

Station No. 5

Jefferson Park

FROEHLING & ROBERTSON, INC.

VISUAL SURVEY JANUARY 19, 2021

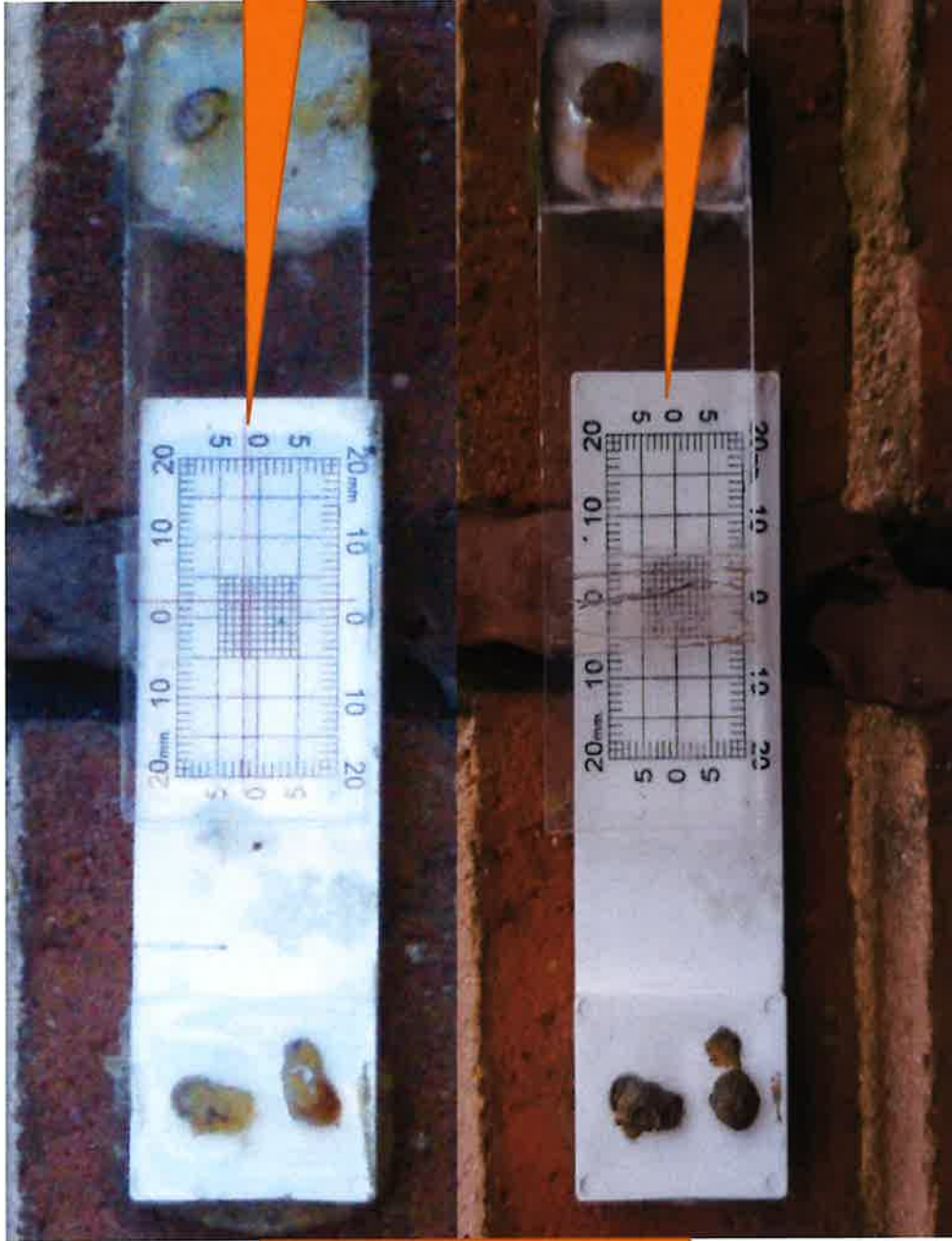
Observations

Station 5 on site observations by F & R Project Engineer Brendan Quirk on January 19, 2021.

A total of 5 crack monitors were observed, 3 interior and 2 exterior. Of the 3 interior monitors, 2 have been completely painted over; however, they indicate little to no movement since initial set up. The 3rd by the southwest door, the cross hairs are visible and still aligned in the initial set position.

A fourth monitor, exterior above the northeast bay door where significant stair-step cracking is evident, the cross hairs are faded from exposure; however, the monitor appears to indicate little to no movement based on current relative positioning of the plates.

Final and 5th monitor located on the exterior expands the control joint. Documentation from 2008 and images indicate 2mm movement horizontally and 2mm movement vertically. There is no confirming picture of initial set to verify alignment but assume the cross hairs were centered appropriately. Comparison of the 2008 image and the 2021 image indicates approximately an additional 2mm movement horizontally and an additional 3mm movement vertically. We can deduct that this movement occurred within some unknown timeframe within the past 13 years. Also note that this movement could be exacerbated by natural thermal expansion/contraction.



2008 Photo shows 2mm horizontal and 2mm vertical movement

2021 Photo shows an additional 2mm horizontal and 3mm vertical movement

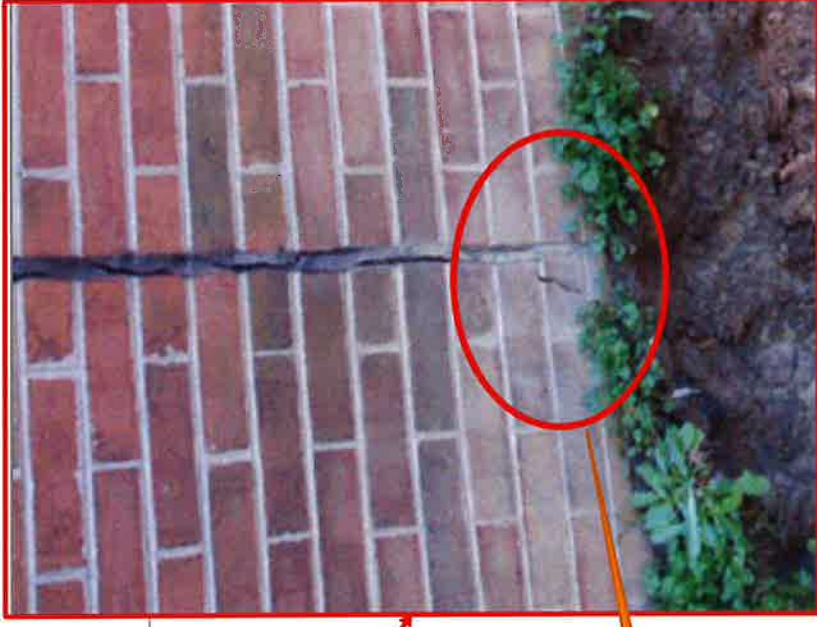
This relative movement of the monitor plates from 2008 to 2021 could be exacerbated by natural thermal expansion/contraction

Exterior north wall -2021





North wall – test pit 2008



2008 Photo crack enlarged shows
Stair-step crack





North wall – 2021

Note the brick cracking existed prior to install of new helical in 2008



Summary

Review of the crack monitors which still exist at Station 5 indicate that additional movements are likely minimal to none.

Existing monitors and cracking should be reviewed periodically for any indication of movement or “worsening”.

Additional monitors could also be installed in new areas to allow for a fresh record of observation and documentation.

Based on observations, 3-4 locations on the interior could be utilized for the set of fresh crack monitors.

Recommend a site visit be scheduled once a week for a month, to take readings of the newly set monitoring program and then once a quarter thereafter. Scheduling can always be adjusted based on the movement observed.

No exterior survey points and measurements by surveying techniques is warranted.

Pricing Summary

Proposed Costs for Station 5 Crack Monitoring for a year.

Cost Estimate

In order to provide the reference scope of service, we recommend that you budget 5,000.00. Please refer to the attached Cost Estimate and Unit Price Fee Schedule for more detailed information regarding this figure was derived.

Please note that this is an estimate and not a lump sum fee. Actual charges will be invoiced on a time and materials basis in accordance with the provided unit rates. Please also note that his figure does not include re-inspections or the time and materials expended when services are delayed and/or cancelled en-route without prior notification.

| | <i>unit</i> | <i>quantity</i> | <i>rate</i> | <i>cost</i> |
|---|-------------|-----------------|--|--------------------|
| I. Installation of New Crack Monitors: | | | | |
| 1. | hour | 5 | \$ 90.00 | \$ 450.00 |
| 2. | each | 4 | \$ 45.00 | \$ 180.00 |
| 3. | trip | 1 | \$ 40.00 | \$ 40.00 |
| | | | Subtotal: | \$ 670.00 |
| II. Monitoring Cracks (1st Month – 1 visit per week) | | | | |
| 1. | hour | 16 | \$ 90.00 | \$ 1,440.00 |
| 2. | hour | 2 | \$ 135.00 | \$ 270.00 |
| 3. | trip | 4 | \$ 40.00 | \$ 160.00 |
| | | | Subtotal: | \$ 1,870.00 |
| II. Monitoring Cracks (Subsequent Months – 1 visit per month; assumes 5 total) | | | | |
| 1. | hour | 20 | \$ 90.00 | \$ 1,800.00 |
| 2. | hour | 3 | \$ 135.00 | \$ 390.00 |
| 3. | trip | 5 | \$ 40.00 | \$ 200.00 |
| | | | Subtotal: | \$ 2,405.00 |
| | | | Estimated Total for CMT Services: | \$ 4,945.00 |

** Supplemental engineering consultation or meeting attendance, can be provided upon request after the report is issued, at a rate of \$135/hour.

Station 5 Renovations





FROELING & ROBERTSON, INC.

Engineering Stability Since 1881

3015 Dumbarton Road
Richmond, Virginia 23228-5831
T 804.284.2701 F 804.284.1202

January 5, 2021

Prince George County
Attn: Mike Purvis

Via email: m.purvis@princegeorgescountypa.gov

Reference: Proposal for Professional Engineer Site Visit and Conditions Assessment
4225 Jefferson Park Road
County of Prince George, Virginia

Dear Mr. Purvis,

Froehling & Robertson, Inc. (F&R) is pleased to submit our cost proposal for the scheduling of a site visit performed by a Professional Engineer to observe the existing conditions and endeavor to evaluate the potential of structural movement and provide recommendations to further monitor the structure and/or remediate the issue. Please refer to the following information which describes our understanding of the project, our scope of services and our estimated cost of services.

UNDERSTANDING THE PROJECT

Our understanding of this project is derived from the following information:

- Telephone and email correspondence on 1/4/2021 and 1/5/2021
- A review of F&R's limited subsurface exploration report No. 1604-0372G, dated 11/19/2008

Based on the provided information, we understand that Chance Anchors were installed in 1992/1993 in efforts to support the structure from subgrade related movement and that no additional movement was recorded until 2007. F&R performed a limited subsurface exploration in 2008 and supplemental helical piers were added for additional support. At this time we do not know of any additional movement and/or movement related damage to the existing fire station structure; however, you have requested F&R make a site visit to observe the existing conditions and provide comment whether or not it appears movement continues.

Therefore, we understand that F&R is to make a site visit to perform a visual survey of the existing conditions and endeavor to assess the evidence of likelihood of continued structural movement. We will issue a subsequent letter reviewed by a professional engineer providing inspection commentary and recommendation for any future actions, as necessary.

Corporate HQ: 3015 Dumbarton Road Richmond, Virginia 23228 T 804.264.2701 F 804.264.1202 www.fandri.com

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COST ESTIMATE

At this time, our services can be performed for a lump sum fee of \$1,500.00. Supplemental engineering consultation or meeting attendance, can be provided upon request after the report is issued, at a rate of \$135/hour.

AUTHORIZATION

We appreciate the opportunity to be considered for this project. In order to formalize an agreement for these services or if you have any questions, please feel free to contact us at (804) 284-2701.

Respectfully Submitted,
FROELING & ROBERTSON, INC.

Digitally signed by

Brendan Quirk

Date: 2021.01.05

0952208-45.00

Brendan L. Quirk, P.E.
Branch Manager

Attached: Agreement for Engineering Services (8 Sheets)



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

3015 Dumbarton Road
Richmond, Virginia 23228-5931
T 804-264-2701, F 804-264-3202

January 29, 2021

Prince George County
Attn: Mike Purvis

Via email: mpurvis@princegeorgescountysva.gov

Proposal for Professional Engineer Site Visit and Conditions Assessment
4225 Jefferson Park Road
County of Prince George, Virginia

Dear Mr. Purvis:

Froehling & Robertson, Inc. (F&R) is pleased to submit our estimated cost proposal for crack monitoring for the above referenced project. Please refer to the following information which describes our understanding of the project, our scope of services, and our estimated cost of services:

UNDERSTANDING THE PROJECT

Our understanding of this project is derived from the following information:

- Telephone and email correspondence on 1/4/2021 and 1/27/2021
- A review of F&R's limited subsurface exploration report No. 160-09726, dated 11/16/2008
- F&R's recent site evaluation and subsequent report dated 1/21/2021

Based on F&R's visual survey of the existing conditions and a review of the crack monitors which still exist at the project site, it indicates that additional movements are likely minimal. However, the lack of condition documentation of the fire station No. 3 structure from 2008 makes it difficult to determine the amount of additional movement which may have taken place and/or damage experienced by structure since the installation of additional foundation support. Therefore, at this time, maintaining of the cracks has been requested to determine if they are growing.

SCOPE OF SERVICES

Based on our understanding of the project, we will undertake the following scope of services:

- 1) Installation of Crack Monitors: We will visit the site to observe the cracks visible in the CMU and install up to 4 new A-wing crack monitors at locations considered accessible and prudent.



2) **Monitoring Cracks:** We will visit the site on a quarterly basis to document the movement of the walls via the previously installed and newly installed crack monitors. Following our visits, we will prepare a report to document the measurements that we collected. Following completion of the monitoring period, or if clear signs of the crack growing are observed sooner, we will provide recommendations for further study.

COST ESTIMATE

In order to provide the referenced scope of services, we recommend that you budget \$,000.00. Please refer to the attached Cost Estimate and Unit Price Fee Schedule for more detailed information regarding how this figure was derived.

Please note that this is an estimate and not a lump sum fee. Actual charges will be invoiced on a time and material basis in accordance with the provided unit rates. Please also note that this figure does not include re-inspections or the time and material expended when services are delayed and/or cancelled en route without prior notification.

AUTHORIZATION

We appreciate the opportunity to be considered for this project. In order to formalize an agreement for these services or if you have any questions, please feel free to contact us at (804) 264-2701.

Respectfully Submitted,
FROEHLING & ROBERTSON, INC.

Brandon L. Quirk, P.E.
Branch Manager

Attachment: Agreement for Engineering Services (8 Sheets)



COST ESTIMATE

I. Installation of New Crack Monitors:

| | | | | | | |
|------------------------------|------|---|----|-----------|----|--------|
| 1. Installing Crack Monitors | hour | 5 | \$ | 90.00 | \$ | 450.00 |
| 2. Crack Monitors | each | 4 | \$ | 45.00 | \$ | 180.00 |
| 3. Mileage | trip | 1 | \$ | 60.00 | \$ | 60.00 |
| | | | | Subtotal: | \$ | 670.00 |

II. Monitoring Cracks (1st Month - 1 visit per week)

| | | | | | | |
|--------------------------|------|----|----|-----------|----|----------|
| 1. Staff Engineer | hour | 16 | \$ | 90.00 | \$ | 1,440.00 |
| 2. Professional Engineer | hour | 2 | \$ | 135.00 | \$ | 270.00 |
| 3. Mileage | trip | 4 | \$ | 40.00 | \$ | 160.00 |
| | | | | Subtotal: | \$ | 1,870.00 |

III. Monitoring Cracks (Subsequent Months - 1 visit per month); assumes 5 visits

| | | | | | | |
|--------------------------|------|----|----|-----------|----|----------|
| 1. Staff Engineer | hour | 20 | \$ | 90.00 | \$ | 1,800.00 |
| 2. Professional Engineer | hour | 3 | \$ | 135.00 | \$ | 360.00 |
| 3. Mileage | trip | 5 | \$ | 40.00 | \$ | 200.00 |
| | | | | Subtotal: | \$ | 2,400.00 |

Estimated Total For CMT Services: \$ 4,945.00

** Supplemental engineering consultation or meeting attendance can be provided upon request after the report is issued, at a rate of \$135/hour.

To date, we have expended for a new Station 5 - \$50,950.56 (A/E - HBA - \$32,049.56; Subaquatics Compressor \$18,901); unclear whether we will owe HBA more upon cancellation of contract

Station 5 Renovations Quotes

| Contractors | System | Cost | Total |
|------------------|-------------------------|--------------|---------------------|
| Warwick | HVAC | \$150,000.00 | \$150,000.00 |
| A-1 Door Company | Bay Doors | \$38,827.06 | \$38,827.06 |
| Deshazo Roof | New Roof | \$26,175.00 | \$26,175.00 |
| F & R | Engineering | \$1,500.00 | \$1,500.00 |
| F & R Proposal | Crack Monitoring (1yr) | \$5,000.00 | \$5,000.00 |
| | | | |
| | | | |
| | | | |
| | To Date Expenses | | \$221,502.06 |
| | | | |
| | | | |

Note: Balance may be used for F & R assessments that required attention and other request that have been received.