



**Firestop Education & Committee –
Action Conference
Seattle, Washington
May 1 , 2008**

**Firestop Data Collection,
Maintenance Documents
and
Firestop Contractor Stats**

Presented By



Firestop Data Collection



The University of Manitoba, Buller Building is located at the Fort Garry Campus in Winnipeg, Manitoba and was originally opened in 1932. This 5 level, 99,400 sq.ft facility services the Biological Faculty. The Firestopping upgrades were phased over 3 years for a value of \$800,000.

Firestop Data Collection


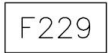
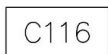
Methodology

- Review current drawings and written documents
- Code analysis – Fire Separations
- Data Collection / Inventory from existing fire separations
 - Service penetrations M+E
 - Top of wall joints
 - Wall to wall joints
 - Perimeter joints
 - Recessed M+E devices
 - Abandoned openings
 - Extension of walls
 - Floor or wall partition upgrades
- Floor, wall and ceiling schedules
- Bid documents (drawings and specification) are created



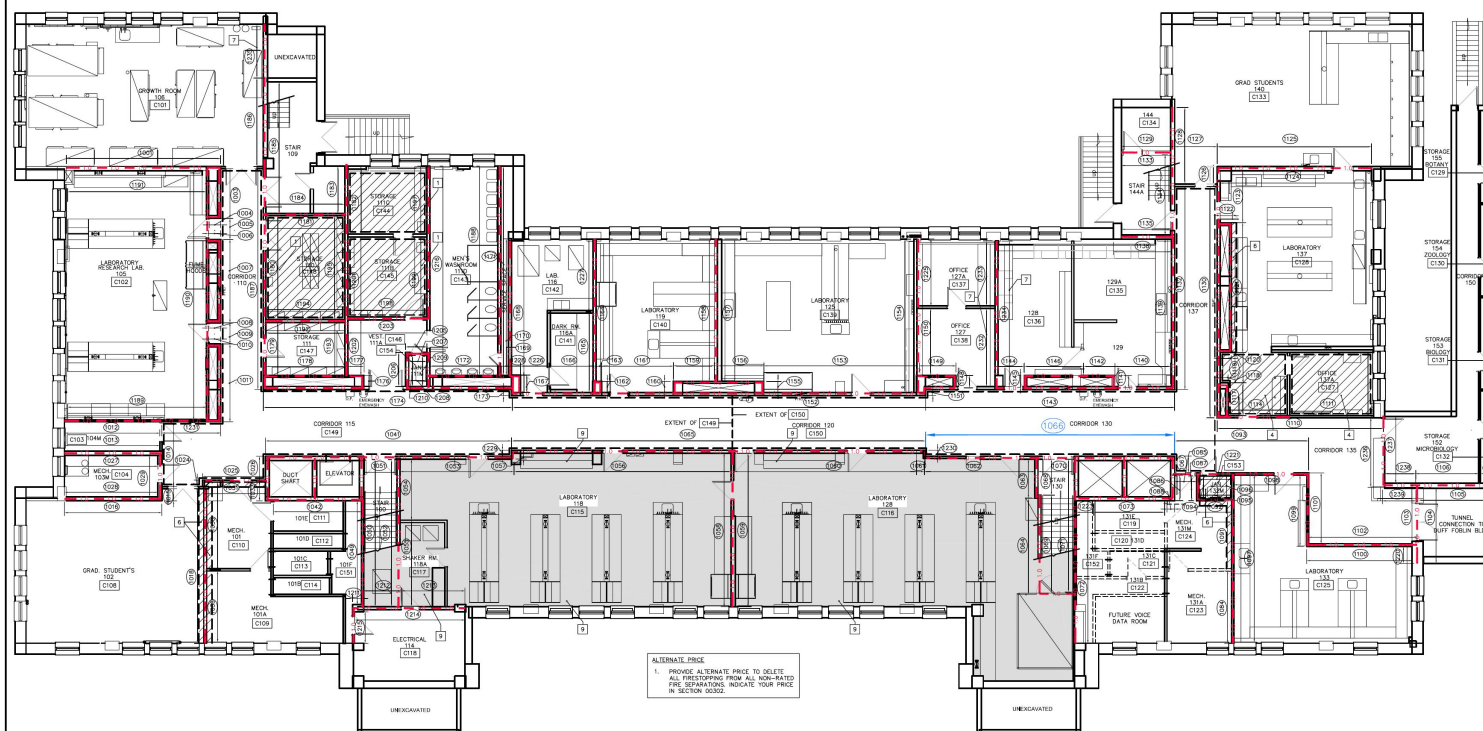
Firestop Data Collection

Drawing Set Up

- AutoCAD Floor Plans are developed based on the owners most up dated electronic documents
- Existing floors are cleaned up to form the base firestop drawings
- Based on the code analysis, fire separations are indicated on the plans (hourly ratings)
- Reference Numbers are indicated:
 - Walls 
 - Floors 
 - Ceilings 
- Additional keynotes are placed on drawings to suit site conditions
- Building sections, wall sections or sections and details are provide to suit upgrade requirements



Firestop Data Collection



LEVEL 100 PLAN
SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. REFER TO ALL MECHANICAL, ELECTRICAL, SPRINKLER AND FIRE ALARM DRAWINGS FOR NEW SYSTEM REQUIREMENTS.
2. REFER TO ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, SPRINKLER AND FIRE ALARM DRAWINGS FOR ALL LOCATION OF EXISTING OUTCROPPY SERVICES THAT ARE BEING ABANDONED. FALL IN WITH APPROPRIATE NEW LISTED SYSTEM, USE RAIL TYPE Q FOR ONE HOUR FIRE SEPARATIONS AND WALL TYPE B FOR TWO HOUR FIRE SEPARATIONS TO MAINTAIN THE INTEGRITY OF LISTED FIRE SEPARATIONS FOR ABANDONED VERTICAL OPENINGS USE APPROVED LISTED FIRESTOP SYSTEM.

PROJECT PHASING

1. REFER TO ARCHITECTURAL DRAWINGS FOR PROJECT PHASING AND SECTION 0110 IN THE PROJECT MANUAL.

ALTERNATE PRICE
1. PROVIDE ALTERNATE PRICE TO DELETE ALL FIRESTOPPING FROM ALL NON-RATED FIRE SEPARATIONS. INDICATE YOUR PRICE IN SECTION 0050.

AFFINITY FIRESTOP CONSULTANTS INC. LIMITATION OF RESPONSIBILITY:

1. THIS DRAWING HAS BEEN PREPARED SOLELY FOR THE PURPOSE OF DESIGN OF FIRESTOPPING UPDATES AND NEW FIRESTOPPING LOCATIONS.

IMPORTANT: ASBESTOS NOTIFICATION AND ACKNOWLEDGMENT
NOTIFICATION BY THE UNIVERSITY OF MANITOBA

This drawing is being prepared for the purpose of asbestos notification and control. The University of Manitoba is a designated asbestos control area. All asbestos work must be done in accordance with the Asbestos Control Regulations (SOR/96-03/01) and the Asbestos Control Regulations (SOR/96-03/01) and the Asbestos Control Regulations (SOR/96-03/01).

Every effort has been made to identify asbestos containing materials within the scope of the project and to ensure that asbestos is properly controlled. However, the presence of asbestos is not guaranteed. The University of Manitoba is not responsible for the accuracy of the information provided in this drawing.

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ACKNOWLEDGMENT: I, the undersigned, acknowledge that I have read and understood the information provided in this drawing and that I agree to the terms and conditions of the project.

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REMOVED NON-RATED WALLS 7/4/2008

ISSUED FOR TENDER 2/28/2008

Revision Date No.

UNIVERSITY OF MANITOBA

Physical Plant Department

ARCHITECTURAL SERVICES

Physical Plant 68 Freeman Crescent Winnipeg, MB

AFFINITY FIRESTOP CONSULTANTS INC.

108 West 1st Street, Suite 100, Winnipeg, MB R2S 0S2

PROFESSOR OF MECHANICAL ENGINEERING

AFFINITY ARCHITECTURE INC.

PROFESSOR OF MECHANICAL ENGINEERING

BULLER BUILDING FIRESTOPPING UPGRADE

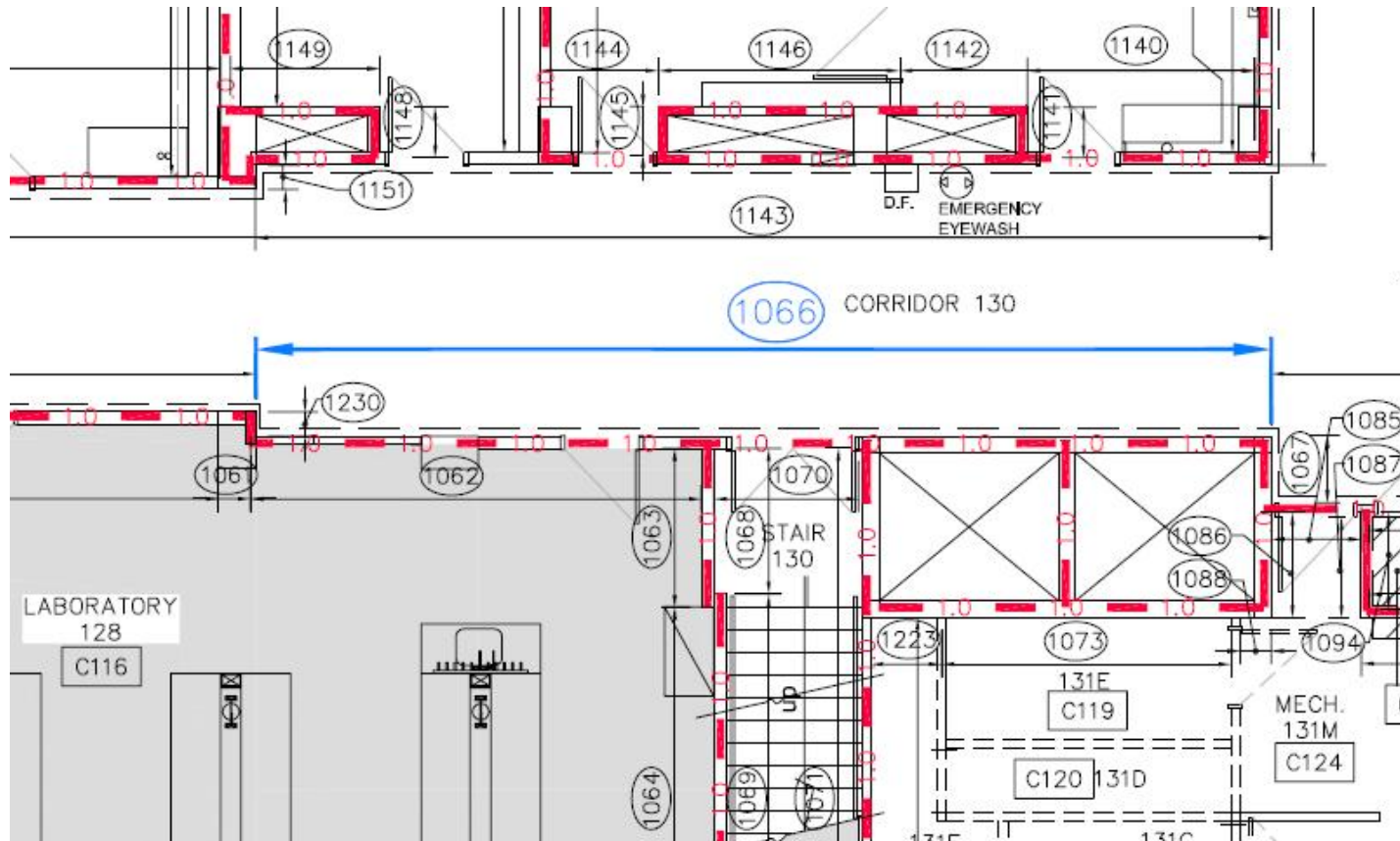
LEVEL 100 FLOOR PLAN

AS SHOWN EBP

FEBRUARY 2008 RFA

2008-10-05 FSD.1

Firestop Data Collection



Firestop Data Collection

Schedule Setup

- FS Schedule – Wall, (Enter)
 - Reference number
 - Drawing number
 - Room number
 - Wall type
 - Photo number
 - Quantity
 - Description
 - Size
 - FS Detail number
 - Penetration note



- During Construction, the following data is entered by the FS Contractor
 - I.D. Plate No. and Design Listing No.

Firestop Data Collection

University of Manitoba
Req#157C050720-02

FIRESTOPPING SCHEDULE - WALL

Section 00971

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| Ref No. | Dwg. No. | Room No. | Wall Type | I.D. Plate No. | Photo No. | Quantity | Description | Size | FS No. | Design No. | Penetration Notes |
|---------|----------|-----------|-----------|-----------------|-----------|----------|-------------|----------|--------|------------|-------------------|
| | | | | | - | 2 | SD | 4" | 01.02 | | |
| | | | | | - | 1 | EMT | 1/2" | 01.02 | | 3, 6 |
| | | | | | - | 1 | ABO | 6" | 00.04 | | |
| | | | | | - | 1 | ABOS | 9" | 00.04 | | |
| | | | | | - | 1 | EMT | 1/2" | 01.02 | | 1 |
| | | | | | - | 1 | SLV | 1/2" | 01.02 | | 1 |
| | | | | | - | 2 | CAT5 | - | 03.04 | | 2, 6 |
| | | | | | - | 4 | LV | - | 03.02 | | |
| 1066 | FSD.1 | Corridor | PL CONC | | 390 | 1 | LA | 35'-7x2" | . | | 30, 69, 72 |
| | | | | | - | 1 | TOW | 35'-7" | 09.04 | | |
| | | | | | - | 1 | BOW | 35'-7" | 09.06E | | 45 |
| | | | | | 391 | 2 | DWP | 1" | 01.02 | | |
| | | | | | 391 | 1 | ABO | 9" | 00.04 | | 6 |
| | | | | | 391 | 2 | ABO | 3" | 00.04 | | 6 |
| | | | | | 392 | 1 | ABO | 6" | 00.04 | | 6 |
| | | | | | - | 1 | SD | 3" | 08.02 | | 6 |
| | | | | | 393 | 1 | EMT | 1/2" | 08.02 | | 6 |
| | | | | | 393 | 1 | HWP | 8" | 08.04 | | 6 |
| | | | | | 393 | 1 | DWP | 5" | 08.04 | | 6 |
| | | | | | - | 2 | EMT | 1/2" | 01.02 | | 6 |
| | | | | | - | 1 | ABO | 2" | 00.02 | | 6 |
| | | | | | - | 1 | BX | - | 01.02 | | 6 |
| | | | | | 394 | 1 | ABOS | 4" | 00.04 | | |
| | | | | | 394 | 1 | CORFS | 1" | 01.02 | | 1 |
| | | | | | 395 | 1 | HWP | 1 1/2" | 08.04 | | 9 |
| | | | | | 395 | 1 | DWP | 1 1/2" | 08.04 | | 9 |
| | | | | | 395 | 2 | EMT | 1/2" | 08.02 | | 9 |
| | | | | | 395 | 1 | GP | 1/2" | 08.02 | | 9 |
| | | | | | 395 | 1 | PVC | 1/2" | 02.02 | | 9 |
| | | | | | 395 | 1 | CA | 1/2" | 08.02 | | 9 |
| | | | | | - | 1 | PS | - | 06.04 | | |
| | | | | | - | 1 | JB | - | 06.02 | | |
| 1067 | FSD.1 | Corridor | PL CONC | No Penetrations | | | | | | | |
| | | | | | - | 1 | TOW | 35" | 09.04 | | |
| | | | | | - | 1 | BOW | 35" | 09.06E | | 47 |
| | | | | | - | 1 | LA | 35"x2' | . | | 71, 70 |
| 1068 | FSD.1 | Stair 130 | PL CONC | | - | 1 | TOW | 5'-10" | 09.04 | | |
| | | | | | - | 1 | BOW | 5'-10" | 09.06E | | 47 |
| | | | | | - | 1 | EMT | 1" | 08.02 | | 6 |
| | | | | | - | 1 | SB | 2"x4" | 06.02 | | |
| 1069 | FSD.1 | Stair 130 | PL CONC | No Penetrations | | | | | | | |
| | | | | | - | 1 | TOW | 13'-10" | 09.04 | | |
| | | | | | - | 1 | BOW | 13'-10" | 09.06E | | 47 |
| 1070 | FSD.1 | Stair 130 | PL CONC | | - | 1 | TOW | 5'-9" | 09.04 | | |
| | | | | | - | 1 | BOW | 5'-9" | 09.06E | | |
| | | | | | - | 1 | LF | 6" | 06.02 | | |
| 1071 | FSD.1 | Stair 130 | PL CONC | No Penetrations | | | | | | | |
| | | | | | - | 1 | TOW | 19'-8" | 09.04 | | |
| | | | | | - | 1 | BOW | 19'-8" | 09.06E | | 47 |
| 1072 | FSD.1 | Stair 130 | PL CONC | | - | 1 | TOW | 10'-0" | 09.04 | | |
| | | | | | - | 1 | BOW | 10'-0" | 09.06E | | |
| | | | | | - | 1 | EMT | 1/2" | 01.02 | | |
| | | | | | - | 1 | CAT5 | - | 03.02 | | |

Firestop Data Collection

University of Manitoba
Req#157C050720-02

FIRESTOPPING SCHEDULE - WALL

Section 00971

Page 11

| Ref No. | Dwg. No. | Room No. | Wall Type | I.D. Plate No. | Photo No. | Quantity | Description | Size | FS No. | Design No. | Penetration Notes |
|---------|----------|----------|-----------|----------------|-----------|----------|-------------|----------|--------|------------|-------------------|
| 1066 | FSD.1 | Corridor | PL CONC | | | | | | | | |
| | | | | | 390 | 1 | LA | 35'-7x2" | . | | 30, 69, 72 |
| | | | | | - | 1 | TOW | 35'-7" | 09.04 | | |
| | | | | | - | 1 | BOW | 35'-7" | 09.06E | | 45 |
| | | | | | 391 | 2 | DWP | 1" | 01.02 | | |
| | | | | | 391 | 1 | ABO | 9" | 00.04 | | 6 |
| | | | | | 391 | 2 | ABO | 3" | 00.04 | | 6 |
| | | | | | 392 | 1 | ABO | 6" | 00.04 | | 6 |
| | | | | | - | 1 | SD | 3" | 08.02 | | 6 |
| | | | | | 393 | 1 | EMT | 1/2" | 08.02 | | 6 |
| | | | | | 393 | 1 | HWP | 8" | 08.04 | | 6 |
| | | | | | 393 | 1 | DWP | 5" | 08.04 | | 6 |
| | | | | | - | 2 | EMT | 1/2" | 01.02 | | 6 |
| | | | | | - | 1 | ABO | 2" | 00.02 | | 6 |
| | | | | | - | 1 | BX | - | 01.02 | | 6 |
| | | | | | 394 | 1 | ABOS | 4" | 00.04 | | |
| | | | | | 394 | 1 | CORFS | 1" | 01.02 | | 1 |
| | | | | | 395 | 1 | HWP | 1 1/2" | 08.04 | | 9 |
| | | | | | 395 | 1 | DWP | 1 1/2" | 08.04 | | 9 |
| | | | | | 395 | 2 | EMT | 1/2" | 08.02 | | 9 |
| | | | | | 395 | 1 | GP | 1/2" | 08.02 | | 9 |
| | | | | | 395 | 1 | PVC | 1/2" | 02.02 | | 9 |
| | | | | | 395 | 1 | CA | 1/2" | 08.02 | | 9 |
| | | | | | - | 1 | PS | - | 06.04 | | |
| | | | | | - | 1 | JB | - | 06.02 | | |

Penetration Note No. 9 – Polyurethane foam present.

Firestop Data Collection

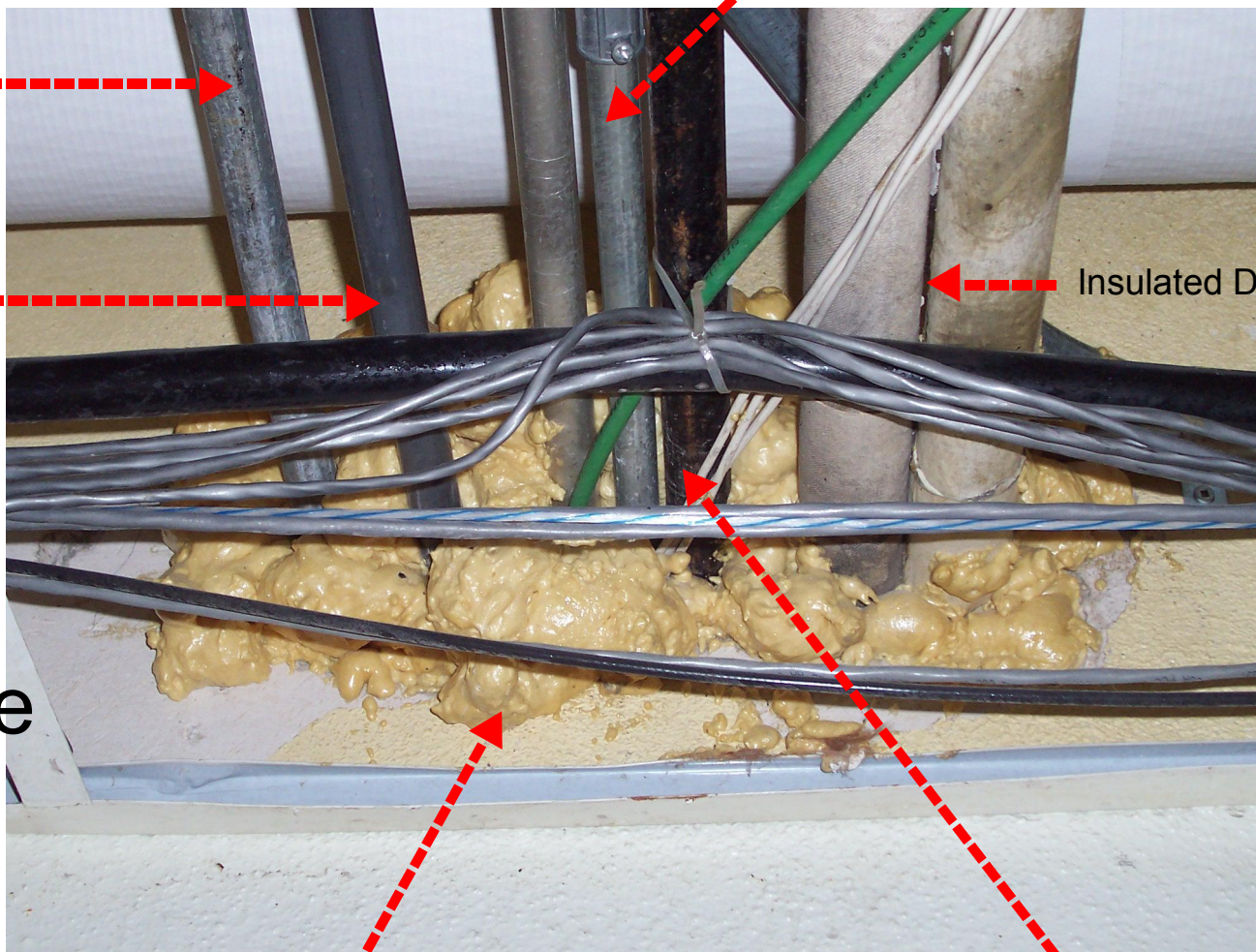
Compressed
Air Pipe

PVC Pipe

EMT Conduits

Insulated Domestic, Hot
Water Pipes

*Picture
395

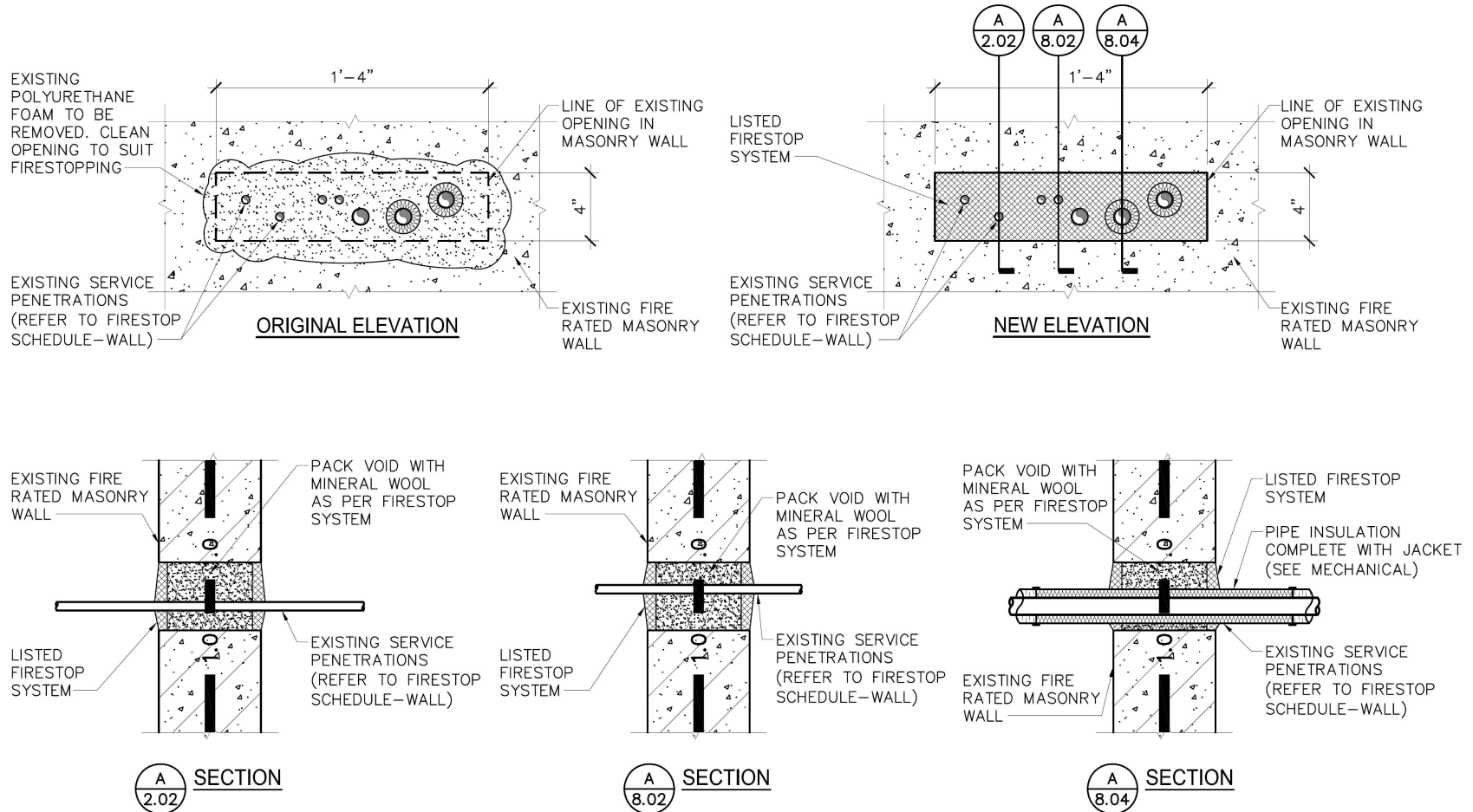


Polyurethane Foam

Gas Pipe

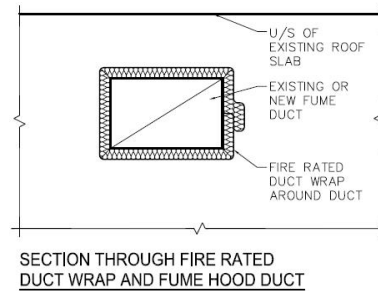
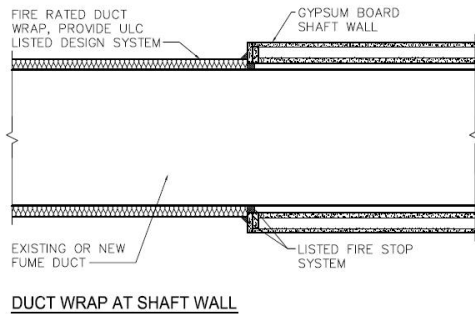
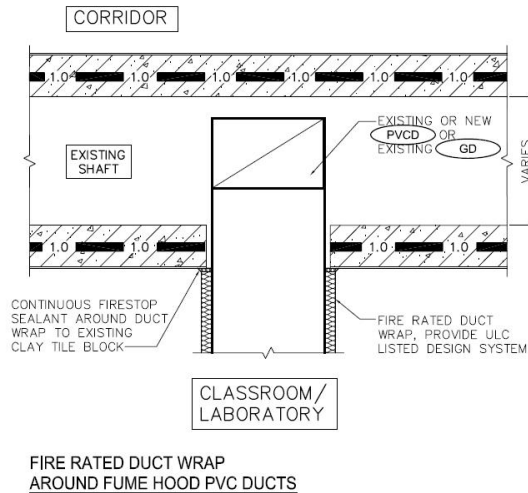
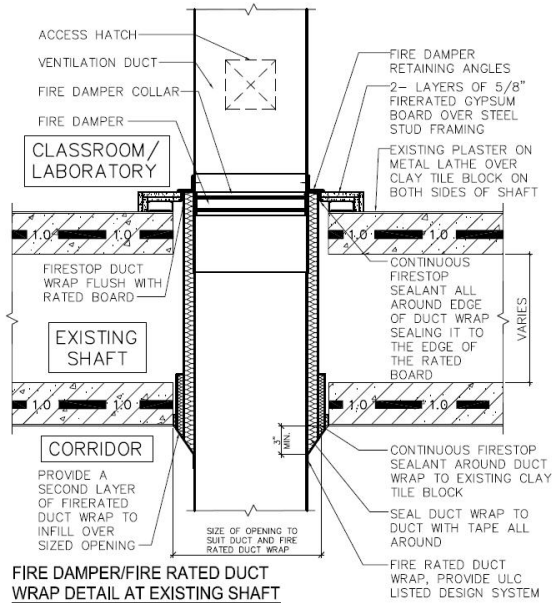
Firestop Data Collection

FS Details

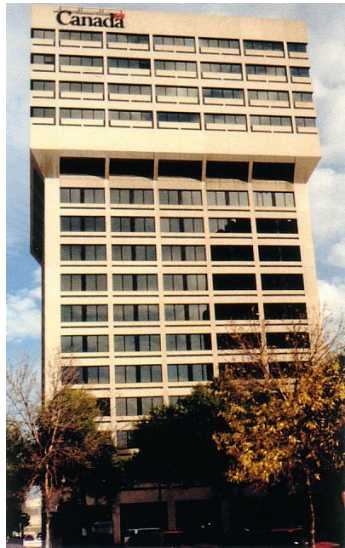


Firestop Data Collection

Related Details



Firestop Data Collection



CGC Building
FS Value - \$750,000



MacDonald Building
FS Value - \$470,000



Parker Building Level 300, 500
FS Value - \$120,000



Brandon Federal Building
FS Value - \$460,000



Government of Canada Building
FS Value - \$160,000

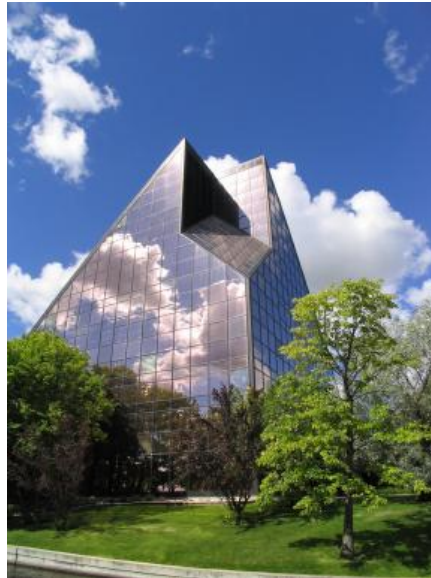


Victory Building
FS Value - \$250,000

Firestop Data Collection



Club Regent Casino
FS Value - \$750,000



Royal Canadian Mint
FS Value - \$1,700,000



Jack River School
FS Value - \$150,000



McPhillips Street Station Casino
FS Value - \$825,000



Churchill Town Center
FS Value - \$2,300,000

Firestop Maintenance Documents



The University of Manitoba, Faculty of Pharmacy building is currently under construction located at the Bannatyne Campus in Winnipeg, Manitoba. This 5 level, 105,000 sq.ft. Pharmacy facility has 3 levels of labs and 1 level of classrooms is being built for a construction cost of \$22.5 Million.

Firestop Maintenance Documents

Methodology

- Review current construction documents
- As Builts
 - Drawings
 - Schedules
- Product
 - Literature
 - MSDS
 - VOC
 - Shelf Life
 - Life Expectancy
- Design Listed System
- Final Report
 - ASTM E2174 & E2393



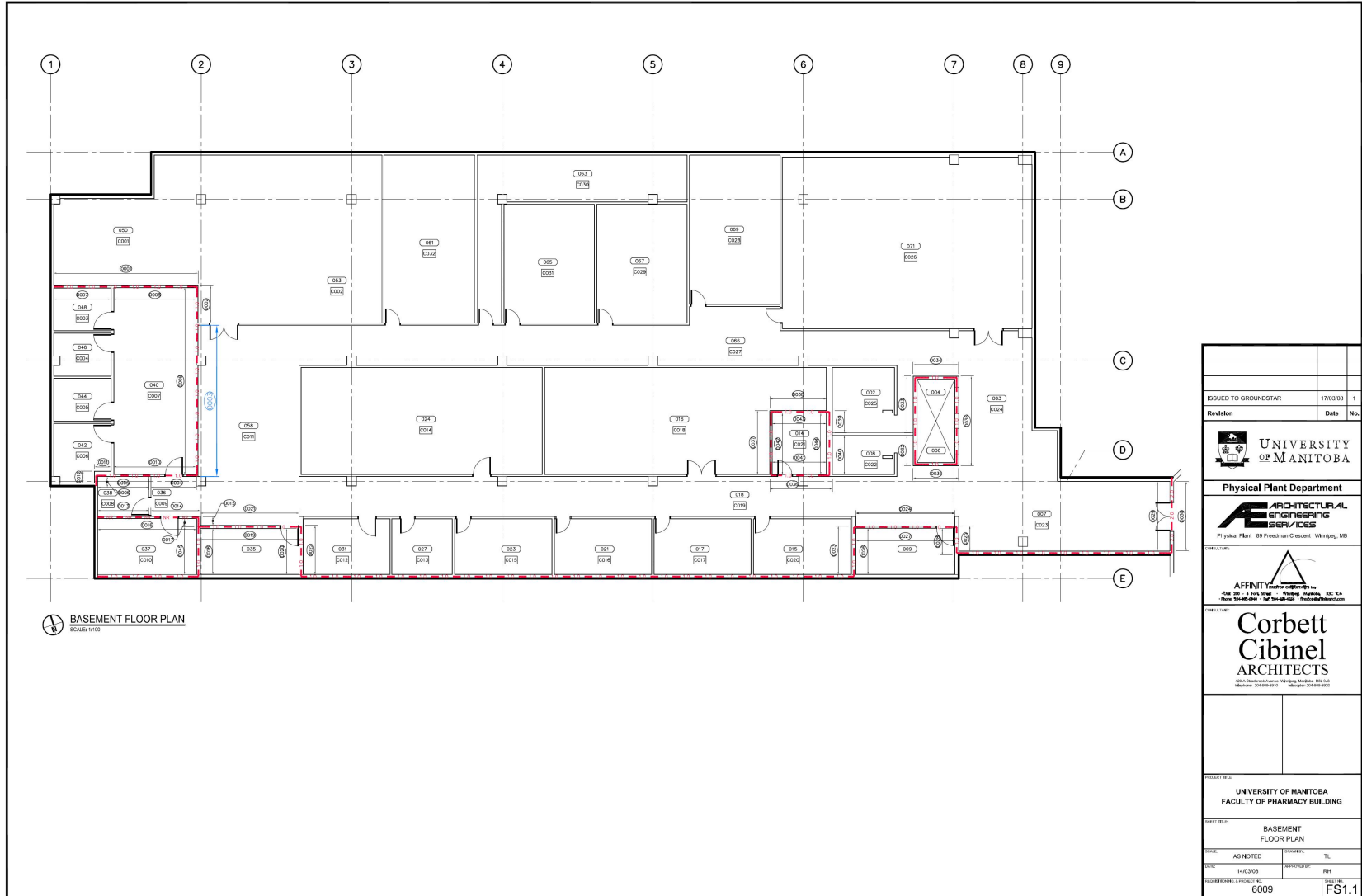
Firestop Maintenance Documents

As Built Drawings

- Create AutoCAD floor plans based on the Architectural Documents
- Floor plans are developed indicating fire separations (as noted on the Architectural Documents) and Reference Numbers:
 - Walls
 - Floors
 - Ceilings
- Keynotes are placed to provide further info
- Building sections, wall sections, sections or details are provided

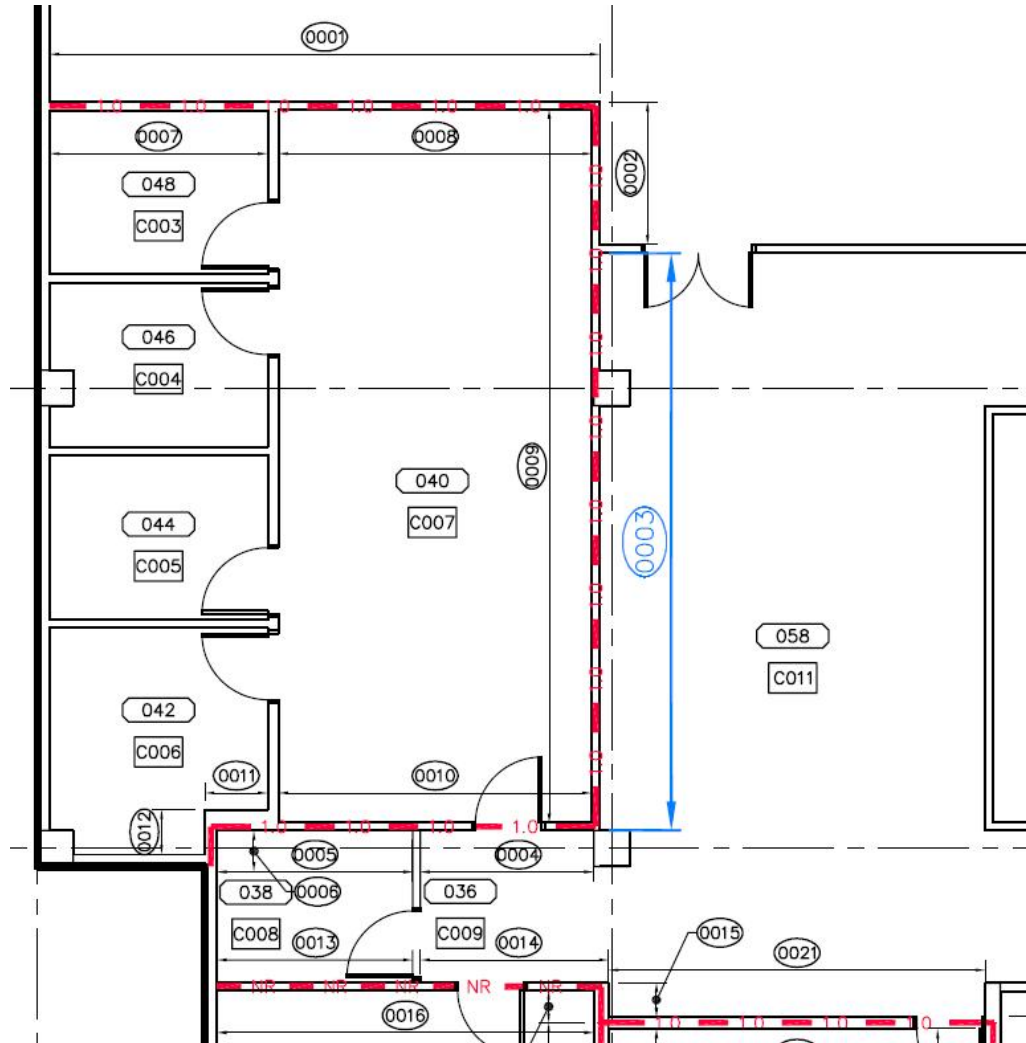


Firestop Maintenance Documents



| | | | |
|---|----------|------------|----------|
| ISSUED TO GROUNDSTAR | | 17/03/08 | 1 |
| Revision | Date | No. | |
| UNIVERSITY OF MANITOBA Physical Plant Department ARCHITECTURAL ENGINEERING SERVICES Physical Plant: 89 Freedman Crescent, Winnipeg, MB | | | |
| AFFINITY FIRESTOP CONSULTANTS Inc. 2nd Flr - 4 Park Drive - Winnipeg, Manitoba, R3C 1A6 Phone: 544-882-4441 • Fax: 544-882-4442 • Email: info@affinityfirestop.com | | | |
| CORBETT CIBINEL ARCHITECTS 454-A St. James Street, Winnipeg, Manitoba, R3C 1A6 Winnipeg, 204-585-0001 • Winnipeg, 204-585-0002 | | | |
| PROJECT NAME: UNIVERSITY OF MANITOBA FACULTY OF PHARMACY BUILDING | | | |
| SHEET TITLE: BASEMENT FLOOR PLAN | | | |
| SCALE: | AS NOTED | DATE: | 14/03/08 |
| DATE: | 14/03/08 | REVISION: | 001 |
| PROJECT NUMBER & PROJECT NAME: | 6009 | SHEET NO.: | FS1.1 |

Firestop Maintenance Documents



Firestop Maintenance Documents

Schedule Setup

- FS Schedule – Wall, (Enter)
 - Reference number
 - Drawing number
 - Room number
 - Wall type
 - I.D. Plate number
 - Photo number
 - Quantity
 - Description
 - Size
 - Report number (if inspected)
 - Design number
 - Penetration note



Firestop Maintenance Documents

6009

FIRESTOPPING SCHEDULE - WALL

Section 00971

Page 1

| Ref No. | Dwg. No. | Room No. | Wall Type | I.D. Plate No. | Photo No. | Quantity | Description | Size | Report No. | Design No. | Penetration Notes |
|---------|----------|----------|-----------|----------------|-----------|----------|-------------|--------|------------|------------|-------------------|
| 0003 | FS1.1 | 058 | GB & SS | | | | | | | | |
| | | | | 0003.01 | - | 1 | TOW | 31'-8" | DR - 1.0 | HW-D-0083 | - |
| | | | | - | - | 1 | BOW | 31'-8" | MR - 1.0 | BW-S-0002 | - |
| | | | | - | - | 2 | W-W | 10'-8" | - | WW-D-0040 | - |
| | | | | 0003.02 | 1 | 1 | CIP | 4" | GR - 1.0 | W-L-1290 | - |
| | | | | 0003.03 | 2 | 4 | EMT | 3" | MR - 2.0 | W-L-1408 | - |
| | | | | 0003.04 | 2 | 2 | CIP | 2" | - | W-L-5257 | - |
| | | | | - | 3 | 1 | Duct | 8"x8" | - | - | - |
| | | | | 0003.05 | 4 | 2 | CIP | 2" | OR - 1.0 | W-L-1054 | - |
| | | | | 0003.06 | 4 | 2 | S-STL | 1" | - | W-L-1054 | - |
| | | | | 0003.07 | 5 | 2 | CIP | 2" | - | W-L-1290 | - |
| | | | | 0003.08 | 5 | 2 | EMT | 1" | DR - 3.0 | W-L-1290 | - |
| | | | | - | 6 | 1 | Duct | 8"x8" | - | - | - |
| | | | | 0003.09 | 7 | 1 | CIP | 2" | DR - 2.0 | W-L-1290 | - |
| | | | | 0003.10 | 7 | 2 | CIP | 2" | - | W-L-5257 | - |
| | | | | 0003.11 | 8 | 1 | S-STL | 1" | - | W-L-1054 | - |
| | | | | 0003.12 | 9 | 1 | RB | - | GR - 2.0 | CLIV 7 | - |

Firestop Maintenance Documents



Photo No. 01



Photo No. 02



Photo No. 03



Photo No. 04



Photo No. 05

Firestop Maintenance Documents



Photo No. 06



Photo No. 07



Photo No. 08

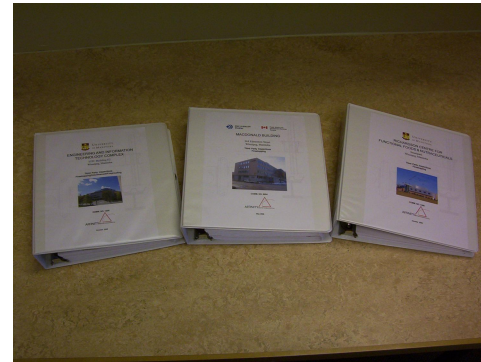


Photo No. 09

Firestop Maintenance Documents

Final Report

- Introduction
 - Overview
 - Mandate
 - Contact Listing
 - Executive Summary
- Performance Requirements and Verification
 - Method
 - Types of Firestops
 - Redundant Design Listed Systems
 - Quantities of FS per level
 - Certification
- Appendix
 - A – Correspondence
 - B – Mock-Ups
 - C – General Reviews / Observations
 - D – Destructive Tests
 - E – Mock-Up Summary
 - F – Destructive Test Summary
 - G – As-Built Drawings
 - H – As-Built Schedules
 - I – Submitted Design Listed Systems



Firestop Contractor Stats

Study

- Global and Affinity compiled firestop inspection statistics from 2006-2007
- Projects from Eastern United States and Western Canada were used for this study
- Inspections were based on ASTM E2174 and E2393
- 70 Projects were chosen
- 1000 Tests were performed utilizing Observation or Destructive Test review methods
- Firestop Contractors reviewed:
 - FCIA, FM approved Contractors
 - FCIA Contractors
 - Non Firestop Contractors



Firestop Contractor Stats

Design Listings Reviewed

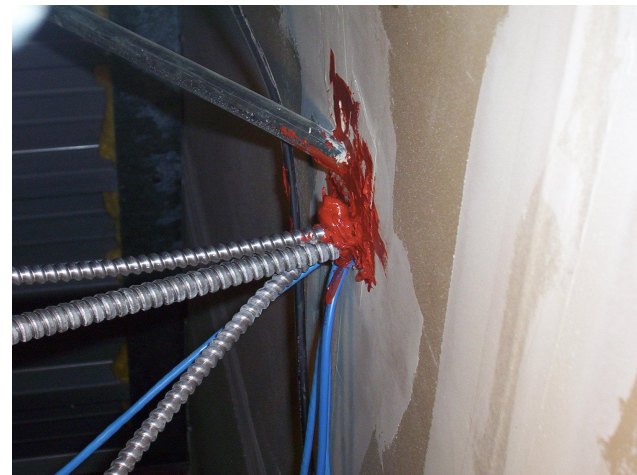
- Total of 985 Design Listings submitted
- Total of 345 Engineered Judgments submitted
- Accuracy of what is installed on site compared to Design Listings submitted:
 - FCIA, FM 96%
 - FCIA 76%
 - Non FS 32%
- Accuracy of what is installed on site compared to Engineer Judgments submitted:
 - FCIA, FM 93%
 - FCIA 73%
 - Non FS 12%



Firestop Contractor Stats

Inspection groups scope of work increases:

- Education for Non Firestop Contractors
 - Building Codes
 - FCIA - MOP
 - Specifications and Drawings
 - Numerous General Site Meetings
 - Product
 - Literature
 - MSDS
 - Installation Limitations
 - Design Listings
 - Engineered Judgments
 - Testing Procedures
 - Mock-Ups



Firestop Contractor Stats

Inspection groups scope of work increases:

- Site Issues by the Non-Firestop Contractor
 - Workmanship is very poor
 - Preparation of joint, service penetration or substrate is not being followed
 - Work is only partially complete
 - No Design Listing was submitted for installed system
 - Design Listing has not been followed
 - Product has expired, frozen, or washed out
 - Seals have been broken
 - No fasteners or incorrect fastener has been installed on collars
 - Inconsistency of actual installer
 - Constantly canceling site reviews
 - Not familiar with code requirements



Firestop Contractor Stats

Additional Inspection Cost for Non FS Contractor

- Education Requirements Increase
- Installation Issues Increase
- More than one Non FS Contractor on a job
- Additional overlap with Designer, Contractor, Sub Trades, AHJ, Owner
- More Reporting
- More follow up on issues (emailing, fax, phone calls)
- Final Reports increase in size

Inspection Group Costs Increase:

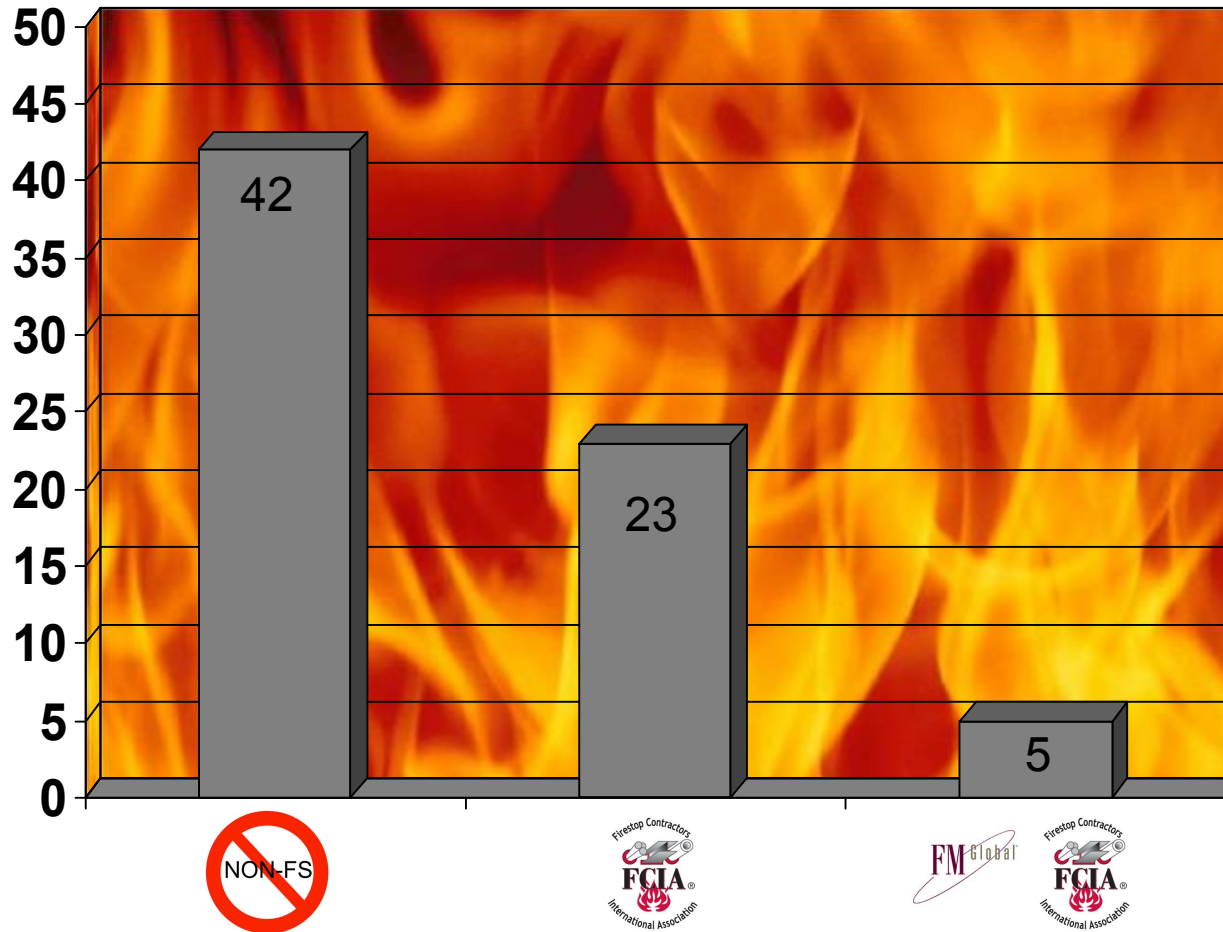
50% to 300%

Up and above using a FCIA – FM
approved Firestop Contractor



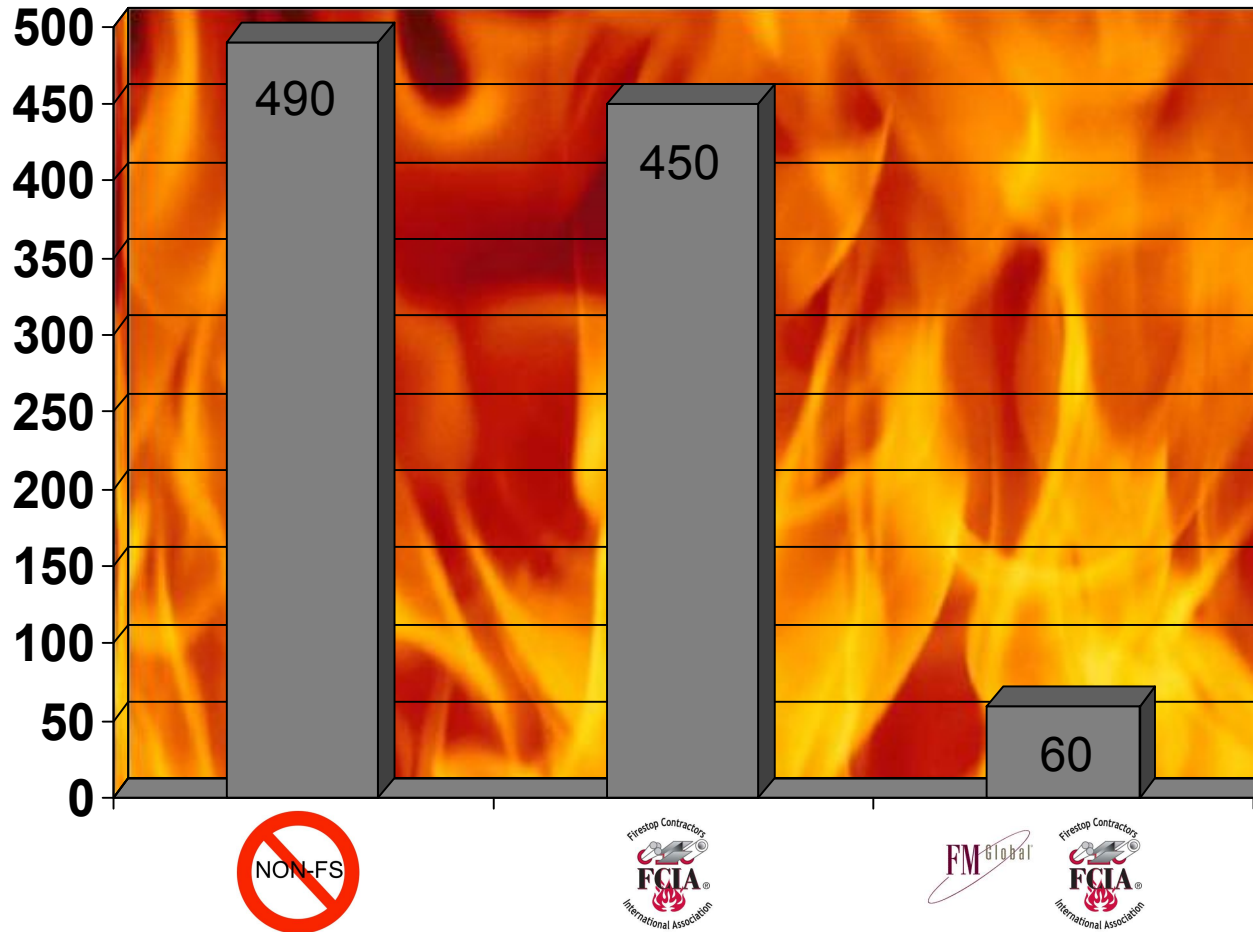
Firestop Contractor Stats

Project Totals for each Firestop Contractor



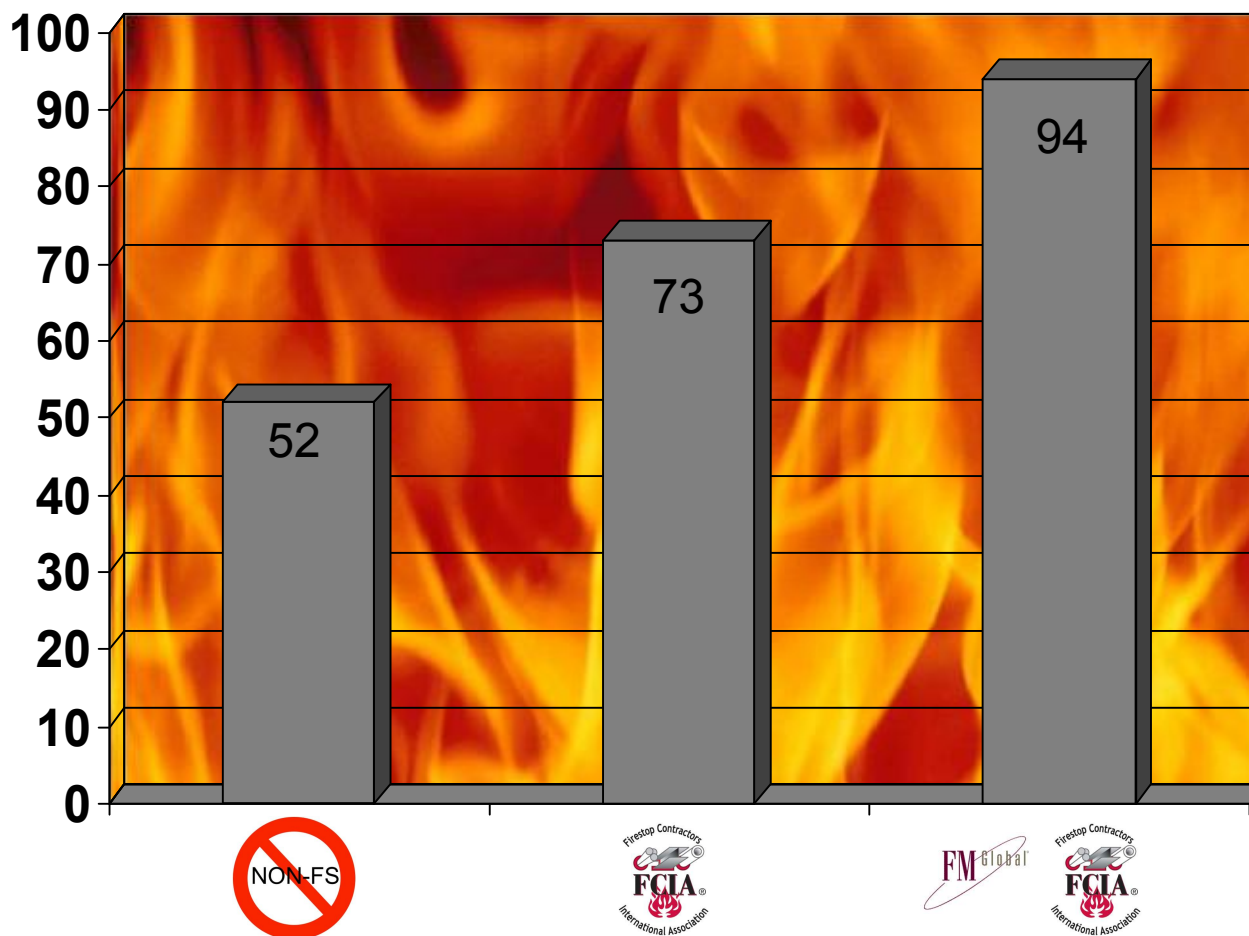
Firestop Contractor Stats

Total Tested Firestop Systems



Firestop Contractor Stats

Success Rate



Firestop Data Collection, Maintenance Documents and Firestop Contractor Stats Questions





**Firestop Education &
Committee –
Action Conference
Seattle, Washington
May 1 , 2008**



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Thank You

