

City of Revere
CFO/City Auditor/Budget Director
281 Broadway
Revere, MA 02151
Tel: (781) 286-8131

Richard Viscay
CFO/City Auditor/Budget Director

July 8, 2026

Anthony Zambuto, City Council President
Revere City Hall
281 Broadway
Revere, MA 02151

RE: Community Improvement Trust appropriations

Dear Council President Zambuto,

Please find attached a copy of a verification of available funds for the following requests from the City's Community Improvement Trust Fund for the following projects.

Legion Landscaping- 25,000

- Request for Cit funding to provide instant gratification and a better product of the newly installed Legion landscape feature. Funds will be used to install a new irrigation system, trees, sod, and a drainage leaching basin for the legion roof leaders.

Freeman St Fire Station Repairs- 570,000

- Freeman St. Fire Station apparatus floor slab requires a full depth slab replacement as outlined in the structural evaluation. The current condition of this frequently used facility creates safety concern. The current imposed load from the 43,000 lb. fire engine may currently exceed the reduced capacity of the deteriorated slab and should be addressed as soon as possible.

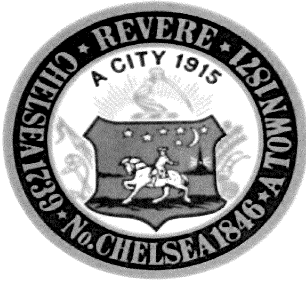
I will be attending Monday's meeting to answer any questions that may arise, however, in the meantime, please do not hesitate to contact me in advance if you have any questions.

Best regards,

Richard Viscay
Chief Financial Officer/City Auditor/Budget Director

Cc: Patrick M. Keefe, Jr., Mayor
Assunta Newton, Assistant Budget Director
Chris Ciaramella, Superintendent of DPW

Attachment



City of Revere CFO/City Auditor

281 Broadway
Revere, MA 02151
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Richard Viscay
CFO/City Auditor

MEMORANDUM

To: Mayor Patrick M. Keefe, Jr
From: Richard Viscay
Cc: Assunta Newton, Assistant Budget Director
Date: July 8, 2026
RE: Verification of Available Funds for Authorization and Transfer

The attached request asks that funds be transferred as follows:

FROM:	Community Improvement Trust (84051-596000)	\$ 595,000
	<i>Available Balance:</i>	\$ 2,142,808
TO:	Legion Landscaping (40421-497000)	25,000
	<i>Original Certification:</i>	\$ 0.00
TO:	Freeman St Fire Station Repairs (40511-497000)	570,000
	<i>Original Certification:</i>	\$ 0.00

Based on the amount available as of July 8, 2026, there are sufficient funds to support such a transfer.

Account verified by _____

Reviewed by _____

For Audit Use Only:

CO# _____ DATE _____ ENTRIES MADE BY _____

MEMORANDUM

TO: Christopher Ciaramella
Department of Public Works, City of Revere, MA

FROM: Qiang Shen, PE; Marselo Marulanda
Weston & Sampson

DATE: May 20, 2026

SUBJECT: Freeman Street Fire Station – Revere, MA
Structural Evaluation of Existing Apparatus Floor Slab

Dear Mr. Ciaramella,

We are writing to provide a detailed assessment and our professional recommendation regarding the structural integrity of the apparatus floor structures at the above-mentioned city fire station in Revere, MA, based on our site visit conducted on January 14, 2026.

Existing Fire Station Building

The fire station is a two-story structure with a basement. The building construction consists of:

- Exterior walls: Brick masonry
- Floor framing: Concrete floor beams supporting concrete slab floors
- Basement: Utilized as a utility and storage space
- Lower floor: Contains two apparatus bays, accommodating fire trucks and equipment
- Upper floor: Serves as sleeping quarters and support space for fire personnel



Building Front View (East side)



Building Side View (North side)



Building Rear View (West side)

Observations and Findings

The findings below are based on visual observation during the site visit. Further investigation or tests may be needed to determine the integrity and safety of the floor slab. The following key findings were made:

Left Bay

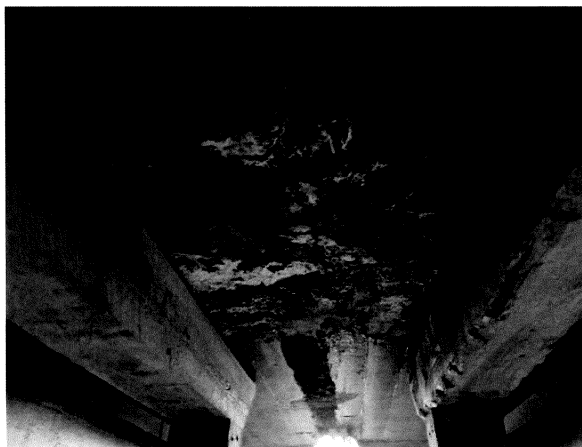
- The concrete floor slab exhibits visible cracking throughout, with noticeable sagging/deflection in multiple areas.
- Surface deterioration is present on the top side of the slab, including scaling and erosion. The deterioration appears consistent with long-term exposure to de-icing salts.
- The underside of the slab shows areas of concrete spalling. In some locations, reinforcing steel may be exposed or at risk of exposure.
- The slab is currently shored with temporary wood columns and beams.
- The bay is used to store a fire engine with an approximate weight of 43,000 lbs.

Right Bay

- The concrete slab in the right bay appears to be in comparatively better condition.
- Minor surface wear is present but no significant sagging or widespread spalling was observed.
- This bay is used for light vehicles only.

Structural Concerns

- The combination of cracking, sagging, surface erosion, and underside spalling in the left bay indicates potential reduced structural capacity.
- Deterioration consistent with chloride-induced reinforcement corrosion is suspected.
- The presence of temporary wood shoring suggests that previous structural concerns have been identified.
- The current imposed load from the 43,000 lb fire engine may exceed the reduced capacity of the deteriorated slab.



Concrete Spalling and Shoring (Left Bay)



Floor Corrosion and Cracking (Left Bay)



Floor Shoring (Left Bay)



Fire Engine Specified Weight and Wheel Loads (Left Bay)



Floor Condition (Right Bay)

Structural Analysis

Due to the lack of existing construction drawings and specifications, the following analysis assumptions were made for analysis purposes:

- Typical concrete compressive strength (early 1900s) ~1,500–2,500 psi was common. Some poorer mixes or early mass concrete could be as low as 800–1,200 psi.
 - In the analysis, concrete compressive strength, $f'_c = 1,500$ psi is assumed.
- Typical rebar (reinforcing steel) strength in the 1900s (from late 1800s to 1910):
 - Material: mild steel or wrought iron
 - Yield strength: $F_y = 30,000$ psi
 - Ultimate strength: $F_u = 48,000$ – $55,000$ psi
 - When assessing historic structures, engineers often assume 30 ksi yield unless testing proves otherwise.
 - In the analysis, reinforcement yield strength, $F_y = 30$ ksi is assumed.
- The floor slab was measured as 6" in thickness. Due to the poor condition and section loss of the rebars by corrosion, the floor slab reinforcing is assumed to #3 bars at 12" on the center spacing at each direction in this analysis.

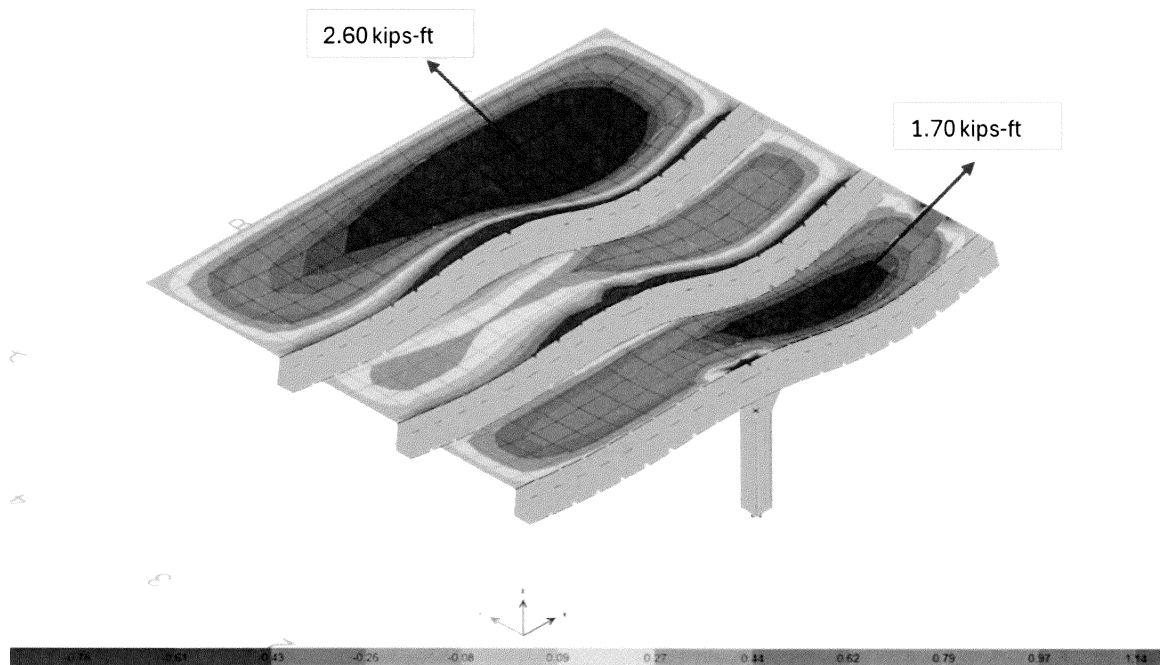
ETABS Concrete Structure analysis software was used in this analysis. The following charts show the results of the analysis which indicate severe overstress in the slab.

Slab Flexure Capacity:

FLEXURE CAPACITY	
b (in)	12
h (in)	6
d (in)	4.5
f'c (psi)	1500
fy (psi)	33000
As (in²)	0.11
a (in)	0.24
c (in)	0.28
ϵ_s	0.045
ϕ	0.90
ϕM_n (kips-ft)	1.19
Mu (kips-ft)	2.60
d/c	2.18

#3 @ 12"

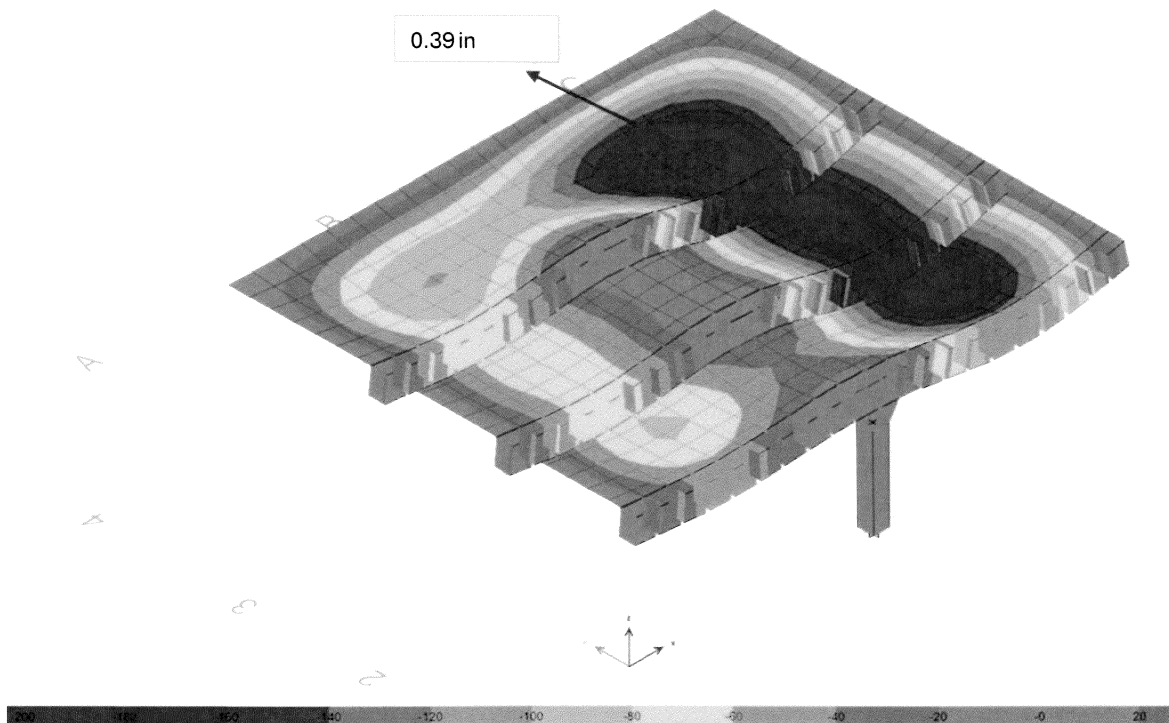
Stress ratio: 218% overstressed.

*Slab Flexural Results*

Slab Deflection Limit:

DEFLECTION LONG TERM	
ΔD (in)	0.082
ΔL (in)	0.144
$\Delta D + L$ (in)	0.22
λ	2
ΔD_{LT} (in)	0.246
ΔL_{LT} (in)	0.144
$\Delta_{LT, Total}$ (in)	0.39
L (ft)	9.2
$L/240$	0.46
$L/360$	0.31

Live load deflection ratio: 47%



Slab Deflection Results

Concrete Floor Beam Flexure Capacity:

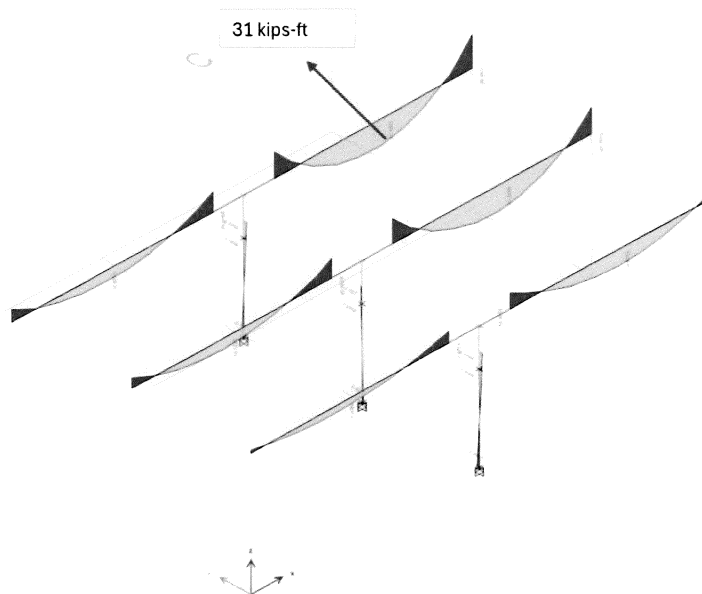
FLEXURE CAPACITY	
b (in)	12
h (in)	18
d (in)	16.5
f_c (psi)	1500
f_y (psi)	33000
A_s (in²)	0.88
a (in)	1.90
c (in)	2.23
ε_s	0.019
φ	0.90
φM_n (kips-ft)	33.87
M_u (kips-ft)	31.00
d/c	0.92

2#6

SHEAR CAPACITY	
φV_n (kips)	11.50
V_u (kips)	13.42
d/c	1.17

Flexural stress ratio: 92%.

Shear stress ratio: 117%, overstressed.

*Floor Beam Flexural Results*

Results and Recommendations

Based on the observed structural deficiencies and analysis, the following result is concluded:

- The left bay slab is severely damaged and overloaded. The concrete beams and columns are in a fair condition.

The following measures are recommended to ensure the stability of overall structure:

Material Testing

- Perform in-place concrete compressive strength testing (cores or equivalent).
- Conduct chloride ion content testing at varying depths within the slab.
- Evaluate reinforcing steel condition where spalling has occurred.

Load Restrictions

- Consider restricting heavy vehicle parking in the left bay until structural adequacy is confirmed.
- Evaluate the safety and adequacy of the existing temporary shoring.

Repair or Replacement

- Based on testing and analysis results, develop a repair strategy which may include:
 - Partial-depth or full-depth slab repair
 - Reinforcement replacement
 - Cathodic protection or corrosion mitigation measures
 - Full slab replacement if required

Repair Options

Option 1 - Full depth slab replacement:

- Remove full depth of left bay slab and replace it with a new concrete slab. Add new steel beams and columns between the existing concrete beams to shorten the new concrete slab spans.

Option 2 - Partial slab replacement and a new slab underneath:

- Add a new supporting steel framing and slab under existing floor slab. Remove and resurface the top of existing slab.

Option 3 - Backfill the basement:

- Reroute and relocate the existing utility in the basement and backfill the existing basement with light-weight flowable concrete fill.

A detailed structural analysis should be conducted using the results of floor slab and supporting member material testing prior to the development of repair plans or specifications for the options noted above.

Estimated Repair Options Construction Cost

Slab Repair and Service Opinion of Probable Cost Estimate			
		Left Apparatus Bay	Both Apparatus Bays
Option 1 - Full depth slab replacement	400 sf for left bay and 800 sf for total area. including demo and new steel support	\$200,000	\$400,000
Option 2 - Partial slab replacement and a new slab underneath	Repair existing concrete slab including new steel support and new slab	\$250,000	\$450,000
Option 3 - Backfill the basement	Reroute and relocate existing utilities. The flowable fill placement cost is around \$350 cu yd. Total volume is 150 cu yd. Concrete foundation and CMU retaining wall 25 ft for \$200 per sq ft. Repair existing slab.	\$260,000	\$520,000
Construction Administration (10%)	Permitting, Site Observations, Inspections	\$26,000	\$52,000
GC Cost (10%)	Insurance and misc	\$26,000	\$52,000
Safety measure	Temp. shoring and site cleaning and mitigation	\$30,000	\$40,000
Contingencies (25%)	Including contingency for unexpected field condition	\$65,000	\$130,000
<u>Grand Total</u>		<u>\$347,000 to \$407,000</u>	<u>\$674,000 to \$794,000</u>

The contingency allowances are expected to decrease as the final design is completed. This cost estimate is based solely on the information currently available to Weston & Sampson. A more accurate construction cost estimate will be developed once the engineering design work is finalized.

The estimated engineering design fee is \$70,000 to \$90,000 which is not included in the construction cost.

Conclusion

The left bay concrete slab shows significant signs of structural distress and deterioration that may compromise its load-carrying capacity, particularly under heavy apparatus loading. Immediate evaluation through testing and engineering analysis is recommended to determine appropriate corrective action.

The right bay slab is currently in serviceable condition but should be periodically monitored for future deterioration.

The Weston & Sampson team is prepared to provide further technical assistance and support throughout the process to ensure the highest level of efficiency and safety.

Should you require any additional information or clarification regarding our assessment, please do not hesitate to contact us.

Sincerely,

Qiang Shen, PE
Structural Engineer

Marselo Marulanda
Structural Engineer