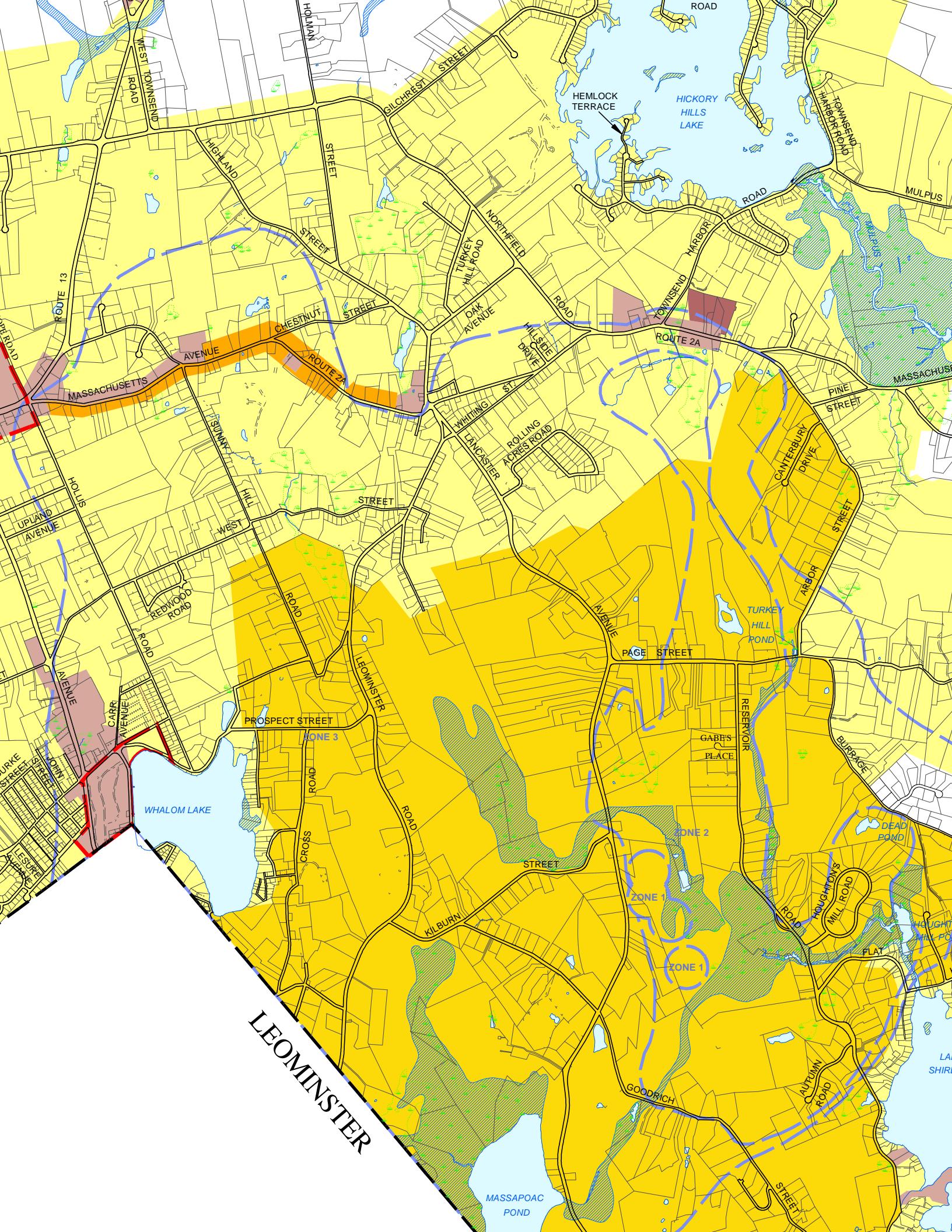
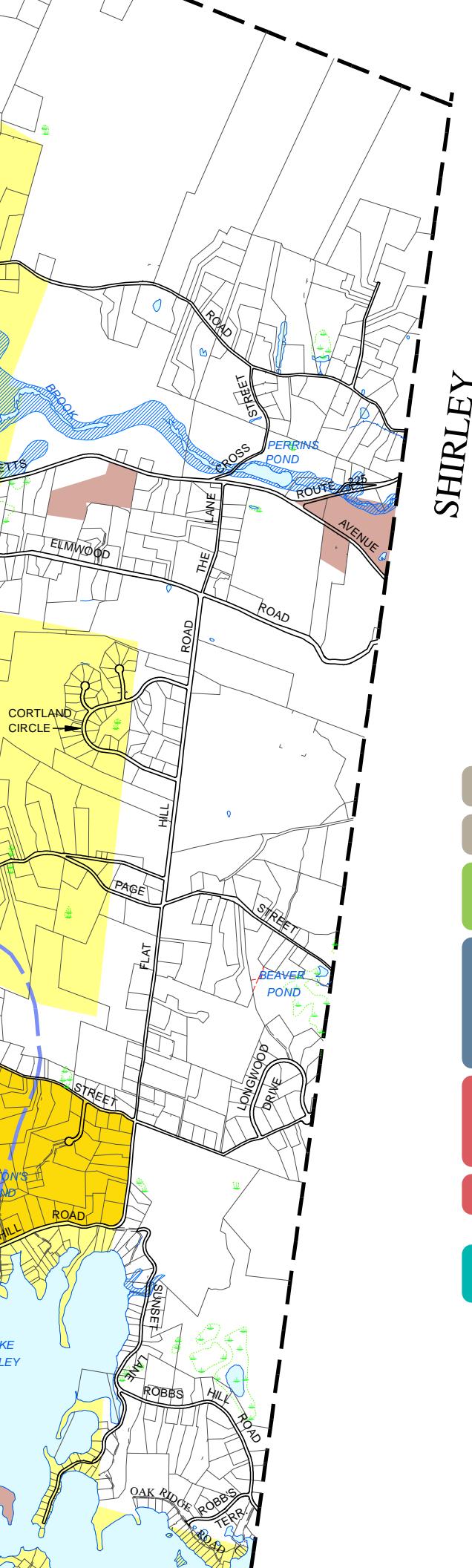


# TOWN OF LUNENBURG BUILDING ASSESSMENT & SPACE NEEDS STUDY

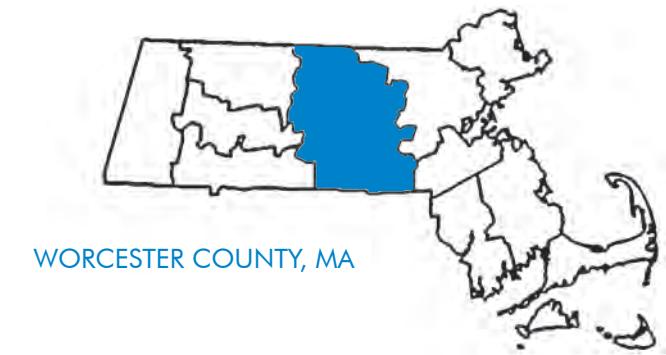
PASSIOS SCHOOL  
TOWN HALL  
OLD PRIMARY SCHOOL  
RITTER MEMORIAL BUILDING

JANUARY 11, 2016





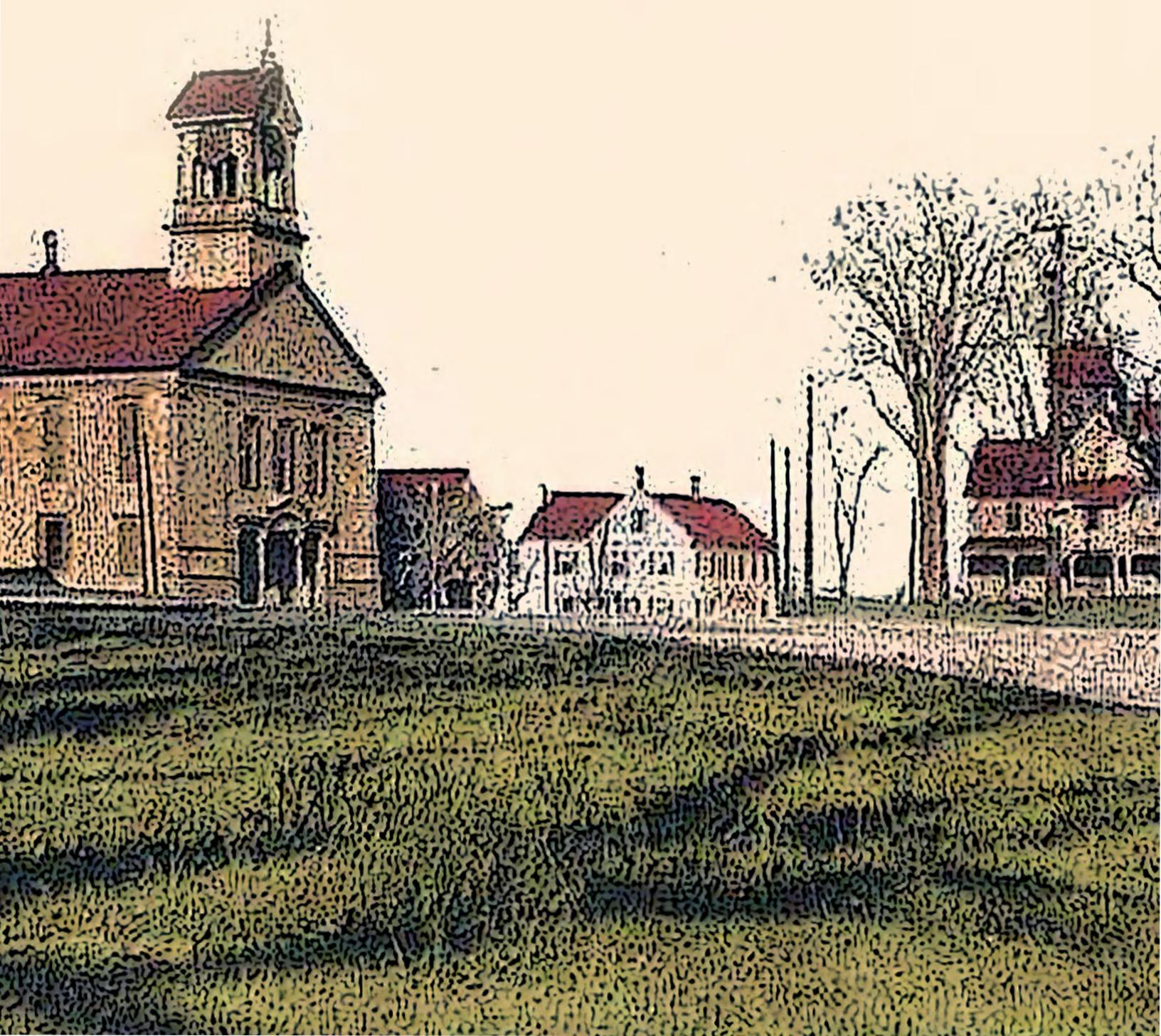
## SHIRLEY

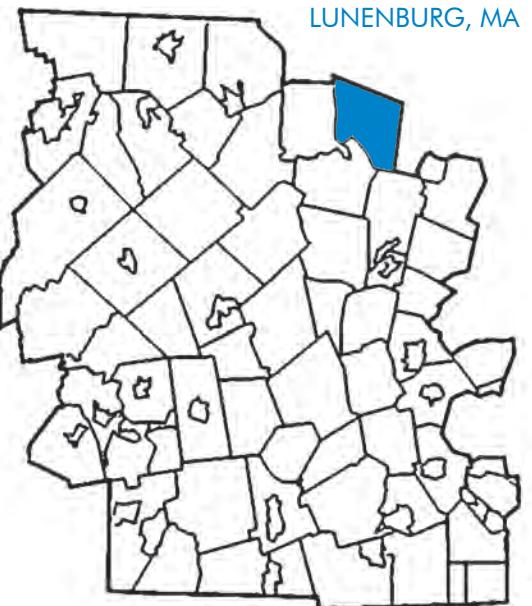


WORCESTER COUNTY, MA

## CONTENTS

pg 1	1.....	ACKNOWLEDGEMENTS
pgs 3-9	2.....	EXECUTIVE SUMMARY
pgs 11-25	3.....	EXISTING CONDITIONS <i>Architectural Narratives; Floor Plans</i>
pgs 27-52	4.....	PRELIMINARY OPTIONS <i>Conceptual Space Template Options Summary Site Plans and Plans Conceptual Cost Models</i>
pgs 53-58	5.....	PREFERRED OPTION <i>Proposed Site Plan; Aerial Image Proposed Demolition and Floor Plan Diagrams</i>
pgs 59-67	6.....	PREFERRED OPTION COST MODEL
pgs 69-92	7.....	APPENDIX <i>Existing conditions narratives for MEP/FP; Structural</i>





## ACKNOWLEDGEMENTS

TOWN OF LUNENBURG

TOWN BUILDING REUSE COMMITTEE

Jamie Toale, Chair  
Ron Albert  
Mark Erickson  
Becky Lantry  
Dave MacDonald  
Mike Mackin  
Damon McQuaid

TOWN MANAGER

Kerry Lafleur

DESIGN TEAM

ARCHITECT

Tappe Architects  
6 Edgerly Place  
Boston, MA

STRUCTURAL

Engineers Design Group  
350 Main Street  
Malden, MA

MEP&FP ENGINEER

Bala / TMP Consulting Engineers  
52 Temple Street  
Boston, MA



## EXECUTIVE SUMMARY



# EXECUTIVE SUMMARY

## INTRODUCTION

The Town of Lunenburg Issued a Request for Proposal in July of 2015 and selected Tappe Architects in August 2015 to complete a feasibility study to examine options for the future of multiple Town owned buildings.

The study examined four buildings, the existing Town Hall, the former Primary School Building, the Ritter Building and the former Passios Elementary School. The town also owns and currently uses the Brooks House, the study however did not consider the future use of that structure.

Tappe Architects worked with the Town Building Re-Use Committee and Town Manager to develop a space program that summarizes current and future space needs. The existing buildings were reviewed by consulting engineers for structural condition as systems conditions. Then a series of preliminary options were developed and analyzed for how well they would meet the Town's needs. Finally, a preferred option was developed and a conceptual cost model was developed for both the preliminary and final options.

## EXISTING BUILDINGS

The existing Town Hall is in active use for both municipal office space and public meeting space. The building was originally constructed in the early 1830's and was relocated to its present location in 1867. The building is a post and beam wood structure with a stone foundation on a very limited lot. It can be anticipated that this building will require exterior envelope and structural stabilization in the future as well as systems and code compliance upgrades.

The Ritter Memorial Building was constructed in 1910 with an addition in 1963 and was used as the Public Library before being converted to municipal offices. The building is a wood frame structure with a masonry exterior on two floors. This

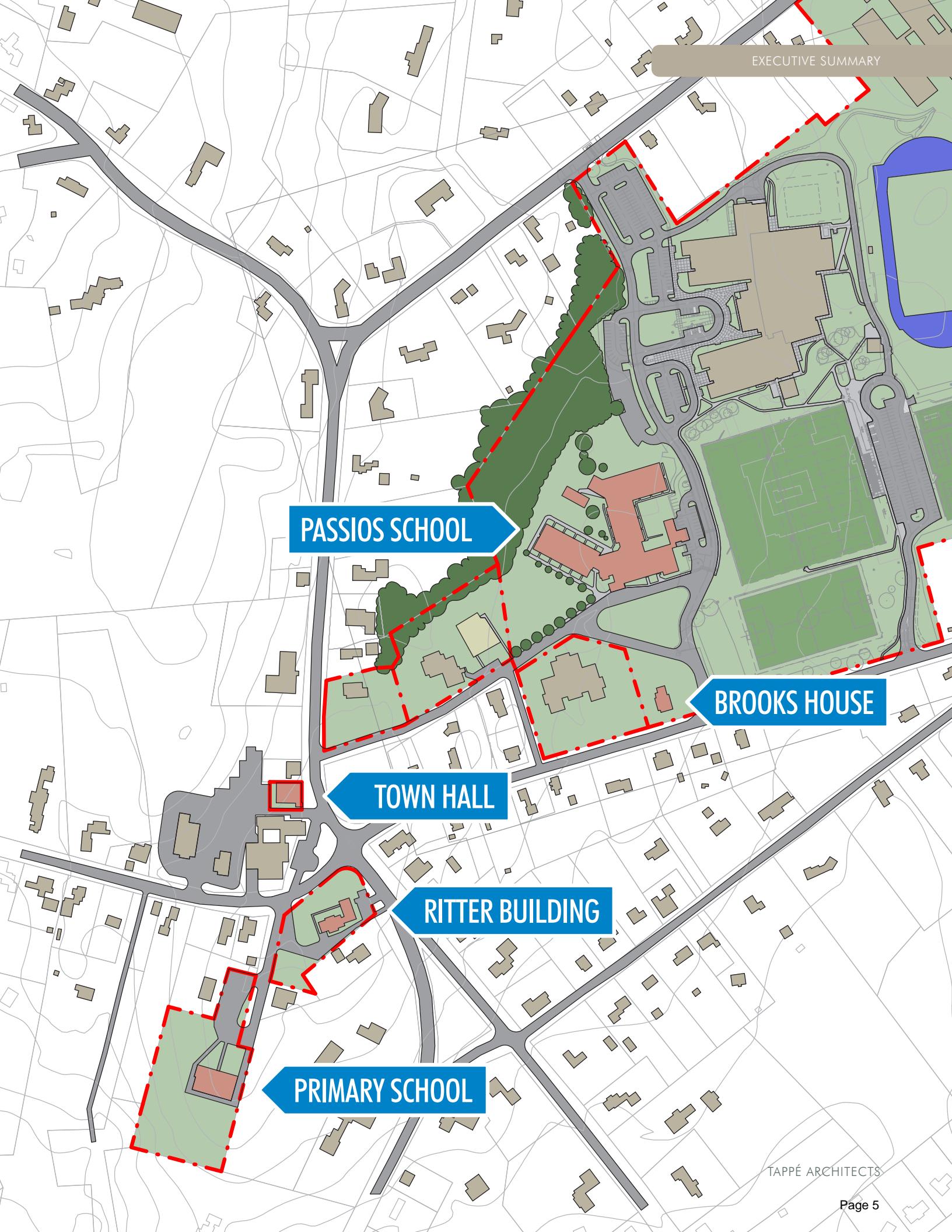
building is not currently accessible and would require interior and exterior modifications to accommodate all visitors. The building is currently in relatively good condition in terms of the envelope as well as finishes and building systems.

The former Primary School is on a larger site and has been unoccupied since 2005. This former school building was constructed in 1928 and is a combination of masonry bearing walls, concrete slabs and steel roof structure. Because the building is not in use it would require significant upgrades to make it occupiable including interior and exterior stabilization, and complete and comprehensive MEPFP systems replacement. The building is a two story structure with multiple floor levels that would require significant modifications to make it fully accessible. The main entrance is also not accessible.

The Passios Elementary School was constructed in 1952. This is the largest and newest of the Town owned buildings under consideration. The building is a single floor and is generally accessible. The structure and building envelope are in good condition and have received various upgrades over time. Building systems are generally in good condition although some upgrades should be anticipated. The building is not currently air conditioned. The Passios is presently used for School District Administrative offices and public cable TV and a section is leased to an educational collaborative.

## SPACE PROGRAM

A space program was developed based on a preliminary space needs assessments prepared by the Town along with additional discussions held between the Town and the Architect to further clarify current and future municipal office needs. The space summary that was developed is preliminary in nature and would need to be more thoroughly developed if the Town proceeds with any municipal building upgrades. The current program anticipates a gross space re-





## EXECUTIVE SUMMARY

quirement of approximately 20,000 SF. For the purposes of the study, an initial assumption of 18,000 sf was used for the preliminary options. This gross square foot number includes support spaces and 900 SF associated with a proposed Public Access Channel studio. It should be noted that the PACC has requested a larger area for their use of approximately 3,000 to 4,000 SF which would increase the overall space program to 23,000 or 24,000 square feet.

### PRELIMINARY OPTIONS

The Town Building Reuse Committee reviewed multiple options during the course of the study. Seven preliminary options were ultimately established for review and consideration.

#### OPTION 1 – PRIMARY SCHOOL RENOVATION & ADDITION

A comprehensive renovation of the existing primary school including reconfiguration of the interior to accommodate new program. This would be combined with construction of an addition adequate for any program that would not fit within the existing building plus an accessible entrance. This option anticipates site work for an expanded and upgraded parking area as well as a new entry.

The Town would incur significant costs associated with this project. The site is farther away from Town center in terms of visibility and the building does not immediately lend itself to the layout of municipal offices without dramatic revisions.

#### OPTION 1A – PRIMARY SCHOOL SITE, NEW CONSTRUCTION

This option requires the complete demolition and removal of the existing Primary School. At the same location as the existing building a new single story town office build-

ing would be constructed to accommodate the anticipated program needs of the Town. Site work for updated parking, roadways and walks would be part of the project.

This proposal would effectively solve the space needs for a town municipal office building with a purpose built new facility on one level. However, the demolition of the old Primary School combined with new construction would be an expensive option for the community.

#### OPTION 1B – PRIMARY SCHOOL & TOWN HALL RENOVATIONS

This would require the comprehensive renovation of two existing buildings in order to accommodate the anticipated program. This option assumes a complete gut rehabilitation of both buildings including structure, envelope and systems as well as site work.

Having to use two buildings to solve the space needs of the Town was not seen as an overall benefit given that this is the current condition and it is not viewed favorably.

#### OPTION 2 – RITTER BUILDING RENOVATION & ADDITION; TOWN HALL RENOVATIONS

Option 2 also anticipates accommodating the municipal space needs in two locations. The Ritter Building would be renovated and an addition would be constructed to provide an accessible entrance and more space. Site work at the Ritter Building would include new parking and building entrance scope. The Town Hall would receive a comprehensive interior and exterior renovation and restoration.

The Ritter Building, while an attractive structure that is in good condition, sits on a limited site which makes an expansion difficult to accommodate. If an addition is limited to two stories, all the Town's space needs are not accommodated which is why the Town Hall is also included within this option. Option 2 therefore is also a two building solution which and not a desired outcome.





## EXECUTIVE SUMMARY

### OPTION 3 – TOWN HALL RENOVATION

This option would renovate the Town Hall only. The Town Hall would receive a comprehensive upgrade as well as exterior and structural stabilization. However, at approximately 5,700 SF, it falls well short of offering enough space to accommodate future municipal needs.

While a comprehensive update to the Town Hall would be a benefit to the community, the site does not support any expansion and the building is too small to fit the desired program. Therefore the Town Hall alone is not a viable option for the future space needs of the Town.

### OPTION 4 – PASSIOS SCHOOL RENOVATION & PARTIAL DEMOLITION

The Passios School has more space than is required for the anticipated town office space needs. Therefore Option 4 would remove a section of the existing building to limit the size of the building in use by the Town. This plan includes construction of a new parking lot and the possibility of a new field being installed at the location of the demolished building wing.

This option is the preferred option due to the current condition of the school, the ease with which the proposed

program can be inserted into the existing site plan, the size which accommodates the entire proposed program and the fact that the building offers the community the benefit of a gym and cafeteria for community use.

### OPTION 4A – PASSIOS SCHOOL RENOVATION

A final option that was considered would be to retain the entire school building and rent or lease the portion of the school that is not in use by the Town. This would be a similar arrangement to the situation that currently exists where portions of the building are used by an educational collaborative.

This option is only a viable option if the Town completes an analysis that suggests that there is an ongoing market for tenants with an interest in this kind of space and that the advantages of rental income outweigh the administrative and upkeep costs of operating a larger building. This option would also bring more traffic and cars to the site and increase pressure on parking and traffic. There is no way to predict the function that would use the space making future planning around these issues harder to pin down. If parking was added without removal of any sections of the building, overall impervious area on the site would increase which may impact on site drainage design.



## EXECUTIVE SUMMARY

### PREFERRED OPTION – PASSIOS SCHOOL & MAINTAIN TOWN HALL

The preferred option selected by the Re-Use Committee is Option 4 which removes a portion of the Passios School and converts the rest of the building into town offices and community space. This option was seen as having many advantages. The Town can continue to benefit from the use of the existing gym and cafeteria for community use. The public access cable studio can be fully accommodated within the anticipated square footage and all programmatic space needs will be met. In addition, the plan offers some potential for future growth as the square footage exceeds the current requirements. The plan could be organized to have a community entrance that is separate from the Town Offices entrance, allowing a portion of the building to be zoned off during after-hours use. Another advantage is the opportunity offered to develop another youth size playing field for Town run athletics programs. With the addition of a parking area for municipal use, an analysis of any future impact on site drainage would be required at a more detailed design phase. However, the removal of a wing of the building may offset the addition of impervious surface associated with the parking area.

The use of a municipal building is relatively low traffic which was viewed as an appropriate and complimentary use of the Middle/High School site given the traffic generated by the school. It is anticipated that any heavy traffic use by a municipal building use would be evenings or weekends. The adjacency of the school to the proposed municipal building

also offers overflow parking opportunities for each facility during heavy parking times associated with functions such as school games or municipal hearings or elections.

Of all the buildings examined, the Passios appears to be in the best condition with the greatest potential for future longevity and with the least requirements for ongoing maintenance. The building is also on a single floor which makes it effective and accessible as a public building where patrons are able to access all town departments easily. The single floor adjacency of all spaces also enhances efficiency and collaboration between the Town's various departments.

The Re-Use Committee also developed as part of the preferred option the concept that the Town would continue to maintain and use the existing Town Hall building. The exact use of that building would be developed over time with greater community input but the goal would be to preserve for Town use an architectural and community landmark that helps to define the character of the Town. Options under discussion include a community arts space and the potential use by local organizations.

As part of the municipal building process, the Re-Use Committee will continue to examine the future of the remaining two buildings under consideration, the Ritter and the Primary School. Preliminary discussions call for the possible sale of these properties if a willing buyer can be identified. The ultimate goal would be for the Town to retain two buildings, the Passios and the Town Hall, instead of four buildings, for municipal and community use.



## EXISTING CONDITIONS

## EXISTING CONDITIONS - PRIMARY SCHOOL & RITTER BUILDING

### PRIMARY SCHOOL

The Primary School Building was constructed in 1928. The building is 11,700 SF and sits on a 2.4 +/- acre parcel of land. The Town states that there is no known asbestos in the building. However, black mold is evident in various locations which would require abatement if any renovations were undertaken. The site is adjacent to town utilities although there is a pre-existing septic system on the site.

The building has not been in active use for ten years and this condition has led to a general deterioration of the building. The structure is a combination of masonry exterior and bearing walls, concrete slabs and steel roof trusses. The exterior envelope is in need of repairs including lintel replacement, window and roof replacement and masonry restoration in various locations. Removal of interior walls would need to be carefully analyzed relative to structural integrity of the building.

Water has been entering the building resulting in interior slabs that have cracked and heaved. Interior finishes are

generally damaged and in need of repair and all building systems require replacement. The building has multiple interior floor elevations and grade is at a mid-level, making the building generally non-accessible.

### RITTER BUILDING

The Ritter Building was constructed in 1910 with an addition in 1963 and served as the Town Library for many years. The overall area is approximately 6,000 SF on two levels. The building is in generally good condition with limited upgrades required. There is currently no sprinkler system or air conditioning.

The building structure is wood with exterior masonry bearing walls. Interior finishes are generally in good condition and the building has been generally well maintained. The current condition is not fully accessible and any anticipated renovation and re-use would need to make modifications to accommodate a main building entrance and bathrooms that is accessible, as well as accommodating the public on both floors of the building.

## PRIMARY SCHOOL

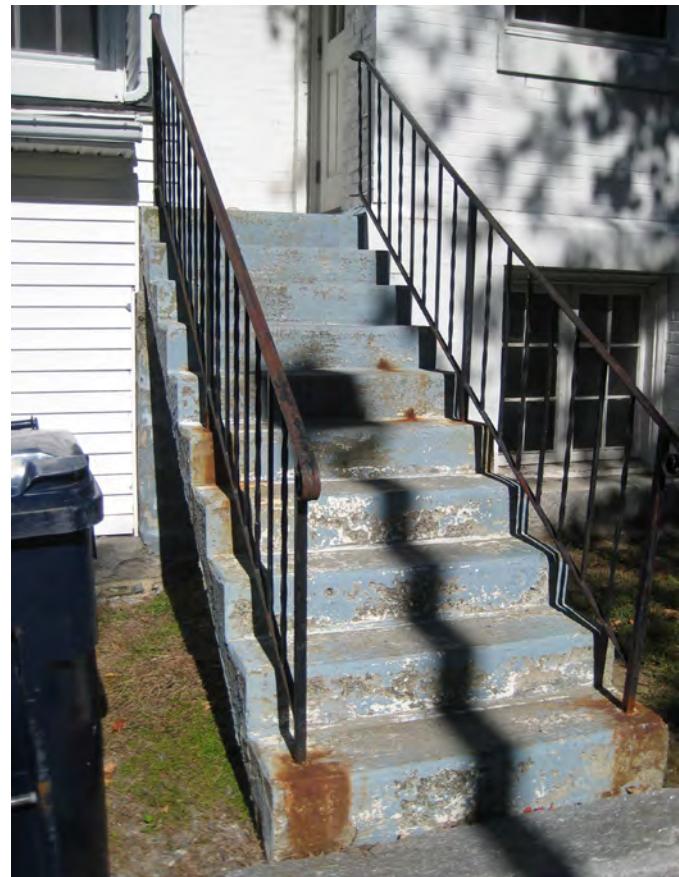
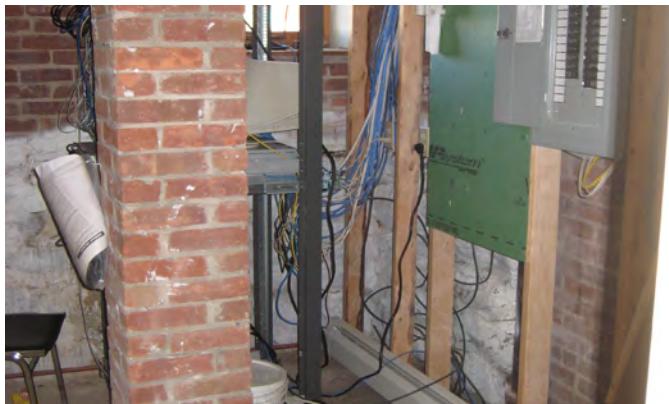
## EXISTING CONDITIONS



EXISTING CONDITIONS



RITTER BUILDING



## EXISTING CONDITIONS - TOWN HALL & PASSIOS SCHOOL

### LUNENBURG TOWN HALL

Town Hall was constructed in the 1830's and relocated to its present location in 1867. The building is on a very limited parcel of land and is approximately 6,500 SF on two levels with an unfinished basement.

The building is a wooden post and beam structure and wood framing and siding. There is evidence of some rot in structural members and excess deflection of some floor joists. There has been some water infiltration into the building from the roof and possibly through the foundation walls which are stone. There is a relatively detailed inspection report from 2013 that can be used as a guide to the condition of the building. It should be anticipated that at some point, a structural and envelope upgrade should be undertaken to stabilize the building and upgrade the building envelope. Consideration might also be given to upgrades to the electrical systems.

The building is not fully accessible although a lift was installed between floors. The main entrance has steps to enter the building.

### PASSIOS ELEMENTARY SCHOOL

The Passios was constructed in 1952 with an addition constructed in 1976. The building is approximately 55,000 SF on one level. The building is in good condition and the Town has made periodic investments in upgrades and enhancements.

The building is a steel frame structure with a brick exterior and wood plank roof framing. Systems in the building are in generally good condition although the fire protection is in need of updating and there is no air conditioning presently. It is recommended that lighting within the building be upgraded and that bathrooms and toilet fixtures be replaced to meet code. It does not appear that classroom entrances have adequate clearances to meet accessibility code and consideration might be given to improving the layout of these locations.

Town improvements over time have included selective re-roofing, updated kitchen equipment and gym floor, accessible main entrance, replacement of some sprinkler heads. The building has asbestos containing materials within it including VAT flooring, plaster and caulking, pipe insulation as well as roofing materials that would require abatement if work was done to modify and upgrade the building.

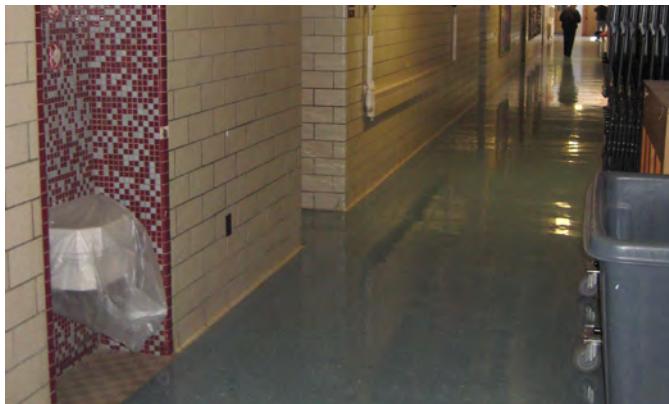
EXISTING CONDITIONS

TOWN HALL

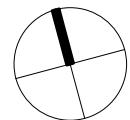
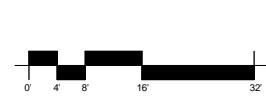
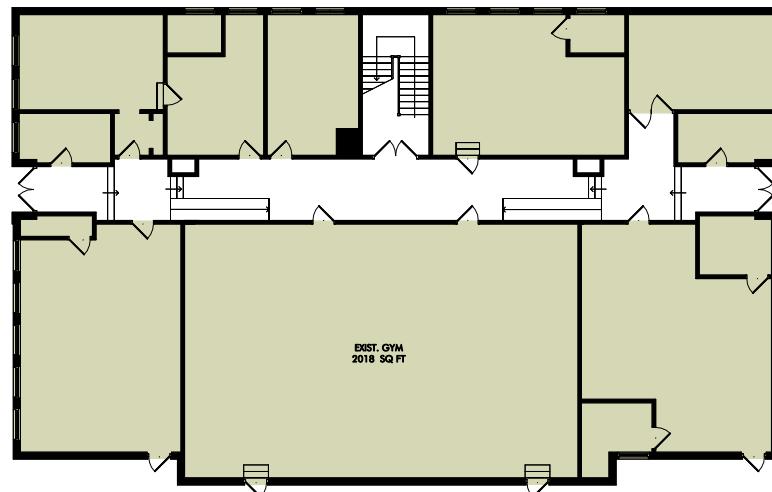
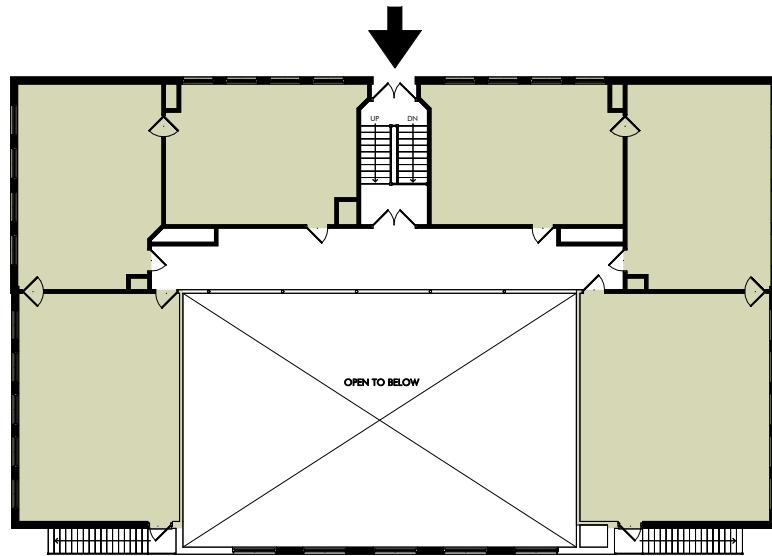


## PASSIOS SCHOOL

## EXISTING CONDITIONS



EXISTING CONDITIONS

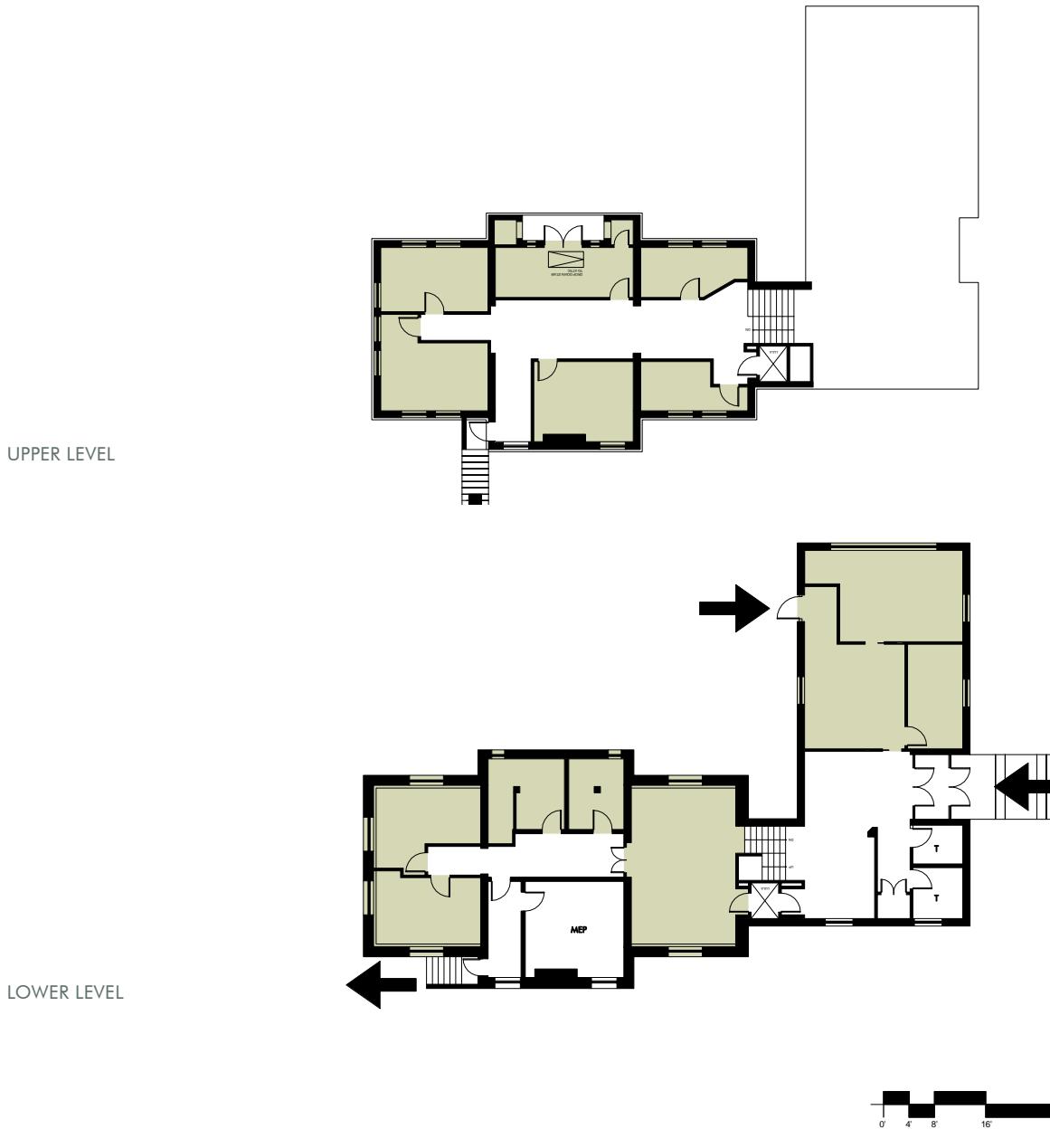


## EXISTING CONDITIONS - OLD PRIMARY SCHOOL

CONCEPTUAL PLANNING OPTIONS



EXISTING CONDITIONS

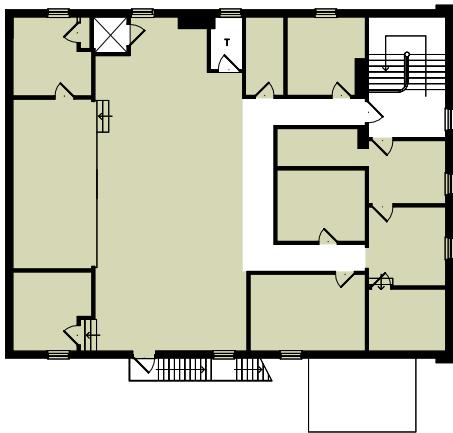


## EXISTING CONDITIONS - RITTER BUILDING

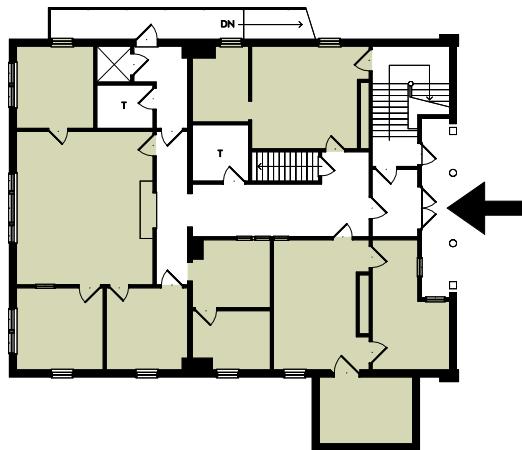
CONCEPTUAL PLANNING OPTIONS



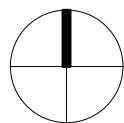
EXISTING CONDITIONS



UPPER LEVEL



LOWER LEVEL

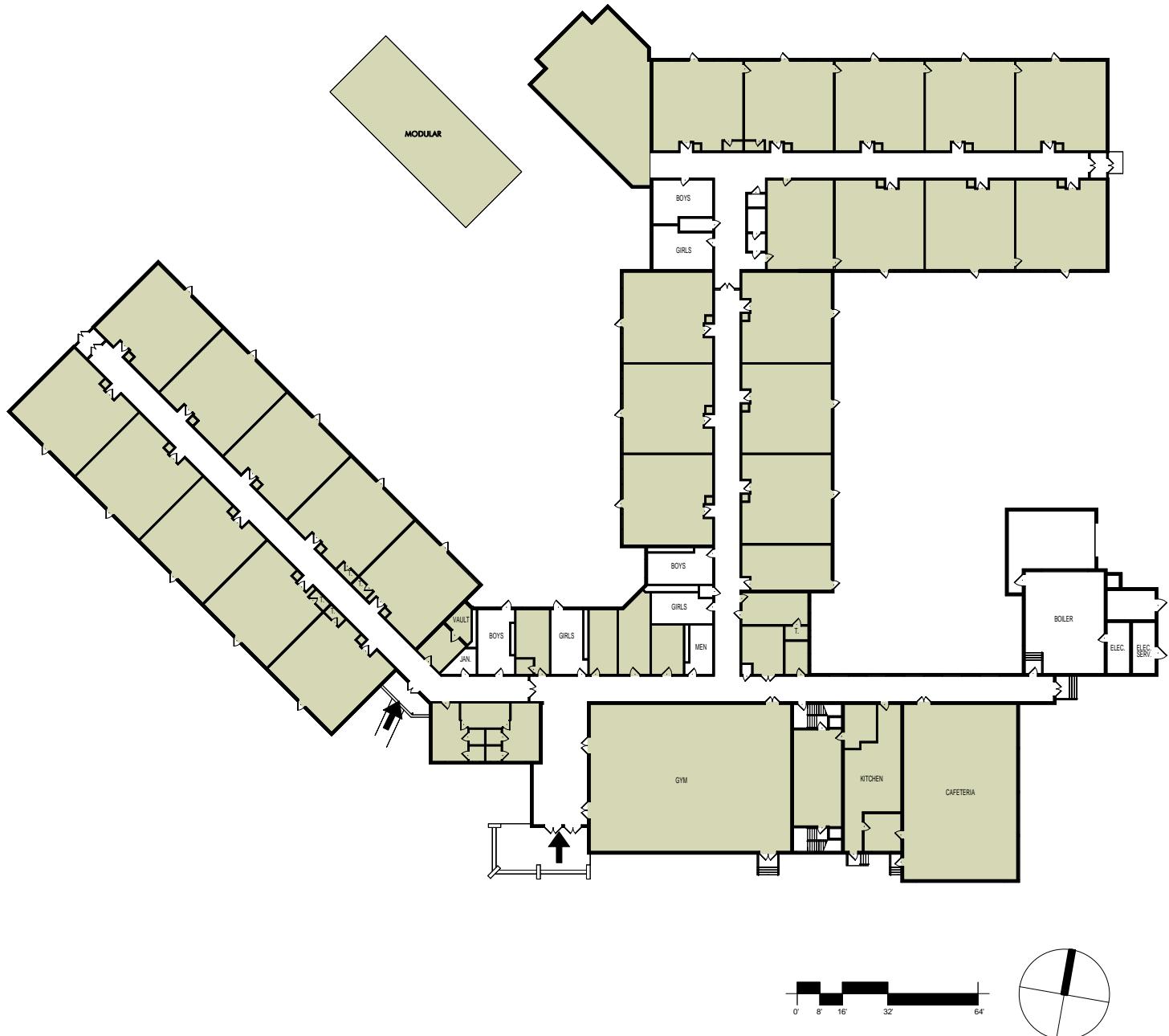


## EXISTING CONDITIONS - LUNENBURG TOWN HALL

CONCEPTUAL PLANNING OPTIONS



EXISTING CONDITIONS



## EXISTING CONDITIONS - PASSIOS SCHOOL

CONCEPTUAL PLANNING OPTIONS

EXISTING CONDITIONS





# PRELIMINARY OPTIONS CONCEPTUAL PROGRAM SUMMARY, PLANS & NOTES

TAPPÉ ARCHITECTS BOSTON • TAPPE.COM			Occupants	Adjacency	SF	Notes
<b>TREASURER / COLLECTOR</b> (public access - near Accounting)						
	Town Collector / Treasurer	1			175	private office w/ desk & table
	Assistant Treasurer	1			100	open office
	Accounting Clerk	1			100	open office
	Record Storage	-			175	row of filing cabinets, 10 lateral files
	Transaction counter	-			35	
		<b>SUBTOTAL</b>	3		<b>585</b>	
<b>ASSESSOR'S OFFICE</b> (public access - near Accounting)						
	Administrative Assistant	2			180	open office
	Contracted Assessor	1			175	private office w/ desk & table
	Conference Room	8			240	
	Storage	-				file cabinets
	Transaction counter	-			35	
		<b>SUBTOTAL</b>	11		<b>630</b>	
<b>TOWN MANAGER</b> (public access)						
	Town Manager	1			175	private office w/ desk & table
	Executive Assistant	1			100	open office
	Admin. Assistant	1			100	
	Conference Room	8			240	
	Record Storage	-			100	separate room - 10 file cabinets - lateral files
	Transaction counter	-			35	
		<b>SUBTOTAL</b>	11		<b>750</b>	
<b>BUILDING DEPARTMENT</b> (public access)						
	Building Commission / Zoning Officer	1			175	private office w/ desk & table
	Executive Assistant / ZBA Administrator	1			100	open office
	Assistant Building Inspector	1			100	desk - part time
	Conference Room	6			180	shared w/ health, conservation, planning
	Record Storage	-			195	flat files / files
	Electrical Inspectors Office	1			100	desk - part time
	Plumb / Gas Inspectors Office	1			100	desk - part time
	Weights & Measures	1			100	desk
	Transaction Counter	-			35	
		<b>SUBTOTAL</b>	12		<b>1085</b>	

TAPPÉ ARCHITECTS BOSTON • TAPPE.COM			Occupants	Adjacency	SF	Notes
<b>BOARD OF HEALTH (public access - with building)</b>						
	Administrative Assistant	1			100	open office
	Record Storage	-				file cabinets
	Health Agent	1			175	private office
	Transaction counter	-			35	
		<b>SUBTOTAL</b>	2		<b>310</b>	
<b>CONSERVATION (public access - with building)</b>						
	Administrative Assistant	1			100	open office
	Record Storage	-				
	Conservation Agent	1			100	
	Historical Commission Office	1			175	
	Transaction Counter	-			35	
		<b>SUBTOTAL</b>	3		<b>410</b>	
<b>SCHOOL DISTRICT OFFICES</b>						
	Superintendent Office	1			175	private office
	Assistant Administrator	1			100	
	HR Business Manager	1			100	
	Admin. Assistant	1			100	
	Conference Room				180	
		<b>SUBTOTAL</b>	4		<b>655</b>	
<b>ACCOUNTING (minimal public access - adjacent to tax collector / assessor)</b>						
	Town Accountant	1	Tax Collector & Assessor		175	private office
	Accounts Payable Clerk	1			100	open office
	Payroll Clerk / Benefits	1			175	private office w/ table
	Records Storage	-				lateral files
		<b>SUBTOTAL</b>	3		<b>450</b>	
<b>INFORMATION TECHNOLOGY (no public access)</b>						
	Cable Access Control Room	1	hearing ram		145	desk / storage
	Cable Access Operations Room	1			175	private office
	PACC Studio				900	3,200 - 4000 sf Requested
	I.T. Techs	2			180	desk
		<b>SUBTOTAL</b>	4		<b>1400</b>	



TAPPÉ ARCHITECTS BOSTON • TAPPE.COM		Occupants	Adjacency	SF	Notes
Staff Toilet - Female				60	
Staff Toilet - Male				60	
Toilets - Female				150	
Toilets - Male				150	
Network Server Room				80	
Small Conference Room	15			450	
Medium Conference Room	30			900	
Hearing Room	100			2000	
Copy				90	one per floor / area
Custodian Closet				60	
Mechanical Closet					
Plumbing / Fire Protection Room					
Main Electrical Room					
Kitchen / Breakroom				205	
Elevator					
Elevator Machine Room					
Entry Vestibule				100	
Central Storage				600	
	<b>SUBTOTAL</b>	<b>145</b>		<b>4905</b>	
<b>TOTAL</b>		<b>212</b>		<b>13130</b>	
<b>GROSS AREA ADJUSTMENT - 1.5</b>				<b>19695</b>	

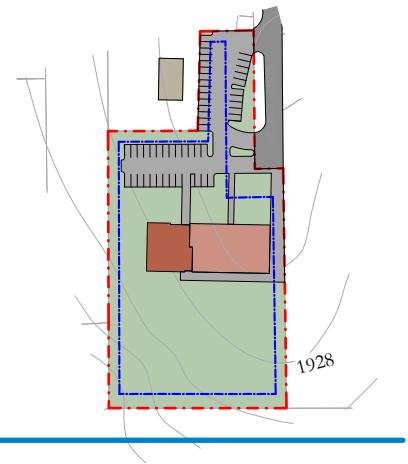
# SUMMARY TABLE OF OPTIONS STUDIED

## OPTION 1

### PRIMARY SCHOOL RENOVATION/ADDITION

Comprehensive renovation of Primary School with addition to accommodate new entrance and required program

18,000 Overall GSF  
12,300 SF Renovation  
7,700 SF New Construction

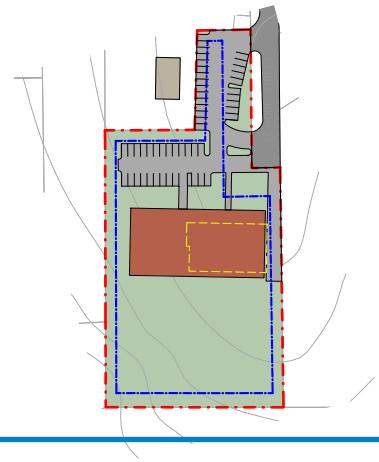


## OPTION 1A

### PRIMARY SCHOOL SITE NEW CONSTRUCTION

Demolish existing Primary School  
Construct new Town Offices building

18,000 Overall GSF New Construction  
One floor

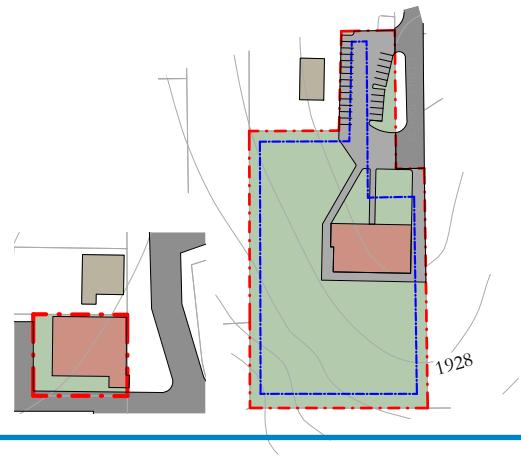


## OPTION 1B

### PRIMARY SCHOOL & TOWN HALL RENOVATION

Renovate existing Primary School  
Renovate existing Town Hall

12,300 SF Renovations - Primary School  
6,500 SF Renovations - Town Hall  
18,800 SF Renovations - Total in two facilities to accommodate required program

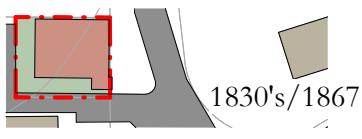


## OPTION 2

### RITTER BUILDING & TOWN HALL RENOVATION & ADDITION

Comprehensive renovation of Town Hall and renovation of Ritter Building with Addition

12,700 SF - Ritter Building  
(5,700 SF renovation / 7,000 SF new construction)  
6,500 SF - Renovations to Town Hall  
19,200 SF - Total in two facilities to accommodate program

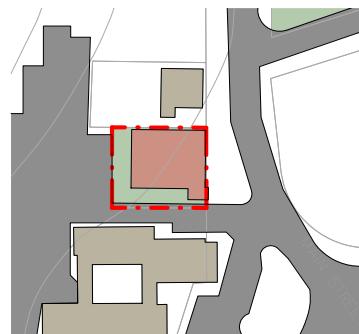


## OPTION 3

### TOWN HALL RENOVATIONS

Comprehensive renovation of existing Lunenburg Town Hall building.

5,700 approx SF - Renovation of building does not accommodate program



1830's/1867

## OPTION 4

### PASSIOS SCHOOL RENOVATION & SELECT DEMOLITION

Select renovations to the existing Passios School building and select demolition

35,000 SF - Area remaining following demolition  
22,500 SF - Area of demolition



1952

## OPTION 4A

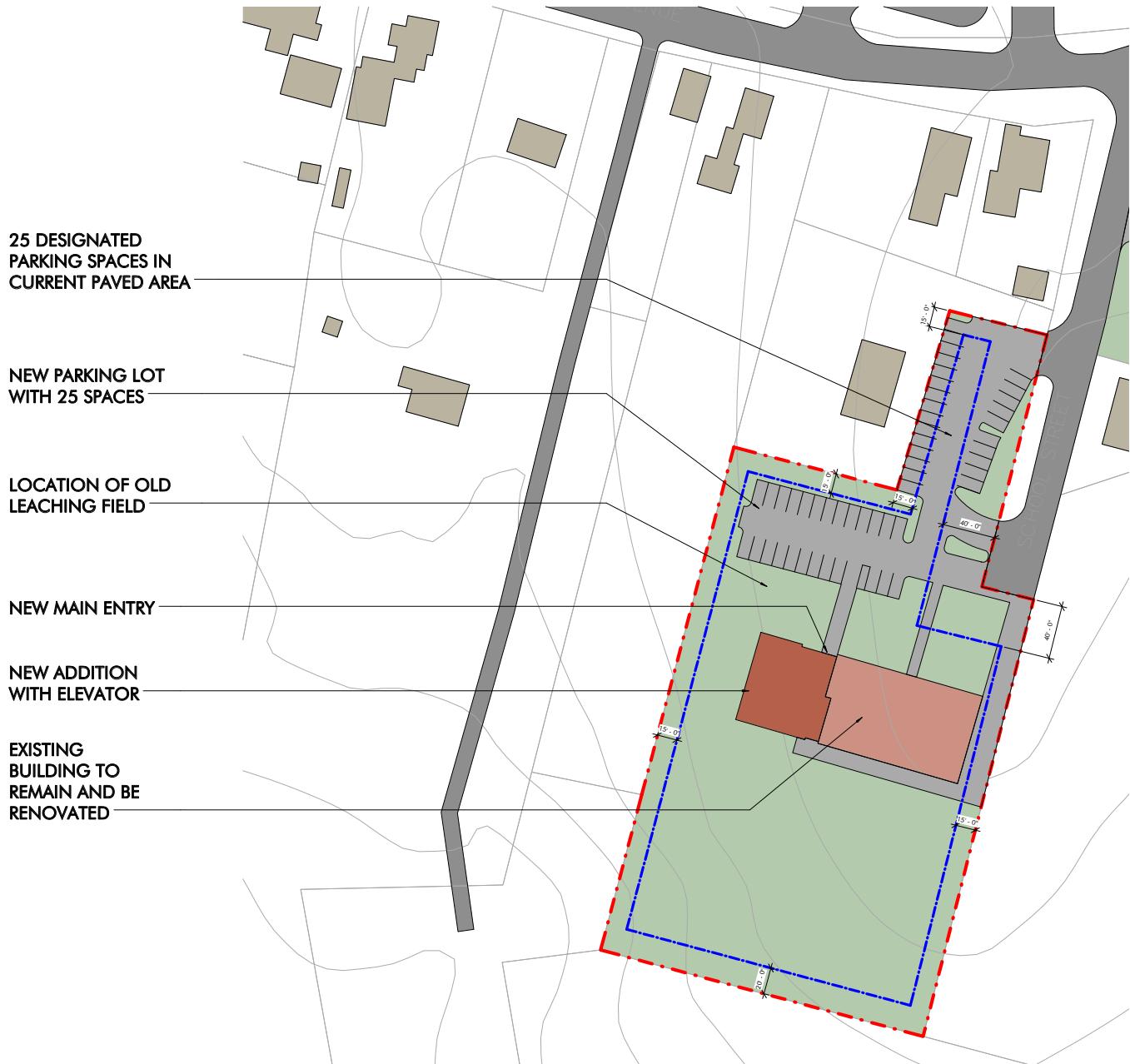
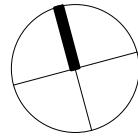
### PASSIOS SCHOOL RENOVATIONS & NO DEMOLITION

Maintain entire existing Passios School building  
Rent or lease portion of building for non-municipal use.

35,000 SF - Approx. overall existing area



1952



## OPTION 1 - PRIMARY SCHOOL - PROPOSED SITE PLAN

### ADVANTAGES

- AVAILABLE SITE FOR EXPANSION

### DISADVANTAGES

- ADDITION REQUIRED TO ACCOMMODATE PROGRAM
- REQUIRES SIGNIFICANT UPGRADES PRIOR TO REUSE SIGNIFICANT COSTS POSSIBLE
- MULTIPLE STORIES MAKE ADJACENCIES MORE DIFFICULT TO ACCOMMODATE
- BUILDING INTERIOR HAS MULTIPLE LEVEL CHANGES
- FARTHER FROM TOWN CENTER
- GETTING PROGRAM TO FIT REQUIRES INTERIOR RECONFIGURATION OF PARTITIONS ETC, SOME OF WHICH ARE BEARING WALLS

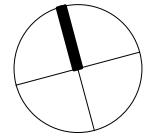


## OPTION 1 - PRIMARY SCHOOL - PROPOSED PROGRAM DIAGRAM

### GENERAL NOTES

- EMPTY FOR 15 YEARS
- MAJOR WATER ISSUES / FLOODING
- MINOR ROOF LEAKS
- WARPED FLOORS
- MULTIPLE LEVEL CHANGES - NOT ADA ACCESSIBLE
- COMPLETE INTERIOR GUT RENOVATION REQUIRED

- EXTERIOR ENVELOPE REPAIRS REQUIRED  
WINDOWS REQUIRE REPLACEMENT
- ADDITION REQUIRED TO FIT ALL PROGRAM SPACE
- MOLD ON INTERIOR
- MEP/FP SYSTEMS IN NEED OF REPLACEMENT



## OPTION 2 - RITTER BUILDING - PROPOSED SITE PLAN

### ADVANTAGES

- CENTRAL LOCATION
- HIGHLY VISIBLE BUILDING
- EXISTING BUILDING IS IN GOOD CONDITION

NOTE: HEARING ROOMS, MEETING ROOMS, AND IT / PACC STUDIO COULD BE LOCATED IN THE EXISTING TOWN HALL

### DISADVANTAGES

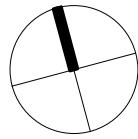
- LIMITED SITE FOR EXPANSION
- EXISTING BUILDING LAYOUT DOES NOT SUPPORT PROGRAM EFFECTIVELY
- MULTIPLE STORIES / LEVELS MAKE ADJACENCIES DIFFICULT
- LIMITED SITE FOR PARKING
- DOES NOT ACCOMMODATE LARGE PROGRAM AREAS: HEARING ROOM, MEDIUM CONFERENCE ROOM, IT / PACC STUDIO
- INADEQUATE SITE AREA TO ACCOMMODATE A TWO STORY ADDITION



## OPTION 2 - RITTER BUILDING - PROPOSED PROGRAM DIAGRAM

### NOTES

EXISTING PLAN AND SITE DO NOT ALLOW FOR EFFICIENT  
LAYOUT OF PROGRAM OR ADDITION



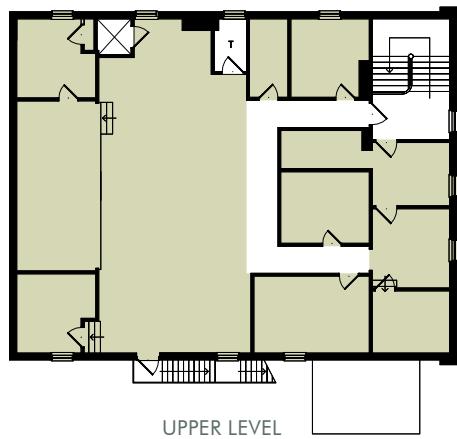
## OPTION 3 - TOWN HALL - SELECT INTERIOR RENOVATIONS

### ADVANTAGES

- CENTRAL LOCATION
- IMPORTANT ARCHITECTURAL LANDMARK FOR TOWN

### DISADVANTAGES

- BUILDING NEEDS REMEDIAL WORK
- NO SITE AREA FOR EXPANSION
- SMALL FLOOR AREA IS DIFFICULT TO FIT PROGRAM
- DOES NOT ACCOMMODATE PROGRAM NEEDS



## TOWN HALL - SELECT INTERIOR RENOVATIONS

### SUMMARY

Comprehensive renovation of existing Lunenburg Town Hall building does not accommodate the required programmatic needs of the Town.



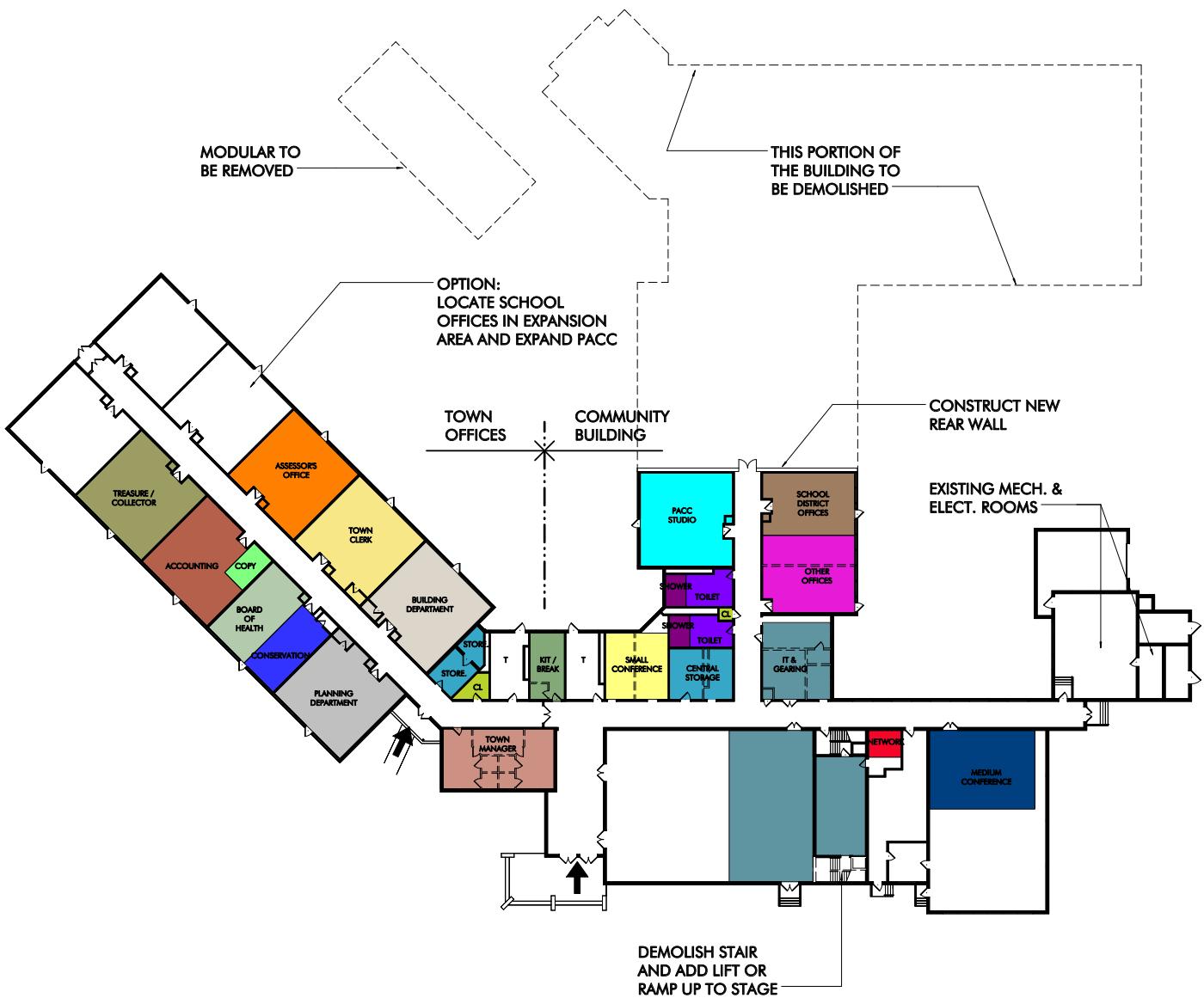
## OPTION 4 - PASSIOS SCHOOL - PROPOSED SITE PLAN

### ADVANTAGES

- BUILDING IN GOOD CONDITION AND ACTIVE USE
- CLOSE TO TOWN CENTER
- AVAILABLE OVERFLOW PARKING FOR LARGER EVENTS
- NEW PARKING DOUBLES AS LIBRARY OVERFLOW PARKING
- ADEQUATE SQ FT FOR FULL PROGRAM AND EXPANSION
- TOWN RETAINS COMMUNITY USE OF GYM AND CAFETERIA WITH COMMUNITY ENTRANCE POSSIBLE
- PROGRAM GENERALLY LAYS OUT WELL IN EXIST. CLASSROOMS
- LIMITED TRAFFIC VOLUME TO BUILDING WORKS WELL WITH ADJACENT SCHOOL SITE

### DISADVANTAGES

- COST ASSOCIATED WITH PARTIAL DEMOLITION / ABATEMENT AND INTERIOR UPGRADES



## OPTION 4 - PASSIOS SCHOOL - PROPOSED PROGRAM DIAGRAM

### GENERAL NOTES

- SPRINKLERS CURRENTLY IN CORRIDORS ONLY
- CURRENT ENTRIES INTO CLASSROOMS ARE NOT ADA COMPLIANT - NEED TO BE MODIFIED TO BE WIDER
- STAGE IS NOT ADA ACCESSIBLE - NEED TO ADD A LIFT OR RAMP
- GYM CAN REMAIN AND FUNCTION AS THE HEARING ROOM
- CAFETERIA CAN REMAIN AND FUNCTION AS ANOTHER MEETING SPACE
- SPACE AVAILABLE FOR THE FUTURE GROWTH / EXPANSION
- AMPLE HEATING AND ELECTRIC CURRENTLY IN PLACE TO CONTINUE TO SERVE THE BUILDING.
- OPENINGS IN EXISTING CORRIDOR WALLS REQUIRED FOR DEPARTMENTS

## SUMMARY TABLE OF OPTIONS STUDIED

### EVALUATION MATRIX

ISSUES:	OPTIONS					
	1	1A	1B	2	3	4
ACCOMMODATES ANTICIPATED TOWN OFFICE SPACE NEEDS	•	•	•	•		•
ACCOMMODATES ANTICIPATED SPACE NEEDS IN ONE BUILDING	•	•				•
OFFERS ADDITIONAL PUBLIC AMENITIES						•
OPPORTUNITY TO DEVELOP ADDITIONAL OUTDOOR RECREATIONAL / ATHLETIC SPACES						•
LIMITED RENOVATION SCOPE						•
LIMITED NEW CONSTRUCTION REQUIRED				•		•
READILY ACCOMMODATES MULTIPLE SIZE MEETING / HEARING ROOMS	•	•	•			•
LIMITED ISSUES AROUND ACCESSIBILITY		•				•
SINGLE FLOOR TO ENHANCE ADJACENCIES		•				•
EXISTING BUILDING EASILY ACCOMMODATES SPACE PROGRAM WITH LIMITED INTERIOR MODIFICATIONS		N.A.				•
EXISTING BUILDING IS IN GOOD CONDITION				•		•
ADEQUATE PARKING ON SITE	•	•	•			•
COULD EASILY ACCOMMODATE CABLE T.V. REQUIREMENTS						•

# CONCEPTUAL COST MODELS

Preliminary cost models were prepared by PM&C for each preliminary concept. These costs need to be viewed as initial cost opinions based on very limited information. If the Town elected to proceed with any of the options under consideration, a more thorough analysis of the condition of the existing buildings along with more detailed design and scope of any proposed modifications would be required prior to developing a more accurate budget.

However, given that each option uses the same method of analysis for establishing a cost, the comparative value of the choices should be clear and helpful in establishing the more costly vs. less costly outcomes.

The budgets assume a year of escalation which would mean that a project would proceed to construction in 2016. If any project under consideration takes longer to be implemented, industry standard assumes 4% annually in increased construction cost. They project budget also includes a soft cost allowance. This is used to cover design fees, fixtures and furnishings and other miscellaneous project costs that are typically encountered. As is the case with the construction cost, a more detailed analysis would be required if a project were to proceed.

SUMMARY OF PRELIMINARY CONCEPTUAL COST OPTIONS – <i>MEETS PROGRAM REQUIREMENTS</i>			
OPTIONS	CONCEPTUAL CONSTR. COST	CONCEPTUAL SOFT COST	CONCEPTUAL PROJECT COST
OPTION 1 PRIMARY SCHOOL RENOVATION/ADDITION	6,670,000	1,670,000	8,340,000
OPTION 1A PRIMARY SCHOOL SITE NEW CONSTRUCTION	7,200,000	1,800,000	9,000,000
OPTION 1B PRIMARY SCHOOL & TOWN HALL RENOVATIONS	5,680,000	1,420,000	7,100,000
OPTION 2 RITTER BUILDING RENO/ADD & TOWN HALL RENO	5,975,000	1,500,000	7,475,000
OPTION 4 PASSIOS SCHOOL PARTIAL DEMOLITION & RENOVATION	3,820,000	955,000	4,775,000
SUMMARY OF PRELIMINARY CONCEPTUAL COST OPTIONS – <i>DOES NOT MEET PROGRAM REQUIREMENTS</i>			
OPTION 3 TOWN HALL RENOVATION	2,215,000	555,000	2,770,000
OPTION STABILIZE TOWN HALL EXTERIOR	500,000	100,000	600,000
NOTES			
<ul style="list-style-type: none"> <li>Escalation is carried at 3% which assumes a construction start of Fall 2016, escalation is typically carried at 4% annually up to construction proceeding</li> <li>Soft cost is carried at 0.25% as an allowance. These costs typically include design costs, misc. Owner expenses and furniture, fixtures and equipment. Town Hall exterior would have less soft costs as no interior FF&amp;E would be required</li> </ul>			





## **Feasibility Design Submission**

# **Lunenburg Municipal Study Design Options**

Lunenburg, MA

**PM&C LLC**  
20 Downer Avenue  
Hingham, MA 02043  
(T) 781-740-8007  
(F) 781-740-1012

Prepared for:

**Tappe Architects, Inc.**  
December 16, 2015

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****MAIN CONSTRUCTION COST SUMMARY**

	Construction Start	Gross Floor Area	\$/sf	Estimated Construction Cost
<b>OPTION 1 PRIMARY SCHOOL RENOVATION/ADDITION</b>				
MAJOR RENOVATION		12,300	\$200.00	\$2,460,000
NEW ADDITION		7,700	\$280.00	\$2,156,000
REMOVE HAZARDOUS MATERIALS - Allowance				\$98,400
SITEWORK - Allowance for modifications only				<u>\$500,000</u>
SUB-TOTAL	Sep-16	20,000	\$260.72	\$5,214,400
ESCALATION TO START - (assumed 4% PA)	3%			\$156,432
DESIGN AND PRICING CONTINGENCY	15%			<u>\$782,160</u>
SUB-TOTAL	Sep-16	20,000	\$307.65	\$6,152,992
GENERAL CONDITIONS	10.00%			\$0
BONDS	1.25%			\$76,912
INSURANCE	1.15%			\$70,759
PERMIT				\$61,530
OVERHEAD AND FEE	5.0%			\$307,650
<b>TOTAL OF ALL CONSTRUCTION OPTION 1</b>	Sep-16	20,000	\$333.49	<b><u>\$6,669,843</u></b>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION 1A PRIMARY SCHOOL SITE - NEW CONSTRUCTION**

DEMOLISH EXISTING BUILDING		12,300	\$10.00	\$123,000
NEW BUILDING		18,000	\$250.00	\$4,500,000
REMOVE HAZARDOUS MATERIALS - Allowance				\$98,400
SITEWORK - New Sitework				<b>\$900,000</b>
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>18,000</b>	<b>\$312.30</b>	<b>\$5,621,400</b>
ESCALATION TO START - (assumed 4% PA)	3%			\$168,642
DESIGN AND PRICING CONTINGENCY	15%			<b>\$843,210</b>
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>18,000</b>	<b>\$368.51</b>	<b>\$6,633,252</b>
GENERAL CONDITIONS	10.00%			\$0
BONDS	1.25%			\$82,916
INSURANCE	1.15%			\$76,282
PERMIT				\$66,333
OVERHEAD AND FEE	5.0%			\$331,663
<b>TOTAL OF ALL CONSTRUCTION OPTION 1A</b>	<b>Sep-16</b>	<b>18,000</b>	<b>\$399.47</b>	<b><u><u>\$7,190,446</u></u></b>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION 1B PRIMARY SCHOOL & TOWN HALL RENOVATION**

MAJOR RENOVATION AT PRIMARY SCHOOL		12,300	\$200.00	\$2,460,000
MAJOR RENOVATION AT TOWN HALL		6,500	\$220.00	\$1,430,000
REMOVE HAZARDOUS MATERIALS - Allowance				\$150,400
SITEWORK - Allowance for modifications only				<hr/> \$400,000
SUB-TOTAL	Sep-16	18,800	\$236.19	\$4,440,400
ESCALATION TO START - (assumed 4% PA)		3%		\$133,212
DESIGN AND PRICING CONTINGENCY		15%		<hr/> \$666,060
SUB-TOTAL	Sep-16	18,800	\$278.71	\$5,239,672
GENERAL CONDITIONS		10.00%		\$0
BONDS		1.25%		\$65,496
INSURANCE		1.15%		\$60,256
PERMIT				\$52,397
OVERHEAD AND FEE		5.0%		\$261,984
<b>TOTAL OF ALL CONSTRUCTION OPTION 1B</b>	Sep-16	18,800	\$302.12	<hr/> <b>\$5,679,805</b> <hr/>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION 2 RITTER BUILDING & TOWN HALL - RENOVATION/ADDITION**

MINOR RENOVATION RITTER BUILDING		5,700	\$120.00	\$684,000
NEW ADDITION RITTER BUILDING		7,000	\$280.00	\$1,960,000
MAJOR RENOVATION AT TOWN HALL		6,500	\$220.00	\$1,430,000
REMOVE HAZARDOUS MATERIALS - Allowance				\$97,600
SITEWORK - Allowance for modifications only				<u>\$500,000</u>
<b>SUB-TOTAL</b>	Sep-16	19,200	\$243.31	\$4,671,600
ESCALATION TO START - (assumed 4% PA)		3%		\$140,148
DESIGN AND PRICING CONTINGENCY		15%		<u>\$700,740</u>
<b>SUB-TOTAL</b>	Sep-16	19,200	\$287.11	\$5,512,488
GENERAL CONDITIONS		10.00%		\$0
BONDS		1.25%		\$68,906
INSURANCE		1.15%		\$63,394
PERMIT				\$55,125
OVERHEAD AND FEE		5.0%		\$275,624
<b>TOTAL OF ALL CONSTRUCTION OPTION 2</b>	Sep-16	19,200	\$311.23	<u><u>\$5,975,537</u></u>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION3 TOWN HALL RENOVATION**

MAJOR RENOVATION AT TOWN HALL		6,500	\$220.00	\$1,430,000
REMOVE HAZARDOUS MATERIALS - Allowance				\$52,000
SITEWORK - Allowance for minor modifications only				<b>\$250,000</b>
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>6,500</b>	<b>\$266.46</b>	<b>\$1,732,000</b>
ESCALATION TO START - (assumed 4% PA)	3%			\$51,960
DESIGN AND PRICING CONTINGENCY	15%			<b>\$259,800</b>
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>6,500</b>	<b>\$314.42</b>	<b>\$2,043,760</b>
GENERAL CONDITIONS	10.00%			\$0
BONDS	1.25%			\$25,547
INSURANCE	1.15%			\$23,503
PERMIT				\$20,438
OVERHEAD AND FEE	5.0%			\$102,188
<b>TOTAL OF ALL CONSTRUCTION OPTION 3</b>	<b>Sep-16</b>	<b>6,500</b>	<b>\$340.84</b>	<b><b>\$2,215,436</b></b>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION 4 - PASSIOS SCHOOL DEMOLITION/RENOVATION**

DEMOLISH EXISTING BUILDING		20,800	\$8.00	\$166,400
RENOVATION		35,000	\$64.82	\$2,268,552
SITEWORK - Allowance for new parking lot and minor modifications only				\$300,000
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$78.14</b>	<b>\$2,734,952</b>
ESCALATION TO START - (assumed 4% PA)	3%			\$82,049
DESIGN AND PRICING CONTINGENCY	15%			\$410,243
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$92.21</b>	<b>\$3,227,244</b>
GENERAL CONDITIONS	10.00%			\$322,724
BONDS	1.25%			\$40,341
INSURANCE	1.15%			\$37,113
PERMIT				\$32,272
OVERHEAD AND FEE	5.0%			\$161,362
<b>TOTAL OF ALL CONSTRUCTION OPTION 4</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$109.17</b>	<b><u><u>\$3,821,056</u></u></b>

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****ALLOWANCE TO STABILIZE TOWN HALL EXTERIOR OPTION****\$500,000**

This Feasibility cost estimate was produced from drawings, outline specifications and other documentation prepared by Tappe Architects and their design team dated December 7, 2015. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, general contractor's overhead, fee and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under Chapter 149 of the Massachusetts General Laws to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufactures.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

**ITEMS NOT CONSIDERED IN THIS ESTIMATE**

Items not included in this estimate are:

- Land acquisition, feasibility, and financing costs
- All professional fees and insurance
- Site or existing conditions surveys investigations costs, including to determine subsoil conditions
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items as indicated in the estimate
- Utility company back charges, including work required off-site
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction contingency

**OPTION 4 - PREFERRED OPTION  
RENOVATION & SELECT DEMO OF EXISTING PASSIOS SCHOOL  
MAINTAIN TOWN HALL FOR OTHER USES**

## OPTION 4 - PREFERRED RENO & SELECT DEMO OF EXISTING PASSIOS SCHOOL

The Passios School has more space then is required for the anticipated town office space needs. Therefore Option 4 would remove a section of the existing building to limit the size of the building in use by the Town. This plan includes construction of a new parking lot and the possibility of a new field being installed at the location of the demolished building wing.

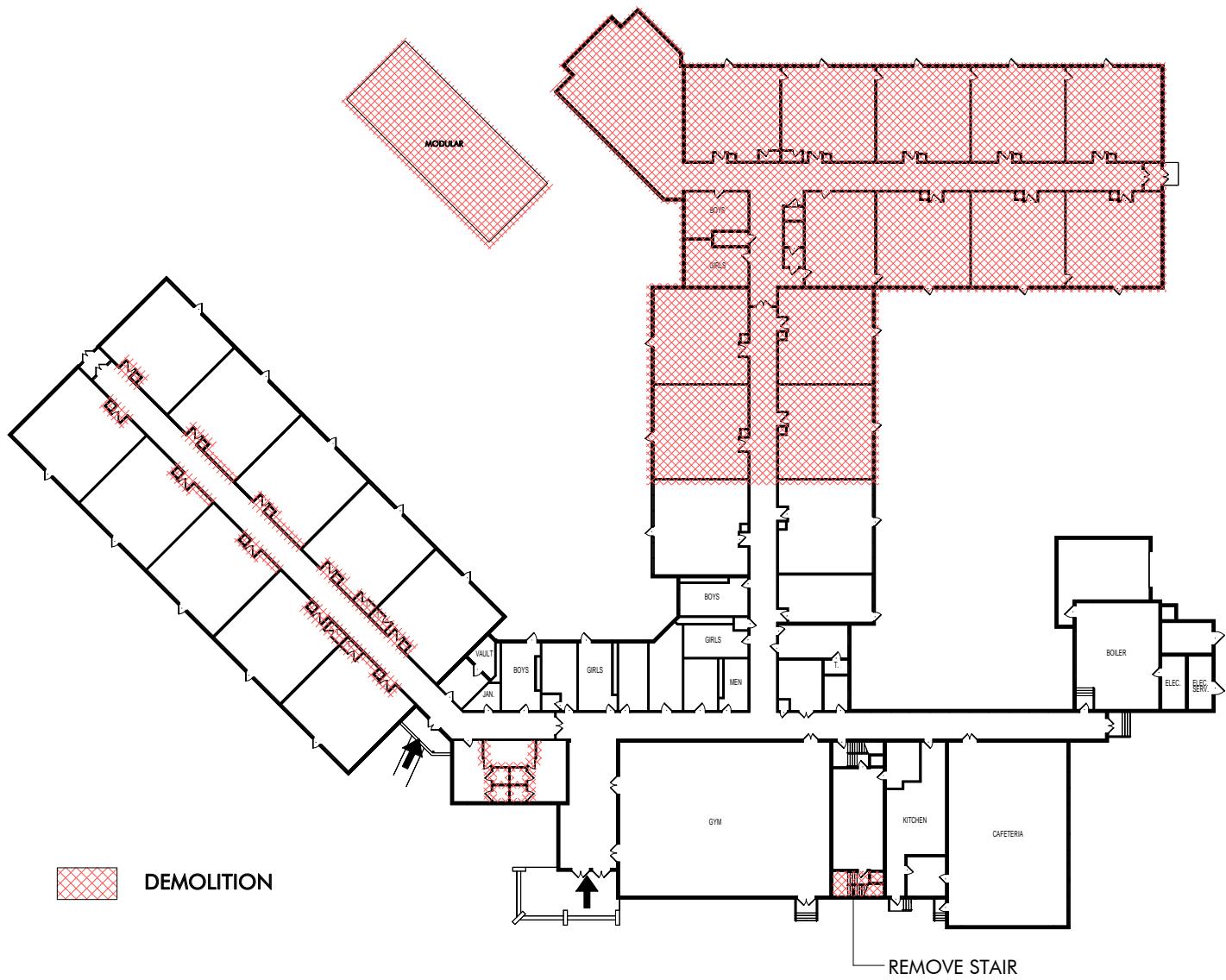
This option is the preferred option due to the current condition of the school, the ease with which the proposed program can be inserted into the existing site plan, the size which accommodates the entire proposed program and the fact that the building offers the community the benefit of a gym and cafeteria for community use.



PREFERRED OPTION

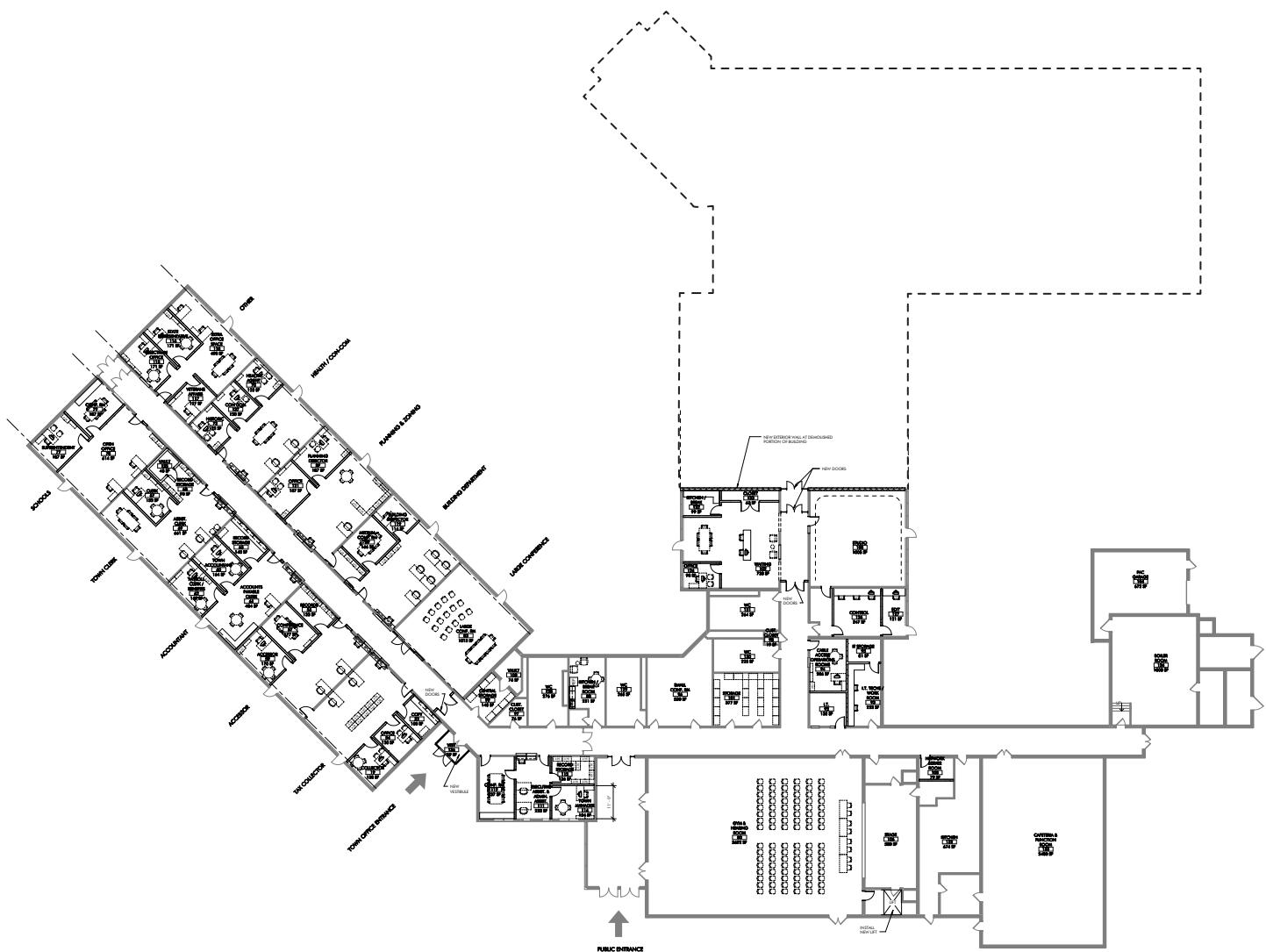


PREFERRED OPTION



## OPTION 4 - PREFERRED CONCEPTUAL DEMOLITION PLAN

- DEMOLISH APPROX. 20,800 SQUARE FEET EXISTING BUILDING
- REMOVE FOOTINGS & FOUNDATION, RESTORE SITE
- SELECTIVE DEMOLITION INCLUDES SOME PARTITION, PORTION OF CORRIDOR WALLS
- REMOVE CEILINGS AT CLASSROOMS & CLASSROOM CORRIDOR
- REMOVE CLASSROOM FLOOR FINISHES
- REMOVE BLACK BOARDS AND WHITE BOARDS & CASEWORK AT CLASSROOMS



## OPTION 4 - PREFERRED CONCEPTUAL FURNISHINGS PLAN

- ASSUME RENOVATION OF WC'S (4) NEW FINISHES & FIXTURES ADA ACCESSIBLE
- ASSUME NEW CEILINGS AND LIGHT FIXTURES
- ASSUME ALLOWANCE FOR MISC. UPDATES TO FIXTURES, CABINETS & HARDWARE FOR ADA COMPLIANCE
- ASSUME PARTIAL CORRIDOR WALL DEMOLITION AND NEW ENTRANCE
- ASSUME NEW TRANSACTION COUNTERS & SECURE GLASS PARTITIONS AT EACH DEPARTMENT
- NEW PAINT, ALL LOCATIONS
- ASSUME NEW FLOORING IN OFFICE WING

PREFERRED OPTION



## OPTION 4 - PREFERRED CONCEPTUAL PERSPECTIVE DIAGRAM

## CONCEPTUAL COST MODEL PREFERRED OPTION 4

**Lunenburg Municipal Study**

Design Options

Lunenburg, MA

16-Dec-15

**Feasibility Design Submission****OPTION 4 - PASSIOS SCHOOL DEMOLITION/RENOVATION**

DEMOLISH EXISTING BUILDING		20,800	\$8.00	\$166,400
RENOVATION		35,000	\$64.82	\$2,268,552
SITEWORK - Allowance for new parking lot and minor modifications only				\$300,000
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$78.14</b>	<b>\$2,734,952</b>
ESCALATION TO START - (assumed 4% PA)	3%			\$82,049
DESIGN AND PRICING CONTINGENCY	15%			\$410,243
<b>SUB-TOTAL</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$92.21</b>	<b>\$3,227,244</b>
GENERAL CONDITIONS	10.00%			\$322,724
BONDS	1.25%			\$40,341
INSURANCE	1.15%			\$37,113
PERMIT				\$32,272
OVERHEAD AND FEE	5.0%			\$161,362
<b>TOTAL OF ALL CONSTRUCTION OPTION 4</b>	<b>Sep-16</b>	<b>35,000</b>	<b>\$109.17</b>	<b><u><u>\$3,821,056</u></u></b>

### CONSTRUCTION COST SUMMARY

BUILDING SYSTEM		SUB-TOTAL	TOTAL	\$/SF	%
<b>OPTION 4 - RENOVATION TO PASSIOS SCHOOL</b>					
<b>A10 FOUNDATIONS</b>					
A1010 Standard Foundations		\$7,450			
A1020 Special Foundations		\$0			
A1030 Lowest Floor Construction		\$52,500	<b>\$59,950</b>	\$1.71	2.6%
<b>A20 BASEMENT CONSTRUCTION</b>					
A2010 Basement Excavation		\$0			
A2020 Basement Walls		\$0	<b>\$0</b>	\$0.00	0.0%
<b>B10 SUPERSTRUCTURE</b>					
B1010 Upper Floor Construction		\$0			
B1020 Roof Construction		\$35,000	<b>\$35,000</b>	\$1.00	1.5%
<b>B20 EXTERIOR CLOSURE</b>					
B2010 Exterior Walls		\$81,657			
B2020 Windows		\$59,640			
B2030 Exterior Doors		\$33,040	<b>\$174,337</b>	\$4.98	7.7%
<b>B30 ROOFING</b>					
B3010 Roof Coverings		\$4,000			
B3020 Roof Openings		\$5,000	<b>\$9,000</b>	\$0.26	0.4%
<b>C10 INTERIOR CONSTRUCTION</b>					
C1010 Partitions		\$186,785			
C1020 Interior Doors		\$85,800			
C1030 Specialties/Millwork		\$100,100	<b>\$372,685</b>	\$10.65	16.4%
<b>C20 STAIRCASES</b>					
C2010 Stair Construction		\$0			
C2020 Stair Finishes		\$0	<b>\$0</b>	\$0.00	0.0%
<b>C30 INTERIOR FINISHES</b>					
C3010 Wall Finishes		\$82,320			
C3020 Floor Finishes		\$178,160			
C3030 Ceiling Finishes		\$175,000	<b>\$435,480</b>	\$12.44	19.2%
<b>D10 CONVEYING SYSTEMS</b>					
D1010 Elevator		\$30,000	<b>\$30,000</b>	\$0.86	1.3%
<b>D20 PLUMBING</b>					
D20 Plumbing		\$80,000	<b>\$80,000</b>	\$2.29	3.5%



<b>CONSTRUCTION COST SUMMARY</b>					
<i>BUILDING SYSTEM</i>		<i>SUB-TOTAL</i>	<i>TOTAL</i>	<i>\$/SF</i>	<i>%</i>
<b>OPTION 4 - RENOVATION TO PASSIOS SCHOOL</b>					
<b>D30</b>	<b>HVAC</b>				
D30	HVAC	\$245,000	<b>\$245,000</b>	\$7.00	10.8%
<b>D40</b>	<b>FIRE PROTECTION</b>				
D40	Fire Protection	\$175,000	<b>\$175,000</b>	\$5.00	7.7%
<b>D50</b>	<b>ELECTRICAL</b>				
D5010	Complete System	\$289,400	<b>\$289,400</b>	\$8.27	12.8%
<b>E10</b>	<b>EQUIPMENT</b>				
E10	Equipment	\$6,000	<b>\$6,000</b>	\$0.17	0.3%
<b>E20</b>	<b>FURNISHINGS</b>				
E2010	Fixed Furnishings	\$39,500			
E2020	Movable Furnishings	NIC	<b>\$39,500</b>	\$1.13	1.7%
<b>F10</b>	<b>SPECIAL CONSTRUCTION</b>				
F10	Special Construction	\$0	<b>\$0</b>	\$0.00	0.0%
<b>F20</b>	<b>HAZMAT REMOVALS</b>				
F2010	Building Elements Demolition	\$192,400			
F2020	Hazardous Components Abatement	\$124,800	<b>\$317,200</b>	\$9.06	14.0%
<b>TOTAL DIRECT COST (Trade Costs)</b>			<b>\$2,268,552</b>	\$64.82	100.0%

Feasibility Design Submission

GFA 35,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>OPTION 4 - RENOVATION TO PASSIOS SCHOOL</b>							

**GROSS FLOOR AREA CALCULATION**

First Floor

35,000

**TOTAL GROSS FLOOR AREA (GFA)**

**35,000 sf**

**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

New foundations and slab at vestibule

1 ls

7,450.00

7,450

**No Work in this section**

SUBTOTAL

7,450

**A1020 SPECIAL FOUNDATIONS**

**No Work in this section**

SUBTOTAL

**A1030 LOWEST FLOOR CONSTRUCTION**

Allowance for patching of existing slabs disturbed by new work

**35,000**

sf

1.50

52,500

SUBTOTAL

52,500

**TOTAL - FOUNDATIONS**

**\$59,950**

**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No items in this section

SUBTOTAL

-

**A2020 BASEMENT WALLS**

No items in this section

SUBTOTAL

-

**TOTAL - BASEMENT CONSTRUCTION**

**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

**No Work in this section**

SUBTOTAL

-

**B1020 ROOF CONSTRUCTION**

New structure at vestibule

1 ls

5,000.00

5,000

Allowance for minor upgrades

1 ls

30,000.00

30,000

SUBTOTAL

35,000

**TOTAL - SUPERSTRUCTURE**

**\$35,000**

**B20 EXTERIOR CLOSURE**

**B2010 EXTERIOR WALLS**

Interior skin

New backup at exterior wall where existing building removed

**788**

sf

26.90

21,197

Feasibility Design Submission

GFA 35,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
----------	-------------	-----	------	-----------	------------	-----------	------------

**OPTION 4 - RENOVATION TO PASSIOS SCHOOL**

58	<u>Exterior skin</u>						
59	New brick exterior	788	sf	45.00	35,460		
60	<u>Miscellaneous</u>						
61	Allowance to patch/repair existing exterior walls	1	ls	25,000.00	25,000		
62	SUBTOTAL					81,657	

63	<b>B2020 WINDOWS</b>	668	sf				
64	Windows at new exterior wall	338	sf	85.00	28,730		
65	New storefront	330	sf	85.00	28,050		
66	Backer rod & double sealant	220	lf	9.00	1,980		
67	Wood blocking at openings	220	lf	4.00	880		
68	SUBTOTAL					59,640	

69	<b>B2030 EXTERIOR DOORS</b>	4	pr	8,000.00	32,000		
70	Glazed entrance doors including frame and hardware; double door						
71	Backer rod & double sealant	80	lf	9.00	720		
72	Wood blocking at openings	80	lf	4.00	320		
73	SUBTOTAL					33,040	

74	<b>TOTAL - EXTERIOR CLOSURE</b>	\$174,337
----	---------------------------------	-----------

**B30 ROOFING**

75	<b>B3010 ROOF COVERINGS</b>						
76	<u>Flat roofing</u>						
77	New roofing at vestibule	1	sf	4,000.00	4,000		
78	SUBTOTAL					4,000	

79	<b>B3020 ROOF OPENINGS</b>						
80	Repair skylights	1	ls	5,000.00	5,000		
81	SUBTOTAL					5,000	

82	<b>TOTAL - ROOFING</b>	\$9,000
----	------------------------	---------

**C10 INTERIOR CONSTRUCTION**

83	<b>C1010 PARTITIONS</b>						
84	New GWB partitions	11,445	sf	13.00	148,785		
85	Patch/repair existing walls	1	ls	20,000.00	20,000		
86	Infill existing openings	12	loc	1,500.00	18,000		
87	SUBTOTAL					186,785	

88	<b>C1020 INTERIOR DOORS</b>						
89	New door, frame and hardware	39	ea	1,800.00	70,200		
90	New door, frame and hardware	1	pr	3,600.00	3,600		
91	New door, frame and hardware at corridor doors	2	pr	6,000.00	12,000		
92	SUBTOTAL					85,800	

93	<b>C1030 SPECIALTIES / MILLWORK</b>						
94	Toilet Partitions	8	ea	1,800.00	14,400		
95	Toilet accessories	4	rms	3,000.00	12,000		
96	Backer panels in electrical closets	1	ls	1,000.00	1,000		
97	Marker boards/tackboards in offices, conference rooms etc.	1	ls	15,000.00	15,000		
98	Room Signs	35,000	gsf	0.40	14,000		
99	Fire extinguisher cabinets	12	ea	350.00	4,200		
100	Janitors Closet Accessories	1	ls	1,000.00	1,000		

Feasibility Design Submission

GFA 35,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
----------	-------------	-----	------	-----------	------------	-----------	------------

**OPTION 4 - RENOVATION TO PASSIOS SCHOOL**

116	Staff mailboxes/casework	1	ls	5,000.00	5,000		
117	Transaction counters/window	1	ls	6,000	6,000		
118	Modify stage for new lift	1	ls	10,000	10,000		
119	Miscellaneous sealants throughout building	35,000	sf	0.50	17,500		
120	SUBTOTAL					100,100	

<b>TOTAL - INTERIOR CONSTRUCTION</b>	<b>\$372,685</b>
--------------------------------------	------------------

**C2o STAIRCASES**

**C2010 STAIR CONSTRUCTION**  
No Work in this section

SUBTOTAL

**C2020 STAIR FINISHES**  
No Work in this section

SUBTOTAL

<b>TOTAL - STAIRCASES</b>
---------------------------

**C3o INTERIOR FINISHES**

**C3010 WALL FINISHES**

Allowance for wall tile in bathrooms	560	sf	22.00	12,320
Painting throughout space	35,000	gsf	2.00	70,000
SUBTOTAL				82,320

**C3020 FLOOR FINISHES**

New tile at bathrooms	1,040	sf	24.00	24,960
Allowance for new floor finishes	20,800	sf	6.00	124,800
Patch/protect existing finishes	14,200	sf	2.00	28,400
SUBTOTAL				178,160

**C3030 CEILING FINISHES**

Allowance for new ceiling finishes	35,000	sf	5.00	175,000
SUBTOTAL				175,000

<b>TOTAL - INTERIOR FINISHES</b>	<b>\$435,480</b>
----------------------------------	------------------

**D1o CONVEYING SYSTEMS**

**D1010 ELEVATOR**

New stage lift	1	ea	30,000.00	30,000
SUBTOTAL				30,000

<b>TOTAL - CONVEYING SYSTEMS</b>	<b>\$30,000</b>
----------------------------------	-----------------

**D2o PLUMBING**

**D2o PLUMBING, GENERALLY**

New plumbing fixtures	16	loc	5,000.00	80,000
SUBTOTAL				80,000

<b>TOTAL - PLUMBING</b>	<b>\$80,000</b>
-------------------------	-----------------

**D3o HVAC**

**D3o HVAC, GENERALLY**

HVAC; modify existing systems for new layouts	35,000	gsf	7.00	245,000
SUBTOTAL				245,000

Feasibility Design Submission

GFA 35,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>OPTION 4 - RENOVATION TO PASSIOS SCHOOL</b>							

<b>TOTAL - HVAC</b>	<b>\$245,000</b>
---------------------	------------------

<b>D40 FIRE PROTECTION</b>
----------------------------

<b>D40 FIRE PROTECTION, GENERALLY</b>					
Sprinkler system; modify/upgrade existing	<b>35,000</b>	gsf	5.00	175,000	
SUBTOTAL				175,000	

<b>TOTAL - FIRE PROTECTION</b>	<b>\$175,000</b>
--------------------------------	------------------

<b>D50 ELECTRICAL</b>
-----------------------

<b>D5010 COMPLETE ELECTRICAL SYSTEM</b>					
New lighting and controls	<b>35,000</b>	gsf	5.00	175,000	
New power and distribution to renovated spaces	<b>20,800</b>	sf	3.00	62,400	
Modify Fire Alarm system	<b>20,800</b>	sf	1.50	31,200	
New Tele/Data	<b>20,800</b>	sf	1.00	20,800	
SUBTOTAL				289,400	

<b>TOTAL - ELECTRICAL</b>	<b>\$289,400</b>
---------------------------	------------------

<b>E10 EQUIPMENT</b>
----------------------

<b>E10 EQUIPMENT, GENERALLY</b>					
New kitchenette	<b>1</b>	ls	6,000.00	6,000	
SUBTOTAL				6,000	

<b>TOTAL - EQUIPMENT</b>	<b>\$6,000</b>
--------------------------	----------------

<b>E20 FURNISHINGS</b>
------------------------

<b>E2010 FIXED FURNISHINGS</b>					
Entry mats & frames - recessed with carpet/rubber strips	<b>200</b>	sf	45.00	9,000	
Manual operated roller shades	<b>1</b>	ls	500.00	500	
Allowance for casework	<b>120</b>	lf	250.00	30,000	
SUBTOTAL				39,500	

<b>E2020 MOVABLE FURNISHINGS</b>	
All movable furnishings to be provided and installed by owner	
SUBTOTAL	NIC

<b>TOTAL - FURNISHINGS</b>	<b>\$39,500</b>
----------------------------	-----------------

<b>F10 SPECIAL CONSTRUCTION</b>
---------------------------------

<b>F10 SPECIAL CONSTRUCTION</b>
No Work in this section
SUBTOTAL

<b>TOTAL - SPECIAL CONSTRUCTION</b>
-------------------------------------

<b>F20 SELECTIVE BUILDING DEMOLITION</b>
--

<b>F2010 BUILDING ELEMENTS DEMOLITION</b>					
Extensive demolition of renovation areas; finishes, doors, MEP systems, casework and specialties	<b>20,800</b>	sf	8.00	166,400	

Feasibility Design Submission

GFA 35,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>OPTION 4 - RENOVATION TO PASSIOS SCHOOL</b>							
244	Gut demolition of bathrooms	4	loc	5,000.00	20,000		
245	Demolition of stair	1	ls	6,000.00	6,000		
246	See main summary for demolition of existing buildings						
247	SUBTOTAL					192,400	
248							
249	<b>F2020 HAZARDOUS COMPONENTS ABATEMENT</b>						
250	Allowance to remove VAT	20,800	sf	6.00	124,800		
251	SUBTOTAL					124,800	
252							
253	<b>TOTAL - SELECTIVE BUILDING DEMOLITION</b>						<b>\$317,200</b>



## **EXISTING CONDITIONS - MEP/FP REPORTS**

## **EXISTING CONDITIONS - STRUCTURAL REPORT**

October 26, 2015

LUNENBURG MUNICIPAL STUDY  
LUNENBURG, MA

Existing Conditions  
Fire Protection/ Plumbing/ HVAC/ Electrical

I. TOWN HALL

There were no existing MEP plans available to assist with the existing conditions review for the Town Hall.

A. Fire Protection:

1. The building does not have a sprinkler system.
2. There is limited space smoke detector coverage.

B. Plumbing:

1. Domestic Water - The building is supplied by a 1 inch water service which feeds two meters, one for building use and the other for irrigation. There are two single fixture toilet rooms on the first floor and one on the second floor with a sink in each room.
2. Domestic Hot Water - The building is serviced by a small (30 gallon) electric water heater located in the basement.
3. Sanitary - The building is serviced by a 4 inch sanitary main exiting towards the front of the building.
4. Natural Gas - The building is supplied with natural gas serving hot air furnace units in the building for space heating. The meter is located at the front of the building. The capacity of the service is not known.
5. Roof Drainage - There is no roof drainage system interior to the building.

C. HVAC:

1. The heating system consists of four (4) gas-fired furnace units. Two are located in the basement, which serve the first floor and two are located in the attic serving the second floor. Each unit has a duct connected to an exterior louver for outside air ventilation. The units are 7 to 8 years old and are in good condition.
2. Each furnace system has a DX coil connected to an outdoor condensing unit to provide cooling to the respective zones. Two units are manufactured by Trane and two are manufactured by York. These were probably installed at different times, but still about 7 to 8 years old. The units have R-22 refrigerant, which

could involve added cost if servicing is needed in the near future. These units appear to be in good condition.

3. The furnace units are controlled by programmable thermostats.
4. The main entrance and exit doors do not have heaters installed nearby to help negate heat loss from infiltration.
5. Some spaces have electric baseboard heating.
6. The elevator machine space is in the basement and is open to the basement. There is no machine room vent to the outdoors.

D. Electrical:

1. This building dates back to the 1800s, and there have been various electrical upgrades over time.
2. The electric service consists of two 200A, 240V, 1 phase, and one 100A, 240V, 1 phase services. Main service disconnects are located in the basement of the building.
3. There were reports of nuisance tripping of branch breakers due to the use of portable electric heaters.
4. Building lighting consists of various types including surface acrylic wrap-around lens type and recessed lensed luminaires.
5. General power including duplex receptacles throughout the building appears to be adequate for present space usage, although receptacle quantities are minimal.
6. The building has a fire alarm system.
7. The building has a limited security system.
8. In general, the overall condition of the electrical systems and equipment are just adequate for the present programmed use of the building. Noting that overloading of branch circuits occurs during colder months. Any changes and/or upgrades to the mechanical system to serve a change in space programming would more than likely trigger an increase in the service size requiring an upgrade to the service entrance, main service disconnect, and distribution equipment.
9. Lighting upgrades including controls are recommended to suit building use program changes within the building.
10. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation.

II. RITTER BUILDING

A. Fire Protection:

1. The building does not have a sprinkler system.

B. Plumbing:

1. Domestic Water - The building appears to have a 1 inch water service. There are two single fixture toilet rooms on the first floor with a sink in each room. A sink with ejector is located at the lower level.
2. Domestic Hot Water - The building is serviced by a small (20 gallon) electric water heater located in the lower level mechanical room.
3. Sanitary - The ejector pump discharge for the sink at the lower level appears to exit the building separately from the two toilet rooms which are at the front of the building.
4. Natural Gas - The building is supplied with natural gas serving two hot water boilers located in the lower level mechanical space. The meter is located at grade just outside the mechanical room. The capacity of the service is not known.
5. Roof Drainage - There is no roof drainage system interior to the building.

C. HVAC:

1. The heating system consists of two gas-fired hot water boilers, each with a circulation pump. There are three hot water zones, each served by a circulator. The boilers are direct vented to the exterior wall with corresponding combustion air intakes connected to each boiler. The gas vent for at least one of the boilers appears to be less than 3 ft. above grade, which could be a safety hazard during times with high snow depths. The units appear to be in good condition.
2. Each of the heating zones is controlled by a programmable thermostat located in the mechanical space. There are space temperature sensors located in each of the zones that are wired back to the programmable thermostats.
3. Space heating is provided by hot water fin-tube radiation.
4. The main entrance vestibule has two cabinet heaters. There is another cabinet heater installed near a lower level exit door.
5. The building is not fully air conditioned. There are three ductless split air conditioning systems with outdoor condensing units and indoor fan DX units serving specific areas. They all appear to be about 1.5 tons capacity each. Offices on the second floor have window air conditioning units.
6. There is no mechanical outdoor air ventilation. The building is largely naturally ventilated using operable windows. However, not all areas comply with natural ventilation requirements.

D. Electrical:

1. Electric service to the building is overhead, 200A, 120/240V, 1 phase. Main service disconnect switch is located in the lower level Boiler Room.
2. There are no reports of problems with the distribution system and/or issues with nuisance tripping of branch or feeder breakers.
3. Building lighting consists of various types including surface acrylic wrap-around lens type and recessed lensed luminaires.
4. General power including duplex receptacles throughout the building appears to be adequate for present space usage.
5. In general, the overall condition of the electrical systems and equipment are in good condition, and are adequate for the present programmed use of the building. Any changes and/or upgrades to the mechanical system to serve a change in space programming would more than likely trigger an increase in the service size requiring an upgrade to the service entrance, main service disconnect, and distribution equipment.
6. Lighting upgrades including controls are recommended to suit building use program changes within the building.
7. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation.

III. PASSIOS SCHOOL

A. Fire Protection:

1. The building has two sprinkler services. One is located in a small janitor's closet across from the administration area near the main entrance. The other is in a storage room off of the Cafeteria. Both appear to have been originally installed in 1950.

B. Plumbing:

1. Domestic Water - The building water service enters into the storage room adjacent to the cafeteria and next to the kitchen. There are three sets of Boys and Girls rooms located in the facility near each wing. Individual sinks are located in a few areas. There is a drinking fountain located in the cafeteria.
2. Domestic Hot Water - The building has two large indirect hot water fired storage heaters located in the boiler room.

3. Sanitary - There are no plumbing plans available for review of the sanitary drainage system. No information was obtained during the walk-through.
4. Natural Gas - The building is supplied with natural gas serving three hot water boilers located in the boiler room. The capacity of the gas service is at least 13,000 MBH based on the boiler input ratings.
5. Roof Drainage - The roof drainage system was not reviewed.

C. HVAC:

1. The heating system consists of three gas-fired hot water boilers, each with a circulation pump. Each boiler is from a different manufacturer and are different styles. The oldest is a Weil McLain cast iron, which has a dual fuel burner. The second boiler is a Buderus cast iron condensing boiler, and the third is a Viessmann stainless steel condensing boiler. The boilers are direct vented to the exterior wall with a draft fan installed in each gas vent. This boiler system also serves the existing high school building through a buried piping system. The units appear to be in good condition and are reportedly running well.
2. Space heating in the classrooms is provided by hot water fin-tube radiation. Unit ventilators are provided in the cafeteria in addition to fin tube radiation.
3. Classroom ventilation is provided by central heating and ventilation units and a classroom exhaust system.
4. The multipurpose room (gym/ auditorium) is ventilated by two heating and ventilating units located above the stairs on either side of the stage.
5. The building is not air conditioned. Some rooms have window air conditioning systems.
6. There is no mechanical outdoor air ventilation. The building is largely naturally ventilated using operable windows. However, not all areas comply with natural ventilation requirements.

D. Electrical:

1. This building has adequate capacity in both its normal power distribution system and backup generator power system to serve current and future building needs.
2. Lighting types vary throughout the building.
3. The building has a fire alarm system.
4. The building has a security system.
5. In general, the overall condition of the electrical systems and equipment are in good condition, and are adequate for the present programmed use of the building.

6. Lighting upgrades including controls are recommended to suit building use program changes within the building.
7. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation for the meeting room.

### III. PRIMARY SCHOOL

#### A. Fire Protection:

1. The building has a sprinkler system. Due to its age, it is recommended that it be completely replaced.

#### B. Plumbing:

1. The building water plumbing systems are out of service and antiquated. Any use of the building would require a complete demo and replacement of the systems.

#### C. HVAC:

1. The building heating system consists of one oil-fired cast iron boiler. The buried oil tank has been removed, therefore the boiler is no longer functional. The boiler room has been completely flooded in the past. Complete replacement of the entire heating system is recommended, if the building is to be reoccupied.

#### D. Electrical:

1. This structure has not been unoccupied for roughly 15 years, and has experienced water damage throughout the building.
2. Most of the lighting appears to be original equipment. Quantities of receptacles are minimal.
3. Lighting controls and manual fire alarm pull stations are mounted higher than today's code height of 48 inches.
4. The building has a fire alarm system, device locations and quantities are not per current code.
5. Based on the present condition of this structure, we recommend a complete removal and replacement of all electrical systems. This would include all electrical lighting, controls, receptacles, panelboards, and distribution equipment back to the electrical service entrance point.
6. We recommend a complete new fire alarm system.

LUNENBURG MUNICIPAL STUDY  
LUNENBURG, MA

EXISTING CONDITIONS REPORT

I. TOWN HALL

There were no existing MEP plans available to assist with the existing conditions review for the Town Hall.

A. Fire Protection:

1. The building does not have a sprinkler system.
2. There is limited space smoke detector coverage.

B. Plumbing:

1. Domestic Water: The building is supplied by a 1 inch water service which feeds two meters, one for building use and the other for irrigation. There are two single fixture toilet rooms on the first floor and one on the second floor with a sink in each room.
2. Domestic Hot Water: The building is serviced by a small (30 gallon) electric water heater located in the basement.
3. Sanitary: The building is serviced by a 4 inch sanitary main exiting towards the front of the building.
4. Natural Gas: The building is supplied with natural gas serving hot air furnace units in the building for space heating. The meter is located at the front of the building. The capacity of the service is not known.
5. Roof Drainage: There is no roof drainage system interior to the building.

C. HVAC:

1. The heating system consists of four gas-fired furnace units. Two are located in the basement, which serve the first floor and two are located in the attic serving the second floor. Each unit has a duct connected to an exterior louver for outside air ventilation. The units are 7 to 8 years old and are in good condition.
2. Each furnace system has a DX coil connected to an outdoor condensing unit to provide cooling to the respective zones. Two units are manufactured by Trane and two are manufactured by York. These were probably installed at different times, but still about 7 to 8 years old. The units have R-22 refrigerant, which could involve added cost if servicing is needed in the near future. These units appear to be in good condition.
3. The furnace units are controlled by programmable thermostats.
4. The main entrance and exit doors do not have heaters installed nearby to help negate heat loss from infiltration.
5. Some spaces have electric baseboard heating.

6. The elevator machine space is in the basement and is open to the basement. There is no machine room vent to the outdoors.

D. Electrical:

1. This building dates back to the 1800's, and there have been various electrical upgrades over time.
2. The electric service consists of two 200A, 240V, 1 phase, and one 100A, 240V, 1 phase services. Main service disconnects are located in the basement of the building.
3. There were reports of nuisance tripping of branch breakers due to the use of portable electric heaters.
4. Building lighting consists of various types including surface acrylic wrap-around lens type and recessed lensed luminaires.
5. General power including duplex receptacles throughout the building appears to be adequate for present space usage, although receptacle quantities are minimal.
6. The building has a fire alarm system.
7. The building has a limited security system.
8. In general, the overall condition of the electrical systems and equipment are just adequate for the present programmed use of the building. Noting that overloading of branch circuits occurs during colder months. Any changes and/or upgrades to the mechanical system to serve a change in space programming would more than likely trigger an increase in the service size requiring an upgrade to the service entrance, main service disconnect, and distribution equipment.
9. Lighting upgrades including controls are recommended to suit building use program changes within the building.
10. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation.

II. RITTER BUILDING

A. Fire Protection:

1. The building does not have a sprinkler system.

B. Plumbing:

1. Domestic Water: The building appears to have a 1 inch water service. There are two single fixture toilet rooms on the first floor with a sink in each room. A sink with ejector is located at the lower level.
2. Domestic Hot Water: The building is serviced by a small (20 gallon) electric water heater located in the lower level mechanical room.

3. Sanitary: The ejector pump discharge for the sink at the lower level appears to exit the building separately from the two toilet rooms which are at the front of the building.
4. Natural Gas: The building is supplied with natural gas serving two hot water boilers located in the lower level mechanical space. The meter is located at grade just outside the mechanical room. The capacity of the service is not known.
5. Roof Drainage: There is no roof drainage system interior to the building.

C. HVAC:

1. The heating system consists of two gas-fired hot water boilers, each with a circulation pump. There are three hot water zones, each served by a circulator. The boilers are direct vented to the exterior wall with corresponding combustion air intakes connected to each boiler. The gas vent for at least one of the boilers appears to be less than 3 feet above grade, which could be a safety hazard during times with high snow depths. The units appear to be in good condition.
2. Each of the heating zones is controlled by a programmable thermostat located in the mechanical space. There are space temperature sensors located in each of the zones that are wired back to the programmable thermostats.
3. Space heating is provided by hot water fin-tube radiation.
4. The main entrance vestibule has two cabinet heaters. There is another cabinet heater installed near a lower level exit door.
5. The building is not fully air conditioned. There are three ductless split air conditioning systems with outdoor condensing units and indoor fan DX units serving specific areas. They all appear to be about 1.5 tons capacity each. Offices on the second floor have window air conditioning units.
6. There is no mechanical outdoor air ventilation. The building is largely naturally ventilated using operable windows. However, not all areas comply with natural ventilation requirements.

D. Electrical:

1. Electric service to the building is overhead, 200A, 120/240V, 1 phase. Main service disconnect switch is located in the lower level Boiler Room.
2. There are no reports of problems with the distribution system and/or issues with nuisance tripping of branch or feeder breakers.
3. Building lighting consists of various types including surface acrylic wrap-around lens type and recessed lensed luminaires.
4. General power including duplex receptacles throughout the building appears to be adequate for present space usage.
5. In general, the overall condition of the electrical systems and equipment are in good condition, and are adequate for the present programmed use of the building. Any changes and/or upgrades to the mechanical system to serve a change in space programming would more than likely trigger an increase in the service size requiring an upgrade to the service entrance, main service disconnect, and distribution equipment.

6. Lighting upgrades including controls are recommended to suit building use program changes within the building.
7. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation.

### III. PASSIOS SCHOOL

#### A. Fire Protection:

1. The building has two sprinkler services. One is located in a small janitor's closet across from the administration area near the main entrance. The other is in a storage room off of the Cafeteria. Both appear to have been originally installed in 1950.

#### B. Plumbing:

1. Domestic Water: The building water service enters into the storage room adjacent to the cafeteria and next to the kitchen. There are three sets of Boys and Girls rooms located in the facility near each wing. Individual sinks are located in a few areas. There is a drinking fountain located in the cafeteria.
2. Domestic Hot Water: The building has two large indirect hot water fired storage heaters located in the boiler room.
3. Sanitary: There are no plumbing plans available for review of the sanitary drainage system. No information was obtained during the walk-through.
4. Natural Gas: The building is supplied with natural gas serving three hot water boilers located in the boiler room. The capacity of the gas service is at least 13,000 MBH based on the boiler input ratings.
5. Roof Drainage: The roof drainage system was not reviewed.

#### C. HVAC:

1. The heating system consists of three gas-fired hot water boilers, each with a circulation pump. Each boiler is from a different manufacturer and are different styles. The oldest is a Weil McLain cast iron, which has a dual fuel burner. The second boiler is a Buderus cast iron condensing boiler, and the third is a Viessmann stainless steel condensing boiler. The boilers are direct vented to the exterior wall with a draft fan installed in each gas vent. This boiler system also serves the existing high school building through a buried piping system. The units appear to be in good condition and are reportedly running well.
2. Space heating in the classrooms is provided by hot water fin-tube radiation. Unit ventilators are provided in the cafeteria in addition to fin tube radiation.
3. Classroom ventilation is provided by central heating and ventilation units and a classroom exhaust system.
4. The multipurpose room (gym/ auditorium) is ventilated by two heating and ventilating units located above the stairs on either side of the stage.
5. The building is not air conditioned. Some rooms have window air conditioning systems.

6. There is no mechanical outdoor air ventilation. The building is largely naturally ventilated using operable windows. However, not all areas comply with natural ventilation requirements.

D. Electrical:

1. This building has adequate capacity in both its normal power distribution system and backup generator power system to serve current and future building needs.
2. Lighting types vary throughout the building.
3. The building has a fire alarm system.
4. The building has a security system.
5. In general, the overall condition of the electrical systems and equipment are in good condition, and are adequate for the present programmed use of the building.
6. Lighting upgrades including controls are recommended to suit building use program changes within the building.
7. A change in the use group of this building with regard to adding a meeting hall would trigger an upgrade of the fire alarm system to provide code required voice evacuation for the meeting room.

IV. PRIMARY SCHOOL

A. Fire Protection:

1. The building has a sprinkler system. Due to its age, it is recommended that it be completely replaced.

B. Plumbing:

1. The building water plumbing systems are out of service and antiquated. Any use of the building would require a complete demo and replacement of the systems.

C. HVAC:

1. The building heating system consists of one oil-fired cast iron boiler. The buried oil tank has been removed; therefore the boiler is no longer functional. The boiler room has been completely flooded in the past. Complete replacement of the entire heating system is recommended, if the building is to be reoccupied.

D. Electrical

1. This structure has not been unoccupied for roughly 15 years, and has experienced water damage throughout the building.
2. Most of the lighting appears to be original equipment. Quantities of receptacles are minimal.
3. Lighting controls and manual fire alarm pull stations are mounted higher than today's code height of 48 inches.
4. The building has a fire alarm system, device locations and quantities are not per current code.

5. Based on the present condition of this structure, we recommend a complete removal and replacement of all electrical systems. This would include all electrical lighting, controls, receptacles, panelboards, and distribution equipment back to the electrical service entrance point.
6. We recommend a complete new fire alarm system.

V. CODE COMPLIANCE

The following items were noted as code deficiencies in the existing buildings or items that are anticipated to require updating as part of a renovation in order to meet the current building codes. Please note that all existing code deficiencies were not identified during the walk-through survey of the buildings. In general, unless the extent of renovations is significant, any modification to a system would require the affected portions of those systems to meet the building code in effect at the time.

A. Town Hall:

1. Fire Protection: Assuming that this building has an overall area that is less than 7,500 square feet, a sprinkler system would not be required.
2. Plumbing: At a minimum, the following would need to be considered: Fixtures older than Year 1990 would need to be upgraded to be of the water conserving type, all water piping would need to be replaced with lead-free type piping and any other incidentals to make these two items happen would also need to be addressed.
3. HVAC
  - a. Verify outside ventilation air quantity is sufficient for building and space occupancies.
  - a. Individual fan units for any new HVAC units should be selected for below 33,000 BTUH capacity each. A capacity greater than this will require the unit to be provided with 100% outside air economizer capability, requiring larger exterior louvers for intake and relief.
  - b. Supply duct modifications would require upgraded thermal insulation.
4. Electrical
  - a. Upgrade the fire alarm system to provide a voice system for the Meeting Hall.
  - b. Provide code required emergency lighting and exit signage.

B. Ritter Building:

1. Fire Protection: Assuming that this building has an overall area that is less than 7,500 square feet, a sprinkler system would not be required.
2. Plumbing: At a minimum, the following would need to be considered: Fixtures older than Year 1990 would need to be upgraded to be of the water conserving type, all water piping would need to be replaced with lead-free type piping and any other incidentals to make these two items happen would also need to be addressed.

3. HVAC

- a. The boiler sidewall gas vents should terminate at least 3 feet above grade. Four or five feet is recommended.
- b. Verify the extent of spaces that comply with natural ventilation requirements and identify spaces that do not comply. Provide a mechanical ventilation system to serve areas that do not comply with natural ventilation requirements.
- c. Individual fan units for any new HVAC units should be selected for below 33,000 BTUH capacity each. A capacity greater than this will require the unit to be provided with 100% outside air economizer capability, requiring larger exterior louvers for intake and relief.

4. Electrical

- a. Upgrade the fire alarm system to provide a voice system for the Meeting Hall.
- b. Provide code required emergency lighting and exit signage.

C. Passios School:

1. Fire Protection: The existing sprinkler system would need to be upgraded and/or replaced as required to comply with current codes and as to provide complete coverage.
2. Plumbing: At a minimum, the following would need to be considered: Fixtures older than Year 1990 would need to be upgraded to be of the water conserving type, all water piping would need to be replaced with lead-free type piping and any other incidentals to make these two items happen would also need to be addressed.

3. HVAC

- a. Verify the extent of spaces that comply with natural ventilation requirements and identify spaces that do not comply. Provide a mechanical ventilation system to serve areas that do not comply with natural ventilation requirements.
- b. Individual fan units for any new HVAC units should be selected for below 33,000 BTUH (2.75 tons) capacity each. A capacity greater than this will require the unit to be provided with 100% outside air economizer capability, requiring larger exterior louvers for intake and relief. The total capacity of all such HVAC units cannot exceed 300,000 BTUH (25 tons). Additional capacity must be provided with air economizer capability.
- c. In general, the actual extent of work required to meet code will depend on the areas to be renovated and the use and occupancy of the spaces affected.

4. Electrical

- a. Upgrade the fire alarm system to provide a voice system for the Meeting Hall.

- b. Provide code required emergency lighting and exit signage.

D. Primary School:

- 1. Fire Protection: The existing sprinkler system would need to be upgraded and/or replaced as required to comply with current codes and as to provide complete coverage.
- 2. Plumbing: At a minimum, the following would need to be considered: Fixtures older than Year 1990 would need to be upgraded to be of the water conserving type, all water piping would need to be replaced with lead-free type piping and any other incidentals to make these two items happen would also need to be addressed.
- 3. HVAC
  - a. The HVAC systems are not useable in the current condition. Any renovations or use of the building will require all new systems, which would need to meet the building codes in effect at the time of the renovations.
- 4. Electrical
  - a. New fire alarm system.
  - b. New lighting and controls.
  - c. New emergency lighting.



## **STRUCTURAL - GENERAL**

### **PRIMARY STRUCTURAL CODE ISSUES RELATED TO THE EXISTING STRUCTURES**

If any repairs, renovations, additions or change of occupancy or use are made to the existing structures, a check for compliance with 780 CMR, Chapter 34 “Existing Structures” (Massachusetts Amendments to The International Existing Building Code 2009) of the Massachusetts Amendments to the International Building Code 2009 (IBC 2009) and reference code “International Existing Building Code 2009” (IEBC 2009) is required. The intent of the IEBC and the related Massachusetts Amendments to IEBC is to provide alternative approaches to alterations, repairs, additions and/or a change of occupancy or use without requiring full compliance with the code requirements for new construction.

The IEBC provides three compliance methods for the repair, alteration, change of use or additions to an existing structure. Compliance is required with only one of the three compliance alternatives. Once the compliance alternative is selected, the project will have to comply with all requirements of that particular method. The requirements from the three compliance alternatives cannot be applied in combination with each other.

The three compliance methods are as follows:

1. Prescription Compliance Method.
2. Work Area Compliance Method.
3. Performance Compliance Method.

#### **Comment**

The approach is to evaluate the compliance requirements for each of the three methods and select the method that would yield the most cost effective solution for the structural scope of the project. The selection of the compliance method may have to be re-evaluated after the impact of the selected method is understood and after analyzing the compliance requirements of the other disciplines, Architectural, Mechanical, Fire Protection, Electrical and Plumbing.

Since the existing buildings are un-reinforced masonry wall structures, the analysis and reinforcement of the existing structures would be governed by the requirements of the required of the Seismic Hazards section based on the percentage of work area compared to the aggregate area of the building.

#### **Prescriptive Compliance Method**

In this method, compliance with Chapter 3 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified are limited to the structural requirements of this chapter.

#### **Additions**

Based on the project scope, the following structural issues have to be addressed:

- All additions should comply with the code requirements for new construction in the IBC.

- For additions that are not structurally independent of an existing structure, the existing structure and its addition, acting as a single structure, shall meet the requirements of the code for new construction for resisting lateral loads, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased by more than 10 percent, these elements can remain unaltered.
- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.

## **Alterations**

- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For alterations that would increase the design lateral loads or cause a structural irregularity or decrease the capacity of any lateral load carrying structural element, the structure of the altered building shall meet the requirements of the code for new construction, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased by more than 10 percent, these elements can remain unaltered.

## **WORK AREA COMPLIANCE METHOD**

In this method, compliance with Chapter 4 through 12 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified are limited to the structural requirements of these chapters.

In this method, the extent of alterations has to be classified into LEVELS OF WORK based on the scope and extent of the alterations to the existing structure. The LEVEL OF WORK can be classified into LEVEL 1, LEVEL 2 or LEVEL 3 Alterations. In addition, there are requirements that have to be satisfied for additions to the existing structure.

The extent of the renovations (includes Architectural, FP and MEP renovations) for this project will exceed 50 percent of the aggregate area of each of the buildings, thus the LEVEL OF WORK for this project would be classified as LEVEL 3 Alterations. This would require compliance with provision of Chapter 6, 7 and 8 of the IEBC. If the scope of the project includes new additions to the existing structure; this would trigger compliance with provisions in Chapter 10 of the IEBC.

### **Level 3 Alterations**

- Any existing gravity, load-carrying structural element for which an alteration causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For alterations where more than 30 percent of the total floor area and roof areas of a building or structure have been or proposed to be involved in structural alterations within a 12 month period, the evaluation and analysis shall demonstrate that the altered building complies with the full design wind loads as per the code requirements for new construction and with reduced IBC level seismic forces.

- For alterations where not more than 30 percent of the total floor and roof areas of a building are involved in structural alterations within a 12 month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads at the time of the original construction or the most recent substantial alteration (more than 30 percent of total floor and roof area). If these alterations increase the seismic demand-capacity ratio on any structural element by more than 10 percent, that particular structural element shall comply with reduced IBC level seismic forces.
- For alterations that involve structural alterations to more than 30 percent of the total floor and roof area of a building within a 12 month period, the evaluation and analysis shall demonstrate that the altered building structure complies with IBC for wind loading and with reduced IBC level seismic forces.
- For alterations where more than 25 percent of the roof is replaced for buildings assigned to seismic design category B, C, D, E or F, all un-reinforced masonry walls shall be anchored to the roof structure and un-reinforced masonry parapets shall be braced to the roof structure.

### **Additions**

- All additions shall comply with the requirements for the code for new construction in the IBC.
- Any existing gravity, load-carrying structural element for which an addition or its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For additions that are not structurally independent of any existing structures, the existing structure and its additions, acting as a single structure, shall meet the requirements of the code for new construction in the IBC for resisting wind loads and IBC Level Seismic Forces (may be lower than loads from the Code for New Construction in the IBC), except for small additions that would not increase the lateral force story shear in any story by more than 10 percent cumulative. In this case, the existing lateral load resisting system can remain unaltered.

## **PERFORMANCE COMPLIANCE METHOD**

Following the requirements of this method for the alterations and additions may be onerous on the project because this method requires that the altered existing structure and the additions meet the requirements for the code for new construction in the IBC.

## **PARTICULAR REQUIREMENTS OF COMPLIANCE METHODS**

For our project, in order to meet compliance with one of the two compliance methods “Prescriptive Compliance Method” or the “Work Area Compliance Method”, we have to address the following:

### **Prescriptive Compliance Method**

#### Additions

The proposed additions would be designed structurally independent of the existing structures, thus, would not impart any additional lateral loads on the existing structure.

If the proposed alterations are such that the alterations increase the design lateral loads on the existing building or cause any structural irregularity or decrease the lateral load carrying capacity of the building, the structure of the altered building shall meet the requirements of the Code for New Construction in the IBC.

If the proposed additions increase the design gravity load on portions of the existing roof members, these members would have to be reinforced and this incidental structural alteration of the existing structures would have to be accounted for in the scope of the alterations to the existing schools and would trigger requirements for alterations.

#### Alterations

Alterations that would increase the design gravity loads by more than 5 percent on any structural members would have to be reinforced.

If the proposed alterations of the structures increase the effective seismic weight on the existing structures due to the greater snow loads from the drifted snow against any proposed additions, or, by addition of equipment on the roof, the increase of the effective seismic weight from the drifted snow and the equipment would require that the existing lateral load resisting system comply with the requirements of the code for new construction in the IBC and it would increase the demand-capacity ratio on certain structural elements of the existing lateral load resisting system.

#### **Work Area Compliance Method**

##### Level 3 Alterations

If the proposed structural alterations of an existing structure are less than 30 percent of the total floor and roof areas of the existing structure, we have to demonstrate that the altered structure complies with the loads applicable at the time of the original construction and that the seismic demand-capacity ratio is not increased by more than 10 percent on any existing structural element. Those structural elements whose seismic demand-capacity ratio is increased by more than 10 percent shall comply with reduced IBC level seismic forces. The percentage increase in seismic demand-capacity ratio on any particular structural element from the added snowdrift load against the proposed addition would be fairly low, thus, this would not have any major impact on the existing lateral load resisting system, though we would have to verify that the increase in seismic demand-capacity ratio on any of those particular structural elements is not greater than 10 percent.

If the proposed structural alterations of an existing structure exceed 30 percent of the total floor and roof areas of an existing structure, we have to demonstrate that the altered structure complies with the IBC for wind loading and with reduced IBC level seismic forces.

The seismic design category (SDC) of the existing structures is 'B'; thus, the replacement of the existing roofs would trigger anchorage of un-reinforced masonry walls to the roof structures and bracing of un-reinforced masonry parapets to the roof structures. All un-reinforced masonry walls in the existing schools will have to be identified. These un-reinforced masonry walls are required to be anchored to the roof structures. Since there are no existing un-reinforced masonry parapets, this requirement does not have any impact on the structural scope of the project.

### Additions

The proposed additions would be designed structurally independent of the existing structures, thus, they would not impart any additional lateral loads on the existing structures.

### **SUMMARY**

The compliance requirements of the two methods, in most respects, are very similar. The Work Area Compliance Method would trigger anchorage of un-reinforced masonry walls, if re-roofing of the existing structures is included as part of the scope for this project. The Prescriptive Compliance Method would require that the existing lateral load resisting systems meet the requirements of the code for new construction of the IBC, even for small increases of design lateral loads. We are required to comply with requirements of Seismic Hazards (Sections 303.7 and 807.5) for the anchorage of masonry walls where the work area exceeds 50% of the aggregate area of the building. Depending on the scope of the project, an appropriate compliance method can be selected.

It is likely, if the proposed renovations are extensive, that the existing structures may be required to be updated to meet the requirements for the Code of New Construction which may require additions of masonry shear walls or structural steel braces into the structures.

**TOWN OF LUNENBURG CAPITAL ASSESSMENT – STRUCTURAL**  
**October 26<sup>th</sup>, 2015**  
**Prepared by: Marshall Puffer, Engineers Design Group**

## **TOWN HALL**

### Basis

This description is based on a walkthrough of the building on October 15<sup>th</sup>, 2015, renovation plans from Hammer Kiefer and Todd, dated April 7<sup>th</sup>, 1989 and an inspection report from McKenzie Engineer Company, dated May 29<sup>th</sup>, 2013. We did not remove any finishes or take any measurements during our visit so our understanding of the structure is limited to our observations and the above mentioned drawings/reports.

### Building Description

The building is a two story post and beam wood building with a stone foundation that was originally constructed as a barn in the early 1800's. The post and beam framing is constructed with pegged connections and the posts in the basement sit on small stone/concrete pedestals. The roof consists of wood trusses supported by the exterior walls with small wood beam infill framing and wood roof decking. The roof trusses also support a large attic area. There is a clock tower through the roof that had added steel support through the 2<sup>nd</sup> and 1<sup>st</sup> floors to the basement. Outside of the building there is a small wood porch at the first floor and a metal emergency stairway leading to the second floor.

### Existing Conditions

There are many elements that are in need of structural repair. The wood posts in the basement columns have evidence of rot at the base and many are not fully supported by the stone pedestals. There is evidence of leaking through the stone foundation wall. Many floor joists appear to be deflecting most likely to added load on the support floor. Some pegs in the connections appeared to be missing. Beams and posts have been added in many locations in the basement, however they do not appear to be stable as there is no mechanical connection between the added structure and the existing. There is evidence of water damage in some of the members in the attic area. The framing supporting the roof decking appears to be undersized per today's building code. There is significant rot in a large wood beam on the front gable end that appears to have greatly compromised this member. The clock tower shows signs of water damage/weathering, but no evidence of rot.

## **RITTER BUILDING**

### Basis

This description is based on a walkthrough of the building on October 15<sup>th</sup>, 2015. There were no existing drawings available at this time. We did not remove any finishes or take any measurements during our visit so our understanding of the structure is limited to our observations.

### Building Description

The building is a masonry and wood building built in 1909 with an addition built in 1963. The foundation is a mix of brick and stone with exterior brick bearing walls. The roof of the original building is wood roof decking supported by wood roof trusses, wood posts and sloping wood joists supported by the exterior brick walls. The attic level is supported by wood joists spanning between wood posts trusses and the exterior brick bearing walls. While no access to the 1963 structure was available, it is believed that it is of similar construction to the original building.

### Existing Conditions

Overall the structure appears to be performing well. There is no evidence of major cracking in the exterior bearing walls nor the foundation. There are some areas of brick and stone that need re-pointing. There are no signs of heaving or major cracking noticed in the slab-on-grade. There is evidence of minor leaking in the attic area, but it does not appear to have rotted any of the structural members. Note that observations of the 1963 building were made on the exterior only.

## **PRIMARY SCHOOL**

### Basis

This description is based on a walkthrough of the building on October 15<sup>th</sup>, 2015. We did not remove any finishes or take any measurements during our visit so our understanding of the structure is limited to our observations.

### Building Description

The building is two story a masonry exterior bearing wall structure with a concrete and masonry foundation. The second floor is supported by a cast-in-place concrete slab supported by interior and exterior masonry bearing walls. The roof structure is believed to be a combination or metal roof decking supported by steel beams supported by steel lally columns (over the gymnasium) and metal roof decking supported by steel roof trusses supported by masonry bearing walls throughout the rest of the structure.

### Existing Conditions

The structure has been abandoned for many years and shows evidence of disrepair. The exterior lintels at the windows all show evidence of rusting and are corroding in some spots. The exterior brick shows signs of minor cracking and water damage. The interior concrete slabs have heaved and cracked in many places. The second floor also shows heaving due to failure in supporting masonry walls. Major water damage from missing roofing over the gymnasium was viewed. It is unknown if this compromised any structure. Note that we did not entire the attic space to view the structure supporting the roof.

## **PASSIOS SCHOOL**

### Basis

This description is based on a walkthrough of the building on October 15<sup>th</sup>, 2015 and the existing drawings dated March 6<sup>th</sup>, 1950 (revised April 25<sup>th</sup> 1951). There is an addition built in 1976. We did not remove any finishes or take any measurements during our visit so our understanding of the structure is limited to our observations and the existing drawings.

### Building Description

The building is a primarily a one-story structure with a small second story area and a two-story open gymnasium. The structure is steel framed with wide flange members supported by steel columns and exterior bearing walls on concrete spread footings and exterior foundation walls, respectively. The exterior of the building is mostly brick with large windows supported by the concrete foundation wall. The roof decking is wood planks. There are steel framed skylights throughout the corridor areas. The first floor is slab-on-grade with no basement area noted.

### Existing Conditions

Overall the structure appears to be performing well. The areas of exposed steel and roof decking appeared to be in good condition with no evidence of leaks or rot/corrosion. There are minor cracks in the masonry in the boiler room area. All other masonry appeared to be in good condition. No issues were seen in the steel supporting the skylights. No major cracks or heaving was present in the slab-on-grade. Note that we did not remove any ceilings to view the roof structure.



