Town of Orleans

Mr. John Kelly, Town Administrator
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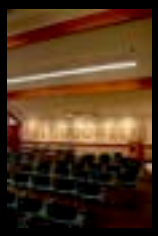


Date : April 10 12, 2019

Snow Library
Current Facility Conditions

Hale Associates, Architects with Mary Braney, Library Consultant
Boston, MA

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Executive Summary - Current Facility Conditions Report

As part of the Town of Orleans request for a space needs assessment of Snow Library, Hale Associates, Architects conducted a Current Facility Conditions Report. This Report includes a Structural Existing Conditions and Code Assessment Report performed by Coastal Engineering Co. Findings are based on several visits with the engineers from Coastal, discussion with Library Trustees and Staff, and our review of the 1992 architectural and engineering drawings made available to us by the Library Director. This report serves as a complement to the Snow Library Building Program Study completed in March 2019.

Results from study of the current Snow Library facility condition highlight a number of deficiencies with the existing library building. These include:

- A lack of an automatic fire sprinkler system;
- Emergency egress on all levels, that does not meet current code;
- Structural components more typical of residential construction rather than public facilities limiting places where books can be housed;
- Inadequate and hazardous parking.

Given that the companion Library Building Program Study identifies the need for approximately 32,000 gross square feet to meet the current and future program needs and the current facility is 16,600 square feet, this report details a number of facility areas that are inadequate to meet current and future program requirements. Among these are:

- Program areas, e.g. children's, teens, and adult reading room that cannot be acoustically separated from adjacent areas, e.g. periodical and reading areas, work tables and the main circulation desk;
- Existing collection shelving areas that have reached maximum capacity, lack flexibility, and have become crowded and compromised;
- A severe lack of quiet and small meeting spaces limits programming;
- The need to more than double the capacity of the Crane Gallery/Meeting Room and make it more flexible;
- Non-existent climate controlled and adequate security for housing and making accessible the Library's special collections.

The expected remaining life of the current building (assuming normal maintenance) is 8-12 years. Any alterations to the current building would require substantial structural work, and trigger the need to bring the library fully up to current code requirements.

Introduction

The Snow Library is located on a 'rhomboid shaped' site at 67 Main Street near Orleans' town center. The library site looks over the town's adjacent Village Green to the South; and abuts the Friend's Marketplace village grocery to the North. The current building is well situated within the 'Village Center District' of Orleans. Across the street is a Rockland Trust bank branch, Orleans' US Post Office, as well as a consignment shop and several small, mercantile businesses.

Village Green view of the Snow Library's main entrance.

The original Snow Library was built in 1877 but destroyed by fire in the Cape blizzard of 1952. The existing library was designed, constructed and opened to the public in 1953/4. There have been a series of additions, with minor improvement and maintenance projects in 1977 and a major renovation/addition in 1992. In 2016 work included substantial upgrade and replacement of the library's original mechanical equipment. The current structure remains a largely Mid-Cape residential style architecture, which in 1992 was wrapped in a unifying facade and accepted as the town's main public library.

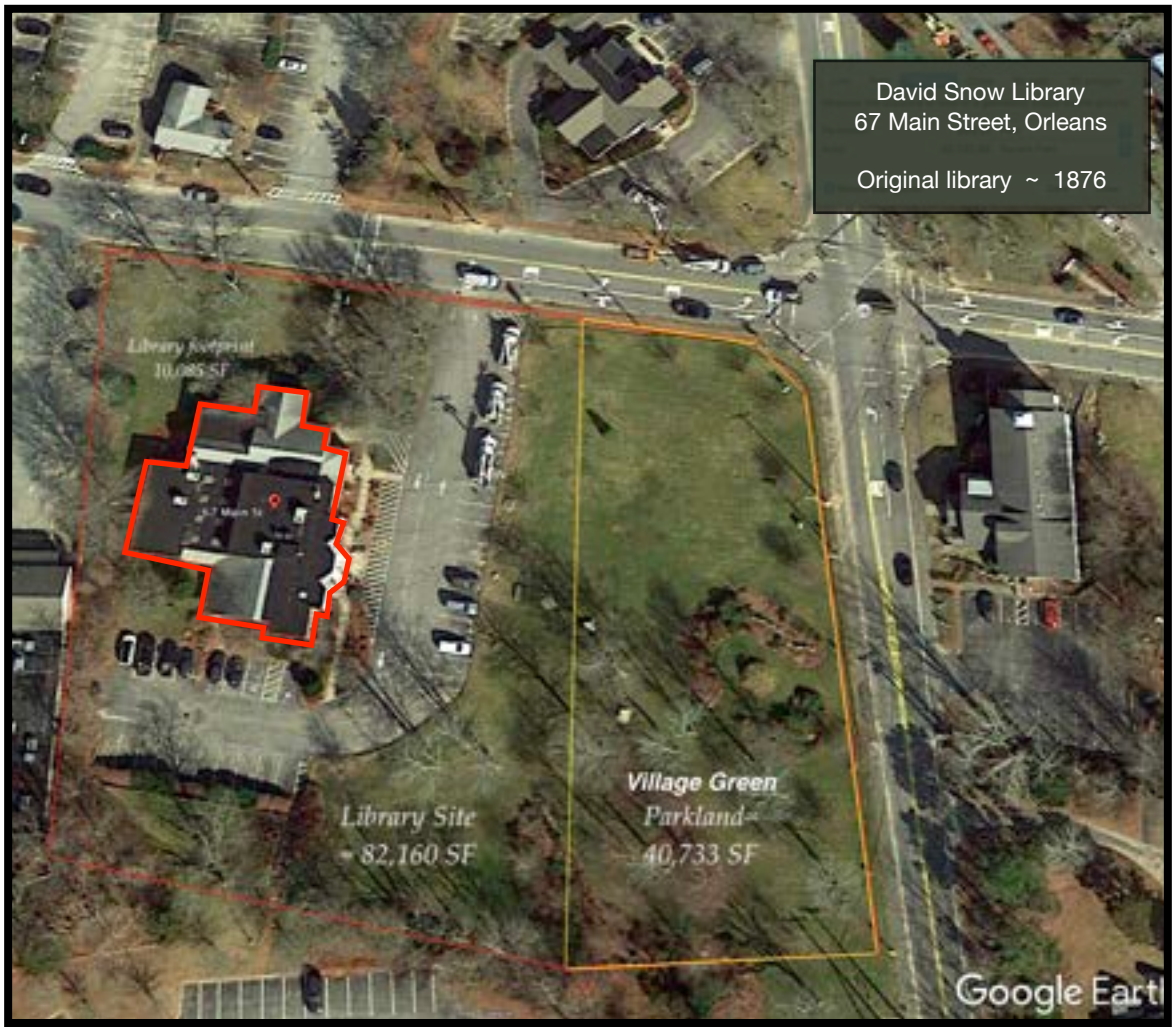
The current library contains 16,600 gross square feet on three stories, with the Main level used for the bulk of public services; a Lower Level is primarily used for Adult stacks, study areas and staff functions. A modest Mezzanine contains the Teen area, non-public spaces and a small balcony overlooking the main floor of the Meeting Room.

The following is our assessment and opinion of the Snow Library, based on several visits with our Engineers, discussions with the library Trustees and Staff during 2018, and our review of the 1992 Architectural and Engineering drawings made available to us by the library Director.

Library Facility Current Conditions

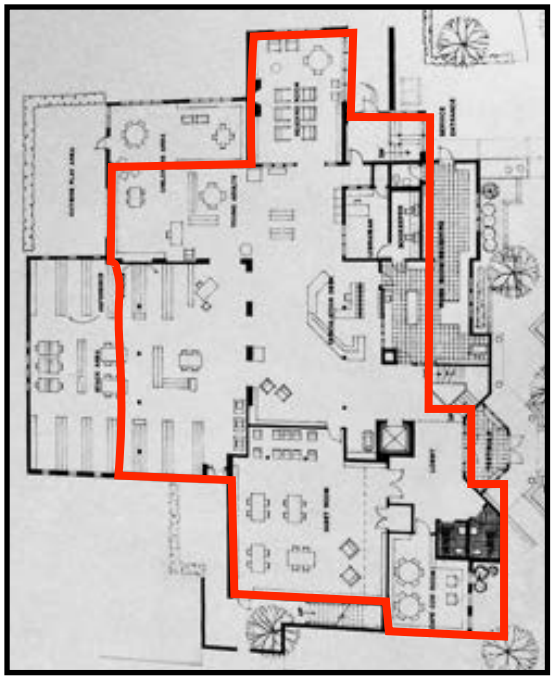
Site and Landscape

There are (37) parking spaces on site, including (2) Handicap spaces with numerous car parking spaces on abutting or adjacent private properties and surrounding streets. The large Nauset Regional Middle School and its parking is adjacent, to the South.



The library site is 82,200 sf; and the Village Green is 40,700 sf. 'e' is Main Entrance.
A measured Site Survey is beyond the scope of our study.

The library site slopes from a high point at the Friend's Market boundary, then slopes down towards the Village Green where the grade makes a considerable dip and then crosses the open 'Village Green' parkland space.
The library reports that patrons arrive primarily by auto. When the library hosts a popular event, available parking is woefully inadequate. This parking problem dramatically surges in the summer with summer residents and seasonal visitors.

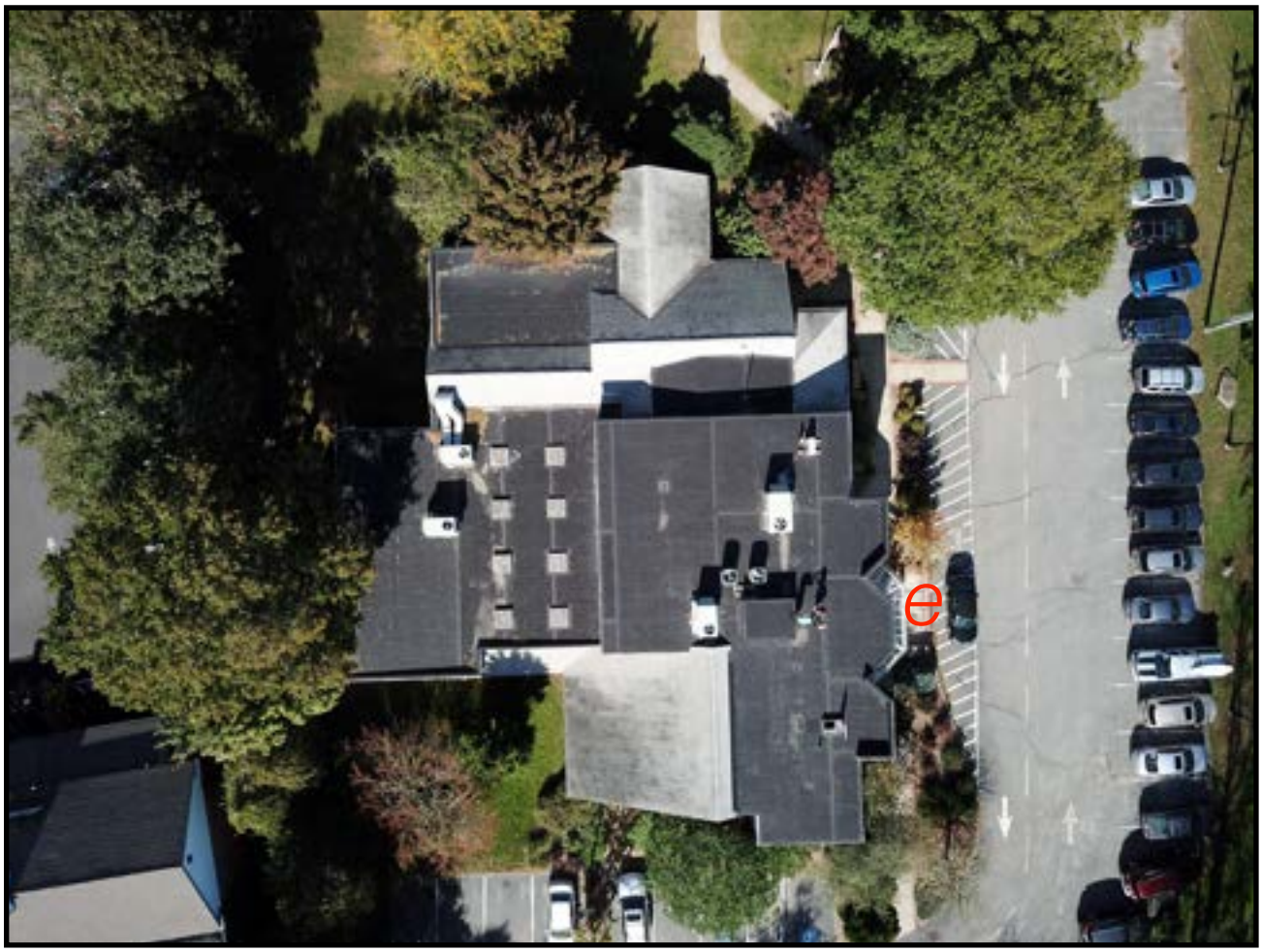


MAIN FLOOR PLAN

SITE :

The footprint of the library is an agglomeration of spaces added to the original floor plan (red).

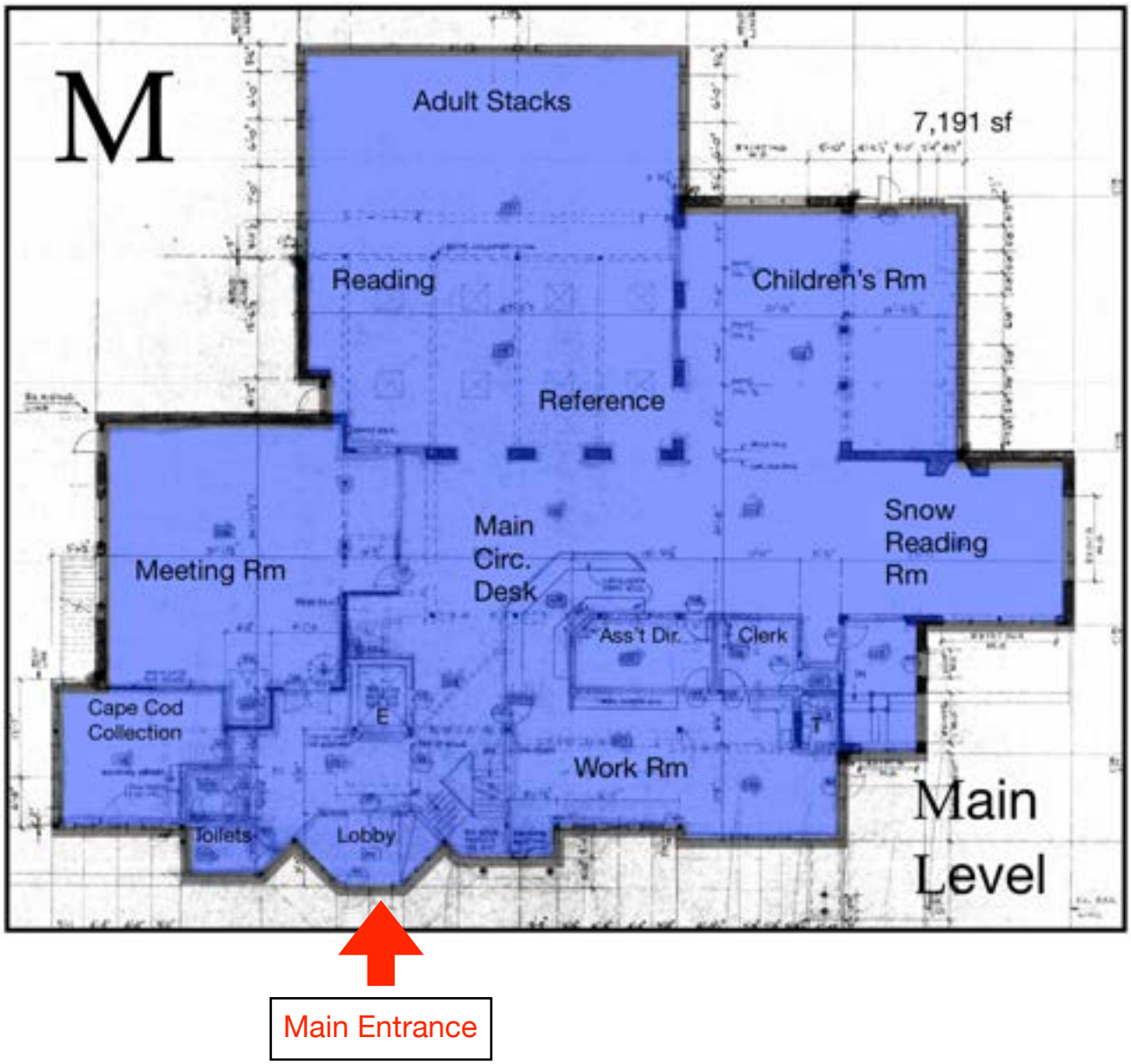
The parking lot pavement and asphalt curbing are in poor to fair condition with insufficient pavement base support in many places.



Rooftop view. Black areas are flat membrane roofing. Gray areas are sloping asphalt shingle.

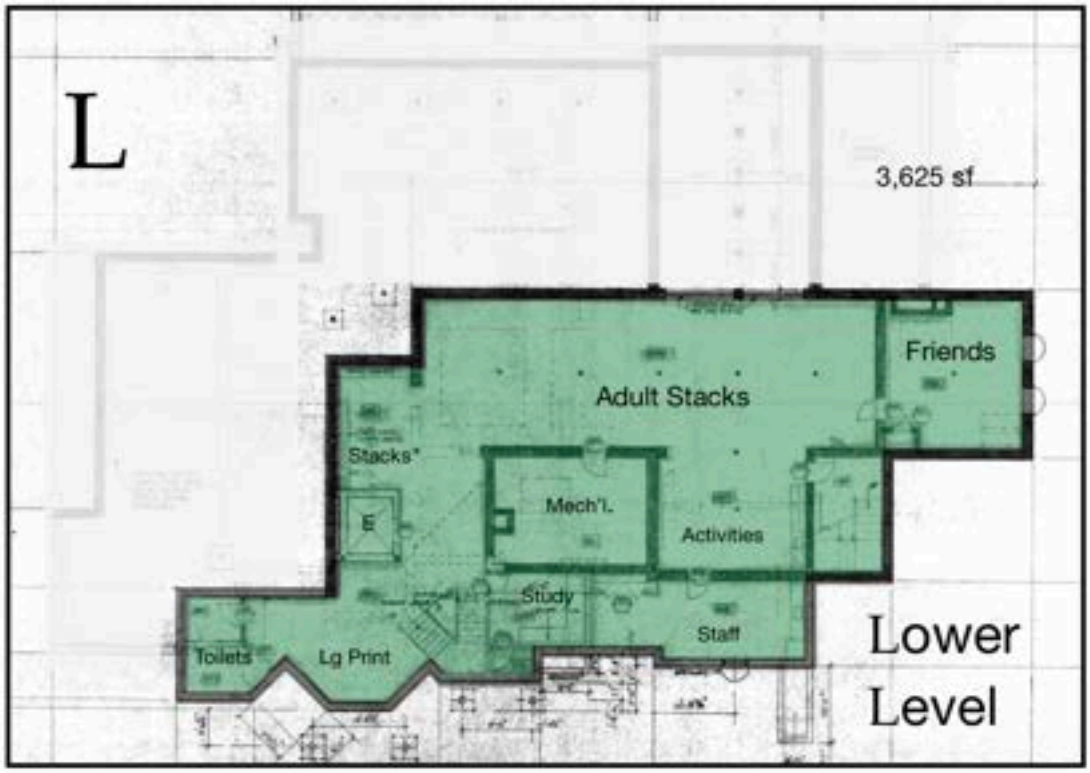
(Above) *The library is located on Main Street, and faces the town's Village Green.*
(Below) *Aerial View (from above the Nauset Middle School). The Friend's Marketplace is at the left.*

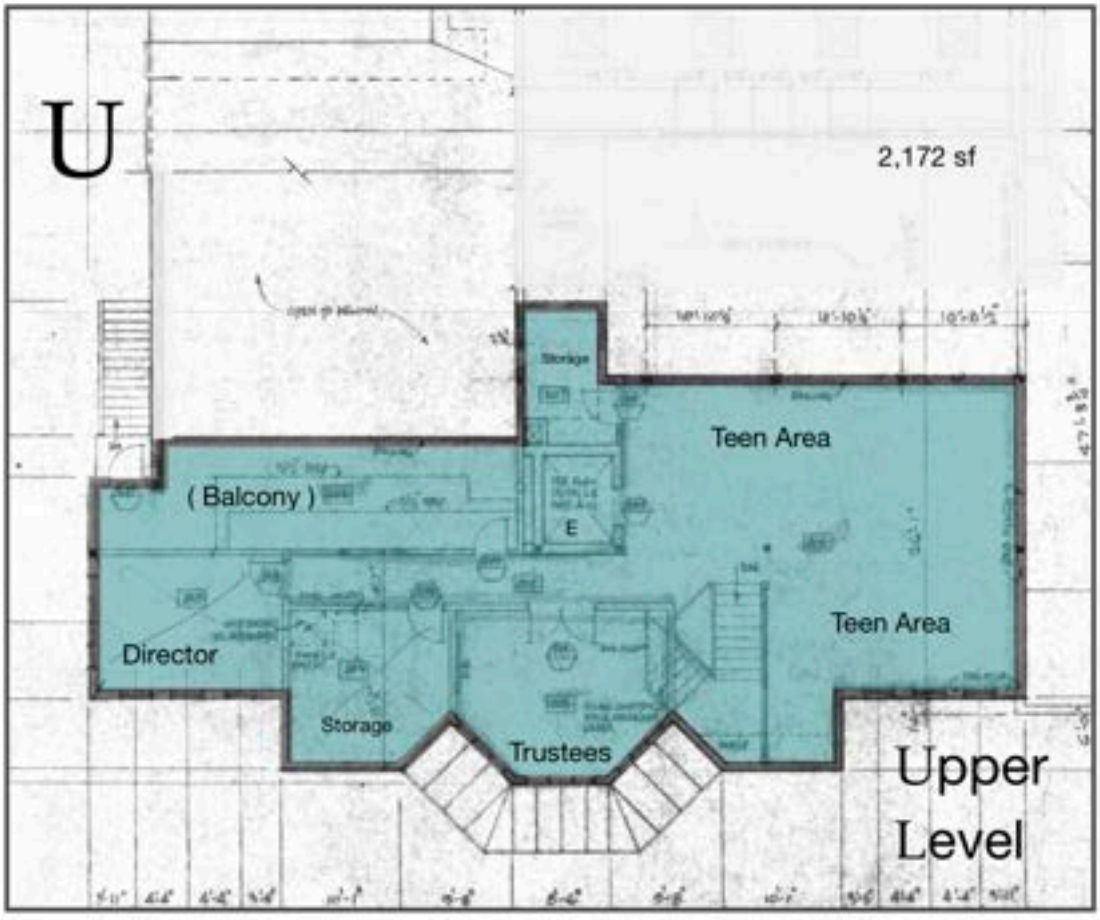
Floor Plans



Floor Plan

(Square footages are net square feet.
The building's foot print is approx. 10,100 sf.)


L
3,625 sf
Friends
Adult Stacks
Stacks
E
Mech'L
Activities
Study
Staff
Toilets
Lg Print
Lower
Level


U
2,172 sf
Storage
Teen Area
(Balcony)
E
Director
Teen Area
Storage
Trustees
Upper
Level

Architectural Character : Exterior

Orleans' Public Library ~ Main Entrance

The Snow Library has a clumped-together, closed architectural character which isn't welcoming with its out-of-date architectural image. This 'clumping' arrangement contributes to confusion about where program areas are located within the building, resulting in overall library service inefficiencies.

In general, the character- defining elements of the exterior (sloping glass canopy entrance, EIFS wall cladding, vinyl siding clapboards and residential style windows) are intact and have served adequately. These cladding components remaining life span is approximately 5-10 years. Some elements of the exterior construction will require updating and replacement in the very near future. Some of the major elements could be upgraded in the context of a major capital public project (a complete 'gut' rehabilitation and large new addition).

Obsolete and incompatible building system components should be removed when all building systems are updated (utility boxes on concrete pads, vestigial lighting, irrelevant signage, inadequately sized utilities, waste and potable water services, etc) .

Architectural Character : Interior

Main Floor Level

The **Circulation Desk** wraps around a corner of the Main level. The Circulation desk is built as a basic wooden frame box, faced with a plastic laminate desk front and plastic laminate top surface. (Over thirty linear feet of service counter, including a three-foot wide section at wheel-chair height faces the new materials area and the business collection alcove.).

Main Floor Level

'The **Children's Area**, containing materials for preschoolers and school-age children is charming, small and cluttered. On one side cozy window seats, child-sized lounge chairs, a colorful rug, a puppet theater and a play table attract preschoolers. Picture books are arranged at the children's eye level.'

The interior design finish is gyp board walls and ceilings with a thin, adhered carpet. It is acoustically, 'normally quiet' except when there are large surges of children. Windows are residential quality with double glazed units that are trimmed with painted low-end soft woods .

Main Floor Level

New Materials and Acquisitions, open areas. Portions of the non-fiction collection are convenient to the Reference and Circulation Desks. The **Periodicals** and **Reading Areas** flank the Circulation area and the Children's Area and present a haven for casual readers. Unfortunately the Children's area next-door is open to this space, making it noisy with exuberant young patrons so close by ! The YA area on the upper level is open directly to the primary adult transaction space below it. At busy times, both areas affect each other with distracting cross chatter.

Main Floor Level

‘ The **Reference Desk Area** is behind a desk wall topped by a narrow shelf. The wall is a barrier to interaction with patrons requesting assistance both physically (either librarian or patron has to stand and bend to see the computer or a document) and acoustically (all conversations can be overheard). ‘ The Reference desk is built with the same basic wooden frame box, faced with a plastic laminate front panel and p-lam top surface, as the Main Circulation Desk.

Main Floor Level

'The **'Marion Craine' Meeting Room** provides both library event programs, town meetings for the General public and incidental Art Gallery wall space. Well-attended programs occur daily. Sometimes several in each day. The Meeting Room gallery exhibits change monthly with local Cape and invited artists. If programs require different arrangements, furniture can easily be moved. About (80) individuals can be comfortably accommodated in loose, auditorium-style seating.' Acoustically, the space is modestly adequate. The floor is sound absorptive with a thin, wall-to-wall carpet. This absorption is assisted by a steeply sloped ceiling. Wall/ceiling finishes are gyp-board which has poor sound benefit. There is no wall absorbency material covering the rear wall (opposite the speaker) to prevent flutter echo. Storage for this busy room is minimal and forces the library to limit its equipment and furnishings, storing tables and chairs in the hallway.

Upper Floor Level

The **Young Adult** area contains the young adult collection for research and recreational reading and provides comfortable work and social space for middle school students and high school students. It has the architectural feeling of a 'loft' space. This means that it is an open space with no walls or barriers and is not acoustically separate from the Main Circulation desk below, which can be busy and quite noisy. Occasionally adults looking for large table space drift up to this **YA** area. The space is woefully inadequate for young adults who can spill out over the space after school. In addition, structural problems in the floor framing have been discovered and addressed (see Structural Report in Appendix).

Lower Floor Level

Lower level Adult steel stacks

The Adult shelving layout, including fiction and non-fiction, is packed into the Lower level of the library. Aesthetically the Snow's basement stack area meets minimal standards for a traditional steel, 7-shelf, budget stack area. The steel (7) shelf units are 90" tall with top ties and the basement's rough floor-to-ceiling dimension is 96". Calculating carpeting, space for hidden electrical wiring and an acoustical ceilings tile system, the steel stacks are a tight fit ! There is no room for a Building Code described automatic sprinkler system. This is a crucial code non-compliance in this Assembly class structure that serves the general public .

The steel stack areas are not flexible and look to be 'maxed-out' for any future expansion or even substantial rearrangement. The are no display end panels for display or short shelves for today's tablet-type OPACs.

Landscape Character

Lawns and mature shrubs soften the view of the library from Main Street.

Rear corner (from Main St.)

Lawns and the library's large oak stand next to the ceremonial flag, as seen from the entrance main driveway.

Front corner (from driveway entrance)

Flowering shrubs and healthy bushes soften the handicap walkway to the library's entrance.

Front corner (from school steps)

Library rear: Meeting Room exit door (right) and Adult Reading Room (left). Students cut through this back corner to quickly access Main Street and the Friends Market. This is a very secluded pathway.

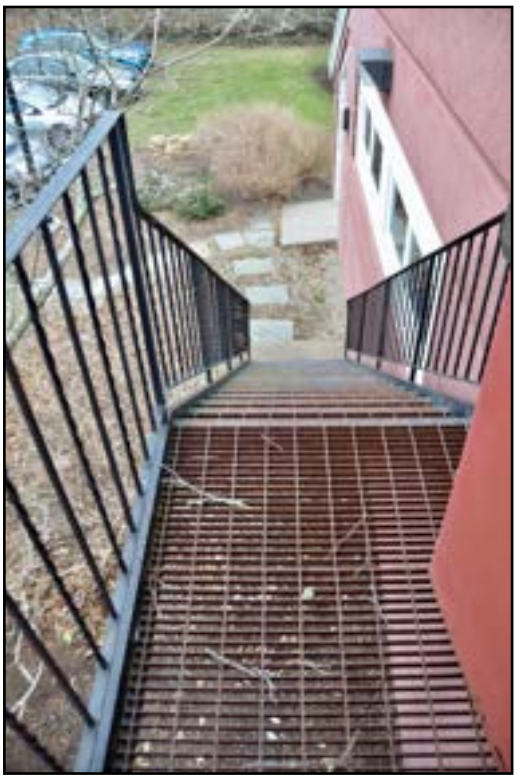
Rear corner (from rear Parking area)

Patron Accessibilty : ADA Compliance

Although the Main Entrance doors to the building have been made wheelchair accessible, (and from there most areas on the Main level of the building are potentially wheelchair accessible), there is no accessible emergency second means of egress from the Meeting Room. This does not meet the requirements of MAAB, which mandates that all public entrances be accessible.

Additionally, the main level non-public area offices which must be accessible, are crowded with materials, furniture and dead-end work spaces. These have insufficient clearances to meet ADA requirements and/or Massachusetts Architectural Board (MAAB).

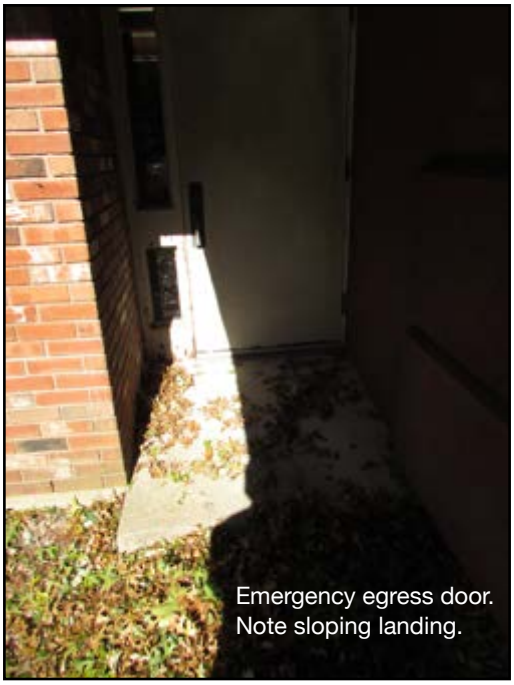
Service Entrance landing outside Receiving and Staff Work Room areas.



Meeting Room Mezzanine exit stairs.

Meeting Room emergency egress door. Note sloping landing.

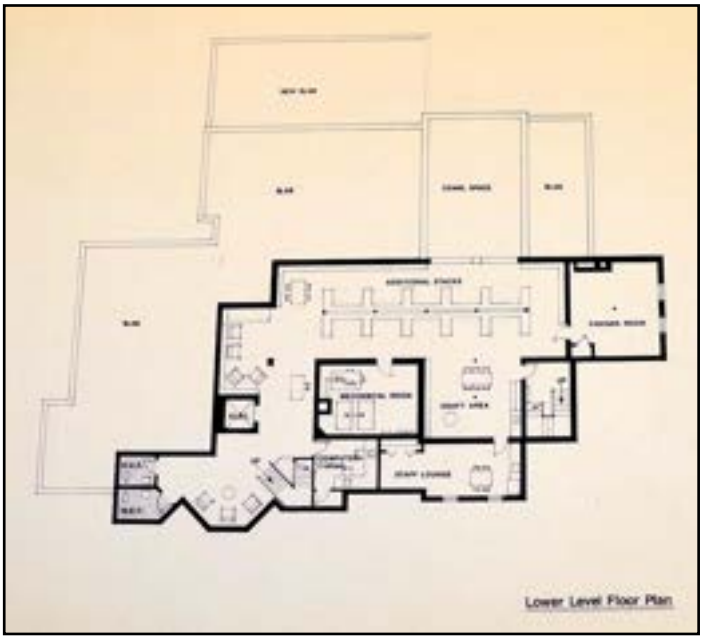
Inaccessible Meeting Room and Adult Stack Area egress landings (and stair systems) are not in conformance with ADA and/or Massachusetts Architectural Board (MAAB). The book return slot handle is much too high to meet ADA/MAAB standards.

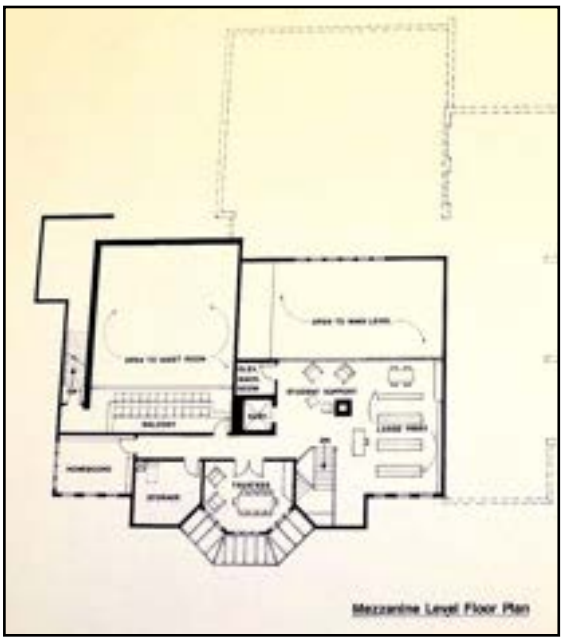


Emergency egress door.
Note sloping landing.

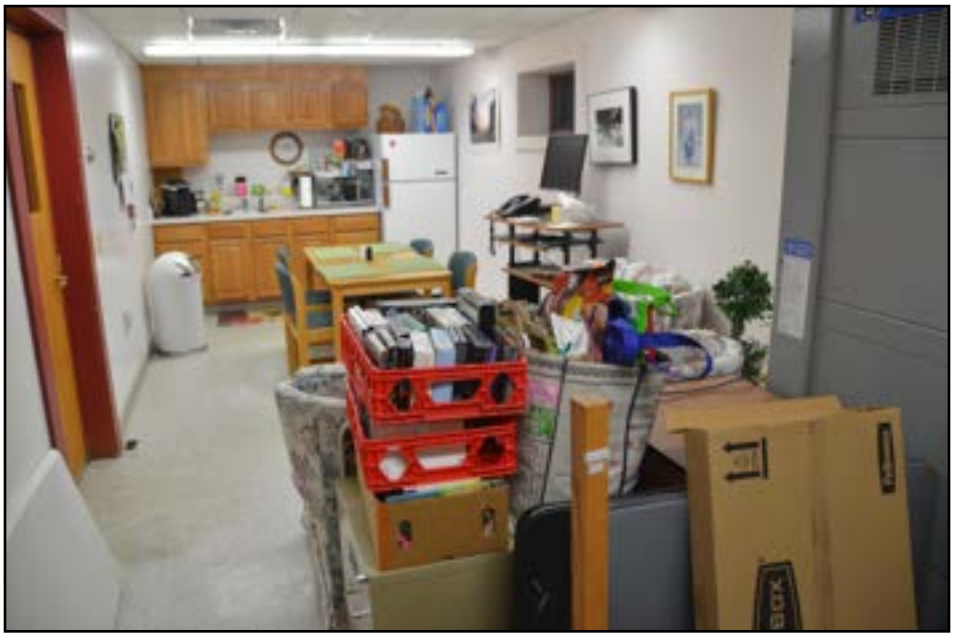
Slot: is too high

Emergency fire escape.



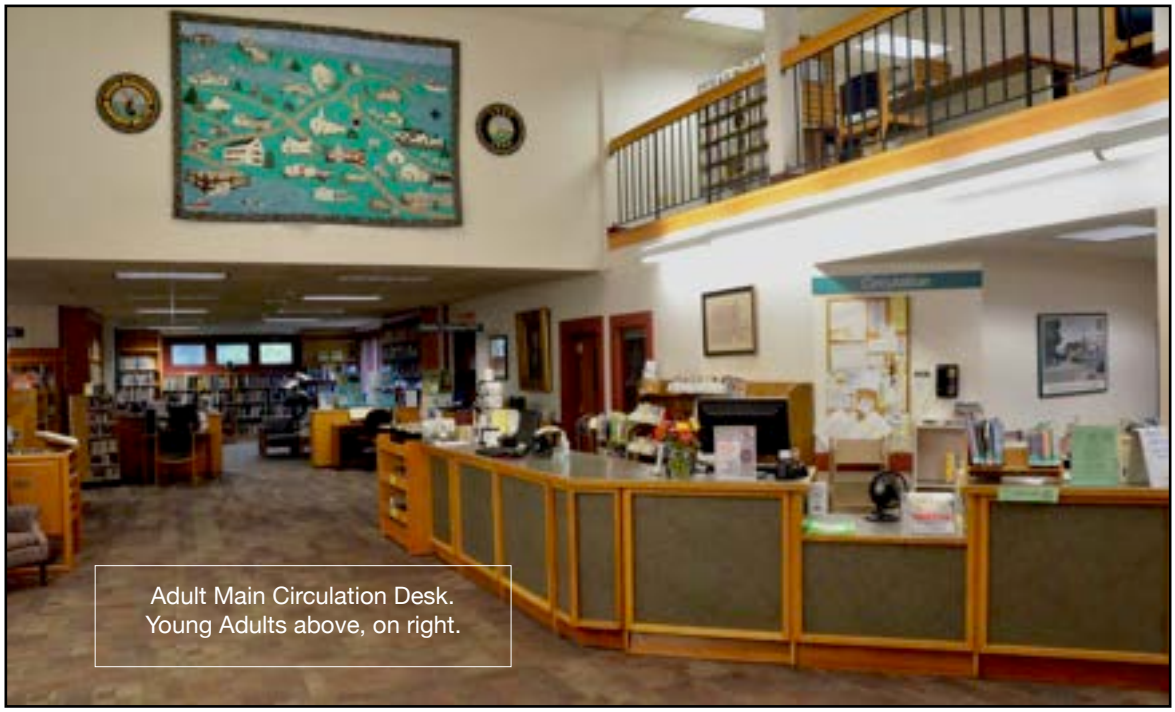


Both **Lower and Mezzanine** floor levels do not have (2) legal means of (fire-escape) egress. The Building Code requires (2) enclosed, fire-rated stairwells at each floor level. (The elevator does not count as a means.) The Lower level has only one stairwell that is enclosed; the Mezzanine level is through an open Balcony. For both levels, the 2nd means of egress is by way of the central communicating stairway which is convenient but not enclosed and therefore does not meet this Code requirement.



The lower level **Staff Room** kitchen cabinets, plumbing fixtures and furniture are not in conformance with ADA and/or Massachusetts Architectural Board (MAAB) standards.

Library Needs : Collections and Services



Adult Main Circulation Desk.
Young Adults above, on right.

One of the greatest challenges that nearly every aging library encounters, is the ineluctable pressure of dynamic changes to their collections. Libraries designed for a specific collection capacity face design challenges with the changing requirements for the spaces they were designed for. Forward thinking library planners recommend a rich variety of spaces that incorporate maximum flexibility in new library design.

Adult Reference Desk 'the fortress'. Children's Room on

Children's Room.

Adult steel stacks.

At the Snow Library, the existing Adult collection shelving has reached their maximum capacities and are becoming crowded and compromised, frustrating patrons who want to linger and enjoy the library. Adult book shelving units are maxed out, (ex.) forcing (7) shelf heights in the Adult Collections. This is extremely difficult for patrons who simply can't reach to 80" heights to fetch a book. In the Children's room seating and displays are at a premium.

Children's Room.

2018 Snow Library Building Program
(an excerpt)

' (Orleans deserves) a library building that encourages and fosters the sense of community for which Orleans is known and will not only be an important asset for the town but more significantly, will be a major factor as the library strives to fulfill its mission 'to sustain and energize the intellectual, cultural, and social life of the community of Orleans'.

Community Meeting Space

Meeting Room - Main Floor

The Craine Meeting Room is very popular and in constant demand. Today's functioning capacity is approximately 80 persons, the future library programming calls for 200. It is heavily booked by the library and outside groups looking for adequate space - anywhere in town. Tables, chairs and equipment storage is teensy for a meeting room of this size that is expected to serve a wide variety of program furnishing configurations. The original architectural layout did not intend this room to be used as a meeting room.

Meeting Room - Mezzanine

Outdated Building Systems

Book delivery box. (defunct)

1950's original
Book Return Slot. (defunct)

Original Library Sign and Light Fixture Location. (defunct)

Exterior Envelope - Conditions

The Main library roof is primarily a flat membrane roof. Generally in good condition; the parapet wall cladding shows considerable de~lamination and deterioration. The membrane appears to be a relatively new installation.

The Meeting Room, and sloping mansard and gable roof (gray) areas are finished with architectural asphalt strip shingles.

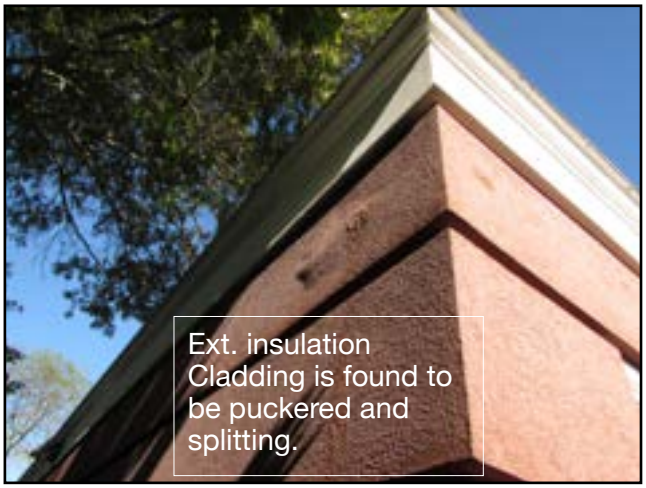
Exterior Envelope Conditions

The ‘Stucco’ Exterior Insulation System used on the North, West and South exterior walls was specified for being inexpensive and for it’s thermal efficiency; but has been problematic to achieve water tightness, repair and maintain in the past.

In New England Exterior Insulation Systems are primarily used as a foundation insulation; but has gained popularity as a wall finish in low budget markets; and in warmer US climates.

The Snow Library’s entrance is distinguished by it’s use of low maintenance, inexpensive wall cladding; and a glass canopy rendering the entanceway in a ‘dreamy’ creamy color.

Exterior Envelope Conditions



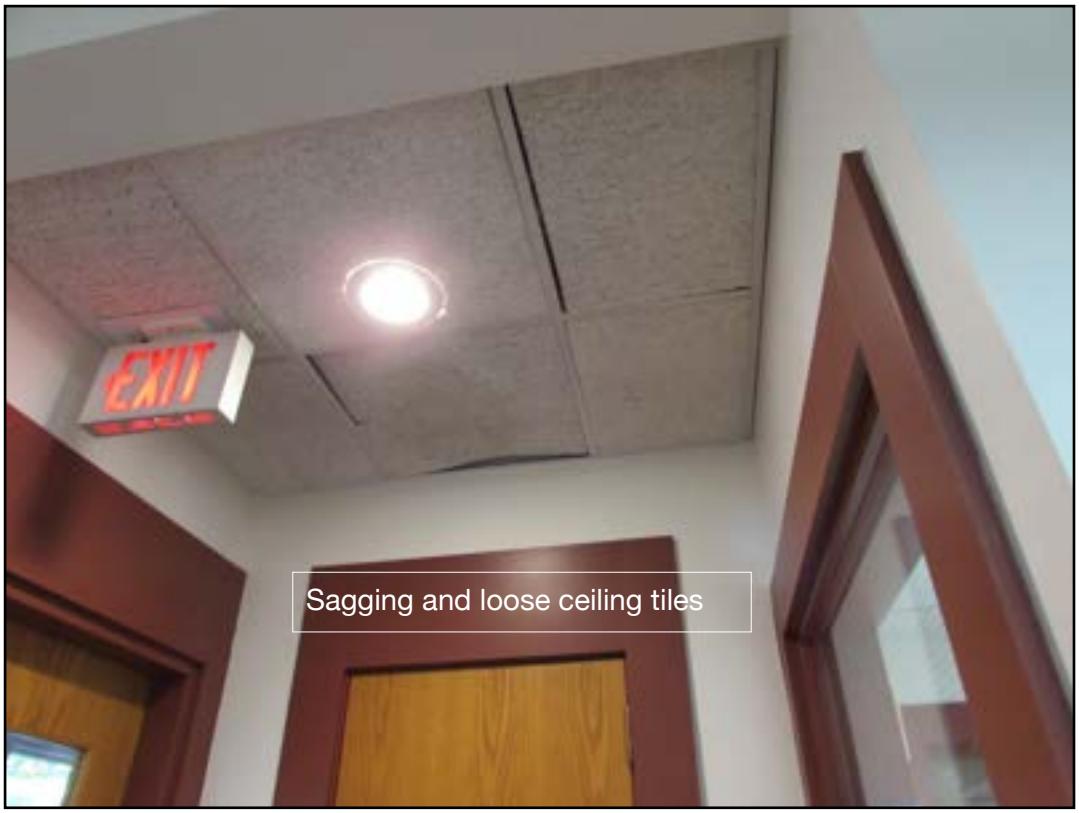
Exterior Envelope Conditions

The exterior envelope shows weathering typical for a structure that has been exposed to nearby Cape Cod salt air and humidity over a span of 27 years. All ferrous metals show considerable rusting.

Exterior insulation wall cladding is dull but in average condition. Light colored trim details show built-up stains and embedded soil and grime.

The Snow Library's landscape concrete, brick and asphalt driveway paving is in poor and average condition; at the end of it's normal materials life-cycle.

Interior - Conditions



Sagging and loose ceiling tiles

Ground water moisture penetration at basement

Interior Conditions Technical Systems : *(HVAC, Electrical, Plumbing & Data)*

Current Facility Conditions

Equipment system deficiencies with the current building :

- The mechanical and technical systems at the Snow library although well maintained are unlikely to meet current Codes. The town's maintenance and replacement strategy has been to replace with current industry quality equipment as necessary.


New Boiler


Main Elec Panel


Switchboard

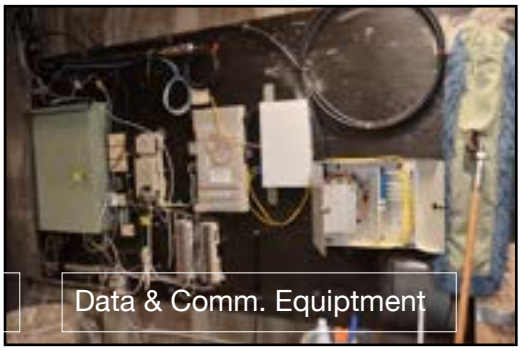
- The Craine Meeting Room does not meet current Code requirements for make up (fresh) air requirements in public assembly, gathering-type spaces.

Rooftop units


Heating/Cooling Units

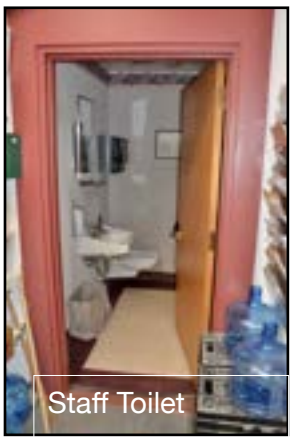
- In 2016 HVAC replacement equipment was installed including a hot water boiler to feed a baseboard heating system for certain areas of the library. An indirect domestic hot water system for potable hot water was added to the new boiler equipment .
- In 2017 new gas-fired rooftop units were installed. They meet original building specs but weren't selected to meet Orleans' newly adopted (and more stringent) Stretch Code requirements.

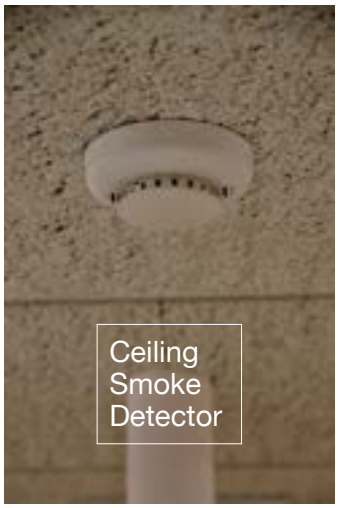

Air Handler unit

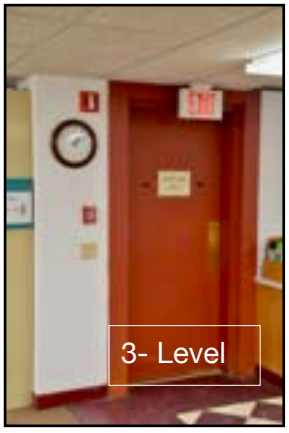

Data & Comm. Equiptment

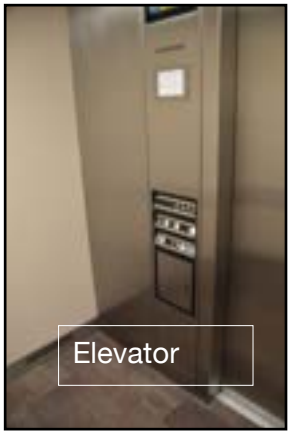

Fire Alarm Controls

- The Staff toilet space is extremely tight and narrow, eliminating the possibility of ever becoming ADA compliant. (4) Public toilets are unisex style and primarily ADA code compliant. The three level elevator is well maintained and meets today's ADA requirements.
- The fire alarm system is comprised of a smoke and rate-of-temperature-rise sensor system. Currently, code requires all Assembly type structures over 7,500 gsf to have an automatic fire suppression system. There is none installed in the Snow Library.


Staff Toilet


Ceiling Smoke Detector


3- Level


Elevator

- Hazardous Materials. A formal building wide assessment of hazardous materials has been made. Previous renovations identified small, specific areas of hazardous materials that were encapsulated. For future building planning, an updated hazardous materials survey of these items must be undertaken and quantified.

Current Facility Conditions Report Summary

Architects' observations

Students pour over the Library parking lot.

The following highlights the library facility's **current status** and the **critical needs** that must be included in a future library design. A companion document to this study, the **2019 Snow Library Building Program** presents the detailed rationale and specifics about the library Trustee's vision (representing the community) for this new facility.

It is our opinion that the a new library facility should provide :

1. Readily available and easy access to the **Snow Library's unique services** which in turn, reflect its patron's interests and Orlean's year-round diversity of users.

Current Status :
- The Snow Library is located near Orleans town center which places it in a highly visible, strategic location within the central business district.
- The library is nominally accessible for wheelchairs, with a 3-level elevator.
- Staff promote library activities through public town announcements and library signage.

Critical Needs :
- *The current library has 19 distinct areas; the new Library Building Program requires 31. This substantial increase in new services requires new, additional space in a new facility.*
- *ADA standards for the current library reflect 1992 code. There are a myriad of large and small ADA enhancements currently needed to make for a contemporary, fully compliant ADA facility.*
- *Full ADA compliance benefits not only handicap patrons but also the younger, older and disabled, yielding a building that is vastly easier for everyone to negotiate, on all floor levels.*

2. Spaces that provide for **rich interactions** between patrons, staff and guests that encourage learning and teaching.

Current Status :
- The library has a warm and welcoming staff. This is clear upon entering the library at the Main Circulation Desk.
- The openness of the library allows adequate internal visibility - staff can both see and be seen. The children's room is filled to capacity with children's materials.

Critical Needs :
- *The Young Adult section is woefully small, with an undernourished collection, furnishings and digital resources.*
- *The one adult Quiet Study room in the Basement is much in demand; and fortunate to book.*
- *While the current Snow's openness is beneficial, a new facility must include several programmable, 'closed-off' spaces for quiet reading and collaborative work and study.*
- *The library's open floor plan is not well arranged.*
- *Books aren't arranged in a logical order and the "flow" among department areas is poor.*

3. A design that provides for **Special Collections** that embody the **local Cape culture and heritage**.

Current Status :
- The Cape Cod Collection room features the library's 800's (literature) collection but not its historic collections ! This room is often comandeered as a small meeting space alternative to the busy, Craine Meeting Room.
- Near the library's entrance is a small diorama that displays local activities.

Critical Needs :
- *The Cummings Room on the mezzanine level holds the Cummings collection of historic photos of Orleans, the Cape as well as the Cape Cod Times on microfilm. The special collections are a strength but the room is not climate controlled. The new facility needs a dedicated climate controlled space for the library's archival materials. It also needs to have the historic Cape Cod Collection in one easily identified location.*
- *The building and site are not of local historic 'Cape' significance.*
- *A new facility must provide a rich architectural design for the Town of Orleans to display the town's historic treasures, uniqueness and cultural influence.*

4. A facility that serves **the academic and intellectually curious** with programs, information and learning resources.

Current Status :
- The library currently holds a large, diverse collection as well as access to other resources through Interlibrary Loan.
- However, collection capacities are 'maxed out' throughout most of the library's departments.

Critical Needs :
- *There is a critical need for quiet study and small meetings spaces for interactions between patrons and knowledgeable members in the community to share.*
- *Relief is needed from the lack of seats in the Periodicals section which also doubles as the Snow Reading Area.*
- *There is a critical need for computer clusters that are conducive to tutorial instruction.*
- *The libraries collections need to be continually 'curated' to make certain that holdings are what the community needs; and continues to makes them exciting to discover and explore.*
- *The new facility design must contain sufficient space for the collection to be arranged in a logical order by Dewey Decimal number/type of resources (i.e. children, YA, periodicals).*
- *The Craine Meeting Room is very popular and in constant demand. It is heavily booked by the library and non-library groups looking for adequate space anywhere in town. The current functioning capacity is approximately 80 persons; the new programming calls for 200.*

5. A library that nurtures and promotes **reading, critical and creative thinking in young people**.

Current Status :
- The Children's librarian is fairly well located to survey and control activity, but space is tight.

Critical Needs :
- *The Children's area needs to be a distinct (and separate) part of the library and needs to be acoustically isolated (by shutting doors) when the noise of enthusiastic kids spills out into the main library.*

- *The Children's room has a critical need for mobile furnishings that allow for re-configuring their space.*
- *Accommodations must be made for information and digital technology in a design scaled to children, parents and care givers.*
- *A new Children's Room should take advantage of the library's immediate landscape as well as the Village Green for outdoor child-appropriate activities.*
- *Provide for teen activities so that they don't interfere with other library patron activities.*
- *Provide a distinct YA space that is quiet, yet observable by staff.*
- *There is no YA librarian to help and supervise that group.*

6. A facility that provides convenient **access to digital information**, electronic resources and evolving new technologies.

Current Status :
- There are a total of (8) computers in the Reference area, and Children's room with the library including PAC stations for patrons.

Critical Needs :
- *Create spaces for multiple users to collaborate digitally.*
- *Provide a cutting edge Audio-Visual technology installation for presentations and sharing.*
- *Create casual and convenient spaces throughout the library for private use of digital devices.*
- *The new library must eliminate WIFI 'dead spots' throughout the building on all floor levels. (ex: the currently necessary hard wire to the Friend's room in the basement.).*
- *The new facility needs to have a policy for outdoor WIFI service availability (on the library's grounds) that comfortably serves casual and roving users when the library is closed.*

7. An efficient facility that compliments library Staff and promotes **collaboration with local businesses** and **institutions;** and **incorporates sustainable planning and design practices.**

Current Status :
- The display case in the main floor entryway is used by community organizations to showcase materials and various programs offered by local and outside organizations.
- The main and upper floors have a grid of skylight and window lighting. Indoor night lighting is poor quality providing minimum foot-candle light standards in most areas.

Critical Needs :
- *The new facility must accommodate more public meeting spaces to allow increased local community involvement.*
- *The workroom is cramped with dead-end (non-accessible) work spaces.*
- *The HVAC systems must be selected for optimum efficiency while integrating equipment sound control.*
- *The luminous environment in the library building type is critical to the success of the library user experience. Daylighting must be carefully planned and designed so as to minimize day/night lighting electrical power use while eliminating glare.*
- *The new facility's master planning should integrate pedestrian pathways of the new library Site Plan with its neighbors. Including the distinguished Nauset Middle School, the town's Village Green, the Friend's Marketplace, and nearby merchants.*

8. A local 'destination' library that hosts and promotes **community cultural activities**.

Current Status :
- The Snow library has been in its current location for 65 years and provides an important destination for the town's public services.
- The Snow Library offers an extensive program calendar covering numerous subjects for all ages.
- The Marion Craine Meeting Room features year-round local art shows and artistic displays.

Critical Needs :
- *The library needs more discrete meeting spaces, including a program room dedicated to young people.*
- *The new facility should expand its design and community art-gallery type spaces for local cultural and artistic enrichment.*
- *The new Snow public library should provide a rich public library atmosphere for social, cultural and political interaction among its patrons, town residents and visitors.*
- *The new design needs to take advantage of the Village Green the library overlooks, and create a welcoming and mutually beneficial landscape design plan.*
- *A new library design should nurture the spirit of the current neighborhood, particularly the energy and enthusiasm of the next door Nauset Regional Middle School students and teachers.*

An excerpt from the 'Executive Summary' of the
The Snow Library Building Program 2019
By Mary Braney, Library Consultant

" The expectation of the stakeholders is that the Snow Library retain traditional services comprising an extensive print collection and wide-ranging programming, while embracing the future opened by technology. There is a critical need for space to enable all to use the library to meet their needs without interfering with the enjoyment of others, to support the many and varied programs presented by the library year-round, and to offer additional programs which are not presented now due to lack of space. "

APPENDIX

Engineer and Consultant Reports

12. Structural Report - Snow Library
13. Civil Report - Snow Library
14. Code Review Report - Snow Library
15. Cost Forecast: New Construction - Snow Library

Structural Report - Snow Library

Observation of Current Conditions :

Coastal Engineerings structural observation … " the (Snow Library) structure appears to be in good condition and functioning well for its current purpose, with only minor deficiencies as noted … There are no immediate structural repairs recommended at this time … "

Summary :

The 2018 Snow Library Building Program calls for an approximate doubling of the library size, from 16,600 to 32,000 gross square feet. We recommend **150 psf** live load for design of stack and reading room areas for A~3 'Assembly type' buildings (libraries).

Concerning the structural implications of **doubling the gross square footage** of the current library facility :

1. If a **renovation and new addition** is pursued and is substantial in scope, the structure may have to meet appropriate Codes for new construction, requiring reinforcement (or replacement) of crucial load carrying elements in the existing structure. [1]

2. **Renovation / Addition**. Any **new additions** should be structurally designed as independent from the existing structure. Coastal Engineering recommends the **Work Area Compliance Method (Level 3 Alterations)** for any alteration/additions to the existing structure.

3. For a **new, freestanding building**, the new structure would be required to meet the requirements of the Massachusetts State Building Code-780 CMR 9th Edition for 'new construction'.

Footnotes

1. "Code Compliance Requirements in Renovation Projects" (High-Profile.com) :

See: https://www.high-profile.com/code-compliance-requirements-in-renovation-projects/

Structural Report - Snow Library

https://www.high-profile.com/code-compliance-requirements-in-renovation-projects/

In this piece the following points are made concerning Renovation/Addition Projects :

1. If construction costs equal or exceed 30% of the “full and fair cash value” of the building, the entire building must be brought into ADA accessibility compliance. (Upgrades to parking, building access, elevators, and restroom facilities are among the most common requirements.)

2. The highest degree of renovation Code compliance is in a project where the proposed renovation of a portion of the building is equal to or greater than 50% of the total building area.

3. Energy code: The energy code requires the greatest degree of compliance when the building is changed in a way that results in a significant increase in the demand for energy.

January 17, 2019 C15069.02

Hale & Associates, Architects
Attn: Stephen Hale
2 Everett Street
Jamaica Plain, MA 02130
VIA EMAIL: haleoffice@gmail.com

RE: Snow Library Structural Assessment Report
67 Main Street, Orleans, MA

Dear Mr. Hale:

Pursuant to Massachusetts State Building Code-780 CMR-9th Edition, Section 107, personnel from Coastal Engineering Company, Inc. (CEC) visited the site of the referenced property on November 27, 2018 to perform a visual, non-destructive conditions assessment of the existing structure. The purpose of these assessments was to evaluate the existing structure in order to:

1. Assess the condition of the existing structure;

2. Make recommendations for the repair and/or augmentation of the existing building elements, where required, to stabilize the structure and to meet short-term and long-term building programing needs.

3. Ascertain the effects of proposed new work on the existing structure.

Included in the scope of this report is the two-story (with a full basement) wood framed structure that currently serves as public library for the community of Orleans, Massachusetts. Accordingly, the following is a summary of observations and comments noted during the structural investigations, along with findings and conclusions drawn from the assessments noted above.

Orleans | Sandwich | Nantucket
260 Cranberry Highway, Orleans, MA 02653
508.255.6511 | coastalengineeringcompany.com

Executive Summary

Based on the field investigation and a review of the available drawings, the structure appears to be functioning well for its current purpose, with only minor deficiencies as noted in this report. There are no immediate structural repairs recommended at this time beyond routine building maintenance to prevent any damage and maintain the current condition of structural elements.

Any alternation to the existing building could result in substantial structural work, dependent on the scope of alterations. The thresholds for the structural requirements based on the level of alternations are indicated in this report.

Any vertical additions to the existing building would require either substantial reinforcing of the existing load carrying elements and/or the installation of new load carrying elements extending down to reinforced/new foundation elements. The requirements of any reinforcing and/or new elements would be dependent on the scope of the vertical addition. If a substantial addition is to be completed, the structure may have to meet the code for new construction, which could lead to the reinforcing and/or the replacement of existing gravity and/or lateral load carrying elements. Further analysis would be required when a scope of work for any additions is finalized.

With any horizontal additions to the building, it would be recommended for the addition to be structurally independent from the existing structure. If the addition is structurally independent, reinforcing and/or replacement of existing gravity and/or lateral load carrying elements within the existing building may not be required. Further analysis would be required when a scope of work for any additions is finalized.

For a new, freestanding building, the structure would be required to meet the requirements of the Massachusetts State Building Code-780 CMR 9th Edition for new construction. The structural systems of a new building can be determined once the scope of construction is known.

Limits of the Investigation

An exhaustive investigation of the structure, with structural sampling and testing of materials was not conducted for this assessment. Due to the limited access of some of the structural components of the building, it was not possible to assess all of the existing conditions pertaining to the structural integrity of the building. It is beyond the scope of this investigation to provide an exhaustive assessment of every element of the existing building's construction. Our report is therefore limited to typical conditions found in the areas investigated and to the assessment of the structure pursuant to the proposed alterations and additions following prescriptive code procedure.

Background

The first Snow Library building was originally constructed in 1877, at a site located directly across from the current building. In 1952, the original building was destroyed by fire. In 1954, a new library was constructed at the current location. The library has had several renovations and additions over the years, with the latest addition being in the early 1990s. The renovations and additions up to early 1990s, along with the original structure represent the current existing construction.

Architectural drawings were available for the last edition (dated May 10, 1989). The drawings indicated the scope of the addition as well as the current construction at that time. No construction drawings were available for the original structure, nor any renovations or additions completed prior to 1989.

Observations

General

The structure is a partial two-story structure with a full basement under portions of the building. The exterior walls are wood stud bearing walls support on cast-in-place concrete foundation walls. The basement and portions of the first floor are cast-in-place concrete slab-on-grade. The first-floor structure is framed with a combination of wood floor joists and wood trusses, supported by the exterior foundation wall and structural steel wide-flange beams, supported by steel round "lally" columns. The partial second floor is located towards the front of the building (relative to the main entrance) and is supported by a combination of wood floor joists and wood trusses, supported by the load bearing wood exterior walls, the interior wood bearing walls and structural steel wide-flange beams.

The floor sheathing over the basement and on the second floor is constructed of a plywood, with an overall thickness of 1 inch. The roof structure is comprised of a variety of gable, pitched and flat roofs. The roofs are constructed of conventional wood framing supported by the exterior bearing walls, interior bearing walls and structural steel wide-flange beams. Some roofs have been built over with the original roof structure now located in the framing space. There are areas of the building that appears to be constructed of exposed engineered glulam beams spanning between bearing supports supporting conventional wood framing in the ceiling space. Access to the basement is provided by two stairwells and an elevator. All roofs are sheathed with various thickness of plywood. Access to the second floor is provided by one staircase and an elevator with emergency access from an exterior stair toward the south of the building. There is a glass awning at the front entrance (east face) that appears to be supported with steel beams and columns.

Foundation

Plans reviewed indicate that the foundation in the newer addition is constructed of reinforced cast-in-place concrete walls set on cast-in-place concrete footings. The basement area is enclosed with 1-0" to 1'-3" thick cast-in-place concrete foundation walls extending 1'-0" beneath the basement slab-on-grade. The remainder of the foundation system outside of the basement area is constructed of shallow (extending 4'-0" below finished grade) 1'-0" cast-in-place concrete foundation walls. All foundation walls are indicated as founded on 1'-0" thick by 3'-0" wide continuous reinforced cast-in-place concrete footings. Steel columns are set on reinforced cast-in-place isolated spread footings of varying sizes.

There is an elevator pit in the basement that appears to be constructed of 1'-0" thick cast-in-place concrete walls set on a pit slab. The elevator pit in the basement appears to extend 4'-0" below the basement-slab-on-grade.

Although the foundation system was constructed at different times during the various additions done since the original building was constructed, it appears that compatible foundation systems were utilized for each of these additions.

The portions of the foundation walls that were exposed to view appeared to be in good condition. The concrete appeared to be free of major cracking with no major spalling or defects noted. There were also no visible signs of foundation settlement or movement in the building. The basement area appeared to be free of water infiltration with no staining or active leaks noted.

Basement Construction

May 1989 plans indicate that the basement is constructed of six (6) inch thick cast-in-place concrete slab-on-grade reinforced with welded wire fabric. Drawings specify that the slab-on-grade was to be placed atop a vapor barrier, but this was not verified during the field investigation. Plans also indicate basement walls to have been built with rigid board insulation on the inside face and damp proofing applied to the exterior of the wall. It is unclear if the foundation walls constructed previous to this received any insulation or damp proofing.

There is a mechanical room that is enclosed by concrete masonry unit (CMU) walls with a CMU shaft for mechanical services. There are exposed steel concrete filled pipe "lally" columns in this area supporting the first floor. The lally columns extend through the slab-on-grade and appear to be support by concrete spread footings.

The basement slab-on-grade appears to be in good condition, with no major cracking or settlement noted. There is a sump pump located in the floor slab that was noted to be free of water. The CMU walls appeared to be in good condition, with no cracking or signs of settlement.

First Floor Construction

The first floor appears to be a combination of slab-on-grade and wood floor sheathing above the basement area. There were some areas of floor boards in place of the wood floor sheathing. These areas appeared to be in the original portion of the structure.

The slab-on-grade appears to be four (4) inch thick cast-in-place concrete reinforced with welded wire fabric. Drawings indicated that the slab-on-grade was placed atop a vapor barrier for the entirety of the slab and rigid insulation at the edges of the slab. It is not clear if the construction in place prior to 1989 has a vapor barrier or rigid insulation. The composition of subgrade below the slab-on-grade is unknown.

The wood sheathing appears to be multiple layers of plywood, totaling one-inch in thickness, installed over the wood trusses or floor joists framing system. Floor joists span between the exterior basement foundation walls, the interior basement foundation walls and structural steel wide flange beams. The wood trusses vary in depth from 12" to 16" and are generally spaced at approximately 1'-4" to 2'-0" on-center. Wood floor joists appears to be conventional 2x framing and vary in depth from 8" to 12" and likewise spaced at approximately 1'-4" to 2'-0" on-center.

Generally, the slab-on-grade appeared to be in good condition, with no direct evidence of any major cracking or settlement visible through the floor finishes.

The supported wood sheathing portions of the floor appeared to be in good condition. It was noted that the floor system was previously augmented in some areas, with additional support lines to reduce the spans of the members to mitigate excessive deflection and/or floor vibrations. No excessive deflection or vibrations were noted in areas that have been augmented. There were some selective areas that appeared to show floor vibration. It is unclear if this is due to insufficient member sizes, damaged member sizes, or unsecured floor sheathing. The floor vibration did not appear to be an immediate concern at this time.

Wood floor framing visible to view appeared to be in good condition, with no signs of splitting at the members or deterioration at any of the connections observed. The structural steel members appeared to be in good condition with no signs of deterioration. There did not appear to be any evidence of cracking on the wall or ceiling finishes indicating excessive wall deflection or out-of-plane deflection.

Second Floor Construction

Similar to the first-floor construction, the wood sheathing appears to be multiple layers of plywood, totaling one-inch in thickness, supported by wood trusses and floor joists, spanning between the exterior basement foundation walls, the interior basement foundation walls and structural steel wide flange beams. The wood trusses vary in depth from 12" to 16" and appear to be spaced at approximately 1'-4" to 2'-0" on-center. Wood floor joists appears to be conventional 2x framing and vary in depth from 8" to 12" and appear to be spaced at approximately 1'-4" to 2'-0" on-center.

The supported wood sheathing portions of the floor appeared to be in good condition, however foot fall floor vibration was distinctly noticeable. It is unclear if this is due to insufficient framing member

sizes, compromised materials or improperly installed sheathing. The floor vibration did not appear to be an immediate concern.

Wood floor framing visible to view appeared to be in good condition, with no signs of splitting at the members or deterioration at any of the connections observed. The structural steel members appeared to be in good condition with no signs of deterioration. There did not appear to be any evidence of cracking on the wall or ceiling finishes indicating excessive wall deflection or out-of-plane deflection.

Roof Construction

The roof geometry varies with areas of flat roof, mono-sloping roofs, hip roofs and gable roofs. There are areas of roof over-framing where additions where placed, with some previously existing roof areas removed, or left in place below the newer roof construction. The newer portions of the roof have skylights installed over the lower roof area with mechanical units on the higher flat roof areas. There is a small roof parapet to the east face of the building.

The structural roof framing is constructed of conventional 2x rafters, varying in depth from six (6) inches, to twelve (12) inches spaced at twelve (12) inches to sixteen (16) inches on-center for the flat portions of the roof. Sloped roof areas are constructed of a combination of conventional wood framing and wood roof trusses. Portions of the newer roof area are supported by exposed glulam beams and wood posts with conventional wood framing/trusses in the ceiling. Access to the framing of the sloped roof areas was limited, so the size and spacing of those members were not ascertained at this time. Many of these areas where constructed prior to 1989, therefore there were no drawings available for review at the time the investigation. The roof sheathing is typically 5/8 inch this plywood with a rubber roof membrane cover on the flat portions of the roof and asphalt shingles over other roof areas. The roof framing members are supported by a combination of the exterior wood bearing walls and structural steel wide-flange beams. Steel beams are supported by steel columns that extend down to the foundation. In some areas that were re-framed during renovations, there appears to be wood posts and 'sistered' members to support the updated roof configuration. The ceiling below is hung directly from the roof structure.

The roof system generally appeared to be in good condition. There did not appear to be any excessive deflection in any of the members nor any rusting of the metal connections. There is some evidence of previous water leakage from the roof above, however there did not appear to be any active leaks during this investigation. Any previous leaks have been addressed, as evidence by the repair patches in the existing rubber membrane roof. The previous roof leaking does not appear to have damaged any structural sheathing or support members visible during this investigation, however not all roof members and other support elements where viewed. Skylights appeared to be free of any visible leaking. Note that some members appeared to have been modified after the initial construction for new mechanical systems or new support conditions. However, these members were augmented or supplemented to ensure the roof system is properly supported.

Exterior Wall Construction

The exterior walls are typically 2x6 conventional wood framing members with studs spaced at 16"-18" on center. There appeared to be a double sill plate set on the concrete foundation wall with anchor bolts. The wall sheathing is typically 1/2-inch thick plywood. The exterior cladding is a combination of wood shingles, vinyl siding, brick veneer and cementitious exterior cladding secured to the plywood sheathing. The walls appear to have six (6) inches of batt insulation with a vapor barrier. The original structure may have load bearing brick walls.

The exterior grade of the building varies to approximately four (4) inches to twelve (12) inches below the top of foundation wall.

The exterior wall systems appeared to be in fair condition. There was evidence of leaking the exterior cladding and windows at one time, but this appears to have been since repaired. Documentation of such repairs was no available at this time for this report. Brick work appeared to be in fair condition, with some re-pointing needed to extend the life of the brick-work and prevent any water leaking to the interior of the building. Exposed foundation walls above grade appeared to be free of cracking and spalling.

Other

The drawings indicate steel braced frames at interior walls to resolve lateral loads. Since no finishes were removed during this investigation, the condition of these elements is not known. Judging from the overall condition of the building it can be generally assumed that that these elements are functioning as intended, but further investigation would be required to confirm this.

The glass awing at the east entrance of the building appeared to be in fair condition with some signs of surface corrosion. No structure was exposed in this area, but there did not appear to be any excessive deflection in the supporting members nor any settlement in the column supports.

The exterior metal stair to the south of the building appears to be in fair condition with some evidence of surface deterioration on the grating at the stairs and the upper landing. The deterioration appears to be superficial and appears to only require routine maintenance. Connections of the stair to the building appear to be in good condition with no signs of deterioration.

Proposed Scheme

The proposed scheme for any alterations and/or additions is not known at this time.

Code Analysis

Requirements for any new work outside of "ordinary repairs" on the existing buildings shall comply with the requirements of Massachusetts State Building Code 9th Edition (Code). The current state building code adopts the 2015 International Existing Building Code (IEBC) as further amended by Massachusetts Department of Public Safety amendments (MA amendments) for work on existing structures.

In general, the Code requires any alteration, addition, or change in use to comply with IEBC Code compliance, as amended.

The Code allows for three options for compliance methodology, to be chosen by the Registered Design Professionals (RDP) or the building code compliance analyst:

- Prescriptive Compliance Method
- Work Area Classification Method
- 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 this project. Note that this may not be the most cost-effective approach for the project as a whole. The selected compliance method should be reevaluated after analyzing the requirements of other disciplines (Architectural, Mechanical, Plumbing, etc.). The preferred method may change depending on the scope of any alterations and/or additions.

Prescriptive Compliance Method

For the Prescriptive Compliance Method, compliance to Chapter 4 of the IEBC is required. Note that this report is limited to the compliance requirements identified as structural in this chapter. Per the Prescriptive Compliance Method, any **additions** to the existing structure would have to comply with the following requirements:

1. All structural elements in the addition shall comply with the International Building Code for new structures.
2. For additions that are not structurally independent from the existing structure, the existing building and any additions shall act as a single structure and shall meet the requirements of the International Building Code for new structures with the following exceptions:
    a. Any gravity load carrying structural element whose demand-capacity ratio is not increased by more than 5 percent can remain unaltered.
    b. Any lateral load carrying structural element whose demand-capacity ratio is not increased by more than 10 percent can remain unaltered.

Per the Prescriptive Compliance Method, any **alterations** to the existing structure would have to comply with the following requirements:

1. Any existing gravity load-carrying structural element for which an alteration causes an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, or replaced.
2. Any existing gravity loading-carrying structural element whose gravity load-carrying capacity is decreased as part of the alteration shall be shown to have the capacity to resist the applicable design gravity loads required by the International Building Code for new structures.
3. Where any alternation that would increase the design lateral loads cause a structural irregularity or decrease the capacity of any existing lateral load-carrying structural element, the structure of the altered building shall be shown to meet the requirements of the International Building Code, except where the alternations do not increase the demand-capacity ratio of the lateral load carrying structural elements by more than 10 percent. Those structural elements can remain unaltered.

Work Area Compliance Method

For the Work Area Compliance Method, compliance with Chapters 5 through 13 of the IEBC is required. Note that this report is limited to the compliance requirements identified as structural in this chapter.

In this method, the extent of alterations is classified into Levels of Work based on the scope and extent of the alterations to the existing structure. The Levels of Work are classified as Level 1, Level 2, and Level 3 Alterations depending on the scope of work for the project. There are also requirements for additions to existing buildings.

If the alterations to the structure exceed 50 percent of the building area, the Level of Work for this project would be classified as Level 3 Alterations. Level 3 Alterations require compliance with Chapters 7, 8, and 9 of IEBC. The scope of the additions to the building would require compliance to Chapter 11 of the IEBC.

Per the Work Area Method, any alterations to the existing structure would have to comply with the following requirements:

1. If the roof covering is to be recovered or replaced, the structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads. If the recovering or replacement of the roof covering results in additional dead load, the structural components supporting the roof should comply with the requirements of the International Building Code for new construction, except where the demand-capacity ratio of the structural components does not increase by more than 5 percent.
2. All new structural elements installed as a result of an alternation should comply with the International Building Code for new construction.
3. Any existing gravity load-carrying structural element for which an alteration causes an increase in design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.

4. Where any alteration that would increase the design lateral loads cause a structural irregularity or decrease the capacity of any existing lateral load-carrying structural element, the structure of the altered building shall be shown to meet the requirements of the International Building Code (possibly with reduced seismic forces as defined in Chapter 3 of the IEBC), except where the alternations do not increase the demand-capacity ratio of the lateral load carrying structural elements by more than 10 percent. Those structural elements can remain unaltered.

Per the Work Area Method, any additions to the existing structure would have to comply with the following requirements:

1. All structural elements in the addition shall comply with the International Building Code for new structures.
2. For additions that are not structurally independent from the existing structure, the existing building and any additions shall act as a single structure and shall meet the requirements of the International Building Code (possibly with reduced seismic forces as defined in Chapter 3 of the IEBC), for new structures with the following exceptions:
    a. Any gravity load carrying structural element whose demand-capacity ratio is not increased by more than 5 percent can remain unaltered.
    b. Any lateral load carrying structural element whose demand-capacity ratio is not increased by more than 10 percent can remain unaltered.

Performance Compliance Method

For the Performance Compliance Method, compliance with Chapter 14 of the IEBC is required. Note that this report is limited to the compliance requirements identified as structural in this chapter.

In this method any addition or alteration must meet the requirements of the International Building Code for new construction and therefore may be onerous on any plan that involves extensive alterations and/or additions.

Conclusion

The structural assessment performed on the Snow Library building in Orleans, Massachusetts indicates that the existing structure appears to be in good condition for its current use, with no major structural deficiencies observed during our initial site visit.

No immediate structural repairs are recommended at this time, however, any new work in excess of thresholds indicated in the previous sections would trigger mandatory code revisions and upgrades. Systematic upgrades to the existing structural system would be required to meet current code requirements.

With the any substantial alterations and/or additions to the building, the code analysis would indicate that the Prescriptive Compliance Method and the Work Area Compliance Method would result in similar scopes for the project. The Prescriptive Compliance Method would require the lateral load resisting system to meet the requirements of the International Building Code for new

construction for any increase in design lateral loads. The Work Area Compliance Method allows for the use of reduced seismic loading provided that the capacity of the lateral load resisting elements is not decreased during the alterations.

Based on the above analysis, we would recommend the **Work Area Compliance Method (Level 3 Alterations)** for any alteration/additions to the existing structure. This means that the structure as a whole is subject to IBC wind load and reduced seismic loads per Chapter 9 of the IEBC when more than 30% of the total floor areas are structurally altered. If less than 30% of the total floor and roof areas are structural altered, it must be demonstrated that the altered building complies with the loads applicable at the time of original construction.

The current scope of work for the existing structure is not known at this time, though all existing elements would have to be reviewed and analyzed to ensure conformance to the IEBC. Any new structural elements in the existing building and all elements in any additions would be designed per the current building code for new construction. This code analysis would be confirmed once the scope of any alteration and/or additions is known.

Any new, freestanding structures would need to conform to the current building code for new construction.

Please do not hesitate to call our office if you have any questions concerning the report.

Very truly yours,

COASTAL ENGINEERING CO., INC.

John A Bologna, PE
President/CEO

Marshall H Puffer, PE
Senior Engineer

JAB/MHP/kvp

Enclosures: Photographic Documentation

References:

1. Massachusetts State Building Code, 780 CMR- 9th Edition
2. 2015 International Existing Building Code
3. 2015 International Building Code

Civil Report - Snow Library

Observation of Current Conditions :

Coastal Engineering's **Civil Engineers** note that the Snow Library facility appears to be in good functioning condition for its current purpose. As part of the downtown sewer system upgrade, a new sewage lift station is planned for the library property in approximately the same location as the existing sewage disposal system.

In order for the library to expand :

1. Parking space quantitates have the greatest impact on the future library site and will have to be vastly increased by reconstructing / expanding or replacing with new spaces. A strategy could include ' … cutting into the hill (at the SE corner of the property) and (earth) retained for construction of the additional spaces'.

2. Water, gas, electric and communication services serving the existing building will be modified and upgraded as necessary to serve the proposed new library structure, or replaced as necessary.

3. The town is constructing a sewage lift station on the property in the same area as the existing sewage disposal system. When the Town sewer system is operational, the library will abandon its existing system and connect to the municipal sewer system.

4. The existing stormwater drainage system will need to be replaced. The new stormwater drainage systems should incorporate low impact development (LID) storm water management elements, such as rain gardens or bio-filters basins, into their design .

COASTAL engineering co.

February 15, 2019 Project No. C15069.02

Stephen Hale & Associates, Architects
Attn: Stephen Hale
2 Everett Street
Jamaica Plain, MA 02130
VIA EMAIL: haleoffice@gmail.com

RE: Civil Engineering Assessment Report
Snow Library
67 Main Street, Orleans, MA

Dear Mr. Hale:

In order to assess the general conditions of the existing site infrastructure and provide comments on the proposed building project, Coastal Engineering made site visits, reviewed record plans on file at the library and town hall, reviewed the schematic site plan we discussed when we met at the site on January 17, 2019, and reviewed the zoning bylaws relative to proposed building and site modifications. A discussion of our observations and findings, and comments regarding potential building and site modifications follow.

Existing Conditions

The property encompasses 83,382 square feet and has 254.84 feet of frontage on Main Street. It is bounded on the west by a mixed-use commercial property anchored by Friends Marketplace, on the south by Nauset Regional Middle School, and on the east by the Town of Orleans Pumphouse on Village Green Park. Rockland Trust Bank and a mixed-use commercial property known as Post Office Square lie across Main Street from the library property. The existing building is situated 60± feet from the front (northerly) property line, 25± feet from the westerly sideline, 121± feet from the easterly sideline, and 122± feet from the rear (southerly) lot line. Vehicle ingress and egress are provided via a single curb cut located on Main Street between the existing building and easterly sideline. Pedestrian access is provided via a concrete sidewalk from Main Street and a timber stairway from a parking lot on the Nauset Regional Middle School property. A total of 37 marked parking spaces exist on property – 19 parking spaces on the easterly side of the building and 18 parking spaces at the rear of the building. Two of the parking spaces in the rear of the building are designated as accessible parking spaces. The accessible pedestrian route of travel between the designated spaces and the library's main entrance is approximately 85 feet long. Record plans from 1989 indicate that a hardened fire lane terminating near the rear of the building was proposed to be constructed on the westerly side of the building. The yard on the westerly side of the building, particularly along the property line, is overgrown with vegetation and a large oak tree that the 1989 plans show as existing within the proposed fire lane is still there. We did not observe any evidence of the fire lane during our site visits. If the fire lane was constructed in 1989 it's possible that it was shortened to save the oak tree. The parking lot pavement and asphalt curb are in poor to fair condition. The asphalt curb is badly broken and misshapen. The pavement has been patched in several places and there are cracks indicative of insufficient pavement base support in many places.

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Utility services to the existing library include municipal water, natural gas, and overhead and buried electric and communication wiring. Parking lot runoff is controlled using a catch basin and leaching basin system in rear of the building and three leaching catch basins on the side of the building. We did not observe any evidence of roof runoff controls. An onsite sewage disposal system situated between the parking lot and easterly property line provides treatment and disposal of the sanitary wastewater.

Proposed Redevelopment

The library is located in the Village Center (VC) Zoning District. Section 164-22 (I.) of the zoning bylaw sets forth that in the VC District the minimum front yard setback shall be 15 feet and the maximum front yard setback shall be 25 feet, except that no maximum setback is required for development where a building exists and is to be retained on the lot. Based on our understanding of Section 164-22 (I.), if the existing building is retained and modified it would not be subject to the maximum setback of 25 feet, but if a new building is constructed it would be subject to the maximum setback of 25 feet. In the VC District the side and rear yard setbacks are 10 feet. Section 164-34 (D.) paragraph (3.) allows that the ratio of gross floor to lot area (gross floor area ratio) shall not exceed 100% in the VC District. Section 164-34 (D.) paragraph (4.) omits any restriction on the maximum amount of impervious coverage from buildings, pavement and constructed surfaces on lots within the VC District.

The off-street parking regulations, Section 164-34 of the zoning bylaw, require parking to be set back at least 10 feet from property and street lines. Section 164-22 (I.) stipulates that no parking be located in a side yard in the VC district. We interpret that as meaning required side yard, but that will need to be verified with the building commissioner. The zoning bylaw requires 1 parking space per 300 square feet of new gross floor for new construction and for any increase in parking demand created by additions, alterations, or changes of use. Based on a projected gross floor area of 32,000± square feet and existing gross floor area of floor area of 16,600± square feet, 51 new parking spaces will be required by zoning. Added to the existing 37 parking spaces, a total of 88 parking spaces will be required per the zoning bylaw. It's possible that some of the required spaces may potentially be provided off-site. In order to provide the required number of parking spaces, the existing parking lots will need to be reconstructed and expanded or replaced with new parking lots. Conceptual site designs show that hill in the southeast corner of the property behind the library will need to be cut into and retained for construction of additional parking spaces.

The existing stormwater drainage systems will need to be replaced. The new stormwater drainage systems should incorporate Low Impact Development (LID) stormwater management elements, such as rain gardens or biofiltration basins, into their design to the extent feasible.

As part of the downtown sewer system, the Town will be constructing a sewage lift station on the property between the existing parking lot and easterly property line, generally in the same area as the existing sewage disposal system. When the Town sewer system is operational the library will abandon its existing sewage disposal system and connect to the municipal sewer.

The water, gas, electric, and communication services serving the existing building will be modified as necessary to serve the proposed modified or new building or they will be replaced if necessary to do so.

Please contact me if you have any questions.

Very truly yours,

COASTAL ENGINEERING CO., INC.

David J. Michniewicz, PE
Senior Vice President

DJM/mmw

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Code Review Report - Snow Library

Observation of Current Conditions :

Snow Library was built to prevailing codes that were enforced at the time that it's 'C of O' was issued. Today, subsequent code conformance items are at the discretion of the Building Inspector to make exceptions for 'life safety' reasons and require the structure to conform to current code.

This Code review asks what are the 'Code implications' if the Snow Library 'strategy' is to double the library size from 16,600 to 32,000 gross square feet, which reflects The **2018 Snow Library Building Program**. (A new construction would clearly have to conform to the base 2015 IBC Code for new structures.) The proposed 'strategy' is an alternative to a new library building. It consists of a full 'gut renovation' of the existing Snow Library building and additions to that existing structure. The intent of this analysis is to point out some of the myriad of specific code requirements that will be triggered by a 'gut' renovation and additions.

Summary :

1. A cascade of Building Codes is triggered if a substantial 'gut' addition / renovation is pursued :

A. A Sprinkler (Fire Suppression System) will be required.

B. The building would be allowed to use Construction type VB and would conform to the building height and allowable floor areas using this construction type.

C. Assuming the strategy is to fully 'gut' the existing building down to the existing structural framing system, Chapter 4 'PRESCRIPTIVE COMPLIANCE METHOD SECTION 401' would be the most efficient option to apply to this project.

D. Any new additions must be evaluated by a structural engineer to determine what structural criteria would be triggered.

E. The entire project will have to conform to 521 CMR, the Massachusetts Architectural Access Board rules and regulations.

2. Applicable Codes / Regulations would include (at least) :

Building Code : Massachusetts Building Code - 9th Edition

Structural Code : Massachusetts Building Code - 9th Edition

Fire Code : Massachusetts Comprehensive Fire Safety Code

Plumbing Code : Massachusetts State Plumbing Code

Energy Code : Massachusetts Building Code - 9th Edition

(Orleans has adopted the Stretch Energy Code.)

Accessibility Code : Massachusetts Architectural Access Board Rules & Regulations

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CODE ANALYSIS
09/12/18

Project: Snow Library addition and Renovation
Orleans, MA

BUILDING CODE/REGULATIONS

APPLICABLE CODES:

Building Code:	780 CMR The Massachusetts State Building Code – Ninth Edition
Structural Code:	780 CMR The Massachusetts State Building Code – Ninth Edition
Fire Code:	527 CMR 1.00: Massachusetts Comprehensive Fire Safety Code
Plumbing Code:	248 CMR Massachusetts State Plumbing Code
Energy Code:	780 CMR The Massachusetts State Building Code – Ninth Edition, Chapter 13, 2015 International Energy Conservation Code with Massachusetts amendments or ASHRAE 90.1-2013 with Massachusetts amendments. **Orleans has adopted the Stretch Energy Code.** https://www.mass.gov/service-details/building-energy-codes
Accessibility:	521 CMR Architectural Access Board Rules and Regulations

Excerpted code text is presented in Times 10 point font

Excerpted MA amendment code text is presented in blue Times 10 point font

Comments and explanations are presented in Arial 12 point font

iNTRODUCTION:

This analysis is being performed based on drawings by Stephen Hale and Associates Architects. These drawings are very conceptual in nature and do not specifically indicate very much detail other than area use descriptions.

The proposed project is an alternative to a new library building. The project will be a full gut renovation of the existing Snow Library building and additions to that existing structure. The intent of this analysis is to point out any specific code requirements that will be triggered by the gut renovation and the two additions.

BASIC BUILDING INFORMATION:

Building will be a library and the use group will be:

303.4 Assembly Group A-3. Group A-3 occupancy includes assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

Libraries

The proposed total gross building area for the basement and the two stories above grade with the two additions is 24,700 SF. The building will have to be sprinkler protected with an NFPA 13 sprinkler system due to the requirements of MA State Fire Law Chapter 148 § 26G since there will be an addition and the gross area will exceed 7,500 SF.

SECTION 506 BUILDING AREA

506.1 General. The floor area of a building shall be determined based on the type of construction, occupancy classification, whether there is an automatic sprinkler system installed throughout the building and the amount of building frontage on public way or open space.

TABLE 506.2[a,b] ALLOWABLE AREA FACTOR (A,= NS, SI, S13R, or SM, as applicable) IN SQUARE FEET

	SEE FOOT NOTES	TYPE OF CONSTRUCTION								
		TYPE 1		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
A-3	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000
	SI	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000

Note: UL = Unlimited; NP = Not permitted;

For SI: 1 square foot = 0.0929 m^2.

NS = Buildings not equipped throughout with an automatic sprinkler system; SI = Buildings a maximum of one story above grade plane equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; **SM = Buildings two or more stories above grade plane equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1;** S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.

The 100% perimeter access around the building will allow an additional 13,500 Sf to be added to the tabular area of 18,000 for a total allowable area per story of 31,500 SF. The largest story of the building is 11,900 SF. Per Table 506.2 and perimeter increase per 506.3.3, the building will be allowed to use Construction type VB.

The additions will be required to conform with 780 CMR Chapter 34 which is based on the 2015 Existing Building Code with Massachusetts written amendments applied to that code.

The existing building which is proposed to be gutted down to the existing structure will be required to conform with 780 CMR Chapter 34 which is based on the 2015 Existing Building Code with Massachusetts written amendments applied to that code.

BEGIN CHAPTER 34 REVIEW

CHAPTER 34: EXISTING BUILDING CODE

780 CMR 34 shall be the *International Existing Building Code 2015* with Sections or text modified or added as follows:

SECTION 101
GENERAL

[A] 101.1 Title. These regulations shall be known as the *Existing Building Code* of *Massachusetts*, hereinafter referred to as "this code."

[A] 101.2 Scope. The provisions of the *International Existing Building Code* shall apply to the *repair, alteration, change of occupancy, addition* to and relocation of *existing buildings*.

Notes:

1. If requirements in this code conflict with similar requirements in 780 CMR 1, then 780 CMR 1 applies.
2. When this code references requirements in other I-Codes see 780 CMR 1 for guidance on how to use those I-Codes.
3. Requirements in this code for plumbing, fuel gas, electrical, elevators, fire, or accessibility shall be replaced by the requirements of the Massachusetts specialty codes, as indicated in 780 CMR 1.

[A] 101.3 Intent. The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by the *repair*, *alteration*, *change of occupancy*, *addition* and relocation of *existing buildings*.

104.2.2.1 Building investigation and evaluation. For any proposed work regulated by this code and subject to 780 CMR, Section 107, as a condition of the issuance of a permit the building *owner* shall cause the *existing building* (or portion thereof) to be investigated and evaluated in accordance with the provisions of this code. The investigation and evaluation shall be in sufficient detail to ascertain the effects of the proposed work on at least these systems: structural, means of egress, fire protection, energy conservation, lighting, hazardous materials, accessibility, and ventilation for the space under consideration and, where necessary, the entire building or structure and its foundation if impacted by the proposed work. The results of the investigation and evaluation, along with any proposed *compliance alternatives*, shall be submitted to the *building official* in written report form.

104.11 Compliance Alternative Where compliance with the provisions of the code for new construction, required by this code, is impractical because of construction difficulties or regulatory conflicts, *compliance alternatives* may be accepted by the *building official*. The *building official* may accept these *compliance alternatives*, archaic materials and assemblies in Resource A of this code, or other alternatives proposed. If the *compliance alternative* involves fire protection systems the *building official* shall consult with the fire official. *Compliance alternatives*, if any are proposed, shall be included with the application for a permit and shall identify all items of non- or partial compliance with the requirements of this code, and for approval by the *building official*. The *building official* shall respond to the acceptability of any proposed *compliance alternatives* within 30 days of the filing of the permit application. Where proposed *compliance alternatives* are, in the opinion of the *building official*, unacceptable, or where issues of non-compliance remain, the permit applicant shall have the remedies prescribed by 780 CMR 113.

Since the intent of the project is to fully gut the existing building down to the existing structural framing system, Chapter 4 PRESCRIPTIVE COMPLIANCE METHOD SECTION 401 would be the most efficient option to apply to this project. There should be no problems meeting Chapter 4 which essentially requires close to full conformance to the base code 2015 IBC with MA amendments because only the existing structural elements will remain in place following the gutting of the building. The building is a two story building with a partial basement and an existing elevator, so accessibility should not be a problem as the grade around the building is pretty much level.

CHAPTER 4

PRESCRIPTIVE COMPLIANCE METHOD SECTION 401

GENERAL

401.1 Scope. The provisions of this chapter shall control the *alteration, repair, addition* and *change of occupancy* or relocation of *existing buildings* and structures, including *historic buildings* and structures as referenced in Section 301.1.1.

Exception: Existing bleachers, grandstands and folding and telescopic seating shall comply with ICC 300.

401.1.1 Compliance with other methods. *Alterations,* repairs, *additions* and *changes of occupancy* to or relocation of, *existing buildings* and structures shall comply with the provisions of this chapter or with one of the methods provided in Section 301.1.

401.2 Building materials and systems. Building materials and systems shall comply with the requirements of this section.

401.2.1 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe per Section 115.

401.2.2 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs* and *alterations,* provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

401.2.3 Existing seismic force-resisting systems. Where the existing seismic force-resisting system is a type that can be designated ordinary, values of R, Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by the *International Building Code* for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate or special system.

401.2.3 must be evaluated by a structural engineer to determine what would be triggered.

SECTION 402 ADDITIONS

402.1 General. *Additions* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. Alterations to the *existing building* or structure shall be made to ensure that the *existing building* or structure together with the *addition* are no less conforming to the provisions of the *International Building Code* than the *existing building* or structure was prior to the *addition*. An *existing building* together with its *additions* shall comply with the height and area provisions of Chapter 5 of the *International Building Code*.

The proposed existing building plus the two additions will be in full conformance with Chapter 5 Height and Area of the IBC using construction type VB.

[BS] 402.3 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *addition* and its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose gravity loadcarrying capacity is decreased shall be considered an altered element subject to the requirements of Section 403.3. Any existing element that will form part of the lateral load path for any part of the *addition* shall be considered an existing lateral load-carrying structural element subject to the requirements of Section 402.4.

402.3 must be evaluated by a structural engineer to determine what would be triggered.

[BS] 402.3.1 Design live load. Where the *addition* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the *addition*. If the approved live load is less than that required by Section 1607 of the *International Building Code,* the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Where the *addition* does result in increased design live load, the live load required by Section 1607 of the *International Building Code* shall be used.

402.3.1 must be evaluated by a structural engineer to determine what would be triggered.

[BS] 402.4 Existing structural elements carrying lateral load. Where the *addition* is structurally independent of the existing structure, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the *addition* is not structurally independent of the existing structure, the existing structure and its *addition* acting together as a single structure shall be shown to meet the requirements of Sections 1609 and 1613 of the *International Building Code*. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 301.1.4.1 for the applicable risk category, shall be deemed to meet the requirements of Section 1613.

Exception: Any existing lateral load-carrying structural element whose demand-capacity ratio with the *addition* considered is no more than 10 percent greater than its demand-capacity ratio with the *addition* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the *International Building Code*. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of *additions* and *alterations* since original construction.

402.4 must be evaluated by a structural engineer to determine what would be triggered.

SECTION 403 ALTERATIONS

403.1 General. Except as provided by Section 401.2 or this section, *alterations* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. *Alterations* shall be such that the *existing building* or structure is no less conforming to the provisions of the *International Building Code* than the *existing building* or structure was prior to the *alteration*.

Exceptions:

1. An existing stairway shall not be required to comply with the requirements of Section 1011 of the *International Building Code* where the existing space and construction does not allow a reduction in pitch or slope.
2. Handrails otherwise required to comply with Section 1011.11 of the *International Building Code* shall not be required to comply with the requirements of Section 1014.6 of the *International Building Code* regarding full extension of the handrails where such extensions would be hazardous due to plan configuration.

The renovation of the existing building once gutted down to the existing structural framing system should have no major problems conforming with the base commercial code for new construction. There should be no existing elements left and therefore the walls, windows and doors will all be new and all new construction must conform to the code for new construction.

Since the building is located on the seacoast, the possible requirement for windows to be capable of sustaining impact loads from wind born debris must be researched and evaluated.

All the following existing structural code sections must be evaluated by a structural engineer to determine what would be triggered.

[BS] 403.3 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *alteration* shall be shown to have the capacity to resist the applicable design gravity loads required by the *International Building Code* for new structures.

[BS] 403.3.1 Design live load. Where the *alteration* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the *alteration*. If the approved live load is less than that required by Section 1607 of the *International Building Code*, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Where the *alteration* does result in increased design live load, the live load required by Section 1607 of the *International Building Code* shall be used.

[BS] 403.4 Existing structural elements carrying lateral load. Except as permitted by Section 403.5, where the *alteration* increases design lateral loads in accordance with Section 1609 or 1613 of the *International Building Code*, or where the *alteration* results in a prohibited structural irregularity as defined in ASCE 7, or where the *alteration* decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613 of the *International Building Code*. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 301,1.4.1 for the applicable risk category, shall be deemed to meet the requirements of Section 1613 of the *International Building Code*.

Exception: Any existing lateral load-carrying structural element whose demand-capacity ratio with the *alteration* considered is no more than 10 percent greater than its demand-capacity ratio with the *alteration* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the *International Building Code*. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of *additions* and *alterations* since original construction.

[BS] 403.4.1 Seismic Design Category F. Where the portion of the building undergoing the intended alteration exceeds 50 percent of the aggregate area of the building, and where the building is assigned to Seismic Design Category F, the structure of the altered building shall be shown to meet the earthquake design provisions of the *International Building Code*. For purposes of this section, the earthquake loads need not be taken greater than 75 percent of those prescribed in Section 1613 of the *International Building Code* for new buildings of similar occupancy, purpose and location. New structural members and connections required by this section shall comply with the detailing provisions of this code for new buildings of similar structure, purpose and location.

[BS] 403.5 Bracing for unreinforced masonry parapets upon reroofing. Where the intended alteration requires a permit for reroofing and involves removal of roofing materials from more than 25 percent of the roof area of a building assigned to Seismic Design Category D, E or F that has parapets constructed of unreinforced masonry, the work shall include installation of parapet bracing to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. For purposes of this section, design seismic forces need not be taken greater than 75 percent of those that would be required for the design of similar nonstructural components in new buildings of similar purpose and location.

[BS] 403.6 Wall anchorage for unreinforced masonry walls in major alterations. Where the portion of the building undergoing the intended alteration exceeds 50 percent of the aggregate area of the building, the building is assigned to Seismic Design Category C, D, E or F, and the building's structural system includes unreinforced masonry walls, the alteration work shall include installation of wall anchors at the roof line to resist seismic forces, unless an evaluation demonstrates compliance of existing wall anchorage. For purposes of this section, design seismic forces need not be taken greater than 75 percent of those that would be required for the design of new buildings of similar structure, purpose and location.

[BS] 403.7 Bracing for unreinforced masonry parapets in major alterations. Where the portion of the building undergoing the intended alteration exceeds 50 percent of the aggregate area of the building, and where the building is assigned to Seismic Design Category C, D, E or F, parapets constructed of unreinforced masonry shall have bracing installed as needed to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. For purposes of this section, design seismic forces need not be taken greater than 75 percent of those that would be required for the design of similar nonstructural components in new buildings of similar purpose and location.

[BS] 403.8 Roof diaphragms resisting wind loads in high- wind regions. Where the intended alteration requires a permit for reroofing and involves removal of roofing materials from more than 50 percent of the roof diaphragm of a building or section of a building located where the ultimate design wind speed is greater than 115 mph (51 m/s) in accordance

with Figure 1609.3(1) of the *International Building Code* or in a special wind region as defined in Section 1609 of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to- wall connections shall be evaluated for the wind loads specified in Section 1609 of the *International Building Code,* including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in Section 1609 of the *International Building Code*.

[BS] 403.9 Voluntary seismic improvements. *Alterations* to existing structural elements or *additions* of new structural elements that are not otherwise required by this chapter and are initiated for the purpose of improving the performance of the seismic force-resisting system of an existing structure or the performance of seismic bracing or anchorage of existing nonstructural elements shall be permitted, provided that an engineering analysis is submitted demonstrating the following:

1. The altered structure and the altered nonstructural elements are no less conforming to the provisions of the *International Building Code* with respect to earthquake design than they were prior to the *alteration*.
2. New structural elements are detailed as required for new construction.
3. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required for new construction.
4. The *alterations* do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.

SECTION 406
GLASS REPLACEMENT
AND REPLACEMENT WINDOWS

406.1 Replacement glass. The installation or replacement of glass shall be as required for new installations.

SECTION 410 ACCESSIBILITY FOR EXISTING BUILDINGS

410.1 Scope. The provisions of Sections 410.1 through 410.9 apply to maintenance, *change of occupancy*, *additions* and *alterations* to *existing buildings*, including those identified as *historic buildings*.

410.2 Maintenance of facilities. *A facility* that is constructed or altered to be *accessible* shall be maintained *accessible* during occupancy.

410.3 Extent of application. An *alteration* of an existing *facility* shall not impose a requirement for greater accessibility than that which would be required for new construction. *Alterations* shall not reduce or have the effect of reducing accessibility of *a facility* or portion of *a facility*.

Conformance to 521 CMR, the Massachusetts Architectural Access Board rules and regulations should not be a problem since the building will be fully gutted down to the existing structural framing system.

Cost Forecast: New Construction - Snow Library

Cost Forecast :

New Construction

Graph Notes (following page) :

1. Based on 2016 MBLC funded public library projects built as 'new' library buildings.

2. The **Total Project Cost** includes bidding and construction costs and other soft (non-construction costs) through occupancy.

3. Lists the estimated Costs of Construction and latest calculation of **Massachusetts Public Library Construction Program's** grant funding contributions to each project.

Cost Forecast. (New Public Library Construction)

Snow Library

Estimated Costs of Construction & Grants

*Note: Based on MBLC funded public projects built as '**NEW**' library buildings.*

11/2/2018

Orleans, MA

Hale Assoc, Archts

MPLCP 2016/17 Construction Projects	SF (gross)	STATE CONSTRUCTION GRANT	TOWN FUNDING + PRIVATE GIFTS AND FUND RAISING	TOTAL PROJECT COST *(Building + Soft Costs)*	Orleans GSF *Assumes : new Construction*	GRANT	TOWN + PRIVATE	*Projected Cost : (to mid-point of Construction Phase)*	Year
Springfield	17,000	$4,906,115	$4,593,106	$9,499,221	**32,165**	$9,381,021	$14,071,532	**$23,452,553**	**2019**
Sutton	17,100	$4,979,584	$6,211,401	$11,190,985		$9,662,452	$14,493,678	$24,156,130	2020
Weymouth	50,296	$12,085,184	$20,976,125	$33,061,309		$9,952,325	$14,928,488	$24,880,814	2021
Norwell	22,300	$6,360,764	$8,992,795	$15,353,559		$10,250,895	$15,376,343	$25,627,238	2022
Hadley	11,805	$3,905,625	$4,364,292	$8,269,917		$10,558,422	$15,837,633	$26,396,055	2023
Medford	44,912	$12,290,917	$22,306,093	$34,597,010		$10,875,175	$16,312,762	$27,187,937	2024
Dartmouth	14,854	$5,346,004	$6,471,213	$11,817,217		$11,201,430	$16,802,145	$28,003,575	2025
Kingston	20,438	$6,893,430	$9,480,367	$16,373,797		$11,537,473	$17,306,209	$28,843,682	2026
Wayland	33,530	$10,137,980	$19,029,137	$29,167,117		$11,883,597	$17,825,396	$29,708,993	2027
	Totals			***Totals***		$12,240,105	$18,360,158	$30,600,263	2028
Totals	**232,235**	**$66,905,603**	**$102,424,529**	**$169,330,132**		$12,607,308	$18,910,962	$31,518,270	2029
		40%	60%			$12,985,527	$19,478,291	$32,463,819	2030
				$/SF					
								Note: *Total project cost includes all bidding and construction costs and all other soft (non-construction costs) through occupancy.*	***Note:*** *Annual Cost Inflation factor is 3% compounded annually.*
				$729					

End

David Snow

Notes