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# Town of Montgomery

## Highway Department Garage Inspection Report

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300 RIVER ROAD  
WALDEN, NY 12586

March 12, 2019

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## SCOPE OF WORK

The Client, Town of Montgomery, intends to address the needs of the Highway Department Garage located at 300 River Road, Walden, New York. This report has been requested to determine if the existing facility is able to be renovated to better serve the current and anticipated needs of the Highway Department and its employees.

The purpose and scope of this report is to outline the existing condition of the steel building based on a visual inspection of the facilities. In addition to identifying areas of concern relative to the structural integrity of the building, the inspection was performed with an eye towards maintenance concerns, life safety issues and energy efficiency. This report also assesses the condition of the existing mechanical (HVAC), Electrical, Plumbing, and Fire Protection (MEP/FP) systems in terms of their suitability for adaptive reuse with the potential renovation of the existing buildings and determine what, if any, replacement, upgrade, or supplement would be considered in the event the existing systems were determined to be insufficient. Also included in this report is a list of capital improvement projects and a suggested order of completion.

The basis of this report was a visual field survey/inspection performed by our office, together with our structural consultant, E.D. Pons Associates, P.C., and Mechanical, Electrical, Plumbing, and Fire Protection Engineers, Martin Rogers Engineering Consultants on December 12, 2018. Note: There were no Architectural, Structural, or MEP/FP drawings available for review.

This report does not include an in-depth analysis of the building systems, i.e. energy usage studies, equipment warranty/life expectancy review, etc., nor does it include any inspection requiring demolition, i.e. core samples, bearing capacity tests, etc. Although no hazardous building materials were visible at the time of this inspection, an asbestos and lead inspection was not performed by a hazardous material inspection agency.

Codes and Standards: The New York State Uniform Code referencing the 2015 International Building Code will be the governing code requirements including Building Code, Existing Building Code, Fire Code, Property Maintenance Code, Mechanical Code, Fire Code, Plumbing Code, Energy Conservation Code, and Gas Code. Below is a list of several other guidelines and standards referenced within the Code:

- ANSI A117.1: Standard for Accessible and Usable Buildings and Facilities
- IMC: International Mechanical Code will require the spaces receive a minimum amount of outside air.
- ANSI/ASHRAE 62.1: Ventilation for Acceptable Indoor Air Quality.
- ASHRAE/IES 90.1: Energy Efficient Design of New Buildings Except Low Rise Residential
- NFPA 90A – Installation of Air Conditioning and Heating Systems
- NFPA 101: Life Safety Code
- SMACNA - HVAC Duct Construction Standards, Metal & Flexible
- SMACNA - HVAC Air Duct Leakage Test Manual
- ICC/ANSI A-117.1 Accessible and Usable Buildings and Facilities
- NFPA 70 - National Electrical Code.

## VISUAL INSPECTION FINDINGS

### GENERAL OBSERVATIONS

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1. The building is currently occupied.
2. There are no existing conditions drawings that could be located for the East 4,800 s.f. building, the Western 4,800 s.f. addition or the Bus Storage Pole Building.
3. The Highway Department Garage Building is occupied and is used for Vehicle Maintenance, Vehicle Storage, Office and Employee Ancillary Facilities.
4. The Bus Storage Building is used for equipment and cold storage.
5. The age of the Highway Department Building structure is unknown, however it is anticipated that the Western addition is 40-50+ years old with the East building constructed many years before that. The Bus Storage Building is approximately twenty (20) years old. The roof over the East structure was replaced approximately twenty (20) years ago.
6. Orientation: The 'front' of the building facing River Road is generally facing South and for the basis of this report it will be identified as the South wall.
7. Town of Montgomery Highway Department Garage; General Building Description:
  - a. The Montgomery Highway Department Building consists of two pre-engineered buildings. The East building consists of a five (5) bay single story pre-engineered rigid framed building having an approximate 50'-0" wide x 96'-0" long footprint.
  - b. The West addition consists of a four (4) bay single story pre-engineered rigid framed building having an approximate 50'-0" wide x 96'-0" long footprint. The pre-engineered building has an eave height of 14'-0" with the gable ridge / peak at 22'-5".
  - c. Nine (9) overhead doors are located along the south elevation, three (3) overhead doors are located along the north elevations and a single man door is located on both the east and west elevations.
  - d. Metal roof panels are supported on steel purlins that bear on the rigid steel frames. The steel columns are supported by concrete piers and we presume concrete footings which were not visible.
  - e. The foundation walls are concrete and extend nine inches (9") above finished floor elevation. Both the East building and the Western addition have an unfinished concrete slab on grade. Along the south elevation there is a four-foot (4'-0") concrete apron that extends out from the overhead doors.
8. Bus Storage Pole Building; General Building Description:
  - a. The Montgomery Highway Department Bus Storage Building is a pole building constructed with metal roof panels supported on 1x4 purlins on the flat spanning between pre-engineered wood trusses spaced at approximately four feet (4'-0") on center.
  - b. The wood trusses are supported on double 2x roof beams, spaced around the existing columns with the 2x beams attached to the front and back of the 6x6 wood columns. The 6x6 columns are anchored to a concrete pier or foundation with a bracket at finished floor elevation.
  - c. The exterior walls have metal panels on 2x4 girts spaced two feet (2'-0") on center. The building is approximately twenty (20) years old.

- d. The interior of the pole building has a concrete slab on grade.
- 9. All structures and systems predate the current building codes, accessibility (ANSI A117.1) codes, and related requirements.

## **SITE OBSERVATIONS (AS IT RELATES TO THE STRUCTURE)**

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- 1. Site conditions are consistent with the use and nature of the facility.
- 2. Exterior egress doors remain clear at the exterior.
- 3. Lack of a continuous gutter and rainwater discharge system is creating localized site deterioration at multiple locations.

## **STRUCTURAL OBSERVATIONS**

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- 1. Town of Montgomery Highway Department Building:
  - a. Significant scaling and deterioration of the concrete pier and foundation along the south elevation of the building addition. Baseplate and steel column deteriorated and reduced column section. The baseplates are missing anchor bolts. **Reference Image S-1 & S-4.**
  - b. The existing roof purlins along the south elevation roof edge have severely deteriorated and holes to the exterior have formed that allow the natural elements (rain, snow, wind, etc.) to penetrate the existing building. **Reference Image S-2.**
  - c. Excessive scaling of existing floor joint, typical throughout the original building as well as the addition. **Reference Image S-3 and A-6.**
  - d. Foundation wall adjacent to overhead door opening has severely deteriorated causing a portion of the existing foundation wall to fall apart. Existing anchor bolt is missing. **Reference Image S-5.**
  - e. Excessive spalling and scaling of the existing concrete slab on grade in both the original building and the addition. **Reference Images S-6 and S-7.**
  - f. Spalling concrete at edge of slab on grade along the overhead door entrance on the south elevation. **Reference Image S-8.**
  - g. Railings and stair construction for wood framed mezzanine do not comply with code requirements for baluster spacing, railings, etc. **Reference Image S-9.**
  - h. Damaged door jamb at an overhead door along the south elevation. **Reference Image S-10.**
  - i. Missing sections of rain gutters along the north elevation contributing to structure deterioration. **Reference Image S-11.**
  - j. Downspouts outlet to grade immediately adjacent to the foundation wall along the south elevation promoting deterioration. **Reference Images S-12 and S-14.**
  - k. Spalling slab on grade at the overhead door entrance. **Reference Image S-13.**
- 2. Bus Storage:
  - a. The existing structure appears to be in generally good condition. **Reference Image S-15.**
  - b. The concrete slab on grade appears to be in good condition.

## GENERAL EXTERIOR OBSERVATIONS

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1. Envelope (Roof/ Exterior Walls):
  - a. Water infiltration and damage observed at roof and walls at multiple locations on all sides of the building. To protect the mechanic's workshop area, an 'interior roof' was constructed to protect against water coming in through main roof/wall envelope. **Reference Image A-21.**
  - b. Exterior overhead doors were observed to be only partially functioning as intended, as damage prevented them from operating along tracks. **Reference Image A-2.**
  - c. Some structural steel members (purlins/girts) are exposed to the exterior in areas and have deteriorated to the point where the elements can pass through. **Reference Image A-5.**
  - d. Exterior emergency egress metal doors are rusted in multiple locations and two of the doors have holes in them. Required protection of doors at exterior is missing.
  - e. Roof Snow Guards are missing at employee egress and access locations.
  - f. Although the space is heated, multiple walls do not have any insulation. This is an energy code violation. **Reference Image A-3.**
  - g. Interior 'liner panels' made of combustible plywood have been added to the interior side of some of the exterior walls to try to address air/water infiltration and provide general protection. This is a Code Violation. **Reference Image A-3.**
  - h. Exterior wall panels and roof panels have exceeded their anticipated life cycle.
  - i. Exterior gutters/leaders and not continuous and not working as originally intended resulting in further water damage.
  - j. Moderate seam separation noticed at various envelope penetrations.
  - k. In general, the envelop (exterior walls/roof) is not protecting against water infiltration, does not provide the ability to resist heat loss/gain, or to function as originally intended.

## GENERAL INTERIOR OBSERVATIONS

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1. The maintenance area generally consists of exposed concrete floors and exposed walls with various coverings (plywood/ metal liner panels/etc.).
2. The office/employee areas generally consist of exposed concrete/VCT/carpet floors, painted gypsum board walls, and exposed or acoustical ceiling tiles. Multiple office/employee areas have been constructed throughout the years as needed.
3. Employee Facilities:
  - a. In general the employee facilities do not meet the current standards of commercial construction and/or those required by the various applicable codes.
  - b. Restrooms are not fully functioning, do not meet accessibility requirements, and are in significant disrepair. **Reference Image A-24.**
  - c. The temporary restroom trailer at the exterior are not a sustainable solution as they do not meet the requirements associate with a permanent structure.
  - d. The locker area is not sufficient for employee needs and is in disrepair. **Reference Images A-11 and A-23.**
  - e. Employee breakroom was constructed approximately 20 years ago by employees, using non-combustible materials, and does not meet current code requirements.

4. Storage mezzanine with small tool storage below was constructed with combustible materials (wood) and does not meet current code requirements. **Reference Image A-12.**
5. Supervisor's office:
  - a. Office walls were constructed with CMU walls; a combustible mezzanine was constructed above. Mezzanine does not meet current code requirements. **Reference Image A-13.**
  - b. Stair to mezzanine does not meet current code requirements rise/run/railings/guard rail/etc. **Reference Image A-14.**
6. Mezzanine storage is for paint, aerosol cans, etc. Further analysis will need to be performed to determine quantities and hazardous storage requirements. **Reference Image A-15.**
7. Storage of oil, antifreeze, etc. were in small containers so that they could be classified as 'temporary storage', as not to require containment and other safety measures required for permanent storage.
8. No overhead crane was observed. Loader is used to mount salters on trucks outside; no engine/transmission replacement is done in the facility that may require an overhead crane.
9. There is currently no means to evacuate vehicle exhaust or monitor carbon monoxide. **Reference Image A-17.**
10. An existing pit was observed for changing oil. Although it was mentioned that the pit is no longer used regularly, the pit does not meet current code requirements for life safety and it is a potential hazard for those working around it. **Reference Image A-18.**
11. One permanent lift was observed (12,000 lbs.). Moveable lifts are utilized for most the bays, when needed.
12. Concrete slabs have been repaired multiple times, due to damage from salt. **Reference Image A-20.**

## **PLUMBING/FIRE PROTECTION OBSERVATIONS**

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1. There is a 1/2" domestic water line extending from a well on site into the Men's Room. There is a well pressure -maintenance tank in this room.
2. There is a 4" sanitary main that discharges to a septic system on site.
3. Existing toilet room fixtures are old and in poor condition. Replacement is required. **Reference Image P-1.**
4. There are multiple hose bib drops in the garage bays for washing down maintenance vehicles.
5. Piping throughout the facility appeared to be copper for domestic hot and cold water and PVC for sanitary waste and vent. Insulation was sporadic. Replacement of all piping is recommended back to connection to mains if any renovation is being considered.
6. There is a trench drain that runs the length of the garage (west bay only) to drain run off and sediment from vehicle washing process. This is reported to be clogged and marginally functional. It was reported that this drain runs to a 1,500/2,000-gallon tank that regularly is pumped and properly disposed of.
7. There are no emergency Eye Wash or Shower Stations. An emergency shower and eye wash should be added if any of the staff could come in contact with any noxious or toxic / hazardous chemicals.
8. The building has no fire protection/ sprinkler system currently.

## HVAC OBSERVATIONS

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1. Garage HVAC Systems:
  - a. There are no air conditioning systems serving any parts of the garage.
  - b. Heating is accomplished using two oil-fired floor-mounted furnaces (**Reference Image M-1**); one at the southern-most wall serving one half of the south portion of the building, and a second on the wall demising the two sections and serving the remaining half of the south section and the entire northern portion of the building.
    - i. Each unit burns diesel oil supplied from the facilities diesel storage tank behind the building. There is a small oil transfer pump (**Reference Image M-2**) and each unit has a small “day tank” mounted high on the wall. There is central supply duct off the south unit that runs down the center of the south bay. The north unit has no duct distribution other than the open-ended discharge off the top of the unit.
    - ii. Each furnace has a capacity of 340,000 BTU/hr output which equates to ~70 BTU/SF. Although normally more than enough for a building of this type (30-35 would be expected) it is reported that there are times when the temperatures inside are quite low, which is consistent with the many leaks and inadequate insulation. It has been reported that the units struggle to keep up and often run full out continuously resulting in close to 600 gallons of diesel fuel consumption per week.
    - iii. Since natural gas is available at the site, should a renovation be undertaken, it is recommended to remove the oil-fired units and install a series of gas-fired unit heaters or radiant tube heaters (or possibly some combination thereof). This will likely require a replacement and upgrade of the existing gas service.
  - c. There are five (5) paddle type ceiling fans in the garage to circulate air, although there is no source of outside air for ventilation, no mechanical exhaust, and no visible form of CO detection or removal. We would recommend adding OA for ventilation and exhaust to meet minimum code requirements along with a CO monitoring and alarm system.
  - d. There is a small office with a wall heater but no mechanical ventilation or AC. A small ductless heat pump system can be added which can also provide year around ventilation.
  - e. Although the toilet rooms have operable windows there was no visible source of mechanical exhaust. Any renovation should include provisions for heat and exhaust in these areas.
  - f. There is no central BMCS or temperature control system.

## ELECTRICAL SYSTEMS OBSERVATIONS

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1. The existing electrical service to this building is 200 Amp, 120/240V, 1-phase, 3 wire with a 200 Amp main circuit breaker. The main panel is manufactured by Murray and is located at the south end of the building. There is no space for future expansion. This service also feeds the salt shed and two other sub panels located toward the north end of the building. (**Reference Image E-1**).



2. This facility also has a three-phase power converter to feed three phase welders. The phase converter is old and in poor condition. Reports were noted that maintenance has experienced various circuit breaker tripping associated with this equipment.
3. The exact peak demand per utility is unknown because NYSEG will not give this information without written authorization by the owner. However, in observing the connected loads it is recommended that a new 400A, 120/240V, three phase electrical service be provided to this facility. It appears that three phase utility power is available along the north end of the building at E. Searsville Road. Coordination with NYSEG would be required.
4. There is an existing emergency generator to feed emergency power to this facility. It consists of an outdoor natural gas emergency generator manufactured by Centurian (Generac). There is a 200 Amp outdoor service entrance rated automatic transfer switch which provides emergency power to this facility. It is recommended to obtain the services of a generator maintenance contractor so they can evaluate the condition of the existing emergency generator and automatic transfer switch. Any new loads should be evaluated and determined if the existing emergency generator is capable of accepting these loads or if a new generator is required.
5. There does not appear to be any life safety emergency lighting in this facility. Even though the generator backs up the entire facility, life safety equipment would need to be derived from its own separate automatic transfer switch or by the use of battery-operated egress lighting. It is recommended to provide battery operated lighting fixtures (battery packs) throughout this facility to meet Life Safety Code. Exit signage is old and some appear to be non-illuminated. It is recommended to provide new exit signs in this facility.
6. There is no fire alarm system serving this garage. Carbon monoxide detection/alarm will be required for fossil fuel burning equipment.
7. The existing lighting consists of a variety of types to include metal halide low-bays, 6 lamp T-5 surface mount fluorescent and 8-foot long, 4 lamp, T8 strip lights. Light levels in most areas appear to be adequate, however it is recommended to upgrade all lighting to energy efficient LED type. Exterior lighting consists of building mounted HID lighting fixtures. (**Reference Image E-2**).
8. Exterior lighting consists of building mounted HID lighting fixtures. It is recommended to also upgrade these lights to energy efficient LED type.

## **CODE / LIFE SAFETY OBSERVATIONS**

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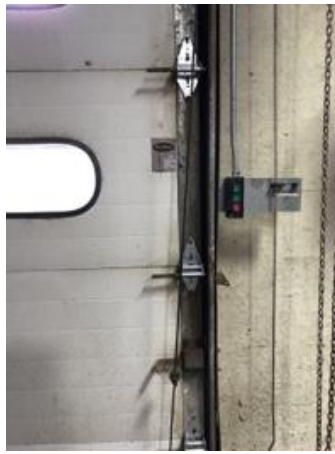
1. Classification of Work:
  - a. Extent of required work, should the building be renovated, would require that all aspects of the building be brought up to the current code standards.
2. Occupancy Classification/Change of Use:
  - a. Existing F-2 Occupancy Classification.
3. Construction Classification/ Fire Hazard:
  - a. Type 2B construction classification (current).
  - b. No sprinkler system.
  - c. Fire alarm system does not exist.
  - d. Fire barriers not provided between office/employee areas and maintenance facility; however, the minimal square footage of these areas may allow them to qualify as accessory uses, if the building were entirely constructed of non-combustible materials.

- e. Non-permitted combustible construction/elements have been added over the years.
4. Egress:
- a. Two remote means of egress are provided.
  - b. Travel distances are within minimum requirements for use.
  - c. Protection for means of egress is missing.
  - d. There is no emergency lighting that meets code requirements.
5. Accessibility:
- a. Facility is required to be accessible. Means of egress components for the garage are accessible; however, all other interior components (bathrooms, door clearances, etc.) are not accessible.
  - b. Width of doors to existing offices do not comply with accessibility requirements.
  - c. Various clearances around existing elements (doors, counters, etc.) do not comply with accessibility requirements.
6. General:
- a. Structural integrity of the building is severely compromised and poses a life safety hazard. It was observed that the steel building structure has degraded to the point where the structure is likely not able to support itself under the loads that it was originally designed for.
  - b. Combustible materials are not permitted.
  - c. A few required exit signs are missing.
  - d. Required quantity of fire extinguishers appear to be missing or inadequately identified.
  - e. Emergency Eye Wash and Shower Station(s) are missing.
  - f. Stairs/ handrails/ guardrails do not meet minimum life safety requirements.
7. Hazardous Materials:
- a. None observed; however, an asbestos, mold or lead paint survey inspection was not performed.
8. Energy:
- a. The current building (insulation, windows, etc.) does not meet the current energy code.
  - b. Heating system is inefficient.
  - c. Electrical lighting is not efficient.

### Corresponding Images



**IMAGE A-1**



**IMAGE A-2**



**IMAGE A-3**



**IMAGE A-4**



**IMAGE A-5**



**IMAGE A-6**



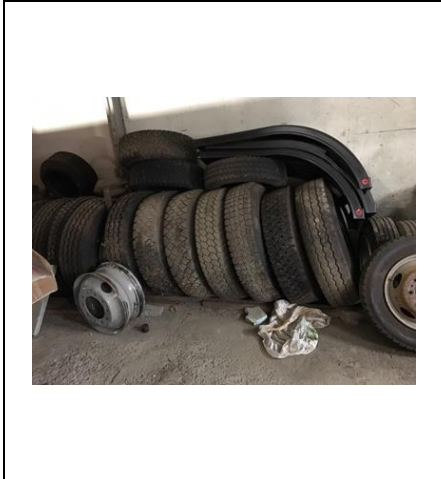
**IMAGE A-7**



**IMAGE A-8**



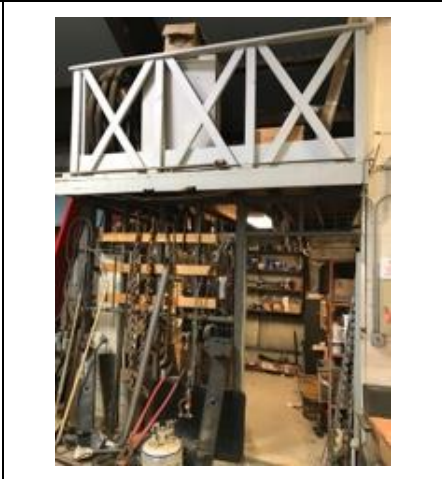
**IMAGE A-9**



**IMAGE A-10**



**IMAGE A-11**



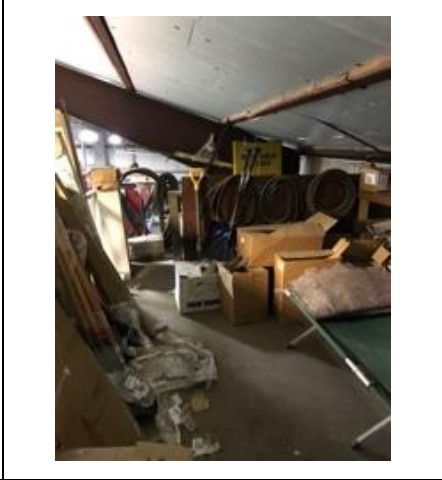
**IMAGE A-12**



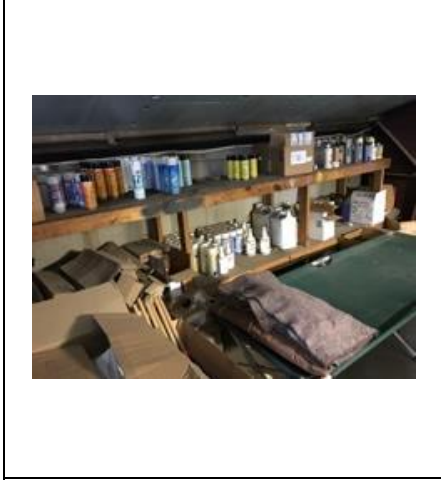
**IMAGE A-13**



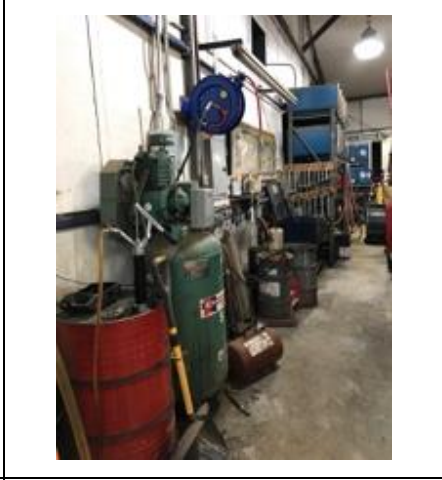
**IMAGE A-14**



**IMAGE A-15**



**IMAGE A-16**



**IMAGE A-17**



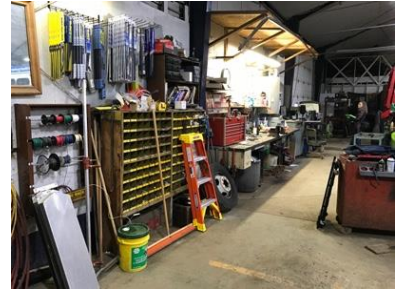
**IMAGE A-18**



**IMAGE A-19**



**IMAGE A-20**



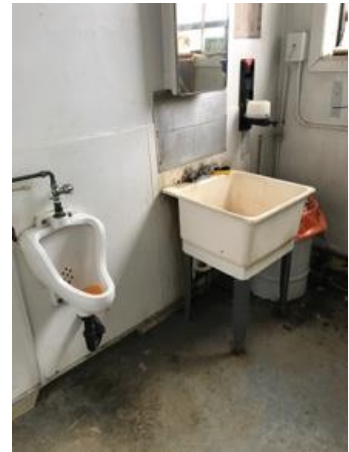
**IMAGE A-21**



**IMAGE A-22**



**IMAGE A-23**



**IMAGE A-24**



**IMAGE A-25**



**IMAGE A-26**



**IMAGE A-27**

		
<p><b>IMAGE A-28</b></p>	<p><b>IMAGE A-29</b></p>	<p><b>IMAGE S-1</b></p>
		
<p><b>IMAGE S-2</b></p>	<p><b>IMAGE S-3</b></p>	<p><b>IMAGE S-4</b></p>
		
<p><b>IMAGE S-5</b></p>	<p><b>IMAGE S-6</b></p>	<p><b>IMAGE S-7</b></p>
		
<p><b>IMAGE S-8</b></p>	<p><b>IMAGE S-9</b></p>	<p><b>IMAGE S-10</b></p>



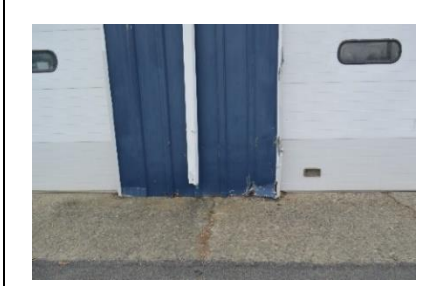
**IMAGE S-11**



**IMAGE S-12**



**IMAGE S-13**



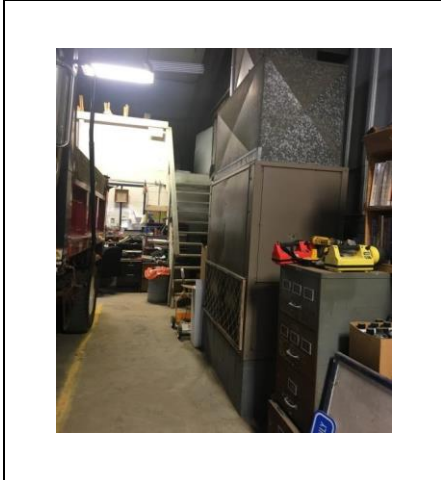
**IMAGE S-14**



**IMAGE S-15**



**IMAGE P-1**



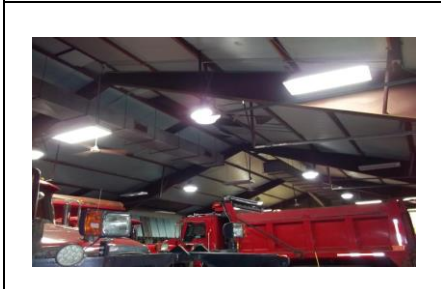
**IMAGE M-1**



**IMAGE M-2**



**IMAGE E-1**



**IMAGE E-2**

## RECOMMENDATIONS

### OVERALL BUILDING / STRUCTURAL / LIFE SAFETY RECOMMENDATIONS

---

#### 1. Structural items:

- a. The garage addition has significant deterioration to structural elements that compromise the structural integrity of this portion of the building. The useful life of this section of the building has been exceeded.
  - i. It is recommended that this portion (the West addition) of the building be demolished due to the extensive deterioration resulting from a lack of protective and preventative maintenance.
  - ii. While there is no way of knowing when a structure will fail, the structural components of this building pose a life-safety concern. Therefore, it is our recommendation that the Town not continue to occupy this portion of the building.
- b. The original building (East), while in better condition than the addition, also is beyond its useful life.
  - i. It is recommended that this portion of the building also be demolished due to extensive deterioration resulting from a lack of protective and preventative maintenance.
  - ii. It is estimated that the costs of trying to repair this structure will cost approximately 25% more than demolishing the entire building and constructing a new pre-engineered metal building with appropriate finishes for this corrosive environment.
- c. The existing Bus Storage Building is in good condition and therefore we recommend continued use of this building for Bus Storage.

#### 3. Itemized Building/Life-Safety/Energy/MEP Related Items:

- a. Based on the observations listed above, an exhaustive list can be generated of improvements that should be made to address code, energy, and life-safety concerns; however, considering the structural integrity of the building and the recommendations outlined in item 1 above, addressing such a list in a renovation project would not be practical or advisable.
  - i. The extensive nature of the structural repairs required to bring the original building to a safe condition and up to current code requirements, would trigger a complete rework of the existing MEP systems and all life safety components.
  - ii. It is estimated that trying to perform this work as part of an alteration or renovation project would cost approximately 25% more than the installation of the same new systems in a new building. Therefore, the most cost-effective solution is to construct a new highway garage to address these issues (see enclosed Budget Estimate)
- b. Interim recommendations should all or portions of the Highway Garage remain in use during the construction of a new facility:
  - i. Add required fire extinguishers
  - ii. Add/upgrade required exit signs
  - iii. Install a portable emergency eyewash/shower station



## **CONCLUSION**

Please note that the above recommendations do not take into consideration unknown conditions that may only be uncovered during demolition (i.e. additional water damage, mold, etc.), nor does it include an in-depth analysis of the building systems (i.e. energy usage studies, equipment warranties, life expectancy review, etc.). No hazardous building materials were visible at the time of this inspection, an asbestos, mold, lead, or overall hazardous material inspection was not performed by a hazardous material inspection agency. As with any building renovation, a reasonable time and monetary contingency should be placed on any preliminary construction estimates that the Owner may receive based on further tests and selective demolition.

In view of the foregoing, it is our recommendation that the entire structure be demolished and that the building cease to be occupied immediately.

# PROBABLE COST SUMMARY



Level 1 (Class 5 or Class D) Estimate  
(see below for explanation)

## TOWN OF MONTGOMERY HIGHWAY GARAGE

<b>1</b>	<b>Building cost, including sidewalk and curb around building</b>	<b>1,002,781.73</b>
<b>2</b>	<b>Contractors fees (General Conditions, Overhead and Profit)</b>	<b>250,695.43</b>
<b>3</b>	<b>Architectural and Engineering Fees</b>	<b>87,743.40</b>
<b>4</b>	<b>Total, based on RS Means Square foot cost estimating data</b>	<b>1,341,220.56</b>
	<b>Additional Items:</b>	
<b>6</b>	<b>Site development, paving, islands, landscaping, preparation, erosion control measures</b>	<b>300,000.00</b>
<b>7</b>	<b>Vehicle exhaust equipment, oil containment, cages and specialty items</b>	<b>200,000.00</b>
<b>8</b>	<b>Sub-total, additional Items</b>	<b>500,000.00</b>
<b>10</b>	<b>Civil Engineering Fees</b>	<b>35,000.00</b>
<b>11</b>	<b>Total Additional Items:</b>	<b>535,000.00</b>
<b>12</b>	<b>Total Project Estimated Cost</b>	<b>1,876,220.56</b>

**NOTE REGARDING ESTIMATES (According to the American Association of Cost Engineers)**  
**Level 1 (Class 5 or D):** Concept Screening Estimate: The estimate method is a cost of a project derived from the cost of similar project of a different capacity, through the use of an appropriate exponential factor, parametric models, judgment or analogy.  
 Expected accuracy: Low: -20% to -50%; High: +20% to +100%.  
**Level 2 (Class 4):** Study or Feasibility Estimate: The estimate method is the 'Equipment Factored' or 'Parametric Model' with specifications for the major element in that facility and the use of elements installation factors.  
 Expected accuracy: Low: -15% to -30%; High: +20% to +50%.  
**Level 3 (Class 3 or C):** Project Budgetary Cost Estimate: The estimate method is semi-detailed unit costs with assembly level line items.  
 Expected accuracy: Low: -10% to -20%; High: +10% to +30%.  
**Level 4 (Class 2 or B):** Control Budget Estimate: The estimate method is detailed unit cost with bulk material take-offs; budgetary or committed cost information from potential bidders and construction subcontractors for equipment and construction direct costs; detailed and accurately developed project resources mobilization plan and re-defined company guidelines of indirect costs specific to the project.  
 Expected accuracy: Low: -5% to -15%; High: +5% to +20%.  
**Level 5 (Class 1 or A):** Detailed Estimate: The estimate method is the detailed unit cost with detailed material take-off after the detailed engineering and design is completed.  
 Expected accuracy: Low: -3% to -10%; High: +3% to +15%.

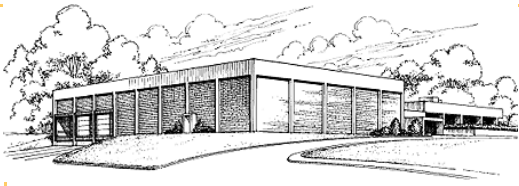
Note: Furniture, Fixtures, Audio Visual Components, IT Systems, Security Systems, and Automation Systems have not been included in this Budget. Budgets for these items often fall with 12%-18% of the cost of construction, depending on the complexity of each system and/or quantity of components.

This Opinion of Probable Costs reflects our due diligence in preparing a probable construction cost estimate for which to use as a means of determining whether to proceed with further Design/Documentation and/or City Approvals. Only upon the completion of full Architectural/Engineering documents can the project be bid to General Contractors, and a fixed price/budget be prepared for a defined Scope of Work.

**NOTES:**  
 The Architect/Engineer shall not be responsible for market conditions or any other factors that result in construction costs that are contrary to this Opinion of Probable Cost, or contrary to the Owner's budget and pricing assumptions. Unknown sub-surface site conditions, unforeseen construction challenges, conditions imposed by the local Authority Having Jurisdiction, current undefined Scope of Work items, further design decisions, market conditions, and a variety of other factors may result in adjustments to these probable costs.



**Square Foot Cost Estimate Report**

Date: **2/13/2019**

Estimate Name:	<b>Town of Montgomery Highway Department Garage</b>	 <p>Costs are derived from a building model with basic components. Scope differences and market conditions can cause costs to vary significantly. ** Perimeter entered is outside the range recommended by RSMeans.</p>
Building Type:	<b>Warehouse with Pre-Engineered Metal Building / Rigid Steel</b>	
Location:	<b>SUFFERN, NY</b>	
Story Count:	<b>1</b>	
Story Height (L.F.):	<b>22</b>	
Floor Area (S.F.):	<b>10000</b>	
Labor Type:	<b>STD</b>	
Basement Included:	<b>No</b>	
Data Release:	<b>Year 2019</b>	
Cost Per Square Foot:	<b>\$134.12</b>	
Building Cost:	<b>\$1,341,220.56</b>	

		<b>% of Total</b>	<b>Cost Per S.F.</b>	<b>Cost</b>
<b>A Substructure</b>		<b>13.00%</b>	<b>13.04</b>	<b>130,385.13</b>
<b>A1010</b>	<b>Standard Foundations</b>		<b>5.49</b>	<b>54,916.33</b>
	Foundation walls		3.35	33,469.05
	Strip Footings		1.53	15,296.43
	Column Footings		0.62	6,150.85
<b>A1030</b>	<b>Slab on Grade</b>		<b>7.3</b>	<b>72,993.80</b>
	Slab on grade		7.3	72,993.80
<b>A2010</b>	<b>Excavation</b>		<b>0.25</b>	<b>2,475.00</b>
	Excavate and fill		0.25	2,475.00
<b>B Shell</b>		<b>46.90%</b>	<b>47.03</b>	<b>470,291.90</b>
<b>B1020</b>	<b>Roof Construction</b>		<b>8.34</b>	<b>83,370.90</b>
	Roof, steel joists, beams,for mezzanine		0.46	4,640.00
	Roof, beams and purlins		6.47	64,728.50
	Roof, additional bracing members		1.4	14,002.40
<b>B2010</b>	<b>Exterior Walls</b>		<b>18.47</b>	<b>184,711.21</b>
	Metal siding, steel, sandwich panels,		12.2	121,991.01
	Metal siding support,		5.59	55,870.20
	Metal siding girts		0.68	6,850.00
<b>B2020</b>	<b>Exterior Windows</b>		<b>0.51</b>	<b>5,057.46</b>
	Windows, sliding, insulated glass		0.51	5,057.46
<b>B2030</b>	<b>Exterior Doors</b>		<b>5.93</b>	<b>59,280.06</b>
	Door, steel 18 gauge, hollow metal, 3'-0" x 7'-0" opening		0.86	8,636.79
	Door, steel, overhead, rolling, electric, 14'-0" x 14'-0" opening		5.06	50,643.27
<b>B3010</b>	<b>Roof Coverings</b>		<b>12.46</b>	<b>124,569.14</b>
	Roofing, PEM standing seam		6.09	60,900.00
	Insulation, roof system		4.85	48,483.90
	Roof edges		1.06	10,605.24
	Gutters		0.46	4,580.00
<b>B3020</b>	<b>Roof Openings</b>		<b>1.33</b>	<b>13,303.13</b>

	Smoke hatch		1.33	13,303.13
<b>C Interiors</b>		<b>10.47%</b>	<b>10.5</b>	<b>104,969.12</b>
<b>C1010</b>	<b>Partitions</b>		<b>4.05</b>	<b>40,499.76</b>
	Concrete block (CMU) partition; separate employee area		1.81	18,124.80
	Metal stud partition		0.74	7,404.00
	Gypsum board fire resistant, 5/8"		0.86	8,563.05
	Add for the following: taping and finishing		0.64	6,407.91
<b>C1020</b>	<b>Interior Doors</b>		<b>0.92</b>	<b>9,231.39</b>
	Door, single leaf, kd steel frame, hollow metal 3'-0" x 7'-0" x 1-3/8"		0.92	9,231.39
<b>C2010</b>	<b>Stair Construction</b>		<b>1.04</b>	<b>10,412.58</b>
	Stairs, steel, grate type w/nosing & rails, 12 risers, for mezzanine		1.04	10,412.58
<b>C3010</b>	<b>Wall Finishes</b>		<b>1.2</b>	<b>12,019.00</b>
	2 coats paint on masonry with block filler		0.28	2,823.32
	Painting, interior on doors and miscellaneous trim, primer & 2 coats		0.13	1,256.86
	Painting, interior on drywall, walls roller work, primer & 2 coats		0.79	7,938.82
<b>C3020</b>	<b>Floor Finishes</b>		<b>2.29</b>	<b>22,924.01</b>
	Concrete topping, hardeners		0.66	6,594.30
	Concrete topping, final sealer		1.28	12,819.78
	Vinyl, composition tile, through office and bathrooms		0.35	3,509.93
<b>C3030</b>	<b>Ceiling Finishes</b>		<b>0.99</b>	<b>9,882.38</b>
	Acoustic ceilings, 3/4" mineral fiber		0.99	9,882.38
<b>D Services</b>		<b>25.59%</b>	<b>25.66</b>	<b>256,611.82</b>
<b>D2010</b>	<b>Plumbing Fixtures</b>		<b>1.98</b>	<b>19,779.42</b>
	Water closet, vitreous china, bowl only with flush valve, wall hung		0.74	7,445.36
	Urinal, vitreous china, wall hung		0.17	1,725.63
	Lavatory w/trim, wall hung, PE on CI, 18" x 15"		0.42	4,224.30
	Service sink w/trim, PE on CI, wall hung w/rim guard, 24" x 20"		0.42	4,241.33
	Water cooler, electric, wall hung, wheelchair type, 7.5 GPH		0.21	2,142.80
<b>D2020</b>	<b>Domestic Water Distribution</b>		<b>0.27</b>	<b>2,652.74</b>
	Gas fired water heater, commercial		0.27	2,652.74
<b>D2040</b>	<b>Rain Water Drainage</b>		<b>0.77</b>	<b>7,749.13</b>
	Roof drainage		0.53	5,328.58
	Roof drain additional for connections		0.24	2,420.55
<b>D3020</b>	<b>Heat Generating Systems</b>		<b>5.75</b>	<b>57,501.18</b>
	Warehouse ventalating system with heat		5.75	57,501.18
<b>D3050</b>	<b>Terminal &amp; Package Units</b>		<b>1.09</b>	<b>10,882.41</b>
	Single zone, air conditioner, offices and personnel areas 9.50 ton		1.09	10,882.41
<b>D4010</b>	<b>Sprinklers</b>		<b>5.02</b>	<b>50,241.40</b>
	Wet pipe sprinkler systems, grooved steel, black, sch 40 pipe, ordinary		5.02	50,241.40
<b>D4020</b>	<b>Standpipes</b>		<b>0.59</b>	<b>5,942.66</b>
	Wet standpipe risers, class III, steel, black, sch 40, 6" diam pipe, 1 floor		0.59	5,942.66
<b>D5010</b>	<b>Electrical Service/Distribution</b>		<b>1.79</b>	<b>17,877.85</b>
	Overhead service installation, includes breakers, metering, 20' conduit & Feeder installation 600 V, including RGS conduit and XHHW wire, 200 A		0.33	3,268.20
	Switchgear installation, incl switchboard, panels & circuit breaker,		0.26	2,603.95
			1.2	12,005.70
<b>D5020</b>	<b>Lighting and Branch Wiring</b>		<b>5.3</b>	<b>52,953.50</b>
	Receptacles incl plate, box, conduit, wire, 5 per 1000 SF, .6 watts per SF		1	10,028.80
	Wall switches, 1.0 per 1000 SF		0.18	1,824.40

	Miscellaneous power, to .5 watts		0.18	1,813.60
	Central air conditioning power		0.07	707.22
	LED fixtures mounted in ceiling, 5 fixtures @32 watt per 1000 SF		2.9	29,019.42
	LED fixtures ceiling, 15 fixtures @ 32 watt per 1000 SF		0.96	9,560.06
<b>D5030</b>	<b>Communications and Security</b>		<b>3.1</b>	<b>31,031.53</b>
	Communication and alarm systems, fire detection, includes outlets, boxes, conduit		2.89	28,929.73
			0.21	2,101.80
<b>E Equipment &amp; Furnishings</b>			<b>3.82%</b>	<b>3.83</b>
				<b>38,277.76</b>
<b>E1030</b>	<b>Vehicular Equipment</b>		<b>1.42</b>	<b>14,158.56</b>
	Auto equipment, hoists, dual post, 12 ton capacity		1.42	14,158.56
<b>E1090</b>	<b>Other Equipment</b>		<b>2.41</b>	<b>24,119.20</b>
	Site lighting, high pressure sodium, 400 watt, aluminum pole, 20' high		1.6	15,975.80
	Sidewalks, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh,		0.22	2,216.00
	Emergency lighting units, nickel cadmium battery operated, twin sealed		0.59	5,927.40
<b>F Special Construction</b>			<b>0%</b>	<b>0</b>
				<b>0</b>
<b>G Building Sitework</b>			<b>0.22%</b>	<b>0.22</b>
				<b>2,246.00</b>
<b>G2010</b>	<b>Roadways</b>		<b>0.22</b>	<b>2,246.00</b>
	Concrete curb, 6" wide, 18" high, cast-in-place		0.22	2,246.00
<b>SubTotal</b>			<b>100%</b>	<b>\$100.28</b>
<b>Contractor Fees (General Conditions,Overhead,Profit)</b>			<b>25.00%</b>	<b>\$25.07</b>
<b>Architectural Fees</b>			<b>7.00%</b>	<b>\$8.77</b>
<b>User Fees</b>			<b>0.00%</b>	<b>\$0.00</b>
<b>Total Building Cost</b>				<b>\$134.12</b>
				<b>\$1,341,220.56</b>

 \*\* Indicates Assemblies or Components have been customized.

#### Audit Trail Notes

There are no audit trail notes associated with this estimate.

**RSM**means data  
from **GORDIAN**