



2021 Elm and High Street Parking Garages Condition Assessment



Nashua
NEW HAMPSHIRE'S GATE CITY

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February 23, 2022

**In 2021, The City of
Nashua retained
Thornton-Tomasetti to
provide a Condition
Assessment
of the Elm & High Street
Parking Garages**

Goal of the Assessment

- Establish Current Conditions of Garages
- Prioritize Necessary Repairs
- Provide Opinion of Probable Repair Cost
- Provide Maintenance Plan for Next 20 Years

Background: This came about from a Board of Aldermen Meeting where members wanted to better understand our Capital Improvement Needs.

Recommended Repairs Based on Priority Levels

High Priority Repairs:

These items should be completed in the near future to address the critical structural supporting elements and life safety concerns. These consist of life safety items, including knocking down overhead spalls and repairing any tripping hazards, severe deteriorated concrete, and repairing or replacing leaking joints and drains.

Moderate Priority Repairs:

These items are important to prevent further water and chloride infiltration and the acceleration of on-going deterioration and durability issues. These should be addressed in a reasonable time frame, but less urgent in nature than the items listed above. The moderate priority repair items include repairs such as replacing the joint sealants from the roof down, crack repair, applying concrete sealer to the deck and installing new drains at areas of ponding water.

Low Priority Repairs:

These items are either cosmetic in nature or not critical to durability of the parking structure. The low priority repairs include items from cleaning the façade, repainting CMU walls, restriping the deck markings, to adding security fencing at the grade level.



Elm Street Garage

Conditions assessment

Elm Street Garage – Single Phase Plan / 20-Year Period

Recommended Structural Work to be Completed Under Single Phase Plan Option:

- 1-2 Year Duration
- \$2.3M Initial Cost
- Includes Years **1-8** on Project Plan*
- Additional phases of work would need to be completed roughly every 5-7 years after the initial work is completed (about \$275K per phase). Not included in cost.
- Miscellaneous repair work (yearly budget) of \$25K. Not included in cost.

Cost to do all Repair Work over a 20-Year Period Option:

- 20 Year Duration
- \$4.5M (\$225K Annually)
- Year 10 Repeat Work would begin - Included in Cost
- Reoccurring repair work - Included in Cost

*This figure represents the projected cost for the scope of work in years 1 through 8 of the 20-year plan.

Elm Street Garage - Structural Repairs

Moderate to High Priority Level –
Under Single Phase Plan

- Leaking Drains/Re-routing/Replacing Drain Lines
- Stair Towers/Stair Risers/Doors
- Repair Cracked/Spalled Concrete
- Joint Sealant & Traffic Membrane Replacement/Repairs
- Asphalt Tripping hazards
- Expansion Joints Replacement/Repairs
- Window Gaskets and crack chasing
- Elevator Modernization



Elm Street Garage – Façade Repairs

Low Priority Level – Included in Single Phase Plan

- Painting of doors, walls, stair towers, etc.
- Restriping
- Brick Façade/Brick work

Other Items Noted but not included in Cost

- Lighting Improvements
- Landscaping
- Bird deterrents
- Additional security cameras
- Expansion of Parking Office



Elm Garage – Findings and Repair Recommendations

High priority repairs:

- Knockdown all loose overhead spalls.
- Repair all severe cracked/spalled DT stems, spandrels, shear-wall ledge, columns, corbels and IT beams.
- Grind DT-DT joint tripping hazards.
- Replace deteriorated joint sealant at locations with severe leaking.
- Repair asphalt tripping hazards around drain.
- Repair stair riser/tread tripping hazards.
- Replace deteriorated conduit and exposed wiring.
- Replace failed expansion joints and header material at roof level.
- Replace deteriorated/leaking drains and leaders.
- Clear clogged drains.
- Verify drain and leaders are clear of debris to sewer at street.

Moderate priority repairs:

- Replace all joint sealants following a top to bottom phased approach.
- Repair/replace broken DT connections.
- Repair spalled DT joint edges.
- Rout and seal precast DT non-structural cracks.
- Apply concrete sealer to DT deck surfaces.
- Repair CIP topping at IT beams & washes.
- Re-apply traffic membrane at IT Beams.
- Repair overhead spalls.
- Install new drains at areas of ponding water.
- Install new clearance head bangers.
- Replace deteriorated doors and frames.
- Replace expansion joints.

Low priority repairs:

- Clean the façade.
- Clean the underside of the decks to remove staining.
- Repoint deteriorated masonry joints.
- Seal masonry.
- Restripe all deck markings.
- Paint stair interiors/exterior walls and steel.
- Install tread covers at stair risers.
- Stair tread/riser replacement.
- Replace stair tower glazing gaskets.
- Replace sealant around stair tower curtain walls
- Paint CMU walls.
- Install security fencing at perimeter of garage at grade level.
- Add additional lighting and relocate existing light to underside of DT stems.
- Replace existing metal conduit with PVC.
- Reset/repair bird deterrent.



High Street Garage

Conditions assessment

High Street Garage – Single Phase Plan / 20 Year Period

Recommended Structural Work to be Completed Under Single Phase Plan Option:

- 1-2 Year Duration
- \$1.7M Initial Cost
- Includes Years **1-9** on Project Plan*
- Additional phases of work would need to be completed roughly every 5-7 years after initial work is completed (about \$200K per phase). Not included in cost.
- Miscellaneous repair work (yearly budget) of \$25K. Not included in cost.

Cost to do all Repair Work over a 20-Year Period Option:

- 20 Year Duration
- \$3.7M (\$185K Annually)
- Year 10 Repeat Work would begin – Included in Cost
- Reoccurring repair work - Included in Cost

*This figure represents the projected cost for the scope of work in years 1 through 9 of the 20-year plan.

High Street Garage - Structural Repairs

Moderate to High Priority Level – Under Single Phase Plan

- Leaking Drains/Re-routing/Replacing Drain Lines
- Stair Towers/Stair Risers/Doors
- Repair Cracked/Spalled Concrete
- Joint Sealant & Traffic Membrane Replacement/Repairs
- Asphalt Tripping hazards
- Expansion Joints Replacement/Repairs
- Elevator Modernization



High Street Garage – Façade Repairs

Low Priority Level – Included in Single Phase Plan

- Painting of doors, walls, stair towers, etc.
- Restriping
- Brick Façade/Brick work

Other Items Noted but not included in Cost

- Lighting Improvements
- Landscaping
- Bird deterrents
- Additional security cameras
- Snow Melter System



Upcoming and Preventative Maintenance

High priority repairs:

- Repair all severe cracked/spalled DT stems, and IT beams.
- Grind DT-DT joint tripping hazards.
- Replace deteriorated joint sealant at locations with severe leaking.
- Repair tripping hazard at North-West stair tower landing.
- Replace deteriorated conduit and exposed wiring.
- Replace deteriorated/leaking drains and leaders.
- Verify drain and leaders are clear of debris to sewer at street.

Moderate priority repairs:

- Replace all joint sealants following a top to bottom phased approach.
- Repair/replace broken DT connections.
- Repair spalled DT joint edges.
- Rout and seal precast DT non-structural cracks.
- Apply concrete sealer to DT deck surfaces.
- Repair CIP topping at IT beams & washes.
- Re-apply traffic membrane at IT Beams.
- Repair overhead spalls.
- Install new drains at areas of ponding water.
- Install new clearance head bangers.
- Replace deteriorated doors and frames.
- Replace expansion joints.

Low priority repairs:

- Clean the façade.
- Clean the underside of the decks to remove staining.
- Repoint deteriorated masonry joints.
- Seal masonry.
- Restripe all deck markings.
- Paint stair interiors/exterior walls and steel.
- Install tread covers at stair risers.
- Stair tread/riser replacement.
- Replace stair tower glazing gaskets.
- Replace sealant around stair tower curtain walls
- Paint CMU walls.
- Install security fencing at perimeter of garage at grade level.
- Add additional lighting and relocate existing light to underside of DT stems.
- Replace existing metal conduit with PVC.
- Reset/repair bird deterrent.

Opinion of Probable Construction Costs by Garage

Elm Street Garage

Present Value* - \$3.4M

This includes 10% contingency and 20% contractor mobilization/general conditions cost

Projected Repair Costs over Span of 20 Years – \$4.5M

High Street Garage

Present Value* - \$2.6M

This includes 10% contingency and 20% contractor mobilization/general conditions cost

Projected Repair Costs over Span of 20 Years – \$3.7M

*This figure represents if all recommended work (Year 1-20) was to be completed today.