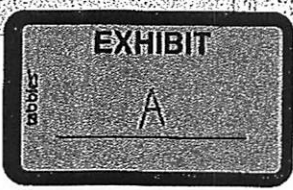




4700 Northwest Parkway, Suite 230  
Hilliard, Ohio 43026  
Tel: 614.430.0813




## Roof Damage Assessment - Engineering Report

EFI Global File No.: 019.03408  
May 22, 2023

Insured: City of Franklin  
Site Address: 2871 North Morton Street  
Franklin, Indiana 46131

Date of Loss: March 21, 2023  
Claim No.: 040523013911

Prepared For:  
Chubb Group of Insurance Companies  
Attn: Latasha Lane  
1 Progress Point Parkway  
O'Fallon, Missouri 63368  
[Latasha.Lane@Chubb.com](mailto:Latasha.Lane@Chubb.com)

<p>Report Authored By:</p> <div></div> <p><i>Luke A. Showalter</i> Luke A. Showalter, PE Senior Structural Forensic Engineer PE Expires: July 31, 2024</p>	<p>Technical Review By:</p> <p><i>Paul Izzo</i></p> <p>Paul Izzo, P.E. Forensic Consultant</p>
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The author hereby certifies that this engineering document was prepared by the author and that the author is a duly licensed Professional Engineer in the state referenced in the signature line above. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copy. Hard copies of this report with a "wet-seal" can be provided upon request. This report is furnished as privileged and confidential to addressee. Release to any other party is the sole responsibility of addressee. ©2023 EFI Global, Inc.

## CITYOFFRANKLIN

## Roofing

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
1. R&R Single-ply membrane - Fully adhered system - 60 mil	22.00 SQ	542.73	352.83	2,458.58	14,751.47	(3,600.30)	11,151.17
6. R&R Insulation - ISO board, 1"	22.00 SQ	250.44	135.77	1,129.10	6,774.55	(193.95)	6,580.60
3. R&R Insulation - ISO board, 1 1/2"	22.00 SQ	277.54	154.37	1,252.06	7,512.31	(220.53)	7,291.78
4. R&R Insulation - ISO board, 1 1/2"	22.00 SQ	277.54	154.37	1,252.06	7,512.31	(220.53)	7,291.78
7. R&R Curb flashing - PVC/TPO	63.00 LF	19.55	43.00	254.92	1,529.57	(438.75)	1,090.82
14. R&R Cap flashing	63.00 LF	21.17	56.18	277.98	1,667.87	(343.98)	1,323.89
12. R&R Counterflashing - Apron flashing	140.00 LF	10.17	17.05	288.18	1,729.03	(104.40)	1,624.63
11. R&R Aluminum termination bar / flashing for membrane roofs	104.00 LF	3.02	5.10	63.84	383.02	(31.20)	351.82
9. R&R Exhaust cap - through flat roof - PVC/TPO	2.00 EA	136.44	12.56	57.10	342.54	(76.90)	265.64
10. R&R Pipe jack flashing - PVC/TPO	3.00 EA	72.59	8.27	45.20	271.24	(84.39)	186.85
<b>Totals: Roofing</b>			939.50	7,079.02	42,473.91	5,314.93	37,158.98

## Structural

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
29. R&R Metal decking, 1 1/2" 16 gauge galvanized - 'B'	2,170.00 SF	11.40	596.97	5,067.00	30,401.97	(0.00)	30,401.97
34. R&R Steel joist - 20" K Series - under 60' span	93.00 LF	19.52	86.26	380.34	2,281.96	(0.00)	2,281.96
<b>Totals: Structural</b>			683.23	5,447.34	32,683.93	0.00	32,683.93

## Interior

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
37. Electrician - per hour	112.00 HR	104.98	0.00	2,351.56	14,109.32	(0.00)	14,109.32
Labor added to manipulate electrical lines during replacement of roof decking and bar joists. 2 laborers for 8 hours a day over a period of one week.							
40. Plumber - per hour	48.00 HR	129.21	0.00	1,240.42	7,442.50	(0.00)	7,442.50
Labor added to manipulate plumbing lines during replacement of roof decking and bar joists. 2 laborers working 8 hours a day over a period of 3 days.							
42. Paint masonry	975.00 SF	0.93	20.48	185.46	1,112.69	(0.00)	1,112.69
35. Detach & Reset Fluorescent - two tube - 8' - strip light	8.00 EA	108.93	0.00	174.28	1,045.72	(0.00)	1,045.72
48. Water heater - Detach & reset	1.00 EA	626.47	0.00	125.30	751.77	(0.00)	751.77
39. Install Fire alarm - Horn/Bell	2.00 EA	146.06	0.00	58.42	350.54	(0.00)	350.54

## CONTINUED - Interior

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
45. Install Chalkboards, Tackboards, & Markerboards	48.00 SF	2.67	0.00	25.64	153.80	(0.00)	153.80
46. Medicine cabinet - Detach & reset	1.00 EA	45.83	0.00	9.16	54.99	(0.00)	54.99
38. Remove Fire alarm - Horn/Bell	2.00 EA	21.34	0.00	8.54	51.22	(0.00)	51.22
43. Remove Chalkboards, Tackboards, & Markerboards	48.00 SF	0.44	0.00	4.22	25.34	(0.00)	25.34
<b>Totals: Interior</b>			<b>20.48</b>	<b>4,183.00</b>	<b>25,097.89</b>	<b>0.00</b>	<b>25,097.89</b>

## Exterior

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
21. R&R Block - 8" x 8" x 16" - in place	535.50 SF	12.16	122.95	1,326.94	7,961.57	(0.00)	7,961.57
55. Masonry - General Laborer - per hour	40.00 HR	46.02	0.00	368.16	2,208.96	(0.00)	2,208.96
Masonry labor added to cover additional cost of tying in new wall to existing block wall.							
15. R&R Wall/roof panel - ribbed - 26 gauge - up to 1"	233.75 SF	5.30	39.92	255.74	1,534.54	(0.00)	1,534.54
28. R&R Framing/truss anchor - wood to concrete/masonry - embedded	60.00 EA	10.58	9.41	128.84	773.05	(0.00)	773.05
23. Paint masonry	535.50 SF	0.93	11.25	101.86	611.13	(0.00)	611.13
17. R&R Aluminum rake/gable edge trim - mill finish	57.00 LF	5.55	6.62	64.60	387.57	(0.00)	387.57
<b>Totals: Exterior</b>			<b>190.15</b>	<b>2,246.14</b>	<b>13,476.82</b>	<b>0.00</b>	<b>13,476.82</b>

## General Conditions

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
53. Telehandler/forklift and operator	40.00 HR	132.69	0.00	1,061.52	6,369.12	(0.00)	6,369.12
49. Commercial Supervision / Project Management - per hour	80.00 HR	72.36	0.00	1,157.76	6,946.56	(0.00)	6,946.56
Commercial supervision added at rate of 4 hours a day for a period of 20 days.							
56. Temporary fencing - 1-4 months (per month)	400.00 LF	4.75	0.00	380.00	2,280.00	(0.00)	2,280.00
52. Dumpster load - Approx. 40 yards, 7-8 tons of debris	1.00 EA	768.41	0.00	153.68	922.09	(0.00)	922.09
50. Temporary toilet - Minimum rental charge	1.00 EA	160.00	0.00	32.00	192.00	(0.00)	192.00

## CONTINUED - General Conditions

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
51. Job-site cargo/storage container - 40' long (per month)	1.00 MO	130.00	0.00	26.00	156.00	(0.00)	156.00
Totals: General Conditions			0.00	2,810.96	16,865.77	0.00	16,865.77

## Labor Minimums Applied

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
44. Finish hardware labor minimum	1.00 EA	4.18	0.00	0.84	5.02	(0.00)	5.02
47. Cabinetry labor minimum	1.00 EA	123.12	0.00	24.62	147.74	(0.00)	147.74
Totals: Labor Minimums Applied			0.00	25.46	152.76	0.00	152.76
Line Item Totals: CITYOFFRANKLIN			1,833.36	21,791.92	130,751.08	5,314.93	125,436.15

**Summary for Building**

Line Item Total	107,125.80
Material Sales Tax	1,833.36
Subtotal	108,959.16
Overhead	10,895.96
Profit	10,895.96
Replacement Cost Value	\$130,751.08
Less Depreciation	(5,314.93)
Actual Cash Value	\$125,436.15
Net Claim	\$125,436.15
Total Recoverable Depreciation	5,314.93
Net Claim if Depreciation is Recovered	\$130,751.08

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Kyle Mynar

**Recap of Taxes, Overhead and Profit**

	Overhead (10%)	Profit (10%)	Material Sales Tax (7%)	Manuf. Home Tax (7%)	Storage Tax (7%)
Line Items	10,895.96	10,895.96	1,833.36	0.00	0.00
Total	10,895.96	10,895.96	1,833.36	0.00	0.00

**Recap by Room**

Estimate: CITYOFFRANKLIN

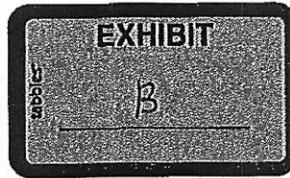
Roofing	34,455.39	32.16%
Structural	26,553.36	24.79%
Interior	20,894.41	19.50%
Exterior	11,040.53	10.31%
General Conditions	14,054.81	13.12%
Labor Minimums Applied	127.30	0.12%
<hr/>		
Subtotal of Areas	107,125.80	100.00%
<hr/>		
Total	107,125.80	100.00%

## Recap by Category with Depreciation

O&P Items	RCV	Deprec.	ACV
CABINETRY	168.95		168.95
CONTENT MANIPULATION	130.00		130.00
GENERAL DEMOLITION	16,789.26		16,789.26
ELECTRICAL	11,757.76		11,757.76
ELECTRICAL - SPECIAL SYSTEMS	292.12		292.12
HEAVY EQUIPMENT	5,307.60		5,307.60
FINISH HARDWARE	132.34		132.34
LABOR ONLY	5,788.80		5,788.80
LIGHT FIXTURES	871.44		871.44
MASONRY	7,477.29		7,477.29
METAL STRUCTURES & COMPONENTS	1,105.64		1,105.64
PLUMBING	6,828.55		6,828.55
PAINTING	1,404.77		1,404.77
ROOFING	28,593.87	5,314.93	23,278.94
STEEL JOIST COMPONENTS	1,513.11		1,513.11
STEEL COMPONENTS	16,904.30		16,904.30
TEMPORARY REPAIRS	2,060.00		2,060.00
O&P Items Subtotal	107,125.80	5,314.93	101,810.87
Material Sales Tax	1,833.36		1,833.36
Overhead	10,895.96		10,895.96
Profit	10,895.96		10,895.96
Total	130,751.08	5,314.93	125,436.15



Insured: City of Franklin  
EFI Global File No.: 019.03408



## ASSIGNMENT

The assignment was received by EFI Global, Inc. (EFI) on May 4, 2023, from Latasha Lane with Chubb Group of Insurance Companies.

The scope of this assignment was to:

- Determine the extent of damage to the roof of the maintenance building attributable to the concrete masonry unit (CMU) wall failure above the roof line.

In response to this request, Luke A. Showalter, P.E., (EFI) visited the site on May 11, 2023. Mr. Jason Wilson and Mr. Brett Jones, both with City of Franklin Street Department, representing the Insured, were present during the site visit, provided access to the property, and background information.

EFI has completed an engineering examination of the subject property located at the above referenced location. EFI's findings, analysis, and conclusions are included herein. This report contains a discussion of the information gathered during the assessment and an analysis and opinions with respect to the condition of the subject property at the time of EFI's assessment. The opinions contained herein are based on information available to date.

## METHODOLOGY

The collection and analysis of information for this assignment followed an application of engineering principles to the investigation analysis.

The procedures followed included:

1. Upon receipt of the assignment, a site examination was conducted on May 11, 2023. Mr. Wilson and Mr. Jones were present at that time.
2. Mr. Wilson and Mr. Jones were interviewed.
3. This written report was authored at Latasha Lane's request.

## BACKGROUND

The following information was gathered during the site visit and through an interview of the Insured's representatives:

- The buildings on the property were purchased by the City of Franklin in 2010. The subject building is utilized as a maintenance building.
- On the Date of Loss (DOL) a CMU wall on the east elevation of the Franklin Street Department building reportedly collapsed. The CMU impacted the low-slope roof of the maintenance building east of the Franklin Street Department Building.

## BUILDING SYSTEM DESCRIPTION

The maintenance building was constructed of a combination of steel framing and CMU walls and clad with metal wall panels and a thermoplastic roofing membrane (Photos 1 and 2). For this report, the front is considered to face west towards North Morton Street.

## **SITE OBSERVATIONS**

Observations were limited to visual examinations and measurements of accessible portions of the subject property. Removal of finish materials, qualitative testing, excavation, or other work not specifically described herein was not conducted.

Observations were photographed to document distress and relevant conditions of the subject property on the date of the site visit. Not all damage or distress present was necessarily observed or photographed; however, the selected photographs provide an indication of their types, severity, and distribution. The photographs may also document unusual or contributing conditions that may exist. Photographs captured to document findings and observations are attached to this report. During this examination, the following observations were made:

### **EXTERIOR SITE OBSERVATIONS:**

- Photo 3 depicts the east wall of the Franklin Street Department Building that was formerly covered by CMU.
- Deflections and ponding were observed affecting the roof components directly adjacent to the area of reported failed CMU (Photo 3).

### **INTERIOR SITE OBSERVATIONS:**

- The roof of the maintenance building was constructed of open web steel joists spaced at approximately 6-feet on center and spanning approximately 30-feet in the east-west direction. The joists were supported by a CMU wall at the west end, and a wide flange steel beam at the east end. The open web steel joists supported metal decking. (Photo 4).
- Each steel joist (11 total) was examined for distress characteristic of impact from the reported CMU failure. The joists were arbitrarily numbered by the engineer from 1-11 with the number 1 joist the northernmost joist.
  - Distress characteristic of recent impact was observed affecting the number 5 (Photos 5 and 6) number 6 (Photos 7 and 8) and number 7 joists (Photos 9 and 10).
  - The remaining joists exhibited no observable distress characteristic of a recent impact.
- Metal roof decking spanned between the joists in the north-south direction. Visible deflections were observed in the decking between each joist but was most prevalent between joists 2-3, 3-4, 4-5, 5-6, 6-7, and 7-8. (Photos 11 and 12).

## **DISCUSSION AND ANALYSIS**

On the DOL a CMU wall constructed on the east elevation of the Franklin Street Department building reportedly collapsed, impacting the adjacent roof of the maintenance building.

Distress attributable to the impact was observed both on the roof of the maintenance building in the form of deflections in the roofing components, as well as in the interior of the building in the form of distress to joists 5, 6, and 7, and visible deflections to the underside of the metal deck. The distress to joists 5, 6, and 7 is advanced enough that the impact has negatively affected the structural capacity of these components. Similarly, the deflections in the metal decking indicate a reduction in the structural capacity of these components and allows water to pond on the roof surface.

Insured: City of Franklin  
EFI Global File No.: 019.03408

No structural distress was readily visible to the remainder of the joists supporting the roof components in this area. Given that the deflections in the metal decking were readily visible, several other joists may have incurred distress that has negatively affected their structural capacity. The joists should be examined by the contractor during repair activities and any areas of concern should be reported to and evaluated by an engineer.

## CONCLUSIONS

The analysis of available evidence related to this assignment supports the following opinions:

1. The impact from the CMU failure has damaged open web joists 5, 6, and 7, the metal decking spanning between joists 2 through 8, as well as the attached architectural components.
2. The remainder of the joists exhibited no observable damage but should be examined by the contractor during repair activities. Any areas of concern should be examined by an engineer.

## ADDITIONAL WORK AND INFORMATION REQUESTED

No additional work by EFI is recommended at this time. If any further information becomes available, please forward that to EFI for additional analysis.

## APPENDICES

Representative photographs are included with this report. Additional photographs captured at the time of the examination are available upon request.

- Appendix A – Photographs

## LIMITATIONS

The information presented in this report addresses the limited objectives related to the evaluation of the subject property. The opinions presented in this report have been made to a reasonable degree of scientific and engineering certainty based upon the information available at the time this report was authored. This report only describes the conditions present at the time of EFI's examination and is only based upon the observations made. This analysis was limited to the scope of work outlined in this report. This report is not intended to fully delineate or document every defect or deficiency throughout the subject property.

The opinions contained within this report are limited to the circumstances associated with this assignment, and are based on this author's education, experience, and training. Should additional information which relates to this evaluation become known, EFI reserves the right to alter the opinions contained in this report, as necessary. In some cases, additional studies may be warranted to fully evaluate conditions noted.

This report is furnished as privileged and confidential to the addressee. Release to any other company, concern, or individual is solely the responsibility of the addressee. Any verbal statements made before, during, or after the course of the assignment were made as a courtesy only and are not considered a part of this report. Any reuse of this report or the findings, opinions, or recommendations presented herein without the express written consent of EFI is prohibited.

Insured: City of Franklin  
EFI Global File No.: 019.03408

### **CLOSING**

EFI appreciates this opportunity to provide consulting services related to this matter. Please contact us should any questions arise concerning this report, or if we may be of further assistance.

### **ENGINEER STAMP**

This report has been transmitted electronically. If requested, a hard copy of the report with a "wet-stamp" can be provided. The signature and stamp image on the front is for demonstrative purposes. This report has been electronically signed and sealed by this author on the referenced date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copy.

It is a violation of law for any person to alter this document in any way, unless acting under the direction of a licensed professional engineer. If a document bearing the seal of an engineer is altered, the altering engineer shall affix to the document their seal and the notation "altered by" followed by their signature and the date of such alteration, and a specific description of the alteration.

**Insured: City of Franklin**  
**EFI Global File No.: 019.03408**

## **APPENDIX A**

### **PHOTOGRAPHS**