner is used. Steel st

(#10 mm) OC. BRADY CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORNIA EXPANDED METAL PRODUCTS CO — CST CLARROIETRICH BUILDING SYSTEMS — Type SLT, SLT-H MARINOWARE, DIV OF WARE INDUSTRIES INC — Type SLT METAL-LITE INC — The System

SCAFCO STEEL STUD MANUFACTURING CO

MARINOWARE, DV OF WARE INDUSTRIES INC — Type SLT METAL LTER C. — The System NETAL LTER C. — The System NINKG CD STELT NDR (INEUSTRIES) AND MARK DIMING CD CALL Light Cauge Framing'- Virtual Deflection Deflection Track A2. Light Cauge Framing'- Virtual Deflection Deflection Track A2. Light Cauge Framing'- Virtual Deflection Deflection Califor Uncernitive State (International Particle A) and A1, vertical deflection celling runner to consist of gata vertex electhanel with State Virtual Mark Dimese (International Particle A) and A1, vertical deflection celling runner to consist of gata vertex electhanel with State Virtual Mark Dimese (International Particle A) and State (In

each side. Stud spacing not to exceed 24 in (610 mm) OC. D. Gysum Board⁻⁻⁻⁻ Orgsum board installed to a min total thickness of 5/8 in. (16 mm) or 1-1/4 in. (32 mm) on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individue Wall and Partition Design in the ULF increassitance Directory, exceed that a non 2 in. (51 mm) gap shall be maintained between the top of the gypsum board and the bottom of the steel deck and the top row of screws shall be installed into the studs 4 to 4 -1/2 in. (102 to 114 mm) below the lower surface of the floor or roof. Joint System — Max separation between bottom of floor or ord and top of wall at time of installation of joint system 2 in (51 mm). The joint system is designed to accommodate a max 20 or 125 percent (see time 1(2) compression o extension from its installed width. The joint system consists of a deflection channel, forming material and a fill materia a follower

». Intron Channel — A nom 3-5/8 in (92 mm) wide by 3 in (76 mm) deen min No. 22 gauge steel Lisbaned.

as follows: A Deflection Channel — A nom 3-5/8 in. (92 mm) wide by 3 in. (76 mm) deep min No. 22 gauge steel U-shaped channel. Deflection Channel installed parallel to direction of fluted steel deck, centered beneath valley, and secure to valley of steel deck with steel fasteners or by weight spaced max 24 M. (610 mm) OC. Deflection channel is para-applied fire ressive material is used. The celling runner (tilem 2A) is installed within the deflection channel. The maintain a 1-12 II. (35 mm) gap between the top of the celling runner (tilem 2A) is installed within the deflection channel. The B four number is not some top the observation of the celling runner (time 2A) is installed within the deflection channel. The B four number is not some top the observation of the celling runner (time 2A) is installed within the deflection channel. The B four number is not applied to the celling runner (time 2A) is installed within the deflection channel is insulation. For all 2 hr radie as dis firming and 1-14 m, (22 mm) thick stips of min 4 pd mixer and firmily packed into the gap between the top of the gypsum badr and bottom of the steel deck. flush with both surfaces of the wall. Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in. (1.2 m) apart along the length of the joint. ROCK WOOL NANUFACTURING CO — Delta Board ROXUL INC — SAFE 81. Forming Material* - Strips = - (Optional) - Nom 5/8 in.(16 mm) and 1-114 in. (32 mm) wide by 4 in. (102 mm) thick seams spaced min 48 in. (1.2 m) apart along the length of the joint. HLT CONSTRUCTION CHEMCHALS, DV OF HIL INC — O P37 Speed Strips C. Fill, Void or Carly Material* - Min 11/6 m. (1.6 mm) dy thickness (mn 18 in. or 3 mm we thickness, of fill material approach of trived or to ach side of the wall completely core minerial wool forming material and to material approach of throwed or the side side deck and to completely core minerial wool forming material and to C. Fill, Void or Carly Material* - Min 11/6 m. (1.6 mn) dy thickness

C. Hill, Youd or Cavity Material — Mn 11/b in (1, b mm) dry finchess (mn 1/b in r3.2 mm wet increase) of this material sprayed or troweled on each side of the walf to concletely cover inner al void for the side of the valid and to overlap a min of 1/2 in (13 mm) onto gypsum board and atel elde kon both sides of wall. When spray-applied fire resistive materials is applied to the side dock, the fill material is to overlap the gypsum board a min of 12 in (13 mm) and the spray-applied fire resistive materials are not given by party shall overlap the wall and the stray-applied the resistive materials are used, the CPP02 freetop pary shall overlap the wall and the 11.1 (13 mm) and overlap the groy-applied fire resistive material a min d 2 in (51 mm) on both sides of the wall. HLI CONSTRUCTION CHEMCHALS, DV OF HLI NC — OPC92 Freetop Stray or CFS-SP WB Firestop Join

aring the LIL Classification Mark



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3A) shall not be used. When optional spray-applied material is used on the steel deck, notched celling runner secured through spray-applied material to each valley of steel deck with min 3/16 in. (5 mm) diam steel fasteners spaced max 24 in. (610 mm) OC.
DLMAR SUPPLY INC — Type SCR
B. Steel Attachment Citips — (Optional - Not Shown) - When spray applied fireprosing is used celling runner may be secured to lock with 2-shaped chaips formed from in. 11n. (25 mm) long strips of min 20 ga paiv steel. Length of spray-applied tire-resistive material on the bottom of the steel deck with 1-12 or 2 in. (38 or 51 mm) long upper and lower loss. Length of upper deck (prior to palpication of spray-applied fire-resistive material) and top of celling runner with steel fasteners or welds. Citips spaced max 24 in. (610 mm) OC.
C. Studs — Steel studs to be min 2-12 in. (64 mm) wide. Studs out 1/2 to 34 in. (13 to 19 mm) long upper and use starbine material) and top of celling runner with steel fasteners or welds. Citips spaced max 24 in. (610 mm) OC.
C. Studs — Steel studs to be min 2-12 in. (64 mm) wide. Studs out 1/2 to 34 in. (13 to 19 mm) long unner without attachment. When solted celling runner with steel fasteners or welds. Citips spaced max 24 in. (610 mm) OC.
C. Studs — Steel studs to be min 2-12 in. (64 mm) vide. Studs out 1/2 to 34 in. (13 to 19 mm) long stures that assess the material of the steel s

extension from its installed width. The joint system consists of a deflection channel, forming material and a fill material is follow:
A. Deflection Channel — A nom 3-56 in. (92 mm) wide by 3 in. (76 mm) deep min No. 22 gauge steel U-shaped channel. Deflection channel istalled perpendicular to direction of fillued steel deck and secured to valleys with masonry anchors, steel fasteners or welds spaced max 24 in. (80 mm) OC before or after optional spray-applied for existive material is used. The celling runner (inter A2) is installed within the deflection channel. Instantian a 1-12 in. (38 mm) gap between the top of the celling runner (inter A2) is installed within the deflection channel. The celling runner (inter A2) is installed within the deflection channel. The calling turner if not fastened to the deflection channel.
The filles and with a length approx equal to the overall thickness of the wall. Multipe pieces stacked on top deflection channel. The deflection channel. The deflection channel is used. The stacked on the deflection channel. The thickness and installen out approx 25 percent vider than be there are advected and then compressed 50 percent in thickness and installen out approx of the deflection top of the celling runner. The mineral wool bat insulation is to project beyond each side of the celling numer, the top of the gap between the top of the gap former and tipty packed, cut degle first, into the gap between the top of the gap. Adv. Cut Deflection Channel CANDE C

AFIBER INC - Type SAF

THEEMAKFIESTIC- Type SAE BI Forming Matkrield — Pugs (For use with 3-1/2 in. or 89 mm deep studs or larger) — (Optional-Not Shown) -Preformed mineral wool Jugs, formed to the shape of the fulued floor units, friction fit to completely fill the fulue above the coeling runner. The Jugs shall project beyond sech side of the coeling runner, flush with wall surfaces. Additional forming material, described in Item 38, to be used in conjunction with the plags to fill the gap between the top of grysm board and the bottom of plag. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP777 Speed Plags

Underwriters Laboratories, Inc. January 11, 2013

8. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units. S. Spray-Applied Fire Resistive Materialst — Principal Statistical of the defection channel. Forming Material and Fill, Void or Cavity Material (Ilems 3A, 3B, 3C) the steel floor units may be sprayed with a min 5/16 i (il smm) to mar 1.34 in. (A4 mm) bickness of flor carbits meanted: (8 mm) to max 1.344 in .(4 mm) thickness of fire resistive material. W R GRACE & CO - CONN — Type MK-8-HY ISOLATEK INTERNATIONAL — Type 300 When Type 300 spray is used, the movement cycling for the joint is Class II Movement Capabilities with 20% Compression and 12.5% Extension. Id 12.5% Extension. — (Not Shown) — As an alternate to the floor assembly, a fire rated fluted steel deck roof assembly. A. Root Assembly — (two showh) — As an automate to the noor assembly, a line rated nuels site deck tool assembly may be used. The roof assembly shall be constructed of the materials and in the manned described in the individual PP00 Series Root-Celling Design in the UL. Firs Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The root assembly shall be individual.

00 Series Non-Celling Design in tartog of the wall assembly. The roof assembly shi nstruction 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 me

In the maintain bubble following construction features or book of book county groups in the behavior and construction features of the second secon

our units. B. Rod Assembly — As an alternate to items 1 and 1A, a fire rated protected 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 P700 Series Roof-Celling Design in the ULF in Resistance Directory. The houry rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction

Bo of greater than the hoully faiting or the Waii assembly, Line Yould assembly anism nature to humming outputsets. A. Sheel Root Deck — Max 3 in (76 mm) deep galv steel futed roof deck. B. Spray—Applied Fine Resistive Materials'— (Ivol Shown)—Price to or after the installation of the stealable runners, Forming Materials and Root Gavity Materials (A) (Shown)—Price to a same the installation of the stealable runners, Forming Materials and Root Gavity Materials (A) (Shown)—Price to a same the installation of the stealable runners, Forming Materials and Root Gavity Materials (A) (Shown)—Price to a same the installation of the stealable runners, Forming Materials and Root Gavity Materials (A) (Shown)—Price (A) (Shown)—Price (A) (Shown)—Price (A) (Shown)—Price (Vial) Assembly (A) (Shown)—Price (A) (Shown)—Price (A) (Shown)—Price (Shown)—Price (A) (

sumer installed within the U-shaped deflection channel (lem 3A) with a 1-12 in. (38 mm) gap maintained between the top of ceiling runner and top of deflection plate. A1. Light Gauge Framing-Stotted Ceiling Runner — (For use in applications where the nominal joint with does not exceed 1-12 in. or 38 mm) - As an alternate to the ceiling runner in them A2, slotted ceiling runner in tossite gaiv steel channel with slotted flanges sized to accommodate steel studs (lem 2C). Slotted ceiling runner intsalled perpendicular to or 38 mm) - As an alternate to the ceiling runner intsalled perpendicular to direction of fluid set de cko fedore or after freproofing and secure to varielys with steel masonry anchors, steel fasteners or welds spaced max 24 in. (810 mm) OC. The use of welds to secure the ceiling runner in used, deflection channel (tem 3A) shall not be used. When optional spray-applied material. When slotted ceiling runner is used, deflection channel (tem 3A) shall not be used. When optional spray-applied material is used on the steel deck. Stotted ceiling runner secured through spray-applied material is used with min 316 in. (5 mm) diam steel fasteners steel masonry anchors spaced max 24 in. (810 mm) OC. BRADY CONSTRUCTION INNOVEM SLUTERACK SYSTEMS — SLP-TRK CALIFORNIA EXPANDED METAL PRODUCTS CO _ CST CLARROIETICH ULIDING SYSTEMS _ Type SLT METAL-LTER MCI _ The System METAL-LTER MCI _ The System _ more steel

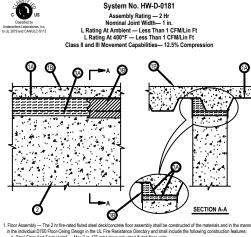
A3. Light Gauge Framing⁻¹. Notched Ceiling Runner — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to runsisi of C-shaped gal wisel channel with notched return flanges sized to accommodate sitel studs (Item 2G). Notched ceiling runner installed perpendicular to direction of flated steel dock and secured before or after spray-applied materials to valesy with steel masony anchors, steel fasteners or welds spaced max 24 in. (610 mm) OC. The use of welds to secure the ceiling runner installation of the optical spray-applied material is used on the steel dock, notched ceiling runner installation of the spray-applied material is used on the steel dock, notched ceiling runner 3A) shall not be used. When optional spray-applied material is used on the steel dock, notched ceiling runner is used, dorn is dars applied in asterials well of the steel fasteners.

CLARKDIETRICH BUILDING SYSTEMG — Type SLT, SLT-H MARINOWARE, DUV GY MAER INUUSTRIES INC. — Type SLT METAL-LITE INC — The System SCAPCO STEEL SYLD MANUFACTURING CO TELLING INDUSTRIES LL C — True-Action Deflection Track A.2. Light Gauge Framing'-Vertical Deflection Celling Runner — (For use in applications where the nominal joint widh does not exceed 1 in or 25 mm) - As an alternate to the celling runners in tems 2A and 2A1, vertical deflection celling runner to consider of galv steel channel with skilder vertical deflection digits mechanically tasterned adhetics on celling runner to consider of galv steel channel with skilder vertical deflection celling runner and seconomodate site studies (fitem 2C). Vertical deflection celling runner installed prepredicate to direction of listed fasternes or webits spaced max 24 in. (810 mm) OC. The use of veld6 to secure the celling runner is used, deflection channel (fitem 3A) shall not be used. When optional spray-applied material is valued on the steel deck with min 3/16 in. (5 mm) diam steel lasteners or steel masonay anchors spaced max 24 in. (810 mm) OC. THE STEEL NETWORK INC — VertTack VTD260, VTD362, VTD400, VTD600 and VTD800 A3. Jupht Gauge Framing' - Notched Ceiling Runner — A an alternate to the other runners in Items 2A through A3. onched celling runners to consist OC-shaped gal veleci channel with notched returner in fages sized to

Notes:

- . Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the fireston assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating.
- 6. All rated assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL Svstem #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""></notes>	1. Any modification to these details could result in an application/system not meeting the	UL or Intertek Classification or the intended temperature or fire ratings.	2. Details shown are up to date as of February 2015.	3. For additional information on the details, refer to the most current "Underwriter's	Laboratories Fire Resistance Directory (volume 2.)"
DR CH ISS RE TY FIF JO DE	B NU AWN ECK SUE I VISIC PICA EET	ED: DATI	E:		



Floor Assembly — The 2 hr file-rated fluids steel decklooncrete floor assembly shall be constructed of the materials and in the manner describ in the individual 0700 Floor-Carling Design in the UL File Resistance Directory and shall include the following construction features: A Steel Floor Adv Form Units' — Mask in (Film) design side fluids floor units of the following construction features: B. Concept — Min 2-1/2 in (64 mm) thick interfaced concrete, as measured from the top plane of the fore rules.
 Concept — Min 2-1/2 in (64 mm) thick interfaced concrete, as measured from the top plane of the fore rules.
 Concept — Min 2-1/2 in (84 mm) thick interfaced concrete, as measured from the top plane of the formitisaterial and fill, inclid or canky material (imm).
 We reproce Adv 20 is concept and the individual D700 Series Design.
 W R GRACE AD - CON — Type 300 (194) Assembly — UN R in (703 mm) their varianced the individual D700 Series Design.

VID.4 Assembly — Win in (23 mm) thick reinforced lightweight or normal weight (100-150 pd or 1600-2400 kg/m3) structural concrete. Wall shall be instaled parallel with the flutes of the steel floor and form units (Rem 1A). Wall may also be constructed of any LL Classified 2 hr fire ral Concrete Blocks (MaXT) category in the Fire Resistance Directory for names of manufacturers. Joint System — Max separation between bottom of spray-applied fire resistive and top of the wall at time of installation of joint system is 1 in. (mm). The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width. The joint system

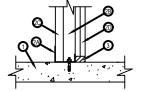
consists of the following: A Forming Material — Min4 pct (64 kg/ms) mineral wool batt insulation cut into strips with a width approx equal to the overall thickness of th wat. Sings compressed 33 percent in thickness and inserted into the gap between the top of the wall and the bottion of the focu nuts. When the vicio bineral the protected steel decisi is cloarded entirely and you the wall, that apprincip device insulation compressed 33 percent in thickness. When vicio themast the steel deck is located in part above the wall, that portion of the vicio dave the wall shale backwise which additional arrivation of the insulation compressed 35 percent in thickness.

wal shall be packed with additional strips of mineral word batt resultation compresses a percent in ununverse. ROCK WOOL MWHACTURINE CO — Date Baced B. FIL, Void or Cavity Metricia¹¹ — Min 18 in (, 22 mm) wet thickness of fill material sprayed or troveled on each side of the wall to completely over mineral word forming material and to overlap a min of 12 in (, 13 mm) onto wall and bete deck no bho sides of wall. When spray-applied file resistive meterial "in a splete to the sele floor and form units, the fill material is to overlap the wall a min of 12 in. (13 mm) and to overlap the spray-applied file resistive material and in 02 in (, 16 mm) onto baiks of the wall HILI TOCHSTRUCTION CHEMICALS, DIV OF HILTI INC — CP612 Firstop Spray or CFS-SP WB Firstop Joint Spray ¹¹



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1. Floor Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400

(i) Constraining and the set of the set o

features: A Floor and Celling Runners — 1-shaped runner, 2-1212. In: (64 mm) wide with unequal legs of min 1-14 in: (32 mm) and 21. (51 mm), fabricated from min 24 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with sheel fasteners located not greater than 2. in: (51 mm) from ends and not greater than 24 in: (610 mm) OC. 8. Steel Studs – CH-shaped studs. 2-122 n: (64 mm) wide by 1-121 n: (38 mm) deep, fabricated from min 25 MSG galv steel, cut to lengths 38 to 172 in: (101 mm) OC. OC. Studs nest in floor runner at theorem and 1 runner or stoted celling track at top. After installation of gypsum board liner panels (Item 2C), studs secured to fange of floor runner on finished side of wall only with No. 8 by 1/2 in; (13 mm) long self-dilling, self-lapping steel screenes. Studs secured to fange of stoted celling thack on finished side of wall only with No. 8 by 1/2 in. (13 mm) long self-drilling, self-tapping water head steel screws at stot midheight.

and of which the winn No. 5 yr 12, it, it is nin y bring semi-alimity, semi-apping water likes better screws at sour C. System Board — In it of Smith Nick by 24 in (150 mm) wide gyportune board liner panels as specified in the individual U400 or V400-Series design. Panels cut 1 in (25 mm) less in length than floor to ceiling height. Vertical deges inserted in 1H-shaped scatcion of CH-H stude. At the ends of the assembly, the free dege of the end panels are attached to the long leg of vertical J-runners (Item 2A) with 1-5/8 in. (41 mm) long Type S steel screws space max 12 in (356 mm) OC.

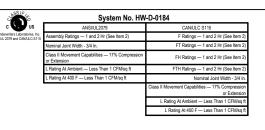
D. Gypsum Board* — Gypsum board sheets, 1/2 or 5/8 in. (13 or 16 mm) thick, applied vertically or horizontally in

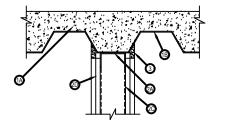
Opening the set of the set of the set of the set of the individual U400 or V400-Series design. A max 1 in, (25 mm) gap shall be maintained between the bottom of the gypsum board and the top surface of the concrete floor. The series addresses at the set of the gypsum board and the top surface of the concrete floor. The series addresses at the set of the gypsum board at the set of the set of the set of the distribution of the set of th

ed ceiling track. ourly fire rating of the joint system is equal to the hourly fire rating of the wall. The houry fire rating of the joint system is equal to the houry fire rating of the wall. 5. Till, Void of Carly Material" Sealant — Max separation between top of floor and bottom of gypsum board on the finish side is fin. The depth of sealant to be installed to fill the linear gap between the bottom of the gypsum board sheets (time 20) and the top of the concrete floor shall be equal to the overall thickness of the gypsum board sheet flush with the finished side of the wall. HLTI CONSTRUCTION CHEMCHCALS, UV OF HILT INC — CP 606 "Bearing the UL Classification Mark."



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Floor Assembly - The fire-rated fluted steel floor uni the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction

A Steel Floor and Form Units* — Max 3 in. (76 mm) deep galv steel fluted units. B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

W R GRACE & CO - CONN Type MK-6/HY W R GRACE & CO - CONN Type Mr.6HY Roof Assembly - (McIs Khom) — As an alterate to the floor assembly, a fire rated fluted steel deck roof assembly ying be used. The roof assembly shall be constructed of the materials and in the manner described in the individual PROS Grains Roof-Calling Desgrin in the LT prior Resistance Directory. The bodry draing of the roof assembly alto a lequal to or grater than the hourly ning of the well assembly. The roof

Reastance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall induction features: A Steel Roof Dexk— Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Insulation — Max 14 in, (77 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance — Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance = Max 3 in, (76 mm) deep gain steel fluid roof dexk. B Roof Reastance =

microses or the resistive material indicates in the monocular / 00 Series obsign. 2. Wall Assembly — The 1 or 2 the reated groups model/steel study all assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the

destrote on the number of the second se accommodate seles studs (tem 2.7), Hange height of cening numer shall be tim 1/4 m, (e tim) greater than max extended grint votm. Cells in umen installed particle I direction of their seles del deck, centered beneath' valley, and account whit betil maximum cancels will be statement or works spaced max 24 m, (610mm) C2 before or after optional spray-applied for resistive meterial is used. The use of webb is secure the celling runner may only be used prior to their installation of the optional spray-applied material. Just sele channel will be used prior to the installation of the optional spray-applied material. All solid calling runner to consist of gains sele channel will be used prior to the commode seles status (tem 20, Celling runner may object the direction of the direction

the optional spray-applied material. BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

EXPANDED METAL PROD

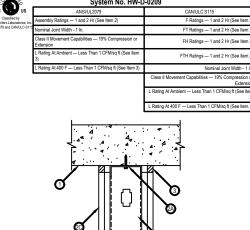
CALFORMA EXPANDED NETAL PRODUCTS CO — CST CARROTERICH AUDITORS SYSTEMS — Type SIT, SIT H SCAPCO STEEL, STUD MANUFACTURING CO TELLING INUDITATION STREED. L C — Two-Keno Deletion Tack THE STEEL NETWORK INC — VeriTrack VT, series 250/T, 362/T, 400/T, 600/T and 800/T Z. Liph Gauge Transmin Testing of the studies and and a strength and the strength

unner may only be used prior to the installation of the optional spins-applied material. THE STEL, INTORK NC — Vertical V17253, 352, 400, 400, 400, 400.
ASI. Light Gauge Framing⁻¹ Notched Ceiling Runner — As an alternate to the calling runners in thems 2A through 2A2, notched ceiling runners installed galaxies that will notched treat mingraphic scale to assume the status (IRIN 20, Notched ceiling runners) and the coll scale to the call to the call scale to the call scale to the call scale to the call to t

agree to accommodate a mark // percent compression or extension from its researce work, win 5 on 1, (to mm) incortes 5 on in mattern alled on each side of the wall between the top of the graphen board and he bottom of the selet dock, flash with each surface of wall. IT CONSTRUCTION OFENIXCLAS, DV OF HILTING – CP 9015 Elastometric Frestog Seatant or CP 805 Flexible Firestog Seatant. L flag adply when CP 506 Seatant is used. mmg Naternia — Optional, Not Shown) - Mineral wool insulation, flag datas bat insulation or polyurethane/polyethylene foam backer of ming matterial to be reseased from both surfaces of the 2 M fire and wall to accommodate the required theress of ill matterial.

aring the UL Classification Mark

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System No. HW-D-0209

Life of Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m2) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified holiow-core Precase Concrete U mis¹.
 Synal reast: Concrete U mis¹.
 Resistance Directory and shall be constructed or any 6 in. (152 mm) thick UL Classified holiow-core synal reast: Concrete U mis¹.
 Resistance Directory and shall nee ranked graves of manufactures.
 Synal reast: Concrete U and the individual L400, V400 or V400 Series Wall and Partition Design in the UL Flee
 Resistance Directory and shall neicode the following construction frequences:
 A Steel Floor and Ceiling Runners — Floor and ceiling runners of vall assembly shall consist of min No.25 gauge
 gav steel channels sized to accommodate steel stude (Item 28, Flange height of coling runner in the min 144 in.
 (6 mm) greater than max extended joint width. Ceiling runner secured with masonry anchors or steel fastenese
 spaced 24 in. (610 mm) OC.
 A1. Light Gauge Framing — Slotted Ceiling Runner - As an alternate to the ceiling runner in the 28, slotted ceiling
 runner is consist of gavi steel channel with sitel fasteneses spaced 34 in. (610 mm) OC.
 CALIFORNA EXPANDED MEAL REVOLUCTION CO — CST
 BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK.
 MARINGWARE, DIV OF WARE RUDUSTRIES INC — Type SLT

BRADY CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK. MARINOVMARE, DV OF WARE INDUSTRIES INC. - Type SLT A2. Light Gauge Framing⁻¹ – Vertical Deflection Ceiling Runner - As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galx steel channel with slotted vertical deflection clips mechanically fastened within runner. Stotted clips provided with step bushings for permanent fastening of steel studies of floor with steel fasteners spaced max 24 in. (610 mm) OC. THE STEEL NETVORK INC – VentTrack VTD262, VTD362, VTD400, VTD600 and VTD800 B. Studs – Steel studs to be min 3-12 in. (88 mm) wide. Studs cut 172 to 34 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and realing or floor runner and with top mesting in ceiling runner without by 171 in (13 mm) long wafer head steel studies (16 sted runner 34 mid vertica) for dial of walls. Stud spacing not to pervend 24 in (13 mm) long wafer head steel studies to selfor undie and other 326 in yeals in studies and studies of the runner studies and steel studies to selfor undies and the pervend part in ceiling runner without be by 171 in (13 mm) long wafer head steel stores at midnleight of slot on each side of wall. Stud spacing not to water 24 be in (15 mm) long wafer head steel stores at midnleight of slot on each side of wall. Stud spacing not b

attachment. When solited celling runner (filem 2A1) is used, steel studs secured to solited celling runner with No.9 by 172 in (15 mm) long water head steel screus at mindheight of all on each side of wall. Stud spacing not to exceed 24 in. (610 mm) OC. When vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical deflection celling runner (filem 2A2) is used, steel studs secured to solited vertical and Partition Design. For 2 h assembly, hos loyers of 58 in (file mm) thick gypsum board is required in the individual Wall and Partition Design. Wall to be constructed as specified in the individual L400 per solita below the below, runner (filem 2A1) is used. Steel studs shall be installed into the studs 3-12 (m. (B3 mm) below the floor. The screws attaching the system board to the source of the forst layer results at the top dynamic section stude at the hourly rating or the solita. Steel is used shall be installed in the budy rating or deflection (L2 mm). The hourly fire rating of the joint system is sequel to the budy rating or extension from the installed law. Min 56 in (16 mm) thickness of fill material installed on each side of the wall between the top of the system board and the about rating or board the action structed correct compression or extension from is installed Wall. Min 56 in (15 mm) thickness of fill material installed on the action structed correct floor. The screen floor, floar which we have the wall between the top of the system board and the bobtiom of the correct floor. Thas nor which may be access floar the walls. Scheen the to

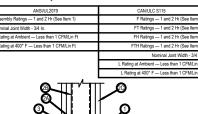
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System No. BW-S-0002



Floor Assembly — Min 4-12 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pd or 1600-2400 kg/m3) structural concrete. Floor may also be constructed of any 0 in. (152 mm) thick UL Dassifier holivo-coae Precase Concrete Units'. Wall Assemb) — The 1 or 2 har benefit organized maximum barrier and assembly abile and the onstructed of the materials and in the manner speci in the individual U400 or V400 Semis Wall or Pertition Design in the UL Fire Resistance Directory. The wall hash include the following marked-wall joint years as specified in the W Series Joint Systems in the UL Fire Resistance Directory. The wall hash include the following the order-dwall joint years as predicted in the W Series Joint Systems in the UL Fire Resistance Directory. The wall hash include the following the order-dwall joint years benefits the HM Series Joint Systems in the UL Fire Resistance Directory. The wall hash include the following the order of the the Series Mill or Pertition Disense in the UL Fire Resistance Directory. The Wall hash include the following the order of the the the Series Mill or Pertition Disense in the UL Fire Resistance Directory. The Wall hash include the following the order pertition of the Series Mill or Pertition Disense in the UL Fire Resistance Directory. The Series Mill order pertition the Series Mill order the Series Mill order the Series Mill order to the Series Mill order to the Series Mill order to the Series Million to the Series Mi

construction features: A. Steel Floor Runners — Floor runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (litem 2015. Floor runners to be provided with 1-1/4 in .132 mm) flances. Runners secured with steel fasteners spaced 12 in .1305 mm

OC. B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 to 34 in. (13 to 19 mm) less in length than assembly height with bottom mesting in, resting can and fastemed to foor runner with theter metal corews. Stud spacing not to exceed 24 in. (810 mm) OC. C. Coypure blaceri (mailed to a min total throbused 55 of r-114 in. (16 ro 22 mm) na easi ade valie for a 1 or 2 hr railed water prepetively. Wall to be constructed as specified in the individual UM00 rVM00 Steries Design in the UL Fire Restance Directory, courcip that am as: All is (15 mm) gap able to initiation the beat minimum back and top Gorcosties foor. The hourth fire in and the individual UM00 rVM00 Steries Design in the UL Fire Restance Directory.

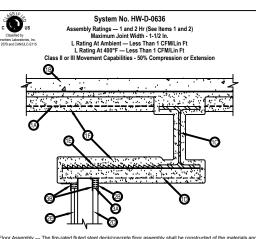
except that area 34 in. (19 mi) gap shall be mantaned between the comunic gypsen wave area to be a service to the north fire rating of the wall. Inding of the joint system is equal to the hourly fire rating of the wall. If vider Cavity Metanti "Seatent — Max secando between to of floor and bottom of wall is 34 in. (19 mm). Min 56 in. (16 mm) hicknes If in material installed on each side of the wall between the bottom of the gypsum board and the top of the concrete floor, flush with each surf

of hill material installed on each sale of the wall between the bottom the gypsum board and the top of the concrete floor, itush with each surface of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — OP6015S Elastomeric Firestop Sealant, CP606 Flexible Firestop Sealant, CFS-S SIL GG, ES-XDNF Sealant or ES-XDNF Matk Intersector Sealant

icates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada



Underwriters Laboratories, Inc. January 28, 2015



I not assembly — I ner area nueto stee decicioncrete hoor assembly shall be constructed or the materiaa and in the manner described in the individual DTOO series foro-Celling Design in the U. Life Resistance Directory and at noted below. 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 Floor Unlis" — Max 3 in. (76 mm) deep galv steel fluide floor unlis.

A Steel Floor and Floor Units' — Max 3 in, (76 mm) deep gaiv steel fluited floor units. B. Concrete — Min 2-112 in, (64 mm) thick reinforced concrete, as measured from the top plane of the floor units. C. Structural Steel Support — Gleet Deam, as specified in the individual DYOS deries Floor-Caling Design, used to support steel floor units. Structural steel support oriented parallel to and max 12 n. (355 mm) from wall assembly. D. Steel Furing – 2-Ahaged bars - channels, located to span from steel beam to min 1. In, 25 mm) beyon face of wall and spaced max 24 in, (610 mm) on center. Z-shaped bars are nom 1-12 to 26 n. (356 to 51 mm) deep and formed from min 16 gauge painted or galavnized steel. Channels are nom 1-12 n. (38 mm) or 21 n. (51 mm) deep and formed from min 16 gauge painted or galavnized steel. Channels are nom 1-12 n. (38 mm) or 21 n. (31 mm) deep and Struet Boarn and velded, Oxled or Strewed to celling runner of wall. Each bar or channel simali be fully covered with spray applied fre resistive material to the minimum thickness of material required on the flanges of the steet beam.

Steel Lath — Nom 3/8 in. (10 mm) diamond mesh expanded steel rib lath having a nom weight of 3.4 lb/vd2 (1.8 - steet call — root sho in t (10 mill) during the sequence steen for an making a new weight of 3× logger (1) sky(m); shall be installed over an atlached to the steel furing bars or channels (limen TO) to completely cover the exposed area from the flange tip of the steel beam to the end of the bar/channel framing extending beyond the vertices the strate of the strate of a shall be secured with steel fasteness or tie wire and shall be fully covered with spray applied fin esistive material (see Item 1F).

2 since was executed — in it in the 2 at the faited gypsum board setter stud shart was assembly 4 mills be confiduced to other materials and in the manner described in the individual U400 or V400 Series Wall and Partition Desgrin in the UL Fromitration burses:
A. Floor and Wall Runners – (Not Shown) - 4-Baged runner, equal in width to sette studs (Item 20, with unequal legs of 1 in, 25 mm) and 2 in, (51 mm), fabricated from 24 MSG galx steel. Runners positioned with short leg toward finished side of Wall. Shown) - 4-Baged runner, equal in width to sette studs (Item 20, with unequal legs of 1 in, 25 mm) and 2 in, (51 mm), fabricated from 24 MSG galx steel. Runners positioned with short leg toward finished side of wall. Runners attached to 10 mor with sette fasteners located not greater than 2 in. (51 mm), fabricated from 24 MSG galx steel. Runners positioned with short leg toward finished side of wall. Runners attached to 10 mor with sette fasteners located not greater than 2 in. (51 mm), fabricated from 24 MSG galx steel. Runners positioned with short leg toward finished side of wall. Runners attached to 10 mor with sette fasteners located not greater than 2 in. (51 mm), fabricated from 24 kg (16 mm) QC. Ceiling runner is secured to steel furning (Item 10) with setel fasteners or webs spaced max 24 in. (61 mm) QC. Ceiling runner is bearing the finished wall and the fange of the setel bearn (Item 10). Item 28 steted deal mark 10 mm) and (3 mm) with 2 mm) is steted state fasteners or webs spaced max 24 in. (610 mm) QC. Solited ceiling runner is based of 3 MS million (3 mm) with 2 mm) stetes fasteners or 12 mm. Solited and 10 mm) Solited (3 mm) with 2 mm) is steted form 30 mm is present between the finished wall and the fange of the setel bearn (Item 10). Item 28 steted form 30 mm) is present between the fasteners or webs spaced max 24 in. (610 mm) QC. Solited ceiling runner is based to 1 mm (3 mm) with a stel fasteners or webs spaced max 24 in. (610 mm) QC.
Caller Studs – C+Hasped studs, min 4 in

to 38 mm) below the bottom of the celling runner or skitted celling track. No gypsum board attachment screws and to penetrate the celling runner. The hourly fire rating of the wall. 3. Joint System – Max separation between bottom plane of spray-applied fire resistive material on the steel attachme clip (tem 1D) and the top of the gypsum board is 1-1/2 in (38 mm). The joint system is designed to accommodate a max 50 percent compression or extension from is installed widh. The joint system is designed for accommodate a A. Fill, Void or Carlty Material* - Sealant – Mn 11/16 in (1.6 mm) dry hickness (1 Bi in or 3.2 mm wet thickness) A. Fill, Void or Carlty Material* - Sealant – Mn 11/16 in (1.6 mm) dry hickness (1 Bi in or 3.2 mm wet thickness) (1 Bi in or 3.2 mm wet thickness) (1 Bi in 0.7.2 mm wet thin 0.7.2 m

A - Fill, Vold or Caking Material - sealaint – win 1/16 m, Lts min dry unckness (16 m cl 3 - prim vet inicines) material sprayed or loweled or acash side of wall to completely cover mineral woof forming material and to overla min 12 m. (13 mm) onto wall and min 2 m. (51 mm) onto spray-applied fire resistive material. HLTI CONSTRUCTION CHEMICALS, DIV O HILTI INC — CPC7 Firestop Spray or CFS-SP WB Firestop Join

B. Forming Material* — Min 4 pcf (64 kg/m3) density mineral wool batt insulation cut to a thickness twice larger that the distance between the top of the gypsum board and the bottom plane of the spray applied fire resistive materia on the steel furring (Item 1D). Naterial compressed 50 percent and installed within ceiling runner above to pd panel flush with the inside unstance of the panel. Material compressed and installed on finished side of the wall panel tush with the inside surface of the panel. Material compressed and installed on finished axie of the wall between the top of the gypsum board and the bottom of the steel floor units, flush with the surface of the wall. ROCK WOOL MANUFACTURING CO — Delta Board ROXEL NO — SAFE HERMARFEER INC — Type SAF

ilti Firestop Systems

THEEMAKPIEER INC — Type SAF BI - Forming Material" - Strops – ASF BI - Forming Material" - Strops – ASF BI - Forming Material" - Strops – ASF Material (Intel 1): Str

Fill material to overlap a min of 1/2 in (13 mm) onto gypsum board and a min of 2 in. (51 mm) onto the spray-applied fire resistive material on finished side of wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 672 Firestop Spray or CFS-SP WB Firestop Joint

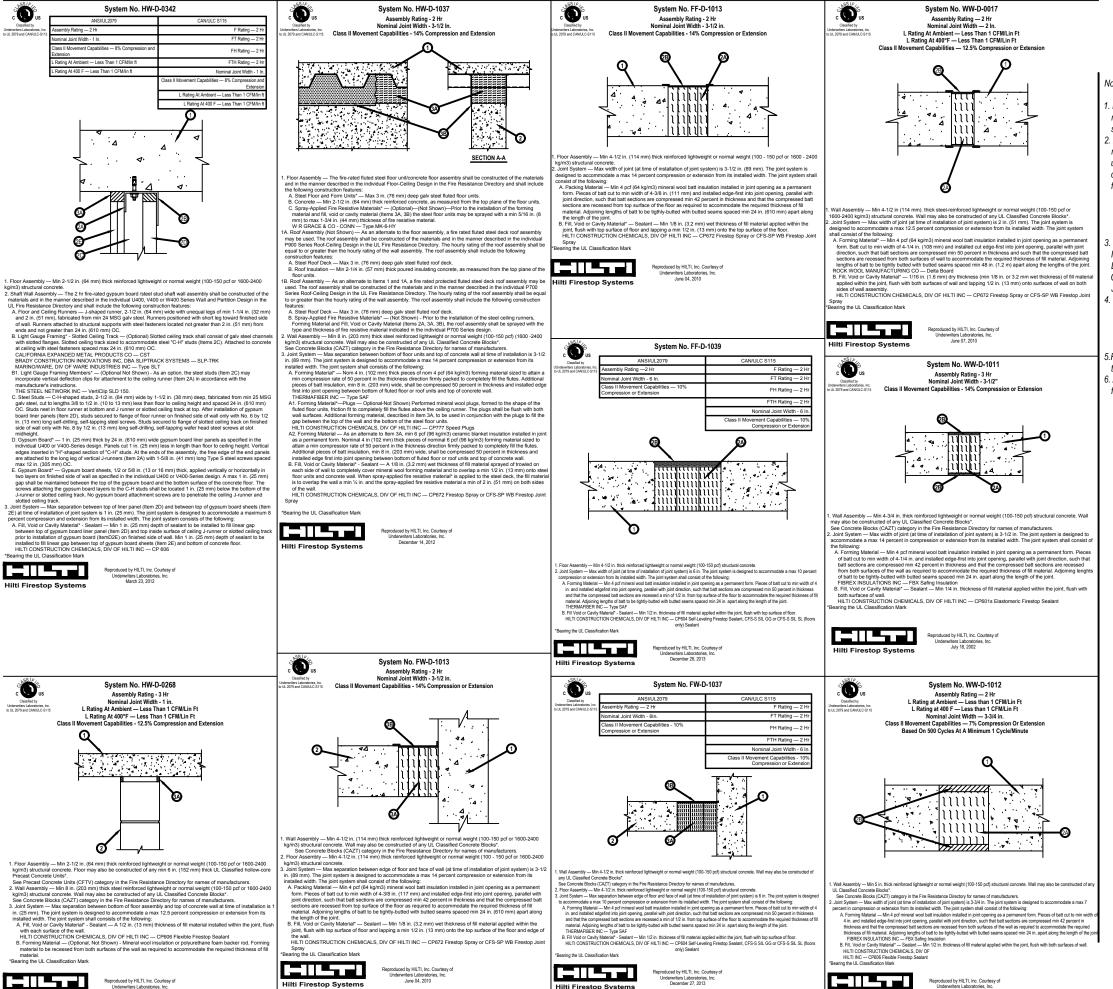
pray ng the UL Classification Mark Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc.

January 11, 2013

Notes:

- Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the fireston assembly shall meet or exceed the highest rating of the adjacent construction.
- B. If alternate details matching the field conditions are not available Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating.
- . All rated assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""></notes>	 Any modification to these details could result in an application/system not meeting the UL or Intertek Classification or the intended temperature or fire ratings. Details shown are up to date as of February 2015. For additional information on the details, refer to the most current "Underwriter's Laboratories Fire Resistance Directory (volume 2)" 			
	B NUMBER:			
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Underwriters Laboratories, Inc. June 26, 2008



Hilti Firestop Systems

lilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. December 27, 2013

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. June 17, 2003 lilti Firestop System

Notes:

- . Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available, Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating. 6. All rated assemblies shall be prominently labeled with the
- following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

the eting ъt gs. 11 ation/syste or fire rating or ost applic ature to designer (delete this note after reading and replace wit 1. Any modification to these details could result in an app UL or Intertek Classification or the intended temperatur 2. Details shown are up to date as of February 2015. 3. For additional information on the details, refer to the m Laboratories Fire Resistance Directory (volume 2.)" ÷. പ്പ

JOB NUMBER:

DRAWN:

CHECKED:

ISSUE DATE:

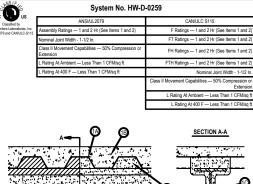
REVISIONS

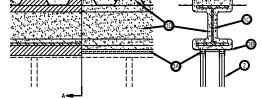
TYPICAL FIRESTOP JOINT DETAILS

SHEET NAME:

SHEET NUMBER:







 Floor Assembly — The fire-rated fluted steel floor unit/co structed of the materials irectory and shall include ated fluted steel floor unit/concrete floor assembl in the individual Floor-Ceiling Design in the Fire y shall be con

le following construction features: A Steel Floor and Form Units⁻ — Max 3 in. (76 mm) deep galv steel fluted floor units. B. Concrete — Min 2-112 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units C. Structural Steel Support — Steel beam, as specified in the individual D700 or D900 Steels Floor-Ceiling Desi used to support steel floor units. Structural steel support centered over and paralel with wall assembly.

C. Smuchrai Steel Support –– Steel beam, as specified in the individual D700 or D800 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support calls of our werand parallel with wall assembly. D. Spray-Applied Fire Resistive Material –– Steel floor units and structural steel beam to be sprayed with the thickness of material specified in the individual D500 Series Design. The flutes of the steel support steel floor units are to be sprayed in accordance with the specifications in the individual D500 Series Design. The flutes of the steel support to the web of the sete beam call dictional material across the neitre top flange of the steel beam. Additional material ashalb as opplied to the web of the steel beam calls and be min 1516 in (2 mm), fra 2 of Assembly Rating, the total thickness of material applied to each side of the sube beam web shalb e min 1516 in (3 mm). W R GRACE & COCNSTRUCTION PHOLOCITS DIV — Tips MR-CE-H11
W R GRACE & COC CONSTRUCTION PHOLOCITS DIV — Tips MR-CE-H11
Thickness of material appendie in the individual D700 or D900 Series Design. The futures of the steel floor units are to be do floe steel beam on each side of the wall. Fra a 1 hr Assembly Rating, the total thickness of material applied to each side of the wall. Fra a 1 hr Assembly Rating, the total thickness of material appled to the set beam on each side of the wall. For a 1 hr Assembly Rating, the total thickness of material appled to the ach side of the steel beam web shalb e min 1-16 in. (13 mm). ISOLATEK INTERNATIONAL — Type 300.
2. Wall Assembly' — The 1 or 2 h fire rated gypsum board/stud wall assembly shall consist of min No. 25 gauge gave set and calling nummers of work and Paratino Design in the U.Fre Resistance Directory and chall include the following construction features.
A. Steel Foor and Cealling numers of work and assembly shall consist of min No. 25 gauge gave set charam steel bace material shapeled for the sele beam web shalb e min 1-1/2 in (13 mm).
<p

ax 24 in. (610 mm) OC.

(6 mm) greater than max extended joint width. Celling runner centered benetial and parallel with steel fasternes spaced max 24 in (610 mm) O.C.
A1. Light Gauge Fraining' — Solided Celling Runner As an alternate to the celling runner in Item 2A, slotted celling runner to consist of gair steel channel with stotted fasternas street fasternas researced to steel beam truting the stotted fanges and the constraint state fasternes spaced max 24 in (610 mm) O.C.
BRADY CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORM EXPANDED for ILE (ILE CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORMER, EVAPADED BMTER IDUSTRIES INC. TO Scotted for the secure of the steel beam with steel fasternes revealed spaced max 24 in (610 mm) O.C.
BRADY CONSTRUCTION INNOVATIONS INC. DBA SLIPTRACK SYSTEMS — SLP-TRK CALIFORMER, EUYOF WARE, INDUSTRIES INC. OC O GST CLARKOIETRICH BUILDING SYSTEMS — Type SLT, SLT-H MARINOVARE, EUVOF WARE INDUSTRIES INC. TO THE SLIPT SCAFCO STEEL STUD MANUFACTURING CO TELLING INDUSTRIES IN DUSTRIES INCOMENT A san alternate to the celling runner is intem 2A and 2A, vertical deflection celling runner is consist of gair steel channel with stotled deflection celling runner since backel backs and a store second to steel beam with steel beams (Item 10.). Vertical Deflection celling runner secured to steel beam with steel fasteners, steel fasteners or weeks spaced max 24 in (610 mm) OC.
THE STEEL NETWORK INC — VertTrack VTD362, VTD400, VTD600 and VTD800.
THE STEEL NETWORK INC — VertTrack VTD362, VTD400, VTD600 and VTD800.
THE STEEL NETWORK INC — VertTrack VTD362, VTD400, VTD600 and VTD800.
A1. Light Gauge Framing' — Solided Celling runner is a laternase in them 2A through 2A2, nothed celling runner is a steel fasteners.
Lee fasteners or weeks spaced to Constat of C-shaped gair steel channel with notched return flanges sized to accommodate steel studes. (Item 2), Notchod celling runner intem 2A1, Int(610 mg) OC.
THE ST

B. Studs — Steel studs to be min 3-fiz. In: (89 mm) wide. Studs cut 3/4 in: to 1-1/4 in: (19 to 32 mm) less in length than assembly height with bottom ensting in, resting on and fastence to the floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted with No.8 by 1/2.1 (13 mm) long water head steel screws at minhelphot for slot on each side of wall with No.8 by 1/2.1 (13 mm) long water head steel screws at minhelphot for slot on each side of wall with No.8 by 1/2.1 (13 mm) slotted screws at a stude slotted ceiling runner (Item 2A4) is used, steel studs cut in lengths 3/4 to 1-3/4 in. (19 to 44 mm) less than floor to ceiling neight nead sceured to slotted ceiling runner with No.8 by 1/2.1 (13 mm) long water head steel screws at indhelphot for long long that may long the maintained between the steel screws at a steel steel screws at indhelphot (10 mm) long water head steel screws at indhelphot in the No.8 by 1/2.1 (19 to 44 mm) (19 to 44 mm)

the Fire Resistance Directory, except that a max 1-1/2 in .(38 mm) gap shall be maintained between top edge of the grysum board and the spray applied for esistive material on the structural sete layont. The top row of screws shall be installed into the studs 1-1/2 in .(38 mm) between the totlem of the ceiling runner scured to steel beam with 2-shaped clips formed from min 1 in .(25 mm) long strips of min 20 ga gait setel. Length of clips should not exceed the widin (hindwass) of the wall. Clips to be sized to beater through the thickness of the wall should not exceed the widin (hindwass) of the wall. Clips to be sized to beater through the thickness of the long upper and lower legs. Legs of clips fastened to bottom of beam (prior to application of spray-applied for resistive materials) and top of ceiling runner with sele fasteness or welds. Clips spraced max if the (406 mm) O.C. The hourly ratings of the joint system are dependent on the hourly rating of the wall. Joint System – Max separation between bottom of spray-applied for resistive material and no beam and top of orging runner with sele fasteners or welds. Clips top sized commodate a max 50 percent compression or excension from this inside widh. The joint system consists of a forming material and no beam and top of orging runner. The joint system sizes of a forming material and the material and the material and the material and the direction of the spray-applied for resistive material and the material and the direction of the spray-applic for resistive material and the material and the direction of the spray-applice for resistive material and the material and the material and the direction top the spray of the spray spray for the resistive material and the material and the direction of the spray-applice for resistive material and the material and the spray-applice for resistive material and the applice of the spray should for resistive material and the spray should for resistive material and the applice of the spray should for resistive materia

ollows: A. Forming Material" — Nominal 4 pcf (64 kg/m3) mineral wool forming material cut into strips to fill the gap betw top of the gypsum board and bottom of beam. Width of the strips shall be equal to the total thickness of the gyp board. The strips of mineral wool shall be compressed 50 percent in thickness and firmly packed into the gap between the top of gypsum board and bottom of beam. MOCK WOOL MANUFACTURING CO — Deta Board

ROXUL INC — SAFE THERMAFIBER INC — Type SAF

I mEXMAPIBER INV — 1 ypt SAF M. Forming Material* - Strips — (Optional) - Nom 5/8 in. (16 mm) and 1-114 in. (32 mm) wide by 2 in. (51 mm) higt precut mineral wool strips for 1 and 2 hr rated assemblies respectively. The strips are compressed 50 percent and firmly packed, cut edge first, into the gap between the top of the gypsum board and bottom of the steel floor units on both scies of the wall

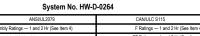
on both sides of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips B-FII, Void or current or chemicals, bit vor mit nime — Or no speed suge B-FII, Void or curvel Material — Min 11/6 in (15 mm) dy thickness (min 18 in or 3 2 mm wet thickness) of fill material sprayed or troweled on each side of wall to completely cover mineral wool forming material and to overla 12/2 in (13 mm) onto gyssus board and 2 in (51 mm) onto spray-appled fire resistive material on the structural

steel support. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP672 Firestop Spray or CFS-SP WB Firestop Joi

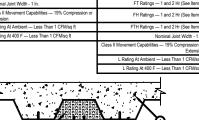
January 11, 2013

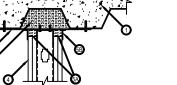
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Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials nd in the manner described in the individual Floor-Ceiling Design in the Fire Resistance Directory and shall include a In the manner described in the many data i non-deming begins in the risk in a second se

completely fill the futes above the steel straps. Adjacent lengths of plugs to be tightly butted with butted seams spaced mix 24 in. (610 cm) agard along the length of the plugs. HILTI CONSTRUCTION CHEIMCALS, DIV OF HILTI INC. — CP777 Speed Plugs 4. Wall Assembly — The 1 th or 21 fine-rated gypsun board/stict wall assembly shall be constructed of the materials and in the manner specified in the individual U400, V400 or V400 Series Wal and Partition Design in the UL Fire Resistance Directory and shall induce the following construction features: A. Steel Floor and Celling Runners — Floor and celling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel study (tet sec). Celling runner to be provided with 21, 61 mm) fanges. Celling runner installed parallel to direction of fluide steel floor units, directly beneath steel straps, and soccared to staps with No No. Self-diriling, self-apping steel screws per strap. A numer to consist of galv steel channel with sictled flanges sized to accommodate steel study, Items 41, 0400, 04

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

MARINOWARE, DW OF WARE INDUSTRUES INC — Type SLT METAL-LITE INC — The System THE STELL NETWORK INC — VentTrack VT, series.260/T, 362VT, 400VT, 600VT and 800VT A2. Light Gauge Framing*: Notched Ceiling Rumer — As an alternate to the ceiling runners in Items 2A through 2A1, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodels setel studs (Item 2B). Notched ceiling runner installed perinduciar to direction of fluids tatel deck and secured to valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. 3A1. Light Gauge Fromgr — Solted Ceiling Runner — As an alternate to the ceiling runner in Item 4A through 4A2, ceiling runner to consist of galv steel channel with solted flanges sized to accommodate steel studs (Item 4B). Finage height of solted ceiling runner marks 100 - 141, in (33 mm) with 2 in (61 mm) robs. Solted ceiling runner installed parallel to direction of fluids steel floor deck, directly beneath steel straps, and secured to straps with hus Net estart/within set Interner set straps.

runner installed parallel to direction of futed steel floor deck, directly beneath steel straps, and secured to straps with two No. 8 are dirdining, self-leaping steel screws per strap. SCAFCO STEEL STUD MANUFACTURING CO — Stotted Track-Type SDLT 5. Studs — Steel studs to be min 3-12 n. (64 mm) wide. Studs cut 12 in; (13 mm) to 3/4 in. (19 mm) less in length than assembly height with bottom nesting i nard resting on the floor runner and with top nesting in neiling runner without attachment. When stotted celling runner (time ArX1) is used, steel studs accurate of solted celling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exoced 24 mM. (1601 nm) CO. When slotted celling runner (time ArX3) is used, steel studs cut in lengths 3/4 to rot to exoced 24 mM.

with No. 8 by 12 in .(13 mm) long wafer head steel screws at midnieght of slot on each side of wall. Stud spacing not to exceed 24 in. (161 mm) OC. When slotted coelling runner (time NA3) is used; steel studs cut in lengths 34 to 1-34 kn. (19 to 24 mm) less than floor to ceiling height and secured to slotted ceiling runner with No. 8 by 172 (13 mm) long wafer head steel screws at H - 39 kn. (16 mm) of the mid-height of slott on each side of wall. C. Oppsum Board" — For 11 massembly, one layer of 58 kn. (16 mm) hits grypsum board as specified in the specified in the add test loceward and Partition Design. For both houry tarting, a hominal in 1. (25 mm) gap shall be maintained between the top of the grypsum board and the botom surface of the steel floor units and the top row of screws shall be installed in the totsd 3 n. (76 mm) betwork walleys of the steel floor units. The houry ratings of the joint system are dependent on the houry rating of the torus. The thoury rating at 11 mm shall and 11 mit match between the top of the grypsum board and the botom to the floor, as floor units. The houry rating of the steel floor units. The houry rating of the steel floor units and the top row of the floor and top of walls. The joint system care site of the floor, as floor the steel floor units. The houry rating at 11 mit and the top of the floor, as floor the steel floor units. A more than a 11 mit match between the top of the grypsum board and the botom of the floor, as floor the floor as 11 mit. The site of 10 mit installed with. The joint system care site of site is the site of 10 m site of the grypsum board and bottom of the minar would accent in thickness and firmly packed into the gap between the top of the grypsum board and bottom of the site floor units. A forming Material strips are compressed 50 percent in thickness and firmly packed into the gap between the top of the grypsum board and bottom of the site floor units on both sides of the wall. Adjoining lengths of sitrips to be lightly builted with builte seams

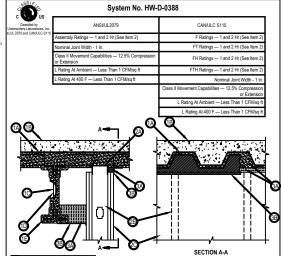
length of the joint. length of the joint. HLTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips 5. Fill, Void or Cavity Material - Sealant — Min 1/8 in, 1/3 mm wet thickness (min 1/16 in, or 1.6 mm dry thicknes of fill material sprayed or troweled on each side of the wall to completely cover the mineral wool forming material and to overlap a min of 1/2 in, (15 mm) onto gypsum board, sited if loor units and stelet straps on both sides of the

Wall. HILTL CONSTRUCTION CHEMICALS, DIV OF HILTLINC — CP672 Fireston Spray or CES-SP WB Fireston Join

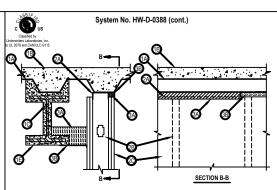
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were used. The root assembly shall be constructed of the materials and in the manner described in individual P70S derise Root-Celling Design in the UL Fire Resistance Directory. The hourly fire rating of the root assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The root assembly shall individual P70S description faith rest.

he following construction features: A Steel RoO Dex — Max 3 in . (76 mm) dee gay side fluide roof deck. B. Roof Insulation — Minaral and Fiber Baard" — Min 34 in . (19 mm) thick boards applied in one or more layers directly over sheel Iroof deck or over grysum board sheathing laid algo sheel not deck. C. Roof Covering" — Hot wnopped or cold-application materials compatible with mineral and fluer board insulation. D. Structural Steel Support — Steel beam or open-web steel steel support oriented parallel to and 1 in . 0 6 in (25 to 152 mm) from wail assembly. E Steel Lath — When structural steel support oriented parallel to and 1 in . 0 6 in (25 to 152 mm) from sale assembly.

Roof-Celling Design, used to support steel floor units. Structural steel support oriented parallel to and 1 in. to 6 in. (25 to 152 mm) from wall assembly. E: Steel Lath — When structural steel support (ltem 10) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel ath Avian a non-weight of 1.7 to 3.4 lb per sty d(0.9 to 1.8 kg/m2) shall be installed to completely cover one side of each joist which is located within 6 in. (152 mm) of wall assembly. The lath shall be F. Streak-proling of Fire Resistive Mathina file and the streak of the streak o

max 24 in. (610 mm) OC: OLMAR SUPPL INIC — Type SCR A4. Light Gauge Framing¹⁻ — Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Flange height of slotted ceiling runner shall be 3-14 in. (83 mm) with 2 in. (51 mm) deep slots. Ceiling runner secured to valleys with steel listeners or well spaced max 24 in. (630 mm) OC: SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track-Type SUL B. Studs — Sleet listeners or well so that in the 3-16 in (610 mm) OC: SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track-Type SUL B. Studs — Sleet slotte to rein 73-16 in (68 mm) with 2 in (51 nm) deep slots. Ceiling runner (tem 24) is used steel studs is bound to Stotted ceiling runner with No. 8 by 12 (13 mm) long wafer head steel screws at mC4-togin of skt or each side of wail. Wmen Stotted ceiling runner (tem 24) is used. Steel studs is comm in Stotted ceiling runner (tem 24) is used steel studs socured to slotted ceiling runner (tem 24) is used. Steel studs (socured to slotted ceiling runner (tem 24) is used steel studs socured to slotted ceiling runner (tem 24) is used. Steel studs (socured to slotted ceiling runner (tem 24) is used steel studs socured to slotted ceiling runner (tem 24) is used to sam is deep slots. The steel screws at 1, 12 (13 mm) long wafer head steel screws at 1, 12 (13 mm) long wafer head steel screws at 1, 12 (13 mm) long wafer head steel screws at 1, 12 (13 mm) long sp shal be maintained between the tog of the gypsum board and the blot maintained between the tog of the gypsum board sheets installed to a min total 56 in (16 mm) the steel floor mink with 2006 series assembly is used or blotten plane of the store slotted steel store waterial on the steel deck when D700 series assembly is used or blotten plane of the too the store of the store thore waterial on the steel deck when D700 series assembly is used or blottween the tog of gypsum board and the sto

the steel floor units when D900 series assembly is used, on both sides of the wall assembly. The screws attaching the grysum board to the studs along the top of the wall shall be located 1 in. (25 mm) below the bottom of the celling runner. No grysum board attachment screws shall be driven into the celling runner. Where the top of the wall assembly is inaccessible above the lowest levation of the structural steel support, the grysum board attachment screws may be onited. The hourly fire rating of the joint system is equal to the hourly fire rating of the wall. The hourly fire rating of the joint system is equal to the hourly fire rating of the wall. The hourly fire rating of the joint system is equal to the hour board (at time of installation of joint system) is edited for units and top of grysum board (at time of installation of joint system) is 51 in. (25 mm) when D700 series assembly is used. Max separation between bottom of the steel floor units and top of grysum board (at time of installation of joint system) is 51 in. (25 mm) when D900 series assembly is used. Max separation between spray applied fire resistive material on structural support member and suiced or Wall is in (102 mm). The joint system is 61 segmed to accompression or extension from its installed width as measured between the bottom plane of the steel foor units or grysum-spilled fire resistive material on structural supports. Such as disclose to attain a thickness which is 50 parcent greater than the width of the wall assembly. Stacked sections of minneral wool batt used to a such to gry and based of the steel foor units and the top of the steel in the bottom of the steel foor sections of minneral wool batt cut to a width of 4 in. (102 mm) and stacked to attain a thickness which is 50 parcent preater than the width of the new structural support. The hourts applied fire resistive or material in the future deeg first into linear gap until the bottom edge is thus with the bottom surface of the saper and installed of ta eqgme firs

gap above the top of the gypsum board. IIG MINWOOL L L C — MinWool-1200 Safing ROCK WOOL MANUFACTURING CO — Delta Board

ROCKWOOL MALAYSIA SDN BHD - SAFE

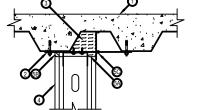
ROCKWOOL MALAYSIA SUN BHU — SAFE ROULING – SAFE THERMAR/BER INC — Type SAF AI: Forming Metariant — Puga — (Optional, Not Shown) - Preformed mineral wool plugs, formed to the shape of th fueld deck, fiction fit to completely fill the fuelse. The plugs shall be flush with both wall surfaces. Additional forming metariant, described in lines 3A, to be used in conjunction with the plugs to fill the gap between the top of HILTI CONSTRUCTION OFENICALS, DV OF HILTI INC — OP777 Speed Plugs Plug Vict & Portuk Maturet & Scated — Julin fit fit (2.2 cm) wait Michaess (1.16) in (1.6 mm) dru thickness (1.16)

Inter Looker Noom to characterized by the finite intervence in the second provided ingo Fill Void or Cavity Material — Sealant — Min 178 in: (3.2 mm) wet thickness or 1/16 in: (1.6 mm) dry thickness fill material spray or brush applied over the forming material on each side of the wall. Fill material to overlap a min of 12 in: (1.3 mm) onto the gypsyme board and a min 2 in: (51 mm) onto the steel floor units or spray-applied from of 12 in: (1.3 mm) onto the gypsyme board and a min 2 in: (51 mm) onto the steel floor units or spray-applied from the steel of esistive material on the steel floor units and on the structural steel support member. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP672 Firestop Spray or CFS-SP WB Firestop Join

aring the UL Classification Mar

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System No. HW-D-0396 Õ F Ratings - 1 and 2 Hr (See Ite FH Ratings - 1 and 2 Hr (See Ite Nominal Joint Width - 3 L Rating At 400 F - Less Than 1 CFM $\mathbf{0}$



loor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials of in the manner described in the individual D900 Series Floor-Celling Design in the Fire Resistance Directory and and in the manner described in the individual D900 Series Floor-Ceiling Design in the Fire Resis hall include the following construction features: A. Steel Floor and Form Units' — Max 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.

B. Concrete — Min 2-12 in. (64 mm) bick reinforced concrete, as measured from the top plane of the floor units. Steel Strags — Min 2- in (54 mm) bick is enforced and gauge as test is atrags out to a length to span the future and overlap the adjacent valleys of fluted floor units by min 1-1/2 in. (38 mm). Straps spaced max 24 in. (610 mm) OC and fastened to floor assembly with maxony anchors or steel fastenet.
F. Forming Material" - Plugs — Preformed mineral wool plugs, formed to the shape of the fluted floor area directly above the wall, Acidocent Hogith to fill the fluted area directly above the wall, Acidocent Hogith to fill the gluted area directly above the wall, Acidocent Hogiths of plugs. But on the vall, Acidocent Hengths of plugs.

ROCK WOOL MANUFACTURING CO — Delta Board

ing the UL Classification Mark

Hilti Firestop Systems

3 ducts — steps studies to demini 5 r. or a fi. of minity works, studies out in z to deminity from 16 minity resist mengani tables, and the steps of the step o

Individual Wall and Partition Design. For 2 hr assembly, two layers of 58 in; (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. For both houly ratings, a normal 34 in; (19 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the steel floor units and the bottom surface of the steel straps and forming material (lawer 3). The top row of screws shall be installed into the studes 3 in (76 mm) below the valleys of the steel floor units. The hourly fire rating of the joint system is equal to the hourly rating of the wall. Joint System — Max separation between bottom of floor and top of wall is 34 in; (19 mm). The joint system is eisigned to accommodate a max 17 percent compression or extension form is installed with. The joint system onsists of a forming material and two fill materials between the top of the gypsum board and the bottom of the floor, softence:

onsiss or a forming materia and two init materials between the top or the gypsum board and the bottom or the loor, A. Forming Material" — Min 4 pcl (64 kg/m3) density mineral wool batt insulation shall be cut into strips to fill the ga between the top of the gypsum board and the underside of the forming material plugs (Item 3) and straps (Item 2) on the side of the wall located beneath the created 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 thickness and in inserted cut-edge first into the gap between the top of the gypsum board and bottom of the mineral wool plug or steel

ROCK WOOL NAROFAL IORMS CU — Detail board ROXULINC — SAFE THERMARIBER INC — Type SAF AL Forming Material" - Strips – As an alternate to Item 5A, nom 5/8 in. (16 mm) and 1-1/4 in. (32 mm) wide precut mineral wool strips for 1 and 2 In rated assemblies respectively. The strips are compressed 50 percent in hickness and inserted cut-deg first link be ago between the top of the gyspawn board and the underside of the forming material plugs (Item 3) and straps (Item 2) on the side of the will located beneath the creat of the floor units. Adjoining lenging of strips to be lightly builted with builted sams spaced min 48 in. (1219 mm) apart along the

Adjoining lengths of strips to be tightly butted with butted seams spaced min 48 in. (1219 mm) apart along the length of the joint. CHEMICALS, DIV OF HILT INC — CP 767 Speed Strips A2. Forming Material — (Optional, Not Shown) - Mineral wooi insulation, fiberglass batt insulation or polyurethaneipolyethylene foam backer rod. Forming material to be installed on the side of the 2 hr fire rated wall located beneath valley of steel floor units, between the top of the gypsure bacard and the valley of the floor unit, and recessed from surface of the wall to accommodate the required thickness of sealant (Item SB). B. Fill, Void or Carly Material - Sealant — Min S8 in . (If mm) thickness of fill material installed on the side of the wall located beneath valley of steel floor unit, between the top of the gypsum board and the bottom of the valleys o the steel floor units. find, with the surface of the wall.

wall located beneath valley of steel floor unit, between the top of the gypsum board and the bottom of the valleys the steel floor units, flush with the surface of the vall. HILT CONSTRUCTION OF HEMCALS, DIV OF HILT INC — OF605 Selant C. FIII, Void or Cavity Materiat⁻¹ Sealant — Min 1 fail, 32 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material sprayed or troweled to completely cover the mineral wood plugs (tilem 3) and mineral woo forming material (tilems 5A and 5A1) on the side of the vall located beneath the crest of the steel floor unit. Fill material to overlap a min of 1/2 in. (13 mm) onto the gypsum board, steel floor units and steel straps. HILTI CONSTRUCTION OFHEMCALS, DIV OF HILT INC — OF627 Eversols paran or CS-SP WB Firestop Join

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Notes:

- Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available, Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating.
- 6. All rated assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

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JOB NUMBER:

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REVISIONS

TYPICAL FIRESTOP JOINT DETAILS

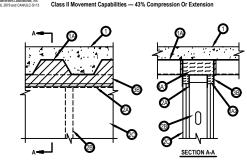
SHEET NAME:

SHEET NUMBER:





System No. HW-D-0538 mbly Ratings — 1 And 2 Hr (See Item 2) Nominal Joint Width — 1-3/4 In.



Assembly — The fire rated fluted steel deck/concrete floor assembly shall be constr anner described in the individual D900 Series Floor-Ceiling Design in the UL Fire Re

the manner described in the individual DB00 Series Floor-Ceiling Design in the UL. Fire Resistance Directory and shi include the following construction features: A. Sileel Floor and Form Units' — Max 3 in . (70 mm) deep gaiv steel fluide floor units. B. Concrete – Min 2-1/2 m, (64 mm) thick reinforced concrete, as measured from the top plane of the floor units. B. Concrete – Min 2-1/2 m, (64 mm) thick reinforced concrete, as measured from the top plane of the floor units, but we have the sense of the sense may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual PB00 Series Root-Ceiling Design in the UL. Fire Resistance Directory. The houry rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features: A. Steel Roof Deck. — Max 3 in. (76 mm) deep gaiv steel fluited roof deck. B. Roof Insulation — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the teel roof deck.

A steer hour Deb.— That S In: (1/h min) usery pairs setup inside 10x ees.
A steer hour Deb.— That S In: (1/h min) usery pairs setup inside 10x ees.
2. Wall Assembly — The 1 hr or 2 hr fire rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the U.L Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Ceiling Runners — Floor and coiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (tem 2B). Flange height of ceiling runner in wall assembly shall consist of galv steel channels sized to accommodate steel studs (tem 2B). Flange height of ceiling runner in the main 14 in. (6 mm) greater than max extended joint with C.Ceiling runner installed perpendicular to the deck direction and secured to valleys of deck with masony anchors, steel fastenes or welds spaced max 24 in. (610 mm) OC.
A1. Light Gauge Fraining "Stotled Ceiling Runner of wall to the ceiling runner in the 2A, slotted ceiling runner in the State of anony associate steel studs. (tem 2B). Slotted ceiling runner in the CEIL STUD MANUFACTURING CO As SLETRACK SYSTEMS — SLP-TRK
THE STEEL STUD MANUFACTURING CO As SLETRACK SYSTEMS — SLP-TRK
THE STEEL STUD MANUFACTURING CO As SLETRACK SYSTEMS — SLP-TRK
THE STEEL STUD MANUFACTURING CO As SLETRACK SYSTEMS — SLP-TRK
THE STEEL STUD MANUFACTURING CO — Slotted ceiling runner in the points of the desk and secured to valleys with steel masony anchors, steel fastenes or welds spaced max 24 in. (610 mm) OC.
SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track-Type SDLT
B. Studs — Seel studs to be in 3-12/n. (88 mm) wide. Studs of 11/n in. 11/n in. 11/n in. 12/n in. 21/n in. 31/n in. 31/n

Covpsum Board* - Gvpsum board installed to a min total thickness of 5/8 in. (16 mm) or 1-1/4 in. (32 mm) on C. Cypsum Board" — Oypsum board installed to a min total thickness of 58 in. (16 mm) or 1-14 in. (32 mm) on each side of wall for 1 h and 2 h rated assembles, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL. Fire Resistance Directory, except that a nom 134 in. (44 mm) aga shall be maintained between the top of the gypsum board and the bottom of the steud st in. (102 mm) being the bottom of the steud st in. (102 mm) being the bottom of the steud st in. (102 mm) being the bottom of the steud st in. (102 mm) being the bottom of the steud st in. (102 mm) being the bottom plane of the floor or root.
The hourly rating of the joint system is dependent on the hourly rating of the wall.
3. Joint System — Max separation between bottom plane of floor or roof and top of gypsum board at time of installation of joint system is 134 in. (44 mm). The joint system is designed to accommodate a max 43 compression retension from its installed width. The joint system is designed to accommodate an ax43 compression retension from its installed width. The joint system consists of forming material and a fill material as follows:
A. Forming Material" — Nom 51 (127 mm) thick pieces of nom 4 pc (164 kg/m3) (Sming material aided to a steel so attain a min compression rate of 50 percent in the thickness direction firmity packed to completely fill the flutes. Additional pieces of 50 and pc (174 mm) thick, whall be compressed 50 percent in thickness and installed cut edge first into gap between bottom of fluted floor or roof units and top of gypsum bard.

gypsum board. ROCK WOOL MANUFACTURING CO — Delta Board

ROXUL INC - SAF

NONLINC — GARE
NONLINC = ARE

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mbly Ratings — 1 and 2 Hr (See Item 2) Nominal Joint Width — 1-3/4 In. nt Capabilities — 43% Compression Or Extensior ß ß (A) ′®-**3**B 6 GA GA 0 Ø

System No. HW-D-0539

Dus

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 DBOG Series Floor-Celling Design in the U.F. Fire Resistance Directory and shall include the flooring construction features: A Steel Floor and Form Units' — Max 3 in (75 mm) deep galv steel flueted floor units. A Steel Floor and Form Units' — Max 3 in (75 mm) deep galv steel flueted floor units. A Root Assembly and Form Units' — Max 3 in (75 mm) deep galv steel flueted floor units. Root Assembly — Alco Schedman, also alternate the floor assembly a fire ratef flueted steel deck root assembly may be used. The root assembly shall be constructed of the materials and in the manner described in the individual PBOG Series Root-Celling Design in the U.F. Fire Resistance Directory. The houry rating of the root assembly shall be equal to or greater than the houry rating of the wall assembly. The roof assembly shall include the following construction fleatures:

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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

B. Rodor instalation — kinit _ rivia in Lg/ mmy linex pourbe insulating concrete, as measures from the top parte of the Wall Assembly — The T hr or 2 r file rotated groups moder (steles taid wall assembly shall be constructed of the materials and in the manner described in the individual 1400 or V400 Series Wall and Partition Design in the UL File Resistance Directory and shall include the following construction features: A. Stele Floor and Celling Runners — Floor and celling runners of wall assembly shall consist of galv stele channels sized to accomposite the following construction features: A. Stele Floor and Celling Runners — Floor and celling runners of wall assembly shall consist of galv stele channels sized to accomposite stele status (them 23). Flange high for celling runners shall be min 14 n. (6 mm) greater than max extended joint width. Celling runner centered beneath and parallel with the valley of the deck and secured to valley with stele flatements, stelet masonry anchors or welds spaced max 24 n. (6 for mm) CC.
A1. Light Gauge Framing's Stoted Celling Runner — As and the celling runner in them 2A, slotted celling and the valley of the data status of the valley of the data status of the valley with stele thannels with slotted market at the celling runner in them 2A. Slotted celling and the valley of the data status of the valley of the data status of the celling runner in them 2A. Slotted celling Runner — As and the celling runner in them 2A. Slotted call and the valley of the data status of the valley with stele thannels the status of the valley of the data status of the valley of the data status of the valley with stele thannels the valley of the data status of the valley of the data of the valley of the data status of the val

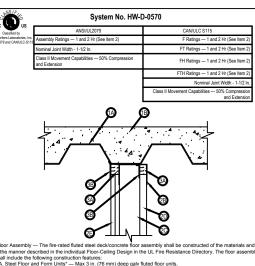
BRADY CONSTRUCTION INNOVATIONS INC. DBASLIPTIACX SYSTEMS — SUP-TRK THE STEEL DERVORK INC – VerifTack VT, series,250/T, 362/T, 400/T, 600/T, 600/T and 800/T A2. Light Gauge Framing* — Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A through 2A1 ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B) Flange height of slotted ceiling runner shall be 3-1/4 In. (83 mm) with 2 in. (51 mm) deep slots. Slotted ceiling

Flange height of slotted ceiling runner shall be 3-1/4 in. (83 mm) with 2 in. (51 mm) deep slots. Stotted ceiling runner centered benesht and parallel with the valge to the deck and secured to valge with slet fasteners, steel masonry anchors or welds spaced max 24 in. (610 mm) OC. SCAFCO STEELS TUDI MAVLEARCUTURING CO — Stotted Track-Type SDLT 8. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1-1/4 in. to 1-1/2 in. (32 to 38 mm) less in length than assembly height with bottom ensing in and resting on floor runner and with top nesting nealing runner without attachment. Stud spacing not to exceed 24 in. (610 mm) OC. When slotted ceiling runner (term 2A2) is used, steel studs cut in lengts 34 is 10-34 in. (16) 44 mm) less than floor to ceiling height and secured to slotted ceiling runner with No. 8 by 1/2 (13 mm) long water head steel screws at +3 316 in. (5 mm) of the min-sheight of slot on each side of value.

THEEMAKEIDER (INC — Type SAF. AI: Forming Metantial—Strips — As an alternate to Item 3A, nom 58 in (16 nm) and 1-14 in, (32 mm) wide precut mineral wool strips for 1 and 2 hr mated assemblies, respectively. The strips are compressed 50 percent in hichness and instended cui-degline fit in the tage between the top of the togenum board and the toktom of the floor or roof deck. flush with both surfaces of the wall. Adjoining lengths of strips to be tightly butted with butted seams speced m 3 and in (91 cm) apart along the length of the ip inti. HILTICONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips B. FIL, Void or Carly Material" — Multifian (1 f aming thickness (min 16 in or 32 mm wet thickness) of fill material sprayed on each side of the wall to completely cover mineral wool forming material and to overlap a min of 12 in. (13 mm) or og sysum board and steel deck on both sides of wall. HILTICONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP672 Firestop Spray or CFS-SP WB Firestop Joint intra-

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4. Setel i hoor and norm units — wax 3 in (no mm) deep gav luitee indor units. 5. Concrete — Min 2-1/21. in (64 mm) thich lightweight in normal weight (100-150 pcf or 1600-2400 kg/m3) concrete, as measured from the top plane of the floor units. 2. Spray-Applied Fire Resistive Materials" — (Optional, Not Shown) — After installation of the steel ceiling runners (film 28) the steel floor units may be sprayed with a min 5/16 in. (8 mm) to max 1 34 in. (45 mm) thickness of fire

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2B

SECTION A-A

(Idem 28) the steel floor units may be sprayed with a min 5/16 in. (8 mm) to max 1 3/4 in. (4b mm) nuckness or we residere material. ISOLATEK INTERNATIONAL — Type 300 WR GRACE & CO - CONN — Type MK-6-HY Shaft Wall Assembly — The 1 hr or 2 hr fire rated gypsum board/steel stud shaft wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or V400 Series Wall and Partition Design in Ae ULE fire Resistance Directory and shall include the following construction features: A. Floor and Wall Runners — (No Show) - J-shaped runner, equal in with to safe studs (Idem 2C), with unequal legs of 1 in. (25 mm) and 2 in. (51 mm), tacincated from 24 MSG galv steel. Runners positioned with short legs toward finished - Ceiling runner statched to floor with sheel fastemers located not greater than 2 in. (51 mm) from ends and not greater than 24 in. (610 mm) CC. B. Ceiling Runner — Ceiling runner of wall assembly shall consist of galv steel channel sized to accommodate steel studs (Item 2C). Flange height of ceiling Runner — As an altemate to the ceiling runner in Item 28, slotted ceiling Runner — As and Runner — with Steel Statemater (Ime) and the ceiling runner in Item 28, slotted ceiling Runner B. Light Cauger Finanger - Stotted Colling Runner — As an altemate to the ceiling runner in Item 28, slotted ceiling Runner A substance in the ceiling runner in Item 28, slotted ceiling Runner — As an altemate to the ceiling runner in Item 28, slotted ceiling Runner in Artice in Arti

runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2C). Flange height of slotted ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width. Slotted ceiling runner installed parallel with direction of flued steel deck and secured to steel deck valley with steel fasteners c

height of source ceans funner state bern 14 in (6 mm) greater than max extended plm wour. Source ceans runner installed greater with several ceals and secure to stell deck value with stell fasteners or teach or CONSTRUCTION INNOV CONSTRUCT

parallel with direction of fluted steel deck and secured to steel deck valley with steel masonry anchors, steel fasteners or welds spaced max 24 in . (610 nm) OC. SCAFCO STEEL STUD MANUFACTURING CO — Skitted Track-Type SDLT C. Steel Studs — C-H-shaped studs, min 4 in . (102 nm) wide by 1-12 in. (38 nm) decg, fabricated from 25 MSG gaiv steel, cut to lengths 34 to 1 in. (19 to 25 nm) less than floor to celling height and spaced 24 in. (610 nm) OC. When slotted coelling runner specified in 1tem 282 is used the C-H-shaped studs, cut in lengths 34 to 1 in. (19 to 42 nm) less than floor to celling height and spaced 24 in. (610 nm) OC. O, Gyspus Bloard — Nom 1 in. (25 mm) leids oppsare bload (100 nm) OC. O, Gyspus Bloard — Nom 1 in. (25 mm) leids oppsare bload (100 nm) OC. I. Oppsare Bloard — Nom 1 in. (25 mm) leids oppsare bload (100 nm) OC. Sasembly, the ree edge of the end panels are attached to the long leg of vertical -luruners (Item 2A) with 1-58 in (41 nm) long Type S steel screws spaced max 12 in. (305 nm) OC.

(41 mm)long Type 5 steel screws spaced max 12 in. (305 mm) OC. C sysum Board — Nom S8 in. (16 mm) thick gysum board applied vertically in one or two layers for 1 hr and 2 hr fire rated assembles, respectively. Panets cut 1-1/2 in. (38 mm) less in length than floor to caling height. The screws attaching the gysum board layers to the C+1 studs shall be located 1 to 1-1/2 in. (25 to 38 mm) below the bottom of the celling runner or slotted celling track. No gypsum board attachment screws are to penetrate the the stude deliber of the study of the

bottom of the ceiling runner or slotted ceiling track. No gypsum board attachment screws are to penetrate the ceiling runner or slotted ceiling track. The hourly ratings of the joint system are equal to the hourly fire rating of the wall. onli System — Max separation between bottom of flued deck surface and top of gypsum board (at the time of tallallon of the joint system) is 1 1/2 in .(38 mm). The joint system is designed to accommodate a max 50 percent mpression or actestion from its installed width. The joint system is designed to accommodate a max 50 percent the distance between the top of the gypsum board and the bottom of the steel floor unit. Material compressed 50 percent and installed within realing runner above top of liner panel flush with the inside surface of the panel. Material more seed and installed on finished side in of the wall between the top of the presum board at the bottom of the top of the panel. Material compressed and installed on finished side of the wall were the top of the gypsum board and the bott of the steel floor units, flush with the surface of the wall. Between the top of the gypsum board and the bott of CoCK WOOL MANUFACTURING CO — Delta Board

ROCK WOOL MANU-RALITION OF THE REPORT OF THE distance between the top of the gypsum board and the bottom of the steel floor unit. Strips compressed 50 percent and installed within ceiling runner above top of line panel flush with the inside surface of the panel. Strips compressed and installed on finished side of the wall between the top of the gypsum board and the bottom of the steel floor units. Bioth with the surface of the wall. HLIT CONSTRUCTION OFENICALS, DIV OF HILTI INC — OP 787 Speed Strips B. FIII void or Consty Material — And In 1/56 in (1.6 mm) df th incinses) fills in or 3.2 mm wet thickness) of fill material sprayed or troweled within stud cavity and on finished side of the shaft wall to completely cover mineral wool forming material. FIII material to overlap a min of 1/2 in (1.3 mm) onto gypsum board and steel dock in the fill material cavity. FIII material to coverlap a min of 1/2 in coverlap the start dock. The differentiate side of the material line cavity and on the start is material and the start dock.

When spray-applied fire resistive material (In: (In This) and graded and dock, the fill material is to overlap the spray-applied fire resistive material (In: TO) is applied to the steel dock, the fill material is to overlap the spray-applied fire resistive material a min of 2 in. (51 mm) on the finished side of the wall. HLTI CONSTRUCTION CHEMCALS, DIV OF HLTI INC — CP 672 Firestop Spray or CFS-SP WB Firestop Joi

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Floor Assembly — The fire-rated fluted steel dec ted of the materials and in the manner described in the individual D700, D800 or D900 Series Floor-Ceiling Design in the UL Fire Resistance

System No. HW-D-0571

(A)

CAN/ULC S115

F Ratings - 1 and 2 Hr (See I

FH Ratings - 1 and 2 Hr (See Ite

FTH Ratings — 1 and 2 Hr (See Nominal Joint Width - 1-1

Capabilities — 50% Comp

ANSI/I II 2079

embly Ratings - 1 and 2 Hr (See Item 2

Class II Movement Canabilities - 4

In the manner described in the individual 1700, 0.800 or D900 Series Floor-Ceiling Design in the UL. Fire Resistance Directory and shall include the following construction features: A. Steel Floor And Floor Units' — Max 3 in. (76 mm) deep galv steel fluted floor units. B. Concrete — Min 2-12 in. (16 mm) thick ighthreight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete, as measured from the top plane of the floor units. C. Structural Steel Support — Steel beam, as specified in the individual 1700, D800, or D900 Series Floor-Ceiling Design, used to support steel floor units. Steel beam centered over and paralel with wall assembly. D. Syray-Applie Ter Ressitve Mareialt — After installation of the steel attachment cite; (16m-28), steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual 1700, D800, Or D900 Series of the steel floor units are to be fille with material accress the entire top flange or the steel beam. Additional material shall be applied to the web of the steel beam on each side of the wall. For a 11 to Accrement Johino the hold hildinger of material beapplied to the web of the steel beam on each side of the tend floor units and the floor the top the steel beam.

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the stee beam. Additional material shall be applied to the web of the steel beam on each side of the wail. For a 1 hr Assembly Rating, the total httoness of material applied to each side of the steel beam web shall be 13/8 in. (2 mm). For a 2 hr Assembly Rating, the total httoness of material applied to each side of the steel beam web shall be 13/8 in. (35 mm). W R GRACE & CO - CONN — Type MK-6HY D). Spray-Applied Fire Ressitub Metarial — After installation of the steel attachment clips (Item 2B), steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual D700, D800, or D900 Series Design. The fulses of the steel floor units are to be filed with material across the entire top flange of the steel beam. Additional material shall be applied to the web of the steel beam web shall be 11/16 in. (18 mm), For a 2 in Assembly Rating, the total thickness of material applied to each side of the steel beam web shall be 11/16 in. (18 mm), For a 2 in Assembly Rating, the total thickness of material applied to each side of the steel beam web shall be 11/16 in. (18 mm), For a 2 in Assembly Rating, the total thickness of material applied to each side of the steel beam web shall be 11/16 in. (18 mm), For a 2 in Assembly Rating, the total thickness of material applied to each side of the steel beam web shall be

117hc in, (16 mm), For 2 z1 // Assembly Asima, the total thickness of material applied to each side of the steel beam web shall be 1-12 in. (36 mm) 300 or Type II 2 hold NLTEX NTERNAL TO ALL - 2 for for rankd gripsum boardisel stud shaft wall assembly shall be constructed 2 hold NLTEX NTERNAL TO ALL - 2 for for rankd gripsum boardinal U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features: A Floor and Wall Runners -- (Not Shown) - J-shaped runner, sized equati in with to steel studs (Item 2C), with unequal legs of 1 in. (25 mm) and 2 in. (51 mm), fabricated from 24 MSG galv steel. Runners positioned with short leg toward finished side of wall. Runners attiched to floor with steel fasternes located not grater than 2 in. (51 mm) form ends and not greater than 24 in. (61 mm) form ends and not greater than 24 in. (61 mm) form in 1 in. (25 mm) wide strips of min 20 ga galv steel. Length of clips should not exceed the widh (thickness) of the wall. Clips to be staed to extend through the thickness of the story-applied free-resistive material on the bottom finage of the steeb basin with 2 in. (51 mm) (con (tem 10 or 101) on the bottom flange of the steeb basin. Legs of clips staemed to bottom of basin (groor spaced max 24 in. (610 mm) OC. C celling runner – C celling runner – C will supervised to bottom of basin (groor spaced max 24 in. (610 mm) OC.

application of spray-applied thre-resistive materials) and top of celling runner with steel fasteners or welds. Clips spaced max 24 in. (610 mm) OC. C. Celling Runner — Celling runner of wall assembly shall consist of galv steel channel sized to accommodate steel studs (Item 2D). Flange height of celling runner of wall assembly shall consist of galv steel channel sized to accommodate steel studs (Item 2D). Flange height of celling runners or welds spaced max 24 in. (610 mm) OC. C. C. Light Gauge Franing⁻¹. Stotted Celling Runner — As an alternate to the celling runner in tem 2B, slotted celling runner to be positioned beneath and parallel with bottom flange of steel beam. Celling runner in tem 2B, slotted celling runner to be positioned beneath and parallel with bottom flange of steel beam. Celling runner in tem 2B, slotted celling runner to be positioned beneath and parallel with bottom flange of steel beam. Slotted celling runner in tem 2B, slotted celling runner to be positioned beneath and parallel with bottom flange of steel beam. Slotted celling runner in tem 2B, slotted celling runner to be positioned beneath and parallel with bottom flange of steel beam. Slotted celling runner secured to steel attachment clips (Item 2B) with steel fasteners or welds spaced max 24 in. (610 mm) OC. CALIFORNIK EVPANDED MER LINER SINCO — GST CALRKOIETRICH BULDING SYSTEMS — Type SLT, SLT-H METAL-UTE INC — The System SCAFCO STEEL STUD AMAUFACTURING CO — Slotted Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTRIES I L C — True-Action Deflection Track TELLING INDUSTR

The hourly raings of the joint system are equal to the hourly fire rating of the wall. Joint System — Max separation between coating on stele beam bottom flange and top of gypsum board (at the time of installation of the joint system) is 112 in. (38 mm). The joint system coasists of the following: A. Forming Material" — Min 4 pcf (64 kg/m3) density mineral wool batt insulation cut to a thickness twoice larger than the distance between the top of the pyssum board and the bottom of the coating on the stele beam bottom flange. Material compressed 50 percent and installed with: The joint system coasists of the following: Material compressed 50 percent and installed within ceiling runner above top of liner panel flush with the inside surface of the panel. Material compressed and installed on finished sole of the wall between the top of the ogspum board and the bottom of the coating on the stele beam bottom flange, flush with the surface of the wall. ROCK WOOL MANUFACTURNES CO — Deta Bacard ROCK WIOL MANUFACTURNES CO = Deta Bacard ROCK WIOL SARES (MANUFACTURNES) ROCK WIOL MANUFACTURNES CO = Deta Bacard ROCK WIOL MANUFACTURNES CO = Deta Bac

THERMAFIBER INC — Type SAF A1. Forming Material*: Strips – As an alternate to Item 2A, the strips are stacked to a height twice larger than the distance between the top of the gypsum board and the bottom of the coating on the steel beam bottom flange. Strips compressed 50 percent and installed within origing runner above top of Inter parell flash with the inside surface of the panel. Strips compressed and installed on finished side of the wall between the top of the gypsum board and the bottom of the coating on the steel beam bottom flange, flash with the surface of the wall. HILT CONSTRUCTION OLFEMICALS, DIV OF HILT INC — CP 787 Speed Strips B.F.III, Void or Cavity Material* — Multifle in (1 fam) dry thickness (16 in. or 3.2 mm wet thickness) of fill material sprayed or troweled within stud cavity and on finished side of the shaft wall to completely cover mineral wool forming material. Fill material to overlap a min of 12 in. (1 3 mm) onto gypsum board and min 2 in. (51 mm) onto grava-gaptied fill resistive material (lem 10) on the inshed side of the wall. HILT CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP 672 Firestop Spray or CFS-SP WB Firestop Joint Stray.

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Votes:

- Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available, Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating. 6. All rated assemblies shall be prominently labeled with the
- following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

the eting ğ gs. 11 Tre or st to designer (delete this note after reading and replace wi 1. Any modification to these details could result in an app UL or Intertek Classification or the intended temperatur 2. Details shown are up to date as of February 2015. 3. For additional information on the details, refer to the m Laboratories Fire Resistance Directory (volume 2.)" ÷. പ്പ

JOB NUMBER:

DRAWN:

CHECKED:

ISSUE DATE:

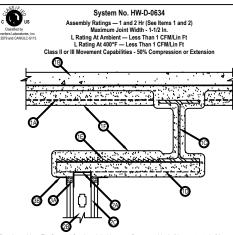
REVISIONS

TYPICAL FIRESTOP JOINT DETAILS

SHEET NAME:

SHEET NUMBER:





1. Floor Assembly — The fite-rated futed steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 Series Floor-Ceiling Design in the U. Fire Resistance Directory and as node below. The hourly fite rating of the floor assembly shall be equal to or grater than the hourly fiter rating of the floor assembly shall be equal to or grater than the hourly fiter rating of the floor assembly shall be equal to or grater than the hourly fiter rating of the seasembly. The floor assembly shall induce the following construction features: A Steel Floor and Floor Units – Max 3 in (.ff am) deep galv steel futed floor units. B. Concrete — Min 2-12 in (.f4 mm) thick reinforced concrete, as measured from the top plane of the floor units. C. Structural Steel Support – Steel beam, as specified in the individual D700 Series Floor-Ceiling Desgin, used to support steel floor units. Structural steel support oriented parallel to and max 12 in (.365 mm) from wall assembly. D. Steel Furing — Z-shaped bas or channels, located to span from set leavan to min 11. (25 mm) beyond face of wall and spaced max 24 in (.610 mm) on center. Z-shaped bars are nom 1-12 to 2.in (.381 os 11 mm) deep and formed from min 16 gauge painted or galvanized steel. Channels are nom 1-12 to 13 mm) oz 16, (15 mm) deep and formed from min 16 gauge painted or galvanized steel. Channels are nom 1-12 to 13 mor 14 mm, 16 mm) shaped shall be fully covered with steel beam.

fasteners to steel beam and welded, bolled or screwed to ceiling runner or wain. Each or or or cammer sum or uny covered with spray applied fire resistive material to the minimum histories of material required on the flanges of the steel beam. Keym2) shall be installed over and attached to the steel furing bars or channes (film to 10 st. blyd2 (1.8 kg/m2) shall be installed over and attached to the steel furing bars or channes (film to 10) to completely over the exposed area from the flange tip of the steel beam to the end of the bar/channel framing oxtending beyond the wail surface. The tait shall be certain with steel flasteners or the wire and shall be fully covered with spray applied fire resistive material (see Item 1F). F. Spray-Applied Fire Resistive Material" — After installation of ceiling runner, steel floor units and structural steel beam to be sprayed with set flasteners or the wire and shall be full owing the steel structural steel beam to be sprayed with the thickness of material specified in the individual TOTO Series Despin. The futures of the steel floor units alove the structural steel beam hall be filled with spray-applied fire resistive material applied to extreme the entire top flange of the steel beam. Each bar or channel (film ming member) (film 11) shall be fully covered with spray thickness of material applied to the expanded steel alth shall be sufficient to completely fill be sprayed solve the wail. For the samble start all be started applied to each side of the steel beam web shall be 130 file. (12 mm). For a 2 hr Assembly Raing, the thickness of material applied to each side of the steel beam web shall be 130 file. (12 mm). For a 2 hr Assembly Raing, the thickness of material applied to each side of the steel beam web shall be 130 file. (12 mm). For a 2 hr Assembly Raing, the thickness of material applied to each side of the steel beam web shall be 130 file. (12 mm). For a 2 hr Assembly Raing, the thickness of material applied to each side of the steel beam web sh

W R GRACE & CO - CONN — Type MK-6MY, MK-6HY ES, MK-6s, RG F1. Spray-Applied Fre Resistive Metarial" — After installation of colling runner, steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual D700 Series Dession. The flutes of the steel floor units above the structural steel beams halh be filted with spray-applied fire resistive material across the entire top flange of the steel beam. Each bar or channel furring member (flem TD) shall be fully covered with spray applied fire resistive material to the minimum thickness of material required on the flanges of the steel beam The thickness of material applied to the expanded steel lath shall be sufficient to completely fill the space betwee the bar/channel furring above the walf. Additional material shall be applied to the web of the steel beam on each

The thickness of material applied to the expanded steel lish shall be sufficient to completely ill the spaces between the barchanel kuring above the wall. Additional material shall be sufficient to canchetely of the steel beam web side of the weil. For at 1n / Assembly Rating, the thickness of material applied to the web loss of the steel beam web beam web shall be 1-12 in (16 mm). In addition, the thickness of material applied to each side of the steel beam web beam web shall be 1-12 in (16 mm). In addition, the thickness of material applied to the expanded steel lash shall cover the top surface of the lath with a minimum 1-56 in. (A1 mm) of material for the 1 hr Assembly Rating and 2-56 in. (67 mm) of material for the 2 hr Assembly Rating. ISOLATEK INTERNATIONAL — Type 300 2. Wall Assembly — The 1 or 2 hr fire rated gryssum boardisteel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction flatters: A. Side Floor and Celling Runners — Floor and celling runners of wall assembly shall consist of galv steel channels assemble jointwith. Celling runner is bescher for the first heat support and located such that a materials runner is secord to bashforming (Immer Sor Wall assembly shall consist of galv steel channels second provide). Celling runner is bescher the finished wall and the flang of the steels beam (Imm 10). A1. Light Gauge Framing' — Stotted Celling Runner — As an atternate to the celling runner is located frages sized of caccomodes task studies (Imm 25). Flange height of stotted celling runner shall be 3-14 in . (33 mm) with 2.in .(31 mm) wide subs. Stotted celling runner is secured to sinsilad parallel with structural steel support material celling frammer to be installed parallel with structural steel support modes. Stotted celling runner to installed parallel with structural steel support malocated suck (Imm 2

runner to be installed parallel with structural stell support and located such that a max clearance of 12 in. (305 mm) is present between the finished wall and the flange of the stell beam (flam 16). SCAFCO STEEL STUD MANUFACTURING CO — Slotted Track-Type SDLT B. Studs — Sleet sluds to be min 3-12 in. (80 mm) wilds. Studs cut 12 in. to 34 in. (115 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner. Studs to nest in celling runner without statchment. When slotted celling runner (fltem 24) is used; satel studs cut in length 34 to 1-34 in. (116 to 44 mm) less than floor to celling height and secured to slotted celle do to an extra 40 to 1/34 in. (150 to 44 mm) less than floor to celling height and secured to slotted cells of the value of value C. Gypsam Bace? — Gypsam baced sheets installed to a min total 56 in. (16 mm) or 1-164 in. (32 mm) highers on invitividial Wallow V400 Series lesgin in the UL. Fire Resistance Directory except that a max 1-172 m. (38 mm) gap shall be maintained between the top of the gypsum baced of the value save floor gave of the star star 1-172 m. (31 mm) gap shall be maintained between the top of the gypsum baced of the value save floor floor shale to the stell furth of them of 10 hou phot sides or the value save floor floor was applied for resistive material on the stell furth of them 10 hou phot sides or the wall assemble.

shall be finalized unknowner inter top unite gyspan todard and the coultin pane or the system sphere in the sear material on the sele furning (term 10) on both seases of the wall assembly. It was separation between both pane of spray-applied for resistive material on the steel attachr cip (term 10) and the top of the gyspan between both pane of spray-applied for resistive material on the steel attachr cip (term 10) and the top of the gyspan both is installed width. The joint system is designed to accommodate max 50 percent compression or extension from its installed width. The joint system is designed to accommodate and so the spray of the gyspan to the size of the shear and the steel attachr and the steel steel the steel steel

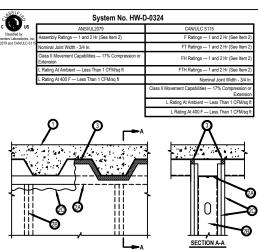
max ob percent compression or extension norm is instance widor. The joint system shar consist or norming and im A coming Material—Non 4 of (46 kg/m3) density inneal wool betti instalation. Sections of mineral wool betti to a thickness equal to the overall thickness of gypsum board and compressed a min of 50 percent into the gap between the top of the gypsum board and the bottem plane of the spray applied fire resistive material on the steel furring (tem 10) on both sides of the wall assembly. ROCK WOOL MANUFACTURING CO— Detta Board

I aunity (lenin LD VIA VER States of unit wait assembly). Mark Concentration of the Concentration of the Concentration of the States of the Concentration o

Spray ring the UL Classification Mark







Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the Fire Resistance Directory and shall include the following construction features: A Steel Floor And Form Units' — Max 3 in. (76 mm) deep galv steel fluted floor units.

Mill filter matterier describes in a or inverse. The Voice Construction of the Voice Construction of the Voice Construction for the Voice Construction for the Voice Construction of Voice Construction of

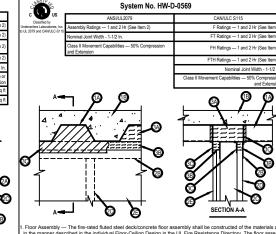
the manner specified in the individual U400, V400 or V400 Series Wall and Partition Design in the UL Fire esistance Directory and shall include the following construction features: A. Steel Floor and Celling Runners — Floor and celling runners of wall assembly shall consist of min No. 25 gauge gait steel channels sized to accommodate steel studies (limer 20). Flange height of celling runner shall be min 14 in. (6 mm) greater than max extended joint widh. . Celling runner secured to valleys of steel floor units with steel fasheres or by welds spaced max 24 in. (610 mm) OC. The use of welds to secure the celling runner may only be used prior to the installation of the optional spray-applied material. A1. Lipft Gauge Framing-Sideet Celling Runner — As an alternate to the celling runner in Item 2A, stotted celling runner to consist of gaits steel channel with stotled flanges sized to accommodate steel studies (time 25). Stotted celling runner installed per pendicute to direction of Hudd steel floor runits and secured to calleys with steel CALIFORNIA EXPANDED METAL PRODUCTS CO — CST PARAY CONSTITUCTION INNOV/ATIONS INC FLOR SUPERTY SYSTEMS — SI P.TPX

CALIFORNIA EXPANDED METAL PRODUCTS CO — CST BRADY CONSTRUCTION INCOVATIONS INC, DBAS SUJETRACK SYSTEMS — SLP-TRK MARINOWARE, DIV OF WARE INDUSTRIES INC — Type SLT THE STEEL INEV WORK INC — Verifitack VT, series 250/T, 332/T, 400/T, 600/T and 800/T A2, Light Gauge Framing-Vertical Deflection Ceiling Runner — As an alternate to the ceiling runners in Item 2A an 2A1, vertical deflection ceiling numer to consist of gait setel channel with solited vertical deflection citig mechanically fastened within runner. Sicitat citips, provided with step bushings, for permanent fastening of steel stude. Flanges size to faccomondate steel studie (met2), vertical deflection ceiling runner installed pergendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. (fit) mm) CC

perpendicular to direction of fluted steel floor units and secured to valleys with steel rasement spaced must an (\$10 m) OC. THE STEEL NETWORK INC — VentTrack VTD362, VTD400, VTD600 and VTD600 B. Studs — Steel studs to be min 3-1/2 n. (88 mm) wide. Studs cut 12 n. (13 mm) to 34 in (19 mm) less in length than assembly height with bottom nesting in and resting on the floor runner and with top nesting in celling runner without attactment. When slotted celling runner is used, steel studs secured to slotted colling runner without attaction is used, steel studs to be min to secure steel softed vertical deflection citigs, florough bushings, with steel screws at mithelight of each sits. Stud spacing not to exceed 24 in. (610 mm) OC. C. Syssum Board — One or two layers of 578 in. (16 mm) thick gynum board on each side of wall. Wall to be constructed as specified in the individual Wall and Partition Design, except that the gyssum board is cut to fit the screating they. The screws attaching the second layer to the site slots shall be located 4 in. (102 mm) from the steel floor unit valleys. The screws attaching the second layer to the slott slots all be located 4.11. (180 mm) from the valleys of the stude starbing the second layer to the slott slots shall be located 4.11. (180 mm) from the valleys of the steel floor units.

floor unit valleys. The screws attaching the second layer to the steel studs shall be included on the teel floor units. The valleys of the steel floor units. The hourly fire rating of the joint system is equal to the hourly rating of the wall. S. Flu, Void or Carly Material - Sealant – Max separation between bottom of floor or ord units and top of gypsum board at time of installation is 34 in. (19 mm). The joint system is designed to accommodate a max 17 percent compression or extension from its installad with A. S5 in. (16 mm) Mitchess of fill material installad with with surface of board on both sides of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Flexible Firestop Sealant 4. Forming Material — (Optiona). No Shown) - Mitchesid vooi insulation, theory as the scale of the 2 hr fire rated wall to accommodate the required thickness of fill material. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Flexible Firestop Sealant HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Flexible Firestop Sealant HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Flexible Firestop Sealant

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THE ITRE-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and ibed in the individual Floor-Ceiling Design in the UL Fire Resistance Directory. The floor assembly owing construction features: the manner descr

nal include the following construction features: A Steel Floor and Form Units'—Max's in. (76 mm) deep galv fluted floor units. B. Concrete — Min 2-1/2 in. (64 mm) thick lightweight on rormal weight (100-150 pcf or 1600-2400 kg/m3) concrete. as measured from the top plane of the floor units. C. Spray-Applied Fire Resistive Materials'— (Optional, Not Shown) — After installation of the steel ceiling runners (film: 28) the steel floor units may be sprayed with a run ifs 716 in. (3 mm) to max 1 34 in. (45 mm) thickness of fire

(Idem 28) the stee mout unes that are sensitive anterial. resistive matterial. ISOLATEK INTERNATIONAL — Type 300 W R GRACE & Co - CONN — Type MK-6HY Shaft Wall Assembly — The 1 hr or 2 hr fire rated gypsum board/steel stud shaft wail assembly shall be constructed the matterials and in the manner described in the individual U400, V400 or V400 Series Wall and Partition Design in he UL Fire Resistance Directory and shall include the following construction features: A. Floor and Wall Runners — (NG Stown) - J-shaped runner, equal in width to steel stud stof (tem 2C), with unequal A. Floor and Vall Runners – (NG Stown) - Jakaped runner, equal in width to steel stud stof (tem 2C), with unequal the ut for the 1/26 mm) and 2 in (51 mm), fabricated from 24 MSG galv steel. Runners theo 3 in (51 mm)

A. Floor and Wall Runners — (Not Shown) - J-shaped runner, equal in width to steel studs (Item 2C), with unequal legs of 1 in (25 min) and 2 in (61 min), labicitated from 24 MSG gai visel. Runners positioned with short leg toward finished side of wall. Runners attached to floor with steel fasteners located not greater than 24 in (610 min) OC.
B. Celling Runner — Ceiling runner shall be min 14 in. (6 min) greater than an wax extended joint width. Ceiling runner shall be min 14 in. (6 min) greater than 24 in (610 min) OC.
B. Celling Sunner — Ceiling runner shall be min 14 in. (6 min) greater than max extended joint width. Ceiling runner shall be min 14 in. (6 min) greater than a westended joint width. Ceiling runner shall spaced max 24 in (610 min) OC.

Isstemers or welds spaced max 24 in. (610 mm) OC. B1. Light Gauge Traning' - Stotle Celling Runner — As an alternate to the celling runner in tem 25, stotled ceiling runner to consist of gair steel channel with slotted flanges sized to accommodate steel studs (tem 20; Flange height of slotted celling runner stable be min 14 in. (6 mm) greater than max extended joint with. Slotted ceiling runner installed perpendicular to direction of fluted steel deck and secured to steel deck valleys with steel masony anchors spaced max 24 in. (610 mm) OC. BRADV CONSTRUCTION INNOVATIONS IND; DBA SLIPTRACK SYSTEMS — SLP-TRK CALFORNIA EXPANDED INETLA PRODUCTS CO — CST CLARKOILETRICH BULDING SYSTEMS — Type SLT, SLT-H1 MARINOVARE, DV/ of WARE HOUSTRIES INC. — Type SLT METAL-LITE INC — Thou System SLT METAL-LITE INC — Thou System SLT METAL-LITE INC — The System SLT METAL-LITE INC — The System

SCAFLOS STEELS STUD MANUFACI UKING CO — Slotted Irtack TELLING INDUSTIESE LL C — True-Action Deflection Track 82. Light Gauge Framing¹ — Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 28, slotted ceiling runner to consist of gal vaste channel, size of a accommodate steel studs (Item 20). Flange height of slott ceiling runner thal be 3-14 / in. (33 mm) with 2 in. (51 mm) deep slots. Slotted oeiling runner installe deependicu to direction of fluted steel deck actual secured to steel deck valleys with twelf fasteres for welds spaced ama z4 in.

bo direction or muters sheet users an associate state of the state of

D. Cypsum Board" — Nom 1 in, (25 mm) thick gypsum board liner panels. Panels out 1-1/2 in, (33 mm) less in length than floor to ceiling height Virclical degis insertied in H-shaped scion of C-H studs. At the ends of the assembly, the free edge of the end panels are attached to be long leg of vertical -unners (Item 2A) with 1-58 in. (41 mm) (ong Type 5 steet screeve spaced max 12 in (305 mm) OC.
E. Cypsum Board" — Nom 55 in (16 mm) thick gypsum board alpeide vertically in one or two layers for 1 h and 2.
E. Cypsum Board" — Nom 55 in (16 mm) thick gypsum board alpeide vertically in one or two layers for 1 h and 2.
E. Cypsum Board" — Nom 55 in (16 mm) thick gypsum board alpeide vertically in one or two layers for 1 h and 2.
E. Cypsum Board "— Nom 55 in (16 mm) thick gypsum board layers lot the C-H studs shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling nearly and below the ceiling nearly and below the ceiling number of ceiling nearly in the ceiling nearly and the ceiling nearly that the located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly number of ceiling nearly in the C-H studs shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly number of ceiling nearly in the C-H stude shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly in the C-H stude shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly in the C-H stude shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly in the ceiling number of ceiling nearly in the C-H stude shall be located 1 to 1-1/2 in (25 to 3 mm) below the ceiling number of ceiling nearly in the ceiling number of ceiling nearly in the ceiling number of ceiling number of ceiling nearly in the ceiling nearly in the ceiling nearly in the ceiling

bottom of the ceiling runner or slotted ceiling track. No gypsum oxiaru externation of a ceiling runner or slotted ceiling track. The hourly ratings of the joint system are equal to the hourly fire rating of the wall. Joint System — Max separation between bottom of fluted deck surface and top of ypsum board (at the time of nstallation of the joint system) is 11/2 in .(38 mm). The joint system is designed to accommodate a max 50 percent prompression or extension from its installed with. The joint system consists of the following: A Forming Material — Min 4 pcf (64 kg/m3) density mineral wool batt insulation cut to the shape of the fluted deck. S0 percent larger than the height of the flutes, and compressed into the flutes of the self-loor units above the ceiling runner as a permanent from. The interval wool batt insulation is to project beyond the ceiling runner to be

A "rotming Naterial" — Min 4 por (ex kg/ms) generally mineral word tati instalation Cutto the Single of the Intels does. So percent largest minit here held to the Inites, and compressed into the Initiad other. Such courts also were the full with the finished wall surfaces. ROCK WOOL MANUFACTURING CO — Detta Board ROXLINC — SAFE A1. Forming Material" — Ming SAF A1. Forming Material" — Ming A performed to the safe of the fulles does. Ming Material" — Ming A performance of the fulles and the safe of the safe of the safe of the safe Ming Material" — Ming A performance of the safe of the safe

of the skelet loor units, isus with the surface or me wail. ROCK WOOL MANUFACTURING CO — Detail Board ROCK WOOL MANUFACTURING CO — Detail Board ROCK WOOL MANUFACTURING CO — Detail Board ROCK MOOL MANUFACTURING Bit Forming Material". See Share an alternate to item 28, the strips are stacked to a height twice larger than the and installed row finished site of the wall between the top of the gypsum board and the bottom of the steel foor units, liste with the surface of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips C - Fill, Void or cavity Material" — Min 1/16 in. (16 mm) dot pix/stress (16 in. or 3.2 mm wet thickness) of fill material sprayed or troweled within stud cavity and on both sides of the shaft wall to completely cover mineral wool forming material. Fill material to overlap a min of 1/2 in. (13 mm) ortog sysuem board and steel deck on finished side of wall. Fill material is to overlap a min of 1/2 in. (13 mm) ortog sysuem board and steel deck of wall. Fill material to overlap a min of 1/2 in. (13 mm) ortog sysuem board and steel deck of wall. Fill material is to overlap a min of 1/2 in. (15 mm) ortog sysuem board and steel deck of wall. Fill material is to overlap and the spray-applied fire resistive material (Inter 10 is applied to the steel deck, the fill material is to overlap and the spray-applied fire resistive material and to 10.1 (51 mm) on this ded overlap. HILT CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 672 Firestop Spray or CFS-SP WB Firestop Joint Sery

y ng the UL Classification Mark

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i Firestop Systems

Floor Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) structural concrete loor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core Precast Concrete Units". y also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core Precast Concrete Units". as Concrete Units category in the Fire Resistance Directory for names of manufactures. sembly — Tha 1 or 2 h fire-rated gypsum board /steel stud wall assembly shall be constructed or the materials and in the manner in the individual Unitor V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following

eelidel in the individual U400 or V400 Sentes Wall and Partition Design in the UL Fire Resistance Directory and shall induced the tollowing A Steer Floor and C-like Directors — Floor and obliging unnere of a wall assembly shall consol of an Vin A2 Senge grave the directory and shall induced the tollowing A Steer Floor and C-like Directors — Floor and obliging unnere of a wall assembly shall consol of a with A2 Senge grave the directory and shall induce the steel Calling ouncer second to concrete floor stable with shall mission unnorthics, steel fastances spaced A1, (ii) from QC. A1. Light Cauge Framing' — Sidted Celing Runner — As an alternate to the celing runner in Item A2, stotted celing runner to consist of gain steel transmit wholden Stapes scale accommodate test study (lim 23); Soluto celing runner sources foor stable with steel masony anchors or steel fastenes spaced max. 24 n. (610 mm) OC. BRADY CONSTRUCTION INNOVATIONS NC. DEA SLIPTRACK SYSTEMS — SLIP-TIRK CALRICIPRACH ULLINGS SYSTEMS — Types S1, S1, H1 METALITE INC — The System ULLINGS STEMS CONSTRUCTION SUBJECTION ROUGH Track SCAPCO STEMS (TUD MANUFACTURES ON CO — SIGNED Track TELLING INDUSTRIES LL C — Trau-Action Defection Track TELLING INDUSTRIES LL C — Trau-Action Defection Track TELLING INDUSTRIES LL C — Trau-Action Defection Track

TELING NDUSTRES 1.L C — Tran-Acton Detection Track. AC Light Gage Framing⁻¹ — Vertical detection Calling Rumer—As an alternate to the colling nunners in Items 2A and 2A1, vertical defection calling numer to consist of gain skeel channel with alcted vertical defection clops mechanically fastemed within numer. Stoten defection calling numer to consist of gain skeel channel with alcted vertical defection clops mechanically fastemed within 2019. Vertical defection calling numer ascenaries to concrete floor stabe with skeel fastemers or skeel mascray andrones spaced max 24 in. (610 mm) OC. THE STEEL INFORMEN INC. Vertical AC UTOBO, UTOBOO MUTVB00 A3 Light Gage Framing⁻¹ — Notched Calling Rumer — As an alternate to the calling numers in consist dust (filter 23), Notched numers to consist of change daylark defamile thannel with motient term linesging scalar day and the calling numers in the calling (filter 100 mm) OC. A3 Light Gage Framing⁻¹ — Notched Calling Rumer — As an alternate to the calling numers in thems 2.4 though 2A3, notched calling numers to consist (filter Calling Alliner) — As an alternate to the calling numers in thems 2.4 though 2A3, notched calling numers to consist (filter Calling Alliner) — As an alternate to the calling numers in thems 2.4 though 2A3, notched calling numers to consist (filter Calling Alliner) = (filter

nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. When slotted ceiling nunner (Ham 241) is used, steal studs secured to slotted ceiling nunner with No. 8 by 12 In. (13 mm) fong water head steal screws at mid-height of slot neads do of wall. Slut specing not to exceed 24 In. (61 mm) CO. When vertical defection ceiling nunner (Ham 251) is used, steal studs secure to slotted vertical deflection clips, through the bushings, with steal screws at mid-height of each slot. Stud spacing not to exceed 24 in. (61 mm) CO. When the screws at mid-height of each slot. Stud spacing not to exceed 24 in. (61 mm) CO. When the screws at mid-height of each slot. Stud spacing not to exceed 24 in. (61 mm) CO.

In block whence detection tops, timogen the locarings, winn sets clones at min-renging of each osci, subs galacing noto becalled 2 at its (2 - Gryania Board). The Chron Bayer of SB in 1 (Birm) block gynaum board is required in the individual Wall and Partition Design. For 2 hr assembly, how layers of SB in 1 (Birm) block gynaum board is required in the individual Wall and Partition Design. For 2 hr assembly, how gaps shall be maintained between the top of gynaum board and the bottom of subscale of the occurrent be bottom of subscale of the source of the so

stabiled Wolf, FRIDEY segrees were not measured and the second stability of the stability o



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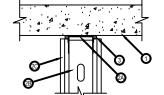
FH Rating - 1 and 2 Hr (See Item on or 66% Com Class II or III Movement Capabilities L Rating at Amb L Rating at 400° F

System No. HW-D-0757

ns __ 1 and 2 Hr (See Item 2

al Joint Width — 1/2 or 3/4 In. (See Iter

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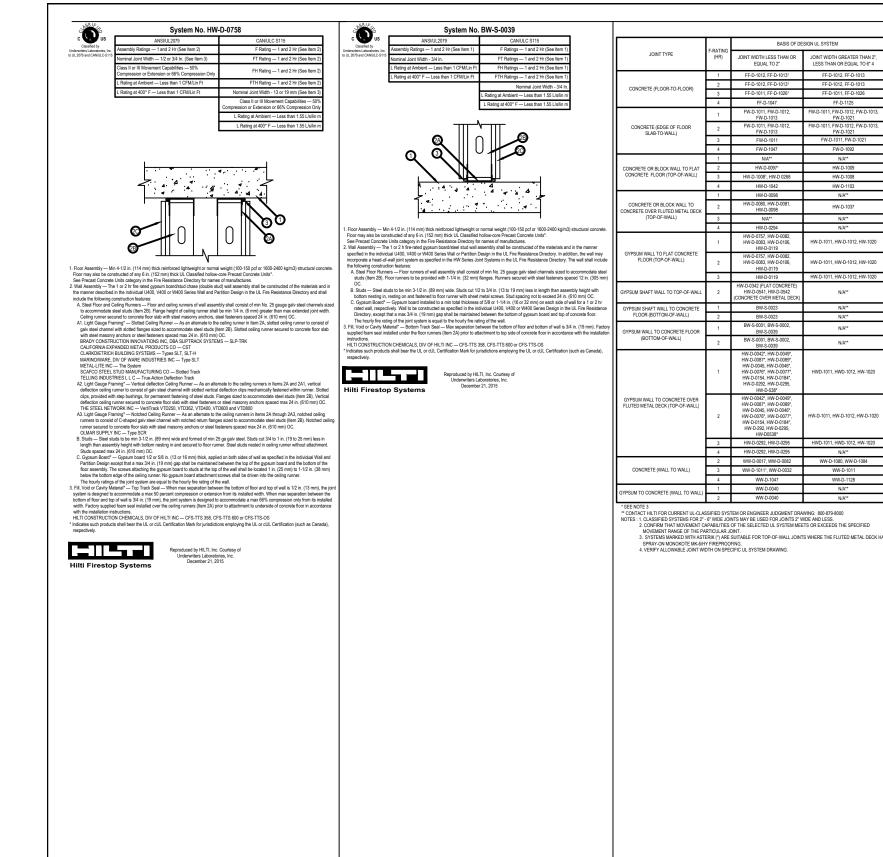
Notes:

F Rating - 1 and 2 Hr (See Item)

T Rating — 1 and 2 Hr (See Iter

- Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the fireston assembly shall meet or exceed the highest rating of the adjacent construction.
- B. If alternate details matching the field conditions are not available Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- . References:
- * Underwriter's Laboratories Fire Resistance Directory
- * Intertek Directory of Listed Products
- * NFPA 101 Life Safety Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of UL 2079 tested assemblies that provide the required assembly rating.
- 6. All rated assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""></notes>	 Any modification to these details could result in an application/system not meeting the UL or Intertek Classification or the intended temperature or fire ratings. Details shown are up to date as of February 2015. For additional information on the details, refer to the most current "Underwriter's Laboratories Fire Resistance Directory (volume 2.)" 		
_	B NUMBER:		
CHECKED:			
ISSUE DATE:			
REVISIONS: TYPICAL FIRESTOP JOINT DETAILS			
SH	EET NAME:		
SH			



Notes:

- Refer to section 07840 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
- * Minimum and maximum Width of Joints
- * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available, Manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- 4. References:
- * Underwriter's Laboratories Fire Resistance Directory
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- * UL System #
- * Product(s) used
- * Hourly Rating (Assembly Rating)
- * Installation Date

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""></notes>	 Any modification to these details could result in an application/system not meeting the UL or Intertek Classification or the intended temperature or fire ratings. Details shown are up to date as of February 2015. For additional information on the details, refer to the most current "Underwriter's Laboratories Fire Resistance Directory (volume 2.)" 			
JO	B NUMBER:			
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