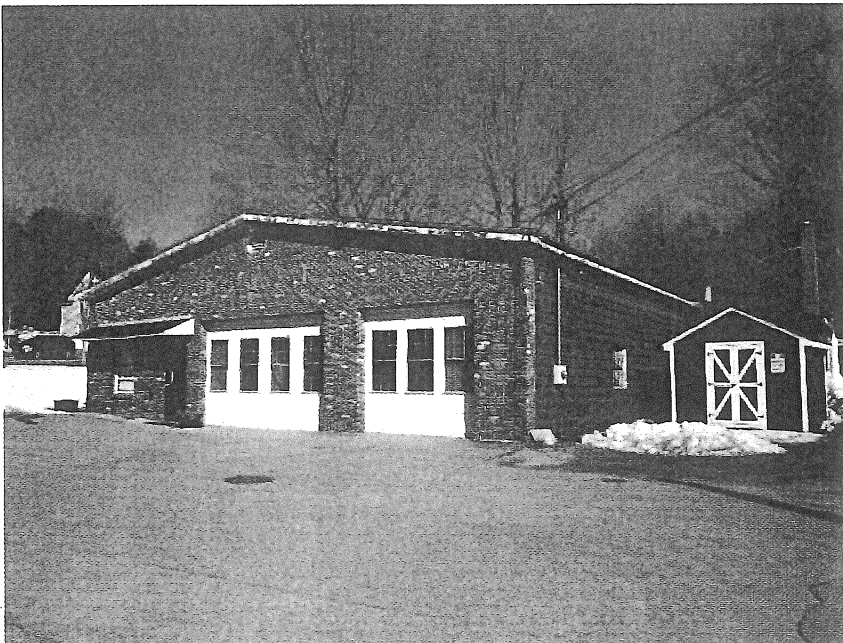


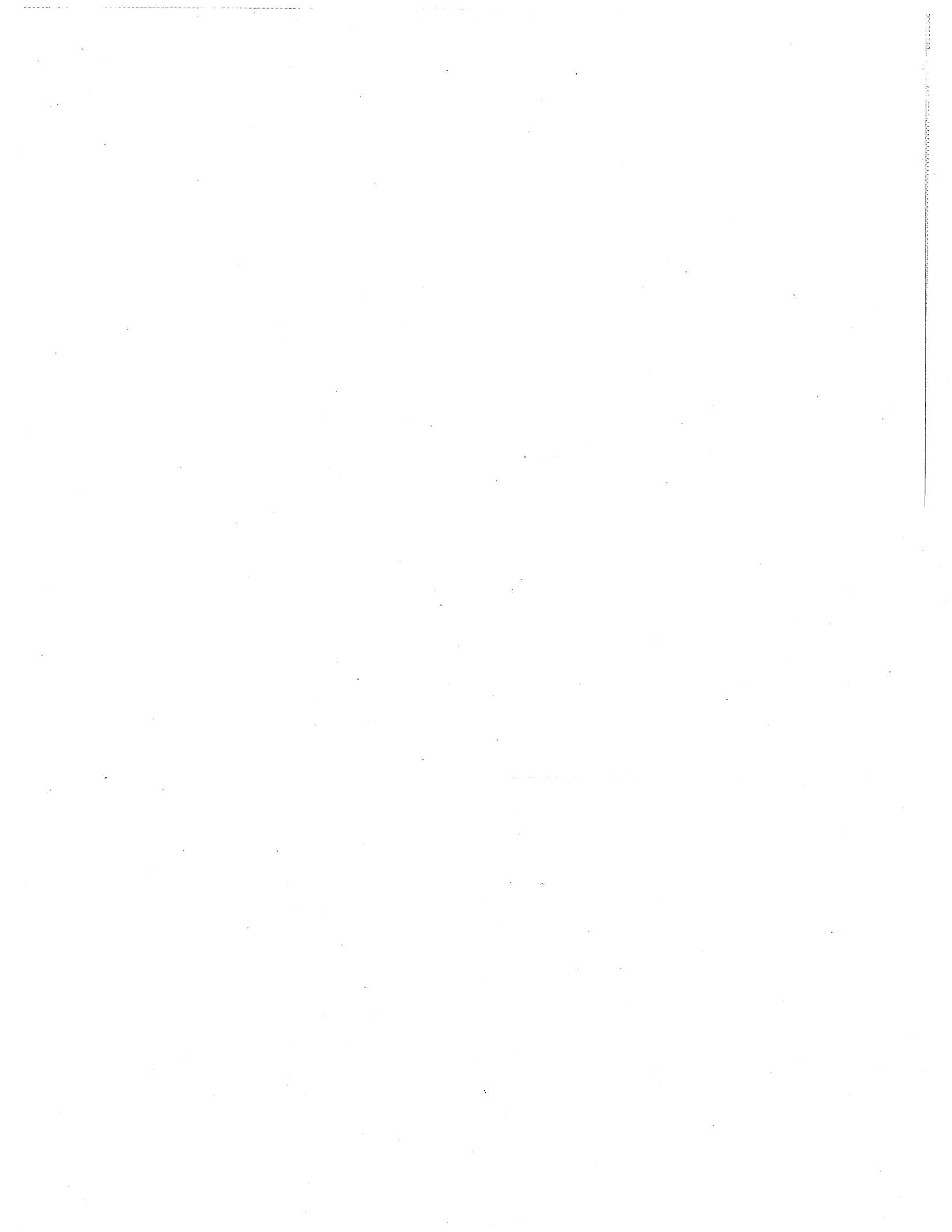
# CONDITIONS ASSESSMENT AND FEASIBILITY STUDY

8 BROOKFIELD ROAD  
STURBRIDGE, MA 01566

April 14, 2015

Prepared for:  
Town of Sturbridge, Massachusetts





8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

# 1 TABLE OF CONTENTS

- 2 EXECUTIVE SUMMARY
- 3 CODE REVIEW
- 4 SITE CONDITIONS
  - EXISTING CONDITIONS
  - CONDITIONS ASSESSMENT
  - RECOMMENDATIONS AND ESTIMATE OF PROBABLE COST
- 5 STRUCTURAL CONDITIONS
  - EXISTING CONDITIONS
  - CONDITIONS ASSESSMENT
  - RECOMMENDATIONS AND ESTIMATE OF PROBABLE COST
- 6 ARCHITECTURAL CONDITIONS
  - EXISTING CONDITIONS
  - CONDITIONS ASSESSMENT
  - RECOMMENDATIONS AND ESTIMATE OF PROBABLE COST
- 7 MECHANICAL, ELECTRICAL AND PLUMBING CONDITIONS
  - EXISTING CONDITIONS
  - CONDITIONS ASSESSMENT
  - RECOMMENDATIONS AND ESTIMATE OF PROBABLE COST
- 8 SUMMARY OF PROBABLE COST

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 2 EXECUTIVE SUMMARY

At the request of the Town of Sturbridge, CME Associates, Inc. and sub consultant Salamone & Associates, PC, visited the property at 8 Brookfield Road in Sturbridge to assess existing conditions, develop cost estimates for repair and determine the feasibility of reuse of the site as an adjunct to the Recreation Department facilities and as a home for the Cable Access studio. This report is the culmination of this study.

The site is owned by the Town of Sturbridge and is composed of 1.1 acres of land at the corner of Route 148 and Route 20. A single story building constructed in 1955 faces Route 20 has been used as a fire house into recent years and subsequently leased to a private dance studio. Currently vacant, the Town has an interest in repurposing the property to house Recreation Department programs and to provide space for the activities of Sturbridge Community Public Access Television (SCTV).

The space is well suited to independent use by both groups. Recreation Department programs will be focused in the large main room while SCTV activities will be housed in a separate but contiguous space at the rear of the building. Accessed by a shared front door, both program spaces will be able to share support spaces such as toilet rooms, lunch kitchen and storage areas off a main, connecting corridor. Adequate egress facilities are in place although code required improvements will be required including a fire alarm system, sprinkler system and accessible toilet rooms.

Work outlined in the following report will result in a renovated building in “as new condition”. If budget constraints do not allow for full renovation, phased improvements could be implemented and perhaps some work performed by Town forces. Costs associated with these improvements have been developed and are included in the summary of probable costs at the end of the report. It is recommended that the Town engage an expert in hazardous materials testing, prior to any work being performed, to determine the extent of potential hazardous materials and an estimate of cost to remediate hazardous conditions.

Respectfully submitted,

CME Associates, Inc.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 3 CODE REVIEW

### Applicable Codes

- 2009 International Building Code
- 2009 International Existing Building Code
- 2009 International Mechanical Code
- 2009 International Energy Conservation Code
- Massachusetts Amendments
- Board of Fire Prevention Regulations (527 CMR)
- Board of State Examiners of Plumbers and Gas Fitters (248 CMR)
- Massachusetts Electrical Code (527 CMR 12.00)
- Massachusetts Architectural Access Board (521 CMR)
- ICC A117.1-3 Accessible and Usable Buildings and Facilities

### Occupancy:

Existing: Use Group A-3: Assembly, dance studio

Proposed: Use Group A-3: Assembly, community hall for adult recreation and cable TV studio

### State Building Code Review

#### Chapter 34: Existing Structures

3401.1 Scope. Chapter 34 of the International Building Code 2009 is deleted in its entirety. The alteration, repair, addition, and change of occupancy of existing buildings shall be controlled by the provisions of the **International Existing Building Code 2009** and its appendices, and as modified with Massachusetts Amendments.

### International Existing Building Code 2009 (IEBC)

For the purposes of this study, the 2009 International Existing Building Code will serve as the basis for code review.

The building will not be undergoing a “change of occupancy” as its previous use was an Assembly use building most recently housing a private dance studio. However, the codes will require compliance to the greatest extent possible to provide the following with regard to universal access.

#### Chapter 11: Accessibility

1101.1 Scope. In accordance with MGL c.22, paragraph 13A, all public buildings shall be designed to be accessible to, and functional for use by, physically disabled persons, and conform to the requirements of 521 CMR...which shall be enforced by the building official or the state inspector, as applicable.

- At least one accessible building entrance
- At least one accessible route from an accessible building entrance to primary function areas.
- Signage complying with Section 1110 of the International Building Code.
- Accessible parking, where parking is being provided.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

- At least one accessible passenger loading zone, when loading zones are provided.
- At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.
- Where toilet rooms are provided, the room shall comply with the standards for an accessible family or assisted-use toilet room. The toilet room shall be on an accessible route.

All of these accessibility requirements are readily achievable within the existing building.

It is envisioned that given the program for occupancy envisioned in this report, the majority of work will consist of repairs to the existing structure. No additions are anticipated at this time, and alterations will consist of the inclusion of accessible toilet facilities within the existing building footprint. As such, the IEBC allows for the following:

Repairs: (The restoration to good or sound condition of any part of an existing building for the purpose of its maintenance.) Repairs shall be done in a manner that maintains the level of fire protection, of protection provided for the means of egress, and the level of accessibility.

Alterations: (Any construction or renovation to an existing structure other than repair or addition. Alterations are classified as Level 1, Level 2, and Level 3.) Alterations shall comply with the requirements of the International Building Code for new construction.

Repairs can be made in a manner that maintains or exceeds the required level of fire protection. Alterations such as new toilet facilities can be made compliant with current building codes for new construction and will most likely fall under Level 2 provisions. The upgrades for mechanical, electrical and plumbing systems may move the project to Level 3 Alteration status and the work area may exceed 50% of the building area moving the project to full compliance with the 2009 IBC with Massachusetts Amendments.

Repairs might include the following:

- Exterior wall repointing and repainting
- Window and door replacement
- Repair of interior finishes
- Repair of select structural members such as roof rafters.

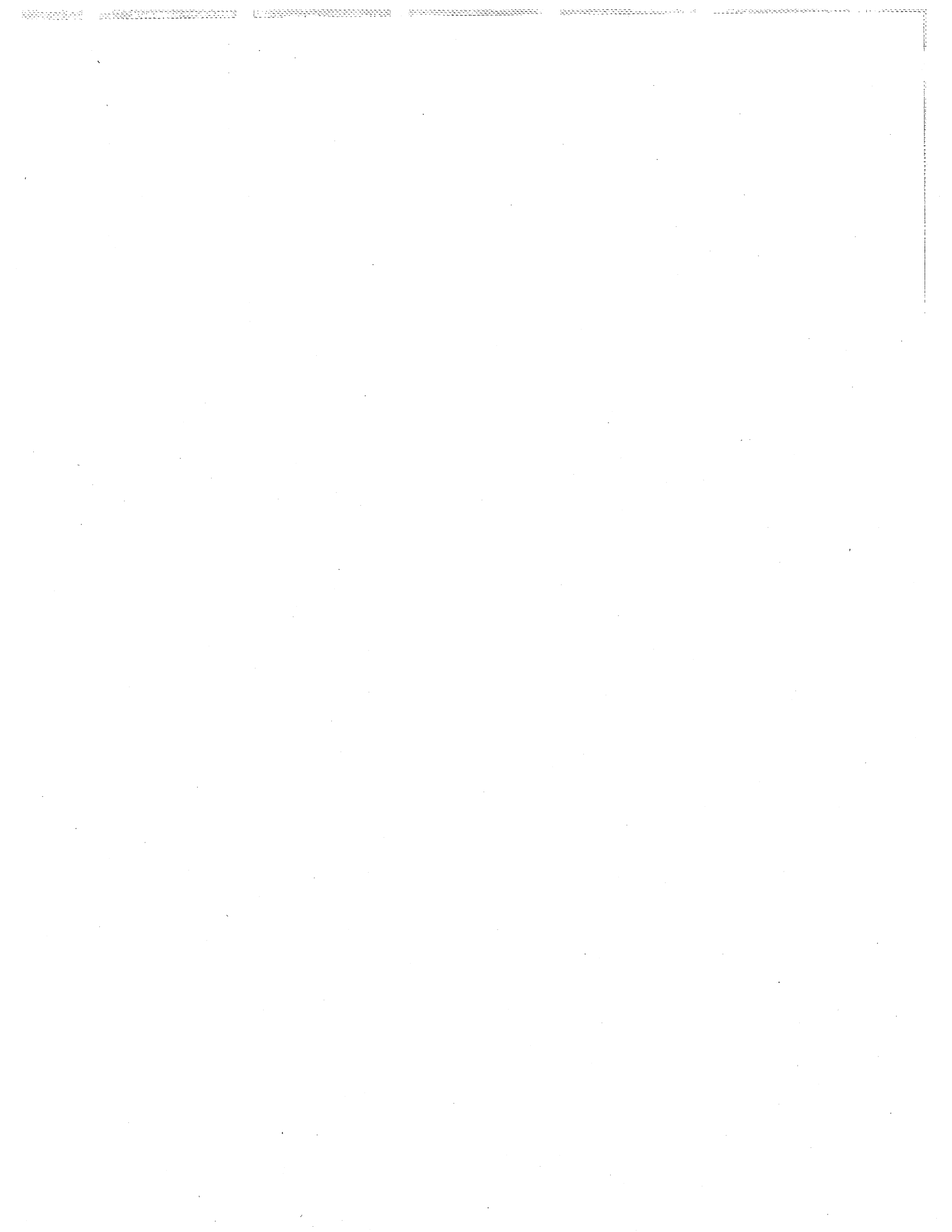
Alterations might include the following:

- Reconfiguring existing toilet rooms to accommodate multiple use toilet facilities
- Installation of CMU sill at apparatus bay openings and extension of the raised wood floor system to the front of the building
- Additions and improvements to electrical power and lighting
- Replacement of mechanical equipment
- Installation of an automatic fire extinguishing system throughout the facility.



Code Summary: 8 Brookfield Road, Sturbridge, MA

APPLICABLE CODES		International Building Code (IBC 2009) w/ Massachusetts Amendments (780 CMR)	International Existing Building Code 2009	Massachusetts Plumbing Regulations (248 CMR)	International Mechanical Code 2003	National Electrical Code (NEC 2011) w/ Massachusetts Amendments (Ch. 12 of Massachusetts Fire Prevention Regulations - 527CMR)	International Energy Conservation Code 2012
Description	Code Reference	Requirement/ Allowed	Existing	Proposed			
Building Accessibility	International Building Code (IBC 2009) w/ Massachusetts Amendments (780 CMR)	MAAB, ICC A117.1					
Existing Building	International Existing Building Code 2009						
Plumbing	Massachusetts Plumbing Regulations (248 CMR)						
Mechanical	International Mechanical Code 2003						
Electrical	National Electrical Code (NEC 2011) w/ Massachusetts Amendments						
Fire Protection	(Ch. 12 of Massachusetts Fire Prevention Regulations - 527CMR)						
Energy	International Energy Conservation Code 2012						
<b>GENERAL</b>	<b>IBC 2009 with Massachusetts Amendments</b>						
Use Group	309		A	A			
Mixed Use Occupancy	302.3, Table 302.3.2	Separated Uses	NA	NA			
Construction Type	602.5, incl. table 601	any	3C	3C			
Building Area	503, incl. table 503	9,500 SF per floor		3,000 SF per floor	No change		
No. of Stories	503, incl. table 503	2 Stories		1 story	No change		
Sprinkler systems	903, 903.2.7	Required for 12,000 SF fire area or more than 300 occupants		None	Proposed		
Fire alarm/ detection systems	907, 907.2.7	Required if more than 300 occ.		None	Proposed		
<b>OCCUPANT LOAD</b>	<b>IBC 2009 with Massachusetts Amendments</b>						
Floor Area Gross	1002.1 (definition)	n.a.			3,750 SF		
Occupant Load (floor area allowance/ occ.)	1004, incl. table 1004.1.1	A-3 = 5 SF per person, B = 100 SF per person		A-3 = 1,650 B = 2,100	A-3 = 1,650 sf/5 sf/p B = 2,100 sf/100 sf/p 330p 21p		
Total Occupant Load					351p		
<b>EGRESS</b>	<b>IBC 2009 with Massachusetts Amendments</b>						
Required No. of Exits	1018, including table 1018.1	less than 500 occ. = 2		2	2		
Exit access travel distance	1015, including table 1015.1	200' max/250		100	100'		
Exit separation (remoteness)	1015.2.1	>or = 1/2 length of diag.		35	35		
Size (width) of doors	1005.1	Diag. = 90/2 = 45' 0.2" per occ. / 32" min.		36"	36"		
<b>PLUMBING FACILITIES</b>	<b>Massachusetts Plumbing Regulations (248 CMR)</b>						
Toilet and Lavatory		toilet f: 1/65, m: 1/125 lavatory: f: 1/200, m: 1/200			f: 175/65 = 3, m: 175/125 = 2 f: 175/200 = 1, m: 175/200 = 1		
Drinking Fountain				0	1 proposed		
Utility Sink				0	1 proposed		

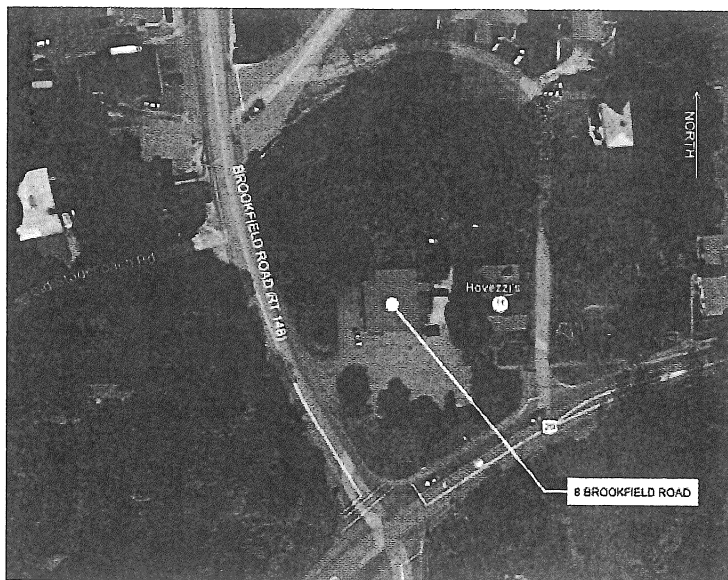


8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 4 SITE CONDITIONS

### SITE DESCRIPTION

The location of the 8 Brookfield Road property is at the intersection of Brookfield Road (Route 148) and Main Street (Route 20) in the Town of Sturbridge, Massachusetts. It comprises a one story building, a small shed, paved parking lot and a grassed area to the north of the building that appears to have once been a park or memorial. School Street borders the property to the north and a restaurant to the east. The site is accessed through a curb cut on the east side of Brookfield Road and from the abutting restaurant parking lot.



The site was inspected on March 26, 2015. The weather at the time of inspection was cloudy and approximately 45 degrees. Stockpiles of snow remained at the southern end of the parking lot and various other areas as seen in the photos.

The following is a general description of the condition of the site. The intent is to determine the general conditions of the site for use in making a decision regarding future maintenance and/or rehabilitation. A detailed inspection would be required if a major rehabilitation were undertaken.

### GENERAL CONDITIONS

The site slopes from School Street south to Main Street. The northern wall of the building is built into the grade with a stone masonry retaining wall extending to the west and a concrete barrier wall extending to the east. The paved areas adjacent to the building generally slope south. Stormwater runoff is collected by a drainage system comprised of piping, catch basins and a manhole with an open drain. Bituminous lip curbing borders the majority of the parking lot, directing stormwater into a catch basin along the southern edge. A gently sloped green area with grass and several trees is located along the property frontage with Main Street.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Photo No. 1. Front of building, facing northwest

**Drainage:**

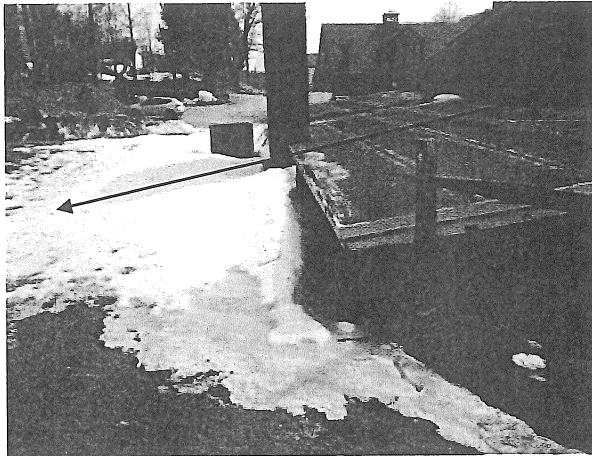
Overall the site drainage follows the grade and flows south from Church Street to Main Street. There is a drainage system with catch basins in Church Street that collect runoff from the roadway; however, portions of Church Street drain onto the property due to lack of curbing. The northern grassed area appears to be graded to divert stormwater runoff around the building by a small earthen berm and a swale. This area appeared to be in a stable vegetated condition. Earthwork appears to have occurred at the northeastern corner of the building to install a flat paved dumpster pad. This area should be properly graded and stabilized with pavement or grass when weather permits.



Earth Berm North of Building

Photo No. 2. Northern grassed area, facing east

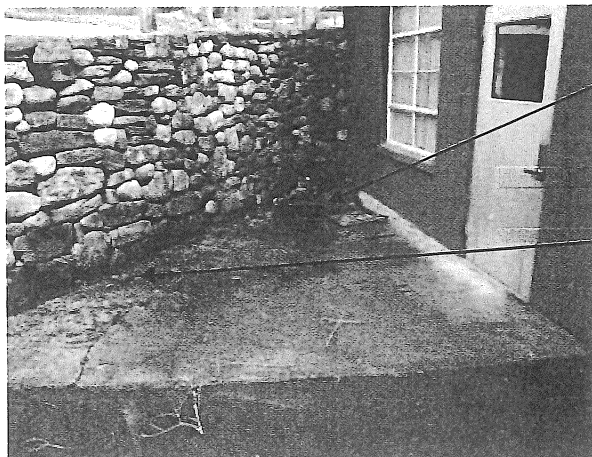
8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Swale North of Building

Photo No. 3. North side of building, facing east

An onsite drainage system consists of a catch basin at the western stone masonry retaining wall, a manhole with an open drain and a second catch basin located on the southern edge of the parking lot. The parking lot catch basin was not observed due to a snow stockpile. Greg Morse, Sturbridge DPW Director indicated that the drainage at the building had work done to it and was in operating condition with no known issues with the system or with water entering the building due to faulty drainage. He indicated that the drainage system connected with the drainage system crossing Main Street. The catch basin at the toe of the stone masonry retaining wall was in fair operating condition and appeared to properly collect seepage from the retaining wall. The manhole with open drain west of the building appeared to function properly; however, the manhole top is elevated above the pavement and may cause a trip or snowplow hazard. If improvements are made to the parking lot, modifications to the manhole structure to allow the replacement of the manhole top with a catch basin frame and grate should be investigated.



Catch Basin at Toe of Stone  
Masonry Retaining Wall

Slight Seepage through  
Retaining Wall draining to  
Catch Basin

Photo No. 4. Stone masonry retaining wall, facing east

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Manhole with Open Drain

Photo No. 5. Manhole with open drain, facing east

The building does not have gutters to control roof runoff. A paved swale made of hot mix pavement was installed to convey stormwater runoff draining from the northern roof edge. The paved swale is split at the chimney to convey flows east to the restaurant parking lot and west to the manhole with open drain. Both swales appear to be functioning; however, there aesthetic appearance and functionality could be improved by replacement or an overlay of new pavement. The discharge point of the eastern swale appears to have been disturbed during earthwork to install a newly paved dumpster pad. The discharge point should be reviewed at the time of any building or parking lot improvements to determine if repairs are warranted.



Paved Swale for Roof Runoff  
draining West

Photo No. 6. Paved swale, facing west

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

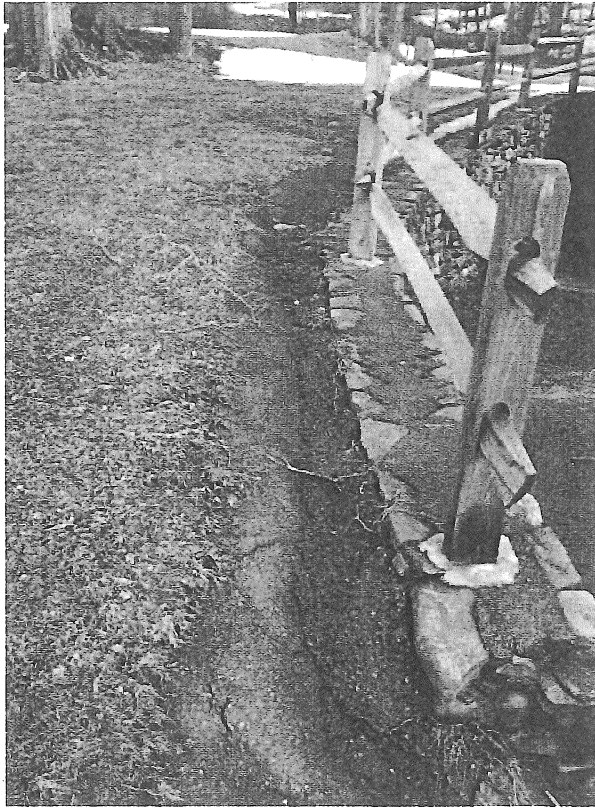


Photo No. 7. Paved swale facing northeast



Paved Swale for Roof Runoff  
draining East

Earth Disturbance at the  
Northeastern corner of the  
Building

Photo No. 8. Northeast corner of building, facing northwest

Stormwater runoff from Brookfield Road is collected by catch basins and bituminous Cape Cod berm. It appears minimal runoff enters the parking lot from the curb cut access in this area. If future improvements are made to the parking lot, a new driveway apron should be considered with a 1-inch lip at the edge of the road to prevent Brookfield Road runoff from entering the parking lot.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Brookfield Road Drainage  
and Sightline looking North  
from Access Drive

Photo No. 9. Brookfield Road at corner of access drive, facing north

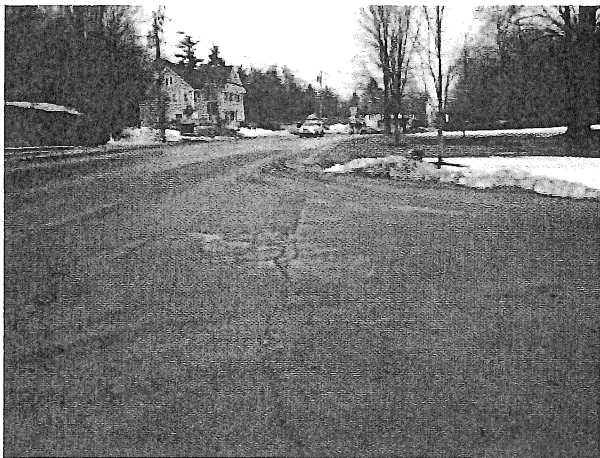


Photo No. 10. Access drive, facing north

**Pavement:**

The site includes a paved access drive and parking lot. The pavement on site appears to be in serviceable condition and does not warrant replacement. Pavement adjacent to the western side of the building includes a swale to provide positive drainage away from the building and to the manhole with open drain. Cracking is evident in the pavement; however, there were no signs of subbase failure observed during the inspection.



8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Paved site Access and  
Parking South of Building

Photo No. 11. Site parking lot and access drive, facing west

Millings were placed east of the building, adjacent to the restaurant property. This area appears stable, but should be reviewed at time of building repair to ensure that proper grades are set to drain surface runoff away from the building.



Area of Millings East of  
Building

Photo No. 12. Shed and millings east of building, facing north

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Area of Millings East of Building, South of Dumpster Pad and Concrete Barrier Wall

Photo No. 13. East side of building at oil tank fill, facing west

**Site Access:**

Access to the site is off of Brookfield Road just north of the intersection with Main Street. The Brookfield Road and Main Street intersection is controlled by a signal light. Sightline from the access drive is minimal looking to the north up Brookfield Road. (See Photos No. 9 and 10.) Sightline to the south appears to be acceptable.



Access Drive and Sightline looking South

Photo No. 14. Southwest corner of site, facing south

**Parking and Accessibility:**

Parking space striping is no longer apparent in the parking lot and should be replaced once parking and traffic flow is designed. A handicap parking sign is located on the west side of the front of the building. No handicap space or loading striping is present. A handicap van space and loading area must be installed in accordance with the future site design as required by the Massachusetts Architectural Access Board (AAB).

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Handicap Parking Sign

Photo No. 15. Front of building, facing east



Photo No. 16. Parking lot and access drive, facing west

**Retaining Walls:**

The site includes two retaining walls: a stone masonry wall on the west side of the building, and a concrete barrier wall on the east side.

The stone masonry retaining wall appears to be in good condition. Seepage was present at the toe of the wall. The seepage was clear and did not appear to be piping soil from behind the wall. A small void was present at the toe of the wall north of the catch basin. This void should be further investigated and patched with rock and mortar. The void does not appear to be a structural issue.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

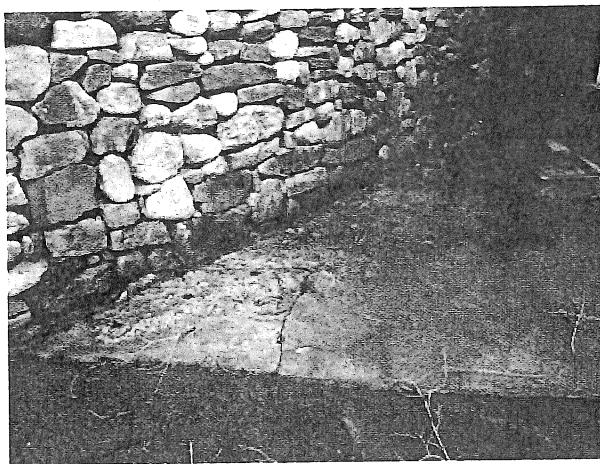


Stone Masonry Retaining  
Wall on the West Side of the  
Building

Manhole with Open Drain

Paved Swale to Open Drain

Photo No. 17. West side of building, facing north



Void in Stone Masonry  
Retaining Wall

Photo No. 18. Stone masonry retaining wall, facing north

The concrete barrier wall is experiencing subsidence at the corner of the building and western edge of the wall. This appears to be due to soil eroding from a gap between the wall and the building. The gap should be filled to retain soil behind the wall and the low areas at the building filled to direct surface flows away from the side of the building.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT



Newly Paved Dumpster Pad

Concrete Barrier Retaining  
Wall on the East Side of the  
Building

Photo No. 19. Concrete barrier wall east of building, facing north



Erosion and Subsidence at  
Wall and Building

Photo No. 20. Concrete barrier wall at the corner of the oil tank room addition



Concrete Barrier Wall

Photo No. 21. Newly paved area behind dumpster pad, facing southwest

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

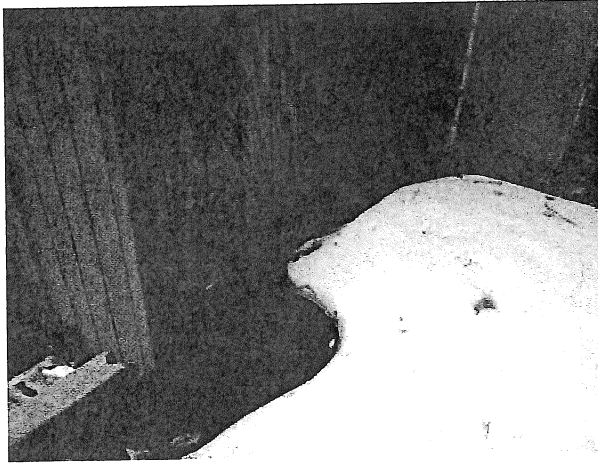


Photo No. 22. Newly paved area behind dumpster pad, facing southwest

RECOMMENDATIONS FOR SITE IMPROVEMENTS AND ESTIMATE OF COST

1. Keep drainage structures clean and Regular maintenance	Town Forces
2. Stripe the parking lot to accommoc vehicles including a van accessible parking : accessible parking space.	\$1,000.00
3. Install site signage indicating buildi and HC parking signage.	\$1,500.00
4. Pave the milled parking area on the building	\$5,000.00
5. Consider a landscape allowance	\$1,000.00
<b>TOTAL ESTIMATED COST OF SITE IMPROVEMENTS</b>	<b>\$8,500.00</b>

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 5 STRUCTURAL CONDITIONS

Definitions of Terms for this report:

Rafter	Parallel, sloped members that are closely spaced and are used to support roof decking.
Ridge Beam	Horizontal member that supports rafters at the high point of the roof.
Intermediate Girder	Horizontal member that supports rafters at the midpoint between the eave and the high point of the roof.
Post	Vertical member that supports framing above and is supported by a beam below.
Beam	Horizontal member that supports framing above.
Column	Vertical member that supports framing above.
Pointing	Mortar placed between stones and brick to create a solid unit. Also known as a mortar joint.

### DESCRIPTION OF STRUCTURAL SYSTEMS

The building at 8 Brookfield Road is a concrete masonry structural with internal framing of wood and steel. The original building has a gable roof and faces approximately south. It is supported on a mortared field stone foundation. The original building has two additions, one to the east and one to the north of the original building.

The addition to the east contains a boiler room with a shed roof. This addition is partially built of concrete masonry and partially of wood studs. This addition is supported on a mortared fieldstone foundation similar to the original building.

The addition to the north contains a large open room and has a shed roof. This addition is built of concrete masonry and is supported on a concrete foundation. This portion of the building is partially below grade and is retaining soil to the north and to the east.

The building at 8 Brookfield Road was inspected on March 19, 2015. The weather during the inspection was cloudy and approximately 40 degrees. There was snow on the ground, but there was no snow on the main roof of the building. There was a small amount of snow on the shed roof of the north addition.

### CONDITIONS ASSESSMENT

The following is a general description of the condition of the building and its additions. A detailed member-by-member investigation was beyond the scope of this investigation. The intent is to determine the general conditions of the structure for use in making a decision regarding future rehabilitation. A detailed inspection would be required if a major rehabilitation project were undertaken.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

I. Original Building

Existing Exterior Conditions:

1. The foundation is composed of mortared fieldstone. Approximately 1" of the top of the foundation wall was observed and appeared to be in good condition.
2. There are no expansion joints in the structure, which is common for a building of this age. The result is that there are numerous small cracks in the mortar joints that are most likely caused by thermal movement. A structure of this size will change length over the course of the year as the temperature changes. Without expansion joints, the masonry will crack.
3. The exterior walls are composed of load bearing concrete masonry units. The front of the building additionally has a brick façade. The external masonry blocks are painted and are constructed in a running bond pattern. The majority of the blocks have a split-face finish. The accent blocks are flat-faced with beveled edges. There are areas of damaged concrete masonry blocks and bricks, and some areas of missing pointing.
4. Along the west side of the building deterioration of the masonry of the bottom two course of CMU on the west wall was observed. In this location, the lower course of masonry is below grade. This deterioration is most likely due to freeze-thaw action of excess water in this area. There is a drain located on the west side of the building. It is unknown when this drain was installed and whether it is providing effective drainage for the west side of the building.
5. Two large openings in the masonry exist at the front of the building, which would have originally been the overhead doors for the fire trucks. These openings are supported by galvanized steel lintels. The steel lintels appear to be in good with minor surface rust.
6. At the exterior of the building near the, areas of water infiltration were observed. From the interior, it could be observed that the outer bays of rafters bear directly on the masonry bearing wall rather than on a wood top plate.

Existing Interior Conditions:

1. The gable roof structure is composed of tongue and groove wood roof decking supported on simple span, wood rafters. The rafters are spaced at 24" on center and were measured to be 7.75" deep by 1.75" wide. Access to the roof structure was limited to the platform area at the top of the stairs. In this area a cracked rafter was observed.
2. The roof structure is composed of four bays running north and south and equally spaced. Ridge beams and intermediate girders support the rafters in the central two bays. The measured ridge beam had dimensions of 7.75" deep by 2" wide. The intermediate girders and the exterior masonry walls support the rafters in the outer two bays. Wood posts support the ridge beams and the intermediate girders. From the exterior of the building, sagging of the ridge beams can be observed between the wood posts.



8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

3. The rafter beams are nailed to the supporting ridge beam. In the area of the roof that could be observed from the platform, a rafter was observed that had begun to separate from the ridge beam.
4. The wood posts extend down to a steel beams that span the width of the building, approximately 49'-0". The steel beams do not bear on the exterior masonry wall, but instead are supported by 5" diameter steel columns. The beams extend over the steel columns and are embedded in the exterior masonry wall, which provides lateral bracing for the column. The column spacing varies between 10'-6" and 12'-3". Access to the steel beam was restricted by the ceiling.
5. In the interior of the building, a 3½" diameter steel column is located within the current dance floor and aligns with columns near the exterior wall of the building. Because of the presences of the ceiling, it is unknown what this column is supporting.

II. Boiler Room Addition (East Side)

Existing Conditions:

1. The foundation is composed of mortared fieldstone similar to the foundation of the original building. Approximately 1" of the top of the foundation wall was observed and appeared to be in good condition.
2. This structure is composed of masonry bearing walls and wood bearing walls and is connected to the original building. Portions of the existing plaster at the interior, have been demolished and the sill plate and the bottom of the wood studs are visible. Both the sill plate and the studs have been damaged by water. It is unknown how far up the wall the damage extends.
3. The shed roof structure in this area could not be observed because of the ceiling. Water damage to the ceiling was observed.

III. Rear Addition (North Side)

Existing Conditions:

1. The existing foundation for the rear addition is cast-in-place concrete. This wall is retaining soil and appears to be in good condition.
2. The exterior walls are constructed of concrete masonry and one section includes a large brick fireplace with a chimney. The exterior concrete masonry does not have a decorative finish nor is it painted. These walls are missing pointing in several areas.
3. The shed roof structure in this area could not be observed. From the exterior, no sagging of roof beams was observed. At the interior of the building, no water damage was observed on the ceiling.
4. At the interior of the building there are several locations where structural members appear to be framed out and project lower than the plane of the ceiling. It is unknown whether these beams are structural. It is likely that they support the ceiling. Where the

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

beam meets the wall, the gypsum board sheathing is cracked. Observation of the masonry on the opposite side of the wall does not indicate any structural deficiency.

IV. Significant Structural Issues

Several structural issues were identified above. Issues that require action are listed below.

Original Building:

1. Deterioration of Masonry at West Side (Bottom Two Courses)  
It is recommended that the masonry be excavated for further inspection. Because of the loss of material from the face of these units, repair is recommended. Selective demolition can be performed to determine if the entire blocks should be replaced or if a repair can be limited to the exterior face shell and repointing.
2. Cracked Rafter  
The cracked rafter can be repaired by sistering another rafter alongside the cracked rafter or the rafter can be replaced. It is recommended that the rafters be inspected for similar damage.
3. Sagging Ridge Beams  
Preliminary calculations show that the ridge beam is significantly overstressed, which is causing the roof to sag between the roof posts. The intermediate girders could not be measured, however, from visual observation they appear to be the same size as the ridge beams. Therefore, it is recommended that both the ridge beams and intermediate girders be strengthened to support anticipated dead and snow loads. This can be accomplished by adding additional members or replacing the ridge beam. Strengthening of the ridge beams and intermediate girders will additionally require modifications to the wood posts.
4. Separation of Rafter from Ridge Beam  
Currently, the rafter beams are nailed to the ridge beam. Over time, this type of nailed connection at rafters can experience separation from the supporting member, reducing the strength of the connection. It is recommended that these connections be modified and joist hangers installed.
5. Water Infiltration at the Eaves  
It is recommended that the soffit covering ends of the rafters be removed to facilitate inspection. With the ends of the rafters removed, it can be determined whether they have water damage or areas of rot. Damaged rafters can then be repaired or replaced.

Boiler Room Addition (East Side):

1. Water Damage to the Exterior Wall  
Due to the damage to the sill plate and the exposed portion of the stud, it is recommended that the sill plate and damaged studs be replaced.
2. Water Damage to the Ceiling

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

At the interior of the boiler room addition staining on the ceiling and the walls indicate that water damage. It is recommended that the ceiling be removed and the roof structure inspected for damage and rot. Damaged rafters can be repaired or replaced.

V. Additional Structural Considerations

If rehabilitation of the existing structure is undertaken, additional considerations for long-term performance of the structure are listed below.

Original Building:

1. Cracking in Exterior Masonry

As noted above, the building has no expansion joints in the masonry, which is common for older masonry structures. All building materials will expand and contract when exposed to temperature variations. Installation of modern expansion joints is not recommended. It is recommended that the cracked joints be repointed at intervals of approximately 15 years.

2. Damaged Masonry and Missing Pointing

It is recommended that damaged masonry be replaced or repaired and joints that are missing mortar be repointed.

3. Galvanized Steel Lintels

It is recommended that the steel lintels be cleaned, the rust removed and painted for protection.

4. Restricted Access to Steel Beam

As noted above, the access to the steel beam was restricted by the ceiling. The bottom flange and the end embedded in the masonry wall were all that could be observed. Modifications to the ceiling structure must ensure that adequate lateral bracing of top flange of the steel beam be maintained. It is unknown if there are additional intermediate members providing lateral bracing.

5. Interior Column

Because of the existing ceiling, it is unknown what this interior column is supporting. If modifications to the existing ceiling are made, it is recommended that the steel column be inspected to determine how it is functioning structurally within the building.

Rear Addition (North Side):

1. Missing Pointing

It is recommended that the existing masonry be repointed due to missing mortar in the joints.

2. Cracked Wall Sheathing

The roof structure in this area could not be observed because of the ceiling. Since the roof structure and how it support is unknown, it is recommended that further investigation of the cracks in the wall sheathing be investigated. It is recommended that selective demolition should be performed to determine the condition of the support and to make necessary repairs to the gypsum sheathing.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

If rehabilitation of the existing structure is undertaken, consideration during renovations needs to be made with regard the lateral resisting system of the structure. Chapter 34 of the 2009 International Building Code states that, "...where the *alteration* increases design lateral loads in accordance with Section 1609 or 1613, or where the *alteration* results in a structural irregularity as defined in ASCE 7, or where the *alteration* decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613..."

For this building, lateral loads are resisted by plain masonry shear walls, which are the exterior masonry walls. Structurally, these walls provide the building's resistance to laterals loads such as horizontal seismic (i.e. earthquake) and wind loads. Any future renovations or additions should avoid modifications such as large openings or significant weight increases, which would increase stresses in the existing masonry walls. Significant increases in the stress of the walls may require a seismic upgrade.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

RECOMMENDATIONS AND COST ESTIMATE FOR STRUCTURAL REPAIRS

Original Building

1. Deterioration of Masonry at West Side Excavate and repair bottom two courses of masonry.	\$3,500
2. Cracked Rafter Inspect existing rafters. Repair or replace damaged rafters.	\$2,000
3. Sagging Ridge Beams Replace or strengthen existing ridge beams and intermediate rafters.	\$10,000
4. Separation of Rafter from Ridge Beam Cut back existing rafter and install light gage metal hangers.	\$1,500
5. Water Infiltration at the Eaves Remove covering on eave and inspect rafter ends.	\$500

Boiler Room

1. Water Damage to the Exterior Wall Replace existing wood sill plate and studs.	\$1,300
2. Water Damage to the Ceiling Inspect and repair existing roof structure.	\$1,300

Additional Structural Considerations

Original Building

1. Cracking in Exterior Masonry Repointing of masonry.	\$1,100
2. Damaged Masonry and Missing Pointing Replace or repair damaged masonry and repoint these areas.	\$1,100
3. Galvanized Steel Lintels Clean surface rust and paint lintels.	\$300

North Addition

1. Missing Pointing Repointing of masonry.	\$1,100
2. Cracked Wall Sheathing Remove existing wall sheathing, inspect connection and repair with gypsum board.	\$300

**TOTAL ESTIMATED COST OF STRUCTURAL REPAIRS**

**\$24,000.00**

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 6 ARCHITECTURAL CONDITIONS

### BUILDING DESCRIPTION

The building at 8 Brookfield Road is a single story concrete block building with several additions. The original building is approximately 50 feet wide by 60 feet deep presenting a gable end at the main façade facing Route 20. Spanned by steel beams and wood trusses, there is a ceiling height of 10 feet to the underside of the original plaster finished ceiling of the old firehouse. Currently offices and support facilities including toilet rooms and kitchen run the length of the western side of the building. Storage and circulation on the north side of the original structure surround a large open space, once apparatus bays, and most recently used as dance studio.

A 17 foot deep addition to the north runs the full width of the original building and is built up against an eight foot high retaining wall. A low sloping shed roof connects at the north gable end of the original building. Having an 8 foot high ceiling height, the focus of the room is a brick faced fireplace on the north wall. The addition exits directly outside at grade level.

To the east, a small wood framed addition houses the current furnace room and a freestanding shed adjacent to the main building protects the oil tank that serves the furnace.

### GENERAL CONDITIONS

While the basic building structure is sound, the interior spaces are in need of upgrading to meet the new intended use as an adjunct recreational facility. The majority of the spaces are functionally adequate to fulfill the basic building program, but updates to meet code compliance are critical even though the building is technically not changing use.

### Site Conditions Affecting the Building Structure

As discussed in the Civil and Structural assessments, it is important to direct water away from the building. It has been noted that the rear portion of the structure is subject to wet floors in extreme storms and heavy snow melt.

Recommendation: It is recommended that a gutter system be installed at the low side of the rear shed roof to divert water before it has a chance to infiltrate at the retaining wall which serves as the rear wall of the building. Additionally, a gutter system at the eaves of the original building will serve to direct roof runoff so that the wall surfaces, especially at the base of the wall, are not subject to wetting during the freeze/thaw cycle which can cause expansion and contraction and loss of mortar integrity.

### Roof

The main building roof has a low roof slope and is clad in three tab asphalt shingles of unknown age. The rear addition roof is clad in a single ply membrane material, while the main entrance canopy roof is composed of architectural asphalt shingles. There was no evidence of water infiltration through the main and addition roof systems, although the furnace room has experienced significant water

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

infiltration at exterior walls and in the area of the chimney in the past. Rake, fascia and soffit trim is in need of repair/replacement.

Recommendation: As part of a regular maintenance routine, the roof should be inspected for obviously material failures. The attic should be inspected for evidence of leakage annually and after significant rain events. Damaged rake, fascia and soffit trim should be replaced throughout prior to installation of a new gutter system. When the main roof is replaced, gable end vents should be removed and ridge and soffit vents installed.

### **Walls**

Exterior concrete block walls are in reasonable condition although as previously mentioned, areas of wall need to be repointed in order to provide a weather tight building envelop.

Recommendations: Preparing and re-painting the walls will help to insure dry interior finishes. The selected paint should allow water vapor to move out of the wall in order to promote drying of the block in a natural way.

### **Windows**

Windows on the east and west sides of the building are the original single pane steel windows which at one time had an awning component for ventilation. The sash are in poor condition. Many have been altered over time to incorporate ventilation units. Full height openings on the east wall have been altered to cover the top portion of the window. All of the metal window sash have deteriorated due to lack of a paint finish to protect the steel from rusting. Further, the single pane windows are not energy efficient.

Vinyl clad windows on the Main Street façade have been installed in the former apparatus bay openings and appear to be in good condition.

Recommendation: The metal window sash on the east and west should be removed and replaced with aluminum units having insulated glazing. Windows on the south, Main Street façade, could be replaced to coordinate with exterior façade improvements if design improvements are deemed appropriate.

### **Doors**

Exterior doors are metal with glazed upper panels. The base of all exterior doors show signs of failure from wetting which has caused the metal to deteriorate thereby allowing water to infiltrate the building and further contribute to failure of the door and threshold system. The main entrance door binds within the opening. Door hardware is not appropriate for compliance with Universal Accessibility or with egress requirements.

Recommendation: Two exterior doors should be replaced with insulated metal or aluminum doors as appropriate to the façade design intent. Code compliant hardware for egress and accessibility should be installed.



8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

**Toilet Rooms**

Currently there are two single occupant toilet rooms neither of which meet Massachusetts Architectural Access Board requirements. According to the Plumbing Code for the intended use, multiple fixture toilet rooms will need to be constructed to meet the needs of the intended use.

Recommendations: New Toilet Room facilities should be rebuilt to meet the intent of the building use and Code requirements. The fixtures should be energy efficient. Room finishes should be washable public toilet room surfaces.

**Interior Finishes**

Currently the floor in the main gathering room is an unfinished raised plywood platform. This floor does not extend to the front wall of the building, but rather stops short resulting in a two level floor system which is a tripping hazard. Carpet in the office and corridor areas has fulfilled its service life. Vinyl tile flooring in the rear of the building appears to be in fair condition.

The majority of interior partitions can remain in place with the exception of the area of the toilet rooms and previous kitchen space. In this area, new, larger toilet rooms will need to be constructed. This will require some demolition and reconstruction resulting in the need for new painted wall surfaces. Wall surfaces throughout the building should be refreshed.

Ceiling finishes in the original building are lay-in acoustic tile ceilings and in the rear building plaster or gypsum wallboard.

Recommendations: In order to maximize space usage and eliminate the two level floor system in the main room, the wood platform floor should be extended to the outside wall. This may entail reworking the front wall to provide a CMU curb to provide a barrier for water runoff and to provide a surface for the floor system to die into. Appropriate floor finishes should be installed throughout the building based on anticipated use.

Interior wall surfaces should be painted throughout the building.

Damaged ceiling tiles should be replaced as necessary.

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

RECOMMENDATIONS AND COST ESTIMATE FOR ARCHITECTURAL REPAIRS

1. New gutters and downspout roof drainage system	\$3,500
2. Repair of rake, fascia and soffit trim throughout	\$8,000
3. Prepare and repaint exterior walls and trim	\$10,000
4. Add CMU base at front bay openings and extend floor	\$4,000
5. Replace metal windows Option to replace vinyl windows at front elevation add \$8,000	\$22,000
6. Replace exterior doors	\$3,000
7. Repair mechanical room finishes	\$9,000
8. Reconstruct Toilet Rooms as per # code required fixtures in addition to MEP cost estimate	\$20,000
9. Replace interior floor finishes throughout	\$20,000
10. Replace damaged ceiling tiles in the original building	\$500
11. Interior painting throughout	\$15,000
12. Lunch kitchen (not commercial kitchen)	\$15,000
13. Automatic fire suppression system	\$25,000

**TOTAL ESTIMATED COST OF ARCHITECTURAL REPAIRS**

**\$155,000.00**

## 7 MECHANICAL, ELECTRICAL AND PLUMBING CONDITIONS

# SALAMONE & ASSOCIATES, P.C.

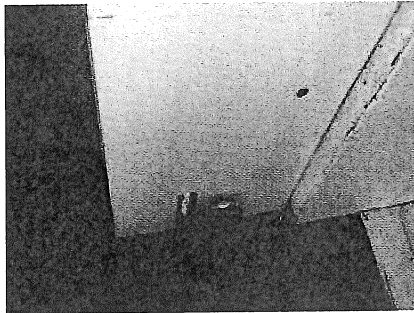
Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## EXISTING PLUMBING, MECHANICAL AND ELECTRICAL EVALUATION

### Sanitary Waste System:



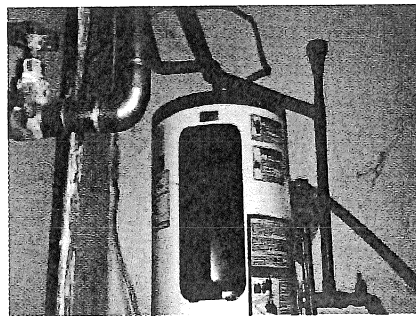
The sanitary system is original to the building and appeared to be in bad condition with disconnected piping at the kitchen sink. Debris and deterioration is present on the exposed piping.

### Domestic Cold Water System:



The domestic cold water piping enters the building near the front entrance and is routed to a water meter. The main pipe riser has an isolation valve, hose attachment and a take off for the exterior hose bibb. The main pipe is then routed to the plumbing fixtures located throughout the building. The piping is not insulated and appeared to be in fair condition with no signs of deterioration/leakage. The valves appeared to be in good condition.

### Domestic Hot Water System:



The domestic hot water is provided by a six (6) gallon electric water heater mounted above an abandoned water heater in a storage closet. Hot water is provided to the bathroom sinks via copper piping routed at the ceilings. All the domestic hot water piping is not insulated and appeared to be in poor condition with deterioration/leaks. The water heater was installed 2004 and appeared to be in fair condition.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

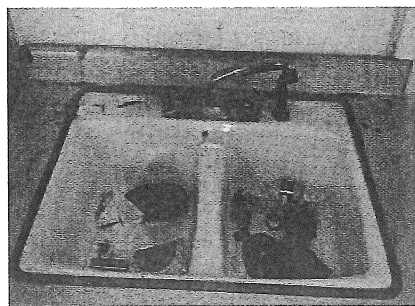


An eighty (80) gallon electric water heater has been abandoned within the storage closet . Since the unit is no longer in operation, the unit should be removed.

## Plumbing Fixtures:



An exterior hose bibb was observed in the front of the building. Piping to the fixture is not insulated. The hose bibb and piping appeared to be in good condition.



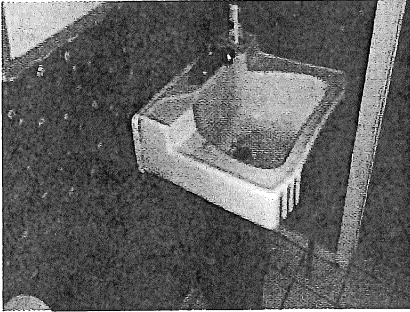
The kitchen has a double bowl ceramic sink. It appears to be in bad condition with deterioration and leakage present. Sanitary piping to the fixture is disconnected and the domestic piping has deterioration.

# SALAMONE & ASSOCIATES, P.C.

## Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road



The bathroom located adjacent to the kitchen has a wall mounted lavatory and faucet. The drain cover/faucet/piping has deterioration and appeared to be in poor condition. The ceramic basin has cracking/heavy stains and appeared to be in bad condition. The domestic hot/cold piping underneath the fixture is not insulated and appeared to be in poor condition.



The bathroom located adjacent to the kitchen has a tank type water closet. The domestic cold water piping appeared to be in fair condition. The water closet and associated accessories appeared to be in good condition.



The large bathroom has a wall mounted lavatory and faucet. The drain cover/faucet/piping has deterioration and appeared to be in poor condition. The ceramic basin has cracking/light stains and appeared to be in poor condition. The domestic hot/cold piping underneath the fixture is not insulated and appeared to be in fair condition.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

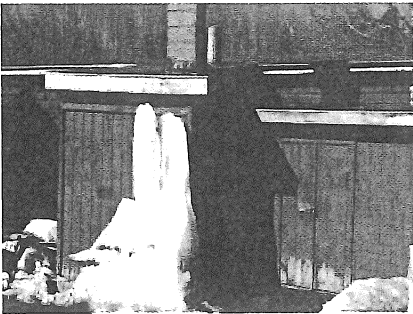
116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

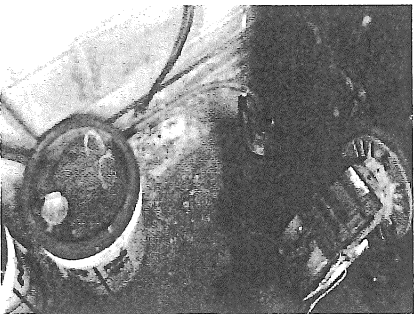


The large bathroom has a tank type water closet that appeared to be in good condition. The domestic cold water piping and isolation valve appeared to be in good condition.

## Fuel Oil System:



The above ground #2 fuel oil tank is located in a exterior shed. The fuel oil tank appears to be in fair condition with deterioration present on the enclosure and piping.



The fuel oil supply line to and from the boiler are routed to the exterior closet. The supply lines and filters appear have leakage present and appeared to be in bad condition.

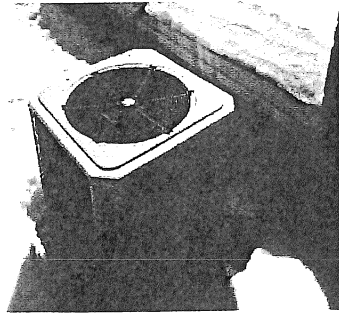
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## Air Conditioning System:



An air cooled condensing unit is located in the rear of the building. Manufactured by the York Company the unit provides five (5) tons of cooling. The refrigerant line set is insulated and routed to the attic. The unit appears to be over twelve (12) years old in poor condition with deterioration present.



The attic is equipped with a horizontal modular air handling unit that provides 2,000 CFM. The unit is manufactured by the York Company and sits on a condensate pan with a plug type condensate pump. The unit is over eight (8) years old with minor deterioration and appeared to be in fair condition.



Ductwork distribution is located within the attic. The main ductwork is rectangular with round duct take offs. Flexible ductwork is routed down to the diffusers. All the ductwork is insulated and appears to be in good condition.



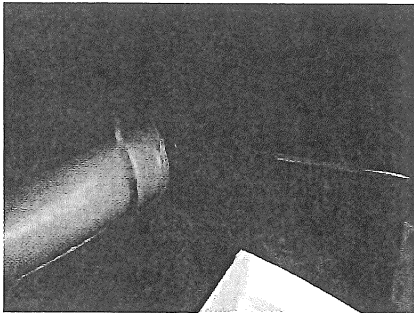
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

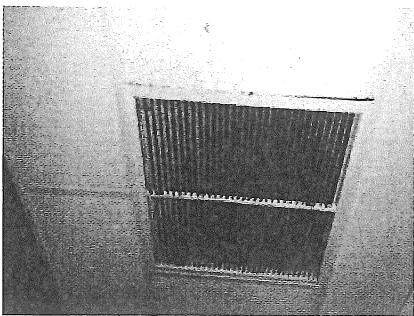
8 Brookfield Road



Flexible ductwork is routed to the supply/return grilles. The ductwork appears to be in good condition.



The large room and corridor has several ceiling mounted cone type supply diffusers. Each diffuser is 24"x24" and appeared to be in good condition with debris present on the exterior.



The return air for the space is directed back through a 24"x24" ceiling mounted return grille. The grille appeared to be in fair condition with debris present within the grille.

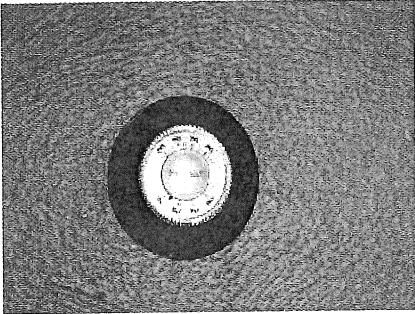
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

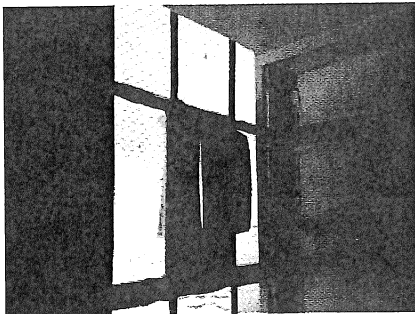


A wall mounted heating/cooling thermostat manufactured by the Honeywell Company controls the condensing unit and the air handling unit. The unit is located beneath the return grille and appears to be in fair condition.

## Exhaust Systems:



The kitchen has two (2) thru-wall exhaust fans controlled by local wall switches. The first exhaust fan is operational, has minor deterioration on the interior grille and appeared to be in fair condition.



The second fan located in the kitchen is manufactured by the Nutone Company and did not appear to be operational. The unit has deterioration and appeared to be in bad condition.

# SALAMONE & ASSOCIATES, P.C.

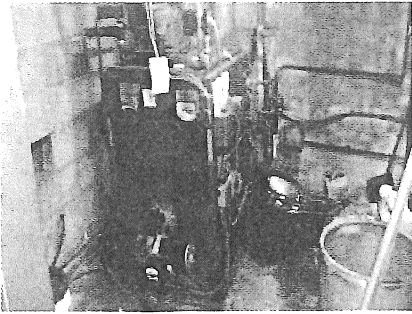
Consulting Engineers

---

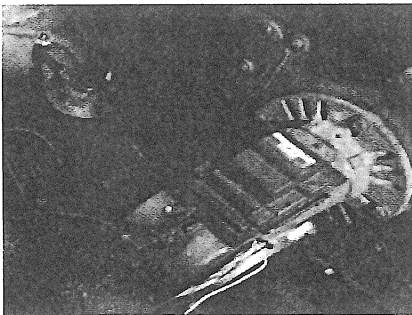
116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

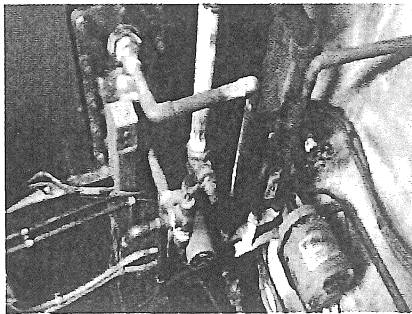
## Hydronic System:



A hot water oil-fired boiler manufactured by the HB Smith Company is located in the mechanical room. The boiler provides hot water to the baseboard radiation located throughout the building. The boiler has cast iron sections and a domestic hot water coil. The boiler appears to be over fifteen (15) years old in fair condition with deterioration present throughout.



The oil-fired burner for the boiler is manufactured by the Carlin Company model 150FRD-1H and is rated for 2.00 -4.50 gallons per hour. Overall the burner components appeared to be over fifteen (15) years old and in poor condition with leakage present.



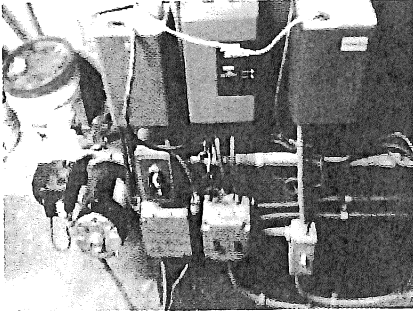
The hot water is distributed via three (3) inline circulator pumps manufactured by the Taco Company. Two (2) pumps appeared to be older and in fair condition with deterioration observed at the flanges. One (1) pump appeared to be recently installed and in good condition.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

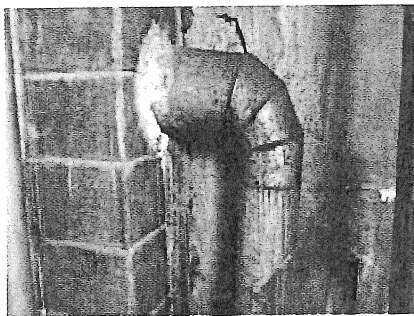
8 Brookfield Road



Three (3) hydronic zones are controlled by a zone controller manufactured by the Taco Company. The wiring for the controller appeared to be loose and the controller appeared to be in good condition.



Piping for the hot water system mainly consists of copper with the exception of the boiler main piping being steel. No piping insulation was found throughout the building. The hydronic accessories included an expansion tank, pressure reducing valve, low water cut off and air vent. All the piping and accessories appeared to be in fair condition.



Breeching for the boiler is routed to the chimney stack located on the right side of the building. A barometric damper is located on the breeching provides the required draft. The breeching appeared to be in poor condition with deterioration.

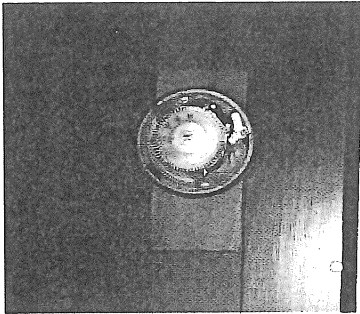
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

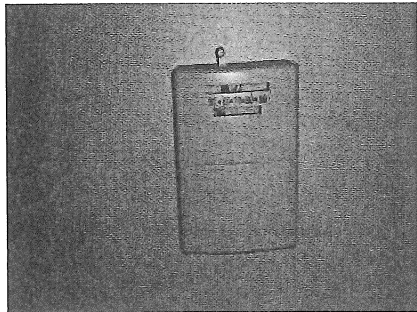
---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

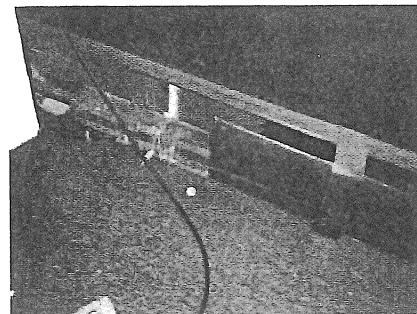
8 Brookfield Road



A wall mounted thermostat manufactured by the Honeywell Company controls the hydronic zone for the office areas via a relay in boiler room. The thermostat appeared to be over twenty (20) years old and in poor condition.



A wall mounted heating only thermostat controls the zone for the large room. The thermostat appeared to be over ten (10) years old and in good condition.



Baseboard radiation is located on the perimeter of the building. The fin tube appeared to be in bad condition with sections being damaged. The enclosures appeared to be in poor condition with debris and deterioration.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

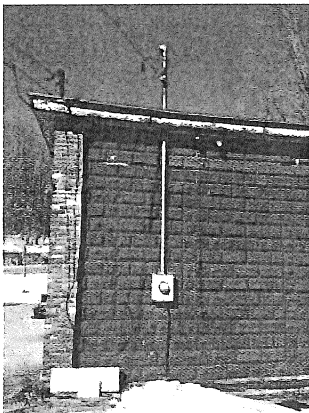
116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## Electrical Service/Distribution Systems:



The electrical service for the building is provided via an overhead aerial service drop from a utility pole located on Main Street along the sidewalk on the adjacent property. The overhead transformer is located on the next utility pole east of the service drop utility pole.



Electrical service weather-head mast, service entrance conductors and meter are located on the Southeast corner of the building. It appears as the original service mast and service entrance conductors have been abandoned in place and are located to the left of the current service.



The service appears to be grounded via a ground rod at the meter location and with a ground wire run from the main electrical panel in the Southeast corner of the building to the main water service piping which is located to the left of the buildings main entry door upon entry. This ground wire is run above the ceiling and then exits the ceiling and runs exposed down the water service piping.

Voltage configuration to the building is 120/240V, 1 phase, 3 wire with an amperage (A) rating of 200A.

Service entrance conductors terminate in a 200A, 120/240V, 1 phase, 3 wire, 40 pole load center type electrical panel with 200A, main circuit breaker. This electrical panel is located opposite the electrical meter on the interior wall. This panel provides power to subpanels, receptacles, air handler and compressor and exterior lighting. It would appear as this panel was installed when the electrical service was upgraded.

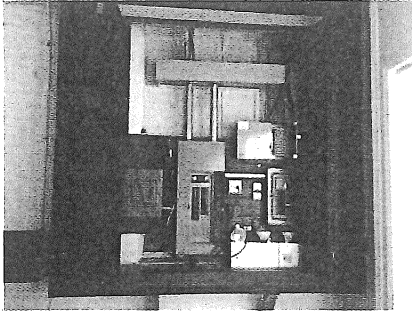
# SALAMONE & ASSOCIATES, P.C.

## Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

### 8 Brookfield Road

It has been in service approximately 20 years old based upon manufacturing date and seems to be in good condition for its age.



Electrical distribution within the building is provided by five (5) electrical panels in total. The main electrical panel noted above and four (4) additional electrical panels. Two (2) of these electrical panels are located adjacent to the existing main panel. The third is located in the addition at the rear of the building which contains the fire place and the fourth is located in the boiler room.



The electrical panel located to the left of the main electrical panel is a 120/240V, 1 phase, 3 wire, 12 pole main lug only (MLO) load center type electrical panel. There was no amperage rating identification for this panel. However, it is protected by a 50A, 2 pole circuit breaker in the main electrical panel. Based upon standard electrical panel ratings and the size of the circuit breaker providing panel feeder protection, it is assumed that this panel has a minimum rating of 60A.. No directory was available for this panel. This panel is older than the main electrical panel and is in fair condition for its age.



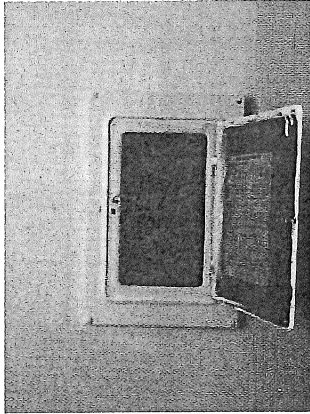
The electrical panel located to the right of the main electrical panel is a 100, 120/240V, 1 phase, 3 wire, 20 pole load center type electrical panel with 100A main circuit breaker. No directory was available for this panel. This panel is also older than the main electrical panel and is in fair condition for its age as well.

# SALAMONE & ASSOCIATES, P.C.

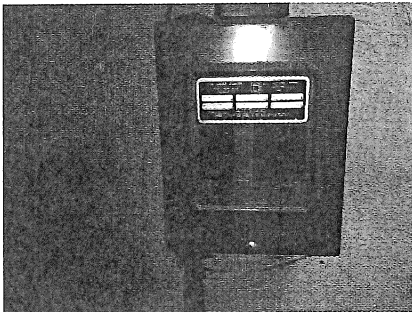
Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road



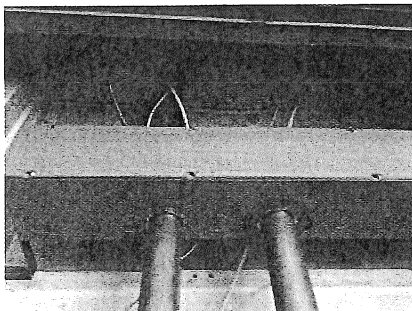
The fourth electrical panel (located in the addition at the rear of the building) is a 120/240V, 1 phase, 3 wire, 16 pole, MLO load center type panel. There was no amperage rating identification for this panel. No directory was available for this panel. Based upon standard electrical panel ratings it is assumed that this panel has a minimum of a 60A rating. The cover of this panel has been painted over in the past. This panel is older than the main electrical panel and is in fair condition for its age.



The fifth and final electrical panel is located in the boiler room. This is a 100A, 120/240V, 1 phase, 3 wire, 6 pole, MLO load center type panel. This panel provides power to the boiler, lighting and receptacles within the boiler room as well as fire hose dryer no longer in use. This panel is older than the main electrical panel and is in fair condition for its age.

The main electrical panel appears to have been replaced when the service was upgraded and has been in service approximately 20 years based upon manufacture date and seems to be in good condition. There were no manufacturing dates on the other panels however it would seem as these panels are approximately 40+ years of age and in fair condition. Consideration should be given to upgrading these panels with exception of the main electrical panel.

## Branch Circuit Wiring:



Branch circuit wiring and conduit is a mixture of different types and consists of surface mounted Electrical Metal Conduit (EMT), wiremold, flexible metal conduit and non-metallic sheathed cable as well as antiquated cloth covered type conductors. The age of the wiring appeared to vary with older wiring observed in the attic areas. The cloth covered



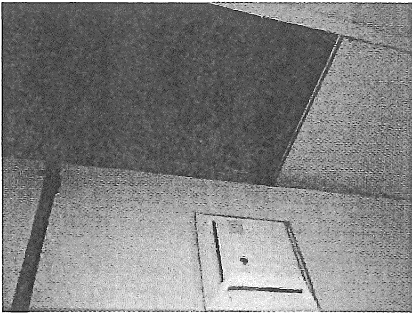
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

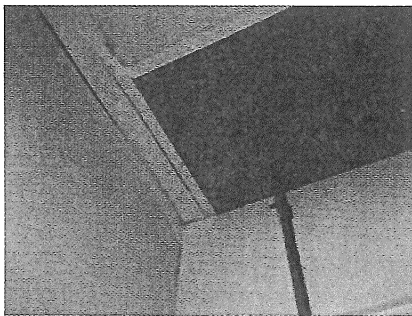
8 Brookfield Road



and non-metallic sheathed cabling should be removed and replaced with metal clad (MC) cabling.

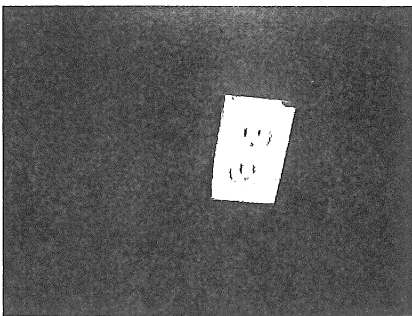
A few electrical junction boxes located above the suspended ceiling and in the attic were missing their cover plates.

A surface mounted located on the ceiling was missing knockouts.



In addition, wiring was observed above the suspended ceiling which not terminating in an electrical box. This wiring just has the conductor ends capped with a wire nut and electrical tape.

## Wiring Devices:



Wiring devices consisted of receptacles, switches and plug mold.

Duplex receptacles were located throughout the building. Both recessed and surface mounted types were observed.



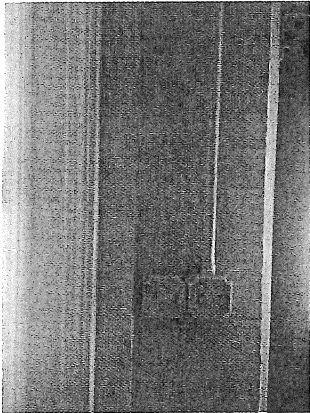
Plug mold was observed within the office areas of the building and was in fair to poor condition. No GFCI duplex receptacles were located in the restrooms as required by Code. Only receptacles observed were part of a fluorescent vanity light which was in poor condition and an incandescent vanity light. No GFCI receptacle was located near the exterior condensing unit as is also required by current Code.

# SALAMONE & ASSOCIATES, P.C.

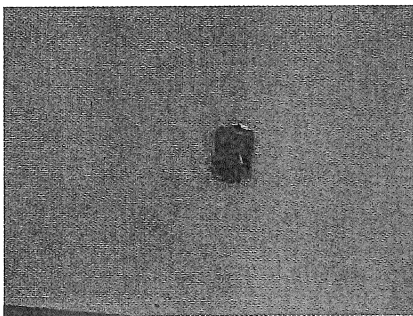
Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road



Control of the lighting was provided by surface mounted and recessed single pole and three way lighting switches.



A number of recessed electrical boxes in the addition room at the rear of the building have no devices installed and were missing cover plates thereby leaving the wiring exposed.

The majority of the existing receptacles, switches and plug mold observed appeared to have been in place a number of years, have been painted over in a few instances, are in fair to poor condition and should be replaced. New devices should be added as determined by proposed layout of building. Plug mold should be removed and replaced with duplex receptacles. GFCI duplex receptacles should be installed in all areas required by current Code.

## Interior Lighting Systems:



A mixture of light fixtures was observed within the building. Surface mounted 1'x4' two (2) lamp T8 fluorescent fixtures were located in the front of the building and addition at the rear. 2'x4' four (4) lamp T8 fluorescent fixtures were located in the main room, corridors and office areas. It would appear as the 2'x4' lighting in the main room was installed prior to the corridor wall being built as the corridor wall does not go from floor to ceiling but stops a few inches short. This causes some fixtures to be split with part of the fixture in the corridor and the remaining portion in the main room.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

## 8 Brookfield Road

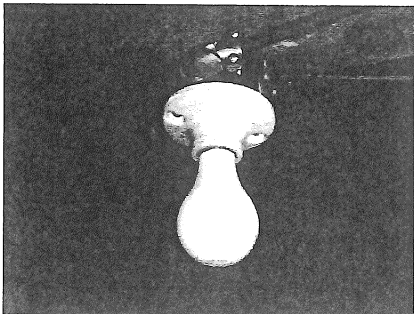


Two (2) lamp T8 suspended fluorescent strip lights were observed in the kitchen area and mechanical room. The kitchen area strip light is suspended from the buildings ceiling with the suspended ceiling tile removed below it. Surface mounted incandescent and fluorescent fixtures were located in the bathrooms with incandescent porcelain sockets in the attic.



The condition of these fixtures varied greatly from good to very poor. A few 1'x4' fluorescent fixtures have broken lens, a 2'x4' fixture was missing lamping and its lens.

Incandescent fixtures within the bathrooms were missing diffusers and lamping. The existing lighting should be removed and replaced with more efficient LED fixtures and rearranged based upon proposed layout to provide better illumination levels. Proposed fixtures located within the mechanical room and attic should also include guards.



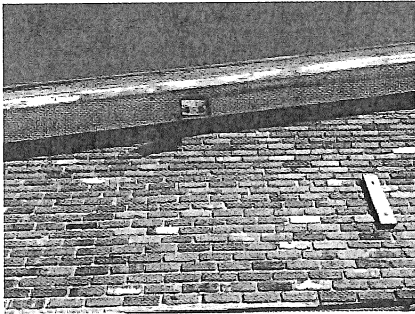
# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

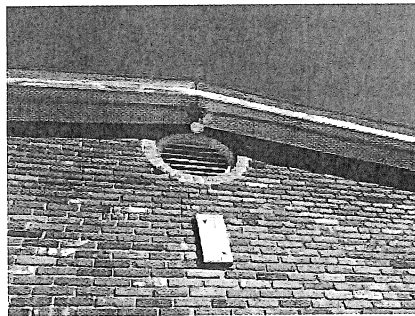
116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## Exterior Lighting Systems:



Exterior lighting consisted of two (2) High Intensity Discharge (HID) fixtures located under the front eave of the building. It appears as these fixtures are aimed to illuminate the parking area of the building. These fixtures are missing lamping, lens and their framing was damaged.



The remaining exterior lighting consisted of one (2) two lamp flood light located at the eave peak in the front of the building, one (1) one lamp flood light located at the Southeast corner and one (1) two lamp flood light at the Southwest corner of the building. These fixtures were in fair condition. No exterior light was located at the side exit door as required by Code nor is the rest of the building perimeter illuminated in any fashion.

The existing exterior lighting should be removed and replaced with energy efficient fixtures with addition fixtures added to provide lighting at the side exit door as well as building perimeter. A pole mounted fixture should be installed to illuminate the parking area to avoid light pollution in lieu of flood lights directed towards the parking area.

## Emergency and Egress Lighting Systems:



It appears as emergency lighting within the building is provided by dual head emergency lighting units with battery backup. Only three (3) emergency lighting units were observed. One (1) is located in the main room, one (1) in the corridor which runs North to South and the last one in the addition room at the rear of the building. The emergency lighting units appeared to be in fair condition. However, it

# SALAMONE & ASSOCIATES, P.C.

## Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

would seem as they are insufficient in quantity to provide adequate illumination of the paths of egress.

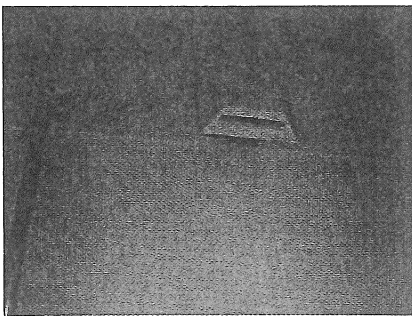


No egress lighting was observed within the building. Path of egress is indicated via signage (red lettering on black background) taped to the walls. This is allowed by Code provided the signage is illuminated by adjacent lighting under normal conditions and emergency lighting when a power failure occurs. Based upon the locations of the egress signage in relation to the emergency lighting units, the emergency lighting units would not be able to illuminate both the paths of egress (to required footcandle levels) as well as the egress signage.

Emergency light units should be removed and replaced as remaining battery life could not be obtained. Additional emergency lighting units with 90 minute should be installed to adequately illuminate the paths of egress as required by current Code.

The existing egress signage should be removed and replaced with AC powered units with 90 minute battery backup. Additional egress lighting units should be installed as required to comply with current Code.

### Fire Alarm Systems:



The building does not contain a fire alarm system. Fire protection is provided by local smoke detectors. Only four (4) smoke detectors were observed. One (1) wall mounted to an office area wall, one (1) ceiling mounted at one end of the main room and two (2) located in the addition room at the rear of the building. The detectors seem to have been in place a number of years.

The fire alarm devices are in poor condition and should be removed. A fire alarm system (inclusive of control panel,

# SALAMONE & ASSOCIATES, P.C.

## Consulting Engineers

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

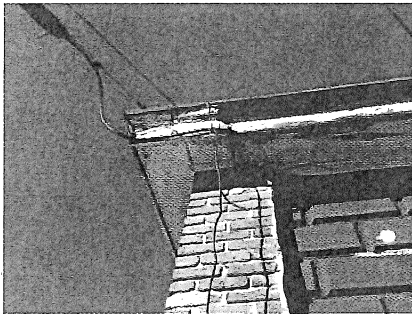
detection devices, manual pull stations and notifications devices) should be installed.

### Carbon Monoxide Systems:

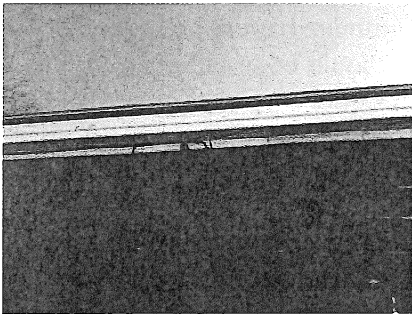
No carbon monoxide detectors were observed within the building.

Carbon monoxide detectors should be installed per current Code.

### Telecommunication Systems:



Telecommunications wiring is routed to the building via overhead cabling utilizing the same utility poles as the electrical service. The cabling is routed through the eave of the building at the Southeast corner. The demarcation equipment is located adjacent to the main electrical panel.



Cable wiring was observed running through the exterior wall on the Southeast corner of the building, up to the eave and along the exterior of the eave to the Northwest corner before coming down the exterior wall and back into the building in the addition at the rear.



A few tele/data outlets were observed in the office areas of the building. The wiring is routed exposed along the interior walls in some instances.

Existing tele/data and cable wiring should be removed back to the demarcation point. New tele/data and cable wiring and associated outlets should be installed and located as required by proposed layout.

**SALAMONE & ASSOCIATES, P.C.**  
Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

Security Systems:

The building does not contain a security system.

ADA Systems:

The building does not contain any ADA handicapped automatic door operators or restroom call-for-aid systems.

Automatic door operators and call-for-aid systems should be installed as part of any modifications to make the building ADA accessible.

**SALAMONE & ASSOCIATES, P.C.**  
**Consulting Engineers**

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

**PLUMBING SYSTEM DESIGN CONCEPT:**

**Proposed Plumbing System:**

The majority of the components that are apart of the plumbing system appear to be in fair condition. Our office recommends the following upgrades:

Replace the kitchen sink, faucet and associated piping.  
(Proposed fixtures shall be low flow to conserve water use)

Replace the bathroom water closets, lavatories, faucets and associated piping.  
(Proposed fixtures shall be in ADA compliance and low flow to conserve water use)

Replace the electric water heater and associated piping.

Remove abandoned water heater and associated accessories.

Underground sanitary lines should be inspected. (Due to amount of debris found in fixtures and open pipes) This shall be done with a sewer inspection camera and videotaped.

Insulate all domestic piping.



**SALAMONE & ASSOCIATES, P.C.**  
**Consulting Engineers**

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

**MECHANICAL SYSTEM DESIGN CONCEPT:**

**Proposed Mechanical System:**

The majority of the components that are a part of the mechanical system appear to be in fair condition. Given the useful service life of this equipment and current condition, cost of service and replacement parts along with labor to maintain units could become cost prohibitive. Energy savings will be present with an introduction of proposed components due to the modern day concern for savings and operations.

Our office recommends the following for the Mechanical System:

Replace condensing unit, refrigerant line sets, air handling unit and associated accessories.  
(Proposed air system will introduce outside air will be sized per applicable codes and standards)

Clean modify supply/return ductwork and associated grilles.

Replace boiler, burner, circulator pumps, breeching, piping and associated accessories.  
(Proposed boiler shall be high efficiency oil-fired and/or propane)

Provide combustion air louvers with burner interlock or direct connection combustion air if required.

Replace all baseboard radiation and associated accessories.

Replace all thermostats.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## ELECTRICAL SYSTEM DESIGN CONCEPT:

### Proposed Electrical System:

The existing exterior lighting should be removed and replaced with additional added to illuminate the side door and perimeter. A site lighting pole should also be installed to illuminate the parking area. The interior lighting should also be removed and replaced with more energy efficient fixtures with additional light fixtures added as required for proper illumination levels. Antiquated cloth type covered conductors and non-metallic sheathed cabling should be removed and replaced with MC cabling. Exposed wiring and junction boxes should be made secure. Existing receptacles, switches and plug mold should be removed and replaced with additional receptacles installed to replace the plug mold and to provide receptacles in all areas. GFCI receptacles should be installed in the restrooms, kitchen area (if to remain) and exterior mechanical equipment locations. Occupancy sensors switches should be installed in restrooms, storage and office areas for energy efficiency. Additional emergency lighting devices should be added to comply with current Code. Existing exit signage should be removed and replaced with self-illuminated units with battery backup. Local smoke detection devices should be removed and a Code compliant fire alarm system installed. Carbon monoxide detection should be provided. Automatic door openers and call-for-aid systems should be provided as part of any ADA upgrade to the building. Interior telecommunications wiring and outlets should be removed and replaced. Exterior cable wiring should be removed with proposed cable wiring routed through the interior of the building. Consideration should be given to removal and replacement of the electrical panels with the exception of the main electrical panel.

Our office recommends the following proposed Electrical System:

Provide additional emergency lighting to comply with current code.

Replacement of egress signage with self-illuminated egress lighting with battery backup to comply with current code.

Removal of smoke detectors and installation of Code compliant fire alarm system.

Installation of carbon monoxide detectors.

Replacement of the existing exterior light fixtures with energy efficient fixtures. Installatio of site lighting pole.

Replacement of the interior light fixtures with more energy efficient fixtures.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

Replacement of receptacles, switches and plug mold with additional added. Installation of GFCI receptacles.

Installation of occupancy sensors in restrooms, storage and office areas.

Removal of antiquated cloth covered conductors and non-metallic sheathed cabling with metal clad cabling.

Securing of exposed wiring and junction boxes.

Replacement of telecommunications and cabling wiring and outlets.

Replacement of electrical panels with the exception of the main electrical panel.

Installation of automatic door openers and call-for-aid systems as part of any ADA building upgrades.

# SALAMONE & ASSOCIATES, P.C.

Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

## ESTIMATED DESIGN COSTS

\*Does not include hazardous materials

### Proposed Plumbing System:

• Demolition of the existing plumbing fixtures and accessories:	\$2,000.00
• Proposed plumbing fixtures and related piping:	\$10,000.00
• Proposed pipe insulation:	\$800.00
• Proposed water heater:	\$1,200.00
• Add mixing valve for domestic hot water:	\$300.00
• Subtotal:	\$14,300.00
• 10% Overhead:	\$1,430.00
• Subtotal:	\$15,730.00
• 10% Profit:	\$1,573.00
• Total:	\$17,303.00
• Say:	\$18,000.00

**SALAMONE & ASSOCIATES, P.C.**  
Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

Proposed Mechanical System:

• Demolition of the condensing unit:	\$500.00
• Demolition of the air handling unit:	\$500.00
• Demolition of the boiler system:	\$2,500.00
• Demolition of baseboard radiation and thermostats:	\$1,500.00
• Proposed high seer condensing unit:	\$5,500.00
• Proposed air handling unit and associated ductwork:	\$4,000.00
• Proposed duct cleaning:	\$1,000.00
• Proposed oil or propane high efficiency boiler and accessories:	\$10,000.00
• Proposed combustion air louvers and associated controls: (Or direct combustion air)	\$800.00
• Proposed baseboard radiation and thermostats:	\$8,000.00
• Subtotal:	\$34,300.00
• 10% Overhead:	\$3,430.00
• Subtotal:	\$37,730.00
• 10% Profit:	\$3,773.00
• Total:	\$41,503.00
• Say:	\$42,000.00

# SALAMONE & ASSOCIATES, P.C.

## Consulting Engineers

---

116 North Plains Industrial Rd • Wallingford • CT • 06492 • Phone (203) 281-6895 • Fax (203) 287-8728

8 Brookfield Road

### Proposed Electrical System:

• Proposed emergency and egress lighting upgrade:	\$ 5,600.00
• Proposed fire alarm system upgrade:	\$ 8,000.00
• Proposed exterior lighting upgrade:	\$ 6,500.00
• Proposed interior lighting upgrade:	\$ 20,000.00
• Proposed receptacle, switches occupancy sensors upgrade:	\$ 8,000.00
• Proposed electrical wiring replacement:	\$ 6,000.00
• Proposed telecommunications upgrade:	\$ 1,000.00
• Proposed electrical panel upgrade:	\$ 5,600.00
• Miscellaneous electrical connections for HVAC upgrades:	\$ 1,500.00
• Subtotal:	\$ 62,200.00
• 10% Overhead:	\$ 6,220.00
• Subtotal:	\$ 68,420.00
• 10% Profit:	\$ 6,850.00
• Total:	\$ 75,270.00
• Say:	\$ 75,500.00

8 BROOKFIELD ROAD – STURBRIDGE, MASSACHUSETTS  
CONDITIONS ASSESSMENT

## 8 SUMMARY OF PROBABLE COST

The following estimate of probable cost combines estimates developed by various disciplines all of which have included a 10% contingency. Costs have been referenced through RS Means Building Construction Cost Data and direct experience with projects of similar scope. As included in the final cost, public bidding will require the application of prevailing wage rates which will add an additional 25% to the project cost. Design costs have also been included. Testing and abatement of hazardous materials has not been included.

Site development costs	\$ 8,500
Structural repair costs	24,000
Architectural renovation costs	155,000
Mechanical, Electrical and Plumbing costs	135,500
Subtotal	323,000
Prevailing Wage Rates (x 0.25)	80,750
Design Fees	32,000
<b>Project total</b>	<b>\$435,750</b>



[www.cmeengineering.com](http://www.cmeengineering.com)

CME Project No. 2015500