

Application Details

Use the tables on pages 3 through 25 to:

1. Identify the type of system the Firestop product will be used in
2. Identify the type of material
3. Identify the penetration item (size and type)
4. Select the proper Nelson drawing number from the right hand column. Each Number has a hyperlink to bring you to the correct drawing.

Concrete Floor or Wall Systems.....	3-8
Floor - Ceiling Systems (Concrete & Membrane).....	9
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NOTES:

1. Any pipe or conduit with a diameter smaller than the listed value may be used.
2. Any pipe or conduit with a wall thickness heavier than the listed value may be used.
3. Any cable tray with a width and / or loading depth narrower than the listed value may be used.
4. Any cable with similar insulation / jacketing and smaller size or gauge may be used.
5. A rated Firestop system “F” rating may be applied to a wall or floor of equal or lesser “F” rating, the system then is rated at the lesser “F” rating
6. References to tested systems are as follows:

UL indicates Underwriters Laboratories, Inc. (US)

cUL indicates Underwriters Laboratories, Inc to Canadian Standards (Canada)

FM indicates Factory Mutual Research

SP indicates Underwriters Laboratories of Canada

SWR indicates Southwest Research Institute

ITS indicates Intertek Testing Services (formerly Warnock Hersey)

NELSON PRODUCT ABBREVIATIONS	
CLK - Silicone Non - Intumescent Sealant	LBS3 - Latex Intumescent Sealant
CMP - Firestop Mortar Compound	MCT - Multi-Cable Transit
CPS - Composite Sheet	MPS - Multi-plug Device
ES1399 - Endothermic Sealant	NFB - Intumescent Fire Brick
FSC - Intumescent Cable Coating	PCS - Pipe Choke System
FSC3 - Elastomeric Joint Coating	PLW - Firestop Pillows
FSP - Flameshield Putty	WRS3 - Intumescent Wrapstrip

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

STEEL PIPE							
¾" / 2", Sch. 10 multiple			2½	2	ES1399	C-AJ-8118	FS-0377
1" Sch. 10, multiple, also 6" thick hollow-core		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
2" Sch. 5, multiple, also 6" thick hollow-core	O	X	4½	2	CLK	C-AJ-1192	FS-0134
2" Sch. 5 (top or bottom)			4½	3	FSP	C-AJ-1004	FS-0008
3" Sch. 5			4½	3	FSP	C-AJ-1046	FS-0091
4" Sch. 5 (top or bottom)			4½	2	FSP	C-AJ-1054	FS-0092
4" Sch. 10, also 6" thick hollow-core	O		4½	2	CLK	C-AJ-1191	FS-0129
4" Sch. 5, multiple (max 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
4" Sch. 5			4½	2	LBS3	C-AJ-8141	FS-0544
4" Sch. 10, also 6" thick hollow-core			4½	3	FSP	C-AJ-1197	FS-0258
4" Sch. 10, also 6" thick hollow-core	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" Sch. 10, also 6" thick hollow-core	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
6" Sch. 40, multiple	O		2½	2	ES1399	C-AJ-1420	FS-0376
6" Sch 5			4½	3	FSP	C-AJ-1003	FS-0001
6" Sch. 5, multiple			3¼,7	3,4	CMP	C-AJ-1040	FS-0084
8" Sch. 40, also 6" thick hollow-core	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
8" Sch. 40, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
8" Sch. 40, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
8" Sch. 10, also 6" thick hollow-core (bottom)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
10" Sch. 5 multiple			4½	2	CMP	C-AJ-1219	FS-0125
10" Sch. 40,	O	X	2½	2	LBS3	C-AJ-1484	FS-0523
10" Sch. 10, w/ cable trays			4½	2	CMP	C-AJ-8049	FS-0149
12" Sch. 10,	O		4½	2	CLK	C-AJ-1193	FS-0135
12" Sch. 10			4½	3	CLK	C-AJ-1124	FS-0103
12" Sch. 30	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
12" Sch. 40		X	4½	3	ES1399	C-AJ-1532	FS-0646
24" Sch. 5			4½	2	CLK	C-AJ-1203	FS-0145
24" Sch. 10, also 6" thick hollow-core		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
24" Sch. 30	O	X	4½	3	ES1399	C-AJ-1415	FS-0353
24" Sch. 10			6	3	LBS3	C-BJ-1051	FS-0545
24" Sch. 10, also 6" thick hollow-core	O	X	4½	2,3	ES1399/LBS3	C-AJ-1483	FS-0522

INSULATED STEEL PIPE							
¾" / 2" Sch. 10, 1" AB/PVC, multiple			2½	2	ES1399	C-AJ-8118	FS-0377
1½" Sch. 5, ¾" AB/PVC			4½	2	FSP	C-AJ-5054	FS-0107
2" Sch. 5, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544
3" Sch. 5, multiple, ¾" AB/PVC			4½	3	LBS3	C-AJ-5259	FS-0540
4" Sch. 40, 2" FIBERGLASS, also for hollow core flo	O		2½	1½	WRS3/LBS3	C-AJ-5268	FS-0618
4" Sch. 5, 1" AB/PVC	O		2½	2	LBS3	C-AJ-5257	FS-0538
4" Sch. 10, 1½" FIBERGLASS			4½	3	FSP	C-AJ-5066	FS-0115
4" Sch. 5, 1" FIBERGLASS/MINERAL FIBER			3¼	2,3	CMP	C-AJ-5008	FS-0070
4" Sch. 5, 2" MINERAL FIBER		X	4½	3	ES1399	C-AJ-1532	FS-0646
6" Sch. 5, 1" FIBERGLASS/MINERAL FIBER, multiple			3¼	2,3	CMP	C-AJ-8007	FS-0084
6" Sch. 10, 1" AB/PVC			4½	3	WRS3/LBS3	C-AJ-5269	FS-0619
8" Sch. 30, 1"-3" CELLULAR GLASS	O	X	4½	2	ES1399	C-AJ-5234	FS-0493
8" Sch. 10, 2" FIBERGLASS/MINERAL FIBER			6	3	LBS3	C-BJ-5014	FS-0547
8" Sch. 40, 2" FIBERGLASS/MINERAL FIBER			4½	3	WRS3/LBS3	C-AJ-5270	FS-0620
10" Sch. 10, 2" FIBERGLASS/MINERAL FIBER			4½	2	CLK	C-AJ-5059	FS-0104
10" Sch. 40, 1" CELLULAR GLASS	O	X	4½	3	ES1399	C-AJ-5203	FS-0354
10" Sch. 5, 1" AB/PVC			4½	1½	LBS3	C-AJ-5255	FS-0536
12" Sch. 10, 1" FIBERGLASS	O	X	4½	2	LBS3	C-AJ-5256	FS-0537
12" Sch. 40, 2" MINERAL WOOL		X	4½	3	ES1399	C-AJ-1532	FS-0646
24" Sch. 20, 2" FIBERGLASS	O		4½	3	ES1399/LBS3	C-AJ-5288	FS-0648

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

COPPER PIPE / TUBING							
¾" / 2" copper, multiple			2½	2	ES1399	C-AJ-8118	FS-0377
1" copper, multiple, also 6" thick hollow-core		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
1" copper, multiple		X	2½	1	WRS3/LBS3	F-A-8026	FS-0660
1½" copper, multiple (max. 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
2" copper, multiple			3¼,7	3,4	CMP	C-AJ-1040	FS-0084
4" copper, also 6" thick hollow-core	O		4½	2	CLK	C-AJ-1191	FS-0129
4" copper, multiple			4½	2	CMP	C-AJ-1219	FS-0125
4" copper, multiple	O		2½	2	ES1399	C-AJ-1420	FS-0376
4" copper, also 6" thick hollow-core	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
4" copper, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
4" copper, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
4" copper, also 6" thick hollow-core (bottom)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
4" copper, w/ cable trays			4½	2	CMP	C-AJ-8049	FS-0149
4" copper			4½	2	LBS3	C-AJ-8141	FS-0544
4" copper, also 6" thick hollow-core	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" copper, also 6" thick hollow-core	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
6" copper, also 6" thick hollow-core		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
6" copper	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
6" copper, also 6" thick hollow-core	O	X	4½	2 or 3	ES1399/LBS3	C-AJ-1483	FS-0522

INSULATED COPPER PIPE / TUBING							
¾" / 2" copper, 1" AB/PVC w/multiple other pipes			2½	2	ES1399	C-AJ-8118	FS-0377
1" copper, ¾" AB/PVC, mult., 6" thick hollow-core		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
1½" copper, ¾" AB/PVC			4½	2	FSP	C-AJ-5054	FS-0107
2" copper, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544
2" copper, 1" FIBERGLASS/MINERAL FIBER			3¼	2,3	CMP	C-AJ-5008	FS-0070
2" copper, 1" FIBERGLASS/MINERAL FIBER, multiple			3¼	2,3	CMP	C-AJ-8007	FS-0084
3" copper, mult., ¾" AB/PVC			4½	3	LBS3	C-AJ-5259	FS-0540
4" copper, 1" AB/PVC			2½	2	LBS3	C-AJ-5257	FS-0538
4" copper, 1½" FIBERGLASS			4½	3	FSP	C-AJ-5066	FS-0115
4" copper, 2" MINERAL FIBER		X	4½	3	ES1399	C-AJ-1532	FS-0646
6" copper, 2" FIBERGLASS	O		4½	3	ES1399/LBS3	C-AJ-5288	FS-0648
6" copper, 1" AB/PVC			4½	3	WRS3/LBS3	C-AJ-5269	FS-0619
10" copper, 1" AB/PVC			4½	1½	LBS3	C-AJ-5255	FS-0536

REFRIGERATION LINES							
2" copper/steel, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

NON-METALLIC PIPE							
1" PEX, multiple			4½	3	LBS3	C-AJ-2461	FS-0529
1½" Sch. 40 PVC, CPVC			4½	2	FSP	C-AJ-2096	FS-0116
1½" Sch. 40 PVC, CPVC, also 6" thick hollow-core	O	X	4½	2,3	LBS3	C-AJ-2463	FS-0531
1½" Sch. 40 PVC		X	2½	1	WRS3/LBS3	F-A-8026	FS-0660
2" Sch. 40 PVC	O		4½	2	LBS3	C-AJ-2462	FS-0530
2" Sch. 40 PVC			4½	2	LBS3	C-AJ-8141	FS-0544
2" Sch. 40 ABS, FRPP			4½	3	PCS	C-AJ-2102	FS-0117
2" Sch. 40 PVC, CPVC			6	2,3	LBS3	C-BJ-2022	FS-0546
2" Sch. 40 PVC, CPVC, ENT	O	X	4½	3	ES1399	C-AJ-2525	FS-0647
2" Sch.40 ABS, FRPP, steel plate		X	2½	2	PCS	F-A-2159	FS-0658
3" Sch. 40 PVC, ABS, CPVC, 6" thick hollow-core	O		4½	2	WRS3/LBS3	C-AJ-2474	FS-0615
3" Sch. 40 PVC, CPVC, ABS, 6" thick hollow-core	R		4½	3	WRS3/LBS3	C-AJ-2472	FS-0613
3" Sch. 40 PVC, RNC, ENT, Closed PVC	O	X	4½	2,3	LBS3	C-AJ-2596	FS-0668
4" Sch. 40 PVC, ABS, CPVC, 6" thick hollow-core			4½	2	WRS3/LBS3	C-AJ-2476	FS-0617
4" Sch. 40 PVC, ABS		X	4½	2	ES1399/LBS3	F-A-2122	FS-0511
4" Sch. 40 PVC, ABS, CPVC 6" thick hollow-core	O	X	2½	3	WRS3/LBS3	C-AJ-2473	FS-0614
4" FRPP, 6" thick hollow-core	O	X	2½	3	WRS3/LBS3	C-AJ-2473	FS-0614
4" Sch.40 PVC,CPVC,PB,also 6" thick hollow-core			4½	2,3	PCS	C-AJ-2086	FS-0111
4" Sch.40 ABS, also 6" thick hollow-core	O	X	4½	2,3	WRS3/LBS3	C-AJ-2489	FS-0638
4" Sch.40 PVC, CPVC, ABS, FRPP, steel plate		X	2½	2	WRS3/LBS3	F-A-2159	FS-0658
4" Sch.40 PVC, CPVC, steel plate		X	2½	2	PCS	F-A-2159	FS-0658
5" Sch.40 PVC, CPVC also 6" thick hollow-core	O	X	4½	2,3	WRS3/LBS3	C-AJ-2489	FS-0638
6" Sch. 40 PVC, CPVC also 6" thick hollow-core	O	X	2½	1	WRS3/LBS3	C-AJ-2475	FS-0616

STEEL CONDUIT							
¾" / 2" EMT multiple			2½	2	ES1399	C-AJ-8118	FS-0377
2" EMT/RMC, multiple, also 6" thick hollow-core	O	X	4½	2	CLK	C-AJ-1192	FS-0134
2" EMT, multiple	O		2½	2	ES1399	C-AJ-1420	FS-0376
2" EMT/RMC (top or bottom)			4½	3	FSP	C-AJ-1004	FS-0008
3" EMT/RMC			4½	3	FSP	C-AJ-1046	FS-0091
4" EMT	O	X	4½	3	ES1399	C-AJ-1415	FS-0353
4" EMT	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
4" EMT, also 6" thick hollow-core	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" EMT, also 6" thick hollow-core	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
4" EMT/RMC (top or bottom)			4½	2	FSP	C-AJ-1054	FS-0092
4" EMT/RMC, also 6" thick hollow-core	O		4½	2	CLK	C-AJ-1191	FS-0129
4" EMT/RMC, multiple (max 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
4" EMT/RMC, also 6" thick hollow-core	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
4" EMT/RMC, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
4" EMT/RMC, also 6" thick hollow-core (bottom)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
4" EMT/RMC			4½	2	LBS3	C-AJ-8141	FS-0544
4" EMT/RMC, also 6" thick hollow-core			4½	3	FSP	C-AJ-1197	FS-0258
4" EMT/RMC, also 6" thick hollow-core (bottom)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
4" EMT / 6" RMC	O		4½	2	CLK	C-AJ-1193	FS-0135
4" EMT / 6" RMC			4½	2	CLK	C-AJ-1203	FS-0145
4" EMT / 6" RMC, multiple			4½	2	CMP	C-AJ-1219	FS-0125
4" EMT / 6" RMC	O	X	2½	2	LBS3	C-AJ-1484	FS-0523
4" EMT/ 6" RMC, also 6" thick hollow-core		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
4" EMT / 6" RMC			4½	2	CMP	C-AJ-8049	FS-0149
4" EMT / 6" RMC			4½	3	FSP	C-AJ-1003	FS-0001
4" EMT / 6" RMC			4½	3	CLK	C-AJ-1124	FS-0103
4" EMT / 6" RMC			6	3	LBS3	C-BJ-1051	FS-0545
4" EMT/ 6" RMC, also 6" thick hollow-core	O	X	4½	2,3	ES1399/LBS3	C-AJ-1483	FS-0522
4" EMT / 6" RMC, multiple			3¼,7	3,4	CMP	C-AJ-1040	FS-0084

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

FLEXIBLE METALLIC CONDUIT							
1½" FMC, mult. steel, also 6" thick hollow-core	R	X	4½	3	LBS3	C-AJ-1488	FS-0527
1½" FMC, mult. Steel or Al, 6" thick hollow-core	O	X	4½	2,3	ES1399	C-AJ-1512	FS-0517

NON-METALLIC CONDUIT							
1" ENT			6	2,3	LBS3	C-BJ-2022	FS-0546
1½" RNC			4½	2	FSP	C-AJ-2096	FS-0116
1½" RNC, also 6" thick hollow-core	O		4½	2,3	LBS3	C-AJ-2463	FS-0531
2" RNC	O		4½	2	LBS3	C-AJ-2462	FS-0530
2" RNC			6	2,3	LBS3	C-BJ-2022	FS-0546
2" RNC	O	X	4½	3	ES1399	C-AJ-2525	FS-0647
3" Sch 40 Pvc, RNC, ENT, Closed PVC	O	X	4½	2,3	LBS3	C-AJ-2596	FS-0668
4" RNC, also 6" thick hollow-core			4½	2,3	PCS	C-AJ-2086	FS-0111
4" RNC, steel plate		X	2½	2	WRS3/LBS3	F-A-2159	FS-0658

CABLE TRAY							
18" x 4" - 39% fill			4½	3	FSP	C-AJ-4001	FS-0020
24" x 4" - 25% fill			4½	2	Brick/FSP	C-AJ-4086	FS-0672
24" x 4" - 40% fill			4½	2	PLW/FSP	C-AJ-4013	FS-0100
24" x 4" - 30% fill			4½	2	CMP/PLW	C-AJ-4033	FS-0148
24" x 3" - 38% fill			8	3	CMP	C-BJ-4034	FS-0064
36" x 4" - 30% fill, multiple w/pipe			4½	2	CMP	C-AJ-8049	FS-0149
36" x 6" - 40% fill			4½	2	PLW/FSP	C-AJ-4032	FS-0147
36% fill, 750 MCM (18" x 24")			8	2	CPS/FSP	C-BJ-4016	FS-0094

POWER CABLE							
Max 4C #5awg Al. or Stl. METAL CLAD			4½	2	FSP	C-AJ-3149	FS-0501
300 MCM			3¼	2	MPS	C-AJ-3047	FS-0087
15% fill, 300MCM / #2 AWG multi cond.			4½	3	FSP	C-AJ-3003	FS-0002
350 MCM			4½	2,3	MCT	C-AJ-3048	FS-0114
15% fill, 350 MCM	R		4½	2	PLW	C-AJ-3093	FS-0130
25% fill, 350 MCM			4½	2	ES1399	C-AJ-3235	FS-0518
33% fill, 350 MCM, also 6" hollow-core	O		4½	2	LBS3	C-AJ-3225	FS-0532
45% fill, 350 MCM	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
3C #2/0, max. 2 bundles w/ other penetrants			2½	2	ES1399	C-AJ-8118	FS-0377
45% fill, 4C #2/0, COPPER, STEEL, AL., MC	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
25% fill, 3C #2/0 SER			4½	2	ES1399	C-AJ-3235	FS-0518
45% fill, 3C #2/0 SER	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
25% fill, 3C #2/0 METAL CLAD			4½	2	ES1399	C-AJ-3235	FS-0518
22% fill, 3C #12 METAL CLAD			4½	3	PLUG	C-AJ-3299	FS-0673
45% fill, 3C #12 ROMEX	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
3C #2 AWG armored, METAL CLAD, 6" hollow-core	O	X	4½	2	LBS3	C-AJ-3226	FS-0534
3C #18 AWG or 1C #3 AWG	R		8	3	CLK	C-BJ-3014	FS-0192
4C #2 AWG armored, METAL CLAD, 6" hollow-core			4½	2	FSP	C-AJ-3090	FS-0127
36% fill, 750 MCM			8	2	CPS/FSP	C-BJ-4016	FS-0094
38% fill, 750 MCM	O		2½	2	LBS3	C-AJ-3224	FS-0533
40% fill, 750 MCM	O		4½	3	LBS3	C-AJ-3227	FS-0535
70% fill, 750 MCM	O		4½	2	PCS/FSP	C-AJ-3118	FS-0196

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

CONTROL CABLE							
2C #10 AWG		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
3C #18 AWG or 1C #3 AWG	R		8	3	CLK	C-BJ-3014	FS-0192
4C #2 AWG armored, METAL CLAD, 6" hollow-core			4½	2	FSP	C-AJ-3090	FS-0127
4C #12 AWG	O		4½	2	LBS3	C-AJ-3225	FS-0532
7C #12 AWG			¾	2	MPS	C-AJ-3047	FS-0087
7C #12 AWG	R		4½	2	PLW	C-AJ-3093	FS-0130
7C #12 AWG			4½	2,3	MCT	C-AJ-3048	FS-0114
25% fill, 7C #12 AWG			4½	2	ES1399	C-AJ-3235	FS-0518
15% fill, #2-14 AWG			4½	3	FSP	C-AJ-3003	FS-0002
7C #16 AWG	O		½	2	LBS3	C-AJ-3224	FS-0533
7C #16 AWG	O		4½	3	LBS3	C-AJ-3227	FS-0535
7C #24 AWG		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
16C #16 AWG, also 6" hollow-core	O		4½	2	LBS3	C-AJ-3225	FS-0532

COMMUNICATIONS CABLE							
4 pr. #18 AWG, multiple		X	½	1	WRS3/LBS3	F-A-8026	FS-0660
25 pr. #24 AWG			4½	2	LBS3	C-AJ-8141	FS-0544
15% fill, 25 pr. #24 AWG	R		4½	2	PLW	C-AJ-3093	FS-0130
15% fill, 25 pr. #24 AWG			4½	3	FSP	C-AJ-3003	FS-0002
30% fill, 25 pr. #24 AWG	R		4½	2	CLK	C-AJ-3094	FS-0131
100 pr. #24 AWG			¾	2	MPS	C-AJ-3047	FS-0087
100 pr. #24 AWG, also 6" hollow-core	O		4½	2	LBS3	C-AJ-3225	FS-0532
100 pr. 72 Fiber optic			4½	2	MCT	C-AJ-3048	FS-0114
200 pr. #24 AWG			4½	2	PLUG	C-AJ-3299	FS-0673
13% fill, 100 pr. #24 telephone			4½	3	FSP	C-AJ-3004	FS-0014
25% fill, 100 pr. #24 AWG			4½	2	ES1399	C-AJ-3235	FS-0518
70% fill, 100 pr. #24 AWG	O		4½	2	PCS/FSP	C-AJ-3118	FS-0196
36% fill, 240 pr. #24 AWG			8	2	CPS/FSP	C-BJ-4016	FS-0094
400 pr. #24 AWG comm. Cable bundles w/ more			½	2	ES1399	C-AJ-8118	FS-0377
400 pr. #24 AWG telecomm.	O		½	2	LBS3	C-AJ-3224	FS-0533
400 pr. #24 AWG telecomm.	O		4½	3	LBS3	C-AJ-3227	FS-0535
45% fill, 400 pr. #24 AWG telecomm.	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
45% fill, RG59/U, RG/6 COAX	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
45% fill, 62.5/125 Fiber optic	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
62.5/125 Fiber optic			4½	2	PLUG	C-AJ-3299	FS-0673
72 Fiber optic	R		4½	2	FSP	C-AJ-3089	FS-0126
72 Fiber optic	O		½	2	LBS3	C-AJ-3224	FS-0533
72 Fiber optic			4½	2	LBS3	C-AJ-8141	FS-0544
72 Fiber optic	O		4½	3	LBS3	C-AJ-3227	FS-0535

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE FLOORS OR WALLS

BUS DUCT							
6" x 15", 3000A Copper			4½	2	CLK	C-AJ-6004	FS-0102
6" x 27", 4000A Aluminum			4½	2	LBS3	C-AJ-6035	FS-0541
6" x 19", 4000A Aluminum			4½	3	ES1399	C-AJ-6030	FS-0494

HVAC DUCT							
10" diameter, 28 GA			5	2	LBS3	C-AJ-7092	FS-0543
10" x 30", 24 GA			4½	3	ES1399	C-AJ-7079	FS-0461
12" x 24", 24 GA			4½	1 1/2	LBS3	C-AJ-7091	FS-0542
12" x 24", 24 GA, also 6" thick hollow-core		X	4½	2	ES1399	C-AJ-7077	FS-0459
12" x 24", 28 GA			4½	2	FSP	C-AJ-7010	FS-0128
20" x 36" OVAL, 24 GA		X	4½	2	ES1399	C-AJ-7078	FS-0460
24" diameter, 22 GA		X	4½	3	ES1399	C-AJ-7093	FS-0513

KITCHEN EXHAUST / AIR DUCT							
Max. 24" x 48", 20 GA Aiiir Duct & Grease Duct Blanket Types Thermal Ceramics, ETS Schaefer and Vesuvius			4½	2	FSP	C-AJ-7018 C-AJ-7024 C-AJ-7025	FS-0211

NO PENETRATING ITEMS							
5½" x 11½" top mounted			4½	3	Plate	C-AJ-0010	FS-0090
6" diameter, sleeved above floor	R		4½	3	PLW	C-AJ-0054	FS-0177
6" diameter, sleeved above & below floor	R		4½	3	PLW	C-AJ-0099	FS-0505
15" diameter	O		4½	3	ES1399	C-AJ-0104	FS-0510
18" x 7", top mounted, also 6" thick hollow-core			4½	2	CPS	C-AJ-0049	FS-0169
18" x 7", bottom mounted			4½	2	CPS	C-AJ-0050	FS-0176
10" x 30", also 6" thick hollow-core			3¼,7	3,4	CMP	C-AJ-0030	FS-0085
40" x 48"			4½	3	CMP	C-AJ-0043	FS-0124

Penetration Item (Size & Type)	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
FLOOR - CEILING SYSTEMS (Concrete & Membrane)						
STEEL PIPE						
4" Sch. 10	X	G500 design	1	ES1399	F-E-1007	FS-0409
COPPER PIPE / TUBING						
3" copper	X	G500 design	1	ES1399	F-E-1007	FS-0409
STEEL CONDUIT						
4" EMT	X	G500 design	1	ES1399	F-E-1007	FS-0409
POWER CABLE						
3C #2 AWG SER	X	G500 design	1	ES1399	F-E-3007	FS-0410
3C #12 AWG	X	G500 design	1	ES1399	F-E-3007	FS-0410
7C #12 AWG	X	G500 design	1	ES1399	F-E-3007	FS-0410
CONTROL CABLE						
3C #2 AWG SER	X	G500 design	1	ES1399	F-E-3007	FS-0410
3C #12 AWG	X	G500 design	1	ES1399	F-E-3007	FS-0410
7C #12 AWG	X	G500 design	1	ES1399	F-E-3007	FS-0410
COMMUNICATIONS CABLE						
100 pr. #24 AWG	X	G500 design	1	ES1399	F-E-3007	FS-0410
STEEL DUCT						
6" diameter, 30 GA	X	G500 design	1	ES1399	F-E-7004	FS-0411
INSULATED STEEL PIPE						
1½" Sch. 10, 1" FIBERGLASS or ¾" AB/PVC		G500 design	1	LBS3	F-E-5007	FS-0566
INSULATED COPPER PIPE						
1½" copper, 1" FIBERGLASS or ¾" AB/PVC		G500 design	1	LBS3	F-E-5007	FS-0566
NON-METALLIC PIPE						
¾" max. dia. multiple, SDR9 (PEX)		G500 design	1	LBS3	F-E-2020	FS-0565
2" Sch. 40 PVC, ABS, CPVC		G500 design	1	WRS3/LBS3	F-E-2024	FS-0627
4" Sch. 40 PVC, ABS, CPVC		G500 design	1	WRS3/LBS3	F-E-2025	FS-0628
FLEXIBLE METALLIC CONDUIT / PIPE						
½" FMC, multiple		G500 design	1	LBS3	F-E-1013	FS-0564

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
CONCRETE / MASONRY WALLS							
STEEL PIPE							
¾" / 2", Sch. 10 multiple			3	2	ES1399	C-AJ-8118	FS-0377
1" Sch. 10 multiple		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
2" Sch. 5 multiple	O		5	2	CLK	C-AJ-1192	FS-0134
2" Sch. 10 multiple		X	6	2	LBS3	W-J-1150	FS-0568
2" Sch. 5			4½	3	FSP	C-AJ-1004	FS-0008
3" Sch. 10, multiple		X	6	2	ES1399	W-J-1119	FS-0351
3" Sch. 5			7¼	3	FSP	C-AJ-1046	FS-0091
4" Sch. 5			4½	2	FSP	C-AJ-1054	FS-0092
4" Sch. 10	O		5	2	CLK	C-AJ-1191	FS-0129
4", Sch. 5, multiple (max 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
4" Sch. 5			4½	2	LBS3	C-AJ-8141	FS-0544
4" Sch. 5			5	2	CLK	W-J-1014	FS-0099
4" Sch. 10			5½	3	FSP	C-AJ-1197	FS-0258
4" Sch. 10	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" Sch. 10	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
6" Sch. 40, multiple	O		3	2	ES1399	C-AJ-1420	FS-0376
6" Sch. 5			4½	3	FSP	C-AJ-1003	FS-0001
6" Sch. 5, multiple			3¼, 7	3, 4	CMP	C-AJ-1040	FS-0084
8" Sch. 40	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
8" Sch. 40	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
8" Sch. 10, (one side application)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
8" Sch. 40 (one side application)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
10" Sch. 5, multiple			4½	2	CMP	C-AJ-1219	FS-0125
10" Sch. 40,	O	X	2½	2	LBS3	C-AJ-1484	FS-0523
10" Sch. 10, multiple			4½	2	CMP	C-AJ-8049	FS-0149
12" Sch. 10	O		5	2	CLK	C-AJ-1193	FS-0135
12" Sch. 10			4½	3	CLK	C-AJ-1124	FS-0103
12" Sch 30	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
24" Sch. 5			5	2	CLK	C-AJ-1203	FS-0145
24" Sch. 10		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
24" Sch. 30	O	X	4½	3	ES1399	C-AJ-1415	FS-0353
24" Sch. 10			6	3	LBS3	C-BJ-1051	FS-0545
24" Sch. 10	O	X	4½	2 or 3	ES1399/LBS3	C-AJ-1483	FS-0522

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE / MASONRY WALLS

INSULATED STEEL PIPE							
¾" / 2" Sch. 10, 1" AB/PVC, multiple			3	2	ES1399	C-AJ-8118	FS-0377
1½" Sch. 5, ¾" AB/PVC			6	2	FSP	C-AJ-5054	FS-0107
2" Sch. 5, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544
3" Sch. 5, mult., ¾" AB/PVC			4½	3	LBS3	C-AJ-5259	FS-0540
4" Sch. 40, 2" FIBERGLASS	O		2½	1½	WRS3/LBS3	C-AJ-5268	FS-0618
4" Sch. 5, 1" AB/PVC	O		2½	2	LBS3	C-AJ-5257	FS-0538
4" Sch. 10, 2" FIBERGLASS/MINERAL FIBER		X	6	2	LBS3	W-J-5108	FS-0582
4" Sch. 10, ¾" AB/PVC		X	6	2	LBS3	W-J-5109	FS-0583
4" Sch. 10, 1½" FIBERGLASS			6	3	FSP	C-AJ-5066	FS-0115
4" Sch. 5, 1" FIBERGLASS/MINERAL FIBER			3¼	2,3	CMP	C-AJ-5008	FS-0070
4" Sch. 5, 2" MINERAL FIBER		X	4½	3	ES1399	C-AJ-1532	FS-0646
6" Sch. 10, 2" FIBERGLASS		X	6	2	ES1399	W-J-5076	FS-0393
6" Sch. 10, 3" FIBERGLASS	R	X	6 1/8	1,2	LBS3	W-J-5110	FS-0584
6" Sch. 10, 1" AB/PVC			4½	3	WRS3/LBS3	C-AJ-5269	FS-0619
6" Sch. 5, 1" FIBERGLASS/MINERAL FIBER, multiple			3¼	2,3	CMP	C-AJ-8007	FS-0084
8" Sch. 10, 1½" CALCIUM SILICATE		X	6	2	LBS3	W-J-5106	FS-0580
8" Sch. 30, 1"-3" CELLULAR GLASS insulation	O	X	4½	2	ES1399	C-AJ-5234	FS-0493
8" Sch. 10, 2" FIBERGLASS/MINERAL FIBER			6	3	LBS3	C-BJ-5014	FS-0547
8" Sch. 40, 2" FIBERGLASS/MINERAL FIBER			4½	3	WRS3/LBS3	C-AJ-5270	FS-0620
10" Sch. 10, 2" FIBERGLASS/MINERAL FIBER			4½	2	CLK	C-AJ-5059	FS-0104
10" Sch. 10, 3" CELLULAR GLASS insulation		X	6	2	LBS3	W-J-5107	FS-0581
10" Sch. 40, 1" CELLULAR GLASS insulation	O	X	4½	3	ES1399	C-AJ-5203	FS-0354
10" Sch. 5, 1" AB/PVC			4½	1½	LBS3	C-AJ-5255	FS-0536
12" Sch. 10, 1" FIBERGLASS	O	X	4½	2	LBS3	C-AJ-5256	FS-0537
12", Sch. 30, 2" FIBERGLASS/MINERAL FIBER		X	6	2	ES1399	W-J-5085	FS-0468
12", Sch. 30, 2" FIBERGLASS/MINERAL FIBER	O	X	6	2	ES1399	W-J-5086	FS-0469
12", Sch. 40, 2" MINERAL FIBER		X	4½	3	ES1399	C-AJ-1532	FS-0646
12", Sch. 10, 3" FIBERGLASS/MINERAL FIBER			6	2	WRS3/LBS3	W-J-5111	FS-0631
12", Sch. 30, ¾" AB / PVC		X	6	2	ES1399	W-J-5087	FS-0470
24" Sch. 20, 2" FIBERGLASS	O		5"	3	ES1399/LBS3	C-AJ-5288	FS-0648

COPPER PIPE / TUBING							
¾" / 2" copper, multiple			3	2	ES1399	C-AJ-8118	FS-0377
1" copper, multiple		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
1½" copper, multiple (max. 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
2" copper, multiple		X	3¼, 7	3,4	CMP	C-AJ-1040	FS-0084
4" copper	O		5	2	CLK	C-AJ-1191	FS-0129
4" copper, multiple			4½	2	CMP	C-AJ-1219	FS-0125
4" copper, multiple	O		3	2	ES1399	C-AJ-1420	FS-0376
4" copper	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
4" copper	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
4" copper w/cable trays			4½	2	CMP	C-AJ-8049	FS-0149
4" copper			4½	2	LBS3	C-AJ-8141	FS-0544
4" copper	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" copper	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
4" copper	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
4" copper (one side application)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
4" copper (one side application)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
6" copper		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
6" copper	O	X	4½	2 or 3	ES1399/LBS3	C-AJ-1483	FS-0522

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE / MASONRY WALLS

INSULATED COPPER PIPE / TUBING							
¾" / 2" copper, 1" AB/PVC w/multiple other pipes			3	2	ES1399	C-AJ-8118	FS-0377
1" copper, ¾" AB/PVC, multiple		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
1½" copper, ¾" AB/PVC			6	2	FSP	C-AJ-5054	FS-0107
2" copper, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544
2" copper, 1" FIBERGLASS/MINERAL FIBER			¾	2,3	CMP	C-AJ-5008	FS-0070
2" copper, 1" FIBERGLASS/MINERAL FIBER, multiple			¾	2,3	CMP	C-AJ-8007	FS-0084
3" copper, mult., ¾" AB/PVC			4½	3	LBS3	C-AJ-5259	FS-0540
4" copper, 2" FIBERGLASS			2½	1½	WRS3/LBS3	C-AJ-5268	FS-0618
4" copper, 1" AB/PVC			2½	2	LBS3	C-AJ-5257	FS-0538
4" copper, 2" FIBERGLASS/MINERAL FIBER		X	6	2	LBS3	W-J-5108	FS-0582
4" copper, ¾" AB/PVC		X	6	2	LBS3	W-J-5109	FS-0583
4" copper, 1½" FIBERGLASS			6	3	FSP	C-AJ-5066	FS-0115
4" copper, 2" MINERAL FIBER		X	4½	3	ES1399	C-AJ-1532	FS-0646
6" copper, 2" FIBERGLASS		X	6	2	ES1399	W-J-5076	FS-0393
6" copper, 2" FIBERGLASS/MINERAL FIBER	O	X	6	2	ES1399	W-J-5086	FS-0469
6" copper, 2" FIBERGLASS	O		5"	3	ES1399/LBS3	C-AJ-5288	FS-0648
6" copper, ¾" AB / PVC		X	6	2	ES1399	W-J-5087	FS-0470
6" copper, 1" AB / PVC			4½	3	WRS3/LBS3	C-AJ-5269	FS-0619
6" copper, 3" FIBERGLASS/MINERAL FIBER	R	X	6 1/8	1,2	LBS3	W-J-5110	FS-0584
10" copper, 1" AB/PVC			4½	1½	LBS3	C-AJ-5255	FS-0536

REFRIGERATION LINES							
2" copper/steel, 1" AB/PVC			4½	2	LBS3	C-AJ-8141	FS-0544

NON-METALLIC PIPE							
¾" PEX, multiple			6	2	LBS3	W-J-2148	FS-0573
1" PEX			6	2	LBS3	W-J-2148	FS-0573
1" PEX, multiple			4½	3	LBS3	C-AJ-2461	FS-0529
1½" Sch. 40 PVC, CPVC			6	2	FSP	C-AJ-2096	FS-0116
1½" Sch. 40 ABS or PEX			6	2	LBS3	W-J-2146	FS-0571
1½" Sch. 40 PVC, CPVC	O	X	4½	2,3	LBS3	C-AJ-2463	FS-0531
2" Sch. 40 PVC	O		4½	2	LBS3	C-AJ-2462	FS-0530
2" Sch. 40 PVC			4½	2	LBS3	C-AJ-8141	FS-0544
2" Sch. 40 PVC, ABS, CPVC			6	2	ES1399	W-J-2104	FS-0392
2" Sch. 40 PVC, CPVC			6	2	LBS3	W-J-2146	FS-0571
2" Sch. 40 FRPP, ABS			4½	3	PCS	C-AJ-2102	FS-0117
2" Sch. 40 PVC, CPVC			6	2,3	LBS3	C-BJ-2022	FS-0546
2" Sch. 40 PVC, CPVC, ENT	O	X	5"	3	ES1399	C-AJ-2525	FS-0647
3" Sch. 40 PVC, CPVC, ABS	R		4½	2	WRS3/LBS3	C-AJ-2474	FS-0615
3" Sch. 40 PVC, CPVC			6	2	WRS3/LBS3	W-J-2155	FS-0630
3" Sch. 40 PVC, CPVC, ABS	R		4½	3	WRS3/LBS3	C-AJ-2472	FS-0613
3" Sch. 40 PVC, RNC, ENT, Closed PVC	O	X	4½	2,3	LBS3	C-AJ-2596	FS-0668
4" glass pipe		X	6	2	LBS3	W-J-2147	FS-0572
4" Sch. 40 PVC, ABS		X	4½	2	ES1399	F-A-2122	FS-0511
4" Sch. 40 PVC, ABS, CPVC			4½	2	WRS3/LBS3	C-AJ-2476	FS-0617
4" Sch. 40 PVC, ABS, CPVC		X	6	2	WRS3/LBS3	W-J-2154	FS-0629
4" Sch. 40 PVC, ABS, FRPP, CPVC	O	X	2½	2,3	WRS3/LBS3	C-AJ-2473	FS-0614
4" Sch. 40 PVC, CPVC, PB			4½	2,3	PCS	C-AJ-2086	FS-0111
4" Sch. 40 ABS	O	X	4½	2,3	WRS3/LBS3	C-AJ-2489	FS-0638
5" Sch. 40 PVC, CPVC	O	X	4½	2,3	WRS3/LBS3	C-AJ-2489	FS-0638
6" glass pipe			6	2	ES1399	W-J-2103	FS-0391
6" Sch. 40 PVC, CPVC	O	X	2½	1	WRS3/LBS3	C-AJ-2475	FS-0616

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE / MASONRY WALLS

STEEL CONDUIT							
¾" / 2" EMT multiple			3	2	ES1399	C-AJ-8118	FS-0377
2" EMT/RMC, multiple	O		5	2	CLK	C-AJ-1192	FS-0134
2" EMT, mult.	O		3	2	ES1399	C-AJ-1420	FS-0376
2" EMT/RMC, multiple		X	6	2	LBS3	W-J-1150	FS-0568
2" EMT/RMC			4½	3	FSP	C-AJ-1004	FS-0008
3" EMT multiple		X	6	2	ES1399	W-J-1119	FS-0351
3" EMT/RMC			7¼	3	FSP	C-AJ-1046	FS-0091
4" EMT	O	X	4½	3	ES1399	C-AJ-1415	FS-0353
4" EMT	O	X	4½	3	FSC3	C-AJ-1458	FS-0492
4" EMT	O-PVC	X	4½	3	LBS3	C-AJ-1581	FS-0666
4" EMT	O-PVC		4½	3	LBS3/ES1399	C-AJ-1580	FS-0666
4" EMT/RMC			4½	2	FSP	C-AJ-1054	FS-0092
4" EMT/RMC	O		5	2	CLK	C-AJ-1191	FS-0129
4" EMT/RMC, multiple (max 24)		X	4½	2	FSC3	C-AJ-1441	FS-0458
4" EMT/RMC	O	X	2½	2	LBS3	C-AJ-1485	FS-0524
4" EMT/RMC	O	X	4½	2	ES1399/LBS3	C-AJ-1486	FS-0525
4" EMT/RMC			4½	2	LBS3	C-AJ-8141	FS-0544
4" EMT/RMC			5	2	CLK	W-J-1014	FS-0099
4" EMT/RMC			5½	3	FSP	C-AJ-1197	FS-0258
4" EMT/RMC (one side application)	O	X	4½	2½	LBS3	C-AJ-1489	FS-0528
4" EMT/RMC (one side application)	O	X	4½	2	ES1399/LBS3	C-AJ-1439	FS-0456
4" EMT / 6" RMC	O		5	2	CLK	C-AJ-1193	FS-0135
4" EMT / 6" RMC			5	2	CLK	C-AJ-1203	FS-0145
4" EMT / 6" RMC, multiple			4½	2	CMP	C-AJ-1219	FS-0125
4" EMT/ 6" RMC	O	X	2½	2	LBS3	C-AJ-1484	FS-0523
4" EMT/ 6" RMC		X	2½	2	ES1399/LBS3	C-AJ-1487	FS-0526
4" EMT/ 6" RMC			4½	2	CMP	C-AJ-8049	FS-0149
4" EMT / 6" RMC w/ 2" FIBERGLASS/MIN. FIBER		X	6	2	ES1399	W-J-5085	FS-0468
4" EMT / 6" RMC w/ 2" FIBERGLASS/MIN. FIBER	O	X	6	2	ES1399	W-J-5086	FS-0469
4" EMT / 6" RMC w/ ¾" AB / PVC insulation		X	6	2	ES1399	W-J-5087	FS-0470
4" EMT/ 6" RMC	O	X	4½	2,3	ES1399/LBS3	C-AJ-1483	FS-0522
4" EMT/ 6" RMC			4½	3	FSP	C-AJ-1003	FS-0001
4" EMT/ 6" RMC			4½	3	CLK	C-AJ-1124	FS-0103
4" EMT/ 6" RMC			6	3	LBS3	C-BJ-1051	FS-0545
4" EMT / 6" RMC, multiple			3¼, 7	3,4	CMP	C-AJ-1040	FS-0084

FLEXIBLE METALLIC CONDUIT / PIPING							
1" FMT, aluminum pipe, multiple		X	6	2	LBS3	W-J-1152	FS-0570
1½" FMC, mltpl. Steel		X	6	2	ES1399	W-J-1162	FS-0520
1½" FMC, mltpl. Steel	R	X	4½	3	LBS3	C-AJ-1488	FS-0527
1½" FMC, mltpl. Steel, Al	O	X	4½	2,3	ES1399	C-AJ-1512	FS-0517

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE / MASONRY WALLS

NON- METALLIC CONDUIT							
½" ENT			5	2	FSP	W-J-2003	FS-0078
1½" RNC			6	2	FSP	C-AJ-2096	FS-0116
1½" ENT			6	2	LBS3	W-J-2146	FS-0571
2" RNC			6	2	ES1399	W-J-2104	FS-0392
2" RNC			6	2	LBS3	W-J-2146	FS-0571
2" RNC	O	X	5"	3	ES1399	C-AJ-2525	FS-0647
3" RNC			6	2	WRS3/LBS3	W-J-2155	FS-0630
3" Sch. 40 PVC, RNC, ENT, Closed PVC	O	X	4½	2,3	LBS3	C-AJ-2596	FS-0668
4" RNC			6	2	WRS3/LBS3	W-J-2154	FS-0629
4" RNC			4½	2,3	PCS	C-AJ-2086	FS-0111

CABLE TRAY							
18" x 4" steel tray - 39% fill			4½	3	FSP	C-AJ-4001	FS-0020
18" x 5" aluminum tray - 20% fill			5	2	LBS3	W-J-4045	FS-0579
24" x 4" steel tray - 30% fill			4½	2	CMP/PLW	C-AJ-4033	FS-0148
24" x 4" steel or aluminum - 40% fill		X	4½	2	PLW/FSP	C-AJ-4013	FS-0100
24" x 3" steel tray - 38% fill			8	3	CMP	C-BJ-4034	FS-0064
24" x 4" steel tray - 40% fill		X	6	2	Fire Brick	W-J-4058	FS-0643
36" x 4" steel tray - 30% fill, multiple w/pipe			4½	2	CMP	C-AJ-8049	FS-0149
36" x 6" steel tray - 40% fill			4½	2	PLW/FSP	C-AJ-4032	FS-0147
18" x 4" steel sleeve - 36% fill, 350 MCM	R		6	2	PLW/FSP	W-J-3100	FS-0491

POWER CABLE							
Max 4C #5awg Al. or Stl. METAL CLAD			6	2	FSP	C-AJ-3149	FS-0501
18 AWG RG6/U	R	X	6 1/8	1,2	LBS3	W-J-3119	FS-0578
41% fill, 2C #12 AWG ROMEX		X	6	2	LBS3	W-J-3118	FS-0577
3C #12 AWG ROMEX		X	6	2	LBS3	W-J-3116	FS-0575
3C #2/0 Al SER		X	6	2	LBS3	W-J-3117	FS-0576
3C #2/0 Al SER			5	2	ES1399	C-AJ-3235	FS-0631
3C #2/0, max. 2 bundles w/ other penetrants			3	2	ES1399	C-AJ-8118	FS-0377
45% fill, 3C #2/0 SER	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
45% fill, 4C #2/0, COPPER, STEEL, AL., MC	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
(2) 3C-2 AWG armored, METAL CLAD (Al, St)		X	6	2	LBS3	W-J-3117	FS-0576
3C #18 AWG or 1C #3 AWG	R		8¾	3	CLK	C-BJ-3014	FS-0192
25% fill, 3C #2/0 AWG METAL CLAD (Al, St)			5	2	ES1399	C-AJ-3235	FS-0631
40% fill, 3C #2/0 Al SER		X	6	2	LBS3	W-J-3116	FS-0575
40% fill, 3C #12 AWG ROMEX		X	6	2	LBS3	W-J-3116	FS-0575
4C-2 AWG armored, METAL CLAD			6	2	FSP	C-AJ-3090	FS-0127
41% fill, 4C-2/0 AWG armored, METAL CLAD (Al, St)		X	6	2	LBS3	W-J-3118	FS-0577
45% fill, 3C #12 ROMEX	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
3C #12 AWG METAL CLAD		X	6	2	Fire Brick	W-J-3159	FS-0664
55.6% fill, 4C #12 AWG	R	X	6 1/8	1,2	LBS3	W-J-3119	FS-0578
19% fill, 7C #16, 4pr #24 AWG, 2/C #12 AWG		X	6	2	ES1399	W-J-3086	FS-0467
300 MCM			3¼	2	MPS	C-AJ3047	FS-0087
15% fill, 300MCM / #2 AWG multi cond.			4½	3	FSP	C-AJ-3003	FS-0002
350 MCM	R		4½	2	PLW	C-AJ-3093	FS-0130
350 MCM			4½	2,3	MCT	C-AJ-3048	FS-0114
350 MCM copper conductor			6	2	Fire Brick	W-J-3159	FS-0664
25% fill, 350 MCM			5	2	ES1399	C-AJ-3235	FS-0631
33% fill, 350 MCM	O		4½	2	LBS3	C-AJ-3225	FS-0532
36% fill, 350 MCM	R		6	2	PLW/FSP	W-J-3100	FS-0491
40% fill, 350 MCM		X	6	2	LBS3	W-J-3116	FS-0575
41% fill, 350 MCM		X	6	2	LBS3	W-J-3118	FS-0577
45% fill, 350 MCM	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
55.6% fill, 350 MCM	R	X	6 1/8	1,2	LBS3	W-J-3119	FS-0578
36% fill, 750 MCM			8	2	CPS/FSP	C-BJ-4016	FS-0094
38% fill, 750 MCM	O		2½	2	LBS3	C-AJ-3224	FS-0533
40% fill, 750 MCM	O		4½	3	LBS3	C-AJ-3227	FS-0535
70% fill, 750 MCM	O		5	2	PCS/FSP	C-AJ-3118	FS-0196

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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CONCRETE / MASONRY WALLS

CONTROL CABLE							
2C #10 AWG, multiple		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641
(7) 2C #20 AWG	O		5	2	FSP	W-J-3008	FS-0080
3C #18 AWG or 1C #3 AWG	R		8⅞	3	CLK	C-BJ-3014	FS-0192
3C #2 AWG aluminum armored, METAL CLAD , multiple			6	2	LBS3	W-J-3117	FS-0576
3C #2/0 AWG al or stl armored/ METAL CLAD	O	X	4½	2	LBS3	C-AJ-3226	FS-0534
4C #2 AWG armored, METAL CLAD			4½	2	FSP	C-AJ-3090	FS-0127
7C #12 AWG	R		4½	2	PLW	C-AJ-3093	FS-0130
25% fill, 7C #12 AWG			5	2	ES1399	C-AJ-3235	FS-0631
15% fill, #2-14AWG			4½	3	FSP	C-AJ-3003	FS-0002
36% fill, 7C #12 AWG	R		6	2	PLW/FSP	W-J-3100	FS-0491
100% fill, 7/C #12 AWG			3¼	2	MPS	C-AJ-3047	FS-0087
100% fill, 7/C #12 AWG			4½	2,3	MCT	C-AJ-3048	FS-0114
7C #24 AWG, multiple		X	4½	2	ES1399/LBS3	C-AJ-8162	FS-0641

COMMUNICATIONS CABLE							
25 pr. pvc insulated			5	2	CLK	W-J-3010	FS-0101
15% fill, 25 pr. #24 AWG	R		4½	2	PLW	C-AJ-3093	FS-0130
15% fill, 25 pr. #24 AWG			4½	3	FSP	C-AJ-3003	FS-0002
50 pr. #24 AWG			5	2	FSP	W-J-3007	FS-0079
200 pr. #24 AWG copper conductor			6	2	Fire Brick	W-J-3159	FS-0664
13% fill, 100 pr. #24 telephone			7½	3	FSP	C-AJ-3004	FS-0014
400 pr. #24 AWG comm.		X	2	2	LBS3	W-J-3118	FS-0577
400 pr. #24 AWG comm. Cable bundles w/ more			3	2	ES1399	C-AJ-8118	FS-0377
38% fill, 400 pr. #24 AWG	O		2½	2	LBS3	C-AJ-3224	FS-0533
40% fill, 400 pr. #24 AWG	O		4½	3	LBS3	C-AJ-3227	FS-0535
30% fill, 5 pr. #24 AWG	R		5	2	CLK	C-AJ-3094	FS-0131
25% fill, 25 pr. #24 AWG	R		5	2	LBS3	W-J-3115	FS-0574
25% fill, 100 pr. #24 AWG			5	2	ES1399	C-AJ-3235	FS-0631
33% fill, 100 pr. #24 AWG	O		4½	2	LBS3	C-AJ-3225	FS-0532
40% fill, 100 pr. #24 AWG	R		6	2	FSP	W-J-3075	FS-0383
70% fill., 100 pr. #24 AWG	O		5	2	PCS/FSP	C-AJ-3118	FS-0196
100% fill, 100 pr. #24 AWG			3¼	2	MPS	C-AJ-3047	FS-0087
100% fill, 100 pr. #24 AWG			4½	2	MCT	C-AJ-3048	FS-0114
100% fill, 100 pr. #24 AWG	R		6	2	PLW/FSP	W-J-3100	FS-0491
36% fill, 240 pr. #24 AWG			8	2	CPS/FSP	C-BJ-4016	FS-0094
45% fill, 400 pr. #24 AWG telecomm.	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
45% fill, RG59/U, RG/6 COAX	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
45% fill, 62.5/125 Fiber optic	O-PVC		4½	3	LBS3	C-AJ-3289	FS-0669
24 Fiber optic		X	6	2	LBS3	W-J-3116	FS-0575
62.5/125 Fiber optic	R	X	6 1/8	1,2	LBS3	W-J-3119	FS-0578
40% fill, 62.5/125 Fiber optic	O		4½	3	LBS3	C-AJ-3227	FS-0535
72 Fiber optic	R		4½	2	FSP	C-AJ-3089	FS-0126

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
CONCRETE / MASONRY WALLS							
BUS DUCT							
6" x 15", 3000A Copper			4½	2	CLK	C-AJ-6004	FS-0102
6" x 19", 4000A Aluminum			4½	3	ES1399	C-AJ-6030	FS-0494
6" x 27", 4000A Aluminum			4½	2	LBS3	C-AJ-6035	FS-0541
HVAC DUCT							
10" x 30", 24 GA			4½	3	ES1399	C-AJ-7079	FS-0461
12" x 12", 24 GA			5	2	LBS3	W-J-7061	FS-0585
12" x 24", 24 GA		X	4½	2	ES1399	C-AJ-7077	FS-0459
12" x 24", 28 GA			6	2	FSP	C-AJ-7010	FS-0128
12" x 24", 24 GA			4½	1½	LBS3	C-AJ-7091	FS-0542
18" x 67" 24 GA		X	6	2	ES1399	W-J-7048	FS-0395
20" x 36" OVAL, 24 GA		X	5	2	ES1399	C-AJ-7078	FS-0460
20" x 20" 24 GA		X	6	2	FSC3	W-J-7047	FS-0394
24" x 30" 24 GA, 1½ fiberglass			6	2	ES1399	W-J-7049	FS-0396
40" x 20", 24 GA			6	2	LBS3	W-J-7062	FS-0586
KITCHEN EXHAUST / AIR DUCT							
Max. 24" x 48", 20 GA Aiir Duct & Grease Duct Blanket Types Thermal Ceramics, ETS Schaefer and Vesuvius			4½	2	FSP	C-AJ-7018 C-AJ-7024 C-AJ-7025	FS-0211
STEEL DUCT							
4" diameter" 30 GA		X	6	2	LBS3	W-J-7063	FS-0587
6" diameter" 28 GA		X	6	2	ES1399	W-J-7051	FS-0471
10" diameter" 28 GA			5	2	LBS3	C-AJ-7092	FS-0543
24" diameter, 22 GA		X	4½	3	ES1399	C-AJ-7093	FS-0513
NO PENETRATING ITEMS							
5½" x 11½" top mounted			4½	3	Plate	C-AJ-0010	FS-0090
6" diameter, sleeved	R		4½	3	PLW	C-AJ-0054	FS-0177
6" diameter, sleeved	R		4½	3	PLW	C-AJ-0099	FS-0505
15" diameter	O		4½	3	ES1399	C-AJ-0104	FS-0510
18" x 7", top mounted			4½	2	CPS	C-AJ-0049	FS-0169
18" x 7", bottom mounted			4½	2	CPS	C-AJ-0050	FS-0176
10" x 30"			¾, 7	3, 4	CMP	C-AJ-0030	FS-0085
40" x 48"			4½	3	CMP	C-AJ-0043	FS-0124

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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GYPSUM WALLBOARD WALLS (BASED ON 2-1/2 IN. STUDS)

STEEL PIPE							
1" Sch. 5			5	2	FSP	W-L-1006	FS-0041
1" Sch. 5, multiple			5	1,2	FSP	W-L-1031	FS-0098
2" Sch. 10, multiple		X	33/4, 5	1,2	LBS3	W-L-1335	FS-0591
3" Sch. 10, multiple		X	33/4, 5	1,2	ES1399	W-L-1277	FS-0349
4" Sch. 5			33/4, 5	1,2	CLK	W-L-1030	FS-0095
4" Sch. 10	R		33/4, 5	1,2	CLK	W-L-1083	FS-0133
4" Sch. 5, multiple			33/4, 5	1,2	LBS3	W-L-8051	FS-0612
24" Sch. 10		X	33/4, 5	1,2	ES1399	W-L-1276	FS-0348
24" Sch. 10		X	33/4, 5	1,2	LBS3	W-L-1334	FS-0590
24" Sch. 5	R	X	33/4, 5	1,2	ES1399/LBS3	W-L-1405	FS-0657

INSULATED STEEL PIPE							
2" Sch. 5, 1" AB/PVC, 3/4" MINERAL FIBER			33/4,5	1,2	LBS3	W-L-8051	FS-0612
4" Sch. 10, 2" FIBERGLASS/MINERAL FIBER		X	33/4,5	1,2	LBS3	W-L-5213	FS-0605
4" Sch. 10, 3/4" AB/PVC		X	33/4,5	1,2	LBS3	W-L-5214	FS-0606
6" Sch. 10, 1 1/2" FIBERGLASS/MINERAL FIBER			5	2	FSP	W-L-5036	FS-0108
6" Sch. 10, 2" FIBERGLASS		X	33/4,5	1,2	ES1399	W-L-5161	FS-0399
6" Sch. 10, 3" FIBERGLASS	R	X	33/4,5	1,2	LBS3	W-L-5216	FS-0608
6" Sch. 10, 3" CELLULAR GLASS		X	33/4,5	1,2	ES1399	W-L-5212	FS-0516
8" Sch. 10, 1 1/2" CALCIUM SILICATE		X	33/4,5	1,2	LBS3	W-L-5211	FS-0603
10" Sch. 10, 3" CELLULAR GLASS		X	33/4,5	1,2	LBS3	W-L-5212	FS-0604
12" Sch. 30, 2" FIBERGLASS/MINERAL FIBER		X	33/4,5	1,2	ES1399	W-L-5178	FS-0463
12" Sch. 30, 2" FIBERGLASS/MINERAL FIBER	R	X	33/4,5	1,2	ES1399	W-L-5179	FS-0464
12" Sch. 10, 3" FIBERGLASS/MINERAL FIBER			33/4,5	1,2	WRS3/LBS3	W-L-5220	FS-0634
12" Sch. 10, 3/4" AB / PVC		X	33/4,5	1,2	ES1399	W-L-5180	FS-0465
12" Sch. 30, 2" FIBERGLASS		X	33/4,5	1,2	LBS3	W-L-5215	FS-0607

COPPER PIPE / TUBING							
1" copper			5	2	FSP	W-L-1006	FS-0041
2" copper			5	1,2	FSP	W-L-1031	FS-0098
4" copper, multiple			33/4, 5	1,2	LBS3	W-L-8051	FS-0612
6" copper		X	33/4, 5	1,2	ES1399	W-L-1276	FS-0348
6" copper		X	33/4, 5	1,2	LBS3	W-L-1334	FS-0590
6" copper	R	X	33/4, 5	1,2	ES1399/LBS3	W-L-1405	FS-0657

INSULATED COPPER PIPE / TUBING							
2" copper, 1" AB/PVC, 3/4" MINERAL FIBER			33/4,5	1,2	LBS3	W-L-8051	FS-0612
4" copper, 1 1/2" FIBERGLASS/MINERAL FIBER			5	2	FSP	W-L-5036	FS-0108
4" copper, 2" FIBERGLASS/MINERAL FIBER		X	33/4, 5	1,2	LBS3	W-L-5213	FS-0605
4" copper, 3/4" AB/PVC		X	33/4, 5	1,2	LBS3	W-L-5214	FS-0606
6" copper, 2" FIBERGLASS		X	33/4, 5	1,2	ES1399	W-L-5161	FS-0399
6" copper, 2" FIBERGLASS	R	X	33/4,5	1,2	ES1399	W-L-5179	FS-0464
6" copper, 3/4" AB / PVC		X	33/4, 5	1,2	ES1399	W-L-5180	FS-0465
6" copper, 3" FIBERGLASS/MINERAL FIBER	R	X	33/4, 5	1,2	LBS3	W-L-5216	FS-0608
6" copper, 3" CELLULAR GLASS		X	33/4, 5	1,2	ES1399	W-L-5212	FS-0516

Penetration Item (Size & Type)	Sleeve O-Opt./R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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GYPSUM WALLBOARD WALLS (BASED ON 2-1/2 IN. STUDS)

NON-METALLIC PIPE							
3/4" PEX, multiple		X	33/4, 5	1,2	LBS3	W-L-2383	FS-0596
1" PEX		X	33/4, 5	1,2	LBS3	W-L-2383	FS-0596
1 1/2" PEX			33/4, 5	1,2	LBS3	W-L-2381	FS-0594
1 1/2" Sch. 40 ABS			33/4, 5	1,2	LBS3	W-L-2381	FS-0594
2" Sch. 40 FRPP			33/4, 5	1,2	PCS	W-L-2081	FS-0118
2" Sch. 40 PVC, ABS, CPVC			33/4, 5	1,2	ES1399	W-L-2291	FS-0398
2" Sch. 40 PVC, CPVC			33/4, 5	1,2	LBS3	W-L-2381	FS-0594
2" Sch. 40 PVC, CPVC	R		33/4, 5	1,2	LBS3	W-L-2470	FS-0659
2" Sch. 40 PVC, multiple			33/4, 5	1,2	LBS3	W-L-8051	FS-0612
3" Sch. 40 PVC, CPVC			33/4, 5	1,2	WRS3/LBS3	W-L-2389	FS-0633
3" Sch. 40 PVC, CPVC	O		33/4, 5	1,2	WRS3/LBS3	W-L-2469	FS-0662
4" Sch. 40 PVC, CPVC			33/4, 5	1,2	PCS	W-L-2071	FS-0110
4" Sch. 40 PVC, ABS, CPVC	O	X	33/4, 5	1,2	WRS3/LBS3	W-L-2468	FS-0661
4" Sch. 40 PVC, ABS, CPVC		X	33/4, 5	1,2	WRS3/LBS3	W-L-2388	FS-0632
4" glass pipe		X	33/4, 5	1,2	LBS3	W-L-2382	FS-0595
6" glass pipe		X	33/4, 5	1,2	ES1399	W-L-2290	FS-0397

STEEL CONDUIT							
1" EMT/RMC			5	2	FSP	W-L-1006	FS-0041
1" EMT/RMC, multiple	R		5	1,2	FSP	W-L-1031	FS-0098
2" EMT/RMC, multiple			33/4, 5	1,2	LBS3	W-L-1335	FS-0591
3" EMT multiple		X	33/4, 5	1,2	ES1399	W-L-1277	FS-0349
4" EMT/RMC			33/4, 5	1,2	CLK	W-L-1030	FS-0095
4" EMT / RMC	R		33/4, 5	1,2	CLK	W-L-1083	FS-0133
4" EMT / 6" RMC		X	33/4, 5	1,2	ES1399	W-L-1276	FS-0348
4" EMT / 6" RMC		X	33/4, 5	1,2	LBS3	W-L-1334	FS-0590
4" EMT / 6" RMC w/ 2" fiberglass/min. wool		X	33/4, 5	1,2	ES1399	W-L-5178	FS-0463
4" EMT / 6" RMC w/ 2" fiberglass/min. wool	R	X	33/4,5	1,2	ES1399	W-L-5179	FS-0464
4" EMT / 6" RMC w/ 3/4" AB / PVC		X	33/4,5	1,2	ES1399	W-L-5180	FS-0465
4" EMT / 6" RMC	R	X	33/4, 5	1,2	ES1399/LBS3	W-L-1405	FS-0657

FLEXIBLE METALLIC CONDUIT / PIPE							
1/2" FMC, steel or alum conduit			33/4, 5	1,2	ES1399	W-L-1275	FS-0347
1/2" FMC, steel or alum conduit			33/4, 5	1,2	LBS3	W-L-1332	FS-0588
1" FMC, steel or aluminum pipe, multiple		X	33/4, 5	1,2	LBS3	W-L-1337	FS-0593
1" FMC, steel	R	X	33/4, 5	1,2	ES1399/LBS3	W-L-1405	FS-0657
1-1/4" FMC, steel conduit		X	33/4, 5	1,2	ES1399/LBS3	W-L-1429	FS-0670
1 1/2" FMC, steel conduit, multiple			33/4, 5	1,2	ES1399	W-L-1352	FS-0519

NON-METALLIC CONDUIT							
1/2" ENT			5	2	FSP	W-L-2011	FS-0042
1" ENT	R		33/4, 5	1,2	LBS3	W-L-2470	FS-0659
1 1/2" ENT			33/4, 5	1,2	LBS3	W-L-2381	FS-0594
2" RNC			33/4, 5	1,2	ES1399	W-L-2291	FS-0398
2" RNC			33/4, 5	1,2	LBS3	W-L-2381	FS-0594
2" RNC	R		33/4, 5	1,2	LBS3	W-L-2470	FS-0659
3" RNC			33/4, 5	1,2	WRS3/LBS3	W-L-2389	FS-0633
3" RNC	O		33/4, 5	1,2	WRS3/LBS3	W-L-2469	FS-0662
4" RNC			33/4, 5	1,2	WRS3/LBS3	W-L-2388	FS-0632
4" RNC	O	X	33/4, 5	1,2	WRS3/LBS3	W-L-2468	FS-0661

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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GYPSON WALLBOARD WALLS (BASED ON 2-1/2 IN. STUDS)

CABLE TRAY							
18" x 4" AL or 18" x 6" steel - 30% fill		X	33/4, 5	1,2	PLW/FSP	W-L-4003	FS-0097
18" x 4" - steel tray, 39% fill			33/4, 5	1,2	FSP	W-L-4051	FS-0636
18" x 5" aluminum tray - 20% fill			33/4, 5	1,2	LBS3	W-L-4045	FS-0602
24" x 4" steel tray - 40% fill		X	31/2, 5	1,2	Fire Brick	W-L-4061	FS-0642
18" X 4", steel sleeve, 26% fill	R		31/2, 5	1,2	PLW/FSP	W-L-3055	FS-0106

POWER CONTROL OR COMMUNICATIONS CABLE							
18 AWG RG6/U		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
18 AWG RG6/U	R	X	33/4, 5	1,2	LBS3	W-L-3243	FS-0601
64% fill, 18 AWG RG6/U		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
25 pr. #24 AWG			33/4, 5	1,2	CLK	W-L-3026	FS-0096
(6) 25pr #24AWG comm.			33/4, 5	1,2	LBS3	W-L-8051	FS-0612
25% fill, 25 pr. #24 AWG	R		33/4, 5	1,2	LBS3	W-L-3239	FS-0597
50 pr. #24 AWG			5	2	FSP	W-L-3003	FS-0044
40% fill, 100 pr. #24 AWG	R		33/4, 5	1,2	FSP	W-L-3190	FS-0382
40% fill, 100pr #24 AWG	O		33/4, 5	1,2	FSP/PCS	W-L-3227	FS-0509
200pr #24AWG copper conductor		X	33/4, 5	1,2	Fire Brick	W-L-3311	FS-0663
41% fill, 400 pr. #24 AWG comm.		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
64% fill, 400 pr. #24 AWG comm.		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
(7) 2C #20 AWG	R		5	2	FSP	W-L-3004	FS-0043
41% fill, 2C #12 AWG ROMEX		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
3C #2/0 AWG Aluminum SER		X	33/4, 5	1,2	LBS3	W-L-3240	FS-0598
64% 3C #2/0 AWG copper or Al SER		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
3C #12 AWG METAL CLAD		X	33/4, 5	1,2	Fire Brick	W-L-3311	FS-0663
(2) 3C #2 AWG Al armored/METAL CLAD		X	33/4, 5	1,2	LBS3	W-L-3240	FS-0598
40% fill, 3C #12 AWG ROMEX		X	33/4, 5	1,2	LBS3	W-L-3241	FS-0599
40% fill, 3C #2/0 Al SER		X	33/4, 5	1,2	LBS3	W-L-3241	FS-0599
41% fill, 4C #2/0 AWG armored (Al, St)		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
41% fill, 4C #2/0 AWG METAL CLAD (Al, St)		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
64% fill, 4C #2/0 AWG METAL CLAD (Al, St)		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
64% fill, 4C #2/0 AWG armored, (Al, St)		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
55.6% fill, 4C #12 AWG	R	X	33/4, 5	1,2	LBS3	W-L-3243	FS-0601
64% fill, 3C #12 AWG ROMEX		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
19% fill, 7C #16, 4pr #24 awg, 2C #12 awg	R	X	33/4, 5	1,2	ES1399	W-L-3204	FS-0462
64% fill, 7C #12awg		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
34% fill, power, control, comm.			5	2	MCT	W-L-3054	FS-0105
1/C 350 MCM copper conductor		X	33/4, 5	1,2	Fire Brick	W-L-3311	FS-0663
40% fill, 350 MCM		X	33/4, 5	1,2	LBS3	W-L-3241	FS-0599
41% fill, 350 MCM		X	33/4, 5	1,2	LBS3	W-L-3242	FS-0600
55.6% fill, 350 MCM	R	X	33/4, 5	1,2	LBS3	W-L-3243	FS-0601
64% fill, 350 MCM		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
70% fill, 750MCM	O		33/4, 5	1,2	FSP/PCS	W-L-3227	FS-0509
62.5/125 Fiber optic		X	33/4, 5	1,2	LBS3	W-L-3241	FS-0599
62.5/125 Fiber optic	R	X	33/4, 5	1,2	LBS3	W-L-3243	FS-0601
64% 62.5/125 Fiber optic		X	33/4, 5	1,2	ES1399	W-L-3270	FS-0649
26% fill, pwr, cntrl, comm.	R		33/4, 5	1,2	PLW/FSP	W-L-3055	FS-0106

Penetration Item (Size & Type)	Sleeve O-Opt.R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
GYPSUM WALLBOARD WALLS (BASED ON 2-1/2 IN. STUDS)							
BUS DUCT							
5" X 15" 300A Copper			5	2	FSP	W-L-6003	FS0132
HVAC DUCT							
12" x 12" 24 GA			33/4, 5	1,2	LBS3	W-L-7104	FS-0609
18" x 67" 24 GA		X	33/4, 5	1,2	ES1399	W-L-7084	FS-0401
20" x 20" 24 GA		X	33/4, 5	1,2	FSC3	W-L-7083	FS-0400
24" x 30" 24 GA, 1½ FIBERGLASS			33/4, 5	1,2	ES1399	W-L-7085	FS-0402
40" x 20", 24 GA			33/4, 5	1,2	LBS3	W-L-7105	FS-0610
STEEL DUCT							
4" diameter" 30 GA		X	33/4, 5	1,2	LBS3	W-L-7106	FS-0611
6" diameter 28 GA or 20" diameter 22 GA.		X	33/4, 5	1,2	ES1399	W-L-7106	FS-0466
20" diameter 28 GA (Insulated-Fiberglass)		X	33/4, 5	1,2	WRS3/ES1399	W-L-7126	FS-0650
ELECTRICAL OUTLET BOX							
4" x 4"			5	2	FSP Pads	R10764	FS-0210
4-11/16" x 4-11/16"			33/4	1	FSP Pads	R10764	FS-0216

Penetration Item (Size & Type)	Sleeve O-Opt. R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
WOOD JOIST FLOOR							
STEEL PIPE							
¾" Sch. 10 multiple			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
2" Sch. 10 multiple	X		10 truss	1 or 2	LBS3	F-C-8033	FS-0563
4" Sch. 5			10 joist	2	CLK	F-C-1012	FS-0113
4" Sch. 10		X	10 truss	1 or 2	ES1399	F-C-1100	FS-0486
4" Sch. 10		X	10 truss	1 or 2	LBS3	F-C-1116	FS-0548
INSULATED STEEL PIPE							
½" Sch. 10, 1½" FIBERGLASS	X		10 truss	1 or 2	LBS3	F-C-8033	FS-0563
¾" Sch. 10, ¾" AB/PVC			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
1½" Sch. 10, 1" FBRGLS, MINWL or ¾" AB/PVC			10 truss	1	LBS3	F-C-5070	FS-0560
1½" Sch. 10, 1" FIBERGLASS			10 truss	2	LBS3	F-C-5069	FS-0559
2" Sch. 10, ½" AB/PVC			10 truss	1 or 2	WRS3/LBS3	F-C-5071	FS-0625
3" Sch. 10, 1" FIBERGLASS			10 truss	1 or 2	ES1399	F-C-5061	FS-0478
COPPER PIPE / TUBING							
¾" copper multiple			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
2" copper			10 joist	2	CLK	F-C-1012	FS-0113
3" copper		X	10 truss	1 or 2	ES1399	F-C-1100	FS-0486
3" copper		X	10 truss	1 or 2	LBS3	F-C-1116	FS-0548
INSULATED COPPER PIPE							
½" copper, ½" FIBERGLASS	X		10 truss	1 or 2	LBS3	F-C-8033	FS-0563
¾" copper, ¾" AB/PVC			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
1½" copper, 1" FIBERGLASS or ¾" AB/PVC			10 truss	1	LBS3	F-C-5070	FS-0560
1½" copper, 1" FIBERGLASS			10 truss	2	LBS3	F-C-5069	FS-0559
2" copper, ½" AB/PVC			10 truss	1 or 2	WRS3/LBS3	F-C-5071	FS-0625
3" copper, 1" FIBERGLASS			10 truss	1 or 2	ES1399	F-C-5061	FS-0478
NON-METALLIC PIPE							
¾" max. dia. multiple, SDR9 (PEX)		X	10 truss	1 or 2	ES1399/LBS3	F-C-2282	FS-0557
1¼" Sch. 40 PVC, CPVC			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
1½" Sch. 40 PVC, ABS			10 truss	1	ES1399/LBS3	F-C-2279	FS-0554
2" Sch. 40 PVC, ABS, CPVC			10 truss	1 or 2	WRS3/LBS3	F-C-2291	FS-0621
2" Sch. 40 PVC, CPVC			10 truss	1 or 2	ES1399/LBS3	F-C-2276	FS-0551
4" Sch. 40 PVC, ABS (closet flange)			10 truss	1	ES1399/LBS3	F-C-2278	FS-0553
4" Sch. 40 PVC, ABS, CPVC		X	10 truss	1 or 2	WRS3/LBS3	F-C-2293	FS-0623
4" Sch. 40 PVC, CPVC			10 solid	2	PCS/CLK	F-C-2031	FS-0137

Penetration Item (Size & Type)	Sleeve O-Opt. R-Reqd.	Point Contact	Assembly Thickness	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
WOOD JOIST FLOOR							
STEEL CONDUIT							
¾" EMT/RMC multiple			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
2" EMT / RMC multiple	X		10 truss	1 or 2	LBS3	F-C-8033	FS-0563
4" EMT / RMC			10 joist	2	CLK	F-C-1012	FS-0113
4" EMT / RMC		X	10 truss	1 or 2	ES1399	F-C-1100	FS-0486
4" EMT / RMC			10 truss	1 or 2	LBS3	F-C-1116	FS-0548
FLEXIBLE METALLIC CONDUIT / PIPE							
½" FMC, steel pipe, multiple		X	10 truss	1 or 2	LBS3	F-C-1118	FS-0550
1½" FMC, steel conduit, multiple		X	10 truss	1 or 2	ES1399	F-C-1129	FS-0521
NON-METALLIC CONDUIT							
1¼" RNC			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
2" RNC			10 truss	1 or 2	ES1399/LBS3	F-C-2276	FS-0551
4" RNC			10 solid	2	PCS/CLK	F-C-2031	FS-0137
POWER CONTROL OR COMMUNICATIONS CABLE							
100 pr #24 AWG			10 truss	1 or 2	ES1399/LBS3	F-C-3078	FS-0558
100 pr #24 AWG	X		10 truss	1 or 2	LBS3	F-C-8033	FS-0563
3-1/2" bund. 100 pr #24 AWG			10 truss	1 or 2	ES1399	F-C-3073	FS-0488
2C #12 AWG			10 truss	1 or 2	ES1399/LBS3	F-C-3078	FS-0558
2C #24 AWG			10 truss	1 or 2	ES1399/LBS3	F-C-3078	FS-0558
3C 2/0 SER			10 truss	1 or 2	ES1399/LBS3	F-C-3078	FS-0558
3C 2/0 SER			10 truss	1 or 2	ES1399	F-C-3073	FS-0488
3C #12 ROMEX			10 truss	1 or 2	ES1399	F-C-3073	FS-0488
7C #12 AWG			10 truss	1 or 2	ES1399	F-C-3073	FS-0488
(2) 7C #12 AWG			10 truss	1	WRS3/LBS3	F-C-8034	FS-0626
STEEL DUCT							
4" diameter 28 GA			10 truss	1or 2	LBS3	F-C-7027	FS-0561
6" x 10" 24 GA			10 truss	1	LBS3	F-C-7028	FS-0562
6" diameter 30 GA		X	10 truss	1or 2	ES1399	F-C-7020	FS-0408
24"x 7" 26 Ga Vent or 16 GA Grease Cuct, Insul.			10 truss	1or 2	ES1399	F-C-7036	FS-0655

Joint Description	Max. Joint Width	Movement Comp. / Ext. %	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
JOINT TREATMENT SYSTEMS						
HEAD OF WALL						
Conc. fluted deck/roof assy to gyp. wall	¾	33	2	FSC3	HW-D-0288	FS-0483
Conc. fluted deck to conc. wall	1	25	2	ES1399	HW-D-0230	FS-0375
Conc. fluted deck/roof assy to conc. wall	1	25	2	ES1399	HW-D-0287	FS-0482
Conc. fluted deck/roof assy to conc. wall	1	12.5	2	FSC3	HW-D-0394	FS-0645
Conc. floor also hollow core to conc. wall	1	12.5	2	ES1399	HW-D-0232	FS-0379
Conc. fluted deck or stl deck to gyp. wall	1	25	2	FSC3	HW-D-0239	FS-0389
Conc. fluted deck/stl deck to conc. wall	1	25	2	FSC3	HW-D-0240	FS-0390
Conc. fluted deck w/ "I" beam to conc. wall	1	25	2	FSC3	HW-D-0311	FS-0496
Conc. fluted deck to gyp. wall	1	25	1,2	FSC3	CEJ249H	FS-0319
Conc. floor to gyp. wall	1	25	1,2	FSC3	CEJ251H	FS-0321
Conc. fluted deck/roof assy to gyp. wall	1	12.5	1,2	FSC3	HW-D-0393	FS-0644
Conc. fluted deck to gyp. wall	1	25	1,2	ES1399	HW-D-0224	FS-0371
Conc. fluted deck to gyp. wall	1	25	1,2	ES1399	HW-D-0229	FS-0372
Conc. floor to gyp. wall	1	25	1,2	ES1399	HW-D-0226	FS-0373
Conc. fluted deck to gyp. wall	1	25	1,2	ES1399	HW-D-0231	FS-0374
Conc. fluted deck to gyp. wall	1	25	1,2	FSC3	HW-D-0360	FS-0512
Conc. fluted deck w/ "I" beam to gyp. wall	1	25	1,2	FSC3	HW-D-0310	FS-0495
Conc. fluted deck w/ "I" beam to conc. wall	1	18.75	3	FSC3	HW-D-0326	FS-0503
Conc. fluted deck w/ "I" beam to gyp. wall	1	18.75	1,2,3	FSC3	HW-D-0290	FS-0485
Conc. fluted deck/stl deck to gyp. wall	1	25	1,2,3	FSC3	HW-D-0309	FS-0388
Conc. fluted deck/stl deck to conc. wall	1	25	2,3	FSC3	HW-D-308	FS-0387
Conc. floor also hollow core to gyp. wall	1½	25	1	FSC3	HW-D-0305	FS-0368
Conc. fluted deck/stl deck to gyp. wall	1½	25	1	FSC3	HW-D-0304	FS-0386
Conc. fluted deck/roof assy to conc. wall	2	25	2	FSC3	HW-D-0289	FS-0484
Conc. fluted deck to gyp. wall	2	25	2	FSC3	HW-D-0227	FS-0378
Conc. fluted deck/roof assy to conc. wall	2	12.5	3	FSC3	HW-D-0362	FS-0514
Conc. fluted deck/roof assy to conc. wall	2	12.5	3	FSC3	HW-D-0361	FS-0515
Conc. floor also hollow core to conc. wall	2	25	2,3	FSC3	HW-D-0306	FS-0369
Conc. fluted deck to conc. wall	2	25	2,3	FSC3	HW-D-0307	FS-0370
Conc. floor also hollow core to gyp. wall	2	25	2,3,4	FSC3	HW-D-0305	FS-0368
Conc. fluted deck/stl deck to gyp. wall	2	25	2,3,4	FSC3	HW-D-0304	FS-0386
Conc. floor to conc. wall	2	Static	4	CLK	HW-S-1003	FS-0143
Conc. floor also hollow core to conc. wall	3-1/2	15	3	FSC3	HW-D-1035	FS-0380
Conc. floor also hollow core to conc. wall	3-1/2	15	3	ES1399	HW-D-1036	FS-0381
Conc. fluted deck to conc. wall	3-5/8	Static	2	FSC	OPL 15670-103058	FS-0168
Conc. fluted deck to gyp. wall	3-5/8	Static	1,2	CLK	WHI-495-PSV-1122	FS-0166
Conc. floor to conc. wall	4	Static	2	CLK	HW-S-1002	FS-0141
Conc. floor to conc. wall	4	Static	2	CLK	HW-S-1013	FS-0653

Joint Description	Max. Joint Width	Movement Comp. / Ext. %	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
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JOINT TREATMENT SYSTEMS

FLOOR TO FLOOR						
Min. 4-1/2" concrete	1	25	2	ES1399	FF-D-0027	FS-0357
Min. 2-1/2" concrete	2	12.5	1	FSC3	FF-D-0034	FS-0480
Min. 6" concrete	2	12.5	4	FSC3	FF-D-0025	FS-0355
Min. 6" concrete	2	12.5	4	ES1399	FF-D-0026	FS-0356
Min. 4-1/2" concrete	3-1/2	14	2	CLK	FF-D-1037	FS-0304
Min. 4-1/2" concrete	3-1/2	15	3	FSC3	FF-D-1040	FS-0358
Min. 4-1/2" concrete	3-1/2	15	3	ES1399	FF-D-1041	FS-0359
Min. 4-1/2" concrete	4	Static	2	CLK	FF-S-1016	FS-0138
Min. 4-1/2" concrete	4	Static	2	CLK	FF-S-1032	FS-0651
Min. 5-1/2" concrete	4	Static	4	CLK	FF-S-1011	FS-0119
Min. 6" concrete	4	Static	4	CLK	FF-S-1036	FS-0665

WALL TO WALL						
Min. 2 layers of Gypsum Wallboard	3/4	0	2	ES1399	WW-S-0044	FS-0635
Min. 4-1/2" concrete	1	12.5	2	ES1399	WW-D-0030	FS-0360
Min. 4-1/2" concrete	3-1/2	15	3	FSC3	WW-D-1038	FS-0361
Min. 4-1/2" concrete	3-1/2	15	3	ES1399	WW-D-1039	FS-0362
Min. 4-1/2" concrete	4	Static	2	CLK	WW-S-1020	FS-0139
Min. 5" concrete	4	Static	2	CLK	WW-S-1021	FS-0140
Min. 5-1/2" concrete	4	Static	4	CLK	WW-S-1013	FS-0120
Min. 4-1/2" concrete	4	Static	4	CLK	WW-S-1014	FS-0121
Min. 5" concrete	4	Static	2	CLK	WW-S-1034	FS-0654

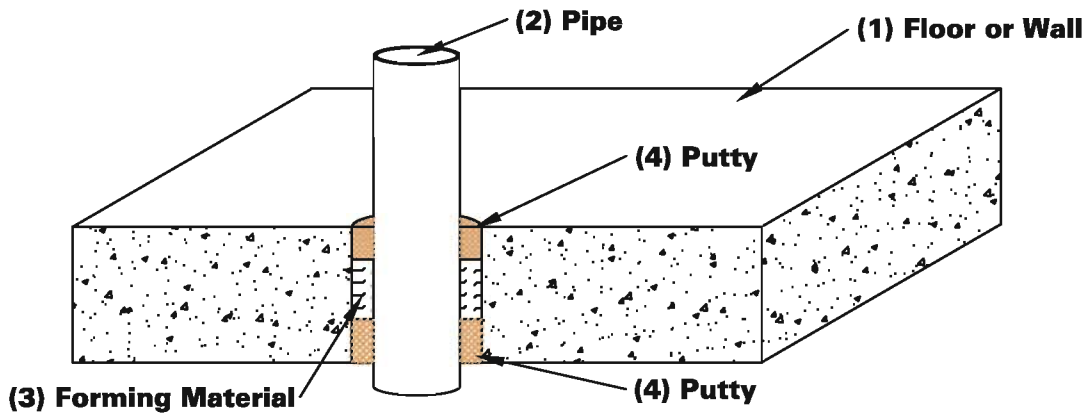
FLOOR TO WALL						
Conc. Floor to conc. Wall	1	25	2	ES1399	FW-D-0022	FS-0365
Conc. Floor to Gypsum Wall	1	0	1 or 2	ES1399/LBS3	BW-S-0012	FS-0637
Min. 2-1/2" concrete floor to 4-1/2" wall	2	12.5	1	FSC3	FW-D-0029	FS-0479
Conc. Floor to conc. Wall	2	12.5	4	FSC3	FW-D-0020	FS-0363
Conc. Floor to conc. Wall	2	12.5	4	ES1399	FW-D-0021	FS-0364
Min. 4-1/2" conc. Floor to conc. Wall	3-1/2	14	2	CLK	FW-D-1034	FS-0303
Conc. Floor to conc. Wall	3-1/2	15	3	FSC3	FW-D-1038	FS-0366
Conc. Floor to conc. Wall	3-1/2	15	3	ES1399	FW-D-1039	FS-0367
Min. 4-1/2" conc. Floor to conc. Wall	4	Static	2	CLK	FW-S-1003	FS-0142
Min. 4-1/2" conc. Floor to conc. Wall	4	Static	2	CLK	FW-S-1017	FS-0652
Min. 5-1/2" conc. Floor to conc. Wall	4	Static	4	CLK	FW-S-1004	FS-0144

Joint Description	Max. Joint Width	Movement Comp. / Ext. %	F Rating	Nelson Product	U.L. System	Nelson FS Drawing
JOINT TREATMENT SYSTEMS						
PERIMETER JOINTS / CURTAIN WALL						
EIFS Wall	4	15	1	FSC3/CLK	CEJ258P	FS-0318
Steel Panels	8	16.7	2	FSC3/CLK	CEJ236P	FS-0311
Steel Panels	8	16.7	2	FSC3/CLK	CEJ237P	FS-0312
Steel Panels	8	12.5	2	FSC3/CLK	CEJ253P	FS-0313
Concrete Tilt-Up Panels	8	12.5	2	FSC3/CLK	CEJ254P	FS-0314
Concrete Panels steel frame	8	12.5	2	FSC3/CLK	CEJ255P	FS-0315
Concrete Panels steel frame	8	16.7	2-1/2	FSC3/CLK	CEJ235P	FS-0310
Concrete Panels alum. Frame	8	12.5	2	FSC3/CLK	CEJ256P	FS-0316
Glass Panels	8	15	2	FSC3/CLK	CEJ257P	FS-0317
EIFS (Ext. Foam & cementious finish)	8	12.5	2	FSC3/CLK	CEJ278P	FS-0412
EIFS (Ext. Foam & plaster)	8	12.5	2	FSC3/CLK	CEJ279P	FS-0413
EIFS (Stone & Mortar)	8	12.5	2	FSC3/CLK	CEJ280P	FS-0414
EIFS (Brick & Mortar)	8	12.5	2	FSC3/CLK	CEJ281P	FS-0415
EIFS (Exterior gypsum)	8	12.5	2	FSC3/CLK	CEJ282P	FS-0416
EIFS Vision Glass (Ext. Foam & cementious)	8	12.5	2	FSC3/CLK	CEJ283P	FS-0417
EIFS Vision Glass (Ext. Foam & plaster)	8	12.5	2	FSC3/CLK	CEJ284P	FS-0418
EIFS Vision Glass (Stone & Mortar)	8	12.5	2	FSC3/CLK	CEJ285P	FS-0419
EIFS Vision Glass (Brick & Mortar)	8	12.5	2	FSC3/CLK	CEJ286P	FS-0420
EIFS Vision Glass (Ext. gyp.)	8	12.5	2	FSC3/CLK	CEJ287P	FS-0421
Glass Spandrell Alum mullion, vision glass	8	12.5	2	FSC3/CLK	CEJ298P	FS-0489
Alum Spandrell Alum mullion, vision glass	8	12.5	2	FSC3/CLK	CEJ299P	FS-0490
Steel Panels, vision glass	8	12.5	2	FSC3/CLK	CEJ291P	FS-0497
Concrete Panels steel frame, vision glass	8	12.5	2	FSC3/CLK	CEJ292P	FS-0498
Concrete Panels alum. Frame, vision glass	8	12.5	2	FSC3/CLK	CEJ293P	FS-0499
Concrete Tilt-Up Panels, vision glass	8	12.5	2	FSC3/CLK	CEJ294P	FS-0500
Glass Spandrell Alum I mullion, hat chnl	8	12.5	2	FSC3/CLK	CEJ304P	FS-0506
Glass Spandrell Alum mullion, hat chnl	8	12.5	2	FSC3/CLK	CEJ305P	FS-0507
Alum Spandrell Alum mullion, hat channel	8	12.5	2	FSC3/CLK	CEJ306P	FS-0508

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0, 1/2, 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT- Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" diameter (or smaller) steel conduit.
3. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt or loose ceramic fiber insulation into the annular space at the required depth as indicated below. Recess from top and/or bottom surface(s) of floor or both or one surface(s) of wall to accommodate the required thickness of putty as indicated below.
4. NELSON FSP PUTTY (part # AA445) - Apply FSP to the required thickness shown below, flush with top and/or bottom surface(s) of floor or both or one surface(s) of wall.

Max. Pipe Size	Forming Mat. Thickness	Annular Space (Nom)	T Rating (Hr.)	Putty Thickness	No. Surfaces Required to Firestop
6" (152mm) Steel or RMC	2-1/2" (64mm)	11/16" (17mm)	0	1" (25mm)	2 Surfaces
4" (102mm) EMT	2-1/2" (64mm)	2" (51mm)	0	1" (25mm)	2 Surfaces
2" (51mm) Steel, RMC, EMT	3" (76mm)	13/16" (21mm)	3/4	3/4" (19mm)	2 Surfaces
2" (51mm) Steel, RMC, EMT	5-1/2" (140mm)	13/16" (21mm)	3/4	1" (25mm)	1 Surface, Top of floor
2" (51mm) Steel, RMC, EMT	5-1/2" (140mm)	13/16" (21mm)	1/2	1" (25mm)	1 Surface, Bottom of floor
2" (51mm) Steel, RMC, EMT	5-1/2" (140mm)	13/16" (21mm)	1/2	1" (25mm)	1 Surface, Wall

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1003, C-AJ-1004**

Nelson Firestop

DWG NO. FS-0001R3

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

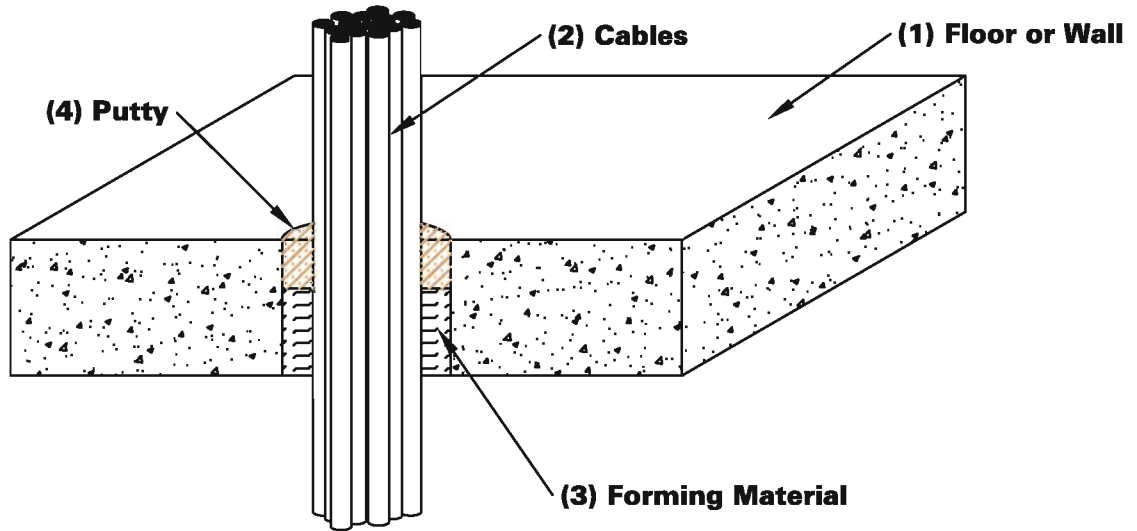
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 3 Hr.

T Rating 0, 1/2, 2, 3 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 6" (152mm) thick wall, or CMU block wall. Max. diameter of opening to be 4" (102mm).

2. CABLES - Max. 15% cable fill of opening in any combination of:

Cable Type	Cable Identification
a	Max. #2 awg, multi-conductor power & control cable XLPE & PVC insul.
b	Max. #12 awg, multi-conductor control cable XLPE & PVC insul.
c	Max. #14 awg, multi-conductor control cable XLPE & PVC insul.
d	Max. 300MCM, 1/C, power cable XLPE insul.
e	Max. 25pr. telephone cable, PVC insul.

Cable combinations of a,b,c,d & e, the T-Rating=0. Cable combinations of a,b,c & e, the T-Rating = 1/2 hr. Cable combinations of b,c & e, the T Rating = 2 Hr. Cable combinations of c & e, the T Rating = 3 Hr.

3. FORMING MATERIAL - Tightly pack, min. 3" (76mm) tk, min. 6pcf (96 kg/cubic meter) mineral wool insulation into the opening. Recesss from top or both surfaces of wall as required for putty.

4. NELSON FSP PUTTY (part # AA445) - Apply FSP over the forming material to a min. 1-1/2" (38mm) depth, flush with the top surface of the floor, or both ends of the wall. Putty to be forced into interstices of cable group to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3003**

Nelson Firestop

DWG NO. FS-0002 R3

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

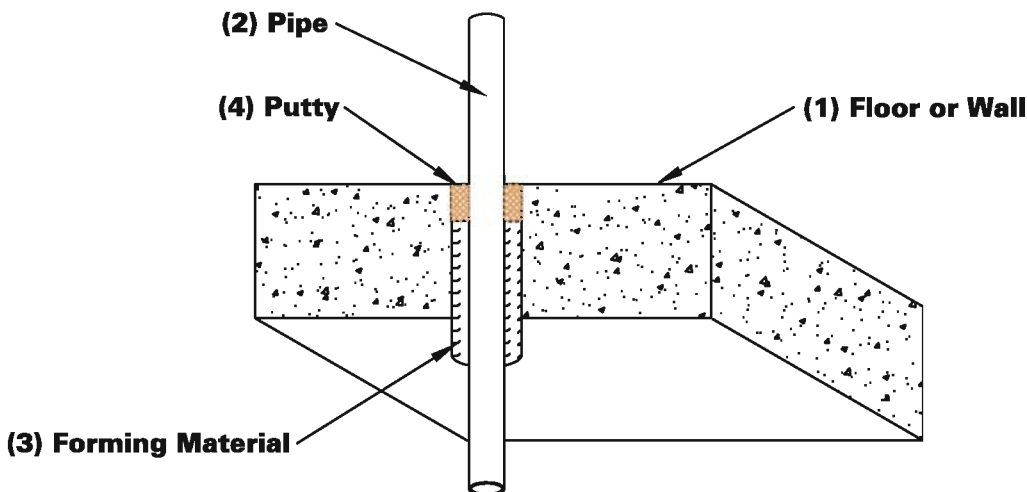
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 1/2 or 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) concrete floor or wall or CMU block wall. The max. diameter of the opening is 4" (102mm).
2. METALLIC PIPE or CONDUIT - The following types of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 The nom annular space is 13/16" (21mm).
3. FORMING MATERIAL - Min. 5-1/2" (140mm) depth of min. 6pcf (96 kg/cubic meter) mineral wool or ceramic fiber. Pack to extend a min. of 2" (51mm) above top surface of floor and recess 1" (25mm) from bottom surface of floor or pack the material a min. of 2" (51mm) below bottom surface of the floor and recess 1" (25mm) from the top of the floor. In walls, pack the material to extend 2" (51mm) from one surface of wall and recess 1" (25mm) from other wall surface.
4. NELSON FSP PUTTY (part # AA445) - Min. 1" (25mm) thickness of putty applied within the annulus, flush with top or bottom surface of floor, or both surfaces of wall. In floors, the T Rating is 3/4 Hr. if the FSP is flush with top of floor. If the FSP is installed flush to the bottom surface of the floor the T Rating is 1/2 Hr. In walls the T Rating is 1/2 Hr.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1004**

Nelson Firestop

DWG NO. FS-0008 R5

DATE: 07/14/06

BY: RL

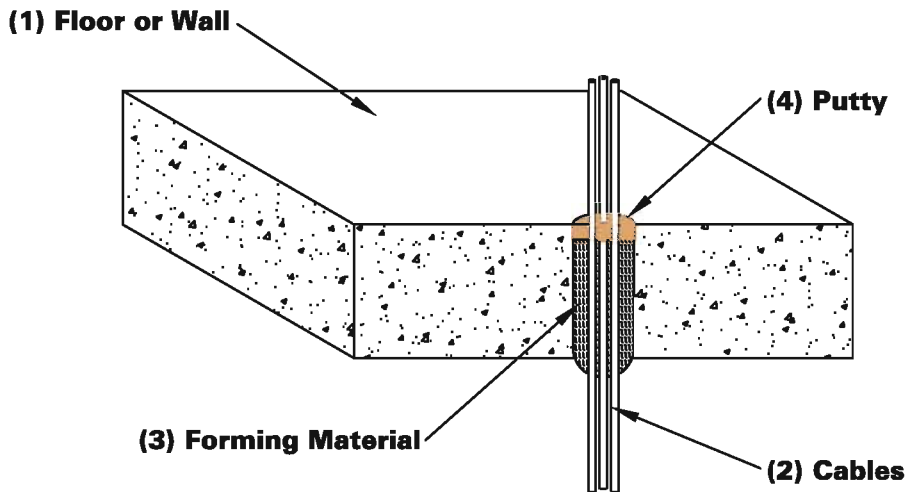
MEA # 196-84 Vol.3

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 3 Hr. T Rating 1/2, 1, 1-1/2, 3 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) concrete floor or min. 7-1/2" (191mm) wall or CMU block wall. The max. diameter of the opening is 4" (102mm).
2. CABLES - Max. 13% cable fill of opening in any combination of:
 - (A) max. 3/c #2 awg cable w/cross linked polyethylene (XLPE) insulation and polyvinyl chloride (PVC) jacket.
 - (B) max. 7/C #12 awg cable w/(XLPE) insulation and (PVC) jacket.
 - (C) max. 2/C #14 awg cable w/(XLPE) insulation and (PVC) jacket.
 - (D) max. 100pr. #24 awg telephone cable w/ PVC insulation and jacket.
3. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter), mineral wool batt insulation to fill the annular space to a 4-3/4" (121mm) depth, and recess 1-1/4" (32mm) from floor surface or from both surfaces of the wall.
4. NELSON FSP PUTTY (part # AA445) - Min. 1-1/4" (32mm) depth in the annular space around the pipe flush with the floor surface or flush with both surfaces of the wall. T Rating is 1/2 Hr. for combinations of A, B, C & D. T Rating is 1 Hr. for A, B & C combinations. T Rating is 1-1/2 Hr. for combinations of A & B. T Rating is 3 Hr for C type cables only.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3004**

Nelson Firestop

DWG NO. FS-0014 R4

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

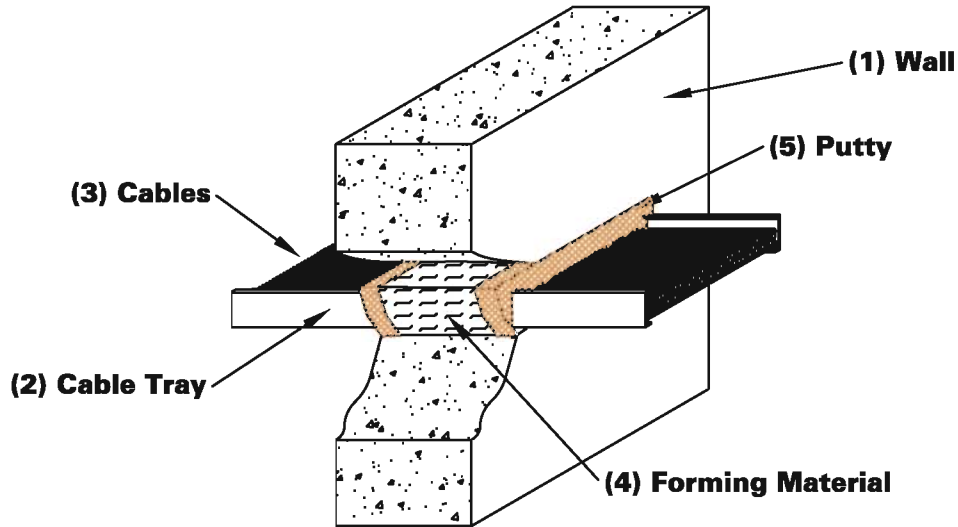
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 3 Hr.

T Rating 0, 3/4 & 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) lightweight or normal weight concrete floor or wall or CMU block wall. The max. size of the opening is 7" x 21" (178mm x 533mm).
2. CABLE TRAY - Max. 18" x 4" (457mm x 102mm) open ladder type, steel, cable tray. Center tray in the opening. The annular space between cable tray and edge of the opening is 1-1/2" (38mm).
3. CABLES - Max. 20-39% cable fill in any combination of:
 - (A) max. #2awg multiconductor power and control cable w/cross linked polyethylene (XLPE) insulation and polyvinyl chloride (PVC) jacket. When these cables are used exclusively, the T rating is 3/4 Hr.
 - (B) max. #12awg multiconductor control cable w/(XLPE) insulation and jacket. When these cables are used exclusively, the T rating is 2 Hr.
 - (C) max. 300 kcmil single conductor power cable w/(XLPE) insulation. When these cables are used exclusively, the T rating is 0 Hr.
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool in and around cables for separation of cables to a 3" (76mm) depth. Recess 3/4" (19mm) from each floor or wall surface.
5. NELSON FSP PUTTY (part # AA445) - Apply FSP within the annulus on both surfaces, within and around the cables over forming material to a min. depth of 3/4" (19mm) depth, with an additional 1" (25mm) crown around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-4001**

Nelson Firestop

DWG NO. FS-0020 R2

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

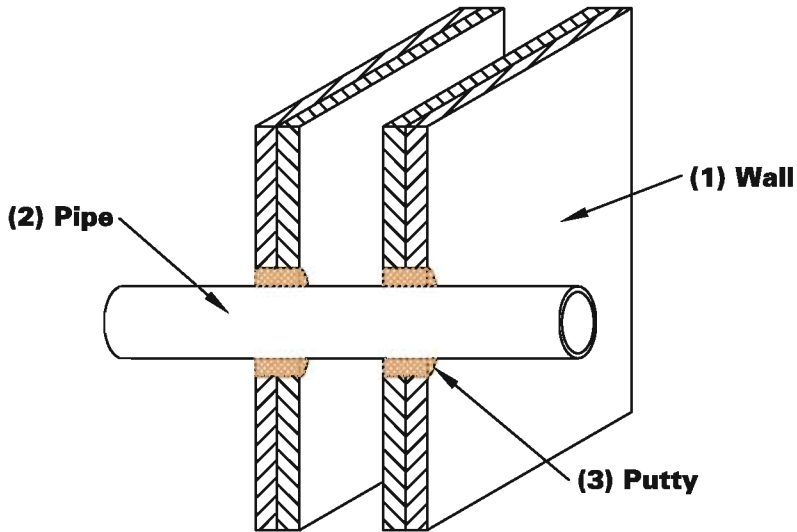
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 2" (51mm).
2. **METALLIC PIPE or CONDUIT** - The following types of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 1" (25mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 1" (25mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 1" (25mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 1" (25mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The max. annular space is 5/16" (8mm).
3. **NELSON FSP PUTTY** (part # AA445) - Min. 1-1/2" (38mm) depth in the annular space around the pipe. Apply an additional 1/8" (3mm) crown around the pipe where it exits the wall on both sides.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-1006**

Nelson Firestop

DWG NO. FS-0041 R5

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

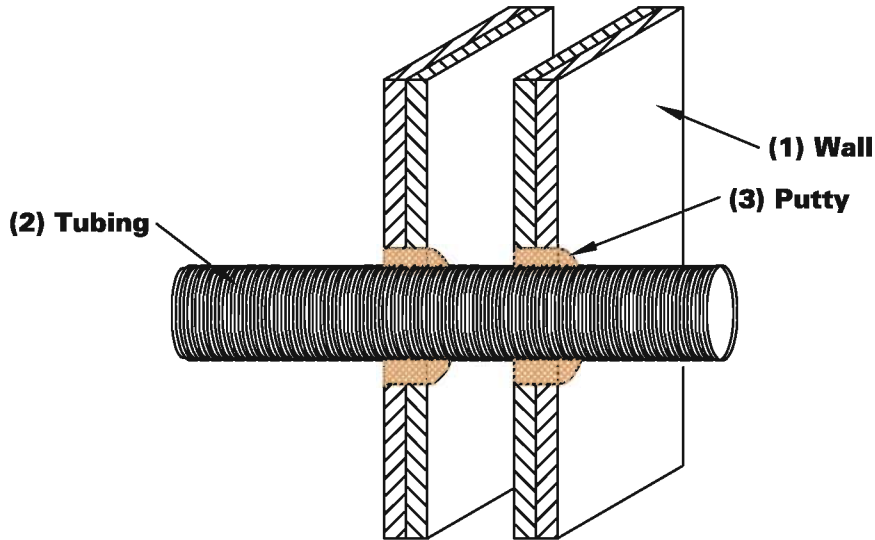
Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC TUBING

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300, U400 series designs as shown in the UL Fire Resistance Directory. The max. annular space is 5/8" (16mm). The max. diameter of opening is 2" (51mm).
2. NONMETALLIC TUBING - Max. 1/2" (13mm) diameter or smaller Electrical Nonmetallic Tubing (ENT).
3. NELSON FSP PUTTY (part # AA445) - Min. 1-1/2" (38mm) depth in the annular space around the pipe. Apply an additional 1/8" (3mm) crown around the pipe where it exits the wall on both sides.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-2011

Nelson Firestop

DWG NO. FS-0042 R3

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

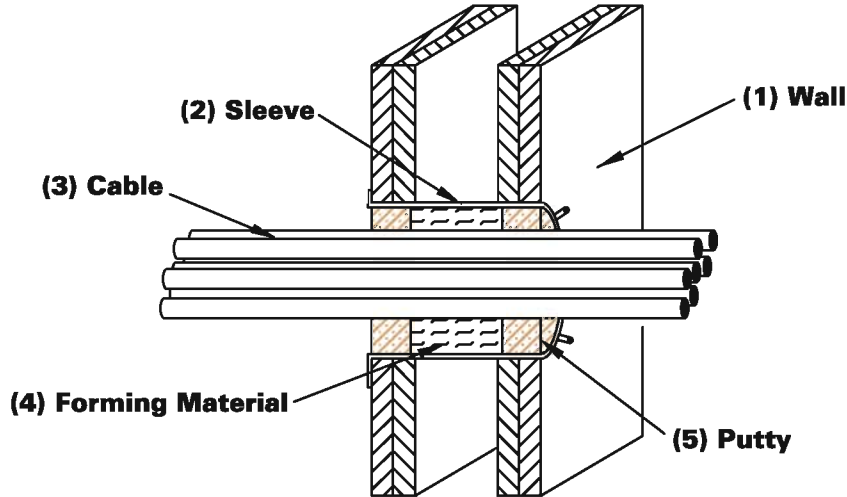
Address: _____

Signature: _____

GYPSUM WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 3" (76mm).
2. METALLIC SLEEVE - Nom 3" (76mm) diameter or smaller, steel sleeve with 3/4" - 3" (19mm - 76mm) long tabs. Sleeve fabricated from 27 GA galv sheet steel.
3. CABLES - (7) 2/C No. 20awg or smaller cables with polyethylene insulation and polyvinyl jacket. Min. separation between cables is 1/8" (3mm). The annular space between cables and the periphery of opening shall be 3/8" (10mm).
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt insulation into the sleeve at a min. 3" (76mm) depth. Recess the fiber 1" (25mm) from both ends of the sleeve.
5. NELSON FSP PUTTY (part # AA445) - Apply over the forming material to a min. 1" (25mm) depth, flush with both ends of the wall. Additional material to be installed such that a min. 1/8" (3mm) crown is formed around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-3004**

Nelson Firestop

DWG NO. FS-0043 R2

DATE: 07/14/06

BY: RL

MEA # 135-00-M

Nelson Firestop

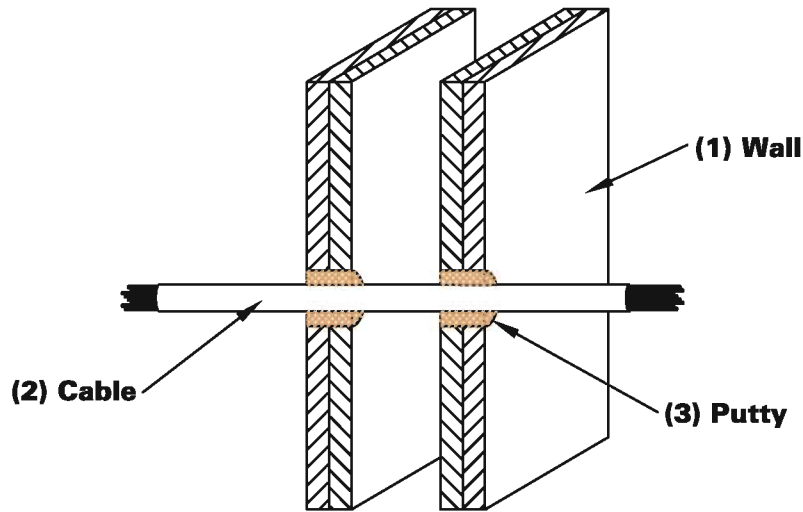
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL CABLE

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - As specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. size of the opening is 1" (25mm).
2. CABLE - Max. 50pr. # 24awg., PVC insulated telecommunications cable. The cable is to be centered in the opening.
3. NELSON FSP PUTTY (part # AA445) - Apply to fill the annular space around the cable to a min. 1-1/2" (38mm) depth. Additional material to be installed such that a min. 1/8" (3mm) crown is formed around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3003

Nelson Firestop

DWG NO. FS-0044 R2

DATE: 07/14/06

BY: RL

MEA # 135-00-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

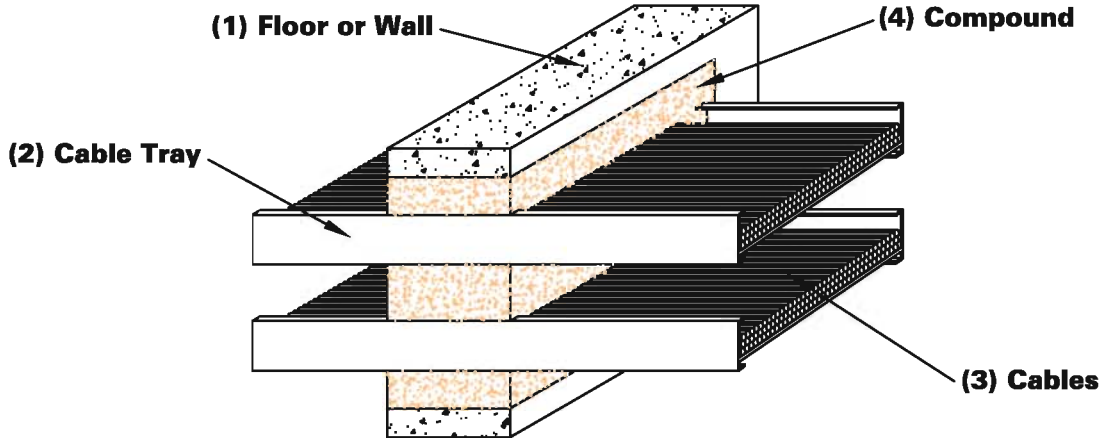
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAYS

F Rating 3 Hr. T Rating 1/2, 1, 1-1/2, 2 & 3 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 8" (200mm) concrete floor or wall or CMU block wall. The max. size of the opening is 45" x 39" (1155mm x 990mm).
2. CABLE TRAY - Max. (2) max. 24" x 3" (610mm x 75mm) steel ladder type or solid bottom tray with a min. separation of 20" (500mm) between cable trays and with a min. separation of 11" (280mm) between the cable trays and the perimeter of the opening. Cable trays rigidly supported on both sides of opening a max. of 18" (460mm) from floor or wall.
3. CABLES - Max. 38% cross-sectional fill area per tray in any combination of:
 - (A) max. (1) 500 MCM single conductor power control cable, with XLPE jacketing. When used, T rating is 1/2 Hr.
 - (B) max. (1) #2/0awg multiconductor power cables with fire retardant XLPE insulation and PVC jacketing. When used, T rating is 1 Hr.
 - (C) max. (1) #2/0awg welding cable with hypalon jacketing. When used, T rating is 1-1/2 Hr.
 - (D) max. (1) #4/0awg single conductor cable with XLPE jacketing. When used, T rating is 1-1/2 Hr.
 - (E) max. (1) #4awg multiconductor power cable with PVC insulation and jacketing. When used, T rating is 2 Hr.
 - (F) max. (1) #8awg multiconductor power cable with XLPE insulation and PVC jacketing. When used, T rating is 2 Hr.
 - (G) max. (1) #1/0awg Teck cable with XLPE insulation and jacketing. When used, T rating is 2 Hr.
 - (H) max. (5) #8awg multiconductor teck cable with interlocked aluminum armour. When used, T rating is 2 Hr.
 - (I) max. #2awg multiconductor power and control cables with fire retardant PVC insulation and jacketing or fire retardant XLPE insulation and PVC jacketing. When used, T rating is 3 Hr.
4. NELSON CMP COMPOUND (part # AA476) - Apply CMP to fill the void within the floor or wall between the cables and cable tray and the periphery of the opening. Min. thickness is 8" (200mm).

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-BJ-4034**

Nelson Firestop

DWG NO. FS-0064 R5

DATE: 10/23/06

BY: RL

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

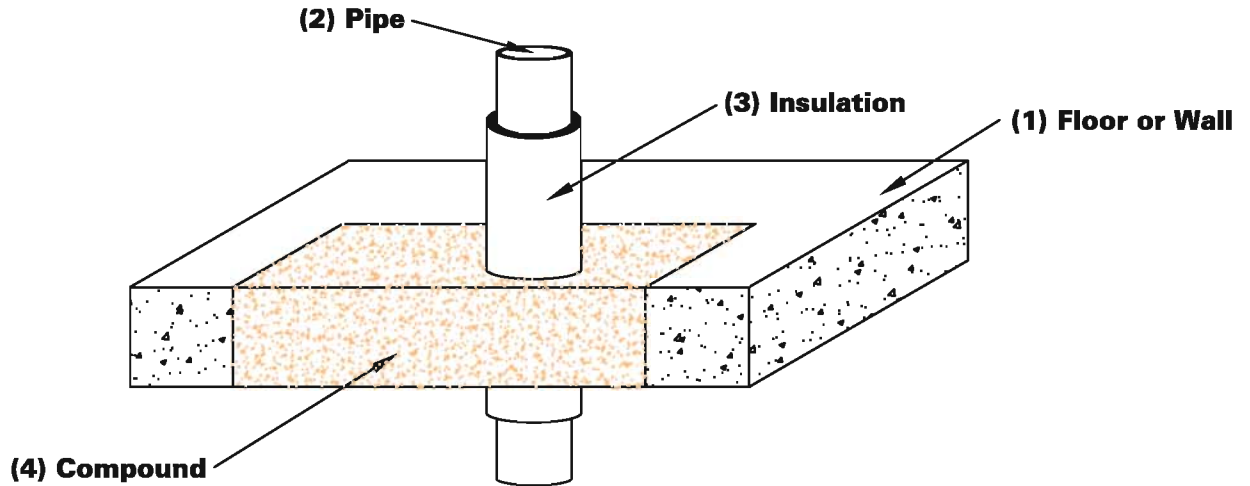
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE

F Rating 2 or 3 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 3-1/4" (83mm) concrete floor or wall or CMU block wall. The max. size of opening is 10" x 30" (254mm x 762mm).
2. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Max. 1" (25mm) thick FIBERGLASS or MINERAL FIBER pipe insulation. Annular space within the firestop system shall be 3/4" to 16" (19mm to 406mm).
4. NELSON CMP COMPOUND (part # AA476) - Min. 3-1/4" (83mm) depth for 2 or 3 hr F- Rating. Use of forming material such as plywood or polystyrene, cut close to the contour of opening, will aid in installation.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5008**

Nelson Firestop

DWG NO. FS-0070 R1

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

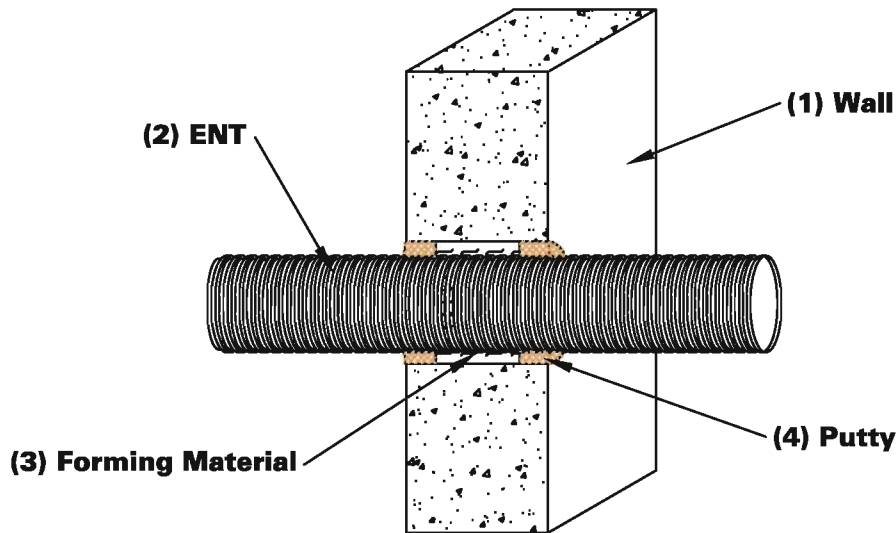
Address: _____

Signature: _____

CONCRETE WALL ELECTRICAL NONMETALLIC TUBING

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU wall. The max. diameter of opening is 2" (51mm).
2. ELECTRICAL NOMETALLIC TUBING - Nominal 1/2" (13mm) diameter electrical nonmetallic tubing centered in opening. Annular space of 5/8" (16mm) is required.
3. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool or ceramic fiber within annular space. Recess from both surfaces of wall 1-1/2" (38mm) to accomodate putty.
4. NELSON FSP PUTTY (part # AA445) - Apply FSP over the forming material, within the annular space, to a min. 1-1/2" (38mm) depth. Apply an additional 1/8" (3mm) crown around the penetrating item. Apply in same manner on both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0078 R2

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

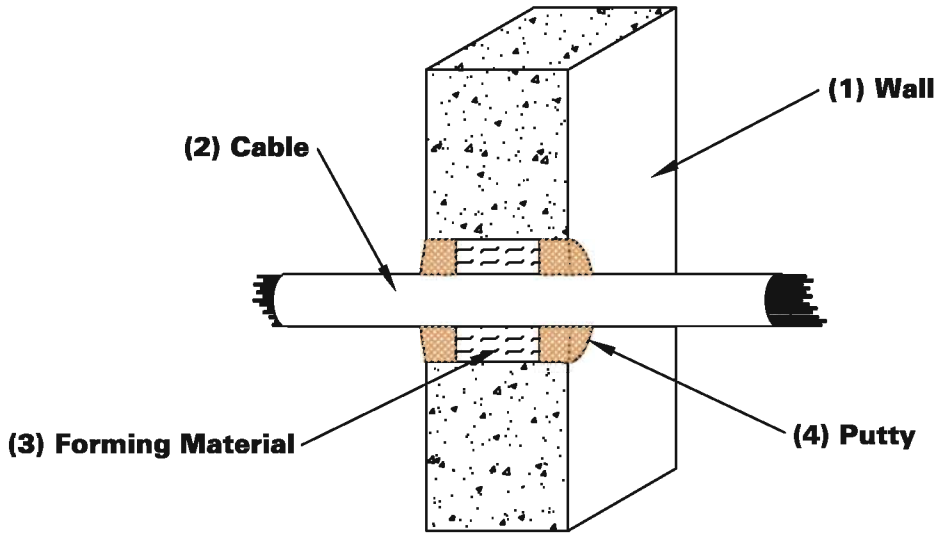
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL TELEPHONE CABLE

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU wall. The max. diameter of opening is 2" (51mm).
2. CABLE - One 50 pair, #24 awg or smaller telephone cable with PVC insulation. Cable to be centered in opening and rigidly supported on both sides of wall.
3. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool or ceramic fiber within annular space. Recess from both surfaces of wall 1-1/2" (38mm) to accomodate putty.
4. NELSON FSP PUTTY (part # AA445) - Apply FSP over the forming material within the annular space, to a min. 1-1/2" (38mm) depth. Apply an additional 1/8" (3mm) crown around the penetrating item. Apply in same manner on both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479


System No.
W-J-3007

Nelson Firestop

DWG NO. FS-0079 R2

DATE: 03/01/02

BY: RCE

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

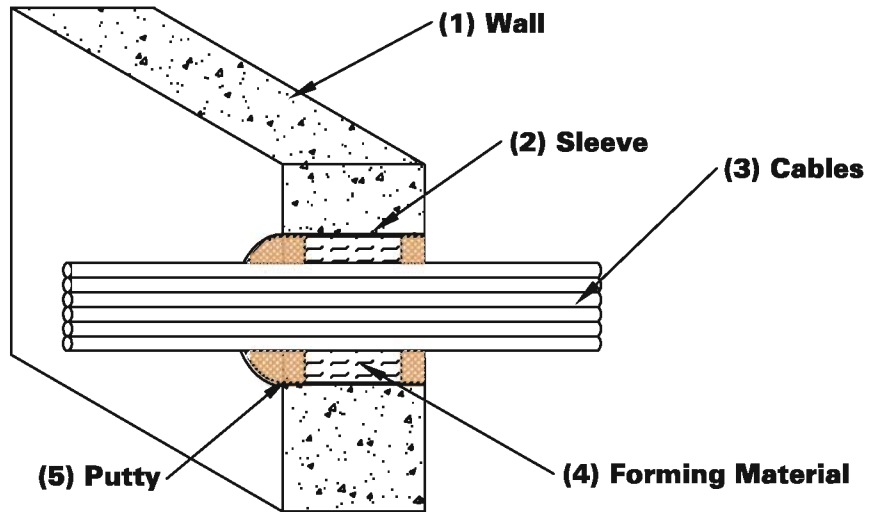
Address: _____

Signature: _____

CONCRETE WALL CABLES

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 3" (76mm).
2. METALLIC SLEEVE (optional) - Nom 3" (76mm) diameter or smaller steel sleeve. Sleeve fabricated from 27 GA galv sheet steel.
3. CABLES - (7) 2/C No. 20awg or smaller cables with polyethylene insulation and polyvinyl jacket. Min. separation between cables is 1/8" (3mm). The annular space between cables and the periphery of opening shall be 3/8" (10mm).
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt insulation into the sleeve at a min 3" (76mm) depth. Recess the fiber 1" (25mm) from both ends of the sleeve.
5. NELSON FSP PUTTY (part # AA445) - Apply over the forming material to a min. 1" (25mm) depth, flush with both ends of the wall. Additional material to be installed such that a min. 1/8" (3mm) crown is formed around the penetrating item.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0080 R2

DATE: 07/14/06

BY: RL

MEA # 135-00-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

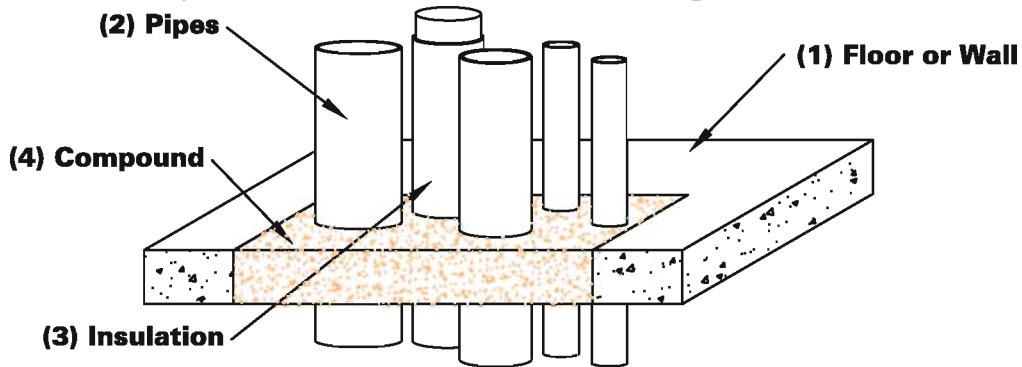
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULTIPLE METALLIC PIPE

F Rating 2, 3, 4 Hr.

T Rating 0 or 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min 3-1/4" (83mm) concrete floor or wall or CMU block wall. The max. size of opening is 10" x 30" (254mm x 762mm).
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used: Max. (5) conduits or tubing to be installed within the opening.
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" diameter (or smaller) rigid steel conduit.
 - (D) COPPER TUBING OR PIPE - Nom 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Annular space between pipes and the periphery of opening is 3/4" to 4-3/4" (19mm to 121mm). Spacing between pipes or conduits is 3/4" to 1-1/2" (19mm to 38mm).
3. PIPE INSULATION (optional), Max. 1" (25mm) thick FIBERGLASS or MINERAL WOOL. For FIBERGLASS: F- Rating = 2 Hr. & T- Rating = 1/2 Hr. For MINERAL WOOL: F- Rating = 3 Hr. & the T- Rating = 1-1/2 Hr. No insulation: T- Rating = 0 Hr. Only one pipe, 4" (102mm) diameter or less, may have insulation and spaced a min 3/4" - 1-3/4" (19mm - 44mm) between pipes or conduits. Annular space between pipe and the periphery of opening is 1-1/2" - 3-3/4" (38mm - 95mm).
4. NELSON CMP COMPOUND (part # AA476) - Min. 3-1/4" (83mm) depth for 2 or 3 hr F- Rating or 7" (178mm) depth for 4 hr F- Rating. Use of forming material such as plywood or polystyrene, cut close to the contour of opening, will aid in installation.
5. WRAP MATERIAL (optional-not shown) - Thermal Ceramics type FP60, single layer ceramic fiber w/ foil facing each side. Extend min. 6" (152mm) beyond both surfaces of floor or wall. Secure w/ min 12 ga. steel wire. If this wrap material is applied to pipe or conduit the T-Rating is 1/2 Hr. If omitted then T rating is 0 Hr..



**System No.
C-AJ-1040
C-AJ-8007
FM-44**

Tested in accordance with:
ASTM E-814
ANSI/UL 1479

Nelson Firestop

DWG NO. FS-0084 R6

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

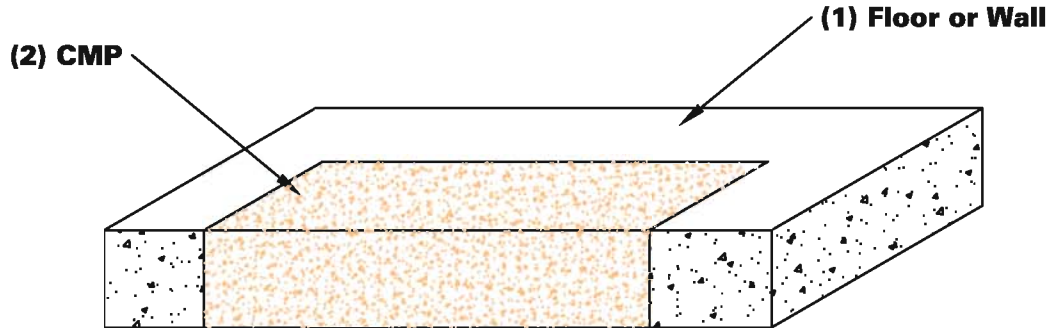
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NO PENETRATING ITEM

F Rating 3 or 4 Hr.

T Rating 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 3-1/4" (83mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. The max. size of the opening is 10" X 30" (254mm x 762mm). Max. diameter of opening is 7" (178mm) within a HOLLOW-CORE floor.
2. NELSON FIRESTOP CMP COMPOUND (part # AA476) - Min. 3-1/4" (83mm) thick floor or wall assembly and thickness of CMP will provide a 3 hr. F rating. A 7" (178mm) thickness will provide a 4 hr. F rating.
3. FORMING MATERIAL (not shown) - Plywood or polystyrene boards cut close to the contour of the opening. Remove after CMP cures (approx. 48 hours).

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-0030**

Nelson Firestop

DWG NO. FS-0085 R6

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

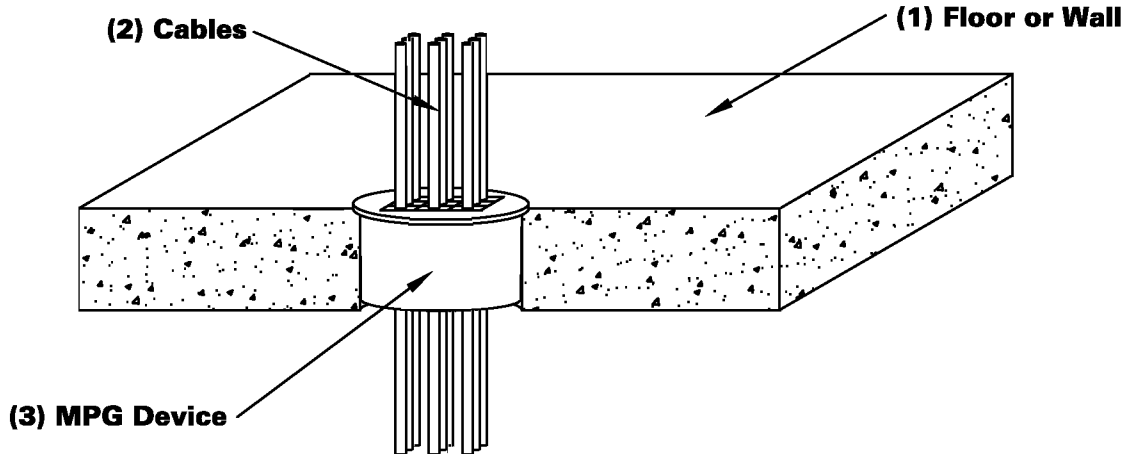
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0, 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 3-1/4" (83mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the opening is 6" or 8" (152mm or 203mm) dependent on the size of the multiplug device.

- 2. CABLES** - Max. 100% cable fill, as limited by available modules:
- (A) max. 300MCM power cable.
 - (B) max. 7C-12awg control cable.
 - (C) max. 100pr. - 24awg communication cable with PVC or PE insulation and jacket.

Where control cable only is used, the T rating is 1/2 Hr. For all other cable types, the T rating is 0 Hr.

3. NELSON MPG MULTIPLUG DEVICES - Install in pre-drilled or pre formed openings of floors or walls. Select and install modules for each cable per manufacturer's instructions. Tighten compression bolts uniformly until modules are securely held.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-3047**

Nelson Firestop

DWG NO. FS-0087 R4

DATE: 07/14/06

BY: RL

MEA # 174-99-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

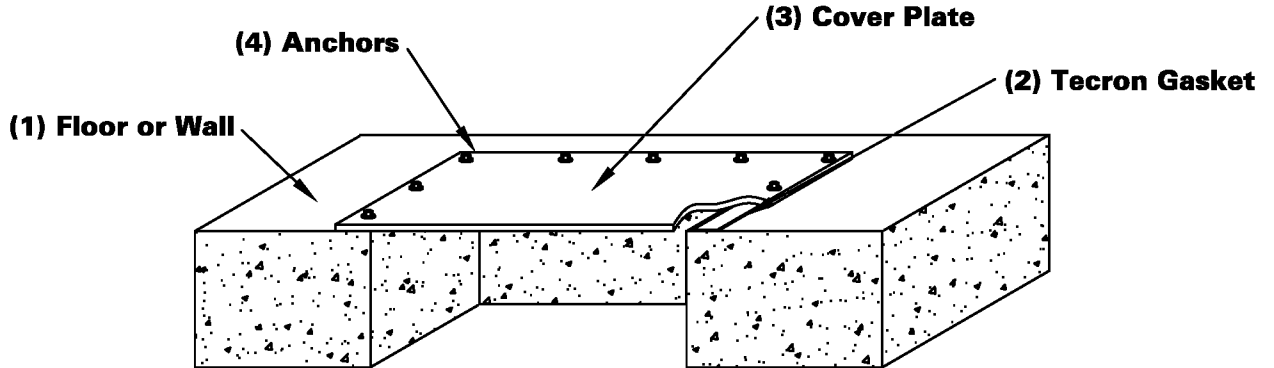
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NO PENETRATING ITEM

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. area of the opening is 63-1/4 sq. inches (408 sq. cm) with a max. dimension of 11-1/2" (292mm).
2. TECRON GASKET MATERIAL - Nominal 2-1/4" (52mm) wide, 1/8" (3mm) thick Tecron gasket is placed between the underside of the cover plate and the top surface of the concrete floor or both surfaces of the wall.
3. COVER PLATE - Constructed of min. 16 gauge (.057" thick) (1.44mm thick) galvanized sheet steel, sized to overlap the edge of the opening on all sides by a min. of 2-1/2" (64mm). Applied to the top side of the floor or on both sides of the wall.
4. CONCRETE ANCHORS - Nominal 3/8" (10mm) diameter by 3-1/4" (83mm) long steel expansion anchors, or equivalent. Spacing is not to exceed 4" (102mm) on center.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-0010

Nelson Firestop

DWG NO. FS-0090 R3

DATE: 07/14/06

BY: RL

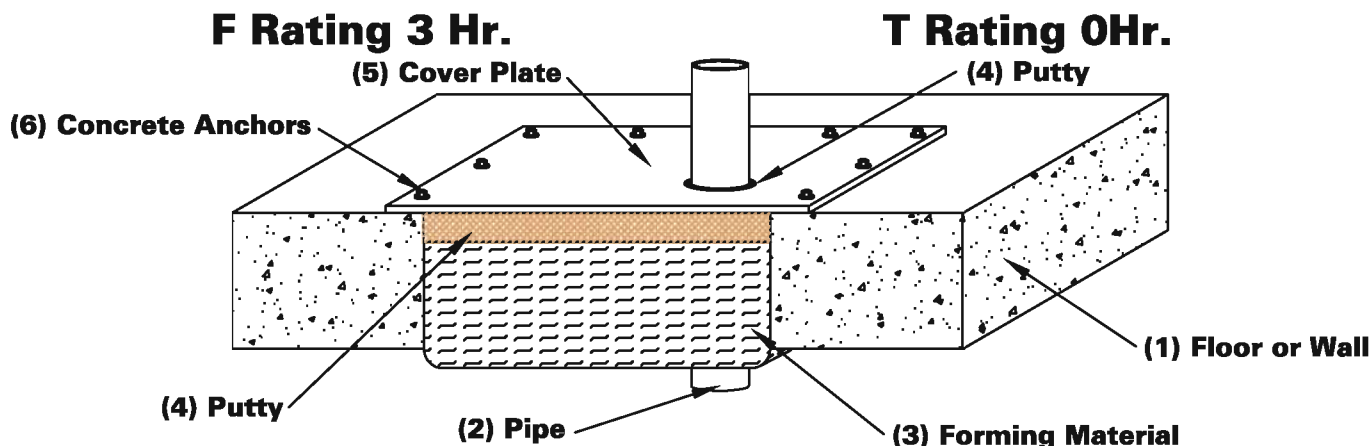
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The min. wall thickness is 7-1/4" (184mm). The max. area of the opening is 63-1/4 sq. inches (408 sq. cm) with a max. dimension of 11-1/2" (292mm). The annular space between the penetrating item and the periphery of the opening may range from 3/8" to 7-5/8" (10mm to 194mm).
2. METALLIC PIPE or CONDUIT - The following types of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 3" (76mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 3" (76mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 The annular space between the penetrating item and the periphery of the opening may range from 3/8" to 7-5/8" (10mm to 194mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool or ceramic fiber within the opening to a min. thickness of 5-3/4" (146mm). In floor assemblies, the forming material is to be domed a min. of 2" (51mm) below the bottom surface of the floor. Recess the fiber 3/4" (19mm) from the top surface of the floor or from both surfaces of the wall.
4. NELSON FSP PUTTY (part # AA445) - Apply a min. 3/4" (19mm) depth of FSP over the forming material, flush with the top surface of the floor or with both surfaces of the wall.
5. COVER PLATE - Constructed of min. 28 gauge (.021" thick) (.533mm thick) galvanized sheet steel, cut to fit the contour of the penetrating item and sized to overlap the edge of the opening on all sides by a min. of 2-3/8" (60mm). Applied to the top side of the floor or on both sides of the wall.
6. CONCRETE ANCHORS - Nominal 3/8" (10mm) diameter by 3-1/4" (83mm) long steel expansion anchors, or equivalent. Spacing is not to exceed 4" (102mm) on center.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1046**

Nelson Firestop

DWG NO. FS-0091 R4

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

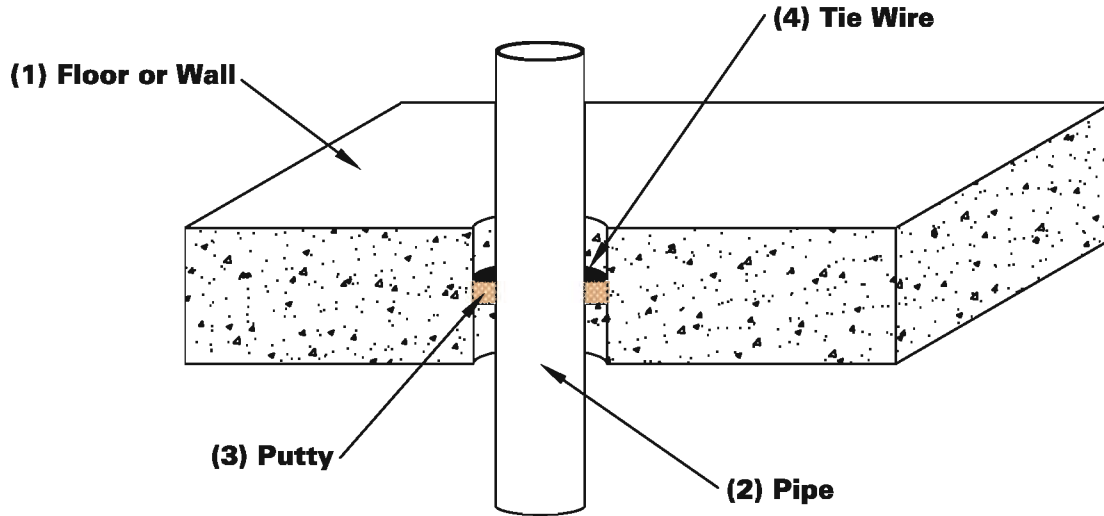
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the opening is 5" (127mm).
2. METALLIC PIPE or CONDUIT - The following types of metallic pipe, conduit or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 The max. annular space is 1/4" (6mm).
3. NELSON FSP PUTTY (part # AA445) - Min. 1" (25mm) thick layer of FSP recessed 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
4. STEEL TIE WIRE - Nominal 12 gauge steel tie wire tightly wrapped around the pipe and placed over the top surface of the FSP putty in floor applications or both surfaces in wall applications.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1054**

Nelson Firestop

DWG NO. FS-0092 R3

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

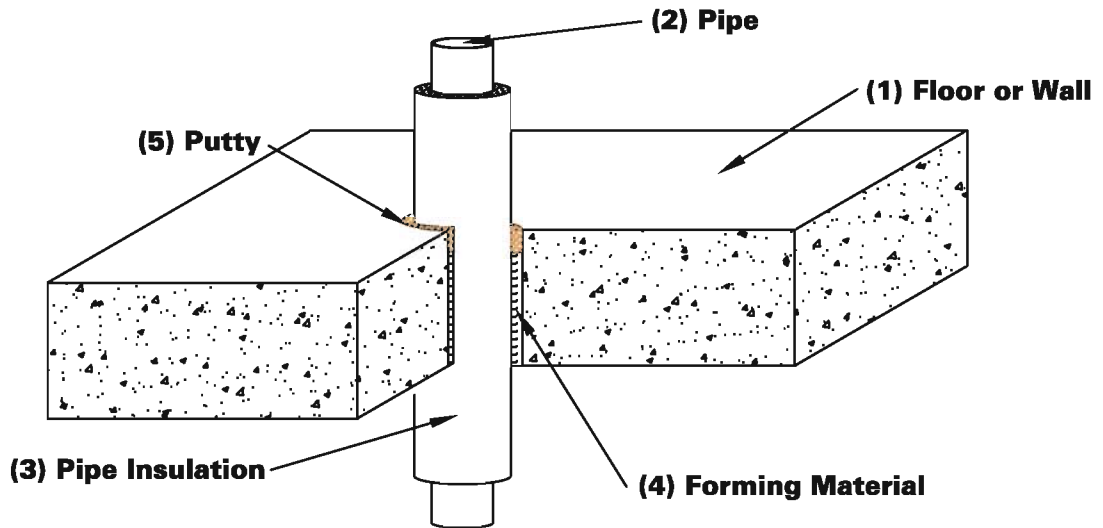
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 5-1/2" (140mm) wall or CMU block wall. The max. opening diameter is 8" (203mm).
2. METALLIC PIPE or CONDUIT - The following types of metallic pipes or conduits may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 1" (25mm) thick, or thinner, FIBERGLASS or MINERAL FIBER pipe insulation. The max. annular space is 3/4" (19mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-1/2" (89mm) depth, and recess 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
5. NELSON FSP PUTTY (part # AA445) - Apply over the forming material to a min. depth of 1" (25mm), flush with the top surface of the floor or with both surfaces of the wall with an additional 3/4" (19mm) crown around the pipe where it penetrates the floor or wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5012**

Nelson Firestop

DWG NO. FS-0093 R4

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

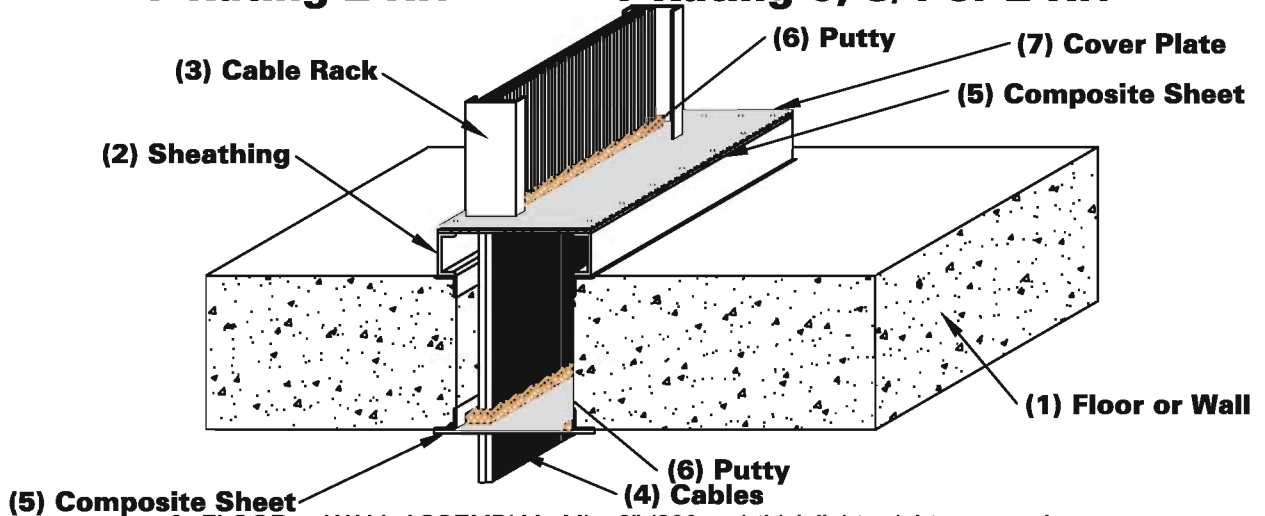
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0, 3/4 or 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 8" (203mm) thick lightweight or normal weight concrete floor or wall. The max. size of the opening is 18" X 24" (457mm x 610mm).
2. SHEATHING - Nominal 1-1/2" X 4" X 3/8" (38mm x 102mm x 10mm) steel channel enclosing the perimeter of the opening at the top surface of the floor, one surface of wall (asymmetrical) or both surfaces of wall (symmetrical).
3. CABLE RACK - Max. 20" (508mm) wide open ladder type cable rack, welded to the top surface of the sheathing.
4. CABLES - Max. 36% cable fill of opening in any combination of:
 - (A) max. 240pr. #24awg telephone cable w/PVC insulation and jacket.
 - (B) max. 750 kcmil power cable w/XLPE insulation and PVC jacket.
 In floor or wall asymmetrical configuration, when cables (A) or NONE are used, the T rating is 2 or 0 Hr. When cables (B) are used, the T rating is 3/4 or 0 Hr. In wall symmetrical configuration, when cables (A), (B) or NONE are used the T rating is 2, 3/4 or 2 Hr respectively. The annular space between cable bundle and the periphery of opening is 1/2" (13mm) to 5-1/2" (140mm).
5. NELSON CPS COMPOSITE SHEET - Cut to the contour of the cables at the top and bottom of the opening and secure to the frame with 1/4" (6mm) diameter x 1" (25mm) steel bolts and nuts.
6. NELSON FSP PUTTY (part # AA445) - Pack to seal voids between the composite sheet, cables, and the periphery of the opening. Apply a min. 1/2" (13mm) bead around the periphery of the opening at the bottom, and around the cable bundle at both the top after installation of the cover plate (Item 6C). Apply a min. 1/4" (6mm) bead between the top layer of CPS and the underside of the cover plate. Apply a min. 1-1/2" (wide) (38mm) x 2" (high) (51mm) bead around the cable bundle at the bottom of the opening.
7. COVER PLATE - Constructed of min. 12 gauge sheet steel, cut to fit the contour of the cable bundle and installed over the CPS sheet (top layer for floor) or (one surface for asymmetrical wall) or (both surfaces for symmetrical wall) and secured with min. 3/16" (5mm) diameter bolts.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-BJ-4016**

Nelson Firestop

DWG NO. FS-0094 R3

DATE: 07/14/06

BY: RL

MEA # 228-95-M

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

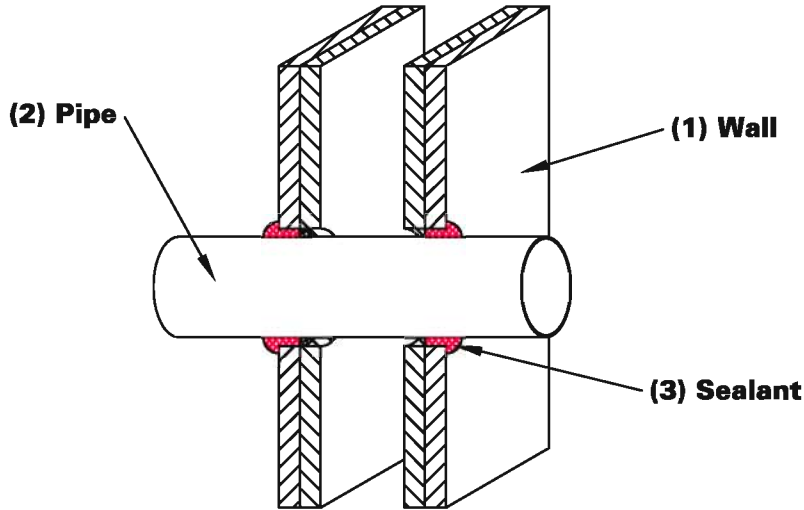
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. opening diameter is 5" (127mm).
2. **METALLIC PIPE or CONDUIT** - The following types of metallic pipe, conduit or tubing may be used:
 - (A) **STEEL PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or rigid steel conduit.
The nom annular space is 1/4" (6mm).
3. **NELSON CLK SEALANT** - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, with an additional 3/8" (10mm) bead around the pipe, on the surface of the wall. Nominal 1/2" diameter polyurethane backer rod may be used to control the depth of the sealant.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-1030

Nelson Firestop

DWG NO. FS-0095 R4

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

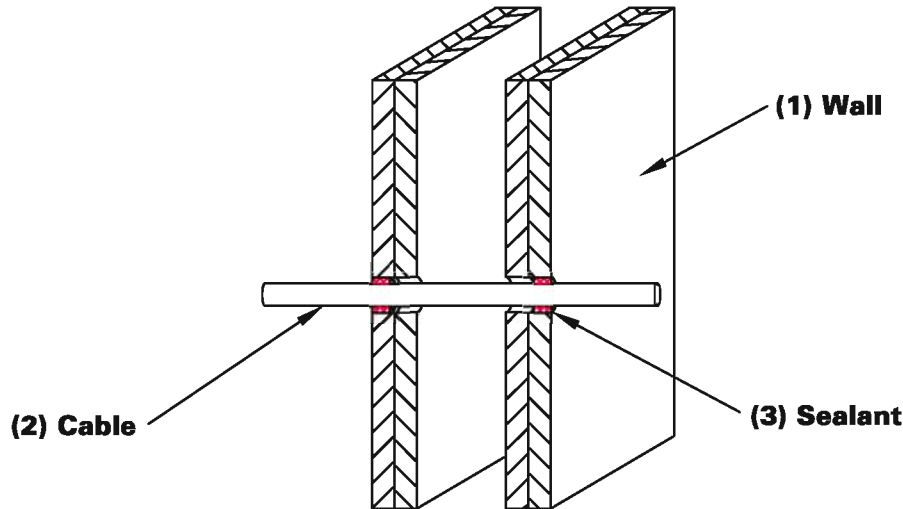
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 1/2".
2. CABLES - Max. 25pr. 24 awg (or smaller), telephone cable with polyvinyl chloride insulation and jacket. The nom annular space is 1/8" (3mm).
3. NELSON CLK SEALANT - Apply to fill the annular space around the cable to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. Additional sealant shall be applied such that a min. 3/8" (10mm) bead is formed around the penetrating item.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0096 R6

DATE: 05/01/07

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

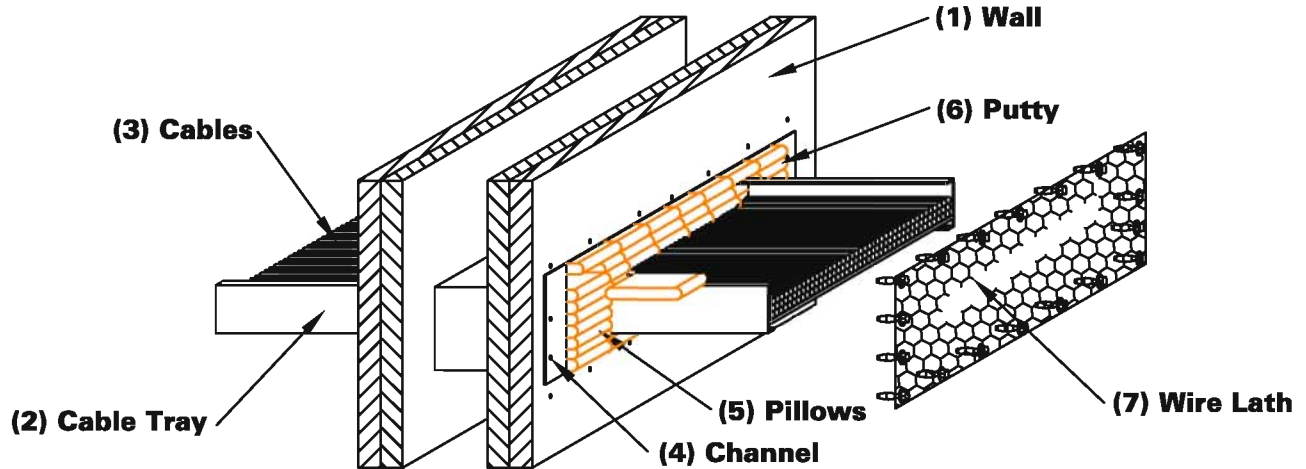
Address: _____

Signature: _____

GYPSUM WALL CABLE TRAY

F Rating 1 or 2 Hr.

T Rating 0 or 1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as showing the UL Fire Resistance Directory. The max. area of opening is 160 sq. in. (1032 sq. cm) with a max. dimension of 20" (508mm). The annular space between the cable tray and top and bottom of the opening shall range from 0" (point of contact) to 2" (51mm).
2. **CABLE TRAY** - Max. 18" (457mm) wide x 4" (102mm) deep aluminum or 18" (457mm) x 6" (152mm) steel, open ladder type cable tray. The annular space between the cable tray and each side shall be a nom 1" (25mm).
3. **CABLES** - Max. 18-30% cable fill of opening in any combination of:
 - (A) max. 1/C #300 kcmil cable w/cross linked polyethylene (XLPE) jacket.
 - (B) max. 7/C #12 awg cable w/polyvinyl chloride (PVC) or (XLPE) insulation and PVC jacket.
 - (C) max. 100pr #24 awg cable w/PVC insulation and jacket.
 The T rating is 0 hr. for 1 hr. rated walls.
4. **STEEL CHANNEL** - Fabricated from 30 ga. galv. steel. Channel is to bridge the stud cavity on both sides of the opening with a min. 3" (76mm) flange on both sides of wall. Secure with steel screws and fender washers, spaced 4" (102mm) OC. on both sides of wall.
5. **NELSON PLW PILLOWS** (part # AA478 or AA479) - Pillows to be installed horizontally through the wall and centered within the opening of the wall. Pillows tightly packed into the opening to fill the annular space between cables and periphery of opening and between cable tray and periphery of opening.
6. **NELSON FSP PUTTY** (part # AA445) - After installation of the pillows, putty shall be applied to seal any voids between the cables and the pillows and between the cable tray and the pillows on both sides of wall.
7. **WIRE LATH** - Nominal 2" (51mm), 19awg. galv. steel wire lath, cut to fit the contour of the opening with a min. 3" (76mm) lap beyond the periphery of the opening. Wire lath secured to both surfaces of wall assembly with 2-1/4" (57mm) long Type S self-drilling, self-tapping bugle head steel screws and 1/4" (6mm) by 1-1/2" (38mm) diameter steel fender washers, spaced 6" (152mm) OC.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-4003**

Nelson Firestop

DWG NO. FS-0097 R5

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol. 3

Nelson Firestop

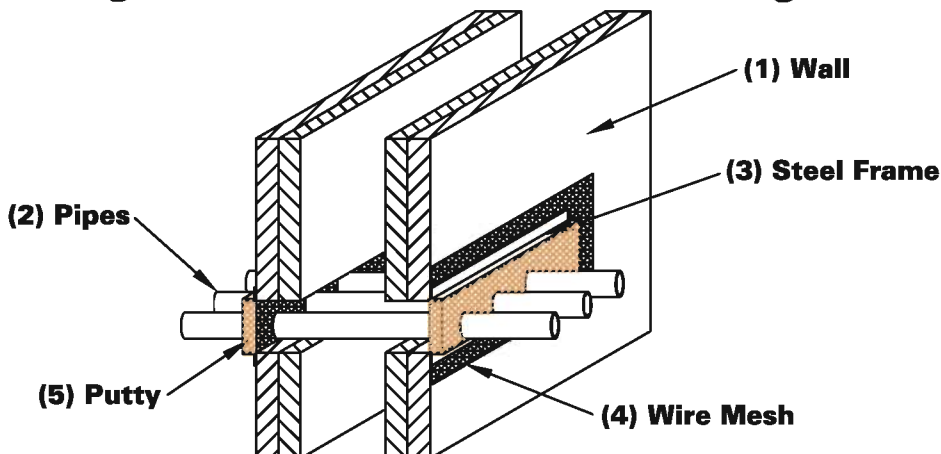
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL MULTIPLE METALLIC PIPES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. opening is 11" x 3" (279mm x 76mm).
2. METALLIC PIPES or CONDUITS - Max. (5) pipes of which only (2) can have a diameter greater than 1" (25mm).
 - (A) STEEL PIPE - Nom 1" (25mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 1" (25mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 1" (25mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The pipes and conduits shall be spaced a nom 1/2" (13mm) apart and a nom 3/4" (83mm) from each side of the opening. The annular space between the pipes, the conduits or tubing and the top and bottom of the opening may range from 0" (point of contact) to a max. of 1-15/16" (49mm).

3. STEEL FRAME - Constructed of 7/8" x 7/8", (22mm x 22mm) nominal 16 ga. steel angles that extend a min. of 7-1/2" (191mm) beyond the periphery of the opening and secured to studs with 2-1/4" (57mm) long Type S self tapping bugle head screws in conjunction with 1/4" x 1-1/2" (6mm x 38mm) diameter steel fender washers.
4. WIRE MESH - Diamond shaped steel mesh or metal fabric cut to fit the contour of the metallic pipes and conduit and installed between steel framing unit and the gypsum board on both surfaces of the wall. Mesh to be secured to both the horizontal and vertical members of the steel framing unit by means of #6 x 1/2" (13mm) long panhead sheet metal screws located at each corner of the steel framing unit.
5. NELSON FSP PUTTY (part # AA445) - Min. 1" (25mm) thickness of putty applied over metal lath flush with top surface of steel framing unit on both surfaces.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-1031**

Nelson Firestop

DWG NO. FS-0098 R4

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

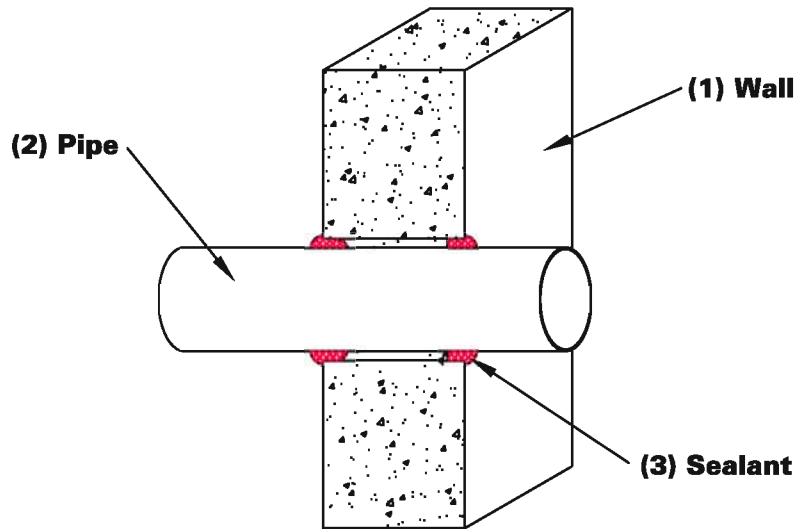
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Address: _____

Signature: _____

CONCRETE WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU wall.
2. METALLIC PIPE or CONDUIT - The following types of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or rigid steel conduit.

The max. annular space is 1/4" (6mm).
3. NELSON CLK SEALANT - Apply CLK to fill the annular space to a min. 5/8" (16mm) depth, with an additional 3/8" (10mm) bead around pipe on both wall surfaces. Nominal 1/2" (13mm) backer rod may be used to control the depth of the sealant.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-1014

Nelson Firestop

DWG NO. FS-0099 R4

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

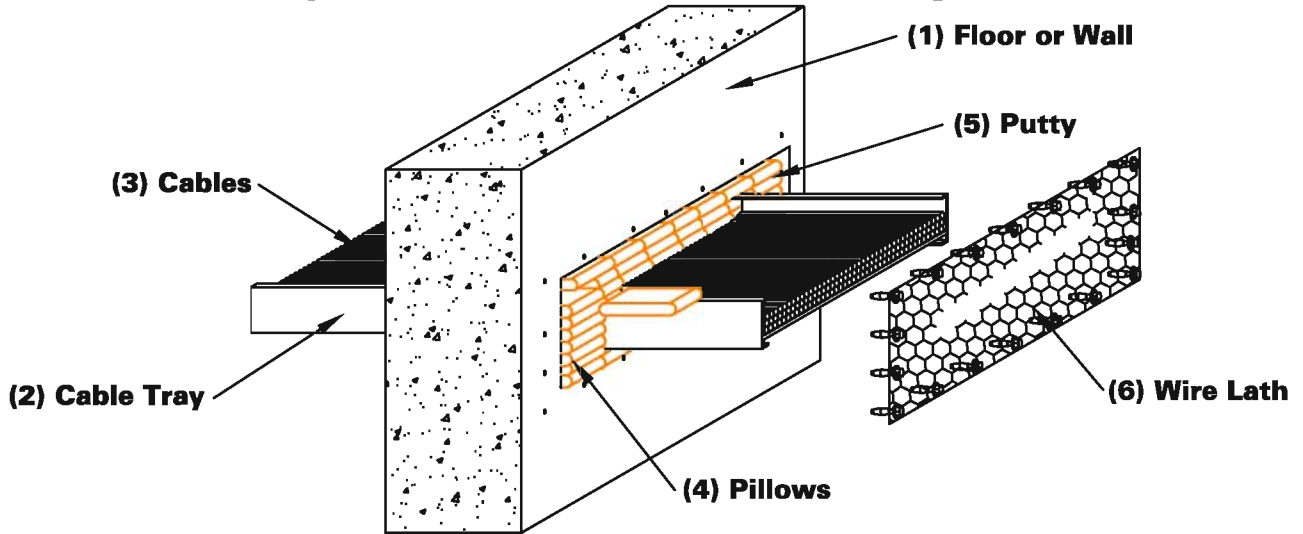
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. area of opening is 189 sq. in. (1219 sq. cm) with max. dimension of 27" (686mm).
2. CABLE TRAY - Max. 24" (610mm) wide x 4" (102mm) deep steel or aluminum, open ladder type cable tray. Annular space between side rails of cable tray and periphery of opening shall be 1-1/2" (38mm). Annular space between the back of cable tray and periphery of opening may range from 0" (point of contact) to 2-3/4" (70mm).
3. CABLES - Max. 40% cable fill of opening in any combination of:
 - (A) max. 1/C #300 kcmil cable w/cross linked polyethylene (XLPE) jacket.
 - (B) max. 7/C #12 awg cable w/polyvinyl chloride (PVC) or (XLPE) insulation and PVC jacket.
 - (C) max. 100pr #24 awg cable w/PVC insulation and PVC jacket.
4. NELSON PLW PILLOWS (part # AA478 or AA479) - Pillows to be installed horizontally within the opening in such a manner that the ends project beyond each surface of floor or wall. Pillows tightly packed into opening to fill the annular space between cables and periphery of opening and between cable tray and periphery of opening.
5. NELSON FSP PUTTY (part # AA445) - At the point of contact location between the cable tray and concrete, a min. 1" (25mm) bead of putty shall be hand packed at concrete/cable tray interface on top surface of floor and on both surfaces of wall.
6. WIRE LATH - Nominal 2" (51mm), 19awg. galv. steel wire lath, cut to fit the contour of the opening with a min 3" (76mm) lap beyond the periphery of the opening. Wire lath secured to top surface of floor and both surfaces of wall assembly with 1/4" (6mm) diameter by 1" (25mm) long concrete anchors in conjunction with 1/4" (6mm) by 1-1/2" (38mm) diameter steel fender washers, spaced 8" (203mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-4013**

Nelson Firestop

DWG NO. FS-0100 R5

DATE: 07/14/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
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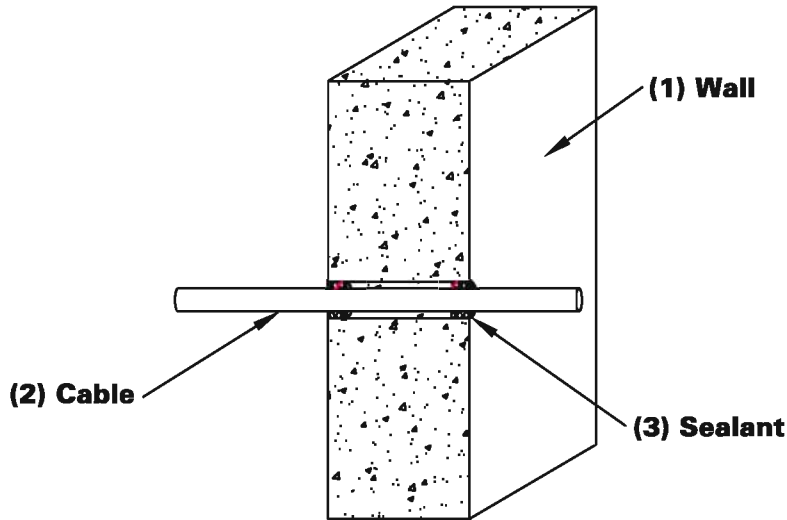
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Address: _____

Signature: _____

CONCRETE WALL CABLE

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU wall.
2. CABLE - Max. 25pr. PVC insulated telecommunications or data cable. The nom annular space is 1/8" (3mm).
3. NELSON CLK SEALANT - Apply CLK to fill the annular space around the cable to a min. 5/8" (16mm) depth with an additional 3/8" (10mm) bead around the cable where it exits both sides of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-3010

Nelson Firestop

DWG NO. FS-0101 R4

DATE: 07/14/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
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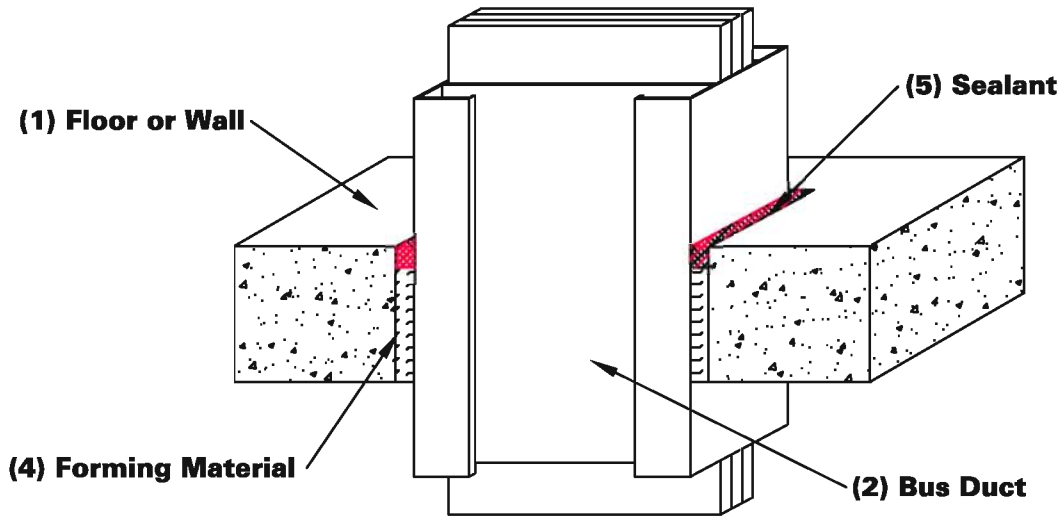
Installer: _____
Address: _____

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CONCRETE FLOOR OR WALL BUS DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. area of opening is 119 sq. in. (768 sq. cm) and a max. dimension of 17" (432mm).
2. BUS DUCT ASSEMBLY - Nom 15" x 6" (381mm x 152mm) "I" shaped steel and aluminum enclosure containing factory mounted copper bars rated for 600V / 3000A. The annular space between the flange of the busway and the periphery of the opening shall be 5/8" (16mm). The annular space between the web of the busway and the periphery of the opening shall be 1-3/8" (35mm)
3. COVER PLATE ASSEMBLY (not shown) - A min. 1/8" (3mm) thick steel cover plate provided by busway manufacturer shall be installed on top surface of floor and both surfaces of wall assembly. Steel cover plate secured in accordance with busway manufacturer's installation instructions.
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-5/8" (92mm) depth, and recess 7/16" (11mm) from top of floor surface or from both surfaces of wall.
5. NELSON CLK SEALANT - Apply over forming material, within the annular space to a min. 7/16" (11mm) depth, flush with the top surface of the floor or with both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-6004

Nelson Firestop

DWG NO. FS-0102 R7

DATE: 02/06/07

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

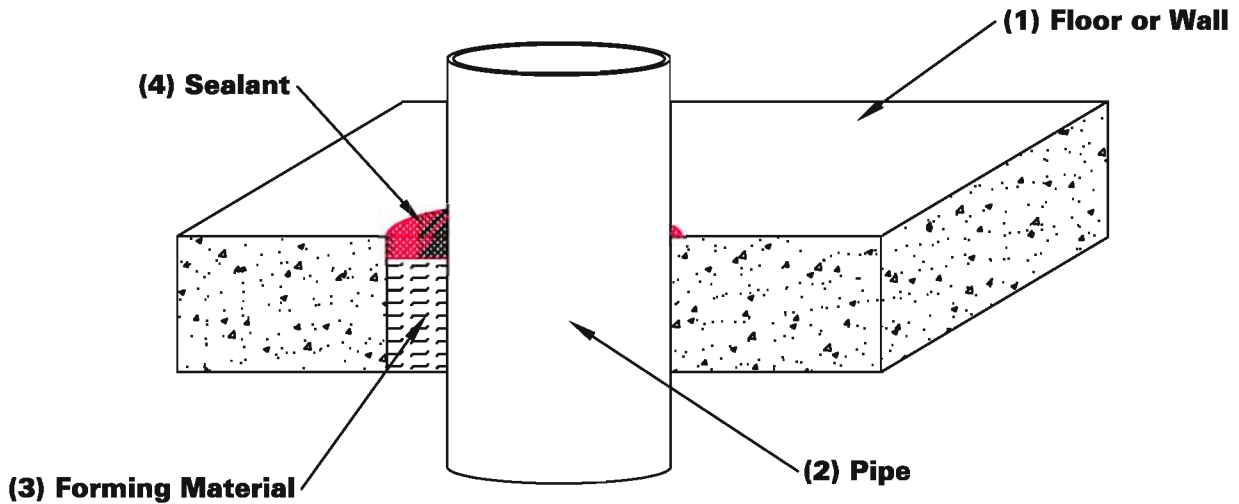
Address: _____

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CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the opening is 18" (457mm).
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes or conduits may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-1/2" (89mm) depth, and recess 1/2" (13mm) from top surface of floor or both wall surfaces.
4. NELSON CLK SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall. At areas of point contact, apply a 1/2" (13mm) bead at the pipe to concrete interface. Where CLK non-sag caulk is used, the annular space is 2 to 3-1/4" (51mm to 83mm). Where CLK self leveling caulk is used, the annular space is 0" to 3-1/4" (83mm).

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-1124

Nelson Firestop

DWG NO. FS-0103 R5

DATE: 07/17/06

BY: rl

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

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Installer: _____

Address: _____

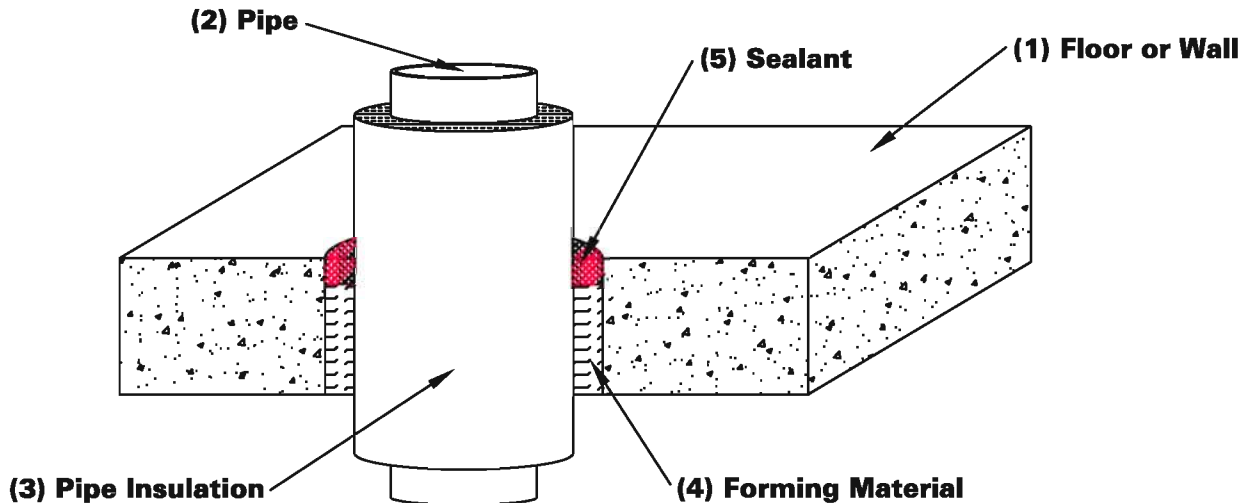
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CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1-1/2 Hr.

L Rating - < 1 SCFM



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 16" (406mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick or thinner, FIBERGLASS or MINERAL FIBER pipe insulation. Annular space is 5/8" (16mm).
4. FORMING MATERIAL - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-1/2" (89mm) depth, and recess 1/2" (13mm) from top of floor surface or both wall surfaces.
5. NELSON CLK SEALANT - Apply within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5059**

Nelson Firestop

DWG NO. FS-0104 R6

DATE: 07/17/06

BY: rl

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

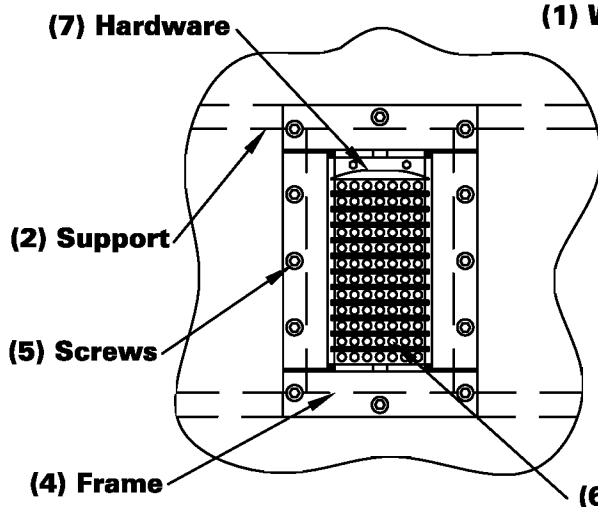
Installer: _____

Address: _____

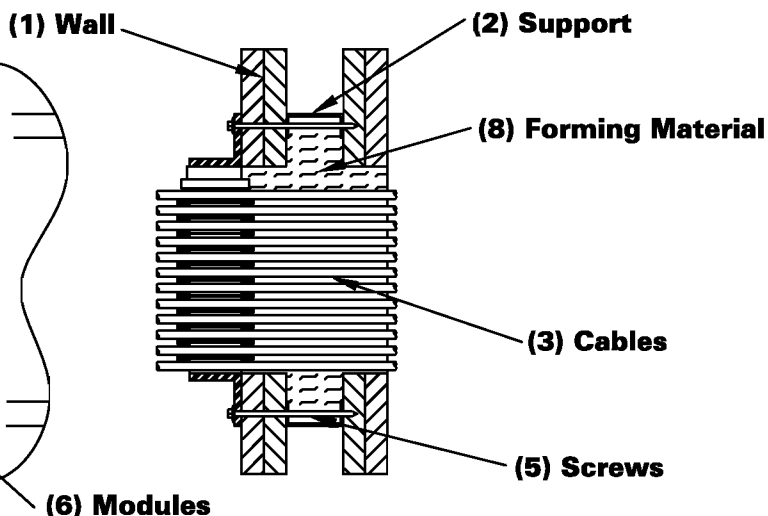
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GYPSUM WALL CABLES

F Rating 2 Hr.



T Rating 1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. SUPPORT - Constructed from steel stud and track mat'l, designed to provide backing for mounting screws on all sides of MCT Frame assembly.
3. CABLES - Max. 33.3% cable fill of opening of:
(A) max. 1/C #0awg power cable w/moisture and thermoplastic insulation and jacket.
4. FRAME ASSEMBLY - Nelson RGM frame, size 8 or smaller with a max. opening of 64 sq. in. (413 sq. cm). Max. diameter of 11-5/8" (295mm). The firestop device may be installed on either side of the wall.
5. MOUNTING SCREWS - 1/4 x 5" (6mm x 127mm) lg. hex drive roofing screws w/ fender washers at each bolt hole in flange.
6. TECRON MODULES - Sized to fit each cable in accordance with Nelson instructions.
7. FRAME HARDWARE - Stay Plates, Compression Plates and End Packing as required by Nelson instructions.
8. FORMING MATERIAL - Tightly pack min. 4pcf mineral wool insulation to fill the annular space to a min. 5" (127mm) depth between the cables and periphery of opening flush with surface of wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-3054**

Nelson Firestop

DWG NO. FS-0105 R4

DATE: 07/17/06

BY: RL

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

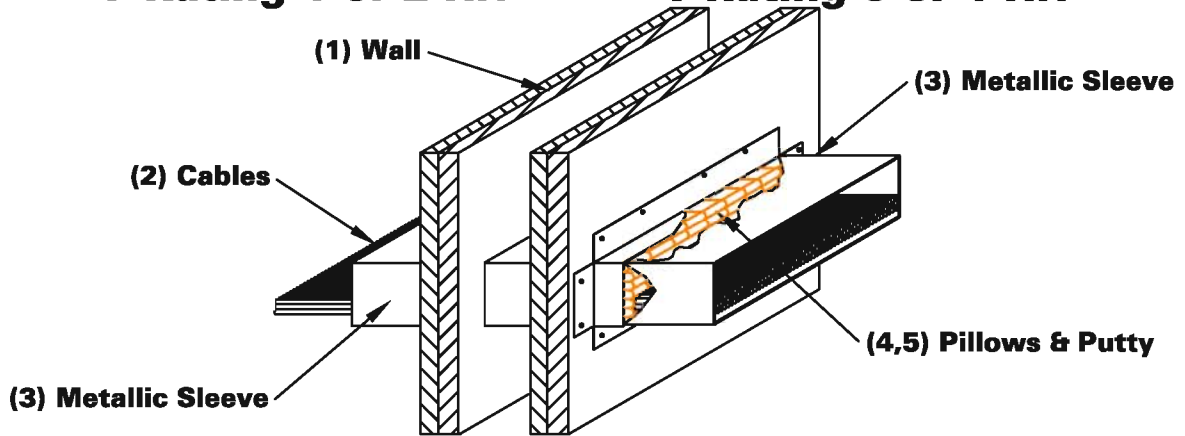
Address: _____

Signature: _____

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 0 or 1 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. opening size is 83-1/4 sq. in. (537 sq. cm) with a max. dimension of 18-1/2" (470mm).
2. **CABLES** - Max. 26% cable fill of opening in any combination of:
 - (A) max. 350 kcmil single conductor power cables w/PVC insulation.
 - (B) max. 7C #12 awg copper conductor control cables w/PVC insulation jacket.
 - (C) max. 100pr. #24 awg copper conductor communication cables w/polyvinyl chloride (PVC) insulation and jacket.
3. **METALLIC SLEEVE** - Metallic sleeve consists of a rectangular shaped sleeve and a cover plate fabricated from 14MSG (0.072 in.) (2mm) thick galv. steel. The rectangular shaped sleeve consists of a cover 18" (457mm) wide by 4" (102mm) high by 20" (508mm) long sleeve with a 2-3/4" (70mm) wide mounting plate. The cover plate consists of a 2-3/4" (70mm) wide leg and 1-1/2" (38mm) high flange. The rectangular shaped sleeve to be inserted into the opening from either side of wall. Cover plate to be surface mounted on opposite side of wall. Both rectangular shaped sleeve and cover plate secured to wall by means of 2-1/2" (64mm) long Type S, self-drilling, self-tapping bugle head steel screws in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers installed in pre-drilled holes spaced 7-1/2" (191mm) OC along the mounting plate and cover plate. The max. width of the steel sleeve is 12" (305mm), if installed in a wood stud/gypsum wallboard assembly.
P-W INDUSTRIES INC. - Type P-W COOPER B-LINE INC - Wall Penetration Sleeve
4. **NELSON PLW PILLOWS** (part # AA478 or AA479) - Tightly pack pillows into opening to fill annular space between cables and periphery of opening. Install pillows flat with nom 9-1/2" (241mm) length of each pillow passing through the wall opening with ends projecting a min. of 2-1/2" (57mm) beyond each side of the wall.
5. **NELSON FSP PUTTY** (part # AA445) - (not shown) After installation of the pillows, putty shall be applied to seal any voids between the cables and the pillows and the metallic sleeve on both sides of wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-3055**

Nelson Firestop

DWG NO. FS-0106 R8

DATE: 11/29/06

BY: RL

MEA # 368-94-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

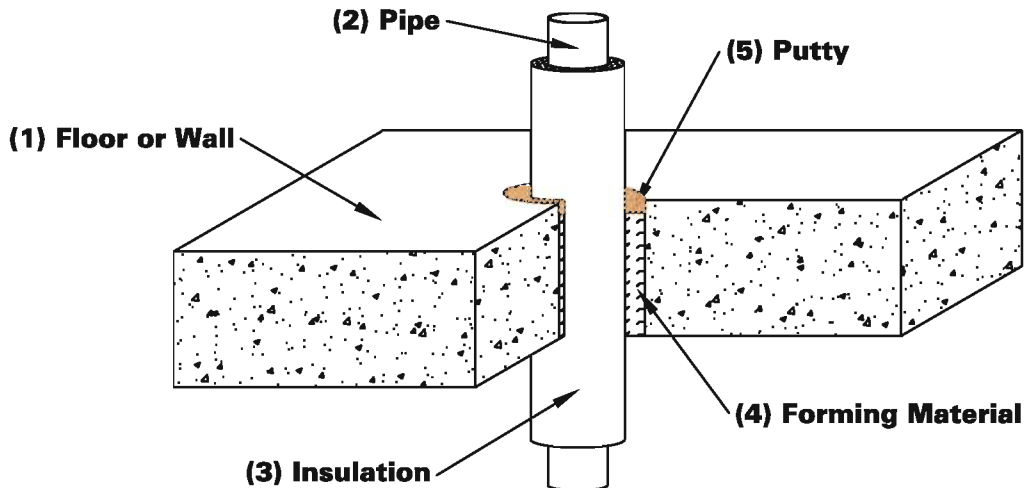
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor min 6" (152mm) thick concrete wall or CMU block wall.
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 1-1/2" (38mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 3/4" (19mm) thick or thinner, AB/PVC (ARMAFLEX) flexible foam pipe insulation or mineral wool pipe insulation. The max. annular space is 15/16" (24mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3" (76mm) depth, and recess 1-1/2" (38mm) from top surface of floor or from both wall surfaces.
5. NELSON FSP PUTTY (part # AA445) - Apply over forming material, within the annular space to a min. 1-1/2" (38mm) depth, flush with top surface of floor or with both surfaces of the wall with an additional 1/8" (3mm) crown around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5054**

Nelson Firestop

DWG NO. FS-0107 R5

DATE: 07/17/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

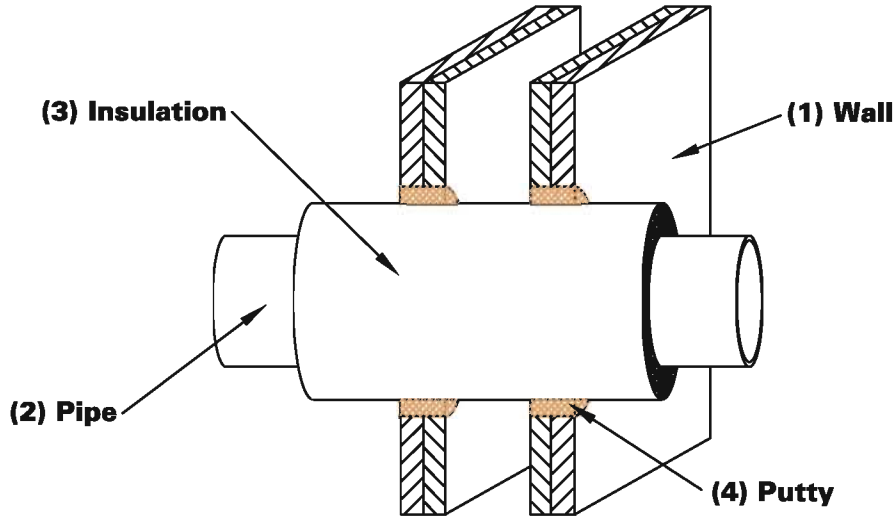
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 0 or 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 10" (254mm).
2. METALLIC PIPE - The following types and sizes of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

For steel or cast iron pipe the T rating is 2 hrs, for copper tubing or pipe the T rating is 0 hr.
3. PIPE INSULATION - Nom 1-1/2" thick (38mm) (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation.
The max. annular space for pipe larger than 4" diameter is 3/16" (5mm) and 3/4" (19mm) otherwise.
4. NELSON FSP PUTTY (part # AA445) - Apply FSP to fill the annular space to a nominal 1-3/4" (44mm) depth on both sides of the wall. Additional material to be installed such that a 1/2" (13mm) thick crown is formed around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0108 R6

DATE: 07/17/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

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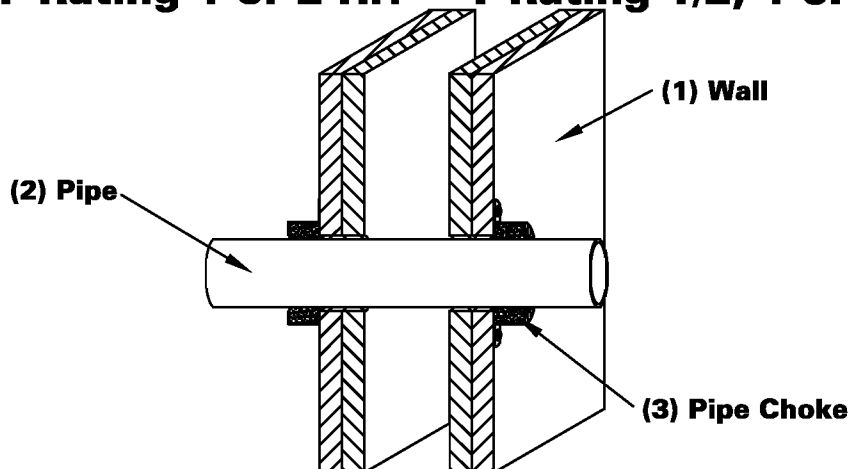
Installer: _____

Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr. T Rating 1/2, 1 or 2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. **NONMETALLIC PIPE** - The following types of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 **SOLID CORE PVC** pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) **RIGID NONMETALLIC CONDUIT** - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.

Pipe Size	F Rating (Hr.)	T Rating (Hr.)
4" (102mm)	1 or 2	1 or 2
3" (76mm)	1 or 2	1 or 2
2" (51mm)	1 or 2	1/2 or 2

The nom annular space is 1/4" to 5/16" (6mm to 8mm) for 2" (51mm) diameter or less pipes or conduits and the annular space is 1/4" (6mm) for pipes or conduits greater than 2" (51mm).

3. **NELSON PCS PIPECHOKE** - Install the appropriate sized pipechoke around the pipe on both sides of the wall and secure the choke to the wall with 1/8" (3mm) diameter by 1-3/4" (44mm) toggle bolts in conjunction with 1/4" (6mm) by 3/4" (19mm) diameter and 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-2071**

Nelson Firestop

DWG NO. FS-0110 R5

DATE: 07/17/06

BY: RL

Project Name: _____
Address: _____

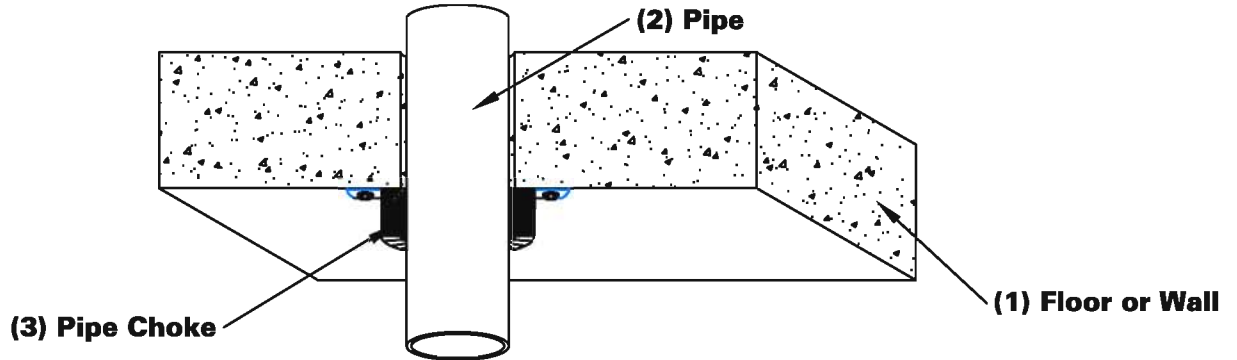
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr. T Rating 0, 1-1/2, or 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 5" (127mm).
2. NONMETALLIC PIPE or CONDUIT - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter, (or smaller), Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 4" (102mm) diameter, (or smaller), Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter, (or smaller), SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (D) POLYBUTYLENE (PB) PIPE - Nom 4" (102mm) diameter, (or smaller), SDR11 PB pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The max. annular space is 1/4" (6mm).

Pipe Size/Description	F Rating (Hr.)	T Rating (Hr.)
1-1/2" (38mm) Solid Core PVC	3	2
2" - 4" (51mm - 102mm) Solid Core PVC	2	2
2" - 4" (51mm - 102mm) Cellular Core PVC	2	1-1/2
1-1/2" - 4" (38mm - 102mm) CPVC	3	2
1-1/2" - 4" (38mm - 102mm) PB	3	0
1-1/2" - 4" (38mm - 102mm) RNC	2	2

3. NELSON PCS PIPECHOKE - Apply the appropriate sized pipechoke around the pipe on the underside of the floor, or on both sides of the wall. Secure to the concrete with steel masonry anchors and fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2086**

Nelson Firestop

DWG NO. FS-0111R9

DATE: 07/17/06

BY: RL

MEA # 173-99-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

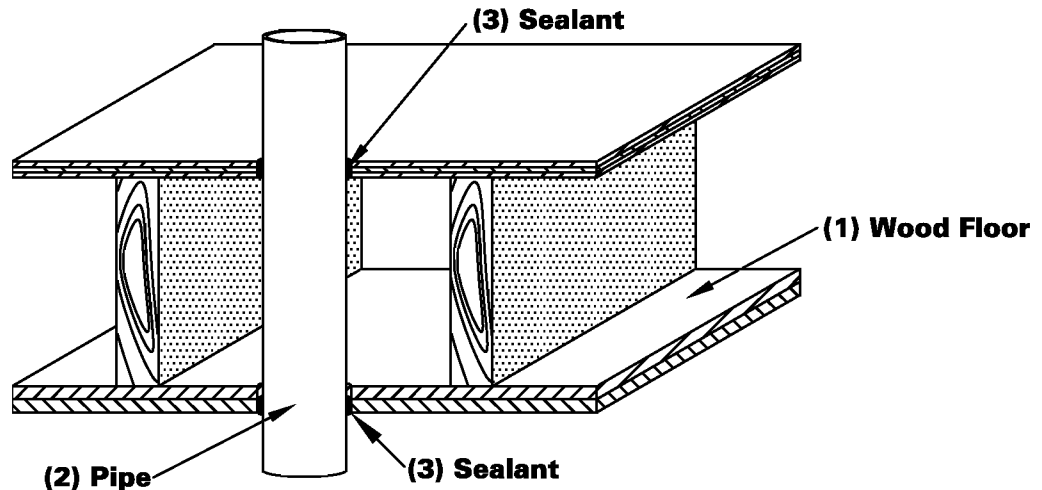
Installer: _____
Address: _____

Signature: _____

WOOD JOIST FLOOR METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 3/4 or 1 Hr.



1. WOOD FLOOR ASSEMBLY - Constructed in the manner specified in Design No. L505, L511, or L536 in the UL Fire Resistance Directory, as summarized below: Diameter of opening to be 1/2" (13mm) larger than the outside diameter of through penetrant.
 - (A) FLOORING SYSTEM - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) FURRING CHANNELS (not shown) - Resilient galv. steel furring installed perpendicular to wood joists between first and second layers of wallboard and spaced 24" O.C.
 - (C) GYPSUM BOARD - First layer of wallboard nailed to wood joists. Second layer of wallboard screw-attached to furring channels.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes or conduits may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

For steel or cast iron pipe the T rating is 1 hr., for copper tubing or pipe the T rating is 3/4 hr.

3. NELSON CLK N/S SEALANT - Sealant forced into annulus to max. extent possible on both surfaces of floor-ceiling assembly. Additional sealant to be installed such that a min. 1/8" (3mm) thick crown is formed around the penetrant on bottom side of floor-ceiling assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-1012**

Nelson Firestop

DWG NO. FS-0113 R5

DATE: 10/23/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

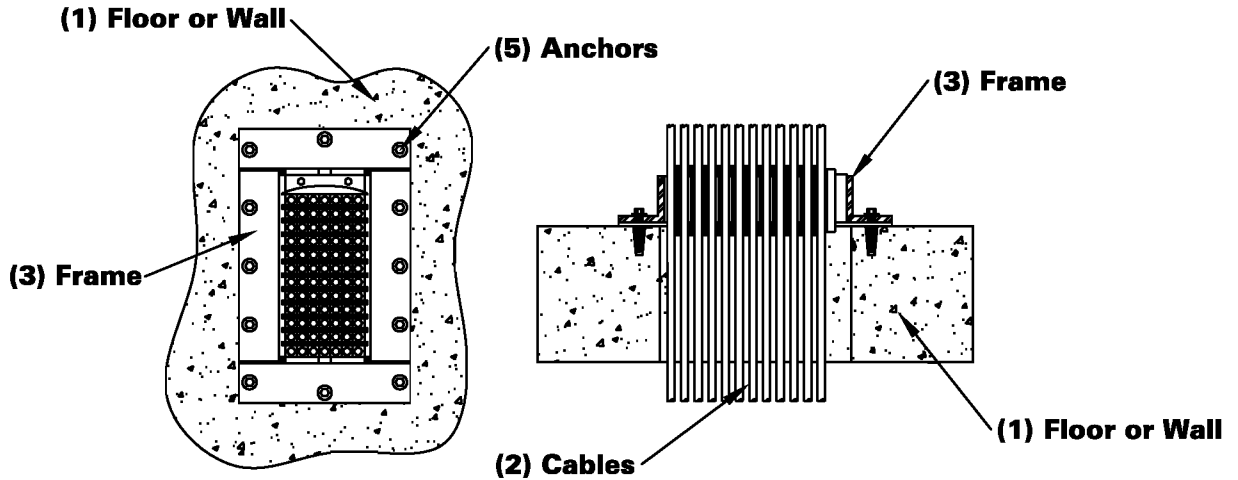
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 or 3 Hr.

T Rating 1/2 or 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall.
2. CABLES - Max. 100% cable fill, as limited by available modules, of:
 - (A) max. 350 kcmil single conductor w/polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. 7/C #12 awg multi conductor w/PVC or cross linked polyethylene (XLPE) insulation and PVC jacket.
 - (C) max. 100pr. #24 awg w/PVC insulation and jacket.
 - (D) max. 72 fibers - 62.5/125 fiber-optic cable w/ PVC insulation and jacket.
 - (E) max. 50pr. #24 awg w/PVC insulation and jacket.

When 350kcmil or 100 pr. 24awg cables are used the F rating is 3 hrs. and the T rating is 1/2 hr. When 7C-12awg cables are used the F rating is 3 hrs. and the T rating is 1 hr. When fiber optic cables are used the F rating is 2 hrs. and the T rating is 1 hr.

3. NELSON MCT FRAME ASSEMBLY - Type RGM8 or smaller frame with one or more openings/ assy. Tecron insert blocks are sized to fit closely around each individual cable installed together with blank modules, stayplates, compression plates and end packing units to fill the entire frame assy. MCT frame is to be installed on the top surface of floor or both surfaces of the wall.
4. TECRON GASKET - (not shown) 2-1/8" (54mm) wide x 1/8" (3mm) tk. gasket as supplied by Nelson Firestop Products, is installed between the flange of the MCT frame and the wall or floor.
5. MOUNTING ANCHORS - Steel masonry anchors with fender washers are required to secure frame to the wall or floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3048**

Nelson Firestop

DWG NO. FS-0114 R4

DATE: 07/17/06

BY: RL

Project Name: _____
Address: _____

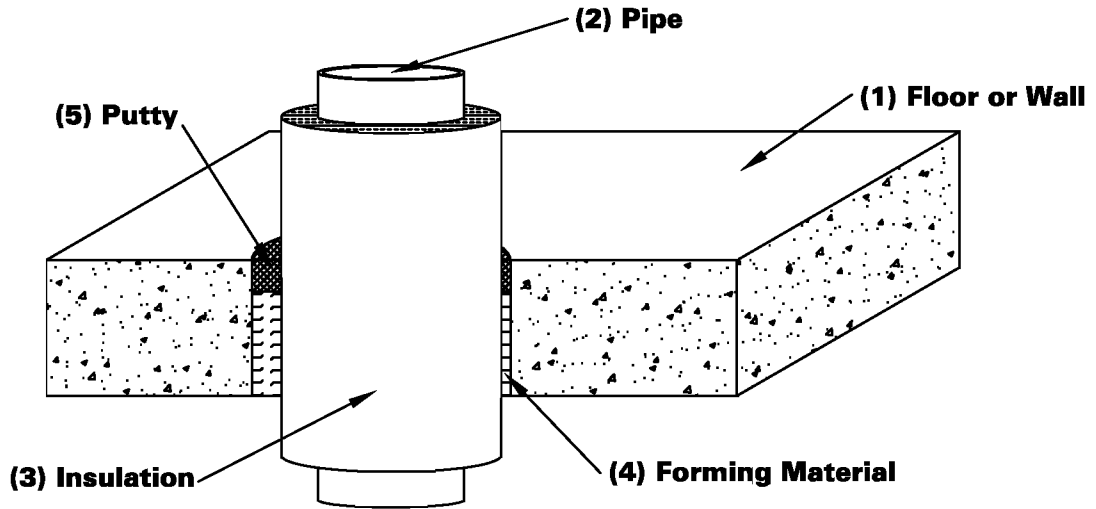
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr. T Rating 1/2 or 1-1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 6" (152mm) thick wall or CMU block wall.
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nom 1-1/2" (38mm) thick or thinner FIBERGLASS or MINERAL FIBER pipe insulation. For insulation 1/2" to 1" (13mm to 25mm) thick the T rating is 1/2 hr. For 1-1/2" (38mm) thick insulation the T rating is 1-1/2 hr. The annular space is to be 1/8" to 3/4" (3mm to 19mm).
4. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a nominal 3" (76mm) depth, and recess 1-1/2" (38mm) from TOP or BOTTOM surface of floor or from both wall surfaces.
5. NELSON FSP PUTTY (part # AA445) - Min. 1-1/2" (38mm) thickness of putty applied within the annular space, flush with TOP or BOTTOM surface of floor or both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5066**

Nelson Firestop

DWG NO. FS-0115 R6

DATE: 02/01/07

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

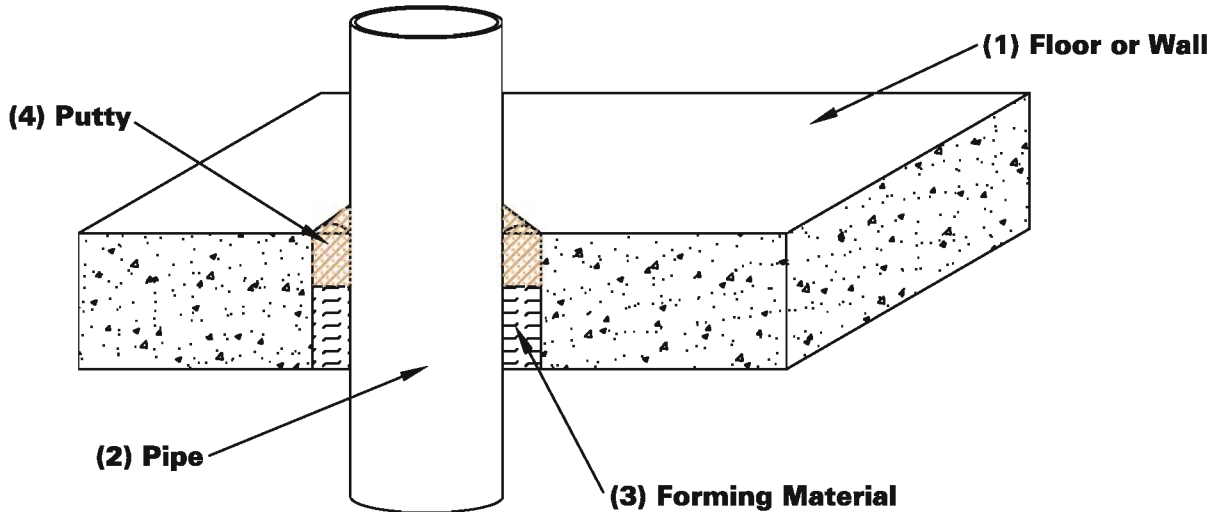
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 6" (152mm) thick wall or CMU block wall.
2. NONMETALLIC PIPE OR CONDUIT - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented, (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
The nom annular space is 13/16" (21mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3" (76mm) depth, and recess 1-1/2" (38mm) from topside or underside of floor or from both wall surfaces.
4. NELSON FSP PUTTY (part # AA445) - Apply within the annular space, over or under the forming material to a min. 1-1/2" (38mm) depth, flush with the topside or underside of the floor or with both sides of the wall. Additional putty to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2096**

Nelson Firestop

DWG NO. FS-0116 R6

DATE: 07/17/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

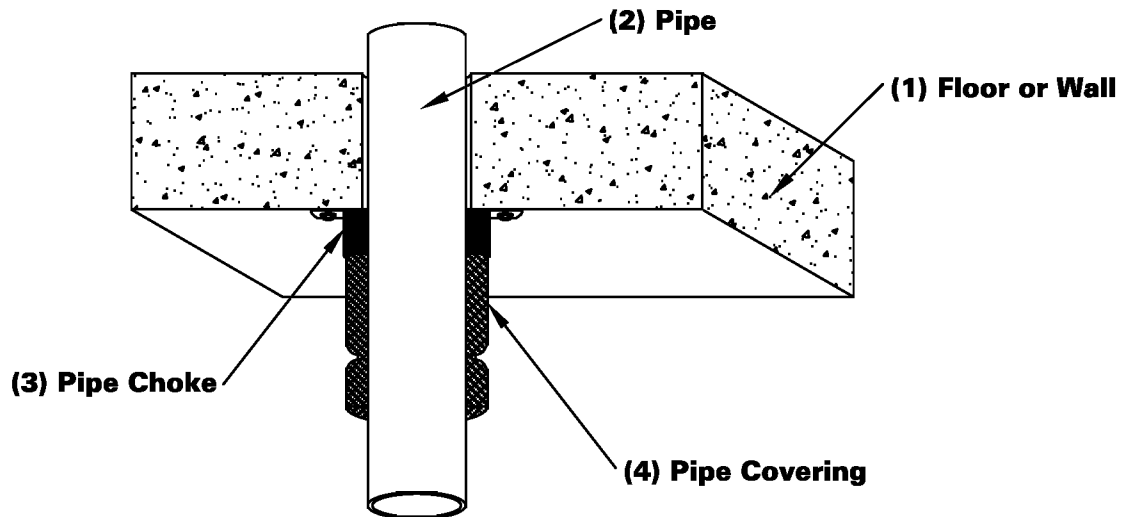
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 3 Hr.

T Rating 0 or 3 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall.
2. NONMETALLIC PIPE or CONDUIT - The following types of nonmetallic pipes may be used:
 - (A) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 foamed core ABS pipe for use inclosed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) FIRE RETARDANT POLYPROPYLENE (FRPP) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

When ABS pipe is used the T rating is 0 hr. When FRPP pipe is used the T rating is 3 hrs.
The max. annular space is 5/16" (8mm).
3. NELSON PCS PIPECHOKE - Apply the appropriate sized pipechoke around the pipe on the underside of the floor, or on both sides of the wall. Secure to the concrete with steel masonry anchors and fender washers.
4. PIPE COVERING - Apply a nominal 1" (25mm) thick, 7-1/2" (191mm) long hollow cylindrical heavy density glass fiber pipe insulation, butted against the bottom of the PCS device. In wall penetrations, apply to both sides. Secure to pipe with steel tie wire.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2102**

Nelson Firestop

DWG NO. FS-0117 R4

DATE: 07/17/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

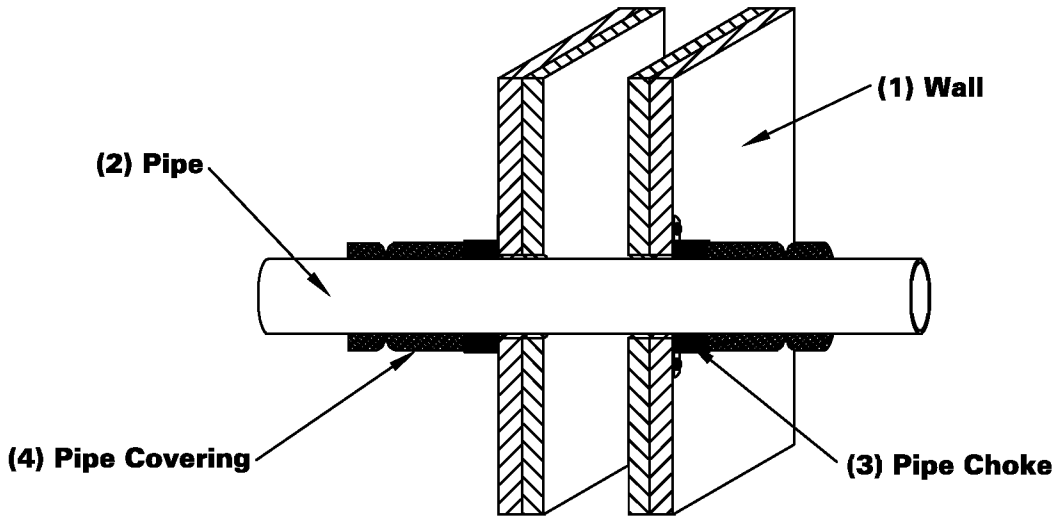
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The nom annular space is 5/16" (8mm).
2. NONMETALLIC PIPE - Nominal 2" (51mm) diameter, or smaller, Sch. 40 Flame Retardant Polypropylene FRPP pipe.
3. NELSON PCS PIPECHOKE - Apply the appropriate sized pipe choke around the pipe on both sides of the wall. Secure to the wall with drywall anchors and washers.
4. PIPE COVERING - Apply a nominal 1" (25mm) thick, 7-1/2" (191mm) long hollow cylindrical heavy density glass fiber pipe insulation, butted against the PCS devices on both sides of the wall. Secure to pipe with steel tie wire.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479


System No.
W-L-2081

Nelson Firestop

DWG NO. FS-0118 R4

DATE: 07/17/04

BY: RL

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

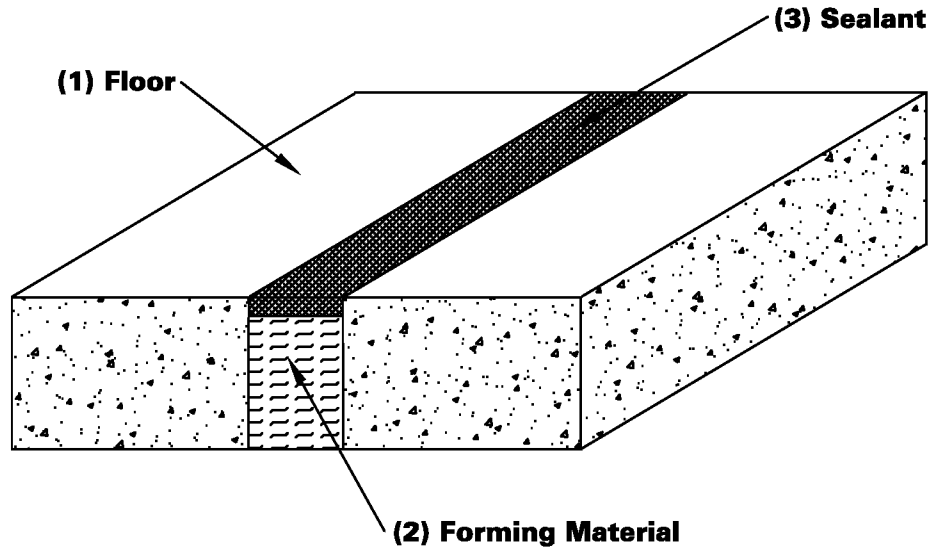
Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

**F Rating 4 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 5-1/2" (140mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5" (127mm) depth, and recess 1/2" (13mm) from the top surface of the floor.
3. NELSON CLK SEALANT - Apply CLK over the forming material to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
FF-S-1011

Nelson Firestop

DWG NO. FS-0119 R5

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

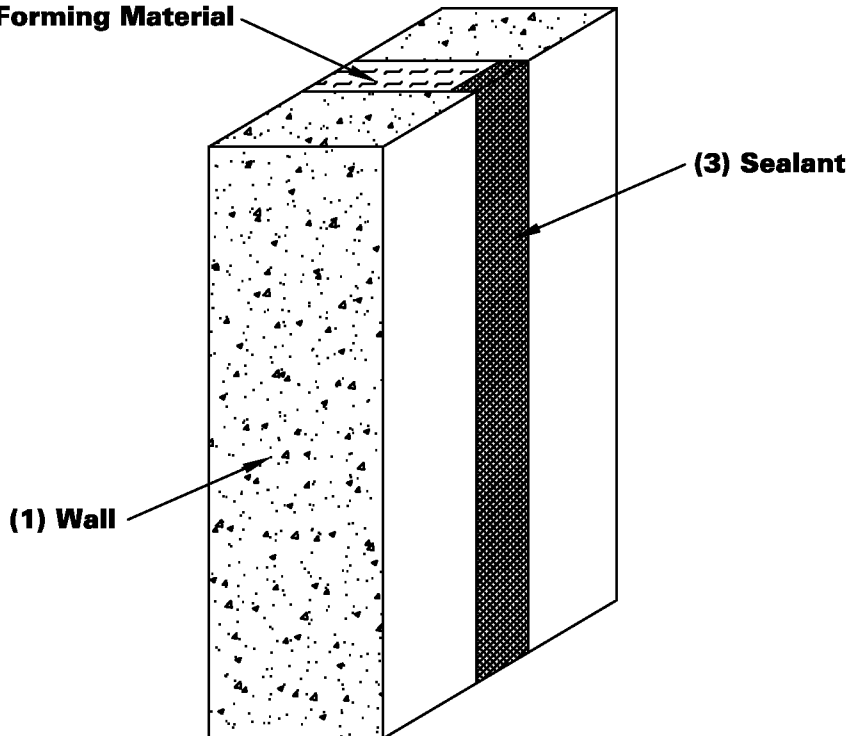
JOINT TREATMENT SYSTEM WALL TO WALL

(Limited to Fire Exposure on Interior Face)

F Rating 4 Hr.

Nominal Joint Width - 4" (102mm)

(2) Forming Material



1. WALL ASSEMBLY - Min. 5-1/2" (140mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5" (127mm) depth, and recess 1/2" (13mm) from the external face of the wall.
3. NELSON CLK SEALANT - Apply CLK over the forming material on the external face, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
WW-S-1013**

Nelson Firestop

DWG NO. FS-0120 R6

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

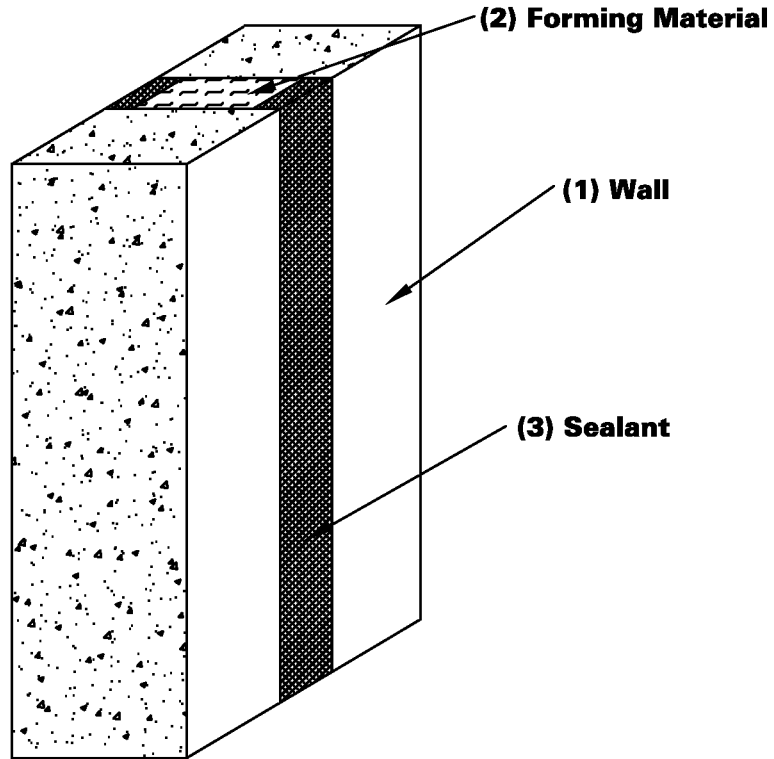
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

F Rating 4 Hr.
Nominal Joint Width - 4" (102mm)



1. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5" (127mm) depth, and recess 1/2" (13mm) from both surfaces of the wall.
3. NELSON CLK SEALANT - Apply CLK over the forming material, on both sides of the wall, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079



System No.
WW-S-1014

Nelson Firestop

DWG NO. FS-0121 R6

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____
Address: _____

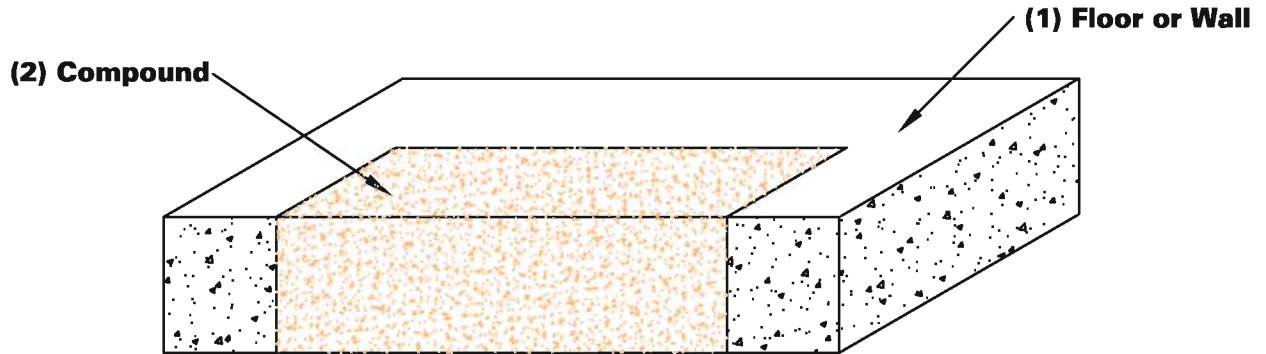
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL LARGE OPENING

F Rating 3 Hr.

T Rating 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. size of the opening is 40" x 48" (1016mm x 1219mm).
2. NELSON CMP COMPOUND (part # AA476) - Install to a min. 4-1/2" (114mm) depth, flush with the top surface of the floor or with both surfaces of the wall.
3. FORMING MATERIAL - (not shown) - Use plywood or polystyrene forming board cut close to contour of opening. Remove after curing of CMP, min. 48 hrs.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-0043

Nelson Firestop

DWG NO. FS-0124 R3

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

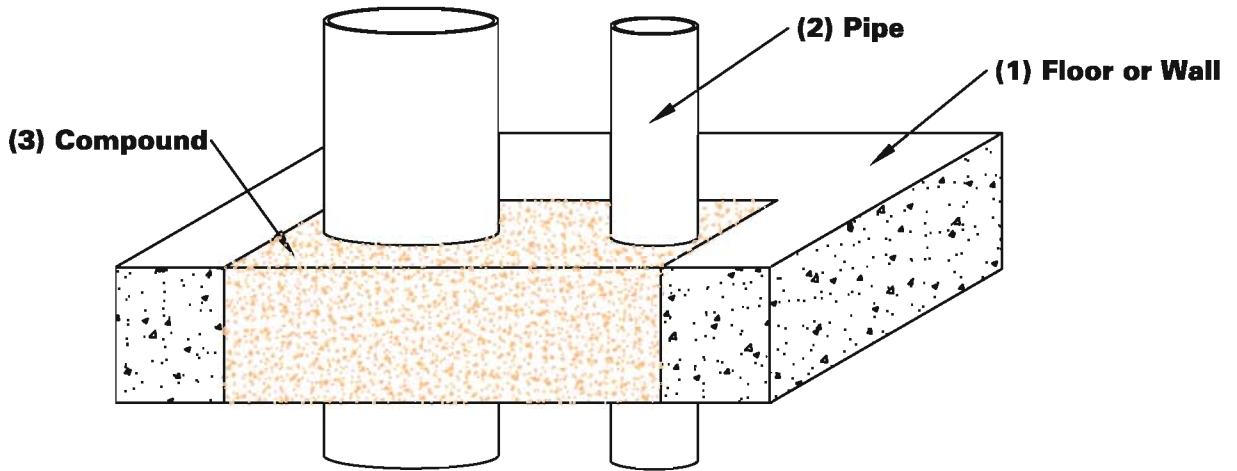
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPES OR CONDUITS

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. size of opening is 40" x 48" (1016mm x 1219mm).
2. METALLIC PIPE or CONDUIT - A max. of (2) pipes, conduits or tubing to be installed within the opening. The following types and sizes of metallic pipes, conduits or tubing may be used.
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 6" (152mm) diameter (or smaller) rigid galv steel conduit.
 - (D) EMT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing.
 - (E) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Only (1) pipe may be larger than 4" (102mm). Annular space to opening edge is min. 1" to 37" (25mm to 940mm), between pipes is 2" to 40" (51mm to 1016mm).
3. NELSON CMP COMPOUND (part # AA476) - Install to min. 4-1/2" (114mm) depth, flush with the top surface of the floor or with both surfaces of the wall.
4. FORMING MATERIAL - (not shown) - Use plywood or polystyrene forming board, cut close to contour of opening. Remove after cure, approx. 48 hrs.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-1219

Nelson Firestop

DWG NO. FS-0125 R5

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

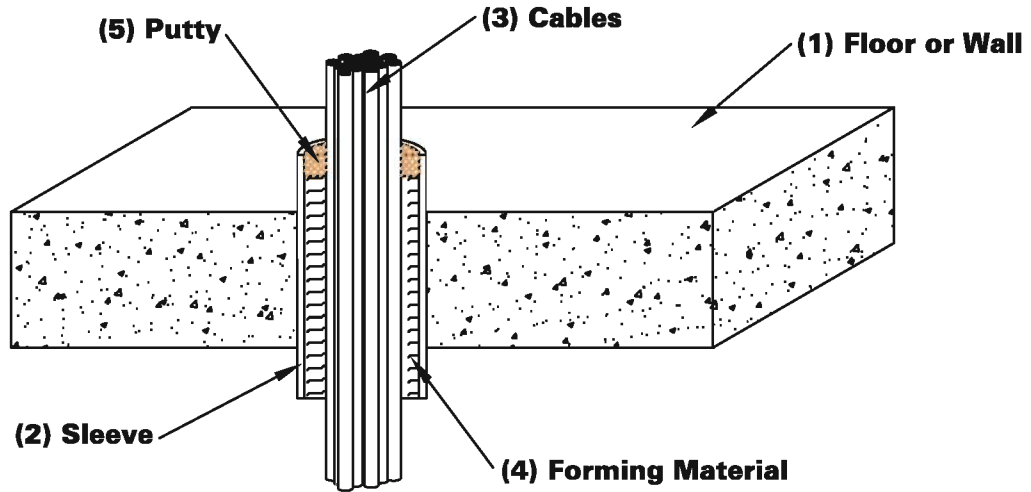
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 3/4 or 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall.
2. METALLIC SLEEVE - Max. nominal 6" (152mm) diameter (or smaller) Sch 10 (or heavier), steel sleeve cast or grouted into the floor or wall, and extending a nominal 2" (51mm) beyond surfaces.
3. CABLES - Max. 40% cable fill of opening of:
 (A) max. 600pr. 24awg or smaller, PVC jacketed telecommunications cable.
 CABLES - Max. 26% cable fill of opening of:
 (A) max. 72 fiber PVC jacketed fiber optic cable
 For telecommunications cable the T rating is 3/4 hr., for fiber optic cable the T rating is 1 hr.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5-1/4" (133mm) depth, and recess 3/4" (19mm) from top surface of sleeve in floors or from both surfaces of sleeve in walls.
5. NELSON FSP PUTTY (part # AA445) - Apply within the annular space to a min. 3/4" (19mm) depth, flush with the top surface of the sleeve, or with both ends of sleeve in walls.

Tested in accordance with:
 ASTM E-814
 ANSI/UL 1479


System No.
C-AJ-3089

Nelson Firestop

DWG NO. FS-0126 R5

DATE: 07/18/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

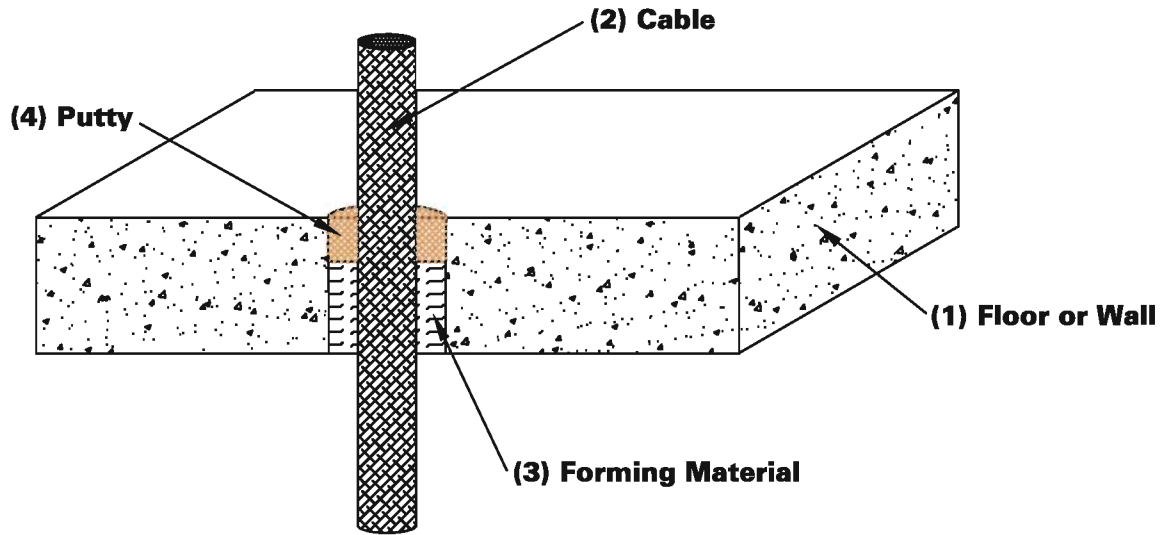
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL ARMORED OR METAL CLAD CABLE

F Rating 2 Hr.

T Rating 0,1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 6" (152mm) thick wall or CMU block wall. The floor may be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete. The nom annular space is 7/8" (22mm). T rating is 0 hour with HOLLOW-CORE assembly only.
2. CABLE - Max. 4/C-2awg copper conductor, aluminum or steel ARMORED cable or METAL CLAD cable.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3" (76mm) depth, and recess 1-1/2" (38mm) from top surface of floor or from both wall surfaces or from both floor surfaces in a HOLLOW-CORE floor.
4. NELSON FSP PUTTY (part # AA445) - Apply within the annular space to a min. 1-1/2" (38mm) depth, flush with the top surface of the floor or with both surfaces of the wall or from both floor surfaces in a HOLLOW-CORE floor.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



System No.

C-AJ-3090, C-AJ-3158

Nelson Firestop

DWG NO. FS-0127 R4

DATE: 07/18/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

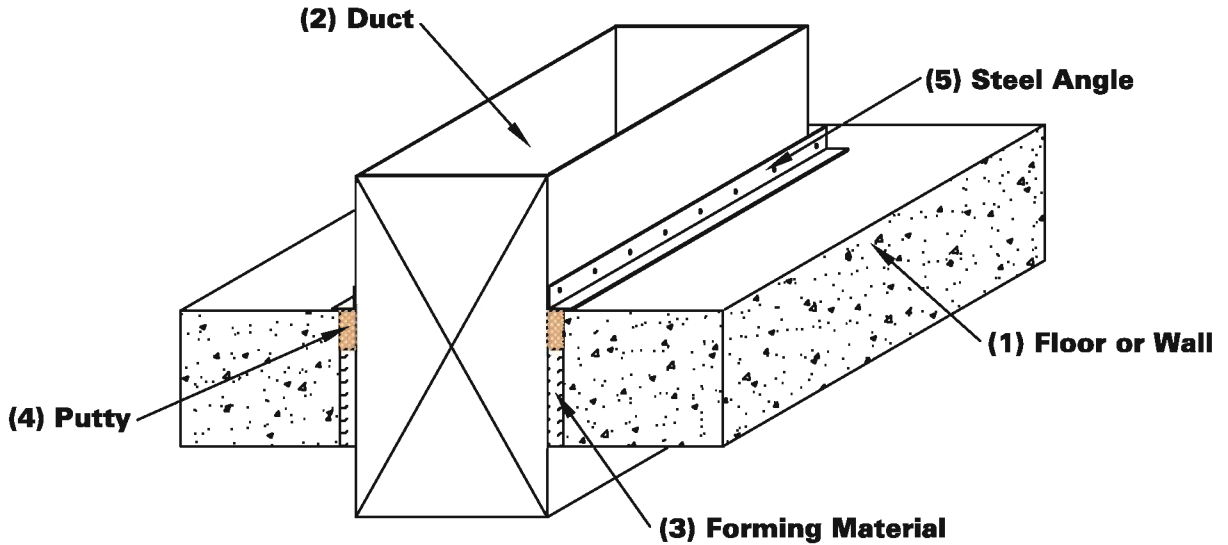
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 6" (152mm) thick wall, or CMU block wall. The nominal annular space is 1/2" (13mm).
2. HVAC DUCT - Max. 12" x 24" (305mm x 610mm), 28 gauge or heavier, galv., sheet steel HVAC duct, centered in opening.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3" (76mm) depth, and recess 1-1/2" (38mm) from top surface of floor or from both wall surfaces.
4. NELSON FSP PUTTY (part # AA445) - Apply within the annular space to a min. 1-1/2" (38mm) depth, flush with the top surface of the floor or with both surfaces of the wall.
5. STEEL ANGLE - Min. 1-1/2" x 1-1/2" (38mm x 38mm) x .030" (.8mm) (22 ga.) steel angle cut to fit the contour of the duct and secured to the duct with #12 sheet metal screws, spaced max. of 4" (102mm) on center.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-7010**

Nelson Firestop

DWG NO. FS-0128 R3

DATE: 07/18/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

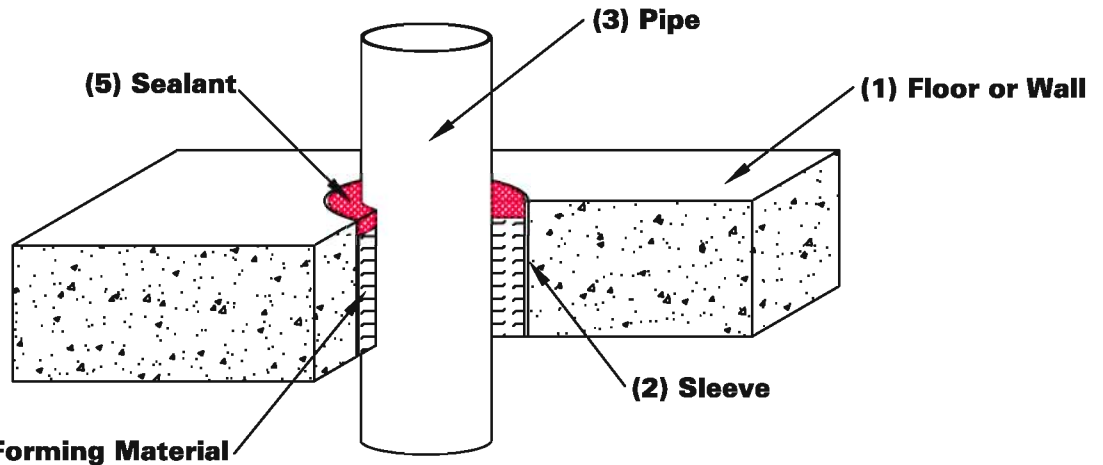
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



(4) Forming Material

1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 5" (127mm) thick wall or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. METALLIC SLEEVE (optional) - Max. nominal 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into the floor or wall, flush with both surfaces. Max. annular space within the sleeve is 15/16" (24mm).
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The max. annular space is 1/4" (6mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool or ceramic fiber into the annular space to a min. 4" (102mm) depth. Recess fiber 1/2" (13mm) from top surface of floor or from both wall or HOLLOW-CORE floor surfaces.
5. NELSON CLK SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall or HOLLOW-CORE floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1191**

Nelson Firestop

DWG NO. FS-0129 R4

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

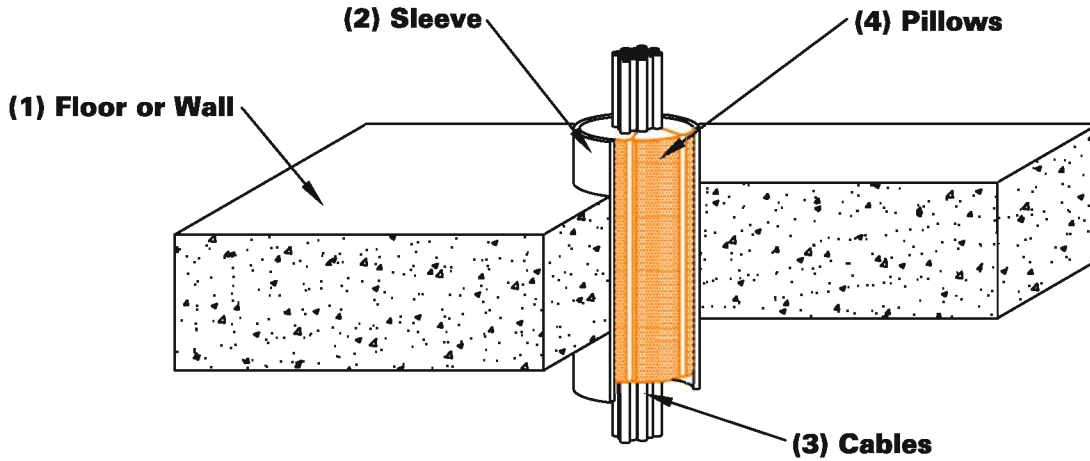
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 6" (152mm).
2. METALLIC SLEEVE - Max. nominal 6" (152mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, and extending a nominal 2" (51mm) beyond surfaces.
3. CABLES - Max. 15% cable fill in any combination of:
 - (A) max. 350 kcmil single conductor cable with cross linked polyethylene (XLPE) insulation and jacket.
 - (B) max. 7/C #12 awg cable w/polyvinyl chloride (PVC) or (XLPE) insulation and PVC jacket.
 - (C) max. 25pr. 24awg telecommunications cable with PVC jacketing.
4. NELSON PLW PILLOWS (part # AA478 or AA479) - Pillows tightly compressed within the annular space between the cables and the periphery of the opening. Pillows to be installed flush with top surface of sleeve in floor or with both surfaces of sleeve in wall.
5. NELSON FSP PUTTY (part # AA445) (not shown) - Putty to be forced into interstices of cable group and gaps between pillows and cables to max. extent possible.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3093**

Nelson Firestop

DWG NO. FS-0130 R4

DATE: 07/18/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

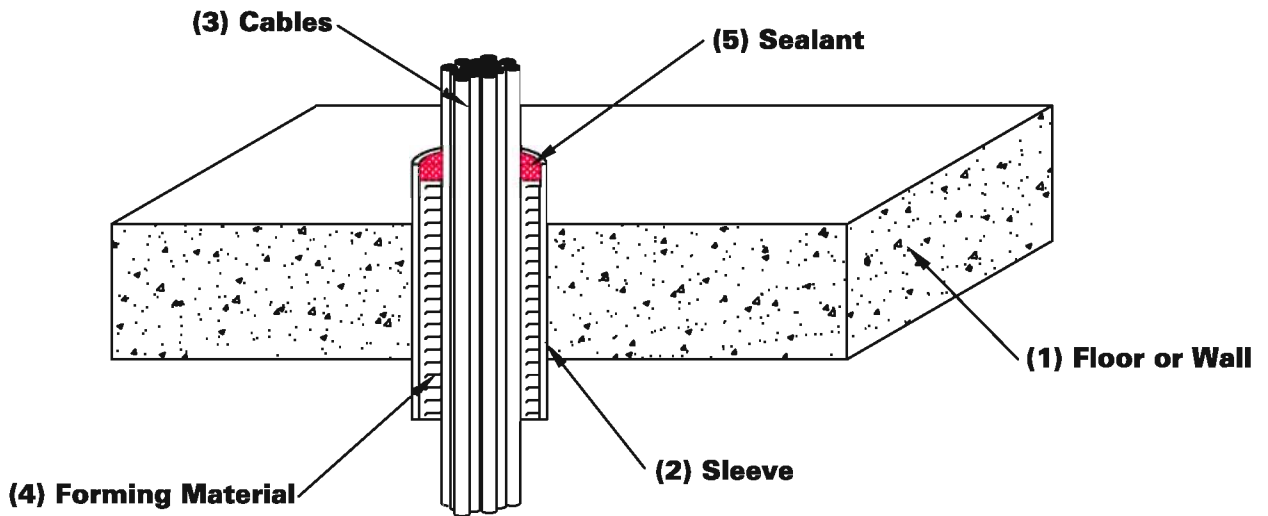
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 5" (127mm) thick wall or CMU block wall.
2. METALLIC SLEEVE - Max. nominal 6" (152mm) diameter, Sch. 10 or heavier, steel sleeve cast or grouted into the floor or wall, and extending a nominal 2" (51mm) beyond surfaces.
3. CABLES - Max. 30% fill of 25pr. 24awg or smaller, PVC jacketed telecommunications cable.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 8" (203mm) depth, and recess recess 1/2" (13mm) from top surface of sleeve in floors or from both surfaces of sleeve in walls.
5. NELSON CLK SEALANT - Apply over the forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the sleeve, or with both ends of sleeve in walls.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-3094

Nelson Firestop

DWG NO. FS-0131R3

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

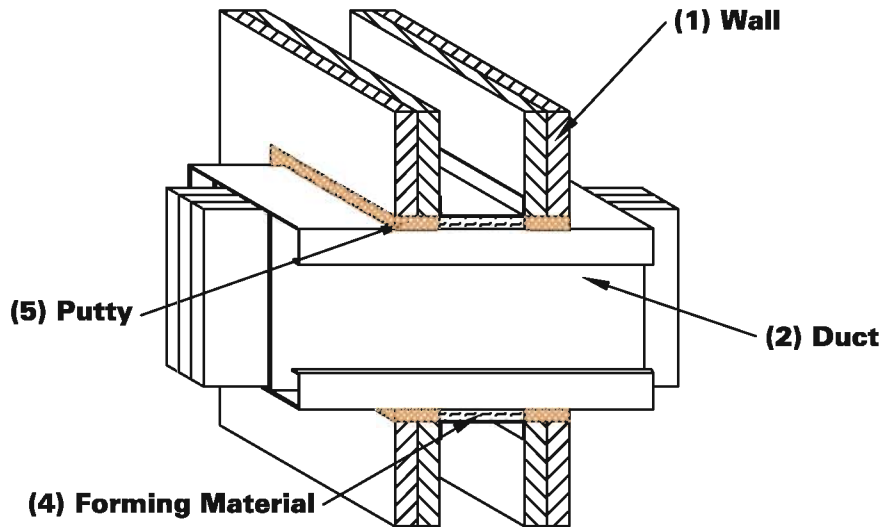
Installer: _____
Address: _____

Signature: _____

GYP SUM WALL BUS DUCT

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Opening is to be framed on all sides with like stud material.
2. **BUS DUCT** - Max. 15" x 5" (381mm) x 127mm) "I" shaped aluminum and steel enclosure containing factory mounted copper bars rated for 600V / 3000 A. The annular space between the flange tip of the busway and periphery of the opening shall be a nom 1/2" (13mm). The annular space between the web section of the busway and the periphery of the opening shall be a nom 2-1/4" (57mm).
3. **COVER PLATE ASSEMBLY** (not shown) - A min. 1/8" (3mm) thick steel cover plate provided by busway manufacturer shall be installed on both surfaces of wall assembly. Steel cover plate secured in accordance with busway manufacturer's installation instructions.
4. **FORMING MATERIAL** - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space between the bus duct and wall to min. 2-3/8" (60mm) depth for a 1 hr. wall or 2-1/2" (64mm) depth for a 2 hr. wall. Recess fiber 1-1/4" (32mm) from wall surfaces.
5. **NELSON FSP PUTTY** (part # AA445) - Apply putty over the forming material to a min. 1-1/4" (32mm) depth, flush with both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-6003**

Nelson Firestop

DWG NO. FS-0132 R4

DATE: 02/06/07

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

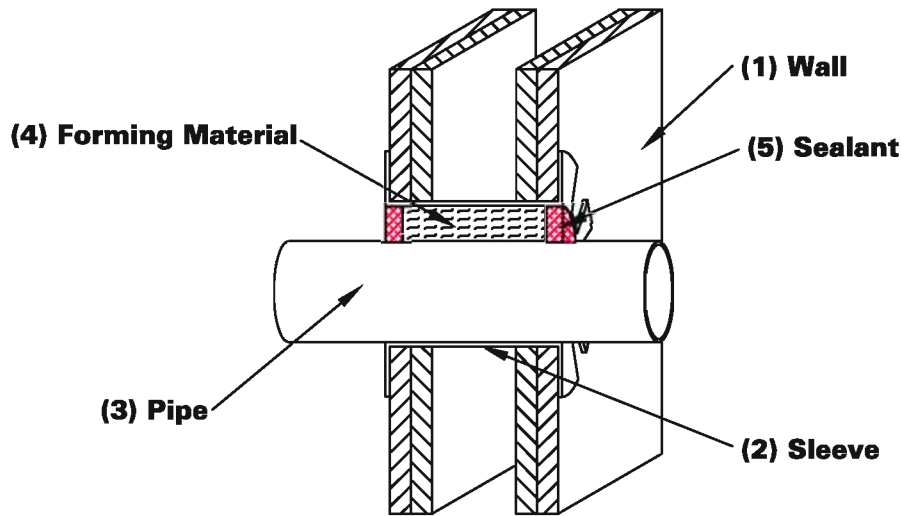
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. **METALLIC SLEEVE** - Nominal 6-1/2" (165mm) diameter, or smaller, steel sleeve fabricated from .018" (.457) (26 ga.) galv. sheet steel, with a 2" (51mm) overlap along longitudinal seam and 1-1/2" (38mm) long anchor tabs spaced a max. 6" (152mm) on center. Secure to both sides of wall with toggle bolts and fender washers.
3. **METALLIC PIPE or CONDUIT** - The following types of metallic pipes, tubing or conduits may be used:
 - (A) **STEEL PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.

Annular space range is min. 0" (point contact) to max. 2" (51mm).
4. **FORMING MATERIAL** - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to min. 3-7/8" (98mm) depth for 1 hr. walls or 4" (102mm) depth for 2 hr. walls. Recess fiber 1/2" (13mm) from both surfaces of wall.
5. **NELSON CLK SEALANT** - Apply over the forming material to a min. 1/2" (13mm) depth, flush with wall. At areas of point contact, apply a 1/4" (6mm) bead at the interface of the pipe and sleeve on both wall surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-1083

Nelson Firestop

DWG NO. FS-0133 R3

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

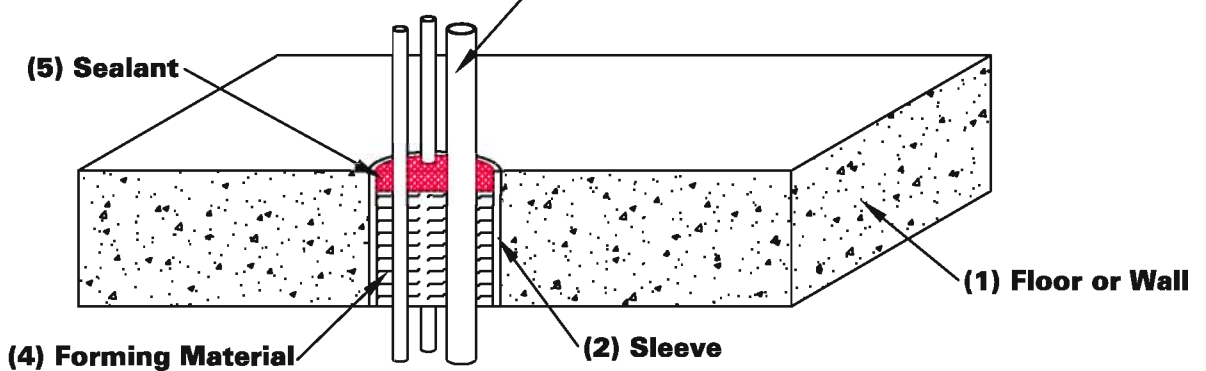
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULTIPLE METALLIC PIPES

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. METALLIC SLEEVE (optional) - Max. nominal 6" (152mm) diameter or smaller, Sch. 10 or heavier, steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPES or CONDUITS - A max. of (3) penetrants to be installed within opening and only (1) of the (3) penetrants may be greater than 1" (25mm) in diameter. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.

The space between penetrating items may be 0" (point of contact) to 1-1/2" (38mm). Annular space between penetrants and periphery of opening is 0" (point of contact) to 3-7/8" (98mm).
Of the three pipes, conduits or tubing, only two shall be in point contact.

4. FORMING MATERIAL - Tightly pack min. 4pcf (64kg/cubic meter) mineral wool batt insulation into the annular space to a min 4" depth, and recess 1/2" (13mm) from top surface of floor or both wall or HOLLOW-CORE floor surfaces.
5. NELSON CLK SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall or HOLLOW-CORE floor.
At areas of point of contact, apply a 3/8" (10mm) bead of sealant at the interface between the pipes and the top surface of the floor or both surfaces of the wall or HOLLOW-CORE floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1192**

Nelson Firestop

DWG NO. FS-0134 R5

DATE: 02/15/07

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

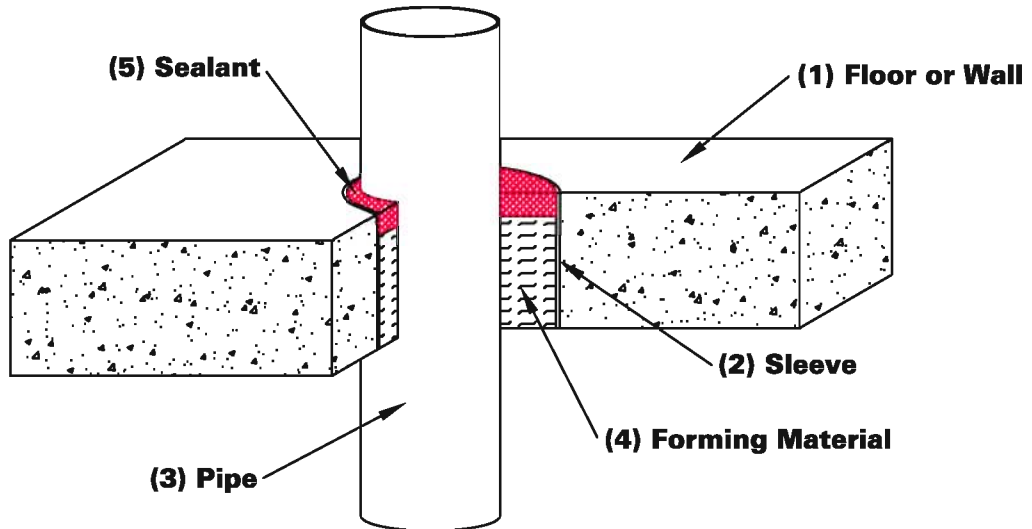
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall or CMU block wall.
2. METALLIC SLEEVE (optional) - Max. nominal 16" (406mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 Annular space may range from 1/2" to 2-1/4" (13mm to 57mm).
4. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from top surface of floor or both wall surfaces.
5. NELSON CLK SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1193**

Nelson Firestop

DWG NO. FS-0135 R3

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

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Installer: _____

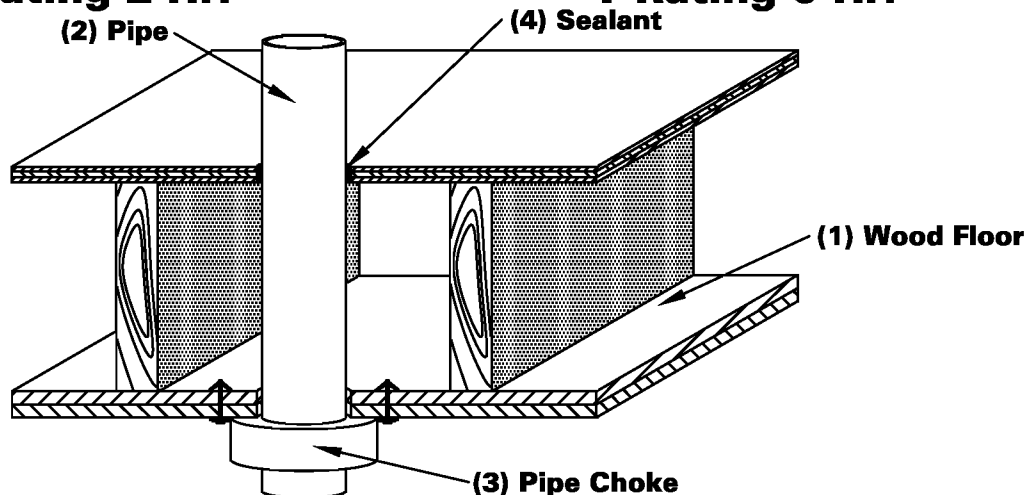
Address: _____

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WOOD JOIST FLOOR NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. **WOOD FLOOR ASSEMBLY** - The fire rated wood joist floor-ceiling assembly shall be constructed in the manner specified in Design L505, L511 or L536 in the UL Fire Resistance Directory.
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood joists between first and second layers of wallboard and spaced 24" O.C.
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood joists. Second layer of wallboard screw-attached to furring channels.
2. **NONMETALLIC PIPE** - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 4" (102mm) diameter, Sch. 40 (or heavier) PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID, NONMETALLIC CONDUIT** - Nom 4" (102mm) diameter, Sch. 40 (or heavier) PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 4" (102mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

Annular space is 1/2" (13mm).
3. **NELSON PCS PIPECHOKE** - Apply appropriate sized pipechoke around pipe and secure to underside of gypsum ceiling using 1/8" (3mm) diameter by 3" (76mm) long toggle bolts in conjunction with 1/4" (6mm) by 1" (25mm) diameter steel fender washers.
4. **NELSON CLK SEALANT** - Apply CLK to fill the annular space where the pipe penetrates the floor to the max. extent possible with an additional 1/4" (6mm) bead around pipe above the floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2031**

Nelson Firestop

DWG NO. FS-0137 R4

DATE: 11/07/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

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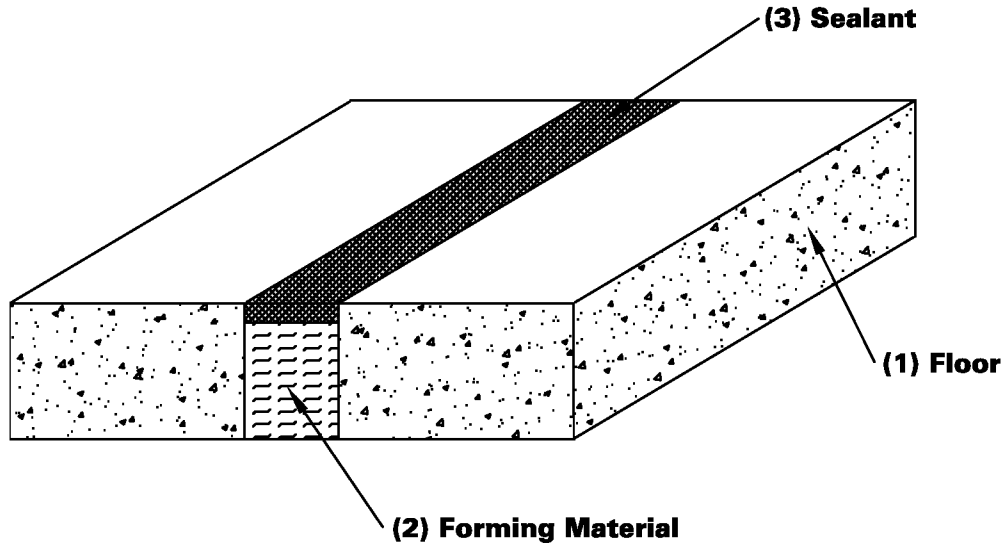
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from the top surface of the floor.
3. NELSON CLK SEALANT - Apply CLK over the forming material to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
FF-S-1016

Nelson Firestop

DWG NO. FS-0138 R4

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
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Project Name: _____
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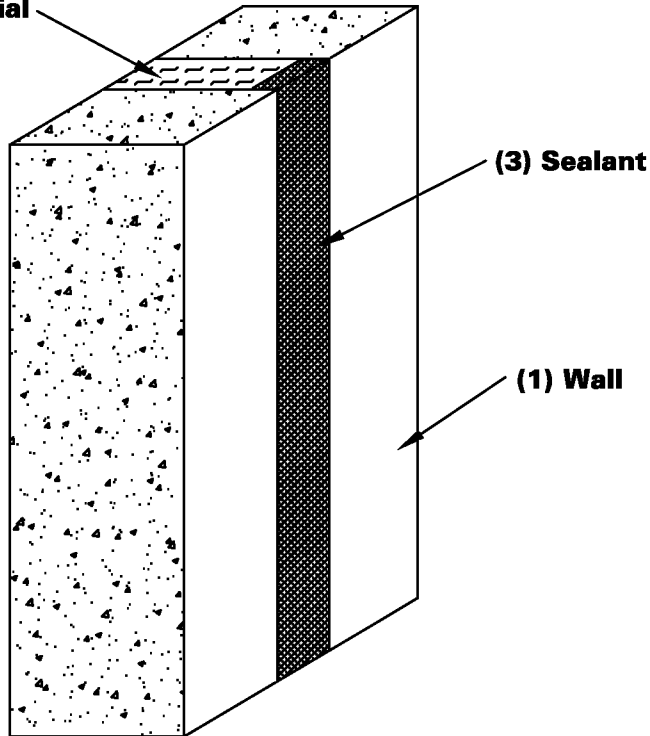
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JOINT TREATMENT SYSTEM WALL TO WALL

(Limited to Fire Exposure on Interior Face)

F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)

(2) Forming Material



1. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from the external face of the wall.
3. NELSON CLK SEALANT - Apply CLK over the forming material on the external face, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
WW-S-1020

Nelson Firestop

DWG NO. FS-0139 R5

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

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Address: _____

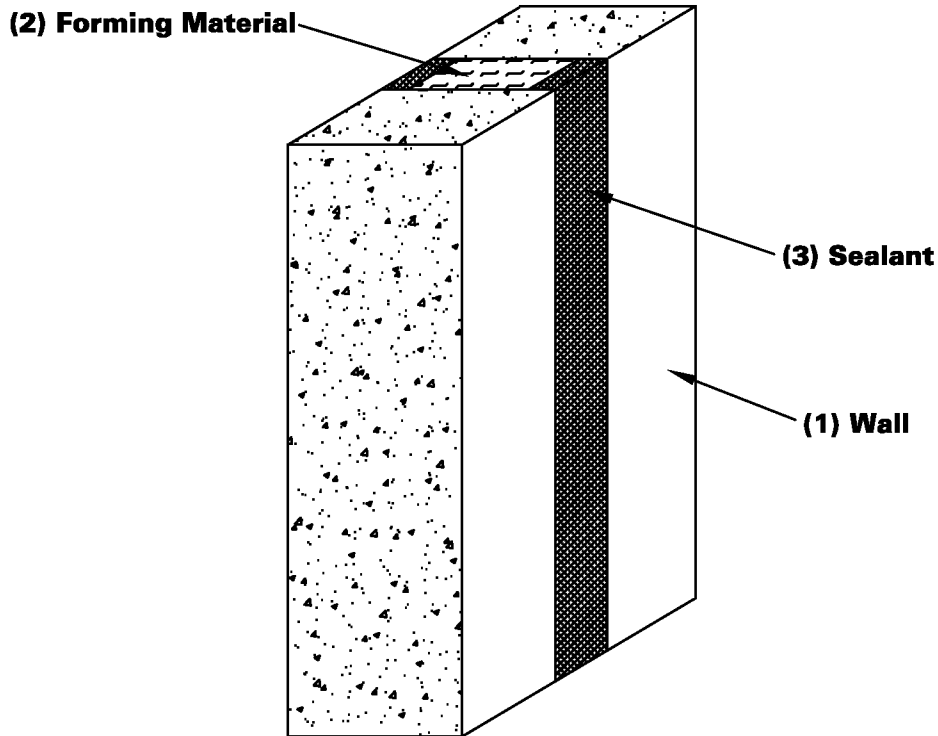
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from both surfaces of the wall.
3. NELSON CLK SEALANT - Apply CLK over the forming material on both sides of the wall to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079



**System No.
WW-S-1021**

Nelson Firestop

DWG NO. FS-0140 R5

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

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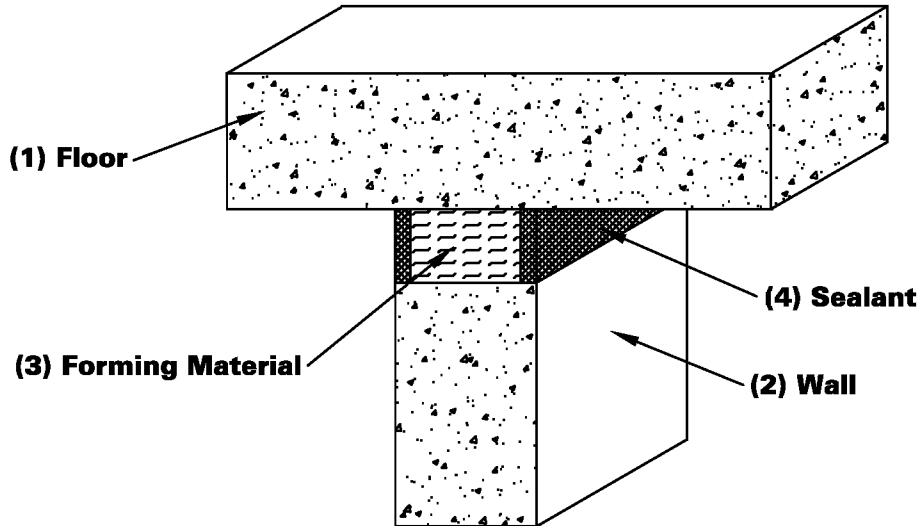
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 4" (102mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from both surfaces of the wall.
4. NELSON CLK SEALANT - Apply CLK over the forming material on both sides of the wall to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
HW-S-1002**

Nelson Firestop

DWG NO. FS-0141 R4

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

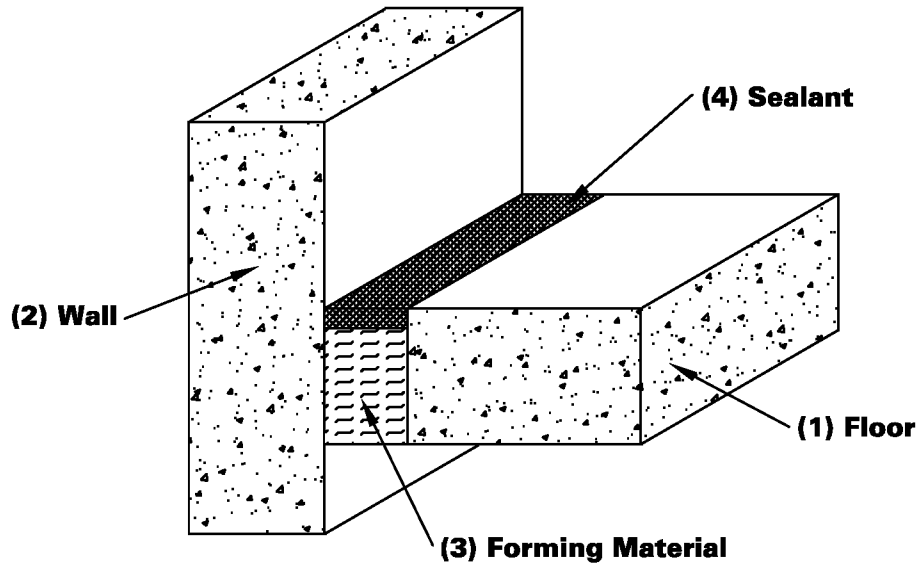
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 4" (102mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from the surface of the floor.
4. NELSON CLK SEALANT - Apply CLK over the forming material, flush with the top surface of the floor, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
FW-S-1003

Nelson Firestop

DWG NO. FS-0142 R4

DATE: 11/28/6

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

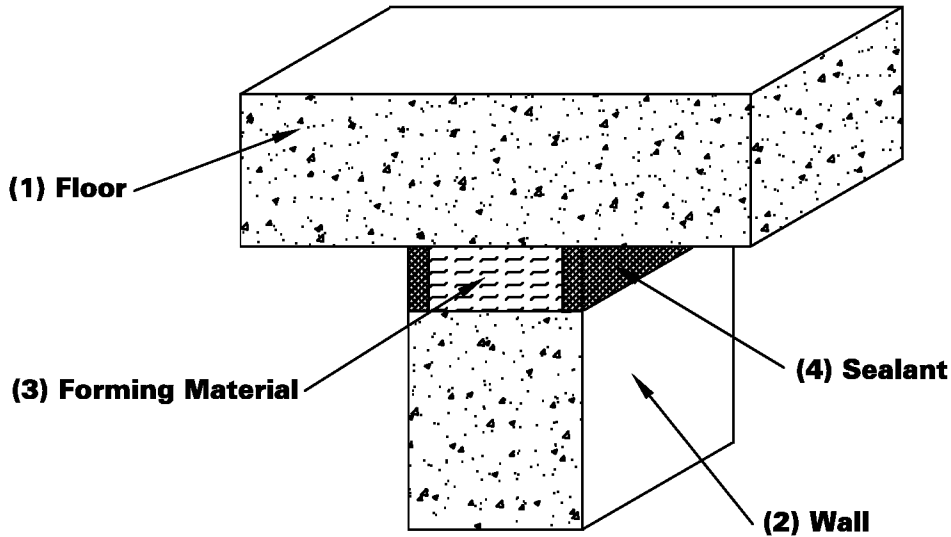
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 4 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 5-1/2" (140mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 4" (102mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5" (127mm) depth, and recess 1/2" (13mm) from both surfaces of the wall.
4. NELSON CLK SEALANT - Apply CLK over the forming material on both sides of the wall to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


**System No.
HW-S-1003**

Nelson Firestop

DWG NO. FS-0143 R4

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

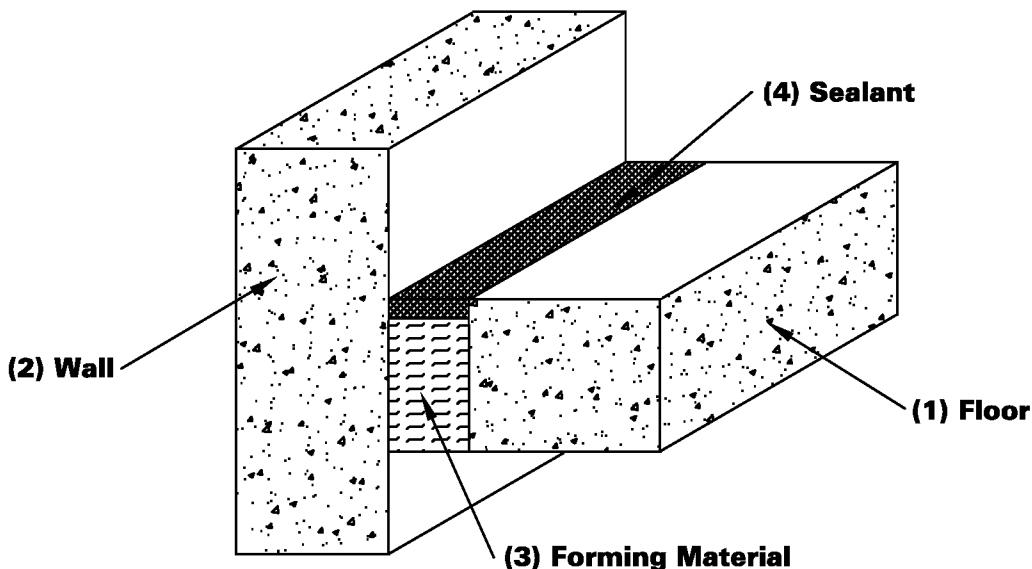
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

**F Rating 4 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 5-1/2" (140mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 5-1/2" (140mm) thick, lightweight or normal weight concrete wall or CMU wall. The max. joint width at the time of installation is 4" (102mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 5" (127mm) depth, and recess 1/2" (13mm) from the top surface of the floor.
4. NELSON CLK SEALANT - Apply CLK over the forming material, flush with the top surface of the floor, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
F-WS-1004

Nelson Firestop

DWG NO. FS-0144 R4

DATE: 11/28/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

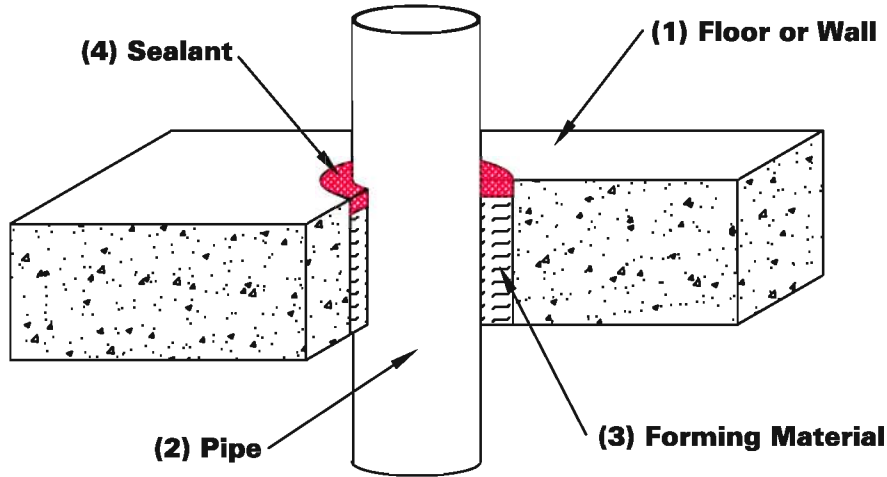
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) lightweight or normal weight concrete floor or 5" (127mm) thick wall or CMU block wall.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" diameter (or smaller) steel conduit.
 The annular space is 1/2" to 1-1/2" (13mm to 38mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf, (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from floor surface or from both surfaces of the wall.
4. NELSON CLK SEALANT - Min. 1/2" (13mm) depth in the annular space around the pipe flush with the floor surface or flush with both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-1203**

Nelson Firestop

DWG NO. FS-0145 R5

DATE: 07/18/06

BY: RL

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

Nelson Firestop

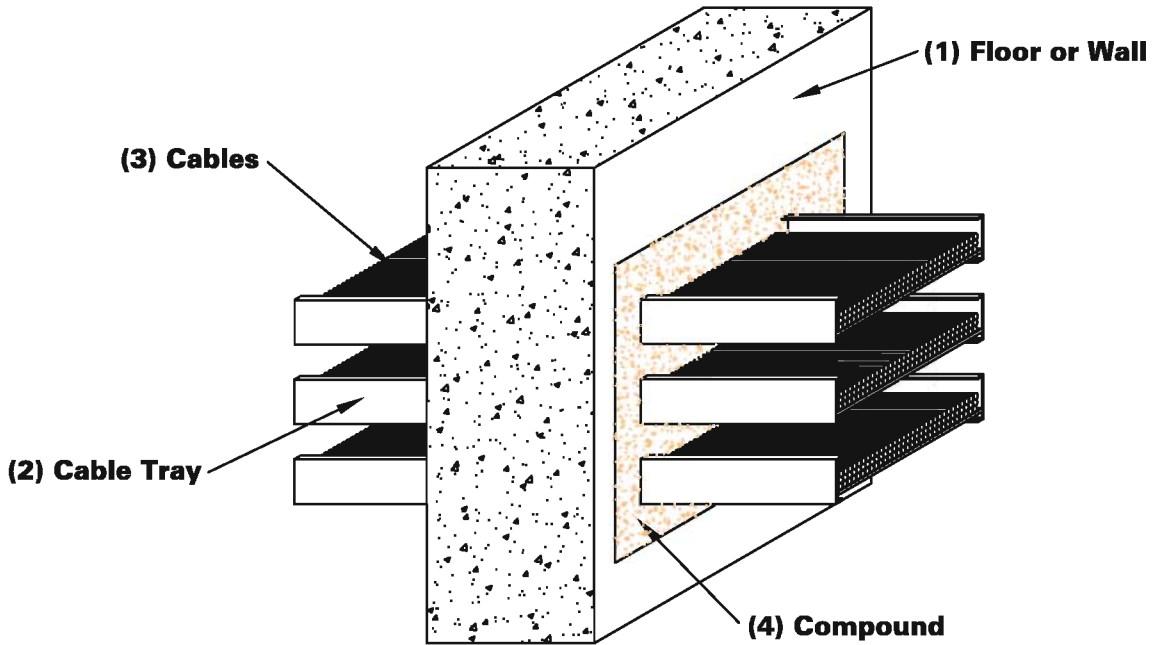
800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) lightweight or normal weight concrete floor or wall or CMU block wall. The annular range is 1" to 12" (25mm to 305mm). The max. size of the opening is 40" x 48" (1016mm to 1219mm).
2. CABLE TRAY - Max. 36" x 4" (914mm x 102mm) open ladder type, steel, cable tray. A max. 3 trays per opening with a min 8" (203mm) separation between trays.
3. CABLES - Max. 30% cable fill of opening of:
 - (A) max. 1/C - 350 kcmil cable with polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. 7/C - No. 12 awg cable with PVC-nylon insulation and PVC jacket.
 - (C) max. 100 pr No. 24 awg cable with PVC insulation and jacket.
4. NELSON CMP COMPOUND (part # AA476) - Install CMP to fill the opening around the trays to the full depth of the wall, flush with the floor surface or flush with both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-4031**

Nelson Firestop

DWG NO. FS-0146 R3

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol. 2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

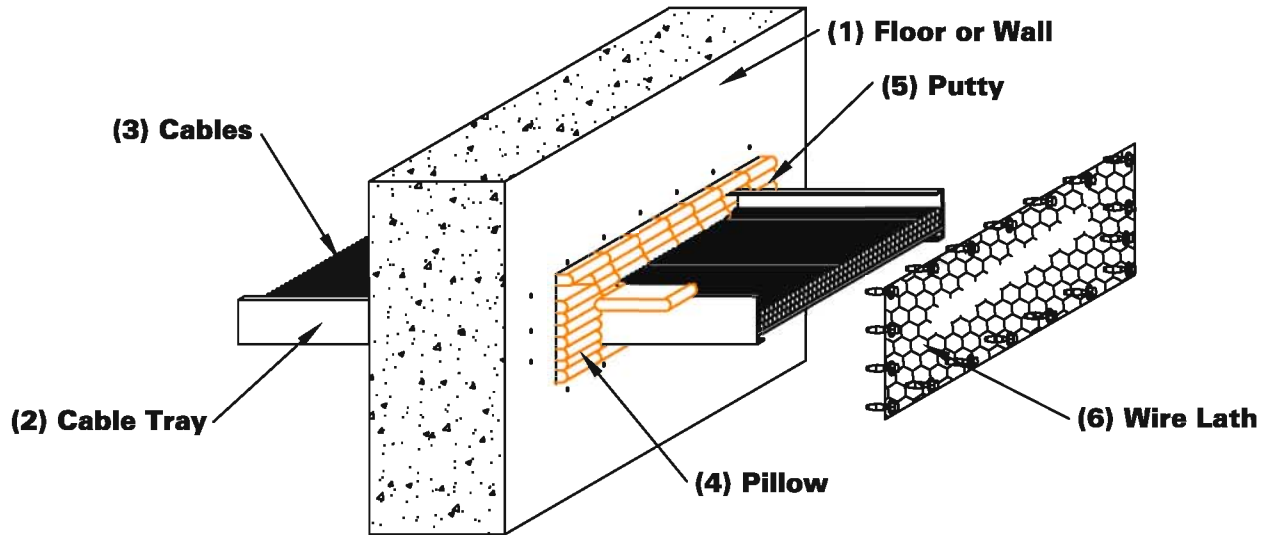
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL - Min. 4-1/2" (114mm) concrete floor or wall or CMU block wall. The max. area is 320 sq. in. (2065 sq. cm) with max. dimension of 40" (1016mm). The annular space is 0" (point of contact) to 2" (51mm).
2. CABLE TRAY - Max. 36" x 6" (914mm x 152mm) steel, open ladder type cable tray.
3. CABLES - Max. 40% cable fill of opening in any combination of:
 - (A) max. 72 fibers 62.5/125 fiber optic cable w/polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. 100pr #24 awg cable w/PVC insulation and jacket.
4. NELSON PLW PILLOW (part # AA478 or AA479) - Pillows to be installed horizontally or vertically within the opening in such a manner that the ends project a min. of 2-1/2" (64mm) beyond each surface of floor or wall. Pillows tightly packed into opening to fill the annular space between cables and periphery of opening and between cable tray and periphery of opening.
5. NELSON FSP PUTTY (part # AA445) - Where spacing does not permit installation of pillows between the cable tray and/or cables and the periphery of the opening, a min. 1-1/2" (38mm) thickness of putty applied at cable tray or cable/concrete interface on bottom surface of floor or both surfaces of wall. Putty applied to seal any voids between the cables, and the pillows and between the cable tray and the pillows on both sides of the floor or wall assembly.
6. WIRE LATH - Nominal 2" (51mm), 19awg. galv. steel wire lath, cut to fit the contour of the opening with a min. 2" (51mm) lap beyond the periphery of the opening. Wire lath secured to both surfaces of floor or wall assembly with 1/4" (6mm) diameter by 1-3/4" (44mm) long concrete anchors in conjunction with 1/4" (6mm) by 1-1/2" (38mm) diameter steel fender washers, spaced 6" OC.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-4032**

Nelson Firestop

DWG NO. FS-0147 R4

DATE: 07/18/06

BY: RL

MEA # 196-84-M Vol. 3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

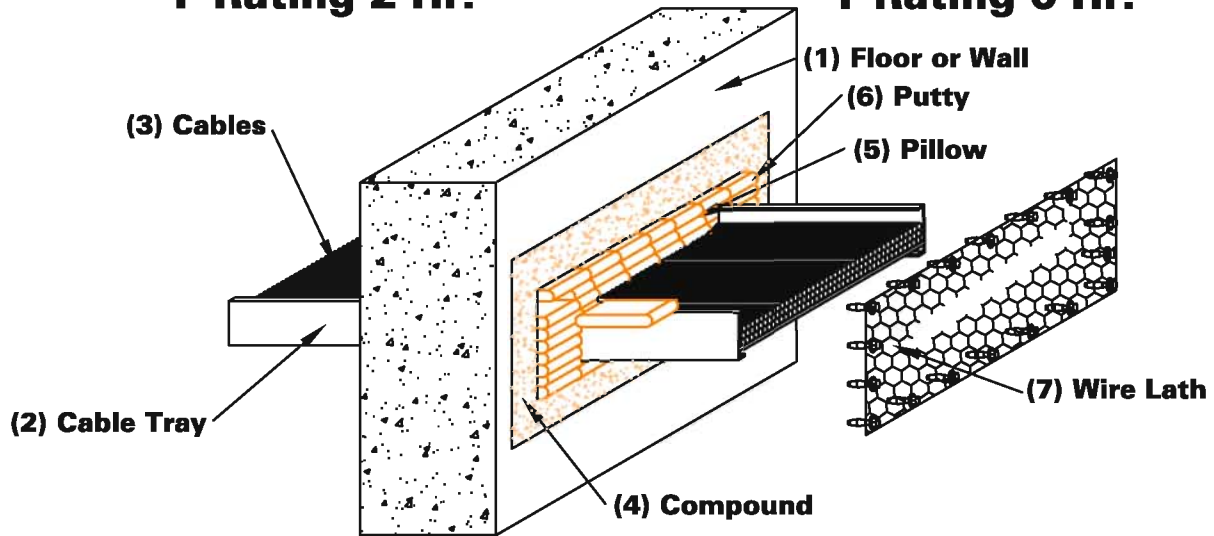
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL - Min. 4-1/2" (114mm) concrete floor or wall or CMU block wall. The max. size of the opening is 36" x 36" (914mm x 914mm). Annular space between cable tray and periphery of opening will be min. 6" to max. 24" (152mm to 610mm).
2. CABLE TRAY - Max. 24" x 4" (610mm x 102mm) steel, open ladder type cable tray. Annular space between cable tray sides and CMP opening is nominal 3" (76mm) and from back or front of tray to be 0" (point of contact) to 3" (76mm).
3. CABLES - Max. 30% cable fill of opening in any combination of:
 - (A) max. 1/C - 350 kcmil cable w/polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. 100pr #24 awg cable w/PVC insulation and jacket.
 - (C) max. 7/C #12 awg cable w/PVC nylon insulation and PVC jacket.
4. NELSON CMP COMPOUND (part # AA476) - Apply a min. 4 1/2" (114mm) depth of CMP to reduce the annular space around the cable tray. CMP to be flush with the top surface of the floor or both surfaces of the wall.
5. NELSON PLW PILLOW (part # AA478 or AA479) - Pillows to be installed tightly packed horizontally or vertically within the annular space in such a manner the ends project a min. of 2-1/2" (64mm) beyond each surface of floor or wall.
6. NELSON FSP PUTTY (part # AA445) - Where spacing does not permit installation of pillows between the cable tray and/or cables and the periphery of the opening, a min. 1-1/2" (38mm) thickness of putty applied at cable tray or cable/concrete interface on bottom surface of floor or both surfaces of wall. Putty applied to seal any voids between the cables, pillows and between the cable tray /pillows interface on both sides of the floor or wall assembly.
7. WIRE LATH - Nominal 2" (51mm), 19awg. galv. steel wire lath, cut to fit the contour of the opening with a min. 2" (51mm) lap beyond the periphery of the opening. Wire lath secured to both surfaces of floor or wall assembly with 1/4" (6mm) diameter by 1-3/4" (44mm) long concrete anchors in conjunction with 1/4" (6mm) by 1-1/2" (38mm) diameter steel fender washers, spaced 6" (152mm) OC.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-4033**

Nelson Firestop

DWG NO. FS-0148 R4

DATE: 07/18/06

BY: RL

MEA # 236-87-M Vol.2

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

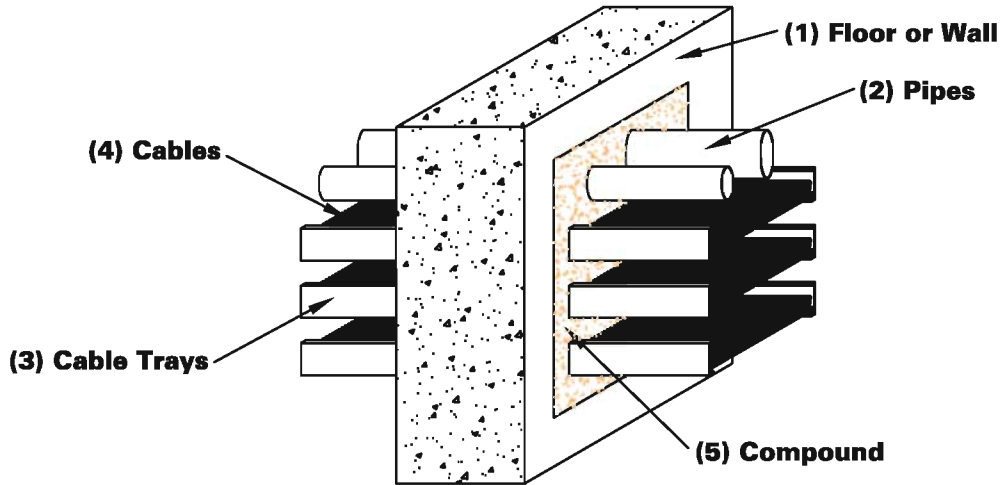
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. size of the opening is 40" X 48" (1016mm x 1219mm). The annular space range is 1" to 12" (25mm to 305mm).
2. METALLIC PIPE or CONDUITS - A max. of (2) penetrants to be installed within opening and annular space between them is 13" (330mm).
The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) Nom 10" (254mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Only one copper pipe or tubing may be larger than nominal 4" (102mm) diameter. Annular space between pipes and the periphery of the opening is 1" to 6-1/2" (25mm to 165mm). The annular space between the pipe and the cable trays is 4" to 12" (102mm to 305mm).
3. CABLE TRAY - Max. 36" (914mm) wide by 4" (102mm) deep open ladder type, steel cable tray. A max. of (3) trays may penetrate the opening with a min. 8" (203mm) separation between trays. Annular space is 1" to 4" (25mm to 102mm).
4. CABLES - Max. 30% cable fill of opening in any combination of:
 - (A) max. 1/C - 350 kcmil cable w/polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. 7/C - #12 awg cable w/PVC nylon insulation and PVC jacket.
 - (C) max. 100pr. #24 awg cable w/PVC insulation and jacket.
5. NELSON CMP COMPOUND (part # AA476) - Installed to fill the opening around the trays to a min. 4-1/2" (114mm) depth, flush with the top surface of the floor or both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-8049**

Nelson Firestop

DWG NO. FS-0149 R3

DATE: 07/18/06

BY: RL

MEA # 236-87--M Vol.2

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

Installer: _____
Address: _____

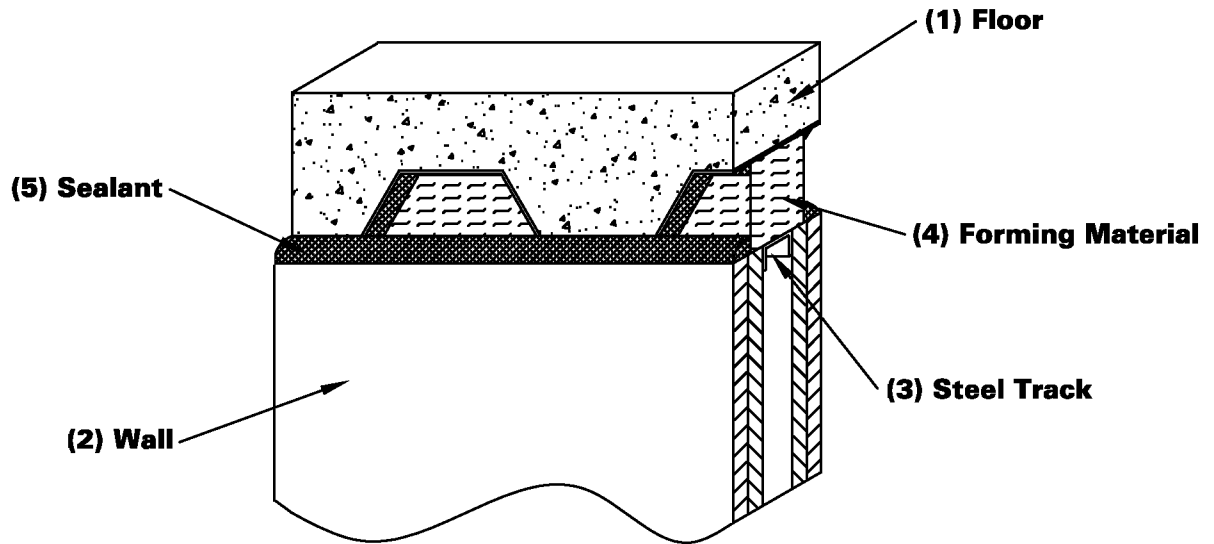
Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.

T Rating 1-1/2 Hr.

Nominal Joint Width - 5/8" (16mm)



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor poured over steel fluted decking.
2. WALL ASSEMBLY - As specified in the U300, U400 series designs per UL fire Resistance Directory. The max. joint width is 5/8" (16mm).
3. STEEL SLIP TRACK
4. FORMING MATERIAL -Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space, and recess 3/4" (19mm) from both sides of the wall.
5. NELSON CLK SEALANT - Apply a min. 3/4" (19mm) bead over the forming material along the interface of the top of the wall and the forming material. Apply a min. 3/4" (19mm) bead of CLK along the interface between the contour of the fluted deck and the forming material.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079

Nelson Firestop

**Warnock Hersey Test Report
WHI-495-PSV-1122**

DWG NO. FS-0166 R5

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

DATE: 11/28/06

BY: RL

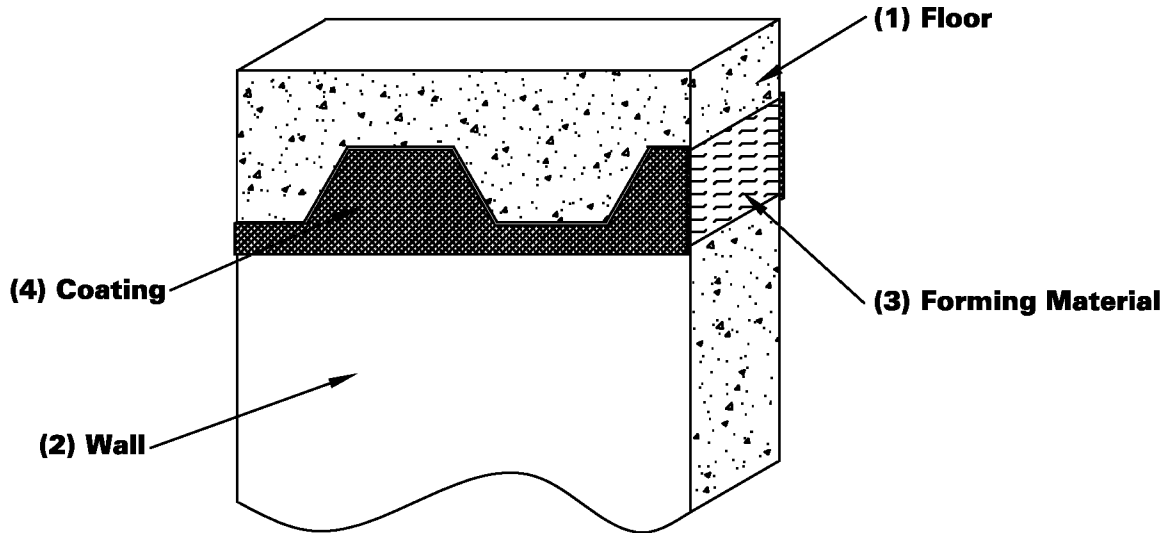
Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.

T Rating 2 Hr.

Nominal Joint Width - 1" (25mm)



1. FLOOR ASSEMBLY - Min. 1-1/2" (38mm) thick lightweight or normal weight concrete poured over a steel fluted deck.
2. WALL ASSEMBLY - Min. 8" (203mm) thick concrete wall or CMU block wall. The max. joint width is 1" (25mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening above the wall, to the full depth of the wall.
4. NELSON FSC COATING - Apply by Spray, trowel, or brush over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the wall and the deck a min. of 1/2" (13mm). Apply on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**Omega Point Test Report
15670-103058**

Nelson Firestop

DWG NO. FS-0168 R6

DATE: 11/28/06

BY: RL

MEA # 16-99-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

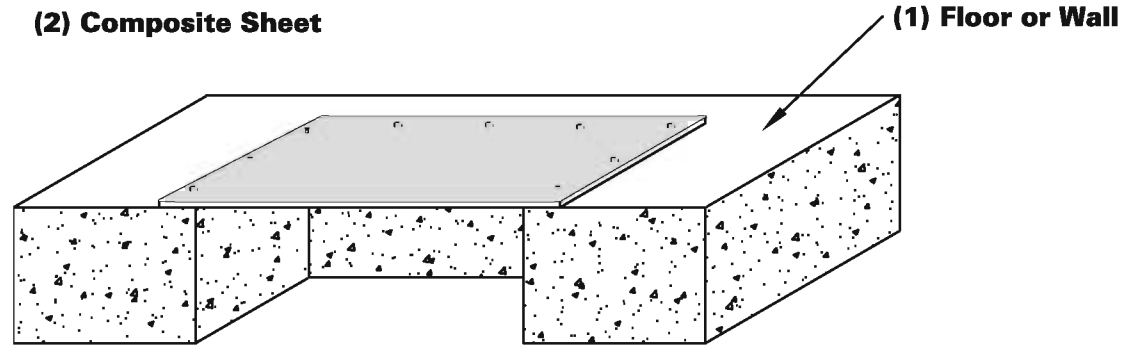
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NO PENETRATION

F Rating 2 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. The max. area of the opening is 126 sq. in. (813 sq. cm) with a max. dimension of 18" (457mm). Max. diameter of opening shall be 7" (178mm) within a HOLLOW-CORE floor.

2. NELSON CPS COMPOSITE SHEET - Apply to the top side of the floor or to both sides of the wall or HOLLOW-CORE floor, with the foil side facing the opening. Overlap the opening by a min. 2" (51mm) on all sides. Mount with 3/8" (10mm) diameter x min. 1-7/8" (48mm) steel masonry anchors spaced a max. of 5" (127mm) on center. When the floor is constructed of HOLLOW-CORE precast concrete units, composite sheet secured to both surfaces of floor with foil side facing the opening.

3. SEALANT (optional, not shown) - Apply CLK sealant around the perimeter of the CPS for added smoke seal protection.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-0049**

Nelson Firestop

DWG NO. FS-0169 R5

DATE: 07/18/06

BY: RL

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

Nelson Firestop

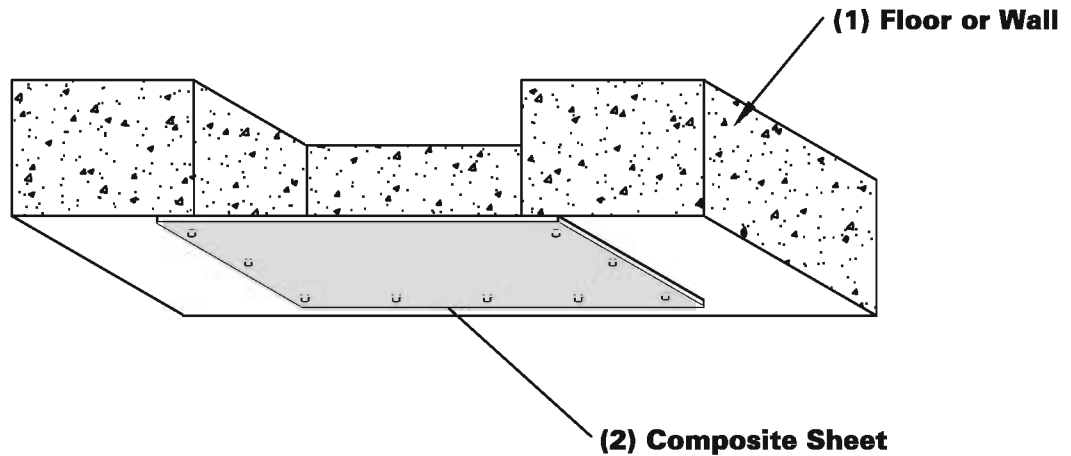
800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

CONCRETE FLOOR OR WALL NO PENETRATION

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. area of the opening is 127 sq. inches (819 sq. cm) with a max. dimension of 18" (457mm).
2. NELSON CPS COMPOSITE SHEET - Apply to the under side of the floor or to both sides of the wall with the foil side facing the opening. Overlap the opening by a min. of 3-1/2" (89mm) on all sides. Mount to the floor or wall with 1/4" (6mm) x min. 1-1/4" (32mm) long steel masonry anchors in conjunction with 1/4" (6mm) x 1-1/4" (32mm) diameter steel fender washers spaced a max. of 5" OC.
3. SEALANT (optional, not shown) - Apply Nelson CLK sealant around the perimeter of the composite sheet for added smoke seal protection.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-0050

Nelson Firestop

DWG NO. FS-0176 R4

DATE: 07/18/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

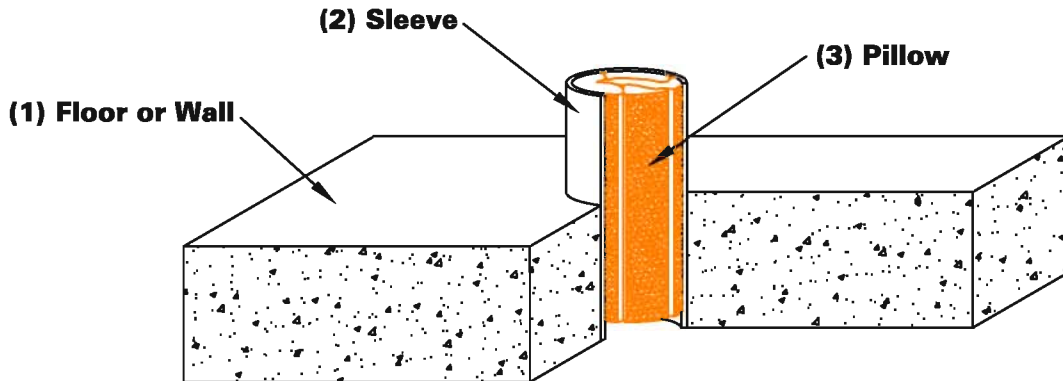
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL NO PENETRATION

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the opening is 6-5/8" (168mm).
2. METALLIC SLEEVE - Max. 6" (152mm) nominal diameter, Sch. 10 (or heavier) steel sleeve cast or grouted into the floor or wall. In floors, steel sleeve shall be flush with bottom surface of floor and extend a min. 6" (152mm) above top surface of floor. In walls, steel sleeve shall extend a min. 6" (152mm) beyond each surface of the wall.
3. NELSON PLW PILLOWS (part # AA478 or AA479) - Pillows tightly packed to completely fill the annulus within the steel sleeve. In floors, pillows shall be installed vertically (on edge), flush with both ends of the sleeve. In walls, pillows shall be installed horizontally (on edge) flush with both ends of the steel sleeve.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-0054

Nelson Firestop

DWG NO. FS-0177 R5

DATE: 07/19/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

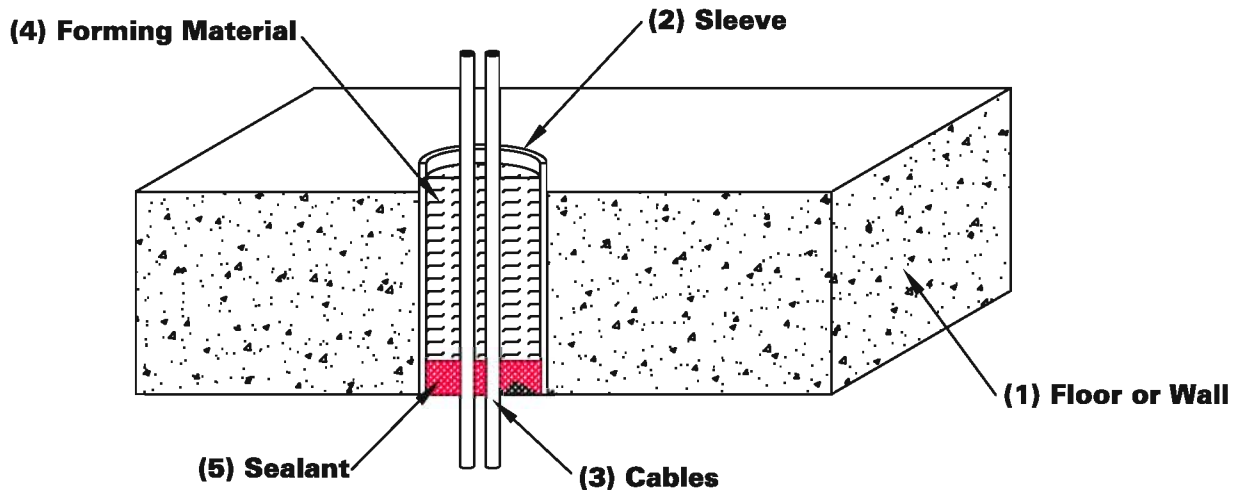
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL SLEEVED CABLES

F Rating 3 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 8" (203mm) thick lightweight or normal weight concrete floor or min. 8-7/8" (225mm) thick wall, or CMU block wall. Max. diameter of opening is 6" (152mm).
2. METALLIC SLEEVE - Max. nominal 6" (152mm) diameter Sch. 40 (or heavier) steel sleeve, cast or grouted into the floor, and extending 1" above the floor, flush with the bottom of the floor, and 1" (25mm) beyond both surfaces of the wall.
3. CABLES - Max. 15% cable fill of opening in any combination of:
 - (A) max. 3/C-18awg
 - (B) max. 1/C-3awg, or smaller cables with PVC jacketing.
 Min. 1/4" (6mm) separation between cables.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space to a min. 8" (203mm) depth and recess 7/16" (11mm) from the bottom surface of the floor or both surfaces of the wall.
5. NELSON CLK SEALANT - Apply CLK over the forming material to a min. 7/16" (11mm) depth, flush with the bottom surface of the floor or flush with both surfaces of the sleeve.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-BJ-3014

Nelson Firestop

DWG NO. FS-0192 R5

DATE: 07/19/06

BY: RL

MEA # 135-00-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

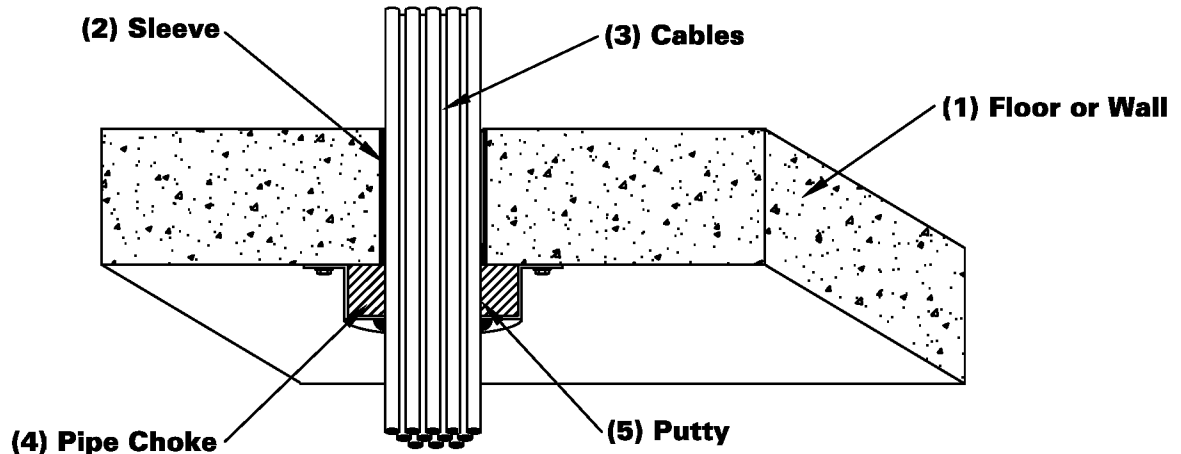
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor min. 5" (127mm) thick wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick UL Classified HOLLOW-CORE Precast Concrete units. Max. diameter of opening is 4" (102mm).
2. METALLIC SLEEVE (optional) - Fabricated from min. 30 gauge galvanized steel and having a min. 2" (51mm) lap along the longitudinal seam. The sleeve is flush with both surfaces of the floor or wall.
3. CABLES - Max. 70% cable fill of opening in any combination of:
 - (A) max. 750 kcmil or smaller cross linked polyethylene (XLPE) insulation and PVC jacketed.
 - (B) max. 100pr. 24 awg, or smaller, PVC jacketed.
 - (C) max. one length of 1/C -750 kcmil or smaller along with remainder cables may be max. 100 pr. 24 awg, or smaller, PVC jacketed.
4. NELSON PCS PIPECHOKE - Install the applicable sized pipechoke, in accordance with the size of the cable bundle, around the bundle on the underside of the floor or on both sides of the wall. Secure to the concrete surface by means of 1/4" (6mm) diameter by 1-3/4" (44mm) long concrete anchors in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers.
5. NELSON FSP PUTTY (part # AA445) - Apply a 3/4" (19mm) depth of FSP in the annular space around the cables, flush with the underside of the floor or with both surfaces of the wall, prior to installing the Pipechoke device. Apply an additional 1/2" (13mm) depth of FSP around the cable bundle where the cables enter the pipechoke device. Fill interstitially within the cable bundle to the max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3118**

Nelson Firestop

DWG NO. FS-0196 R4

DATE: 04/09/07

BY: RL

MEA # 196-84-M Vol. 3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

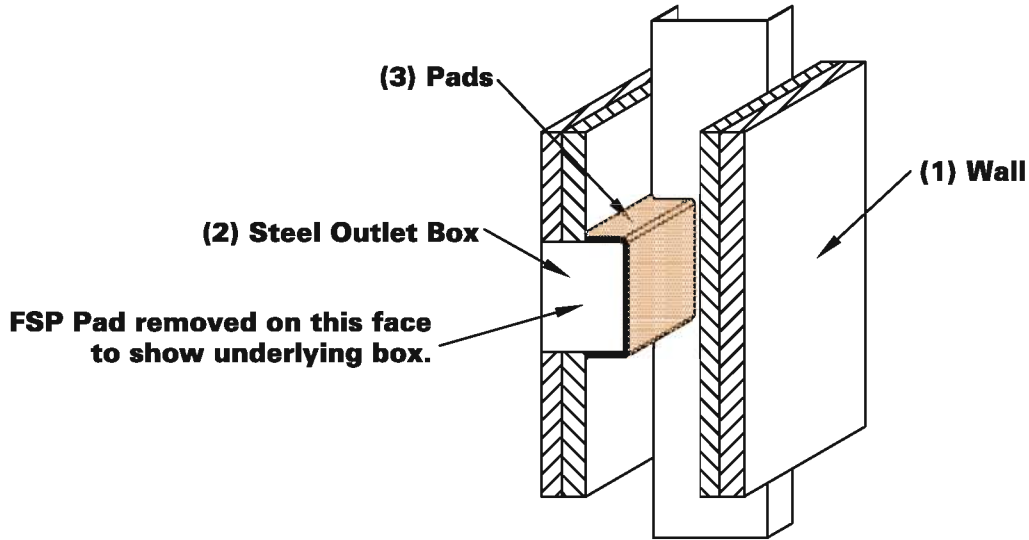
Installer: _____

Address: _____

Signature: _____

GYPSUM WALL STEEL OUTLET BOX

F Rating 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory.
2. STEEL OUTLET BOX - Max. 4" X 4" (102mm x 102mm) steel outlet box installed in accordance with NFPA 70 regulations. The box can be installed within the same stud cavity, provided they are not installed back-to-back.
3. NELSON FSP PUTTY PADS (part # AA452) - Min. 1/4" (6mm) thickness Putty pad. Putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and completely seal against the stud within the stud cavity. An additional 1/4" (6mm) thickness of putty to be formed around the connector securing the end of each electrical metallic tube or conduit to the box. When moldable putty pad outlet box protective material is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610mm) provided that the boxes are not installed back-to-back.

Tested in accordance with:

ASTM E-119

ANSI/UL 263



**Wall Openings Protective
Materials (CLIV)
UL File R10764**

Nelson Firestop

DWG NO. FS-0210 R4

DATE: 07/19/06

BY: RL

MEA # 196-84-M Vol. III

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

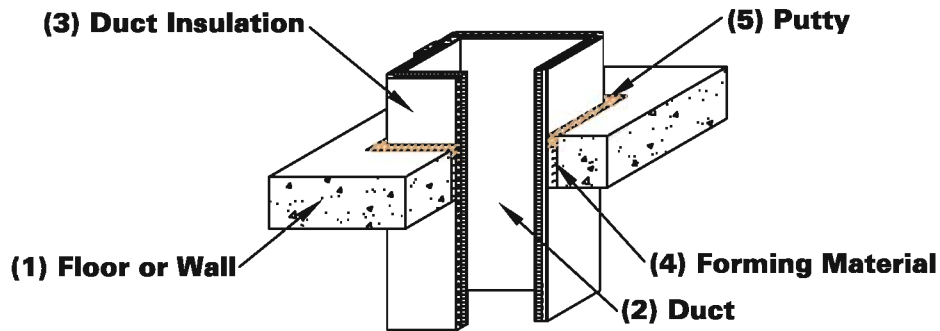
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL KITCHEN EXHAUST DUCT / AIR DUCT

F Rating 2 Hr.

T Rating 2 Hr.



1. CONCRETE FLOOR or WALL - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5-1/2" (140mm) thick concrete wall or CMU wall. The max. area of the opening is 1792 sq. in. (11561 sq. cm) with a max. dim. of 56" (1422mm). The nominal annular space between insulation and opening is 1" (25mm).
2. THROUGH PENETRANT - One insulated steel air duct or grease duct, rigidly supported on both sides of the floor or wall assy. The following types may be used:
 - (A) AIR DUCT - max. 24" x 48" (508mm x 1219mm), min. 20 ga. steel using (Thermal Ceramics Inc. Firemaster Duct Wrap or Firemaster Duct Wrap+), (Vesuvius USA Corp Pyroscat FP duct wrap or Pyroscat CSM Duct Wrap) or (ETS Schaefer Flameshield or FSB duct insulation). Wrap method to be in accordance with applicable blanket manufacturer instructions.
 - (B) GREASE DUCT - max. 12" x 36" (305mm x 914mm), min. 20 ga. steel using (Thermal Ceramics Inc. Firemaster Duct Wrap or Firemaster Duct Wrap+). Wrap in accordance with mfg. instructions.
 - (C) GREASE DUCT - max. 24" x 48" (508mm x 1219mm), min. 20 ga. steel using (Vesuvius USA Corp Pyroscat FP Duct Wrap or Pyroscat CSM Duct Wrap) or (ETS Schaefer Flameshield or FSB duct insulation). Wrap method to be in accordance with applicable blanket manufacturer instructions.
3. DUCT INSULATION - Nom 1-1/2" (38mm) tk. blanket, min. 6pcf applied in two layers and installed according with applicable manufactures instructions. (Thermal Ceramics Inc. Firemaster Duct Wrap or Firemaster Duct Wrap+), (Vesuvius USA Corp Pyroscat FP Duct Wrap or Pyroscat CSM Duct Wrap) or (ETS Schaefer Flameshield or FSB duct insulation).
4. FORMING MATERIAL - Tightly pack min. 3-1/2" (89mm) depth of loose fill (blanket material) fiber into the annular space. Recess 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
5. NELSON FSP PUTTY (part # AA445) - Pack a min. 1" (25mm) depth over the forming material, flush with the top surface of the floor or with both surfaces of the wall. Additionally, a min. 1/2" (13mm) crown is formed around the wrapped duct and lapping 1/2" (13mm) beyond the periphery of the opening.



Tested in accordance with:
ASTM E-814, E-119
ANSI/UL 1479, UL 1978

System No.'s
C-AJ-7018, C-AJ-7024
C-AJ-7025

Nelson Firestop

DWG NO. FS-0211R7

Project Name: _____
Address: _____

Installer: _____
Address: _____

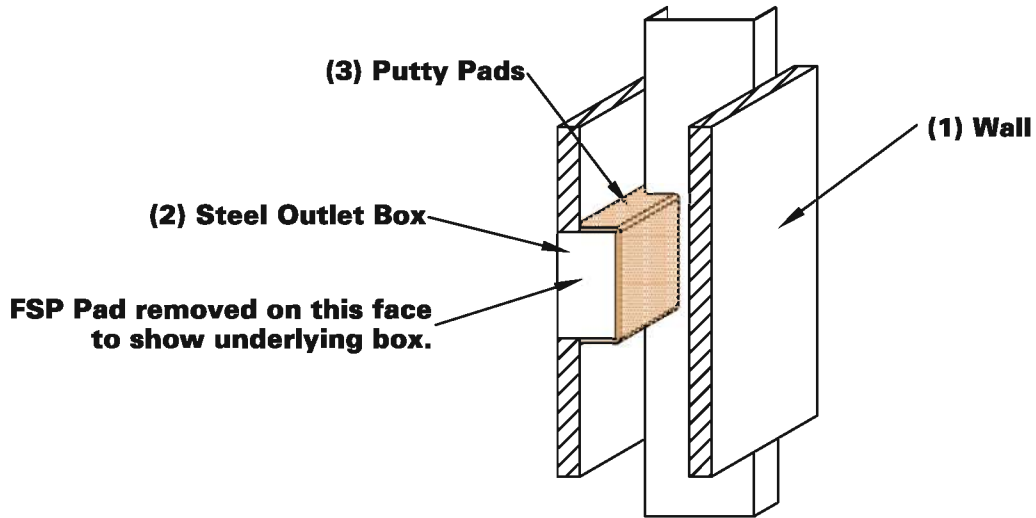
Signature: _____

DATE: 07/19/06
BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL ELECTRICAL OUTLET BOX

F Rating 1 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory.
2. METALLIC OUTLET BOX - Max. 4-11/16" X 4-11/16" (119mm x 119mm) steel outlet box installed in accordance with NFPA 70 regulations. The box can be installed within the same stud cavity, provided they are not installed back-to-back.
3. NELSON FSP PUTTY PADS (part # AA458) - Min. 1/8" (3mm) thickness Putty pad. Putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and completely seal against the stud within the stud cavity. An additional 1/8" (3mm) thickness of putty to be formed around the connector securing the end of each electrical metallic tube or conduit to the box. When moldable putty pad outlet box protective material is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610mm) provided that the boxes are not installed back-to-back.

Tested in accordance with:
ASTM E-119
ANSI/UL 263



**Wall Openings Protective
Materials (CLIV)
UL File R10764**

Nelson Firestop

DWG NO. FS-0216 R4

DATE: 07/19/06

BY: RL

MEA # 196-84-M Vol. III

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

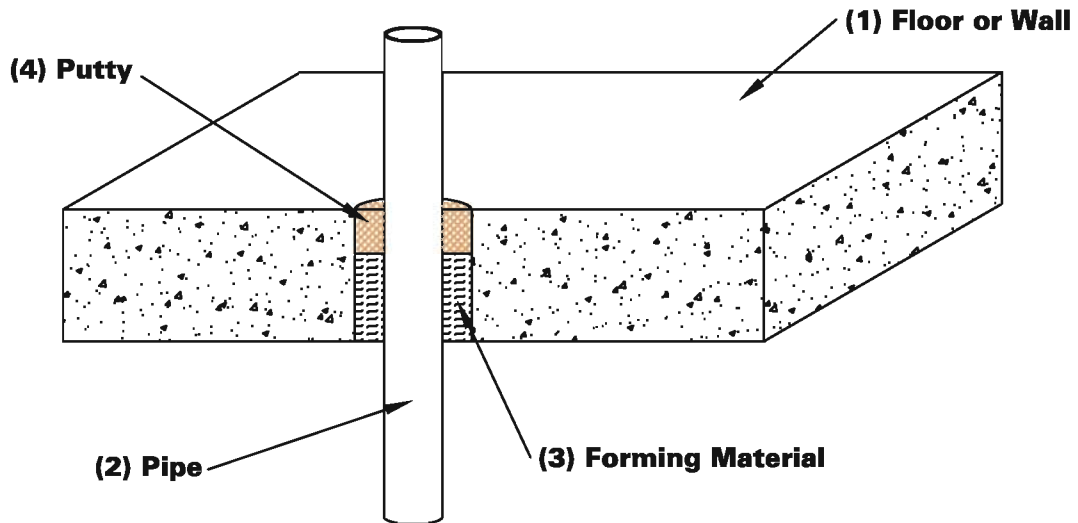
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5-1/2" (140mm) thick wall, or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 6" (152mm).
2. METALLIC PIPE or CONDUIT - The following types of pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 The max. annular space is 3/4" (19mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-1/2" (89mm) depth, and recess 1" (25mm) from the top surface of the floor or from both wall or HOLLOW-CORE floor surfaces.
4. NELSON FSP PUTTY (part # AA445) - Apply over the forming material to a min. 1" (25mm) depth, flush with the top surface of the floor or with both surfaces of the wall or HOLLOW-CORE floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1197**

Nelson Firestop

DWG NO. FS-0258 R3

DATE: 07/19/06

BY: RL

MEA # 196-84-M Vol.3

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

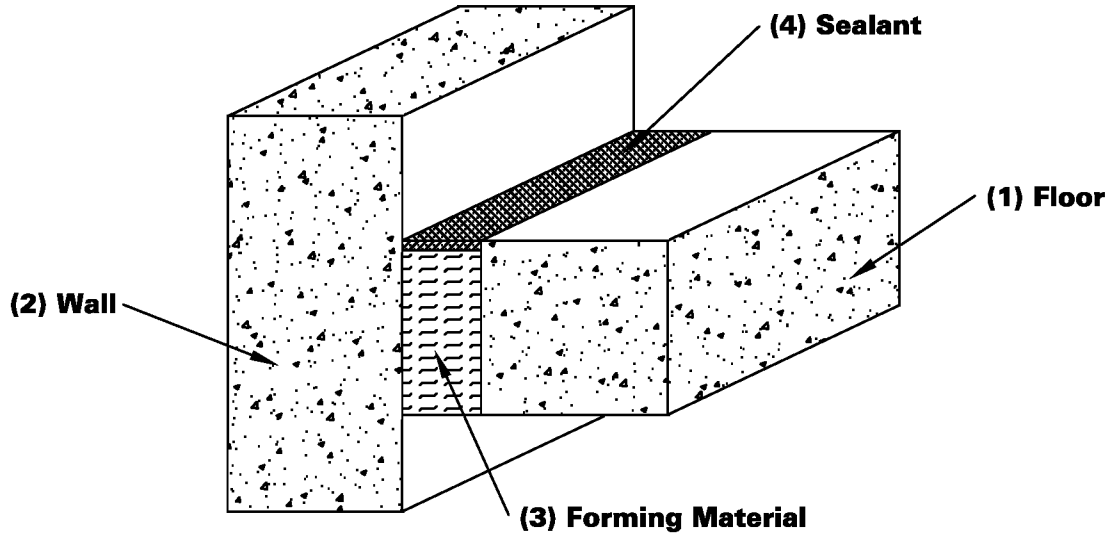
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 2 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II & III Movement - 14% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick, lightweight or normal weight concrete wall or CMU wall. The max. joint width at the time of installation is 3-1/2" (89mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 25% in the nominal joint width and flush with the top surface of the concrete floor.
4. NELSON CLK SEALANT - Apply CLK over the forming material to a min. 1/4" (6mm) depth, flush with the top surface of the floor.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FW-D-1034

Nelson Firestop

DWG NO. FS-0303 R2

DATE: 11/28/06

BY: RL

Project Name: _____
Address: _____

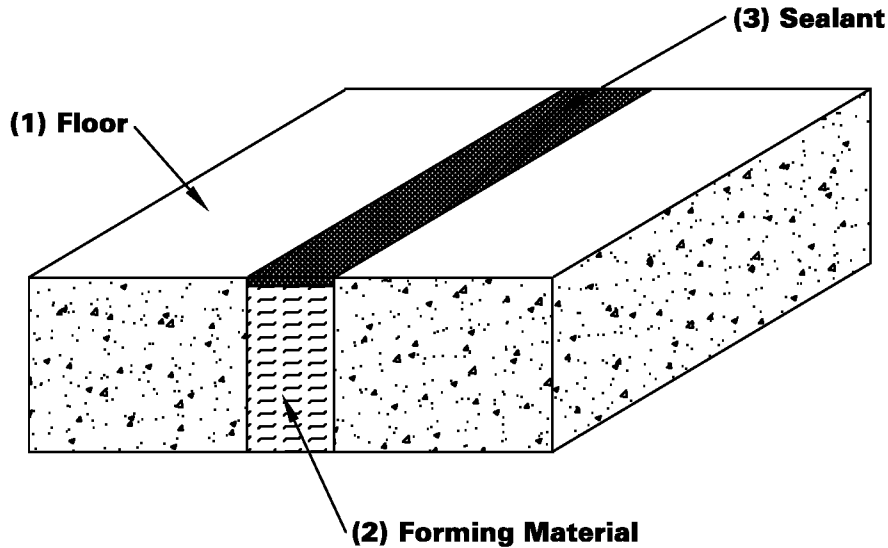
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 2 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II & III Movement - 14% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 3-1/2" (89mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 25% in the nominal joint width and flush with the top surface of the floor.
3. NELSON CLK SEALANT - Apply CLK over the forming material to a min. 1/4" (6mm) depth, flush with the top surface of the floor.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-1037

Nelson Firestop

DWG NO. FS-0304 R2

DATE: 11/28/06

BY: RL

Project Name: _____
Address: _____

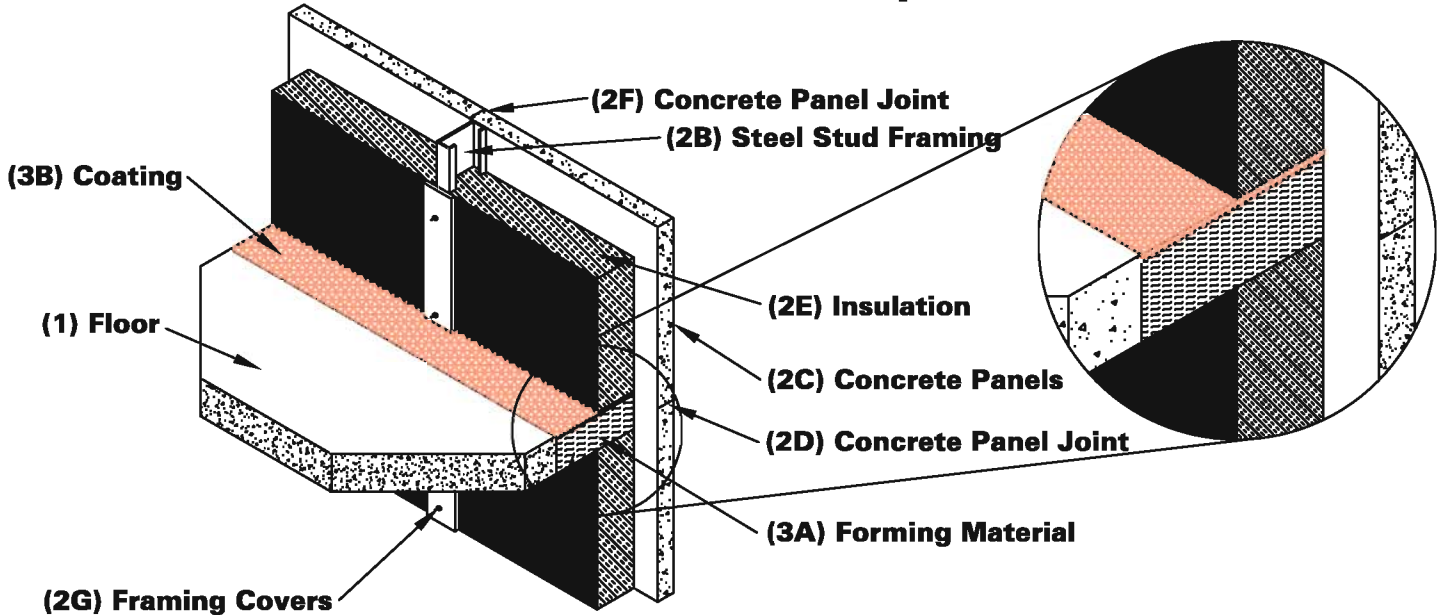
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM CONCRETE PANEL CURTAIN WALL

F Rating 2-1/2 Hr. T Rating 1 Hr.
L Rating <1 SCFM
Movement - 16.7% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Max spacing to be 60" (1524mm) o.c. and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Concrete Panels - Concrete panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Panels shall not be less than 2-1/2" (64mm) thick, 12" (305mm) high or 12" (305mm) long.
 - (D) Impaling Pins (not shown) - When required by insulation manufacturer, use with insulation. Pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 235 P**

DWG NO. FS-0310 R2
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (E) Curtain Wall Insulation (optional) - Perimeter joint treatment shall be installed before curtain wall insulation. Insulation material designed and installed according to the curtain wall system manufacturer's guidelines for steel framing. Insulation shall be installed flush against the top and bottom structures of the perimeter joint protection without deforming it.
- (F) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.
- (G) Framing Covers - Framing covers used over the mullions and transoms are optional. Framing covers shall be located, sized and installed according to the curtain wall system manufacturer's guidelines. Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment without deforming it.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max. 24" (610mm) centers.
- (E) Support Angle (not shown) - Horizontally install a min. 1-1/2" x 1-1/2" (38mm x 38mm) 24 GA steel angle mechanically fastened to the stud framing at the mid point location of the forming material.



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 235 P**

Nelson Firestop

DWG NO. FS-0310 R2
Page 2 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

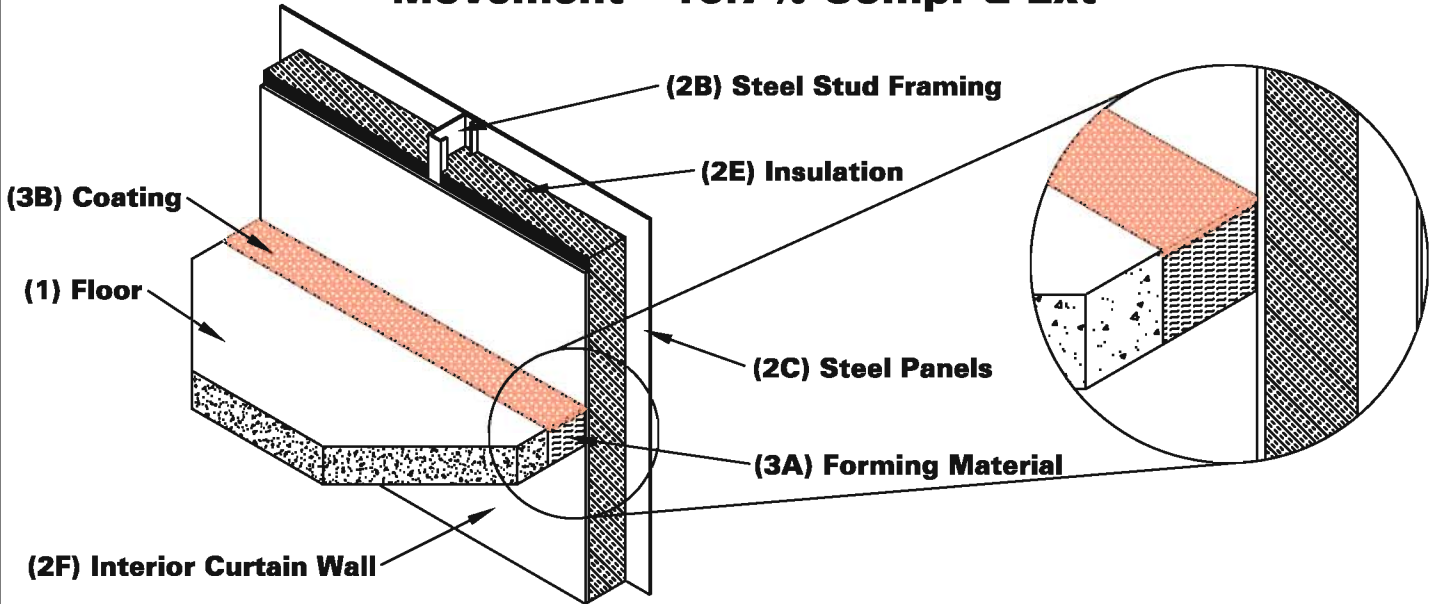
Installer: _____

Address: _____

Signature: _____

PERIMETER FIRE BARRIER SYSTEM STEEL PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-1/2 Hr.
L Rating <1 SCFM
Movement - 16.7% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Max. spacing to be 48" (1219mm) and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Steel Panels - Steel panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 20 GA sheet steel panel with max. dimensions of 48 in. (1219mm) by 144 in (3658mm).
 - (D) Impaling Pins (not shown) - When insulation is used, use impaling pins when required by manufacturer's instructions. The pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.

Tested in accordance with:
ASTM E-2307, E-1399



Omega Point Design No.
CEJ 236 P

Nelson Firestop

DWG NO. FS-0311 R2
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (E) Curtain Wall Insulation (optional) - When curtain wall insulation is used, the perimeter joint treatment must be installed before the insulation. Insulation may be butted to top and bottom of perimeter joint treatment but not deform the perimeter joint treatment. Either mineral wool or fiberglass batt insulation may be used.
- (F) Interior Curtain Wall Surface - Framing covered with one layer of 5/8 in. thick, Type X gypsum wallboard on interior face. The face layer of gypsum wallboard fastened to steel studs with min. #6 x 1-1/8 in (29mm) long bugle-head phillips drywall screws spaced 12 in. o.c.. Joint tape and compound to be applied to be applied to cover joints and screw heads.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional, but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max 24" (610mm) centers.
- (E) Support Angles (not shown) - Horizontally install a min. 1-1/2" x 1-1/2" (38mm x 38mm) 24 GA steel angle mechanically fastened to the stud framing at the mid point location of the forming material.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 236 P**

DWG NO. FS-0311 R2
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

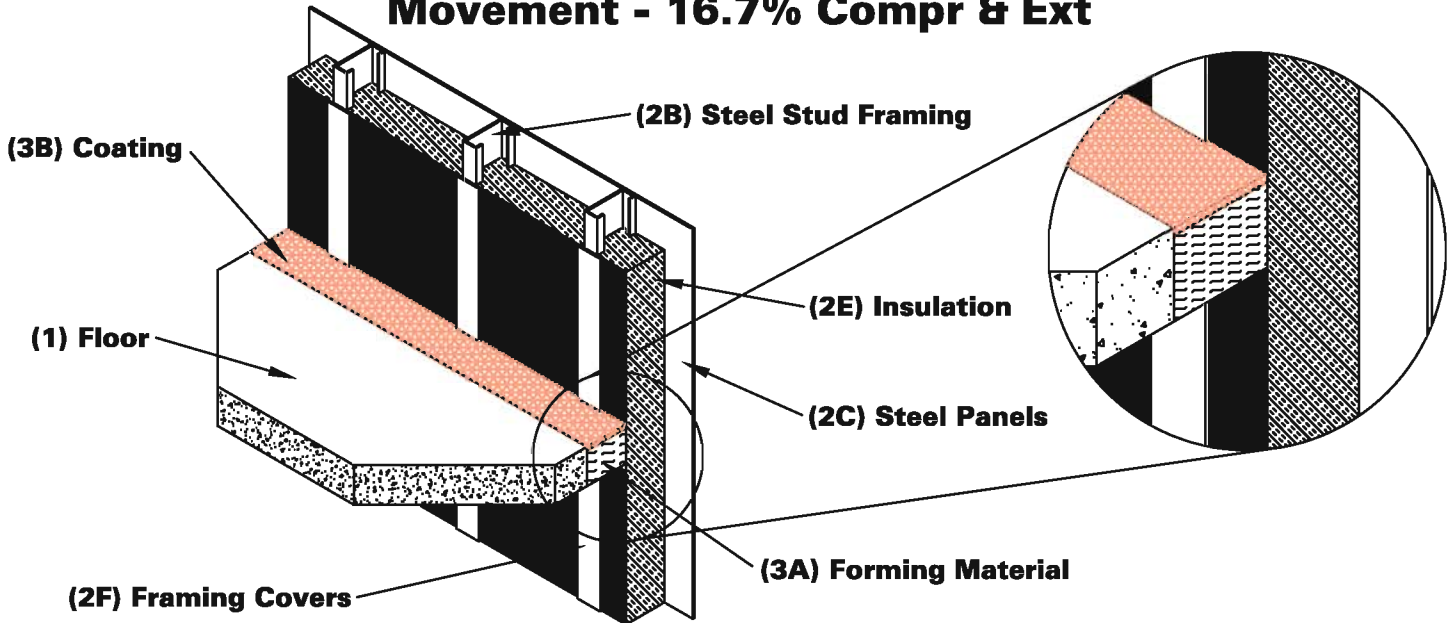
BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM STEEL PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 3/4 Hr.
L Rating <1 SCFM
Movement - 16.7% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Max. spacing to be 48" (1219mm) and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Steel Panels - Steel panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 20 GA sheet steel panel with max. dimensions of 48 in. (1219mm) by 144 in (3658mm).
 - (D) Impaling Pins (not shown) - When insulation is used, use impaling pins when required by manufacturer's instructions. The pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 237 P**

Nelson Firestop

DWG NO. FS-0312 R2
Page 1 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

- (E) Curtain Wall Insulation - Use a nom 4" (102mm) 4pcf (64 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim which is exposed to the room interior. In lieu of filling the full depth of the stud cavity with 4pcf (64 kg /cubic meter) mineral wool, the use of nom 2" (51mm) 8pcf (96 kg/cubic meter) mineral wool is allowed. Install the batts flush with the interior face of the curtain wall framing. Install the batts flush with the interior face of the curtain wall framing. Install the min. 24" (610mm) wide batts without vertical seams. All meeting edges of insulation are sealed with nom 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation.
- (F) Framing Covers - Strips made of min. 1" (25mm) thick by 4" (102mm) wide, 8pcf, mineral wool batt insulation faced on one side with aluminum foil scrim, which is exposed to the room interior. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced spaced at least 12" (305mm) o.c. and attached in accord with (2D). Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional, but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max 24" (610mm) centers.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

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CEJ 237 P**

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BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
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Project Name: _____

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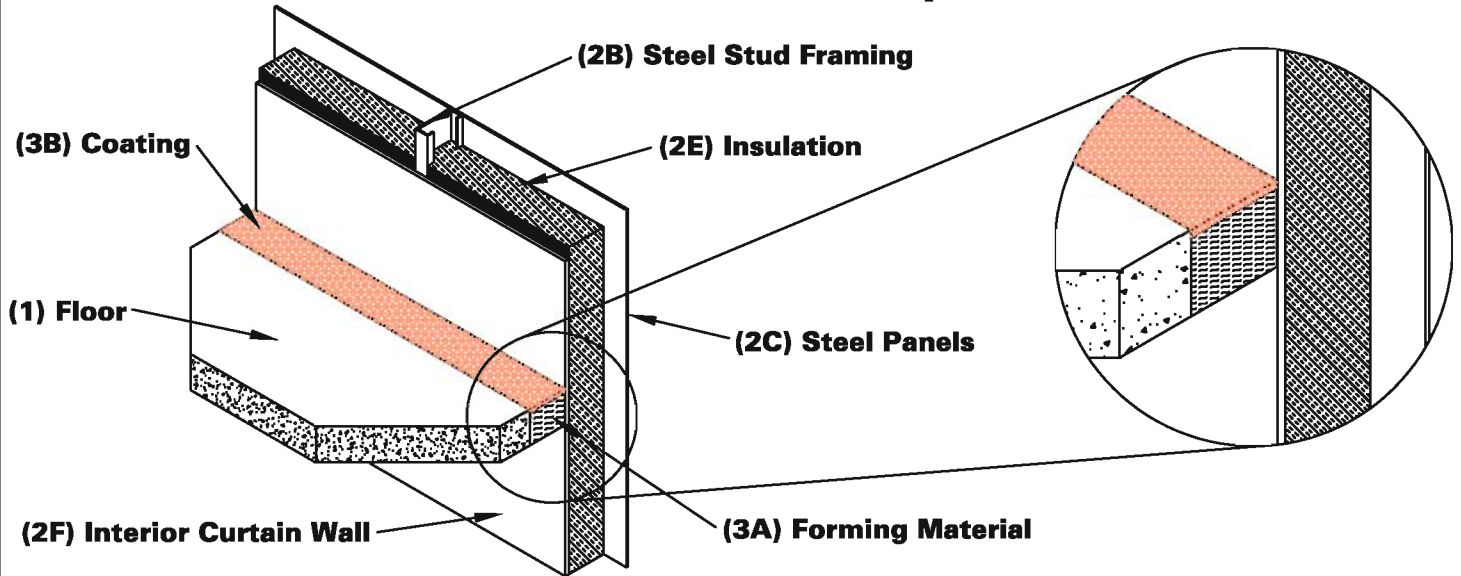
Installer: _____

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Signature: _____

PERIMETER FIRE BARRIER SYSTEM STEEL PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-3/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Max. spacing to be 48" (1219mm) and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Steel Panels - Steel panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 20 GA sheet steel panel with max. dimensions of 48 in. (1219mm) by 144 in. (3658mm).
 - (D) Impaling Pins (not shown) - When insulation is used, use impaling pins when required by manufacturer's instructions. The pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.

Tested in accordance with:
ASTM E-2307, E-1399



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CEJ 253 P**

Nelson Firestop

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BY: RL

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Nelson Firestop

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(E) Curtain Wall Insulation (optional) - When curtain wall insulation is used, the perimeter joint treatment must be installed before the insulation. Insulation may be butted to top and bottom of perimeter joint treatment but not deform the perimeter joint treatment. Either mineral wool or fiberglass batt insulation may be used.

(F) Interior Curtain Wall Surface - Framing covered with one layer of 5/8 in. thick, Type X gypsum wallboard on interior face. The face layer of gypsum wallboard fastened to steel studs with min. #6 x 1-1/8 in. (29mm) long bugle-head phillips drywall screws spaced 12 in. (305mm) o.c.. Joint tape and compound to be applied to cover joints and screw heads.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

(A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.

(B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).

(C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.

(D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional, but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max 24" (610mm) centers.



Tested in accordance with:
ASTM E-2307, E-1399

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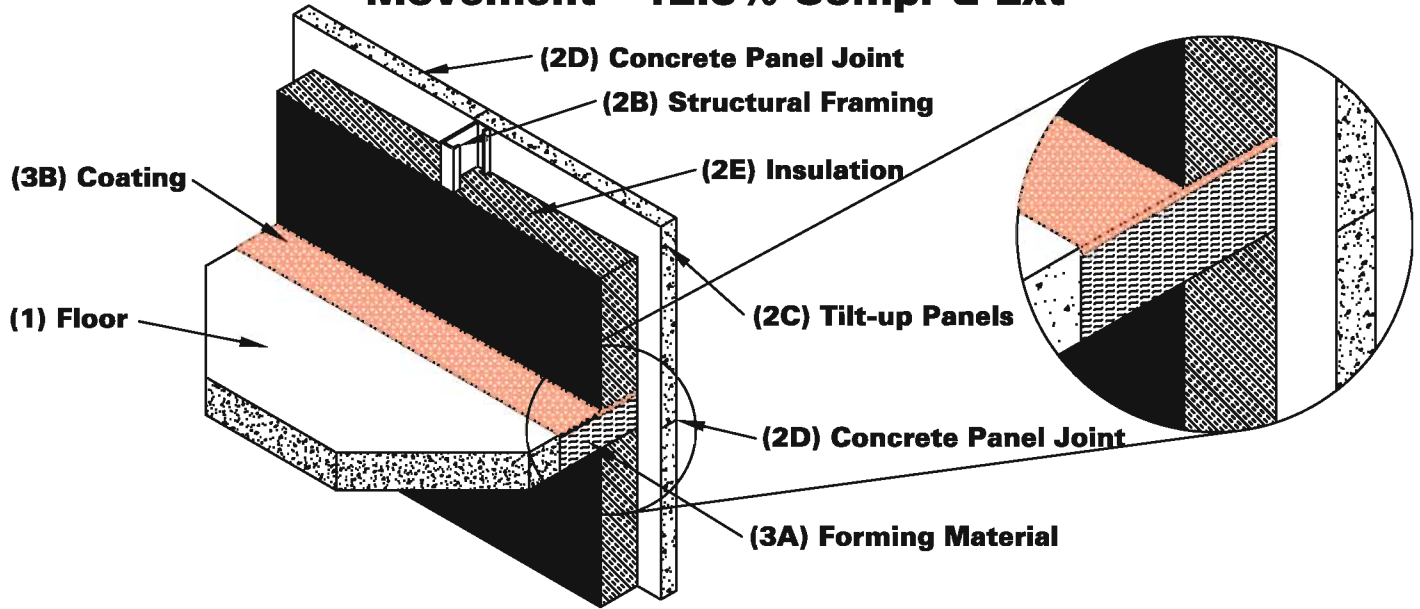
Project Name: _____
Address: _____

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Address: _____

Signature: _____

PERIMETER FIRE BARRIER SYSTEM TILT UP CONCRETE CURTAIN WALL

F Rating 2 Hr. T Rating 1-3/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Structural Framing - Structural framing members shall be according to the curtain wall system manufacturer's requirements. Aluminum structural framing must be completely covered by concrete panels.
 - (C) Tilt-Up Panels - Tilt-up concrete panels shall be installed to structural framing according to the curtain wall system manufacturer's guidelines. Panels shall not be less than 1-1/2" (38mm) thick.
 - (D) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.



Tested in accordance with:
 ASTM E-2307, E-1399

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 CEJ 254 P**

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(E) Curtain Wall Insulation (optional) - Perimeter joint treatment must be installed before curtain wall insulation. Insulation may be butted to top and bottom of perimeter joint treatment but not deform the perimeter joint treatment. Either mineral wool or fiberglass batt insulation may be used.

(F) Impaling Pins (not shown) - When insulation is used, use impaling pins when required by manufacturer's instructions. Pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

(A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.

(B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).

(C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.

(D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended or installations subject to vertical shear movement. Z-clips are to be installed on max. 24" (610mm) centers.



Tested in accordance with:
ASTM E-2307, E-1399

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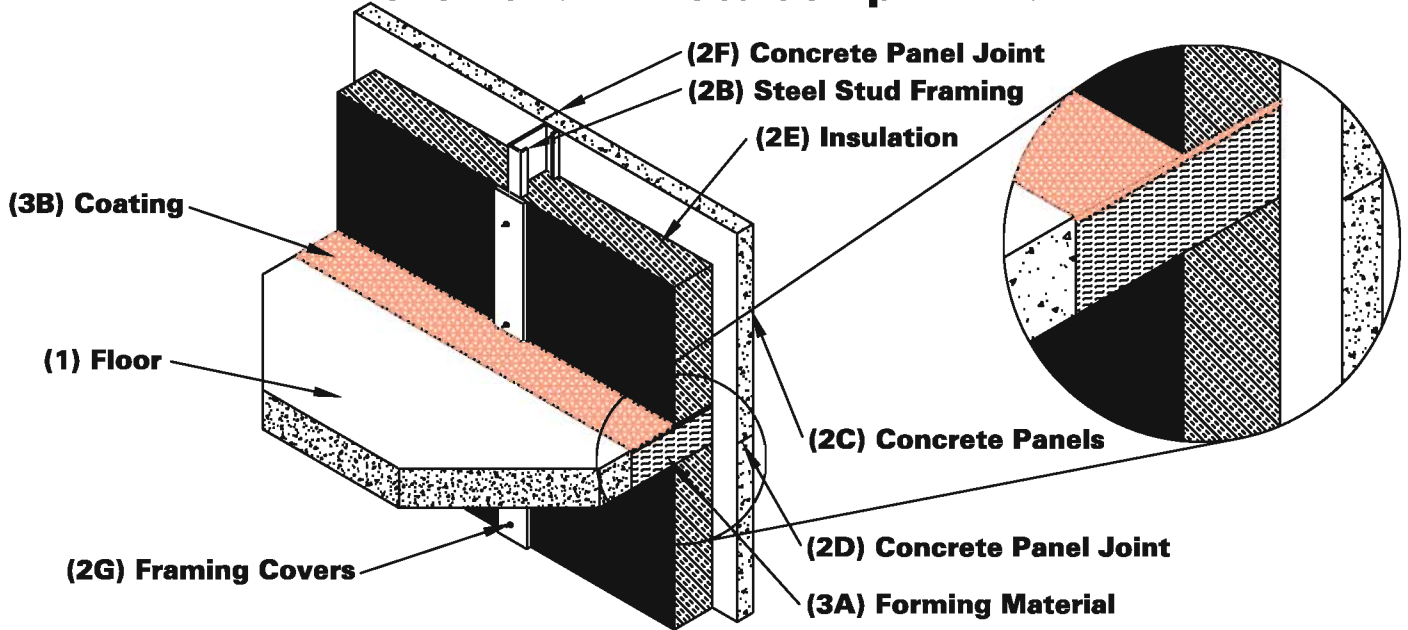
Installer: _____

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PERIMETER FIRE BARRIER SYSTEM CONCRETE PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-3/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Max spacing to be 60" (1524mm) o.c. and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Concrete Panels - Concrete panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Panels shall not be less than 1-1/2" (38mm) thick, 12" (305mm) high or 12" (305mm) long.
 - (D) Impaling Pins (not shown) - When required by insulation manufacturer, use with insulation. Pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 255 P**

Nelson Firestop

DWG NO. FS-0315 R2
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- (E) Curtain Wall Insulation (optional) - Perimeter joint treatment shall be installed before curtain wall insulation. Insulation material designed and installed according to the curtain wall system manufacturer's guidelines for steel framing. Insulation shall be installed flush against the top and bottom structures of the perimeter joint protection without deforming it.
- (F) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.
- (G) Framing Covers - Framing covers used over the mullions and transoms are optional. Framing covers shall be located, sized and installed according to the curtain wall system manufacturer's guidelines. Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment without deforming it.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max. 24" (610mm) centers.



Tested in accordance with:
ASTM E-2307, E-1399

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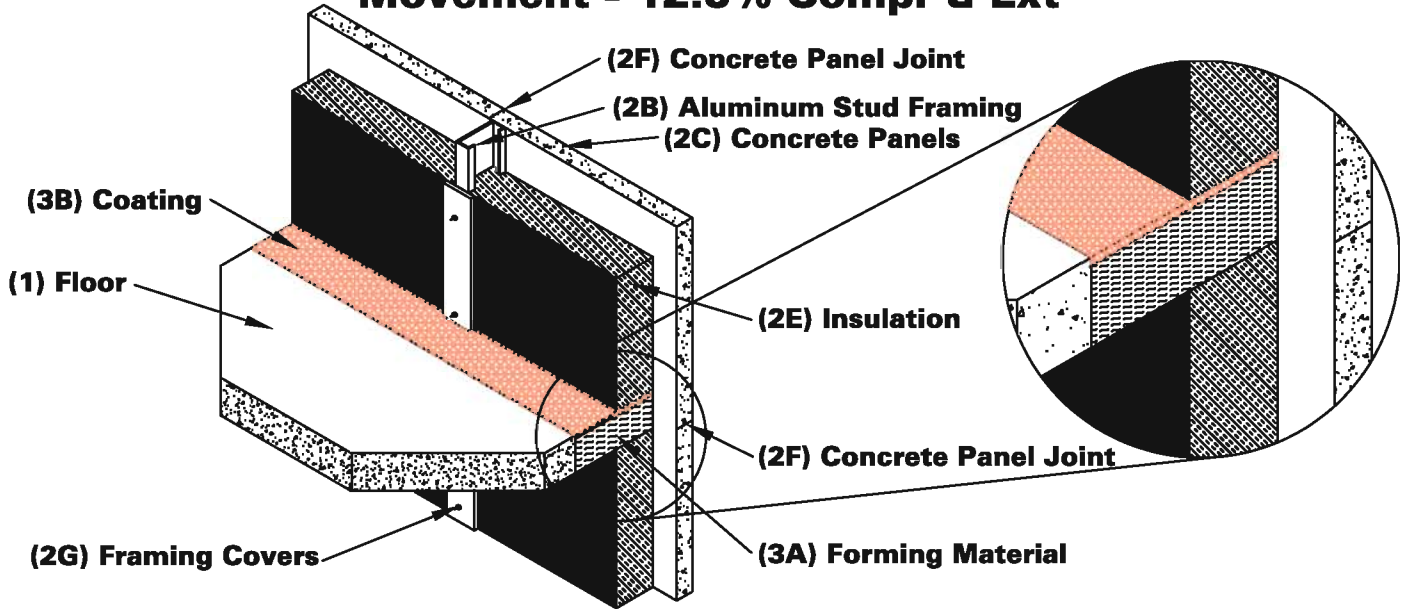
Project Name: _____
Address: _____

Installer: _____
Address: _____

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PERIMETER FIRE BARRIER SYSTEM CONCRETE PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-3/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Compr & Ext



1. CONCRETE FLOOR ASSEMBLY - Min. 4 1/2" (114mm) thick or normal weight concrete at the joint face. The perimeter joint shall not exceed an 8" (203mm) nominal joint width.
2. CURTAIN WALL ASSEMBLY - The curtain wall shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10' (3048mm).
 - (B) Aluminum Stud Framing - Vertical framing members shall be min. 2-1/2" by 4" (64mm x 102mm) deep, 0.100" (3mm) thick rectangular aluminum tubing studs. Max spacing to be 60" (1524mm) o.c. and to be installed in accordance with curtain wall manufacturer's instructions.
 - (C) Concrete Panels - Concrete panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Panels shall not be less than 1-1/2" (38mm) thick, 12" (305mm) high or 12" (305mm) long.
 - (D) Impaling Pins (not shown) - When used with insulation and framing covers, the pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines. Pins shall be spaced a max. of 12" (305mm) o.c. and installed around the periphery (min.) so that the interior face of the curtain wall insulation is flush with the interior face of the framing.



Tested in accordance with:
ASTM E-2307, E-1399

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CEJ 256 P

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- (E) Curtain Wall Insulation - Nom 4" (102mm) thick 4 pcf (64 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim which is exposed to the room interior, installed the full depth of the stud cavity. Batts are fitted tightly between vertical framing members secured with clips or impaling pins or friction fit with length 1/4" (6mm) longer.
- (F) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.
- (G) Framing Covers - Strips made of 1" (25mm) thick by 4" (102mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max. 24" (610mm) centers.
- (E) Support Angle (not shown) - Horizontally install a min. 1-1/2" x 1-1/2" (38mm x 38mm) 24 GA steel angle mechanically fastened to the stud framing at the mid point location of the forming material. Required when using 2" (51mm) x 8 pcf (128 kg/cm) mineral wool curtain wall insulation.



Tested in accordance with:
ASTM E-2307, E-1399

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- (D) Impaling Pins (not shown) - When used with insulation and framing covers, the aluminum pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines. Pins shall be spaced a max. of 12" (305mm) o.c. and installed around the periphery (min.) so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
- (E) Curtain Wall Insulation - Nom 4" (102mm) thick 4 pcf (64 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim which is exposed to the room interior, installed the full depth of the stud cavity. Batts are fitted tightly between vertical framing members secured with clips or impaling pins.
- (F) Framing Covers - Strips made of 1" (25mm) thick by 4" (102mm) wide, 8pcf (96kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z-shaped clips) are optional, but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max 24" (610mm) centers. Extended into forming material no more than 4" (102mm) from curtain wall surface.
- (E) Support Angle (not shown) - Horizontally install a min 1-1/2" x 1-1/2" (38mm x 38mm) 16 GA steel angle mechanically fastened to each mullion at the mid point location of the forming material. Required when using 2" (51mm) x 8 pcf (96 kg/cubic meter) mineral wool curtain wall insulation.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

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CEJ 257 P**

DWG NO. FS-0317 R2
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- (E) Interior Curtain Wall Surface - Framing covered with one layer of 5/8" (16mm) thick, Type X gypsum wallboard on interior face. The face layer of gypsum wallboard fastened to steel studs with min. #6 x 1-7/8" (48mm) long Type S drywall screws spaced 8" (203mm) o.c. on the periphery and 12" (305mm) o.c. in the field.. Joint tape and compound to be applied to cover joints and screw heads.
- (F) Exterior Curtain Wall Surface - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, a base coat, a float coat, a reinforcing mesh, and a finish coat. The EPS foam boards measure 24" x 48" x 4" (610mm x 1219mm x 102mm) thick with a nominal density of 1pcf (16 kg/cubic meter).

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 4" (102mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (not shown) (optional to FSC3) (part # AA552) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Z-clips are to be installed on max 24" (610mm) centers.



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 258 P**

Nelson Firestop

DWG NO. FS-0318 R2
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Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

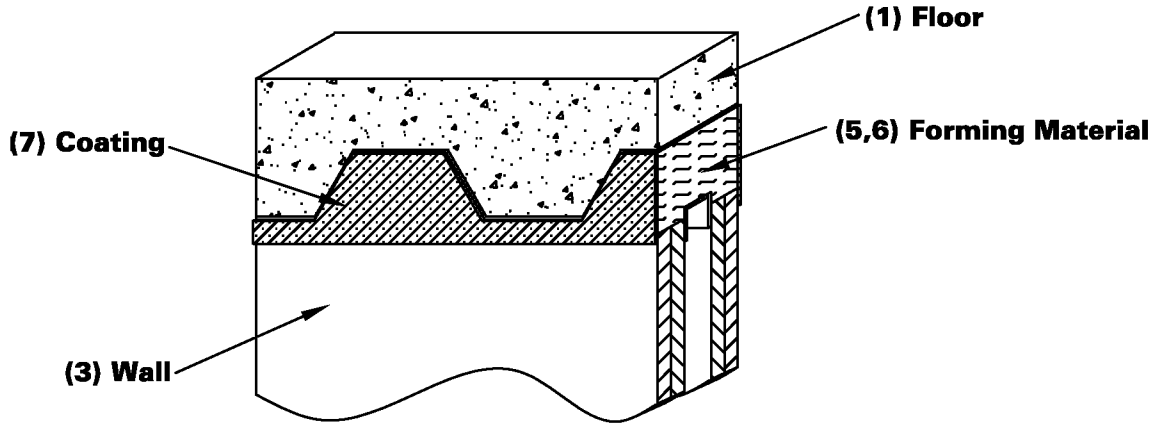
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MEA # 127-04-M Vol. II

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JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext**



1. FLOOR ASSEMBLY - Min. 3-1/2" (89mm) thick light weight or normal weight concrete poured over fluted steel decking.
2. SPRAY-APPLIED FIRE PROOFING (optional) (not shown) - Min. 15 pcf (240 kg/cubic meter) applied to the bottom of the steel floor and form unit, with a thickness equal to obtain a 1 or 2 hour fire resistance.
3. WALL ASSEMBLY - Non-load bearing design rated for a min. of 1 or 2 hr. fire resistance. The max separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Ceiling Runner is attached to bottom of the flutes.
4. STEEL STUDS (not shown) - Min. 2-1/2" (64mm) steel studs with max 24" (610mm) o.c. spacing.
5. FORMING MATERIAL (flutes) - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation into the flute. The forming material shall be compressed 33% in the nominal flute width. (Option) - The flutes may be packed full and leveled even with bottom of flutes and finished flush with wall using the spray-applied fire proofing material.
6. FORMING MATERIAL (joint) - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation into the joint. The forming material shall be compressed 50% in the nominal joint width.
7. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material in the joint. Apply a min. 1/8" (3mm) thick wet applied coating and overlap the material a min. 1" (25mm) onto the adjacent wall and bottom of the concrete floor or over the spray-applied fire proofing when used.



Tested in accordance with:

ASTM E-1966
ANSI/UL 2079

Nelson Firestop

**Omega Point Design No.
CEJ 249 H, CEJ 250 H**

DWG NO. FS-0319 R3

Project Name: _____
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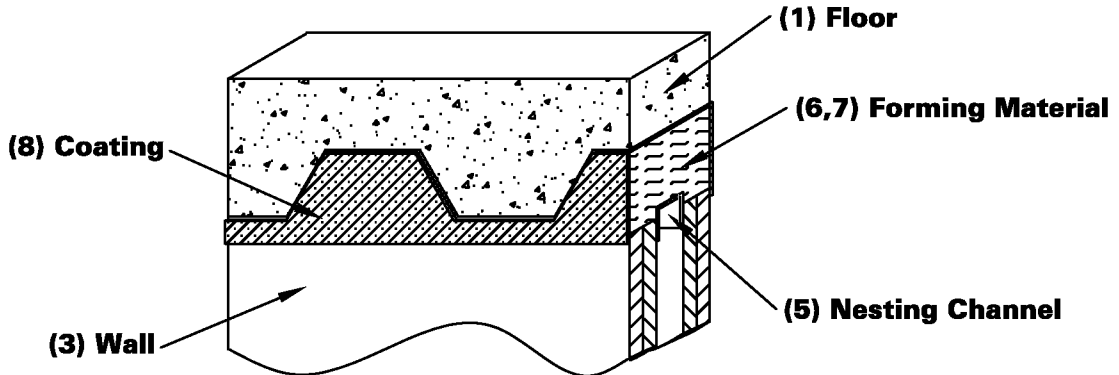
DATE: 11/30/06

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JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext



1. FLOOR ASSEMBLY - Min. 3-1/2" (89mm) thick light weight or normal weight concrete poured over fluted steel decking.
2. SPRAY-APPLIED FIRE PROOFING (optional) (not shown) - Min. 15 pcf (240kg/cubic meter) applied to the bottom of the steel floor and form unit, with a thickness equal to obtain a 1 or 2 hour fire resistance.
3. WALL ASSEMBLY - Non-load bearing design rated for a min. of 1 or 2 hr. fire resistance. The max separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Ceiling Runner is attached to bottom of the flutes.
4. STEEL STUDS (not shown) - Min. 2-1/2" (64mm) steel studs with max. 24" (610mm) o.c. spacing.
5. NESTING CHANNEL - Nom 3-3/4" (95mm) x 2" (51mm) deep min. 25 GA. U-shaped steel channel.
6. FORMING MATERIAL (flutes) - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation into the flute. The forming material shall be compressed 33% in the nominal flute width. (Option) - The flutes may be packed full and leveled even with bottom of flutes and finished flush with wall using the spray-applied fire proofing material.
7. FORMING MATERIAL (joint) - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation into the joint. The forming material shall be compressed 50% in the nominal joint width.
8. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material on both sides of the wall in the joint. Apply a min. 1/8" (3mm) thick wet applied coating and overlap the material a min. 1" (25mm) onto the adjacent wall and bottom of the concrete floor or over the spray-applied fire proofing when used.



Tested in accordance with:

ASTM E-1966
ANSI/UL 2079

Nelson Firestop

Omega Point Design No.
CEJ 251 H, CEJ 252 H

DWG NO. FS-0321 R3

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 11/30/06

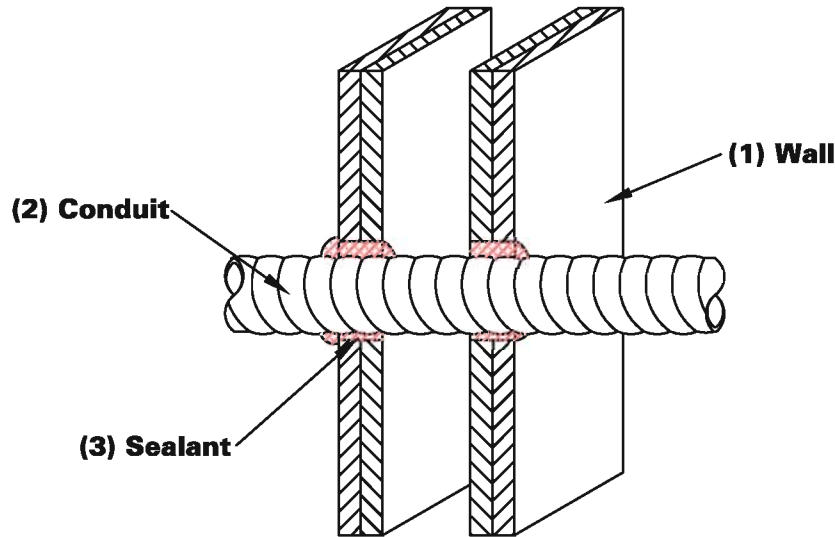
BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL FLEXIBLE METALLIC CONDUIT

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The annular space range is 1/8" to 1/4" (3mm to 6mm). Max. diameter of opening is 1-3/8" (35mm).
2. **FLEXIBLE METALLIC CONDUIT** - Max. 1/2" (13mm) nominal diameter, or smaller, steel or aluminum flexible metal conduit.
3. **NELSON ES1399 SEALANT** - Apply to fill the annular space around the pipe. In 2 hr fire-rated assemblies, additional fill material to be installed such that a min. 3/8" (10mm) crown is formed around the penetrating item and lapping 1/2" (13mm) beyond the periphery of the opening. In opening. In 1 hr fire-rated assemblies, additional fill material to be installed such that a min 1" (25mm) crown is formed around the penetrating item and lapping a min. 1/2" (13mm) beyond the periphery of the opening.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
W-L-1275**

Nelson Firestop

DWG NO. FS-0347 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

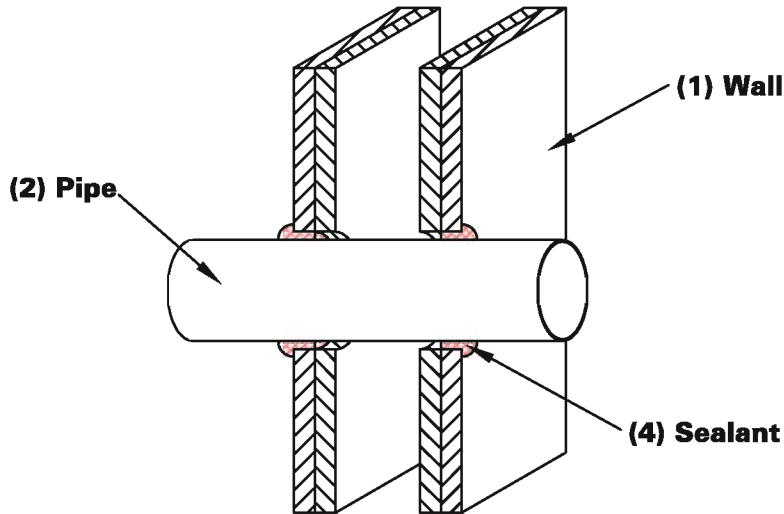
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. **METALLIC PIPE or CONDUIT** - The following types and sizes of metallic pipes, conduits or tubing may be used.
 - (A) **STEEL PIPE** - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between penetrant and periphery of opening is 0" (point of contact) to 2" (51mm).
3. **FORMING MATERIAL** (not shown) - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. **NELSON ES1399 SEALANT** - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the pipe and both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-1276**

Nelson Firestop

DWG NO. FS-0348 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

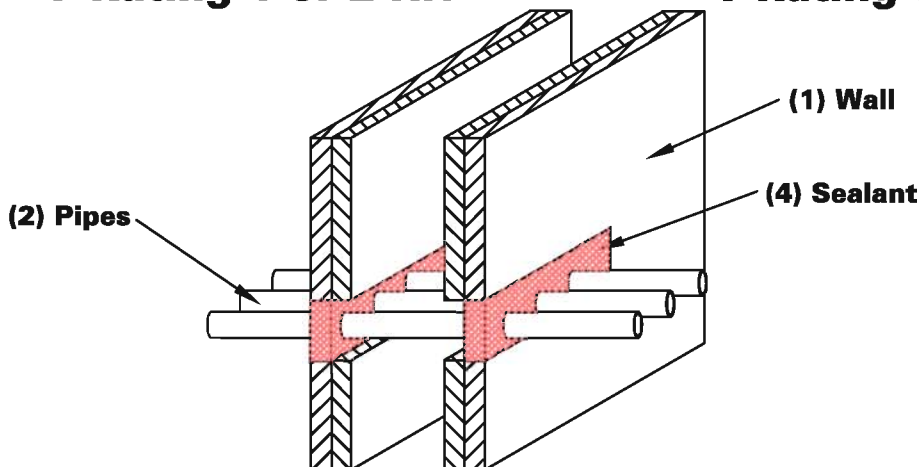
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPES OR CONDUITS

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of opening is 90-1/2 sq. in. (584 sq. cm) with max. dim. of 22-5/8" (575mm) for steel stud walls or max. area of 58 sq. in. (374 sq. cm) with max. dim. of 14-1/2" (368mm) for wood stud walls, respectively.

2. METALLIC PIPES or CONDUITS - One or more through penetrants to be installed within the opening.

(A) **STEEL PIPE** - Nom 3" (76mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.

(B) **IRON PIPE** - Nom 3" (76mm) diameter (or smaller) cast or ductile iron pipe.

(C) **CONDUIT** - Nom 3" (76mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.

Only three penetrants shall have a nom diameter greater than 1" (25mm). Annular space between penetrants shall be a nom 1/2" (13mm). The annular space between penetrants and the periphery of the opening shall be 0" (point of contact) to max. 1/2" (13mm) for penetrants having a nom diameter greater than 1" (25mm). The annular space between penetrants and the periphery of the opening shall be min. 0" (point of contact) to 2-7/8" (73mm) for penetrants having a diameter 1" (25mm) or less.

3. FORMING MATERIAL (optional) (not shown) - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.

4. NELSON ES1399 SEALANT - Apply min. 5/8" (16mm) thickness of ES1399 within the annulus, flush with both surfaces of the wall. At point of contact location between penetrants and gypsum wallboard, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum wallboard/penetrant interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
W-L-1277**

Nelson Firestop

DWG NO. FS-0349 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

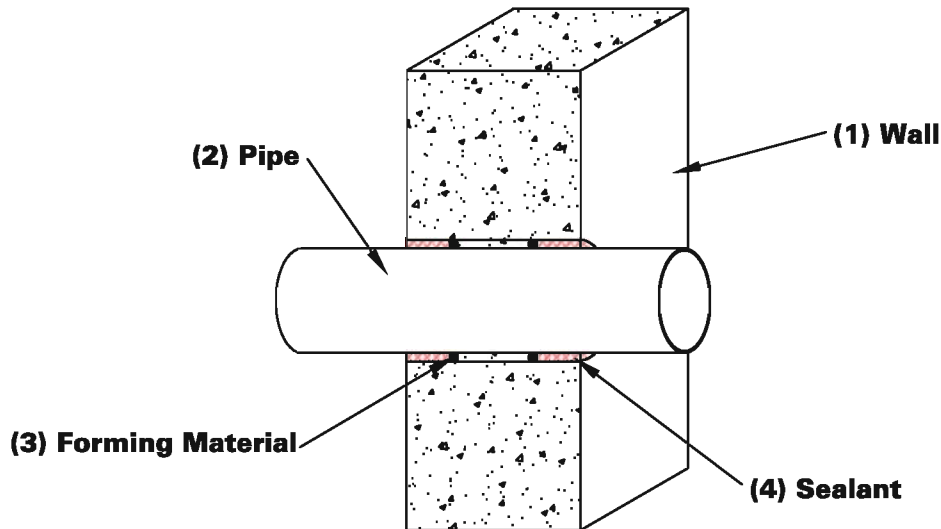
Address: _____

Signature: _____

CONCRETE WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduit or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between penetrant and periphery of opening is 0" (point of contact) to 2" (51mm).
3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the pipe and both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-1120

Nelson Firestop

DWG NO. FS-0350 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

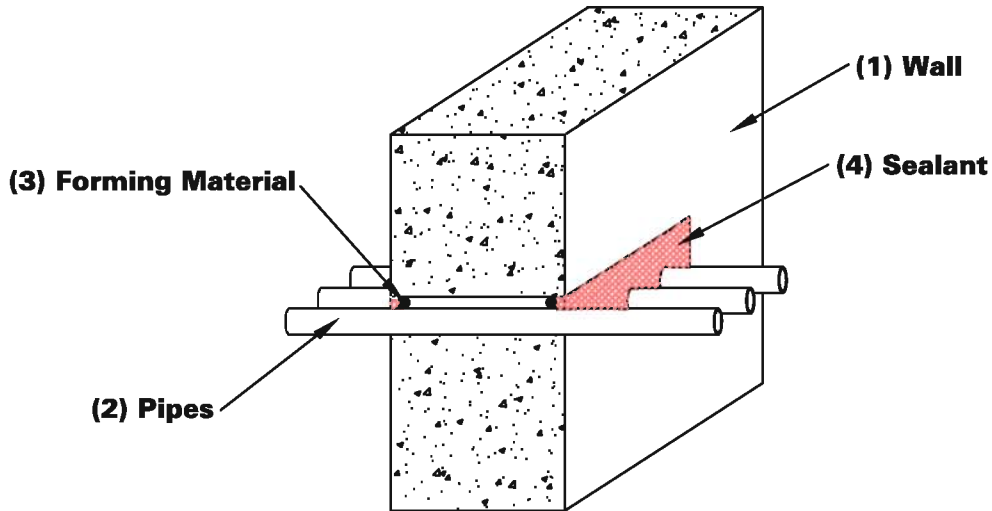
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL METALLIC PIPES OR CONDUITS

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete wall or CMU wall. The max. area of opening is 90-1/2 sq. in. (584 sq. cm) with a max. dimension of 22-5/8" (575mm).
2. METALLIC PIPES or CONDUITS - One or more pipes penetrants to be installed within the opening. The following types of pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 3" (76mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 3" (76mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.

Only three penetrants shall have a nom diameter greater than 1" (25mm). Annular space between penetrants shall be a nom 1/2" (13mm). The annular space between penetrants and the periphery of the opening shall be 0" (point of contact) to max. 1/2" (13mm) for penetrants having a nom diameter greater than 1" (25mm). The annular space between penetrants and the periphery of the opening shall be min 0" (point of contact) to 2-1/8" (54mm) for penetrants having a diameter 1" (25mm) or less.

3. FORMING MATERIAL (optional) - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply min. 5/8" (16mm) thickness of sealant within the annulus, flush with both surfaces of the wall. At point of contact location between penetrants and concrete, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete /penetrant interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-1119**

Nelson Firestop

DWG NO. FS-0351R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

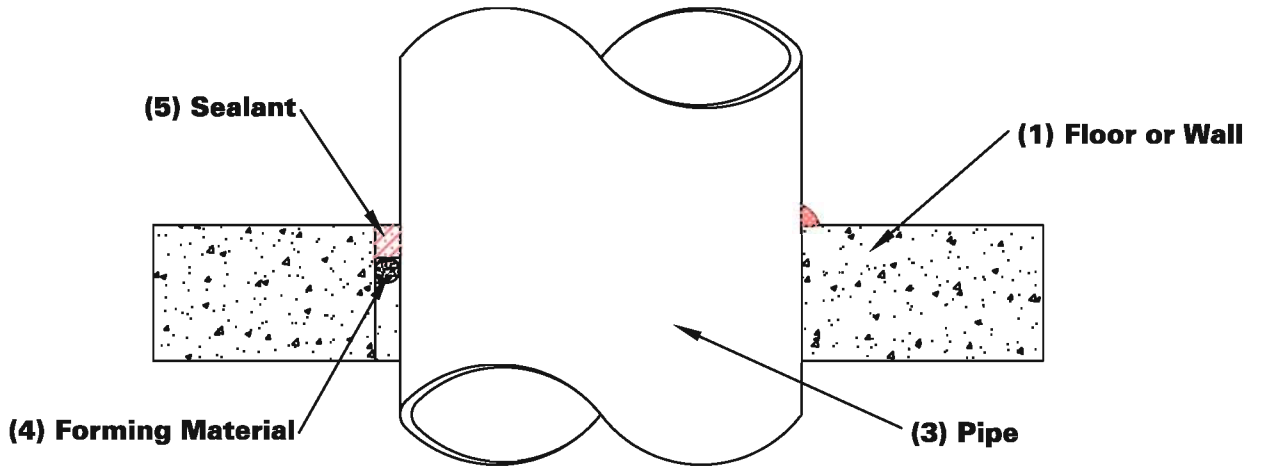
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any min. 6" (152mm) thick HOLLOW-CORE
2. METALLIC SLEEVE (not shown) (optional) - Max. 8" (203mm) nominal diameter Sch. 10 or heavier, steel sleeve cast or grouted into the floor or wall, flush with floor or wall surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits and tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between penetrant and periphery of opening is 0" (point of contact) to a max. of 1-7/8" (48mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation or 1" (25mm) diameter backer rod to fill the annular space and recess 1/2" (13mm) from the top surface of the floor or from both surfaces of the wall or HOLLOW-CORE floor.
5. NELSON ES1399 SEALANT - Apply ES1399 sealant over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall or HOLLOW-CORE floor. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the pipe and the top surface of the floor or both surfaces of the wall or HOLLOW-CORE floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1414**

Nelson Firestop

DWG NO. FS-0352 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

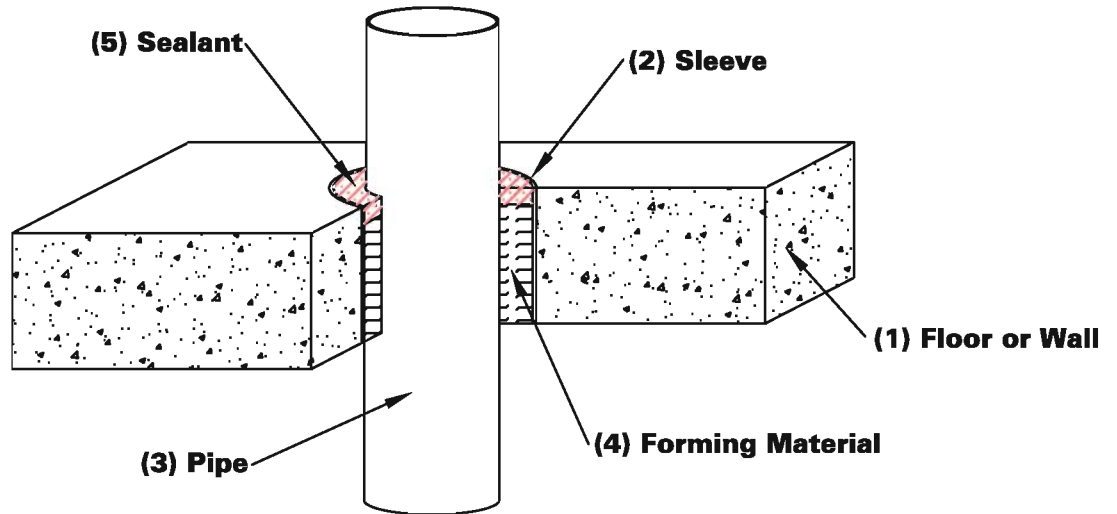
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 26-1/2" (673mm).
2. METALLIC SLEEVE (optional) - Max. nominal 16" (406mm) diameter, Sch. 10 (or heavier) steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits and tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT- Nom 6" (152mm) diameter (or smaller) rigid steel conduit.
 - (D) EMT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing.

The annular space may range from 0" (point of contact) to 2-1/2" (64mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recess 1/2" (13mm) from top surface of the floor or both surfaces of wall.
5. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall. Apply a 1/4" (6mm) bead around the entire circumference of the pipe at the pipe at the level of the floor surface or both wall surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1415**

Nelson Firestop

DWG NO. FS-0353 R1

DATE: 07/19/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

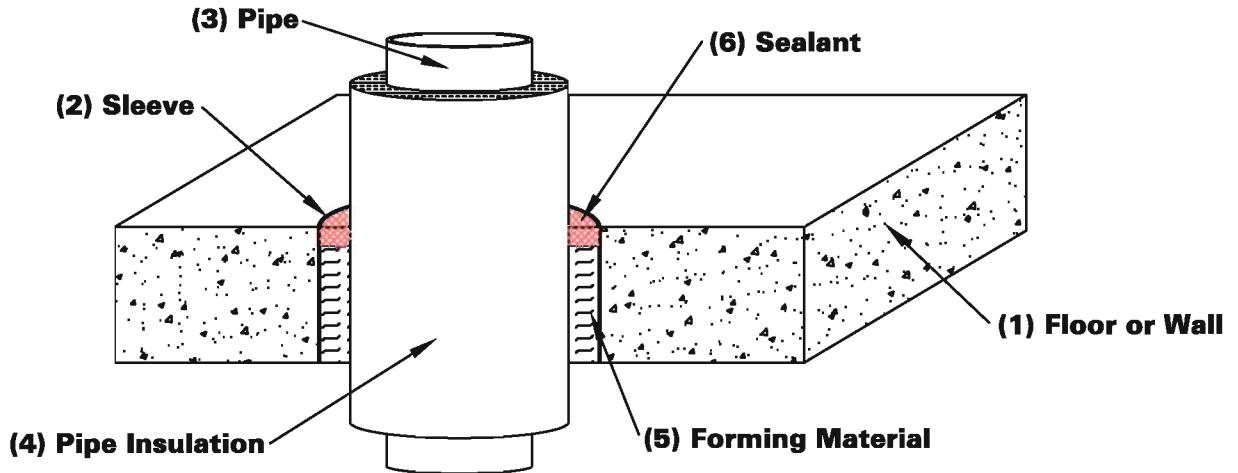
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor wall, or CMU block wall. The max. diameter of the opening is 18" (457mm).
2. METALLIC SLEEVE (optional) - Nominal 18" (457mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
4. PIPE INSULATION - Nominal 1" (25mm) thick, CELLULAR GLASS pipe insulation. The insulation material may be jacketed within 0.010 in. (.25mm) thick aluminum sheet wrapped tightly around with a min. 2" (51mm) overlap. Jacket to be installed with edge abutting surface of sealant on top surface of floor or both surfaces of wall. Jacket to be well secured with metallic bands. The annular space is to 0" (point of contact) to 4-1/4" (108mm).
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
6. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1" (25mm) depth, flush with the top surface of the floor or with both surfaces of the wall. At areas of point of contact, apply a 1/4" (6mm) bead at the interface between the insulated pipe and the periphery of the opening.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5203**

Nelson Firestop

DWG NO. FS-0354 R3

DATE: 08/11/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

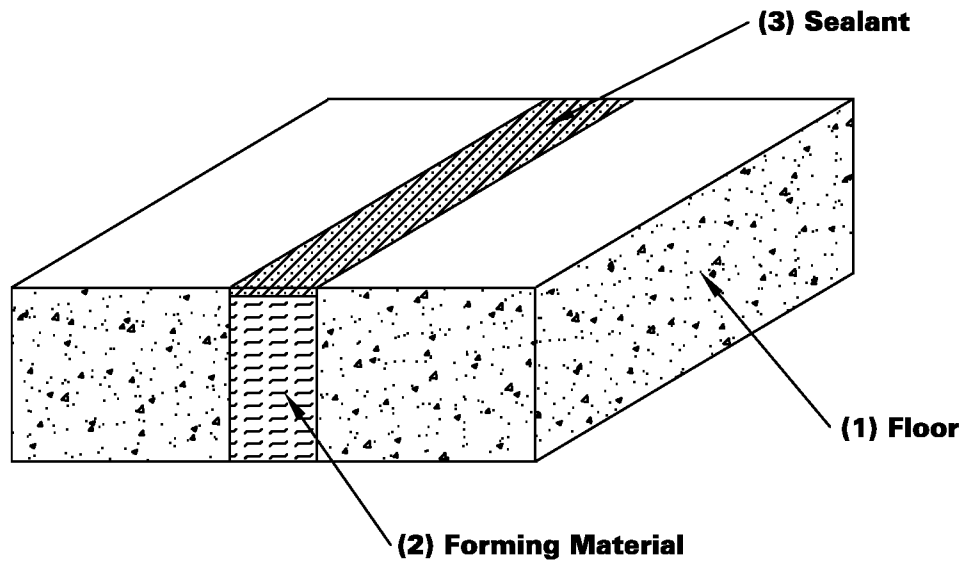
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 4 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr or Ext



1. FLOOR ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 2" (51mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 5-1/2" (140mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 33% in the nominal joint width.
3. NELSON ES1399 SEALANT - Apply ES1399 over the forming material to a min. 1/4" (6mm) depth, flush with the top surface of the floor.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-0026

Nelson Firestop

DWG NO. FS-0356 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

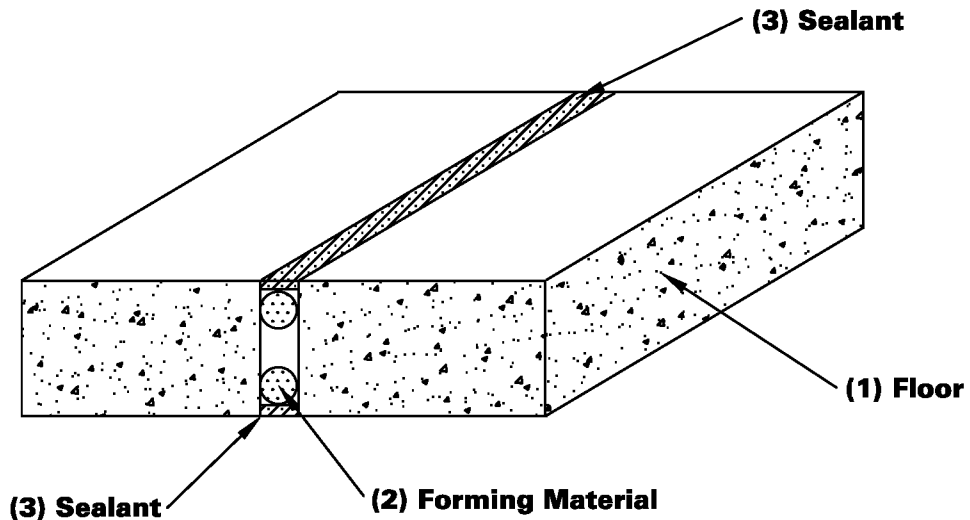
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 1" (25mm).
2. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from both surfaces of the floor.
3. NELSON ES1399 SEALANT - Apply ES1399 over the forming material to a min. 1/2" (13mm) depth, flush with the both surfaces of the floor.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-0027

Nelson Firestop

DWG NO. FS-0357 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

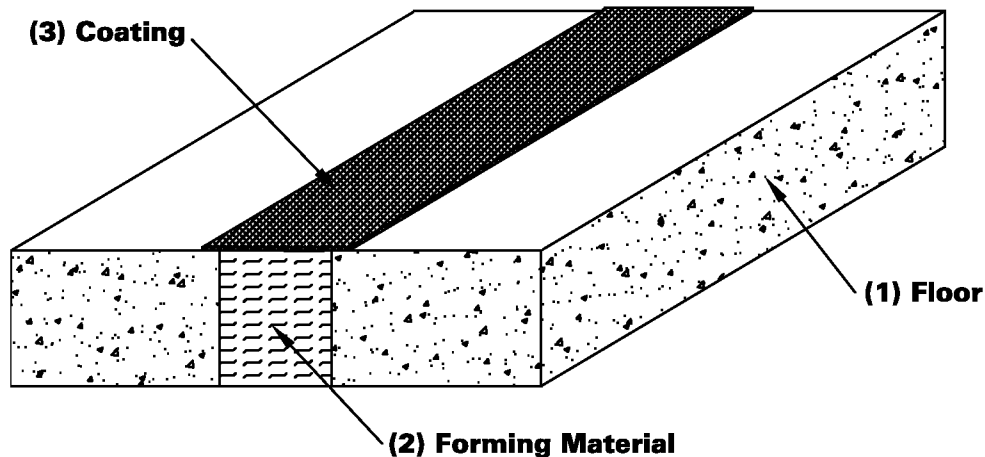
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 3 Hr.
L Rating at Ambient **< 1 CFM/Lin Ft.**
Class II Movement - 15% Compr or Ext
Nominal Joint Width - 3-1/2" (89mm)



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 3-1/2" (89mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. The forming material shall be compressed 42% in the nominal joint width.
3. NELSON FSC3 COATING (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor a min. of 1/2" (13mm).

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-1040

Nelson Firestop

DWG NO. FS-0358 R3

DATE: 11/29/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

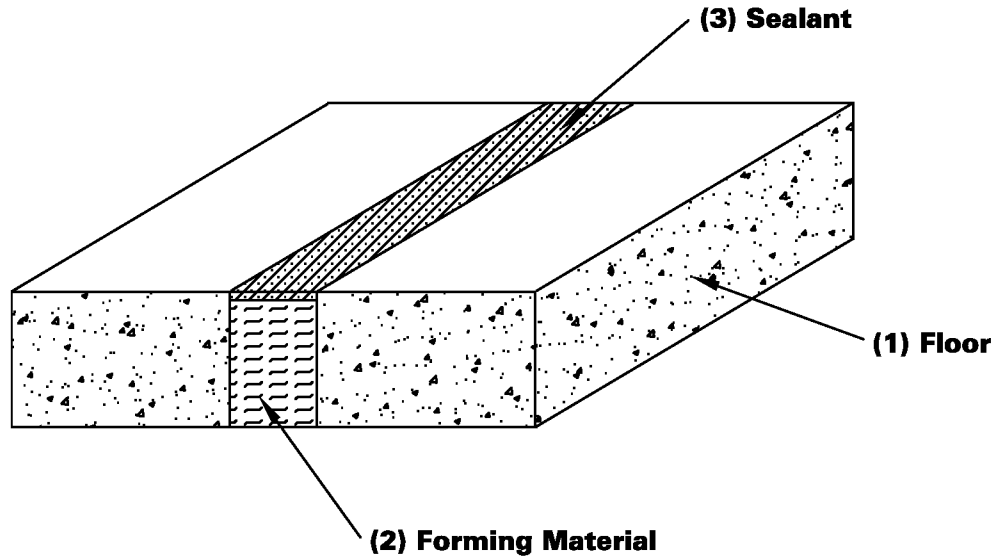
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 3-1/2" (89mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 42% in the nominal joint width.
3. NELSON ES1399 SEALANT - Apply ES1399 over the forming material to a min. 1/4" (6mm) depth, flush with the top surface of the floor.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-1041

Nelson Firestop

DWG NO. FS-0359 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

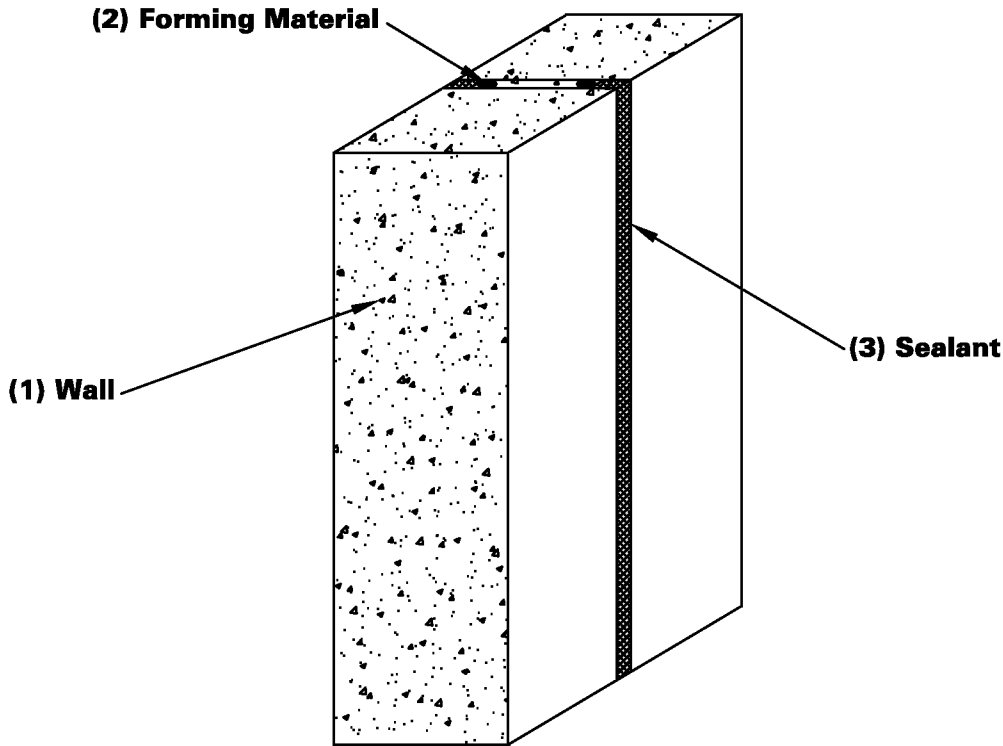
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 12.5% Compr or Ext



1. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 1" (25mm).
2. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from both surfaces of the wall.
3. NELSON ES1399 SEALANT - Min. 1/2" (13mm) thickness over the forming material applied within the joint, flush with both surfaces of the wall.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
WW-D-0030

Nelson Firestop

DWG NO. FS-0360 R2

DATE: 11/28/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

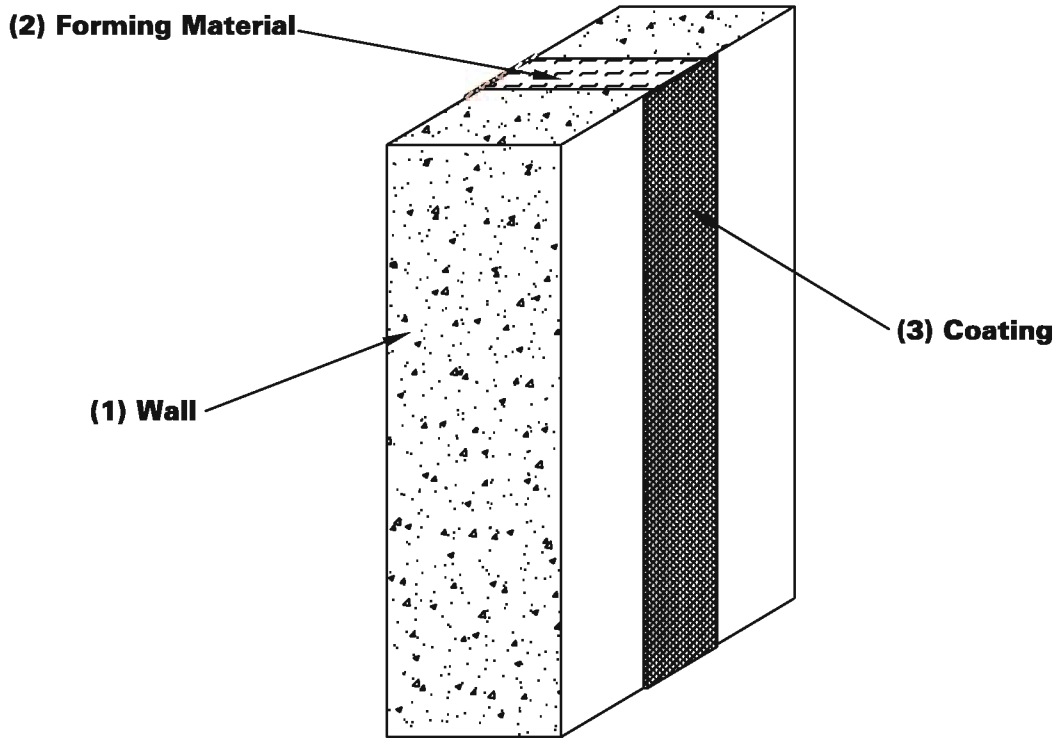
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 3-1/2" (89mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. The forming material shall be compressed 42% in the nominal joint width.
3. NELSON FSC3 COATING (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto both sides of the wall a min. 1/2" (13mm).

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
WW-D-1038

Nelson Firestop

DWG NO. FS-0361 R2

DATE: 11/28/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

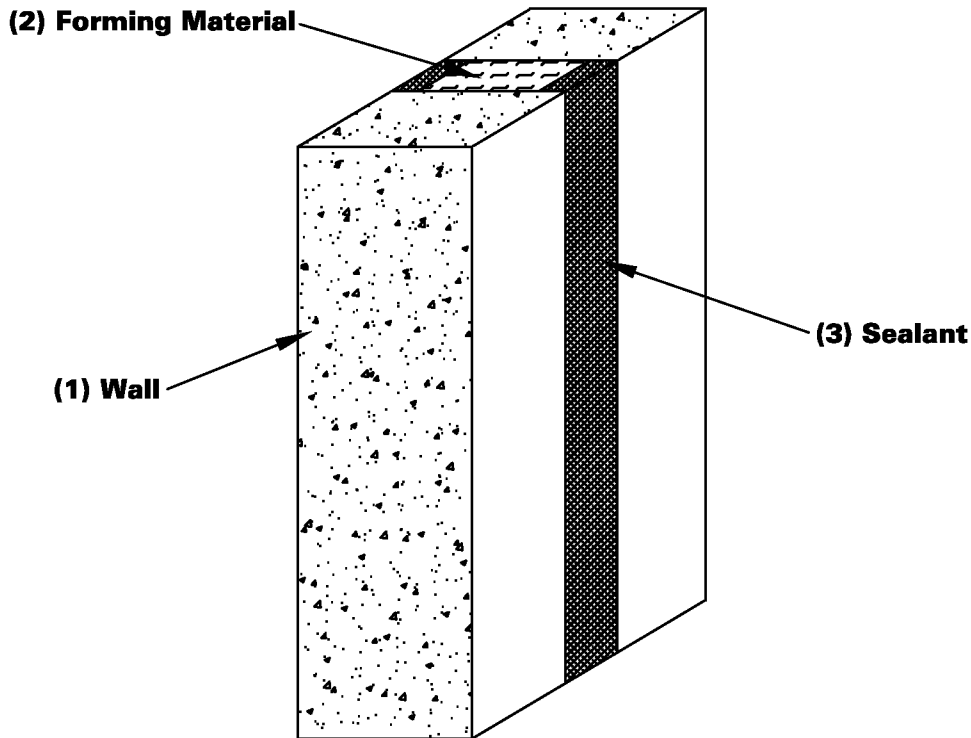
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 3-1/2"(89mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/4" (6mm) from both surfaces of the wall. The forming material shall be compressed 42% in the nominal joint width.
3. NELSON ES1399 SEALANT - Apply ES1399 over the forming material, on both sides of the wall, to a min. 1/4" (6mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
WW-D-1039

Nelson Firestop

DWG NO. FS-0362 R2

DATE: 11/28/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

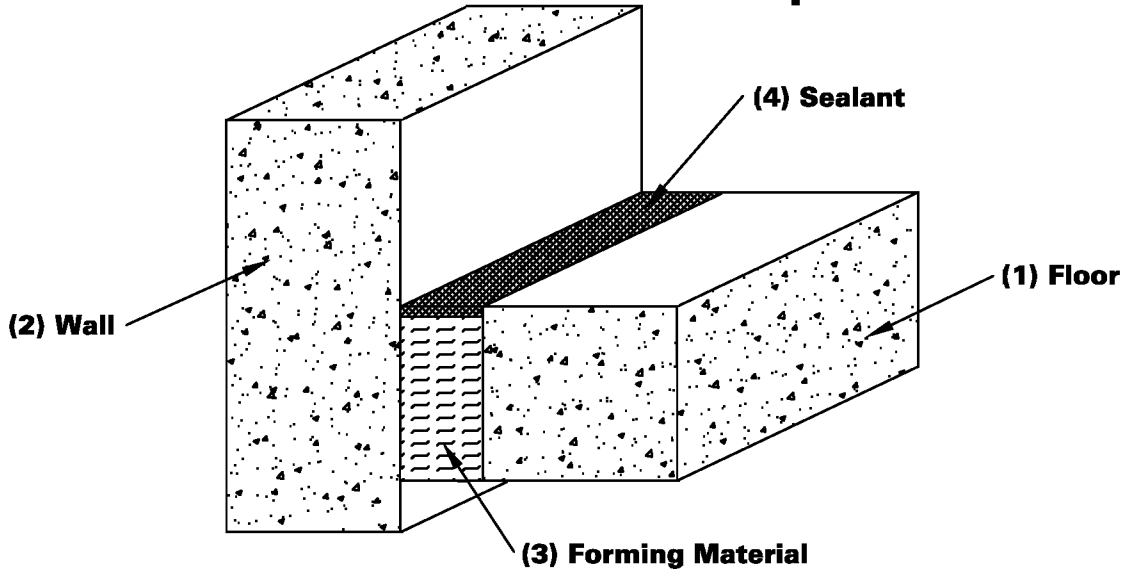
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 4 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr or Ext



1. FLOOR ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 2" (51mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 5-1/2" (140mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 33% in the nominal joint width.
4. NELSON ES1399 SEALANT - Apply ES1399 over the forming material, flush with the top surface of the floor, to a min. 1/4" (6mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
FW-D-0021

Nelson Firestop

DWG NO. FS-0364 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

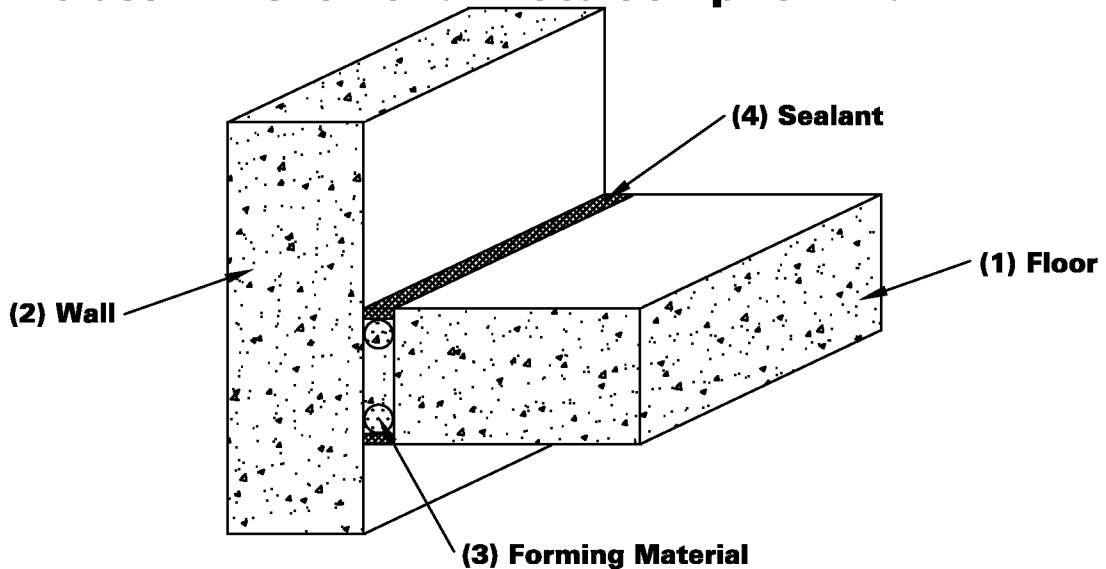
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 1" (25mm).
3. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from both surfaces of the floor.
4. NELSON ES1399 SEALANT - Apply ES1399 over the forming material, flush with both surfaces of the floor, to a min. 1/2" (13mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FW-D-0022

Nelson Firestop

DWG NO. FS-0365 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

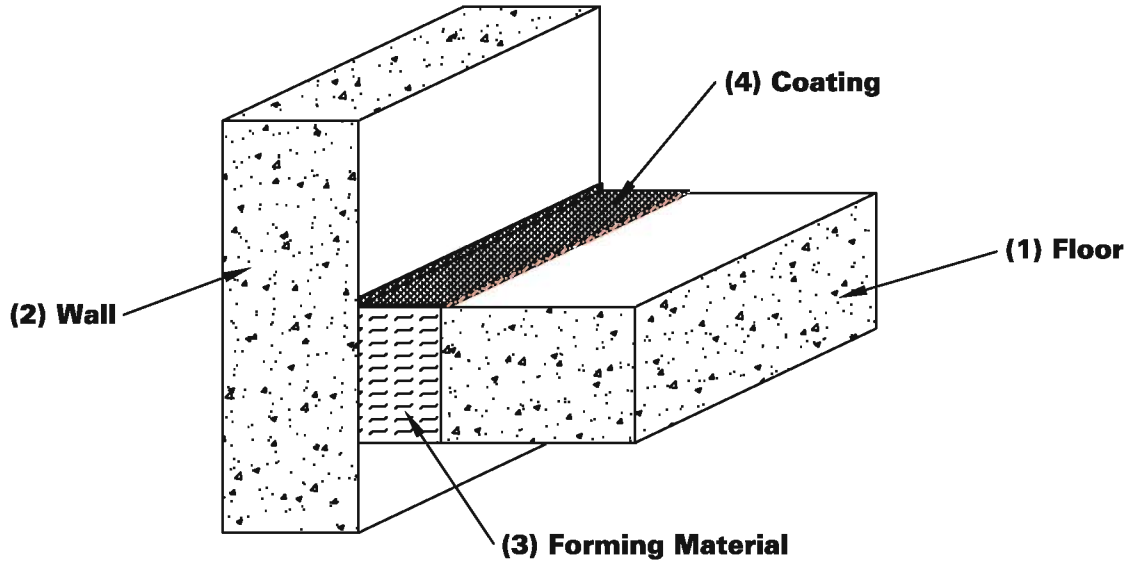
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 3 Hr.
L Rating at Ambient **< 1CFM/Lin Ft.**
Class II Movement - 15% Compr or Ext
Nominal Joint Width - 3-1/2" (89mm)



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max joint width at the time of installation is 3-1/2" (89mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. The forming material shall be compressed 42% in the nominal joint width.
4. NELSON FSC3 COATING (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and side of wall a min. of 1/2" (13mm).

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079



System No.
FW-D-1038

Nelson Firestop

DWG NO. FS-0366 R3

DATE: 11/29/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

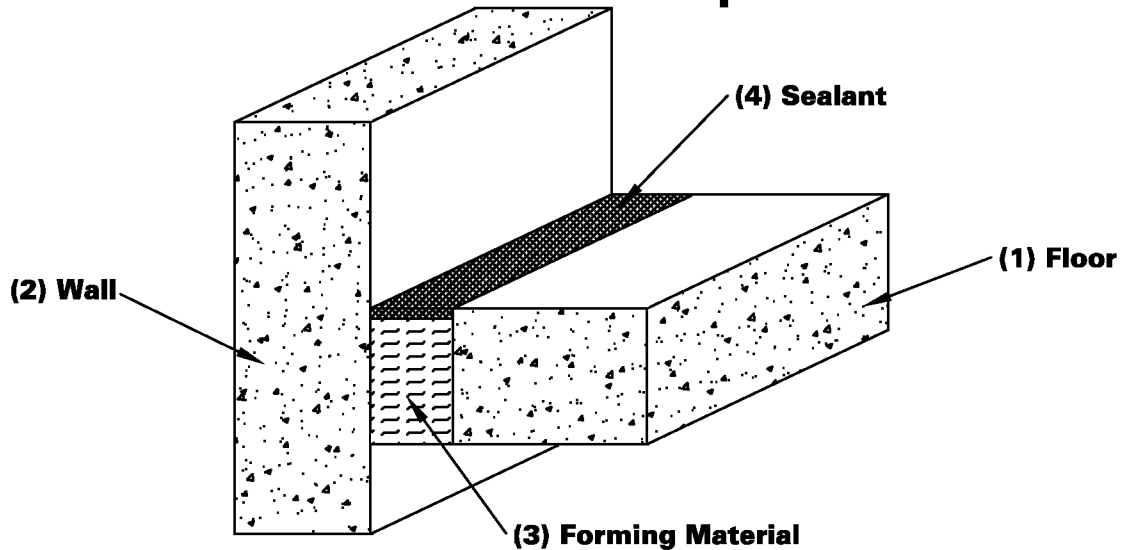
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 3-1/2" (89mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/4" (6mm) from the top surface of the floor. The forming material shall be compressed 42% in the nominal joint width.
4. NELSON ES1399 SEALANT - Apply ES1399 over the forming material, flush with the top surface of the floor, to a min. 1/4" (6mm) thickness, continuous along the entire length of the joint.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FW-D-1039

Nelson Firestop

DWG NO. FS-0367 R2

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

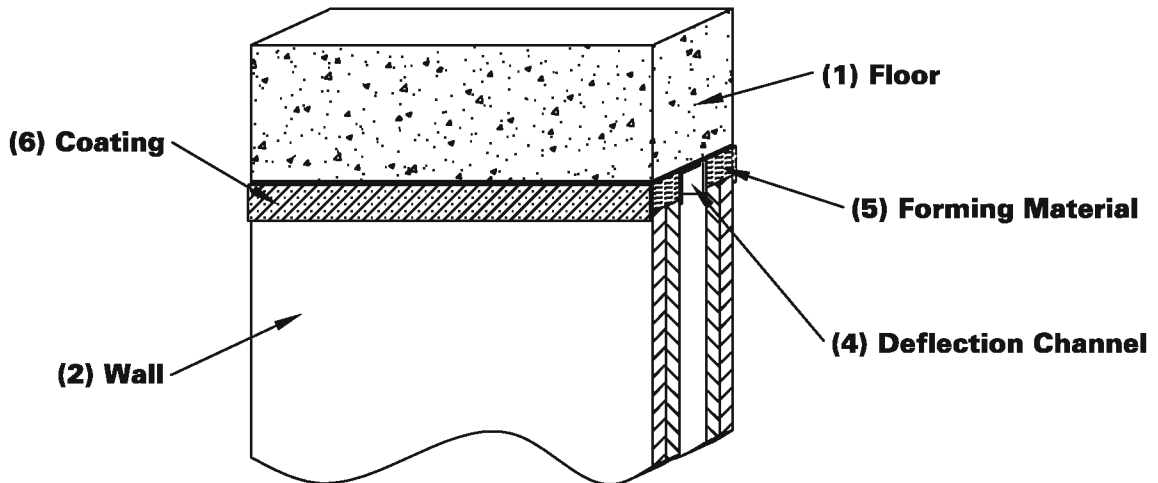
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1, 2, 3, or 4 Hr.
L Rating at Ambient **< 1CFM/Lin Ft**
Class II Movement - 25% Compr & Ext
Nominal Joint Width - 2" (51mm)



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick light weight or normal weight concrete floor. Floor may also be constructed of any min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - As specified in the U400 series designs per UL Fire Resistance Directory. The max separation between bottom of floor and top of wall is 1-1/2" (38mm) for 1 hr fire-rated assemblies and 2" (51mm) for 2, 3, or 4 hr fire-rated assemblies. The joint system is designed to accommodate a max. 25% compression or extension from its installed width.
3. STEEL STUDS - Min 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL (optional) - Nominal 3-3/4" x 3" (95mm x 76mm) deep min. 25 GA. U-shaped steel channel. Secured to the underside of the floor.
5. FORMING MATERIAL - Tightly pack min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space. The forming material shall be compressed 50% in the nominal joint width.
6. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of coating spray or brush applied over the forming material on each side of the wall between the top of the wall and the bottom of the concrete floor and overlapping a min. 1/2" (13mm) onto the concrete floor and gypsum board on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0305

Nelson Firestop

DWG NO. FS-0368 R3

DATE: 11/29/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

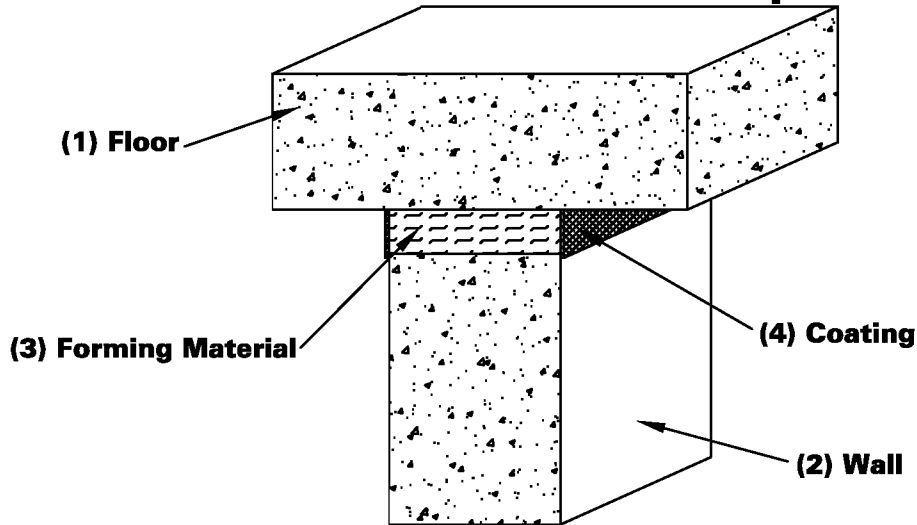
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 or 3 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. Floor may also be constructed of any min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space a min. 6" or 6-5/8" (152mm or 168mm) depth for 2 or 3 hr rated assemblies, respectively, and installed edge-first into joint opening, parallel with joint direction. Recess the fiber 1/8" (3mm) from both sides of the wall. The forming material shall be compressed 50% in the nominal joint width.
4. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of coating applied within the joint, flush with each surface of wall and lapping a min. 1/2" (13mm) onto the bottom surface of the floor and each surface of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0306

Nelson Firestop

DWG NO. FS-0369 R3

DATE: 11/29/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

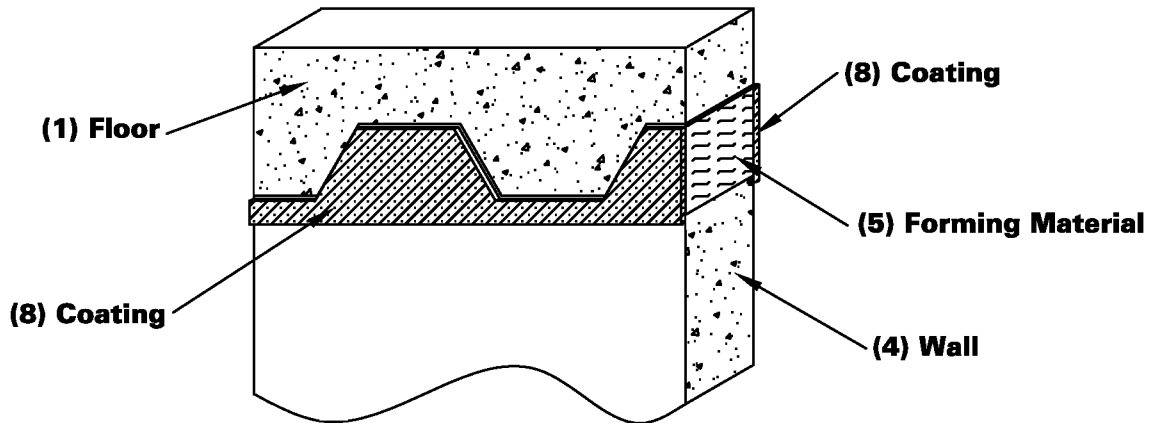
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 or 3 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - Min. 2-1/4" (57mm) thick poured insulating concrete, as measured from the top plane of the roof deck.
4. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space a min. 6" or 6-5/8" (152mm or 168mm) depth for 2 or 3 hr rated assemblies, respectively. The forming material shall be installed flush with both surfaces of the wall. The forming material shall be compressed 50% in the nominal joint width and 25% into the flutes of the steel floor units or roof deck.
6. SPRAY-APPLIED FIRE PROOFING - As an alternate to the forming material within the flutes, apply min. 15pcf (240 kg/cubic meter) into the flutes of the steel floor or roof deck.
7. FORMING MATERIAL (Plugs)(not shown) - As an alternate to the forming material and spray-applied fire proofing, mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes.
8. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of fill material spray or brush applied on each side of the wall in the flutes of the steel floor units or roof deck and between the top of the wall and the bottom of the steel floor units or roof deck and overlap a min. 1/2" (13mm) onto concrete wall and steel deck on both sides of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0307

Nelson Firestop

DWG NO. FS-0370 R3

DATE: 11/29/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

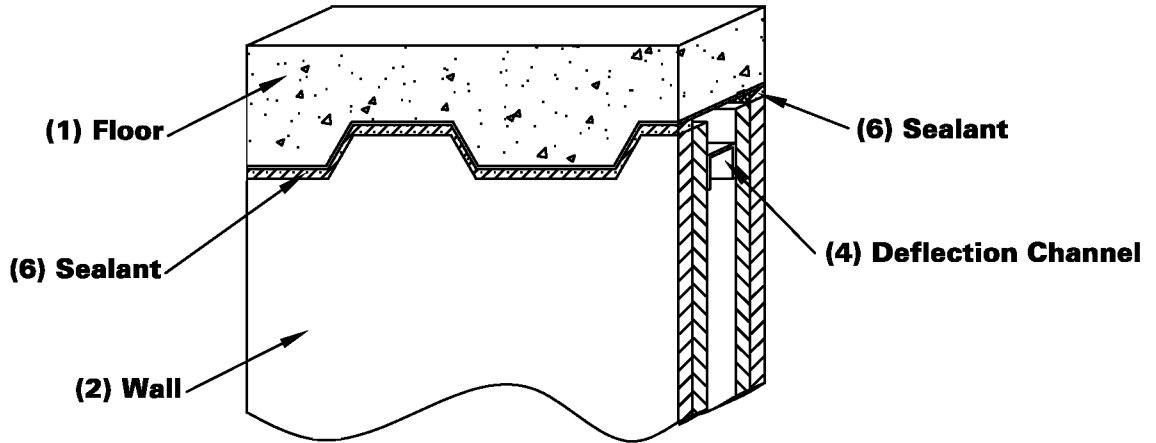
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compression



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Wallboard sheets installed to a min. 5/8" or 1-1/4" (16mm or 32mm) thickness on each side of wall for a 1 hr or 2 hr fire-rated wall. Wallboard is cut to fit the contour of the steel floor with a nom 1" (25mm) gap. Ceiling runner installed within deflection channel when used, else secured to valleys of the steel floor units.
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL (optional) - Nom 3" (76mm) deep min. 25 GA U-shaped steel channel. Secured to the valleys of the steel floor units.
5. FORMING MATERIAL (not shown) - Install backer rod within the annular space for 2 hr. walls. Recess 5/8" (16mm) from both surfaces of the wall.
6. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth over the forming material. Apply on both sides of the wall. In 1 hr fire-rated wall assemblies, bond breaker tape shall be applied to ceiling channel or deflection channel prior to installation of fill material on both sides of the wall.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0224

Nelson Firestop

DWG NO. FS-0371 R3

DATE: 11/29/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

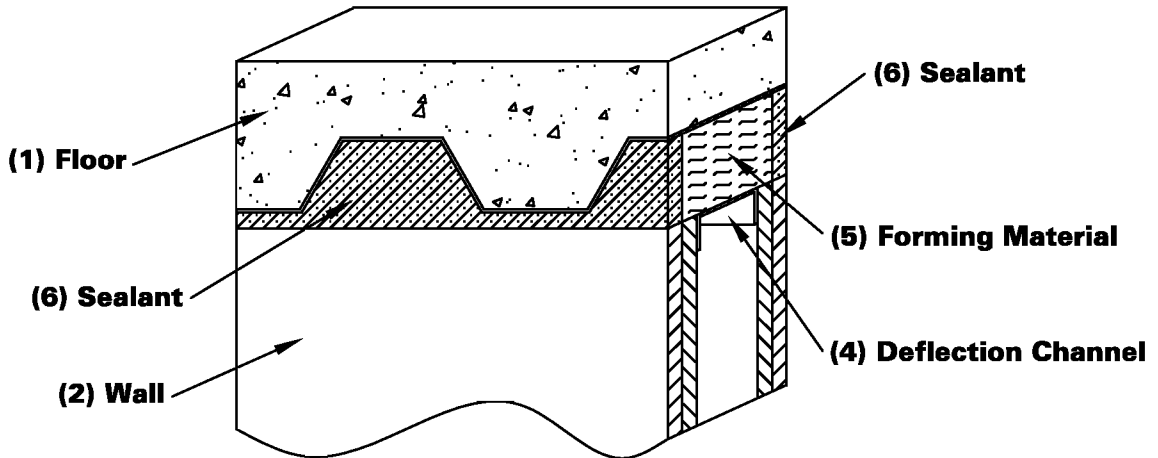
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compression**



1. FLOOR ASSEMBLY - Min. 3" (76mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Wallboard sheets installed to a min. 5/8" or 1-1/4" (16mm or 32mm) thickness on each side of wall for a 1 hr or 2 hr fire-rated wall. Ceiling runner installed within deflection channel when used, else secured to valleys of the steel floor units.
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL (optional) - Nom 3" (76mm) deep min. 25 GA. U-shaped steel channel. Secured to the valleys of the steel floor units.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a depth of 3-5/8" or 4-7/8" (92mm or 124mm) for 1 hr or 2 hr walls. Cut to the shape of the fluted deck, approx. 20% larger than the area of the flutes. The forming material shall be recessed 5/8" (16mm) from each side of the wall. For 2 hr. assembly, an additional 2" x 1" (51mm x 25mm) section is compressed 50% and installed between the top of gypsum wallboard and bottom of the steel floor units.
6. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth over the forming material. Apply on both sides of the wall. For 1 hr systems, bond breaker tape to be applied to deflection channel on both sides of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
HW-D-0229**

Nelson Firestop

DWG NO. FS-0372 R3

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

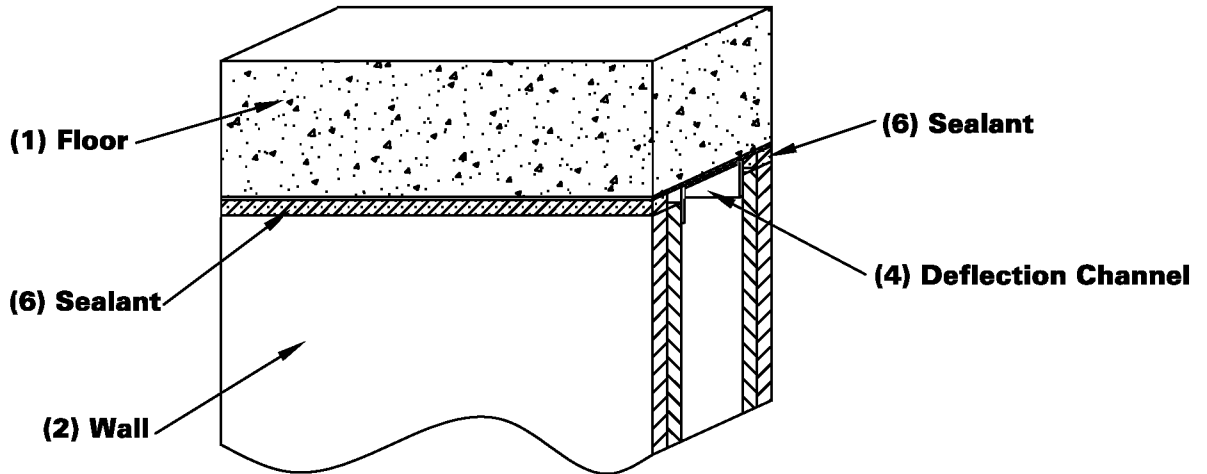
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compression**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete.
2. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Wallboard sheets installed to a min. 5/8" or 1-1/4" (16mm or 32mm) thickness on each side of wall for a 1 hr or 2 hr fire-rated wall.
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL (optional) - Nom 3-3/4" x 3" (95mm x 76mm) deep min. 25 GA. U-shaped steel channel. Secured to the underside of the floor.
5. FORMING MATERIAL (not shown) - Install backer rod within the annular space. Optional for 2 hr. walls. Recess 5/8" (16mm) from both surfaces of the wall.
6. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth. Apply on both sides of the wall. For 1 hr systems, bond breaker tape to be applied to deflection channel on both sides of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
HW-D-0226**

Nelson Firestop

DWG NO. FS-0373 R3

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

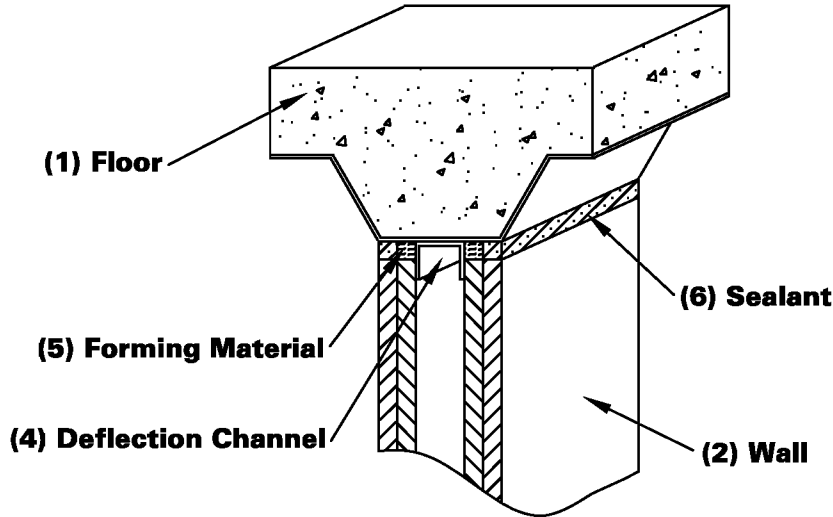
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compression



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Wallboard sheets installed to a min. 5/8" or 1-1/4" (16mm or 32mm) thickness on each side of wall for a 1 hr or 2 hr fire-rated wall. Ceiling runner (not shown) installed within the deflection channel.
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL - Nom 3-11/16" x 3" (94mm x 76mm) deep min. 25 GA. U-shaped steel channel. Secured to the valleys of the steel floor units.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space at 50 % compression, and recess 5/8" (16mm) from both sides of the wall.
6. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth over the forming material. Apply on both sides of the wall. For 1 Hr. systems, bond breaker tape to be applied to deflection channel on both sides of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0231

Nelson Firestop

DWG NO. FS-0374 R3

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

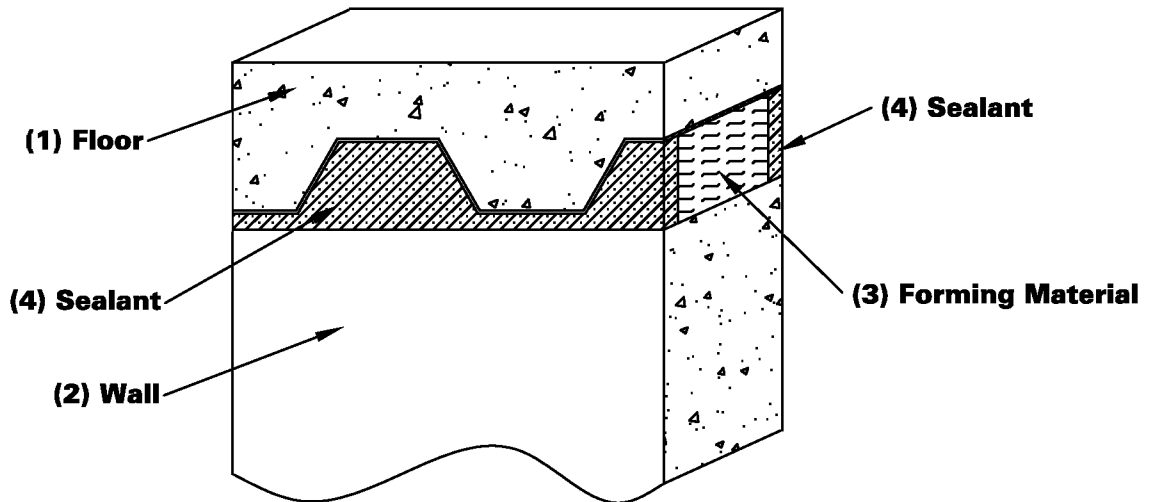
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compression



1. FLOOR ASSEMBLY - Min. 3" (76mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. WALL ASSEMBLY - Min. 8" (203mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a depth of 6-7/8" (175mm). Recess the fiber 5/8" (16mm) from both sides of the wall. The forming material shall be compressed 50% in the nominal joint width.
4. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth over the forming material. Apply on both sides of the wall.

Tested in accordance with:

ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0230

Nelson Firestop

DWG NO. FS-0375 R2

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

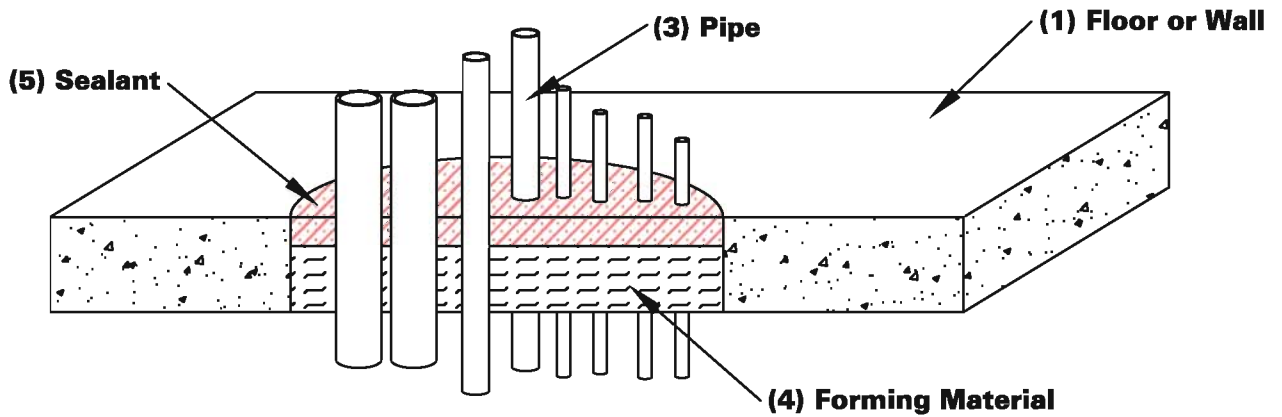
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULTIPLE METALLIC PIPES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or min. 3" (76mm) thick wall, or CMU block wall. The max. diameter of opening is 15-1/4". Annular space shall be 1/2" to 3" (13mm to 76mm) between penetrants and 1/2" to 5" (13mm to 127mm) between periphery of opening and penetrants.
2. METALLIC SLEEVE (optional) (not shown) - Max. 15-1/4" (387mm) diameter, or smaller, Sch. 30 or heavier, steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE - A max. of (8) pipes, conduits or tubing to be installed within opening. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 2" (51mm) diameter (or smaller) electrical metallic tubing.
 - (D) COPPER TUBING or PIPE - Nom 3/4" (19mm) diameter (or smaller) Type L (or heavier) copper tubing or nom 4" (102mm) diameter (or smaller) regular (or heavier) copper pipe.
 Annular space shall be 1/2" to 3" (13mm to 76mm) between penetrants and 1/2" to 5" (13mm to 127mm) between periphery of opening and penetrants.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1/2" (13mm) from the top surface of the floor or from both sides of the wall.
5. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1420**

Nelson Firestop

DWG NO. FS-0376 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

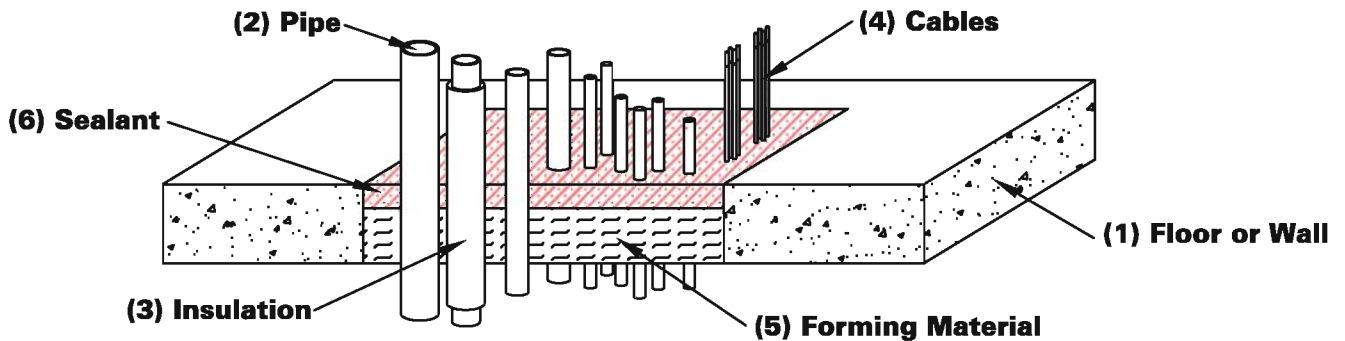
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULT. METALLIC PIPES and CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or min. 3" (76mm) thick wall, or CMU block wall. The floor assembly may consist of a fluted steel deck/concrete floor assembly (not shown). The max. size of opening is 144 sq. in. (929 sq. cm) with a max. dimension of 24" (610mm). Opening may contain any combination of ten pipes and two cable bundle penetrations.
2. METALLIC PIPES - Max. (10) pipes, conduits or tubing to be installed within opening. The following types and sizes of pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Max (8) nominal 3/4" (19mm) diameter or max. (2) 2" (51mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Max (8) nominal 3/4" (19mm) diameter or max. (2) 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Max (8) nominal 3/4" (19mm) diameter or max. (2) 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Annular space shall be 3/8" to 1" (10mm to 25mm) between penetrants and 1/2" to 3" (13mm to 76mm) between periphery of opening and pipes.
3. PIPE INSULATION - Max. 1" (25mm) thick or thinner AB/PVC (ARMAFLEX) foam insulation or FIBERGLASS insulation installed on one 2" (51mm) diameter (or smaller) metallic penetrant. The annular space between the insulated pipe and the periphery of the opening shall be a min. 1/2" to 1-3/4" (13mm to 44mm).
4. CABLES - Max. (2) cable bundles to be installed within the opening.
 - (A) Max. 3/c #2/0 awg copper conductor, PVC jacketed aluminum clad or steel clad cable.
 - (B) Max. 400pr. #24awg telephone cables w/PVC insulation and jacket.

The annular space between cable bundles and the periphery of the opening shall be a min. 3/8" to 2-5/8" (10mm to 67mm). The bundles shall be 1/2" (13mm) apart.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1/2" (13mm) from the top surface of the floor or both surfaces of the wall.
6. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or both surfaces of the wall. Sealant to be forced into interstices of cable group to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-8118**

Nelson Firestop

DWG NO. FS-0377 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

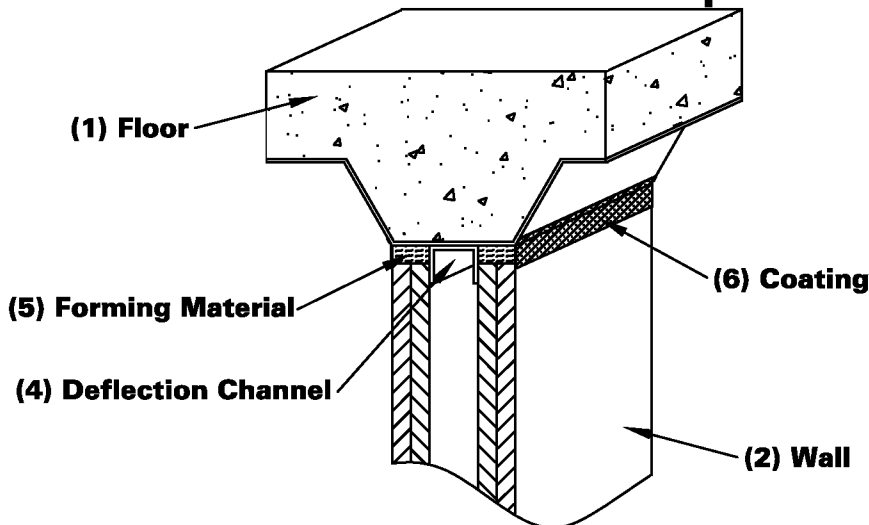
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width. Wallboard sheets installed to a min. 5/8" or 1-1/4" (16mm or 32mm) thickness on each side of wall for a 1 hr or 2 hr fire-rated wall. Ceiling runner (not shown) installed within the deflection channel.
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. DEFLECTION CHANNEL - Nom 3-11/16" x 3" (94mm x 76mm) deep min. 22 GA. U-shaped steel channel. Secured to the valleys of the steel floor units.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 1-1/4" (32mm) depth. The forming material shall be compressed 50% in the nominal joint width and flush with both surfaces of the wall.
6. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material on each side of the wall to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the wall and deck a min. of 1/2" (13mm).

Tested in accordance with:

ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0227

Nelson Firestop

DWG NO. FS-0378 R2

DATE: 11/30/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

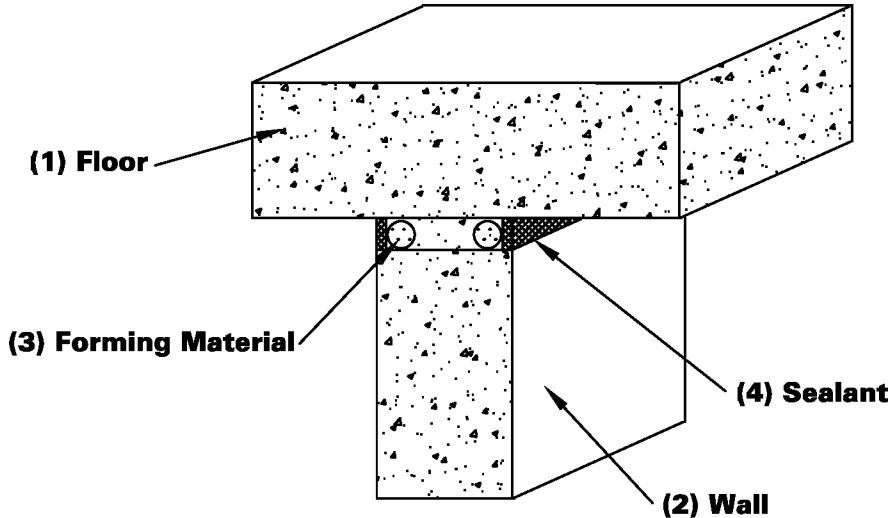
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 12.5% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 12.5% compression or extension from its installed width.
3. FORMING MATERIAL - Install backer rod within the annular space, and recess 1/2" (13mm) from both surfaces of the wall.
4. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. 1/2" (13mm) depth over the forming material. Apply on both sides of the wall.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
HW-D-0232

Nelson Firestop

DWG NO. FS-0379 R2

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

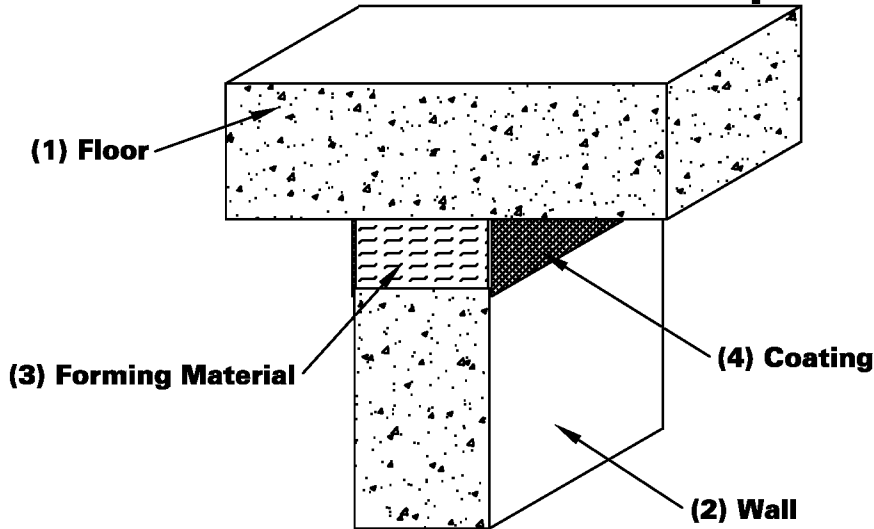
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 3-1/2" (89mm). The joint system is designed to accommodate a max. 15% compression or extension from its installed width.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" (102mm) depth. Recess the fiber 1/8" (3mm) from both sides of the wall. The forming material shall be compressed 42% in the nominal joint width.
4. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material on each side of the wall to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the wall and floor a min. of 1/2" (13mm).

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-1035

Nelson Firestop

DWG NO. FS-0380 R2

DATE: 11/30/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

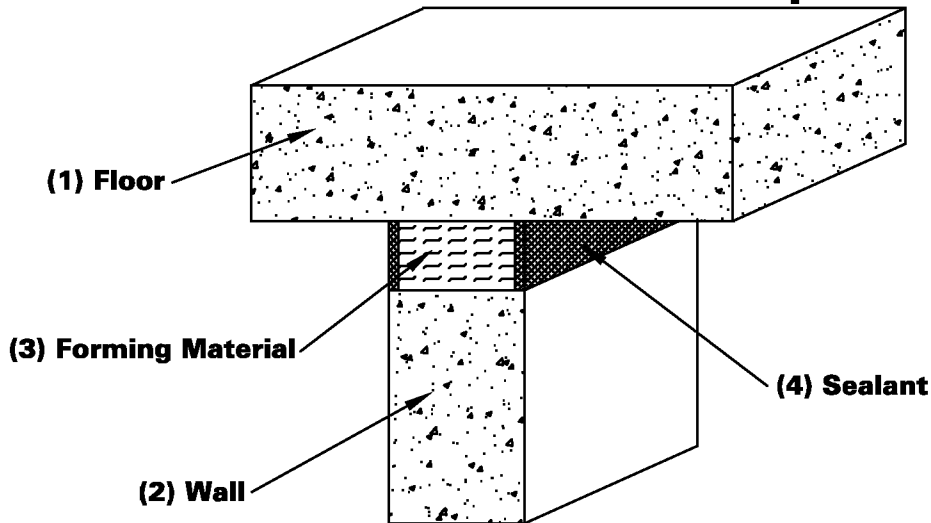
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 3 Hr.
Nominal Joint Width - 3-1/2" (89mm)
Class II Movement - 15% Compr or Ext



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 3-1/2" (89mm). The joint system is designed to accommodate a max. 15% compression or extension from its installed width.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 4" depth. Recess the fiber 1/4" (6mm) from both sides of the wall. The forming material shall be compressed 42% in the nominal joint width.
4. NELSON ES1399 SEALANT - Apply to fill the cavities to a min. 1/4" (6mm) depth over the forming material. Apply on both sides of the wall.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
HW-D-1036

Nelson Firestop

DWG NO. FS-0381 R2

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

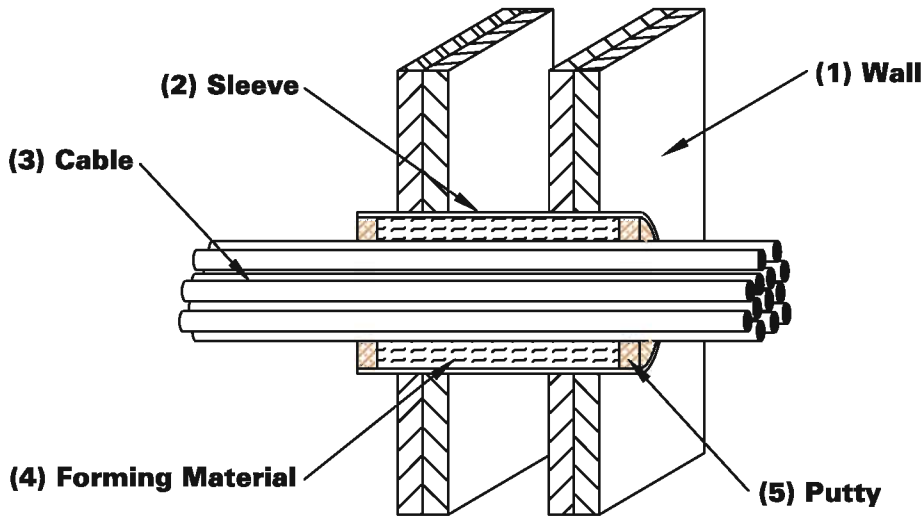
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL SLEEVED CABLES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 4" (102mm). Min. annular space is 1/2" (13mm) to max. 1" (25mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter min. 28 GA steel sleeve having a min. 2" (51mm) lap. Sleeve installed by coiling the sheet steel to a diameter smaller than the opening and releasing the coil to let it uncoil against the periphery of the opening. Sleeve will extend a nominal 2" (51mm) beyond each surface of the wall.
3. CABLES - Max. 40% fill of 100pr. #24awg., or smaller PVC jacketed telecommunications cables.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool into the sleeve to the full depth. Recess the fiber 1-1/2" (38mm) from both ends of the sleeve.
5. NELSON FSP PUTTY (part # AA445) - Apply over the forming material to a min. 1-1/2" (13mm) depth, flush with both ends of the sleeve. FSP to be tightly packed within interstices of cable bundle.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3190

Nelson Firestop

DWG NO. FS-0382 R1

DATE: 07/20/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

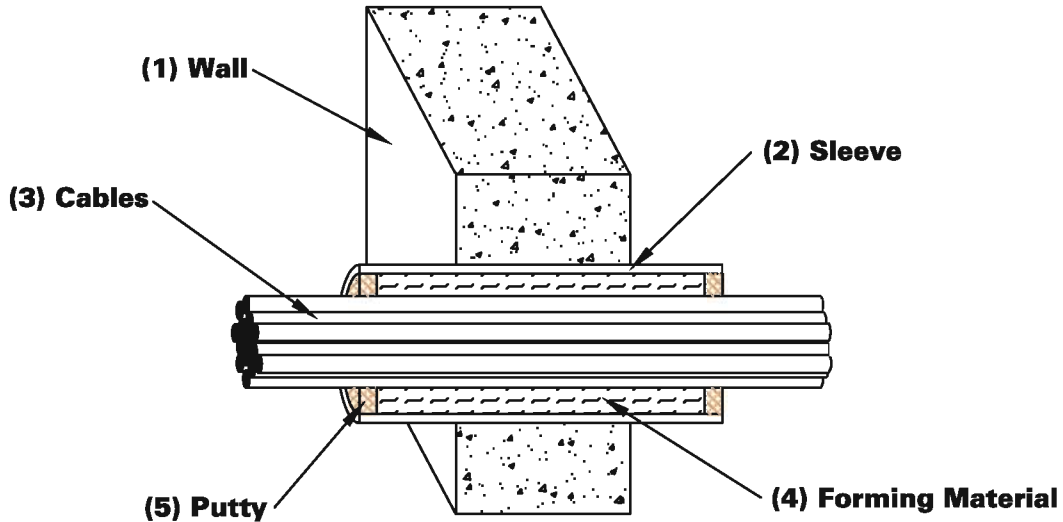
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4" (102mm). Min. annular space is 1/2" (13mm) to max. 1" (25mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter min. 28 GA steel sleeve having a min. 2" (51mm) lap. Sleeve installed by coiling the sheet steel to a diameter smaller than the opening and releasing the coil to let it uncoil against the periphery of the opening. Sleeve will extend a nominal 2" (51mm) beyond each surface of the wall.
3. CABLES - Max. 40% fill of 100pr. 24awg, or smaller, PVC jacketed telecommunications cables.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a 7" (178mm) depth, and recess 1-1/2" (38mm) from both ends of the sleeve.
5. NELSON FSP PUTTY (part # AA445) - Apply FSP over the forming material to a min. 1-1/2" depth, flush with both ends of the sleeve. FSP to be tightly packed within interstices of cable bundle.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479

CLASSIFIED
UL US
System No.
W-J-3075

Nelson Firestop

DWG NO. FS-0383 R1

DATE: 07/20/06

BY: RL

Project Name: _____
Address: _____

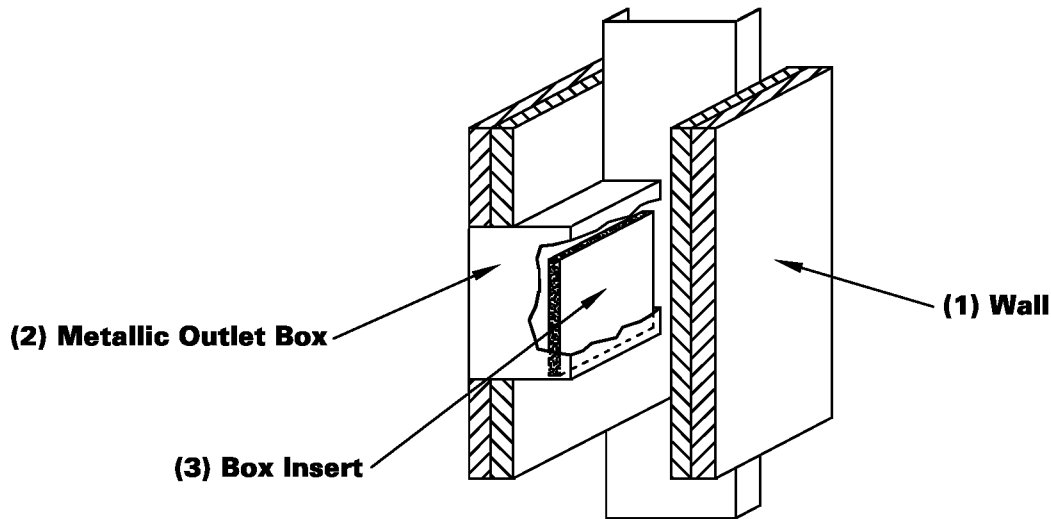
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL ELECTRICAL OUTLET BOX

F Rating 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory.
2. METALLIC OUTLET BOX - Max. 2-1/8" x 4-11/16" (54mm x 119mm) steel outlet box installed in accordance with NFPA 70 regulations. The box can be installed within the same stud cavity, provided they are not installed back-to-back.
3. NELSON BOX INSERT (part # AA0860) - Apply 2" x 4" (51mm x 102mm) box insert inside to back wall of steel outlet box.

Tested in accordance with:
ASTM E-119
ANSI/UL 263



**Wall Openings Protective
Materials (CLIV)
UL File R10764**

Nelson Firestop

DWG NO. FS-0384 R1

DATE: 07/20/06

BY: RL

Project Name: _____
Address: _____

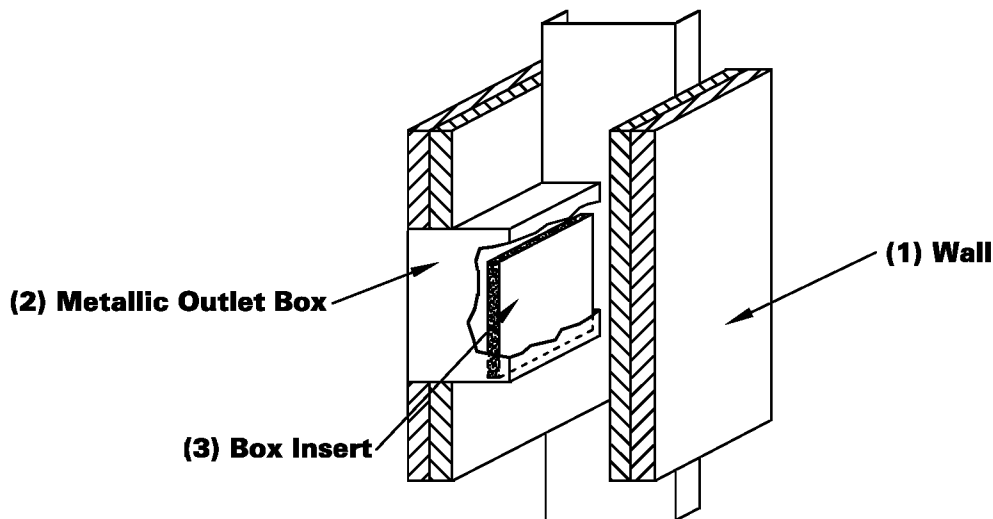
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL ELECTRICAL OUTLET BOX

F Rating 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory.
2. METALLIC OUTLET BOX - Max. 4" x 4" (102mm x 102mm) steel box installed in accordance with NFPA 70 regulations. The box can be installed within the same stud cavity, provided they are not installed back-to-back.
3. NELSON BOX INSERT (part # AA0862) - Apply 4" x 4" (102mm x 102mm) box insert inside to back wall of steel outlet box.

Tested in accordance with:
ASTM E-119
ANSI/UL 263



**Wall Openings Protective
Materials (CLIV)
UL File R10764**

Nelson Firestop

DWG NO. FS-0385 R1

DATE: 07/20/06

BY: RL

Project Name: _____
Address: _____

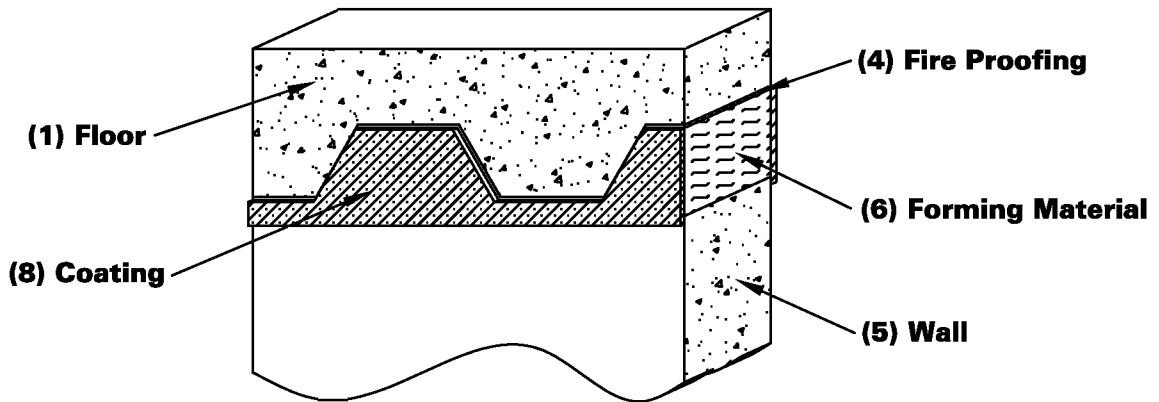
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 2 or 3 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext**



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick light weight or normal weight concrete floor.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - As specified in the individual P700 series design.
4. SPRAY-APPLIED FIRE PROOFING - The steel roof deck shall be sprayed with the thickness of material specified in the individual P700 series design. As an alternate to the forming material within the flutes, with a thickness equal to obtain a 2 or 3 hour fire resistance, and installed into the flutes of the protected steel floor or roof deck.
5. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width.
6. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space to a min. 6" or 6-5/8" (152mm or 168mm) depth for 2 or 3 hr rated assemblies, respectively. The forming material shall be compressed 25% into the fluted area and 50% in the nominal joint and flush with both surfaces of the wall.
7. FORMING MATERIAL (Plugs) (not shown) - As an alternate to the forming material and spray-applied fire proofing, mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes.
8. NELSON FSC3 COATING (part # AA0868) - Apply by spray or brush over the fireproofing or forming material in the joint to a nom 1/8" (3mm) thick wet applied coating. Overlap the coating 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of the wall.



**System No.
HW-D-0308**

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079

Nelson Firestop

DWG NO. FS-0387 R3

DATE: 11/30/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

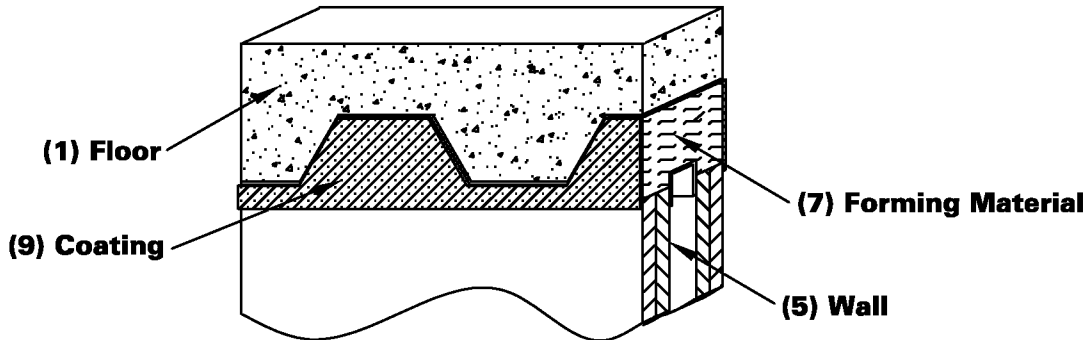
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1, 2, or 3 Hr.
L Rating at Ambient **< 1CFM/Lin Ft**
Class II Movement - 25% Compr & Ext
Nominal Joint Width - 1" (25mm)



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick light weight or normal weight concrete floor.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - As specified in the individual P700 series design.
4. SPRAY-APPLIED FIRE PROOFING (not shown) - The steel roof deck shall be sprayed with the thickness of material specified in the individual P700 series design. As an alternate to the forming material within the flutes, with a thickness equal to obtain a 1, 2, or 3 hour fire resistance, and installed into the flutes of the protected steel floor or roof deck between the top of the wall and the bottom of the protected steel floor units or roof deck.
5. WALL ASSEMBLY - Non-load bearing design rated for a min. of 1, 2, or 3 hr. fire resistance. The max separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression from its installed width. Ceiling Runner attached to bottom of the flutes.
6. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs with max. 24" (610mm) o.c. spacing.
7. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 25% into the fluted area and 50% in the nominal joint and flush with both surfaces of the wall.
8. FORMING MATERIAL (Plugs) (not shown) - As an alternate to the forming material and spray-applied fire proofing, mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes.
9. NELSON FSC3 COATING (part # AA0868) - Apply by spray or brush over the fireproofing or forming material in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0309

Nelson Firestop

DWG NO. FS-0388 R3

DATE: 11/30/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

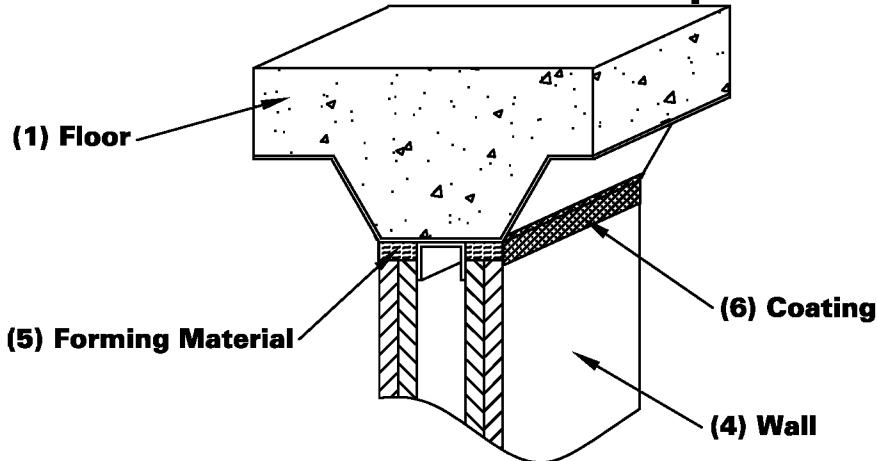
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated 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-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. SPRAY-APPLIED FIRE PROOFING (not shown) - Min. 15 pcf (240 kg/cubic meter) applied to the bottom of the steel floor, with a thickness equal to obtain a 2 hour fire resistance.
4. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width. Ceiling runner is attached to bottom of the flutes.
5. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs with max. 24" (610mm) o.c. spacing.
6. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint width and flush with both surfaces of the wall.
7. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating a min. 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0239

Nelson Firestop

DWG NO. FS-0389 R2

DATE: 11/30/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

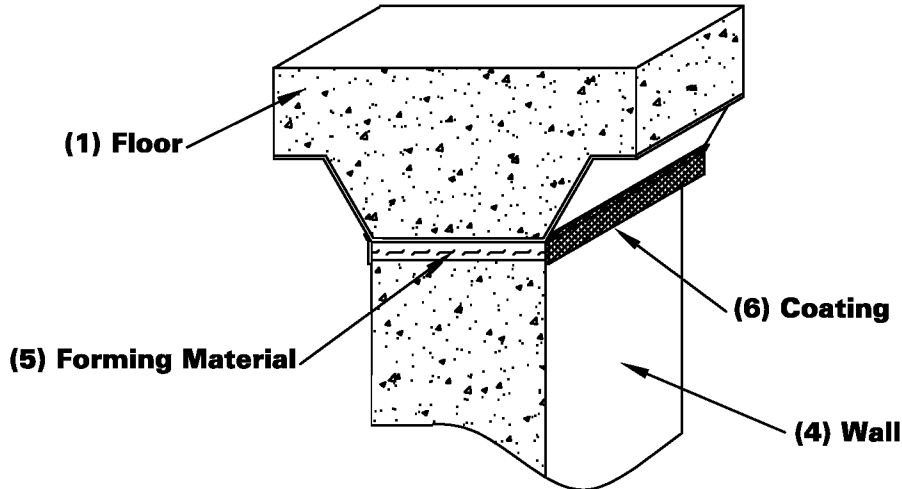
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated 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-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. SPRAY-APPLIED FIRE PROOFING (not shown) - Min. 15 pcf (240 kg/cubic meter) applied to the bottom of the steel floor, with a thickness equal to obtain a 2 hr. fire resistance.
4. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The wall may be parallel to and centered under the valleys of the steel floor. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max 25% compression from its installed width.
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint width and flush with both surfaces of the wall.
6. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating a min. 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0240

Nelson Firestop

DWG NO. FS-0390 R2

DATE: 07/20/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

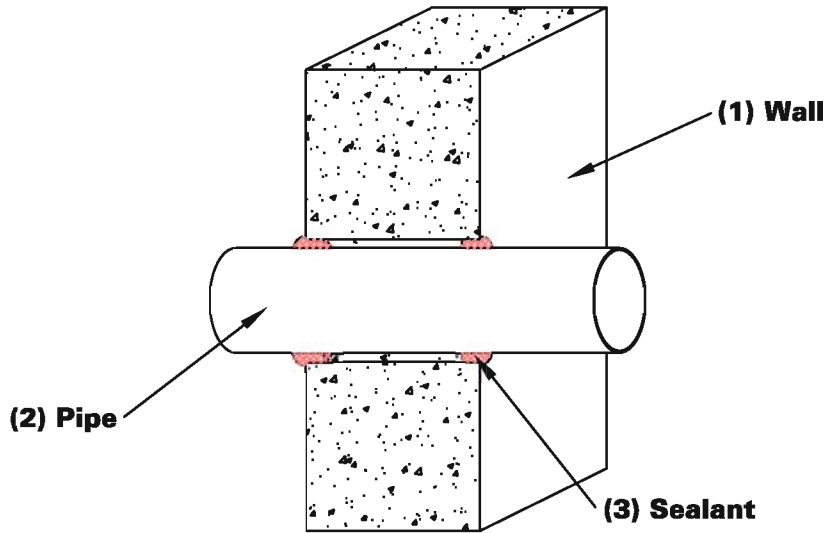
Address: _____

Signature: _____

CONCRETE WALL GLASS PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. The max. annular space is 0" (point of contact) to 1-3/8" (35mm). Max. diameter of opening is 8" (203mm).
2. GLASS PIPE - Max. nominal 6" (152mm) diameter , or smaller glass pipe. For use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
3. NELSON ES1399 SEALANT - Apply ES1399 within the annular space to a min. 5/8" (16mm) depth. Additional sealant to be applied such that a min. 1/4" (6mm) crown is formed around the through penetrant on both surfaces of wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0391R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

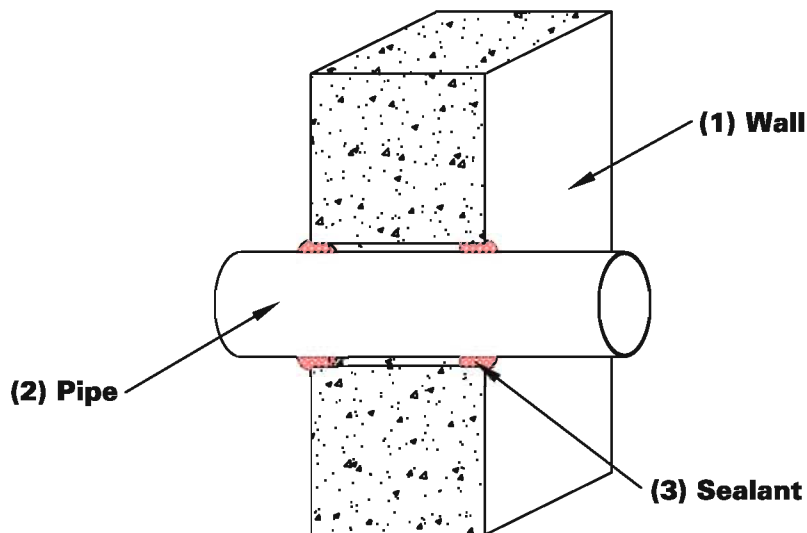
Address: _____

Signature: _____

CONCRETE WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. The max. diameter of opening is 4" (102mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space is min. 5/8" to max. 1" (16mm to 25mm).

3. NELSON ES1399 SEALANT - Apply ES1399 within the annular space to a 5/8" (16mm) depth, with an additional 1/4" (6mm) bead around the pipe where it exits the wall on both sides.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
W-J-2104**

Nelson Firestop

DWG NO. FS-0392 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

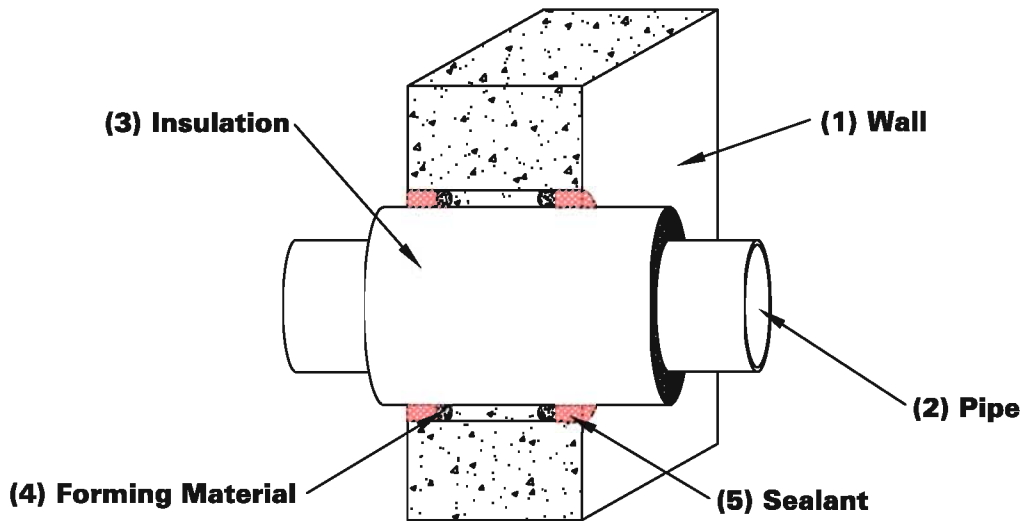
Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 12" (305mm).
2. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is 0" (point of contact) to 1-3/8" (35mm).
4. FORMING MATERIAL - Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. NELSON ES1399 SEALANT - Apply ES1399 sealant within the annular space to a min. 5/8" (16mm) depth. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the pipe and both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-5076

Nelson Firestop

DWG NO. FS-0393 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

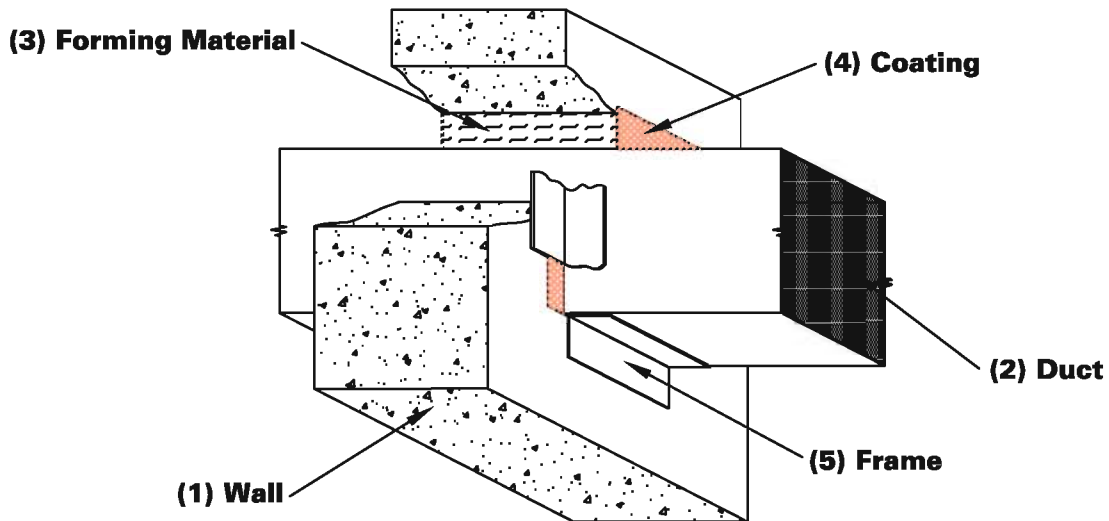
Address: _____

Signature: _____

CONCRETE WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete, or CMU block wall. The max. area of the opening is 498 sq. in. (3213 sq. cm) with a max. dimension of 22-5/8" (575mm). The annular space is 0" (point of contact) to 2" (51mm).
2. STEEL HVAC DUCT - 20" x 20" (508mm), or smaller, No. 24 gauge (or heavier) steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. FORMING MATERIAL - Tightly pack min. 6" (152mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and flush with both wall surfaces.
4. NELSON FSC3 COATING (part # AA0868) - Apply over the forming material to fill the annular space to a min. 1/8" (3mm) depth on both sides of the wall. Overlap the coating onto the wall and duct a min. 1/2" (13mm).
5. METAL FRAME - Min. No. 22 GA galvanized steel angles sized to lap duct a min. of 2" (51mm) and lap wall surfaces a min. 1-1/2" (38mm). Angles attached to steel duct on both sides of wall with min. No. 10 steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-7047**

Nelson Firestop

DWG NO. FS-0394 R2

DATE: 07/20/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

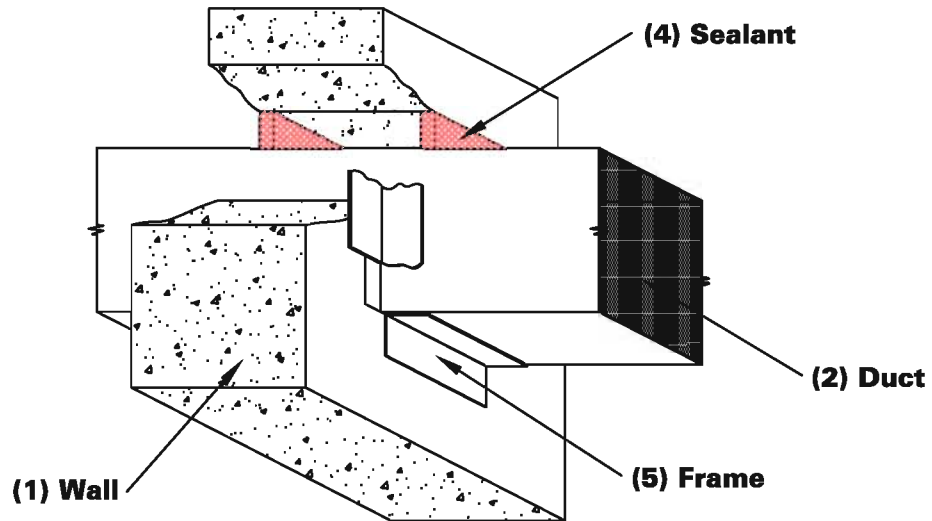
Tulsa, Ok.

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

CONCRETE WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete, or CMU block wall. The max. area of the opening is 1470 sq. in. (9484 sq. cm) with a max. dimension of 70" (1778mm). The annular space is 0" (point contact) to 3-1/2" (89mm).
2. STEEL HVAC DUCT - 67" x 18" (1702mm) x 457mm), or smaller, No. 24 gauge, or heavier, steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. FORMING MATERIAL (not shown) - Install backer rod, mineral wool, or fiberglass batt insulation into the opening and recess 5/8" (16mm) from both sides of the wall.
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the duct and the concrete on both surfaces of the wall.
5. METAL FRAME - Min. No. 22 GA galvanized steel angles sized to lap duct a min. of 2" (51mm) and lap wall surfaces a min. 1-1/2" (38mm). Angles attached to steel duct on both sides of wall with min. No. 10 steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-7048**

Nelson Firestop

DWG NO. FS-0395 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

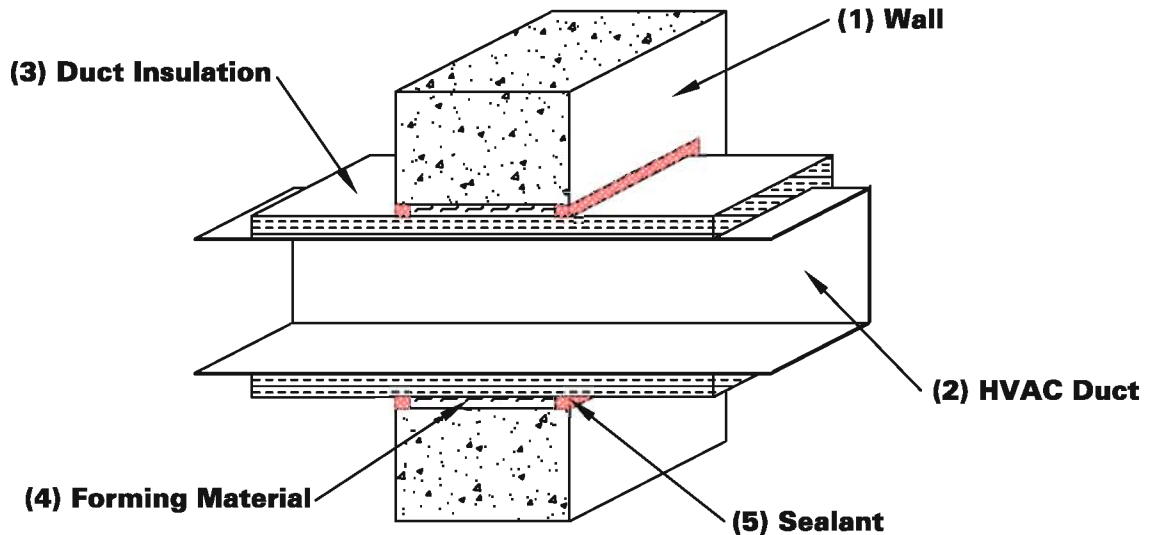
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL INSULATED HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. The max. area of the opening is 1050 sq. in. (6774 sq. cm) with a max. dimension of 35" (889mm).
2. STEEL HVAC DUCT - Max. nom 24" x 30" (610mm x 762mm) (or smaller) 24 GA (or heavier) steel duct installed eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. DUCT INSULATION - Max. 1-1/2" (38mm) thick (or thinner) FIBERGLASS jacketed on the outside with foil scrim-kraft facing. Longitudinal and transverse joints are to be sealed with aluminum foil tape. Insulation shall be compressed 50% during installation. The annular space is 1" to 2-3/4" (25mm to 70mm).
4. FORMING MATERIAL - Tightly pack min. 4-7/8" (124mm) of min 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recess 5/8" (16mm) from both surfaces of the wall.
5. NELSON ES1399 SEALANT - Apply over the forming material to fill the annular space to a min. 5/8" (16mm) depth flush with both surfaces of the wall.
6. METAL FRAME (not shown) - Properly install a 2 x 1-1/2" (51mm x 38mm), min. 22 gauge angle around perimeter of duct on each side of wall such that sealant is completely covered and the angle overlaps onto wall min. 1-1/2" (38mm).

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-7049**

Nelson Firestop

DWG NO. FS-0396 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

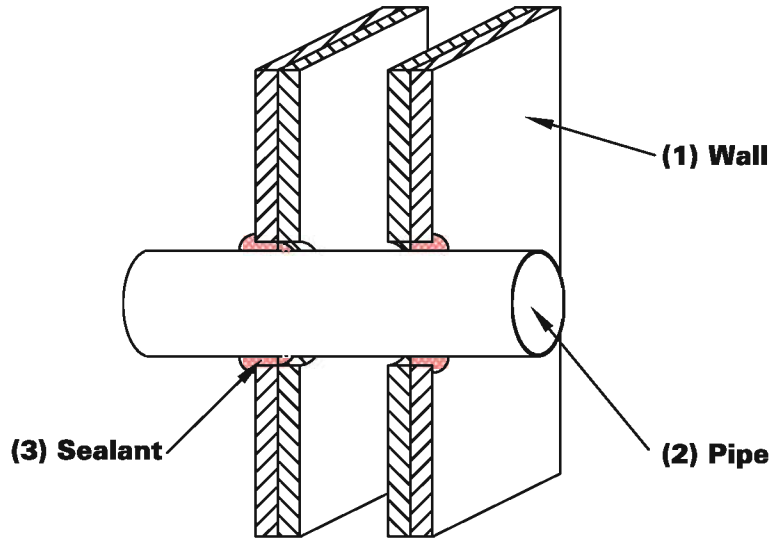
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL GLASS PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. annular space is 0" (point of contact) to 1-3/8" (35mm).
2. GLASS PIPE - Max. 6" (152mm) nominal diameter glass pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
3. NELSON ES1399 SEALANT - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, with an additional 1/4" (6mm) bead around the pipe, on the surface of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0397 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

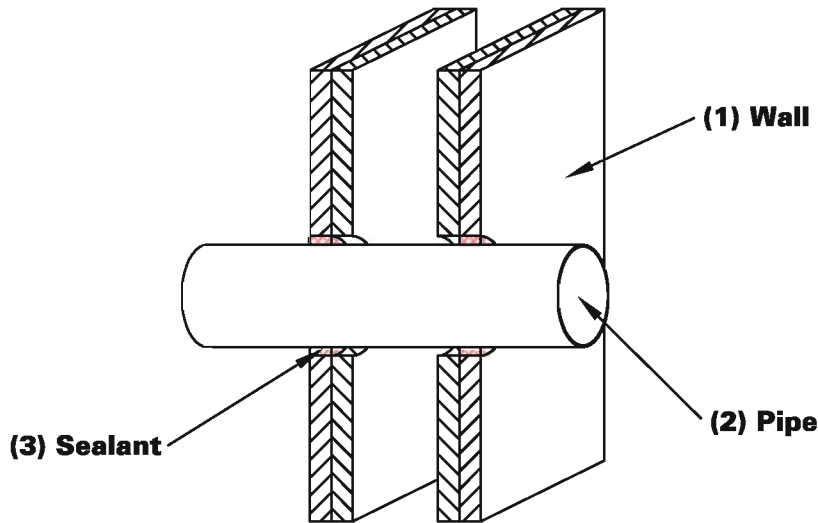
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of the opening is 4" (102mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The nom annular space is min. 5/8" to max. 1" (16mm to 25mm).
3. NELSON ES1399 SEALANT - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, flush surface of the wall on both sides. Apply an additional min. 1/4" (6mm) crown around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0398 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

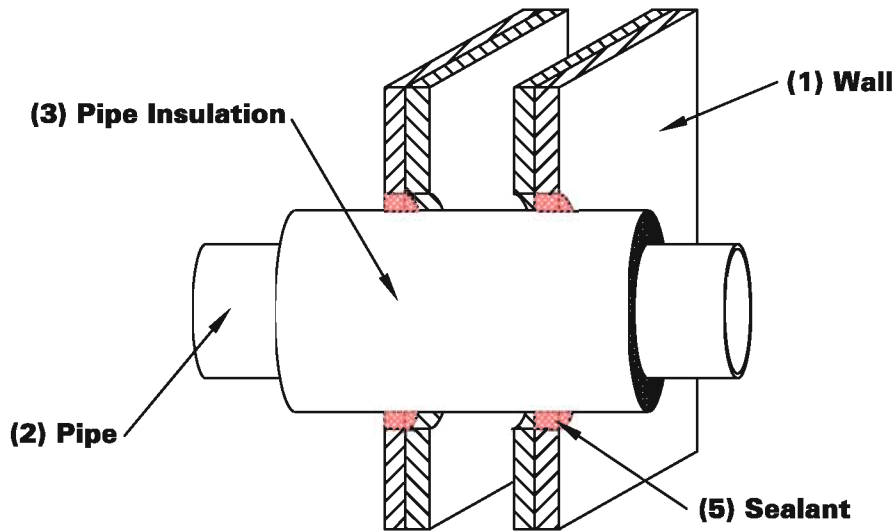
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0, 1 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 12" (305mm).
2. **METALLIC PIPE** - The following types and sizes of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. **PIPE INSULATION** - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space range is 0" (point of contact) to 1-3/8" (35mm).
4. **FORMING MATERIAL** (not shown) - Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. **NELSON ES1399 SEALANT** - Apply ES1399 to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the pipe and both surfaces of the wall. T rating is 0 or 1 hr when installed in 1 or 2 hr rated walls, respectively.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-5161

Nelson Firestop

DWG NO. FS-0399 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

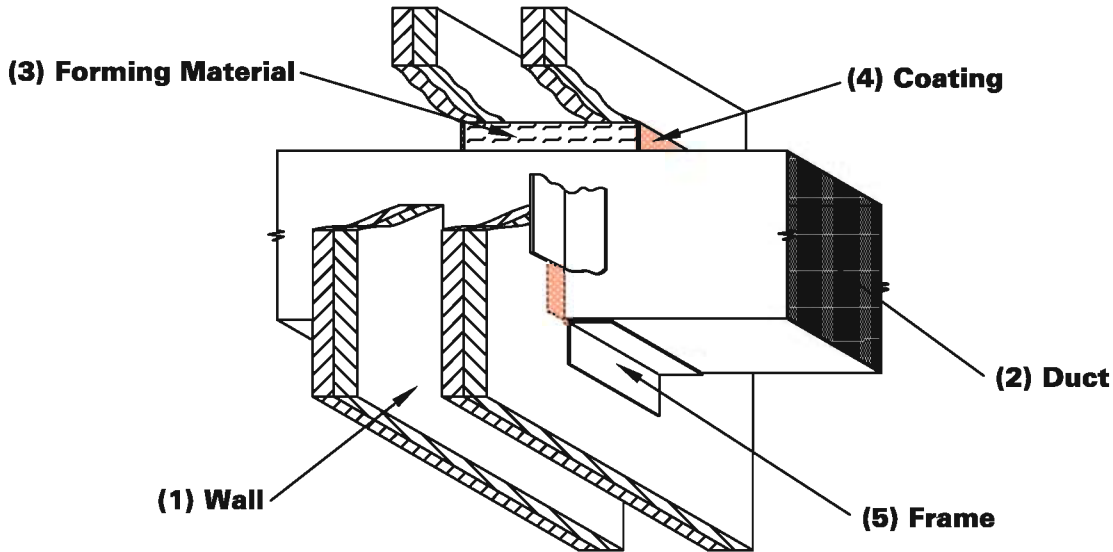
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL HVAC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of the opening is 498 sq. in. (3213 sq. cm) with a max. dimension of 22-5/8" (575mm) for steel studs. The max. area of the opening is 328 sq. in. (2116 sq. cm) with a max. dimension of 14-1/2" (368mm) for wood studs. The annular space is 0" (point contact) to 2" (51mm).
2. STEEL HVAC DUCT - 20" x 20" (508mm x 508mm), or smaller, No. 24 gauge, or heavier, steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and flush with both wall surfaces.
4. NELSON FSC3 COATING (part # AA0868) - Apply over the forming material to fill the annular space to a min. 1/8" (3mm) depth on both sides of the wall. Overlap the coating onto the wall and duct a min. 1/2" (152mm).
5. METAL FRAME - Min. No. 22 GA galvanized steel angles sized to lap duct a min. of 2" (51mm) and lap wall surfaces a min. 1-1/2" (38mm). Angles attached to steel duct on both sides of wall with min. No. 10 steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-7083**

Nelson Firestop

DWG NO. FS-0400 R2

DATE: 07/20/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

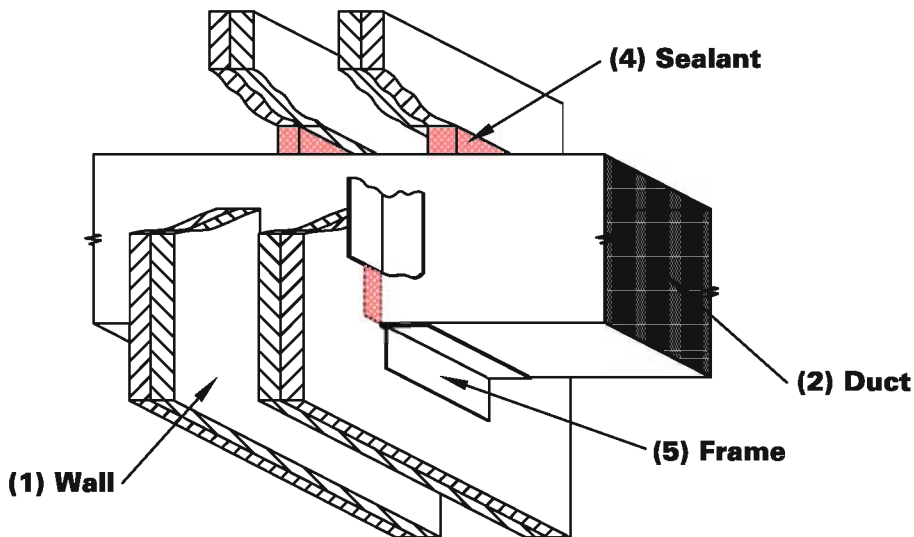
Installer: _____
Address: _____

Signature: _____

GYP SUM WALL HVAC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of opening is 1470 sq. in. (9484 sq. cm) with a max. dimension of 70" (1778mm). The annular space is 0" (point contact) to 3-1/2" (89mm).
2. **STEEL HVAC DUCT** - 67" x 18" (1702mm x 457mm), or smaller, No. 24 gauge, or heavier, steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. **FORMING MATERIAL** (not shown) - Install backer rod, mineral wool, or fiberglass batt insulation into the opening and recess 5/8" (16mm) from both sides of the wall. For 2 hr wall assemblies only.
4. **NELSON ES1399 SEALANT** - Apply within the annular space to a min. 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the duct and both surfaces of the wall.
5. **METAL FRAME** - Min. No. 22 GA galvanized steel angles sized to lap duct a min. of 2" (51mm) and lap wall surfaces a min. 1-1/2" (38mm). Angles attached to steel duct on both sides of wall with min. No. 10 steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479

CLASSIFIED
UL
C US
System No.
W-L-7084

Nelson Firestop

DWG NO. FS-0401R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

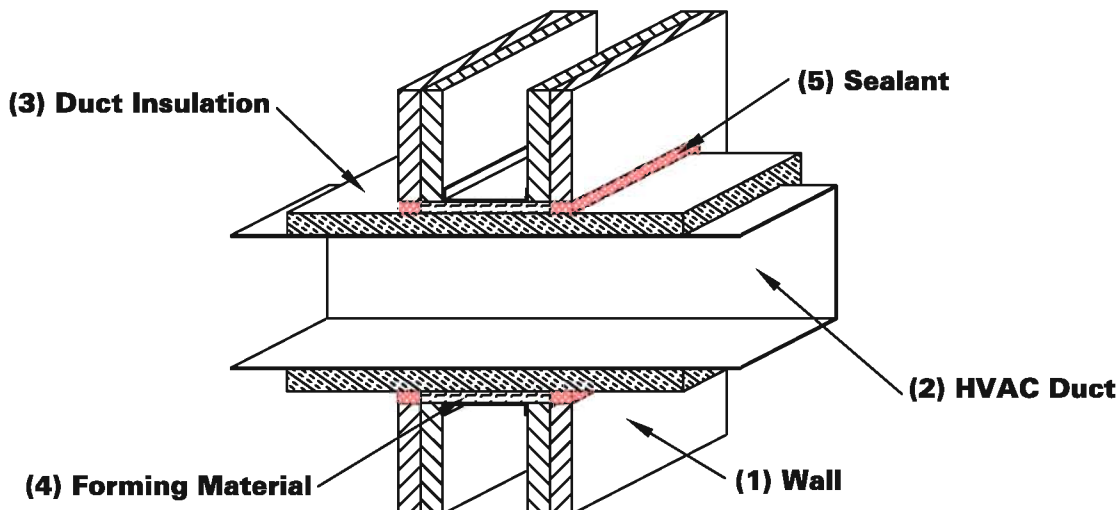
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL INSULATED HVAC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of the opening is 1050 sq. in. (6774 sq. cm) with a max. dimension of 30" (762mm) for steel studs. The max. area of the opening is 210 sq. in. (1355 sq. cm) with a max. dimension of 14-1/2" (368mm) for wood studs. opening is to be framed on all sides with stud like material. The annular space is 1" to 2-3/4" (70mm).
2. **STEEL HVAC DUCT** - Nominal 24" x 30" (610mm x 762mm) (or smaller) 24 gauge (or heavier) steel duct installed eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. **DUCT INSULATION** - Max. 1-1/2" (38mm) thick glass fiber batt or blanket (min. 3/4 pcf) jacketed on the outside with foil-scrim-kraft facing. Longitudinal and transverse joints are to be sealed with aluminum foil tape. Insulation shall be compressed 50% during installation.
4. **FORMING MATERIAL** - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recess 5/8" (16mm) from both wall surfaces.
5. **NELSON ES1399 SEALANT** - Apply to fill the annular space to a min. 5/8" (16mm) depth on both sides of the wall.
6. **METAL FRAME** (not shown) - Properly install a 2" x 1-1/2" (51mm x 38mm), min. 22 gauge angle around perimeter of duct on each side of wall such that sealant is completely covered and the angle overlaps onto wall min. 1-1/2" (38mm).

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-7085**

Nelson Firestop

DWG NO. FS-0402 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

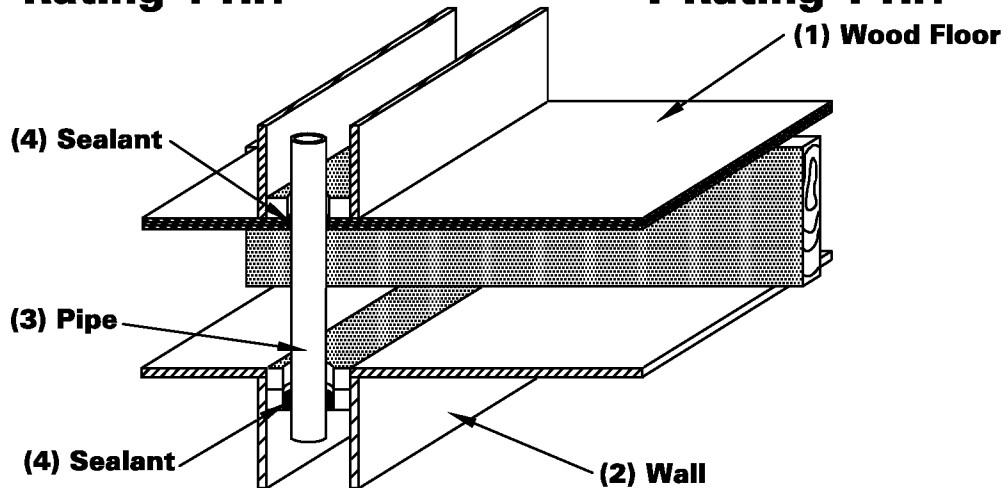
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Max. diameter of opening is 3 - 1/8" (79mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses.
 - (C) **GYPSUM BOARD** - Gypsum wallboard secured to wood/steel joists/trusses or furring channels.
2. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **NONMETALLIC PIPE** - The following types of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID NONMETALLIC CONDUIT** - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

Annular space for all penetrations is min. 1/4" to max, 1/2" (6mm to 13mm).

4. **NELSON ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of ES1399 around the pipe where it penetrates the flooring or the sole plate, and a min. 3/4" (19mm) depth where it penetrates the lower top plate with an additional min. 3/8" (10mm) crown at bottom surface of lower top plate of chase wall and top surface of floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2224**

Nelson Firestop

DWG NO. FS-0406 R2

DATE: 10/25/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

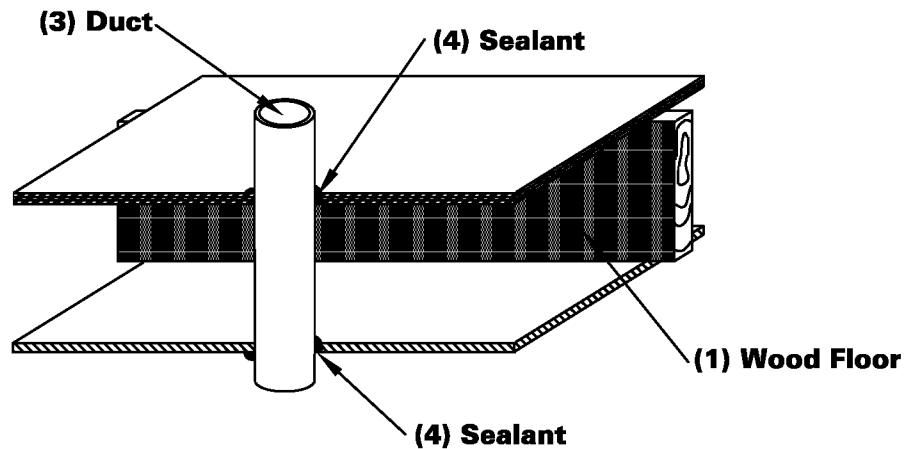
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR STEEL DUCT

F Rating 1 or 2 Hr. T Rating 1 or 1-1/2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Const. in the manner specified in individual L500 series 1 hr floor-ceiling designs in the UL Fire Res. Dir.. 2 hr floor-ceiling designs in the UL Fire Res. Dir. shall be constructed in the manner specified in design nos. L505, L511, or L536. Max. diameter of opening is 6-1/2" (165mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Const. in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **STEEL DUCT** - Max. 6" diameter, 30 gauge or heavier, galvanized steel duct, installed concentrically or eccentrically within the openings. Annular space shall be 0" (point of contact) to 1/2" (13mm).
4. **NELSON ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of ES1399 flush with annulus on top surface of floor or sole plate. Min. 1/2" (13mm) depth where it penetrates the ceiling or bottom surface of lower top plate of optional chase wall assembly. At areas of point of contact, apply a additional 3/8" (10mm) bead at the interface between the duct and the floor and ceiling or top plate. T rating is 1 or 1-1/2 hr when installed in 1 or 2 hr rated walls, respectively.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0408 R2

DATE: 10/24/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

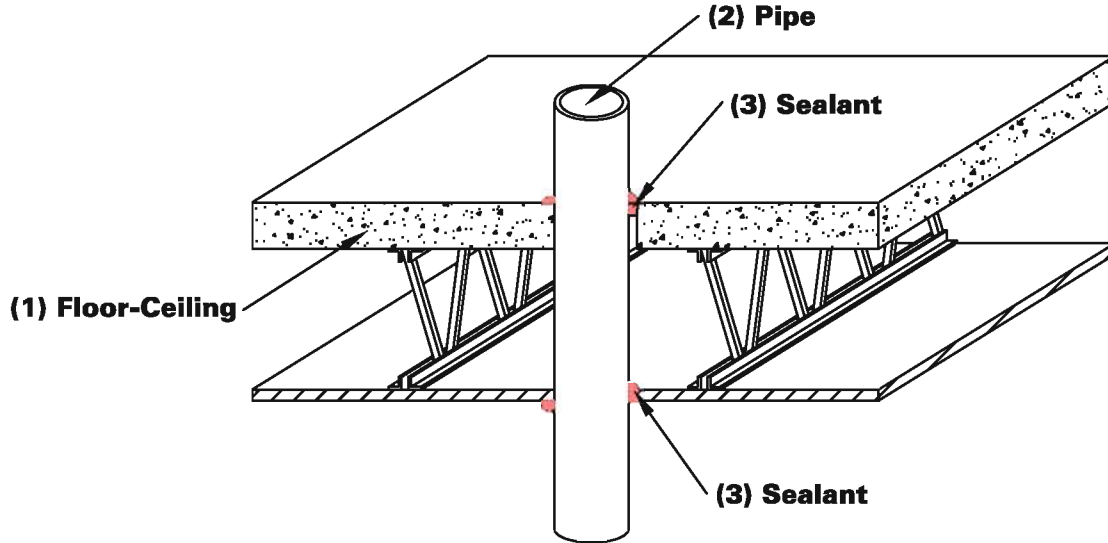
Address: _____

Signature: _____

CONCRETE JOIST FLOOR METALLIC PIPE OR CONDUIT

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Const. in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 5" (127mm).
2. METALLIC PIPE - The following types and sizes of metallic pipe, conduit or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or rigid galv steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 3" (76mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Annular space range is 0" (point of contact) to 1/2" (13mm) for steel, cast iron, or EMT penetrants, and 0" (point of contact) to 7/8" (22mm) for copper pipe or tubing. Max. diameter of opening is 5" (127mm).
3. NELSON ES1399 SEALANT - Apply a min. 3/4" (19mm) depth of ES1399 around the pipe where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling. At areas of point of contact, apply an additional min. 1/4" (6mm) diameter bead at the interface between the pipe and the top surface of the concrete (floor) and bottom surface of the gypsum board (ceiling).

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0409 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

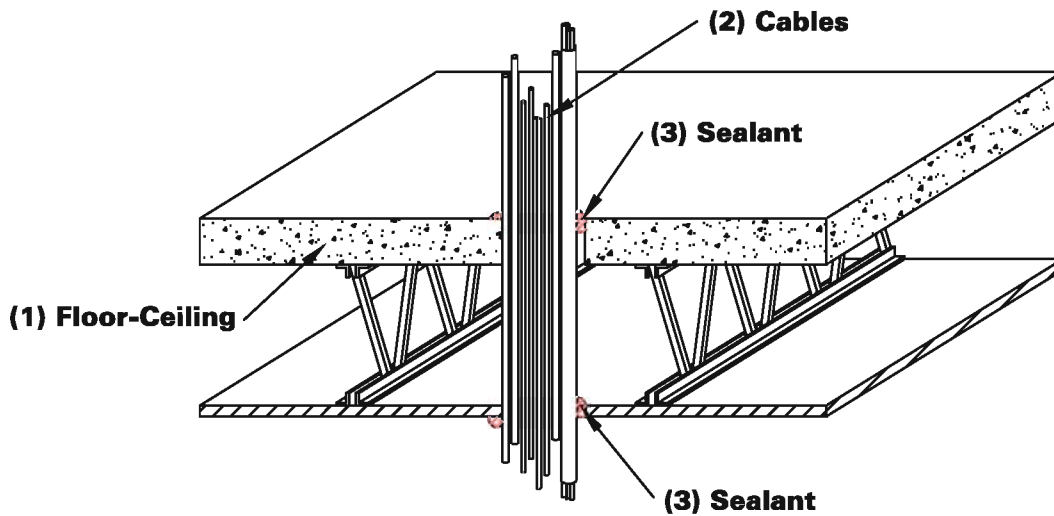
Installer: _____
Address: _____

Signature: _____

CONCRETE JOIST FLOOR CABLES

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Const. in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Annular space range for all penetrants is 0" (point of contact) to 1/2" (13mm). Max. diameter of opening is 4" (102mm).
2. CABLES - Max. 3-1/2" (89mm) diameter, or smaller bundle of:
 - (A) max. 100pr #24awg or smaller telecommunication cable w/PVC jacketing
 - (B) max. 3/C #2/0awg or smaller aluminum conductor SER cable w/PVC jacketing
 - (C) max. 3/C w/#12awg or smaller Type NM (ROMEX) w/PVC jacketing
 - (D) max. 7/C #12awg , or smaller cables with PVC jacketing
 - (E) max. RG/U or smaller copper conductor coaxial cable w/fluorinated ethylene jacketing
 - (F) max. (1) 4/C #2awg aluminum or copper conductor aluminum jacketed METAL CLAD cable within the cable bundle.
 Maintain 3-1/2" (89mm) diameter cable bundle when included with other mentioned cables.
3. NELSON ES1399 SEALANT - Apply a min. 3/4" (19mm) depth of ES1399 around the cables where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling. At areas of point of contact, apply an additional 1/4" (6mm) bead at the interface between the cables and the top surface of the concrete (floor) and bottom surface of the gypsum board (ceiling).

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0410 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

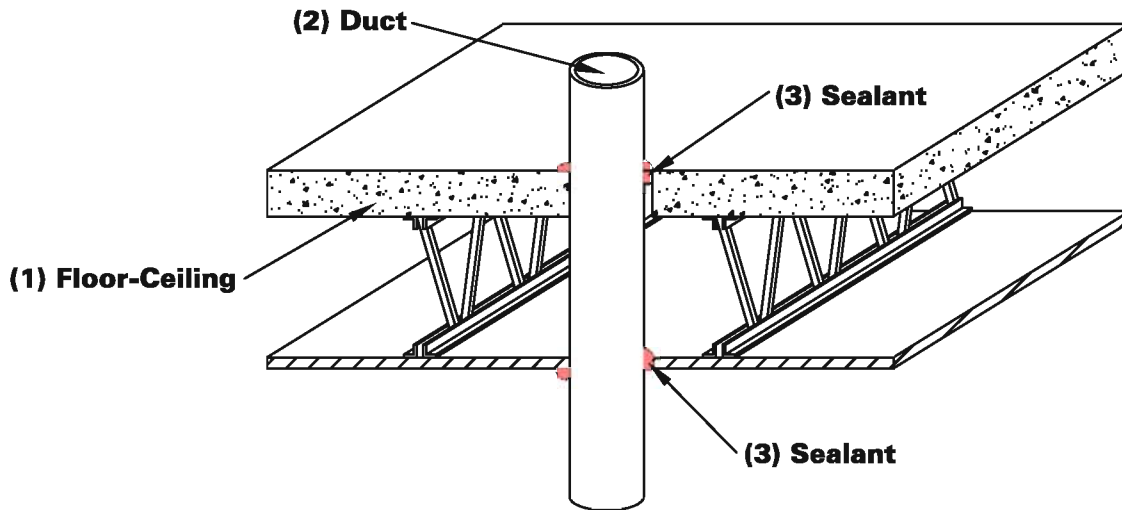
Address: _____

Signature: _____

CONCRETE JOIST FLOOR STEEL DUCT

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Const. in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Annular space range for all penetrations is 0" (point of contact) to 1/2" (13mm). Max. diameter of opening is 6-1/2" (165mm).
2. STEEL DUCT - Max. 6" (152mm) diameter, or smaller, 30 gauge (or heavier), steel duct, installed concentrically or eccentrically within the openings.
3. NELSON ES1399 SEALANT - Apply a min. 3/4" (19mm) depth of ES1399 around the duct where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling. At areas of point of contact, apply an additional 1/4" (6mm) bead at the interface between the duct and the top surface of the concrete (floor) and bottom surface of the gypsum board (ceiling).

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0411 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - The cementitious base coat and reinforcing mesh is applied over the Exterior Curtain Wall Insulation. Apply 1/16" to 1/8" (3mm) thick cementitious base coat to the exposed surface of the EPS foam. Apply the mesh in accordance with manufacturer's recommendations.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the FSC3 coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 278 P**

DWG NO. FS-0412 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) ong Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - The plaster base coat and reinforcing mesh is applied over the Exterior Curtain Wall Insulation. Apply 1/16" (2mm) to 1/8" (3mm) thick plaster base coat to the exposed surface of the EPS foam. Apply the mesh in accordance with manufacturer's recommendations.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with the top surface or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 279 P**

DWG NO. FS-0413 R3
Page 2 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

PERIMETER FIRE BARRIER SYSTEM EIFS CURTAIN WALL

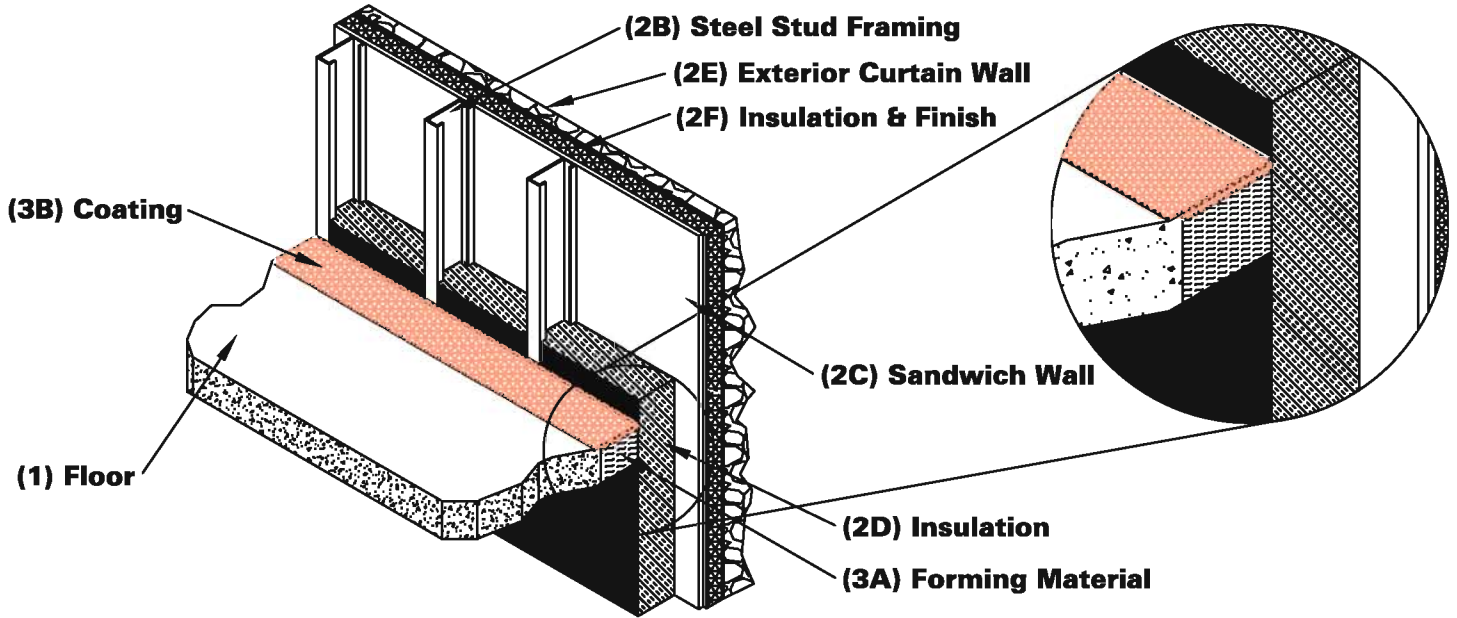
Stone & Mortar

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. **CONCRETE FLOOR ASSEMBLY** - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. **CURTAIN WALL ASSEMBLY** - The curtain wall assembly shall incorporate the following construction features:
 - (A) **Mounting Attachment** (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) **Steel Stud Framing** - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 280 P**

DWG NO. FS-0414 R3
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06
BY: RL
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foils crim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation (optional) - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - Use stone and mortar of any type. Mortar joints not to exceed 7/8" (22mm). Secure stone wall finish to wall assembly using conventional acceptable masonry techniques.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) mineral wool batt insulation installed with the fibers running density, parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 280 P**

DWG NO. FS-0414 R3
Page 2 of 2

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

DATE: 04/19/06
BY: RL
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

(C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.

(D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.

(E) Exterior Curtain Wall Insulation (optional) - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.

(F) Exterior Curtain Wall Finish - Use brick and mortar of any type. Mortar joints not to exceed 7/8" (22mm). Secure bricks to wall assembly using conventional acceptable masonry techniques.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

(A) Forming Material - Min. 4" thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.

(B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).

(C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.

(D) Support Clips (not shown) - Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 281 P**

DWG NO. FS-0415 R3
Page 2 of 2

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM EIFS CURTAIN WALL

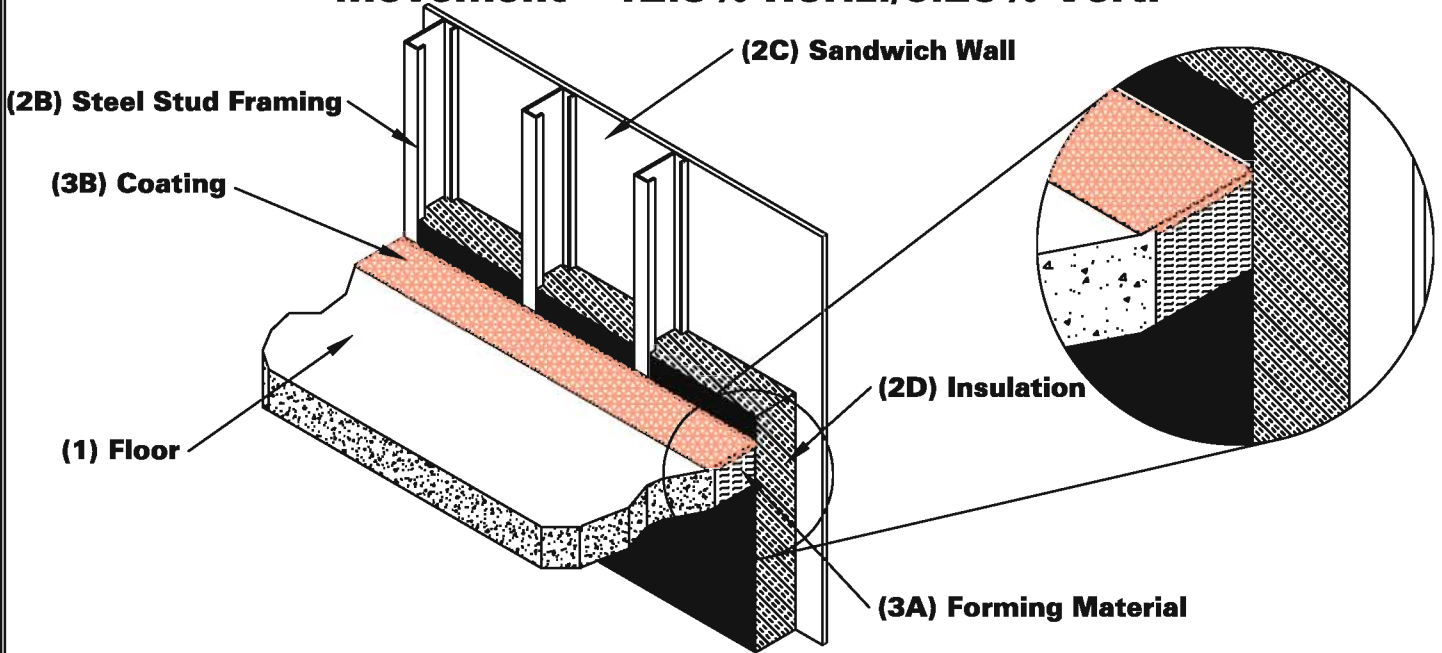
Exterior Gypsum

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 282 P**

Nelson Firestop

DWG NO. FS-0416 R3
Page 1 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt (102mm) thick insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 282 P**

Nelson Firestop

DWG NO. FS-0416 R3
Page 2 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

PERIMETER FIRE BARRIER SYSTEM EIFS VISION GLASS CURTAIN WALL

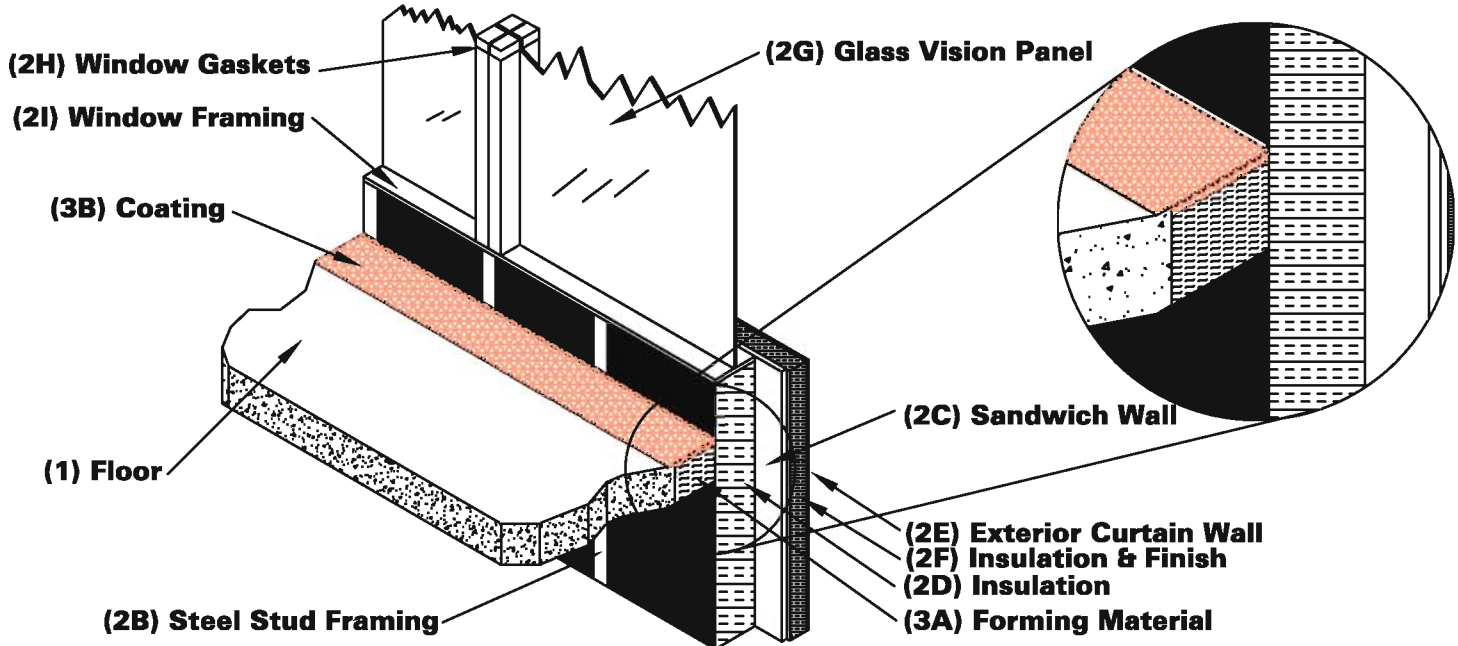
Exterior Foam & Cementitious Finish

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 283 P**

DWG NO. FS-0417 R3
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - The cementitious base coat and reinforcing mesh is applied over the Exterior Curtain Wall Insulation. Apply 1/16" (2mm) to 1/8" (3mm) thick cementitious base coat to the exposed surface of the EPS foam. Apply the mesh in accordance with manufacturer's recommendations.
- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing at least 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 283 P**

DWG NO. FS-0417 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

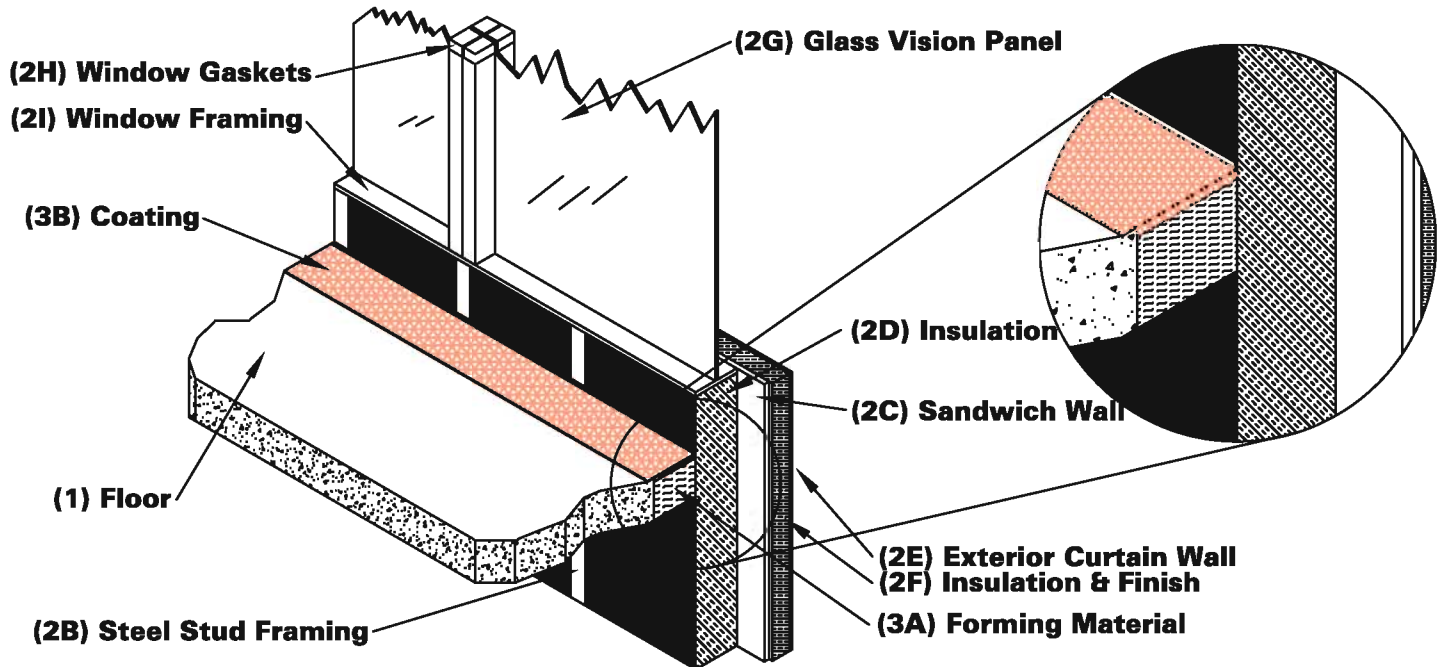
PERIMETER FIRE BARRIER SYSTEM EIFS VISION GLASS CURTAIN WALL

Exterior Foam & Plaster Finish

F Rating 2 Hr. T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. **CONCRETE FLOOR ASSEMBLY** - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602 - 2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. **CURTAIN WALL ASSEMBLY** - The curtain wall assembly shall incorporate the following construction features:
 - (A) **Mounting Attachment** (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) **Steel Stud Framing** - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 284 P**

Nelson Firestop

DWG NO. FS-0418 R3

Page 1 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - The plaster base coat and reinforcing mesh is applied over the Exterior Curtain Wall Insulation. Apply 1/16" (2mm) to 1/8" (3mm) thick plaster base coat to the exposed surface of the EPS foam. Apply the mesh in accordance with manufacturer's recommendations.
- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:
- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
 - (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
 - (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 284 P**

DWG NO. FS-0418 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM EIFS VISION GLASS CURTAIN WALL

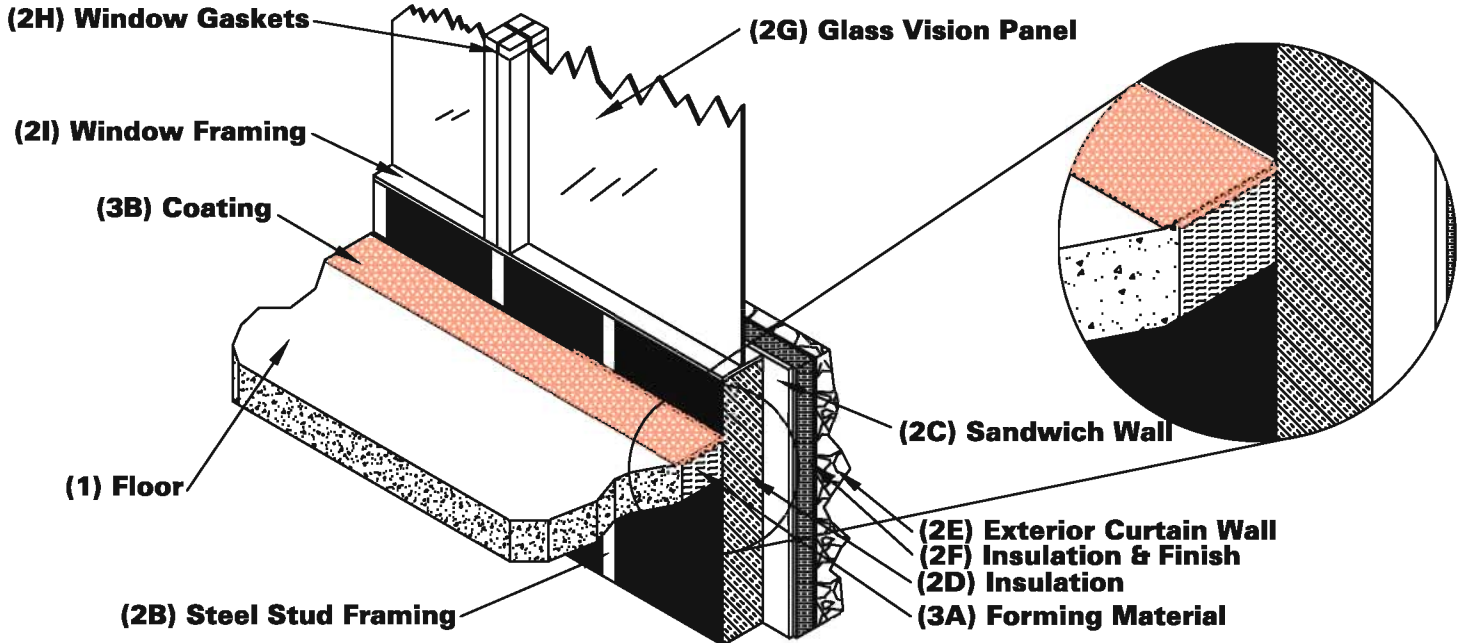
Stone & Mortar

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602 - 2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blackout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blackout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 285 P**

DWG NO. FS-0419 R3
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
 800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation (optional) - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" (1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - Use stone and mortar of any type. Mortar joints not to exceed 7/8" (22mm). Secure stone wall finish to wall assembly using conventional acceptable masonry techniques.
- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 285 P**

DWG NO. FS-0419 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM EIFS VISION GLASS CURTAIN WALL

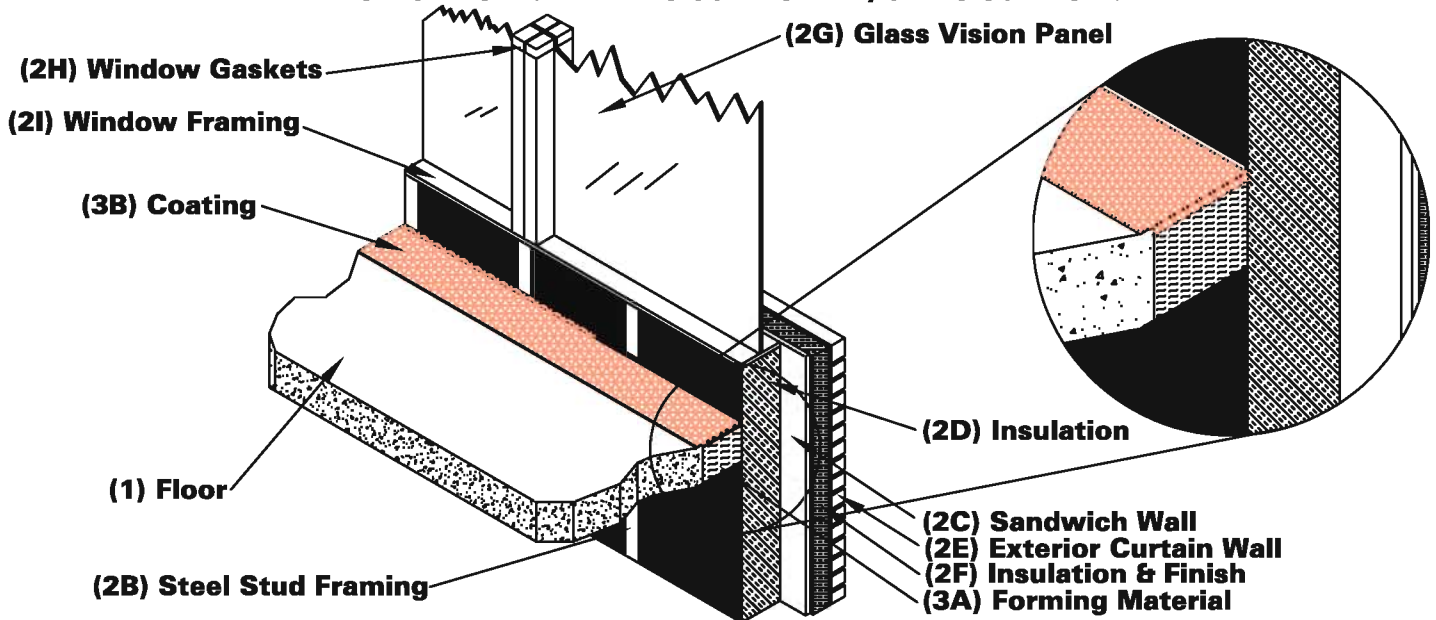
Brick & Mortar

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blackout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blackout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 286 P**

DWG NO. FS-0420 R3
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" (102mm) thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Exterior Curtain Wall Insulation (optional) - An Exterior Insulation Finish System (EIFS) is composed of an expanded polystyrene foam (EPS) insulation, and a Exterior Curtain Wall Finish. The EIFS system is a monolithic assembly without expansion or control joints. The EPS foam boards measure 24" (610mm) wide by 48" 1219mm) long by 4" (102mm) thick with a nominal density of 1 pcf (16 kg/cubic meter). The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations.
- (F) Exterior Curtain Wall Finish - Use brick and mortar of any type. Mortar joints not to exceed 7/8" (22mm). Secure bricks to wall assembly using conventional acceptable masonry techniques.
- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK Sealant S/L (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 286 P**

DWG NO. FS-0420 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM EIFS VISION GLASS CURTAIN WALL

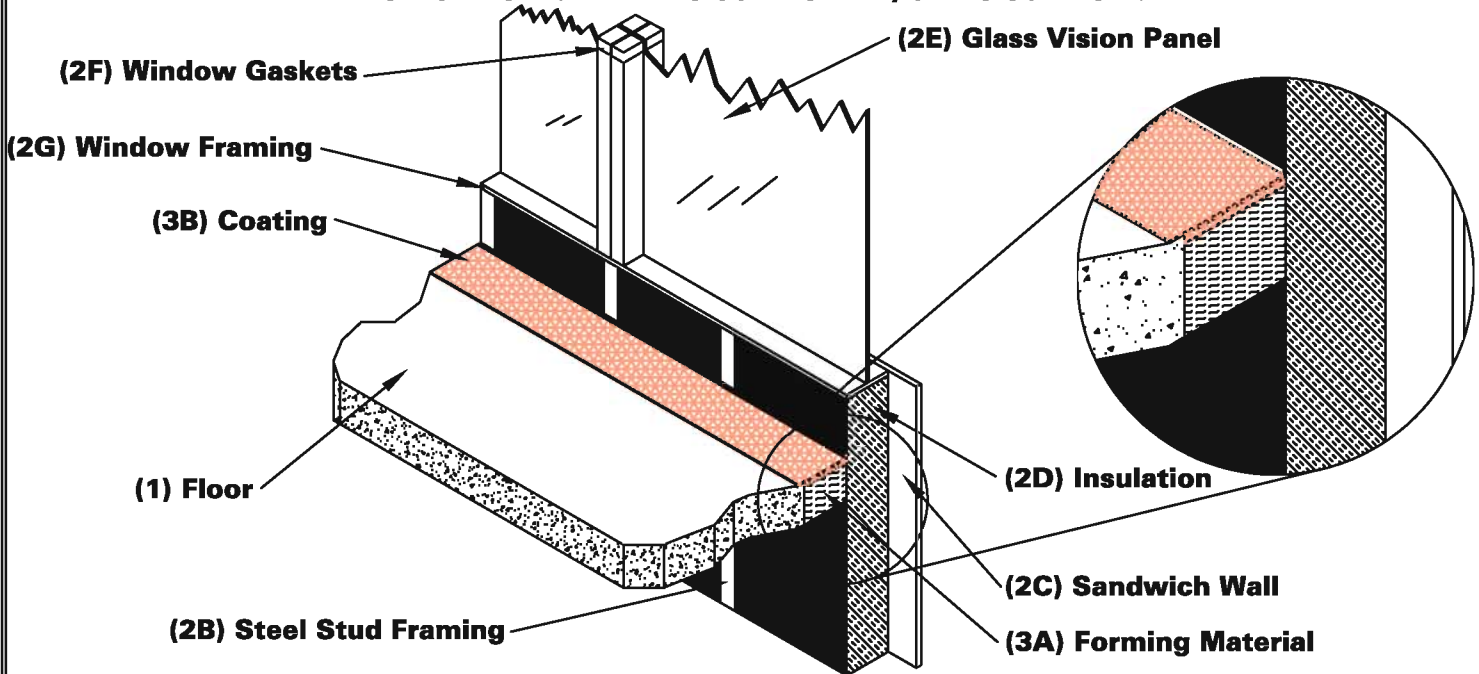
Exterior Gypsum

F Rating 2 Hr.

T Rating 2 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) - Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. The mounting attachments to the floor slab shall be connected to the joint face of the floor slab at every floor, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs secured in an 18 GA steel track top and bottom using #6 x 1.25" (32mm) bugle head SD PT screws. Vertical framing shall not exceed a spacing of 16" (406mm) o.c..



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 287 P**

DWG NO. FS-0421 R3
Page 1 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

- (C) Sandwich Wall Surface - Use a min. 1/2" (13mm) thick, 48" (1219mm) wide x 96" (2438mm) long, exterior grade gypsum wallboard (ASTM C79), placed over and secured to framing with min. 1-1/4" (32mm) long Type S drywall screws 8" (203mm) o.c.. As an option, min. 5/8" (16mm) water-resistant Type X gypsum wallboard sheathing with embedded glass mat facing and non-flammable primer coating, and having a nom. weight of 2300lb/msf. may be used in place of the gypsum sheathing.
- (D) Curtain Wall Insulation - A nom. 24" (610mm) wide by 34" (864mm) tall by 4" thick min. 4 pcf (64 kg/cubic meter) mineral wool batt insulation, faced on one side with aluminum foil scrim (vapor retarder) which faces the room interior, is cut to a width slightly larger than 16" (406mm) and installed in each stud cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining the min. 34" (864mm) vertical length. Batt is fitted tightly between vertical framing members. The curtain wall insulation shall completely fill the recess of the min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs.
- (E) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (F) Window Gaskets - Secure glass vision panels with a thermal break.
- (G) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or redressed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips - (Not Shown) Support clips are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 287 P**

DWG NO. FS-0421 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

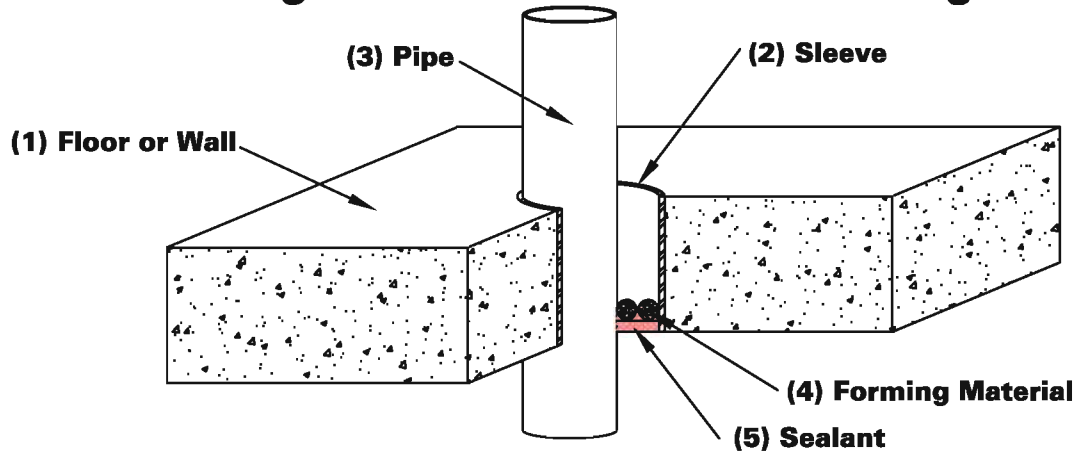
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL METALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 9-5/8" (244mm) and 7" (178mm) when precast concrete units are used.
2. METALLIC SLEEVE (optional) - Max. nominal 5" (127mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE OR CONDUIT - The following types and sizes of metallic pipe, conduit or tubing may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
 Annular space range is 0" (point of contact) to 1" (25mm).
4. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from surface of the floor or from both surfaces of wall.
5. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with either the bottom or top surfaces of the floor or one surface of the wall. At areas of point of contact, apply a 3/8" (10mm) diameter bead of sealant at the interface between the pipe and the bottom or top floor surface or at wall surface. In HOLLOW-CORE floors, sealant shall be installed on the bottom side of the floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1439**

Nelson Firestop

DWG NO. FS-0456 R0

DATE: 06/11/02

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

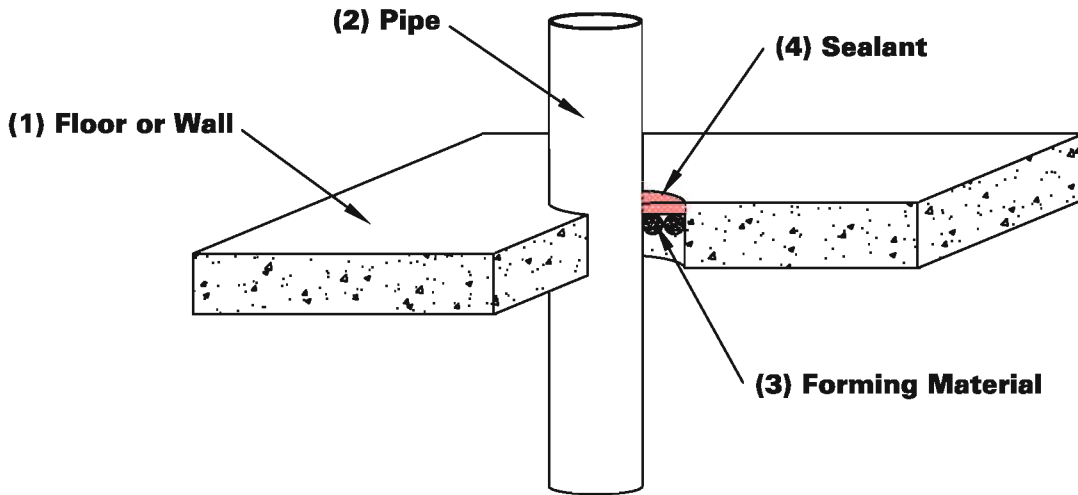
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Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 24-7/8" (632mm) or 7" (178mm) when HOLLOW-CORE floor is used.
2. METALLIC PIPE OR CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 6" (152mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
 Annular space range is 0" (point of contact) to 7/8" (22mm).
3. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from top side of the floor or from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall or HOLLOW-CORE floor. At areas of point of contact, apply a 1/4" (6mm) diameter bead of sealant at the interface between the pipe and the top surface of floor or both surfaces of wall or HOLLOW-CORE floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1440**

Nelson Firestop

DWG NO. FS-0457 R0

DATE: 06/11/02

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

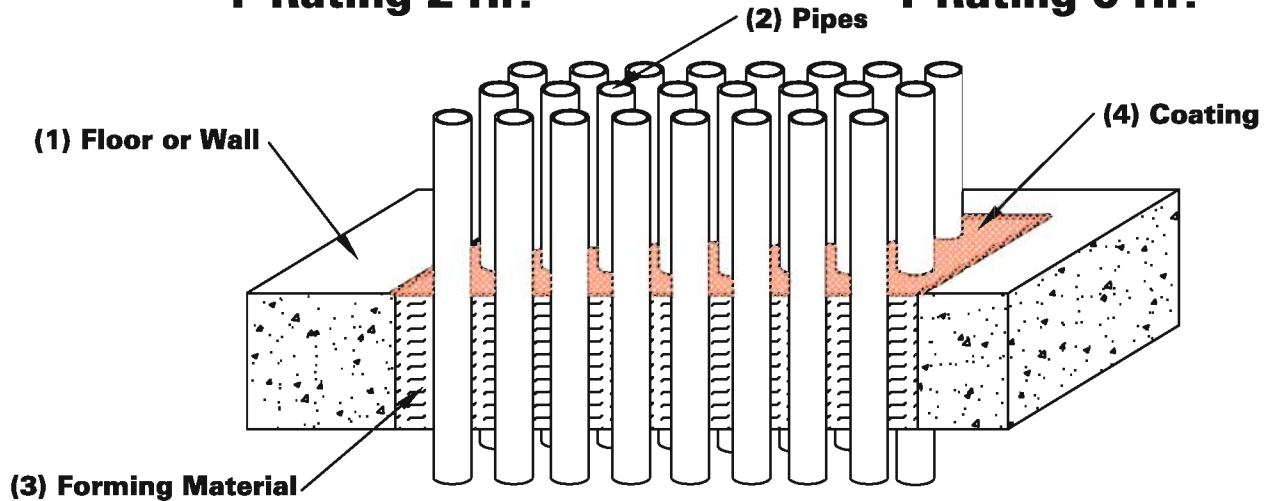
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULT. METALLIC PIPES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. size of opening is 864 sq. in. (5574 sq. cm) with a max. dimension of 48" (1219mm).
2. METALLIC PIPES OR CONDUITS - A max. of (24) pipes, conduits or tubing to be installed within the opening. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING - Nom 1-1/2" (38mm) diameter (or smaller) Type L (or heavier) copper tubing.

Annular space shall be 5/16" to 2-1/2" (8mm to 64mm) between penetrants and 0" (point of contact) to 2" (51mm) between periphery of opening and pipes.
3. FORMING MATERIAL- Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth. Forming material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of coating.
4. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material to a nominal 1/8" (3mm) thick wet applied coating, flush with top surface of floor or both surfaces of wall. Overlap the edges of the opening and the penetrant surfaces above the floor surface or from both wall surfaces by a min. 1/2" (13mm).

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1441**

Nelson Firestop

DWG NO. FS-0458 R1

DATE: 07/20/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

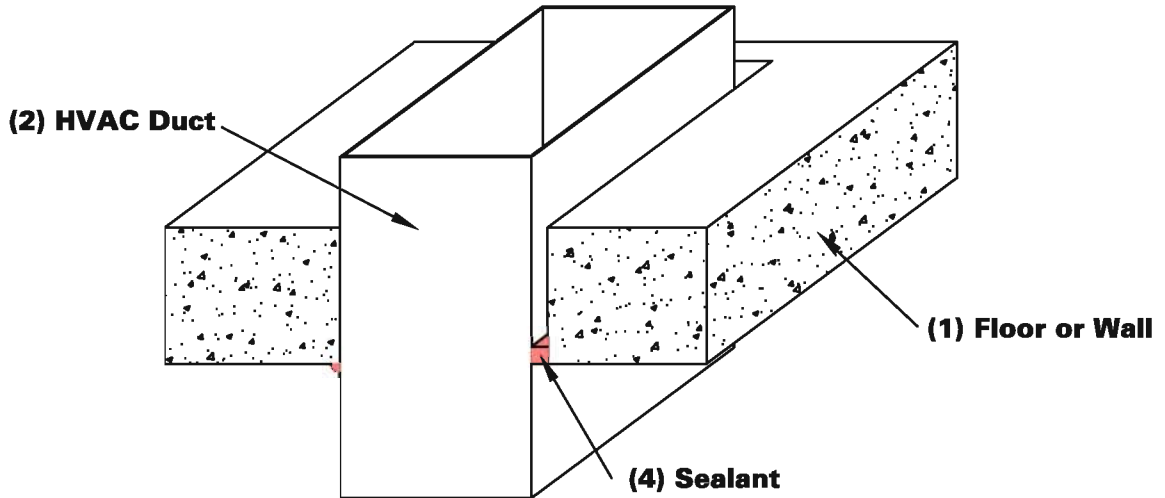
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Address: _____

Signature: _____

CONCRETE FLOOR OR WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. area of opening is 364 sq. in. (2348 sq. cm) with a max. dimension of 26" (660mm). When HOLLOW-CORE floor is used the max. area of opening is 49 sq. in. (316 sq. cm) with a max. dimension of 7" (178mm). The max. annular space space range is 0" (point of contact) to 2" (51mm).
2. HVAC DUCT - Max. 12" x 24" (305mm x 610mm), 24 gauge (or heavier), galv., sheet steel HVAC duct. Duct to be rigidly supported on both sides of floor or wall assembly.
3. FORMING MATERIAL (not shown) - Min. 1" (25mm) thick polystrene board, firmly packed into opening. Recess forming material from bottom or top surface of floor or from one surface of wall to accomodate the required thickness of fill material.
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 1" (25mm) depth, flush with either the top or bottom surface of floor or one surface of wall. When a HOLLOW-CORE floor is used, sealant shall be installed on the bottom surface of the floor. At areas of point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/duct interface on the bottom or top surface of floor or one surface of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-7077

Nelson Firestop

DWG NO. FS-0459 R1

DATE: 07/20/06

BY: RL

MEA #125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

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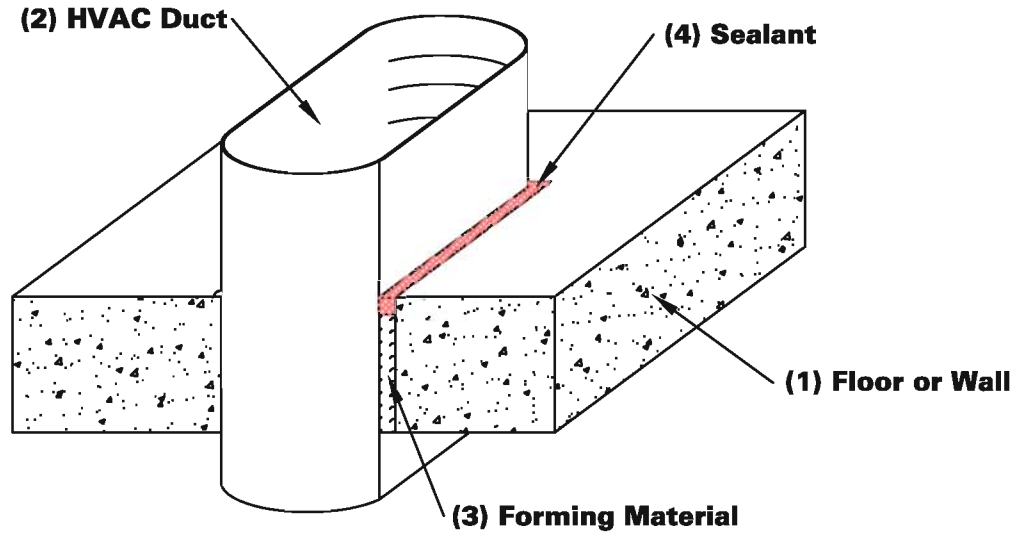
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Address: _____

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CONCRETE FLOOR OR WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall, or CMU block wall. Max. area of opening is 715 sq. in. (4613 sq. cm) with a max. dimension of 37-1/4" (946mm). The max. annular space is 0" (point of contact) to 2" (51mm).
2. HVAC DUCT - Max. 20" x 36" (508mm x 914mm), 24 gauge (or heavier), galv., sheet steel oval HVAC duct. Duct to be rigidly supported along its entire perimeter 8" (203mm) from both surfaces of floor or wall assembly.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from top surface of floor or from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of floor or both surfaces of wall. At areas of point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/duct interface on the top surface of floor or both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-7078

Nelson Firestop

DWG NO. FS-0460 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

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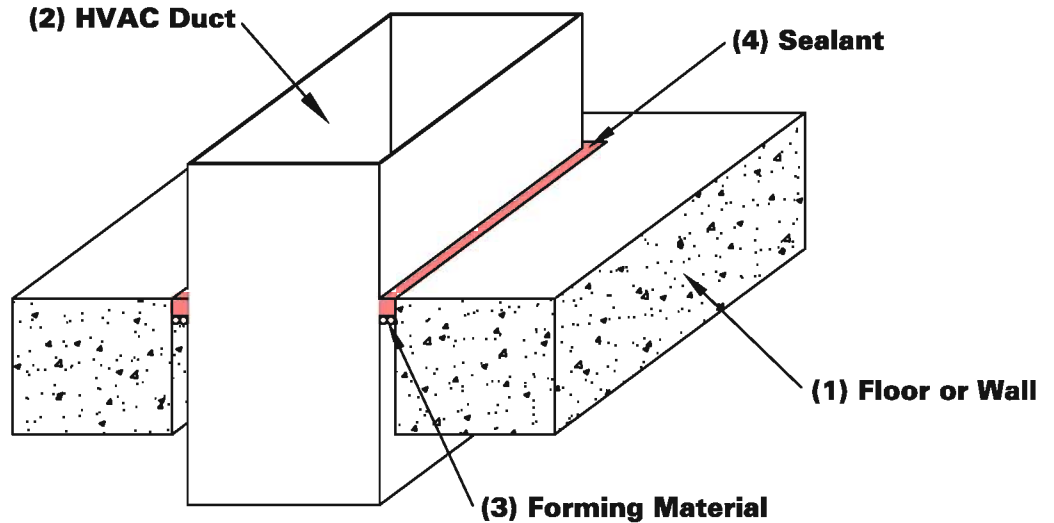
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CONCRETE FLOOR OR WALL HVAC DUCT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 8" (203mm) thick HOLLOW-CORE Precast Concrete Units. Max. area of opening is 384 sq. in. (2477 sq. cm) with a max. dimension of 32" (813mm). When a HOLLOW-CORE floor is used, the max. area of opening is 49 sq. in. (316 sq. cm) with a max. dimension of 7" (178mm). The nominal annular space is 1/2" (13mm) to 1-1/2" (38mm).
2. HVAC DUCT - Max. 10" x 30" (254mm x 762mm), 24 gauge (or heavier), galv., sheet steel HVAC duct. Duct to be rigidly supported along its perimeter 4" (102mm) from both floor or wall surfaces.
3. FORMING MATERIAL - Min. 1" (25mm) diameter backer rod or min. 4pcf (64 kg/cm) mineral wool batt insulation, firmly packed into opening. Recess forming material from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 1" (25mm) depth, flush with the top surface of floor or both surfaces of wall. When a HOLLOW-CORE floor is used, sealant shall be installed on both surfaces of the floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-7079

Nelson Firestop

DWG NO. FS-0461R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

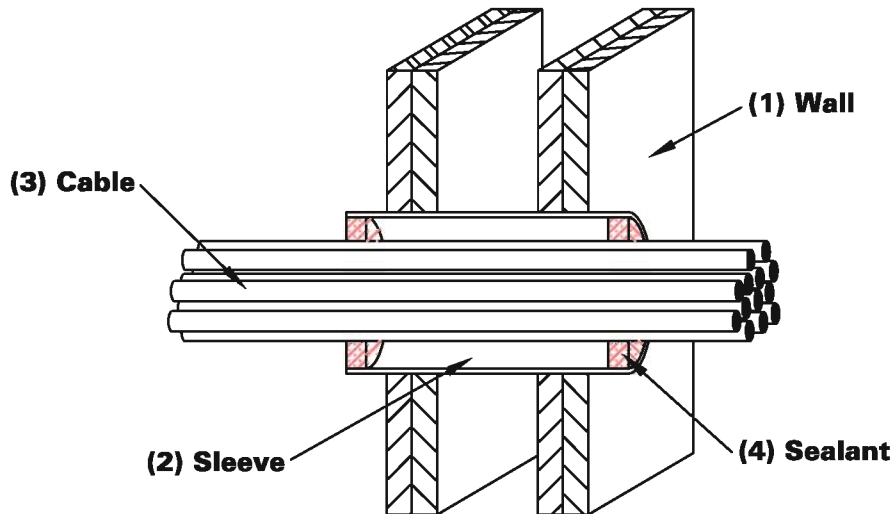
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Address: _____

Signature: _____

GYPSUM WALL SLEEVED CABLES

F Rating 1 or 2 Hr.

T Rating 1/2 or 1 Hr.



1. WALL ASSEMBLY - Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 4-1/2" (114mm). The hourly T rating is 1/2 hr or 1 hr for 1 or 2 hr rated assemblies, respectively.
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter (or smaller), steel, iron or EMT sleeve with 0.083 in. wall thickness, tightly fitted into wall opening. Sleeve will extend a nominal 1" (25mm) beyond each surface of the wall.
3. CABLES - Max. 18.6% cable fill of opening in any combination of:
 - (A) max. 7/C #16awg or smaller power and control cables w/XLPE or PVC jacket.
 - (B) max. 4pr #24awg or smaller data cables w/Hylar jacket.
 - (C) max. 2/C #12awg or smaller cables w/PVC jacket.
 - (D) max. 62.5/125 micron fibre optic cables w/PVC jacket.
 - (E) max. Type RG59/U coaxial cables with polyethylene (PE) insulation and PVC jacket.

The annular space between cable bundle and edge of metallic sleeve shall be min. 0" (point of contact) to max. 2" (51mm).
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 5/8" (16mm) depth, flush with both ends of the sleeve. Sealant to be tightly packed within interstices of cable bundle. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the interfaces of the sleeve and both wall surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3204

Nelson Firestop

DWG NO. FS-0462 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

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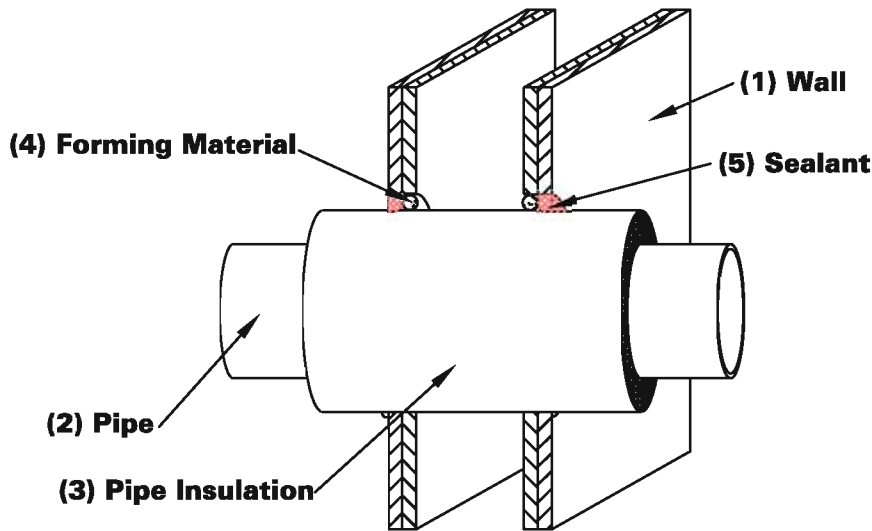
Installer: _____

Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 18-5/16" (465mm) in steel stud walls and 14-1/2" (368mm) in wood stud walls. T rating is 3/4 or 1-1/2 hr for 1 or 2 hr rated assemblies, respectively. The inside diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of pipe covering.
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space range is 0" (point of contact) to 1-9/16" (40mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
5. NELSON ES1399 SEALANT - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant shall be applied to the wall/pipe covering interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-5178**

Nelson Firestop

DWG NO. FS-0463 R4

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

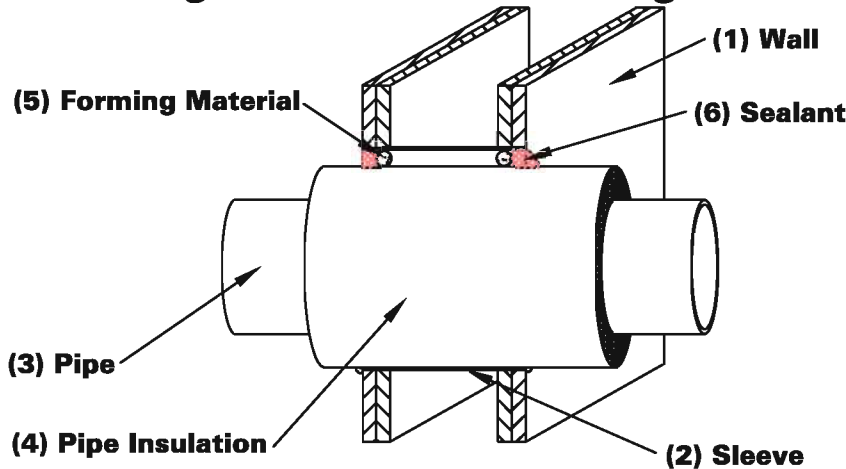
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 1/2, 1 or 2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 18-3/4" (476mm) in steel stud walls and 14-1/2" (368mm) in wood stud walls.
2. **METALLIC SLEEVE** - Sleeve fabricated from min 28 GA steel having a min. 1" (25mm) lap. Sleeve installed by coiling the sheet steel to a diameter smaller than the opening and releasing the coil to let it uncoil against the periphery of the opening. Sleeve to equal the thickness of wall. The inside diameter of sleeve shall be min. 1" (25mm) larger than the outside diameter of pipe covering.
3. **METALLIC PIPE** - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
When copper pipe or tubing is used, the T rating is 1/2 hr or 1 hr for 1 or 2 hr rated assemblies, respectively. When iron or steel pipe is used, the T rating is 1 hr or 2 hr for 1 or 2 hr rated assemblies.
4. **PIPE INSULATION** - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space range is 0" (point of contact) to 2" (51mm).
5. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 1" (25mm) from both surfaces of the wall.
6. **NELSON ES1399 SEALANT** - Apply sealant to fill the annular space to a nom 1" (25mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the wall/sleeve/pipe covering interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-5179**

Nelson Firestop

DWG NO. FS-0464 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

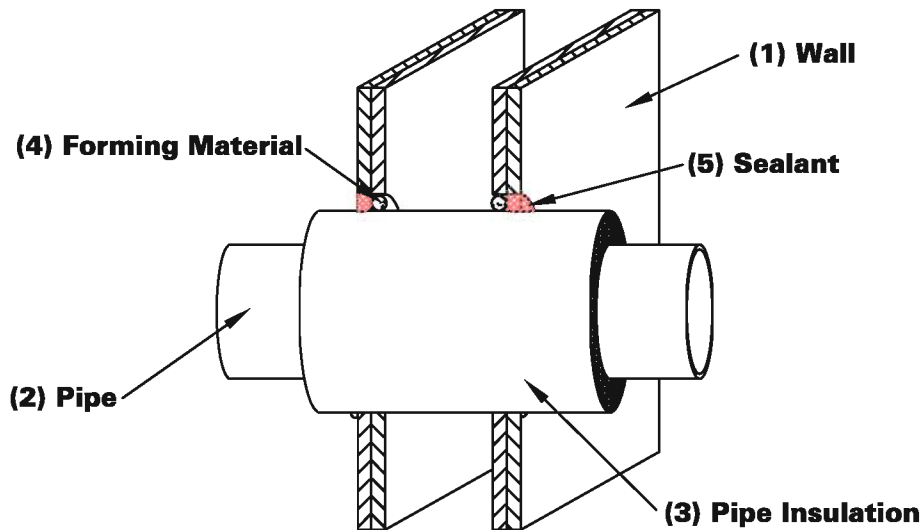
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 15-1/4" (387mm) in steel stud walls and 14-1/2" (368mm) in wood stud walls. The inside diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of the pipe covering.
2. **METALLIC PIPE** - The following types and sizes of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. **PIPE INSULATION** - Nominal 3/4" (19mm) thick (or thinner) AB/PVC (ARMAFLEX) pipe insulation. The annular space range is 0" (point of contact) to 1" (25mm).
4. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. **NELSON ES1399 SEALANT** - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the gypsum wallboard/insulated through penetrant interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-5180

Nelson Firestop

DWG NO. FS-0465 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

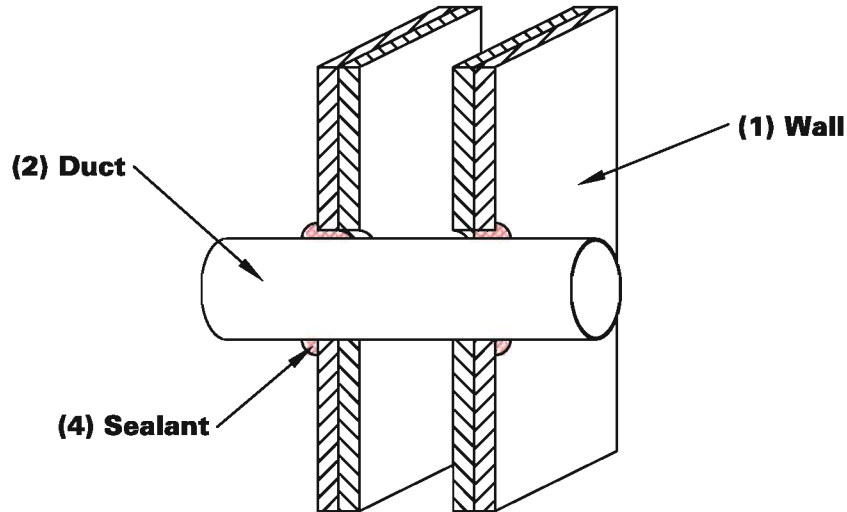
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. METALLIC DUCT - Max nominal 6" (152mm) diameter, or smaller, No. 28 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly. The annular space between duct and periphery of opening shall be min. 0" (point of contact) to max. 1" (25mm).
3. METALLIC DUCT - Max nominal 20" (508mm) diameter, or smaller, No. 22 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly. The annular space between duct and periphery of opening shall be min. 0" (point of contact) to max. 2" (51mm).
4. FORMING MATERIAL (not shown) - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
5. NELSON ES1399 SEALANT - Apply to fill the annular space around the duct to a min 5/8" (16mm) depth. At areas of point of contact, apply a 3/8" (10mm) diameter bead of sealant at the gypsum wallboard/through penetrant interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



System No.
W-L-7092, W-L-7106

Nelson Firestop

DWG NO. FS-0466 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

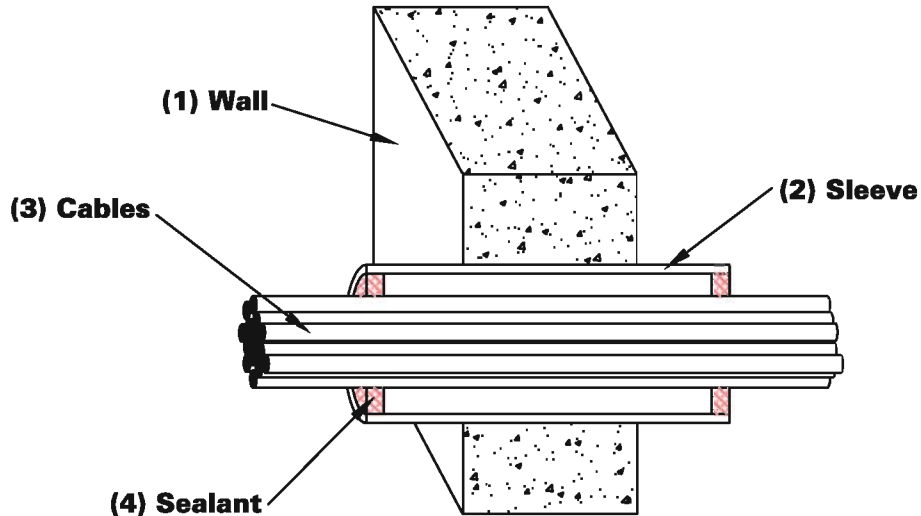
Address: _____

Signature: _____

CONCRETE WALL SLEEVED CABLES

F Rating 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4-1/2" (114mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter or smaller, steel, iron or EMT sleeve with 0.083 in. (2mm) wall thickness, tightly fitted into wall opening. Sleeve will extend a nominal 1" (25mm) beyond each surface of the wall. Sleeve is optional when wall thickness is equal to or greater than 8" (203mm).
3. CABLES - Max. 18.6% cable fill of opening in any combination of:
 - (A) max. 7/C #16awg or smaller copper conductor power and control cables w/XLPE or PVC insulation and XLPE or PVC jacket.
 - (B) max. 4pr #24awg or smaller copper conductor data cables w/Hylar insulation and jacket.
 - (C) max. 2/C #12awg or smaller cables w/PVC insulation and jacket
 - (D) max. 62.5/125 micron fibre optic cables w/PVC insulation and jacket.
 - (E) max. Type RG59/U coaxial cables with polyethylene (PE) insulation and PVC jacket.

The annular space between cable bundle and edge of metallic sleeve shall be min. 0" (point of contact) to 2" (51mm).
4. NELSON ES1399 SEALANT - Apply within the annular space to a min. 5/8" (16mm) depth, flush with both ends of the sleeve. Sealant to be tightly packed within interstices of cable bundle. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the interfaces of the sleeve and both wall surfaces.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-3086**

Nelson Firestop

DWG NO. FS-0467 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

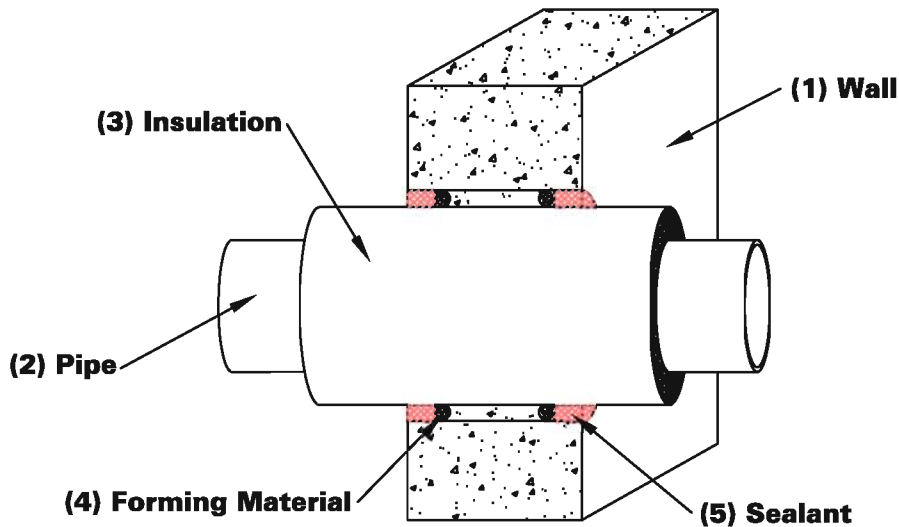
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Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1-1/2 Hr.



1. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 18-5/16" (465mm). The diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of pipe covering.
2. METALLIC PIPE - The following types and sizes of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is 0" (point of contact) to 1-9/16" (40mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
5. NELSON ES1399 SEALANT - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant shall be applied to the wall/pipe covering interface on both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-5085

Nelson Firestop

DWG NO. FS-0468 R3

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

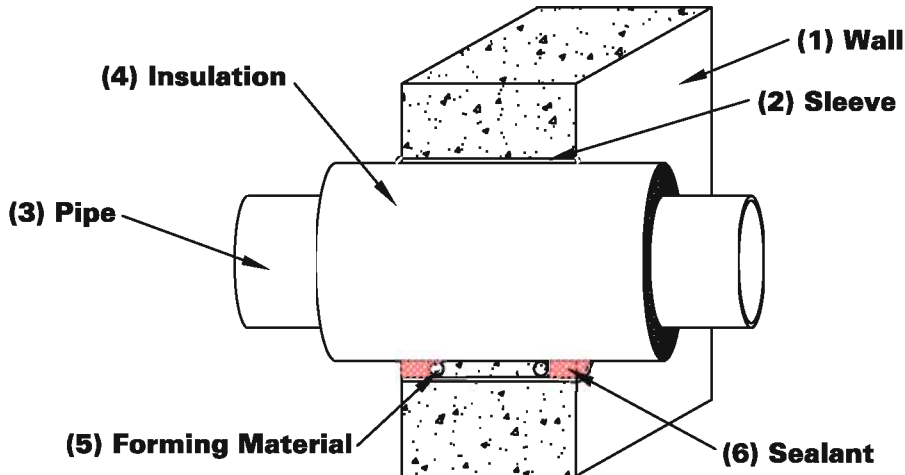
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1 or 2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 18-3/4" (476mm). The diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of pipe covering.
2. METALLIC SLEEVE (optional) - Sleeve fabricated from min 28 GA steel having a min. 1" (25mm) lap. Sleeve installed by coiling the sheet steel to a diameter smaller than the opening and releasing the coil to let it uncoil against the periphery of the opening. Sleeve to equal the thickness of wall.
3. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

When copper pipe or tubing is used, the T rating is 1 hr. When iron or steel pipe is used, the T rating is 2 hr.
4. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is 0" (point of contact) to 2" (51mm).
5. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 1" (25mm) from both surfaces of the wall.
6. NELSON ES1399 SEALANT - Apply sealant to fill the annular space to a nom 1" (25mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the wall/sleeve/pipe covering interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-5086**

Nelson Firestop

DWG NO. FS-0469 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

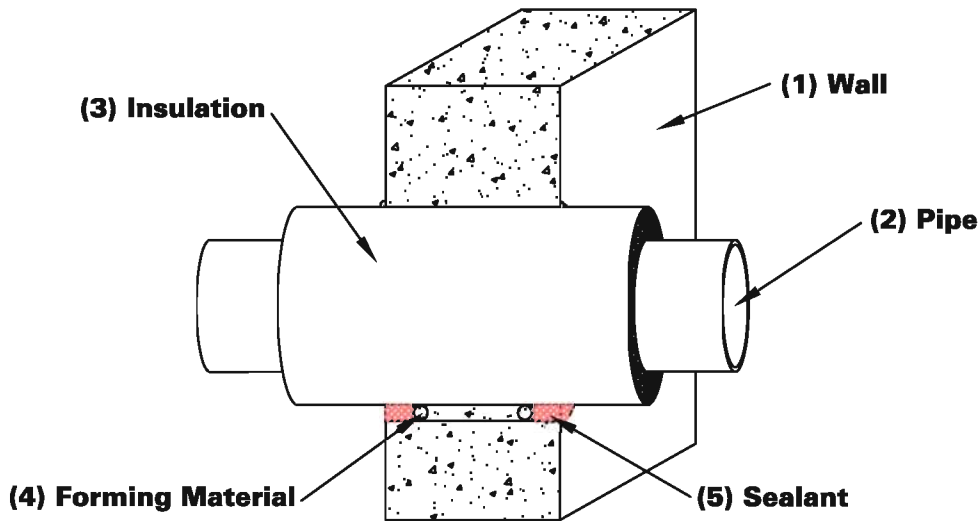
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 15-1/4" (387mm). The inside diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of the pipe covering.
2. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 3/4" (19mm) thick (or thinner) AB/PVC (ARMAFLEX) pipe insulation. The annular space is 0" (point of contact) to 1" (25mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" from both surfaces of the wall.
5. NELSON ES1399 SEALANT - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the wall/insulated through penetrant interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0470 R2

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

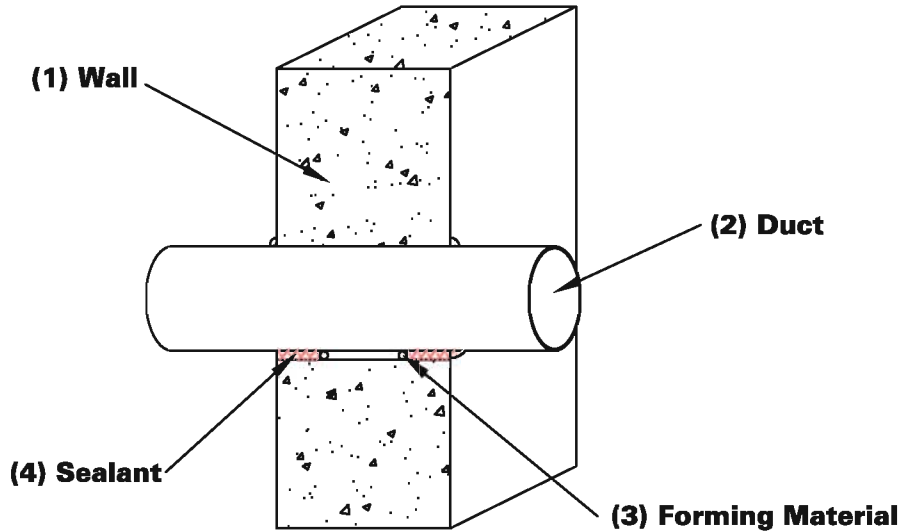
Address: _____

Signature: _____

CONCRETE WALL METALLIC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. The annular space range is 0" (point of contact) to 1" (25mm).
2. METALLIC DUCT - Max nominal 6" (152mm) diameter, or smaller, No. 28 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly.
3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply to fill the annular space around the duct to a the duct to a min 5/8" (16mm) depth. At areas of point of contact, apply a 3/8" (10mm) diameter bead of sealant at the wall/through penetrant interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0471R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

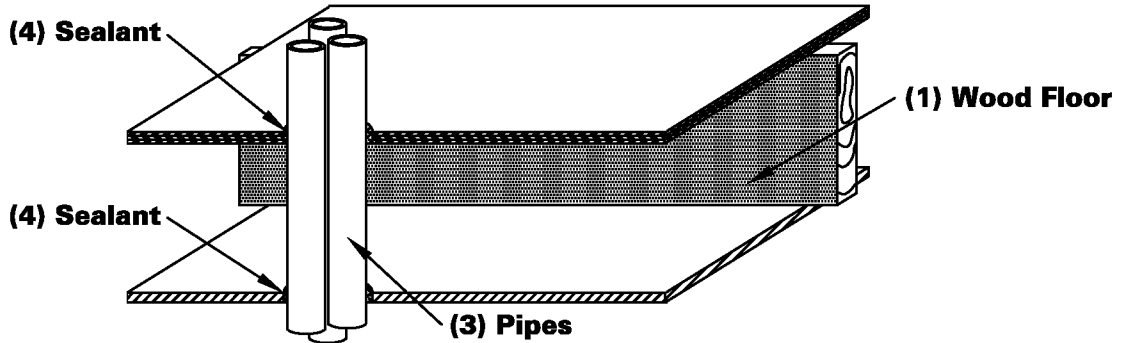
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC TUBING

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory. Max. diameter of opening is 3" (76mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **NONMETALLIC TUBING** - The following types of through penetrants shall be used:
 - (A). **CROSS-LINKED POLYETHYLENE TUBING** - Max. of (3) nom 3/4" (19mm) diameter SDR9 (or heavier) cross-linked (PEX) tubing for use in closed (process or supply) piping systems. Max. (1) (PEX) shall have a nom diameter greater than 3/4" (19mm). Max F rating is 1 hr. Annular space between tubing and periphery of opening shall be a min. 3/16" (5mm) to 1" (25mm). The space between tubing shall be a min. 0" (point of contact) to a max. 1/4" (6mm).
 - (B). **ALUMINUM CROSS-LINKED POLYETHYLENE TUBING** - Max. of (3) nom 3/4" (19mm) diameter SDR9 (or heavier) aluminum cross-linked polyethylene (AL PEX) tubing for use in closed (process or supply) piping systems. Max. (3) nominal 3/4" (19mm) diameter (AL PEX) tubing. Max. F rating is 1 or 2 hrs. Annular space between tubing and periphery of opening shall be a min. 1/8" (3mm) to 1" (25mm). The space between the tubing shall be min. 0" (point of contact) to a max. 1/4" (6mm).
4. **NELSON ES1399 SEALANT** - Apply a min 3/4" (19mm) depth of sealant within the annulus, flush with the top surface of floor or sole plate. Min 1/2" (13mm) thickness of sealant within the annulus, flush with bottom surface of ceiling or on bottom surface of lower top plate of chase wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2249**

Nelson Firestop

DWG NO. FS-0475 R4

DATE: 10/25/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

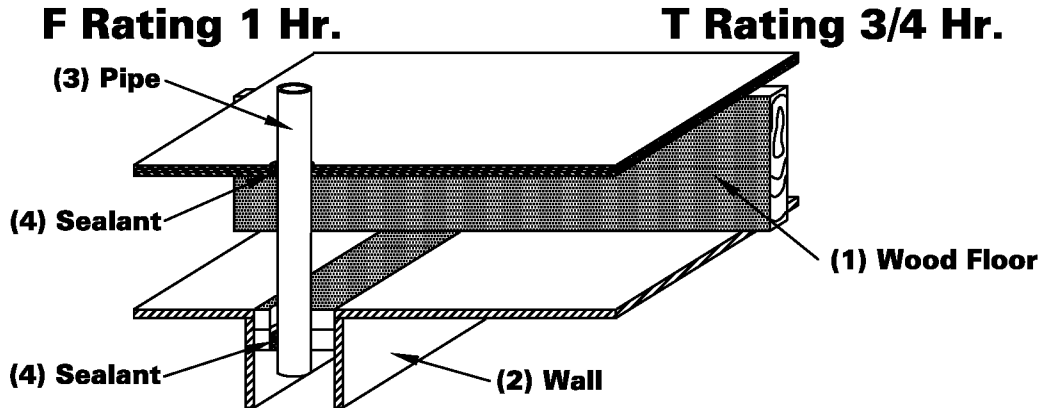
Tulsa, Ok.

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Diameter of opening through flooring system and through top plate of chase wall assembly to be max. 1/2" (13mm) larger than outside diameter of through penetrant. Max. diameter of opening is 5" (127mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses.
 - (C) **GYPSUM BOARD** - Gypsum wallboard secured to wood/steel joists/trusses or furring channels.
2. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **NONMETALLIC PIPE** - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID NONMETALLIC CONDUIT** - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) **ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (E) **CROSS LINKED POLYETHYLENE (PEX) TUBING** - Nom 1-1/2" (38mm) diameter (or smaller) SDR 9 cross linked polyethylene (PEX) tubing for use in closed (process or supply) piping systems.

The annular space for all penetrations is 0" (point of contact) to 1/2" (13mm).
4. **NELSON ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with the top surface of the subfloor and a min. 5/8" (16mm) thickness of sealant within annulus on lower top plate of chase wall assembly. Additional sealant to be installed such that a min. 1/4" (6mm) bead is formed around the penetrant on the top surface of the floor and bottom surface of the lower plate of chase wall assembly. At areas of point of contact, apply a min. 1/2" (13mm) diameter bead of sealant shall be applied to the penetrant/plywood interface on top surface of floor assembly and penetrant/top plate interface.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



System No.
F-C-2251

Nelson Firestop

DWG NO. FS-0477 R4

DATE: 10/26/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

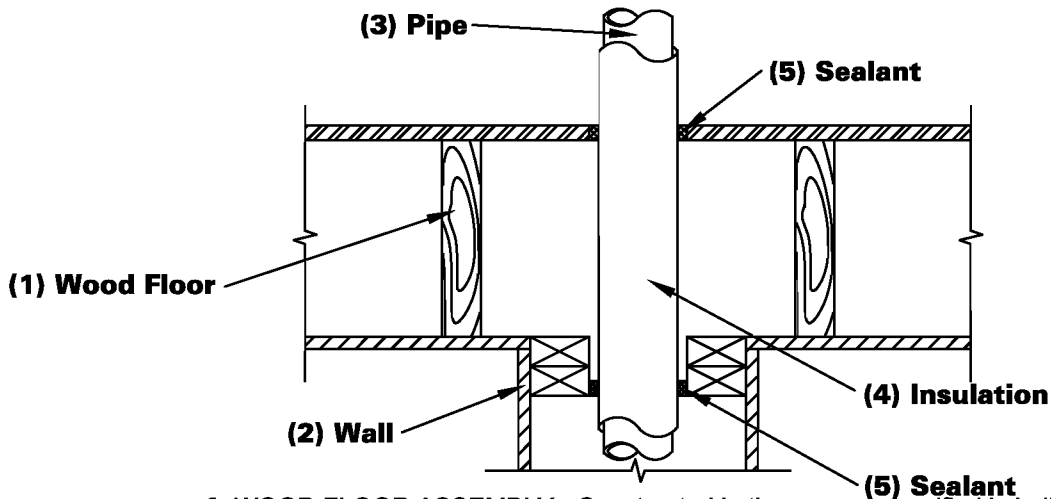
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Address: _____

Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 1 or 1 1/2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory. Max. diameter of opening is 6" (152mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **METALLIC PIPE** - The following types of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 3" (76mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 3" (76mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 3" (76mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. **PIPE INSULATION** - Nominal 1" (25mm) thick FIBERGLASS pipe insulation. Annular space shall be min. 3/8" (10mm) to max. 5/8" (16mm).
5. **NELSON ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annular space, flush with top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within the annular space, flush with bottom surface of gypsum board ceiling or lower top plate of chase wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-5061**

Nelson Firestop

DWG NO. FS-0478 R3

DATE: 10/25/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

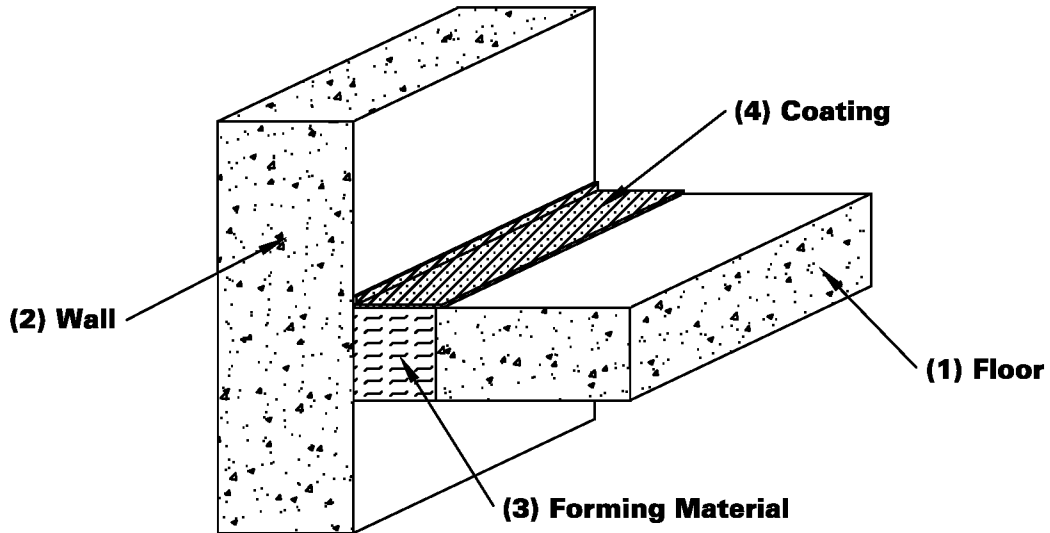
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM FLOOR TO WALL

F Rating 1 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr & Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 2" (51mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 2-1/2" (64mm) depth. The forming material shall be compressed 50% in the nominal joint width.
4. NELSON FSC3 COATING (part # AA0868) - Spray, trowel, or brush apply the FSC3 coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and side of wall a min. of 1/2" (13mm).

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FW-D-0029

Nelson Firestop

DWG NO. FS-0479 R2

DATE: 12/04/06

BY: RL

Project Name: _____
Address: _____

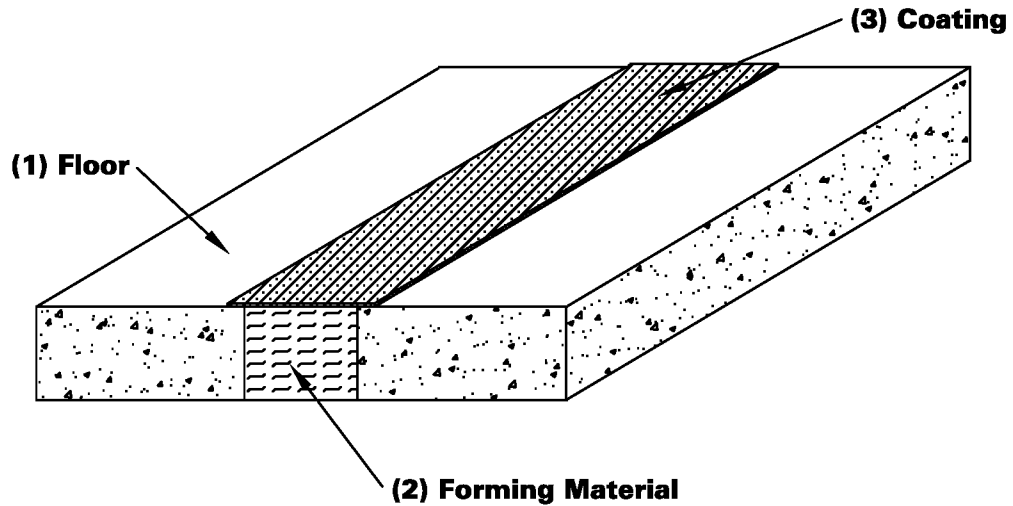
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

F Rating 1 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr & Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 2" (51mm).
2. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the opening to a min. 2-1/2" (64mm) depth. The forming material shall be compressed 50% in the nominal joint width.
3. NELSON FSC3 COATING (part # AA0868) - Spray, trowel, or brush apply the FSC3 coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor a min. of 1/2" (13mm).

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079


System No.
FF-D-0034

Nelson Firestop

DWG NO. FS-0480 R2

DATE: 12/04/06

BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

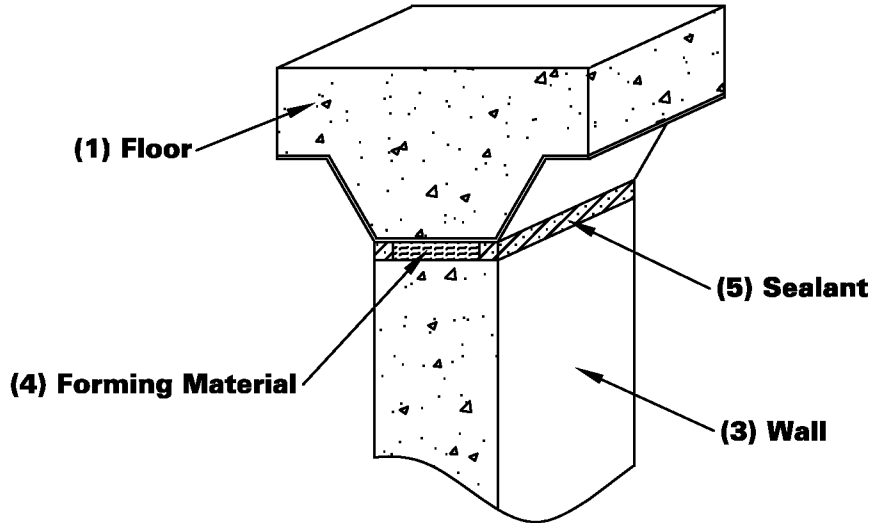
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext



1. FLOOR ASSEMBLY - Min 3" (76mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. Roof assembly shall include min. 2-1/4" (57mm) thick poured insulating concrete, and roof covering hot mopped or cold application materials compatible with concrete.
3. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The wall may be parallel to and centered under the valleys of the steel floor. The max separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max 25% compression or extension from its installed width.
4. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint width and recessed from both surfaces of the wall to accommodate the required thickness of sealant.
5. NELSON ES1399 SEALANT - Min. 5/8" (16mm) thickness of sealant installed flush with both sides of the wall.

Tested in accordance with:

ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0287

Nelson Firestop

DWG NO. FS-0482 R2

DATE: 11/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

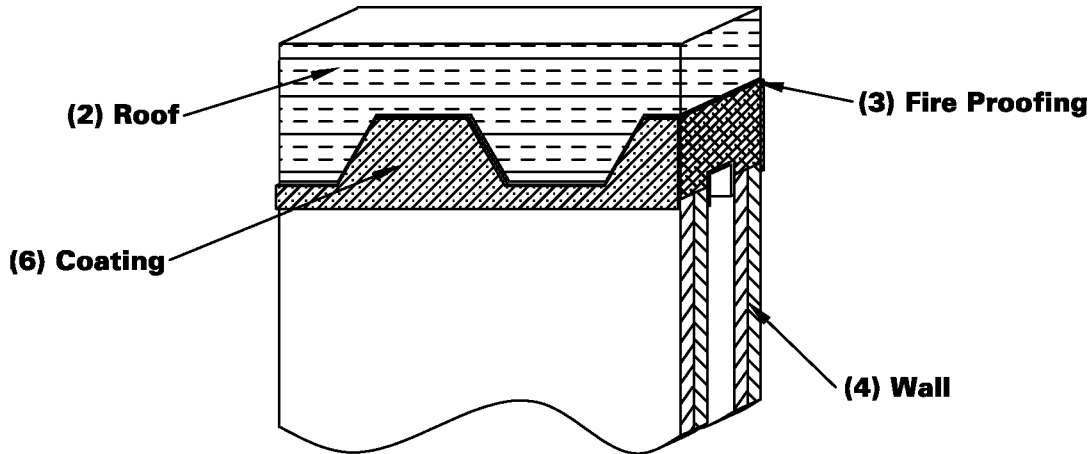
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 3/4" (19mm)
Class II Movement - 33% Compr & Ext



1. FLOOR ASSEMBLY (not shown) - As an alternate to the roof assembly, min. 2-1/2" (64mm) thick light weight or normal weight concrete poured over steel fluted deck.
2. ROOF ASSEMBLY - A fire-rated steel deck roof assembly. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. SPRAY-APPLIED FIRE PROOFING - Min 15 pcf (240 kg/cubic meter) applied to the bottom of the steel floor, with a thickness of min. 3/4" (19mm).
4. WALL ASSEMBLY - Non-load bearing design rated for a min of 2 hr. fire resistance. The max separation between bottom of floor and top of wall is 3/4" (19mm). The joint system is designed to accommodate a max. 33% compression or extension from its installed width. Ceiling Runner is attached to bottom of the flutes.
5. STEEL STUDS (not shown) - Min 3-5/8" (92mm) steel studs with max 24" (610mm) o.c. spacing.
6. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the fireproofing in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of wall.

Tested in accordance with:
 ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0288

Nelson Firestop

DWG NO. FS-0483 R2

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

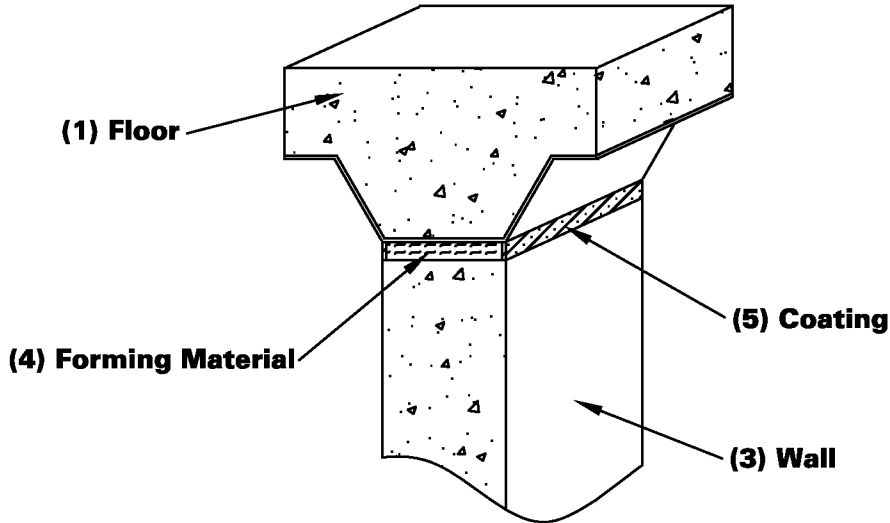
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 25% Compr & Ext



1. FLOOR ASSEMBLY - Min 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. The wall may be parallel to and centered under the valleys of the steel floor. The max separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max 25% compression or extension from its installed width.
4. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint width and flush with both surfaces of the wall.
5. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating a min 1/2" (13mm) onto the wall and protected steel floor or roof deck on both sides of the wall.

Tested in accordance with:

ASTM E-1966
 ANSI/UL 2079



System No.
HW-D-0289

Nelson Firestop

DWG NO. FS-0484 R2

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

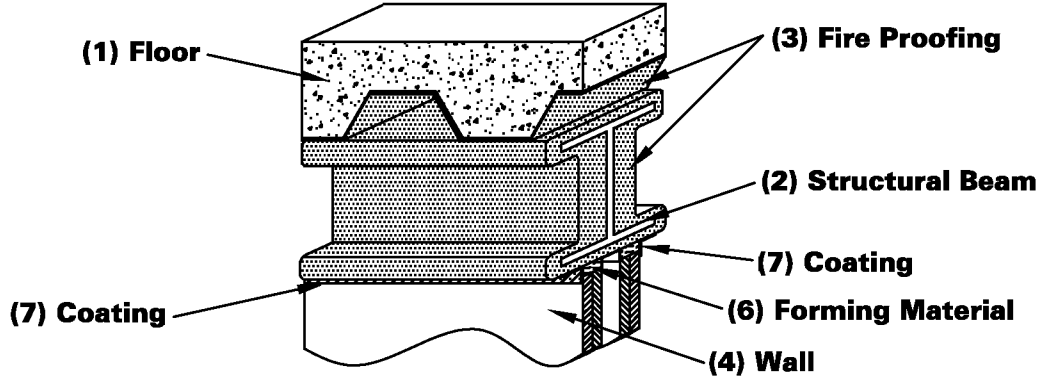
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 1, 2 or 3 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 19% Compr & Ext**



1. FLOOR ASSEMBLY - Constructed in the manner specified in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - As specified in the individual P700 series design.
4. STRUCTURAL BEAM - Steel Beam as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units.
5. SPRAY-APPLIED FIRE PROOFING - Steel floor and beam to be sprayed with min. thickness as specified in the individual D700/P700 Series Design. Additional material shall be applied to the web of the steel beam on each side of the wall. The thickness of material applied to each side of the steel beam web shall be 13/16" (21mm), 1-3/8" (35mm) and 1-9/16" (40mm) for 1, 2 and 3 hr assembly rating, respectively.
6. WALL ASSEMBLY - Non-load bearing design rated for a min of 1, 2 or 3 hr. fire resistance. The max separation between bottom of protected steel beam and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 19% compression or extension from its installed width. Ceiling Runner is attached to bottom of the steel beam.
7. STEEL STUDS (not shown) - Min 3-1/2" (89mm) steel studs with max 24" (610mm) o.c. spacing.
8. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint and flush with both surfaces of the wall.
9. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the fireproofing or forming material in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1/2" (13mm) onto the wall and 2" (51mm) onto the fireproofing material on the steel beam on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
HW-D-0325**

Nelson Firestop

DWG NO. FS-0485 R4

DATE: 03/05/07

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

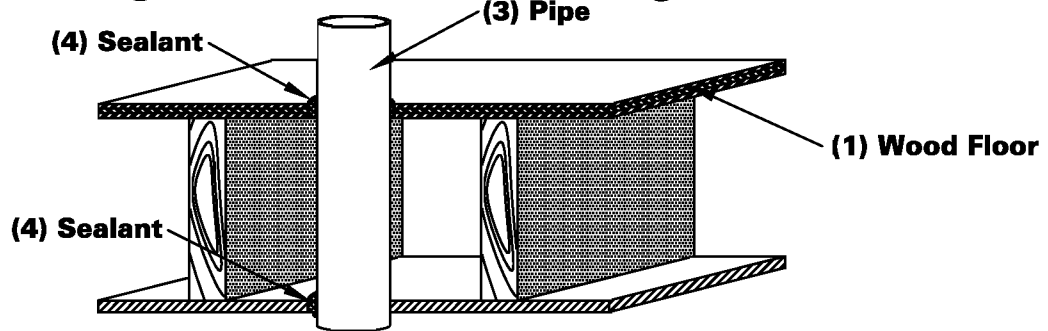
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 1/2 or 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory.
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Constructed in the manner specified in individual U300 series designs as shown in the UL Fire Resistance Directory.
3. **METALLIC PIPE** - The following types and sizes of metallic pipes, conduits or tubing may be used.
 - (A) **STEEL PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or rigid galv steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 3" (76mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

T rating is 1 Hr. if steel, cast iron pipe, RMC, or EMT is used and T rating is 1/2 Hr. if copper tubing or pipe is used.
Annular space is min. 0" (point of contact) to max. 1/2" (13mm) for steel, cast iron, RMC or EMT, or 0" (point of contact) to 7/8" (22mm) for copper pipe or tubing.
4. **NELSON ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of floor or sole plate. Min. 5/8" (16mm) thickness of sealant within the annulus, flush with bottom surface of ceiling or bottom top plate. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant applied at penetrant/floor or sole plate interface and at penetrant/ceiling or top plate interface. Additional sealant shall be applied in such manner that the sealant overlaps a min. 1/2" (13mm) beyond the periphery of the opening on the top surface of the floor or sole plate and bottom surface of ceiling or bottom top plate.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479


System No.
F-C-1100

Nelson Firestop

DWG NO. FS-0486 R3

DATE: 10/27/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

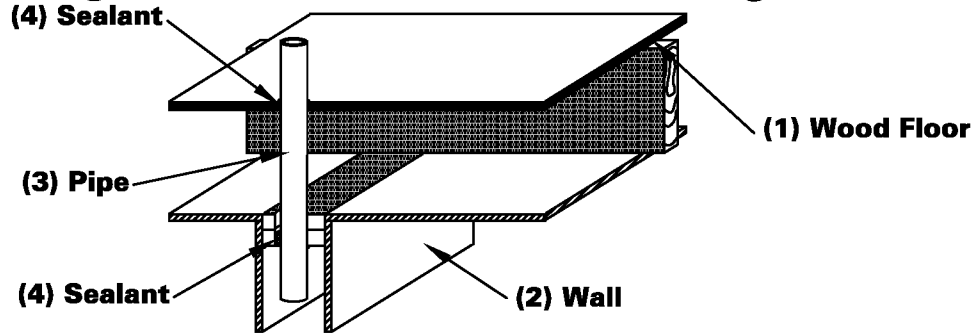
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Max area of opening is 30-1/4 sq. in. (195 sq. cm) with a max. dimension of 5-1/2" (140mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses.
 - (C) **GYPSUM BOARD** - Gypsum wallboard secured to wood/steel joists/trusses or furring channels.
2. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **NONMETALLIC PIPE** - The following types of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID NONMETALLIC CONDUIT** - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) **ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

Annular space within the top plate of chase wall is 0" (point of contact) to 1/2" (13mm). Dimensions of opening through flooring system to be max. 1" (25mm) larger than outside diameter of through penetrant. On top surface of the floor, the annular space for within the firestop system shall be 0" (point of contact) to 1" (25mm).
4. **NELSON ES1399 SEALANT** - Apply a min 3/4" (19mm) depth of ES1399 within annulus, flush with top surface of floor. Min 5/8" (16mm) thickness of sealant applied within annulus on lower top plate of chase wall assembly. At areas of point of contact, apply a min. 1/4" (6mm) diameter bead of sealant at the through penetrant on the top surface of the floor and bottom surface of the lower top plate of chase wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2254**

Nelson Firestop

DWG NO. FS-0487 R3

DATE: 10/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

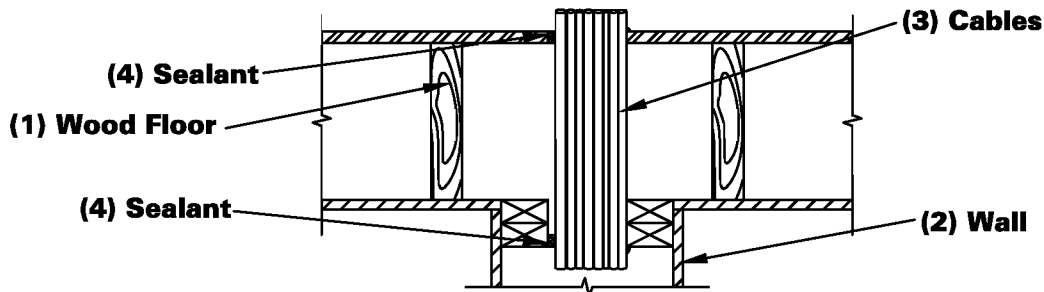
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR CABLES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm). The annular space between cable bundle and periphery of opening shall be 0" (point of contact) to 1/2" (13mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSON BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **CABLES** - Max. nominal 3-1/2" (89mm) diameter cable bundle w/ PVC insulation and jacketing or other as noted of:
 - (A) max. 100pr. #24awg or smaller telecommunication cables.
 - (B) max. 3/C #2/0 awg or smaller aluminum SER cables.
 - (C) max. 3/C #12awg or smaller Type NM ROMEX cables.
 - (D) max. 7/C #12awg or smaller power/control cables.
 - (E) max. RG/U or smaller coaxial cable w/fluorinated ethylene jacketing.
 - (F) max. 4/C #2awg or smaller aluminum or copper conductor aluminum jacketed Metal Clad cable. Max. one cable to be installed within the cable bundle.
4. **NELSON ES1399 SEALANT** - Apply a min 3/4" (19mm) depth of sealant within the annulus, flush with top surface of the floor or sole plate. Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with bottom surface of ceiling or top plate. Sealant forced within interstices of cable bundle to max. extent possible. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at cable bundle/floor or sole plate interface and at cable bundle/ceiling or top plate interface. Additional sealant shall be applied in such a manner that the sealant overlaps a min. 1/2" (13mm) surface of ceiling or bottom top plate.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-3073**

Nelson Firestop

DWG NO. FS-0488 R2

DATE: 10/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

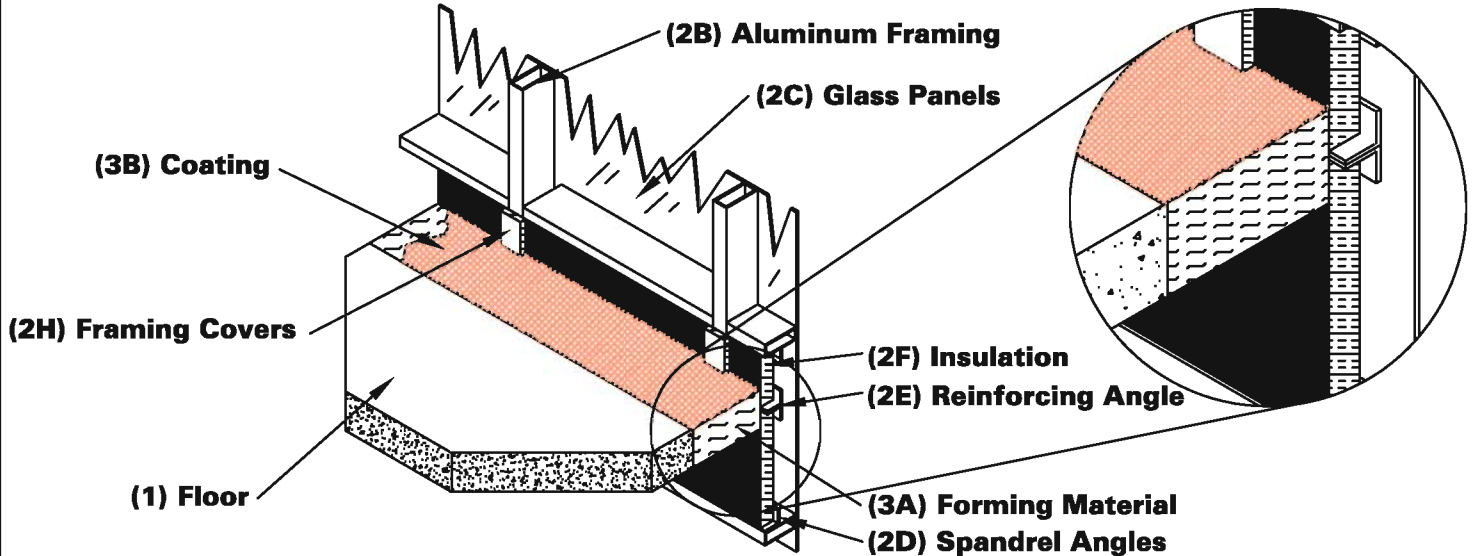
PERIMETER FIRE BARRIER SYSTEM GLASS SPANDREL CURTAIN WALL

F Rating 2 Hr.

T Rating 1-1/4 Hr.

L Rating <1 SCFM

Movement - 12.5% Horizontal/6.25% Vertical



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602 - 2404 kg/cubic meter), with a min. thickness of 4" (102mm) at the joint face.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be min 60" (1524mm) O.C.
 - (B) Aluminum Framing - Rectangular aluminum tubing mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Mullions are spaced a min 60" (1524mm) o.c. and transoms are to be spaced a min 34" (864mm) o.c.. For the spandrel region, the lower transom must be placed a min. of 13-3/4" (349mm) below the concrete floor (from the underside of the floor to the top side of the transom) and the upper transom must be placed a min. of 4-1/2" (114mm) above the floor (from the top surface of the floor to the underside of the transom) while maintaining the min. 34" (864mm) spandrel height.
 - (C) Glass Panels - Glass panels shall be installed according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing o.c. spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 x 5/8" (16mm) long screws, and a snap face (aluminum extrusion).

Tested in accordance with:

ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 298 P**

Nelson Firestop

DWG NO. FS-0489 R2

Page 1 of 2

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

- (D) Perimeter Spandrel Angles - Min. 20 GA 1-1/2" x 1-1/2" (38mm x 38mm) galvanized steel angle is placed around the entire inside perimeter of the spandrel framing and is secured to the wall framing (2B) with No. 10 sheet metal screws spaced max. 8" (203mm) o.c..
- (E) Reinforcing Angle - At the horizontal butt joints of the insulation in the field of the glass panels (2C), place two 1-1/2" x 1-1/2" (38mm x 38mm) by 20 GA steel angles back to back to form a "T". Locate the "T" reinforcing angle at the horizontal centerline of the perimeter joint protection and secure the "T" angle to the perimeter spandrel angles (2D).
- (F) Curtain Wall Insulation - All spandrel panels shall be installed with a min. 2 in. (51mm) thick, 8pcf (128 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder) which is exposed to the room interior. The batt is to be fitted tightly to the framing, and is secured to the framing with the perimeter spandrel angle (2D) and impaling pins (2G). All meeting edges of insulation are sealed with nom. 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation. Place a horizontal seam at the centerline of the perimeter joint protection and reinforce with angle (2E). The 24" (610mm) wide batts shall be installed without vertical seams, spanning the full length between the vertical curtain wall-framing members.
- (G) Impaling Pins - (Not Shown) Attach curtain wall insulation to the perimeter spandrel angle (2D) with min. 12 GA steel cup-head pins with a spacing of max. 8" (203mm) o.c. at the centerline of the flange. Pins should be sized in accordance with the curtain wall insulation thickness, to maintain a firm attachment to the perimeter spandrel angle. Pins shall be installed so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
- (H) Framing Covers - Strips made of 2" (51mm) thick by 8" (203mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint protection.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nominal joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 298 P**

DWG NO. FS-0489 R2
Page 2 of 2

Project Name: _____
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DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

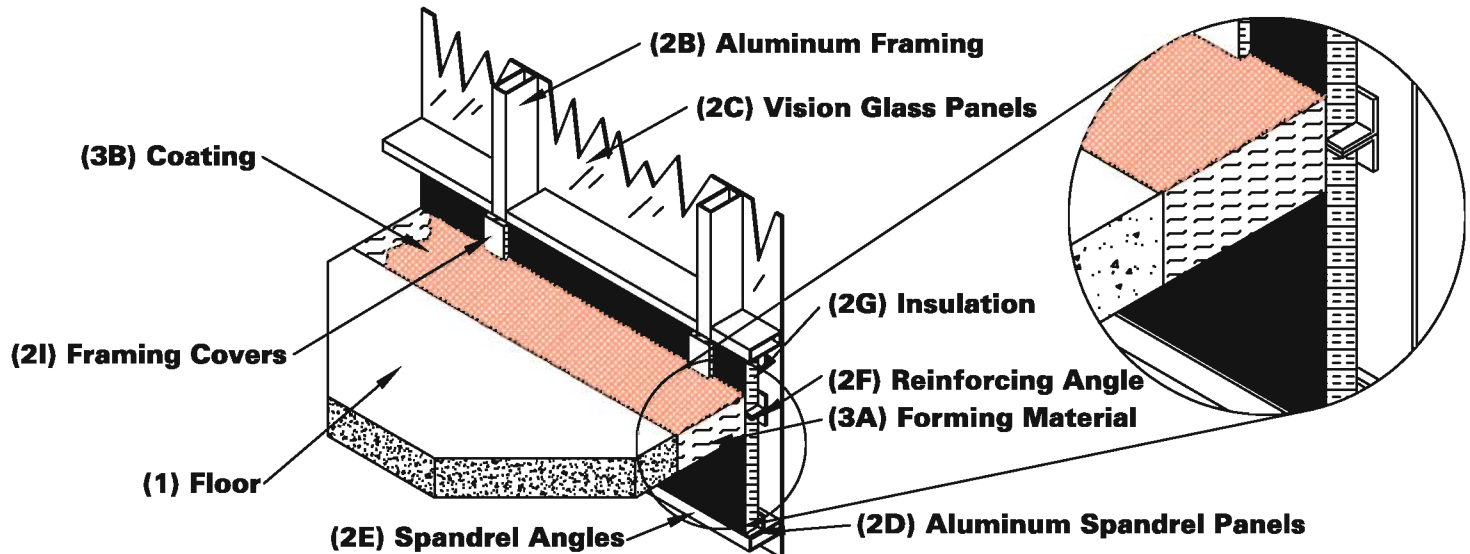
PERIMETER FIRE BARRIER SYSTEM ALUMINUM SPANDREL CURTAIN WALL

F Rating 2 Hr.

T Rating 1-1/4 Hr.

L Rating <1 SCFM

Movement - 12.5% Horizontal/6.25% Vertical



1. **CONCRETE FLOOR ASSEMBLY** - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4" (102mm) at the joint face.
2. **CURTAIN WALL ASSEMBLY** - The curtain wall assembly shall incorporate the following construction features:
 - (A) **Mounting Attachment** (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be min. 60" (1524mm) O.C.
 - (B) **Aluminum Framing** - Rectangular aluminum tubing mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Mullions are spaced a min 60" (1524mm) o.c. and transoms are to be spaced a min 34" (864mm) o.c.. For the spandrel region, the lower transom must be placed a min. of 13-3/4" (349mm) below the concrete floor (from the underside of the floor to the top side of the transom) and the upper transom must be placed a min. of 4-1/2" (114mm) above the floor (from the top surface of the floor to the underside of the transom) while maintaining the min. 34" (864mm) spandrel height.
 - (C) **Vision Glass Panels** - Glass panels shall be installed according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing o.c. spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 x 5/8" (16mm) long screws, and a snap face (aluminum extrusion).



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 299 P**

DWG NO. FS-0490 R2

Page 1 of 2

Project Name: _____
Address: _____
Installer: _____
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DATE: 04/19/06

BY: RL

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- (D) Aluminum Spandrel Panels - Aluminum panels used in the spandrel shall be sized and attached to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/8" (3mm) sheet aluminum panel with max. dimensions 34" x 60" (864mm x 1524mm).
- (E) Perimeter Spandrel Angles - Min. 20 GA 1-1/2" x 1-1/2" (38mm x 38mm) galv. steel angle is placed around the entire inside perimeter of the spandrel framing and is secured to the wall framing (2B) with No. 10 sheet metal screws spaced max. 8" (203mm) o.c..
- (F) Reinforcing Angle - At the horizontal butt joints of the insulation in the field of the glass panels (2D), place two 1-1/2" x 1-1/2" (38mm x 38mm) by 20 GA steel angles back to back to form a "T". Locate the "T" reinforcing angle at the horizontal centerline of the perimeter joint protection and secure the "T" angle to the perimeter spandrel angles (2E).
- (G) Curtain Wall Insulation - All spandrel panels shall be installed with thick, 8pcf (128 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim a min. 2 in. (51mm) (vapor retarder) which is exposed to the room interior. The batt is to be fitted tightly to the framing, and is secured to the framing with the perimeter spandrel angle (2E) and impaling pins (2H). All meeting edges of insulation are sealed with nom. 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation. Place a horizontal seam at the centerline of the perimeter joint protection and reinforce with angle (2F). The 24" (610mm) wide batts shall be installed without vertical seams, spanning the full length between the vertical curtain wall-framing members.
- (H) Impaling Pins - (Not Shown) Attach curtain wall insulation to the perimeter spandrel angle (2E) with min. 12 GA steel cup-head pins with a spacing of max. 8" (203mm) o.c. at the centerline of the flange. Pins should be sized in accordance with the curtain wall insulation thickness, to maintain a firm attachment to the perimeter spandrel angle. Pins shall be installed so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
- (I) Framing Covers - Strips made of 2" (51mm) thick by 8" (203mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint protection.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:
- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
 - (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
 - (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 299 P**

DWG NO. FS-0490 R2

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Project Name: _____
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Installer: _____
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DATE: 04/19/06

BY: RL

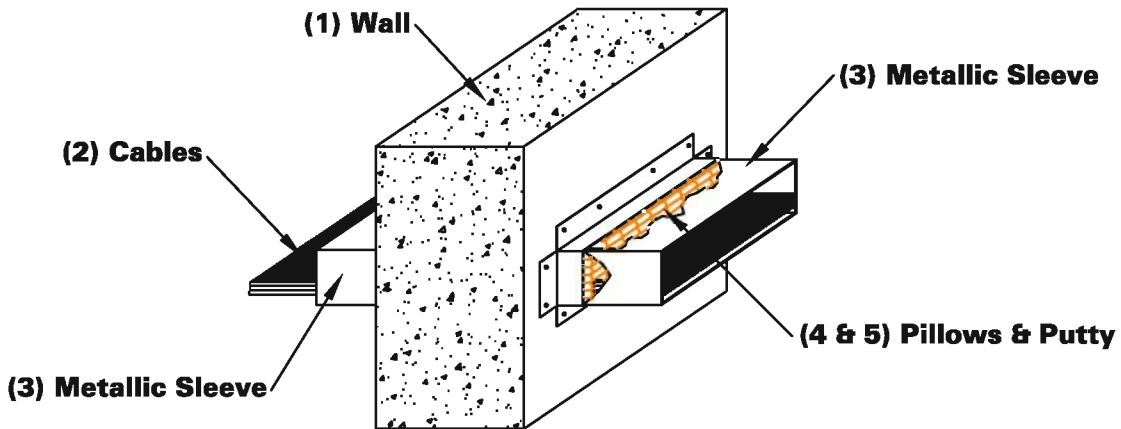
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE WALL CABLES

F Rating 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight (100-150 pcf) (1602-2404 kg/cm) concrete. Wall may also be constructed of any UL Classified Concrete Blocks. Max. area of opening is 83-1/4 sq. in. (537 sq. cm) with max. dimensions of 18-1/2" (470mm).
2. CABLE - Max. 26% cable fill of opening in any combination of:
 - (A) max. 350 kcmil power cable w/PVC insulation
 - (B) max. 7C #12 awg control cable w/PVC insulation jacket
 - (C) max. 100pr. #24 awg communications cable w/PVC insulation and jacket.

3. METALLIC SLEEVE - Metallic sleeve consists of a rectangular shaped sleeve and a cover plate fabricated from 14MSG (0.072 in.) thick galv. steel. The rectangular shaped sleeve consists of a cover 18" (457mm) wide by 4" (102mm) high by 20" (508mm) long sleeve with a 2-3/4" (70mm) wide mounting plate. The cover plate consists of a 2-3/4" (70mm) wide leg and 1-1/2" (38mm) high flange. The rectangular shaped sleeve to be inserted into the opening from either side of wall. Cover plate to be surface mounted on opposite side of wall. Both rectangular shaped sleeve and cover plate secured to wall by means of 1/4" (6mm) diameter 1-1/4" (32mm) long steel screws in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers installed in pre-drilled holes spaced 7-1/2" (191mm) OC along the mounting plate and cover plate.

P-W SOUTHERN INC. - Type P-W
COOPER B-LINE INC - Wall Penetration Sleeve

4. NELSON PLW PILLOWS (part # AA478 or AA479) - Tightly pack pillows into opening to fill annular space between cables and periphery of opening. Install pillows flat and centered within the wall.
5. NELSON FSP PUTTY (part # AA445) - (not shown) After installation of the pillows, putty shall be applied to seal any voids between the cables and the pillows and the metallic sleeve on both sides of wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-3100**

Nelson Firestop

DWG NO. FS-0491R2

DATE: 07/20/06

BY: RL

Project Name: _____
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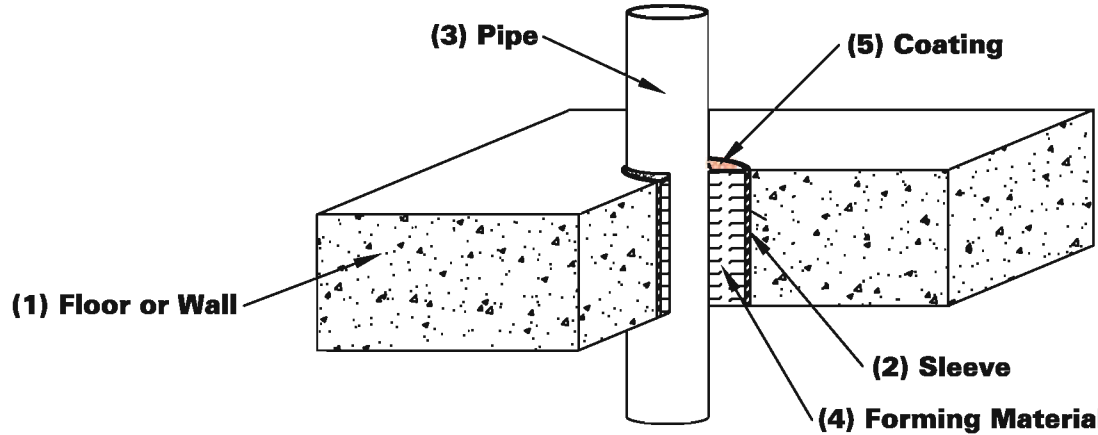
Signature: _____

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800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor, wall or CMU block wall. Max. diameter of opening is 15-1/2" (394mm).
2. METALLIC SLEEVE (optional) - Max. nominal 16" (406mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE OR CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space may range from 0" (point contact) to a max. of 2-3/8" (60mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth. Forming material to be installed flush with top surface of floor or both surfaces of wall assembly. At the point contact location between through penetrant and concrete, forming material forced into interstices between through penetrant and concrete to max. extent possible.
5. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of coating brush or spray applied over the annulus on top surface of floor or both surfaces of wall assembly. Additional min. 1/8" (3mm) wet thickness of coating applied on the through penetrant to a min. height of 1/2" (13mm) above the top surface of the floor and both surfaces of the wall assembly and a min. 1/2" (13mm) beyond the periphery of the opening on top surface of the floor and on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1458**

Nelson Firestop

DWG NO. FS-0492 R1

DATE: 07/20/06

BY: RL

MEA # 127-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

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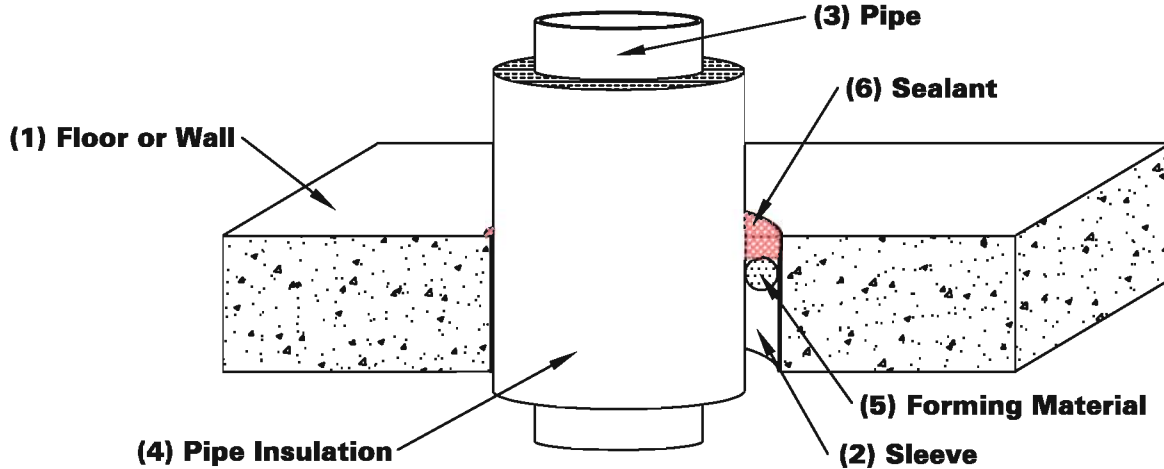
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CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 17-1/2" (445mm).
2. METALLIC SLEEVE (optional) - Nominal 18" (457mm) diameter, (or smaller), Sch. 10 or heavier steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
4. PIPE INSULATION - Nominal 1" (25mm) to 3" (76mm) thick, CELLULAR GLASS insulation. The insulation material may be jacketed within 0.010 in. (.25mm) thick aluminum sheet wrapped tightly around with a min. 2" (51mm) overlap. Jacket to be installed with edge abutting surface of sealant on top surface of floor or both surfaces of wall. Jacket to be well secured with metallic bands. The annular space between insulated pipe and periphery of opening is 0" (point of contact) to 2-1/8" (54mm).
5. FORMING MATERIAL - Min. 1" (25mm) diameter foam backer rod firmly packed into opening as a permanent form. As an alternate, foaming material may consist of FIBERGLASS or MINERAL WOOL batt insulation. Forming Material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the thickness of fill material.
6. NELSON ES1399 SEALANT - Apply over the forming material a min. 1" (25mm) depth, flush with the top surface of the floor or with both surfaces of the wall. Additional material to be installed to form a min. 3/8" (10mm) bead at the concrete/insulation material interface on the top surface of the floor and both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-5234**

Nelson Firestop

DWG NO. FS-0493 R3

DATE: 10/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

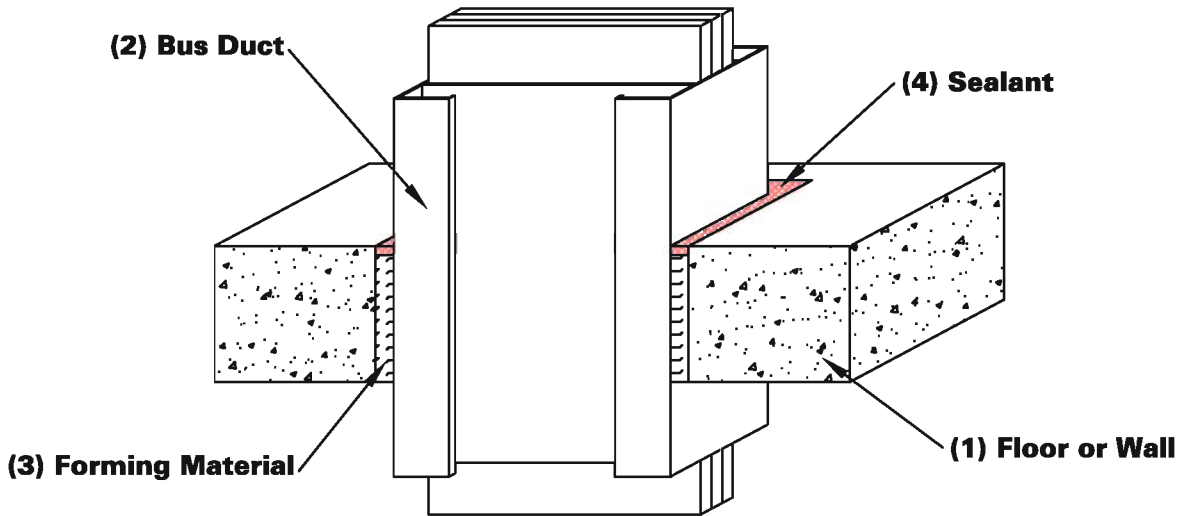
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL BUS DUCT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick concrete wall, or CMU block wall. The max area of opening is 345 sq. in. and a max. dimension of 28-1/2" (724mm).
2. BUS DUCT ASSEMBLY - Nom 19" x 6" (483mm x 152mm), "I" shaped aluminum and steel enclosure containing factory mounted aluminum bars rated for 600V, 4000A. The annular space between the flange tip of the busway and the periphery of the opening shall be min. 0" (point of contact) to 5-1/8" (130mm). The annular space between the web section of the busway and the periphery of the opening shall be a nominal 8" (203mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from top of floor surface or from both surfaces of wall.
4. NELSON ES1399 SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-6030**

Nelson Firestop

DWG NO. FS-0494 R1

DATE: 07/20/06

BY: RL

MEA # 125-04-M

Nelson Firestop

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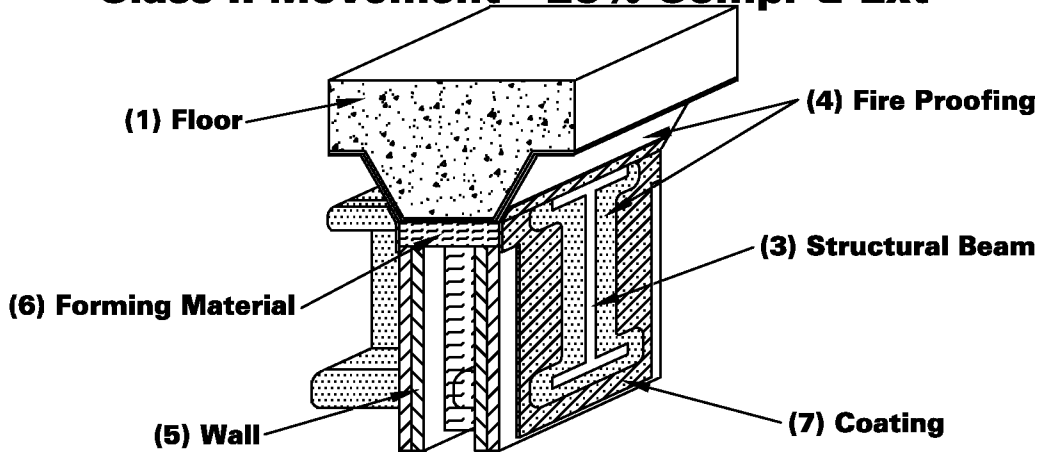
Project Name: _____
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JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext**



1. FLOOR ASSEMBLY - Min 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a steel fluted 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-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. STRUCTURAL BEAM (optional) - Steel Beam or open web steel joist as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units with framing.
4. SPRAY-APPLIED FIRE PROOFING - Steel floor or roof and beam to be sprayed with min. thickness as specified in the individual D700 Series Design.
5. WALL ASSEMBLY - Non-load bearing design rated for a 1 or 2 hr. fire resistance. The max separation between bottom of protected steel floor or roof deck and top of wall is 1" (25mm) with the joint system designed to accommodate a max. 25% compression or extension from its installed width. A min. clearance of 1" (25mm) to a max. 3" (76mm) shall be maintained between the framing and the fire-proofed beam on two sides of the beam with a 1" (25mm) max. being on the bottom.
6. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint and flush with both surfaces of the wall.
7. NELSON FSC3 COATING (part # AA0868) - Apply by spray or brush over the fireproofing or forming material in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1" (25mm) onto the wall and 2" (51mm) onto the fireproofing material on the steel floor or roof deck and steel beam on both sides of the wall.



**System No.
HW-D-0310**

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079

Nelson Firestop

DWG NO. FS-0495 R3

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

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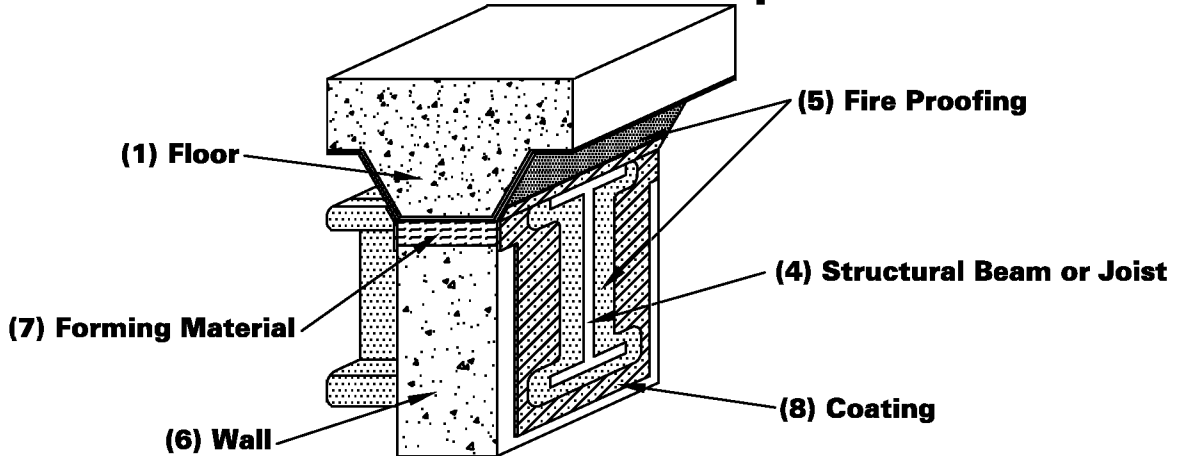
Project Name: _____
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Installer: _____
Address: _____

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JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr & Ext**



1. FLOOR ASSEMBLY - Min 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a steel fluted 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-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. ROOF INSULATION (not shown) - As specified in the individual P700 series design.
4. STRUCTURAL BEAM (optional) - Steel Beam or open web steel joist as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units.
5. SPRAY-APPLIED FIRE PROOFING - Steel floor or roof and beam to be sprayed with min. thickness as specified in the individual D700 Series Design.
6. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete wall or CMU block wall. The max separation between bottom of protected steel floor or roof deck and top of wall is 1" (25mm) with the joint system designed to accommodate a max. 25% compression or extension from its installed width. A min. clearance of 1" (25mm) to a max. 3" (76mm) shall be maintained between the opening and the fire-protected beam or joist on two sides of the beam or joist with a 1" (25mm) max. being on the bottom.
7. FORMING MATERIAL - Tightly pack min 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint and flush with both surfaces of the wall.
8. NELSON FSC3 COATING (part # AA0868) - Apply by spray or brush over the fireproofing or forming material in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1" (25mm) onto the wall and 2" (51mm) onto the fireproofing material on the steel floor or roof deck and steel beam on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
HW-D-0311**

Nelson Firestop

DWG NO. FS-0496 R4

DATE: 04/04/07

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

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Project Name: _____
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Signature: _____

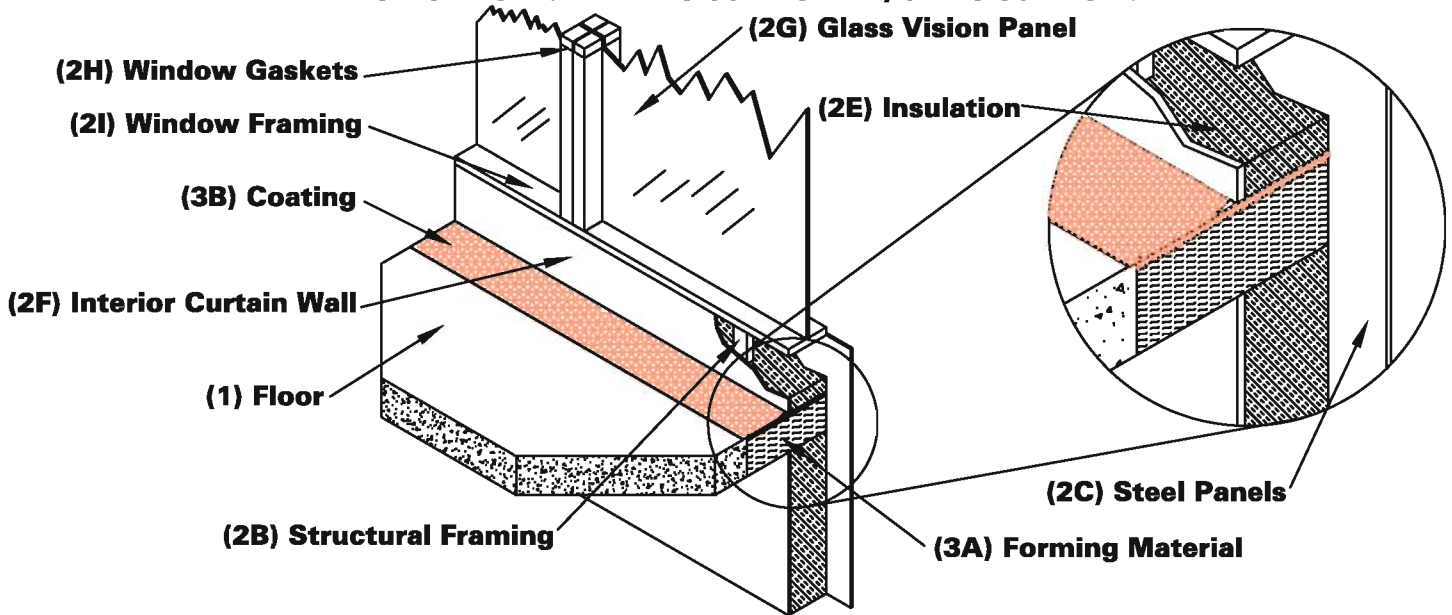
PERIMETER FIRE BARRIER SYSTEM STEEL PANEL CURTAIN WALL

F Rating 2 Hr.

T Rating 1-3/4 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blackout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blackout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. When required, the mounting attachments to the floor slab shall be connected to the joint face of the floor slab, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) by 1-5/8" (41mm), 18 GA steel "C" studs. Attachment shall be according to the curtain wall system manufacturer's guidelines. Vertical framing shall not exceed a spacing of 48" (1219mm) o.c.. If required, horizontal framing members shall be installed according to the curtain wall system manufacturer's guidelines.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 291 P**

Nelson Firestop

DWG NO. FS-0497 R3
Page 1 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

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Tulsa, Ok.**

Project Name: _____

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Signature: _____

- (C) Steel Panels - Steel panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 20 GA sheet steel panel with max dimensions of 48 in. (1219mm) by 144 in. (3658mm).
- (D) Impaling Pins - (Not Shown) When insulation is used, use impaling pins when required by manufacturer's instructions. The pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.
- (E) Curtain Wall Insulation (Optional) - When curtain wall insulation is used, the curtain wall insulation must be installed before the joint treatment. Insulation may be friction fitted or mechanically fastened to the wall framing. Either mineral wool or fiberglass batt insulation may be used.
- (F) Interior Curtain Wall Surface - Framing covered with one layer of 5/8" (16mm) thick, Type X gypsum wallboard on interior face. The face layer of gypsum wallboard fastened to steel studs with min. #6 1-1/8" (29mm) long bugle-head phillips drywall screws spaced 12 in. (305mm) o.c.. Joint tape and compound to be applied to cover joints and screw heads.

The following vision glass panel detail is included as an optional installation detail outside the spandrel area:

- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the top surface of the floor and curtain wall a min of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and 3" lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 291 P**

DWG NO. FS-0497 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

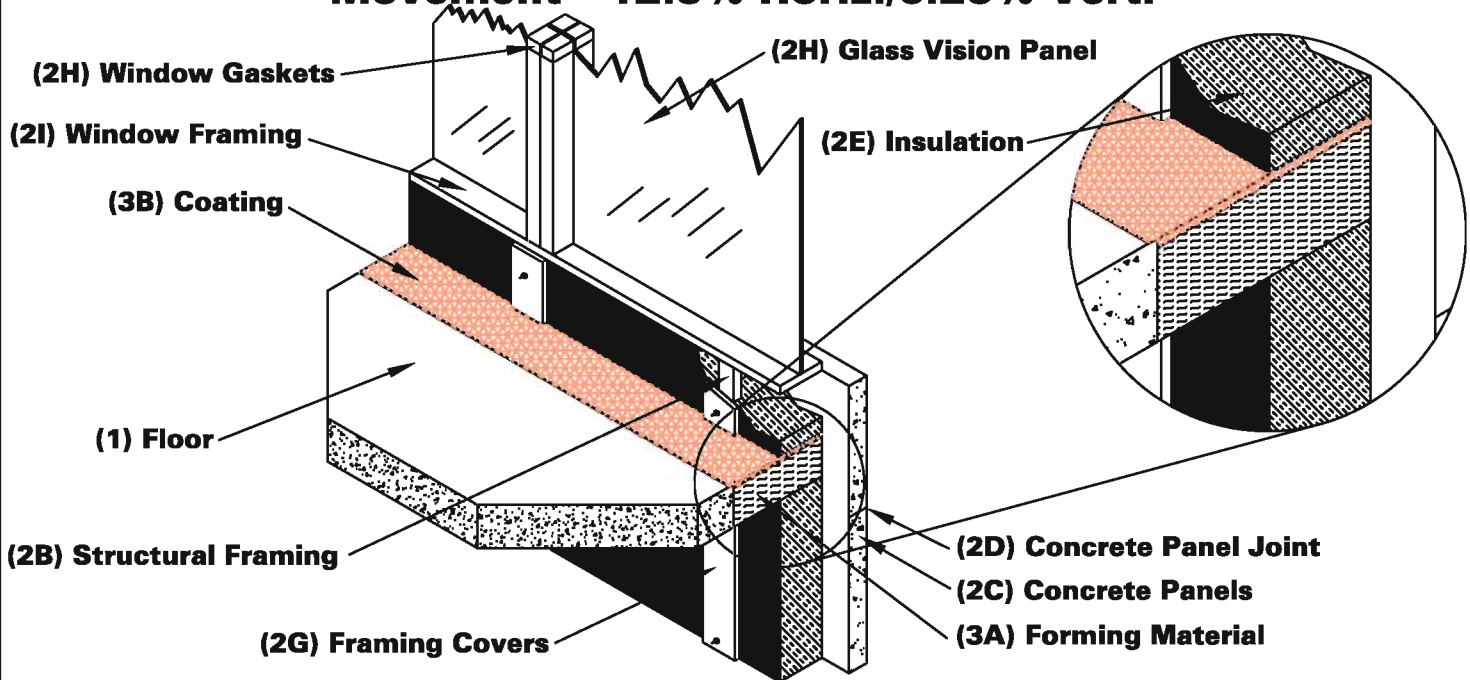
PERIMETER FIRE BARRIER SYSTEM CONCRETE PANEL CURTAIN WALL

F Rating 2 Hr.

T Rating 1-3/4 Hr.

L Rating <1 SCFM

Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blackout depths (longitudinal recesses) formed in the concrete to house the architectural cover plate. The blackout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. When required, the mounting attachments to the floor slab shall be connected to the joint face of the floor slab, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Steel-Stud Framing - Vertical framing members shall be min. 3-5/8" (92mm) x 1-5/8" (41mm) 18GA steel "C" studs. Attachment shall be according to the curtain wall system manufacturer's guidelines. Vertical framing shall not exceed a spacing of 48" (1219mm) o.c.. If required, horizontal framing members shall be installed to the curtain wall system manufacturer's guidelines.



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 292 P**

Nelson Firestop

DWG NO. FS-0498 R3
Page 1 of 2

Project Name: _____
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DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

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- (C) Concrete Panels - Concrete panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Panels shall not be less than 1-1/2" (38mm) thick, 12" (305mm) high or 12" (305mm) long.
- (D) Impaling Pins - (Not Shown) When insulation is used, use impaling pins when required by manufacturer's instructions. Pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.
- (E) Curtain Wall Insulation (Optional) - Perimeter joint treatment shall be installed before curtain wall insulation. Insulation shall be installed flush against the top and bottom surfaces of the perimeter joint protection without deforming it. Insulation material designed and installed according to the curtain wall system manufacturer's guidelines for steel framing.
- (F) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.
- (G) Framing Covers - Framing covers used over the mullions and transoms are optional. When used, the framing covers shall be located, and installed according to covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment without deforming it.

The following vision glass panel detail is included as an optional installation detail outside the spandrel area:

- (H) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (I) Window Gaskets - Secure glass vision panels with a thermal break.
- (J) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 292 P**

DWG NO. FS-0498 R3
Page 2 of 2

Project Name: _____
Address: _____

Installer: _____
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Signature: _____

DATE: 04/19/06

BY: RL

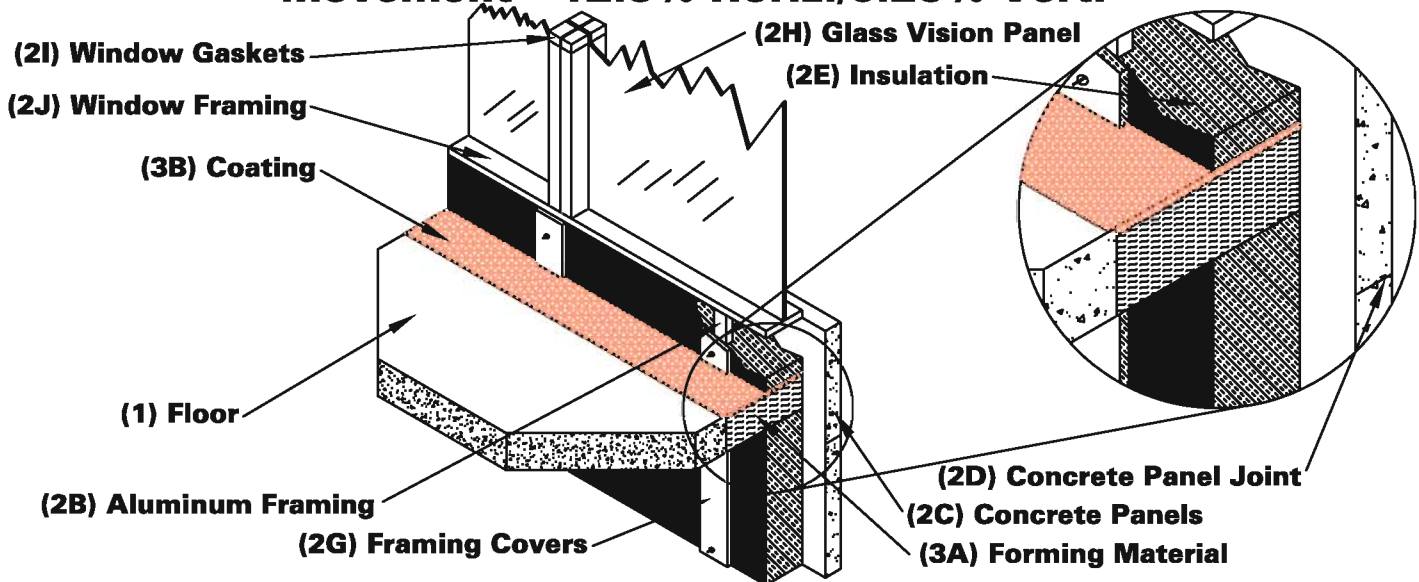
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM CONCRETE PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-3/4 Hr.

**L Rating <1 SCFM
Movement - 12.5% Horiz./6.25% Vert.**



1. **CONCRETE FLOOR ASSEMBLY** - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. **CURTAIN WALL ASSEMBLY** - The curtain wall assembly shall incorporate the following construction features:
 - (A) **Mounting Attachment** (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. When required, the mounting attachments to the floor slab shall be connected to the joint face of the floor slab, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) **Aluminum Framing** - Vertical framing members shall be min. 2-1/2" (64mm) wide by 4" (102mm) deep, 0.100" (2.5mm) thick rectangular aluminum tubing members and not exceed a spacing of 60" (1524mm) o.c. and shall exist on the internal side of the wall panels only. Attachment shall be according to the curtain wall system manufacturer's guidelines.
 - (C) **Concrete Panels** - Any non-combustible exterior concrete based panel. Panels shall not be less than 1-1/2" (38mm) thick, 12" (305mm) high or 12" (305mm) long. Attachment to the framing shall be according to the curtain wall system manufacturer's guidelines.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 293 P**

Nelson Firestop

DWG NO. FS-0499 R3
Page 1 of 2

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BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

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Project Name: _____
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- (D) Impaling Pins - (Not Shown) When used with insulation and framing covers, the pins shall be located, sized and installed according to curtain wall system manufacturer's guidelines.
- (E) Curtain Wall Insulation - A nom 4" (102mm) 4pcf (64 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim which is exposed to the room interior and installed the full depth of the spandrel cavity. Install insulation in each spandrel cavity so that a min. of 4-1/2" (114mm) of insulation extends above the surface of the perimeter joint protection and a min. of 13-3/4" (349mm) extends below the floor while maintaining a min. 34" (864mm) vertical length. Batts are fitted tightly between vertical framing members, secured with clips, impaling pins, or friction fit using a batt insulation length at least 1/4" (6mm) longer than the distance between vertical framing members. All meeting edges of insulation are sealed with nom 4" (102mm) wide pressure sensitive aluminum foil faced tape. In lieu of 4" (102mm) 4pcf (64 kg/cubic meter) mineral wool, the use of 2" (51mm) 8pcf (128 kg/cubic meter) may be used but not friction fitted and must have a 1-1/2" x 1-1/2" x (38mm x 38mm) 20GA horizontal support angle installed at the mid depth of the perimeter joint protection and mechanically attached to all vertical framing. Horizontal seams in the insulation are to be located at least 6" (152mm) from the top surface of the perimeter joint treatment, or 13-3/4" (349mm) below the bottom surface of the perimeter joint treatment.
- (F) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type.
- (G) Framing Covers - Strips made of 1" (25mm) thick by 4" (102mm) wide, 8pcf (128 kg/cm), mineral wool batt insulation faced on one side with aluminum foil scrim which is exposed to the room interior. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c. and attached in accord with (2d). Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment without deforming it. The following vision glass panel detail is included as an optional installation detail outside the spandrel area:
- (H) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (I) Window Gaskets - Secure glass vision panels with a thermal break.
- (J) Window Framing - Aluminum framing members shall be a min. 0.100" thick with min. 4" depth and min. 2-1/2" width of the extrusion and must be compatible with aluminum framing (2b). Locate window framing a min. 6" above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:
- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
 - (B) Nelson FSC3 Coating (part # AA0868) - Spray apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the top surface of the floor and curtain wall a min of 1/2" (13mm).
 - (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 293 P**

Nelson Firestop

DWG NO. FS-0499 R3
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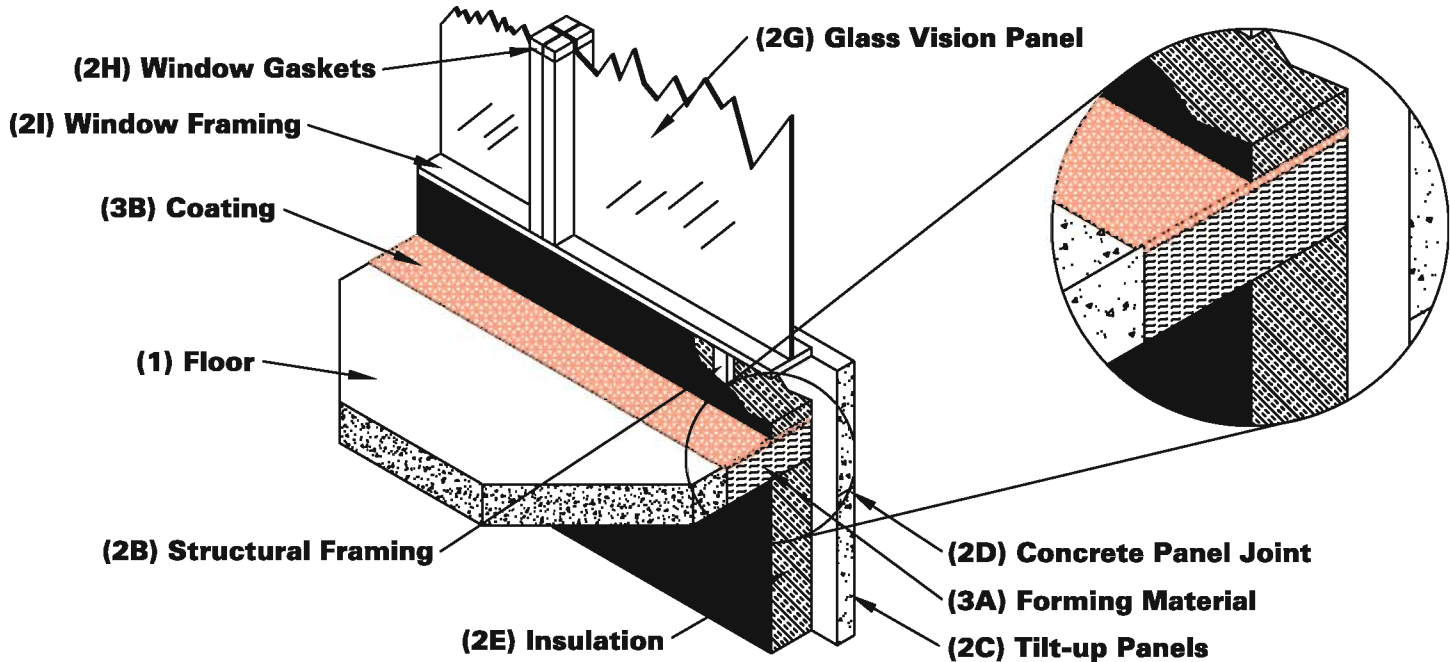
Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____
Installer: _____
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**PERIMETER FIRE BARRIER SYSTEM
TILT-UP PANEL CURTAIN WALL**
F Rating 2 Hr. T Rating 1-3/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Horiz./6.25% Vert.



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (not shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. When required, the mounting attachments to the floor slab shall be connected to the joint face of the floor slab, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 48" (1219mm).
 - (B) Structural Framing - Structural framing members shall be according to the curtain wall system manufacturer's requirements. Aluminum structural framing must be completely covered by concrete panels.



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 294 P**

Nelson Firestop

DWG NO. FS-0500 R3
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Project Name: _____
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Signature: _____

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

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Tulsa, Ok.

- (C) Tilt-up Panels - Tilt-up concrete panels shall be installed to structural framing according to the curtain wall system manufacturer's requirements. Panels shall not be less than 1-1/2" (13mm) thick, reinforced lightweight or normal weight.
- (D) Concrete Panel Joint - Vertical and horizontal concrete panel joints created between panels can be either flush type or key way type. Concrete panel edges must be in contact with each other.
- (E) Curtain Wall Insulation (Optional) - When curtain wall insulation is used, the perimeter joint treatment must be installed before the insulation. Insulation may be butted to top and bottom of perimeter joint treatment but not deform the perimeter joint treatment. Either mineral wool or fiberglass batt insulation may be used.
- (F) Impaling Pins - (Not Shown) When curtain wall insulation is used, use impaling pins when required by manufacturer's instructions. The pins shall be located, sized and installed according to the curtain wall system manufacturer's guidelines.

The following vision glass panel detail is included as an optional installation detail outside the spandrel area:

- (G) Glass Vision Panels - Glass vision panels shall be a min. 6" (152mm) above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear tempered glass with a max. width of 56-1/2" (1435mm) and max. height of 69" (1753mm).
- (H) Window Gaskets - Secure glass vision panels with a thermal break.
- (I) Window Framing - Steel framing members shall be a min. 3-5/8" (92mm) by 1-5/8" (41mm) 18 GA steel "U" channel or similar construction that is compatible with steel-stud framing. Locate window framing a min. 6" (152mm) above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating onto the top surface of the floor and curtain wall a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.
- (D) Support Clips (not shown) - Support clips (Z- shaped clips) are optional but recommended for installations subject to vertical shear movement. Standard Z-shaped clips are 20 GA galvanized steel with the following dimensions: 1" (25mm) wide x 3" (76mm) high with a 2" (51mm) upper leg and a 3" (76mm) lower leg.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 294 P**

DWG NO. FS-0500 R3
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Project Name: _____
Address: _____

Installer: _____
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Signature: _____

DATE: 04/19/06

BY: RL

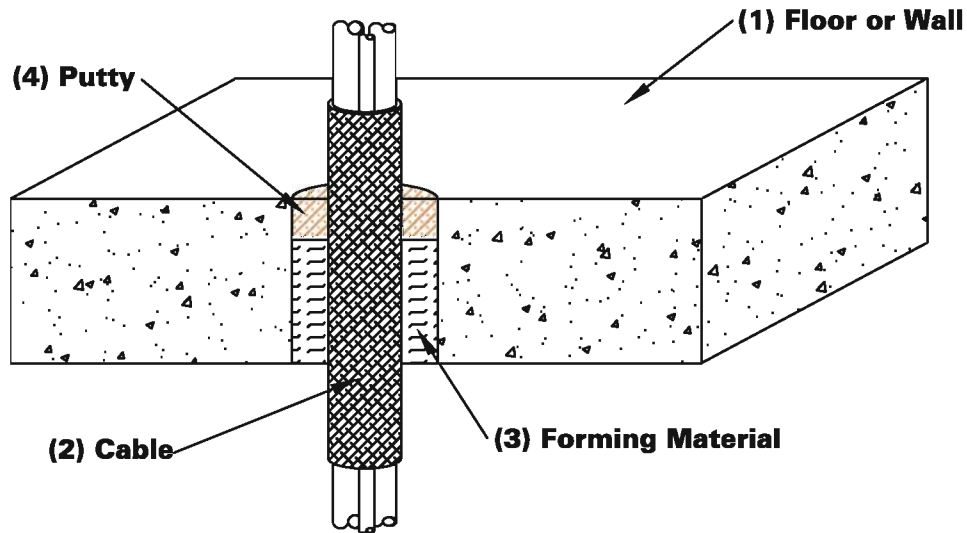
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL ARMORED or METAL CLAD CABLE

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 6" (152mm) thick concrete wall or CMU block wall. The max. diameter of the opening is 3" (76mm).
2. CABLE - Max. four copper conductor No. 5 AWG (or smaller) aluminum or steel ARMORED CABLE or METAL CLAD CABLE. Max. one ARMORED cable or METAL CLAD cable centered within the firestop system. The annular space between the through penetrating product and the periphery of the opening shall be a nom 7/8" (22mm).
3. FORMING MATERIAL - Min. 3" (76mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation tightly packed into opening. Putty to be recessed from top surface of floor or from both surfaces of wall as required to accomodate the required thickness of putty.
4. NELSON FSP PUTTY (part # AA445) - Min. 1-1/2" (38mm) thickness of putty applied within the annulus, flush with top top surface of floor or both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-3149

Nelson Firestop

DWG NO. FS-0501R1

DATE: 07/21/06

BY: RL

Project Name: _____
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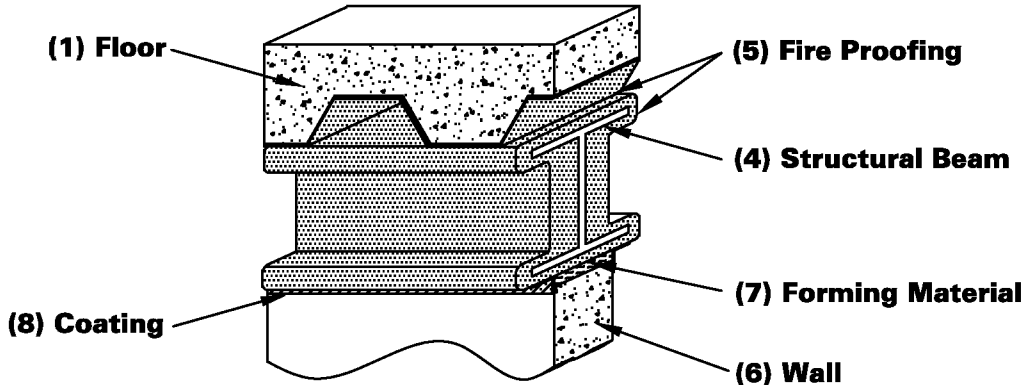
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Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 or 3 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 19% Compr & Ext



1. FLOOR ASSEMBLY - Constructed in the manner specified in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - As specified in the individual P700 series design.
4. STRUCTURAL BEAM - Steel Beam as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units.
5. SPRAY-APPLIED FIRE PROOFING - Steel floor and beam to be sprayed with min. thickness as specified in the individual D700/P700 Series Design. Additional material shall be applied to the web of the steel beam on each side of the wall. The thickness of material applied to each side of the steel beam web shall be 1-3/8" (35mm) and 1-9/16" (40mm) for 2 and 3 hr assembly rating, respectively.
6. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight structural concrete. Wall may also be constructed of any UL Classified Concrete Blocks. The max. separation between bottom of protected steel beam and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 19% compression or extension from its installed width.
7. FORMING MATERIAL - Tightly pack min. 6" (152mm) or 6-5/8" (168mm) of nom 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space. The forming material shall be compressed 50% in the nominal joint and flush with both surfaces of the wall.
8. NELSON FSC3 COATING (part # AA0868) - Apply by spray, trowel, or brush over the fireproofing or forming material in the joint to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating 1/2" (13mm) onto the wall and 2" (51mm) onto the fireproofing material on the steel beam on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0326

Nelson Firestop

DWG NO. FS-0503 R3

DATE: 03/05/07

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

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Project Name: _____
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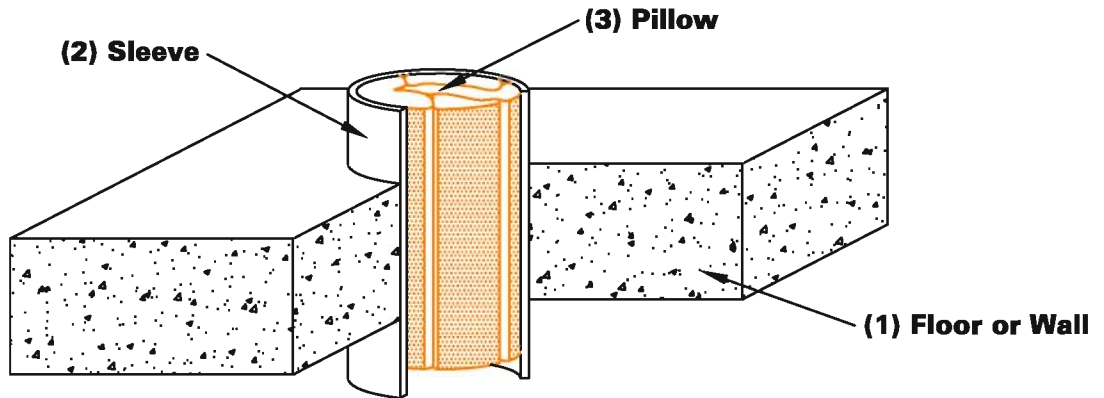
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Address: _____

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CONCRETE FLOOR OR WALL NO PENETRATION

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the opening is 6-5/8" (168mm).
2. METALLIC SLEEVE - Max. 6" (152mm) nominal diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall. The sleeve shall extend 2" (51mm) above both surfaces of the floor or wall.
3. NELSON PLW PILLOWS (part # AA478 or AA479) - Pillows tightly packed to completely fill the annulus within the steel sleeve. Pillows to be installed with the 9-1/2" (241mm) dimension projecting through the floor or wall and centered within the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-0099

Nelson Firestop

DWG NO. FS-0505 R2

DATE: 07/21/06

BY: RL

Project Name: _____
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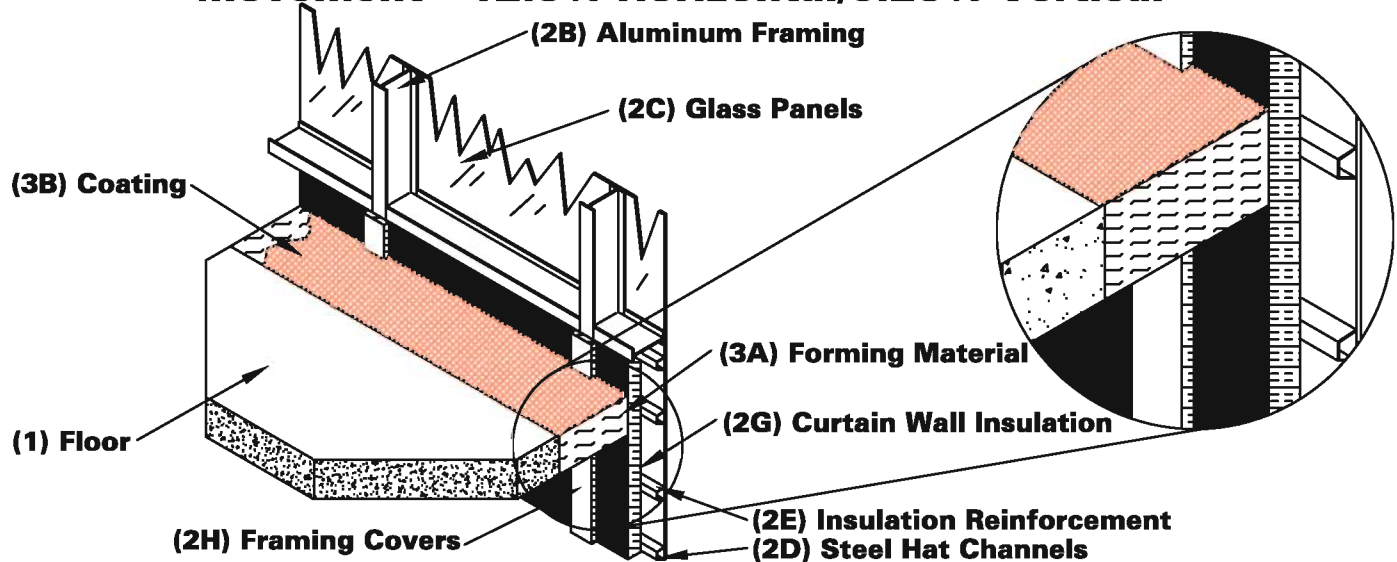
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Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM GLASS PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-1/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Horizontal/6.25% Vertical



- (2H) Framing Covers
- 1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cm), with a min. thickness of 4-1/2" (114mm) at the joint face.
- 2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (Not Shown) Attachment of the min. 1/4" (6mm) plate steel curtain framing to the structural framing shall be according to the curtain wall manufacturer's instructions to allow vertical shear movement only. Max. distance between mounting attachments shall be min. 60" (1524mm) O.C.
 - (B) Aluminum Framing - Install I shaped mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Mullions are spaced a min. 60" (1524mm) o.c. and transoms are to be spaced a min. of 34" (864mm) o.c.. For the spandrel region, the lower transom must be placed a min. of 13-3/4" (349mm) below the concrete floor (from the underside of the floor to the top side of the transom) and the upper transom must be placed a min. of 4-1/2" (114mm) above the floor (from the top surface of the floor to the underside of the transom) while maintaining the min. 34" (864mm) spandrel height.
 - (C) Glass Panels - Glass panels shall be installed according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing o.c. spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 x 5/8" (16mm) long screws, and a snap face (aluminum extrusion).

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 304 P**

Nelson Firestop

DWG NO. FS-0506 R2
Page 1 of 2

Project Name: _____
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Address: _____
Signature: _____

DATE: 04/20/06
BY: RL
MEA # 127-04-M Vol. II

Nelson Firestop
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Tulsa, Ok.

- (D) Steel Hat Channels - Apply nom 2-1/2" (64mm) wide x 7/8" (22mm) deep, min. 24 GA steel hat channels so that they span the space between mullions for the purpose of providing a retention system for the curtain wall insulation. The hat channels are to be applied, horizontally, at a max. 3" (76mm) above the lower transom and 3" (76mm) below the upper transom of the spandrel area, and at max. 24" (610mm) centers within the spandrel area.
- (E) Insulation Reinforcement - At the horizontal centerline of the perimeter joint protection, apply a hat channel (2D) that is secured to the vertical framing as described in (2D).
- (F) Impaling Pins - (Not Shown) Attach curtain wall insulation to the steel hat channel (2D) with min. 12 GA steel cup-head pins with a spacing of max. 8" (203mm) o.c. at the centerline of the flange. Pins shall be installed so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
- (G) Curtain Wall Insulation - All spandrel panels shall be installed with a min. 2 in. (51mm) thick, 8pcf (128 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder) which is exposed to the room interior. The batt is to be fitted tightly to the framing, and is secured to the framing with the steel hat channel (2D) and impaling pins (2F). All meeting edges of insulation are sealed with nom. 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation. 24" (610mm) wide batt insulation installed without vertical seams and horizontal seams are to be placed min. 4-1/2" (114mm) above the floor. The batt in the perimeter joint region is to be supported by at least one hat channel support (2D) above the floor in addition to the centerline perimeter joint insulation reinforcement channel (2E).
- (H) Framing Covers - Strips made of 2" (51mm) thick by 8" (203mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint protection.
- (I) Thermal Break (not shown) - Secure panels with a thermal break, pressure bar, 1/4-20 x 5/8" (16mm) long screws, and a snap face. The spandrel panels shall be insulated according to (2G).

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (B) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional for FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 304 P**

DWG NO. FS-0506 R2
Page 2 of 2

Project Name: _____
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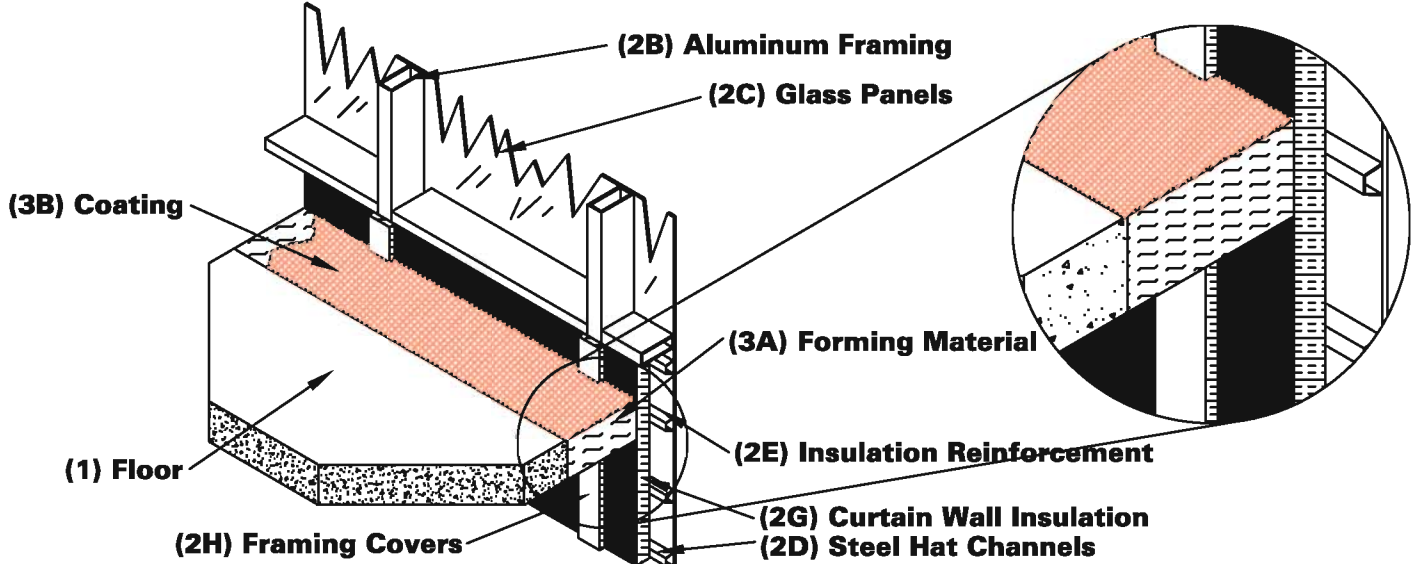
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DATE: 04/20/06
BY: RL
MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM GLASS PANEL CURTAIN WALL

F Rating 2 Hr. T Rating 1-1/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Horizontal/6.25% Vertical



(2H) Framing Covers

1. **CONCRETE FLOOR ASSEMBLY** - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face.
2. **CURTAIN WALL ASSEMBLY** - The curtain wall assembly shall incorporate the following construction features:
 - (A) **Mounting Attachment (Not Shown)** - Attachment of the min. 1/4" (6mm) plate steel curtain framing to the structural framing shall be according to the curtain wall manufacturer's instructions to allow vertical shear movement only. Max. distance between mounting attachments shall be min. 60" (1524mm) O.C.
 - (B) **Aluminum Framing** - Rectangular aluminum tubing mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Mullions are spaced a min. 60" (1524mm) o.c. and transoms are to be spaced a min. 34" (864mm) o.c.. For the spandrel region, the lower transom must be placed a min. of 13-3/4" (349mm) below the concrete floor (from the underside of the floor to the top side of the transom) and the upper transom must be placed a min. of 4-1/2" (114mm) above the floor (from the top surface of the floor to the underside of the transom) while maintaining the min. 34" (864mm) spandrel height.
 - (C) **Glass Panels** - Glass panels shall be installed according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing o.c. spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 x 5/8" (16mm) long screws, and a snap face (aluminum extrusion).

Tested in accordance with:
ASTM E-2307, E-1399



Omega Point Design No.
CEJ 305 P

Nelson Firestop

DWG NO. FS-0507 R2

Page 1 of 2

DATE: 04/19/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

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- (D) Steel Hat Channels - Apply nom 2-1/2" (64mm) wide x 7/8" (22mm) deep, min. 24 GA steel hat channels so that they span the space between mullions for the purpose of providing a retention system for the curtain wall insulation. The hat channels are to be applied, horizontally, at a max. 3" (76mm) above the lower transom and 3" (76mm) below the upper transom of the spandrel area, and at max. 24" (610mm) centers within the spandrel area.
 - (E) Insulation Reinforcement - At the horizontal centerline of the perimeter joint protection, apply a hat channel (2D) that is secured to the vertical framing as described in (2D).
 - (F) Impaling Pins - (Not Shown) Attach curtain wall insulation to the steel hat channel (2D) with min. 12 GA steel cup-head pins with a spacing of max. 8" o.c. at the centerline of the flange. Pins shall be installed so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
 - (G) Curtain Wall Insulation - All spandrel panels shall be installed with a min. 2 in. (51mm) thick, 8pcf (128 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder) which is exposed to the room interior. The batt is to be fitted tightly to the framing, and is secured to the framing with the steel hat channel (2D) and impaling pins (2F). All meeting edges of insulation are sealed with nom. 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation. 24" (610mm) wide batt insulation installed without vertical seams and horizontal seams are to be placed min. 4-1/2" (114mm) above the floor. The batt in the perimeter joint region is to be supported by at least one hat channel support (2D) above the floor, in addition to the centerline perimeter joint insulation reinforcement channel (2E).
 - (H) Framing Covers - Strips made of 2" (51mm) thick by 8" (203mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint protection.
 - (I) Thermal Break (not shown) - Secure panels with a thermal break, pressure bar, 1/4-20 x 5/8" (16mm) long screws, and a snap face. The spandrel panels shall be insulated according to (2G).
- 3. PERIMETER JOINT PROTECTION** - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:
- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" (6mm) from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
 - (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
 - (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.



Tested in accordance with:
ASTM E-2307, E-1399

Nelson Firestop

**Omega Point Design No.
CEJ 305 P**

DWG NO. FS-0507 R2

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Project Name: _____
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Installer: _____
Address: _____

Signature: _____

DATE: 04/19/06

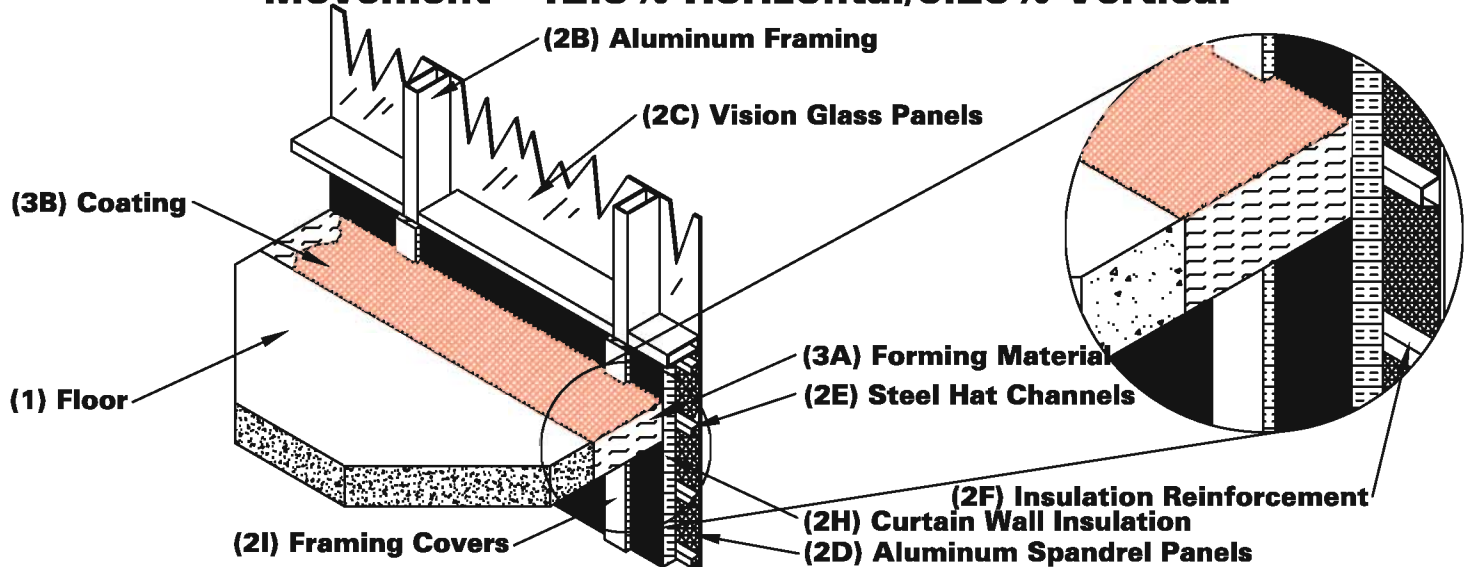
BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

PERIMETER FIRE BARRIER SYSTEM ALUMINUM SPANDREL CURTAIN WALL

F Rating 2 Hr. T Rating 1-1/4 Hr.
L Rating <1 SCFM
Movement - 12.5% Horizontal/6.25% Vertical



1. CONCRETE FLOOR ASSEMBLY - Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf (1602-2404 kg/cubic meter), with a min. thickness of 4-1/2" (114mm) at the joint face.
2. CURTAIN WALL ASSEMBLY - The curtain wall assembly shall incorporate the following construction features:
 - (A) Mounting Attachment (Not Shown) Attachment of the min. 1/4" (6mm) plate steel curtain framing to the structural framing shall be according to the curtain wall manufacturer's instructions to allow vertical shear movement only. Max. distance between mounting attachments shall be min 60" (1524mm) O.C.
 - (B) Aluminum Framing - Rectangular aluminum tubing mullions and transoms sized according to the curtain wall system manufacturer's guidelines. Mullions are spaced a min 60" (1524mm) o.c. and transoms are to be spaced a min 34" (864mm) o.c.. For the spandrel region, the lower transom must be placed a min. of 13-3/4" (349mm) below the concrete floor (from the underside of the floor to the top side of the transom) and the upper transom must be placed a min. of 4-1/2" (114mm) above the floor (from the top surface of the floor to the underside of the transom) while maintaining the min. 34" (864mm) spandrel height.
 - (C) Vision Glass Panels - Glass panels shall be installed according to the curtain wall system manufacturer's guidelines. Use a min. 1/4" (6mm) thick, clear heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing o.c. spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 x 5/8" (16mm) long screws, and a snap face (aluminum extrusion).



Tested in accordance with:
ASTM E-2307, E-1399

**Omega Point Design No.
CEJ 306 P**

Nelson Firestop

DWG NO. FS-0508 R2

Page 1 of 2

DATE: 04/20/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

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- (D) Aluminum Spandrel Panels - Aluminum panels used in the spandrel shall be sized and attached to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/8" (3mm) sheet aluminum panel with max. dimensions 34" x 60" (864mm x 1524mm).
- (E) Steel Hat Channels - Apply nom 2-1/2" (64mm) wide x 7/8" (22mm) deep, min. 24GA steel hat channels so that they span the space between mullions for the purpose of providing a retention system for the curtain wall insulation. The hat channels are to be applied, horizontally, at a max. 3" (76mm) above the lower transom and 3" (76mm) below the upper transom of the spandrel area, and at 24" (610mm) centers within the spandrel area.
- (F) Insulation Reinforcement - At the horizontal centerline of the perimeter joint protection, apply a hat channel (2D) that is secured to the vertical framing as described in (2D).
- (G) Impaling Pins - (Not Shown) Attach curtain wall insulation to the steel hat channel (2E) with min. 12 GA steel cup-head pins with a spacing of max. 8" (203mm) o.c. at the centerline of the flange. Pins shall be installed so that the interior face of the curtain wall insulation is flush with the interior face of the framing.
- (H) Curtain Wall Insulation - All spandrel panels shall be installed with a min. 2 in. (51mm) thick, 8pcf (128 kg/cubic meter) mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder) which is exposed to the room interior. The batt is to be fitted tightly to the framing, and is secured to the framing with the steel hat channel (2E) and impaling pins (2G). All meeting edges of insulation are sealed with nom. 4" (102mm) wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2" (51mm) of tape covers each edge of the adjacent insulation. 24" (610mm) wide batt insulation installed without vertical seams and horizontal seams are to be placed a min. 4-1/2" (114mm) above the floor. The batt in the perimeter joint region is to be supported by at least one hat channel the floor in addition to the centerline perimeter joint insulation reinforcement channel (2E).
- (I) Framing Covers - Strips made of 2" (51mm) thick by 8" (203mm) wide, 8pcf (128 kg/cm) mineral wool batt insulation faced on one side with aluminum foil scrim. Framing covers are centered over each vertical framing member and secured to the member with impaling pins and clips spaced at least 12" (305mm) o.c.. Framing covers do not pass through the perimeter joint protection.
- (J) Thermal Break (not shown) - Secure panels with a thermal break, pressure bar, 1/4-20 x 5/8" (16mm) long screws, and a snap face. The spandrel panels shall be insulated according to (2H).

3. PERIMETER JOINT PROTECTION - The perimeter joint (linear opening) shall not exceed an 8" (203mm) nom. joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- (A) Forming Material - Min. 4" (102mm) thick 4 pcf (64 kg/cubic meter) density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The forming material shall be compressed 25% in the nom joint width and flush with or recessed 1/4" from the top surface of the concrete floor, if FSC3 or CLK is used respectively.
- (B) Nelson FSC3 Coating (part # AA0868) - Spray, trowel, or brush apply the coating over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Single pass application is acceptable. Overlap the coating onto the top surface of the floor and curtain wall insulation a min. of 1/2" (13mm).
- (C) Nelson CLK S/L Sealant (part # AA552) (not shown) (optional to the FSC3) - Applied to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply sealant over the forming material to a min. 1/4" (6mm) thickness and finish flush with the top surface of the concrete floor.

Tested in accordance with:
ASTM E-2307, E-1399



**Omega Point Design No.
CEJ 306 P**

Nelson Firestop

DWG NO. FS-0508 R2

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DATE: 04/20/06

BY: RL

MEA # 127-04-M Vol. II

Nelson Firestop

800 331-7325 Fax: 918 627-2941

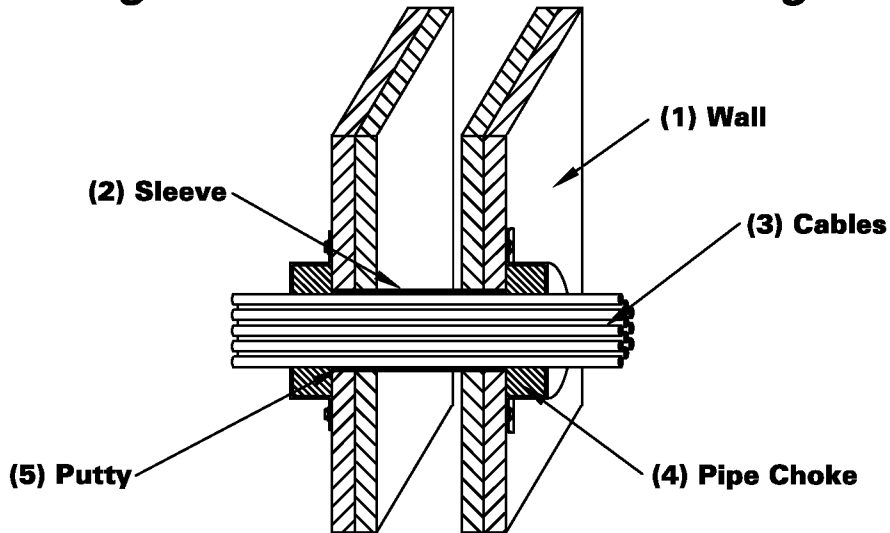
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Project Name: _____
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GYPSUM WALL SLEEVED CABLES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 Series Wall and Partitions Designs in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm).
2. **METALLIC SLEEVE** (optional) - Cylindrical sleeve fabricated from 0.015" (.381mm) (30 MSG) thick galv sheet steel and having a min. 2" (51mm) lap along the longitudinal seam. Sleeve installed flush with both wall surfaces.
3. **CABLES** - Max. 70% cable fill of opening of any combination of:
 - (A) max. 750 kcmil single conductor cable with cross linked polyethylene insulation and polyvinyl chloride (PVC) jacket.
 - (B) max. 100pr. No. 24awg, or smaller, with PVC insulation and jacket.

Max. one length of 1/C -750 kcmil cable along with max. 100pr No. 24awg can be installed within the opening.
4. **NELSON PCS PIPECHOKE** - Install the applicable sized pipechoke, in accordance with the size of the cable bundle, around the bundle on both sides of the wall. Secure to the wall with 1/8" x 1-3/4" (3mm x 44mm) long steel toggle bolts in conjunction with 1/4" x 3/4" (6mm) x 19mm) and 1/4" x 1-1/4" (6mm) x 32mm) diameter steel fender washers.
5. **NELSON FSP PUTTY** (part # AA445) - Apply a 5/8" (16mm) depth of FSP in the annular space around the cables, flush with both surfaces of the wall. Additional 1/2" (13mm) thickness of putty shall be applied within interstices of cable bundle at its egress from the device to seal any voids on both sides of wall. Min. 3/4" (19mm) thick crown of putty shall be applied around outer circumference of cable bundle, at the interface of the cable bundle and the retainer tabs on both sides of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-3227**

Nelson Firestop

DWG NO. FS-0509 R2

DATE: 07/21/06

BY: RL

Project Name: _____
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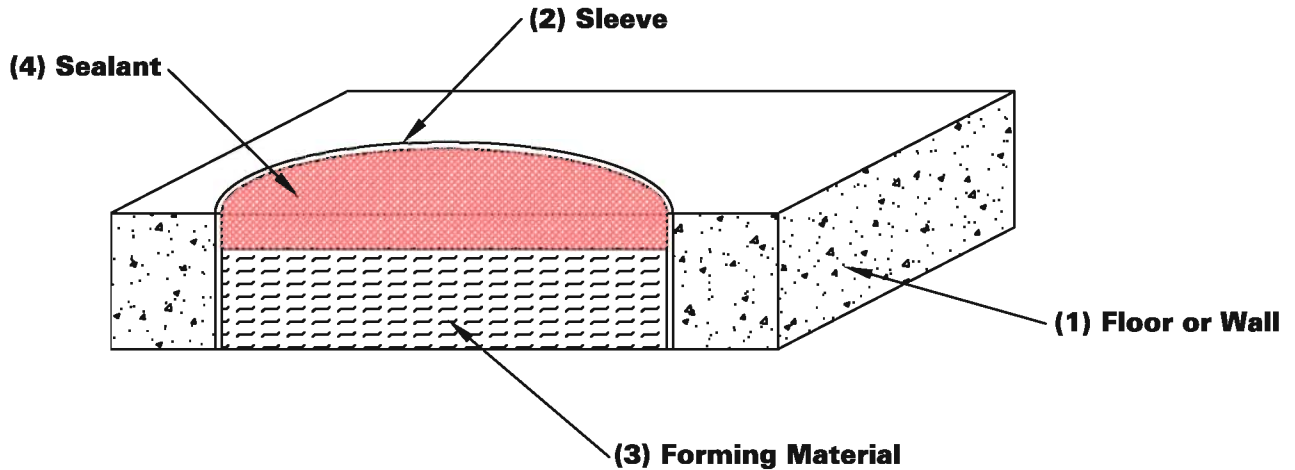
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800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL NO PENETRATING ITEM

F Rating 3 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 15" (381mm).
2. METALLIC SLEEVE (optional) - Nom 14" (356mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. FORMING MATERIAL - Min. 2" (51mm) thickness of min. 4pcf (64kg/cubic meter) mineral wool batt insulation firmly packed into opening. Recess 1" (25mm) from top surface of floor or from both surfaces of wall.
4. NELSON ES1399 SEALANT - Min. 1" (25mm) thickness of sealant applied within annulus, flush with top surface of floor or both surfaces of wall. If cracking occurs after sealant cures, the cracks shall be sealed with sealant.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-0104**

Nelson Firestop

DWG NO. FS-0510 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
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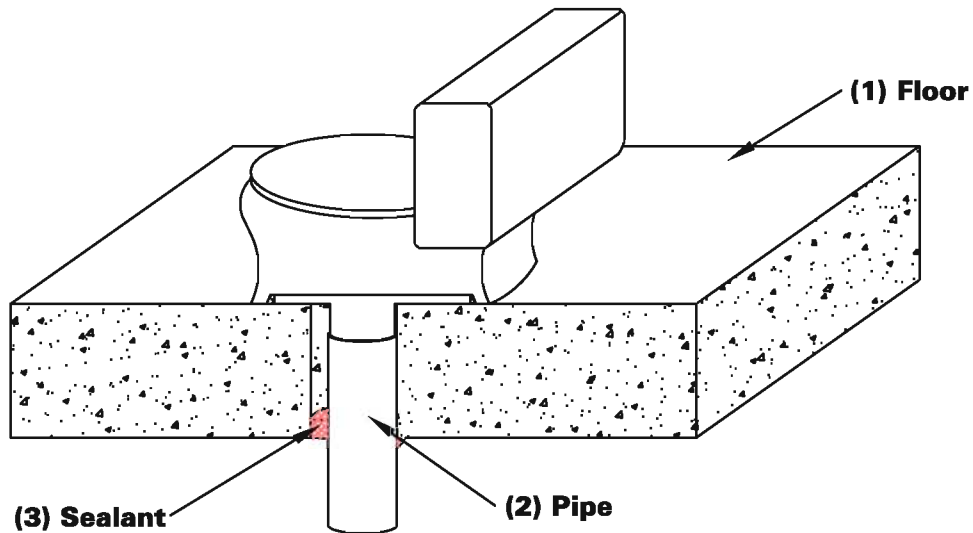
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CONCRETE FLOOR NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 2 Hr.



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. diameter of opening is 6" (152mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in vented (drain, waste or vent) piping systems.
 - (B) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in vented (drain, waste or vent) piping systems.

The nominal annular space between drain pipe and periphery of opening is 0" (point of contact) to 1-1/2" (38mm).
3. NELSON ES1399/LBS3 SEALANT - Apply to fill the annular space to a min. 1" (25mm) depth flush with bottom surface of the floor. At point contact location between concrete and pipe, a min. 1/2" (13mm) diameter bead of sealant shall be applied to the pipe/concrete interface on bottom surface of floor assembly. A min. 1/2" (13mm) diameter bead of sealant shall also be applied around top edge of toilet flange. Prior to placement of water closet, a min. 1/2" (13mm) diameter bead of material shall be applied to the bottom surface of the outer rim of the water closet.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0511 R2

DATE: 02/14/07

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

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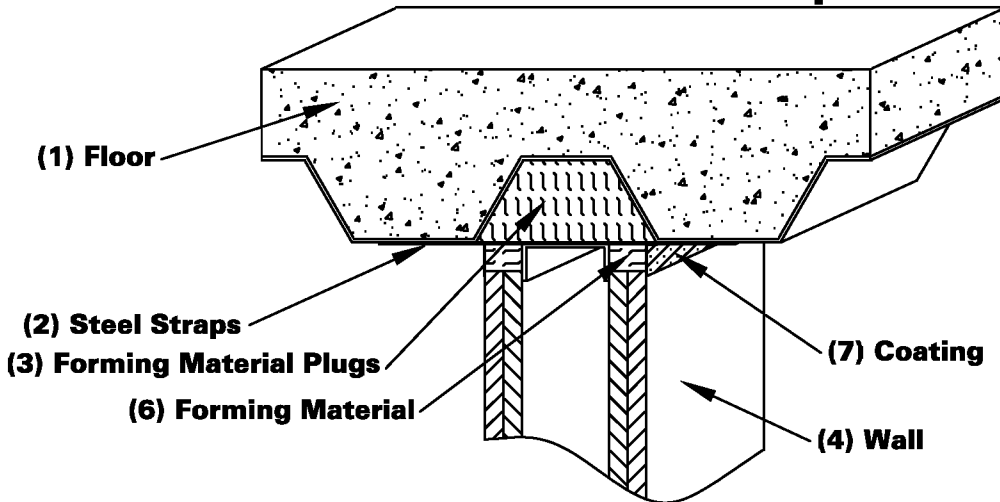
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JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)
Class II Movement - 25% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. STEEL STRAPS - Min. 2" (51mm) wide 16 MSG galv steel straps cut to a length to span the flute and overlap the adjacent valleys of fluted floor units by 1-1/2" (38mm). Straps spaced max. 24" (610mm) OC and fastened to floor assembly with 1/4" (6mm) diameter by 1-1/2" (38mm) long steel concrete anchors.
3. FORMING MATERIAL PLUGS - Preformed mineral wool plugs, formed to the shape of the fluted floor units, friction fit to completely fill the flutes above the steel straps. Adjacent lengths of plugs to be tightly butted with butted seams spaced min. 24" apart along the length of the plugs.
4. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor and top of wall is 1" (25mm). The joint system is designed to accommodate a max. 25% compression or extension from its installed width. Ceiling runner is secured to straps with two #8 self-drilling, self-tapping steel screws per strap.
5. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs with max. 24" (610mm) o.c. spacing.
6. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space above the wall. The forming material shall be compressed 50% in the nominal joint width and flush with both surfaces of wall.
7. NELSON FSC3 COATING (part # AA0868) - Spray or trowel over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating a min. 1/2" (13mm) onto the wall, steel floor and steel straps on both sides of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0360

Nelson Firestop

DWG NO. FS-0512 R2

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

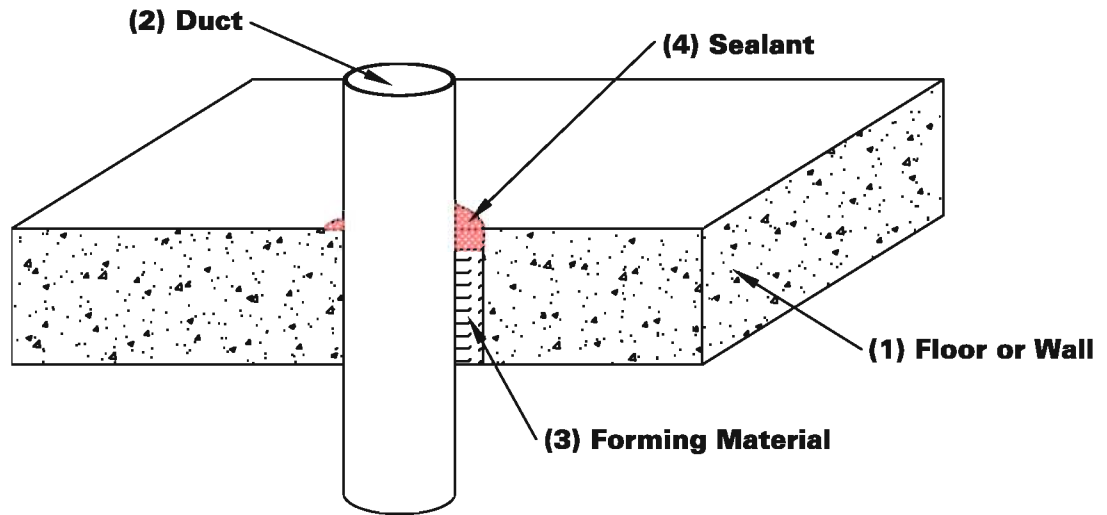
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Address: _____

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CONCRETE FLOOR OR WALL STEEL DUCT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall or CMU wall. Max. diameter of opening is 28" (711mm).
2. METALLIC DUCT - Max. nominal 24" (610mm) diameter, (or smaller), No. 22 GA (or heavier) steel HVAC duct to be installed concentrically or eccentrically within the firestop system. The annular space between duct and periphery of opening shall be min. 0" (point of contact) to max. 4" (102mm). Duct to be rigidly supported on both sides of floor or wall assembly.
3. FORMING MATERIAL - Min. 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening as a permanent form. Forming material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of sealant.
4. NELSON ES1399 SEALANT - Apply to fill the annular space around the duct to a min. 1/2" (13mm) depth, flush with top surface of floor or both surfaces of wall. Additional sealant installed to form a min. 1/4" (6mm) bead at the point of contact of the duct and periphery of the opening on the top floor surface or both wall surfaces.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
C-AJ-7093**

Nelson Firestop

DWG NO. FS-0513 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

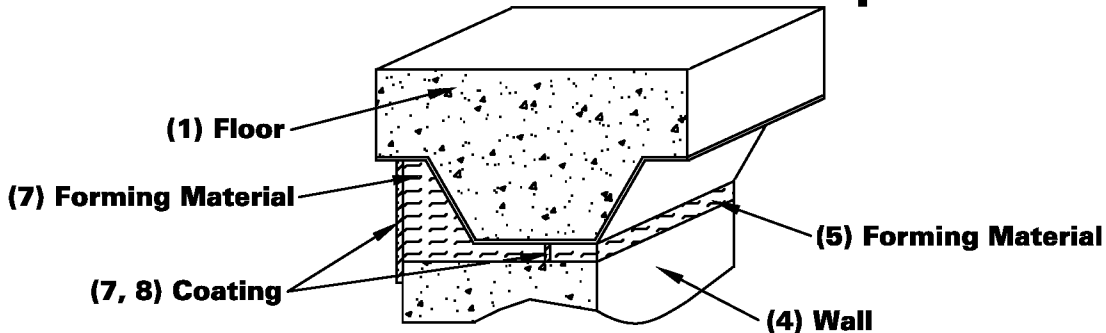
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 3 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr & Ext



1. FLOOR ASSEMBLY - Min 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Res. Direct. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.
3. SPRAY-APPLIED FIRE PROOFING (not shown, optional) - The roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.
4. WALL ASSEMBLY - Min 8" (203mm) thick lightweight or normal weight concrete wall or CMU block wall. The wall shall be installed parallel with the flutes of the steel floor and roof deck units. The max. separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max. 12.5% compression or extension from its installed width.
5. FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation cut into strips min. 2" (51mm) wide compressed 50 % in thickness and inserted into gap between the top of the wall and the bottom of the steel floor units, roof deck or sprayed-applied fire resistive material flush with one surface of the wall.
6. NELSON FSC3 COATING - Min. 1/8" (3mm) wet thickness of coating sprayed or trowelled into the joint to completely cover forming material and to overlap a min. of 1/2" (13mm) onto wall and steel deck, roof deck or spray-applied fire resistive material within joint cavity.
7. FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation cut into strips min. 6" (152mm) wide compressed 50 % in thickness and inserted into gap between the top of the wall and the bottom of the steel floor units, roof deck or sprayed-applied fire resistive material butting edge of the forming material.
8. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of coating sprayed or trowelled to completely cover forming material and to overlap a min. of 1/2" (13mm) onto wall and steel deck, roof deck or spray-applied fire resistive material on accessible side of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



Based on System No.
HW-D-0362

Nelson Firestop

DWG NO. FS-0514 R2

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

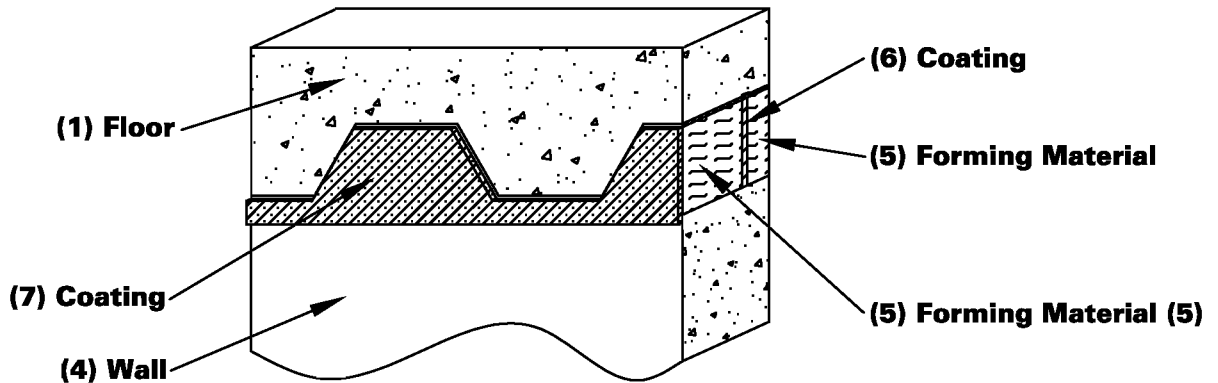
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 3 Hr.
Nominal Joint Width - 2" (51mm)
Class II Movement - 12.5% Compr or Ext



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete poured over fluted steel decking.
2. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used.
3. ROOF INSULATION (not shown) - Min. 2-1/4" (57mm) thick poured insulating concrete, as measured from the top plane of the roof deck.
4. WALL ASSEMBLY - Min 8" (203mm) thick lightweight or normal weight concrete wall or CMU block wall. The max separation between bottom of floor and top of wall is 2" (51mm). The joint system is designed to accommodate a max 12.5% compression or extension from its installed width.
5. FORMING MATERIAL - Tightly pack 2" (51mm) wide min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space between the top of the wall and bottom of the floor or roof on one side of the wall and installed flush with one surface of the wall. The forming material shall be compressed 50% in the nominal joint width and 33% into the flutes of the steel floor units or roof deck. Tightly pack 6" (152mm) wide min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space between the top of the wall and bottom of the floor or roof and installed flush with surface of the wall. The forming material shall be compressed 50% in the nominal joint width and 33% into the flutes of the steel floor units or roof deck.
6. NELSON FSC3 COATING - Min. 1/8" (3mm) wet thickness of coating sprayed or trowelled into the joint to completely cover forming material and to overlap a min. of 1/2" (13mm) onto wall and steel deck, within joint cavity.
7. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness of coating sprayed or trowelled on one side of the wall to completely cover forming material and to overlap a min. of 1/2" (13mm) onto wall and steel deck on accessible side of wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0361

Nelson Firestop

DWG NO. FS-0515 R2

DATE: 12/04/06

BY: RL

MEA # 127-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

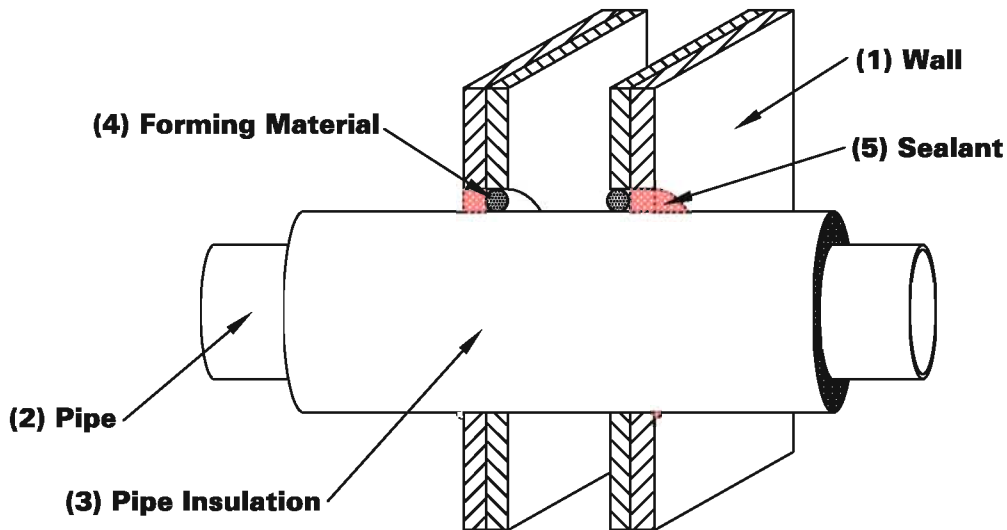
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 or 1 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 13-7/8" (352mm) and 10-3/8" (264mm) for steel or wood stud walls, respectively.
2. **METALLIC PIPE** - The following types of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (B) **IRON PIPE** - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING** - Nom 6" (152mm) diameter (or smaller) Type L or heavier) copper tubing.
3. **PIPE INSULATION** - Nominal 3" (76mm) thick CELLULAR GLASS pipe insulation. The annular space between insulated through penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
5. **NELSON ES1399 SEALANT** - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, min. 3/8" (10mm) diameter bead of sealant shall be applied to the insulation/wall interface on both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-5212

Nelson Firestop

DWG NO. FS-0516 R1

DATE: 07/13/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

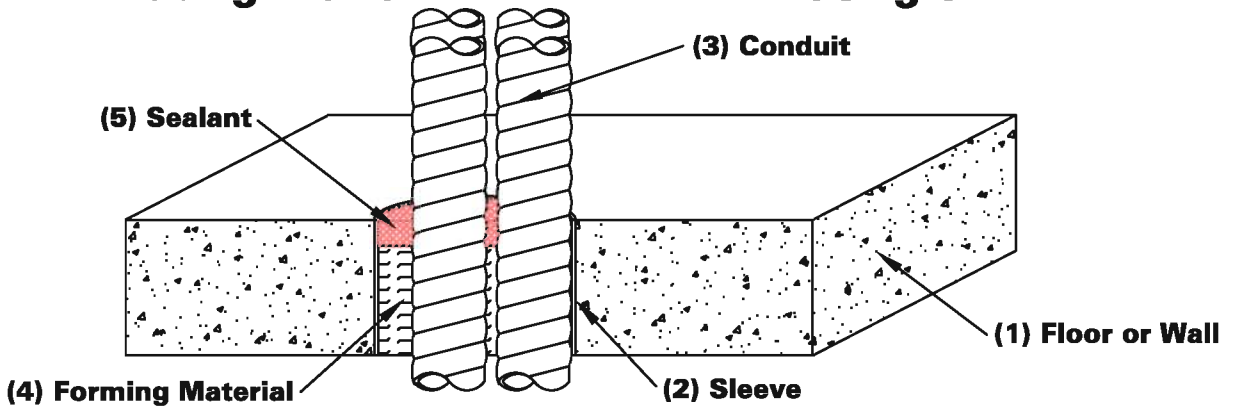
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL FLEXIBLE METALLIC CONDUITS

F Rating 2 or 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall, or CMU block wall. Floor may also be constructed of any min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 4" (102mm) if flexible ALUMINUM conduit is used and max. diameter opening is 6" (152mm) if flexible STEEL conduit is used.
2. METALLIC SLEEVE (optional) - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. If flexible STEEL conduit is used, the max. diameter of the steel sleeve is 6" (152mm). If flexible ALUMINUM conduit is used, the max. diameter of the steel sleeve is 4" (102mm).
3. FLEXIBLE METALLIC CONDUITS - One or more 1-1/2" (38mm) diameter, (or smaller) flexible STEEL metallic conduits or 1" (25mm) diameter (or smaller) flexible ALUMINUM conduit bundled together and installed within the opening. Max. diameter of through penetrant bundle shall not exceed 4" (102mm) and 2-1/2" (64mm) for flexible STEEL conduit and flexible ALUMINUM conduit, respectively. Annular space between penetrants is 0" (point of contact) to 1/4" (6mm). The annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to 2" (51mm) for flexible STEEL conduit and 0" (point of contact) to 1-1/2" (38mm) for flexible ALUMINUM conduit. If flexible ALUMINUM conduit is used, the F rating of the firestop system is 2 Hr. and if flexible STEEL conduit is used, the F rating is 3 Hr.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a 4" (102mm) depth, and recess 1/2" (13mm) from the top surface of the floor or from both surfaces of wall or HOLLOW-CORE floor.
5. NELSON ES1399 SEALANT - Apply sealant over the forming material to fill the annular space to a min. 1/2" (13mm) depth, flush with top surface of the floor or with both surfaces of wall. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/penetrating item interface on top surface of floor or on both surfaces of wall or HOLLOW-CORE precast concrete units. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1512**

Nelson Firestop

DWG NO. FS-0517 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

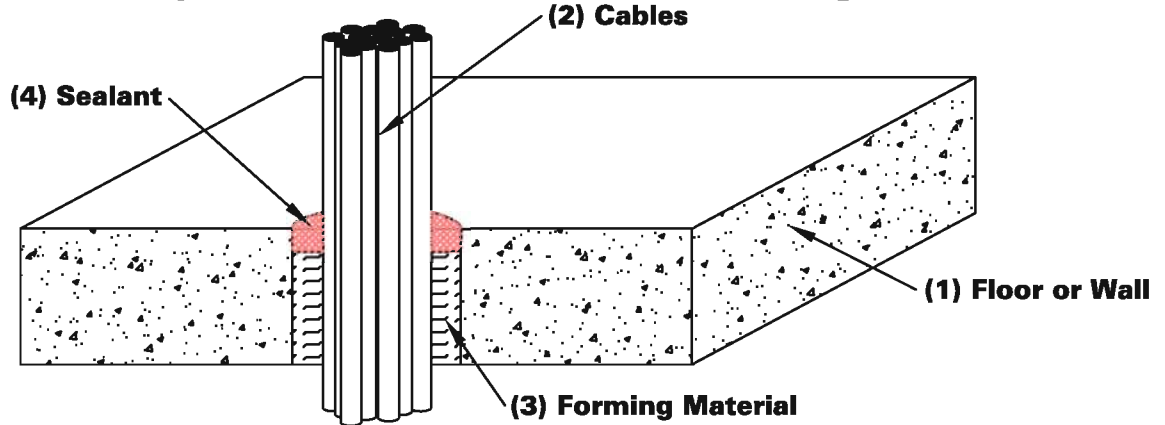
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall, or CMU block wall. Floor may be constructed of any min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening to be 6" (152mm).
2. CABLES - Max. 25% fill of aggregate cross-section area of opening. Cables installed individually or in bundles having a max. bundle diameter of 3" (76mm). The annular space between cable bundle and the periphery of the opening shall be min. 3/8" (10mm) to max. 2-5/8" (67mm).

Cable Type	Cable Identification
a	Max. 100 pr. No. 24 awg copper conductor with PVC jacketing and insulation.
b	Max. 3/C No. 2/0 awg aluminum conductor SER with PVC insulation and jacket.
c	Max. 3/C No. 12 awg nonmetallic sheathed (ROMEX) with copper conductors, PVC insulation and jacket.
d	Max. 350kcmil, 1/C, copper conductor with XLPE or PVC insul and XLPE or PVC jacket.
e	Max. RG59/U copper conductor coaxial cable with ethylene insulation and jacketing.
f	Max. 62.5/125 fiber optic with PVC insulation and jacketing.
g	Max. RG/6 No. 18 awg copper conductor CATV coaxial cable with PVC insul and jacket.
h	Max. 7/C No. 12 awg copper conductor with XLPE or PVC insulation and jacket.

2. CABLES - As an alternate to the cables listed above, max. 3/C No. 2/0 awg copper conductors aluminum or steel METAL CLAD cable.
3. FORMING MATERIAL - Tightly pack, min. 4" (102mm) tk, min. 4pcf (64 kg/cubic meter) mineral wool insulation into the opening. Recesss from top or both surfaces of wall or floor as required for sealant.
4. NELSON ES1399 SEALANT- Apply sealant over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor, or both ends of the wall or HOLLOW-CORE floor. Sealant to be forced into interstices of cable group to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3235**

Nelson Firestop

DWG NO. FS-0518 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

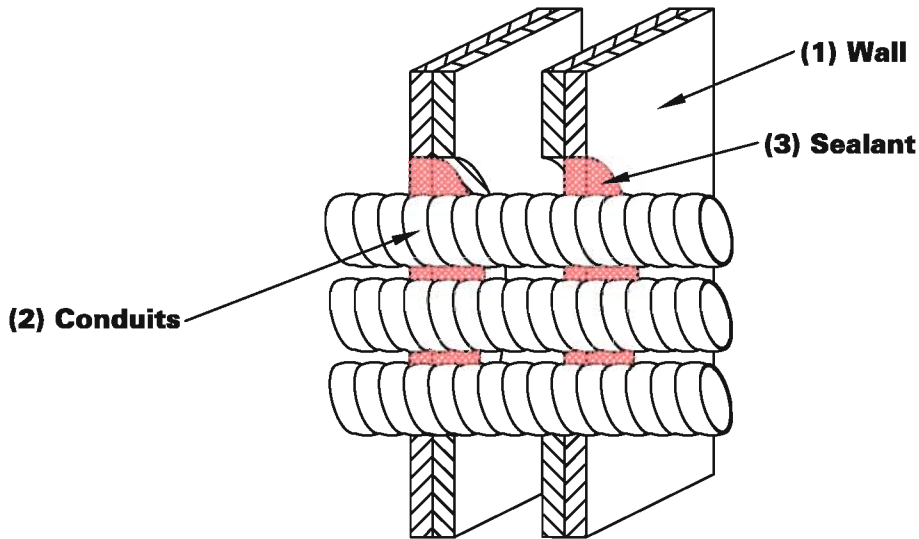
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL MULTIPLE FLEXIBLE METALLIC CONDUITS

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 6" (152mm).
2. **FLEXIBLE METALLIC CONDUITS** - One or more 1-1/2" (38mm) diameter, (or smaller) steel flexible metallic conduits. Max. diameter of through penetrant bundle shall be 4" (102mm). Annular space between penetrants is 0" (point of contact) to 1/4" (6mm). The annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to 2" (51mm).
3. **NELSON ES1399 SEALANT** - Apply sealant within the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum board/through penetrant interface on both surfaces of the wall. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479


System No.
W-L-1352

Nelson Firestop

DWG NO. FS-0519 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

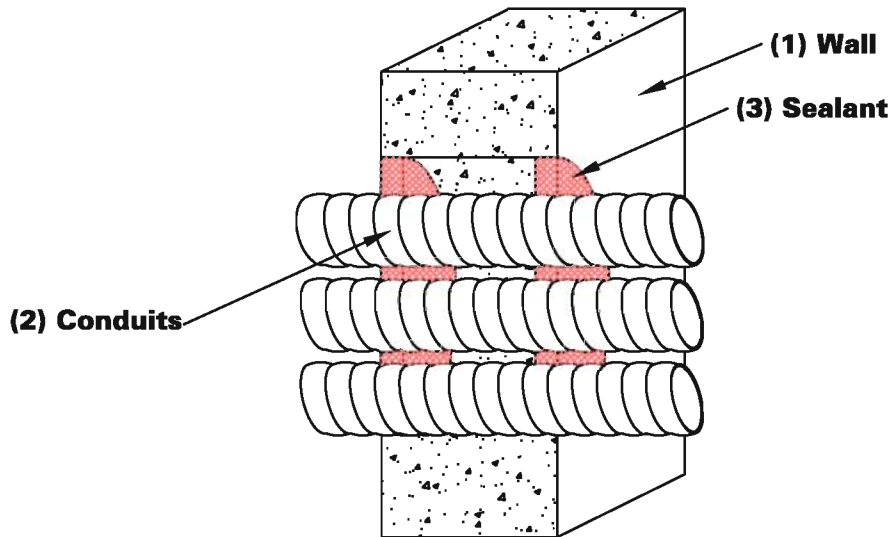
Address: _____

Signature: _____

CONCRETE WALL MULTIPLE FLEXIBLE METALLIC CONDUITS

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete wall or CMU block wall. Max. diameter of opening is 6" (152mm).
2. FLEXIBLE METALLIC CONDUITS - One or more 1-1/2" (38mm) diameter, (or smaller) steel flexible metallic conduits. Max. diameter of through penetrant bundle shall be 4" (102mm). Annular space between penetrants is 0" (point of contact) to 1/4" (6mm). The annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to 2" (51mm).
3. NELSON ES1399 SEALANT - Apply sealant within the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/through penetrant interface on both surfaces of the wall. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479


System No.
W-J-1162

Nelson Firestop

DWG NO. FS-0520 R1

DATE: 07/21/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

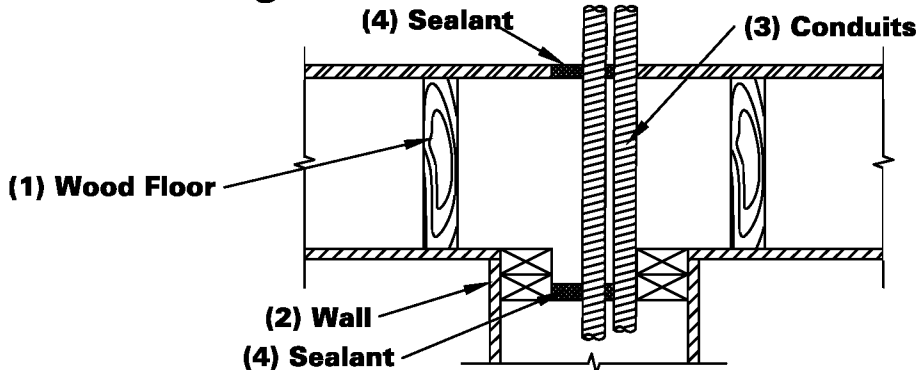
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR MULTIPLE FLEXIBLE METALLIC PIPES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. For 1 Hr. floor-ceiling assemblies nom 10" (254mm) deep lumber, steel or combination lumber and steel joists or trusses may be used. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory.
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **FLEXIBLE METALLIC CONDUITS** - One or more 1-1/2" (38mm) diameter, (or smaller) steel flexible metallic conduits. Max. diameter of through penetrant bundle shall be 3" (76mm). Annular space between penetrants is 0" (point of contact) to 1/4" (6mm). The annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to 1" (25mm).
4. **NELSON ES1399 SEALANT** - Min. 3/4" (19mm) thickness of sealant applied within annulus, on top surface of the floor or sole plate. Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with bottom surface of ceiling or bottom top plate. Additional min. 1/8" (3mm) thickness of sealant shall extend a min. 1/2" (13mm) beyond the periphery of the opening on top surface of the floor or sole plate and bottom surface of the ceiling or at point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied opening on top surface of the floor or sole plate and bottom surface of the ceiling or At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum board/through penetrant interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-1129**

Nelson Firestop

DWG NO. FS-0521 R2

DATE: 10/30/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

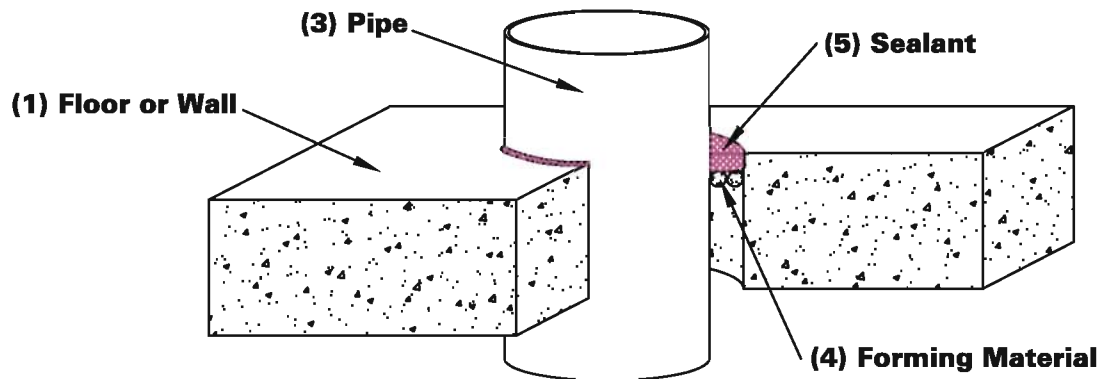
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 or 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 26" (660mm).
2. METALLIC SLEEVE (optional) (not shown) - Nom. 8" (203mm) diameter (or smaller), Sch 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. Max. 6" (152mm) diameter (or smaller) steel sleeve for 4" (102mm) diameter or smaller metallic pipe.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space is 0" (point of contact) to 1-7/8" (48mm).
4. FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation tightly packed into opening or min. 1" (25mm) diameter backer rod into the opening and recess to accommodate the required thickness of sealant from top surface of the floor or both surfaces of the wall or HOLLOW-CORE floor.
5. NELSON LBS3/ES1399 SEALANT - Sealant to be applied within the annulus, flush with top surface of floor or with both surfaces of wall. At areas of point of contact, apply a min. 3/8" (10mm) bead of sealant at the concrete/through penetrant interface on the top surface of floor and on both surfaces of wall. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed on BOTH sides of floor, flush with BOTH floor surfaces. Apply 1" (25mm) depth of LBS3 sealant for a F Rating of 3 Hr. for the metallic pipe described above. Apply 1/2" (13mm) depth of LBS3 sealant for a F Rating of 2 Hr. for the metallic pipe described above. Apply 1/2" (13mm) depth of ES1399 sealant for a max. F Rating of 3 Hr. for the metallic pipe described above.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1483**

Nelson Firestop

DWG NO. FS-0522 R3

DATE: 02/14/07

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

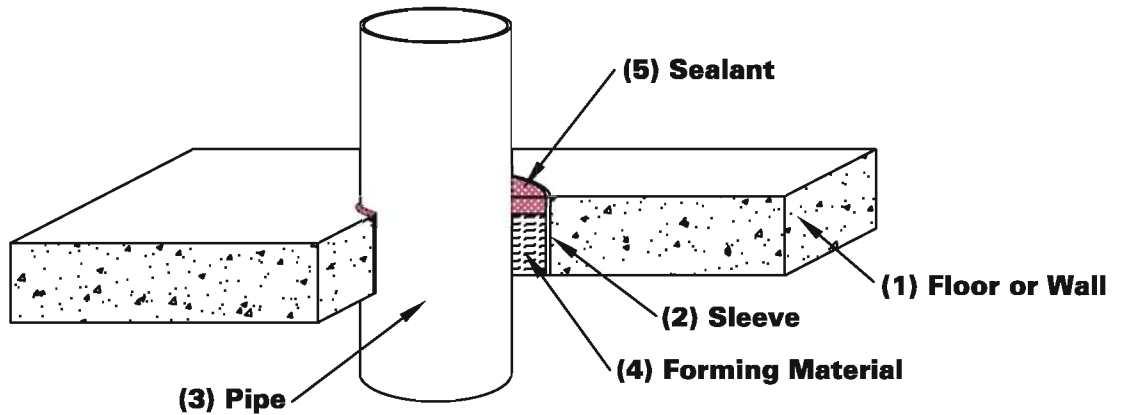
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 14" (356mm).
2. METALLIC SLEEVE (optional) - Max. nominal 14" (356mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 The annular space is 0" (point of contact) to 2-1/2" (64mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation within the annular space to a min. 2" (51mm) depth, and recess 1/2" (13mm) from the top surface of the floor or both surfaces of wall.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall. At areas of point of contact, apply a min. 1/4" (6mm) bead of sealant at the interface between the pipe and the top floor surface or both wall surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-1484

Nelson Firestop

DWG NO. FS-0523 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

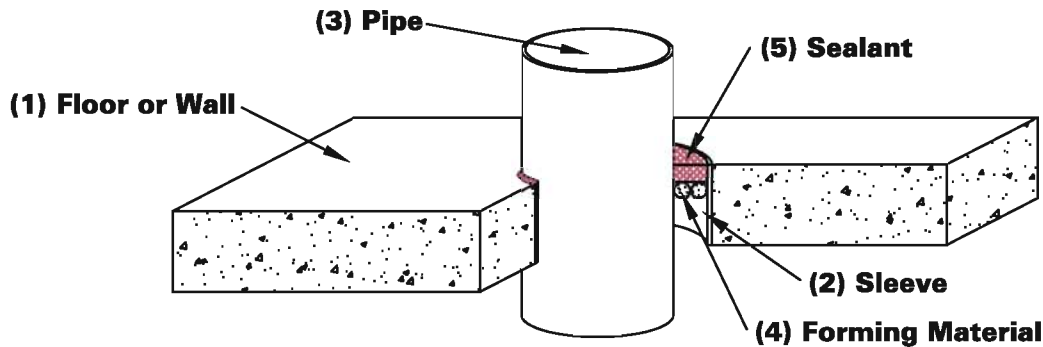
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 10-3/4" (273mm).
2. METALLIC SLEEVE (optional) - Max. nominal 10" (254mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits and tubing may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space is 0" (point of contact) to 2-1/8" (54mm).
4. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from top surface of the floor or both surfaces of the wall or HOLLOW-CORE floor.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall. At areas of point of contact, apply a min. 1/4" (6mm) bead of sealant at the interface between the pipe and the top floor surface or both wall surfaces. When the floor is constructed of HOLLOW-CORE Precast Concrete Units, sealant shall be installed on BOTH sides of the floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1485**

Nelson Firestop

DWG NO. FS-0524 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

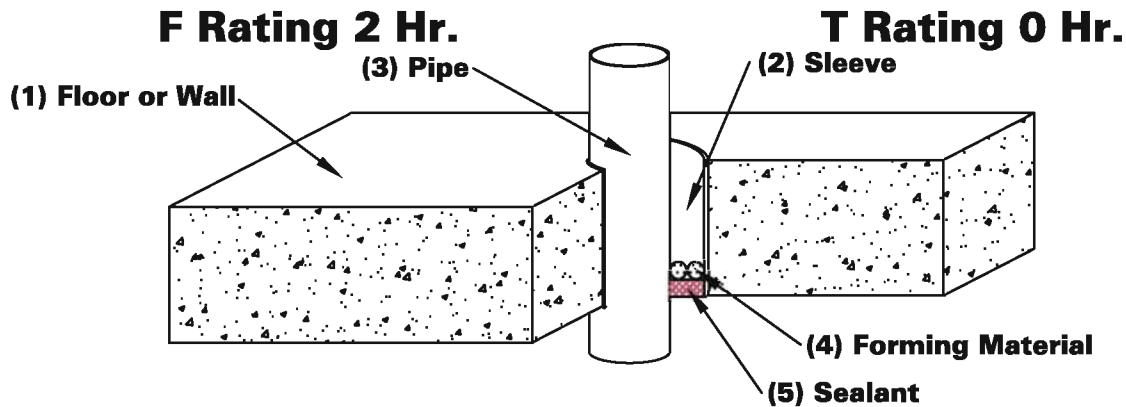
Address: _____

Installer: _____

Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 9-5/8" (244mm). When precast concrete units are used the max. diameter of opening is 7" (178mm).
2. METALLIC SLEEVE (optional) - Max. nominal 5" (127mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter or 4" (102mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe with ES1399 sealant or LBS3 sealant respectively.
 - (B) IRON PIPE - Nom 8" (203mm) diameter or 4" (102mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe with ES1399 sealant or LBS3 sealant respectively.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit with either sealant.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe with ES1399 sealant ONLY.

The annular space is 0" (point of contact) to 1/2" (13mm) for LBS3 and 0" (point of contact) to 1" for ES1399.

4. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) for ES1399 or 3/4" (19mm) for LBS3 from floor or wall surfaces.
5. NELSON LBS3/ES1399 SEALANT - Apply over the forming material to a min. 3/4" (19mm) or 1/2" (13mm) depth of LBS3 or ES1399 sealant respectively, flush with the BOTTOM or TOP surface of the floor or with ONE surface of the wall. At areas of point of contact, apply a min. 3/8" (10mm) bead of sealant at the interface between the pipe and the BOTTOM or TOP floor surface or ONE wall surface. When the floor is constructed of HOLLOW-CORE Precast Concrete Units, sealant shall be installed on BOTTOM side of the floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1486**

Nelson Firestop

DWG NO. FS-0525 R3

DATE: 1/11/07

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

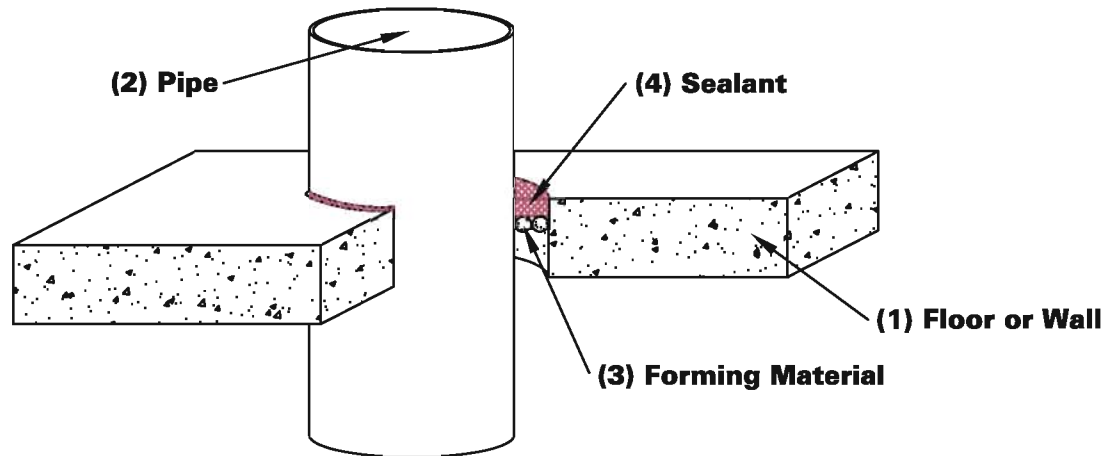
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 24-7/8" (632mm) or 7" (178mm) when precast concrete units are used.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 6" (152mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space is 0" (point of contact) to 7/8" (22mm).
3. FORMING MATERIAL - Install backer rod into the opening and recess 1/2" (13mm) from top surface of the floor or both surfaces of the wall or HOLLOW-CORE floor.
4. NELSON LBS3/ES1399 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall. At areas of point of contact, apply a min. 1/4" bead of sealant at the interface between the pipe and the top floor surface or both wall surfaces. When the floor is constructed of HOLLOW-CORE Precast Concrete Units, sealant shall be installed on BOTH sides of the floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1487**

Nelson Firestop

DWG NO. FS-0526 R2

DATE: 12/11/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

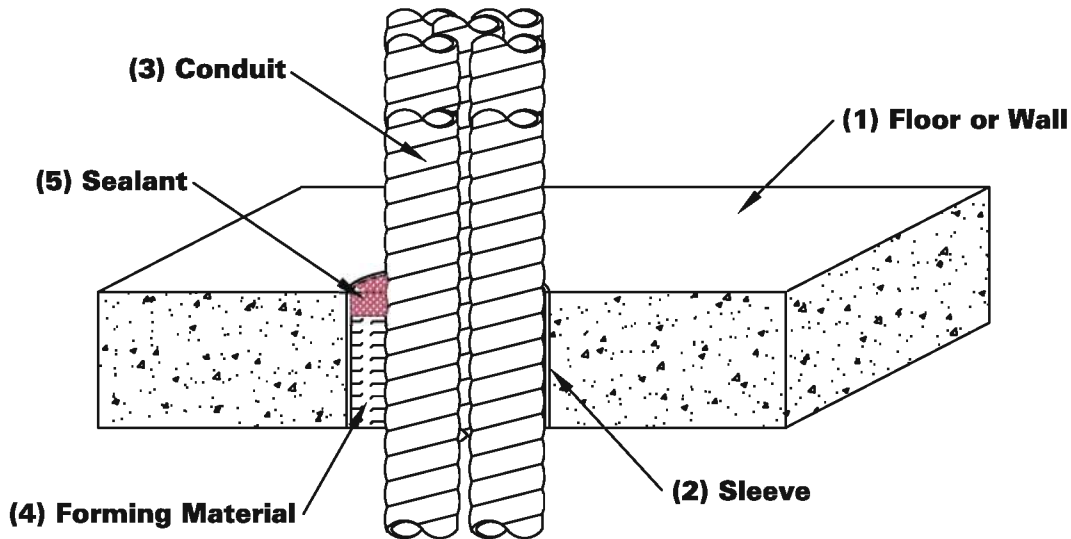
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL FLEXIBLE METALLIC CONDUITS

F Rating 3 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any min. 6" (152mm) thick UL Classified HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 6-5/16" (160mm).
2. METALLIC SLEEVE - Nom 6" (152mm) diameter or smaller, Sch 10 (or heavier) steel pipe sleeve, cast into floor or wall flush with floor or wall surfaces.
3. METALLIC CONDUIT - Max. (7) 1-1/2" (38mm) nominal diameter, (or smaller), steel flexible metal conduit. The annular space between pipes and periphery of opening shall be min. 0" (point of contact) to max. 1-1/2" (38mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a 4" (102mm) depth, and recess 1/2" (13mm) from the top surface of the floor or from both surfaces of wall. When the floor is constructed of HOLLOW-CORE precast concrete units, forming material shall be recessed from BOTH surfaces of floor.
5. NELSON LBS3 SEALANT - Apply sealant over the forming material to fill the annular space to a min. 1/2" (13mm) depth flush with the top surface of the floor or with both surfaces of wall. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed symmetrically on BOTH sides of floor, flush with BOTH floor surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-1488

Nelson Firestop

DWG NO. FS-0527 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

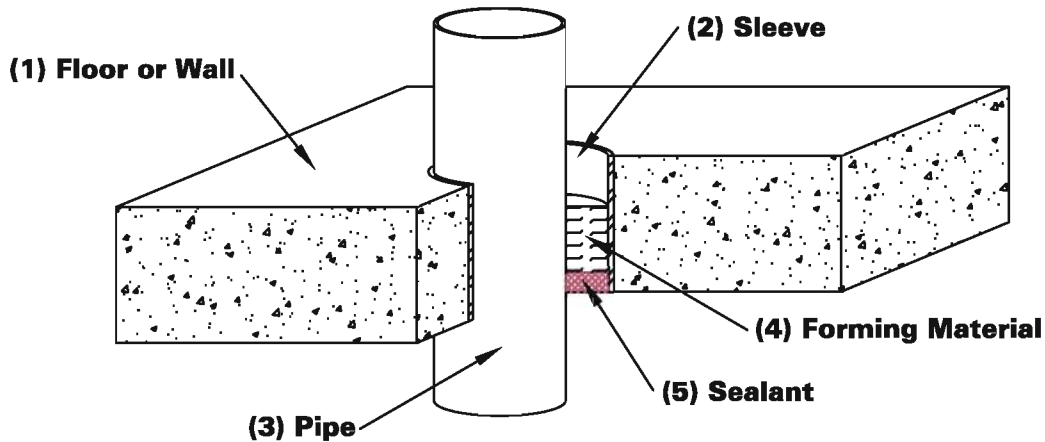
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE OR CONDUIT

F Rating 2-1/2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 9-1/8" (232mm) and 7" (178mm) when precast concrete units are used.
2. METALLIC SLEEVE (optional) - Max. nominal 5" (127mm) diameter, Sch. 10 (or heavier), steel sleeve cast or grouted into the floor or wall, flush with both surfaces.
3. METALLIC PIPE OR CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between pipe, conduit or tubing and periphery of opening shall be min. 0" (point of contact) to max. 1/2" (13mm).
4. FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation compressed and tightly packed to a min. 2" (51mm) thickness. Forming material recessed from bottom surface of floor or both surfaces of wall as required to accommodate sealant.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 3/4" (19mm) depth, flush with the bottom floor surface or ONE or both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1489**

Nelson Firestop

DWG NO. FS-0528 R0

DATE: 07/21/03

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

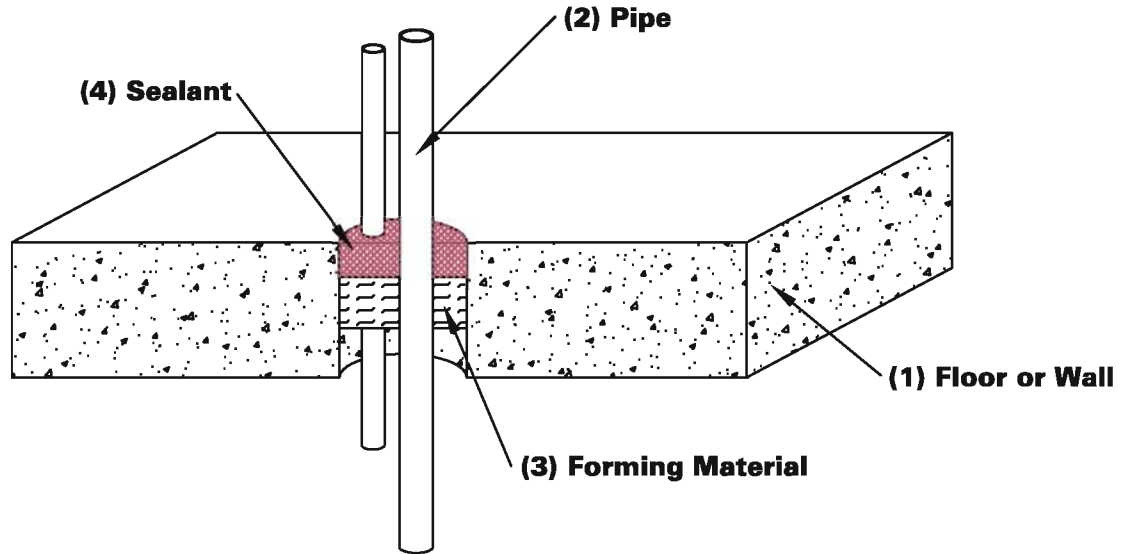
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 3" (76mm).
2. NONMETALLIC PIPE - A max. of two nom 1" (25mm) diameter (or smaller) SDR9 cross linked polyethylene (PEX) tubing for use in closed (process or supply) or vented (drain, waste, or vent) piping systems. The space between the through penetrants shall be a nom 3/8" (10mm). The annular space between the through penetrants and the periphery of opening shall be min. 1/2" (13mm) to max. 3/4" (19mm). Only one penetrant shall have a nom diameter greater than 1/2" (13mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1" (25mm) from the top surface of the floor or both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply to fill the annular space around the pipe to a min. 1" (25mm) depth, flush with top surface of floor or with both surfaces of wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrants.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2461**

Nelson Firestop

DWG NO. FS-0529 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

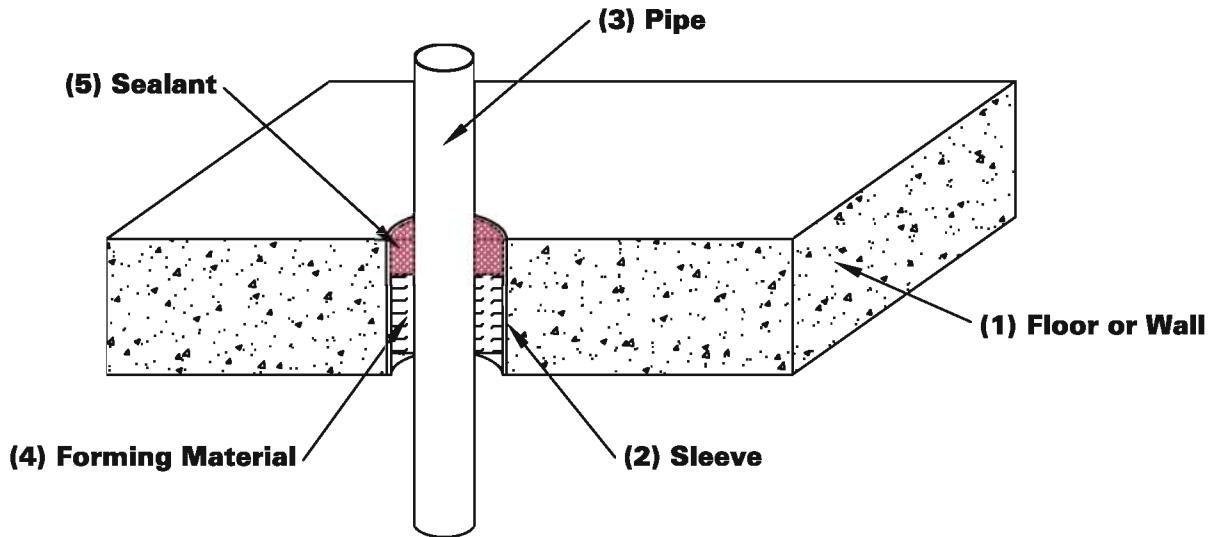
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Max. diameter of opening is 4-1/4" (108mm).
2. METALLIC SLEEVE (optional) - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.

The annular space is min. 9/16" (14mm) to max. 1-3/8" (35mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of sealant.
5. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 1" (25mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2462**

Nelson Firestop

DWG NO. FS-0530 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

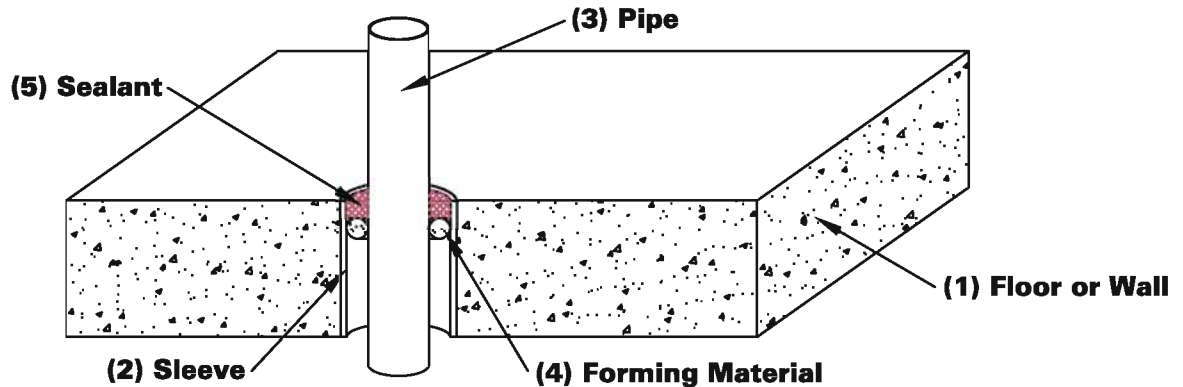
Installer: _____

Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr. T Rating 1/2 or 1-1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 3-7/32" (82mm).
2. METALLIC SLEEVE (optional) - Nom 3" (76mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (CPVC) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 PVC conduit.
4. FORMING MATERIAL - Install backer rod into the opening and recess from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material surfaces.
5. NELSON LBS3 SEALANT - Sealant applied within the annulus, flush with top surface of floor or with both surfaces of wall as shown in the table below. When floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed symmetrically on BOTH sides of floor, flush with BOTH floor surfaces.

Nom Steel Sleeve In. (mm)	Max. Diameter of Opening In. (mm)	Max. Diameter of Pipe In. (mm)	Annular Space In. (mm)	Min. Thickness of Sealant In. (mm)	F Rating Hr.	T Rating Hr.
2 (51)	2-3/16 (56)	1 (25)	0 to 7/8 (22)	1/2 (13)	3	1-1/2
3 (76)	3-7/32 (82)	1-1/2 (38)	0 to 1-9/32 (33)	1 (25)	2	1/2

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2463**

Nelson Firestop

DWG NO. FS-0531 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

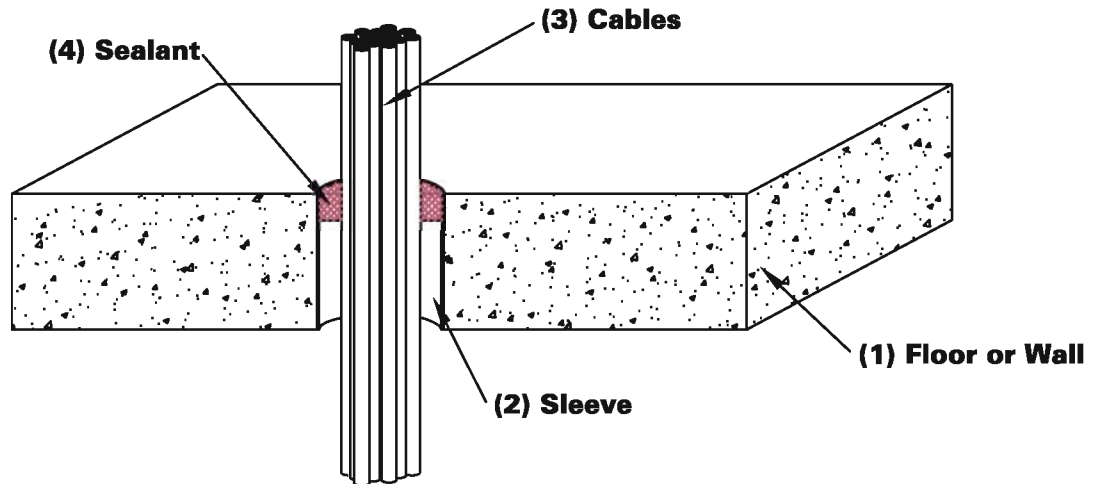
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any min. 6" (152mm) thick UL classified HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 6" (152mm).
2. METALLIC SLEEVE (optional) - Nom 6" (152mm) diameter (or smaller), Sch. 40 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall assembly.
3. CABLES - Max. 33% cable fill of opening in any combination of:
 - (A) max. 1/C-350 kcmil cable w/PVC insulation and jacket.
 - (B) max. 16/C #16awg cable w/PVC insulation and jacket.
 - (C) max. 100 pair #24awg cable w/PVC insulation and jacket.
 - (D) max. 4/C #12awg cable with rubber insulation and neoprene jacket.
 The annular space between the cable bundle and the periphery of the opening shall be a min. 1/2" (13mm) to a max. 2" (51mm).
4. NELSON LBS3 SEALANT - Min. 3/4" (19mm) thickness of sealant applied within the annulus and interstices between cables, flush with top surface of floor or both surfaces of wall. A min. 1/4" (6mm) crown of the caulking material shall be applied around the entire circumference of the cable bundle at the level of the floor surface or both wall surfaces. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed symmetrically on BOTH sides of floor, flush with BOTH floor surfaces.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3225**

Nelson Firestop

DWG NO. FS-0532 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

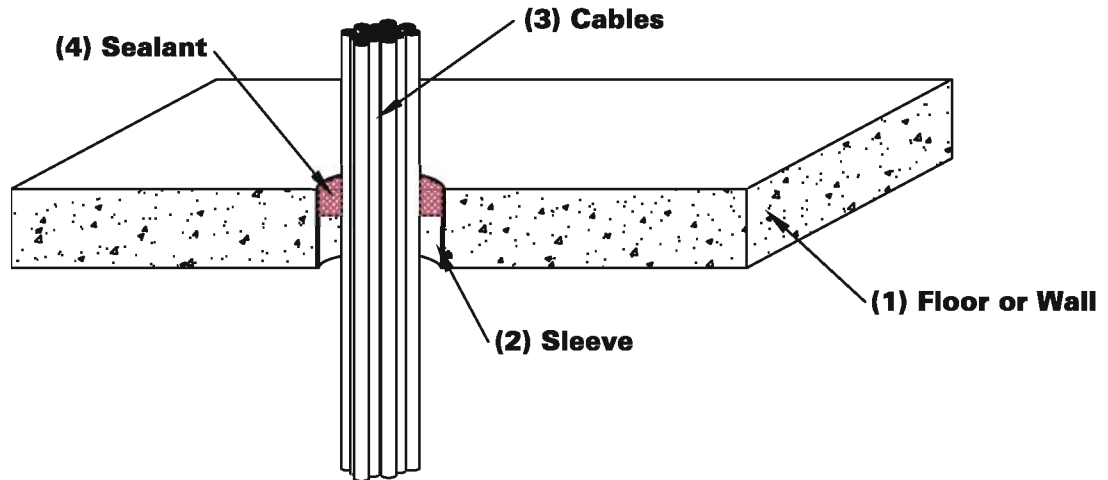
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 5" (127mm).
2. METALLIC SLEEVE (optional) - Nom 5" (127mm) diameter (or smaller), Sch. 10 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall assembly.
3. CABLES - Max. 38% cable fill of opening in any combination of:
 - (A) max. 1/C 750 MCM THHN power cable w/PVC insulation and jacket.
 - (B) max. 72 conductors 62.5/125 fibre optic cable w/ PVC insulation and jacket.
 - (C) max. 400 pairs #24awg telephone communication cable w/PVC insulation and jacket.
 - (D) max. 7/C #16awg power and control cables with rubber insulation and neoprene jacket.

The annular space between the cable bundle and the periphery of the opening shall be a min. 1/4" (6mm) to a max. 3/4" (19mm).
4. NELSON LBS3 SEALANT - Min. 3/4" (19mm) thickness of sealant applied within the annulus and interstices between cables, flush with top surface of floor or both surfaces of wall. A min. 1/4" (6mm) crown of the caulking material shall be applied around the entire circumference of the cable bundle at the level of the floor surface or both wall surfaces.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3224**

Nelson Firestop

DWG NO. FS-0533 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

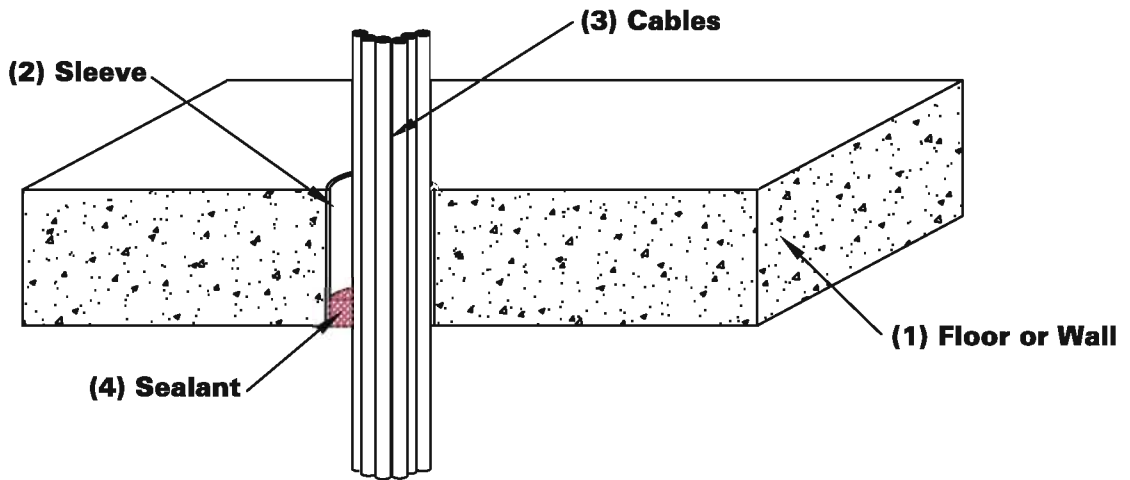
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any min. 6" (152mm) thick UL classified HOLLOW-CORE Precast Concrete Units. When individual cable is installed, diameter of opening to be 3/4" (19mm) to 1-3/4" (44mm) larger than diameter of cable. Max. diameter of opening is 4" (102mm).
2. METALLIC SLEEVE (optional) - Nom 4" (102mm) diameter (or smaller), Sch. 10 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall assembly.
3. CABLES - Max. six copper 3/C #2/0awg aluminum or steel jacketed METAL-CLAD or ARMORED cables. The annular space between the cable bundle and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1-3/4" (44mm).
4. NELSON LBS3 SEALANT - Min. 1" (25mm) thickness of sealant applied within the annulus and interstices between cables, flush with either BOTTOM or TOP surface of floor or ONE surface of wall. A min. 3/8" (10mm) thick bead of sealant shall be applied at point of contact of cable bundle with the opening. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed on BOTTOM side of floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3226**

Nelson Firestop

DWG NO. FS-0534 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

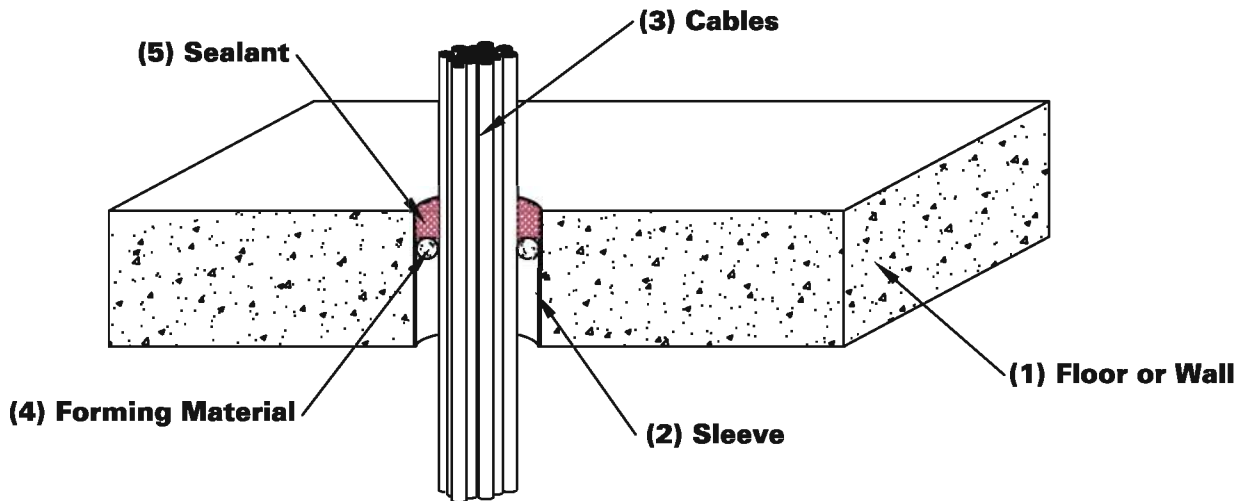
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL CABLES

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of any min. 8" (203mm) thick UL classified HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 4-3/8" (111mm).
2. METALLIC SLEEVE (optional) - Nom 4" (102mm) diameter or smaller, Sch. 10 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall assembly.
3. CABLES - Max. 40% cable fill of opening in any combination of:
 - (A) max. 1/C 750 MCM THHN power cable w/insulation and jacket.
 - (B) max. 72 conductors 62.5/125 fibre optic cable w/PVC insulation and jacket.
 - (C) max. 400 pairs, #24awg telephone communication cable, w/PVC insulation and jacket.
 - (D) max. 7/C, #16awg power and control cables with rubber insulation and neoprene jacket.

The annular space between the cable bundle and the periphery of the opening shall be a min. 3/8" (10mm) to a max. 1-3/16" (30mm).

4. FORMING MATERIAL - Install backer rod into the opening and recess 1" (25mm) from the top surface of the floor or both surfaces of wall.
5. NELSON LBS3 SEALANT - Min. 1" (25mm) thickness of sealant applied within the annulus and interstices between cables, flush with top surface of floor or both surfaces of wall. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed on BOTH sides of floor, flush with BOTH floor surfaces.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3227**

Nelson Firestop

DWG NO. FS-0535 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

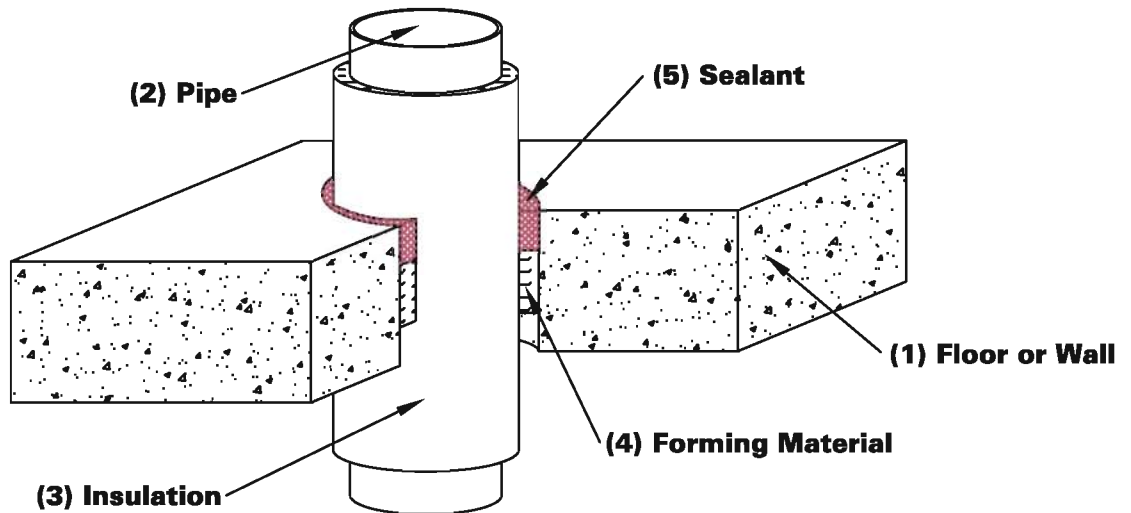
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 1-1/2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of opening is 15" (381mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 10" (254mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 1" (25mm) thick, or thinner, acrylonitrile butadiene/ polyvinyl chloride (AB/PVC) (ARMAFLEX) flexible foam pipe insulation. The annular space is 1-1/2" (38mm).
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt insulation into the annular space to a min. 2" (51mm) depth, and recess the fiber 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 1" (25mm) depth, flush with the top surface of the floor or with both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-5255

Nelson Firestop

DWG NO. FS-0536 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

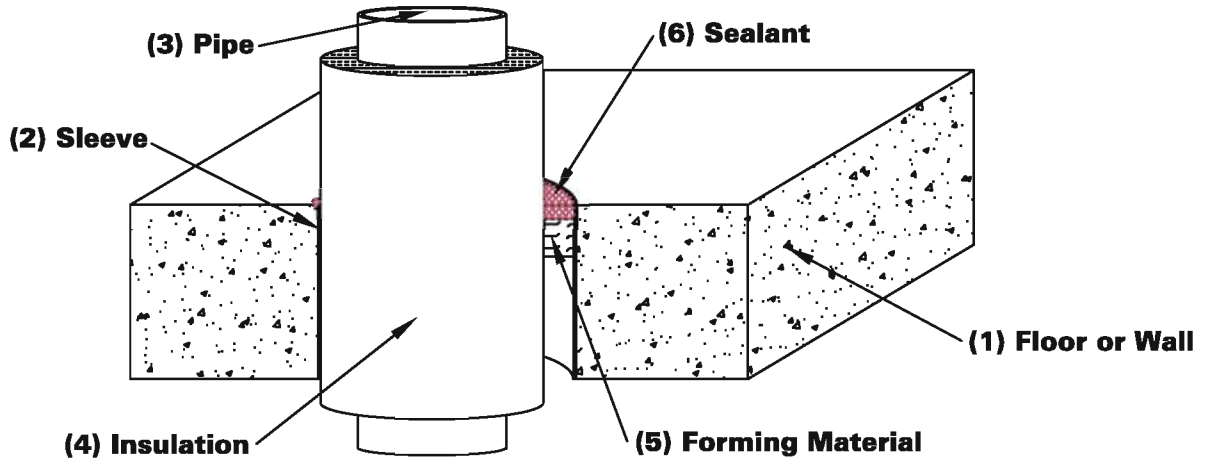
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of opening is 18" (457mm).
2. METALLIC SLEEVE (optional) - Max. nominal 18" (457mm) diameter, (or smaller) Sch. 10 or heavier steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
4. PIPE INSULATION - Nominal 1" (25mm) thick, or thinner, FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is 0" (point of contact) to 2-3/4" (70mm).
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1/2" (13mm) from the top surface of the floor or from both sides of the wall. At the point contact location between through penetrant and concrete, forming material forced into interstices of through penetrant and concrete to max. extent possible.
6. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 1/2" (13mm) depth, flush with the topside of the floor or with both sides of the wall. At areas of point of contact, apply a min. 1/4" (6mm) crown at the interface between the pipe and the top surface of the floor or both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the thr through penetrants.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5256**

Nelson Firestop

DWG NO. FS-0537 R1

DATE: 07/21/06

BY: RL

MEA #126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

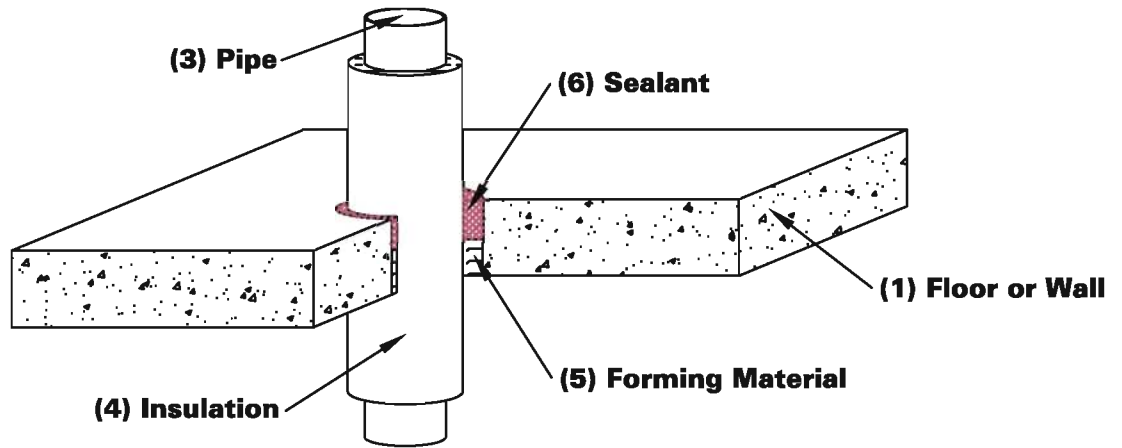
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or min 3-1/2" (89mm) thick concrete wall, or CMU block wall. The max. diameter of opening is 8-1/4" (210mm).
2. METALLIC SLEEVE (optional, not shown) - Nom. 8" (203mm) diameter (or smaller) Sch. 10 steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. PIPE INSULATION - Nominal 1" (25mm) thick, or thinner, acrylonitrile butadiene/polyvinyl chloride (AB/PVC) (ARMAFLEX) flexible foam pipe insulation. The annular space shall be 1/2" (13mm) to 1-3/8" (35mm).
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation into the annular space to a min. 1-1/2" (38mm) depth, and recess the fiber 1" (25mm) from the top surface of the floor or from both surfaces of the wall.
6. NELSON LBS3 SEALANT - Apply over the forming material to a min. 1" (25mm) depth, flush with the top surface of the floor or with both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5257**

Nelson Firestop

DWG NO. FS-0538 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

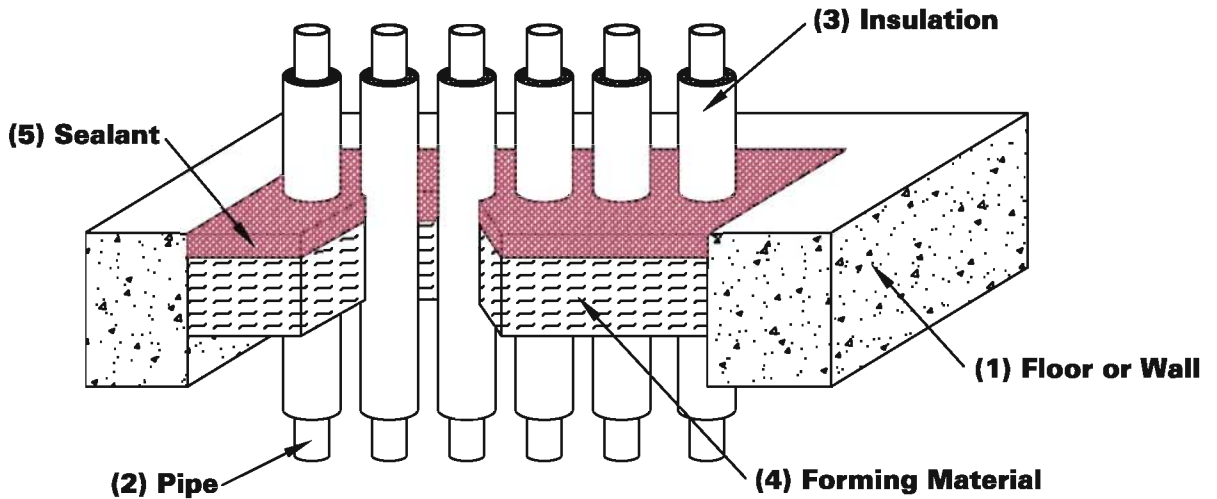
Installer: _____

Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULTIPLE INSULATED METALLIC PIPES

F Rating 3 Hr. T Rating 2-1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5-1/2" (140mm) thick wall, or CMU block wall. The max. area of the opening is 144 sq. inches (929 sq. cm) with a max. dimension of 24" (610mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 3" (76mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 3" (76mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Of the six penetrants, only two shall have a nominal diameter greater than 1" (25mm).
3. PIPE INSULATION - Max 3/4" (19mm) thick AB/PVC (ARMAFLEX) flexible foam insulation. The annular space range is 1/2" (13mm) to 2-5/8" (67mm). Annular space between pipes is 2" (51mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min 3-1/2" (89mm) depth, and recess 1" (25mm) from the top surface of the floor or both surfaces of the wall.
5. NELSON LBS3 SEALANT - Apply sealant over the forming material a min. 1" (25mm) depth, flush with the top surface of the floor or both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-5259

Nelson Firestop

DWG NO. FS-0540 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

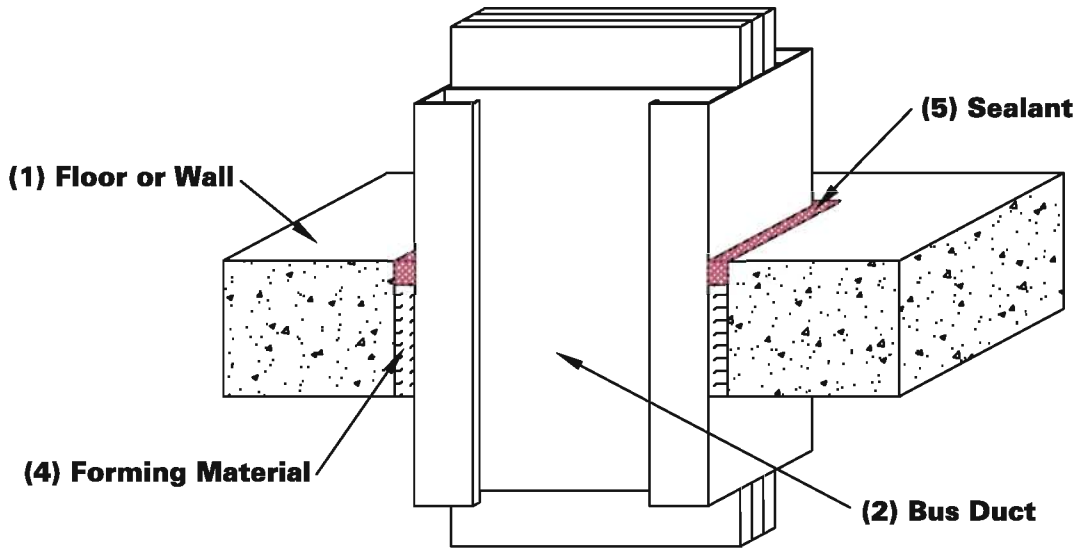
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL BUS DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall, or CMU block wall. The max. area of opening is 360 sq. in. (2323 sq. cm) and a max. dimension of 30" (762mm).
2. BUS DUCT ASSEMBLY - Nominal 27" x 6" (686mm x 152mm), "I" shaped aluminum and steel enclosure containing factory mounted aluminum bars rated for 600V/4000A. Annular space between the flange tip of the busway the periphery of the opening shall be a nom 2" (51mm). The annular space between the web section of the busway the periphery of the opening shall be a nom 5-1/4" (133mm).
3. COVER PLATE ASSEMBLY (not shown) - A min. 1/8" (3mm) thick steel cover plate provided by busway manufacturer shall be installed on top surface of floor and both surfaces of wall. Steel cover plate secured in accordance with busway manufacturer's installation instructions.
4. FORMING MATERIAL - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool batt insulation into the annular space to a min. 4" (102mm) depth, and recess 1/2" (13mm) from top surface of the floor or from both surfaces of the wall.
5. NELSON LBS3 SEALANT - Apply over forming material, within the annular space to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-6035**

Nelson Firestop

DWG NO. FS-0541 R2

DATE: 02/06/07

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

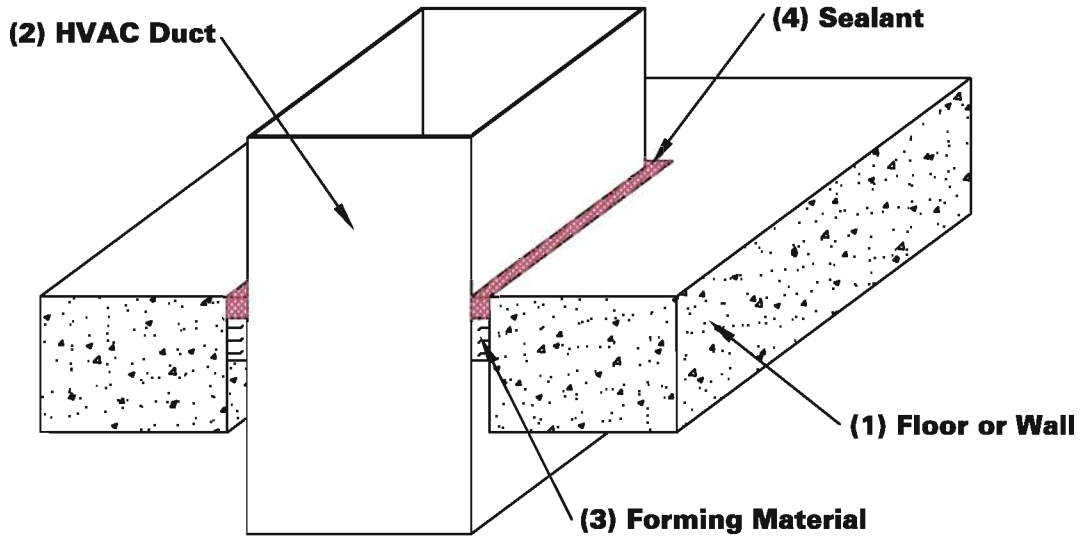
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL HVAC DUCT

F Rating 1-1/2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. area of opening is 364 sq. in. (2348 sq. cm) with a max. dimension of 26" (660mm).
2. HVAC DUCT - Max. 24" x 12" (610mm x 305mm), 24 gauge (or heavier), steel HVAC duct. Duct to be rigidly supported on both sides of floor or wall assembly. Annular space is a nom 1" (25mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1" (25mm) from top surface of floor or from both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply within the annular space to a min. 1" (25mm) depth, flush with the top surface of floor or both surfaces of wall.
5. STEEL ANGLE (not shown) - Min. 2" (51mm) wide x 3" (76mm) high x 0.108" (3mm) thick steel angle cut to fit contour of the duct with a 1" (25mm) lap on the top surface of floor or both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-7091

Nelson Firestop

DWG NO. FS-0542 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

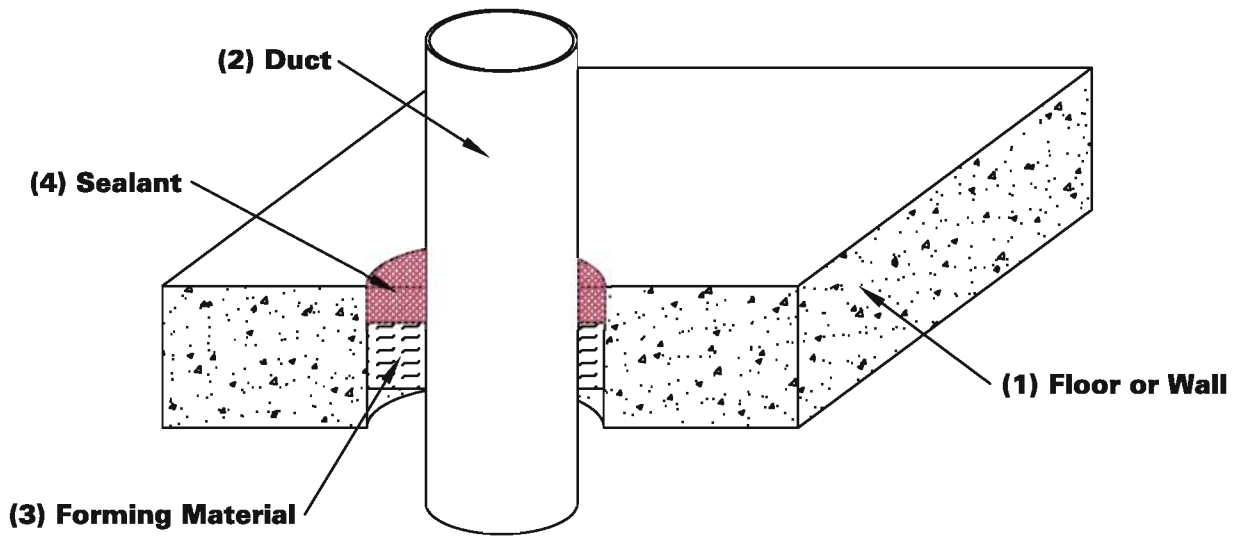
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL STEEL DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of opening is 14" (356mm).
2. STEEL DUCT - Max. 10" (254mm) nominal diameter or smaller, 28GA (or heavier) steel duct. Duct to be installed either concentrically or eccentricity within the firestop system. The annular space between steel duct and periphery of opening shall be min. 3/4" (19mm) to max. 3-1/4" (83mm).
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51 mm) depth, and recess 3/4" (19mm) from the top surface of the floor or from both surfaces of the wall.
4. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 3/4" (19mm) depth, flush with the top surface of the floor or with both surfaces of the wall. Apply an additional 1/4" (6mm) crown around the duct on top surface of floor or on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-7092

Nelson Firestop

DWG NO. FS-0543 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

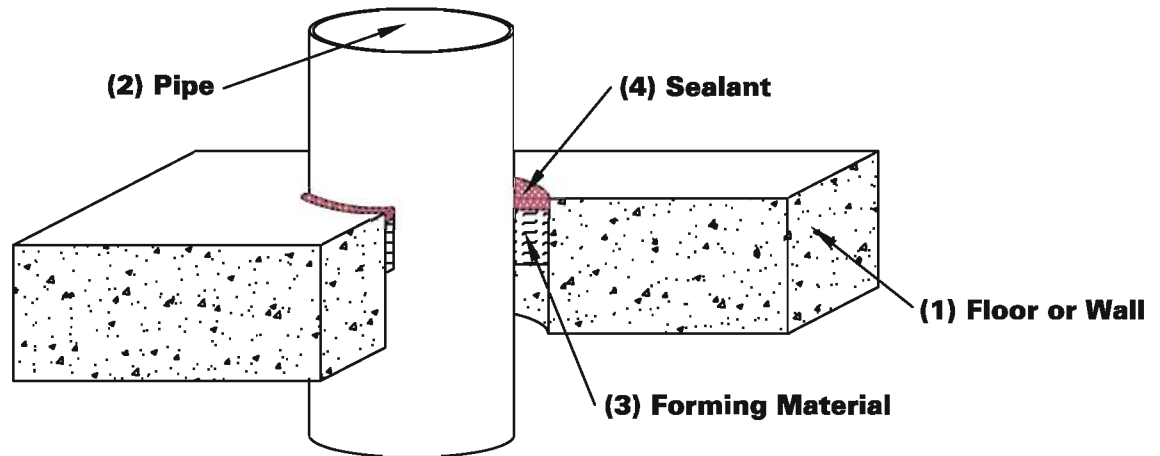
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL METALLIC PIPE or CONDUIT

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 26" (660mm).
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nominal 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nominal 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nominal 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.

The annular space is min. 3/4" (19mm) to max. 2-1/2" (64mm).

3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation within the annular space to a min. 2-1/2" (64mm) depth, and recess 1/4" (6mm) from the top surface of the floor or both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply over the forming material to a min. 1/4" (6mm) depth, flush with the top surface of the floor or with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-BJ-1051

Nelson Firestop

DWG NO. FS-0545 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

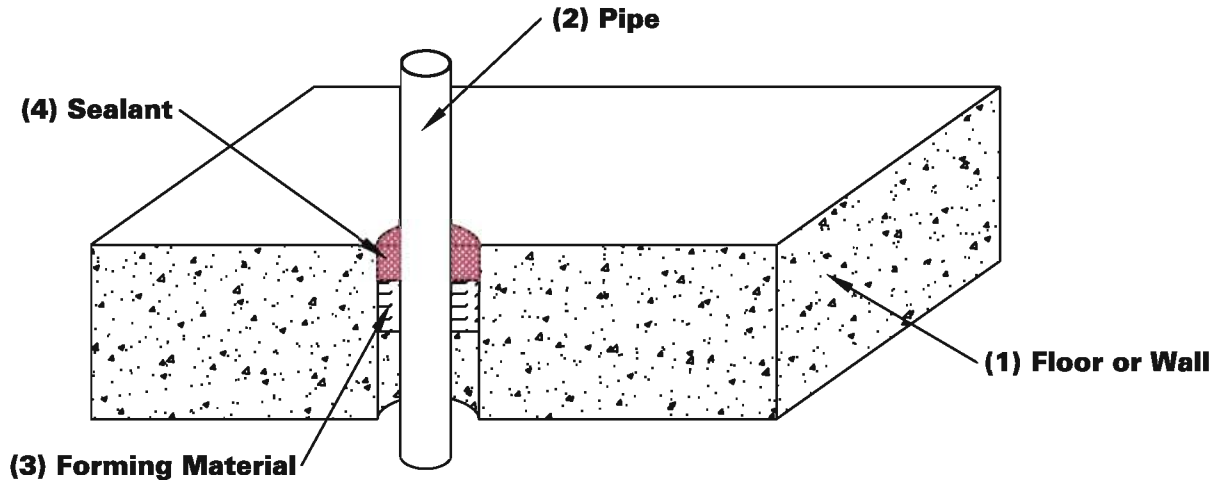
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Max. diameter of opening is 5" (127mm).
2. NONMETALLIC PIPE - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ELECTRICAL NONMETALLIC TUBING (ENT) - Nom 1" (25mm) diameter (or smaller) PVC tubing.

The nominal annular space is 1-5/16" (33mm). If a PVC, CPVC or RNC is used, the F rating is 3 Hr. and if a ENT is used, the F rating is 2 Hr.

3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2-1/2" (64mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accomodate the required thickness of sealant.
4. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 1" (25mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-BJ-2022**

Nelson Firestop

DWG NO. FS-0546 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

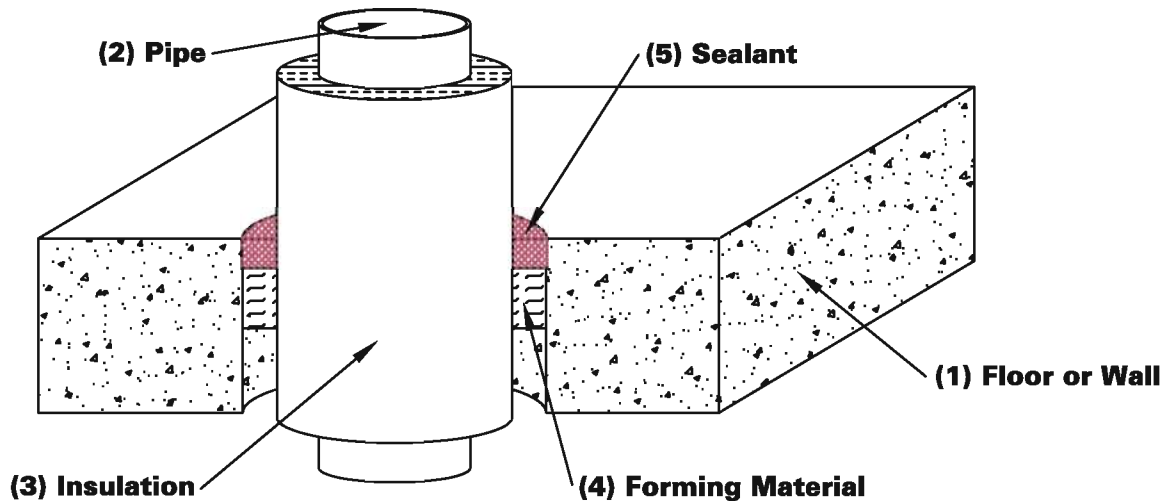
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr.

T Rating 3 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Max. diameter of opening is 16" (406mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick, or thinner, FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is to be 1/2" (13mm) to 2" (51mm).
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2-1/2" (64mm) depth. Forming material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of coating.
5. NELSON LBS3 SEALANT - Apply sealant within the annulus and over the forming material to a min. 1" (25mm) depth, flush with the top surface of the floor or with both sides of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-BJ-5014**

Nelson Firestop

DWG NO. FS-0547 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

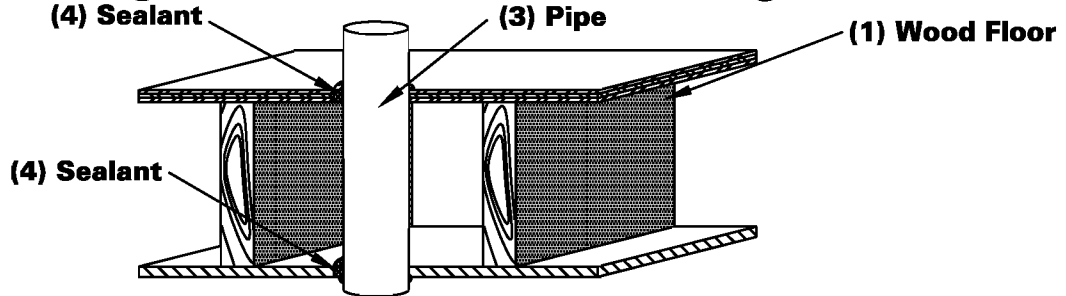
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 5-1/2" (140mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSON BOARD** - First layer of wallboard nailed to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Constructed in the manner specified in individual U300 series designs as shown in the UL Fire Resistance Directory.
3. **METALLIC PIPE or CONDUIT** - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 3" (76mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space is dependent upon the nom diameter of the penetrant. If the nom diameter of the penetrant is 3" (76mm) or less, the annular space shall be min. 0" (point of contact) to max. 5/8" (16mm). If the nom diameter of the penetrant is greater than 3" (76mm), the annular space shall be a nom 1/2" (13mm).
4. **NELSON LBS3 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of floor. Min. 5/8" (16mm) thickness of sealant within the annulus, flush with bottom surface of ceiling or bottom top plate. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrant on top surface of floor and bottom surface of ceiling or bottom top plate.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-1116**

Nelson Firestop

DWG NO. FS-0548 R2

DATE: 10/31/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

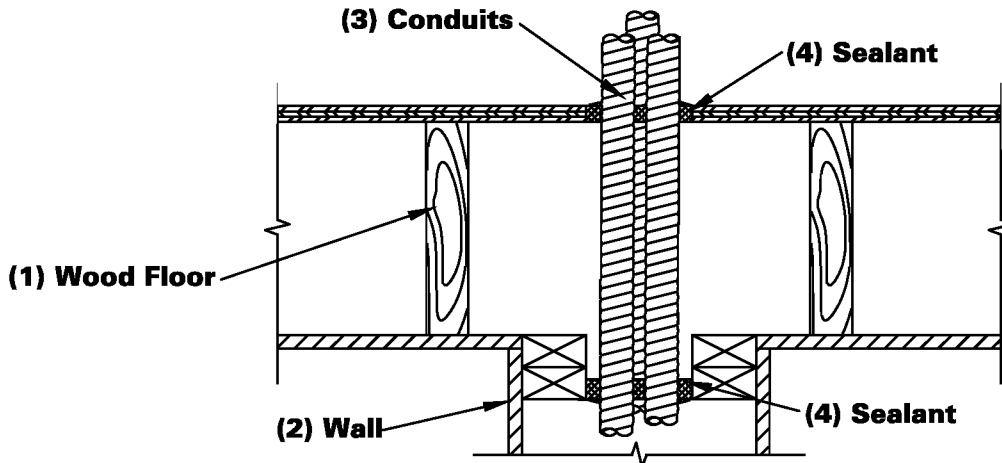
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR MULTIPLE FLEXIBLE METALLIC CONDUITS

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 2" (51mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **METALLIC CONDUITS** - Max. (3) nominal 1-1/4" (32mm) diameter, (or smaller), steel flexible metal conduits. Of the three conduits, only one conduit shall have a nom diameter greater than 1/2" (13mm). Annular space between conduits shall be 0" (point of contact) to 1/4" (6mm). The annular space between conduits and the periphery of opening shall be 1/8" (3mm) to 1/4" (6mm).
4. **NELSON LBS3 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annular space at the subfloor level and a min. 5/8" (16mm) depth where it penetrates the bottom surface of ceiling or lower top plate. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrants on top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly. Sealant to be forced into interstices of conduit bundle to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-1118**

Nelson Firestop

DWG NO. FS-0550 R2

DATE: 10/31/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

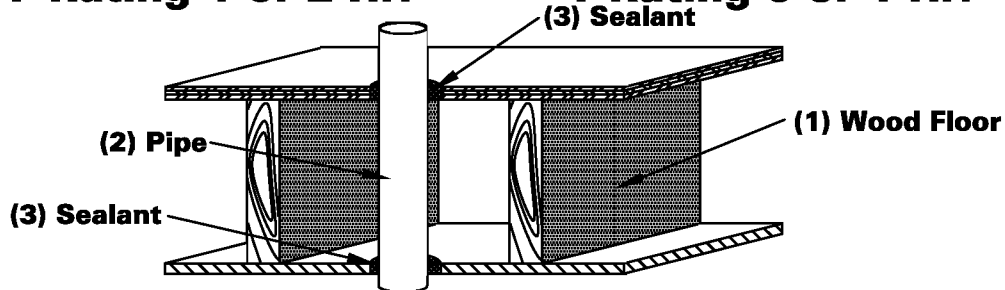
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 or 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **NONMETALLIC PIPE** - The following types of nonmetallic pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID NONMETALLIC CONDUIT** - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

Rating of Assembly Hr.	Type of Sealant	Annular Space In. (mm)	Min. Thickness of Sealant in Ceiling In. (mm)	F Rating Hr.	T Rating Hr.
2	LBS3	1/2 (13) to 1-1/8 (29)	1-1/4 (32)	2	0
2	ES1399	1/2 (13) to 5/8 (16)	5/8 (16)	2	0
1	ES1399	1/2 (13) to 5/8 (16)	5/8 (16)	1	1

3. **NELSON LBS3/ES1399 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of subfloor and min. 1-1/4" (32mm) or 5/8" (16mm) thickness of sealant within the annulus, flush with bottom surface of ceiling. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item on both sides of floor-ceiling assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2276**

Nelson Firestop

DWG NO. FS-0551 R2

DATE: 11/1/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

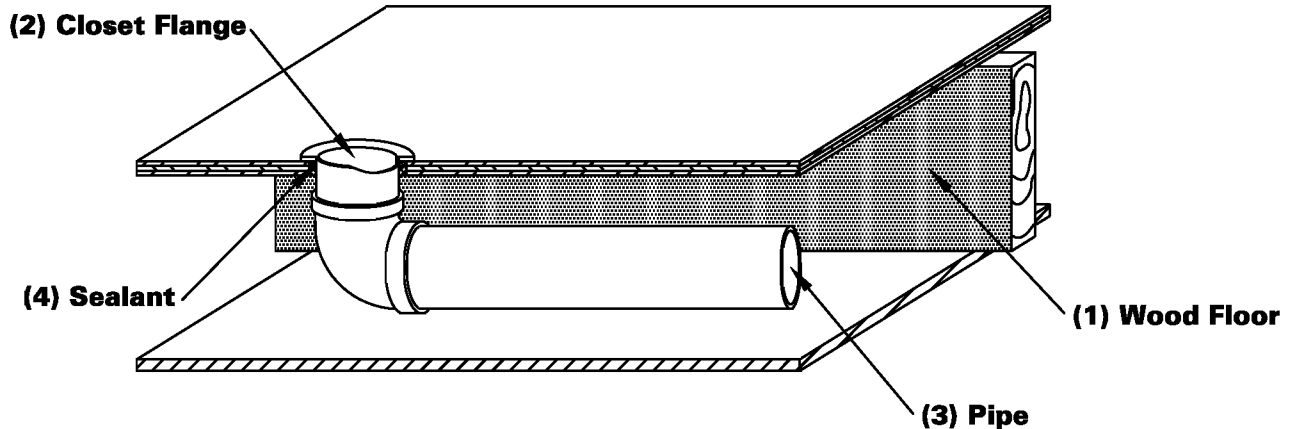
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses.
 - (C) **GYPSUM BOARD** - Gypsum wallboard secured to wood/steel joists/trusses.
2. **NONMETALLIC PIPE (closet flange)** - PVC or ABS flange installed in hole-sawed opening in flooring system with flange secured to top of flooring with steel screws. Diameter of opening through flooring to be 1/2" (13mm) larger than outside diameter of closet flange.
3. **NONMETALLIC PIPE (drain pipe)** - Max. nominal 4" (102mm) diameter Sch. 40 PVC or ABS pipe.
4. **NELSON LBS3/ES1399 SEALANT** - Apply sealant into the annulus between pipe and periphery in flooring to max extent possible, flush with bottom surface of floor. An additional 3/8" (10mm) crown is formed around the closet stub on the bottom surface of floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0553 R2

DATE: 11/01/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

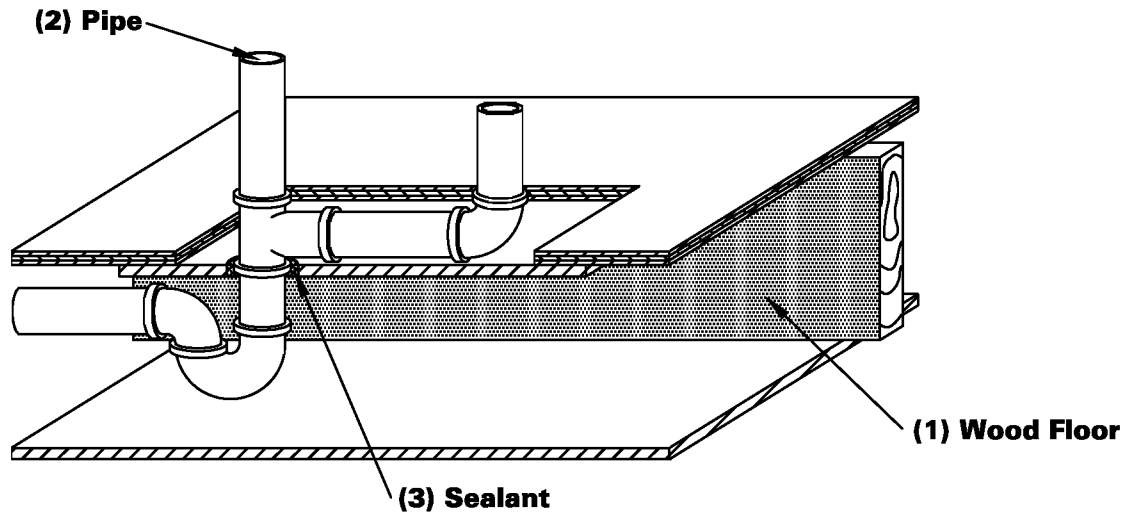
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory.
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture. Max. rectangular cutout in flooring to be 8" x 12" (203mm x 305mm).
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses.
 - (C) **GYPSON BOARD** - Gypsum wallboard secured to wood/steel joists/trusses. One piece of gypsum board, min. 4" (102mm) longer and wider than the cutout in the flooring, screw-attached to bottom of flooring concentric with cutout by means of 1" (25mm) long Type S steel screws spaced max. 5" (127mm) OC. Diameter of opening hole-sawed through the gypsum board patch to be 1" (25mm) larger than outside diameter of bathtub drain piping.
2. **NONMETALLIC PIPE** - Max. nominal 1-1/2" (38mm) diameter solid or cellular core Sch. 40 PVC or ABS pipe for use in vented (drain, waste, or vent) piping systems. Annular space within the firestop system shall be a min. 3/8" (10mm) to a max. 5/8" (16mm).
3. **NELSON LBS3/ES1399 SEALANT** - Apply to fill the annular space to a min. 5/8" (16mm) depth flush with the top surface of the gypsum patch. An additional 1/4" (6mm) crown is formed around the pipe at the topside of the patch.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
F-C-2279

Nelson Firestop

DWG NO. FS-0554 R2

DATE: 11/01/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

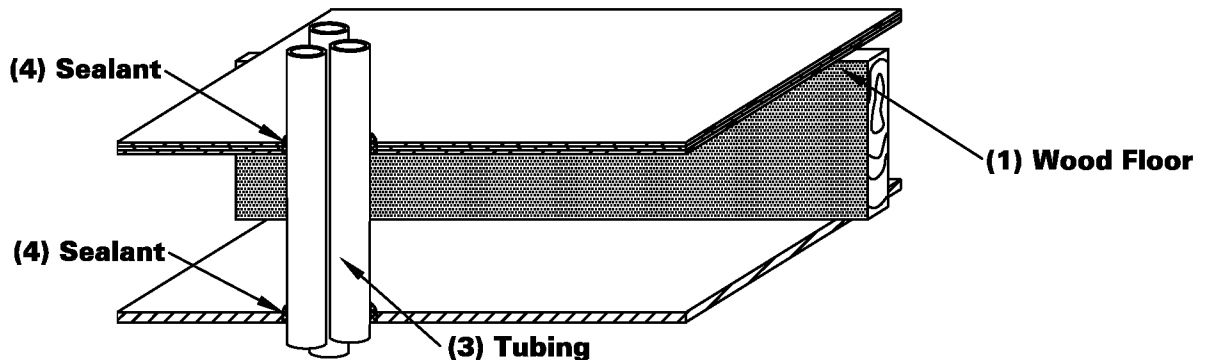
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC TUBING

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. WOOD FLOOR ASSEMBLY - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory. Max. diameter of opening is 3" (76mm).

(A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.

(B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..

(C) **GYPSON BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.

2. WALL ASSEMBLY (optional) (not shown) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.

3. NONMETALLIC TUBING - The following types of through penetrants shall be used:

(A) **CROSS LINKED POLYETHYLENE TUBING** - Max. of (3) SDR9 (or heavier) cross linked (PEX) tubing for use in closed (process or supply) piping systems. Of the (3) tubes, a max. of (1) shall have a nom diameter greater than 3/4" (19mm).

Annular space between tubing and periphery of opening shall be 3/16" (5mm) to 1" (25mm). The space between all tubing shall be a min. 0" (point of contact) to a max. 1/4" (6mm).

(B) **ALUMINUM CROSS LINKED POLYETHYLENE TUBING** - Max. of (3) nom 3/4" (19mm) diameter (or smaller) SDR 9 aluminum cross linked (AL PEX) tubing for use in closed (process or supply) piping systems.

Annular space between tubing and periphery of opening shall be 1/8" (3mm) to 1" (25mm). The space between tubing shall be a min. 0" (point of contact) to a max. 1/4" (6mm).

4. NELSON LBS3/ES1399 SEALANT - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with the top surface of floor or sole plate. Min. 1/2" (13mm) thickness of sealant within the annulus, flush with bottom surface of ceiling or on bottom surface of lower top plate of chase wall assembly. Additional sealant forced within the group of tubing to max. extent possible on the top surface of floor or sole plate and bottom surface of ceiling or on bottom surface of lower plate of chase wall assembly. LBS3 to be used with (PEX) tubing only. ES1399 to be used on 1 or 2 hr. (AL PEX) or 1 Hr. (PEX) tubing.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-2282**

Nelson Firestop

DWG NO. FS-0557 R2

DATE: 11/02/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

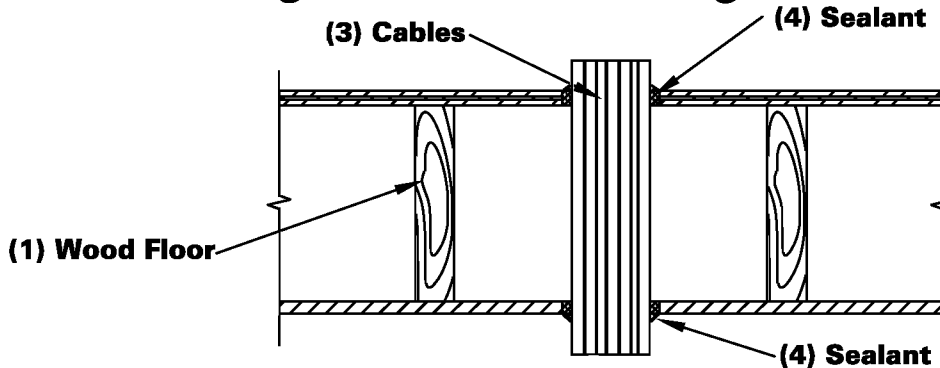
Installer: _____

Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR CABLES

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. WOOD FLOOR ASSEMBLY - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory. Max. diameter of opening is 2" (51mm).

(A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.

(B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..

(C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.

2. WALL ASSEMBLY (optional) (not shown) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.

3. CABLES - One or more of the following cables.

(A) max. 100pr. #24awg copper conductor telephone cable.

(B) max. 2/C #12awg copper conductor nonmetallic sheathed cable.

(C) max. RG/U #22awg copper conductor coaxial cable.

(D) max. 3/C #2/0awg aluminum conductor service entrance cable (SER).

(E) max. 2/C #24awg copper conductor cable.

All with PVC insulation and jacket materials. The annular space shall be 1/8" (3mm) to 1/4" (6mm).

4. NELSON LBS3/ES1399 SEALANT - Apply a min. 3/4" (19mm) depth of sealant within annulus on top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within annulus on bottom surface of ceiling or lower top plate of chase wall assembly. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly. Sealant to be forced into interstices of cable bundle to max. extent possible.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
F-C-3078**

Nelson Firestop

DWG NO. FS-0558 R2

DATE: 11/02/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

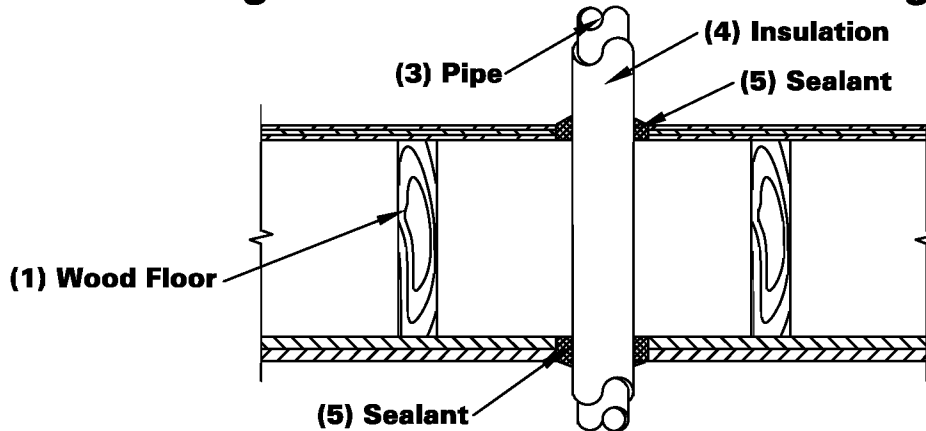
Address: _____

Signature: _____

WOOD JOIST FLOOR INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified Design No. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 4-3/4" (121mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood joists between first and second layers of wallboard and spaced 24" O.C.
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood joists. Second layer of wallboard screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Constructed in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **METALLIC PIPE** - The following types of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 1-1/2" (38mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 1-1/2" (38mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. **PIPE INSULATION** - Nominal 1" (25mm) thick FIBERGLASS pipe insulation. The annular space between the insulated penetrating item and the periphery of the opening shall be a min. of 1/2" (13mm) to a max. of 5/8" (16mm).
5. **NELSON LBS3 SEALANT** - Apply a min 3/4" (19mm) depth of sealant within the annular space, flush with top surface of floor. Min. 1-1/4" (32mm) thickness of sealant applied within the annular space, flush with bottom surface of gypsum board ceiling or lower top plate of chase wall assembly. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrant on top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
F-C-5069**

Nelson Firestop

DWG NO. FS-0559 R2

DATE: 11/02/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

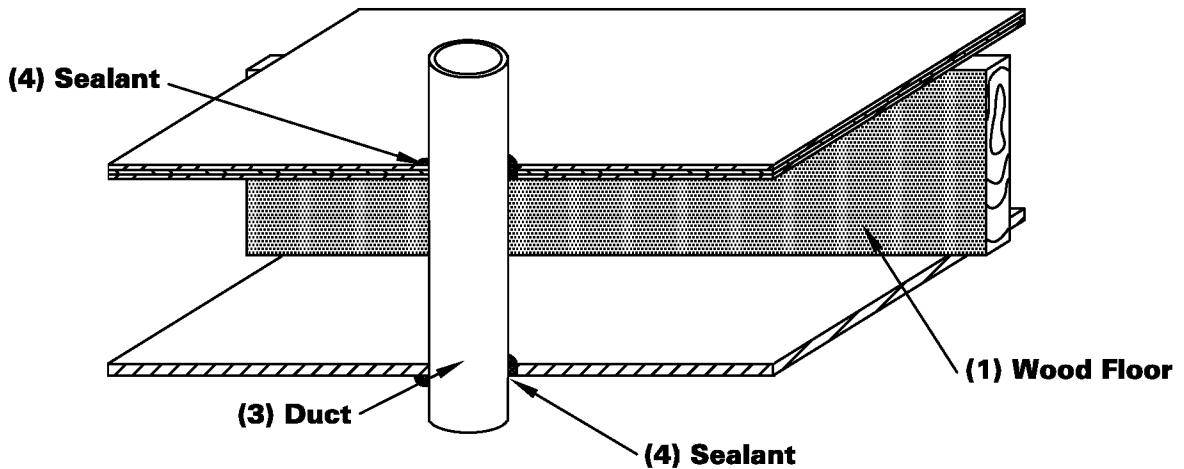
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR STEEL DUCT

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Const. in the manner specified in individual L500 series 1 hr floor-ceiling designs in the UL Fire Res. Dir.. The 2 hr floor-ceiling designs in the UL Fire Res. Dir. shall be constructed in the manner specified in design nos. L505, L511, or L536. Max. diameter of opening is 4-1/2" (114mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional) (not shown) - Const. in the manner specified in the U300 series designs as shown in the UL Fire Resistance Directory.
3. **STEEL DUCT** - Max. 4" (102mm) diameter, 28 gauge or heavier, steel duct, installed concentrically or eccentrically within the openings. A nom 1/4" (6mm) annular space is required.
4. **NELSON LBS3 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant around the duct where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling or bottom surface of lower top plate of optional chase wall assembly. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on top surface of floor, and bottom surface of ceiling or lower top plate of chase wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-7027**

Nelson Firestop

DWG NO. FS-0561 R2

DATE: 11/6/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

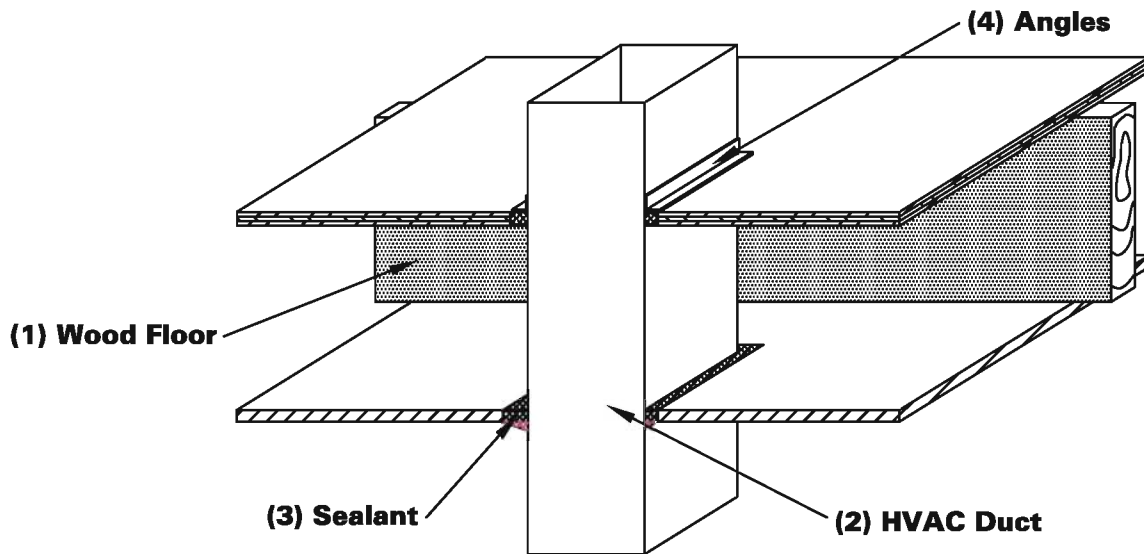
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR STEEL DUCT

F Rating 1 Hr.

T Rating 0 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series 1 hr floor-ceiling designs in the UL Fire Res. Dir.. Max. area of opening is 96 sq. in. (619 sq. cm) with a max. dimensions of 12" (305mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses or furring channels.
 - (C) **GYPSUM BOARD** - Gypsum wallboard secured to wood/steel joists/trusses or furring channels.
2. **STEEL DUCT** - Max. 6" x 10" (152mm x 254mm) or smaller 24 gauge (or heavier), steel duct, installed installed concentrically or eccentrically within the opening. An annular space range is min. 3/8" (10mm) to a max. 1-5/8" (41mm).
3. **NELSON LBS3 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant around the duct where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on bottom surface of ceiling.
4. **STEEL RETAINING ANGLES** - Min. #16 GA galv steel angles sized to lap steel duct a min. 2" (51mm) and lap floor surfaces a min. 1" (25mm). Angles attached to steel duct on top surface of floor with min. #8 x 1/2" (13mm) long steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
F-C-7028

Nelson Firestop

DWG NO. FS-0562 R2

DATE: 11/06/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

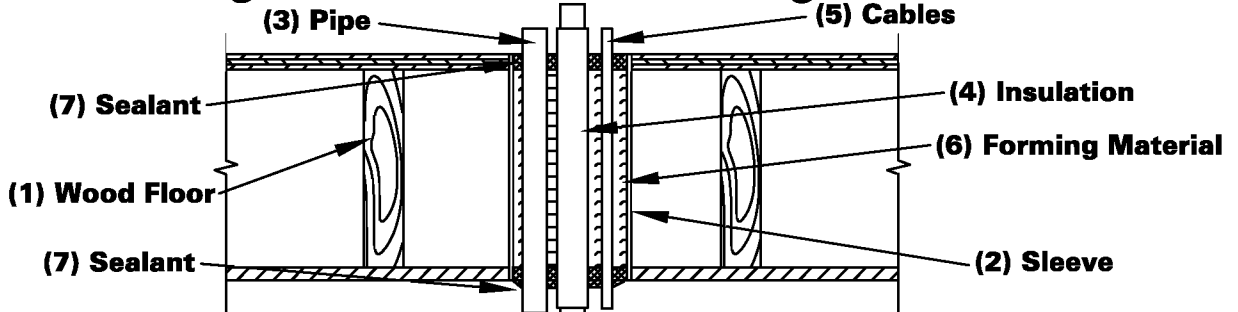
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR CABLES, METALLIC PIPES

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, L536 in the UL Fire Resistance Directory. Max. diameter of opening is 6" (152mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C.
 - (C) **GYPSUM BOARD** - First layer of wallboard nailed to wood/steel joists/trusses. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **METALLIC SLEEVE** - Sleeve fabricated from 0.015" (.38mm) 28MSG thick galv sheet steel having a min. 1" (25mm) lap and flush with wall surfaces. Diameter of sleeve is 6" (152mm).
3. **METALLIC PIPE or CONDUIT** - Max. (2) pipes, conduits or tubing may be installed. The following types/sizes of pipes, conduits and tubing may be used:
 - (A) **STEEL PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 1/2" (13mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Pipes to be spaced 1/2" (13mm) apart. The annular space between pipes and the periphery of the opening is 1/2" (13mm).
4. **PIPE INSULATION** - Nom 1/2" (13mm) thick FIBERGLASS pipe insulation to be applied to one penetrant having a max. diameter of 1/2" (13mm). Insulated penetrant to be spaced from other penetrants and spaced between periphery of opening a nom 1/2" (13mm).
5. **CABLES** - One 100pr. #24awg PVC insulated and jacketed telephone cable. Cable to be spaced from other penetrants and spaced between periphery of opening 1/2" (13mm).
6. **FORMING MATERIAL** - Min. 2" (51mm) thickness of min. 4 pcf (64 kg/cubic meter) mineral wool insulation and recessed 3/4" (19mm) from both surfaces of assembly.
7. **NELSON LBS3 SEALANT** - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of the floor. At bottom of the assembly, min. 3/4" (19mm) thickness of sealant applied within annulus, flush with bottom surface of ceiling. Additional sealant shall be applied such that a min. 1/4" (6mm) crown is formed around the penetrating items on bottom surface of ceiling.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-8033**

Nelson Firestop

DWG NO. FS-0563 R2

DATE: 11/06/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

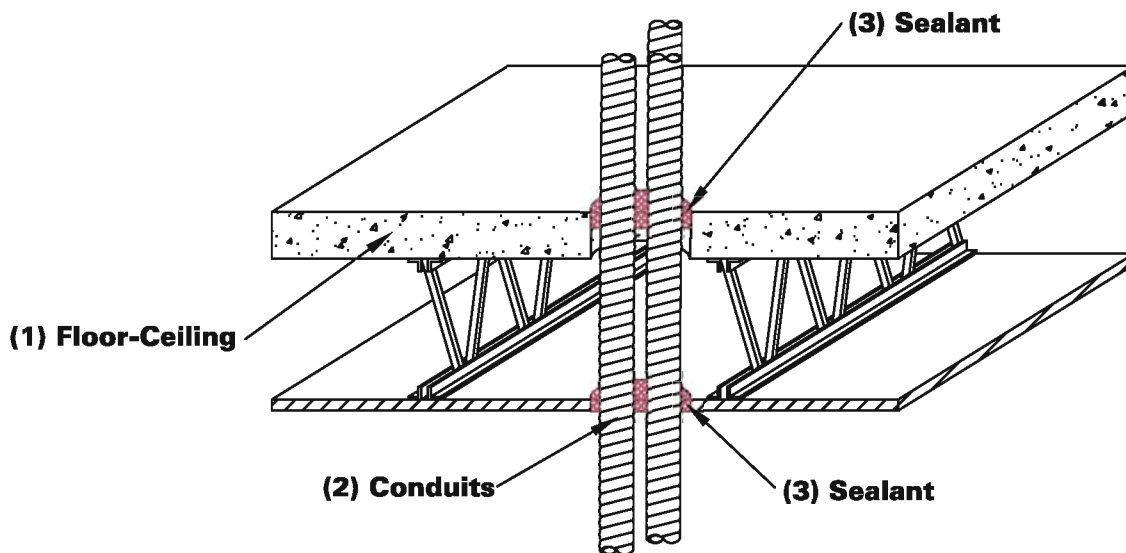
Installer: _____
Address: _____

Signature: _____

CONCRETE JOIST FLOOR METALLIC CONDUITS

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Constructed in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 2" (51mm).
2. METALLIC CONDUITS - A max. of three flexible steel conduits to be installed either concentrically or eccentrically within the firestop system. Of the three conduits, only one shall have a nom diameter greater than 1/2" (13mm). The annular space between the conduit shall be a min. 0" (point of contact) to 1/4" (6mm). The annular space between the conduit and the periphery of the opening shall min. 1/8" (3mm) to a max. 1/4" (6mm). Conduits to be located approx. midway between joists and rigidly supported on both sides of floor-ceiling assembly.
3. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with bottom surface of ceiling. On both the top and bottom of the assembly, sealant forced into interstices within group of penetrating items to max. extent possible. Additional sealant shall be installed such that a min. 1/4" (6mm) thick crown of sealant applied around the group of penetrants on both the top and bottom of the assembly.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0564 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

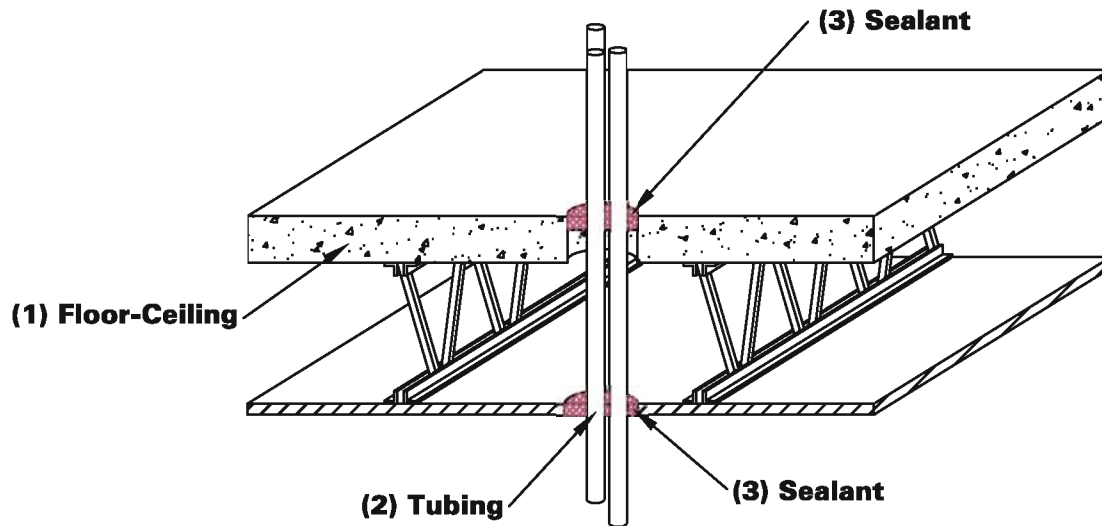
Installer: _____
Address: _____

Signature: _____

CONCRETE JOIST FLOOR NONMETALLIC TUBING

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Constructed in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 3" (76mm).
2. NONMETALLIC TUBING - A max. of three SDR 9 or heavier cross-linked polyethylene (PEX) tubing for use in closed (process or supply) piping systems. Of the three tubes, a max. of one shall have a nom diameter greater than 3/4" (19mm). The annular space between the tubing and the periphery of the opening shall be a min. 3/16" (5mm) and a max. of 1" (25mm). The space between the tubing shall be a min. 0" (point of contact) to a max. 1/4" (6mm). Tubing to be rigidly supported on both sides of the floor-ceiling assembly.
3. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth of sealant within the annulus, flush with top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with bottom surface of ceiling. On both the top and bottom of the assembly, sealant forced into interstices within group of penetrating items to max. extent possible. Additional sealant shall be installed such that a min. 1/4" (6mm) thick crown of sealant applied around the group of penetrants on both the top and bottom of the assembly.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
F-E-2020

Nelson Firestop

DWG NO. FS-0565 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

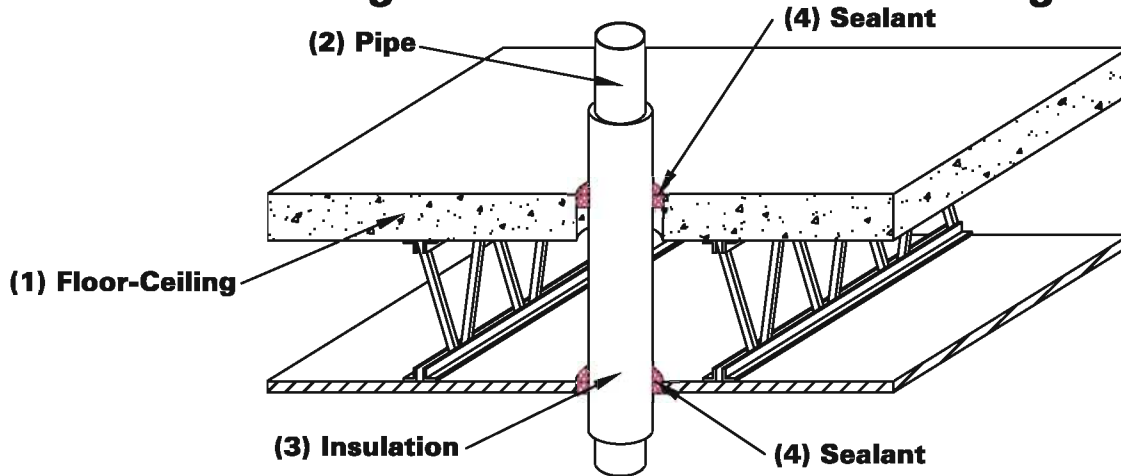
Installer: _____
Address: _____

Signature: _____

CONCRETE JOIST FLOOR INSULATED METALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Constructed in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 4-3/4" (121mm).
2. METALLIC PIPE - The following types of metallic pipes and tubing may be used:
 - (A) STEEL PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 1-1/2" (38mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

If AB/PVC (ARMAFLEX) pipe insulation is used for any of the above pipes, the max. diameter of pipe is 1" (25mm) or smaller.
3. PIPE INSULATION - Max. nominal 1" (25mm) thick or thinner FIBERGLASS or MINERAL FIBER pipe insulation. Max. nominal 3/4" (19mm) thick or thinner AB/PVC (ARMAFLEX) flexible foam pipe insulation. The annular space between the insulated through penetrant and the periphery of the opening shall be 1/2" (13mm) to 5/8" (16mm) for FIBERGLASS or MINERAL FIBER insulation or 1/4" (6mm) to 5/8" (16mm) for (ARMAFLEX) insulation.
4. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth of sealant around the pipe where it penetrates the flooring and a min. 5/8" (16mm) depth where it penetrates the ceiling. On both the top and bottom surfaces of the assembly, a min. 1/4" (6mm) thick crown of sealant is applied around the insulated through penetrant on both the top and bottom of the assembly.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0566 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

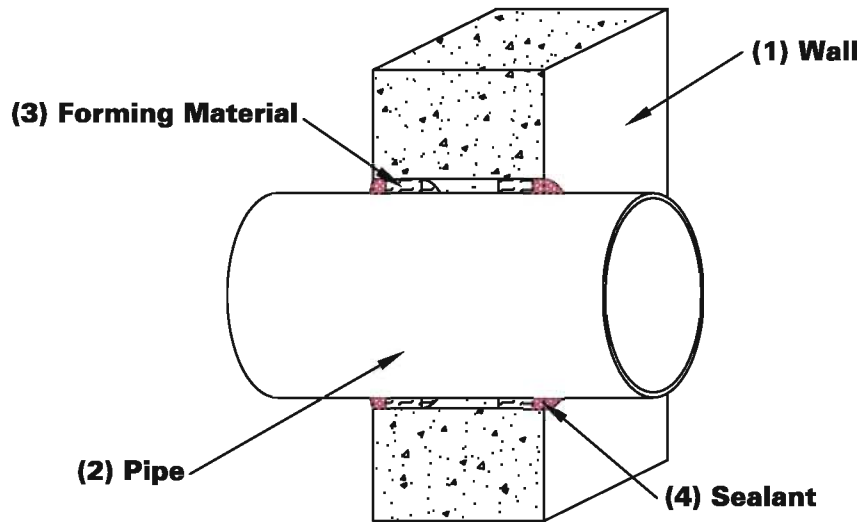
Address: _____

Signature: _____

CONCRETE WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 24-5/8" (625mm).
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between the pipe, conduit or tubing and the periphery of opening shall be min. 1/8" (3mm) to max. 1/2" (13mm).
3. FORMING MATERIAL - Min. 2" (51mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening as a permanent form. Recess from both surfaces of wall as required to accommodate the required thickness of sealant.
4. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 1/4" (6mm) depth flush with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) thick crown is formed around the penetrating item and lapping a min. 1/4" (6mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-1149

Nelson Firestop

DWG NO. FS-0567 R0

DATE: 06/24/03

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

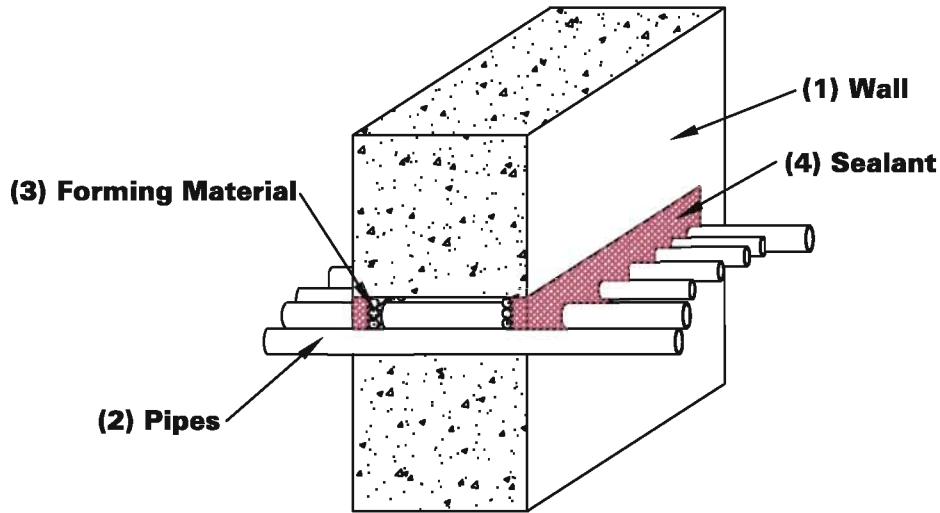
Address: _____

Signature: _____

CONCRETE WALL MULTIPLE METALLIC PIPES

F Rating 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete wall or CMU wall. The max. area of opening is 33 sq. in. (213 sq. cm) with a max. dimension of 11" (279).
2. METALLIC PIPES or CONDUITS - One or more pipes, conduits or tubing to be installed within the opening. The following types of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.

Only two penetrants shall have a nom diameter greater than 1" (25mm). Annular space between penetrants shall be a nom 1/2" (13mm). The annular space between penetrants and the periphery of the opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recessed 5/8" (16mm) from both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply min. 5/8" (16mm) thickness of sealant within the annulus, flush with both surfaces of the wall. At point of contact location between penetrants and concrete, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/penetrant interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-1150**

Nelson Firestop

DWG NO. FS-0568 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

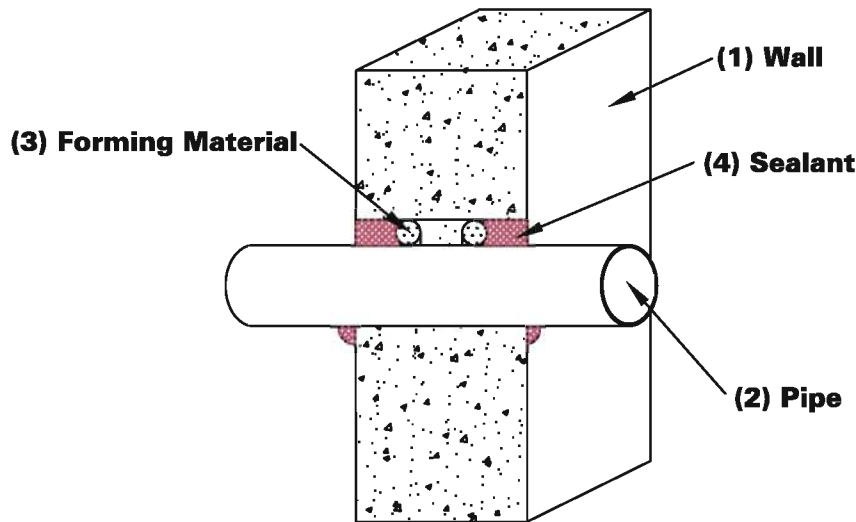
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL METALLIC PIPE OR CONDUIT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. The max. diameter of opening is 6-1/8" (156mm).
2. METALLIC PIPE or CONDUIT - The following types of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space range is 0" (point of contact) to 2" (51mm).

3. FORMING MATERIAL - Used to prevent leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 5/8" (16mm) depth flush with both surfaces of the wall. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the pipe and the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-1151

Nelson Firestop

DWG NO. FS-0569 R0

DATE: 07/21/03

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

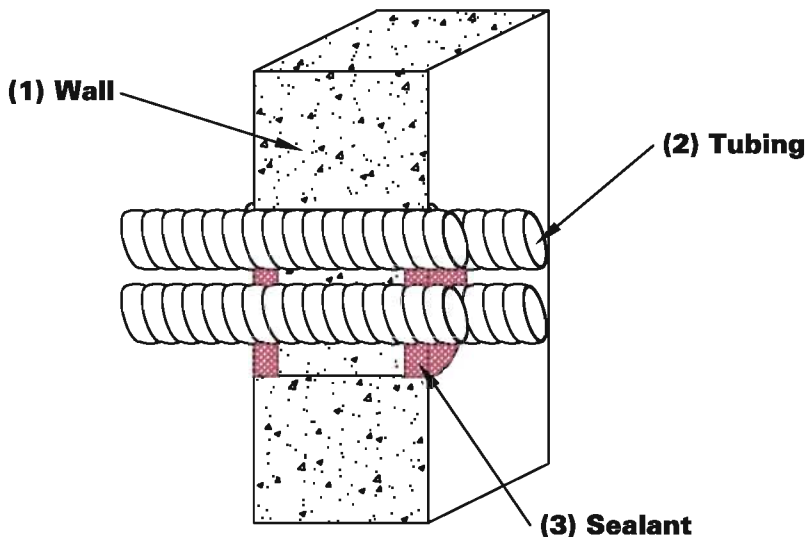
Address: _____

Signature: _____

CONCRETE WALL FLEXIBLE METALLIC TUBING

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4" (102mm).
2. FLEXIBLE METALLIC TUBING - Max. (4) nominal 1" (25mm) diameter, (or smaller), aluminum flexible metal tubing. Annular space between tubing is 0" (point of contact) to 1/4" (6mm). Annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to max. 1-1/2" (38mm).
3. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with both surfaces of wall. At areas of point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/through interface on both surfaces of wall. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0570 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____

Address: _____

Installer: _____

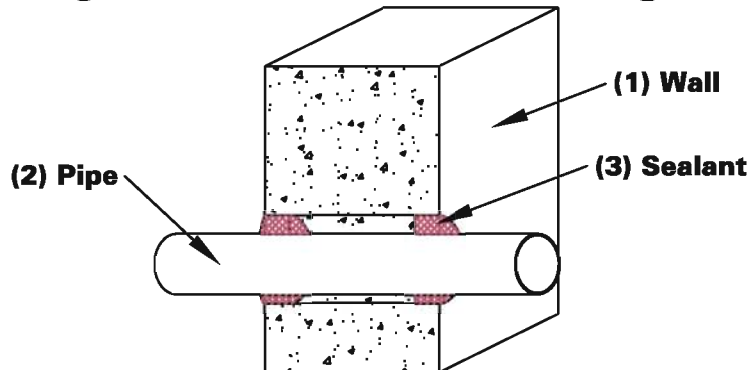
Address: _____

Signature: _____

CONCRETE WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 or 1 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete, or CMU block wall. Max. diameter of opening is 4" (102mm).
2. NONMETALLIC PIPE - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (E) ELECTRICAL NONMETALLIC TUBING (ENT) - Nom 1-1/2" (38mm) diameter (or smaller) PVC tubing.
 - (F) CROSS LINKED POLYETHYLENE (PEX) TUBING - Nom 1-1/2" (38mm) diameter (or smaller) SDR 9 cross linked polyethylene (PEX) tubing for use in closed (process or supply) piping systems.

Type of Through Penetrant	T Rating Hr.	Annular Space (Min., Max.) In. (mm)
PVC, CPVC Pipe, or PVC Conduit	1	5/8", 1" (16, 25)
PVC ENT	1	3/8", 1-1/8" (10, 29)
ABS Pipe, or PEX Tubing	0	3/8", 1-1/8" (10, 29)

3. NELSON LBS3 SEALANT - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, flush with both surfaces of wall. Additional sealant to be installed such that a min. 1/4" (6mm) thick crown is formed around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-2146**

Nelson Firestop

DWG NO. FS-0571 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

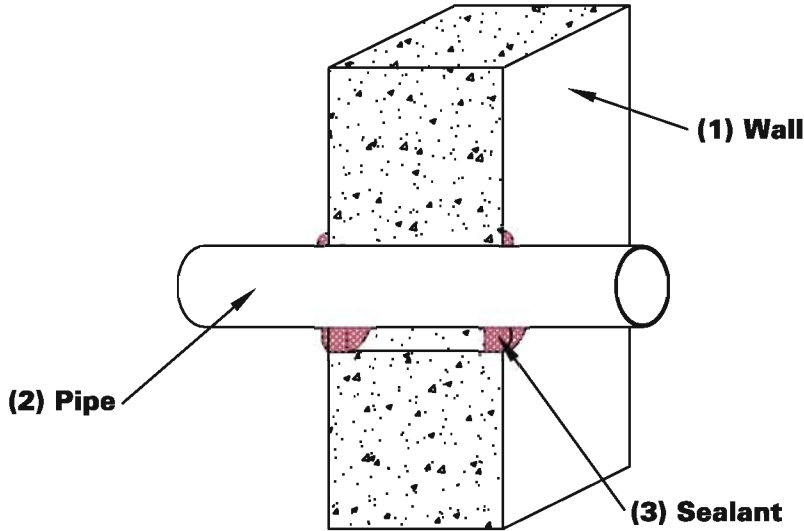
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL GLASS PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 6" (152mm).
2. GLASS PIPE - Max. nominal 4" (102mm) diameter, or smaller glass pipe. For use in closed (process or supply) or vented (drain, waste, or vent) piping systems. The annular space between pipe and periphery of opening shall be min. 0" (point of contact) to max. 1-3/8" (35mm).
3. NELSON LBS3 SEALANT - Apply sealant within the annular space to a min. 5/8" (16mm) depth, flush with both surfaces of wall assembly. Additional sealant to be applied such that a min. 1/4" (6mm) crown is formed around the through penetrant on both surfaces of wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479


System No.
W-J-2147

Nelson Firestop

DWG NO. FS-0572 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

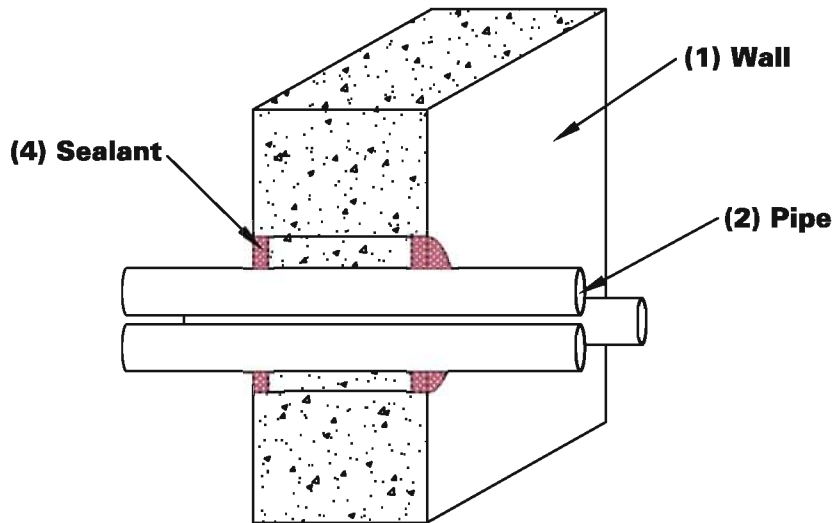
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Signature: _____

CONCRETE WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 1-1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4" (102mm).
2. NONMETALLIC PIPE- Max. 1" (25mm) nominal diameter, or smaller, SDR 9 Cross-linked Polyethylene (PEX) tubing for use in closed (process or supply) systems. A max. of three tubes to be bundled together and installed eccentrically or concentrically within the firestop system. Of the three tubes, a max. of one shall have a nom diameter greater than 3/4" (19mm). The annular space between the tubing and the periphery of the opening shall be min. 5/8" (16mm) to max. 1-1/4" (32mm). Separation between the tubing shall be a min. 0" (point of contact) to max. 3/8" (10mm).
3. FORMING MATERIAL (not shown) (optional) - Install backer rod into the opening and recess from both surfaces of wall as required to accomodate the required thickness of sealant.
4. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 5/8" (16mm) depth, flush with both surfaces of wall. Additional sealant to be forced within tubing bundle to max. extent possible.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-2148

Nelson Firestop

DWG NO. FS-0573 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

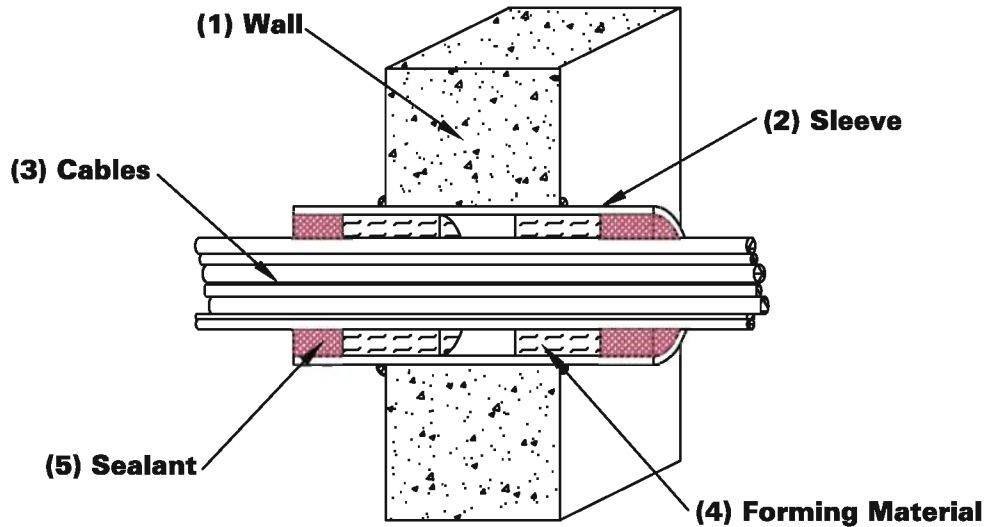
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL SLEEVED CABLES


F Rating 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4-1/2" (114mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter Sch 40 steel sleeve having cast into wall assembly with cement. Length of sleeve to be equal to thickness of wall plus 4" such that, when installed, the ends of the sleeve project 2" (51mm) beyond each side of the wall.
3. CABLES - Max. 25% fill of 25pr. 24awg, or smaller, PVC jacketed telephone cable.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 2" (51mm) depth, and recess 1" (25mm) from both ends of the sleeve. Forming material to be forced into interstices of cable group to max. extent possible.
5. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 1" (25mm) depth, flush with both ends of the sleeve. Sealant to be tightly packed within interstices of cable bundle. A min. 1/2" (13mm) thick bead shall be applied at the steel sleeve/concrete interface on both surfaces of wall.

Tested in accordance with:
 ASTM E-814
 ANSI/UL 1479

CLASSIFIED

System No.
W-J-3115

Nelson Firestop

DWG NO. FS-0574 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

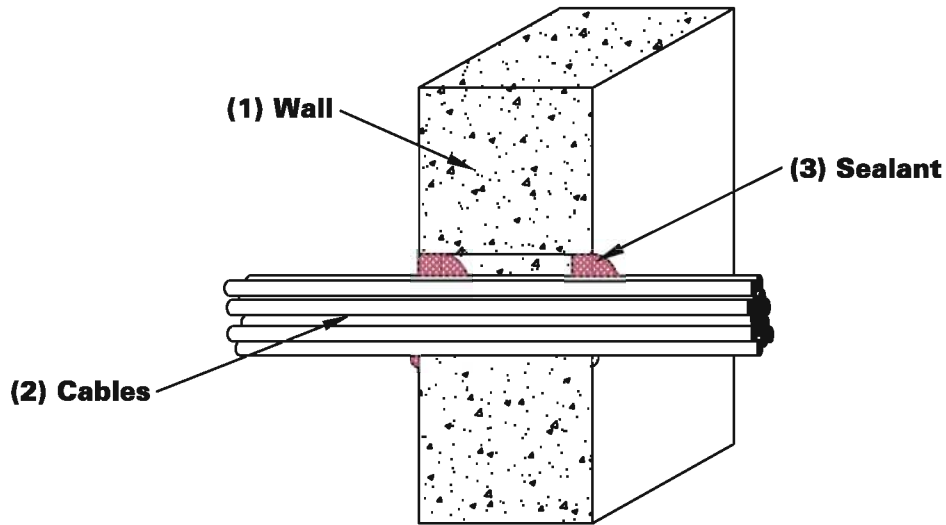
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL CABLES


F Rating 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 5" (127mm).
2. CABLES - Max. 40% cable fill of opening in any combination of:
 - (A) max. 3/C #12awg copper conductor nonmetallic sheathed (ROMEX) cable.
 - (B) max. 3/C #2/0 awg aluminum conductor service entrance cable (SER).
 - (C) max. 24 fiber 62.5/125 uM fiber optic cable
 All above with PVC insulation and jacket materials.
 - (D) max. 1C-350 kcmil or smaller copper conductor cable with a cross-linked polyethylene (XLPE) jacket.
 The annular space between the cable bundle and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1" (25mm).
3. NELSON LBS3 SEALANT - Apply sealant fill the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed around the cable bundle on both sides of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-3116

Nelson Firestop

DWG NO. FS-0575 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

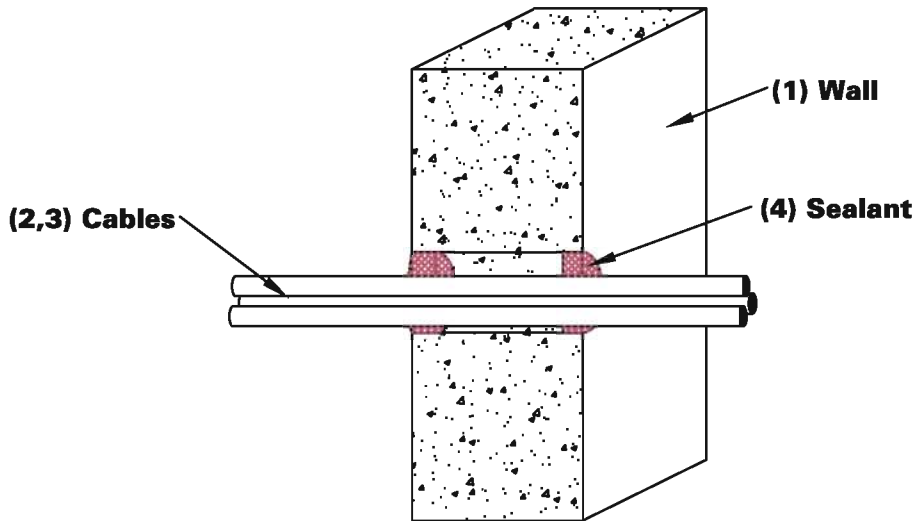
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL CABLES

F Rating 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4" (102mm).
2. CABLE - Max. (1) 3/C #2/0 awg aluminum conductor service entrance cable, with PVC insulation and jacket. Annular space between the cable and periphery of the opening shall be a min. 0" (point of contact) to a max. 1-1/2" (38mm).
3. ARMORED or METAL CLAD CABLES - Max. (2) 3/C #2awg or smaller aluminum ARMORED cable or METAL CLAD cable with copper conductors. The annular space between the through penetrating item and the periphery of the opening shall be a min. 1/8" (3mm) to a max. 1-1/2" (38mm). The annular space between the cable and the ARMORED or METAL CLAD cables shall be a min. 1/8" (3mm) to a max. 1/2" (13mm).
4. NELSON LBS3 SEALANT - Apply sealant fill the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 1/4" (6mm) thick crown is formed around the cable bundle on both sides of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-3117

Nelson Firestop

DWG NO. FS-0576 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

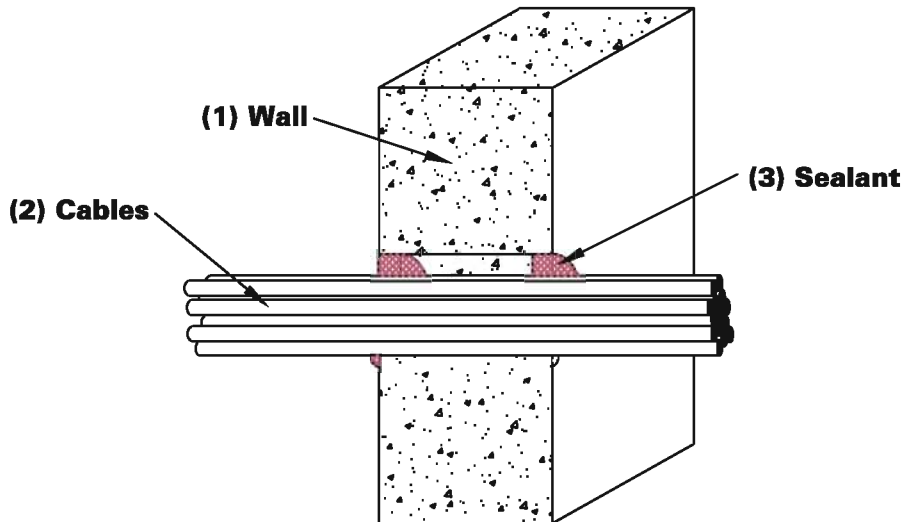
Address: _____

Signature: _____

CONCRETE WALL CABLES

F Rating 2 Hr.


T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 4" (102mm).
2. CABLES - Max. 41% cable fill of opening in any combination of:
 - (A) max. 2/C with ground #12 awg copper conductor cable (12-2 ROMEX) w/polyvinyl chloride (PVC) insulation and jacket.
 - (B) max. RG/6 #18 awg Type CATV copper conductor coaxial cable w/polyvinyl chloride (PVC) insulation and jacket.
 - (C) max. 1/C - 350 kcmil cable w/polyvinyl chloride (PVC) insulation and jacket.
 - (D) max. 400pr #24 awg copper telephone cables, w/polyvinyl chloride (PVC) insulation and jacket.
 - (E) max. 1/C - 350 kcmil cable w/cross linked polyethylene (XLPE) insulation and jacket.
 - (F) max. 4/C #2/0 aluminum or copper conductor, aluminum or steel jacketed METAL-CLAD or ARMORED-CLAD cable.

The annular space between the cable bundle (max. 2-3/4" (70mm) and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1-1/4" (32mm).
3. NELSON LBS3 SEALANT - Apply sealant to fill the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed, at the point of contact of cable bundle and wall, on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-3118

Nelson Firestop

DWG NO. FS-0577 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

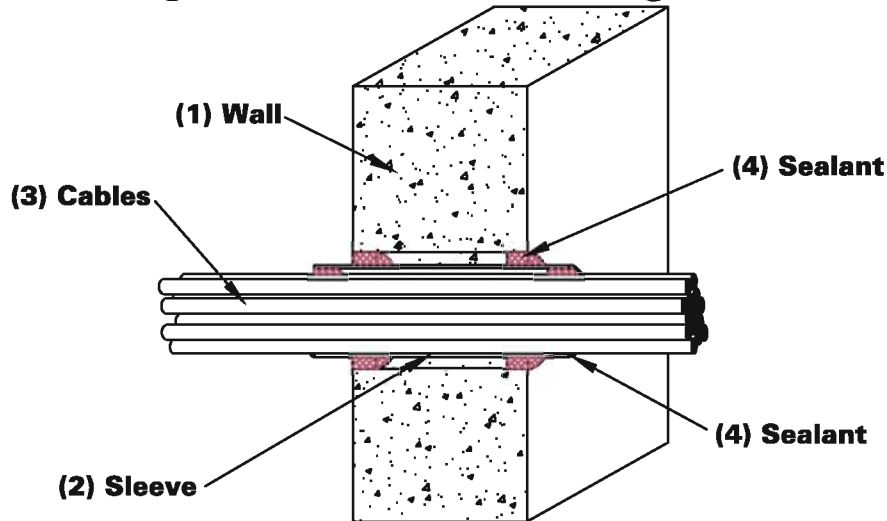
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE WALL SLEEVED CABLES

F Rating 1 or 2 Hr. T Rating 1/4 or 1/2 Hr.



1. WALL ASSEMBLY - Min. 4-7/8" (124mm) or 6-1/8" (156mm) thick lightweight or normal weight concrete wall, or CMU block wall for 1 or 2 Hr. rated assemblies, respectively. Max. diameter of opening is 5" (127mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter steel, iron or EMT sleeve with 0.083" (2mm) wall thickness, fitted into wall opening with a max. annular space of 1/2" (13mm) between the edge of the wall opening. Length of sleeve to be equal to thickness of wall plus 2" (51mm), such that when installed, the ends of the sleeve project 1" (25mm) beyond each side of the wall.
3. CABLES - Max 55.6% cable fill of opening in any combination of:
 - (A) max. 4/C #12awg or smaller cable.
 - (B) max. #18awg RG6/U coaxial cable.
 - (C) max. 62.5/125 micron, Type OFNR, fibre optic cables.
 All with PVC insulation and jacket.
 (D) max. 1/C #350MCM cable with XLPE insulation and jacket.
 (E) max. Type RG59/U coaxial cables with polyethylene insulation and PVC jacket.
 The annular space between cable bundle and edge of sleeve shall be a min. 0" (point of contact) to max. 1/8" (3mm).
4. NELSON LBS3 SEALANT - Apply sealant to fill the annular space between sleeve and wall opening to a min. 5/8" (16mm) thickness, flush with wall surfaces. Min. 1/2" (13mm) thickness of sealant applied within the annulus between cable bundle and sleeve, flush with ends of sleeve. Sealant to be forced into interstices of cable group to max. extent possible. A min. 3/8" (10mm) bead of the sealant shall be applied at the point contact locations of the sleeve with wall and cable bundle with sleeve on both sides of the wall assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-3119**

Nelson Firestop

DWG NO. FS-0578 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

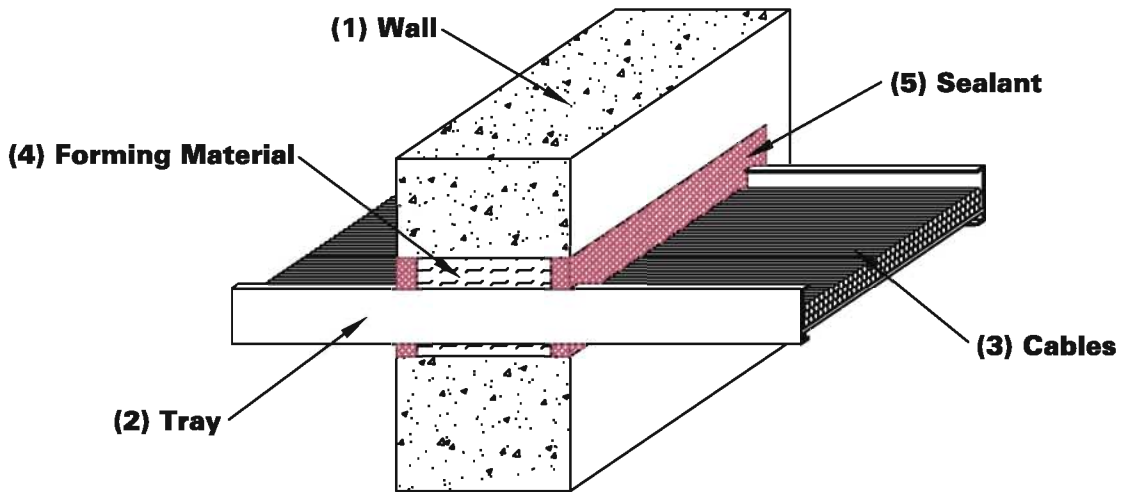
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL CABLE TRAY

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) reinforced lightweight or normal weight concrete or CMU block wall. The max. area of opening is 136.5 sq. in. (881 sq. cm) with a max. dimension of 22-3/4" (578mm).
2. CABLE TRAY - Max. 18" (457mm) wide x 5" (127mm) deep open ladder type cable tray with channel-shaped side rails formed of min. 0.069 in. (2mm) thick aluminum and with 1" (25mm) wide by 7/8" (22mm) deep rungs spaced (229mm) OC. The annular space between the cable tray and periphery of the opening shall be min. 3/8" (10mm) to max. 1-9/16" (40mm).
3. CABLES - Max. 20% cable fill of opening in any combination of:
 - (A) max. 1/C - 350 kcmil cable w/cross linked polyethylene (XLPE) jacket.
 - (B) max. 3/C #2awg cable w/XLPE insulation and polyvinyl chloride (PVC) jacket.
 - (C) max. 7/C #12awg cable w/PVC insulation and jacket.
 - (D) max. 2/C #16awg cable w/PVC insulation and jacket.
4. FORMING MATERIAL - Min. 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening. Forming material to be forced into interstices of cable group to max. extent possible and recessed 1/2" (13mm) from both surfaces of wall.
5. NELSON LBS3 SEALANT - Min. 1/2" (13mm) thickness of sealant applied within the annulus on both surfaces of wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 1/2" (13mm) thick crown is formed around the penetrating item and lapping a min. 1/2" (13mm) beyond the periphery of the opening.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-4045**

Nelson Firestop

DWG NO. FS-0579 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

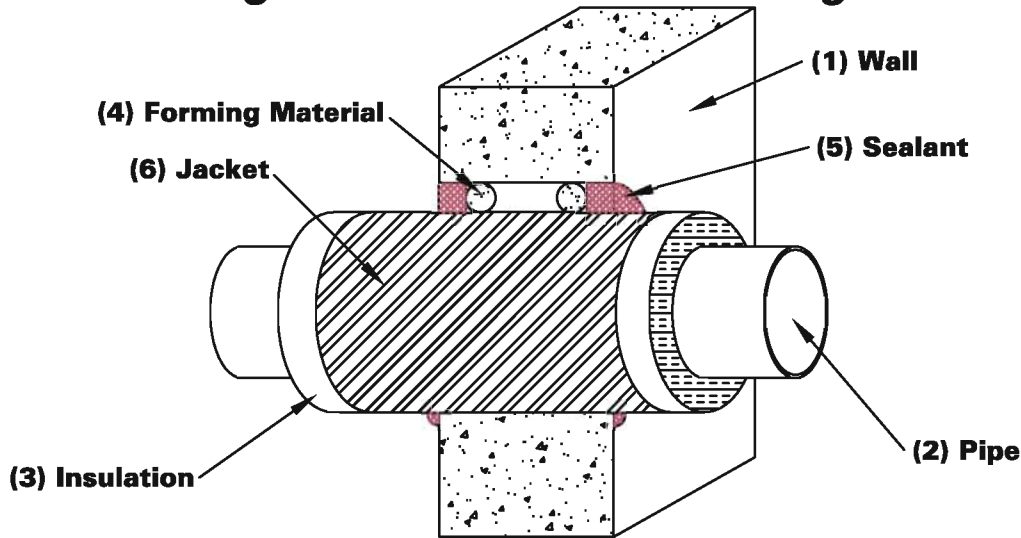
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1-1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 13" (330mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 1-1/2" (38mm) thick, or thinner, CALCIUM SILICATE insulation. The insulation material may be jacketed with 0.010 in. (.254mm) thick aluminum sheet wrapped tightly around with a min. 2" (51mm) overlap. Jacket to be secured with stainless steel hose clamps. The annular space between insulated through penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install foam backer rod firmly packed into opening as a permanent form. Forming Material to be recessed from both surfaces of wall as required to accommodate the thickness of sealant.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead at the concrete/insulated through penetrant interface on both surfaces of wall.
6. METAL JACKET - Min. 12" (305mm) long jacket formed of min. 0.010 in. (.254mm) thick aluminum sheet cut to wrap tightly around the pipe insulation with a min. 2" (51mm) lap and secured using 1/2" (13mm) wide by 0.028 in. (.711mm) thick stainless steel hose clamps. Clamps to be located within 2" (51mm) of each end of the jacket and spaced max. 10" (254mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-5106**

Nelson Firestop

DWG NO. FS-0580 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

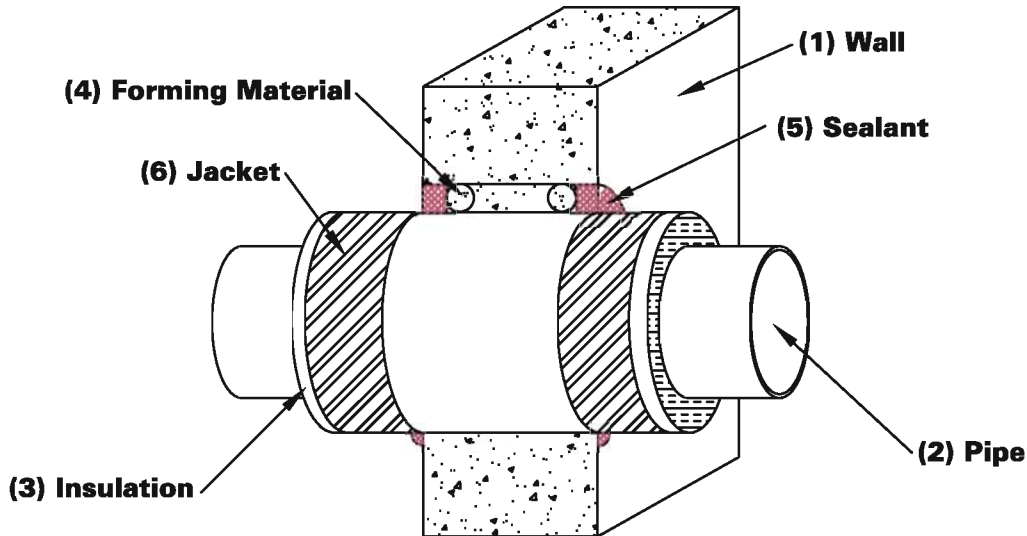
Address: _____

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CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1-1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of opening is 18" (457mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 10" (254mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 3" (76mm) thick, CELLULAR GLASS pipe insulation. The annular space between insulated through penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install foam backer rod firmly packed into opening as a permanent form. Forming material to be recessed from both surfaces of wall as required to accommodate the thickness of sealant.
5. NELSON LBS3 SEALANT - Apply over the forming material to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead at the concrete/insulated through penetrant interface on both surfaces of wall after installation of the metal jacket.
6. METAL JACKET - Min. 12" (305mm) long jacket formed of min. 0.010 in. (.25mm) thick aluminum sheet cut to wrap tightly around the pipe insulation with a min. 2" (51mm) lap and secured using 1/2" (13mm) wide by 0.028 in. (.71mm) thick stainless steel hose clamps. Clamps to be located within 2" (51mm) of each end of the jacket and spaced max. 10" (254mm) OC. Jacket to be installed with edge abutting surface of sealant on each side of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-5107**

Nelson Firestop

DWG NO. FS-0581 R1

DATE: 07/13/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

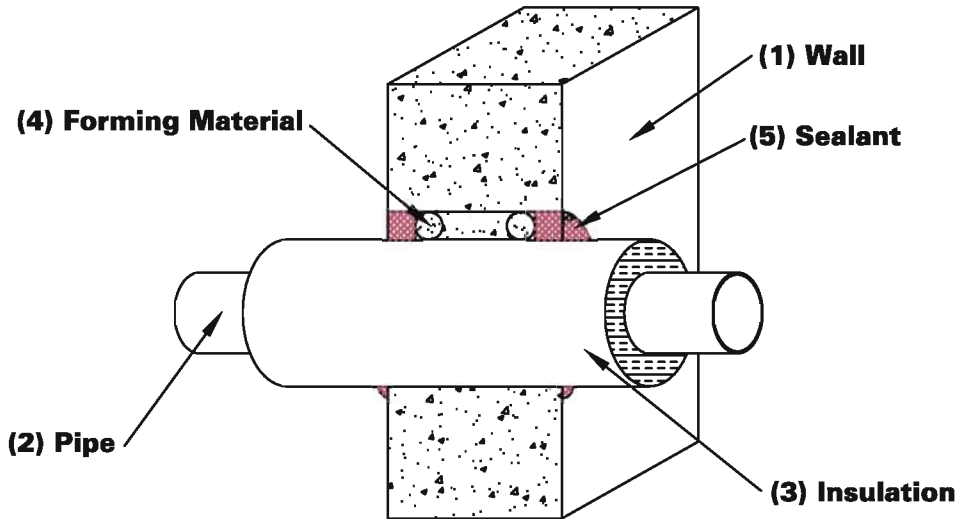
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1 or 1-1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 12" (305mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space is min. 0" (point of contact) to max. 1-3/8" (35mm).
4. FORMING MATERIAL - Used to prevent leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. NELSON LBS3/ES1399 SEALANT - Apply sealant within the annular space to a min. 5/8" (16mm) depth. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the concrete/insulated through penetrant insulated through penetrant on both surfaces of the wall. Max. pipe diameter to be used with LBS3 is 4" (102mm) and the T rating is 1-1/2 Hr. Max. pipe diameter to be used with ES1399 is 6" (152mm) and T rating is 1 Hr.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-5108**

Nelson Firestop

DWG NO. FS-0582 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

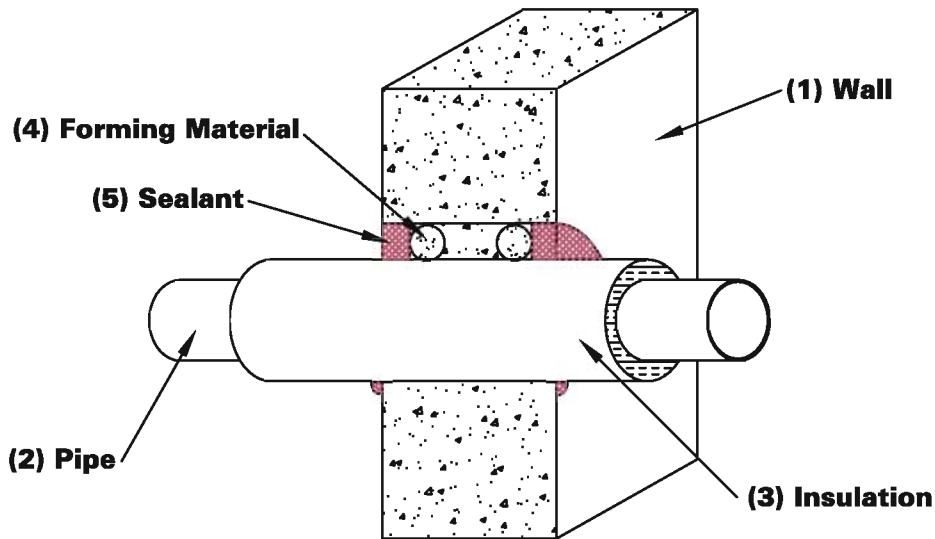
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Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 7" (178mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 3/4" (19mm) thick (or thinner) AB/PVC (ARMAFLEX) foam insulation. The annular space between the insulated through penetrant and the periphery of the opening shall be a min. 0" (point of contact) to max. 1-1/4" (32mm).
4. FORMING MATERIAL - Used to prevent leakage of sealant during installation. Install backer rod within the annular space and recess 5/8" (16mm) from both surfaces of wall.
5. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the concrete/insulation interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-5109

Nelson Firestop

DWG NO. FS-0583 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

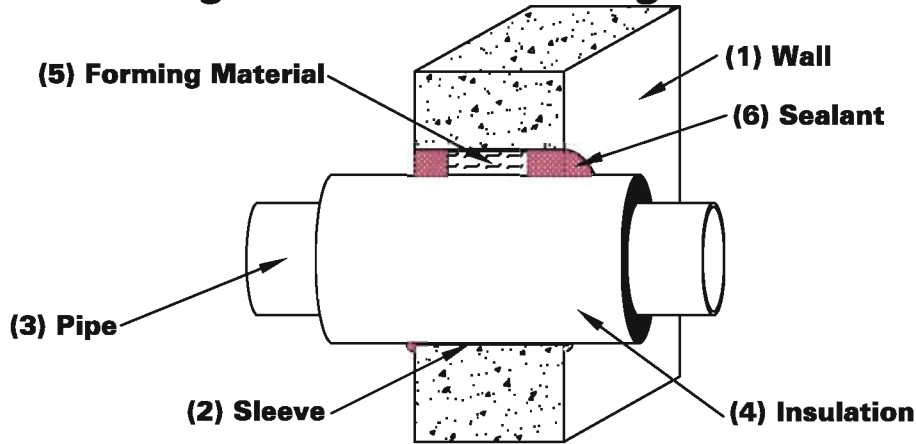
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. WALL ASSEMBLY - Min. 4-7/8" (124mm) or 6-1/8" (156mm) thick lightweight or normal weight concrete for 1 or 2 hr. fire-rated wall or CMU wall assemblies. Max. diameter of opening is 14" (356mm).
2. METALLIC SLEEVE - Sleeve fabricated from min. 0.018 (.46mm) thick (No. 28 GA) galvanized sheet steel and having a min. 1" (25mm) lap along the longitudinal seam. The inside diameter of sleeve shall be min. 1" (25mm) larger than the outside diameter of pipe covering. Sleeve installed by coiling the sheet steel to a diameter smaller than the through opening in the concrete or block wall, inserting the coil through the opening and releasing the coil to let it uncoil against the circular wall opening.
3. METALLIC PIPE - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. PIPE INSULATION - Nominal 3" (76mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space range is 0" (point of contact) to 1-7/8" (48mm).
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cm) mineral wool batt insulation to fill the annular space to a 3" (76mm) or 4" (102mm) depth for 1 or 2 hr rated wall, and recess 1" (25mm) from both surfaces of the wall.
6. NELSON LBS3 SEALANT - Apply sealant over the forming material to a min. 1" (25mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the wall/sleeve/insulation interface on both sides of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-5110**

Nelson Firestop

DWG NO. FS-0584 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

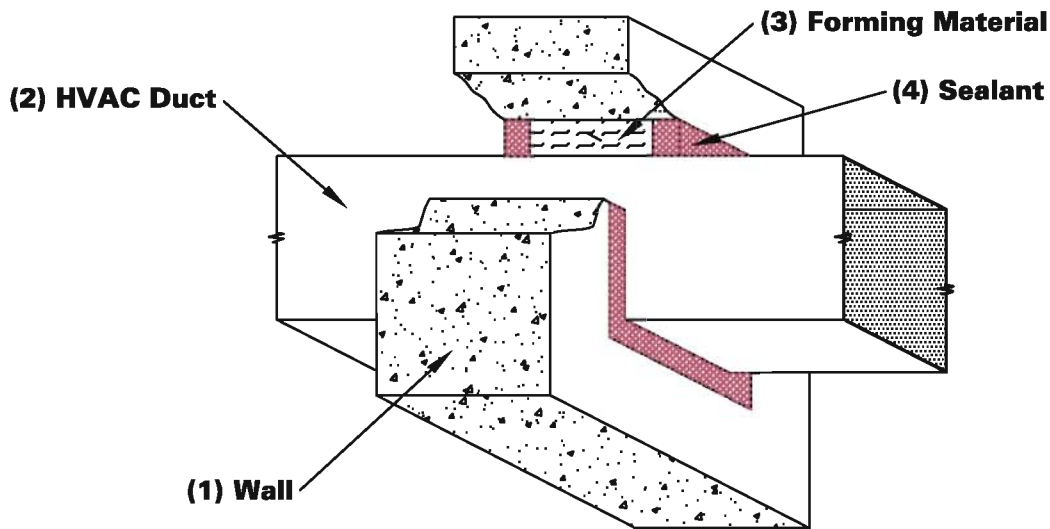
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Address: _____

Signature: _____

CONCRETE WALL HVAC DUCT

F Rating 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete, or CMU block wall. Max. area of opening is 196 sq. in. (1265 sq. cm), with a max. dimension of 14" (356mm).
2. STEEL HVAC DUCT - 12" x 12" (305mm) x 305mm), or smaller, No. 24 gauge, (or heavier), steel duct installed concentrically within the opening. The duct is to be rigidly supported on both sides of the wall. A nom 1" (25mm) annular space is required within the firestop system.
3. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3-1/2" (89mm) depth, and recess 3/4" (19mm) from both surfaces of the wall.
4. NELSON LBS3 SEALANT - Apply over the forming material to fill the annular space to a min. 3/4" (19mm) depth on both sides of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) thick crown is formed around the penetrating item and lapping a min. 1/4" (6mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-7061

Nelson Firestop

DWG NO. FS-0585 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

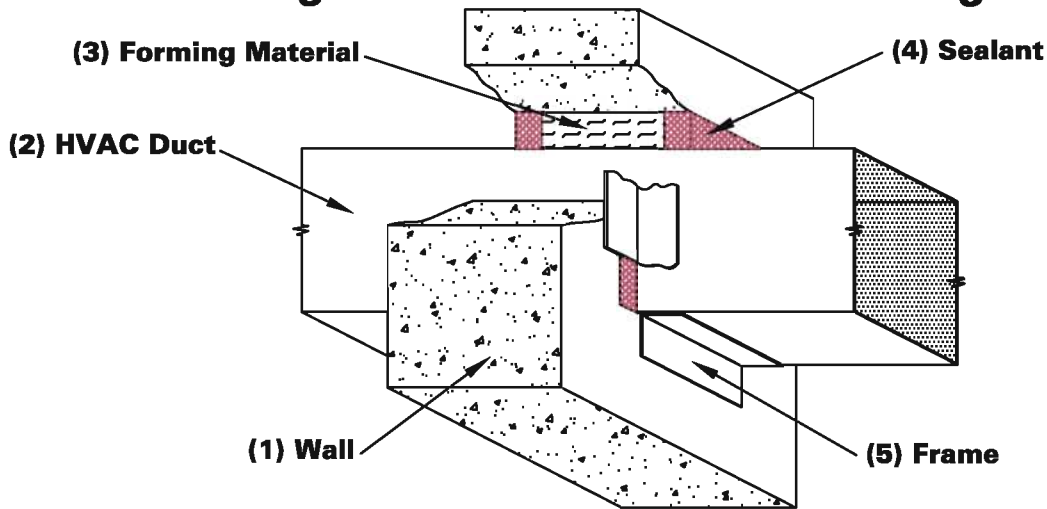
Address: _____

Signature: _____

CONCRETE WALL HVAC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min 6" (152mm) thick lightweight or normal weight concrete, or CMU block wall. The max. area of opening is 989 sq. in. (6381 sq. cm) with max. dimensions of 43" (1092mm).
2. RECTANGULAR STEEL HVAC DUCT - 40 x 20" (1016mm x 508mm), (or smaller), No. 24 gauge, or heavier, steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall. The space between the steel duct and periphery of opening shall be min. 3/4" (19mm) to max. 2-1/4" (57mm). During the installation of the steel duct, internal support members consisting of nom 1/2" (13mm) diameter threaded steel shall be installed within the center of the steel duct on both sides of wall assembly. In addition to the threaded steel rod, external supports consisting of min. 1-1/2" (38mm) x 1-1/2" (38mm) x 3/16" (5mm) thick steel angles to be installed around the outer perimeter of the steel duct and secured to the steel duct by means of No. 10 x 3/4" (19mm) long steel sheet metal screws spaced a max. 8" (203mm) OC.
3. FORMING MATERIAL - Install backer rod, mineral wool, or fiberglass batt insulation into the opening and recess 5/8" (16mm) from both surfaces of the wall.
4. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with both surfaces of wall.
5. METAL FRAME - Min. 16 GA galv steel angles sized to lap steel duct a min. of 2" (51mm) and lap wall surfaces a min. 1" (25mm). Angles attached to steel duct on both sides of wall with min. #10 x 1/2" (13mm) long steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-7062**

Nelson Firestop

DWG NO. FS-0586 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

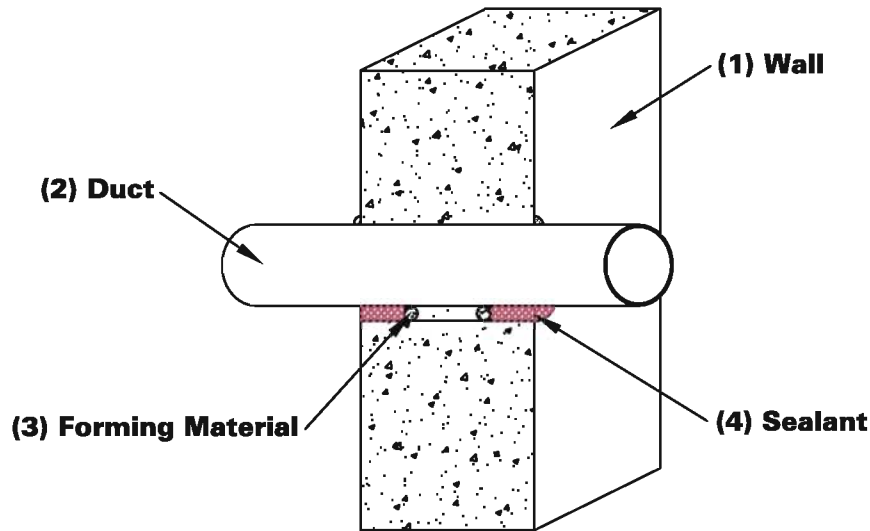
Installer: _____
Address: _____

Signature: _____

CONCRETE WALL METALLIC DUCT

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU wall. Max. diameter of opening is 5" (127mm).
2. METALLIC DUCT - Max. nominal 4" (102mm) diameter, or smaller, No. 30 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly. The annular space between duct and periphery of opening shall be min. 0" (point of contact) to max. 7/8" (22mm).
3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply to fill the annular space around the duct to a min. 5/8" (16mm) depth. At areas of point of contact, apply a 3/8" (10mm) diameter bead of sealant at the concrete/through penetrant interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-J-7063

Nelson Firestop

DWG NO. FS-0587 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

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Address: _____

Installer: _____

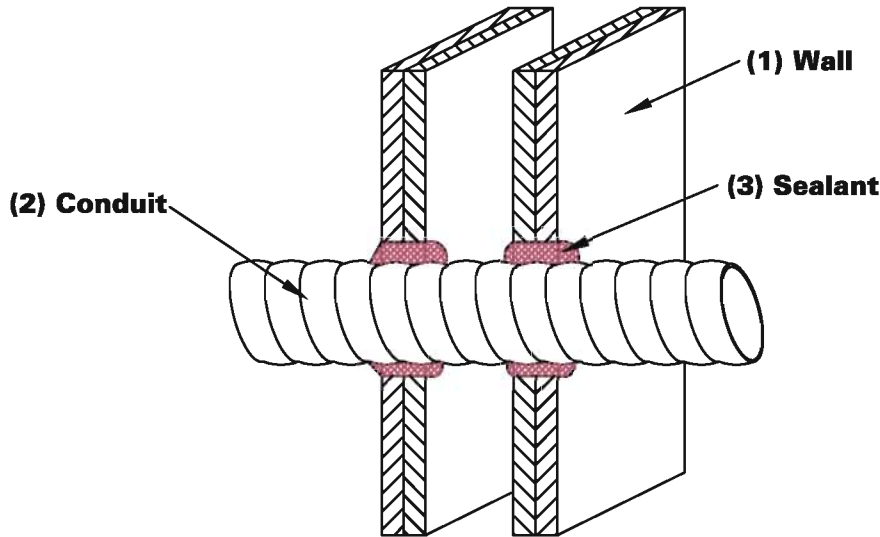
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GYPSUM WALL FLEXIBLE METALLIC CONDUIT

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 1-3/8" (35mm).
2. **FLEXIBLE METALLIC CONDUIT** - Max. 1/2" (13mm) nominal diameter, (or smaller), steel or aluminum flexible metal conduit. The annular space shall be min. 1/8" (3mm) to a max. 1/4" (6mm).
3. **NELSON LBS3 SEALANT** - Sealant applied to completely fill the annular space between the through penetrant and the periphery of the opening to max. extent possible. In 1 Hr. or 2 Hr. fire rated assemblies, additional sealant to be installed such that a min. 1" (25mm) or 3/8" (10mm) crown is formed around the penetrating item, respectively and lapping 1/2" (13mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-1332

Nelson Firestop

DWG NO. FS-0588 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
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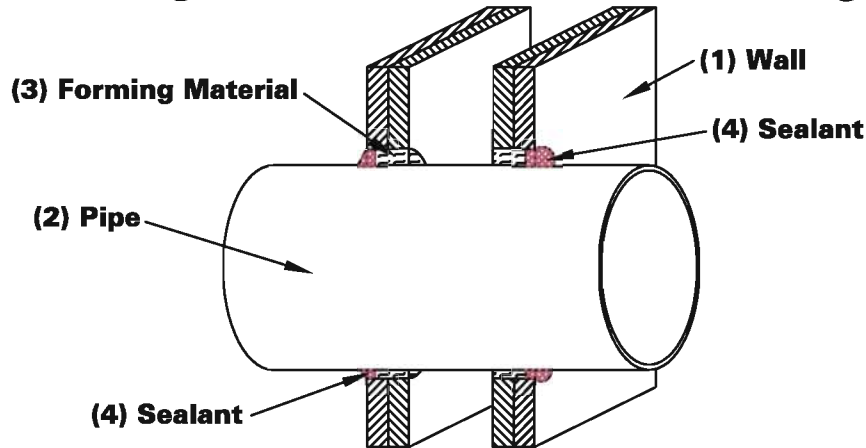
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 24-5/8" (625mm) for steel stud walls and 14-1/2" (368mm) for wood stud walls.
2. **METALLIC PIPE or CONDUIT** - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between pipes, tubing or conduits and periphery of opening shall be min. 1/8" (3mm) to max. 1/2" (13mm).
3. **FORMING MATERIAL** - In 2 Hr. wall assemblies, min. 2" (51mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening. In 1 Hr. wall assemblies, min. 3-3/4" (95mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening. Forming material to be recessed from both surfaces of wall as required to accommodate the required thickness of sealant.
4. **NELSON LBS3 SEALANT** - In 2 Hr wall assemblies, apply sealant within the annular space around the through penetrant to a min. 1/4" (6mm) depth, flush with both surfaces of the wall. Additional sealant to be installed such that a min. 1-1/4" (32mm) thick crown is formed around the penetrating item and lapping a min. 1/4" (6mm) beyond the periphery of the opening. In 1 Hr. wall assemblies, a min. 1/2" (13mm) thick crown is formed around the penetrating item and lapping a min. 1/2" (13mm) beyond the periphery of the opening on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-1333**

Nelson Firestop

DWG NO. FS-0589 R0

DATE: 07/08/03

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

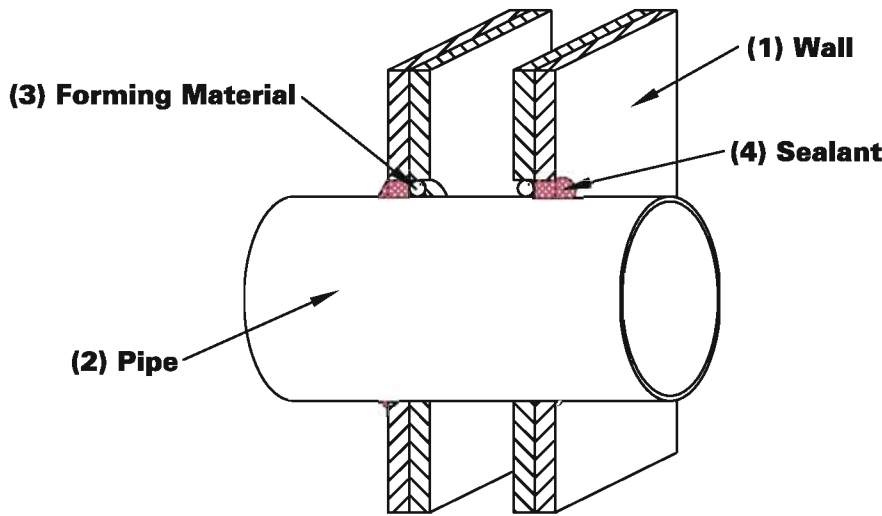
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 26-3/8" (670mm) for steel stud walls and 14-1/2" (368mm) for wood stud walls.
2. METALLIC PIPE or CONDUIT - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between pipes, tubing or conduits and periphery of opening shall be min. 0" (point of contact) to max. 2" (51mm).

3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install backer rod into the opening and recess 5/8" (16mm) from the both surfaces of the wall.
4. NELSON LBS3 SEALANT - Apply sealant within the annular space around the through penetrant to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the through penetrant and both surfaces of the wall. An additional 1/4" (6mm) crown of sealant shall be applied around the entire circumference of the penetrant at both wall surfaces.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-1334**

Nelson Firestop

DWG NO. FS-0590 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

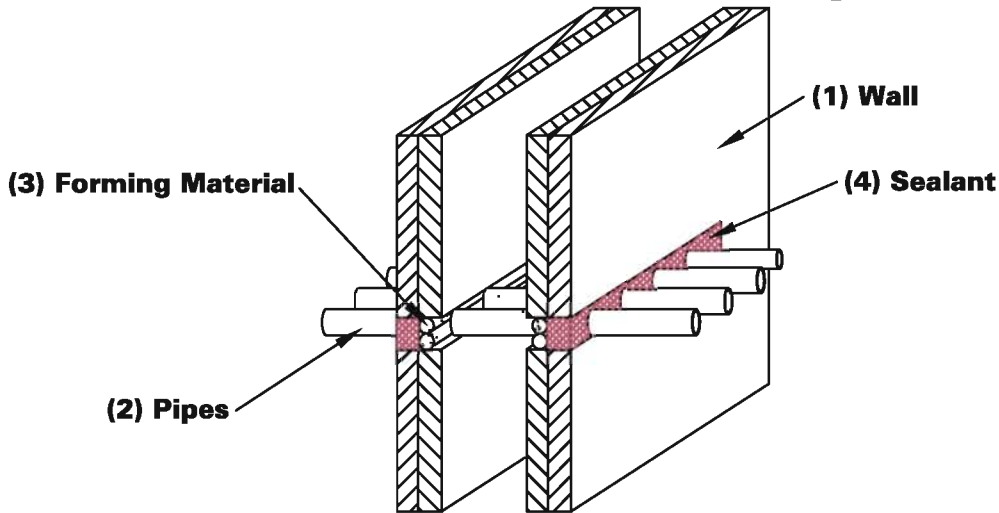
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL MULTIPLE METALLIC PIPES

F Rating 1 or 2 Hr.

T Rating 0 or 1 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of opening is 33 sq. in. (213 sq. cm) with max. dimensions of 11" (279mm).
2. **METALLIC PIPES or CONDUITS** - One or more pipes, conduits or tubing to be installed within the opening. The following types of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.

The annular space between pipes, conduits or tubing and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm). Of the through penetrants, only two through penetrants shall have a nom diameter greater than 1" (25mm).
3. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install backer rod within the annular space, and recess from both surfaces of wall as required to accomodate the required thickness of sealant.
4. **NELSON LBS3 SEALANT** - Min. 5/8" (16mm) thickness of sealant applied within annulus, flush with both surfaces of wall. At areas of point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum wallboard/through penetrant interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-1335**

Nelson Firestop

DWG NO. FS-0591 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

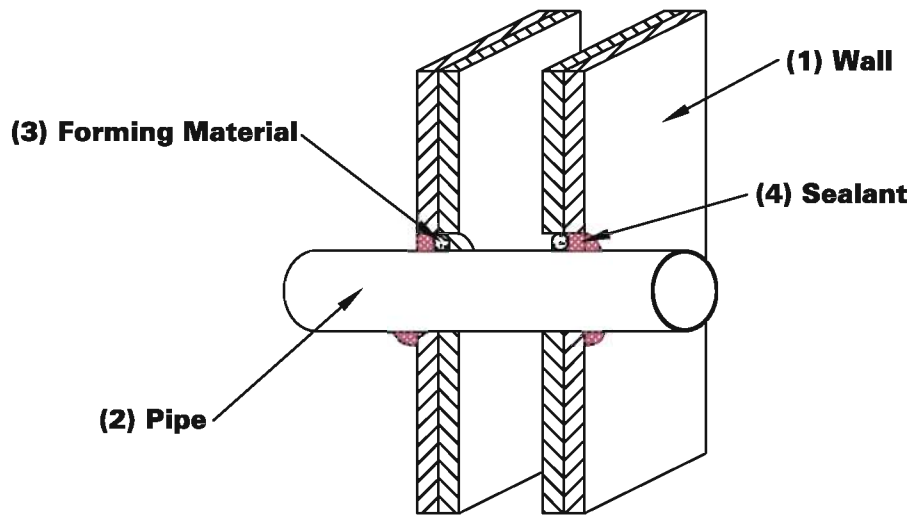
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 6-1/8" (156mm).

2. METALLIC PIPE or CONDUIT - The following types of metallic pipes, conduits or tubing may be used:

- (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) sch. 10 (or heavier) steel pipe.
- (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
- (C) CONDUIT - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or galv steel conduit.
- (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between pipes, tubing or conduits and periphery of opening shall be a min. 0" (point of contact) to max. 2" (51mm).

3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install backer rod into the opening and recess 5/8" (16mm) from the both surfaces of the wall.

4. NELSON LBS3 SEALANT - Apply sealant within the annular space around the through penetrant to a min. 5/8" (16mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead at the interface between the through penetrant and both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-1336**

Nelson Firestop

DWG NO. FS-0592 R0

DATE: 07/08/03

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

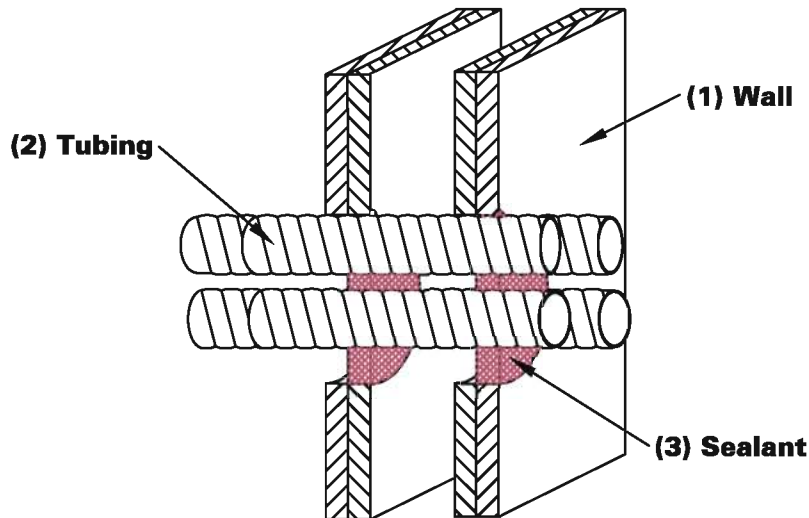
Address: _____

Signature: _____

GYPSUM WALL FLEXIBLE METALLIC TUBING

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm).
2. **FLEXIBLE METALLIC TUBING** - Max. (4) nominal 1" (25mm) diameter, (or smaller), aluminum flexible metal tubing. Annular space between tubing is 0" (point of contact) to 1/4" (6mm). Annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to max. 1-1/2" (38mm).
3. **NELSON LBS3 SEALANT** - Apply min. 5/8" (16mm) thickness of sealant within the annulus, flush with both surfaces of wall. At areas of point of contact, a min. 3/8" (10mm) the diameter bead of sealant shall be applied at the gypsum wallboard/through penetrant interface on both surfaces of wall. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0593 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

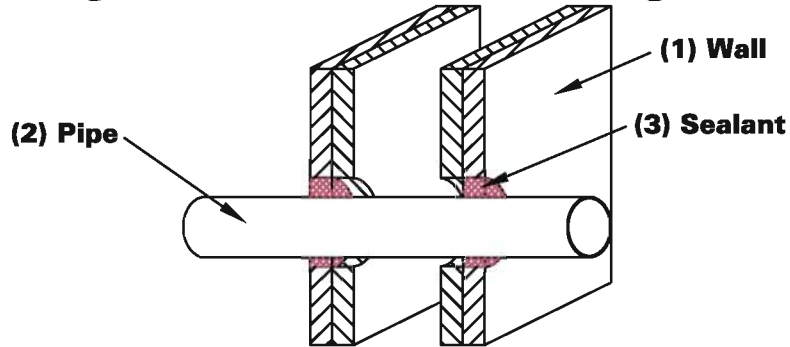
Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 or 1 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm).
2. NONMETALLIC PIPE or TUBING - The following types and sizes of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 1-1/2" (38mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (E) ELECTRICAL NONMETALLIC TUBING (ENT) - Nom 1-1/2" (38mm) diameter (or smaller) PVC tubing.
 - (F) CROSS LINKED POLYETHYLENE (PEX) TUBING - Nom 1-1/2" (38mm) diameter (or smaller) SDR 9 cross linked polyethylene (PEX) tubing for use in closed (process or supply) piping systems.

Type of Through Penetrant	F Rating (Hr.)	T Rating (Hr.)	Annular Space (Min..Max.) In. (mm)
PVC Pipe, CPVC Pipe or PVC Conduit	2	1	5/8", 1" (16, 25)
PVC ENT	2	1	3/8", 1-1/8" (10, 29)
ABS Pipe or PEX Tubing	2	0	3/8", 1-1/8" (10, 29)
PVC Pipe, CPVC Pipe or PVC Conduit	1	0	5/8", 1" (16, 25)
PVC ENT, ABS Pipe or PEX Tubing	1	0	3/8", 1-1/8" (10, 29)

3. NELSON LBS3 SEALANT - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, flush with both surfaces of wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-2381**

Nelson Firestop

DWG NO. FS-0594 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

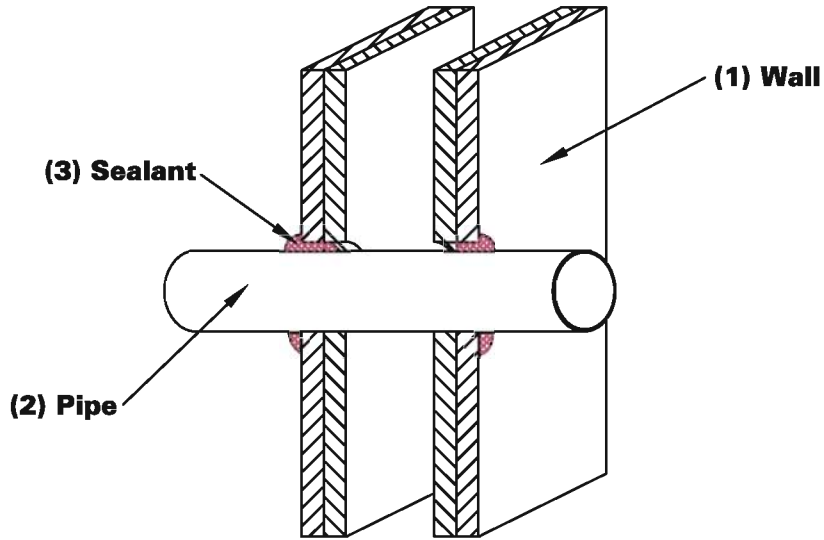
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL GLASS PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of opening is 6" (152mm).
2. **GLASS PIPE** - Max. 4" (102mm) nominal diameter glass pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems. The annular space between pipe and periphery of opening shall be min. 0" (point of contact) to max. 1-3/8" (35mm).
3. **NELSON LBS3 SEALANT** - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, with an additional 1/4" (6mm) bead around the pipe, on the surface of the wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0595 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

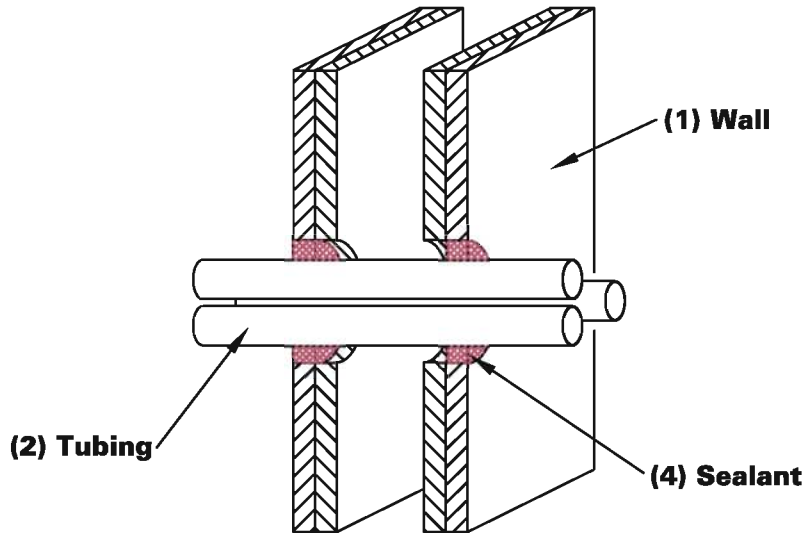
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC TUBING

F Rating 1 or 2 Hr. T Rating 1 or 1-1/2 Hr.



- 1. WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 4" (102mm).
- 2. NONMETALLIC TUBING** - Nominal 1" (25mm) diameter, or smaller, Cross-linked Polyethylene SDR9 (PEX) tubing. For use in closed (process or supply) systems. A max. of three tubes to be bundled together and installed eccentrically or concentrically within the firestop system. Of the three tubes, a max. of one shall have a nom diameter greater than 3/4" (19mm). The annular space between the tubing and the periphery of the opening shall be min. 5/8" (16mm) to max. 1-1/4" (32mm). Separation between the tubing shall be a min. 0" (point of contact) to max. 3/8" (10mm).
- 3. FORMING MATERIAL** (not shown) (optional) - Install backer rod into the annular space to control the sealant depth in 2 Hr. fire-rated wall assemblies. Recess the backer rod 5/8" (16mm) from both surfaces of the wall.
- 4. NELSON LBS3 SEALANT** - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) depth, flush with both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-2383

Nelson Firestop

DWG NO. FS-0596 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

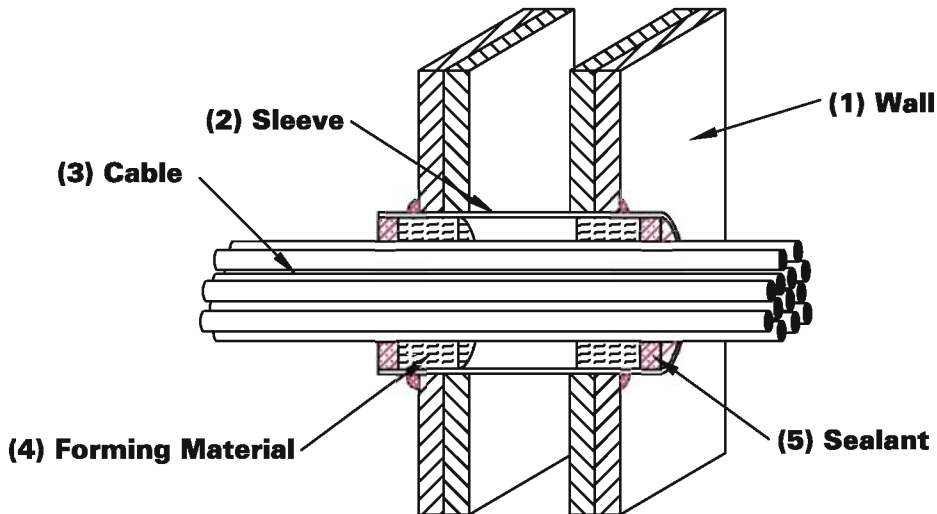
Address: _____

Signature: _____

GYPSUM WALL SLEEVED CABLES

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 4-1/2" (114mm).
2. METALLIC SLEEVE - Max. nominal 4" (102mm) diameter or smaller, Sch. 40 steel sleeve friction fitted into wall opening. Sleeve will extend a nominal 2" (51mm) beyond each surface of the wall.
3. CABLES - Max. 25% fill of 25pr #24awg or smaller polyvinyl chloride (PVC) insulated and jacketed telephone cable.
4. FORMING MATERIAL - Min. 2" (51mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation tightly packed into opening. Forming material to be forced into interstices of cable group to max. extent possible. Forming material to be recessed 1" (25mm) from both wall surfaces.
5. NELSON LBS3 SEALANT - Min. 1" (25mm) thickness of sealant applied within the annulus, flush with ends of sleeve. Sealant to be forced into interstices of cable group to max. extent possible. A min. 1/2" (13mm) thick bead shall be applied at the steel sleeve/gypsum wallboard interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3239

Nelson Firestop

DWG NO. FS-0597 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

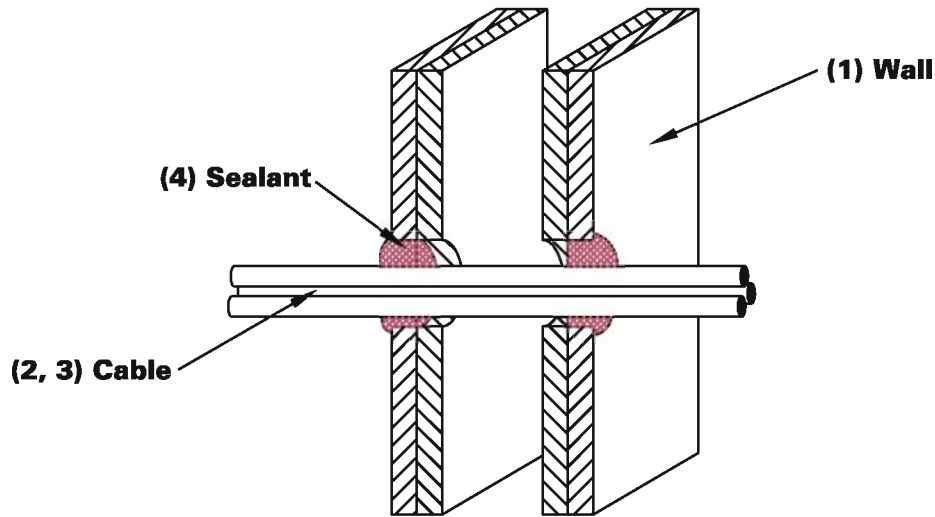
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 0 or 1/2 Hr.



1. **WALL ASSEMBLY**- Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 4" (102mm).
2. **CABLE** - Max. 3/C #2/0awg aluminum conductor service entrance cable with PVC insulation and jacket materials. The annular space between the cable and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1-1/2" (38mm). Max. one cable to be installed concentrically or eccentrically within the opening.
3. **ARMORED or METAL CLAD CABLES** - Max. 3/C #2awg aluminum ARMORED cable or METAL CLAD cable with copper conductors. Max. two lengths to be installed concentrically or eccentrically within the opening in addition to the service entrance cable. The annular space between the cable and the ARMORED or METAL CLAD cables shall be a min. 1/8" (3mm) to a max. 1/2" (13mm). The annular space between the ARMORED or METAL CLAD cables and the periphery of the opening shall be a min. 1/8" (3mm) to a max. 1-1/2" (38mm).
4. **NELSON LBS3 SEALANT** - Min. 5/8" (16mm) depth of sealant applied within annulus, flush with both surfaces of wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 1/4" (6mm) thick crown is formed around the cable bundle on both sides of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3240

Nelson Firestop

DWG NO. FS-0598 R1

DATE: 07/21/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

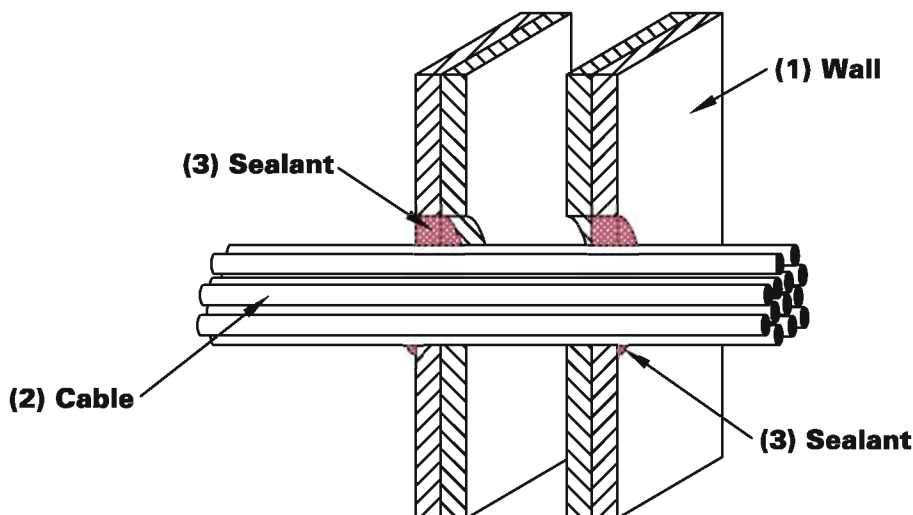
Address: _____

Signature: _____

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 0 or 1/2 Hr.



1. **WALL ASSEMBLY**- Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 5" (127mm).
2. **CABLES** - Max. 40% cable fill of opening in any combination of:
 - (A) max. 1/C-350 kcmil copper conductor cable with a cross-linked polyethylene (XLPE) jacket.
 - (B) max. 3/C #2/0awg aluminum conductor service entrance cable (SER) with polyvinyl chloride (PVC) insulation and jacket.
 - (C) max. 3/C #12awg copper conductor nonmetallic sheathed (ROMEX) cable with PVC insulation and jacket.
 - (D) max. 24 fiber 62.5/125 uM fiber optic cable with PVC insulation and jacket.

The annular space between the cable bundle and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1" (25mm).
3. **NELSON LBS3 SEALANT** - Apply within the annulus to a min. 5/8" (16mm) depth, flush with both surfaces of wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed around the cable bundle on both sides of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-3241

Nelson Firestop

DWG NO. FS-0599 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

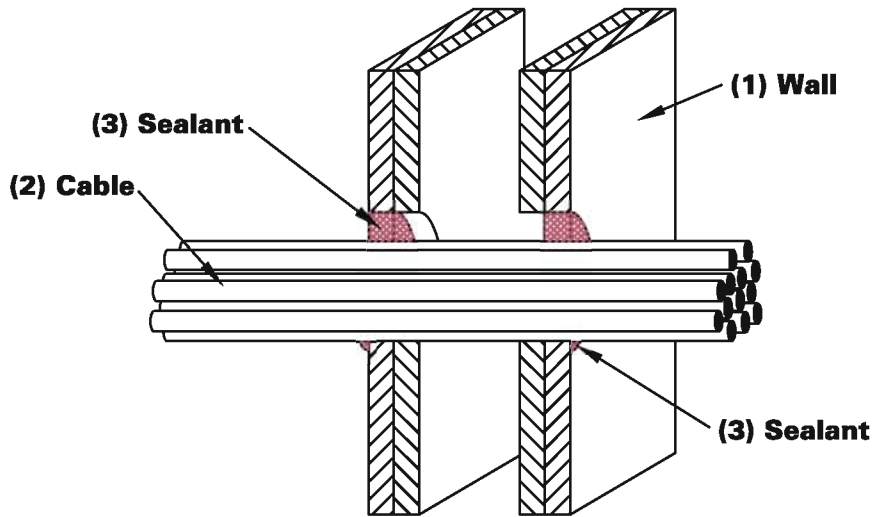
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY**- Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 4" (102mm).
2. **CABLES** - Max. 41% cable fill of opening in any combination of:
 - (A) max. 2/C #12awg copper conductor cable (12-2 ROMEX)
 - (B) max. RG/6 #18awg Type CATV copper conductor coaxial cable
 - (C) max. 1/C-350 kcmil cable
 - (D) max. 400pr #24awg copper telephone cables
 All with polyvinyl chloride (PVC) insulation and jacket
 - (E) max. 1/C 350 kcmil cable with cross-linked polyethylene (XLPE) insulation and jacket
 - (F) max. 4/C #2/0 aluminum or copper conductor, aluminum or steel jacketed METAL CLAD or ARMORED CLAD cable.
 The annular space between the cable bundle and the periphery of opening shall be a min. 0" (point of contact) to max. 1-1/4" (32mm).
3. **NELSON LBS3 SEALANT** - Apply within the annulus to a min. 5/8" (16mm) depth, flush with both surfaces of wall. Sealant to be forced into interstices between the cables, prior to securing the bundle together, at both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed, at the point of contact of cable bundle and wall, on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-3242**

Nelson Firestop

DWG NO. FS-0600 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

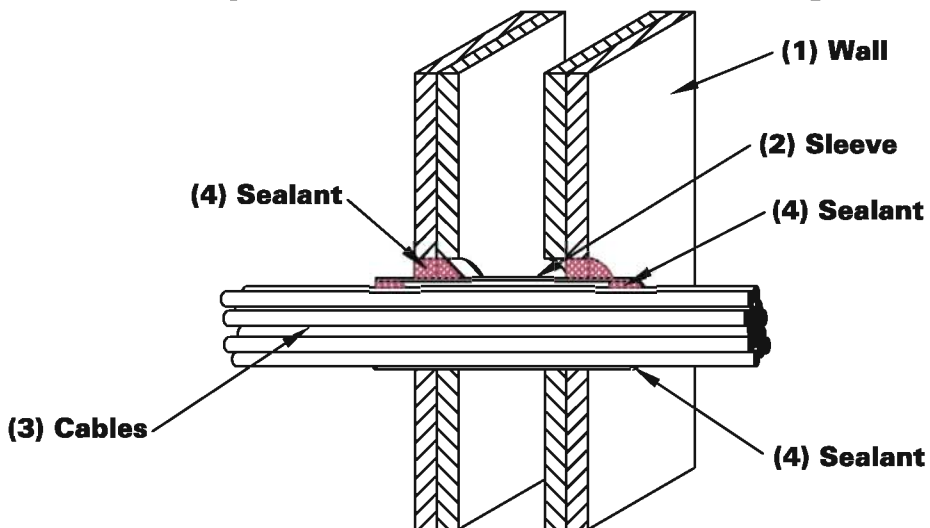
Installer: _____
Address: _____

Signature: _____

GYPHUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 1/4 or 1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as showing the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
2. METALLIC SLEEVE - Nom 4" (102mm) diameter or smaller steel, iron, or EMT sleeve with 0.083 in. (2mm) wall thickness, fitted into wall opening with a max. annular space of 1/2" (13mm) between the edge of the wall opening. Sleeve to project 1" (25mm) beyond each surface of the wall.
3. CABLES - Nominal 55.6% of cable fill of opening in any combination of:
 - (A) max. 4/C #12awg cable.
 - (B) max. #18awg RG6/U coaxial cable.
 - (C) max. 62.5/125 micron, Type OFNR, fibre optic cables.
 - All with PVC insulation and jacket.
 - (D) max. Type RG59/U coaxial cables with polyethylene (PE) insulation and PVC jacket.
 - (E) max. 1/C #350 MCM cable with (XLPE) insulation and jacket.

The annular space between cable bundle and edge of metallic sleeve shall be a min. 0" (point of contact) to max. 1/8" (3mm).
4. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus, between sleeve and wall opening, flush with wall surfaces. Min. 1/2" (13mm) thickness of sealant applied within the annulus between cable bundle and sleeve, flush with ends of sleeve. Sealant to be forced into interstices of cable group to seal any voids on both surfaces of wall. A min. 3/8" (10mm) bead of sealant shall be applied at the point contact locations of the sleeve with wall and cable bundle with sleeve on both sides of the wall assembly.

Tested in accordance with:
 ASTM E-814
 ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0601 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

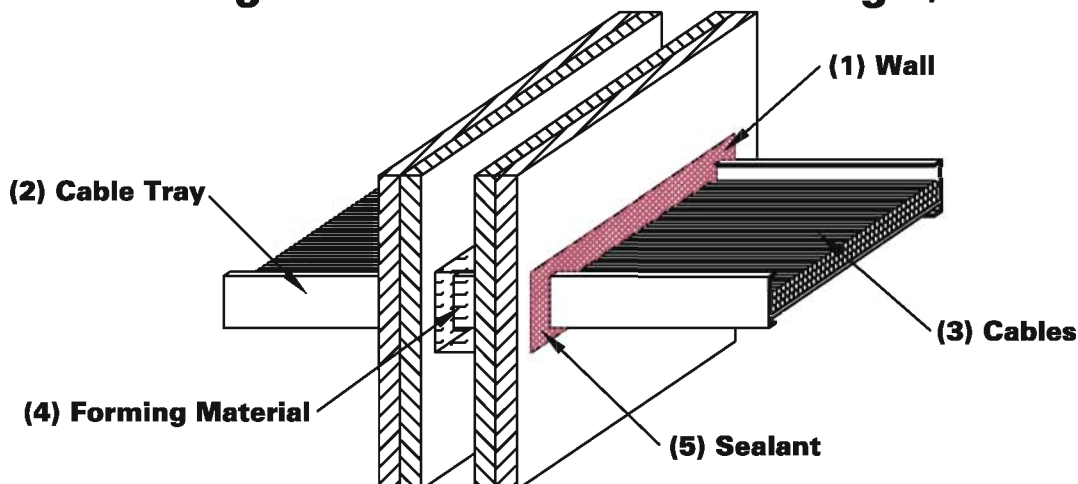
**800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL CABLE TRAY

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as showing the UL Fire Resistance Directory. The max. area of opening is 87 or 136.5 sq. in. (561 sq. cm or 881 sq. cm) with a max. dimension of 14-1/2" (368mm) or 22-3/4" (578mm), if the cable tray is installed in a wood or steel stud/gypsum wallboard assembly, respectively.
2. CABLE TRAY - Max. 18" (457mm) wide x 5" (127mm) deep aluminum open ladder type cable tray. The annular space between the cable tray and periphery of the opening shall be min. 3/8" (10mm) to max. 1-9/16" (40mm). The max. width of the cable tray is 12" (305mm) or 18" (457mm), if the cable tray is installed in a wood or steel stud/gypsum wallboard assembly, respectively.
3. CABLES - Max. 20% cable fill of opening in any combination of:
 - (A) max. 1/C - 350 kcmil cable w/cross linked polyethylene (XLPE) jacket.
 - (B) max. 3/C #2awg cable w/XLPE insulation and polyvinyl chloride (PVC) jacket.
 - (C) max. 7/C #12awg cable w/PVC insulation and jacket.
 - (D) max. 2/C #16awg cable w/PVC insulation and jacket.
4. FORMING MATERIAL - Min. 3-7/8" (98mm) or 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation, if installed in a 1 Hr. or 2 Hr. fire rated wall assemblies, respectively. Forming material to be forced into interstices of cable group to max. extent possible. Forming material to be recessed 1/2" (13mm) from both surfaces of wall.
5. NELSON LBS3 SEALANT - Min. 1/2" (13mm) thickness of sealant applied within the annulus on both surfaces of wall. Sealant to be forced into interstices of cable group to max. extent possible. Additional sealant to be installed such that a min. 1/2" (13mm) thick crown is formed around the penetrating item and lapping a min. 1/2" (13mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-4045**

Nelson Firestop

DWG NO. FS-0602 R1

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

DATE: 07/20/06

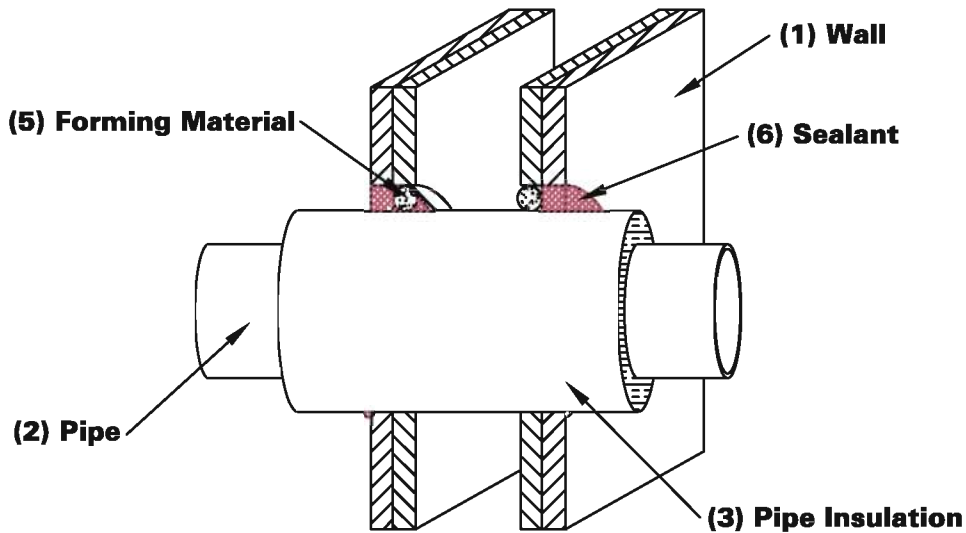
BY: RL

MEA # 126-04-M

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 13" (330mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 1-1/2" (38mm) thick (or thinner) CALCIUM SILICATE pipe insulation. The annular space between insulated through penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. INSULATION JACKET (not shown) - Min. 12" (305mm) long jacket formed of min. 0.010" (.25) thick aluminum sheet cut to wrap tightly around the pipe insulation with a min. 2" (51mm) lap and secured using 1/2" (13mm) wide x 0.028" (.71mm) thick stainless steel hose clamps.
5. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
6. NELSON LBS3 SEALANT - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant shall be applied to the wall/pipe covering interface on both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-5211**

Nelson Firestop

DWG NO. FS-0603 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

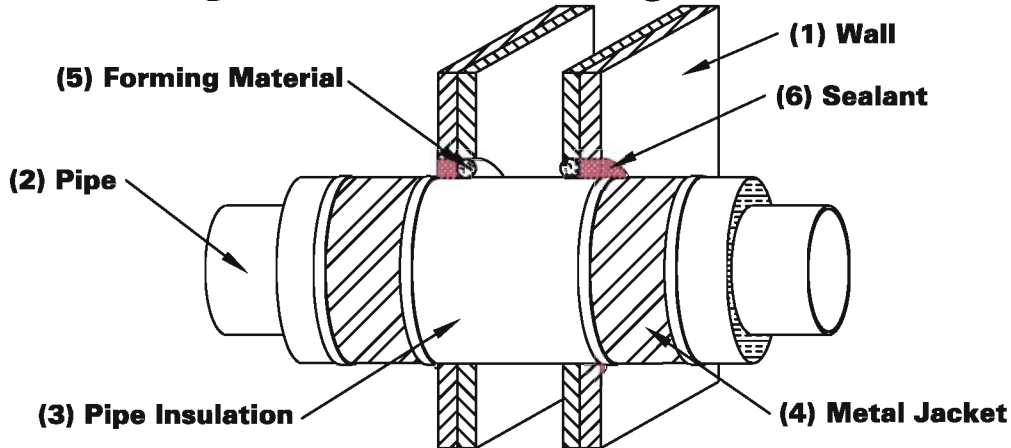
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 18" (457mm) and 14-1/2" (368mm) for steel or wood stud walls, respectively.
2. **METALLIC PIPE** - The following types of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 10" (254mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 10" (254mm) diameter (or smaller) cast or ductile iron pipe.
3. **PIPE INSULATION** - Nominal 3" (76mm) thick CELLULAR GLASS pipe insulation. The annular space between insulated through penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. **INSULATION JACKET** - Min. 12" (305mm) long jacket formed of min. 0.010" (.25mm) thick aluminum sheet cut to wrap tightly around the pipe insulation with a min. 2" (51mm) lap and secured using 1/2" (13mm) wide x (.71mm) thick stainless steel hose clamps. Jacket to be installed with edge abutting surface of sealant on each side of wall.
5. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
6. **NELSON LBS3 SEALANT** - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. After installation of the metal jacket, min. 3/8" (10mm) diameter bead of sealant shall be applied to the metal jacketing/sealant interface on both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-5212

Nelson Firestop

DWG NO. FS-0604 R1

DATE: 07/13/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

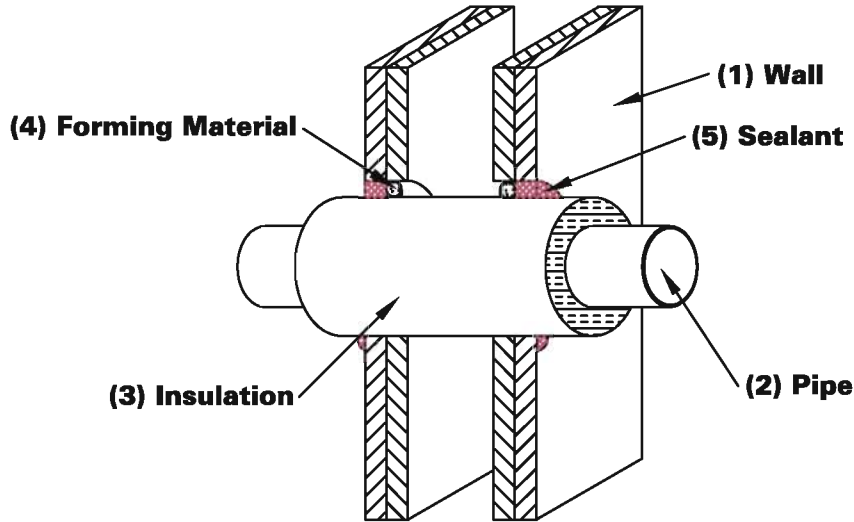
Installer: _____

Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 1 or 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of the opening is 12" (305mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) or 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between the insulated through penetrant and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1-3/8" (35mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. NELSON LBS3/ES1399 SEALANT - Apply sealant within the annular space to a min. 5/8" (16mm) depth. At areas of point of contact, apply a min. 3/8" (10mm) bead at the interface between the gypsum/insulated through penetrant on both surfaces of the wall. Max. pipe diameter to be used with LBS3 is 4" (102mm) and the T rating is 1-1/2 Hr. Max. pipe diameter to be used with ES1399 is 6" (152mm) and T rating is 1 Hr.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-5213**

Nelson Firestop

DWG NO. FS-0605 R1

DATE: 07/14/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

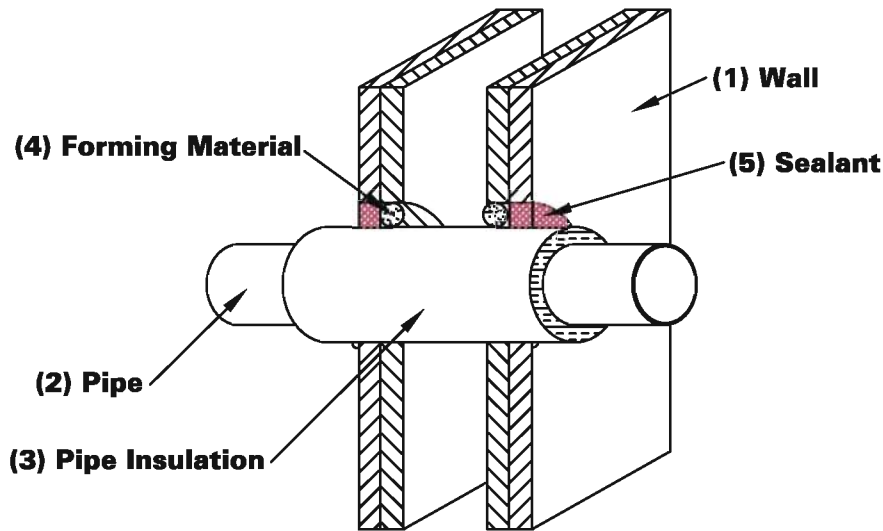
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of the opening is 7" (178mm).
2. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nom 3/4" (19mm) thick (or thinner) AB/PVC (ARMAFLEX) pipe insulation. Annular space between the insulated through penetrant and the periphery of the opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm).
4. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of the wall.
5. NELSON LBS3 SEALANT - Apply sealant to fill the annular space to a nom 5/8" (16mm) depth on both sides of the wall. At areas of point of contact, apply a min. 3/8" (10mm) diameter bead of sealant at the gypsum wallboard/insulated through gypsum penetrant interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-5214**

Nelson Firestop

DWG NO. FS-0606 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

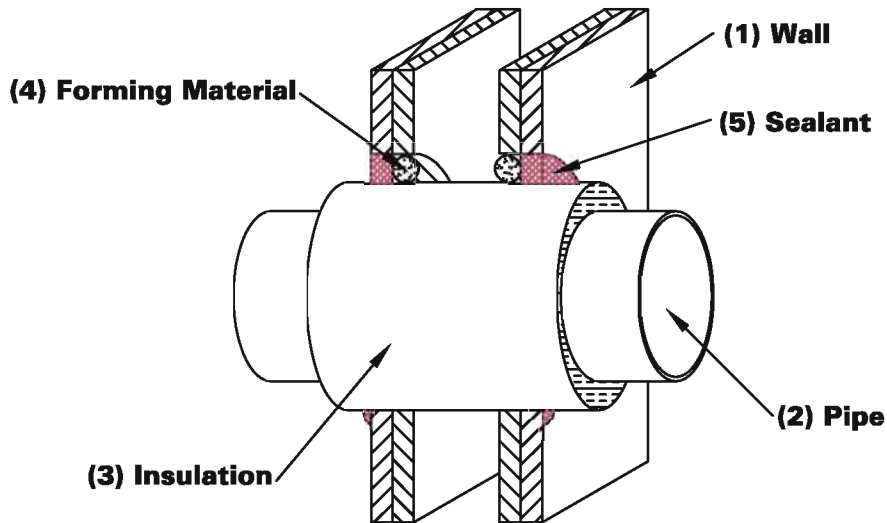
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of the opening is 14-1/2" (368mm) or 18-5/16" (465mm) in wood or steel stud walls. The inside diameter of the opening shall be min. 1" (25mm) larger than the outside diameter of insulation.
2. **METALLIC PIPE** - The following types of metallic pipes may be used:
 - (A) **STEEL PIPE** - Nom 12" (305mm) diameter (or smaller) Sch. 30 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
3. **PIPE INSULATION** - Nominal 2" (51mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between the insulated through penetrant and the periphery of the opening shall be a min. 0" (point of contact) to a max. 1-9/16" (40mm).
4. **FORMING MATERIAL** - Used to prevent the leakage of sealant during installation in 2 Hr. fire-rated assemblies. Install backer rod into the opening and recess 5/8" (16mm) from both surfaces of wall.
5. **NELSON LBS3 SEALANT** - Apply sealant over the forming material to fill the annular space to a min. 5/8" (16mm) depth. At areas of point of contact, a min. (10mm) diameter bead of sealant shall be applied at the gypsum board/insulated through penetrant interface on both surfaces of wall.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
W-L-5215**

Nelson Firestop

DWG NO. FS-0607 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

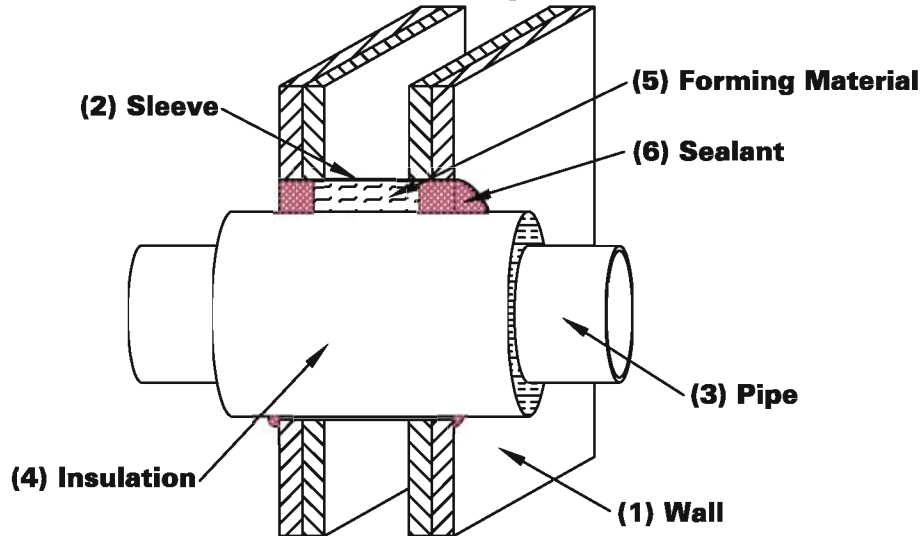
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. diameter of opening is 14" (356mm).
2. **METALLIC SLEEVE** - Cylindrical sleeve fabricated from min. 0.018" (.46mm) thick 28 GA galv sheet steel and having a min 1" (25mm) lap along the longitudinal seam. The inside diameter of sleeve shall be a min. 1" (25mm) larger than the outside diameter of pipe covering.
3. **METALLIC PIPE or CONDUIT** - The following types and sizes of metallic pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
 - (D) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit.
4. **PIPE INSULATION** - Nominal 3" (76mm) thick (or thinner) FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between the insulated through penetrant and the metallic sleeve shall be a min. 0" (point of contact) to a max. 1-7/8" (48mm).
5. **FORMING MATERIAL** - Tightly pack 3" (76mm) or 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recess 1" (25mm) from both surfaces of the 1 Hr or 2 Hr. wall, respectively.
6. **NELSON LBS3 SEALANT** - Apply sealant over the forming material to a min. 1" (25mm) depth, flush with both surfaces of the wall. At areas of point of contact, apply a 3/8" (10mm) bead of sealant shall be applied to the wall/sleeve/insulation interface on both surfaces of the wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-5216**

Nelson Firestop

DWG NO. FS-0608 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

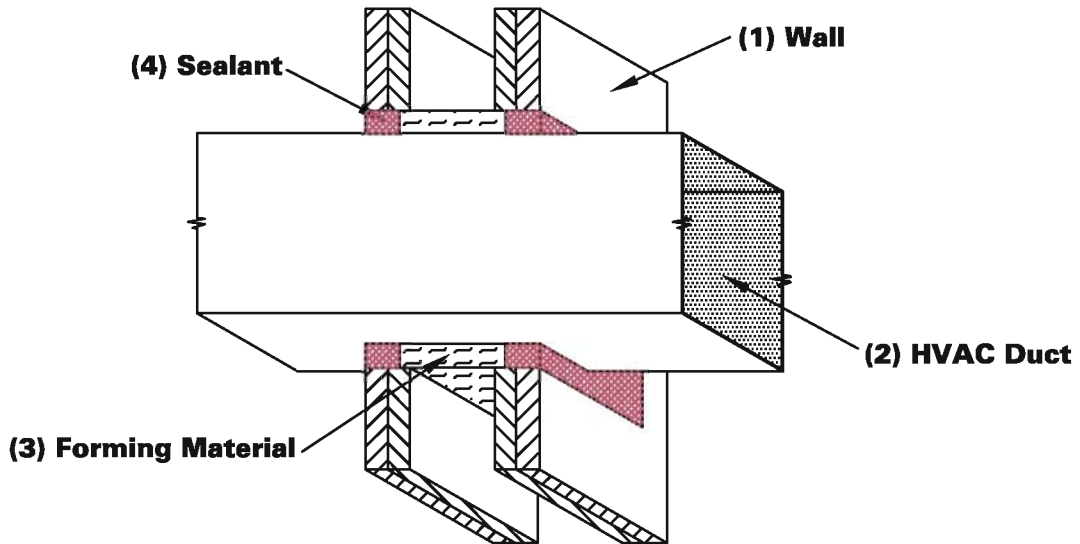
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL HVAC DUCT

F Rating 1 or 2 Hr.

T Rating 1 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. area of opening is 196 sq. in. (1265 sq. cm), with a max. dimension of 14" (356mm).
2. STEEL HVAC DUCT - 12" x 12" (305mm x 305mm), or smaller, No. 24 gauge, (or heavier), steel duct installed concentrically within the opening. The duct is to be rigidly supported on both sides of the wall. A nom 1" (25mm) annular space is required within the firestop system.
3. FORMING MATERIAL - In 1 or 2 Hr. fire rated assemblies, min. 3-7/8" (98mm) or 3-1/2" (89mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into opening, respectively. Forming material to be recessed from both surfaces of wall as required to accomodate the required thickness of sealant.
4. NELSON LBS3 SEALANT - In 1 or 2 Hr. fire rated assemblies, min. 1/2" (13mm) or 3/4" (19mm) thickness of sealant applied within the annulus, on both surfaces of wall, respectively. Additional sealant to be installed such that a min. 1/2" (13mm) or 1/4" (6mm) thick crown is formed around the penetrating item and lapping a min. 1/4" (6mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-7104

Nelson Firestop

DWG NO. FS-0609 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

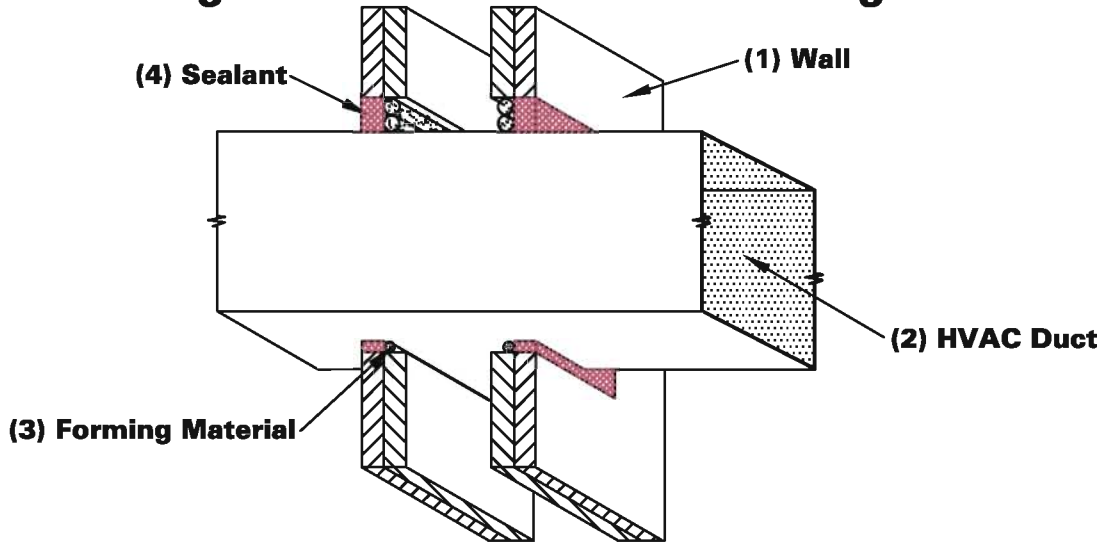
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL HVAC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of opening is 989 sq. in. (6381 sq. cm) with max. dimensions of 43" (1092mm).
2. RECTANGULAR STEEL HVAC DUCT - 40 x 20" (1016mm x 508mm) (or smaller), No. 24 gauge (or heavier) steel duct installed concentrically or eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall. The space between the steel duct and periphery of opening shall be min. 3/4" (19mm) to max. 2-1/4" (57mm). During the installation of the steel duct, internal support members consisting of nom 1/2" (13mm) diameter threaded steel shall be installed within the center of the steel duct on both sides of wall assembly. In addition to the threaded steel rod, external supports consisting of min. 1-1/2" x 1-1/2" x 3/16" (38mm x 38mm x 5mm) thick steel angles to be installed around the outer perimeter of the steel duct and secured to the steel duct by means of No. 10 x 3/4" (19mm) long steel sheet metal screws spaced a max. 8" (203mm) OC. Steel angles to be installed on both sides of wall.
3. FORMING MATERIAL (2 Hr. walls) - Install backer rod, mineral wool, or fiberglass batt insulation into the opening and recess 5/8" (16mm) from both surfaces of the wall.
4. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus, flush with both surfaces of wall.
5. METAL FRAME (not shown) - Min. 16 GA galv steel angles sized to lap steel duct a min. of 2" and lap wall surfaces a min. 1" (25mm). Angles attached to steel duct on both sides of wall with min. #10 x 1/2" (13mm) long steel sheet metal screws spaced a max. of 1" (25mm) from each end of steel duct and spaced a max. 6" (152mm) OC.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
W-L-7105**

Nelson Firestop

DWG NO. FS-0610 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

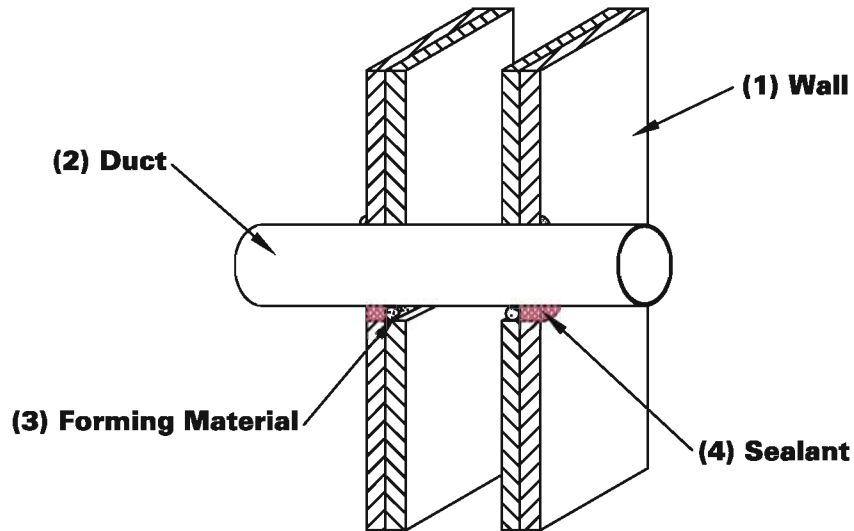
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL METALLIC DUCT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
2. METALLIC DUCT - Max. nominal 4" (102mm) diameter, or smaller, No. 30 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly. The annular space between duct and periphery of opening shall be min. 0" (point of contact) to max. 7/8" (22mm).
3. FORMING MATERIAL - Used to prevent the leakage of sealant during installation in 2 hr. fire-rated assemblies. Install backer rod within the annular space, and recess 5/8" (16mm) from both surfaces of wall.
4. NELSON LBS3 SEALANT - Apply to fill the annular space around the duct to a min. 5/8" depth. At areas of point of contact, apply a 3/8" (10mm) diameter bead of sealant at the gypsum wallboard/through penetrant interface on both surfaces of wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-7106

Nelson Firestop

DWG NO. FS-0611 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____

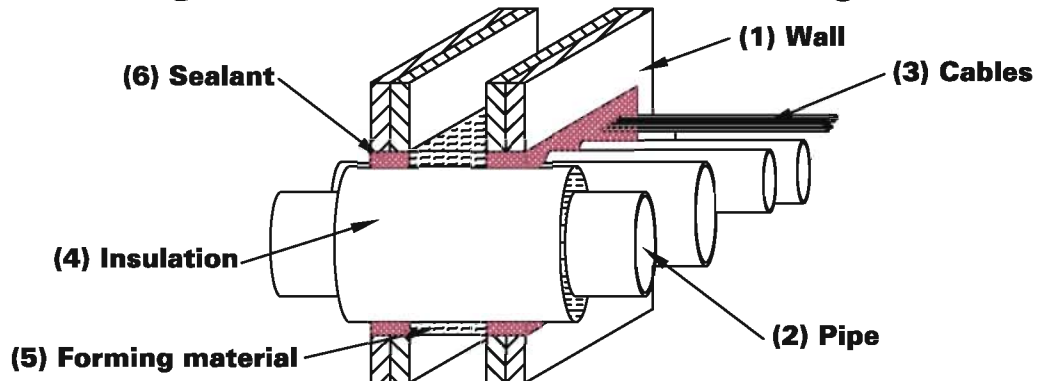
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. The max. area of the opening is 87 (561 sq. cm) or 136.5 sq. in. (881 sq. cm) (with max. dimension of 14-1/2" (368mm) or 22-3/4" (578mm), if the through penetrants are installed in a wood or steel stud/gypsum board assembly, respectively.
2. PIPES - Max. (4) pipes, conduits or tubing to be installed within the opening. The following types and sizes of pipes, conduits or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) CONDUIT - Nom 2" (51mm) diameter (or smaller) steel electrical metallic tubing or steel conduit.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
 - (E) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC pipe for use in closed (process or supply) piping systems.

The space between penetrants shall be a nom 1-7/16" (37mm). The space between penetrants and periphery of opening shall be min. 7/8" (22mm) to max. 2" (51mm). Of the (4) penetrants, only (1) may be greater than 2" diameter.
3. CABLES - Six (6) 25pr #24awg telephone cables with PVC insulation and jacket. Cables to be spaced 1-7/16" (37mm) from penetrants and 1-7/16" (37mm) to 2-5/8" (67mm) from periphery of opening.
4. PIPE INSULATION - Nominal 1" (25mm) thick (or thinner) AB/PVC (ARMAFLEX) flexible foam pipe insulation, or max. 3/4" (19mm) thick or thinner MINERAL FIBER pipe insulation. The insulation may be installed on one metallic penetrant having a diameter of 2" (51mm) or less. Spacing between penetrants and insulated penetrant is 1-7/16" (37mm) and space between insulated penetrant and periphery of opening is 7/8" (22mm).
5. FORMING MATERIAL - In 1 Hr. or 2 Hr. wall assemblies, min. 2-3/8" (60mm) or 2-1/2" (64mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation, respectively. Forming material to be tightly packed and recessed from both wall surfaces 1-1/4" (32mm).
6. NELSON LBS3 SEALANT - Apply sealant over the forming material to fill the annular space to a min. 1-1/4" (32mm) depth, flush with both surfaces of wall. Sealant to be forced into interstices of cable group to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-8051**

Nelson Firestop

DWG NO. FS-0612 R1

DATE: 07/20/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

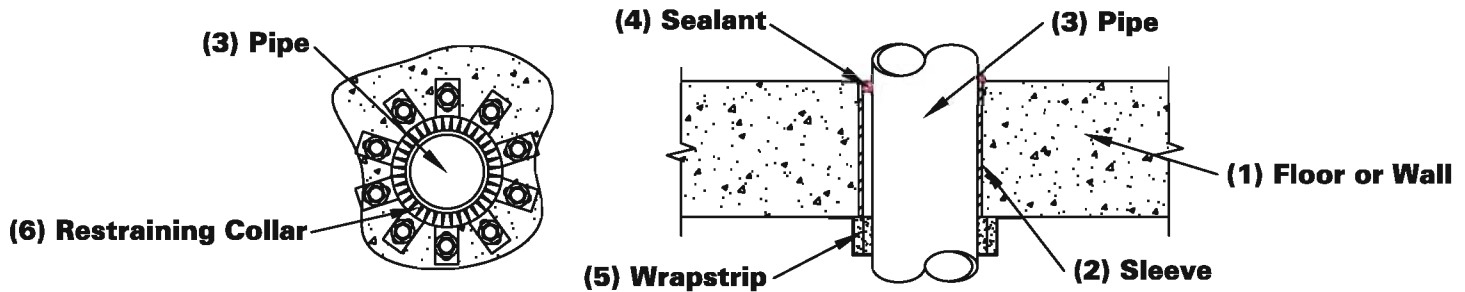
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr. T Rating 3/4, 1, 1-1/2, or 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) or 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 5-1/4" (133mm).
2. METALLIC SLEEVE (optional) - Nom 5" (127mm) diameter, or smaller, Sch. 10 (or heavier) steel sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall.
3. NONMETALLIC PIPE - Max. 4" (102mm) diameter, or smaller, Sch. 40 PVC, ABS, RNC, or FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Max. 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed piping systems.
4. NELSON LBS3 SEALANT - Min. 1/4" (6mm) thickness of sealant applied within applied within the annulus, flush with top surface of floor or with both surfaces of wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on top surface of floor or on both surfaces of wall.
5. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1/4" (6mm) thick by 1" (25mm) wide Nelson wrapstrip around the through penetrant. The wrapstrips are installed on the bottom side of the floor or on each side of the wall.

Min. Concrete Floor or Wall Thickness, in. (mm)	Nom Pipe Diam, in. (mm)	Pipe Type	Annular Space in. (mm)	Min. No. of Wrapstrip Layers	F Rating Hr	T Rating Hr
2-1/2 (64)	3 & 4 (76 & 102)	ABS	0 to 5/8 (16)	2	2	1
2-1/2 (64)	1-1/2 & 2 (38 & 51)	ABS	0 to 5/8 (16)	1	2	1
2-1/2 (64)	3 & 4 (76 & 102)	FRPP	0 to 5/8 (16)	2	2	3/4
2-1/2 (64)	1-1/2 & 2 (38 & 51)	FRPP	0 to 5/8 (16)	1	2	3/4
4-1/2 (114)	4 (102)	ABS	0 to 3/4 (19)	3	2	1-1/2
4-1/2 (114)	3 (76mm)	ABS	0 to 3/4 (19)	2	2	1-1/2
4-1/2 (114)	1-1/2 & 2 (38 & 51)	ABS	0 to 3/4 (19)	1	2	1-1/2
4-1/2 (114)	4 (102)	PVC, CPVC, RNC	0 to 3/4 (19)	3	3	2
4-1/2 (114)	3 (76mm)	PVC, CPVC, RNC	0 to 3/4 (19)	2	3	2
4-1/2 (114)	1-1/2 & 2 (38 & 51)	PVC, CPVC, RNC	0 to 3/4 (19)	1	3	2

6. RESTRAINING COLLAR (part # AA0659D) - Apply min. 28 GA. galv. steel restraining collar around the wrapstrip. Attach the collar to the floor or wall with (6mm) diameter x 2-1/4" (57mm) long steel concrete anchors in conjunction with min. 1/4" x 1-1/4" (6mm x 32mm) diameter fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2473**

Nelson Firestop

DWG NO. FS-0614 R2

DATE: 07/20/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

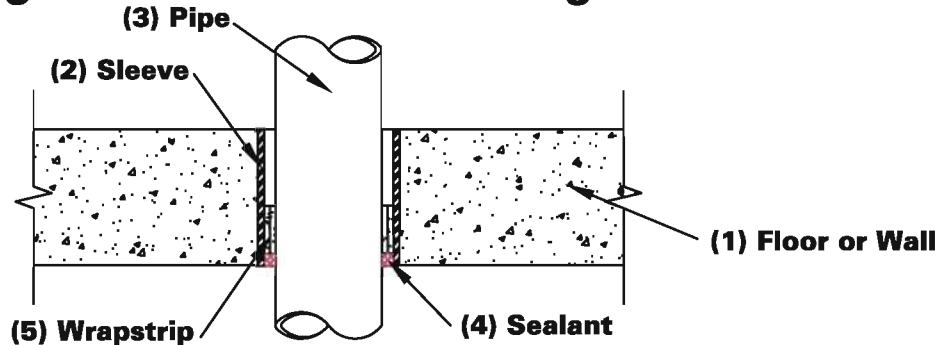
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 or 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units.
2. METALLIC SLEEVE (optional) - Nom 5" (127mm) diameter, or smaller, Sch. 10 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. NONMETALLIC PIPE - Max. 3" (76mm) diameter, (or smaller), Sch. 40 PVC, ABS or RNC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Max. 3" (76mm) diameter, (or smaller), SDR13.5 CPVC pipe for use in closed piping systems. T rating is 1 hr for 2" (51mm) diameter pipe.
4. NELSON LBS3 SEALANT - Sealant to be applied within the annulus, flush with top or bottom surface of floor, bottom surface of a HOLLOW-CORE floor or one surface of wall, as shown in table below.
5. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1/4" (6mm) by 1-1/2" (38mm) wide Nelson wrapstrip around the pipe. Wrapstrip recessed from top or bottom surface of the floor or one surface of the wall by an amount equivalent to the thickness of sealant required. Second piece is wrapped over the first piece (layered) or wrapped around the penetrant, stacked above the first piece.

Max. Opening/Sleeve Diam, in. (mm)	Pipe Type	Max. Pipe Diam. in. (mm)	Annular Space in. (mm)	Min. No. of Wrapstrip Layers	Min. Sealant Thkns, in. (mm)	Stacked/ Layered
4 (102)	ABS	3 (76)	1/4 to 5/16	2	1/4 (6)	Stacked
5 (127)	ABS	3 (76)	1/2 to 1-3/16	2	1/2 (13)	Layered
4 (102)	PVC, RNC, CPVC	2 (51)	1/4 to 1-5/8	1	1/2 (13)	-
4 (102)	PVC, RNC, CPVC	3 (76)	1/4 to 5/16	2	1/2 (13)	Stacked
3 (76)	PVC, RNC, CPVC	2 (51)	1/4 to 3/8	1	1/2 (13)	-

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2474**

Nelson Firestop

DWG NO. FS-0615 R1

DATE: 03/07/05

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

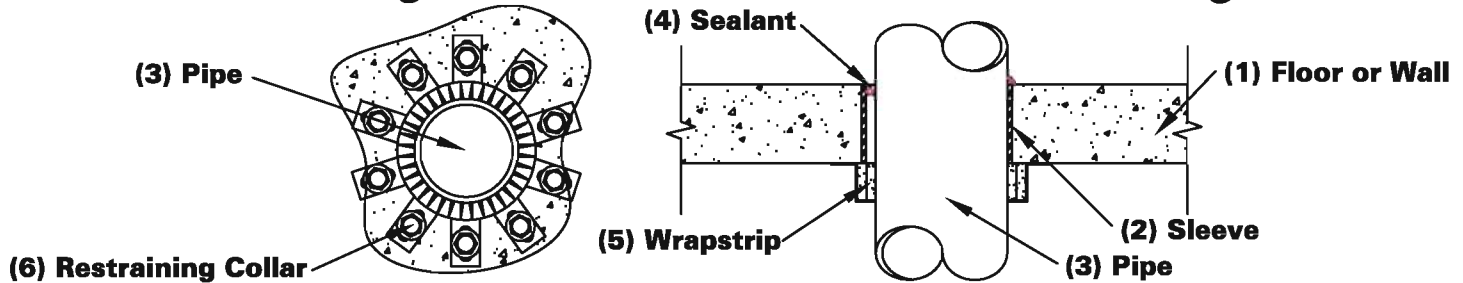
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 7" (178mm).
2. METALLIC SLEEVE (optional) - Nom 5" (127mm) diameter, or smaller, Sch. 10 or heavier steel sleeve, cast or grouted into floor or wall assembly, flush with top surface of floor or both surfaces of wall.
3. NONMETALLIC PIPE - Max. 6" (152mm) diameter, or smaller, Sch. 40 PVC or RNC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Max. 6" (152mm) diameter or smaller SDR 13.5 CPVC pipe for use in closed piping systems.
4. NELSON LBS3 SEALANT - Min. 1/4" (6mm) thickness of sealant applied within the annulus, flush with top surface of floor or with both surfaces of wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on top surface of floor or on both surfaces of wall.
5. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1/4" (6mm) thick by 1" (25mm) wide Nelson wrapstrip around the through penetrant. The wrapstrips are installed on the bottom side of the floor or on each side of the wall.

Nom Pipe Diam. in. (mm)	Min. No. of Wrapstrip Layers	Annular Space in. (mm)	Use of Sleeve
6 (152)	4	0 to 3/8 (10)	Not Permitted
5 (127)	4	0 to 3/8 (10)	Not Permitted
4 (102)	2	0 to 3/4 (19)	Permitted
3 (76)	2	0 to 3/4 (19)	Permitted
2 (51)	1	0 to 3/4 (19)	Permitted
1-1/2 (38)	1	0 to 3/4 (19)	Permitted

6. RESTRAINING COLLAR (part # AA0659D) - Apply min. 28 GA. galv. steel restraining collar around the wrapstrip. Attach the collar to the floor or wall with min. 1/4" (6mm) diameter x 2-1/4" (57mm) long steel concrete anchors in conjunction with 1/4" (6mm) x 1-1/4" (32mm) diameter fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2475**

Nelson Firestop

DWG NO. FS-0616 R2

DATE: 07/20/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

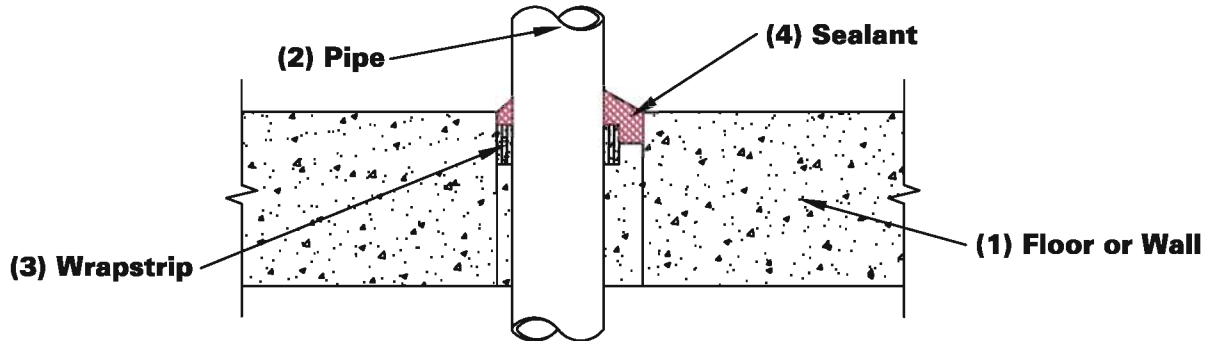
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 3/4 or 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 7" (178mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.

When PVC and CPVC pipes are used, the T rating is 3/4 Hr. When ABS pipe is used, the T rating is 2 Hr. The annular space between pipe and periphery of opening shall be min. 5/8" (16mm) to max. 1-3/4" (44mm).

3. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 3 continuous layers of 1-1/2" (38mm) wide Nelson wrapstrip around the pipe. Wrapstrip recessed 1/4" (6mm) from top surface of the floor or both surfaces of wall. When floor is constructed of HOLLOW-CORE precast concrete unit, wrapstrip shall be installed on both surfaces of floor, such that the exposed edges of the wrapstrip are recessed a max. 1/4" (6mm) from each surface of the floor.
4. NELSON LBS3 SEALANT - Apply a min. 1/2" (13mm) depth within the annular space, flush with the top surface of the floor or with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on top surface of floor or on both surfaces of wall. When floor is constructed of HOLLOW-CORE precast concrete unit, sealant to be installed symmetrically on both sides of floor, flush with floor surfaces. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the through penetrant on both surfaces of precast concrete unit.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2476**

Nelson Firestop

DWG NO. FS-0617 R1

DATE: 07/20/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

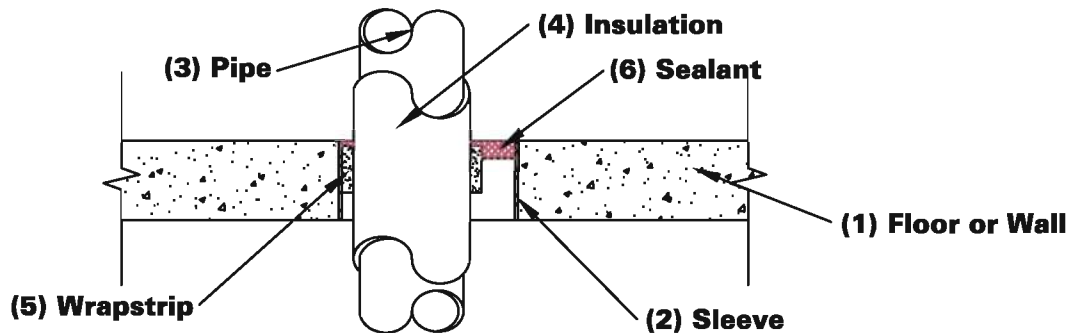
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 1-1/2 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 10-5/8" (270mm) and 7" (178mm), when HOLLOW-CORE precast concrete units are used.
2. METALLIC SLEEVE (optional) - Nom 10" (254mm) diameter (or smaller) Sch. 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. METALLIC PIPE - The following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 4" (102mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. PIPE INSULATION - Nominal 2" (51mm) thick (or thinner) FIBERGLASS pipe insulation. The annular space between the insulated penetrant and the periphery of opening shall be a min. 1/4" (6mm) to a max. 2" (51mm).
5. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1 continuous layer of 1/4" (6mm) thick by 1-1/2" (38mm) wide Nelson wrapstrip around the pipe. Wrapstrip recessed 1/4" (6mm) from the top surface of the floor or both surfaces of wall. When floor is constructed of HOLLOW-CORE precast concrete unit, wrapstrip shall be installed on both surfaces of floor, such that the exposed edges of the wrapstrip are recessed a max. 1/4" (6mm) from each side of the floor.
6. NELSON LBS3 SEALANT - Apply a min. 1/2" (13mm) depth within the annular space, flush with the top surface of the floor or with both surfaces of the wall. In floors constructed of HOLLOW-CORE precast concrete units, sealant shall be installed symmetrically on both surfaces of floor.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5268**

Nelson Firestop

DWG NO. FS-0618 R1

DATE: 07/20/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

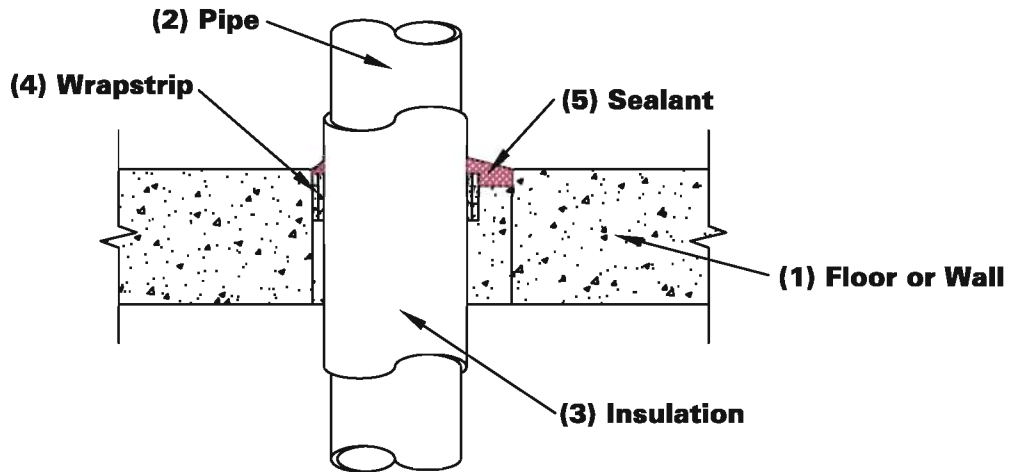
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr.

T Rating 1 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Max. diameter of opening is 10" (254mm).
2. METALLIC PIPE - The following types of pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 6" (152mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 6" (152mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nominal 1" (25mm) thick or thinner AB/PVC (ARMAFLEX) pipe insulation. The annular space between the insulated penetrant and the periphery of opening shall be a min. 1/2" (13mm) to a max. 1-3/8" (35mm).
4. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 2 continuous layers of 1/4" (6mm) thick by 1-1/2" (38mm) wide Nelson wrapstrip around the pipe. Wrapstrip recessed 2-3/4" (70mm) from the bottom surface of the floor. In walls, the wrapstrip shall be installed on both surfaces of the wall such that the exposed edge of the wrapstrip is recessed a nom 1/4" (6mm) from each side of the wall.
5. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth within the annular space, flush with the top surface of the floor or with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrant on top surface of floor or both surfaces of wall. In floors, bottom edge of sealant shall be recessed a nom 1/2" (13mm) below the top edge of wrapstrip.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5269**

Nelson Firestop

DWG NO. FS-0619 R1

DATE: 07/20/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

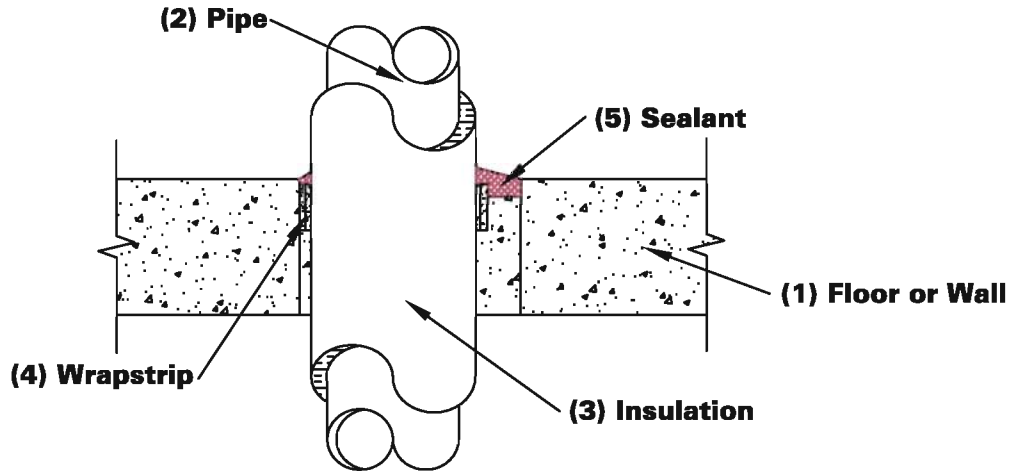
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr.

T Rating 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Max. diameter of opening is 14" (356mm).
2. METALLIC PIPE - The following types of pipes may be used:
 - (A) STEEL PIPE - Nom 8" (203mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 8" (203mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nominal 2" (51mm) thick or thinner FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between the penetrant and the periphery of opening shall be a min. 1/2" (13mm) to a max. 7/8" (22mm).
4. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 2 continuous layers of 1/4" (6mm) thick by 1-1/2" (38mm) wide Nelson wrapstrip around the pipe. Wrapstrip recessed 2-3/4" (70mm) from the bottom surface of the floor. In walls, the wrapstrip shall be installed on both surfaces of the wall such that the exposed edge of the wrapstrip is recessed a nom 1/4" (6mm) from each side of the wall.
5. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth within the annular space, flush with the top surface of the floor or with both surfaces of the wall. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrant on top surface of floor or both surfaces of wall. In floors, bottom edge of sealant shall be recessed a nom 1/2" (13mm) below the top edge of wrapstrip.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
C-AJ-5270

Nelson Firestop

DWG NO. FS-0620 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

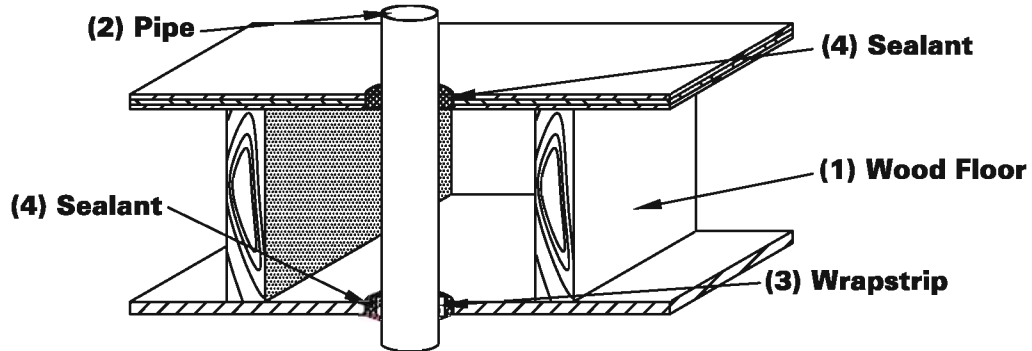
Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WOOD FLOOR ASSEMBLY - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Nom 10" (254mm) deep lumber, steel or combination lumber and steel joists, trusses may be used in 1 Hr. fire-rated floor-ceiling assemblies. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire Resistance Directory. Max. diameter of opening is 3" (76mm).

(A) FLOORING SYSTEM - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.

(B) FURRING CHANNELS (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..

(C) GYPSUM BOARD - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.

2. NONMETALLIC PIPE or CONDUIT - The following types of nonmetallic pipes or conduits may be used:

(A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 solid core PVC pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.

(B) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.

(C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.

(D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 solid core ABS pipe for use in closed (process or supply) or vented (waste, drain or vent) piping systems.

Diameter of opening through flooring system and through gypsum wallboard ceiling to be nom 5/8" (16mm) larger than the outside diameter of pipe.

3. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1 continuous layer of 1/4" (6mm) thick by 1" (25mm) wide Nelson wrapstrip around the pipe as its egress from bottom surface of the ceiling. The bottom edge of the wrapstrip shall extend 1/4" (6mm) below the ceiling.

4. NELSON LBS3 SEALANT - Min. 3/4" (19mm) thickness of sealant applied within annulus on top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within annulus on bottom surface of ceiling. Additional sealant to be installed such that a min. 3/8" (10mm) crown is formed around the penetrating item on top surface of floor and bottom surface of ceiling.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
F-C-2291**

Nelson Firestop

DWG NO. FS-0621 R2

DATE: 11/06/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

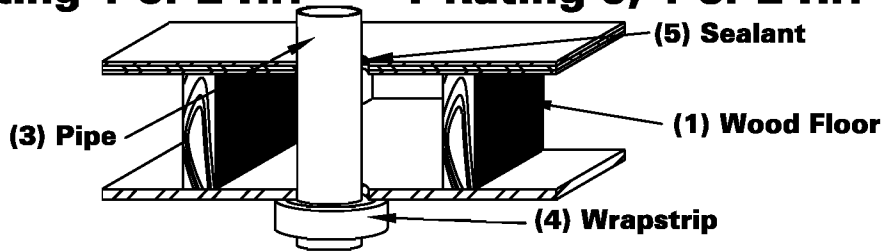
Installer: _____

Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR NONMETALLIC PIPE

F Rating 1 or 2 Hr. T Rating 0, 1 or 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Nom 10" (254mm) deep lumber, steel or combination lumber and steel joists, trusses may be used in 1 Hr. fire-rated floor-ceiling assemblies. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511, or L536 in the UL Fire.
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **CHASE WALL** (not shown, optional) - Constructed in the manner specified in individual U300 series designs as shown in the UL Fire Resistance Directory.
3. **NONMETALLIC PIPE or CONDUIT** - The following types of pipes or conduits may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) **RIGID NONMETALLIC CONDUIT** - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 4" (102mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) **ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE** - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

Annular space between pipe or conduit and periphery of opening shall be min. 0" (point of contact) to max. 1/2" (13mm). T rating is 0 Hr. for PVC, RNC and CPVC pipe. T rating is 1 or 2 Hr. for ABS pipe.

4. **NELSON WRS3 WRAPSTRIP** (part # AA0896) - Apply 2 continuous layers of 1/4" (6mm) thick by 1" (25mm) wide Nelson wrapstrip around the pipe. Secure to the underside of the ceiling with min. 28 GA galvanized steel restraining collar. Collar secured to ceiling at each anchor tab with 3/16" (5mm) diameter by 3" (76mm) long toggle bolts in conjunction with min. 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers. Collar (part # AA0659D) not shown.
5. **NELSON LBS3 SEALANT** - Min. 1/4" (6mm) thickness of sealant applied within annulus, flush with top surface of floor or sole plate. At point of contact, min. 3/8" (10mm) diameter bead of sealant applied at penetrant/floor or sole plate interface.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
F-C-2293**

Nelson Firestop

DWG NO. FS-0623 R2

DATE: 11/06/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

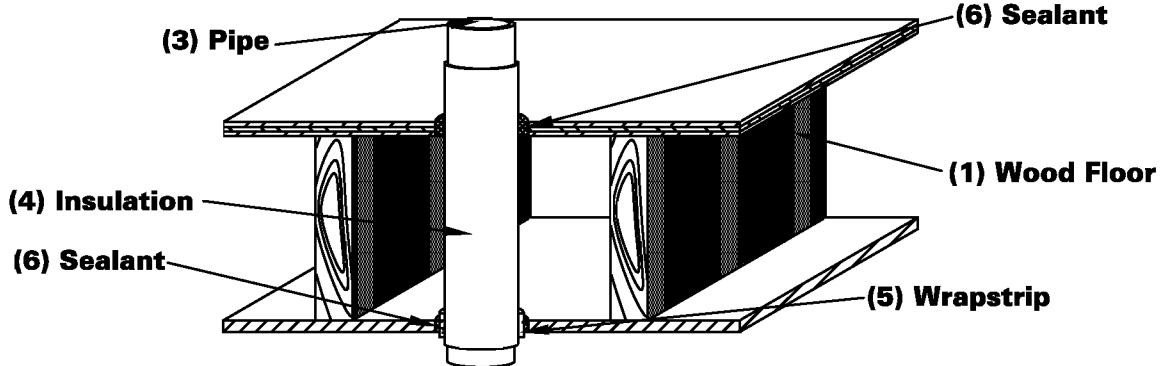
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

WOOD/STEEL JOIST FLOOR INSULATED PIPE

F Rating 1 or 2 Hr. T Rating 3/4 or 1-1/2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series floor-ceiling designs in the UL Fire Resistance Directory. Nom 10" (254mm) deep lumber, steel or combination lumber and steel joists, trusses may be used in 1 Hr. fire-rated floor-ceiling assemblies. The 2 Hr. fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. Max. diameter of opening is 3-3/4" (95mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSON BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **WALL ASSEMBLY** (optional, not shown) - Constructed in the manner specified in individual U300 series wall and partition designs in the UL Fire Resistance Directory.
3. **METALLIC PIPE** - The following types of pipes or tubing may be used:
 - (A) **STEEL PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 2" (51mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **COPPER TUBING or PIPE** - Nom 2" (51mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. **PIPE INSULATION** - Nom 1/2" (13mm) thick, or thinner AB/PVC (ARMAFLEX) pipe insulation. Annular space is 5/16" (8mm).
5. **NELSON WRS3 WRAPSTRIP** (part # AA0896) - Apply 1 continuous layer of 1/4" (6mm) thick by 1" (25mm) wide Nelson wrapstrip around the pipe as its egress from bottom surface of the ceiling or lower top plate of chase wall assembly. The bottom edge of the wrapstrip shall extend 1/4" (6mm) below the bottom surface of the ceiling or lower top plate of chase wall assembly.
6. **NELSON LBS3 SEALANT** - Min. 3/4" (19mm) thickness of sealant applied within annulus on top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within annulus on bottom surface of ceiling or lower top plate of chase wall assembly. Additional sealant to be installed such that a min. 1/4" (6mm) crown is formed around the penetrating item on top surface of floor and bottom surface of ceiling or lower top plate of chase wall assembly.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0625 R2

DATE: 11/07/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

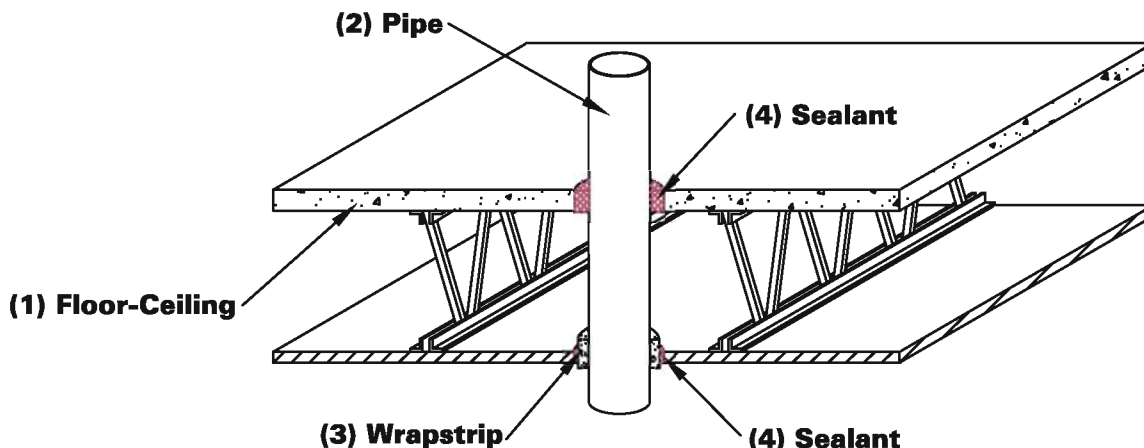
Address: _____

Signature: _____

CONCRETE JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 0 Hr.



1. FLOOR-CEILING ASSEMBLY - Const. in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 3" (76mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 2" (51mm) diameter (or smaller) Sch. 40 solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space between pipe or conduit and periphery of opening to be a nom 5/16" (8mm).

3. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1 continuous layer of 1/4" (6mm) thick by 1" (25mm) wide wrapstrip around the pipe at its egress from bottom surface of the ceiling. The bottom edge of the wrapstrip shall extend 1/4" (6mm) below the ceiling.
4. NELSON LBS3 SEALANT - Apply a min. 3/4" (19mm) depth of sealant within the annulus on top surface of floor. Min. 5/8" (16mm) thickness of sealant applied within annulus on bottom surface of ceiling. Additional sealant to be installed such that a min. 3/8" (10mm) crown is formed around the pipe on top surface of floor and bottom surface of ceiling.

Tested in accordance with:

ASTM E-814

ANSI/UL 1479



**System No.
F-E-2024**

Nelson Firestop

DWG NO. FS-0627 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

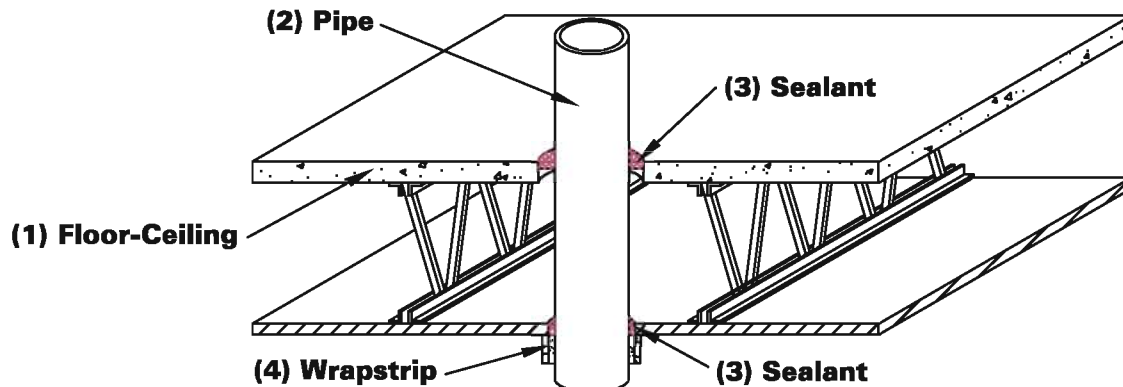
Address: _____

Signature: _____

CONCRETE JOIST FLOOR NONMETALLIC PIPE

F Rating 1 Hr.

T Rating 0 or 1 Hr.



1. FLOOR-CEILING ASSEMBLY - Const. in the manner specified in individual G500 series floor-ceiling designs in the UL Fire Res. Dir.. Max. diameter of opening is 5" (127mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space between pipe or conduit and periphery of opening to be a nom 1/4" (6mm). If a PVC, RNC, or CPVC pipe is used, the T rating is 0 Hr. If ABS pipe is used, the T rating is 1 Hr.

3. NELSON LBS3 SEALANT - Apply a min. 1/4" (6mm) depth of sealant within the annulus, flush with the top surface of the floor or sole plate. Min. 5/8" (16mm) thickness of sealant applied within annulus, flush with bottom surface of ceiling. At point contact, min. 3/8" (10mm) diameter bead of sealant applied at penetrant/floor and at penetrant/ceiling interface.
4. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 2 continuous layers of 1/4" (6mm) thick by 1" (25mm) wide wrapstrip around the pipe on underside of gypsum board ceiling and held in place with masking tape.
5. RESTRAINING COLLAR (not shown) (part # AA0659D) - Apply a min. 28 GA galv. steel restraining collar around the wrapstrip. Attach the collar to the ceiling at each anchor tab with 3/16" (5mm) diameter by min. 3" (76mm) long toggle bolts in conjunction with min. 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0628 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

Project Name: _____

Address: _____

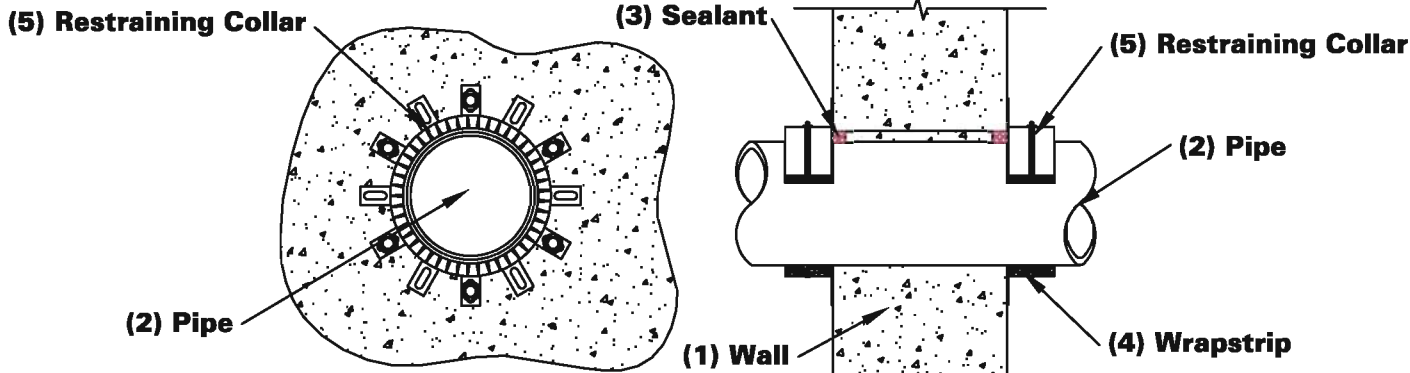
Installer: _____

Address: _____

Signature: _____

CONCRETE WALL NONMETALLIC PIPE

F Rating 2 Hr. T Rating 0, 1 or 1-1/2, 2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. The max. diameter of the opening is 5" (127mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) RIGID NONMETALLIC CONDUIT - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space between pipe, conduit or tubing and periphery of opening shall be 0" (point of contact) to 1/2" (13mm).
3. NELSON LBS3 SEALANT - Apply LBS3 within the annular space to a min. 5/8" (16mm) depth, flush with both wall surfaces. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the concrete/pipe interface on both surfaces of wall.
4. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1" (25mm) wide WRS3 around the pipe on both sides of the wall in accordance with the schedule shown in the table below.

Pipe Type	Max. Pipe Size	Number of Layers	T Rating (Hr.)
PVC, CPVC or RNC	4" (102mm)	2 or 3	0 or 1
ABS	4" (102mm) or 3" (76mm)	3 or 2	1-1/2
PVC, CPVC or RNC	3" (76mm) or 2" (51mm)	2 or 1	1

5. STEEL RESTRAINING COLLAR (part # AA0659D) - Apply nominal 28 gauge prefabricated galvanized steel collar around the wrapstrip. Overlap the collar and secure with 1/2" (13mm) wide by 0.028" (.711mm) thick stainless steel hose clamp. Collar secured to the wall with 1/4" (6mm) diameter by min. 1-3/4" (44mm) long steel concrete anchors in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-J-2154**

Nelson Firestop

DWG NO. FS-0629 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

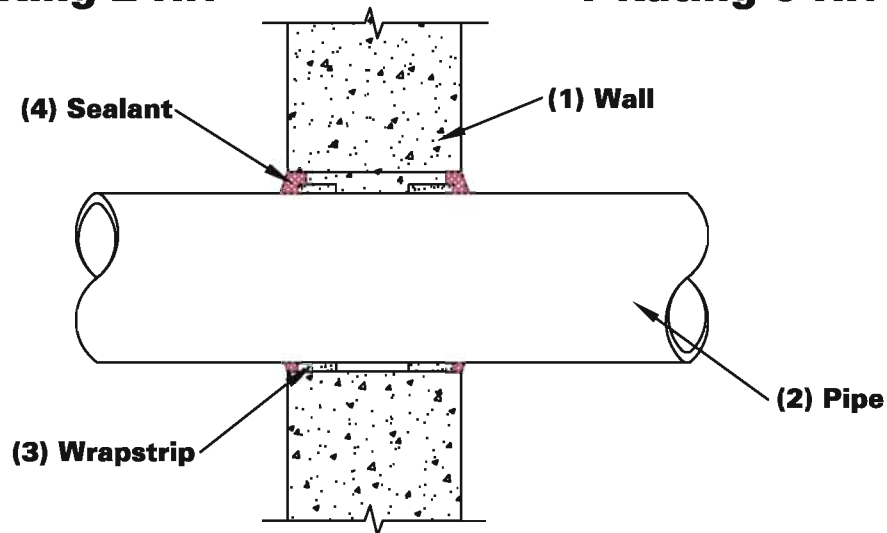
Address: _____

Signature: _____

CONCRETE WALL NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY- Min. 6" (152mm) thick lightweight or normal weight concrete wall, or CMU block wall. Max. diameter of the opening is 5" (127mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 3" (76mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 3" (76mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

The annular space between the pipe or conduit and the periphery of opening shall be 1/4" (6mm) to 1-1/4" (32mm).

3. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1 continuous layer of 1-1/2" (38mm) wide WRS3 around the pipe on both sides of the wall and slide into the annular space, such that the ends are recessed 1/4" (6mm) from the surface of the wall.
4. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus flush with both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed around the pipe.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-2155**

Nelson Firestop

DWG NO. FS-0630 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

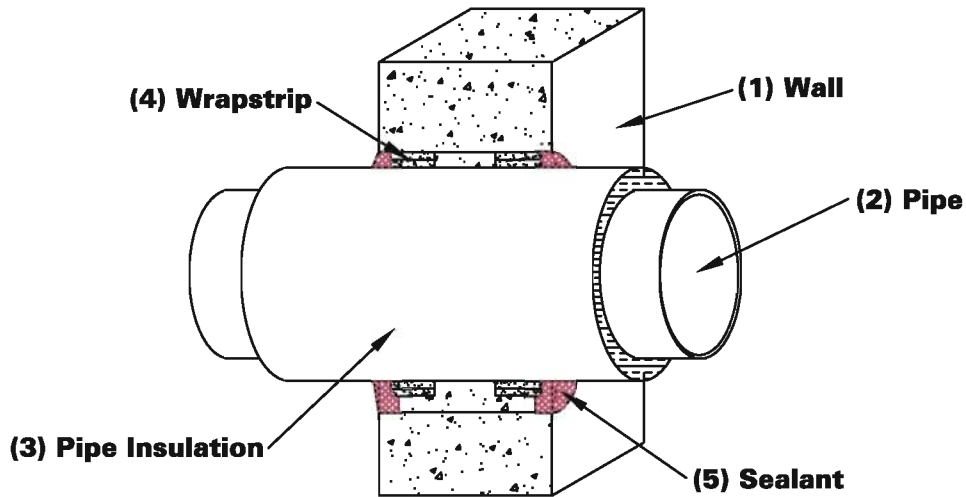
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

CONCRETE WALL INSULATED METALLIC PIPE

F Rating 2 Hr.

T Rating 2 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete wall or CMU block wall. Max. diameter of opening is 21" (533mm).
2. METALLIC PIPE - The following types of pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 12" (305mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Nom 3" (76mm) thick FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between insulated pipe and periphery of opening shall be 1/2" (13mm) to 1-3/4" (44mm).
4. NELSON WRS3 WRAPSTRIP (part# AA0897) - Apply 2 layers of 1-1/2" (38mm) wide WRS3 around the insulated pipe and secure with tape. Wrapstrips are slid along the insulated pipe into annulus such that visible ends of the wrapstrip are recessed 3/8" (10mm) into the wall.
5. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within annulus, flush with both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) crown is formed around the insulated penetrant.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-5111**

Nelson Firestop

DWG NO. FS-0631 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

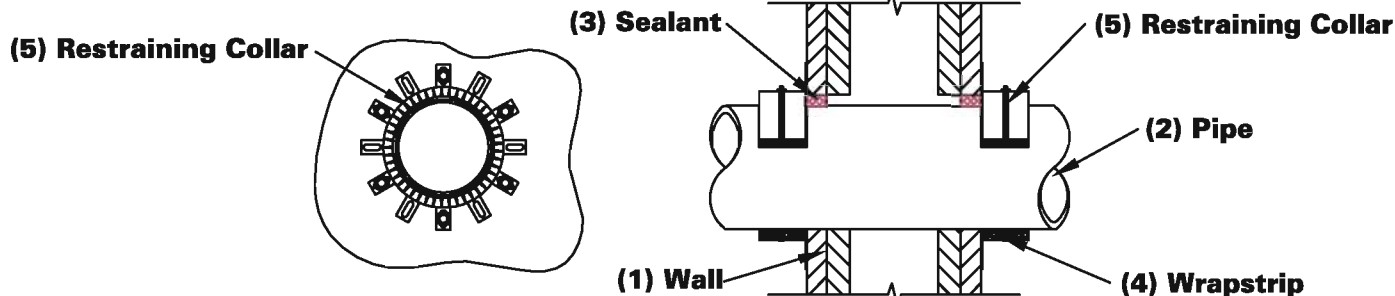
Address: _____

Signature: _____

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0, 1 or 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory.
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space between pipe or conduit and periphery of opening shall be 0" (point of contact) to 1/2" (13mm).

3. NELSON LBS3 SEALANT - Apply LBS3 within the annular space to a min. 5/8" (16mm) depth, flush with both wall surfaces. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum/pipe interface on both surfaces of wall.
4. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1" (25mm) wide WRS3 around the pipe on both sides of the wall in accordance with the schedule shown in the table below.

Pipe Type	Max. Pipe Size	Nos. of Layers	F Rating (Hr.)	T Rating (Hr.)
PVC, CPVC or RNC	4 (102mm)	2 or 3	2	0 or 1
ABS	2 (51mm), 3 (76mm) or 4 (102mm)	1, 2 or 3	2	1-1/2
PVC, CPVC or RNC	2 (51mm)	1	2	1
ABS	4 (102mm)	3	1	0
PVC, CPVC or RNC	4 (102mm)	2 or 3	1	0
PVC, CPVC, ABS or RNC	2 (51mm) or 3 (76mm)	1 or 2	1	0

5. STEEL RESTRAINING COLLAR (part # AA0659D) - Apply nominal 28 gauge prefabricated galvanized steel collar around the wrapstrip. Overlap the collar and secure with 1/2" (13mm) wide by 0.028" (.711mm) thick stainless steel hose clamp. Collar secured to the wall with 1/8" (3mm) diameter by min. 2-3/4" molly bolts in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender (70mm) long steel washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-2388**

Nelson Firestop

DWG NO. FS-0632 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Project Name: _____
Address: _____

Installer: _____
Address: _____

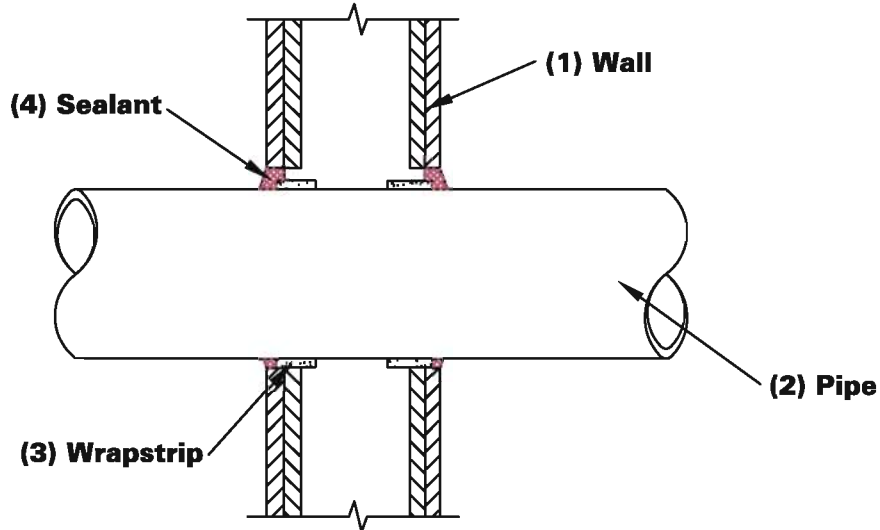
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY- Constructed in the manner specified in the U300 or U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
2. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 3" (76mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 3" (76mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

The annular space between the pipe or conduit and the periphery of opening shall be min. 1/4" (6mm) to max. 1-1/4" (32mm).
3. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1 continuous layer of 1-1/2" (38mm) wide wrapstrip around the pipe on both sides of the wall and slide into the annular space, such that the ends are recessed 1/4" (6mm) from the surface of the wall.
4. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus flush with both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed around the pipe.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-2389**

Nelson Firestop

DWG NO. FS-0633 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

Installer: _____

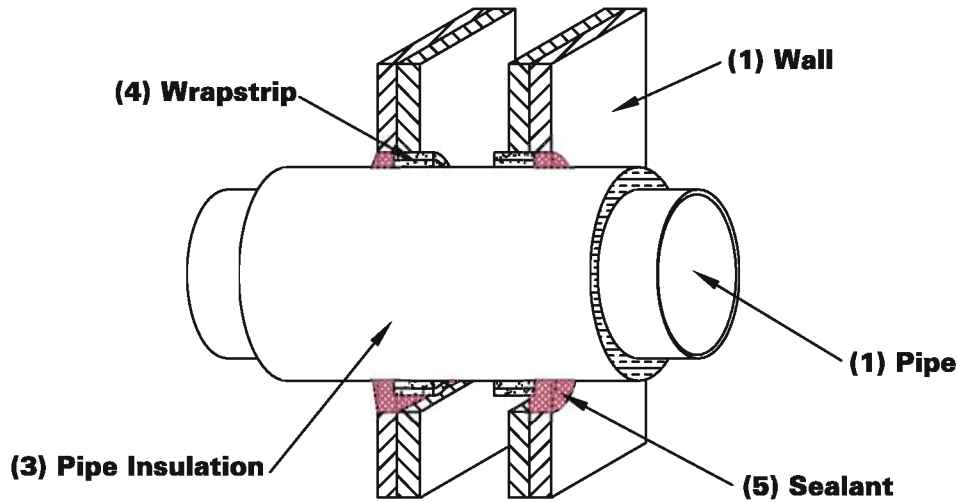
Address: _____

Signature: _____

GYPSUM WALL INSULATED METALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 21" (533mm).
2. METALLIC PIPE - The following types of metallic pipes may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
3. PIPE INSULATION - Nom 3" (76mm) thick FIBERGLASS or MINERAL FIBER pipe insulation. The annular space between insulated pipe and periphery of opening shall be 1/2" (13mm) to 1-3/4" (44mm).
4. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 2 layers of 1-1/2" (38mm) wide wrapstrip around the insulated pipe on both sides of the wall. Wrapstrips are slid along the insulated pipe into annulus such that visible ends of the wrapstrip are recessed 3/8" (10mm) into the wall.
5. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within annulus, flush with both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) crown is formed around the insulated penetrant.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



Nelson Firestop

DWG NO. FS-0634 R1

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____

Address: _____

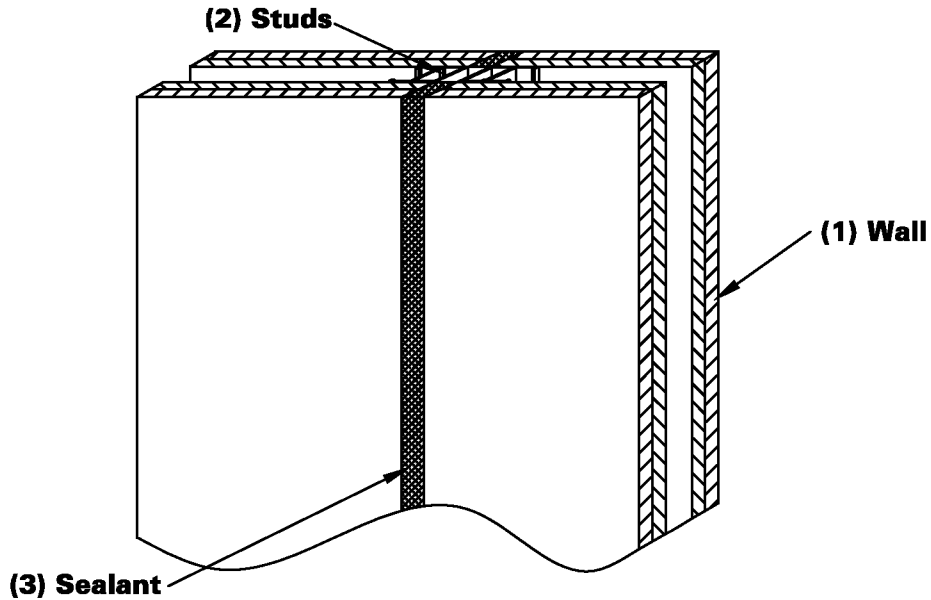
Installer: _____

Address: _____

Signature: _____

JOINT TREATMENT SYSTEM WALL TO WALL

F Rating 2 Hr.
Nominal Joint Width - 3/4" (19mm)



1. WALL ASSEMBLY - Nonbearing 2 Hr. fire rated gypsum board/stud assembly 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. Max. width of joint is 3/4" (19mm).
2. STEEL STUDS - Min 3-5/8" (92mm) steel studs.
3. NELSON ES1399 SEALANT - Min. 1-1/4" (32mm) thickness of sealant applied within the joint, flush with each surface of wall.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079



System No.
WW-S-0044

Nelson Firestop

DWG NO. FS-0635 R2

DATE: 11/28/06

BY: RL

MEA # 125-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

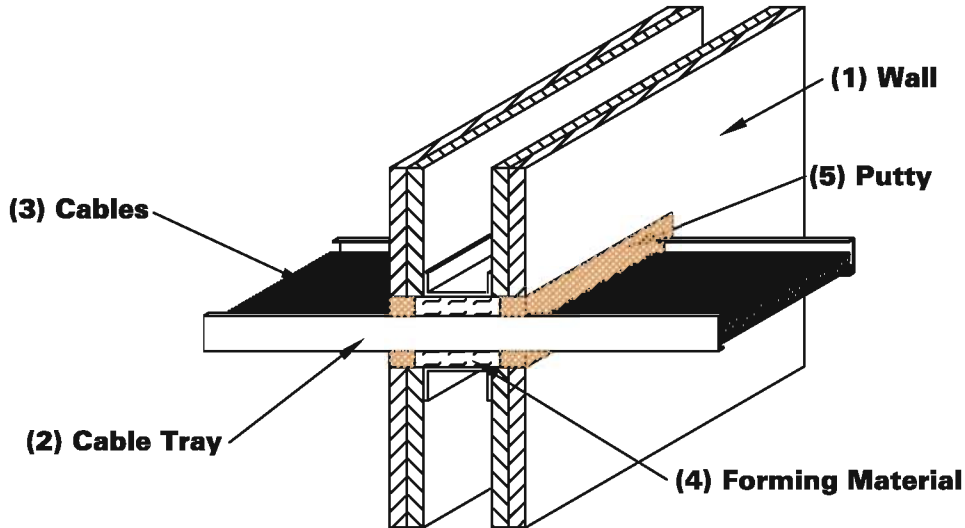
Installer: _____
Address: _____

Signature: _____

GYPSUM WALL CABLE TRAY

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 Series Wall and Partition Designs as shown in the UL Fire Resistance Directory. The max. area of opening is 102 sq. in. (658 sq. cm) with max. dimension of 14-1/2" (368mm) if cable tray is installed in a wood stud/gypsum wallboard assembly. The max. area of opening is 159 sq. in. (1026 sq. cm) with max. dimension of 22-3/4" (578mm) if cable tray is installed in a steel stud/gypsum wallboard assembly.
2. **CABLE TRAY** - Max. 18" x 4" (457mm x 102mm) open ladder type, steel, cable tray. Center tray in the opening. The annular space between cable tray and edge of the opening is 1-1/2" (38mm). If the cable tray is installed in a wood stud/gypsum board assembly, the max. width of the cable tray is 12" (305mm). If the cable tray is installed in a steel stud/gypsum board assembly, the max. width of the cable tray is 18" (457mm).
3. **CABLES** - Max. 39% aggregate cross-sectional fill of #2awg or #12awg multi-#12awg multi-conductor power and control cables and max. 36% aggregate cross-sectional fill of 300kcmil single conductor power cables.
4. **FORMING MATERIAL** - Tightly pack min. 6pcf (96 kg/cubic meter) mineral wool or ceramic fiber insulation in and around cables for separation of cables to a 3-3/8" (86mm) depth or 4-5/8" (117mm) depth for 1 or 2 hr wall assemblies respectively. Recess 3/4" (19mm) from each wall surface.
5. **NELSON FSP PUTTY** (part # AA445) - Min. 3/4" (19mm) thickness of putty applied within the annulus on both surfaces of wall. Additional 1" (25mm) crown around the penetrating item. Putty to be forced into interstices of cable group to max. extent possible.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-4051**

Nelson Firestop

DWG NO. FS-0636 R1

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

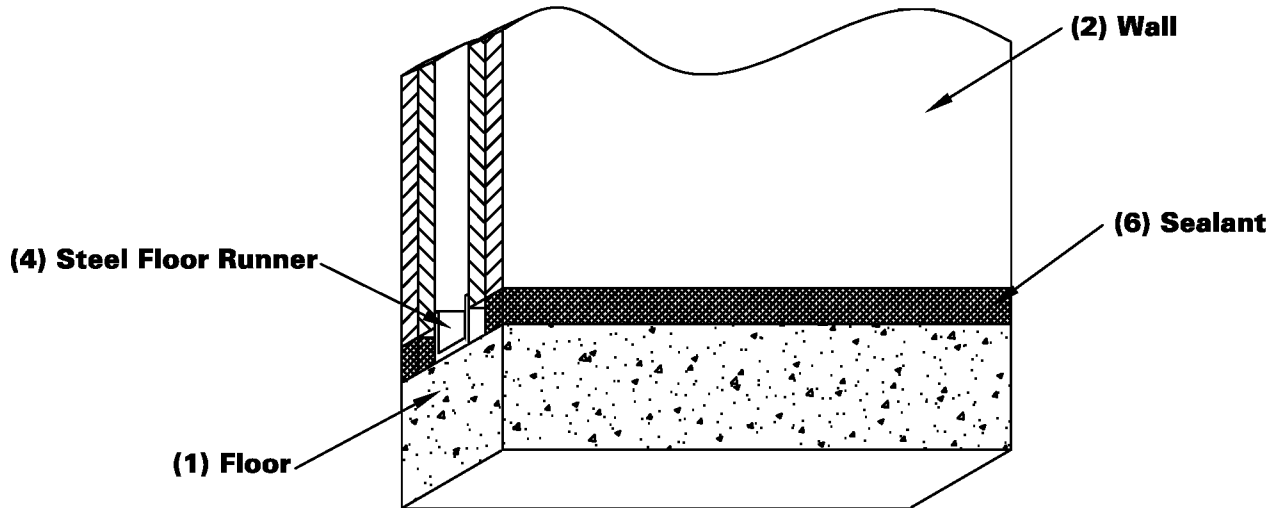
DATE: 07/19/06

BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM BOTTOM OF WALL

**F Rating 1 or 2 Hr.
Nominal Joint Width - 1" (25mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick light weight or normal weight concrete floor. Floor may also be constructed of any 6" (152mm) thick UL Classified HOLLOW-CORE Precast Concrete Units.
2. WALL ASSEMBLY - As specified in the U400 or V400 series designs per UL Fire Resistance Directory. In addition, the wall may incorporate a head-of-wall joint system constructed as specified in the HW Series Joint Systems in the UL Fire Resistance Directory. The max separation between top of floor and bottom of wall is 1" (25mm).
3. STEEL STUDS (not shown) - Min. 3-5/8" (92mm) steel studs.
4. STEEL FLOOR RUNNER - Floor runners of wall assembly shall consist of min. 25 ga galv steel channels sized to accommodate steel studs. Floor runners to be provided with min. 1-1/4" (32mm) flanges.
5. FORMING MATERIAL (optional)(not shown) - Install backer rod within the annular space, and recess 5/8" (16mm) from each surface of the wall.
6. NELSON ES1399 or LBS3 SEALANT - Apply to fill the cavities to a min. of 5/8" (16mm) depth on each side of the wall between the bottom of the gypsum board and the top of the concrete floor, flush with each surface of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
BW-S-0012**

Nelson Firestop

DWG NO. FS-0637 R2

DATE: 11/30/06

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

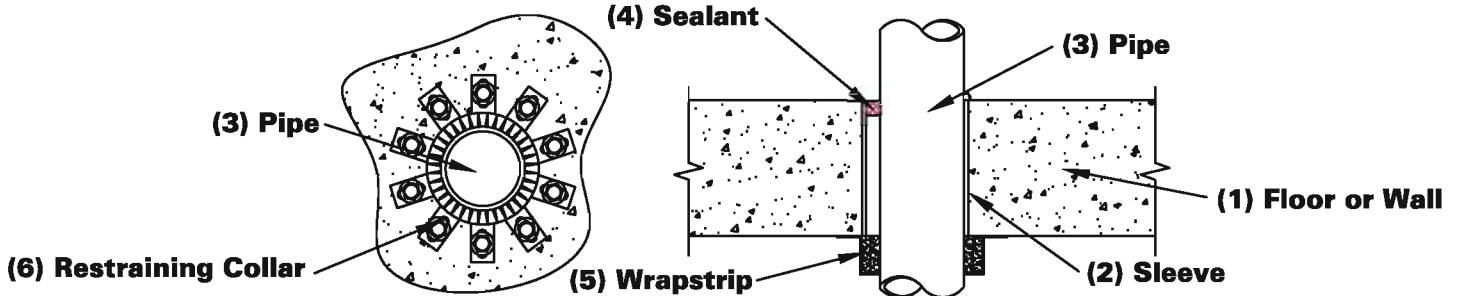
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr. T Rating 1-1/2 or 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall or CMU block wall. Floor may also be constructed of min. 6" thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 6" (152mm).
2. METALLIC SLEEVE (optional) - Nominal 5" (127mm) diameter (or smaller) Sch. 10 or heavier steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. NONMETALLIC PIPE - Max. 5" (127mm) diameter (or smaller) Sch. 40 PVC, RNC or nominal 4" (102mm) diameter (or smaller) Sch 40 ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Max. 5" (127mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed piping systems.
4. NELSON LBS3 SEALANT - Apply a min. 1/4" (6mm) depth within the annular space, flush with top surface of floor or both surfaces of wall. Additional min. 1/4" (6mm) crown is formed around the penetrant on top surface of floor or both surfaces of wall.
5. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1/4" (6mm) thick by 1-1/2" (38mm) wide wrapstrip around the pipe to the underside of the floor or sides of the wall in accordance with the table below.

Pipe Type	Max. Pipe Size	Annular Space	Nos. of Layers	Use of Sleeve	F Rating (Hr.)	T Rating (Hr.)
PVC, CPVC, RNC	4" to 5" (102mm to 127mm)	0-3/8" (10mm)	3	Not Permitted	2	2
PVC, CPVC, RNC	3" (76mm)	0-3/8" (10mm)	2	Not Permitted	2	2
PVC, CPVC, RNC	1-1/2" to 2" (38mm to 51mm)	0-3/8" (10mm)	1	Not Permitted	2	2
PVC, CPVC, RNC	4" (102mm)	0-3/4" (19mm)	3	Permitted	3	1-1/2
PVC, CPVC, RNC	3" (76mm)	0-3/4" (19mm)	2	Permitted	3	1-1/2
PVC, CPVC, RNC	1-1/2" to 2" (38mm to 51mm)	0-3/4" (19mm)	1	Permitted	3	1-1/2
ABS	4" (102mm)	0-3/4" (19mm)	3	Permitted	3	2
ABS	3" (76mm)	0-3/4" (19mm)	2	Permitted	3	2
ABS	1-1/2" to 2" (38mm to 51mm)	0-3/4" (19mm)	1	Permitted	3	2

6. RESTRAINING COLLAR (part # AA0659D) - Apply min. 28 GA. galv. steel restraining collar around the wrapstrip. Attach the collar to the floor with min. 1/4" (6mm) diameter x 2-1/4" (57mm) long steel masonry anchors in conjunction with 1/4" (6mm) x 1-1/4" (32mm) diameter steel fender washers. In wall assemblies, a collar is used on each side of the concrete wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2489**

Nelson Firestop

DWG NO. FS-0638 R2

DATE: 07/19/06

BY: RL

MEA # 128-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

Project Name: _____
Address: _____

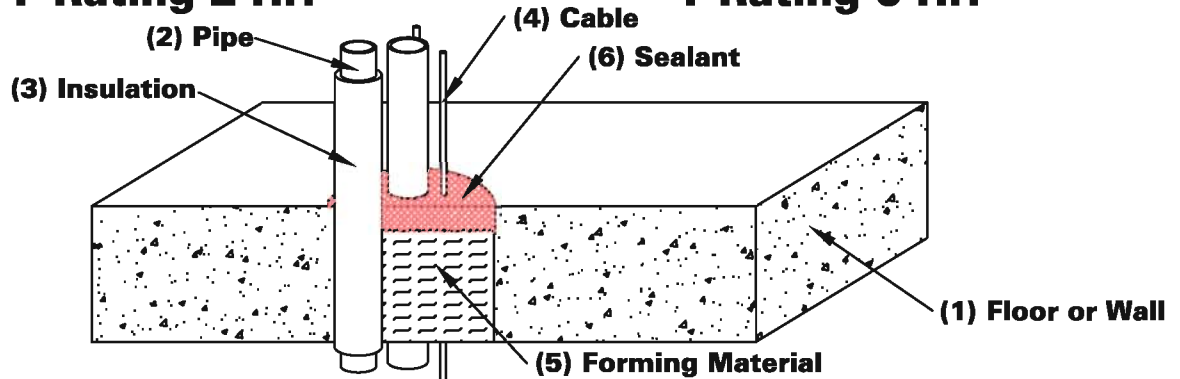
Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL MULT. METALLIC PIPES and CABLES

F Rating 2 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The floor assembly may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 4" (102mm).
2. METALLIC PIPES - Max. (2) pipes of the following types of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 1" (25mm) diameter (or smaller) Sch. 10 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 1" (25mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 1" (25mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
3. PIPE INSULATION - Max. 3/4" (19mm) thick or thinner AB/PVC (ARMAFLEX) foam insulation. The annular space between the insulated penetrating item and uninsulated metallic pipes, conduit or tubing shall be 0" (point of contact) to 1-1/4" (32mm). The annular space between the insulated penetrating item and the periphery of the opening shall be 0" (point of contact) to 2-1/4" (57mm).
4. CABLES - Max. (2) cables of the following: Max. 7/c #24awg control cable with polyvinyl chloride insulation and jacket or 2/C #10awg thermostat wire. Cables spaced 0" (point of contact) from insulation or min. 1/2" (13mm) from other penetrants. The annular space between cable and periphery of opening is 0" (point of contact) to 2-1/4" (57mm).
5. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 3" (76mm) depth, and recess 1/2" (13mm) from the top surface of the floor or both surfaces of the wall. When the floor is constructed of HOLLOW-CORE precast concrete units, forming material shall be recessed 1/2" (13mm) from both surfaces of floor.
6. NELSON ES1399/LBS3 SEALANT - Apply over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or both surfaces of the wall. Min. 1/2" (13mm) diameter bead of sealant applied to the penetrant/concrete interface at the point of contact location on the top surface of floor or both surfaces of wall. ES1399 to be forced into interstices between penetrants to max. extent possible when used. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed flush with both surfaces of floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-8162**

Nelson Firestop

DWG NO. FS-0641 R1

DATE: 07/14/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

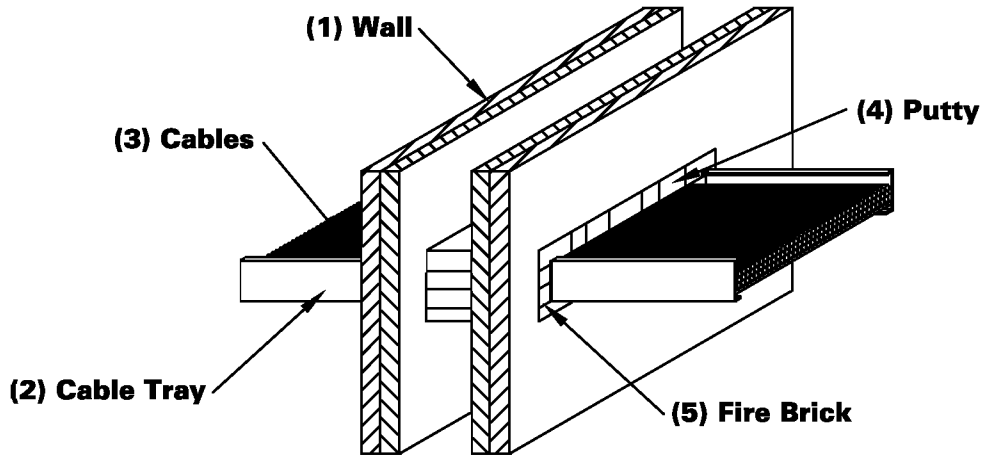
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL CABLE TRAY

F Rating 1 or 2 Hr.

T Rating 3/4 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 series designs as showing the UL Fire Resistance Directory. The max. area of opening is 168 sq. in. (1084 sq. cm) with a max. dimension of 28" (711mm).
2. **CABLE TRAY** - Max. 24" (610mm) wide x 4" (102mm) deep open ladder cable tray. The annular space between the cable tray and periphery of opening shall be min. 0" (point of contact) to 2" (51mm).
3. **CABLES** - Max. 40% cable fill of opening in any combination of:
 - A). 1/C-350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene jacket.
 - B). 200 pair - No. 24awg (or smaller) copper conductor cable with polyvinyl insulation and jacket.
 - C). 62.5/125 fiber optic cable with PVC insulation and jacket.
 - D). Max. 3/C No.12awg (or smaller) METAL-CLAD cable.
4. **NELSON FSP PUTTY** (part # AA445) - Prior to installation of the fire bricks, min. 3/8" (10mm) thickness of putty forced into interstices of cables and between cables and cable tray within the full depth of the stud cavity. After installation of the fire bricks, min. 3/8" (10mm) additional putty applied between the interstices of cables, between cables and cable tray, between the fire bricks and cables and between cable tray and fire brick on both surfaces of the wall assembly. At point of contact location between cable tray and gypsum board, min. 3/8" (10mm) thickness of putty applied at the cable tray/gypsum board interface on both surfaces of the wall.
5. **NELSON FIRE BRICKS** (part # AA0834) - For walls incorporating max. 3-1/2" (89mm) steel studs, fire bricks installed with 5" (127mm) dimension projecting through and centered in opening. For walls constructed of larger than 3-1/2" (89mm) steel studs, fire brick installed with long dimension passing through and centered in opening.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-4061**

Nelson Firestop

DWG NO. FS-0642 R1

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

DATE: 07/19/06

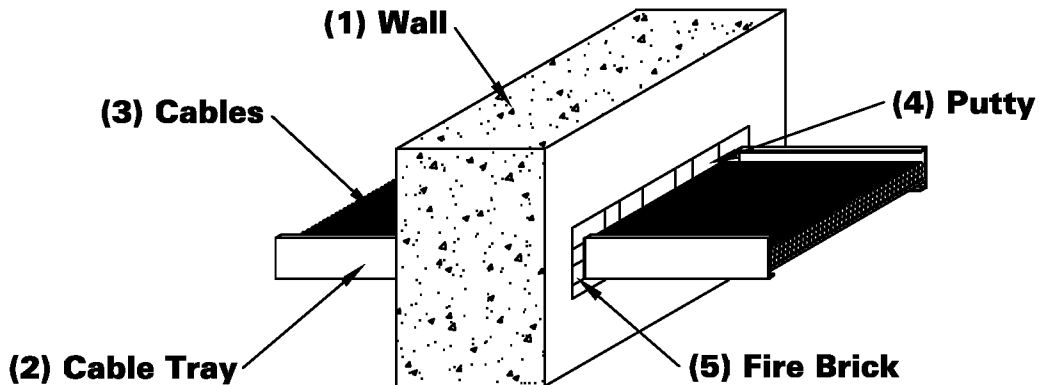
BY: RL

Nelson Firestop
 800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.

CONCRETE WALL CABLE TRAY

F Rating 2 Hr.

T Rating 3/4 Hr.



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete. Wall may also be constructed of any UL Classified Concrete Blocks. The max. area of opening is 168 sq. in. (1084 sq. cm) with a max. dimension of 28" (711mm).
2. CABLE TRAY - Max. 24" wide x 4" deep open ladder cable tray. The annular space between the cable tray and periphery of opening shall be min. 0" (point of contact) to 2".
3. CABLES - Max. 40% cable fill of opening in any combination of:
 - A). 1/C-350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene jacket.
 - B). 200 pair - No. 24awg (or smaller) copper conductor cable with polyvinyl insulation and jacket.
 - C). 62.5/125 fiber optic cable with PVC insulation and jacket.
 - D). Max. 3/C No.12awg (or smaller) METAL-CLAD cable.
4. NELSON FSP PUTTY (part # AA445) - Prior to installation of the fire bricks, min. 3/8" (10mm) thickness of putty forced into interstices of cables and between cables and cable tray within the full depth of the stud cavity. After installation of the fire bricks, min. 3/8" (10mm) additional putty applied between the interstices of cables, between cables and cable tray, between the fire bricks and cables and between cable tray and fire brick on both surfaces of the wall assembly. At point of contact location between cable tray and wall, a min. 3/8" (10mm) thickness of putty applied at the cable tray/concrete interface on both surfaces of the wall.
5. NELSON FIRE BRICKS (part # AA0834) - For reinforced concrete and solid filled concrete block wall assemblies, fire bricks installed centered within depth of opening with the long dimension placed horizontally. For hollow core block walls, fire bricks installed with long dimension passing through the opening from surface to surface. Fire bricks to completely fill the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-J-4058**

Nelson Firestop

DWG NO. FS-0643 R1

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

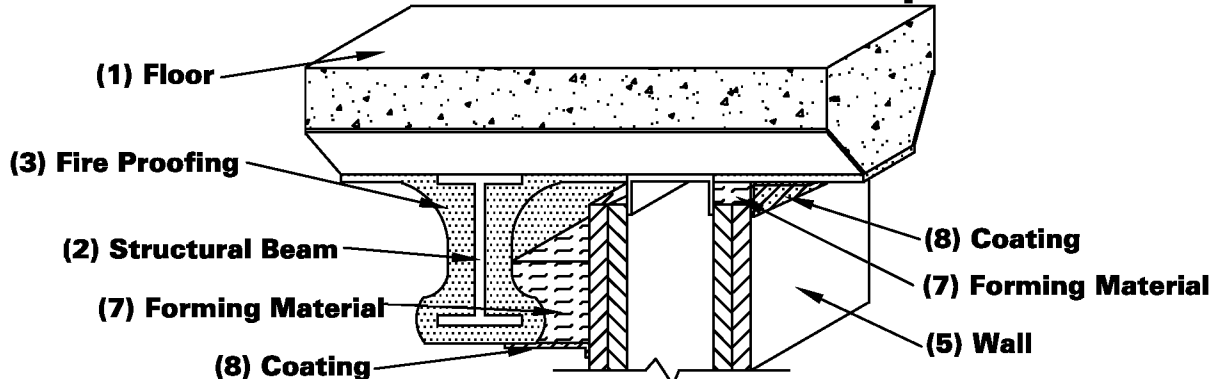
DATE: 07/19/06

BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 1 or 2 Hr.
Nominal Joint Width - 1" to 6" (25mm to 152mm)
Class II Movement - 12.5% Compr or Ext



(8) Coating

1. FLOOR ASSEMBLY - Constructed in the manner specified in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Res.
2. STRUCTURAL SUPPORT - Steel beam or joist as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and 1" (25mm) to 6" (152mm) from wall assembly.
3. SPRAY-APPLIED FIRE PROOFING - Steel floor, beam or joist to be sprayed with min. thickness as specified in the individual D700 or D900 Series Design.
4. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a steel fluted deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Res. Direct.
5. WALL ASSEMBLY - Constructed in the manner specified in the U400 or V400 series designs as shown in the UL Fire Resistance Directory. The max. separation between bottom of floor/fireproofed floor and top of wall is 1" (25mm). Separation between fire proofing on beam/joist and wall is 1" (25mm) to 4" (102mm). The joint system is designed to accommodate a max. 12.5% compression or extension from its installed width.
6. STEEL STUDS (not shown) - Min. 3-1/2" (89mm) steel studs with max. 24" (610mm) o.c. spacing.
7. FORMING MATERIAL - Nom 4pcf (64 kg/cubic meter) mineral wool batt insulation cut to a width of 4" (102mm) and stacked to a thickness which is 50% greater than the width of the linear gap between the spray applied fire resistive material on the structural steel member and the surface of the wall assembly and installed between fireproofed support and wall and compressed 50%. The forming material shall be compressed 50% in the nom joint width above the wall and flush with surface of the wall opposite structural support.
8. NELSON FSC3 COATING (part # AA0868) - Min. 1/8" (3mm) wet thickness over the forming material on each side of the wall. Overlap the coating a min. 1/2" (13mm) onto the wall and 2" (51mm) onto steel floor/fireproofed floor and fire proofed steel support member on each side of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0393

Nelson Firestop

DWG NO. FS-0644 R2

DATE: 12/04/06

BY: RL

Project Name: _____
Address: _____

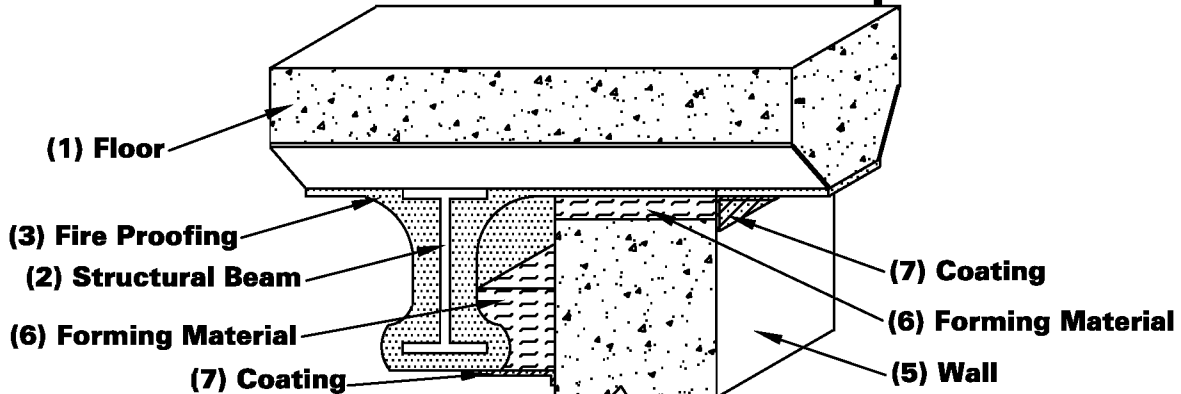
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

F Rating 2 Hr.
Nominal Joint Width - 1" to 6" (25mm to 152mm)
Class II Movement - 12.5% Compr or Ext



1. FLOOR ASSEMBLY - Constructed in the manner specified in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire
2. STRUCTURAL SUPPORT - Steel beam or joist as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and 1" (25mm) to 6" (152mm) from wall assembly.
3. SPRAY-APPLIED FIRE PROOFING - Steel floor, beam or joist to be sprayed with min. thickness as specified in the individual D700 or D900 Series Design.
4. ROOF ASSEMBLY (not shown) - As an alternate to the floor assembly, a steel fluted deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Res. Direct.
5. WALL ASSEMBLY - Min. 6" (152mm) thick steel-reinforced lightweight or normal weight structural concrete wall or CMU block wall. The max. separation between bottom of floor/fireproofed floor and top of wall is 1" (25mm). Separation between fire proofing on beam/joist and wall is 1" (25mm) to 4" (102mm). The joint system is designed to accommodate a max. 12.5% compression or extension from its installed width.
6. FORMING MATERIAL - Nom 4pcf (64 kg/cubic meter) mineral wool batt insulation cut to a width of 4" (102mm) and stacked to a thickness which is 50% greater than the width of the linear gap between the spray applied fire resistive material on the structural steel member and the surface of the wall assembly and installed between fireproofed support and wall and compressed 50%. The forming material shall be compressed 50% in the nom joint width above the wall and flush with surface of the wall opposite structural support.
7. NELSON FSC3 COATING (part # AA0868) - Spray or trowel over the forming material to a nominal 1/8" (3mm) thick wet applied coating. Overlap the coating a min. 1/2" (13mm) onto the wall and 2" (51mm) onto steel floor/fireproofed floor onto steel floor/fireproofed floor and fire proofed steel support member on each side of the wall.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



System No.
HW-D-0394

Nelson Firestop

DWG NO. FS-0645 R2

DATE: 12/04/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

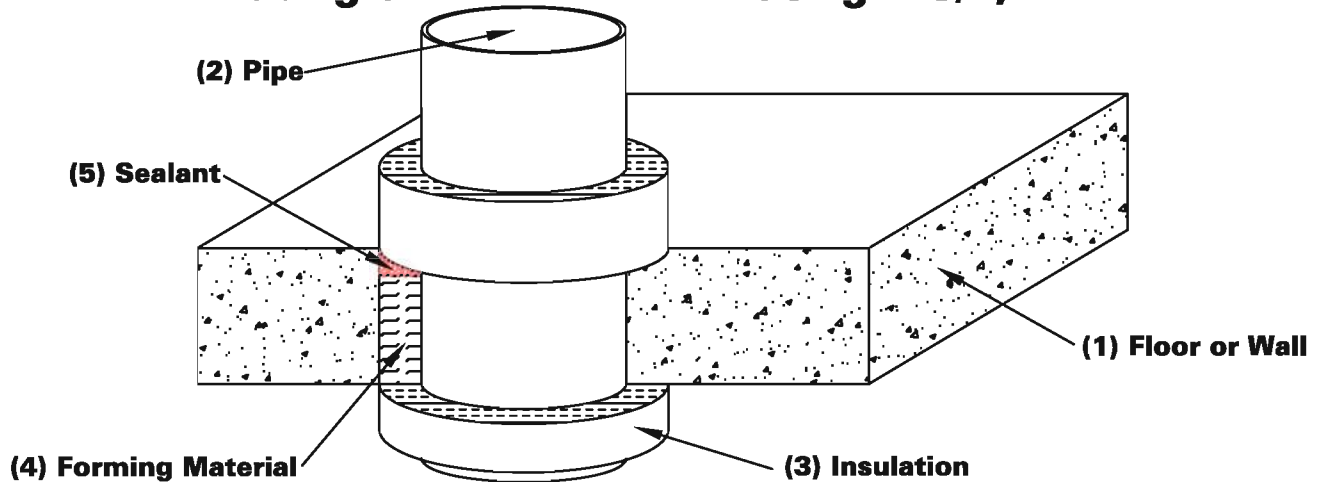
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr.

T Rating 1-3/4, 2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. Floor may also be constructed of min. 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 14" (356mm) and 7" (178mm) when a HOLLOW-CORE floor are used.
2. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 12" (305mm) diameter (or smaller) Sch. 40 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 12" (305mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) STEEL PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (D) COPPER TUBING or PIPE - Nom 4" (102mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

Annular space between penetrant and periphery of opening shall be min. 0" (point of contact) to max. 1-1/4" (32mm) for steel/iron penetrants and 2" (51mm) for copper penetrants. T rating is 2 hr. when penetrant is 4" (102mm) diameter or less and 1-3/4 hr. when diameter of penetrant is greater than 4" (102mm).
3. PIPE INSULATION - Nominal 2" (51mm) thick, or thinner, MINERAL FIBER pipe insulation. Insulation shall extend 12" (305mm) below floor and 36" (914mm) above floor or 36" (914mm) beyond both surfaces of wall.
4. FORMING MATERIAL - Tightly pack min. 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recessed 1/2" (13mm) from the top surface of the floor or from both sides of the wall or HOLLOW-CORE floor.
5. NELSON ES1399 SEALANT - Apply sealant over the forming material to a min. 1/2" (13mm) depth, flush with the top surface of the floor or with BOTH surfaces of the wall or HOLLOW-CORE floor.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-1532**

Nelson Firestop

DWG NO. FS-0646 R0

DATE: 01/20/05

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

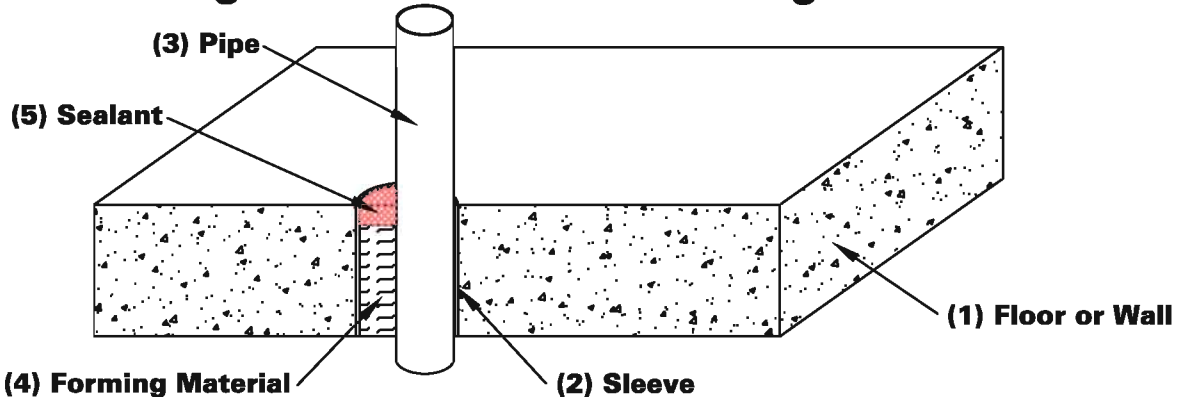
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 3 Hr.

T Rating 2-1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or 5" (127mm) thick wall or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 4" (102mm).

2. METALLIC SLEEVE (optional) - Nom 4" (102mm) diameter (or smaller) Sch. 10 or heavier steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.

- 3. NONMETALLIC PIPE** - The following types of nonmetallic pipes, conduits or tubing may be used:
- (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 2" (51mm) diameter (or smaller Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 2" (51mm) diameter (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) ELECTRICAL NONMETALLIC TUBING - Nom 2" (51mm) diameter (or smaller) PVC tubing.

The annular space between the pipe, conduit or tube and the periphery of the opening shall be min. 0" (point of contact) to max. 1-3/4" (44mm) pipe.

4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess from top surface of floor or from both surfaces of wall or HOLLOW-CORE floor to accommodate the required thickness of sealant.

5. NELSON ES1399 SEALANT - Min. 1/2" (13mm) thickness of sealant installed within annulus, flush with top surface of floor or both surfaces of wall. In HOLLOW-CORE floor sealant installed to min. 1/2" (13mm) depth flush with each surface of the floor. At the point of contact of pipe and concrete a min. 1/2" (13mm) diameter bead of sealant shall be applied at top surface of floor or both surfaces of wall or precast concrete units.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-2525**

Nelson Firestop

DWG NO. FS-0647 R0

DATE: 01/20/05

BY: RL

MEA # 126-04-M

Nelson Firestop

800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

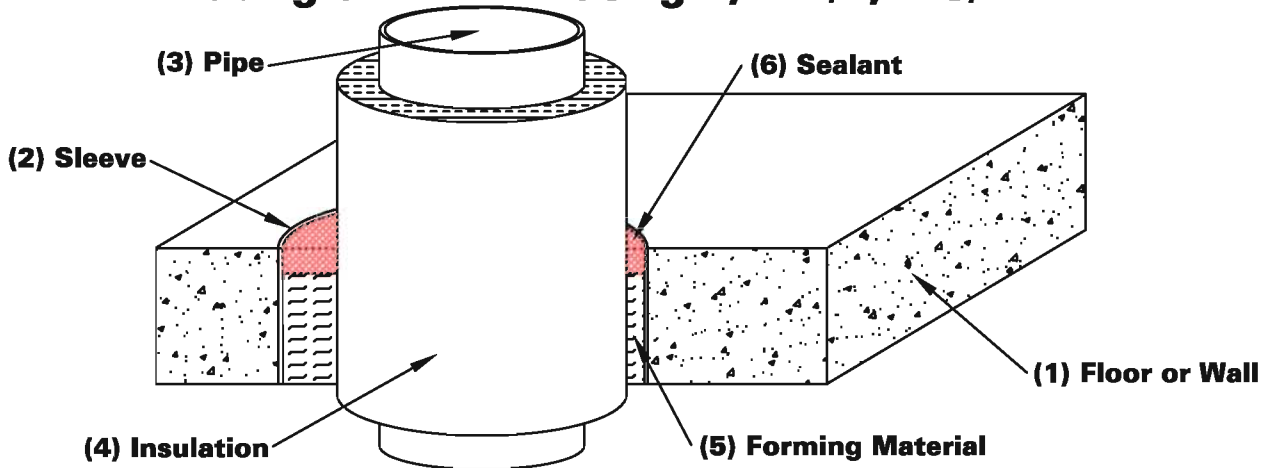
Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

CONCRETE FLOOR OR WALL INSULATED METALLIC PIPE

F Rating 3 Hr. T Rating 1, 1-1/2, 1-3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or min. 5" (127mm) thick wall, or CMU block wall. Floor may also be constructed of any 6" (152mm) thick HOLLOW-CORE Precast Concrete Units. Max. diameter of opening is 30" (762mm). Max. diameter of opening is 7" (178mm) when HOLLOW-CORE Precast Concrete Units are used.
2. METALLIC SLEEVE (optional) - Max. nominal 30" (762mm) diameter, or smaller, Sch. 10 or heavier steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. METALLIC PIPE - The following types and sizes of metallic pipes or tubing may be used:
 - (A) STEEL PIPE - Nom 24" (610mm) diameter (or smaller) Sch. 20 (or heavier) steel pipe.
 - (B) IRON PIPE - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) COPPER TUBING or PIPE - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.
4. PIPE INSULATION - Nominal 2" (51mm) thick, or thinner, FIBERGLASS pipe insulation. The annular space is 5/16" to 1-1/4" (8mm to 32mm).
5. FORMING MATERIAL - Tightly pack min. 4" (102mm) thickness of min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space and recessed 1/2" (13mm) from the top surface of the floor or from both sides of the wall. When the floor is constructed of HOLLOW-CORE precast concrete units, forming material shall be recessed 1/2" from BOTH surfaces of floor.
6. NELSON ES1399/LBS3 SEALANT - Apply sealant over the forming material to a min. 1/2" (13mm) depth, flush with the topside of the floor or with both sides of the wall. When the floor is constructed of HOLLOW-CORE precast concrete units, sealant shall be installed symmetrically on both sides of floor, flush with BOTH floor surfaces. T rating is 1 or 1-1/2 hr. when LBS3 or ES1399 is used respectively, with copper penetrants. T rating is 1 or 1-3/4 hr. when LBS3 or ES1399 is used respectively, with steel/iron penetrants.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-5288**

Nelson Firestop

DWG NO. FS-0648 R1

DATE: 07/14/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

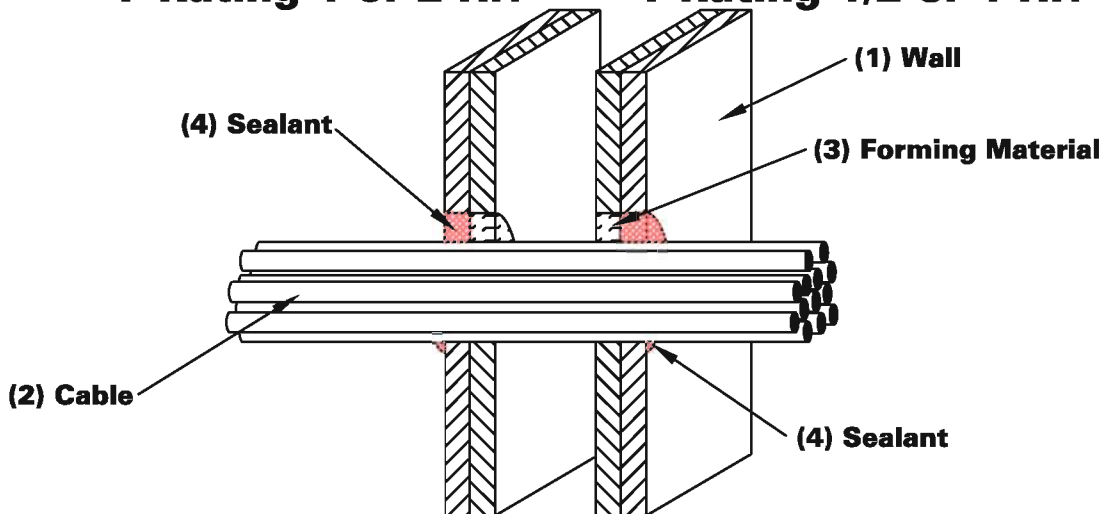
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYP SUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 1/2 or 1 Hr.



1. WALL ASSEMBLY- Construct as specified in the U300 or U400 series designs per UL Fire Resistance Directory. The max. diameter of the opening is 5" (127mm).
2. CABLES - Max. 64% cable fill of opening in any combination of:
 - (A) max. 3/C #12awg nonmetallic sheathed (ROMEX) cable w/copper conductors.
 - (B) max. 400pr #24awg copper telephone cables.
 - (C) max. RG/6 #18awg Type CATV copper conductor coaxial cable.
 - (D) max. 3/C # 2/0awg copper or aluminum conductor SER cables.
 - (E) max. 62.5/125 micron fibre optic cables.

All with PVC insulation and jacket.

 - (F) max. 1/C 350 kcmil copper conductor cable w/cross-linked polyethylene (XLPE) jacket.
 - (G) max. 7/C #12awg copper conductor power and control cables w/XLPE or PVC insulation w/XLPE or PVC jacket.
 - (H) max. 4/C #2/0 aluminum or copper conductor, aluminum or steel jacketed METAL CLAD or ARMORED CLAD cable.
 - (I) max. RG59/U television coaxial cable with fluorinated ethylene insulation and jacketing.

The annular space between the cable bundle and the periphery of opening shall be a min. 0" (point of contact) to max. 1-1/4" (32mm).

3. FORMING MATERIAL (optional) - Mineral wool or fiberglass insulation or foam backer rod compressed and firmly packed into annular space from each end of opening and recessed 5/8" (16mm) from each wall surface.
4. NELSON ES1399 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within annulus, flush with both surfaces of wall. At point of contact, 1/2" (13mm) diameter bead of sealant applied at interface of cables and periphery of opening on both surfaces of wall.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-3270**

Nelson Firestop

DWG NO. FS-0649 R0

DATE: 01/20/05

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

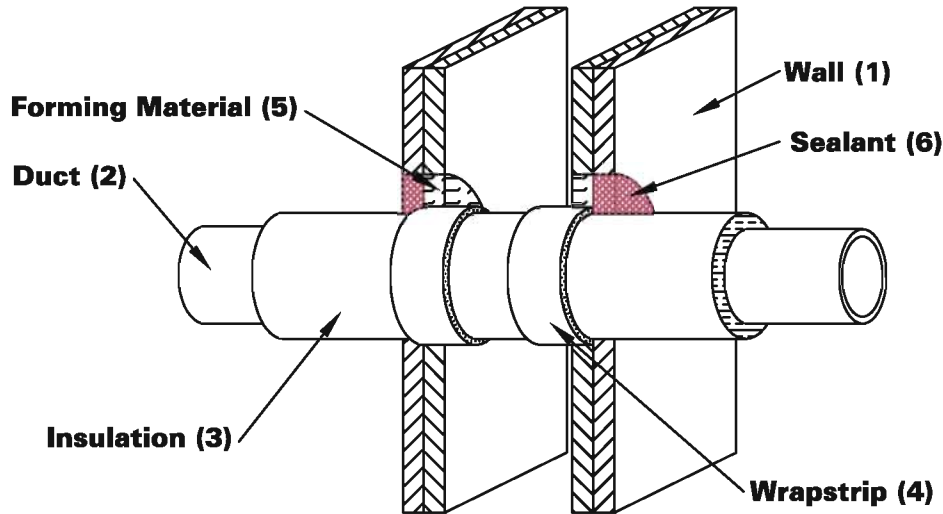
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL METALLIC DUCT

F Rating 1 or 2 Hr.

T Rating 1/2 or 1 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 23" (584mm).
2. **METALLIC DUCT** - Max nominal 20" (508mm) diameter, or smaller, No. 28 MSG (or heavier) steel vent duct. Duct to be rigidly supported on both sides of wall assembly.
3. **DUCT INSULATION** - Nom 1-1/2" (38mm) thick FIBERGLASS insulation jacket on the outside with foil-scrim-kraft facing. The annular space between the wrapstrip and the periphery of the opening shall be min. 0" (point of contact) to max. 1-1/8" (29mm).
4. **NELSON WRS3 WRAPSTRIP** (part # AA0897) - One layer of nom 1/4" (6mm) thick by 1-1/2" (38mm) wide wrapstrip tightly wrapped around duct insulation, with a max. insulation compression ratio of 50% and held in place with masking tape. Wrapstrip slid into annulus on both sides of wall such that wrapstrip is recessed 5/8" (16mm) from both surfaces of wall.
5. **FORMING MATERIAL** (optional) - Mineral wool or fiberglass insulation or foam backer rod compressed and firmly packed into annular space from each end of opening and recessed 5/8" (16mm) from each wall surface.
6. **NELSON ES1399 SEALANT** - Apply to fill the annular space around the duct to a min 5/8" (16mm) depth. flush with both surfaces of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-7126**

Nelson Firestop

DWG NO. FS-0650 R0

DATE: 01/20/05

BY: RL

Project Name: _____
Address: _____

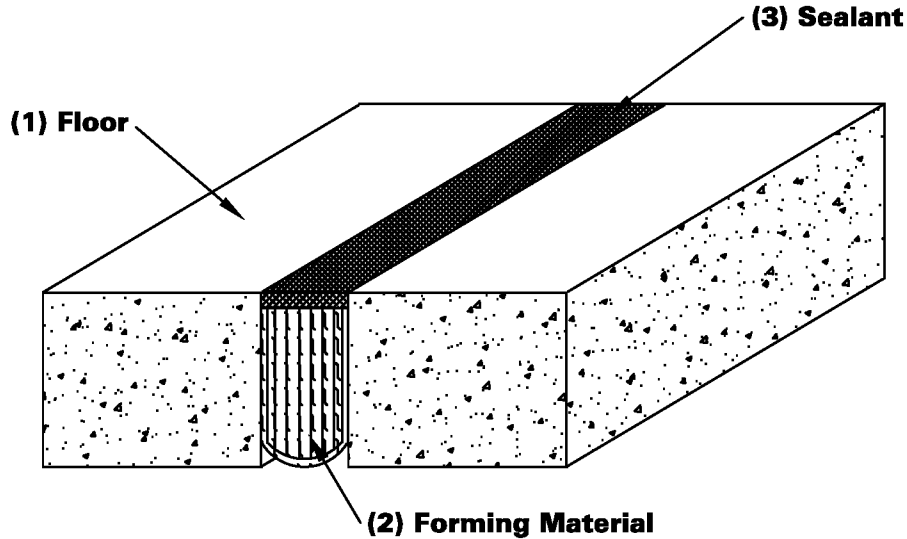
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 4" (102mm).
 2. FORMING MATERIAL - Min. 11" (279mm) width of forming material folded in half, compressed min. 40 percent in thickness and friction fitted into opening as a permanent form. Forming material to be recessed from top surface of floor to accommodate the required thickness of sealant.
- BACKER ROD MFG INC - ULTRA BLOCK
3. NELSON CLK SEALANT - Min. 1/2" (13mm) thickness of sealant applied within the joint, flush with top surface of floor.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
FF-S-1032

Nelson Firestop

DWG NO. FS-0651 R1

DATE: 11/29/06

BY: RL

Project Name: _____
Address: _____

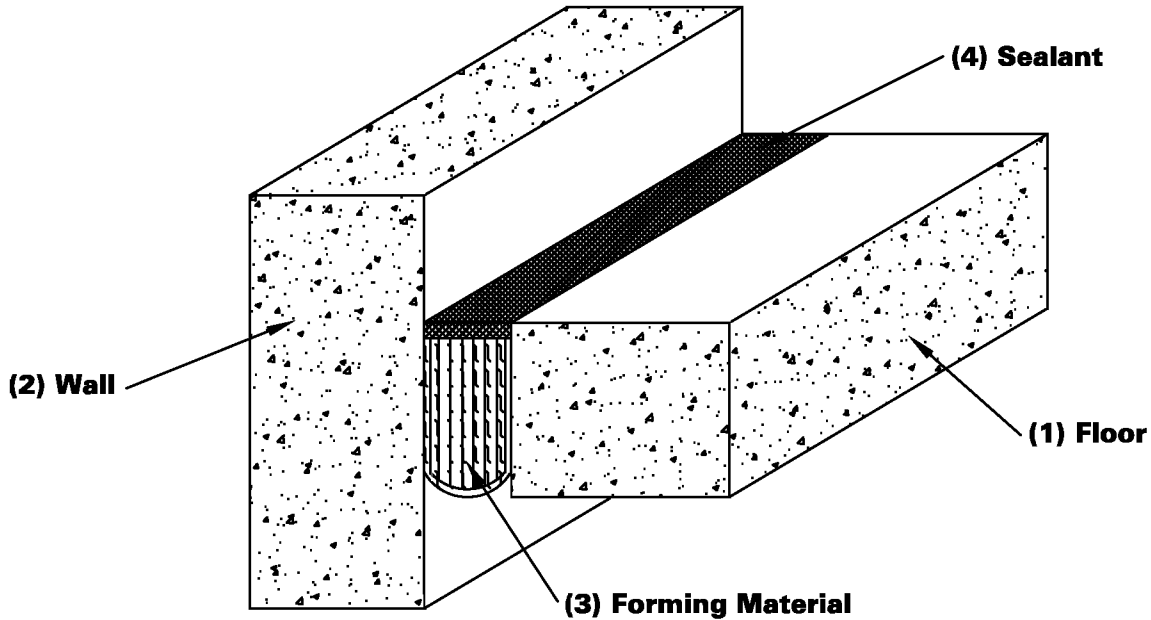
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO WALL

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 4" (102mm).
2. WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete wall. The wall may be constructed of any UL Classified Concrete Blocks.
3. FORMING MATERIAL - Min. 11" (279mm) width of forming material folded in half, compressed min. 40 percent in thickness and friction fitted into opening as a permanent form. Forming material to be recessed from top surface of floor to accommodate the required thickness of sealant.

BACKER ROD MFG INC - ULTRA BLOCK
4. NELSON CLK SEALANT - Min. 1/2" (13mm) thickness of sealant applied within the joint, flush with top surface of floor.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079



**System No.
FW-S-1017**

Nelson Firestop

DWG NO. FS-0652 R1

DATE: 11/29/06

BY: RL

Project Name: _____
Address: _____

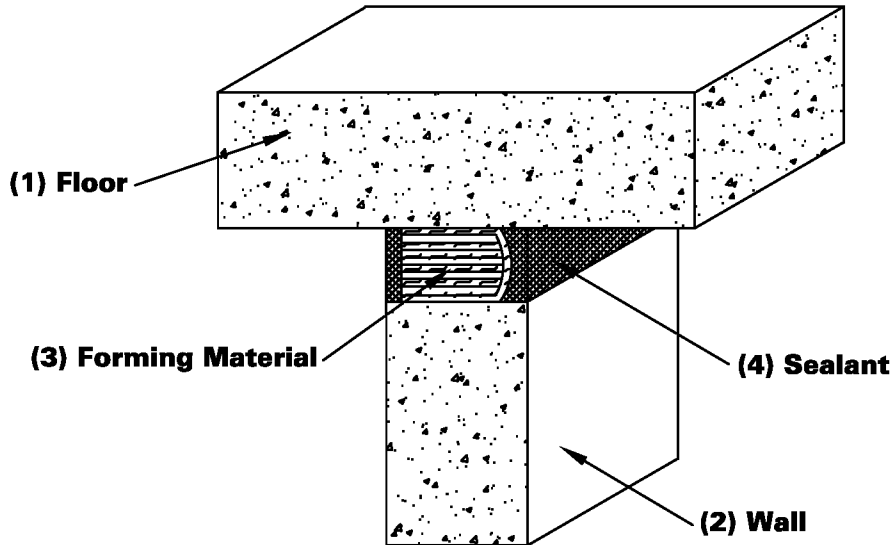
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM HEAD OF WALL

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor.
2. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall or CMU block wall. The max. joint width at the time of installation is 4" (102mm).
3. FORMING MATERIAL - Nom 11" (279mm) wide by 3-3/8" (86mm) thick forming material folded in half and compressed min. 40 percent in thickness. Forming material installed into opening as a permanent form and to be recessed from each surface of walls to accommodate the required thickness of sealant.
4. NELSON CLK SEALANT - Apply CLK over the forming material on both sides of the wall to a min. 1/2" (13mm) thickness, flush with each surface of the wall.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079


System No.
HW-S-1013

Nelson Firestop

DWG NO. FS-0653 R1

DATE: 11/29/06

BY: RL

Project Name: _____
Address: _____

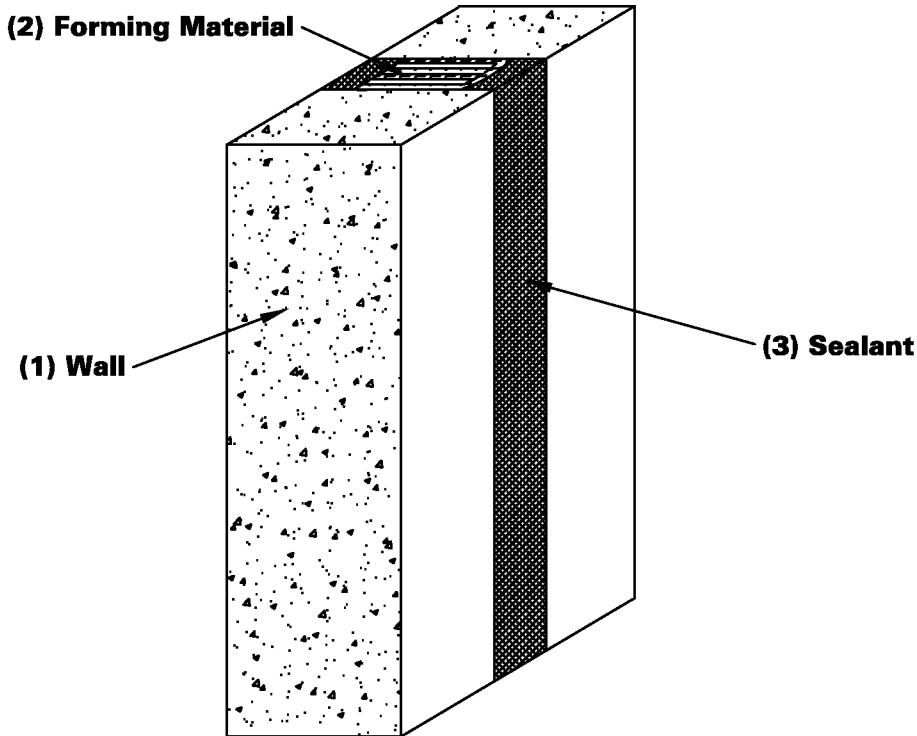
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM WALL TO WALL

**F Rating 2 Hr.
Nominal Joint Width - 4" (102mm)**



1. WALL ASSEMBLY - Min. 5" (127mm) thick lightweight or normal weight concrete wall. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Nom 11" (279mm) wide by 3-3/8" (86mm) thick forming material folded in half and compressed 40 percent in thickness. Forming material installed into opening as a permanent form and to be recessed from each surface of wall to accomodate the required thickness of sealant.
3. NELSON CLK SEALANT - Apply CLK over the forming material on both sides of the wall to a min. 1/2" (13mm) thickness, flush with each surface of wall.

Tested in accordance with:
ASTM E-1966
ANSI/UL 2079



**System No.
WW-S-1034**

Nelson Firestop

DWG NO. FS-0654 R1

DATE: 11/28/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

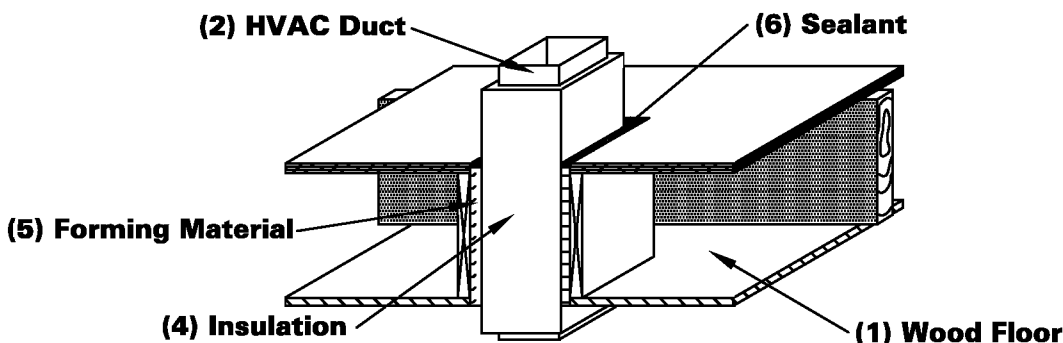
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

WOOD/STEEL JOIST FLOOR INSULATED HVAC/GREASE DUCT

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WOOD FLOOR ASSEMBLY** - Constructed in the manner specified in individual L500 series 1 hr. floor-ceiling designs in the UL Fire Res. Dir.. For 1 Hr. fire rated floor-ceiling assemblies nom 10" (254mm) deep (or deeper) lumber, steel or combination lumber and steel joists and trusses. The 2 Hr. fire rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design No. L505, L511 or L536 in the UL Fire Resistance Directory. Max. area of opening is 435 sq. in. (2806 sq. cm) with a max. dimensions of 30" (762mm).
 - (A) **FLOORING SYSTEM** - Lumber or plywood subfloor with finish lumber, plywood or FLOOR TOPPING mixture.
 - (B) **FURRING CHANNELS** (not shown) - Resilient galv. steel furring installed perpendicular to wood/steel joists/trusses between gypsum board and wood/steel joists/trusses and in 2 hr. assemblies, installed perpendicular to wood joists between first and second layers of gypsum board. All spaced max. 24" O.C..
 - (C) **GYPSUM BOARD** - First layer of wallboard secured to wood/steel joists/trusses or furring channels. Second layer of wallboard (2hr.) screw-attached to furring channels.
2. **HVAC DUCT** - Max. 7-1/2" x 24" (191mm x 610mm) or smaller 26 ga (or heavier) steel duct, installed concentrically or eccentrically within the opening.
3. **GREASE DUCT** (not shown) - Max. 7-1/2" x 24" (191mm x 610mm) or smaller 16 ga (or heavier) steel duct, installed concentrically or eccentrically within the opening.
4. **DUCT INSULATION** - Nom 1-1/2" (38mm) thick blanket totally encapsulated within foil-scrim facers. The steel grease duct shall be wrapped with one layer of duct wrap installed in accordance with Grease Duct Assembly No. G-14. The steel air duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly No. V-19. The annular space between the insulated steel duct and the periphery of the opening shall be nom 1-1/2" (38mm).
THERMAL CERAMICS INC - FireMaster Fast Wrap+
5. **FORMING MATERIAL** - Min. 10-3/8" (264mm) and 11-5/8" (295mm) thickness of unfaced scrap duct ap material compressed 50 % into opening as a permanent form between the insulated steel duct and the periphery of the opening for 1 and 2 Hr. fire rated floor-ceiling assemblies, respectively. At point of contact location between overlap of duct wrap material and floor-ceiling assembly, forming material shall be firmly packed to max. extent possible on both sides of the floor-ceiling assembly. Forming material to be installed flush with bottom surface of ceiling and recessed from top surface of floor to accomodate the required thickness of sealant.
6. **NELSON ES1399/LBS3 SEALANT** - Min. 1/4" (3mm) thickness of sealant applied within annulus on top surface of floor. A min. 1/4" (3mm) diameter bead of sealant shall be applied at the plywood floor/insulated steel duct interface on both surfaces of floor-ceiling assembly.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-C-7036**

Nelson Firestop

DWG NO. FS-0655 R2

DATE: 11/06/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

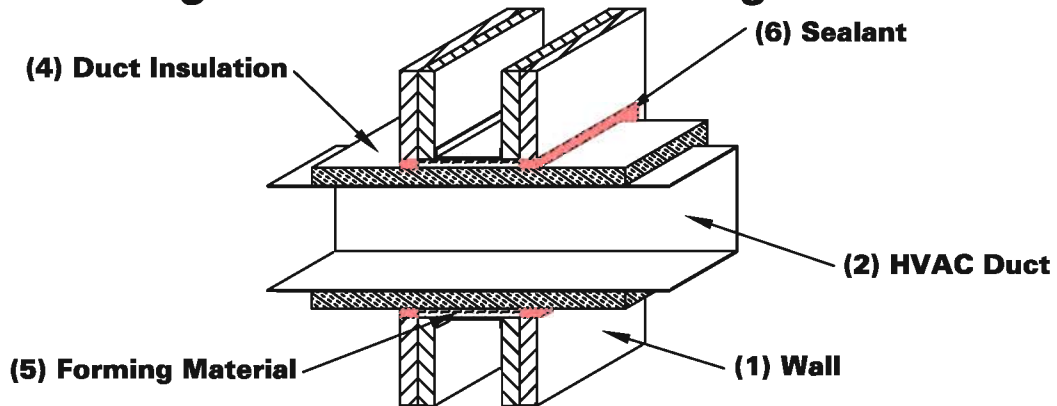
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL INSULATED HVAC/GREASE DUCT

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U400 or V400 series designs as shown in the UL Fire Resistance Directory. The max. area of the opening is 1007.5 sq. in. (6500 sq. cm) with a max. dimension of 35" (889mm).
2. **HVAC DUCT** - Nominal 24" x 30" (610mm x 762mm), or smaller, 26 gauge (or heavier) steel duct installed eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall.
3. **GREASE DUCT** (not shown) - Nominal 24" x 30" (610mm x 762mm) (or smaller), 16 GA (or heavier) steel duct installed eccentrically within the opening. The duct is to be rigidly supported on both sides of the wall. Grease duct assemblies are for use only in 2 Hr. rated walls.
4. **DUCT INSULATION** - Nom 1-1/2" (38mm) thick blanket totally encapsulated within foil-scrim facers. The steel grease duct shall be wrapped with one layer of duct wrap installed in accordance with Grease Duct Assembly No. G-14. The steel air duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly No. V-19. The annular space between the insulated duct and the periphery of the opening shall be min. 0" (point of contact) to max. 2" (51mm).

THERMAL CERAMICS INC - Firemaster Fast Wrap+

5. **FORMING MATERIAL** - Min. 3-1/2" (89mm) thickness of unfaced scrap duct wrap material compressed 50 percent into opening as a permanent form between the insulated steel duct and the periphery of opening. Forming material shall be firmly packed to max. extent possible at gypsum board/insulated steel duct interface on both sides of the wall. Forming material to be recessed from both surfaces of wall to accommodate the required thickness of sealant.
6. **NELSON ES1399/LBS3 SEALANT** - Min. 1/4" (6mm) thickness of sealant applied within annulus, flush with both surfaces of wall assembly. A min. 1/4" (6mm) diameter bead of sealant shall be applied at the gypsum board/insulated duct interface on both surfaces of wall assembly.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-7121

Nelson Firestop

DWG NO. FS-0656 R1

DATE: 07/14/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

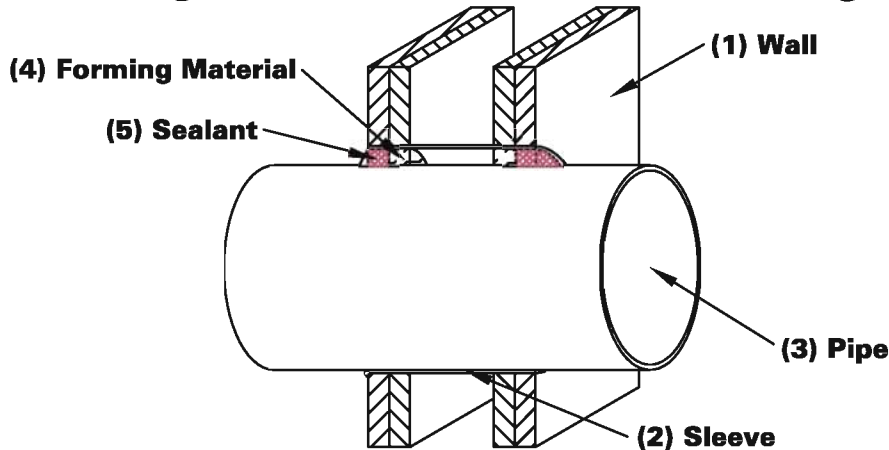
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL METALLIC PIPE OR CONDUIT

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 26-3/8" (670mm) for steel stud walls and 14-1/2" (368mm) for wood stud walls.
2. **METALLIC SLEEVE** - Sleeve fabricated from 0.018" (0.46mm) thick (28 GA) galv sheet steel and having a min. 1" (25mm) lap along the longitudinal seam. Sheet steel coiled to a diameter less than circular cutouts in wall assembly, inserted through both sides of wall and allowed to uncoil against the circular cutouts in the wall assembly. Sleeve may consist of Sch. 5 (or heavier) steel pipe, rigid steel conduit or EMT friction fitted into wall assembly, flush with or extending max. 4" (102mm) beyond each surface of the wall surface.
3. **METALLIC PIPE or CONDUIT** - The following types and sizes of metallic pipes, conduits or tubing may be used:
 - (A) **STEEL PIPE** - Nom 24" (610mm) diameter (or smaller) Sch. 5 (or heavier) steel pipe.
 - (B) **IRON PIPE** - Nom 24" (610mm) diameter (or smaller) cast or ductile iron pipe.
 - (C) **CONDUIT** - Nom 4" (102mm) diameter (or smaller) steel electrical metallic tubing or nom 6" (152mm) diameter (or smaller) steel conduit or nom 1" (25mm) diameter (or smaller) flexible steel conduit.
 - (D) **COPPER TUBING or PIPE** - Nom 6" (152mm) diameter (or smaller) Type L (or heavier) copper tubing or regular (or heavier) copper pipe.

The annular space between pipes, tubing or conduits and periphery of opening shall be min. 0" (point of contact) to max. 2" (51mm).
4. **FORMING MATERIAL** - Min. 2" (51mm) thickness of nom 4pcf (64 kg/cubic meter) mineral wool batt insulation firmly packed into ends of steel sleeve and recessed as required to accomodate required thickness of sealant.
5. **NELSON ES1399/LBS3 SEALANT** - Min. 5/8" (16mm) thickness of sealant within the annular space flush with edges of steel sleeve on both sides of the wall. Nom 3/8" (10mm) diameter bead of sealant to be applied at the point of contact location between the metallic penetrant and the steel sleeve. Additional nom 3/8" (10mm) diameter bead of sealant applied at the steel sleeve/gypsum board interface when sleeve projects beyond the surface of the wall.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-1405**

Nelson Firestop

DWG NO. FS-0657 R1

DATE: 07/14/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

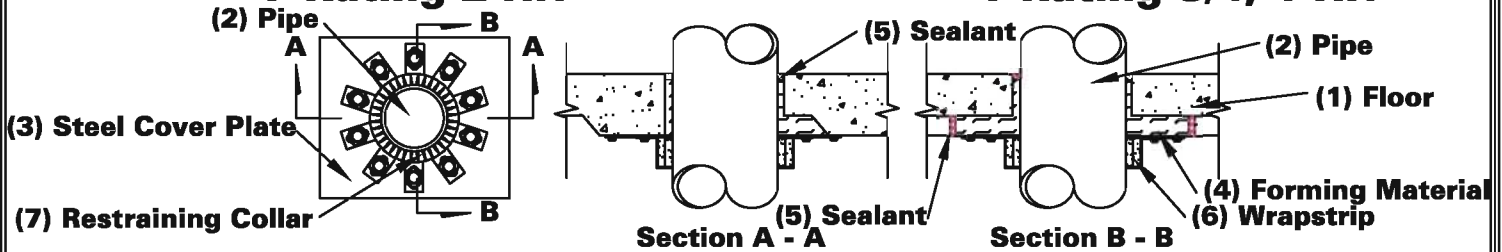
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Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR NONMETALLIC PIPE

F Rating 2 Hr.

T Rating 3/4, 1 Hr.



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete topping poured over a steel fluted deck. Diameter of opening to be 1/2" - 5/8" (13 -16mm) larger than penetrant. Max. diameter of opening is 5" (127mm).
2. NONMETALLIC PIPE - Max. 4" (102mm) diameter, (or smaller), Sch. 40 PVC or RNC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Max. 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed piping systems. Max. 4" (102mm) diameter (or smaller) Sch. 40 ABS pipe for use in closed or vented piping systems. Max. 4" (102mm) diameter (or smaller) Sch. 40 FRPP pipe for use in closed or vented piping systems.
3. STEEL COVER PLATE - Min. 16 GA galv steel. Width of plate to extend a min. of 3" (76mm) beyond both sides of opening. Length of plate to extend to steel floor unit valley beyond each side of core-drilled hole with a min. lap of 1-1/2" (38mm) on the floor unit valley at each end. Circular cutout in plate to be 1/4" (6mm) larger than the outside diameter of penetrant. Max. diameter of opening is 4-3/4" (121mm). Plate to be cut in half along the length of plate to permit installation around the penetrant. Plate secured to valleys of floor unit using 1/4" (6mm) diameter by min. 1-1/4" (32mm) long steel concrete anchors in conjunction with min. 1" (25mm) diameter steel fender washers. Fasteners to be located approx. 1" (25mm) from edges of plate at each corner and at both sides of cut made to permit installation around penetrant.
4. FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation tightly packed into flutes of steel floor units above steel cover plate and annular space between penetrant and floor. Forming material within flutes to be recessed 1/2" (13mm) from both side edges of steel cover plate to accommodate the required depth of sealant. Additional forming material firmly packed into annular space between pipe and concrete. Forming material in annular space to be recessed 1/4" (6mm) from top surface of floor to accommodate the sealant.
5. NELSON LBS3 SEALANT - Min. 1/4" (6mm) thickness of sealant applied within annular space, flush with the top of the concrete floor. Min. 1/2" (13mm) thickness of sealant applied into flutes of steel floor units above steel cover plate to completely cover forming material.
6. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1/4" (6mm) thick by 1" (25mm) wide wrapstrip around the through penetrant. The wrapstrips are installed on the bottom side of the steel cover plate.

Pipe Diam. in. (mm)	Min. No. of Wrapstrip Layers	Annular Space in. (mm)	Through Penetrant	T Rating Hr.
3 & 4 (76 & 102)	2	0 to 5/8 (16)	PVC, CPVC, ABS, RNC	1
1-1/2 & 2 (38 & 51)	1	0 to 5/8 (16)	PVC, CPVC, ABS, RNC	1
3 & 4 (76 & 102)	2	0 to 5/8 (16)	FRPP	3/4
1-1/2 & 2 (38 & 51)	1	0 to 5/8 (16)	FRPP	3/4

7. RESTRAINING COLLAR (part # AA0659D) - Apply min. 28 GA. glv. steel restraining collar around the wrapstrip. Attach the collar to the steel cover plate with No. 8 by 3/4" (19mm) long steel sheet metal screws in conjunction with 1" (24mm) diameter steel fender washers. Use 1/4" (6mm) by 1-1/4" (32mm) concrete screws when mounting beneath valley of steel floor unit.
8. NELSON PCS PIPECHOKE (not shown) - As an option to the WRS3 and restraining collar, the appropriate sized pipechoke may be used around the penetrant on the underside of the steel cover plate. Secure using 1/4" (6mm) diameter by 1-3/4" (44mm) long steel concrete anchors in conjunction with 1/4" (6mm) by 3/4" (19mm) diameter and 1/4" (6mm) by 1-1/4" (32mm) diameter steel washers. When used with ABS or FRPP pipe, the max. size of pipe is 2" (51mm).

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
F-A-2159**

Nelson Firestop

DWG NO. FS-0658 R1

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 10/25/06

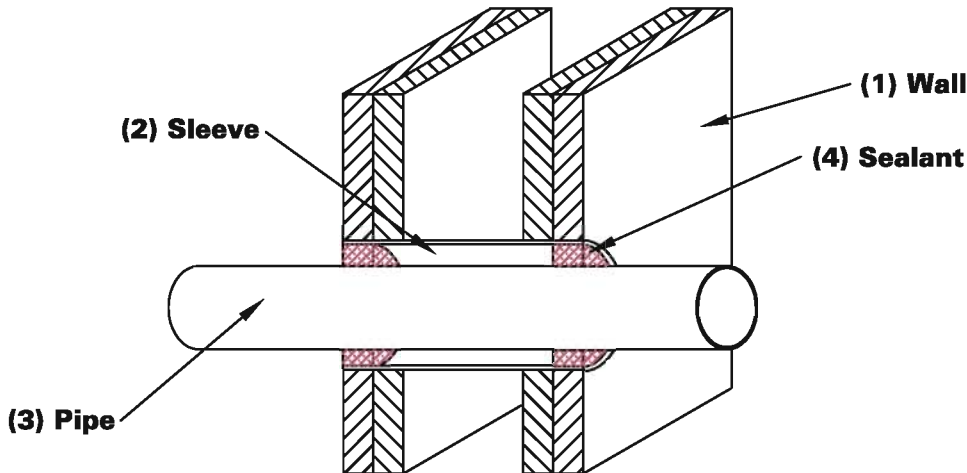
BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 1 or 2 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 4-3/8" (111mm).
2. **METALLIC SLEEVE** - Nom 4" (102mm) diameter (or smaller) cylindrical sleeve fabricated from 0.018" (0.46mm) thick (28 GA) galv sheet steel and having a min. 1" (25mm) lap along the longitudinal seam. circular cutouts in wall assembly, inserted through both sides of wall and allowed to uncoil against the wall surfaces. Sleeve to be installed flush with wall surfaces or extending a max. 1" (25mm) from wall surfaces. Sleeve may consist of Sch. 5 (or heavier) steel pipe, rigid steel conduit or EMT friction fitted into wall assembly flush with or extending a max. 4" (102mm) beyond each surface of the wall.
3. **NONMETALLIC PIPE or TUBING** - The following types and sizes of nonmetallic pipes, conduits or tubing may be used:
 - (A) **POLYVINYL CHLORIDE (PVC) PIPE** - Nom 2" (51mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) piping systems.
 - (B) **CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE** - Nom 2" (51mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (C) **RIGID NONMETALLIC CONDUIT** - Nom 2" (51mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (D) **ELECTRICAL NONMETALLIC TUBING (ENT)** - Nom 1" (25mm) diameter (or smaller) PVC tubing.

Max. annular space is 1" (25mm).
4. **NELSON LBS3 SEALANT** - Apply to fill the annular space around the pipe to a min. 5/8" (16mm) or 1-1/4" (32mm) depth for 1 or 2 Hr. assemblies respectively, flush with both surfaces of sleeve. Additional sealant to be installed such that a min. 5/8" (16mm) crown is formed around the penetrating item and lapping a min. 1" (25mm) beyond the periphery of the opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479


System No.
W-L-2470

Nelson Firestop

DWG NO. FS-0659 R0

DATE: 03/28/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

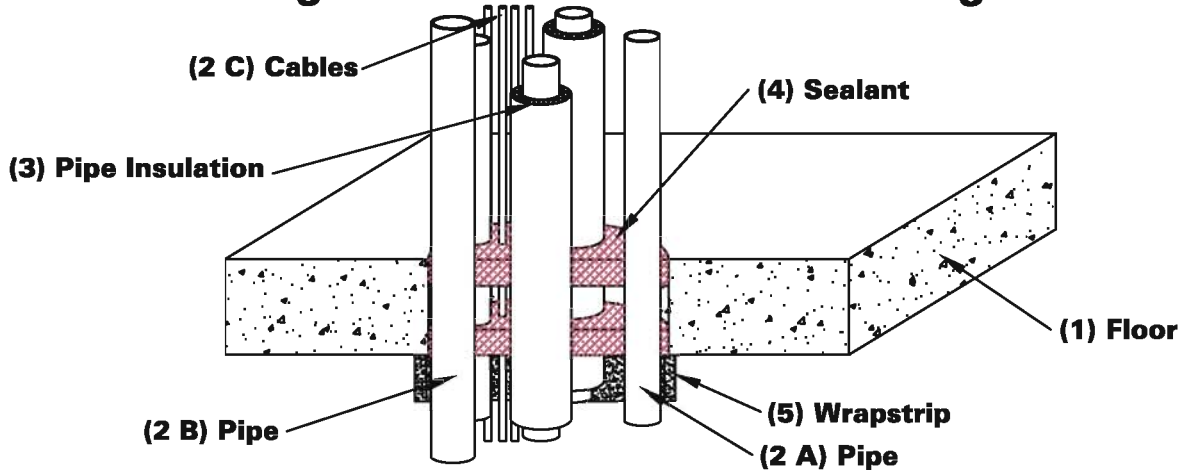
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR MULTIPLE PENETRANTS

F Rating 1 Hr.

T Rating 0 Hr.



1. FLOOR ASSEMBLY - Min. 2-1/2" (64mm) thick lightweight or normal weight concrete floor. The max. diameter of opening is 5" (127mm).
2. PENETRANTS- Pipes, tubes and cables to be bundled together and centered in opening. The annular space shall be min. 0" (point of contact) to 1/2" (13mm).
 - (A) COPPER TUBING - Nom 1" (25mm) diameter (or smaller) Type L (or heavier) copper tubing. A max. of (TWO) 1" (25mm) diameter (or smaller) copper tubes without insulation may be used. A max. of (TWO) 3/4" (19mm) diameter (or smaller) copper tubes with insulation may be used.
 - (B) NONMETALLIC PIPE - Nom 1-1/2" (13mm) diameter (or smaller) Sch. 40 (or heavier) solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. A max. of (ONE) pipe may be used.
 - (C) CABLES - Four pair No. 18awg (or smaller) cable with PVC insulation and jacket materials. A max. of (TWO) cables may be used.
3. PIPE INSULATION - Nom 1/2" (13mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Tube insulation to be installed on a max. of (TWO) 3/4" (19mm) diameter (or smaller) copper tubes.
4. NELSON LBS3 SEALANT - Min. 1/2" (13mm) thickness of sealant applied within annulus, flush with top and bottom surfaces of floor. At point contact location, apply a min. 1/4" (6mm) thick bead of sealant at the penetrant/concrete interface on both surfaces of the floor.
5. NELSON WRS3 WRAPSTRIP (part # AA0897) - Nom 1/4" (6mm) thick by 1-1/2" (38mm) wide strips. ONE layer of wrapstrip is applied around the group of penetrants at its egress from the sealant with its top edge abutting the bottom surface of the floor.
6. RESTRAINING COLLAR (not shown) (part # AA0659D) - Apply min. 30 GA. galv. steel restraining collar around the wrapstrip. Attach the collar to the floor with min. 1/4" (6mm) diameter x 1-3/4" (45mm) long steel concrete anchors in conjunction with 1/4" x 1-1/4" (6mm x 32mm) diameter fender washers. Four concrete anchors are required.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
F-A-8026**

Nelson Firestop

DWG NO. FS-0660 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 03/30/06

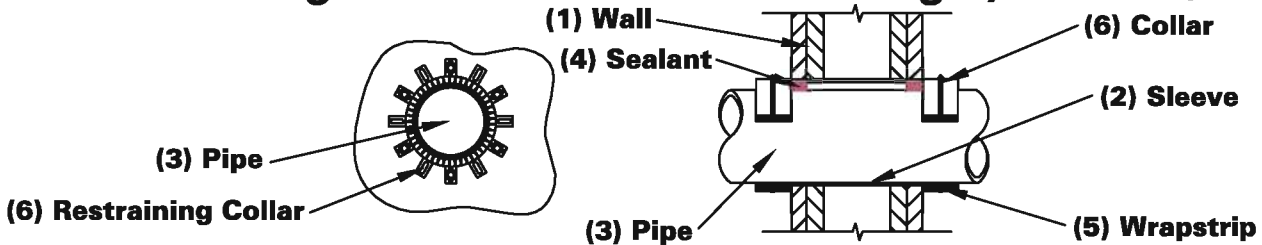
BY: RL

Nelson Firestop
 800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0, 1 or 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
2. METALLIC SLEEVE (optional) - Sleeve fabricated from 0.018" (0.46mm) thick (28 GA) galv sheet steel and having a min. 1" (25mm) lap along the longitudinal seam. Sheet steel coiled to a diameter less than circular cutouts in wall assembly, inserted through both sides of wall and allowed to uncoil against the circular cutouts in the wall assembly. Sleeve to be installed flush with each surface of wall. Sleeve may consist of Sch. 5 (or heavier) steel pipe, rigid steel conduit or EMT friction fitted into wall assembly.
3. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 4" (102mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 4" (102mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 4" (102mm) diameter (or smaller) Sch. 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

The annular space between pipe or conduit and periphery of opening shall be 0" (point of contact) to 1/2" (13mm).
4. NELSON LBS3 SEALANT - Apply LBS3 within the annular space to a min. 5/8" (16mm) depth, flush with both wall surfaces. At point of contact, a min. 3/8" (10mm) diameter bead of sealant shall be applied at the gypsum/penetrant interface on both surfaces of wall.
5. NELSON WRS3 WRAPSTRIP (part # AA0896) - Apply 1/4" (6mm) thick by 1" (25mm) wide WRS3 around the pipe on both sides of the wall in accordance with the schedule shown in the table below.

Pipe Type	Max. Pipe Size	Nos. of Layers	F Rating (Hr.)	T Rating (Hr.)
PVC, CPVC or RNC	4 (102mm)	2 or 3	2	0 or 1
ABS	2 (51mm), 3 (76mm) or 4 (102mm)	1, 2 or 3	2	1-1/2
PVC, CPVC or RNC	2 (51mm)	1	2	1
ABS	4 (102mm)	3	1	0
PVC, CPVC or RNC	4 (102mm)	2 or 3	1	0
PVC, CPVC, ABS or RNC	2 (51mm) or 3 (76mm)	1 or 2	1	0

6. STEEL RESTRAINING COLLAR (part # AA0659D) - Apply nominal 28 gauge prefabricated galvanized steel collar around the wrapstrip. Overlap the collar and secure with 1/2" (13mm) wide by 0.028" (.711mm) thick stainless steel hose clamp. Collar secured to the wall with 1/8" (3mm) diameter by min. 2-3/4" (70mm) long steel molly bolts in conjunction with 1/4" (6mm) by 1-1/4" (32mm) diameter steel fender washers.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-2468**

Nelson Firestop

DWG NO. FS-0661 R0

DATE: 03/28/06

BY: RL

Nelson Firestop

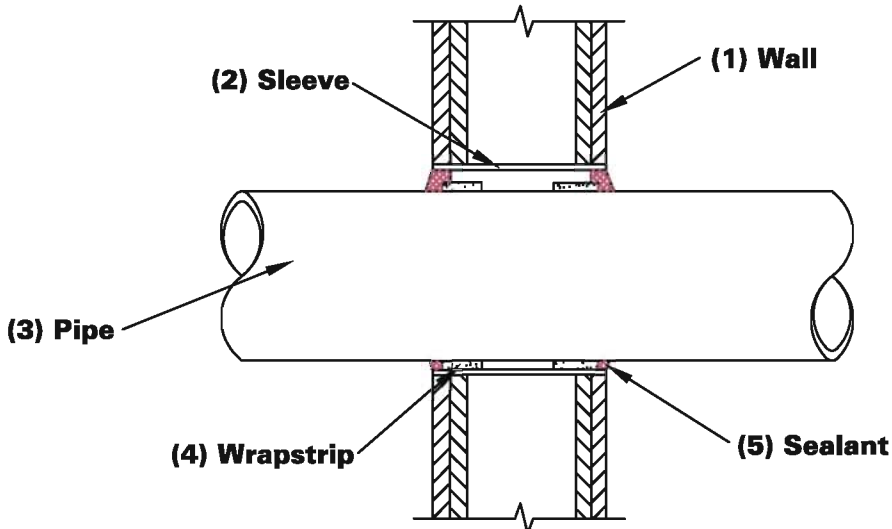
**800 331-7325 Fax: 918 627-2941
Tulsa, Ok.**

Project Name: _____
Address: _____
Installer: _____
Address: _____
Signature: _____

GYPSUM WALL NONMETALLIC PIPE

F Rating 1 or 2 Hr.

T Rating 0 Hr.



1. WALL ASSEMBLY- Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 5" (127mm).
2. METALLIC SLEEVE (optional) - Sleeve fabricated from 0.018" (0.46mm) thick (28 GA) galv sheet steel and having a min. 1" (25mm) lap along the longitudinal seam. Sheet steel coiled to a diameter less than circular cutouts in wall assembly, inserted through both sides of wall and allowed to uncoil against the circular cutouts in the wall assembly. Sleeve to be installed, flush with each surface of wall. Sleeve may consist of Sch. 5 (or heavier) steel pipe, rigid steel conduit or EMT friction fitted into wall assembly.
3. NONMETALLIC PIPE - The following types of nonmetallic pipes or conduits may be used:
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
 - (B) RIGID NONMETALLIC CONDUIT - Nom 3" (76mm) diameter (or smaller) Sch. 40 PVC conduit.
 - (C) CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - Nom 3" (76mm) diameter (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

The annular space between the pipe or conduit and the periphery of opening shall be min. 1/4" (6mm) to max. 1-1/4" (32mm).
4. NELSON WRS3 WRAPSTRIP (part # AA0897) - Apply 1 continuous layer of 1/4" (6mm) thick by 1-1/2" (38mm) wide wrapstrip around the pipe on both sides of the wall and slide into the annular space, such that the ends are recessed 1/4" (6mm) from the surface of the wall.
5. NELSON LBS3 SEALANT - Min. 5/8" (16mm) thickness of sealant applied within the annulus flush with both surfaces of wall. Additional sealant to be installed such that a min. 3/8" (10mm) thick crown is formed around the pipe.

Tested in accordance with:

ASTM E-814
ANSI/UL 1479



**System No.
W-L-2469**

Nelson Firestop

DWG NO. FS-0662 R0

DATE: 03/28/06

BY: RL

Project Name: _____
Address: _____

Installer: _____
Address: _____

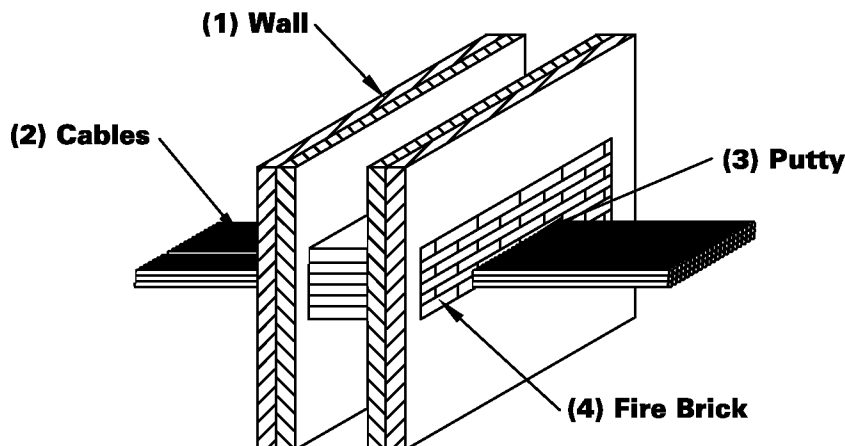
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

GYPSUM WALL CABLES

F Rating 1 or 2 Hr.

T Rating 3/4 Hr.



1. **WALL ASSEMBLY** - Constructed in the manner specified in the U400 or V400 series designs as showing the UL Fire Resistance Directory. The max. area of opening is 168 sq. in. (1084 sq. cm) with a max. dimension of 28" (711mm). Additional framing members shall be installed in stud cavity to form a rectangular box around cables.
2. **CABLES** - Aggregate cross-sectional area of cables within opening is to be max. 29 sq. in. (187 sq. cm). The annular space between the cables and the periphery of opening shall be min. 0" (point of contact) to max. 2" (51mm). Any combination of the following types and sizes of cables may be used:
 - A). 1/C-350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene jacket.
 - B). 200 pair - No. 24awg (or smaller) copper conductor cable with polyvinyl insulation and jacket.
 - C). 62.5/125 fiber optic cable with PVC insulation and jacket.
 - D). Max. 3/C No.12awg (or smaller) METAL-CLAD cable.
3. **NELSON FSP PUTTY** (part # AA445) - Prior to installation of the fire bricks, min. 3/8" (10mm) thickness of putty forced into interstices of cables within the full depth of the stud cavity. After installation of the fire bricks, min. 3/8" (10mm) additional putty applied between the interstices of cables and between the fire bricks and cables on both surfaces of the wall assembly. At point of contact location between cables and gypsum board, min. 3/8" (10mm) thickness of putty applied at the cables/gypsum board interface on both surfaces of the wall.
4. **NELSON FIRE BRICKS** (part # AA0834) - For walls incorporating max. 3-1/2" (89mm) steel studs, fire bricks installed with 5" (127mm) dimension projecting through and centered in opening. For walls constructed of larger than 3-1/2" (89mm) steel studs, fire brick installed with long dimension passing through and centered in opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
W-L-3311**

Nelson Firestop

DWG NO. FS-0663 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 07/14/06

BY: RL

Nelson Firestop
 800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.

CONCRETE WALL CABLES

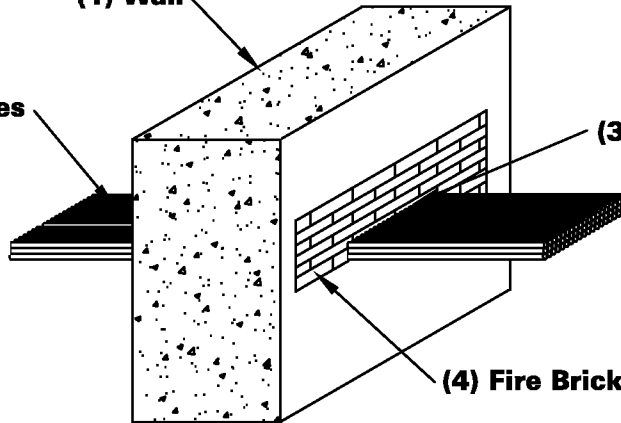
F Rating 2 Hr.
(1) Wall

T Rating 3/4 Hr.

(2) Cables

(3) Putty

(4) Fire Brick



1. WALL ASSEMBLY - Min. 6" (152mm) thick reinforced lightweight or normal weight concrete. Wall may also be constructed of any UL Classified Concrete Blocks. Max. area of opening is 168 sq. in. (1084 sq. cm) with a max. dimension of 28" (711mm).
2. CABLES - Aggregate cross-sectional area of cables within opening is to be max. 29 sq. in. (187 sq. cm). The annular space between the cables and the periphery of opening shall be min. 0" (point of contact) to max. 2" (51mm). Any combination of the following types and sizes of cables may be used:
 - A). 1/C-350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene jacket.
 - B). 200 pair - No. 24awg (or smaller) copper conductor cable with polyvinyl insulation and jacket.
 - C). 62.5/125 fiber optic cable with PVC insulation and jacket.
 - D). Max. 3/C No.12awg (or smaller) METAL-CLAD cable.
3. NELSON FSP PUTTY (part # AA445) - Prior to installation of the fire bricks, min. 3/8" (10mm) thickness of putty forced into interstices of cables within the full depth of the wall. After installation of the fire bricks, min. 3/8" (10mm) additional putty applied between the interstices of cables and between the fire bricks and cables on both surfaces of the wall assembly. At point of contact location between cables and concrete, min. 3/8" (10mm) thickness of putty applied at the cables/concrete interface on both surfaces of the wall.
4. NELSON FIRE BRICKS (part # AA0834) - For reinforced concrete and solid filled concrete block wall assemblies, bricks installed centered within depth of opening with the long dimension placed horizontally. For HOLLOW-CORE block walls, bricks installed with long dimension passing through the opening from surface to surface. Bricks to completely fill the entire opening.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



System No.
W-J-3159

Nelson Firestop

DWG NO. FS-0664 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

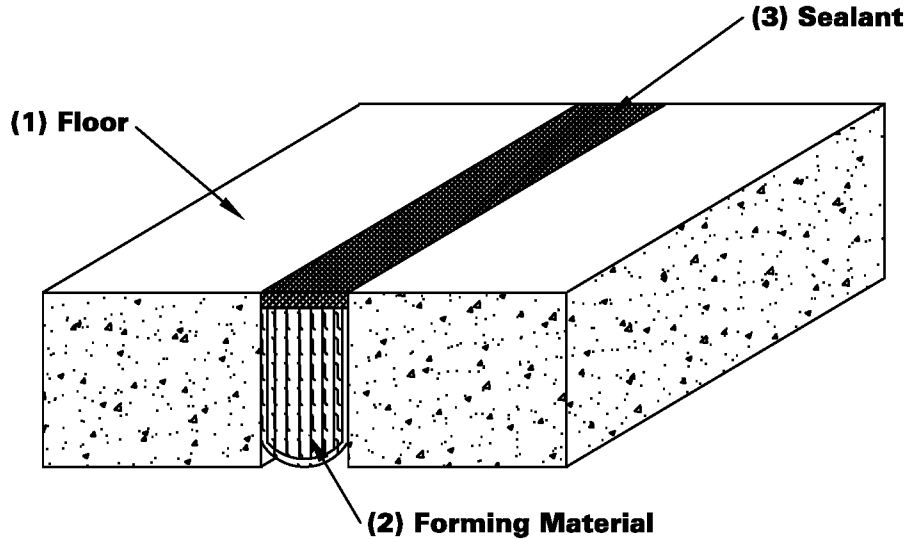
DATE: 07/14/06

BY: RL

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

JOINT TREATMENT SYSTEM FLOOR TO FLOOR

**F Rating 4 Hr.
Nominal Joint Width - 4" (102mm)**



1. FLOOR ASSEMBLY - Min. 6" (152mm) thick lightweight or normal weight concrete floor. The max. joint width at the time of installation is 4" (102mm).
2. FORMING MATERIAL - Min. 16" (406mm) width of forming material folded in half and firmly packed into opening as a permanent form. Forming material to be recessed from top surface of floor as required to accommodate the required thickness of sealant.

BACKER ROD MFG INC - ULTRA BLOCK

ALTERNATE FORMING MATERIAL - Min. 4pcf (64 kg/cubic meter) mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min. width of 5-1/2" (140mm) and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed 50% in thickness and such that the compressed batt sections are recessed from top surface of floor to accommodate the required thickness of sealant. Adjoining lengths of batt to be tightly-butted with butted seams spaced min. 36" (914mm) apart along the length of the joint.

3. NELSON CLK SEALANT (S/L or N/S) - Min. 1/2" (13mm) thickness of sealant applied within the joint, flush with top surface of floor.

Tested in accordance with:

ASTM E-1966
ANSI/UL 2079



**System No.
FF-S-1036**

Nelson Firestop

DWG NO. FS-0665 R1

DATE: 11/29/06

BY: RL

Project Name: _____

Address: _____

Installer: _____

Address: _____

Signature: _____

Nelson Firestop

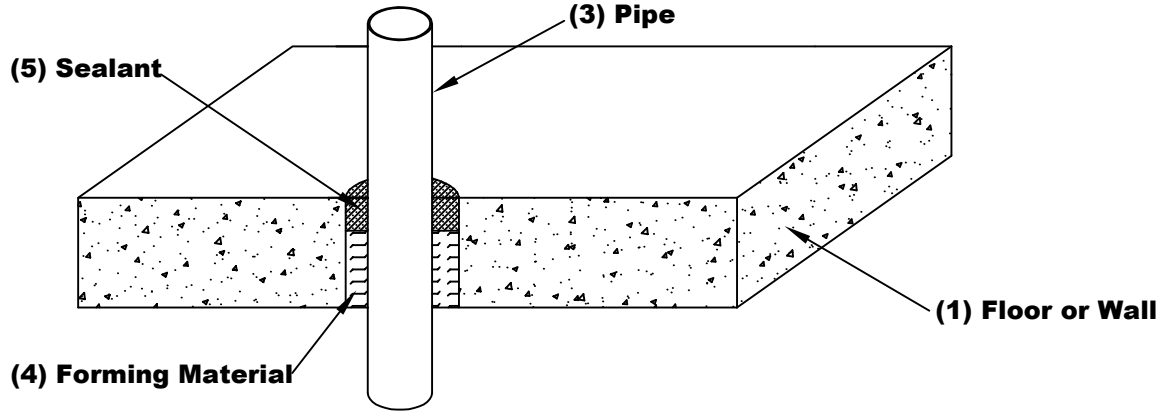
800 331-7325 Fax: 918 627-2941

Tulsa, Ok.

CONCRETE FLOOR OR WALL METALLIC PIPE

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or minimum 5 in. thick reinforced lightweight or normal weight concrete wall. Floor may also be constructed of any min. 6 in. thick hollow-core Precast Concrete Units. Wall may also be constructed of any UL Classified Concrete Blocks. Maximum diameter of the opening is 6 inches.
2. NONMETALLIC SLEEVE - (Optional, not shown) Nom. 6" diameter (or smaller) Schedule 40 PVC pipe cast or grouted into the floor or wall assy., flush with both surfaces.
3. METALLIC PIPE - One metallic pipe, conduit or tubing of the following types and sizes may be used. Annular space to be 0 to 1-3/4" with pipe rigidly supported on both sides.
 - (A) CONDUIT - Nominal 4" (102mm) diameter (or smaller) EMT or steel conduit.
 - (B) COPPER TUBING - Nominal 4" (102mm) diameter (or smaller) Type M (or heavier) copper tubing.
 - (C) STEEL PIPE - Nominal 4" (102mm) diameter (or smaller) Schedule 10 (or heavier) steel pipe.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of sealant.
5. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 1/2" (12mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall. Additional 1/2" bead of sealant to be applied at the surface of the floor or wall at any point contact of the pipe and the concrete. When the floor is constructed of hollow-core precast concrete units, fill material shall be applied symmetrically to both sides of the floor.



**System No.
C-AJ-1581**

Tested in accordance with:

**ASTM E-814
ANSI/UL 1479**

DWG NO. FS-0666 R0

DATE: 01/07/08

BY: TEP

Project Name: _____
Address: _____

Installer: _____
Address: _____

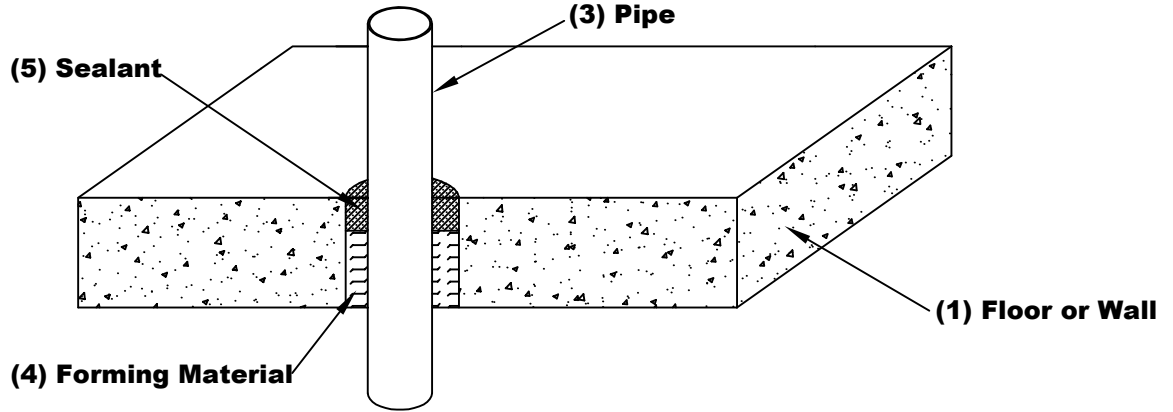
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL METALLIC PIPE

F Rating 3 Hr.

T Rating 0 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or minimum 5 in. thick reinforced lightweight or normal weight concrete wall. Floor may also be constructed of any min. 6 in. thick hollow-core Precast Concrete Units. Wall may also be constructed of any UL Classified Concrete Blocks. Maximum diameter of the opening is 6 inches.
2. NONMETALLIC SLEEVE - (Optional, not shown) Nom. 6" diameter (or smaller) Schedule 40 PVC pipe cast or grouted into the floor or wall assy., flush with both surfaces.
3. METALLIC PIPE - One metallic pipe, conduit or tubing of the following types and sizes may be used. Annular space to be 1/4" to 1-3/4" with pipe rigidly supported on both sides.
 - (A) CONDUIT - Nominal 4" (102mm) diameter (or smaller) EMT or steel conduit.
 - (B) COPPER TUBING - Nominal 4" (102mm) diameter (or smaller) Type M (or heavier) copper tubing.
 - (C) STEEL PIPE - Nominal 4" (102mm) diameter (or smaller) Schedule 10 (or heavier) steel pipe.
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accomodate the required thickness of sealant.
5. NELSON LBS3 or ES1399 SEALANT - Apply to fill the annular space to a min. 1/2" (12mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall. When the floor is constructed of hollow-core precast concrete units, fill material shall be applied symmetrically to both sides of the floor.



**System No.
C-AJ-1580**

Tested in accordance with:

**ASTM E-814
ANSI/UL 1479**

DWG NO. FS-0667 R0

DATE: 01/07/08

BY: TEP

Project Name: _____
Address: _____

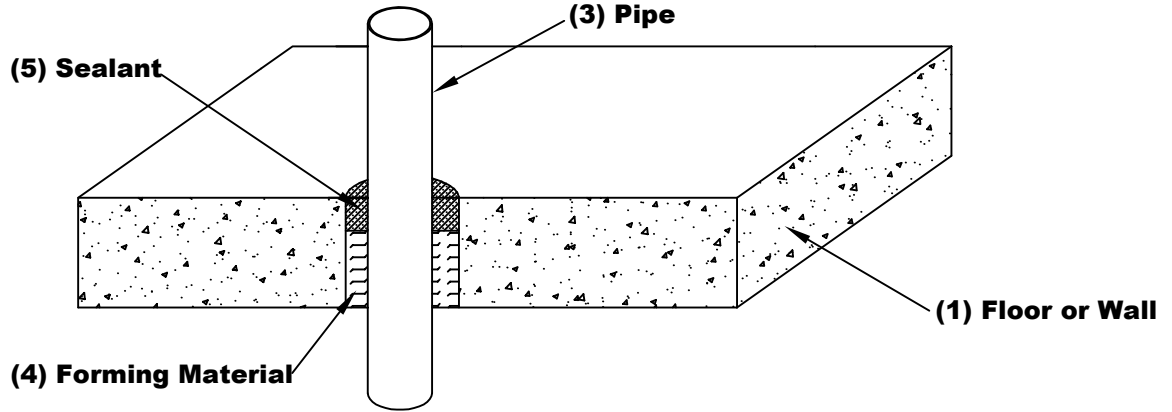
Installer: _____
Address: _____

Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL NONMETALLIC PIPE

F Rating 2 or 3 Hr. T Rating 1 or 1 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or minimum 5 in. thick reinforced lightweight or normal weight concrete wall. Floor may also be constructed of any min. 6 in. thick hollow-core Precast Concrete Units. Wall may also be constructed of any UL Classified Concrete Blocks. Maximum diameter of the opening is 6 inches.
2. STEEL SLEEVE - (Optional, not shown) Nom. 6" diameter (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into the floor or wall assy., flush with both surfaces.
3. NONMETALLIC PIPE - One nonmetallic pipe, conduit or tube of the following types and sizes may be used. Annular space to be 0" (point contact) to 2-1/2".
 - (A) POLYVINYL CHLORIDE (PVC) PIPE - Nom 3" (76mm) diameter (or smaller) Sch. 40 cellular or solid core PVC pipe for use in closed (process or supply) piping systems. (F Rating - 3 hr., T Rating - 1-1/2 hr.)
 - (B) RIGID NONMETALLIC CONDUIT - Nom 3" (76mm) diameter (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the NEC (NFPA 70). (F Rating - 3 hr., T Rating 1-1/2 hr.)
 - (C) ELECTRICAL NONMETALLIC TUBING+ - Nom 2" (51mm) diameter (or smaller) PVC tubing installed in accordance with Article 331 of the NEC (NFPA). (F Rating 3 hr., T Rating 1-1/2 hr.)
 - (D) ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPE - Nom 3" (76mm) diameter (or smaller) SCHDR 40 cellular or solid core ABS pipe for use in closed (process or supply) piping systems. (F Rating - 2 hr., T Rating - 1 hr.)
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accomodate the required thickness of sealant.
5. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 1/2" (12mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall. Additional 1/2" bead of sealant to be applied at the surface of the floor or wall at any point contact of the pipe and the concrete.



**System No.
C-AJ-2596**

Tested in accordance with:

**ASTM E-814
ANSI/UL 1479**

DWG NO. FS-0668 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 01/07/08

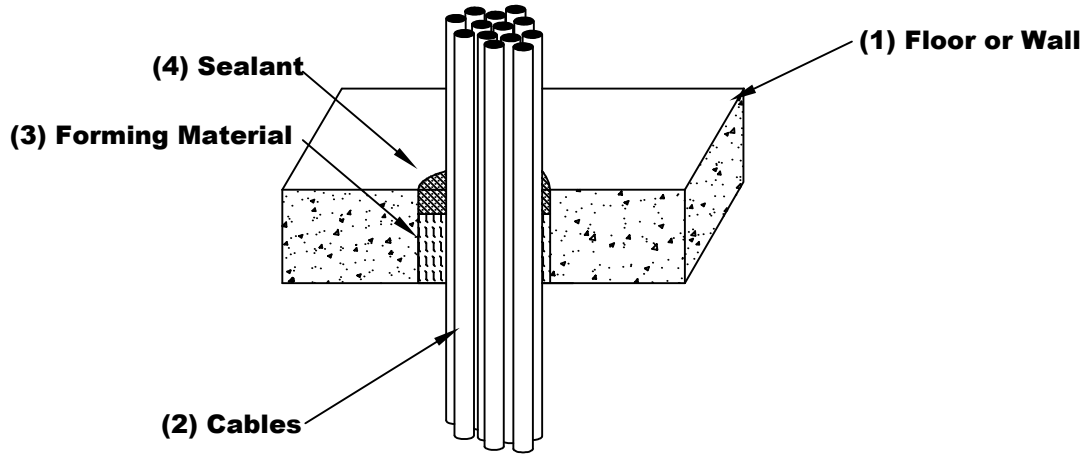
BY: TEP

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL CABLES

F Rating 3 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick reinforced lightweight or normal weight concrete. Floor may also be constructed of any minimum 6" thick UL Classified hollow-core precast concrete units. Wall may also be constructed of any UL Classified concrete blocks. Maximum diameter of the opening is 6 inches (152mm).
2. NONMETALLIC SLEEVE - (Optional, not shown) Nom. 6" diameter (or smaller) Sch 40 PVC pipe cast or grouted into the floor or wall, flush with the floor or wall surfaces.
3. CABLES - Aggregate cross-sectional area of the cable bundle in the opening to be maximum 45% of the cross-sectional area of the opening. Minimum separation between the cables and the periphery of the opening is 1/4". Maximum annular space between the cables and the periphery of the opening is 2". Cables to be rigidly supported on both sides of the opening. The following types and sizes of cables may be used:
 - (A) Max. 1/C 350 kcmil cable with crosslinked polyethelene (XLPE) jacket.
 - (B) Max. 400 pr. No. 24 AWG cable with PVC insulation and jacket.
 - (C) Max. 3/C No. 2/0 AWG aluminum conductor SER cable with PVC insulation and jacketing.
 - (D) Max. 3/C No. 12 AWG copper conductor cable with PVC insulation and jacket (Romex).
 - (E) Max. RG59/U copper conductor coaxial cable with fluorinated ethylene insulation and jacket.
 - (F) Max. 62.5/125 fiber optic cable with PVC insulation and jacket.
 - (G) Max. RG/6 No. 18 AWG copper conductor CATV coax cable with PVC insulation and jacket.
 - (H) Max. 4/C No. 2/0 AWG copper conductor, steel, aluminum or metal clad cable (MC cable) .
4. FORMING MATERIAL - Tightly pack min. 4pcf (64 kg/cubic meter) mineral wool batt insulation to fill the annular space to a min. 4" (102mm) depth, and recess from top surface of floor or from both surfaces of wall as required to accomodate the required thickness of sealant.
5. NELSON LBS3 SEALANT - Apply to fill the annular space to a min. 1/2" (12mm) depth over the forming material. Sealant is to be installed flush to top surface of the floor or with both surfaces of the wall. When the floor is made from hollow-core precast concrete units, the fill material shall be installed symmetrically on both sides of the floor.



Tested in accordance with:

**System No.
C-AJ-3289**

**ASTM E-814
ANSI/UL 1479**

DWG NO. FS-0669 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 01/07/08

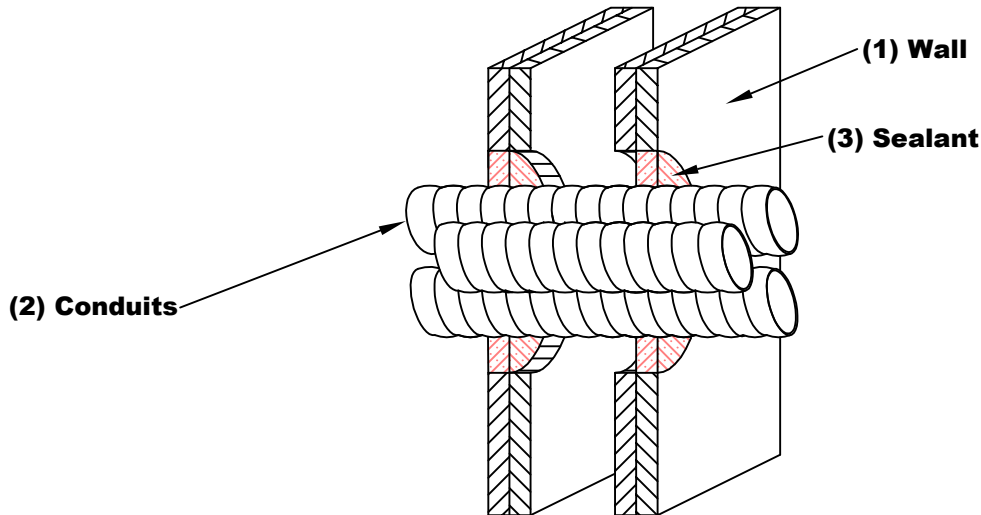
BY: TEP

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Tulsa, Ok.

GYPSUM WALL FLEXIBLE METALLIC PIPING

F Rating 1 and 2 Hr.

T Rating 3/4 and 1-1/2 Hr.



1. WALL ASSEMBLY - Constructed in the manner specified in the U300, U400 or V400 series designs as shown in the UL Fire Resistance Directory. Max. diameter of opening is 6" (152mm).
2. FLEXIBLE METALLIC CONDUITS - One or more 1-1/4" (32mm) diameter, (or smaller) steel flexible metallic conduits. Annular space between penetrants is 0" (point of contact) to 2" (51mm). The annular space between the through penetrants and periphery of opening shall be min. 0" (point of contact) to 2" (51mm).
3. NELSON LBS3 or ES1399 SEALANT - Apply sealant within the annular space to a min. 5/8" (16mm) depth. Apply flush with both surfaces of the wall. At point of contact, a min. 1/2" (10mm) diameter bead of sealant shall be applied at the gypsum board/through penetrant interface on both surfaces of the wall. Additional sealant shall be forced into interstices of through penetrants to max. extent possible.

Note: For 2 hr. rated wall, foam backer rod may be used to set depth of sealant. The hourly F and T Rating of the system is dependant on the fire rating of the wall assembly.



**System No.
W-L-1429**

Tested in accordance with:

**ASTM E-814
ANSI/UL 1479**

DWG NO. FS-0670 R0

DATE: 01/07/08

BY: TEP

Project Name: _____
Address: _____

Installer: _____
Address: _____

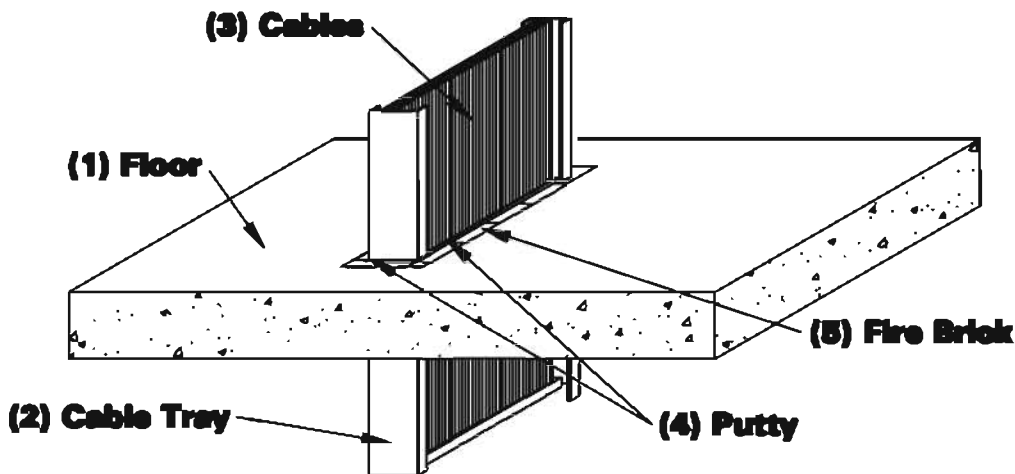
Signature: _____

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL CABLE TRAY

F Rating 2 Hr.

T Rating 3/4 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall. Max. area of the opening is 168 sq. in. with a max. dimension of 28" (711mm). Wall may also be constructed of any UL Classified Concrete Blocks.
2. CABLE TRAY - Max. 24" wide x 4" deep, steel or aluminum, open ladder cable tray. The annular space between the cable tray and periphery of opening shall be min. 0" (point of contact) to 2" (51mm).
3. CABLES - Max. 26% cable fill of cable tray in any combination of:
 - A). 1/C-350 kcmil (or smaller) copper conductor cable with PVC insulation and jacket material.
 - B). 200 pair - No. 24awg (or smaller) copper conductor cable with PVC insulation and jacket.
 - C). 62.5/125 fiber optic cable with PVC insulation and jacket.
 - D). Max. 3/C No.12awg (or smaller) METAL-CLAD cable.
4. NELSON FSP PUTTY (part # AA445) - Prior to installation of the fire bricks, min. 3/8" (10mm) thickness of putty forced into interstices of cables and between cables and cable tray within the full depth of the cavity. After installation of the fire bricks, min. 3/8" (10mm) additional putty applied between the interstices of cables, between cables and cable tray, between the fire bricks and cables and between cable tray and fire brick on both surfaces of the wall or floor assembly. At point of contact location between cable tray and wall, a min. 3/8" (10mm) thickness of putty applied at the cable tray/concrete interface on both surfaces of the wall or floor.
5. NELSON FIRE BRICKS (part # AA0894) - For reinforced concrete and solid filled concrete block wall assemblies, fire bricks installed centered within depth of opening with the long dimension placed horizontally. For hollow core block walls, fire bricks installed with long dimension passing through the opening from surface to surface. Fire bricks to completely fill the opening.



Tested in accordance with:
ASTM E-814
ANSI/UL 1479

Nelson Firestop

**System No.
C-AJ-4088**

DWG NO. FS-0672 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

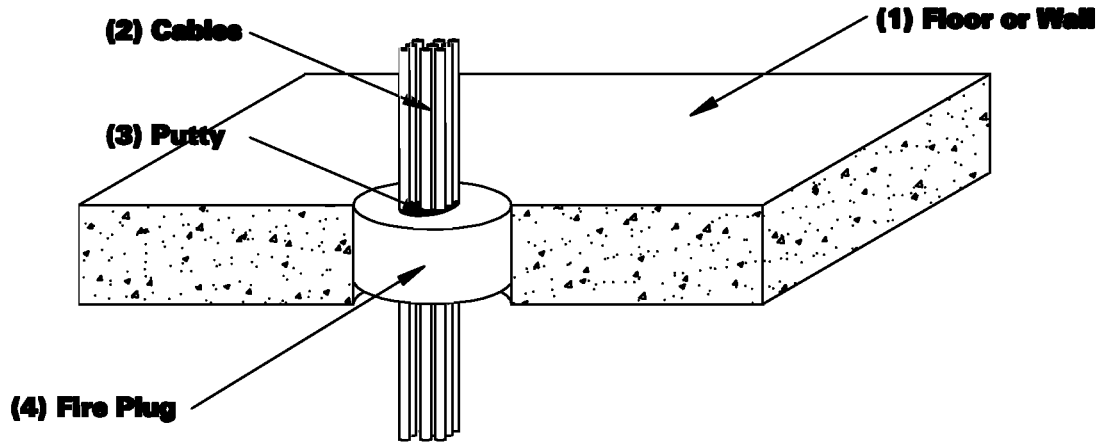
DATE: 10/27/08
BY: TEP

Nelson Firestop
800 331-7325 Fax: 918 627-2941
Tulsa, Ok.

CONCRETE FLOOR OR WALL CABLES

F Rating 2 Hr.

T Rating 1/2 Hr.



1. FLOOR or WALL ASSEMBLY - Min. 4-1/2" (114mm) thick lightweight or normal weight concrete floor or wall, or CMU block wall. The max. diameter of the the opening is 4" (102mm).
2. CABLES - Max. 22% cable fill of aggregate cross sectional area of opening.
The following types and sizes of cables may be used:
 (A) max. 200 pair No. 24 AWG or smaller communication cable with PVC insulation.
 (B) max. 62.5/125mm fiber optic cable with PVC insulation.
 (C) max. 3/c No. 12 AWG or smaller metal clad cable,
3. NELSON FSP Putty - Prior to installation of Plug, min. 3/8 in. (10mm) thickness of putty forced into interstices of cables within the full depth of the opening. After installation of Plug, min 3/8 in (10mm) thickness applied between instices of cables and between cables and plug on both surfaces of floor or wall.
4. NELSON FIRE PLUG - Sized to fit opening. Plug to be friction fitted into opening, flush with the top surface of floor or both surfaces of the wall. Cut to accomodate cable bundle.

Tested in accordance with:
ASTM E-814
ANSI/UL 1479



**System No.
C-AJ-3299**

Nelson Firestop

DWG NO. FS-0673 R0

Project Name: _____
Address: _____

Installer: _____
Address: _____

Signature: _____

DATE: 10/28/08

BY: RCE

Nelson Firestop
 800 331-7325 Fax: 918 627-2941
 Tulsa, Ok.

**United States
(Headquarters)**
Appleton Grp LLC
9377 W. Higgins Road
Rosemont, IL 60018
United States
T +1 800 621 1506

Europe
ATX SAS
Espace Industriel Nord
35, rue André Durouchez,
CS 98017
80084 Amiens Cedex 2, France
T +33 3 2254 1390

Canada
EGS Electrical Group Canada Ltd.
99 Union Street
Elmira ON, N3B 3L7
Canada
T +1 888 765 2226

Asia Pacific
EGS Private Ltd.
Block 4008, Ang Mo Kio Ave 10,
#04-16 TechPlace 1,
Singapore 569625
T +65 6556 1100

Latin America
EGS Comercializadora Mexico S
de RL de CV
Calle 10 N°145 Piso 3
Col. San Pedro de los Pinos
Del. Álvaro Obregon
Ciudad de México. 01180
T +52 55 5809 5049

Australia Sales Office
Bayswater, Victoria
T +61 3 9721 0348


China Sales Office
Shanghai
T +86 21 3338 7000

Middle East Sales Office
Dammam, Saudi Arabia
T +966 13 510 3702

Chile Sales Office
Las Condes
T +56 2928 4819

India Sales Office
Chennai
T +91 44 3919 7300

Korea Sales Office
Seoul
T +82 2 3483 1555

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