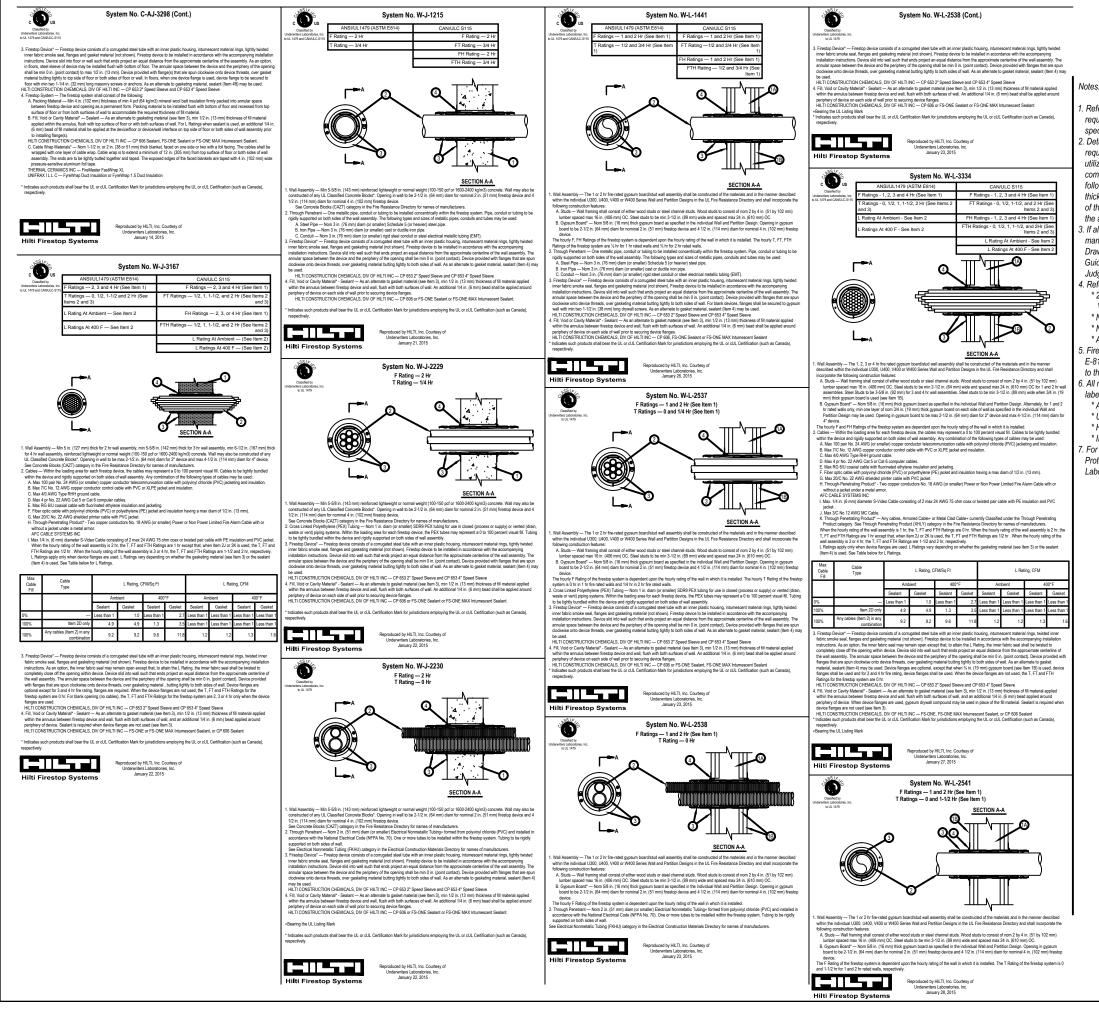


- . Refer to section 16055 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
- 2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field 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 adiacent 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:
- * 2013 Underwriter's Laboratories Fire Resistance Directory, Volumes 1 & 2
- * NFPA 101 Life Safety Code
- * NFPA 70 National Electric Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479) tested assemblies that provide a fire rating equal
- to that of construction being penetrated. 6. All rated through-penetration assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System # * Product(s) used
- * Hourly Rating (F-Rating)
- * Installation Date
- For outlet boxes requiring protection, use only Wall Opening Protective Materials, category CLIV as classified by Underwriter's
- Laboratories, Fire Resistance Directory (Volume 1.)

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""> 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.)" </notes>
JOB NUMBER:
DRAWN:
CHECKED:
ISSUE DATE:
REVISIONS: TYPICAL CP 653 SPEED SLEEVE DETAILS
SHEET NAME:
CP 653



- . Refer to section 16055 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.
- 3. 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:
- * 2013 Underwriter's Laboratories Fire Resistance Directory, Volumes 1 & 2
- * NFPA 101 Life Safety Code
- * NFPA 70 National Electric Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479) tested assemblies that provide a fire rating equal
- to that of construction being penetrated. 6. All rated through-penetration assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System # * Product(s) used
- * Hourly Rating (F-Rating)
- * Installation Date
- For outlet boxes requiring protection, use only Wall Opening Protective Materials, category CLIV as classified by Underwriter's
- Laboratories, Fire Resistance Directory (Volume 1.)

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""> Any modification to these details could result in an application/system not meeting the UL or Interfek 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.)" </notes>
JOB NUMBER:
DRAWN:
CHECKED:
ISSUE DATE:
REVISIONS: TYPICAL CP 653 SPEED SLEEVE DETAILS
SHEET NAME:
CP 653 2.4

System No. W-L-2541 (Cont.)

innough renerarants — Une nonmetalic pipe or conout to be cemered within the treatop system. Hipe to be rigidly supported on both sides or vall. The following types and sizes of pipes may be used: A. Polyvinyl Chloride (PVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process

or supply or ventled (drain, waste, or vent) piping systems. B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or In some provide the second sec

b bith sides of wail. HII CONSTRUCTION CHEMICALS, D/V OF HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve FII Void Covity Materia" - Sealant — Min 12 In (13 mm) thickness df Il material applied within the annulus between frestop device. Hill with oth on structures of wall. An additional 14 In (16 mm) theoret shall be applied around periphery of device on each side of wall prior to

securing device fanges. HILT CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP 666, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant HILT CONSTRUCTION CHEMICALS, DIV OF HILT INC — CP 666, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant Infodese such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Classified by inviters Laboratories, Inc to UL 1479

to both sides of wall

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Underwriters La

to be centered within the firestop system. Pipe to be rigidly supported on both sides o

F Rating - 1 and 2 Hr (See Item 1

Rating — 0 , 1/2 and 1 (See Item and

TH Rating — 0, 1/2 and 1 (See Iter

SECTION A-A

System No. W-L-8085 (Cont.)

28. Tube Installation - Pesticital — Nom 34 in ; (19 mm) thick acylonithe batelenepolyviny chloride (ABPVC) feetble foam furnished in the form tubing. The tube insulation may be installed on one max 1 in ; 25 mm) damp per or tube in each AC line set. The space between the insulated and unsulated project to the within each AC line set shall be 0 in control. See Pleasas(2) (MIR22) category in the Plastics Recognized Component Directory for names of manufactures. Any Recognized Component tube implation mention the one secondations and human gal. U.S. Harmanity Classification d'BAVI may be used. C. Cabin — One § partino. 18 AVIG (or smaller) thermostia cable with psylvingl chloride (PIC) insulation and judet materials may be installed installed in terming the strate human set in a termination of the set of the s

th each AL loss set. Treatop Deroid — Treatop device consists of a compated sited lube with an inter plastic housing, intumescent material rings, tightly heisted mere fabor councie seal, flanges and gesteling material (not shown). Frestop device to be installed in accordance with the accompanying that allow instructions with any end account of the reatop set of a second accounts certaintice of the weal assembly. The munitar space between the device and the perplayery of the opening shall be mit 0 in (point contact). Device provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that as spon indications accounts certained, new gastering material builting tight to be deviced. The advectory provide with flanges that are spon indications accounts accounts, certained in participations accounts deviced flanges that the participation accounts accounts

use of the construction of the Michael State of the Construction o

periphery of device. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE, FS-ONE MAX Intumescent Sealant or CP 606 Sealant roducts shall bear the LIL or cl II. Certification Mark for juris loving the LIL or cLIL Certification (such as Canada)



System No. W-L-8086

Not Assembly — The 1 or 2 b for noted oppoint bacehold valial assembly shall be constructed or ten means or unamble of the construction of ten means or unamble of the construction before the constructing the construction before the constructio

A blod — Wall faming that locase of effect words table of selec (name) tables not source or sense to source or exercise the network of the selection of the sel

I mough-releasing Product – Iwo copper conductors No. 18 AWG (or smaller) Hover or Non Hower Limited - Re Alarm Cable with or without a jubicit under a medial amos. AFC CABLE SYSTEMS INC Mar, 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar, 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill alaretse SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill and the SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill and the SYIGeo Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC Mar. 14 M. (6) mill and the SYIGeo Cable constant and the SYIGEO Alargeo Alarg

Mat. If the system of the syst In the gain of memory in the set of the set

A Steel Pape – Konz An, (51 mm) dam (or smaller) Stockade 5 (or hearing steep pape. B Lon Pape – Venz J, (51 mm) dam (or smaller) call or dabler on pape pape PDA. D Copper Tabe – Non 2 h, (51 mm) dam (or smaller) Tapes ((or hearing) call or dabler of the first of the paper table. E Codad – Nonz J, (51 mm) dam (or smaller) stee (order, nonz, (51 mm) dam (or smaller) steel electrical metallic tabling (EMT), or nom 1 in (25 mm) diam (or smaller) steel steel codard. C corports with metallic pearstrain the hourt, (71, FTH Halings are 12 hz.

System No. W-L-8085

Wall Assembly — The 1 or 2 hr fire readed gpsam boardistud wall assembly shall be constructed of the materials and in the manner described within the individual USD, UH00 or V400 series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following control to the latter.
 Second Termin 1 and Lonssid or fieldher seed databased adults to call data to board adult or based within the information. Second Termin 1 and Lonssid or field databased adults to call of the materials of the VID mm) lumber spaced man 1 bits / UKD mm (2). See lattabase to be in 10 Lin (8) mm) with advagaded mar 24 hr (8) the VID mm) lumber spaced man 1 bits / UKD mm (2). See lattabase to be in 10 Lin (8) mm) with advagaded mar 24 hr (8) the VID mm) board to be man 24 hr (8) for million for 2 hr (15) mm (3) mm (3) for 10 Lin (9) mm) with a dispaced mar 24 hr (8) r (10) mm) board to be man 24 hr (8) for million for 2 hr (15) mm (3) mm (3) for 10 Lin (9) mm) with a dispaced mar 24 hr (8) r (10) mm (3) for 2 hr (10) mm (3) for 3 hr (10) for 2 hr (3) for mal for 3 hr (10) for 3 hr (1

2. Ar Conditioning (AC), Line Sett— ACI line set consists of via pipes or tubes (Iem AL), tubing insulation (Iem ZB) and a thermostate cable (Iem ZC). The ACI line set alls bainging supports on tubes is denoted as a set of the two pipes or tubes, only one may have a nom dia generative. A Matel Inform The Notongy space and cases of through herentamism they acuus as a set. Of the two pipes or tubes, only one may have a nom dia generative TA is all (Imm). The Notongy space and cases of through herentamism that y acuus AC All Set Inform—Hom The Inform (Set Inform) data (Informative) and a set of the two pipes or tubes. It is also a set of the two pipes or tubes, only one may have a nom dia is lice of they. Hom In 1; (2) mind data (Informative) cases that they are to pipe. Co Coppet Pipe—Hom 1; (2) mind data (Informative) cases that they are pipe.

Rating — 1 and 2 Hr (See T Rating — 0 and 3/4 Hr (Se

ASTM F814)

Reproduced by HLTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 28, 2015

F Rating — 1 and 2 Hr (See Item 1)

Rating - 0 and 3/4 Hr (See Item 1

Reproduced by HILTI, Inc. Courtesy o Underwriters Laboratories, Inc. January 28, 2015

Hilti Firestop Systems

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Hilti Firestop Systems

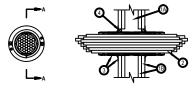
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are in m (see item 3 and 4 also). Metallic Penetrants — One pipe or tube to be installed in opening. The following types and sizes of through penetrants may be used: A Steel Pipe - Nom 2 in. (51 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

Reproduced by HILTI. Inc. Courtesy of Underwriters Laboratories, Inc. January 28, 2015 Hilti Firestop Systems System No. W-L-3335 **O**





bly — The 1 or 2 hr fire rated gypsum boarous Mividual U300, U400, V400 or W400 Series Wall r within the individual USU, UHA, where is there were an end of the second study. Would study be consist of non-2by 4 in (51 by 102 mm) A mother spaced max 16 in (405 mm) OC. Sheet study to be mm 2-12/in, (F4 mm) while and spaced max 24 in (510 mm) OC. Sheet study to be the mother spaced max 16 in (405 mm) OC. Sheet study to be mm 2-12/in, (F4 mm) while and spaced max 24 in (510 mm) OC. Sheet study to be the mother spaced max 16 in (405 mm) OC.

Junce spaced max 16 n. (406 mm) OC. Sheel stads to be min 2:12 n. (64 mm) wide and spaced max 21 n. (610 mm) OC. Sheel stads to be min 3:12 n. (70, 60m) wide and 34 n. (71, 60m) finds (pages based based base based ba

A fast 100 garh to 24 MWC (so or maker) copper conduct his/constraints, my constraints or the thomong types of cables may be used: Max 100 lbs: 140 kbs: 14

ANDLE STSTEWS INC 1/4 in. (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC

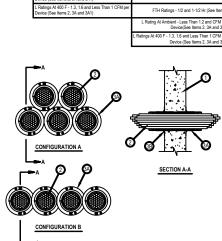
jackat. J. Mar 31: No 12 AVIG MC Cable. K. Through Preventing Product — Any cables, Amoned Cables or Metal Cable connetly Classified under the Through Penetrating Product cablegoy. See Through Penetrating Product (XHLY) usategoy in the Fire Penetraneo Directory for same of manufactures Product cablegoy. See Through Penetrating Product (XHLY) usategoy in the Fire Penetraneo Directory for same of manufactures T. F.F. and F.H. Ratings are 1 for except that, when lime 2.0 or X is used, the T.F. Fir and F.H. Ratings are 10 for Cables and March Annotand Interaction and in the Cables of the

L Ratings vary depending on whether the gasketing material (see Item 3) or the sealant (Item 4) is used. See Table below for L Ratings.							
Max	Cable						

For openings win metallic penetranis the nouny 1, F, F, F H Nating's are 1/2 m?. 4. Firestop Device" — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings, tightly twisted inner fabric smoke seal. flanees and caskeling material (not shown). Firestop device to be installed in accordance with the accompanying	L Raung	is vary depending on whethe	r ine gaskeung	material (see i	leni 3) or the	searanı (ner	n 4) is used. c	see Table beit	wior L Raun	ys.
Intert actions structure team, lategore and generating interesting this structure, message berieved to be instance in indecution team of the accompanying the instance of indecution team of the accompanying the instance of indecutions. There is a structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period period of the average structure team of the period of the period of the average structure team of the average structure team of the period of the average structure team of the period of the average structure team of the average structure team of the period of the average structure team of the average structure team of the period of the average structure team of the average structure team of the period of the average structure team of the period of the average structure te	Max Cable Fill	Cable Type		L Rating, C	FM/Sq Ft			L Ra	ing, CFM	
be used. HILTI CONSTRUCTION CHEMICALS. DIV OF HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve			Aml	xient	400	۴F	An	bient	- 40	00°F
This in construction in the contraint exposed on the intervention of the contraint exposed area			Sealant	Gasket	Sealant	Gasket	Sealant	Gasket	Sealant	Gasket
	0%	-	Less than 1	1.0	Less than 1	2.7	Less than 1	Less than 1	Less than 1	Less than
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE, FS-ONE MAX Intumescent Sealant or CP 606 Sealant	100%	Item 2D only	4.9	4.9	1.3	3.5	Less than 1	Less than 1	Less than 1	Less than
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.	100%	Any cables (Item 2) in any combination	9.2	9.2	9.6	11.8	1.2	1.2	1.3	1.6

3. Frestop Device" — Frestop device consists of a comgated steel table with an inner plastic housing, intumescent material rings, twisted inner fabric smoke avail, flarges and gaskeling material (not thorn). Frestop device to be initialized in accordance with the accompanying installation instructions. As an oxido, the inner this call and investigate that the start has a start of the opening with device. Device all rinks will such that despite tar equal distance from the approximate conterine of the wall assembly, once provide with meters of the opening spatial bars and the start of the opening spatial bars and the start of the opening with the start of the spatial bar target of the opening spatial bars and observes of the spatial bar target openic devices, minuting toxic sorts all bar bar targets and the start of the opening spatial bars and the opening spatial bars and the opening spatial bars and the spatial bar target openic devices, minuting target bar bars and the opening of the opening spatial bars and the opening of the opening spatial bars and the opening spati

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



System No. W-J-3189

ing At Ambient - 1.2 and Less Than

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I. Wall Assembly — Mimmum 5 in (127 mm) thick reinforced lightweight or normal weight (100-150 pd or 1600-2400 kg/m3) concrete wall. Wall may also be constructed of any UL Classified Concrete Blocks'. Maximum five individual openings may be provided (see Iem 3A). Dam of opening for each firsted points and the section of the analysis of the section of the first point point. Sec Concrete Blocks (RAZ): adaption of the first point points and first points and the section of the first point point. Sec Concrete Blocks (RAZ): adaption of the adaption of the blocks' for name of namufactures. 2 adabet — The aggregate consest-adapti and are calles in firsting downs be be min) percent (blank) for max 100 percent visual fill. Cables to be tright bundled within the device and right supported no bith alsed of wall assembly. Any combination of the following types and tases of adabet may be used. Will (to smaller) compare conductor theoremunication cable with polyrind chiotike (PVC) jackeling and insulation. A Max 100 part to 24 AM (to granitation mode) and with PC or XIVE glockst and insulation.

B. Mar, 7C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
C. Mar 40, WC Type Herl ground cable.
D. Mar 4, PN C2 XWG Cabl 5 or Cabl 6 computer cables.
E. Mar RG 60 Locased with Microardise Meyne Insulations and jacketing.
E. Mar RG 60 Locased with Microardise Meyne Insulations and jacketing.
F. Mars 200 Loca 22 AWG cables of the PVC of t

AFC CABLE SYSTEMS INC Max. 1/4 in. (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC

jacket . Max 3/C No 12 AWG MC Cable.

nat 3 c in 2 Am 5 mic Label. Through Penetrating Product — Any cables, Ammond Cable+ or Metal Clad Cable+ currently Classified under the Through Penetrating Product category. See Through Penetrating Product (PALY) category in the Fire Resistance Directory for names of manufactures. For opening with cables, the T, Fir and Fir Handings are 102 hr For Atan Central Const. (In Fir Atan Grin Handing are 112 hr L Ratings vary depending on whether the gasketing material (see Item 3) or the sealant (Item 4) is used. See Table below for L Ratings.

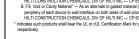
Max Cable Fill	Cable Type	L Rating, CFM Per Device			
		Amb	pient	400'	۴
		Sealant	Gasket	Sealant	Gasket
0%	-	Less than 1	Less than 1	Less than 1	Less than 1
100%	Item 2D only	Less than 1	Less than 1	Less than 1	Less than 1
100%	Any cables (Item 2) in any combination	1.2	1.2	1.3	1.6

estop System — The firestop system shall consist of the following: . Firestop Device" — Maximum five firestop devices grouped in two vox configuration as depicted. The individual openings for each device are spaced min 27/16 in. (62 mm) apart such that the device flanges of adjacent devices are no closer tha for each drive are spaced min 2-716 in (E2 mm) apart tack that the drive farges of dispacet devices are no closer than point contact. Frestop drives consists of a compared latel back with an impact housing, instructionari, threaded mere faticit structure, and farges and galanting material (not show). Firstop device to be installed in accontance with the accompanying contact, the structure of the structure allow be installed in accontance with the accompanying of the structure of the structure of the structure of the accontance with the structure of the accontance with the structure of the struc

Se non 0°, (point contact), Device fanges are to be excured to wail with min too 1-114 n. (32 mm) iong macroiry screes or anchors. As an alternate to gainst matrixel, salarill (imm 38) may be used. The State 25 meV of State 37 meV of

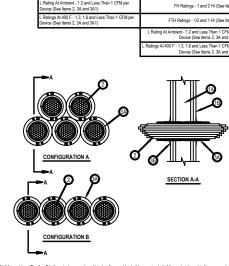
cates such products shall bear the UL or cUL Cartification Mark for jurisdictions employing the UL or cUL Certification (such as Canada)







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System No. W-L-3384

Ratings - 1 and

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Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following

contruction features: A Subat – Will faming shall consist of steel channel studs. Steel studs to be nm 3-1c2 n. (99 nm) wide and spaced 24 n. (910 nm) QC 8. Opsum Board" – The goyaam baard type, finchess, number of layers, fasterer by sen and shed orientation shall be as specified in the dividual U400, WO400 Series Designer in the ULF The Restance Directly Maximum the individual granging may be provided (see Item 34), Diam of opening for each firstop device shall not exceed 4-1/2 n. (114 nm) and shall be sized to the OD of the firstop device.

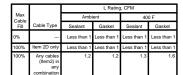
device. The hourly F and FH Ratings of the frestop system are equal to the hourly fire rating of the wall assembly in which it is installed. 2 Cables — The aggregate cross-sectional area of cables in frestop device to be min 0 percent (plank) to max 100 percent visual BI. Cables to girtly burdled within the device and right supported no to the dates of wall assembly, Any combinition of the following types and size at

be lightly hundle within the device and rightly supported no toch sides of wall assembly. Any combination of the following types and sizes of dialities may be used. WINK (is remained organized conductive statements and new limit polyhow) chloride (PVC) jacketing and insulation. A New 70 No. 10 No. 12 AVVIC cognet conducts it control cable with PVC or XLPE jacket and insulation. CM and 70 No. 10 No. 12 AVVIC Cognet conducts it control cables with PVC or XLPE jacket and insulation. D. Max 4 of No. 12 XAVIC CaB S or CaB computer cables. D. Max 4 or No. 22 XAVIC CaB S or CaB computer cables. F. Fiber copic cable with polyingh clicking (PVC) or polyhytique (PE) jacket and insulation having a max dam of 1/2 in. (13 mm). G. Max 3/2 (No. 22 XM shelled primer is with PVC) G avX. H. Timough-Primitizing (Product - Time copper conductors No. 18 AVVC (or smaller) Power or Non Power Limited Fire Alarm Cable with or APC CABLE SYSTERS NO.

jacket . Max 3/C No 12 AWG MC Cable. Triminh Penetrating Product" — Any cables, Armored Cable+ or Metal Clad Cable+ currently Classified under the Throu The Deviation of the Deviation of Deviation of t

K. Intogri Pretraining Product — Any clabes, Amorado Laboe - or Media Lado Labe - ourrently Jassible under the Intogri Pretraining Product (2416); See Through Pretraining Product (2416); Otalegon in the Fire Resistance Directory for names of mandiatures. For opening with cabes, the I, FI and FITH Ratings are 1/2 hr. For blank opening (no cables), when the hourly rating of the wall assembly is it. Part of the Integrit of the VIII and See The Section 2016; S

Ratings are 1/2 hr. L Ratings vary depending on whether the gasketing material (see Item 3) or the sealant (Item 4) is used. See Table below for L Ratings.



3. Firstop System — The firstop system shall consist of the following: A. Firstop System — The firstop system shall consist of the following: A. Firstop System — Maximum fine firstop device grouped in hor or configuration as depicited (Configuration A). The individual operange in the value of cash device as agade mini 2-716 in (32 mm) apart such that the device fittanges of adjacent devices are obser than point contact. Firstop device consists of a comparised stee Lobe with an inner plastic homain; intermeterin testing in the steep of the system of the

The individual openings in the wall for each device are spaced min 1-716 in (36.5 mm) part. Device fanges may overlap one another As an option, the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to complete the inner fabric seal shall be twisted to compl No and divion, me finet leads used intry tentiant open except unit, ou claim the L naming, the inter leads see aliait or wavee to Competent colore of the open within each divion. HILT CONSTRUCTION OFEMICALS, DIV OF HILT INC — CP 653 2" Speed Seleve and CP 653 4" Speed Seleve B.F.II, Viol of Construction of Construction of the select and the select and the select and the select and the B.F.II, Viol of Construction of the select and the se

B. Fill, Void or Cavity Meterial[®] — As an alternate to gaste material (see Reim 3), min 14 in. (6 mm) bead of fill material applied around periphery of each divers be will heritace on on both side of value fraction to installing down fractions franks, and the second sec

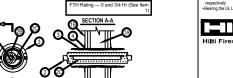


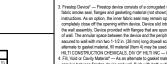












Notes.

- . Refer to section 16055 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 adiacent construction.
- 3. 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:
- * 2013 Underwriter's Laboratories Fire Resistance Directory, Volumes 1 & 2
- * NFPA 101 Life Safety Code
- * NFPA 70 National Electric Code
- * All governing local and regional building codes
- 5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479) tested assemblies that provide a fire rating equal
- to that of construction being penetrated. 6. All rated through-penetration assemblies shall be prominently labeled with the following information:
- * ATTENTION: Fire Rated Assembly
- * UL System # * Product(s) used
- * Hourly Rating (F-Rating)
- * Installation Date
- For outlet boxes requiring protection, use only Wall Opening Protective Materials, category CLIV as classified by Underwriter's
- Laboratories, Fire Resistance Directory (Volume 1.)

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""> 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.)" </notes>
JOB NUMBER:
DRAWN:
CHECKED:
ISSUE DATE:
REVISIONS: TYPICAL CP 653 SPEED SLEEVE DETAILS
SHEET NAME:
CP 653 3.4

	Syster	m No. W-L-3395		
Classified by derwriters Laborato L 1479 and CANU	ories, Inc.			
	ANSI/UL1479 (ASTM E814)	CAN/ULC	S115	
	F Ratings - 1 and 2 Hr (See Items 1 and 2)	F Ratings - 1 and	12 Hr (See Items 1 and 2)	
	T Rating - 1/4 Hr		FT Rating - 1/4 Hr	
	L Rating At Ambient - See Item 5	FH Ratings - 1 and	12 Hr (See Items 1 and 2)	
	L Rating At 400F - See Item 5		FTH Ratings - 1/4 Hr	
		L Ratin	g At Ambient - See Item 5	
6)

Wall Assembly - The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described
within the individual U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following
construction features:
A Stude Wall framing shall experies of steal shanged stude. Steal stude to be min 2 1/2 in (80 mm) wide and spaced may 24 in (610 mm) OC

— Wall faming shall consist of steel channel studs. Steel studs to be min 3-1(z, 1(8) mm) wide and spaced max 24 in. (6) form Bead" — Mon 85 in (16) mm) hind, groups beards as specific in the individual Wall stand Partition Design. Natiums size of in groups board is dependent on the mounting of the grapplate firstop device (tem 2), Openings for grangitates that are suful d to the grysum board may be oriented vertically or horizontally. Openings for grangitates that are stud mounted or too groups board lenges are oriented horizontally. Maximum opening sizes are specified in Table below.

FIRESTOP DEVICE (Item 2)		MAXIMUM OPENING SIZE GANGPLATE MOUNTING				
	SURFACE MOI	JNTED	STUD MOUNTED			
24" PLATE :						
SINGLE	20-1/2" x 5-1/2" x 140)	(521	23" x 6-3/4" 171)	(584 x		
DOUBLE (STACKED)	20-1/2" x 13-1/4 x 337)	(521	23" x 14-1/4" 362)	(584 x		
16" PLATE :						
SINGLE	15" x 5-1/2" x 140)	(381	15-3/16" x 6-3/ x 171)	(386		
DOUBLE (STACKED)	15" x 13-1/4" x 337)	(381	15-3/16" x 14-1/ x 362)	4" (386		

The hourly F and FH Ratings of the firestop system are dependent upon the hourly rating of the wall in which it is installed.

The houty F and FH Ratings of the frestip system are dependent upon the houry rating of the wall in which it is installed.

Frestip Device⁴ — The frestip device contraits of a steel plate and/wich construction with three (15° device size) of nor (24° device) as an option, where the nor (31° lin, 12° device size) of nor (24° device size) of no

Item 4. ILIT CONSTRUCTION CHEMICALS, DIV OF HILTI NC — CFS SL SK 4" Finatop Netroit Sleve 30. Frestop Device" — Finatop device consists of a compatible steel table with an immer platic housing, intumescent material impa and twisted immer fabits comes can be device targets are to be gain contractionals and endowed since they are not used. Device table slid into agray plate port opening and centered within wall such that ends of device table project an approximate equal distance from the gains plates and centered within wall such that ends of device table project and existic and a traditional table to the segment of the segment on the segment of the segment of the segment of the segment on the segment of the segment of the segment on the segment of the segment on the segment of the segment of the segment of the segment on the segment of the segment on the segment of the segment of the segment of the segment of the segment on the segment of the segment on the segment of the segment on the segment of the segme

nstalled tightly within the device sleeve. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-PL Firestop Plug 4"

HLI LOODS IKUCI LON CHEMILORS. UN UP HILI INC - C-S-H Freedor Prog 4" C. Schem – Within Huanding area to each strate brook once (lines) a shore 30, and phylochedic dobler may be installed. The aggregate C. Schem – Within Huanding area to each strate brook once (lines) a shore 30, and phylochedic dobler strate (lines) 32, and 20, 27, For the C PESS Speed Steve firstop dwice (lines) 30, the cables can be used for a 10 fol 00, percent strate III. Cables to be rigidly supported on both radies of wall as memory. Any combination of the follows ghores of cables may be used. A Marc 100 pare No. 24 AWG copper conductor theoremunication cable with polyviel follows (PVC) jacketing and insulation. B. Marz (Tok. 12): ANG cosper conductor combinistic on XFE polyter and insulation.

C. Max 4/0 AWG Type RHH ground cable. D. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.

α, πων τρ. πο. 22, πτης ωα το of Latib computer cables. E. Nack RG 60/L coaxial cable with toxinated ethylene insulation and jacketing. F. Theoropic cable this hoykingh choirde (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm). S. Max 3/C No 12 AWG MC Cable. C mask view of APV and UNE (In the Lating see download in the Lating see

Table 1 - CFM per CFS-SL GP Gangplate Device at Ambient and 400F

Table 1 - Of it per OF 0-0 C OF Dalighade betweet without and 400								
	(CAP - ITEM	TYPE AND NUMBER OF DEVICES IN CFS-SL GP (CAP - ITEM 3A; DEVICES - ANY COMBINATION OF ITEMS 3B THROUGH 3D EXCEPT AS NOTED)						
	CAP(S) ONLY	CAP(S) AND ONE DEVICE	CAP(S) AND TWO DEVICES	CAP (OPT) AND THREE DEVICES	FOUR DEVICES			
BLANK OPENING (NO CABLES) :	LESS THAN 1	1	2	2.5	3.5			
OPENINGS WITH ANY COMBINATION OF ITEM 5 CABLES FOR MAX 33% AGGREGATE FILL IN DEVICE TYPES 3B AND 3C, AND/OR MAX 100% VISUAL CABLE FILL IN DEVICE TYPE 3D	-	2	4	6	8			
	CAP(S) ONLY	CAP(S) AND ONE CP 653 DEVICE (ITEM 3D)	CAP(S) AND TWO CP 653 DEVICES (ITEM 3D)	CAP (OPT) AND THREE CP 653 DEVICES (ITEM 3D)	FOUR CP 653 DEVICES (ITEM 3D)			
OPENINGS WITH MAX 100% VISUAL CABLE FILL WITH CABLE TYPE 5D ONLY AND CP 653 ONLY	-	1.5	3	4	5.5			

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	(CAP - ITEM	TYPE AND NUMBER OF DEVICES IN CFS-SL GP (CAP - ITEM 3A; DEVICES - ANY COMBINATION OF ITEMS 3B THROUGH 3D EXCEPT AS NOTED)					
	CAP(S) ONLY	CAP(S) AND ONE DEVICE	CAP(S) AND TWO DEVICES	CAP (OPT) AND THREE DEVICES	FOUR DEVICES		
BLANK OPENING (NO CABLES) :	1.2	1.3	2.6	3.2	4.5	BLANK OPENING (NO CABLES) :	
OPENINGS WITH ANY COMBINATION OF ITEM 5 CABLES FOR MAX 33% AGGREGATE FILL IN DEVICE TYPES 3B AND 3C, AND/OR MAX 100% VISUAL CABLE FILL IN DEVICE TYPE 3D	-	2.6	5.1	7.7	10.2	OPENINGS WITH ANY COMBINATION OF ITEM 5 CABLES FOR MAX 33% AGGREGATE FILL IN DEVICE TYPES 38 AND 3C, AND/OR MAX 100% VISUAL CABLE FILL IN DEVICE TYPE 3D	
	CAP(S) ONLY	CAP(S) AND ONE CP 653 DEVICE (ITEM 3D)	CAP(S) AND TWO CP 653 DEVICES (ITEM 3D)	CAP (OPT) AND THREE CP 653 DEVICES (ITEM 3D)	FOUR CP 653 DEVICES (ITEM 3D)	Table 2 - CFM per FT2 of Opening at	
OPENINGS WITH MAX 100% VISUAL CABLE FILL WITH CABLE TYPE 5D ONLY AND CP 653 ONLY	-	1.9	3.8	5.1	7.0	OPENINGS WITH MAX 100% VISUAL CABLE FILL WITH CABLE TYPE 5D ONLY AND CP 653 ONLY	

System No. W-L-3395 (Cont.)

Table 2 - CFM per FT2 of Opening at Ambient and 400F

System No. W-J-3200 (Cont.)

CAP(S) AND ONE DEVICE

2

ONE CP 653 DEVICE

A; DEVICES

ONE DEVICE

1.3

2.6

AP(S) ANE ONE

CP 653 DEVICE

1.9

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TYPE AND NUMBER OF DEVICES IN CFS-SL GP (CAP - ITEM 3A; DEVICES - ANY COMBINATION OF ITEMS 3B THROUGH 3D EXCEPT AS NOTED)

CAP(S) AND WO DEVICES

4

CAP(S) ANE TWO CP 653 DEVICES (ITEM 3D)

COMBINA

NO DEVIC

2.6

5.1

AP(S) AN TWO CP 653 DEVICES (ITEM 3D)

3.8

P (OPT) A THREE DEVICES

2.5

6

CAP (OPT) AN THREE CP 653 DEVICES (ITE) 3D)

S IN CFS-SL GF N OF ITEMS 3B

DEVICES

3.2

7.7

CAP (OPT) AN THREE CP 65

VICES (ITE

5.1

FOUR DEVICES

3.5

8

OUR CP 6 DEVICES (ITEM 3D)

DUG뷰 2D

DEVICE

4.5

10.2

DEVICES (ITEM 3D)

7.0

tories, Inc.

Fable 1 - CFM per CFS-SL GP Gangplate Device at Ambient and 400

AP(S) ONL

(CAP - I

1.2

AP(S) ON

BLES FOR MAY 2201

GREGATE FILL IN /ICE TYPES 3B AND 3

ND/OR MAX 100% VISI ABLE FILL IN DEVICE

PENINGS WITH MAX 10% VISUAL CABLE FILL 1TH CABLE TYPE 5D

Bearing the UL Classification Mark

lilti Firestop Systems

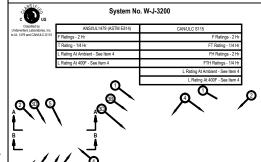
653 ONLY

E 3D

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Ous

Hilti Firestop Systems



୧୧୧ ø ଷ SECTION A-A SECTION A-A Wall Assembly — Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also

constructed of any UL Classified Concrete Blocks*. Maximum opening sizes are specified in Table below. Opening may be o horizontally. vertically o

FIRESTOP DEVICE	MAXIMUM OPENING SIZE
24" PLATE :	
SINGLE	5-1/2" x 20-1/2"
DOUBLE (STACKED)	13-1/4" x 20-1/2"
16" PLATE :	
SINGLE	5-1/2" x 15"
DOUBLE (STACKED)	13-1/4" x 15"

See Concrete Blocks (CAZT) in the Fire Resistance Directory for names of manufacturers.

2. Firstop Device" — The firstop device consists of a steel plate sandwich construction with three (16" device size) or four (24" device size) cricular opening ports which are each nom it. (102 mm) dam. The firstop device is intended to be oriented vertically are horizontally and mounted to the lace of the genering on this device if and its device is a mounted to the lace of the genering on this device if and its device is a mounted to the lace of the genering on this device if and its device is a mounted to the lace of the genering on this device if and its device is a mounted to the lace of the genering on the generic point of the generic point with min 1-120 eV, generic plate is a state of the generic point with min 1-120 eV (25 generic) and the state and period of the device plate, min the locity of the lace of the generic plate installations, four min lace of the generic point of the device plate, min the locity of an evolution in the plate between installing device and lace installations. The min lace of the device plate installations, born min lace of the device plate min the locity of the accounter with the accounter installation installation in the lace. It devices a lace in the lace of the device and lace installations. The ministry of the accounter installation device installation in the lace of the accounter installation device installation in the lace of the accounter installation device installation in the lace of the accounter installation device installation in the lace of the accounter installation device installation in the lace of the accounter installation device installatinstallation installatinstallation device installatinstallation

HILLING INCLUID CHARMAS, UN OF HILLING – CH-SSLOF I'B and of Frestop parallelation (BM 2), exe of the following firestop devices shall installed. Any constraints of these frestop devices may be used within each grang pales. In Frestop David – MIC Showing Restanguist able plaids designed to doe pot operating with no pendirants. Plaie is field installed in accordance with Hill installation instanctions. Filinges of grang plate out pot operating are encoded by doesning GP nati, the stell-plate cap masked with reported to be aligned with Devisions. The Beaters of the Pharmasistic of the semi-statistic and use installated and use installated in topic the Beaters, and the Beaters of the The maskings of GP hen installated and use installated in topic the topic plate topic.

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Cl Max 40 AWD Type RHH ground cable. D Max 4 gr No. 22 MVD Cet 3 or cafe doorputer cables. E Max R 68 U coasial cable with fluorinated ethylene insulation and jacketing. F. Fher optic calles with polyhwing choiced and the (PC) gr ophylethylene (PC) jacket and insulation having a max diam of 1/2 In. (13 mm). G. Max 32 No 12 AWD MC Cable. PL Raftings are determined within the device to attain the L Raftings. The L Raftings are deviced for the type and in CRM per CP4 device (Table 1) and in CPM per cable bundles fault be normally centered within the device to attain the L Raftings. The L Raftings are deviced to attain the L Raftings.



ith the accompanying installation instructions. ILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-SL GP 16" and 24" Firestop Gangplate



Notes:

- Refer to section 16055 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.
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- * Hourly Rating (F-Rating)
- * Installation Date
- 7. For outlet boxes requiring protection, use only Wall Opening Protective Materials, category CLIV as classified by Underwriter's
- Laboratories, Fire Resistance Directory (Volume 1.)

<notes (delete="" after="" and="" block="" designer="" information)="" note="" reading="" replace="" this="" title="" to="" with=""> 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.)" </notes>
JOB NUMBER:
DRAWN:
CHECKED:
ISSUE DATE:
REVISIONS: TYPICAL CP 653 SPEED SLEEVE DETAILS
SHEET NAME:
CP 653 4.4