



Garden City Fire Department Existing Conditions Documentation & Recommendation Executive Summary

General Findings: Firehouse #1, Firehouse #2, Firehouse #3

Vincent Benic Architect (VBA) and Cameron Engineering Associates (CEA) investigated deficiencies and deterioration of the Firehouses #1, #2, and #3. Our team investigated:

- National, State & Local Code Deficiencies
- ADA Compliance
- Facades, Roofs, Drainage, Windows and Dormers
- Based our analysis we recommended repairs to address the observed existing conditions that operate at sub-optimal levels.
- We also included Recommended Upgrades that are not required by Code but are suggested as standard building practice that will improve the building systems and thereby increase longevity.

The extent of the deterioration, physical condition and repair recommendations of all the identified elements will be summarized in this memorandum for each Firehouse. A spreadsheet is provided for each Firehouse summarizing the building's condition and the respective cost for repairs. The costs are estimated with prevailing wages.

The items identified in the "Code" and "ADA Compliance" sections are in violation of New York State Code and/or Federal Law. These issues should be addressed as soon as possible.

After review of all the existing conditions we do not believe that any of the Firehouses require emergency repairs. However, Firehouse #2 is in the most serious and progressively deteriorating condition and should be addressed first. For Firehouse #1, although the interior is generally in good condition, the North and East Facades and roof systems are in an advanced stage of deterioration and should be addressed as soon as possible. The other Facades are in fair condition with sporadic failures. Of the three Houses, Firehouse #3 is in good to fair condition and has fewest deficiencies. In all instances if the damage is not addressed in the next 1-2 years, the deterioration of the existing systems will accelerate and the system failures will produce mounting costs.

Firehouse #1

347 Stewart Ave

Firehouse #1 is a 2 story brick and cast stone building with aluminum windows and limestone surround. There are upper and lower flat roofs as well as a rooftop terrace.

2.1 National, State, & Local Codes

A. Fire Stopping & Fire Safing

The Apparatus Floor and Second floor Corridor have numerous locations where pipes, ducts, conduits, and doors do not maintain the required fire rated construction. All penetrations must be fire safed, fire rated doors installed where missing and fire rated construction maintained. This is a serious *violation of the Code*.

B. Mechanical, C. Electrical, & D. Plumbing

Resolutions to numerous deficiencies throughout the facility range from simple (e.g. insulation missing from water piping) to intrusive (exhaust for oxygen tank storage room, removal of the washing machine from the electrical room, etc.). Providing exhaust and air-supply where required, eliminating obstructions at electrical panels & switches, and maintaining fire-ratings must be addressed for day-to-day operations, though all code violations enumerated in the report are problematic for continued operation of the facility.

2.2 ADA Compliance

A. Exterior Entrance & B. Interior Route & Bathroom

The exterior entrance doors and walkway to the building *do not comply with ADA* regulations or Code. ADA door clearances and hardware are not provided on some First Floor egress and hallway doors. The public toilet room on the First Floor is also not ADA compliant. The Second Floor Meeting Room and Rooftop Terrace are not ADA accessible. The Men's ADA toilet stall does not have adequate clearance. All public toilets and spaces must be ADA compliant and accessible. There must also be an ADA compliant entrance to public buildings.

2.3 Facades

A. Parapet Wall

The parapet wall on the North Façade has *severe* deterioration and failures. Numerous brick cracks, open coping stone joints and efflorescence are visible. Water is infiltrating the wall system causing deterioration at the interior plaster, steel lintels, and door openings. VBA recommends repairing or rebuilding the parapet to address the masonry damage and water infiltration.

B. Brick & Limestone

The existing conditions vary from Façade to Facade. The North facade has the most *severe* failures, followed by the West Facade. The East and South Facades are in *fair* condition. Open coping stone joints are allowing water into the interior of the wall system, causing cracking, efflorescence, rusting lintels, and limestone surround cracking. Cleaning, repairing and repointing the facades are recommended. Replacing the Apparatus door lintels with new is also recommended.

C. Windows & Lintels

Numerous windows have failed and many lintels are rusted due to water infiltration. The windows and lintels range from *severe, poor and fair* condition. The windows are beyond their useful life and most likely do not meet the current NYS Energy Conservation Code. We recommend the window lintels be replaced with new and the windows be replaced to meet the current Energy Code.

2.4 Roofs

A. Flashing, B. Roof Materials, C. Door Sills

The flashing and roof materials at the Rooftop Terrace and Lower Roof are in *poor* condition or *beyond its useful life*. In particular, the pavers on the Rooftop Terrace are difficult to maintain and inhibit drainage. We recommend new flashing and roofing materials be provided for the Rooftop Terrace and Lower Roof. The height of the Rooftop door sills are low, thus the doors may have to be modified and sills replaced due to the new roofing system. Proper pitch for drainage is required, and the Upper Roof flashing and roof materials do not necessarily provide constant slope or adequate drainage at all locations. All roofing materials to meet the NYS Energy Conservation Code.

D. Drainage

The Rooftop Terrace drainage is *severely* deficient due to debris accumulating under the pavers. Also the scuppers are not properly flashing, allowing water to infiltrate into the wall, causing efflorescence and cracks. New scuppers and drainage system should be provided at the Rooftop Terrace. The Lower Roof and Upper Roof are in *fair* condition and have roof pitch issues, creating water ponding in areas. New roof drains should be provided at the Lower Roof. The Upper Roof pitch should be repaired in select areas.

2.5 Recommended Upgrades

A. Architectural

Various areas in the Firehouse have minor finish deterioration and are in *fair* condition. The glazed wall tile, wall plaster, exterior entrance stucco ceiling, and acoustic ceiling tile should be repaired.

B. Mechanical, C. Electrical, D. Plumbing & E. Exterior Drainage

Most recommended mechanical upgrades are contingent upon the option(s) selected for reprogramming the first floor for wheelchair access. Plumbing upgrades will provide more durable pipe materials (metal) as well as improvement to the drainage system along the roof terrace, including interface from the roof deck to the downspout scuppers. Electrical upgrades include switching to LED lighting system for better illumination and long-term cost savings. The exterior drainage pattern should be revised to move rain water away from the building façade where it currently saturates the lawn and ponds against the lower building wall. Downspouts should also be re-routed to avoid rooftop runoff from splashing onto 'dry' utility pipes and equipment.

GCFD Firehouse #1		Physical Condition & Deterioration				Preliminary Cost Estimate
Scope of Work Item	Required By Code/Law	Severe	Poor	Fair	Good	Amount
2.1 National, State & Local Codes						
a. Fire Stopping & Fire Safing	X	X				\$ 111,700
b. Mechanical	X			X		\$ 74,000
c. Electrical	X		X			\$ 31,800
d. Plumbing	X		X			\$ 19,000
National, State & Local Codes TOTAL						\$ 236,500
2.2 ADA Compliance						
a. Exterior Entrance	X					\$ 104,000
b. Interior Route & Bathroom	X					\$ 247,600
ADA Compliance TOTAL + OPTION A						\$ 351,600
2.3 Facades						
a. Parapet		X				\$ 305,500
b. Brick & Limestone		X		X		\$ 229,100
c. Windows & Lintels		X	X	X		\$ 440,000
Facades TOTAL						\$ 974,600
2.4 Roofs						
a. Flashing		X	X	X		\$ 7,000
b. Roof Materials			X	X		\$ 216,900
c. Door Sills			X			\$ 33,300
d. Drainage		X		X		\$ 2,100
Roofs TOTAL						\$ 259,300
Firehouse #1 TOTAL + ADA Option A						\$ 1,822,000

2.5 Recommended Upgrades						
a. Architectural				X		\$ 187,900
b. Mechanical			X			\$ 82,300
c. Electrical			X			\$ 268,000
d. Plumbing				X		\$ 29,300
e. Exterior Drainage			X			\$ 7,200
Recommended Upgrades TOTAL						\$ 574,700

***10% General Conditions, 10% Overhead & Profit, 4% Escalation, & 15% Design Contingency Built In. Prevailing Wage Estimated**

Firehouse #2

Stewart Ave & Edgemere Rd

Firehouse #2 is a 2 story brick and cast stone building with aluminum windows. There are slate tile roofs, flat roofs, a built in gutter system and dormers. There is a brick Tower with glass block windows and a flat roof.

2.1 National, State, & Local Codes

A. Fire Stopping & Fire Safing

The First Floor assembly has numerous locations where pipes are penetrating the concrete slab without maintaining the required fire rated construction. This is a serious *violation of the Code*. The underside of the concrete slab is also severely deteriorated in one area. All penetrations must be fire safed and the fire rated construction maintained.

B. Egress

The exterior metal egress stair's guardrails and risers are *in violation of the Code*. The interior metal egress stair's guardrails are also in violation of Code. A single step located at the path to the metal egress stair is also a violation of Code. The Second Floor egress door has a protrusion in the doorway and is in violation of Code. New stairs and modifications must be made to meet Code requirements for egress.

C. Mechanical, C. Electrical, & D. Plumbing

Observations of mechanical equipment, plumbing piping and electrical lighting in the cellar indicate that significant upgrades or outright replacement of facilities are required to meet Code. Corrections are to include (but not limited to) supporting mechanical equipment on concrete bases, correcting boiler problems, providing adequate lighting and maintaining fire-rating at utility penetrations between partitions and slabs. Violations on other floors include lack of exhaust in the locker room as well as missing insulation on pipes and in spaces that allow outside air into the building.

2.2 ADA Compliance

A. Interior Route & Bathroom

The First and Second Floor bathrooms *do not comply with ADA* regulations or Code. Exposed piping is inhibiting the accessible route on the Apparatus Floor. The Second Floor Meeting is not ADA accessible. All public toilets and spaces must be ADA compliant and accessible.

2.3 Tower

A. Tower Roof & Parapet Wall, B. Hose Tower Steel & Metal Stair, C. Tower Brick & Glass Block

The tower roof and parapet wall have *very severe failures and deterioration*. Open coping stone joints, the failed roof, and degraded flashing and drainage systems are allowing water into the interior of the wall system. This is causing brick cracking, efflorescence, rusting of the hose tower steel and metal stair. Steel rusting then causes further brick cracking of the exterior walls. Inadequate and inappropriate detailing have also allowed this condition to occur. The deterioration is *most severe at the top* and

becomes less severe to poor on the lower portion of the Tower. VBA recommends the upper Tower and roof be demolished and Tower below repaired. A new metal stair to the new roof level would be provided. The lower portion of the Tower should be repaired and cleaned. New windows and lintels are recommended to replace the failing glass block.

2.4 Main Roof Built In Gutters

A. Copper Liner & Cast Stone Gutter, B. Scupper & Conductor Head

The built-in gutter system is not the optimal design and has inherent flaws. The copper liner and cast stone gutter are in *severe to poor condition*, causing water infiltration and some brick cracking. If the built-in gutter system is not addressed, more severe deterioration of the wall system will occur. The scuppers and conductor heads are warped and not properly flashed. The built in gutter system pitched for positive drainage should be rebuilt, and a new copper liner, scupper, conductor head, downspouts, and flashing should be provided. The cast stone should be repointed. An alternative design should be explored to install a new overhang and bypass the existing built in gutter system. This requires an architectural study that can be incorporated in the next phase of the Project.

2.5 Facades & Dormers

A. Brick & Cast Stone, B. Windows & Lintels

The South facade has moderate failures and is in *poor condition*. The East and West Facades are in *fair condition*. The North Facade is in *good condition*. Open joints, brick cracks and masonry staining are typical issues on all facades. Water infiltration is causing *severe and poor deterioration* and rust at the windows and lintels. The facades should be cleaned, cracks repaired, and open joints repointed. All lintels, windows, and doors should be replaced with the new to meet the current Energy Conservation Code.

2.6 Roofs

A. Flashing, B. Slate, C. Flat Roof

The flashing, slate roofs, and flat roofs are in *poor to fair condition*. New flashing should be provided at the dormers, the hip roof ridges and hips, and flat roofs. Slate tiles should be replaced where deteriorated at the ridges and hips.

2.7 Recommended Upgrades

A. Architectural

Various areas in the Firehouse have moderate deterioration and are in *poor* condition. The Apparatus Room concrete slab on grade, wall plaster, Basement concrete wall, and brick chimney should be repaired or cleaned.

B. Mechanical, C. Electrical, D. Plumbing & E. Exterior Drainage

While deterioration of mechanical, plumbing and electrical facilities in the cellar does not necessarily represent a code-violation, the observed problems could be resolved by replacement of or significant upgrades to the equipment as described above regrading resolution to code violations. For example, while a boiler that has exceeded its useful life is not in of itself a code-violation, failure to replace this unit could result in heating failure throughout the house and thus violate workplace requirements. Resolution to other observed deficiencies in the cellar and on other floors may be required to facilitate

other work such as wheelchair access to the bathroom, improvements to the heating system for occupant comfort, etc. As with the other houses, switching the lighting system to LED could represent long-term energy and cost savings.

2.8 Program Design Options

A. Option A, B. Option B

Due to the purchase of a larger ladder truck, our team studied enlarging the existing garage doors and providing a new addition. Enlarging the existing garage doors to fit the ladder truck is not feasible without extreme costs due to the existing building's limited length and location of the existing 2nd Floor beams. A building addition is recommended to accommodate a large ladder truck (14' high, 60' long, 9'-2" wide, 92,000 lbs) rather than expansion of the existing building. Enlargement of the existing apparatus overhead doors would be impractical and uneconomical for the following structural reasons:

- The existing door openings were previously modified in 1960. The steel framing surrounding the doors has been configured to give the maximum width and nearly maximum height.
- Only a small increase in height could be achieved by a total demolition and reconstruction of the stonework, brickwork and steel framing. This may not be sufficient to accommodate the new truck or future apparatus technology (and associated dimensional changes).
- The work would require a significant amount of temporary shoring of the second floor, roof and upper walls.
- The shoring, demolition and reconstruction will affect the remaining existing finishes which will then require remedial and repair work.

Similarly, lowering the apparatus floor to gain height at the overhead doors would be equally impractical for the following reasons:

- Lowering the slab will require the foundation walls to be underpinned or demolished and reconstructed below frost-depth.
- Modifying the column foundations may be difficult as these appear to be stacked pyramids of stone blocks.
- Significant shoring of the upper structures will be required for foundation work.

New Addition Options:

Option A locates the new addition adjacent to the existing building, on the East, with the driveway on Stewart Ave. A new ADA elevator is provided. The existing 2nd Floor egress stair will have to be replaced to meet Code and ADA. The existing grade at this location is steep, making the siting, firetruck turnaround and circulation of the addition more difficult. Architecturally it will also be difficult to aesthetically balance the new addition and the existing building.

Option B locates the new addition at the back of the building, on the South, with a through-driveway on Edgemere Rd and Clinch Ave. An ADA elevator, ADA bathrooms and new egress stair to the 2nd Floor are provided. A new parking lot is provided. There is room for future expansion to the back if needed. Option B provides a more direct connection from the new lobby to the existing Apparatus Room. The through-driveway configuration will also provide for easier maneuverability than Option A.

GCFD Firehouse #2		Physical Condition & Deterioration				Preliminary Cost Estimate
Scope of Work Item	Required By Code/Law	Severe	Poor	Fair	Good	Amount
2.1 National, State & Local Codes						
a. Fire Stopping & Fire Safing	X	X				\$ 4,100
b. Egress	X	X				\$ 135,200
c. Mechanical	X	X				\$ 31,000
d. Electrical	X	X				\$ 15,600
e. Plumbing	X	X				\$ 45,700
National, State & Local Codes TOTAL						\$ 231,600
2.2 ADA Compliance						
a. Interior Route & Bathroom	X					\$ 163,100
ADA Compliance TOTAL						\$ 163,100
2.3 Tower Option 2 (partial demolish)						
a. Tower Roof & Parapet Wall		X				\$ 106,200
b. Hose Tower Steel & Metal Stair		X				\$ 106,700
c. Tower Brick & Glass Block		X	X			\$ 299,200
Tower Option 2 TOTAL						\$ 512,100
2.4 Main Roof Built In Gutters						
a. Copper Liner & Cast Stone Gutter		X	X			\$ 651,100
b. Scupper & Conductor Head			X			\$ 26,200
Built In Gutters TOTAL						\$ 677,300
2.5 Facades & Dormers						
a. Brick & Cast Stone			X	X	X	\$ 260,600
b. Windows & Lintels		X	X	X		\$ 389,300
Facades TOTAL						\$ 649,900
2.6 Roofs						
a. Flashing			X	X		\$ 19,000
b. Slate Roof			X			\$ 33,300
c. Flat Roof				X		\$ -
Roofs TOTAL						\$ 52,300
Abatement & Air Monitoring						
Continuous Project	X					\$ 352,100
Exterior Waterproofing	X					\$ 338,600
Abatement TOTAL						\$ 690,700
Firehouse #2 + Tower Option 2 TOTAL						\$ 2,977,000

2.2 ADA Compliance Alternative						
Second Floor Bathroom						\$ 118,400
2.7 Recommended Upgrades						
a. Architectural			X			\$ 40,000
b. Mechanical		X				\$ 118,800
c. Electrical			X			\$ 149,800
d. Plumbing			X			\$ 66,400
e. Exterior Drainage			X			\$ 25,000
Recommended Upgrades TOTAL						\$ 400,000
2.8 Program Design Options						
a. Option A						\$ 2,515,600
b. Option B						\$ 3,160,700

***10% General Conditions, 10% Overhead & Profit, 4% Escalation, & 15% Design Contingency Built In. Prevailing Wage Estimated**

Firehouse #3

St James North & Emmet Place

Firehouse #3 is a 1 story brick building with aluminum windows and a concrete base. There are slate tile roofs, a flat roof, a hung gutter system, wood eaves, and dormers. It is a Landmark Building.

2.1 National, State, & Local Codes

A. Fire Stopping & Fire Safing

The First Floor assembly has numerous locations where pipes and ducts are penetrating the concrete joists and terracotta floor assembly without maintaining the required fire rated construction. This is a serious *violation of the Code*. All penetrations must be fire safed and the fire rated construction maintained. The floor system and structure must be repaired and strengthened where the concrete joists are damaged or removed.

B. Egress & Emergency Lighting

There is a single step at egress doors in *violation of the Code*. There are insufficient emergency lights and non illuminated exit signs in violation of Code. Modifications to the egress, exit signs and emergency lights must be made to meet Egress Code requirements.

B. Mechanical, C. Electrical, & D. Plumbing

The majority of code-violations were observed in the cellar. Ventilation of the room was noted to be sub-standard, piping was largely uninsulated, access to the electrical panel is blocked by movable obstructions and the water piping must be re-routed to provide adequate separation from the electrical panel. Violations on the upper floor are mostly limited to a lack of mechanical exhaust in various rooms; positive pressure in rooms adjacent to the apparatus floor is also required. Corrections to the exterior dry-well that is alleged to flood during high-rain events will require relocation of the structure to 20-feet from the building face.

2.2 ADA Compliance

A. Exterior Entrance & B. Interior Route & Bathroom

The exterior entrance doors and public toilet room *do not comply with ADA* regulations. All public toilets and one entrance must be ADA compliant.

2.3 Roofs

A. Flashing, B. Slate, C. Dormers

The slate roofs and dormers are in *fair to good condition*. The flashing is in *poor condition* and new flashing should be provided at the hip roof ridges and hips, and flat roofs. Slate tiles should be replaced where deteriorated at the ridges and hips. The wood vents at the dormers should be repaired or replaced.

D. Flat Roof & Drainage

The flat roof has *severe deterioration* and does not drain properly. New roofing, drainage valley, scuppers and conductor heads should be provided. All roofing materials to meet the NYS Energy Conservation Code.

E. Roof Eaves

The roof eaves are in *good to fair condition* with some holes and cracks and the wood brackets. The wood should be repaired or replaced. The slate roof tiles and flashing should also be repaired in the area of eave damage.

2.4 Facades

A. Brick & Concrete Base, B. Windows & Lintels

Generally the facades are in *good to fair condition due to the long overhangs*. Open joints, worn mortar joints and some brick cracks are typical issues. Most of the windows have flat or curved brick arches. One window was modified with a steel lintel and has rusted due to water infiltration. The aluminum windows are near the end of their useful life and have gaps and holes in their sills. The masonry cracks should be repaired, and worn or open joints repointed. All windows, doors and the lintel should be replaced with the new to meet the current Energy Conservation Code.

2.5 Recommended Upgrades

A. Architectural

Various areas in the Firehouse have some deterioration and are in *poor to fair* condition. The Apparatus Room concrete slab on grade, wall plaster, and plaster ceiling should be repaired.

B. Mechanical, C. Electrical, D. Plumbing & E. Exterior Drainage

The house reports inadequate heat - revisions to the existing heating system and/or installation of larger boiler may resolve this. Replacement of the existing lighting system with LED will resolve missing fixtures and are an opportunity for long-term energy & cost savings. Connection of all exterior downspouts to the underground drainage system would also eliminate drainage across sidewalks and prevent icing hazards.

2.6 Program Design Options

A. Option A, B. Option B

Due to the purchase of a larger ladder truck, our team studied enlarging the existing garage doors and providing a new addition. Enlarging the existing garage doors to fit the ladder truck is extremely difficult and very expensive due to the limited length of the existing building, the location of the existing roof beam and flat roof. Enlargement of the existing apparatus overhead doors would also be impractical and uneconomical for the following structural reasons:

- The front wall into which the existing door opens was built in 1950 as an extension of the original building (train station). Three doors were provided, and subsequent modifications resulted in one very wide door - to modify this door and wall would require removal and reconstruction of the entire wall. The roof extension behind the wall would also be affected, as well as the original roof and ceiling since the current door fits snugly under the ceiling/roof structure.

As at Station #2, lowering the apparatus floor to gain height at the overhead doors would be equally impractical for the following reason:

- The front portion of the existing apparatus floor is already at a significant slope that the fire apparatus struggles to overcome when slick with precipitation. To lower the front portion would require lowering the entire floor significantly and would require underpinning the front, side and rear foundation walls.

New Addition Options:

Option A locates the new addition adjacent to the existing building, on the East, with the driveway on St James Street. The existing Exterior Porch is partially demolished. Architecturally it will be difficult to aesthetically balance the new addition and the existing building, especially since the building is a Landmark.

Option B also locates the new addition adjacent to the existing building, on the East, the driveway on St James Street. It differs from Option A in that the existing Exterior Porch will be enclosed, acting as the new addition Lobby and thus provides some separation between the existing building and the new addition.

GCFD Firehouse #3		Physical Condition & Deterioration				Preliminary Cost Estimate
Scope of Work Item	Required By Code/Law	Severe	Poor	Fair	Good	Amount
2.1 National, State & Local Codes						
a. Fire Stopping & Fire Safing	X	X				\$ 9,300
b. Egress & Emergency Lighting	X		X			\$ 8,900
c. Mechanical	X		X			\$ 25,300
d. Electrical	X		X			\$ 24,500
e. Plumbing	X		X			\$ 88,600
National, State & Local Codes TOTAL						\$ 156,600
2.2 ADA Compliance						
a. Exterior Entrance	X					\$ 78,200
b. Interior Route & Bathroom	X					\$ 127,000
ADA Compliance TOTAL						\$ 205,200
2.3 Roofs						
a. Flashing			X	X		\$ 27,400
b. Slate Roof				X	X	\$ 21,000
c. Dormers				X		\$ 11,500
d. Flat Roof & Drainage		X				\$ 115,000
e. Roof Eaves				X	X	\$ 11,100
Roofs TOTAL						\$ 186,000
2.4 Facades						
a. Brick & Concrete Base				X	X	\$ 173,300
b. Windows & Lintels			X	X	X	\$ 113,000
Facades TOTAL						\$ 286,300
Abatement & Air Monitoring						
Continuous Project	X					\$ 167,500
Exterior Waterproofing	X					\$ 200,500
Abatement TOTAL						\$ 368,000
Firehouse #3 TOTAL						\$ 1,202,100

2.5 Recommended Upgrades						
a. Architectural			X	X		\$ 137,000
b. Mechanical			X			\$ 120,200
c. Electrical			X	X		\$ 120,100
d. Plumbing				X		\$ 5,000
e. Exterior Drainage				X		\$ 93,600
Recommended Upgrades TOTAL						\$ 475,900
2.6 Program Design Options						
a. Option A						\$ 1,585,200
b. Option B						\$ 2,218,200

***10% General Conditions, 10% Overhead & Profit, 4% Escalation, & 15% Design Contingency Built In. Prevailing Wage Estimated**