Orleans Old Firehouse Project – Part A

Orleans, Massachusetts

Historic Building Survey

Prepared by

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for

Town of Orleans, Massachusetts
John Kelly, Town Administrator

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Purpose of this Report

The Town of Orleans is the owner and steward of the Old Firehouse, located on 44 Main Street in the Orleans Village Center. The property is currently occupied by the Chamber of Commerce and by Orleans Community Partnership, Inc. (OCP). The Chamber plans to relocate to a new facility and negotiations are currently underway for OCP to enter into a long-term lease of the Old Firehouse property for use a vibrant and active cultural center. The Town contracted with Bargmann, Hendrie + Archetype, Inc. (BH+A) to assess the current conditions of the building as part of an assessment that also includes an adaptive reuse feasibility study. This report is intended as a means for Town officials, OCP and other stakeholders to prioritize capital needs and to attract grant funding for rehabilitation and reuse of this strategically located local landmark. It is hoped that this document will provide ongoing guidance as needed.

Subject to achieving concurrence on proposed uses of the building, agreement on order of magnitude of rehabilitation and availability of funding, the Town and OCP may move forward with a comprehensive reuse design, followed by advertisement, bidding, award and construction.

Old Orleans Firehouse, viewed from Theresa's Way at sunset.

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1. General Description and History

Location

The Old Firehouse is located on 44 Main Street, within a strategic triangular commercial area bounded by Main Street and Cove Road.

Fig. 1.1. Locus Map (Source: Town of Orleans)

Fig. 1.2. Parcel Map/Aerial Photo

Site Plan and Floor Plans

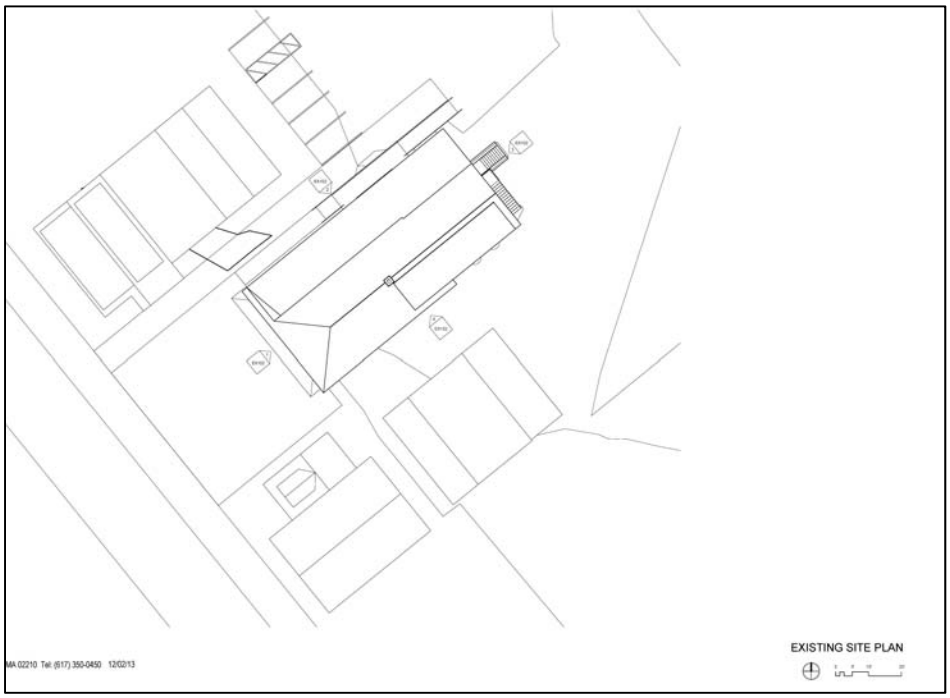

Fig. 1.3. Roof Plan

Fig. 1.4. Floor Plans

Elevations

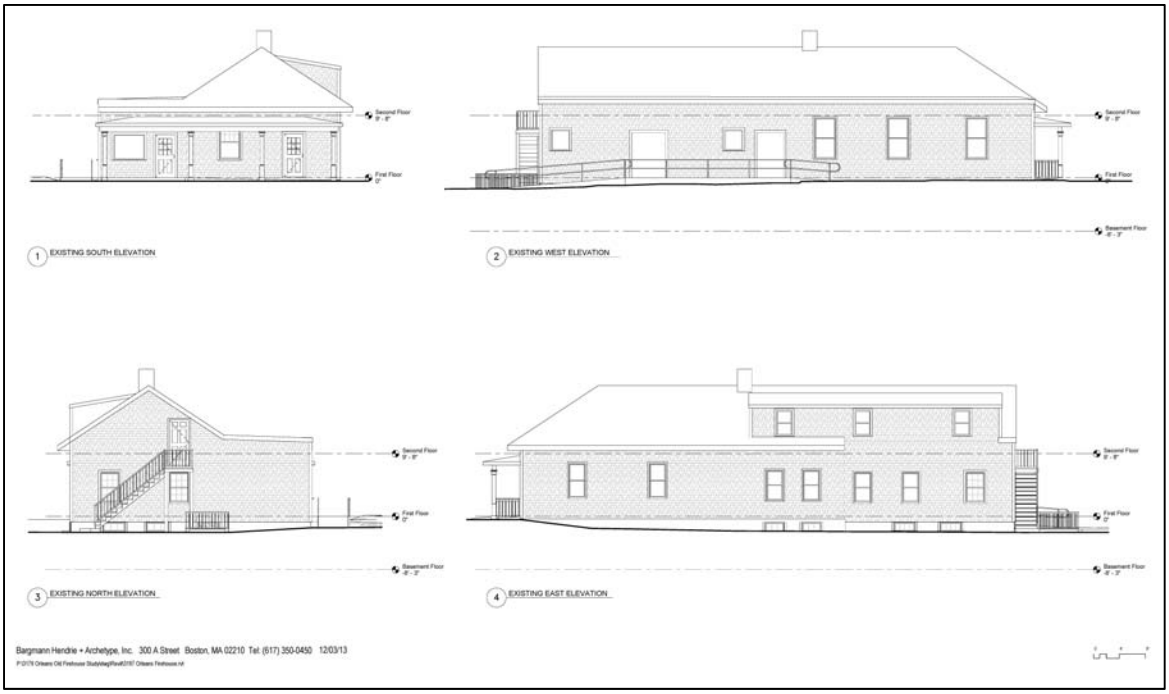

Fig. 1.5. Building Elevations.

Site Access

Vehicular

The Orleans Old Firehouse is located at 44 Main Street, near Route 6A, which acts as a major access road to and from the Village Center. The Main Street frontage includes a limited number of on-street parking spaces. 44 Main Street is contiguous with 5 Cove Road, which is also owned by the Town of Orleans and which is improved with a public parking lot. There is no direct vehicular access along either long side of the building.

Pedestrian

The property is directly accessible via sidewalks along Main Street, and a crosswalk is located in front of the property. Access to the building is made through the landscaped former firehouse apron, presently known as Parish Park. The Cove Road parking facility has been improved with Phase 1 of Theresa's Way, a paved walkway featuring nighttime illumination; this segment of the walkway terminates near the rear of the Old Firehouse.

Public Transportation

An "H2O" (Hyannis-Orleans) transit bus operated by the Cape Cod Regional Transit Authority (CCRTA) stops at Parish Park, near the mouth of the future "Theresa's Way." CCRTA provides daily bus service, Monday through Friday, beginning at 5:45 a.m. to 8:20 p.m., and Saturday beginning at 8:30 a.m. to 8:20 p.m. from downtown Hyannis at the Hyannis Transportation Center to the Stop & Shop complex in Orleans. Passengers may board the H2O Line at any of the scheduled bus stops or they may flag the bus down anywhere along the bus route. The H2O Line connects with the Flex bus at Stop & Shop Orleans, Skaket Corners Orleans, Underground Plaza Orleans and Star Market in Harwich. The H2O Line connects at the Hyannis Transportation Center with the SeaLine, the Barnstable Villager, and the P&B/Bonanza bus service to Boston/Providence. In the summer the H2O Line also connects with the Hyannis Area Trolley at the HTC.

Soils

Because of the age of the building and the assumed presence of lead paint on wood trim and other architectural millwork, soil at the building perimeter may contain lead.

Historical Summary

Property Donation to the Town of Orleans

In 1908, a fire destroyed the Cummings and Howes Pants Manufacturing Company, H.K. Cummings took over the Cummings General Store located at the corner of Main Street and Route 6A and ran the shop until 1951. According to town historian Bonnie Snow, H.K. and his wife Theresa Austin Paine Cummings were active citizens and outstanding community philanthropists. Among several properties donated by the couple to the town was, in 1925, a portion of the Cummings and Howes Company property that would become the site of a new fire station. In celebration of Theresa's roots in Orleans and her many contributions to the community, the emerging Cove Road – Main Street walkway that will pass adjacent to the Old Firehouse will be named "Theresa's Way." A bandstand once stood on the lawn between the firehouse and Cove Road – now a parking area.

Original Building

The original firehouse was a long and narrow one-story building set back from Main Street to provide an apron for equipment access and maintenance. Although the structure's shingled roof was hipped at both front and rear, the apparatus room faced Main Street. At the rear of the building, stairs led down to the basement boiler room and up to the attic Although the original heating system was replaced long ago, the original chimney and ash cleanout survive intact. When the building was extended further back to create a dispatch area above, the basement was enlarged to create a storage area and "supper room," but the original concrete foundation wall was largely retained in place.

Operations

Until dial phones were introduced to the town ca. 1958, fire calls were taken by telephone operators located at a telephone exchange building located next door to the firehouse. A siren was mounted on a tower atop the Cummings Store (which burned in 1973). Eventually, shared use of the telephone system between the police and fire departments became problematic. In 1967, the police and fire departments relocated to a new building and the building was occupied by the town's Recreation Department. The existing first-floor kitchen was apparently installed during this time, for the convenience of the caretaker.

Firefighters' wives arranged monthly suppers that were held in the basement of the firehouse. This tradition continued until volunteers dropped off, a time that generally coincided with women becoming part of the active fire department.

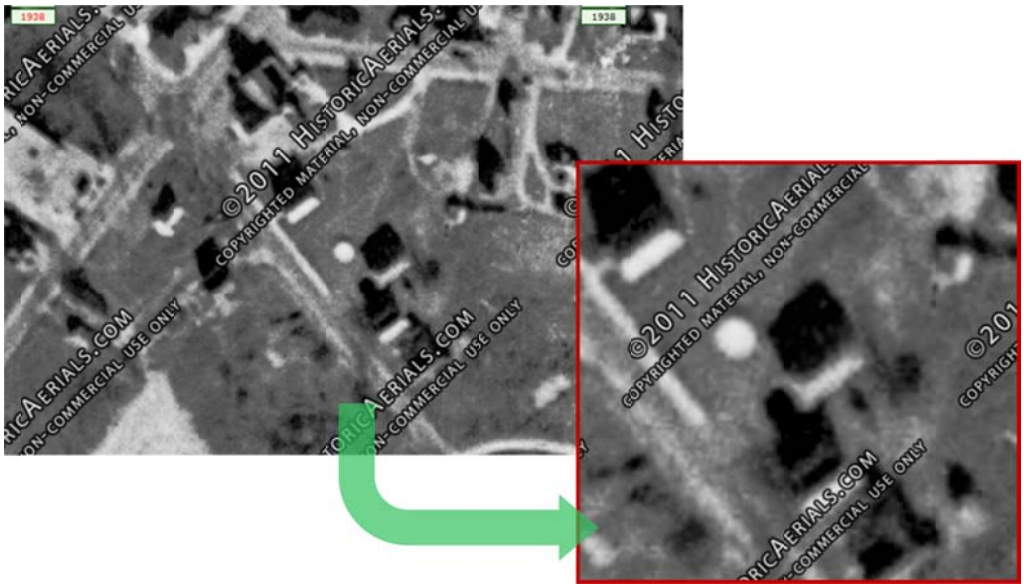

Fig. 1.6. Ca. 1938 aerial photo viewed online at www.historicaerials.com; the inset enlarged view shows the original firehouse massing, with hipped roofs at both ends. The light-colored circle to the west of the building is probably the water cistern.

Later Additions and Renovations

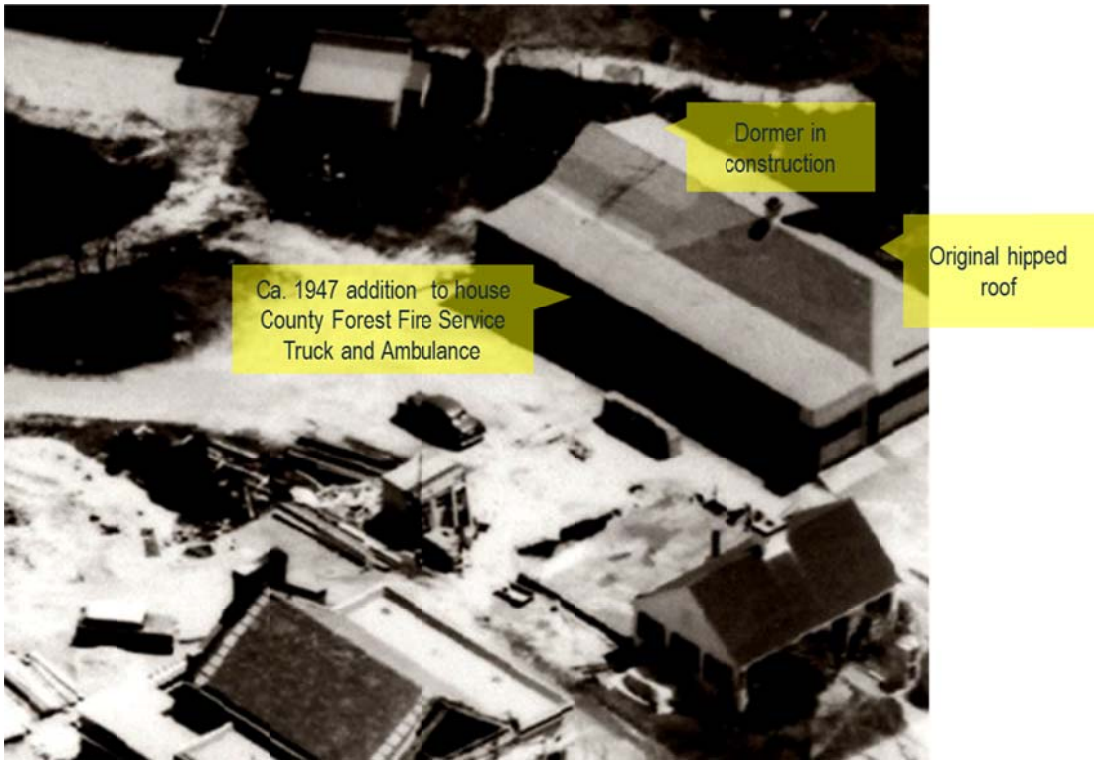

Fig. 1.7. Ca. 1948 aerial photograph (by Warren Quinn) includes the firehouse and police station; the variations in tone of the roof surfaces suggests that the rear apartment addition and dormer was fairly new or still in construction. Note the outbuilding (garage?), top of photo.

Fig. 1.8. 1971 aerial photo shows the firehouse and outbuilding (which is removed by 1994).

Commemorative group portraits of firefighters and the town's fire-fighting and rescue equipment provide information, albeit limited, about the original building and subsequent additions. We learn that the roof was clad with asphalt shingles early on, if not originally, and that the apparatus room doors were not unlike the typical "residential" garage doors of the time. It can be argued that the popularity of the Main Street façade and front apron qualifies these components as key character-defining features that could be reconstructed, should a restoration treatment be selected. Alternatively, rehabilitation of the building as part of an adaptive use project could reinterpret the tradition of presenting personnel and equipment through imaginative displays and exhibits.

Fig. 1.9. Undated photograph featuring the 1935 Patrol and Hose Wagon also shows the apparatus room and Rescue Squad doors in the down position and the roof-mounted "Orleans Fire Station" sign facing Main Street.

Fig. 1.10. Barnstable County Forest Fire Service, Brush-Breaker No. 3, built 1951. Note the asphalt roof shingles (two different tones between the original building and the ca. 1947 addition). The cedar wall shingles were knitted together at the corners of the building with corner trim.

Fig. 1.11. Post-1957 photograph showing firefighters posing in front of (new?) rescue squad panel truck, fire engines and brush breaker. Rear shed dormer is concealed from view.

Fig. 1.12. Recent aerial photograph, showing Old Firehouse "Community Building," Parish Park and brick-paved sidewalks along Main Street. This view pre-dates Phase 1 of the Theresa's Way improvements.

Interior: Additions and Renovations

Surviving photographs offer glimpses of the interior of the ca. 1947 addition; window and door details and wall-mounted radiators are captured in one photo, together with a front view of the county brush breaker parked in the rear of the narrow garage. The apparatus room was located at the front of the building and dispatch area was situated at the rear.

Fig. 1.13. December 1962 view of the Orleans Rescue Squad, illustrating the rescue vehicle and various ladders, etc. leaning on or suspended from what appears to be an exterior wall of the large apparatus room; the overhead door mechanism is visible in the upper right corner of the photo. The rescue squad occupied 44 Main Street until 1967.

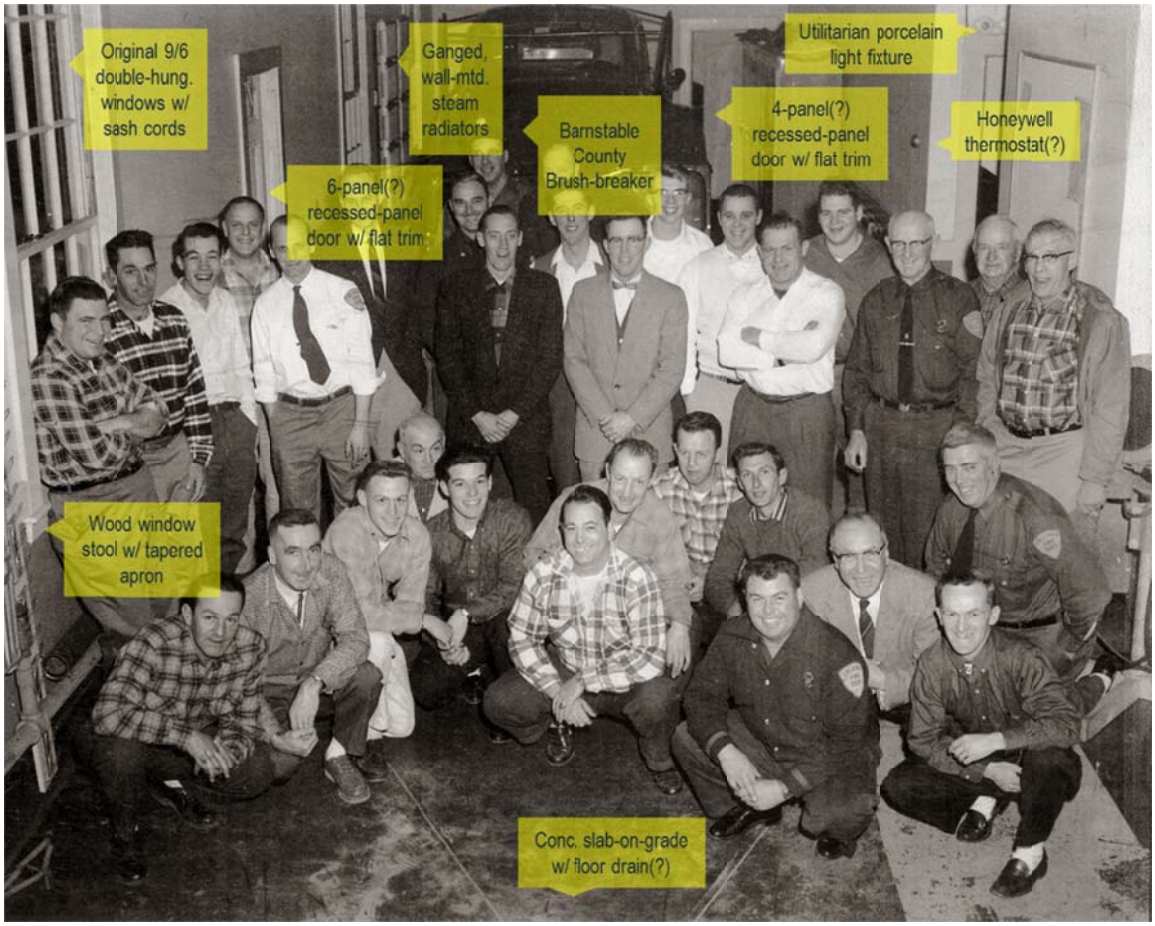

Fig.1.14. Undated portrait taken in Rescue Squad garage, annotated to highlight interior features and equipment.

Building Chronology

Date	Event	Comments and/or TBD
February 6, 1893	New hand-drawn fire pumper & hose housed at Leo Cummings estate	
February 1, 1922	Orleans Fire department officially organized	
February 5, 1925	Town meeting approves $7K for new Fire Station	
1929	Sanborn insurance map shows new building(?)	One known copy in Harvard University libraries; public access unclear.
ca. 1938	Aerial photo appears to show hipped roof at both ends	
ca. 1947	Aerial photo (anecdotally dated 1948 by Warren Quinn) shows rear addition under construction	Original hipped roof form is visble in exposed sheathing. Adjacent bldg. renovation work also.
Sept. 1947	Addition completed to house County Forest Fire Service Truck and Ambulance	Related to Barnstable County purchase of 4 brush breakers. Tandem parking.
by 1948	Dormer added	Upstairs apartment occupied by caretaker Al Brown.
February 27, 1952	Snow Library fire	Cisterns adjacent to 44 Main Street still extant.
1940s - 1970s	"Red Caps"	Ffirefighters' wives supported the department and put on suppers in the basement.
1954	Police force (Chief and 2 constables) moves into rear of building	Existing restroom entrance coincides with original entrance to dispatch area.
1965 - 1967	Town Meeting approves $100K for new combination police/fire station; relocation in 1967	
1989	Fire & Rescue Operations moves to current location	
by 1994	Outbuilding removed; rear exterior stairs added	

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2. Civil and Structural Engineering Evaluations

Civil Engineering Evaluation

Sanitary Sewage

The design flow and permitted capacity of the existing sewage disposal system (1,500-gallon septic tank, 9-outlet distribution box, and leaching gallery installed in 1991) is 830 gpd, based on 580 gpd of design flow for the public restrooms and 250 gpd of design flow for a "dance studio." The cast iron covers of the sewage disposal system are currently paved over; therefore, observation and evaluation of the system components was not possible. Inspection by an approved Title 5 System Inspector is recommended when the access covers are brought to grade level, as planned.

Stormwater Drainage

Measures should be taken to keep stormwater flowing off the property of 42 Main Street from entering onto the property of 44 Main Street and, likewise, measures should be taken at 44 Main Street to contain roof and courtyard runoff and keep it from flowing onto the property at 46 Main Street. The eroded and bare ground between the building and southerly property line of 44 Main Street should be re-vegetated or otherwise stabilized. If reworking of the front courtyard is undertaken, the use of rain gardens or other low-impact development (LID) methods to control stormwater runoff from sidewalks, patios, and other site infrastructure should be considered.

Structural Engineering Evaluation

Code Requirements

The Massachusetts State Building Code allows for three options for compliance methodology, to be chosen by the Registered Design Professionals (RDP) for the building code compliance analysis:

- Prescriptive Compliance Method
- Work Area Classification Method
- Performance Compliance Method

For the purpose of this report, it is presumed that there will be no change in use to a higher hazard index from the current use and that alterations to the existing structure will be limited to the rearrangement of interior walls and the possible addition of a stair and/or demolition, expansion or reconstruction of the existing second floor space. As such, the assessment of the structure will follow the prescriptive method delineated in IEBC-09 Chapter 3. Refer to the attached Coastal Engineering Company letter report for additional detail.

Foundation

The foundation survives in generally good condition. Contraction cracks in foundation walls observed by the structural engineer appear to be old, with no active movement. Concrete slabs appear to remain sound.

First- and Second-Floor Framing

Overall, the framing structure is in fair condition. However, much of the framing assembly is constructed of undersized components. According to the structural engineer, the existing structure can continue to be used in its present condition, but any change of occupancy and/or major alterations to the building will require reinforcement or replacement of the first-floor framing systems. The second-floor framing is sized for residential occupancy only and is inadequate for the storage functions suggested in recent OCP correspondence. Removal of the second floor to open up the space and raise the ceiling height is one option, provided that cross beams and/or wall bracing is added as needed. Refer to the attached Coastal Engineering Company letter report for additional detail.

Roof Framing

The roof framing combines field-built roof trusses with conventionally-framed rafters. The truss web members have limited capacity and should be augmented, according to the structural engineer. Moreover, the lack of ceiling joists or collar ties significantly reduces the strength and durability of the roof framing and should be augmented at a minimum; rafters should be anchored with hurricane ties and straps and collar ties should be installed to stabilize the existing roof structure; refer to the Coastal engineering letter for additional information.

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3. Description and Condition of Mechanical, Electrical and Plumbing Systems

Mechanical Systems

Heating
The existing oil-fired hydronic heating system is in generally good condition and appears adequate for the existing uses of the building. When the boiler needs to be replaced (towards the end of its service life and/or to accommodate additional loads imposed by higher occupancies), conversion to a natural gas-fired system is recommended. The existing exposed unit heater in the function room is noisy and unsightly and could be replaced with a concealed unit, if desired. Refer to the attached letter report prepared by C.A. Crowley Engineering, Inc. for additional detail.

Cooling
Air conditioning is provided via portable window units. Incorporating central air conditioning into a substantial rehabilitation of the building is advisable.

Plumbing Systems

The existing water service contains an undersized water meter and an aging water heater but appears to be functioning adequately. Restroom fixtures are due for performance and compliance upgrades and the number of fixtures may limit the proposed assembly occupancy of the building. Refer to the attached Crowley Engineering letter report for additional detail regarding the water heater, pumps, plumbing fixtures, controls and piping and drains.

There is no internal storm drainage system. Refer to the civil engineering evaluation for site drainage issues.

Electrical Systems

Power
The electric distribution system is in fair condition. Some appliances need disconnect switches. Open and/or poorly insulated wiring, missing switch plates, etc. should be addressed as soon as possible. Refer to the attached letter report prepared by Nangle Engineering Incorporated for additional detail.

At 200 amperes, the existing electrical service capacity appears to be adequate for the existing building program. If a proposed program materially increases the electric load, a service upgrade may be needed. For example, adding electric cooling, an elevator and/or substantially increasing the program area of the building will likely require additional capacity.

Lighting and Egress
Lighting is in generally good condition and appears to serve the existing uses adequately; however, the T8 and T12 linear-type fixtures are not as efficient as the higher-output lamps available now. Some of the existing electrical devices (e.g. switches) are in poor condition and should be replaced. Egress lighting (e.g. EXIT signs and emergency battery units) is partially non-functional; repair and/or upgrade are required for life safety and code compliance; moreover, some egress paths are under-illuminated; refer to the Nangle letter report for additional detail.

Fire Alarm System
The building is not sprinklered. The fire alarm system is in poor condition, with inadequate detection and visual notification coverage and obsolete control equipment. A new fire alarm system will be required as part of an adaptive use rehabilitation project; refer to the Nangle letter report for additional information.

Communications
Refer to the Nangle report for information about problematic telephone and CATV cabling system.

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4. Description and Condition of Exterior Elements

Roofing and Flashing

Overall Description

In its present form, the Orleans Old Firehouse is a hip-roofed, one and one-half story building with a partial basement. The original attic was expanded and modified in the 1940s to create a mostly-unfinished second-floor apartment; the addition is comprised of a wide shed dormer surmounting the northeast corner of the building.

In addition to the various additions and alterations to the building and roof massing over the years, window and door openings have been modified and added to meet changing needs, and siding materials appear to have been replaced on a cyclical basis. A porch was added (ca. 1999?) to the front of the building, fronting Parish Park and Main Street, beyond. An attractively landscaped exterior space, Parish Park occupies the site of the original firehouse apparatus-room apron.

Fig. 4.1. Asphalt shingles at hipped roof.

Fig. 4.2. Painted wood trim and standard metal drip edge.

Shed Dormer

The extant shed dormer was apparently erected to accommodate an apartment occupied for many years by caretaker Al Brown. Although the dormer is minimally visible from Main Street, it does not contribute architecturally to the ensemble.

Porch Roof Facing Parish Park

The hip-roofed porch or canopy added to the building lends human scale and provides cover for the existing entrances. However, in its present form, the canopy conceals part of the façade and appears to limit opening up the façade to Main Street and/or restoring the historic façade, a character-defining feature.

Fig. 4.3. Front porch.

Fig. 4.4. Porch detailing.

Chimney

Based on observation of old photographs, the extant building chimney appears minimally altered, even though the building was extended and the roof modified on more than one occasion. As such, preservation of the chimney is desirable.

Finish Carpentry

Historic photographs show the building clad with (painted or natural?) cedar shingles without corner boards. Window casings are painted wood, simple and flat in profile.

Windows

The original building is believed to have had regularly-spaced windows. The west addition also featured simple and ordered fenestration, but the existing restroom entrance and fenestration is not as austere and attractive. The east elevation is even more jumbled in composition, with a disturbing number of different window sizes and head heights for a relatively small building.

Fig. 4.5. West elevation, showing alterations for public restrooms and accessible entrance.

Fig. 4.6. East elevation; note variety of window sizes, types and locations.

Fig. 4.7. Replacement window with fake muntins.

Doors

No exterior doors are original. The original apparatus room garage doors visible in historic photographs were removed at an unknown time, but portions of the track mechanism survive above the dropped ceiling and one segment is visible from inside an existing storage closet.

Stairs and Ramps

The existing wheelchair ramp provides access to a vestibule shared by the public restrooms and the facility's internal corridor. The stair/ramp assembly is in fair condition and the handrails are not in full compliance with current MAAB regulations.

Fig. 4.8. Existing wheelchair ramp.

The pressure-treated wood stairs connecting the second floor “apartment” to the ground have open risers and do not comply with current requirements for new construction. A guard and gate of similar materials and construction has been erected around the poured-in-place concrete stairs down to the basement.

Fig. 4.9. Existing rear stairs.

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5. Description and Condition of Interior Elements

Description

Overall Description
As noted by former dispatcher Roy Jones, the surviving building is "an addition on an addition on an addition." The original apparatus room and 1940s addition were built on slabs on grade (to support the weight of vehicles) and a basement is situated below the center and rear of the building. The basement is reached by an interior stair, and also via a concrete areaway stair. The original attic was expanded and modified in the 1940s to create a partially-finished second floor apartment, accessed by a narrow winding stair that was probably original to the building and a modern exterior stairway at the rear.

Layout
The existing layout can be characterized as two parallel rectangles corresponding to the original firehouse and rear addition (right side, from Main Street)and the police and rescue squad wing (left side). The left and right "zones" are subdivided into front, middle and rear rooms, each of which have been altered significantly over the years.

Although surviving historical photographs do not show enough of the interior to allow us to reconstruct the original layout, existing jogs in the wall dividing the apparatus room from the rescue squad garage suggest that there was a wide, framed opening between the bays. Further down the wall, an existing doorway appears to co

Historical Integrity
Although a number of original interior features (e.g. painted door and window trim) remain in place, the extent of alteration of the surrounding architectural finishes has compromised the building's historical integrity of design, setting and materials.

Flooring

Floor finishes
The existing function room floor is a concrete slab on grade, finished with modern vinyl composition tile (VCT). At the northern corner of the room, a small ramp paved with grouted clay quarry tile transitions between the function room floor level and slightly lower framed wood floor of the rear wing. The interior corridor itself and the rear meeting rooms are carpeted.

The Chamber of Commerce offices and public restrooms are all situated in the former Rescue Squad and Police Station areas, also a concrete slab on grade. The Chamber spaces are carpeted and the restrooms and vestibule feature quarry tile.

At the upstairs apartment, resilient floor tiles appear to be vinyl-asbestos, in which case hazardous-materials abatement will be required, for demolition or rehabilitation.


Fig. 5.1. Public restroom interior.

Fig. 5.2. Function room interior.

Fig. 5.3. View toward rear corridor.

Walls and Ceilings

Walls

Existing walls include original lath-and-plaster and later gypsum wallboard. One or more openings between the original apparatus room (now the function room) and the ca. 1947 addition were infilled to create office space.

Ceilings

Existing ceilings include plaster with flat and textured finishes and acoustic ceiling tile suspended in a metal grid system.

Fig. 5.4. Suspended acoustic ceiling tile ceiling at function room.

The meeting rooms at the rear of the building occur beneath the “low second floor” of the former upstairs apartment and, accordingly, are very low. Refer to the structural analysis for the structural engineer’s concerns about the existing second floor capacity.

Fig. 5.5. Meeting room interior.

Fig. 5.6. Dado and built-ins at rear meeting room.

Fig. 5.7. Cabinet or pass-through(?)

Stairs

Stairs leading up to the attic and down to the basement are simple and unadorned.


Fig. 5.8. Steep, non-conforming basement stairs.


Fig. 5.9 Stairs up from the basement.


Fig. 5.10. Winders at the attic stairs.

Windows

The original 12-over-12-light, weighted double-hung windows were removed at an unknown time and have been replaced with modern 1-over-1 double-hung units with spring balances. The replacement windows at the rear meeting room sport false muntins in a 6-over-6 pattern. In both cases, the windows appear to have been sized to fit the original openings, but the extant sash materials and muntin configurations represent a significant loss of historic character. Flat interior window trim appears to be original to the building or the early additions.

Fig. 5.11. Typical 1/1 window, with air conditioner; flat trim and skirt may be original.

Interior Doors

Most of the interior doors are flush modern doors set in plain wood frames with flat trim. However, one or two doors (e.g. a second-floor closet) feature raided panels and original hardware.

Fig. 5.12. Second-floor doors; 2-panel closet door (right) is probably original.

Fig. 5.13 Modern pressed-metal exterior door for egress from the semi-finished attic apartment.

Fig. 5.14. Original door hardware at the second-floor closet.

Fig. 5.15. Modern flush doors at first floor.

Interior Finishes

The office spaces presently occupied by the Chamber of Commerce feature painted plaster walls and a slightly pitched ceiling corresponding to the roof framing above.

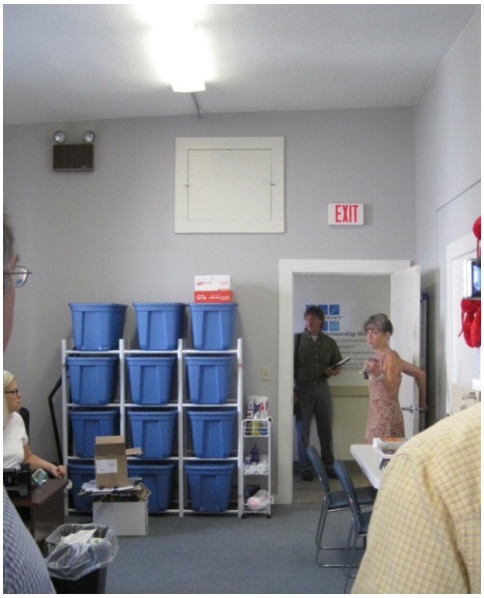

Fig. 5.16. Chamber of Commerce office, looking towards the side entrance vestibule.

The rear meeting rooms feature a varnished knotty-pine dado composed of vertical tongue-and-groove boards

Fig. 5.17. The rear meeting room has a low ceiling which, together with the knotty-pine dado, begins to lend the room a “den” character. However, the flush-mounted fluorescent lights and vinyl windows detract from the building’s historic character.

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6. Building Code Issues

General

APPLICABLE CODES AND REGULATIONS

Codes and regulations governing the repair and or renovation of the Orleans Old Firehouse include:
- The Massachusetts State Building Code (780 CMR), 8th Edition
- The International Existing Building Code (IEBC), 2009 Edition, with MA amendments
- The Massachusetts State Plumbing Code (248 CMR)
- Massachusetts Architectural Access Board (MAAB) Regulations (521 CMR)

Existing Use or Occupancy B Business
Proposed Occupancy A-3 Assembly

Existing Building : B Business			
	Existing Building Area	Occupancy per IBC [1]	Restroom Fixture Count [2]
Basement	1,015 gsf	3 occupants	0
First Floor	2,815 gsf	27 occupants	Required for full occupancy Female: 1 toilet, 1 lav Male: 1 toilet, 1 lav
Semi-Finished Second Floor	830 gsf	9 occupants	0
Unfinished, Unoccupied Attic	825 gsf	N/A	N/A
Total	5,485 gsf	39 occupants	Actual Female: 2 toilets, 2 lavs Male: 1 toilet, 1 urinal, 2 lavs

[1] Occupancy for Business includes gross floor area such as closets, restrooms, and storage.

[2] Restroom fixture count is usually based on actual occupancy and not building code occupancy. The required count in the table above is based on maximum occupancy but the actual fixture count is based on existing fixtures.

Accessibility

Objectives
Accessibility to the Old Firehouse by all people, regardless of physical disability, is an important goal of the Town, as well as a Massachusetts State code requirement and federal mandate. If the cost of construction over any 36-month period exceeds 30% of the assessed value of the building ($311,100 for 2011), full compliance is required for the entire building and it must be upgraded to comply with 521 CMR, the Massachusetts Architectural Access Board regulations. Accessible means of egress is a particularly important issue; for uses requiring two means of egress, the Massachusetts building code requires that both means of egress be accessible.

Historic Buildings
Because the Old Firehouse has been determined by the local historical commission to be a historic structure, the selected accessibility solution should conform to the intent of Secretary of the Interior's Standards for Rehabilitation. Standard #10 promotes reversible solutions allowing for future removal without damage to historic resources: "*New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*"

Issues

The existing wheelchair ramp at the west side of the building provides to the building from the parking lot; however, the handrails are non-compliant. As noted in the TLCR report, the existing restrooms should also be upgraded for full MAAB compliance. The existing Main Street entrances are not code-compliant, due to the steep slope of the approaches, the lack of level landings and the non-compliant door threshold height and profile). Potential accessibility solutions include upgrade of the existing concrete ramp, construction of one or more new ramps or wheelchair lifts and/or re-grading portions of the site to facilitate direct entrance and exit.

7. Preserving Character-Defining Features

Identifying Character-Defining Features

The Secretary of the Interior's Standards for Rehabilitation define "character-defining features" as follows: *"architectural materials and features that are important in defining the historic character of a building are generally recommended for retention and preservation. Alteration or removal is apt to cause diminution or loss of the building's historic character. Repair, rather than replacement, of existing character-defining features is recommended."*

Character-defining features of a contributing property within a historic district are typically linked to those of the district. Evaluation criteria include craftsmanship, historic and/or architectural significance, potential for public accessibility, visual prominence and integrity of setting, design and materials.

Proposed Preservation Priorities

THIS SECTION SETS FORTH A CATEGORIZED LIST OF *PROPOSED* PRESERVATION PRIORITIES FOR THE ORLEANS OLD FIREHOUSE:

High Priority items *must* be preserved and typically require a strict conservation/preservation approach toward repairs.

Medium Priority items are character-defining features that *should* be preserved if possible, but deteriorated components may be replaced in-kind with retention of character and detailing.

Low Priority items are those which possess little or no significant character-defining features. They may be preserved, altered *or removed*, provided that such action has no physical or visual effect on High or Medium Priority items.

High Preservation Priority:
(Must be preserved.)

Exterior
- "Feeling and association" of the building as a community space.
- Hipped-roof massing and one-story façade facing Main Street.
- Cedar shingle wall cladding (appearance; replace in kind as needed).
- Asphalt roof shingle cladding (appearance; replace in kind as needed).

Interior
[None]

Medium Preservation Priority:
(Preserve or replace components in kind, if possible)

Exterior
- Chimney location and height.
- Original painted window casings and trim.

Interior
- Original window stools, casings and skirts.
- One original 2-panel door and hardware (for interpretation; relocate and reinstall as needed).
- Interior bearing wall (original exterior wall) separating original apparatus room from ca. 1947 addition.
- Extant apparatus room overhead door tracks.
- Stairs up to original attic level, including softwood flooring (or, photo-document and demolish).

Low Preservation Priority:
(Little if any contribution; may be altered or removed.)

Exterior
- Front porch.
- Shed dormer.
- Rear stairs.
- Ramp and stairs; restroom entrance.

Interior
- Modern kitchen.
- Second-floor apartment layout, framing and finishes.
- Interior non load-bearing partitions.
- Ordinary painted plaster finishes.
- Knotty-pine dados and built-ins.
- Replacement windows.
- Flush doors.
- Stairs down to basement.

8. Conclusions and Recommendations

In addition to any improvements planned for construction, the Old Firehouse can be repaired and preserved on a phased basis. The following recommendations and estimates assume that all renovation work will be in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, to the extent that they apply.

Maintenance Recommendations

Many maintenance tasks are cyclical, i.e., must be repeated at regular intervals in order to respond to natural weathering, deterioration and wear-and-tear. Even simple housekeeping duties, such as vacuuming grit from floors, are important ways to conserve the building materials and finishes. Other work (e.g., reglazing windows, repainting architectural woodwork, re-securing granite trim) can be relatively durable in nature, yet it may be a little more costly than ordinary maintenance; the more-involved maintenance tasks are, therefore, good candidates for coordinated scheduling over several construction seasons and/or fiscal years.

Short-Term Maintenance

Once the building is occupied, cyclical (short-term) activities that should be performed (monthly, annually or otherwise, as noted) include the following:

General

- General housekeeping (e.g. dusting, vacuuming). Ongoing and continuous work.
- Inspect fire protection and other life-safety systems in accordance with local codes and with requirements set forth by local building officials. Refer also to published NFPA fire safety guidelines.

Roofing and Flashing

- Seasonal inspection of roofs (especially valleys), gutters and downspouts. Seasonal gutter cleaning, typically in April/May and in October.
- Inspect roof surfaces and flashings from the ground at least twice a year.
- Inspection of attic spaces, to check for leaks and excess moisture and to ensure adequate natural and/or mechanical ventilation in spaces above finish ceilings. Spring and Fall.

Windows

- Regular cleaning of windows and screens is required to maintain smooth operation.
- Inspect glazing and seals annually, and repair as required. "Replacement windows" may themselves need to be replaced every 10-15 years.
- Repaint exterior window trim every 10 years; 7 years at south-facing windows.

Interior Finishes

- During dusting, observe plaster finishes for signs of moisture infiltration through wall; follow-up with investigation of any problems observed, i.e., identification of the source and causes of the leak and formulation of appropriate response. Ongoing.

- Carefully remove any soiling from interior painted and plaster finishes (which may become deposited on uninsulated wall surfaces through condensation). Ongoing and continuous work; allow for complete treatment (inspection and/or cleaning) of all interior surfaces at least once a year.

Mechanical, Electrical and Plumbing Systems

- Inspect and maintain boilers, water heaters, tanks, valves, etc. in accordance with manufacturer's written instructions and with industry standards.

- Upon completion of general rewiring work recommended in this report, inspect wiring and switch mechanisms at active light fixtures for evidence of frayed wires, failed insulation, short circuits and other hazards; repair as needed. Inspect each fixture at least once every 6 months.

Vegetation

- Seasonal management of vegetation, including regular pruning, is needed.

Design and Engineering Recommendations

The Town of Orleans and the Orleans Community Partnership worked with bh+a to develop conceptual adaptive-reuse plans to transform the existing building into a vibrant Cultural Center. The goals of the renovation is to attract tourists, stimulate the Town's economy, improve the visitor experience, reduce the need for private vehicles, preserve historic character by creating flexible indoor and outdoor spaces that will gather the community in one building.

Design Concepts

The conceptual renovation project centered around flexible spaces that have the ability to expand or contract based on users in the building. Movable partition walls and retractable glass walls allow the multi-purpose and meeting rooms to accommodate a variety of programs. A large entry or "light court" allow for informal gathering spaces and practical service areas such as the food preparation area, restrooms and storage supports the numerous activities in the building. The second floor can be opened up to provide light into the first floor and the basement and attic is dedicated as storage and mechanical space.


Movable partition wall examples


Retractable glass wall examples

Two conceptual designs and cost estimate were produced for the feasibility study; the first scheme called "Base Bid" and the second scheme called "Bump Out." The "Bump Out" option has an addition on the north side of the building with a cross-gable roof. The "Base Bid" scheme is a bit more modest, having a similar floor plan without the bump out and taller roof. Prices for new construction were also developed to replicate the two design options.

Structural Recommendations

The flexible, open-plan design sought by the OCP requires the removal of most of the existing interior bearing walls, replacing them with steel columns and beams to support the ceiling and roof loads and also the proposed movable room dividers. In order to minimize new foundation work, the steel columns are proposed to rise from the existing concrete basement foundation walls. Removal of the existing wall between the original apparatus bays will require a new steel beam, assumed at this pre-design stage to be 16 inches deep and approximately 30 feet long. (Other options involving shorter spans and additional columns are available as well.) The light court concept will require additional support beams, running in a transverse direction. Lateral support is also needed to compensate for the removal of existing shear walls at the north and south elevations; structural steel moment frames or heavy shear panels would need to be installed at each corner of the building. The redundant north dormer (ca. 1948) is proposed to be removed and replaced with framing in the original rear gable roof plane; new collar ties will be introduced as needed.

HVAC Recommendations

According to the mechanical engineer, the most appropriate new HVAC system would be two- to three high-efficiency condensing-type gas furnaces with DX cooling and condensing units located at grade. Because building occupancy will vary depending upon the day and time of day, another option is to use one unit, split it into two zones -- each with their own sensors and controls. The east attic space could serve the gallery and multipurpose room on the east side of the building and the small attic space above the kitchenette could serve the small meeting room, foyer and restrooms. A mechanical room in the basement would then serve the north meeting room.

It is possible to reuse the existing boiler for heating, but air handlers and ductwork and/or “mini-split” wall-hung air conditioning units would still be needed for cooling. Boilers could supply baseboard heat, but the open floor plan results in very little wall space in the gallery and multipurpose room to locate baseboard radiation. Alternatively, boilers could supply heating coils in new air handling units, with the understanding that antifreeze would be required where such units are installed in unheated attic spaces.

Baseboard heat with mini-split air conditioning is probably the most economical combination. Since mini-splits are generally wall-mounted, however, they might create a visual (and acoustical) distraction at the gallery and multipurpose rooms, where wall space will be at a premium for displaying artwork.

Plumbing Recommendations

The existing 1-1/2” water service appears to be adequate for the proposed number of restroom fixtures. New restroom locations at the concrete slab will likely require under-slab pinning and trenching for new piping. Regarding energy efficiency and sustainability, sensor faucets and flush valves are recommended for the new restrooms, together with low-flow toilets and lavatories. If the optional fire suppression system is installed, a dedicated water service (tapped into an underground water main assumed to be about 50 feet away) will be required.

Electrical Systems

New electrical equipment, panelboards, small power and energy-efficient light fixtures are recommended. If central air-conditioning is incorporated in the project, the existing 200-amp electrical service will probably need to be upgraded. Since this building is less than 7,500 square feet, sprinklers are not required per MGL Chapter 148, Section 26G; however, inasmuch as the building will remain Town-owned and will be used for assembly space, installation of an automatic fire suppression system may be prudent; a wet system would be installed at the first and basement levels and a dry system is recommended for unheated attic spaces. Note that the estimated cost of a fire suppression system was not included in the base cost, but rather as a renovation and new-construction add alternate.

Sustainable Features

Sustainable features of the renovation include the following:

- Insulation of exterior walls, attic floors and exposed roof areas
- New insulating glass windows and doors
- Shading devices on south-facing windows
- Low-flow plumbing fixtures
- Energy-efficient lighting and Occupancy Sensors
- High recycled-content materials
- Low-emitting materials such as adhesives and fabrics
- Use of local and/or natural materials
- Permeable material at walkways and courtyards to divert water away from sewer systems
- Recycling area

Subject to additional research and engineering analysis, potential additional features (omitted from the current cost estimate) include the following:

- Geothermal heat exchange system
- Solar thermal hot water
- Solar electric power systems
- Rain garden to help control water run-off

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9. Appendix

a. Coastal Engineering Company, Inc. Letter Report, dated January 16, 2014
b. C.A. Crowley Engineering, Inc. Letter Report, dated November 11, 2013
c. Nangle Engineering Incorporated Letter Report, dated November 20, 2013

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COASTAL ENGINEERING COMPANY, INC.

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January 2, 2014 Project No. C18027.00

Mr. Jack Glassman
Bargmann Hendrie + Archetype, Inc.
300 A Street
Boston, MA 02210
VIA EMAIL: jglassman@bhplus.com

Re: Site and Structural Conditions Assessment
44 Main Street and 5 Cove Road
Orleans, MA

Dear Mr. Glassman:

Per your request and subsequent authorization, we have prepared this general assessment and evaluation of the existing site and structural conditions at the referenced property. The intent of this report is to provide general qualifications and assessment of the current site and structure relative to feasibility study being prepared for adaptive reuse of the facility. It is our understanding that the intent is to continue to use the existing building as a community resource facility, serving the community as a general meeting place and to support community-sponsored activities including a cultural center, public restrooms and function/gallery space. For the purpose of this report, it is presumed that there will be no change in use to a higher hazard index from the current use and that alterations to the existing structure will be limited to the rearrangement of some interior walls and the possible addition of a stair/elevator tower and/or expansion of existing second floor space. Should work beyond the scope of this presumption be considered for the building, further engineering analysis would be required.

Civil Engineering Evaluation

The subject building is located at 44 Main Street (Map 33 Parcel 71) and is owned by the Town of Orleans together with the property at 5 Cove Road (Map 33 Parcel 110). When a sewage disposal system replacement for 44 Main Street was being permitted in 1990, Town Council issued a letter indicating that the two parcels should be considered as one lot.

Parking for the building is along Main Street and in the public parking lot at 5 Cove Road. There is no direct vehicular access along either side of the building, and insufficient lot width to construct such access. There is one parking space marked for accessible parking at the southeast corner of 44 Main Street [Photo #1]. The parking space is positioned over a catch basin that receives stormwater runoff from more than one-half acre of paved parking; grading of the parking space should be checked for compliance with ADA requirements.

Sanitary Sewage

The existing sewage disposal system was installed in 1991 (Permit No. 91-33), and consists of a 1,500 gallon septic tank, 9-outlet distribution box, and a 39'L x 10'W x 2.5'D leaching gallery. The sewage disposal system is located to the rear of the building beneath the Town parking lot at 5 Cove Road. The design flow and permitted capacity of the sewage disposal system is 830 gpd, based on 580 gpd of design flow for the public restrooms and 250 gpd of design flow for a dance studio.

The cast iron covers of the sewage disposal system components are not presently visible or accessible, due to recent resurfacing of the parking lot with a binder coat of pavement. According to the Orleans Public Works Manager, Mark Budnick, the locations of the covers are known and they will be raised to grade when the top/finish course of pavement is installed. Due to the covers being inaccessible, we were not able to observe the condition of any of the sewage disposal system components. Orleans Board of Health records show that the system was last pumped on June 10, 2010 and that 1,490 gallons of septage were removed from the septic tank.

Stormwater Drainage

Roof runoff flows off the northerly (left), westerly (front), and southerly (right) sides of the building. Our site inspection found that only the northerly side of the building has a gutter and downspouts to control roof runoff [Photo #2]. The downspouts are located at the front and rear corners of the building, with the rear downspout discharging onto the ground and the front downspout discharging into the ground via a PVC pipe. We do not know where the PVC pipe leads. Runoff from the front roof discharges onto the brick courtyard and runoff from the right-side roof discharges onto the ground, where it has caused scour, erosion, and loss of vegetative cover. It is apparent [Photo #3] that the uncontrolled roof runoff and runoff from the brick courtyard discharge onto the property to the south (46 Main Street – Orleans Whole Food Store).

The ground between the right side of the building at 42 Main Street and the property line between 42 and 44 Main Street is paved. Beginning in the vicinity of the left front corner of the building at 44 Main Street and going rearward to the accessible ramp, a distance of 40’ to 50’, the ground surface of 42 Main Street is at a higher elevation than that of 44 Main Street [Photo #2], appears to be sloping toward the property of 44 Main Street, and appears to be discharging stormwater runoff onto the property of 44 Main Street.

Runoff from the behind the building, the Town’s parking lot at 5 Cove Road, and an adjacent private parking lot is collected into a catch basin at the right rear (southeast) corner of 44 Main Street. Stormwater flows from the catch basin into a drainage pipe that runs along the southerly property line and connects to a drainage system in Main Street that discharges treated stormwater to Town Cove.

Comments and Recommendations

Relocation of the accessible parking space closer to the building should be explored. Based on our site inspection it may be feasible to move the accessible parking space to directly behind the building, adjacent to the existing accessible ramp. If the accessible parking space is not relocated it should be checked for compliance with ADA grading requirements, and re-graded and repaved if necessary.

Measures should be taken to keep stormwater flowing off the property of 42 Main Street from entering onto the property of 44 Main Street. At 44 Main Street measures should likewise be taken to contain roof and courtyard runoff and keep it from flowing onto the property at 46 Main Street. The eroded and bare ground between the building and southerly property line of 44 Main Street should be re-vegetated or otherwise stabilized. If reworking of the front courtyard is proposed, the use of rain gardens or other low impact development (LID) methods to control stormwater runoff from sidewalks, patios, and other site infrastructure should be considered.

Lastly, the sewage disposal system should be inspected by Coastal Engineering Co., Inc. or another Commonwealth of Massachusetts Approved Title 5 System Inspector when the access covers of the system components are brought to finish grade. If the system is found to be in good operating and structural condition, the system can remain in use for design flows up to the permitted capacity of 830 gpd. Proposed building uses that would increase the design sewage flow above the 830 gpd permitted capacity, would require the existing sewage disposal system to be replaced with a new sewage disposal system designed in accordance with present regulations. The property of 5 Cove Road appears to contain sufficient land area for a new sewage disposal system assuming new soil tests determine that sufficient soils suitable for subsurface sewage disposal exist. Alternately, innovative/alternative technologies may be considered for sustainable design.

Structural Engineering Evaluation

General

The existing building is a one and one-half story wood framed structure, with a cast in place concrete foundation and conventional, western platform stick framing in the floors and roof. According to the town records, the original building was constructed in 1925 as a fire station, with subsequent additions and renovations and changes to current use as a cultural community center with public restrooms and leased offices. Town tax assessor's card indicates the most recent building permits for remodeling work pulled in 1999 and 2012.

The building is built in two sections, side by side, with one section built on a full cast in place concrete foundation and the other, the former fire station apparatus bay, a concrete slab on grade over a shallow concrete foundation. The building is approximately 76 ft. by 36 ft. with a net footprint area of 2736 sq. ft., not including a small three foot wide canopy porch at the front of the building

Requirements for work on existing buildings must comply with requirements of Massachusetts State Building Code- 8th Edition (Code). The current state building code adopts the 2009 International Existing Building Code (IEBC) as further amended by Massachusetts Department of Public Safety amendments (MA amendments).

In general, the Code requires any alteration, addition or change in use to comply with IEBC Code compliance, as amended, per Massachusetts State Building Code 780 CMR – 8th Edition.

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

- Prescriptive Compliance Method- Chpt 3
- Work Area Classification Method- Chpt 4
- Performance Compliance Method-Chpt 13

Work Area Classification Method further broken down into classification of work categories as follows:

- Repairs
- Level 1 Alterations
- Level 2 Alterations
- Level 3 Alterations
- Change of Occupancy
- Additions
- Historic Buildings
- Relocated or Moved Buildings

For the purpose of this report, it is presumed that there will be no change in use to a higher hazard index from the current use and that alterations to the existing structure will be limited to the rearrangement of some interior walls and the possible addition of a stair/elevator tower and/or expansion or reconstruction of existing second floor space. As such, the assessment of the structure will follow the prescriptive method according to the following guidelines, taken from IEBC-09 Chapter 3, as summarized below:

General

- New Additions and new structural elements must comply with new Code requirements
- Alterations must generally comply with new Code
- Portions of the building not related or affected by the proposed work are not required to comply with IBC for new construction
- Existing structural elements with very limited load increase or no increase are allowed as is
- Existing structural elements experience identified load increases must be sized to meet new Code
- Dangerous conditions must be corrected

- Change in Use of Occupancy to greater hazard index will trigger conformance with new Code

Additions or Alterations to Existing Structure

- Where additions or alterations increase the gravity load in any existing structural element by more than 5%, the structural element must be augmented or replaced to carry the increase load as required for new construction
- Any addition to an existing building must be analyzed for lateral loads due to current code requirements for seismic and wind loads.

Repairs

- Repairs are differentiated from alterations- clarified as routine maintenance
- Dangerous situations warrant improvements to the structural system for purposes of increasing safety
- RDP required to establish whether "substantial structural damage" has occurred to a structure
- For non-substantial structural damage, repairs using materials and strengths that existed prior to the damage are allowed to restore the building to its pre-damaged state (304.4)
- New structural members and connections must comply with detailing provisions for new buildings

Change in Occupancy

- A change in occupancy to an existing building requires the building to meet the requirements of the IBC for the new occupancy (307.1)
- When the change of occupancy results in the structure being classified to a higher occupancy category, the seismic requirements for new construction shall apply to the existing structures

Historic Buildings

- Except for historic building located in flood hazard areas, a proposed change in occupancy that does not constitute a distinct life safety hazard may be approved by the code official without mandatory compliance for new code requirements (308.1)

<u>Existing Conditions</u>

Foundation

As indicated above, the existing foundation consists of a cast-in-place concrete foundation with a full basement under part of the building and a slab on grade at the original fire station apparatus bay and the ca. 1946 addition (space currently used by Orleans Chamber of Commerce and occupied by public restrooms). The foundations are in generally good condition. There is no evidence of settlement or duress in any of the concrete wall surfaces examined. Several cracks were observed along the south wall, particularly at re-entrant corners around window openings. These cracks appear to contraction cracks formed due to normal shrinkage or volumetric shrinkage in the concrete over the years. Although we were not able to determine the depth of the shallow foundation in the slab on grade areas, the concrete slabs appear to be sound, with no evidence of settlement or failure in the floor areas observed.

A short haunch wall of undermined construction was observed in the boiler room along the east foundation wall. It appears that this thickened wall section was constructed to buttress up the foundation wall at the slab on grade to full foundation interface.

Floor Framing

The first floor is conventionally framed 2x10's @ 16 inches on center in the full basement area. The floor joists are supported by a triple-ply 2x10 beam with two concrete-filled pipe columns equally spaced along the beam span. The floor joists are flush-framed into the triple-ply beam. The joists are notched and bear on a continuous 3x4 ledger that is lag-screwed into the triple-ply beam. Horizontal shear stress cracks were observed in a number of joists, most of which have been reinforced with a field fix 1x6 splice.

The second floor space in the rear meeting room area is constructed with 2x8 floor joists spaced at 16 inches on center. The second floor joists span between walls between the meeting rooms on the first floor level. These walls appear to align with the basement floor beam and concrete foundation walls in the floor below meaning these walls are bearing and would need to be shored and supported by a structural support beam if these walls are removed.

Roof Framing

The roof framing consists of field built roof trusses in the front of the building and conventional dormer roof framing in the back. Roof trusses are spaced at 24 inches on center and are constructed from 2x6 top and bottom chord members. Roof trusses are clipped at the front of the building, which appears to be an extant hip roof that was part of the original 1925 building. The hip roof section is framed with 2x6 common rafters that span between a full dimensional 2x10 hip rafter and the perimeter exterior bearing walls.

Roof rafters in the conventional roof areas are typically 2x6 construction spanning the building width. The rafters on the dormer roof side are supported on a full height wall on the eave wall and span continuous to a 2x10 continuous ridge thrust board. Rafters on the opposite side span between the ridge beam and a short knee wall, coincident with the common interior bearing wall and foundation in the floors below. Rafters were not constructed with collar or tension ties to brace the outside wall.

Roof rafters in the flat roof area above the public restrooms are typically 2x8 at 16 inches on center and span across the room, with supports on bearing walls at each end. A false ceiling below the flat roof area is framed with 2x6 constructions, with a gypsum wall board ceiling over the finished spaces in the floor below.

<u>Comments and Recommendations</u>

Overall, the existing structure is in fair condition. Engineering calculations performed for the existing floor and roof framing system indicated that the existing floor live load rating will be limited on each floor as follows:

Existing Floor and Roof Load Capacity		
Members	**Allowable Live Load**	**Controlling Factor**
First Floor 2x10 @ 16”	65 psf	flexure/shear
Second Floor 2x8 @ 16”	40 psf 25 psf	flexure deflection
Pitched Roof 2x6 @ 16”	25 psf	deflection
Flat Roof 2x8 @ 16”	23 psf	deflection

The existing framing layout is summarized in the attached sketch plans.

As indicated above, the existing structure can continued to be used in its present condition, provide no change in use or major alterations are made to the structure. As we understand it, one of the proposed uses of the facility would be to convert the back meeting rooms into a more open public assembly/function or exhibition hall. Currently, the existing floor framing system could not sustain 100 pst live load required for such use. However, the existing 2x10 first floor joist could easily be reinforced or augmented to meet the assembly use load requirement. This would require at minimum adding a sister to each joist and installing a proper flush mounted metal joist hanger at each beam end.

Assuming deflection is not a concern, the 2x8 second floor joists are limited to 40 psf live load capacity, which is essentially a residential loading. The second floor will need to be augmented and new support beams and columns installed if any of the existing interior bearing walls were to demolished. Alternately, the existing second floor may be removed if the first floor walls are significantly reconfigured, however, cross

beams and/or wall bracing would be required to brace the exterior wall and compensate for the loss of the second floor diaphragm.

The field built roof trusses are in fair condition, however, the 1x6 web member has limited capacity and should be augmented with a full dimension 2x4. The 2x6 roof rafters in the conventionally framed roof areas are marginal, but do meet current code snow load requirements. However, the lack of ceiling joist or collar ties significantly reduces the strength and durability of the roof framing system. Additional tie beams and/or collar ties are recommended at minimum to augment the existing framing. This back section of the roof will likely need to be removed and reframed if any reconfiguration of the back section of the roof is contemplated. The 2x8 rafters in the flat roof area is adequate to sustain code required roof snow loads, however would not be sufficient to support any type of roof deck or “green” roof loads without additional support or augmentation. At minimum, rafters should be anchored with hurricane ties and straps at each end support and collar ties installed to stabilize the existing roof structure. Details of the above recommendations are beyond the scope of this report.

Please let us know if you have any questions concerning the above report

Respectfully,

COASTAL ENGINEERING COMPANY, INC.

John A Bologna, PE
President/CEO

JAB/dlb

Enclosures

Photo #1

Photo #2

Photo #3

Photo #4

Photo #5

Photo #6

Photo #7

Photo #8

Photo #9

Photo #10

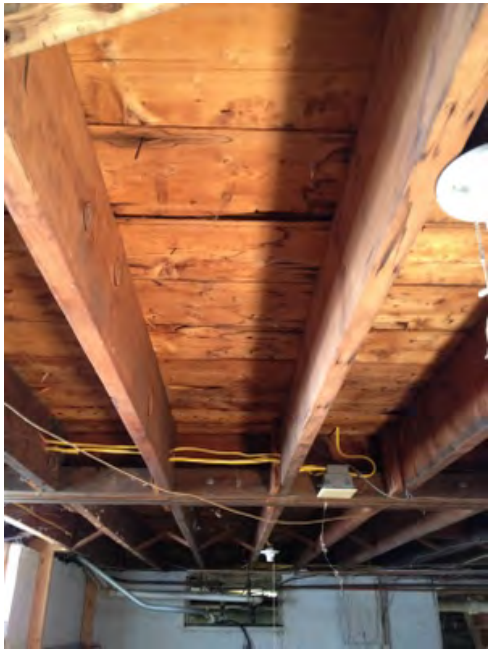
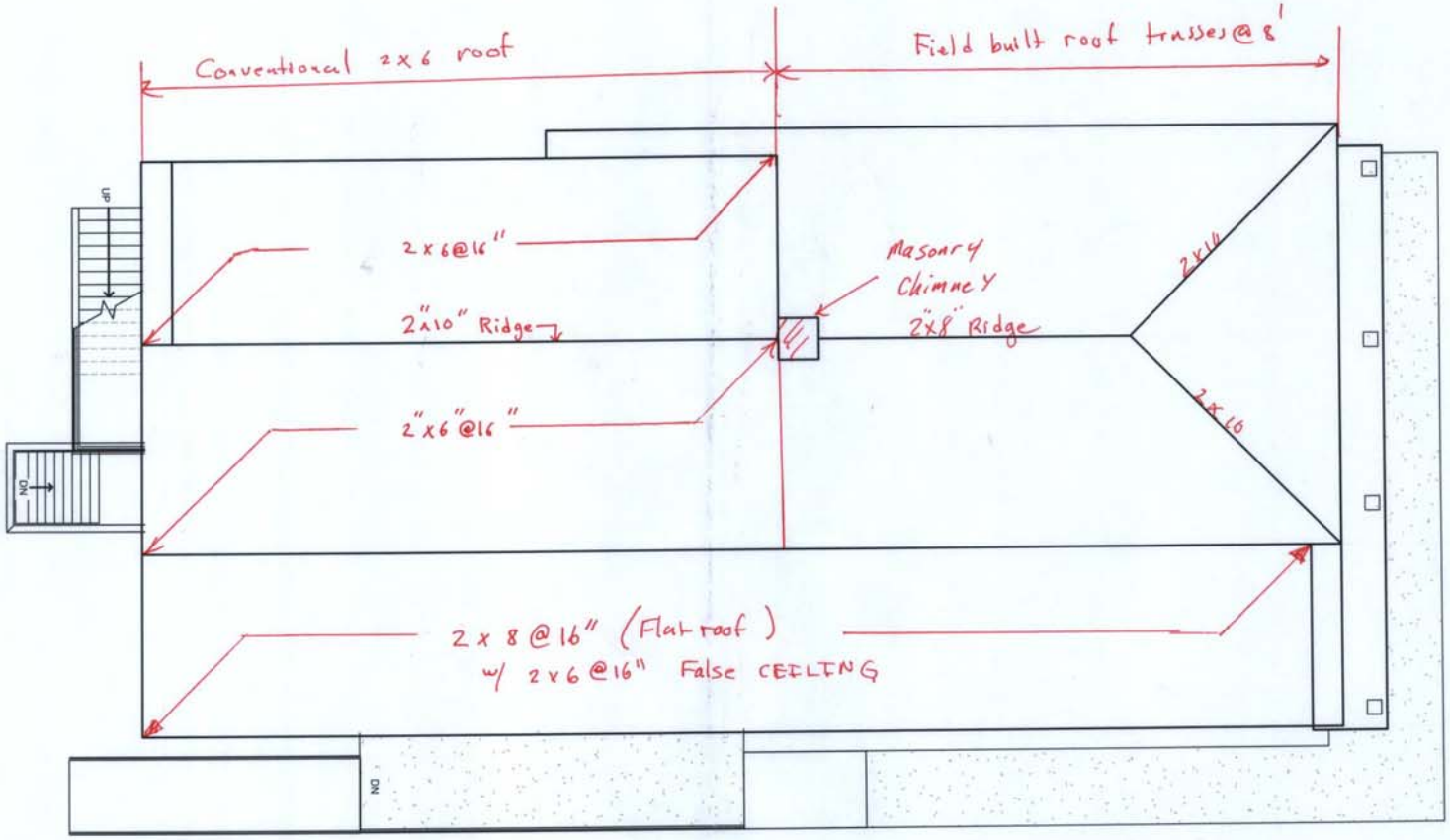


Photo #11

Photo #12

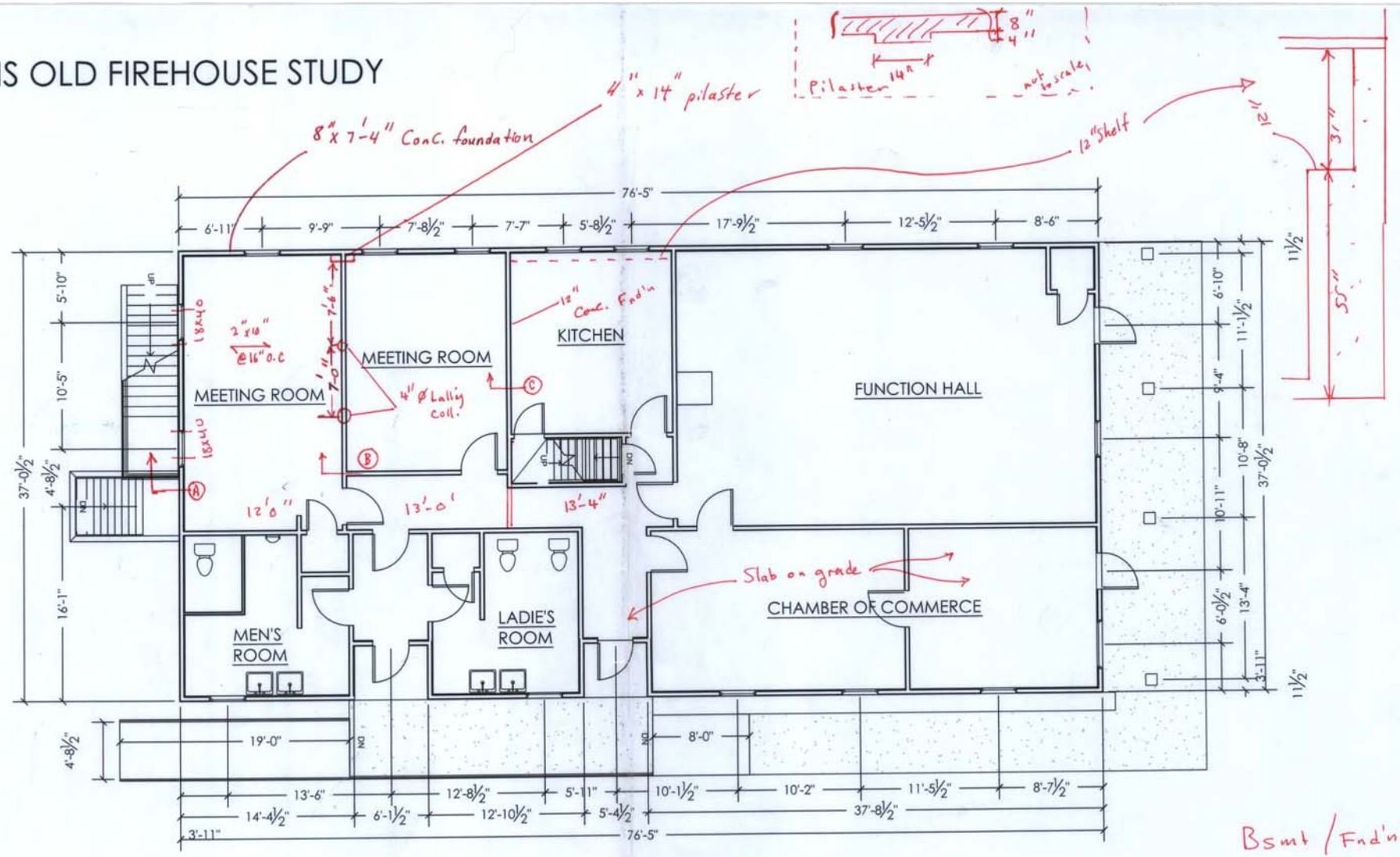
Photo #13



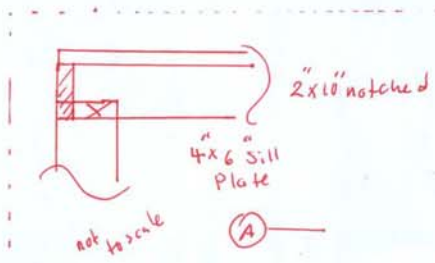
Field notes 1/7/13

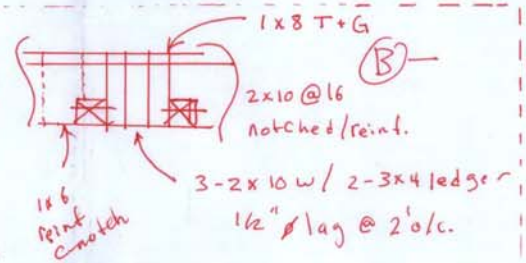
ROOF PLAN

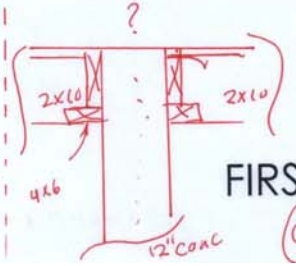
ORLEANS OLD FIREHOUSE STUDY



2x Box



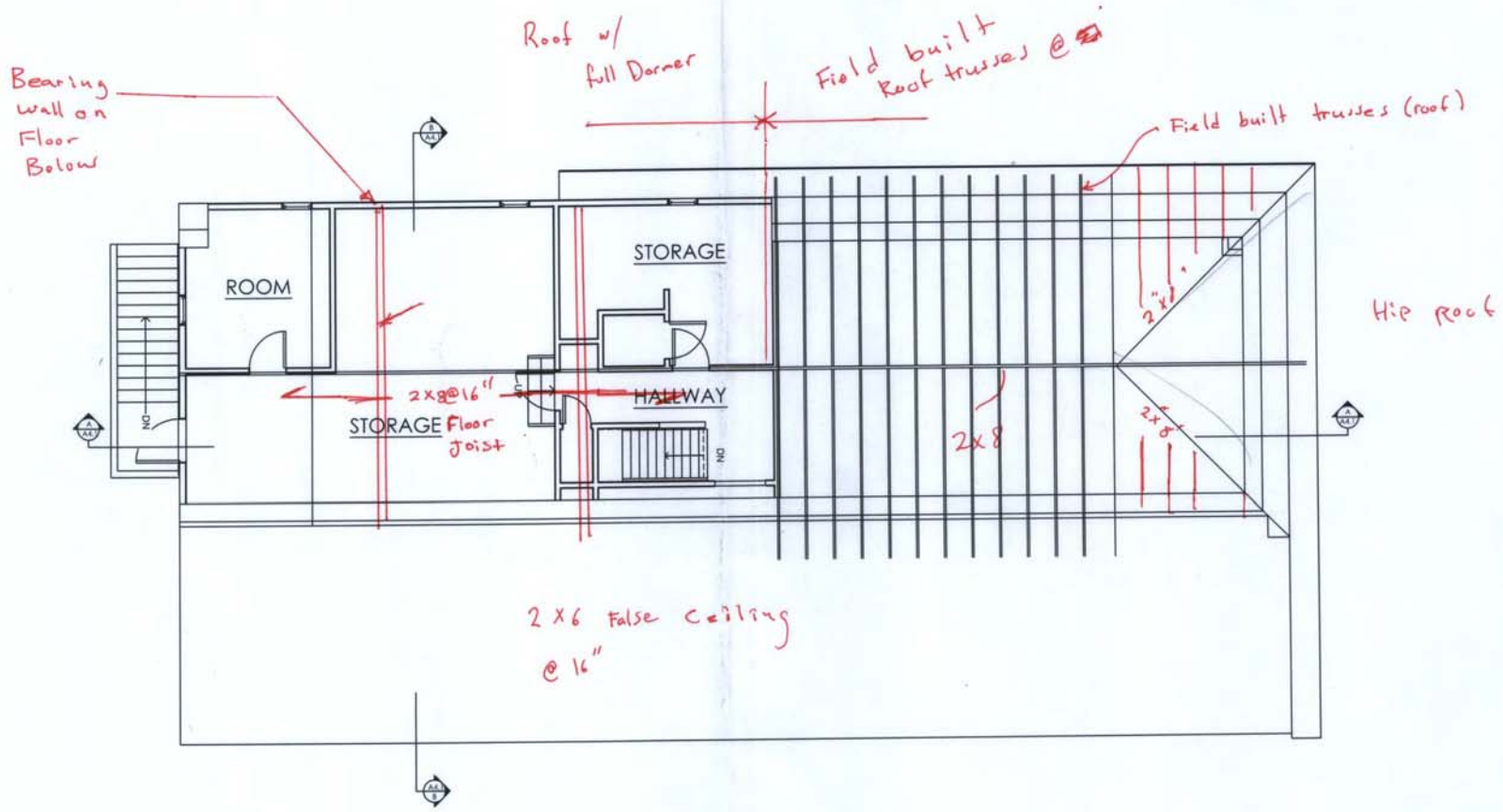




Bsmt / Fnd'n FIELD NOTES 1/7/13

FILE COPY

FIRST FLOOR PLAN



SECOND FLOOR PLAN

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November 11, 2013

ORLEANS OLD FIREHOUSE
MECHANICAL SYSTEMS REPORT

Existing HVAC Systems

The building is served by an oil-fired Weil-McLain WGO-3 hot water boiler with a 100,000btuh output. The boiler is approximately six years old and appears to be in very good condition. The Roth DWT 275-gallon double wall oil tank located in the basement mechanical room is new. The Taco 007-F5 heating system pump supplies four independent heating zones.

The zones are as follows:

- Zone 1 – Meeting Room #1, Meeting Room #2, Corridor and Kitchen
- Zone 2 – Function Hall
- Zone 3 – Chamber of Commerce Offices
- Zone 4 – Men's and Women's Restrooms

Zone 1 also serves the northeast room located on the second floor. This zone has separate risers with shutoff and drain valves located in Meeting Room #1. This room is controlled by the thermostat located in Meeting Room 2.

With the exception of the function hall, all areas have baseboard finned-tube radiation. The function hall has a ceiling-hung Modine HS335 fan-forced unit heater. The baseboard radiation appears to be in good condition, with some damage to the covers and fins. The unit heater appears to be in good condition.

Programmable thermostats are provided for three of the four zones. The Function Hall zone is controlled by a mechanical thermostat attached to the hot water supply piping at the unit.

Heating system piping is a combination of steel, copper and plastic, and all piping appears to be in good condition. The heating system piping has very limited closed cell foam insulation.

The heating system is equipped with a Watts 9D-M3 double check valve with intermediate atmospheric vent, an Amtrol Extrol 30 expansion tank, and an air separator with automatic vent. In addition, there is an air separator with automatic vent installed on the piping serving Zone 1. All equipment appears to be in good condition.

There is no central air conditioning system. Window type air conditioners are used where needed.

Ventilation is provided by operable double-hung windows and door openings, and the openable areas of the doors and windows appear to meet the code required 4% of the floor area served. The Men's and Women's restrooms are provided with new Panasonic WhisperSense model FV-11VQCL5 ceiling exhaust fans with built-in motion and humidity sensors and delay timer. Ventilation rate of the exhaust fans is 110 cubic feet per minute.

Recommendations:

- Future consideration should be given to converting to natural gas when the boiler needs to be replaced. The existing boiler is approximately 85% efficient. New gas fired condensing boilers can be as high as 97%

efficient. However, the savings from increased efficiency and possible utility rebates, offset by the costs recently paid for the new boiler and oil tank, lead to a prolonged payback period.
- Repair baseboard radiation where needed.
- If desired, replace the Function Room unit heater for aesthetic and noise reasons.
- Insulate all heating system piping.
- Verify restroom ventilation exhaust rate.

Existing Plumbing Systems

The 1½" water service enters the southeast corner of the basement mechanical room. This service appears to have replaced an original 1" water service, but the 1" water meter remains. A smaller water meter is not unusual and does not seem to affect the performance of the plumbing fixtures. The change in water service size is most likely due to the addition of the restrooms with flush valve type water closets and urinal, and an irrigation system. The cold water piping is copper and appears to be in good condition. There is minimal closed cell foam insulation on the cold water piping.

Hot water is provided by a State Industries model PV20, 1650 watt electric water heater. The water heater is approximately 21 years old, well past its expected useful life, but appears to be in good condition with no evidence of leaks. There is no mixing valve, and one temperature is distributed to all fixtures. The hot water piping is copper and appears to be in good condition. There is minimal closed cell foam insulation on the hot water piping. Hot water recirculation is not required nor provided.

There are two lavatories, one water closet and one urinal in the Men's restroom. The fixtures are of vitreous china and appear to be in good condition. The water closet and urinal appear to be ADA compliant height. One lavatory appears to be ADA compliant with lever handles, offset waste and insulated under-sink piping. This lavatory does not appear to be equipped with a low flow aerator. The second lavatory is equipped with a pushbutton metering type faucet. Neither lavatory is equipped with a mixing valve. In addition, the restroom is equipped with a floor drain and hose bibb. Although there is no evidence of a floor drain trap primer, one may not have been required at the time of installation.

There are two lavatories and two water closets in the Women's room. The fixtures are of vitreous china and appear to be in good condition. One water closet appears to be ADA compliant height. One lavatory appears to be ADA compliant with an offset waste and insulated under-sink piping. Both lavatories are equipped with lever blade handles but do not appear to be equipped with low flow aerators. Neither lavatory is equipped with a mixing valve. In addition, the restroom is equipped with a floor drain and hose bibb. Although there is no evidence of a floor drain trap primer, one may not have been required at the time of installation.

The fixture quantities may limit the proposed re-use of the space.

All fixtures drain by gravity. There is a system of hub and spigot sanitary drain piping which appears to have been abandoned except for the 4" cast iron vent through the roof. All other observed connections to this pipe have been capped. This pipe exits the basement mechanical room in a north-west direction. The kitchen sink has a 1½" copper drain with a drum trap, which exits the north side of the building through a 4" no-hub cast iron building drain. A portion of this pipe appears to be exposed above grade adjacent to the door exiting the basement. The restroom and custodial fixtures are piped underslab and therefore the routing could not be ascertained. There is a floor cleanout in

the Men's restroom which could be the cleanout for the building drain serving the restrooms. There are two two-inch (2") cast iron vents serving the restrooms and penetrating the roof.

There is a sump pit and pump adjacent to the basement door. The waste is lifted and discharged to grade at the northeast corner of the building. Pump condition and operation is questionable.

There is no interior storm drainage system.

Recommendations:

- Replace the existing water heater with a new tank type electric water heater. On-demand electric water heaters installed in the restrooms are not recommended due to vandalism.
- Investigate the existing and possibly abandoned sanitary waste piping. If it is abandoned it should be removed to prevent future connections thereto.
- Replace the existing lavatory faucets with non-hold-open metering faucets to prevent vandalism.
- If not replaced, install low flow (0.5gpm) aerators on non-metering lavatory faucets.
- Install thermostatic mixing valves on all lavatories.
- Insulate hot and cold water piping.
- Replace an existing exterior hose bibb with a freeze-proof wall hydrant.

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November 20, 2013

NANGLE
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ORLEANS OLD FIREHOUSE
ELECTRICAL SYSTEMS REPORT

Existing Electrical Systems

The electric service to the building is via aerial drop conductors, served by a pole mounted utility transformer. The aerial conductors attach to the building at the weatherhead, connect to service entrance conductors, and serve a class 200 single phase meter socket. The aerial drop conductors are subbing on the underside of the soffit at the attachment point. The utility meter did not display a demand reading. The meter socket feeds a 200 ampere loadcenter inside the front door, in a small closet. The loadcenter is surface mounted, includes a 200 ampere main circuit breaker (service disconnect) and thirty (30) branch circuit poles with one (1) available space. There are stored materials in the closet which obstruct the code required clear working space in front of the panel. There is also a 100 ampere sub-panel located in the basement boiler room. The panel in the basement has drain and heating hot water piping directly above the panel. Generally, the electric distribution is in fair condition.

The service ground is located at the domestic water service entrance in the basement. The connection integrity is suspect, as it appears the conductors were either never properly terminated to the ground clamp, or were disconnected and not re-connected.

The majority of the interior first floor lighting is fluorescent, T8 4 foot linear lamps, in surface mounted wrap-around style fixtures. The main community room has 2x4 acrylic lensed, troffer type fixtures in the suspended ceiling. The second floor lighting includes T12 8 foot linear lamps. There are several 8' fixtures in the attic above the rest room, apparently abandoned in place when the rest room ceilings were installed. There are several incandescent fixtures, including the second floor stair, and the back half of the basement. The lighting controls are conventional toggle switches at the door to each room. Rooms with multiple entrances have three-way switching. Many of the toggle switches are newer, in good condition, but several of the toggle switches are vintage, and in poor condition. Generally, the interior lighting and controls are in good condition, except for a broken lens on one fixture, and several older style toggle switches.

Exterior lighting consists of a recessed fixture in the soffit above each of the side doors, as well as a Rab LED fixture on the left side of the building. The same style LED fixture is located at the second floor rear door, at the top of the stairs. There is also a small coach type wall mounted fixture next to the second floor rear door, although this fixture did not seem to be working. There is a wall mounted fixture at the basement rear door. There are two coach style lantern fixtures at the front doors, with compact fluorescent lamps. Lighting at the front courtyard consists of three onion style lanterns on wood poles. There is a landscape lighting controller (transformer) mounted on the right side of the building, with a cord and plug connection. It was not plugged in at the time of our observations. There is no exterior lighting located along the right side of the building. Most of the exterior lighting is controlled by time clocks located in the building. Generally, the exterior lighting is in good condition.

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Egress lighting includes wall mounted unit equipment ('emergency battery units' or EBUs) and polycarbonate LED type, surface mounted exit signs. Several of the exit signs and EBUs were non-functional when tested. There is a single remote head in the Men's rest room, and the same is presumed for the women's room. Although there are EBUs in each room, there is no egress lighting in the rest room vestibule, nor the side egress corridor. The EBU in the rear tenant space is too high to reach to test. Generally the EBUs are in fair condition, and the exit signs are in good condition, but need new batteries.

Receptacles are located throughout the facility. Most are duplex style, grounding. Receptacles in the right rear room have child guard inserts. There are several ground fault circuit interrupting (GFCI) type receptacles, including at eth basement loadcenter, rest room vanities, the 'kitchenette' in the right center room, and at the exterior (on the right side of the building, ad pole mounted in the courtyard). There is also a GFCI receptacle in the basement, into which is plugged a sump pump. There are several ungrounded receptacles in the right rear room on the second floor. Exterior receptacles are equipped with weatherproof-while-in-use covers, but are not weather resistant type. Receptacles are generally in good condition, except for non-grounding type.

The fire alarm control equipment includes an FCI four (4) zone model FC-72 hardwired fire alarm control panel.

- Automatic detection consists of smoke detectors in corridor and larger areas, and automatic heat detectors in other areas. There are several areas with no automatic detection, including closets, and areas on the second floor, and accessible attic areas.
- Manual alarm stations are located at the first floor and basement egress doors. There are no manual stations at the basement or second floor interior stairs. Mounting heights range from 44" to 52" above finish floor (AFF).
- Occupant notification is via audio-visual notification appliances ("horn-strobes"), primarily located in corridors, the community room, right center room and the rest rooms. A single horn-strobe is located at the front of the second floor, and the rear section of the basement. Mounting heights range from 70" to 93" AFF. There is no visual notification in the rest room vestibule, the side egress corridor, the front half of the basement, or the back half of the second floor.
- The control equipment is supervised by a UDACT ("dialer") located, according to markings on the control panel, in the attic (?) above the control panel.

Generally, the fire alarm system is on poor condition, with inadequate detection coverage, inadequate visual notification coverage, and obsolete control equipment. The building is not sprinklered.

There are 2 aerial drops of coaxial cable from local service providers, presumably one for the Town, and one for the tenant (Chamber of Commerce). There did not appear to be any telephone drop cable. The telephone and CATV cabling systems are in fair condition, with the network interface wiring sloppy and poorly labeled.

Appliances include a 120 volt electric water heater with integral disconnect, and an oil fired boiler. The boiler did not have a local disconnect. A hot water unit heater with fan motor is located in the Community room, and includes a local service switch. There are also exhaust fans in the rest rooms, activated by integral motion sensors.

The following additional issues were noted:

- A broken fluorescent lamp was noted in the second floor eave space to the right of the stair.
- A conduit from the main panel to the basement sub-panel runs along the right side of the building exterior, and is not properly attached to the building.

- An empty porcelain lamp socket is located in the eave space to the right of the stair. If a lamp were installed, it could hit the paper face on roof insulation, causing a fire (although insulation is missing from that roof bay).
- Several loose fluorescent lamps were noted in the attic areas.
- Open wiring was noted in the left rear corner of the second floor rear room in several locations.
- A switch plate is missing at the second floor rear door.
- Abandoned signal wiring at the second floor stair should be removed.

Recommendations

- Correct aerial drop from rubbing on soffit.
- Remove stored materials from main loadcenter.
- Re-connect and test service ground; add supplemental grounding electrodes as required.
- Relocate basement sub-panel away from piping.
- Secure sub-panel exterior feeder conduit.
- New fire alarm throughout, including smoke detectors in all spaces, audio-visual notification in all spaces, new addressable control equipment and UDACT, manual stations at the interior stair, etc.
- Remove abandoned T12 fixtures and lamps.
- Replace all EBUs.
- Replace exit sign batteries.
- Add remote head(s) or EBUs to rest rooms, side corridor, basement and second floor areas.
- Replace all receptacles with grounding type receptacles (or if no ground present, GFCI type receptacles).
- Replace interior receptacles with tamper resistant type.
- Replace exterior receptacles with weather resistant type.
- Add service switch to boiler.
- Add T8 linear lamped fluorescent fixtures to areas with no or incandescent lighting; remove all incandescent style fixtures.
- Replace broken fixture lens in tenant space.
- Occupancy/vacancy sensing lighting controls throughout.
- Replace vintage wiring devices.
- Properly terminate or remove the open wiring noted in the left rear corner of the second floor rear room.
- Install a switch plate at the second floor rear door.
- Abandoned signal wiring at the second floor stair should be removed.
- Disconnect/re-connect replacement water heater (see Mechanical Systems Report).

Note - Recommendations are based on repairs and/or minor renovations to the space. If a ‘gut’ renovation is undertaken, some of the recommendations would become moot.

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Orleans Old Firehouse Project – Part B

Orleans, Massachusetts

Adaptive Reuse Feasibility Study

Prepared by

Bargmann Hendrie + Archetype, Inc.
Boston, Massachusetts

for

Town of Orleans, Massachusetts
John Kelly, Town Administrator

April 2014

Purpose of this Report

This Adaptive Reuse Feasibility Study report is based on the active and collaborative input of numerous participants, including Town of Orleans officials, the Orleans Community Partnership (OCP), architecture and arts programming professionals, current and prospective users of the Old Firehouse cultural center, the BH+A team and other important community stakeholders. Feedback was received from representatives of organizations already using the Old Firehouse for meetings, activities, exhibitions, workshops, performances and other events As evidence of the active use of the existing facility and the need for highly flexible program space, an "Old Firehouse Usage Schedule" is provided by the OCP to the Board of Selectmen each month.

In the accompanying HISTORIC BUILDING SURVEY, BH+A provides a comprehensive analysis of the existing Old Firehouse in Orleans, including a site and structural conditions report by Coastal Engineering Company, Inc., mechanical systems report by C. A. Crowley Engineering Inc., and electrical systems report by Nangle Engineering Incorporated. During the process of completing the historic research and conditions assessment (spanning the fourth quarter of 2013 and into the first quarter of 2014), BH+A also worked closely with the Town and the OCP in facilitating two of the several "community listening sessions" organized to gather comments or suggestions by citizens, businesses, organizations, government and institutions concerning the prospective adaptive use of the Old Firehouse. The sessions were well-publicized and well-attended, presented in different formats and times of day (by design) and held at a variety of venues, including the Senior Center, the Crane Room of the Snow Library and the Old Firehouse Gallery.

Key to this programming process were recommendations and schematic design concepts submitted by the Old Firehouse Design Team, a consortium of citizens, organizations and local professionals that has been meeting weekly at the Old Firehouse over the past two years to explore prospects for the emerging Orleans Cultural Campus. Relevant results of this broad-based collaboration are summarized in the Report.

Late 1950s-early 1960s photo of firefighters posing in front of rescue squad truck, fire engines and brush breaker.

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Table of Contents

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1. Old Firehouse Community Center

Goals

Continue to use the Old Firehouse as a multi-purpose community space as one way to exemplify the spirit of the slogan, "It's All in Orleans." Attract and develop exciting new uses for residents and visitors.

Find new purposes for the building and site that honor the Cummings family, recall the lost Cummings and Howes Pants Manufacturing Company and commemorate the rich history of the Orleans Fire and Police Departments and Barnstable County Forest Fire Service and their roles in protecting public safety and property.

Enhance and/or transform Parish Park with landscape features, monuments, interpretive panels and/or public art. Connect Main Street with businesses on Cove Road, in accordance with the Cape Cod Commission's Streetscape Plan.

Objectives

Attract Tourists

- Increase the number of visitors to Village Center and beyond
- Increase the visitor length of stay
- Increase the frequency of visits

Stimulate the Town's Economy

- Generate income for town businesses
- Generate tax dollars for town government

Improve the Visitor Experience

- Provide a starting point from which to tour Orleans and surrounding towns
- Provide a gateway and orientation point for local attractions
- Provide visitor comfort facilities

Reduce the Need for Private Vehicles

- Encourage visitors arriving by POVs to park and walk around the Village Center
- Utilize and enhance the planned "Theresa's Way" connection between Main Street, Cove Road and municipal parking
- Coordinate landscape amenities, bulletin boards, etc. with the adjacent bus stop to utilize and promote the local transportation system
- Consider making bicycles available to visitors via concession or other method; provide facilities to accommodate cyclists

Preserve Historic Character

- Incorporate historically appropriate elements in reuse design
- Support Cape Cod Commission Streetscape Plan and "Historic Preservation and Community Character" Design Guidelines.

A Successful Old Firehouse Community Center Will:

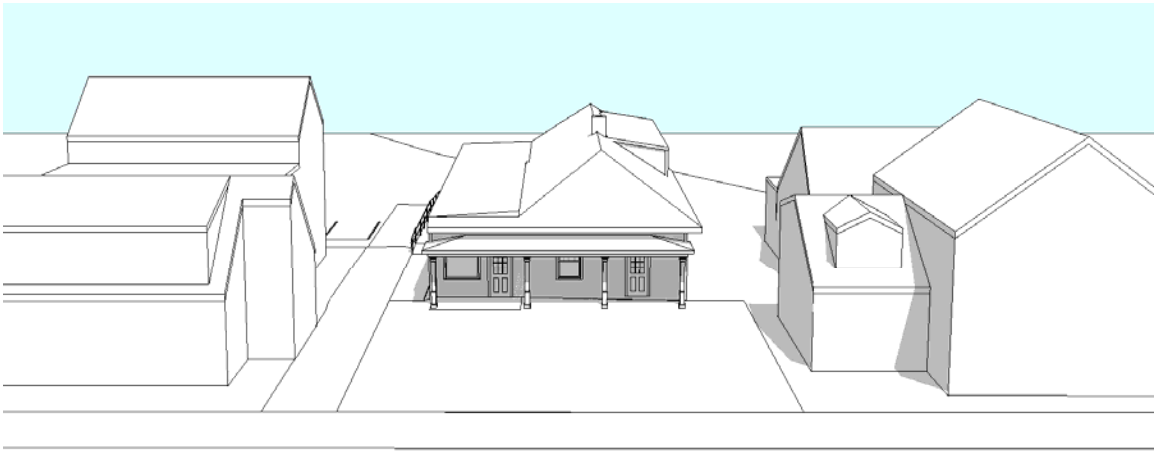
- Serve as a gateway to the Town of Orleans
- Get people out of their cars and walking
- Provide multi-modal transportation linkages
- Expand economic opportunities
- Be a cost-effective, financially sustainable operation
- Accommodate compatible and complementary future commercial uses
- Be environmentally sustainable
- Enhance community fabric and support community events
- Be aesthetically appealing
- Reflect Orleans Village setting in scale and design of historically appropriate features
- Engage use of adjacent outdoor, including walkways and rest areas

2. Programming Process

Listening Sessions

On November 14, 2013, BH+A facilitated a design "charrette" that constituted the first of a number of "community listening sessions" sponsored by the Town and the OCP. BH+A distributed a list of questions and presented a slide show summarizing the historical and current streetscape context, and identified potential adaptive reuse and design considerations. Spirited discussion among the twenty-four attendees followed.

A perspective drawing of the existing building and courtyard was provided to participants to sketch or annotate:



In answer to the question, "*What one word would best describe a successfully reused Old Firehouse?"* participant responses included:

1. "Campus-like"
2. "Flexible"
3. "Energized"
4. "Beautiful"

Underlying the discussions were two key questions:

1. Given the many alterations and additions over the years, how historically significant is the building itself?
2. To best meet our needs for a flexible community cultural center, should we keep the building or replace it?

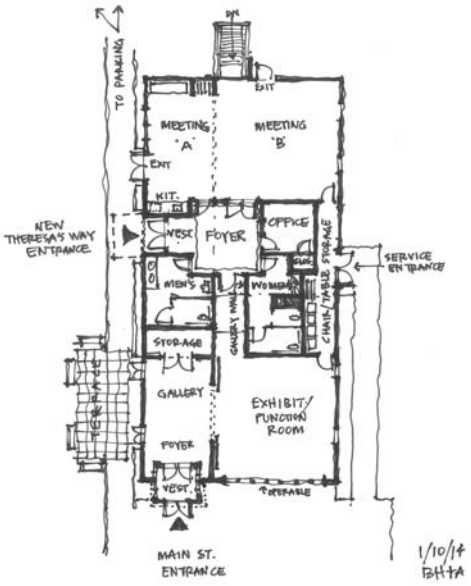
On November 20, 2013, BH+A presented an updated slide show, incorporating and illustrating suggestions by participants in the 11/14 session; Steve Bornemeier and BH+A facilitated the subsequent discussion. Amenities provided by existing cultural facilities in other Cape Cod towns (e.g. Cotuit Center for the Arts) were mentioned.

Additional "listening sessions" were sponsored by the Town and OCP, reinforcing the need for flexible, multi-purpose gallery, meeting and event space, supported by a small food prep area and adequate storage space.

Preliminary Sketches

BH+A provided a number of preliminary adaptive reuse studies to stimulate discussion and to assist the stakeholders in defining functional priorities. Early schemes included an elevator and occupied floors at the second-floor and basement levels, but there was concern that creating an elevator building would require a much larger budget than originally envisioned. Subsequent sketches included the following "good-better-best" schemes:

As the diagrams show, these options still required an internal or external stair tower for access to second-floor storage or office use. The review committee requested elimination of the stair and occupied second floor; this would allow the rear meeting-room ceiling to be opened up and illuminated by skylights. As a means to enhance and enliven the walls facing "Theresa's Way," reconfiguration of the public restrooms was also encouraged. As an interim response, BH+A provided the following quick sketch for review and consideration:



Subsequent discussions by the Old Firehouse Design Team returned to the need for flexibility and resulted in the proposed adaptive reuse concept identified as the "Base Bid Scheme" and illustrated in Chapter 4 below.

3. Conclusions and Recommendations

Adaptive Reuse

As noted above, many hours of discussion by the Town, the OCP, the Old Firehouse Design Team and the community at large were devoted to review of adaptive reuse options for the Old Firehouse. Based on this successful, interactive process, the team's recommendations for an adaptive reuse approach follow:

- The primary adaptive-reuse objective should be creation of a dynamic, attractive community center with public amenities that is economical to build, operate and maintain, with a long service life.
- The Old Firehouse should contain adaptable spaces with movable walls, open ceilings (where practicable), clerestories and/or skylights and thoughtfully-designed hospitality features, storage, and trash-removal options. The facility should readily accommodate use by a wide variety of community groups for workshops, exhibits, meetings, performances, receptions, etc.
- The Old Firehouse should maintain its existing look and appearance, with only slight modifications to enhance its functionality and appeal. In keeping with the building's historically utilitarian appearance (which included a simple exterior and exposed interior steam radiator banks and apparatus-room door hardware), new mechanical systems and ductwork may be left exposed.
- The Old Firehouse should be welcoming in external orientation and highly flexible in terms of internal layout. In order to activate the surrounding site and engage the neighboring properties, entrances should be provided on all four sides if possible. Porches and trellises should be employed to facilitate the use of outdoor space and to invite access.
- Entrances, decks and courtyards should be connected by walkways and enhanced with attractive landscaping designed to integrate with surrounding businesses and existing community amenities.

Building Program and Design Considerations

- Based on the number and extent of later additions and alterations to the original firehouse and police station building, the BH+A team found very few "must save" features and details and concluded in the Historic Building Survey that the Main Street side of the building's massing, scale and setback from the street constitute its most significant character-defining features.
- The existing building has entrances on only two of the four elevations and relatively small windows throughout; accordingly, existing interior galleries and meeting rooms receive limited natural light.
- The porch added to the Main Street façade lends human scale to a wall formerly dominated by apparatus-room overhead doors, but the current configuration of (non-accessible) doors and windows is fairly dark and opaque – an impediment to an inviting connection between the facility, Parish Park and Main Street.
- The existing pair of public restrooms comprises a convenient amenity along the emerging "Theresa's Way," but the configuration also blocks visibility into and out of the facility at a potentially strategic corner of the building, adjacent to public parking.
- The ceiling above the existing rear meeting room is extremely low, as a result of the former apartment above, limiting the utility of the room and potentially complicating the introduction of proper mechanical systems.
- A majority of the building's wood-framed external enclosure and internal partitions are load-bearing; opening up the walls for flexible space use and maximum natural light would require significant temporary shoring and the introduction of structural steel and/or engineered timber posts and beams.

New Construction

Based on the various deficiencies identified and documented in the HISTORIC BUILDING SURVEY, replacement of the Old Firehouse with a brand-new building of scale and appearance compatible with the historic building is strongly recommended, for the following reasons:

- Among other advantages, new construction allows for mitigation of site drainage problems, creation of spacious meeting and event spaces flooded with natural light, excavation and construction of a full basement with adequate headroom, and incorporation of sustainable and highly-efficient mechanical, electrical and plumbing systems with state-of-the art controls.

- The Town's overarching desire for flexible, multi-purpose space supports our conclusion that, although reusing selected components of the existing building rather than discarding them in a landfill may provide initial environmental benefits and cost savings, the apparent cost premium for new construction over rehabilitation will be more than justified by the construction of a durable and high-quality, multi-purpose facility designed for many years of use by the community.

- It should be noted that, although the pre-design cost estimate was applied to the rehabilitation floor plan developed by the design team, the standard unit costs (i.e., costs per gross square foot) used to estimate the cost of new construction would be closely monitored throughout a subsequent building design process -- and ultimately replaced with accurate estimates based on detailed "quantity takeoffs." The design and value-engineering process would offer the opportunity to minimize or eliminate the apparent cost premium.

- The design considerations and recommendations offered above for rehabilitation and adaptive reuse are intended to apply in full force to new construction as well, with the understanding that a replacement building need not and should not slavishly replicate the Old Firehouse. A respectful, contemporary design in keeping with the Cape Cod Commission's Design Guidelines for Cape Cod and the Orleans Village "Historic Preservation and Community Character" design guidelines is desired.

4. Drawings

Existing Conditions

Orleans Old Firehouse Study

Existing Conditions

TOWN OF ORLEANS
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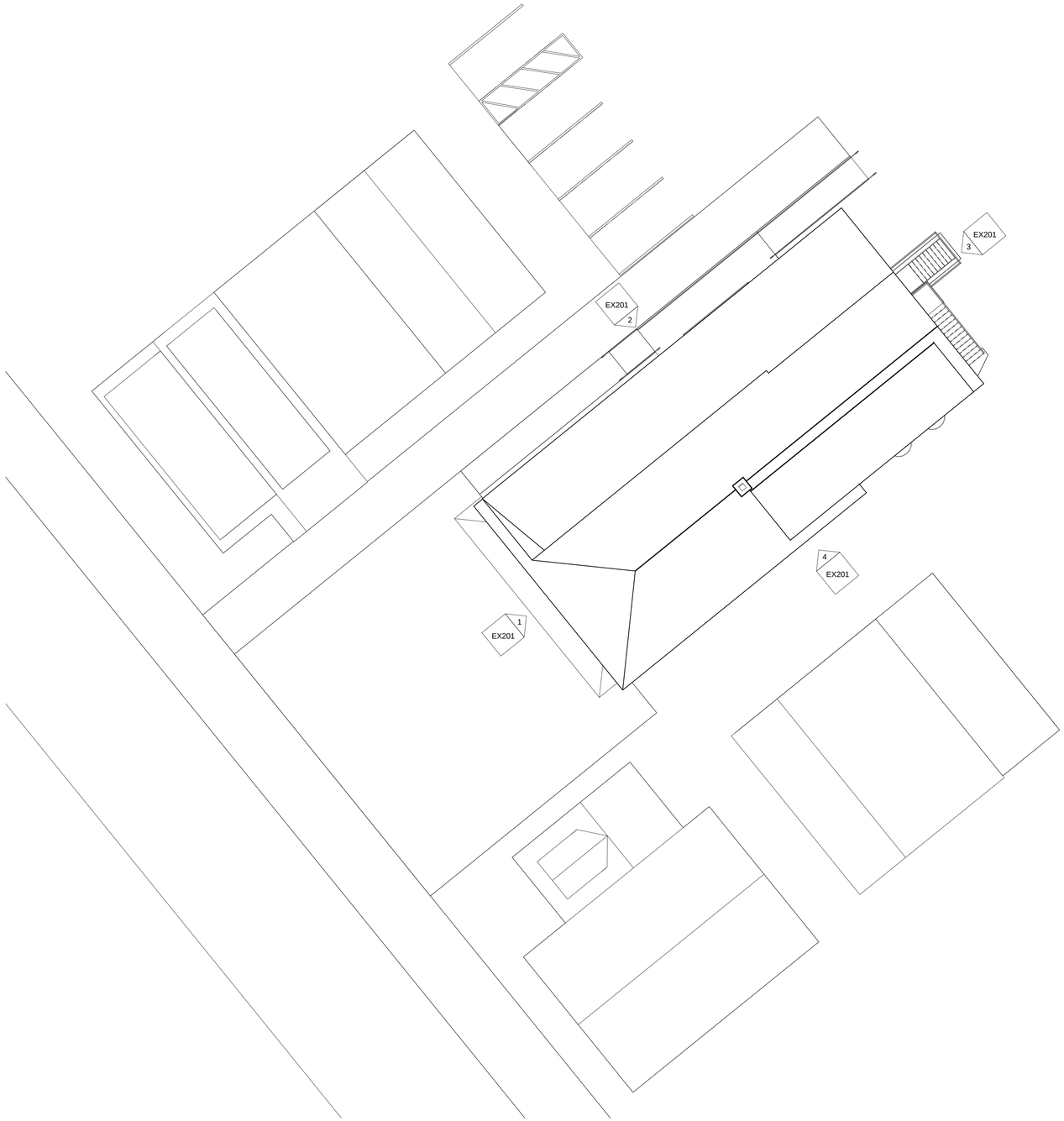

EXISTING SITE PLAN

0 5' 10' 20'

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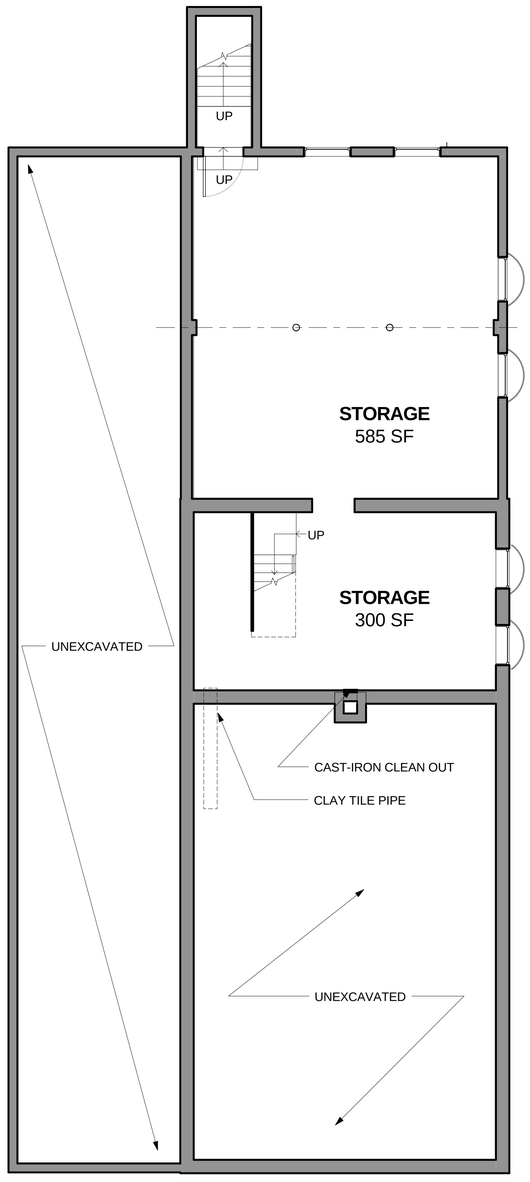
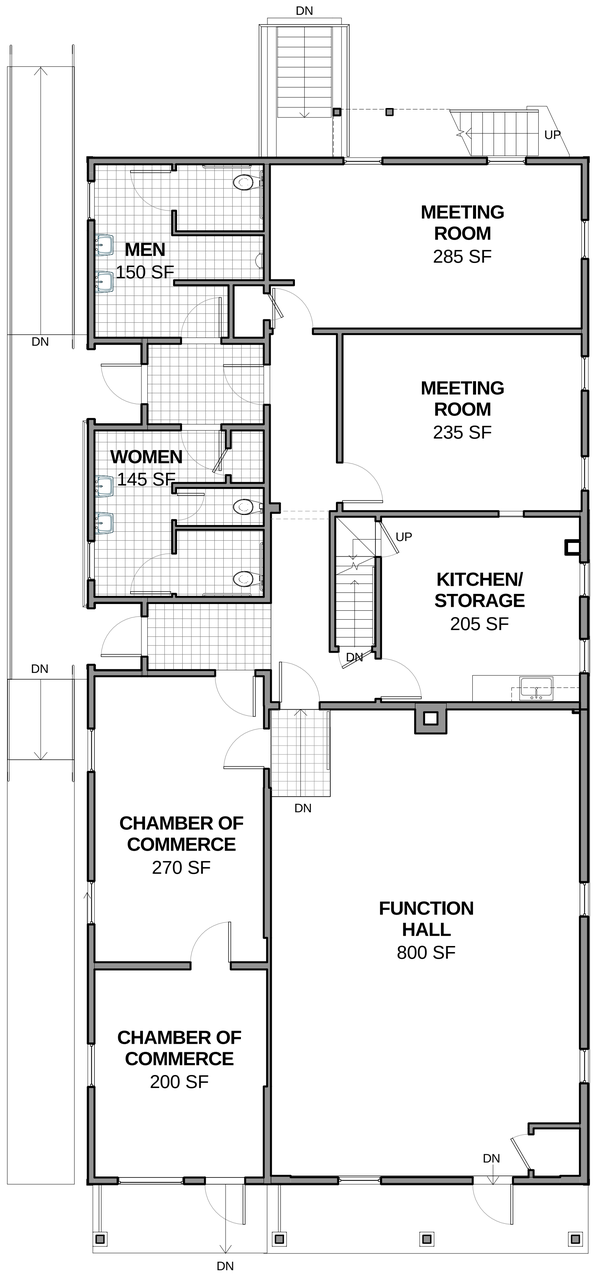
Orleans Old Firehouse Study

Existing Conditions

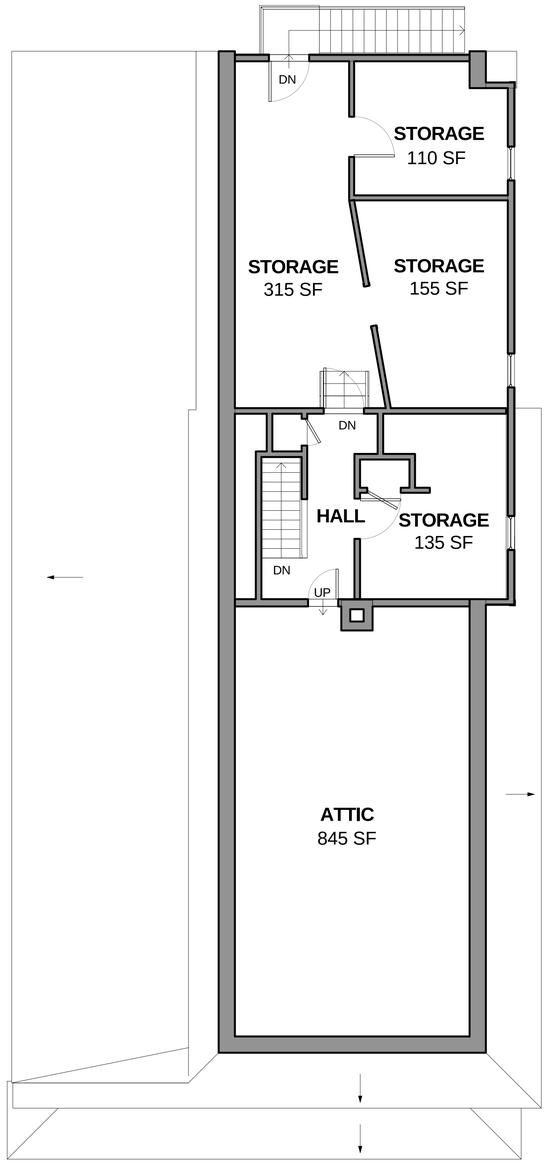
TOWN OF ORLEANS
19 School Road, Orleans, MA 02653



1 EXISTING BASEMENT FLOOR PLAN



2 EXISTING FIRST FLOOR PLAN



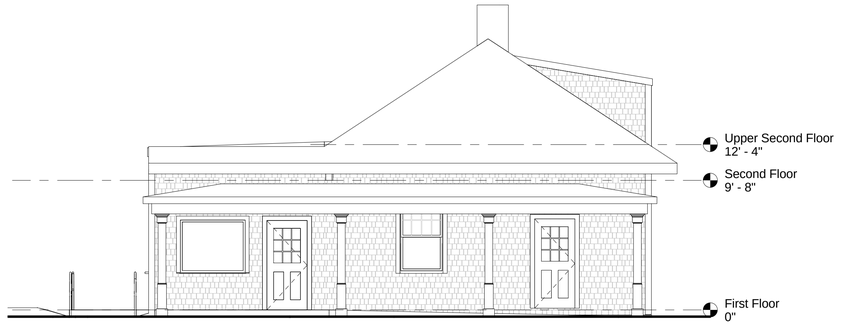
3 EXISTING SECOND FLOOR PLAN

0 4' 8'

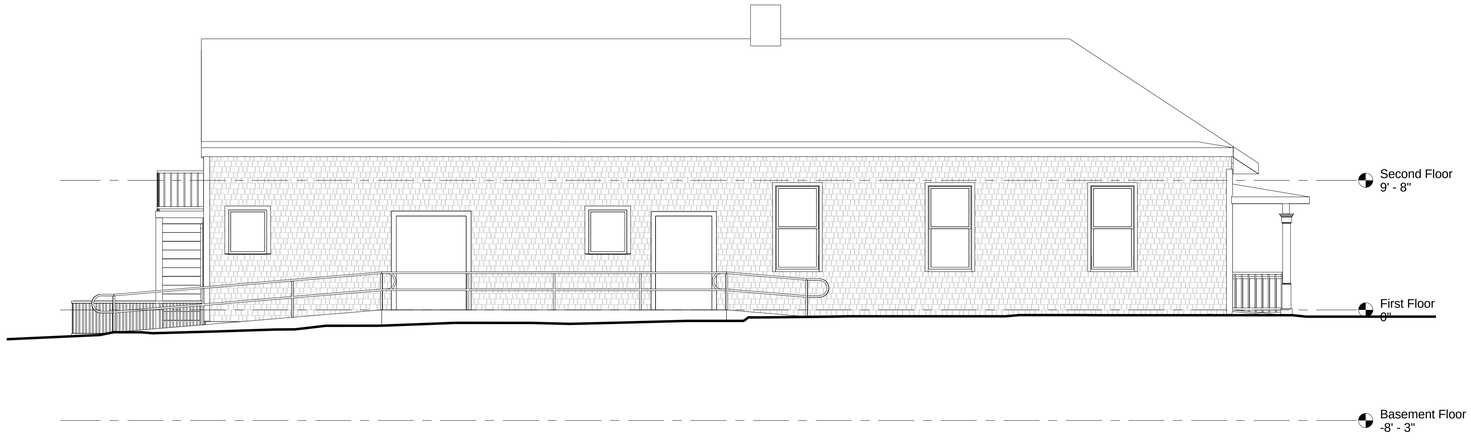
Orleans Old Firehouse Study

Existing Conditions

TOWN OF ORLEANS
19 School Road, Orleans, MA 02653



1 EXISTING SOUTH ELEVATION



2 EXISTING WEST ELEVATION

3 EXISTING NORTH ELEVATION

4 EXISTING EAST ELEVATION

0 4' 8'

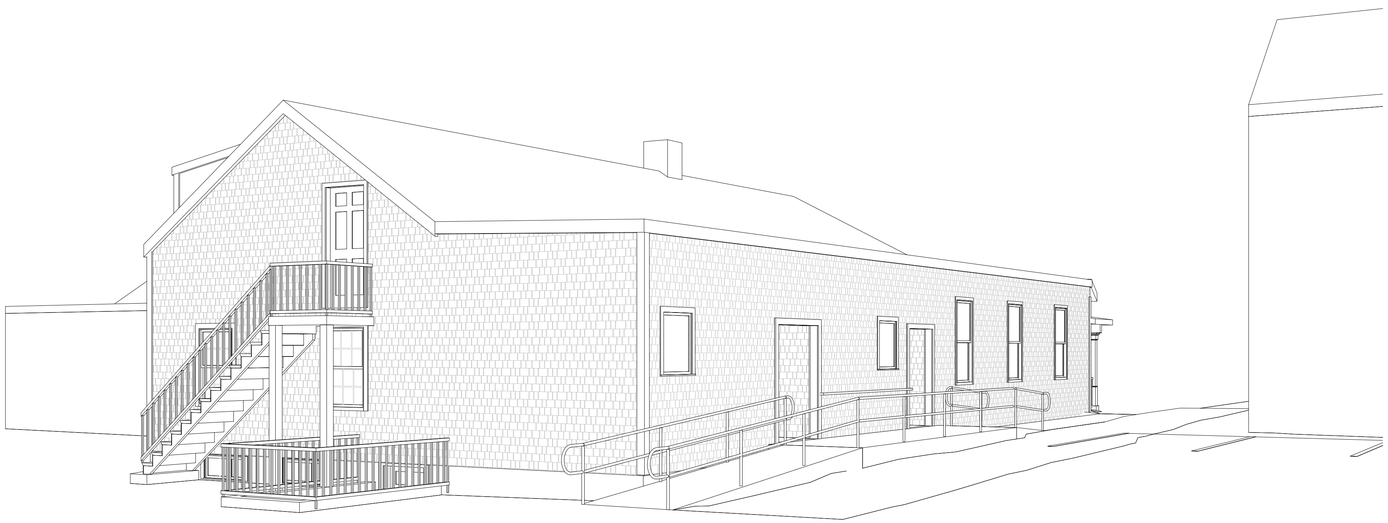
Orleans Old Firehouse Study

Existing Conditions

TOWN OF ORLEANS
19 School Road, Orleans, MA 02653

1 VIEW LOOKING NORTH

2 VIEW LOOKING WEST



3 VIEW LOOKING EAST

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Proposed ("Base Bid Scheme")

Orleans Old Firehouse Study

Base Bid Scheme

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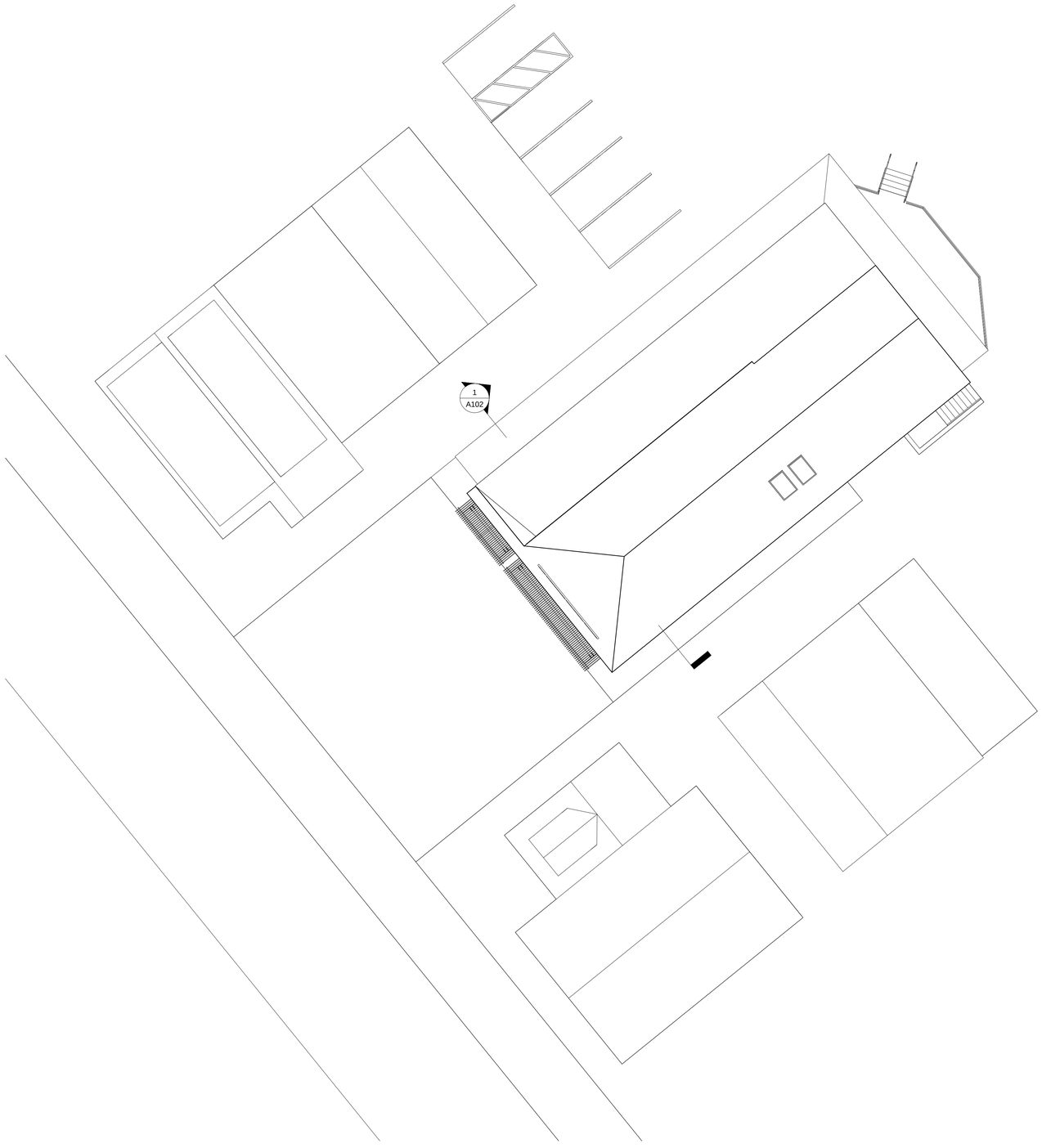


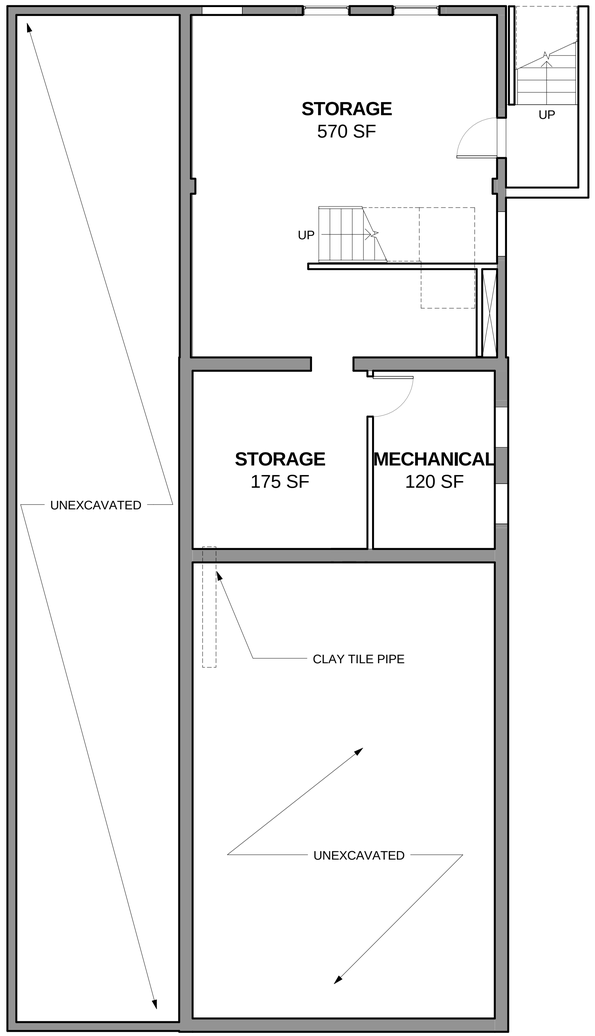
SITE PLAN

0 5' 10' 20'

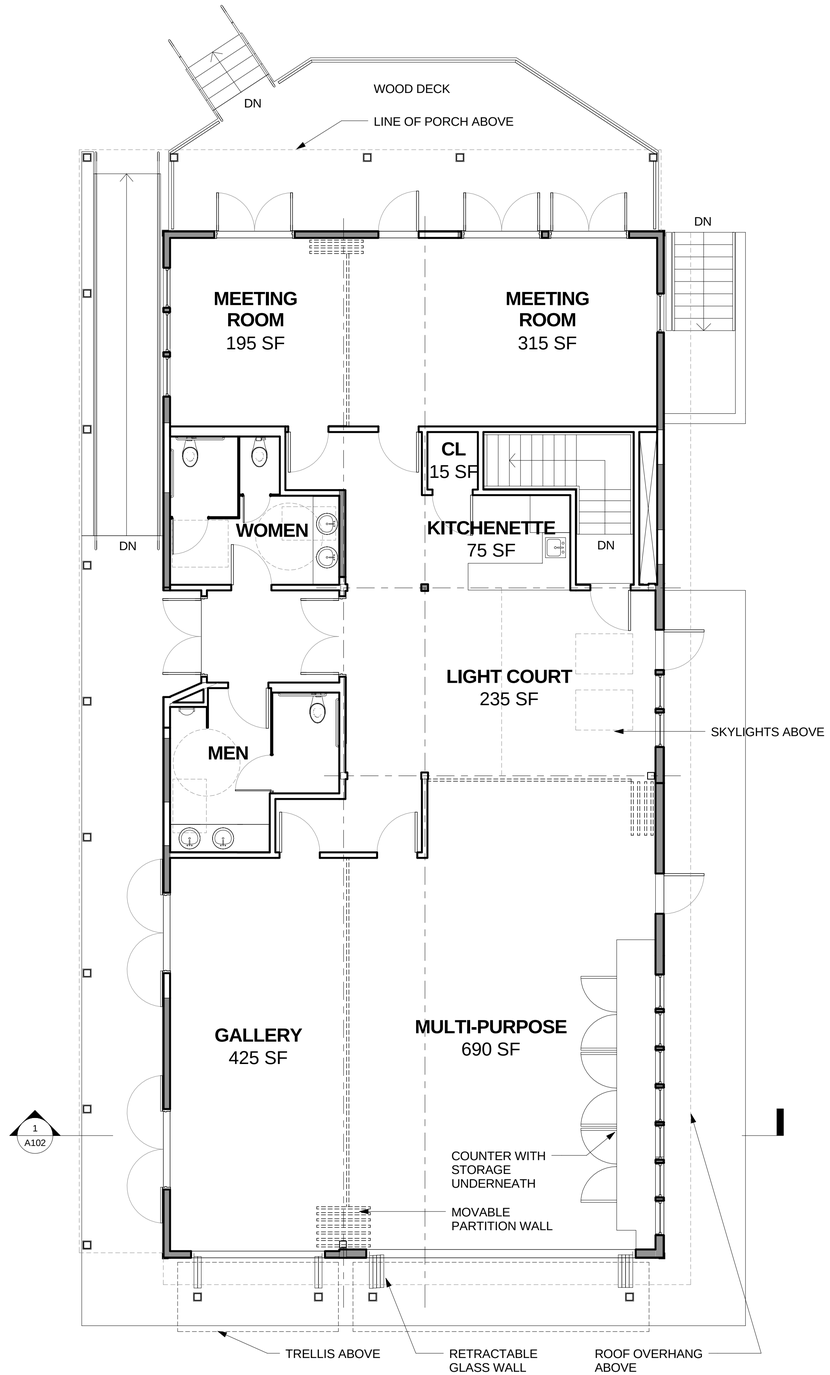
Orleans Old Firehouse Study

Base Bid Scheme

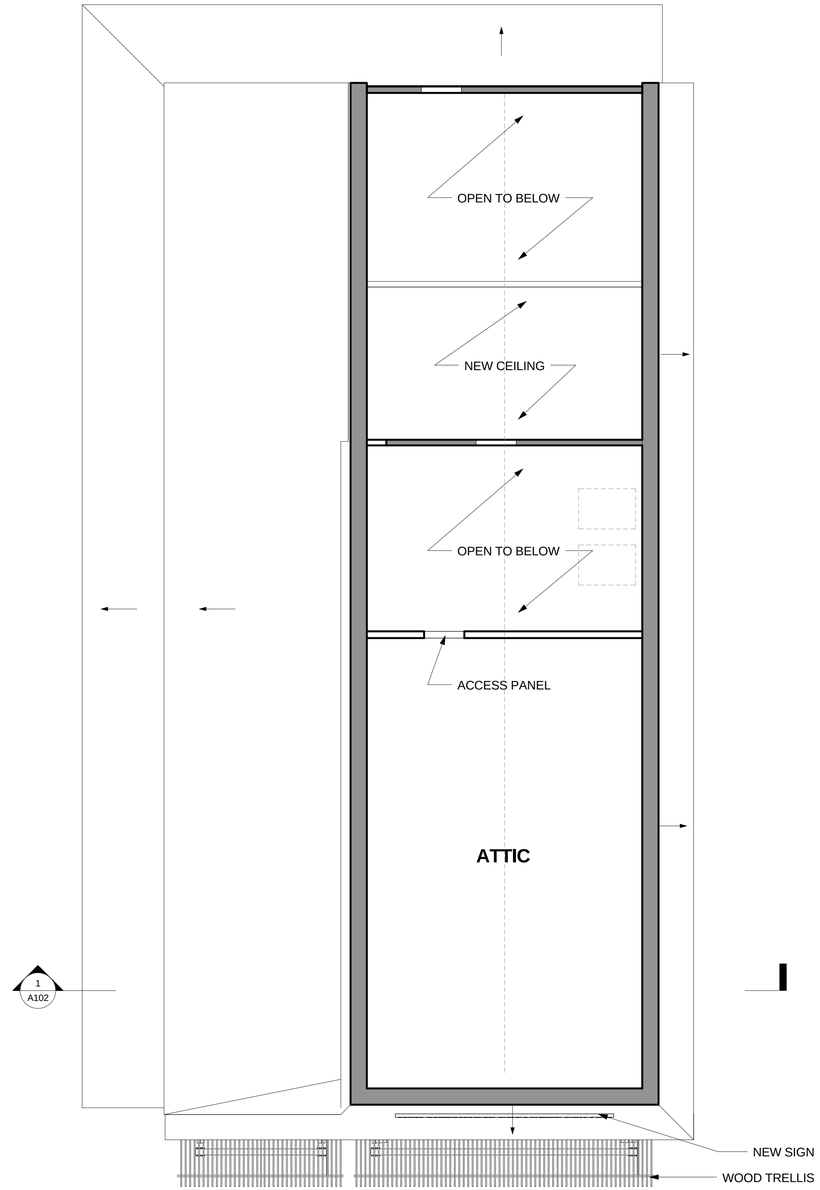
TOWN OF ORLEANS
19 School Road, Orleans, MA 02653



1 BASEMENT FLOOR PLAN



2 FIRST FLOOR PLAN



3 SECOND FLOOR PLAN

Bargmann Hendrie + Archetype, Inc. 300 A Street Boston, MA 02210 Tel: (617) 350-0450 March 13, 2014

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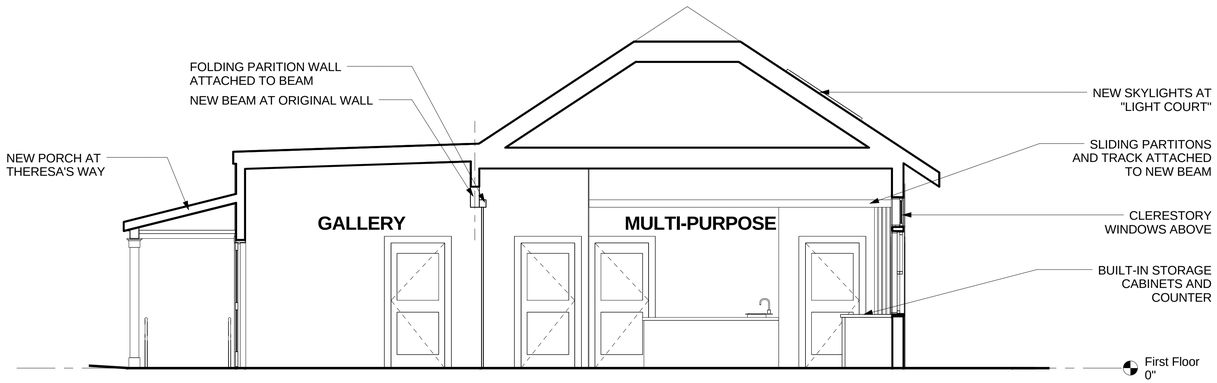
0 4' 8'

Orleans Old Firehouse Study

Base Bid Scheme

TOWN OF ORLEANS
19 School Road, Orleans, MA 02653



1 SECTION

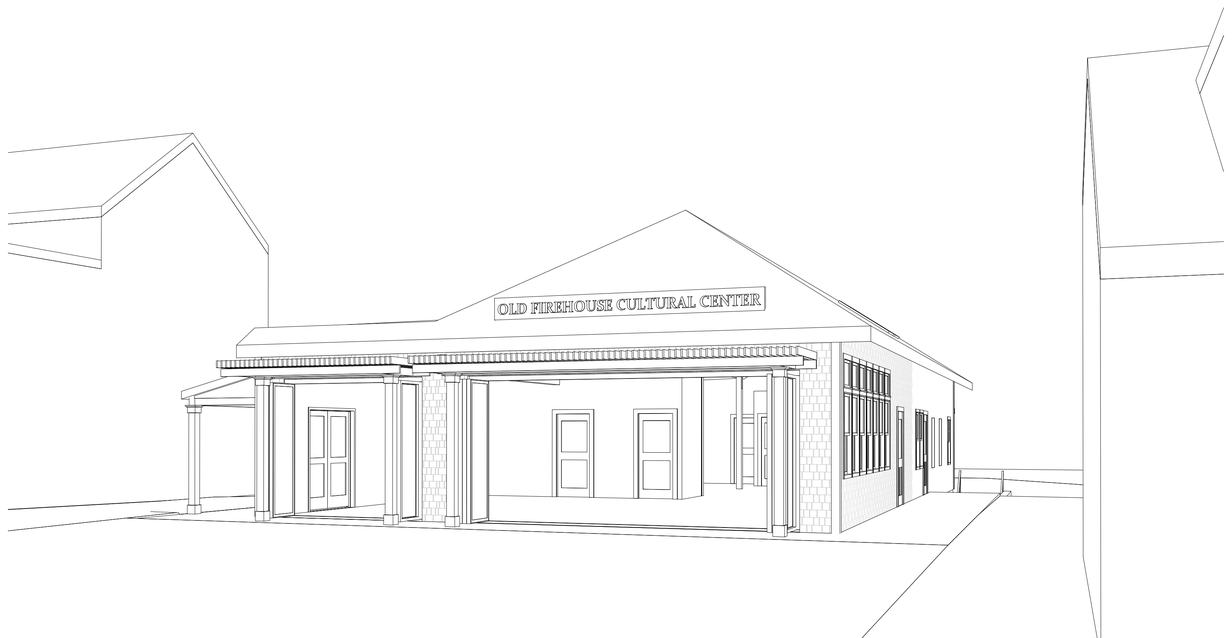
0 2 4

Orleans Old Firehouse Study

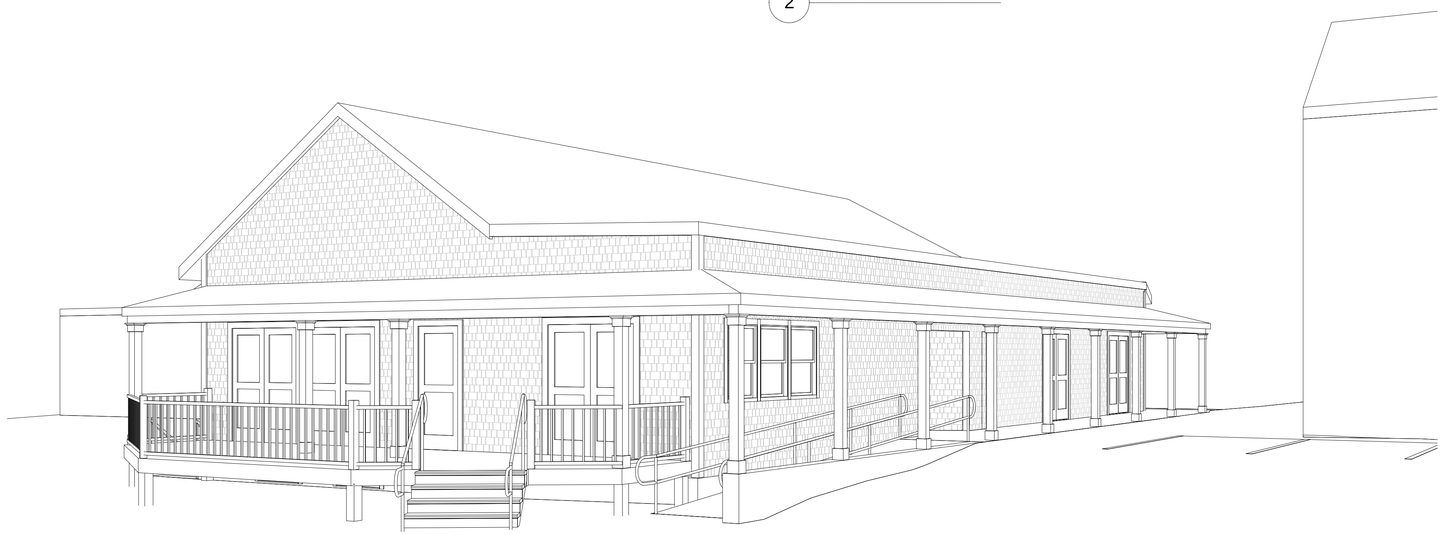
Base Bid Scheme

TOWN OF ORLEANS
19 School Road, Orleans, MA 02653

1 VIEW LOOKING NORTH



2 VIEW LOOKING WEST



3 VIEW LOOKING EAST

Bargmann Hendrie + Archetype, Inc. 300 A Street Boston, MA 02210 Tel: (617) 350-0450 March 13, 2014

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5. Cost Estimates

Orleans Old Firehouse Construction Cost Estimates

The attached cost estimate prepared by D.G. Jones International, Inc. includes a SUMMARY page with two three-part columns, comparing the estimated cost to 1) rehabilitate the Old Firehouse in accordance with the drawings provided above, and 2) construct a new building roughly identical to the rehabilitated facility. The sub-total (net) construction costs for these two options are then marked-up to include General Contractor costs, general requirements, escalation, permit fees and a contingency allowance, resulting in the estimated construction cost.

The estimated costs above are labeled "Base Bid" in order to compare rehabilitation and new construction cost line items using identical floor areas. Estimates for two "Add Alternates" are also provided: 1) adding a fully-automatic fire suppression system (which is recommended but not required for a building this size), and 2) creating a full-size basement rather than the existing half-basement.

For cost-estimating purposes, the rehabilitated existing building would occupy 4,669 gross square feet and the new building with full basement would occupy 6,517 gross square feet.

Orleans Old Firehouse Study
Orleans, MA

Cost Estimate
Update #6

Prepared for:-
Bargmann Hendrie + Archetype, Inc
Boston, MA

Prepared by:-
D G Jones International, Inc.
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Woburn, MA 01801
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April 16, 2014

SUMMARY

		Base Bid			New Construction (Base Bid)		
Gross Floor Area (in square feet)		4,669			4,669		
Division		**Cost $**	**$/sf**	**%**	**Cost $**	**$/sf**	**%**
Existing Conditions		45,277	9.70	5.33%	59,296	12.70	4.85%
Concrete		0	0.00	0.00%	47,437	10.16	3.88%
Masonry		0	0.00	0.00%	0	0.00	0.00%
Metals		44,050	9.43	5.18%	5,930	1.27	0.48%
Wood & Plastics		13,751	2.95	1.62%	88,944	19.05	7.27%
Thermal & Moisture Protection		39,588	8.48	4.66%	106,733	22.86	8.73%
Openings		78,471	16.81	9.23%	130,452	27.94	10.67%
Finishes		93,839	20.10	11.04%	118,593	25.40	9.70%
Specialties		53,165	11.39	6.25%	59,296	12.70	4.85%
Equipment		1,200	0.26	0.14%	1,482	0.32	0.12%
Furnishings		17,513	3.75	2.06%	17,789	3.81	1.45%
Special Construction		0	0.00	0.00%	0	0.00	0.00%
Conveying Systems		0	0.00	0.00%	0	0.00	0.00%
Plumbing		33,928	7.27	3.99%	59,296	12.70	4.85%
Fire Protection		0	0.00	0.00%	0	0.00	0.00%
HVAC		157,098	33.65	18.48%	177,889	38.10	14.55%
Electrical		107,227	22.97	12.61%	130,452	27.94	10.67%
Earthwork		4,624	0.99	0.54%	11,859	2.54	0.97%
Exterior Improvements		110,943	23.76	13.05%	118,593	25.40	9.70%
Utilities		49,580	10.62	5.83%	88,944	19.05	7.27%
Sub-Total Construction		**850,253**	**182.11**	**100.00%**	**1,222,986**	**261.94**	**100.00%**
General Requirements/General Conditions		102,030	21.85		146,758	31.43	
Escalation to mid-point of construction (4Q2015)	8.94%	85,134	18.23		122,455	26.23	
Design Contingency	12.50%	129,677	27.77		186,525	39.95	
Permit Fee	1.00%	11,671	2.50		16,787	3.60	
Construction Contingency		By Owner			By Owner		
Construction Cost		**1,178,766**	**252.47**		**1,695,512**	**363.14**	
Add Alternate: Fire Protection		**57,119**	**12.23**		**42,074**	**9.01**	
Add Alternate: Premium for full-size basement (Additional 1,848 sf at $100/sf)		**0**	**0.00**		**184,800**	**0.00**	
Construction Cost w/Alternates		**1,235,884**	**264.70**		**1,922,386**	**411.73**	
***New Scheme GFA (in square feet) if full-size basement**					**6,517**		

Notes

1. Brief project description:-
   - 4 Schemes for the renovation of existing firehouse including 2 reno options mad 2 new builds.

2. The estimate is based on the following:-
   - Prevailing wage.
   - Minimum 4# bona fide bids.
   - GC type project
   - Single contract.
   - 10 month construction.
   - Bid date 2Q2015.

3. The gross floor areas are based on the following:-
   - Measurement is taken to the outside face of the exterior wall, measured through all stair wells, elevator shafts and ducts.
   - Atriums/large open voids are excluded.

4. Story heights:-
   - Varies.

5. General Requirements for this project are priced on the Summary page.

6. Special Conditions for this project are included with General Requirements.

7. Escalation to mid point of construction (4Q2015) is allowed at 5% per annum compounded.
   - Note: Escalation is taken on the sum of Sub Total Construction and General Requirements.

8. Design contingency is an allowance for future design modifications/additions, which alter the cost of the building as the design progresses, this percentage reduces as the design develops. It is based on a percentage of the sum of Sub-Total Construction, General Requirements and Escalation. For this level of estimate the following has been included:-
   - 12.50%

9. Construction contingency is an allowance for scope/design modifications made by the owner during construction and also for any unforeseen circumstances. It is based on a percentage of the sum of Sub-Total Construction, General Requirements, Escalation and Design Contingency. The following has been included:-
   - Excluded

Notes (Cont'd)

10. This estimate has been prepared from the following design information:-
    - Drawings received 2/28/14
    - Telephone conversations with Bargmann Hendrie + Archetype, Inc
    - Verbal discussions on MEP scope w/Bargmann Hendrie + Archetype, Inc

11. The estimate includes the following:-
    - Building permit fees.
    - Asbestos abatement (qty supplied by BH+A)
    - Window treatment.
    - Telecoms cabling.
    - See Estimate.

12. The estimate excludes the following:-
    - Sales tax.
    - Utility company backcharges.
    - Gas
    - Loose furniture, fittings and equipment.
    - Security System.

13. Allowances:-
    - See estimate

14. Assumptions:-
    - See estimate

15. Estimates by other firms:-
    - None

Notes (Cont'd)

16. Common abbreviations included in this estimate:-
    - cd = construction documents.
    - cf = cubic foot.
    - cte = connect to existing.
    - cy = cubic yard.
    - dd = design development.
    - ea = each.
    - eo = extra over
    - extg = existing
    - flr = floor.
    - gfa = gross floor area
    - lb = pound.
    - lf = linear foot.
    - ls = lump sum.
    - ly = linear yard.
    - mg = make good.
    - opg = opening.
    - rsr = riser.
    - sd = schematic design.
    - sf = square foot.
    - sy = square yard.
    - tn = ton.

17. Builders work in connection (BWIC) with conveying, mechanical and electrical systems includes the following:-
    - Drilling and coring.
    - Chasing.
    - Cutting and patching.

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Existing Conditions					
Demolitions					
Remove					
Remove brick paving and lay aside for reuse	750	sf	3.50	2,625	
Stoop	67	sf	2.50	168	
Concrete ramp - 8' 8" wide	51	lf	43.35	2,211	
Guardrail at porch	8	lf	7.00	56	
Retaining wall at concrete steps - 6' 3" high	163	sf	19.65	3,203	
Footing to ditto	26	lf	18.10	471	
Concrete stairs - 6' 0" x 9# risers	1	ea	540.00	540	
Guardrail at stair	26	lf	5.00	130	
Porch	193	sf	5.00	965	
Ramp railings	100	lf	7.00	700	
Remove exterior wall finish	1,971	sf	1.00	1,971	
Remove inside face of exterior wall	1,971	sf	0.55	1,084	
Windows					
Dormer roof	263	sf	3.00	789	
Dormer walls	361	sf	3.00	1,082	
Column at porch including shoring	4	ea	99.00	396	
Finishes					
Floor	4,923	sf	0.75	3,692	
Ceiling	4,923	sf	0.85	4,185	
SL exterior door	5	ea	50.00	250	
SL interior door	23	ea	50.00	1,150	
Partition	4,451	sf	1.50	6,676	
Countertop	8	lf	10.00	80	
Wall cabinet	5	lf	10.00	50	
Stair - 3' 2" x 11# risers	1	ea	244.09	244	
Stair - 3' 4" x 3# risers	1	ea	69.93	70	
Stair - 4' 9" x 10# risers	1	ea	332.50	333	
Stair - 5' 0" x 14# risers	1	ea	490.00	490	
Allow for					
Remove rubbish off site	1	ls	1,680.44	1,680	35,289
Form opening and make good					
Opening at roof for skylight	2	ea	237.00	474	
Opening at exterior - 3' 0" x 8' 0"	3	ea	472.00	1,416	
Opening at exterior - 6' 0" x 8' 0"	5	ea	688.00	3,440	
Opening at exterior for nana wall					
Exterior nana wall - 10' 0" x 7' 0"	1	ea	894.00	894	
Exterior nana wall - 20' 0" x 7' 0"	1	ea	1,564.00	1,564	7,788
Removal of Asbestos					
Vinyl asbestos floor tiles, allow	110	sf	20.00	2,200	2,200
Existing Conditions	**Total**			**45,277**	45,277
Concrete					
No work in this division					
Concrete	**Total**				
Masonry					
No work in this division					
Masonry	**Total**				

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Metals					
051200 Structural Steel Framing					
Steel beam, 16"	50	lf	175.00	8,750	
Header beam	16	lf	162.50	2,600	
Column at existing bearing wall foundation, allow 6 x 6	180	lf	175.00	31,500	
Misc struct steel framing	1	ls	1,200.00	1,200	44,050
Metals	**Total**			**44,050**	44,050
Wood & Plastics					
061100 Wood Framing					
Connect wood column to existing footing	6	ea	155.00	930	
Roof framing w/decking and collar ties	263	sf	12.00	3,156	
Floor framing at 1st floor w/decking	164	sf	7.50	1,230	
Shear panel	66	sf	3.75	248	5,564
064300 Wood Stairs and Railing					
Stair basement - first floor (4' 2" x 13# risers)	1	ea	3,200.00	3,200	3,200
Rough Carpentry					
Blocking at roofing	80	lf	2.75	220	
Blocking at skylights	32	lf	2.75	88	
Blocking at exterior windows & doors	657	lf	2.75	1,806	
Blocking at Interior openings	428	lf	2.75	1,177	
Blocking at sanitary appliances & counters	72	lf	2.75	197	
Blockings for Owner items, allow	1	ls	500.00	500	
Miscellaneous framing, allow	1	ls	1,000.00	1,000	4,987
Wood & Plastics	**Total**			**13,751**	13,751
Thermal & Moisture Protection					
070002 Roofing and Flashing					
Architectural grade shingle roof	265	sf	9.00	2,385	
Connect to existing roof	80	lf	7.00	560	
Allow for roof penetrations for new HVAC system	1	ls	1,350.00	1,350	4,295
072100 Thermal Insulation					
Insulation to drywall partition	2,461	sf	1.00	2,461	
Insulation at exterior wall	1,971	sf	2.00	3,942	
Insulation in roof	265	sf	2.00	530	
Insulation in attic	920	sf	2.00	1,840	8,773
072123 Manufactured Gutters and Downspouts					
Aluminum gutter	204	lf	15.00	3,060	
Downspout	96	lf	12.00	1,152	4,212
072600 Vapor Retarders					
Vapor barrier at roof	265	sf	1.00	265	
Vapor barrier at exterior wall	1,971	sf	1.00	1,971	2,236
073129 Wood Shingles and Shakes					
Cedar shingle at exterior	1,971	sf	7.00	13,797	13,797
078100 Applied Fireproofing					
Not Required					
078410 Penetration Firestopping					
Firestopping, repairs to existing (gfa)	4,669	sf	0.25	1,167	1,167

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
079200 Joint Sealant					
Sealant at roofing	160	lf	2.25	360	
Sealant at skylights	64	lf	2.25	144	
Sealant at exterior windows & doors	1,313	lf	2.25	2,955	
Sealant at Interior openings	856	lf	1.65	1,412	
Sealant at sanitary appliances & counters	143	lf	1.65	236	5,107
Thermal & Moisture Protection	**Total**			**39,588**	39,588
Openings					
081100 Metal Doors and Frames					
Entrance doors					
Exterior nana wall - 10' 0" x 7' 0"	1	ea	7,700.00	7,700	
Exterior nana wall - 20' 0" x 7' 0"	1	ea	15,400.00	15,400	
Exterior fully glazed wood door DL - 6' 0" x 7' 0"	6	ea	2,840.00	17,040	
Exterior fully glazed wood door SL - 3' 0" x 7' 0"	4	ea	1,696.00	6,784	46,924
081400 Wood Door					
Interior door w/frame and hardware					
Interior wood door DL - 6' 0" x 7' 0"	1	ea	2,185.00	2,185	
Interior wood door SL - 3' 0" x 7' 0"	9	ea	1,332.00	11,988	14,173
085200 Wood Windows					
Exterior					
Window - 2' 7" x 1' 8"	7	ea	303.11	2,122	
Window - 2' 7" x 4' 5.5"	9	ea	870.75	7,837	
Window - 2' 8.5" x 4' 5.5"	1	ea	928.13	928	
Window - 3' 0" x 4' 0"	3	ea	900.00	2,700	
Window - 3' 6" x 1' 6"	2	ea	393.75	788	14,374
086200 Unit Skylights					
Skylight - 3' 0" x 5' 0"	2	ea	1,500.00	3,000	3,000
089100 Louvers					
Not required					
Openings	**Total**			**78,471**	78,471
Finishes					
Gypsum wall					
Partition wall					
Interior partition w/frame, insulation., gwb and paint	2,185	sf	10.30	22,506	
Interior partition, w/frame, insulation., gwb and paint	276	sf	12.36	3,411	
Inside face of exterior wall including prep work	1,971	sf	3.00	5,913	31,830
Floor finishes					
Carpet	503	sf	5.25	2,641	
Ceramic tile floor	868	sf	16.00	13,888	
Vinyl tile floor	1,139	sf	6.50	7,404	
Wood (high traffic)	79	sf	20.00	1,580	
Mech & storage	854	sf		None required	
Existing	688	sf		Existing to remain	25,512
Ceiling					
ACT, suspended	247	sf	6.00	1,482	
GWB, suspended	562	sf	9.50	5,339	
Existing plaster, patching	1,139	sf	1.75	1,993	
Exposed	688	sf		None required	
Exposed above	562	sf		None required	
Exposed floor boards at first floor	734	sf	1.05	771	

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Stair	79	sf		None required	
None	120	sf		None required	9,585
Base					
Ceramic tile base	341	lf	16.00	5,456	
Resilient	199	lf	6.00	1,194	
Rubber	128	lf	4.50	576	
Existing	108	lf		None required	
None	221	lf		None required	
Stair	45	lf		None required	7,226
099100 Painting					
Paint gwb walls	11,821	sf	1.05	12,412	
Paint gwb ceiling	3,685	sf	1.10	4,054	
Trim	657	lf	3.00	1,970	
Stairs	1	ea	500.00	500	
Misc	1	ls	750.00	750	19,686
Finishes	**Total**			**93,839**	93,839
Specialties					
102218 Demountable Partition					
Movable partition, fabric clad w/electric operation	600	sf	70.00	42,000	42,000
102800 Toilet, Bath and Laundry Accessories					
Bathroom accessories					
ADA toilet stall w/door	1	ea	1,150.00	1,150	
Toilet stall w/door	2	ea	950.00	1,900	
Urinal, screen	1	ea	650.00	650	
Grab bar	3	ea	90.00	270	
Mirror	2	ea	165.00	330	
Paper towel dispenser	3	ea	225.00	675	
Robe hook	3	ea	25.00	75	
Soap dispenser	4	ea	105.00	420	
Toilet paper dispenser	3	ea	65.00	195	5,665
101400 Signage					
Interior signage, allow $100/door	10	ea	100.00	1,000	
Interior entrance directory	1	ea	500.00	500	
Miscellaneous interior signage	1	ls	500.00	500	
Exterior building signage	1	ls	3,500.00	3,500	5,500
Specialties	**Total**			**53,165**	53,165
Equipment					
113100 Residential Appliances					
Full height refrigerator	1	ea	850.00	850	
Microwave	1	ea	350.00	350	1,200
Equipment	**Total**			**1,200**	1,200
Furnishings					
122400 Window Shades					
Window shades	251	sf	6.50	1,633	1,633
Casework					
Base cabinet at kitchenette	6	lf	285.00	1,710	

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Countertop at kitchenette - 2' 0" wide	10	lf	165.00	1,650	
Countertop w/base cabinets	23	lf	450.00	10,350	
Vanity counter at men	7	lf	155.00	1,085	
Vanity counter at womens	7	lf	155.00	1,085	15,880
Furnishings	**Total**			**17,513**	17,513
Special Construction					
No work in this division					
Special Construction	**Total**				
Conveying Systems					
No work in this division					
Conveying Systems	**Total**				
Plumbing					
Demolition					
Kitchen sink	1	ea	75.00	75	
Sink	4	ea	65.00	260	
Urinal	1	ea	65.00	65	
WC	3	ea	70.00	210	
Remove rubbish	1	ls	450.00	450	1,060
Plumbing Fixtures					
Connect in place					
WC	2	ea	2,070.00	4,140	
WC, ada	1	ea	2,270.00	2,270	
Urinal	1	ea	1,920.00	1,920	
Lavatory sink, counter mounted	4	ea	2,020.00	8,080	
Kitchen sink	1	ea	2,320.00	2,320	18,730
Equipment					
Allow for plumbing equipment including water heater	4,669	sf	1.00	4,669	
Allow for					
services to kitchen	1	ls	1,000.00	1,000	
seismic restraint & vibration isolation	1	ls	1,250.00	1,250	
permit fees	1	ls	750.00	750	
test & balance	1	ls	2,500.00	2,500	10,169
Underground Piping					
Allow for underslab piping including slab repairs etc	4,669	sf	0.50	2,335	2,335
Above Grade Piping					
Included w/fixtures					
Sub Bid	**Total**			**32,294**	32,294
Builders work in connection with Plumbing @ 2%	1	ls	645.87	646	
General Contractor's overhead and profit @ 3%	1	ls	988.18	988	1,634
Plumbing	**Total**			**33,928**	33,928
Fire Protection					

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
See Alternates					
Fire Protection	**Total**				
HVAC					
Demolition					
Remove HVAC equipment	4,669	sf	0.35	1,634	1,634
Equipment					
Mechanical equipment, allow	4,669	sf	10.00	46,690	46,690
Ductwork					
Galvanized steel ductwork w/accessories, fittings, hangers, etc (22ga):-					
supply/return/exhaust	5,136	lb	8.00	41,087	
Insulation to supply/return duct, allow	2,568	sf	4.50	11,556	
Diffusers/grilles/registers, allow 1# every 200 sf	23	ea	140.00	3,220	
Dampers, allow:-					
volume	23	ea	150.00	3,450	
fire	5	ea		Not Required	
smoke, allow	5	ea		Not Required	
control damper (actuated)	1	ea	350.00	350	59,663
Pipework					
Allow for all piping, fittings, valves, insulation, etc (gfa)	4,669	sf	4.00	18,676	18,676
Automatic Control System					
Automatic Control System (gfa)	4,669	sf	3.00	14,007	14,007
General					
Allow for seismic restraint & vibration isolation	1	ls	2,780.72	2,781	
Permit fee	1	ls	1,772.71	1,773	
Test & balance	1	ls	4,307.69	4,308	8,861
Sub Bid	**Total**			**149,531**	149,531
Builders work in connection with HVAC @ 2%	1	ls	2,990.63	2,991	
General Contractor's overhead and profit @ 3%	1	ls	4,575.66	4,576	7,566
HVAC	**Total**			**157,098**	157,098
Electrical					
Demolition					
Remove Electrical equipment	4,669	sf	0.35	1,634	1,634
Equipment, Panelboards, etc.					
Allow for equipment and panelboards	4,669	sf	2.00	9,338	9,338
Feeders					
Feeders w/wiring and conduit, allow	4,669	sf	1.50	7,004	7,004
Small Power					
Allow for small power devices	4,669	sf	3.00	14,007	14,007
Lighting					
Light fixtures w/conduit, wiring, accessories, allow	4,669	sf	7.50	35,018	
Lighting controls, allow	4,669	sf	1.50	7,004	42,021
Fire Alarm					
Fire alarm devices, allow	4,669	sf	2.50	11,673	11,673

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Security					
Not required					
Telecommunications system					
Tel/data devices including cabling, allow	4,669	sf	2.00	9,338	9,338
General					
Allow for					
lightning protection (gfa)	4,669	sf	0.25	Not Required	
grounding (gfa)	4,669	sf	0.20	934	
heat trace, allow	1	ls		Not Required	
seismic bracing	1	ls	1,918.96	1,919	
permit fees	1	ls	1,223.34	1,223	
testing	1	ls	2,972.71	2,973	7,049
Sub Bid	**Total**			**102,063**	102,063
Builders work in connection with Electrical @ 2%	1	ls	2,041.26	2,041	
General Contractor's overhead and profit @ 3%	1	ls	3,123.13	3,123	5,164
Electrical	**Total**			**107,227**	107,227
Earthwork					
Earthwork					
Excavate and part backfill					
Wood column footing	17	cy	25.00	425	
Brick Retaining wall - 3' 0" high including concrete backup wall	6	cy	25.00	150	
Brick Retaining wall - 7' 3" high including concrete backup wall	11	cy	25.00	275	
Brick paving	61	cy	25.00	1,525	
EO for rock, allow 5% of excavated material	4	cy	50.00	195	
Water removal during excavation work	1	ls		Not required	
Temporary support, allow	1	ls		Not required	
Fill Site to achieve new proposed grade levels, assumed imported	31	cy	35.00	1,069	
Fill where at demolished basement stairs, assumed imported	14	cy	35.00	490	
Grade over entire site to achieve final levels	1,650	sf	0.30	495	4,624
Earthwork	**Total**			**4,624**	4,624
Exterior Improvements					
Exterior Improvements					
Paving					
Brick paving, install existing laid aside for reuse	750	sf	12.00	9,000	
Brick walkway, new	900	sf	18.00	16,200	25,200
Site Improvements					
Footing to wood columns	3	cy	650.00	1,950	
Wood column supporting trellis, 8' 4" high	33	lf	175.00	5,775	
Wood trellis w/architectural grade carpentry	119	sf	15.00	1,785	
Roof at covered walkway	760	sf	15.00	11,400	
T&G wood roof decking underside of covered walkway w/paint	760	sf	6.00	4,560	
Brick Retaining wall - 3' 0" high including concrete backup wall	87	sf	85.00	7,395	
Footing to ditto	2	cy	650.00	1,300	
Brick Retaining wall - 7' 3" high including concrete backup wall	145	cy	85.00	12,325	
Footing to ditto	1	cy	650.00	650	
Stairs w/railings - 4' 8" x 8# risers	1	ea	4,069.00	4,069	
Cap to retaining walls	49	lf	65.00	3,185	
Wood column at deck (8" high)	2	lf	12.75	26	
Wood column at deck full height	32	lf	12.75	408	
Wood column at porch	72	lf	12.75	918	

Description	Qty	Unit	Rate	Amount	CSI Sec Totals
Wood guardrail at deck	48	lf	135.00	6,480	
Wood stairs - 5' 0" wide x 4# risers	1	ea	1,800.00	1,800	
Composite wood decking w/framing	403	sf	16.00	6,448	
Concrete ramp	144	sf	16.00	2,304	
Guardrail at ramp	59	lf	135.00	7,965	80,743
Landscaping					
Allow for landscape repairs	1	ls	5,000.00	5,000	5,000
Exterior Improvements	**Total**			**110,943**	110,943
Utilities					
Site Civil/Mechanical Utilities					
Water, allow	1	ls		See alternate	
Sanitary/Sewer, allow	1	ls	15,000.00	15,000	15,000
Gas Main, allow	1	ls		Not Required	
Drainage, allow	1	ls	8,500.00	8,500	8,500
Electrical Service	1	ls	20,000.00	20,000	20,000
Site lighting,					
Lighting to underside of covered roof	760	sf	8.00	6,080	6,080
Utilities	**Total**			**49,580**	49,580

Gross Floor Areas

	Base Bid	**New Construction (Base Bid)**
Basement	1,005	1,005
1st Floor	2,853	2,853
Attic	811	811
Total	**4,669**	**4,669**

Item #	Description	Qty	Unit	Rate	Amount Add	Amount Deduct
	Alternate Summary					
	Add Alternate - Sprinkler System to Base Bid				**$57,119**	
	Total Add					
	Add Alternate - Sprinkler System to Base Bid					
	Add					
	Fire Protection Systems					
	Wet sprinkler system	2,853	sf	6.00	17,118	
	Dry sprinkler system	1,816	sf	7.00	12,712	
	Fire department connection	1	ea	850.00	850	
	Fire line, allow	1	ls	10,000.00	10,000	
	General Items					
	Test and balance	1	ls	813.60	814	
	Allow for seismic restraint	1	ls	622.40	622	
	Permit fee	1	ls	526.45	526	
	Sub Bid	**Total**				
	Builders work in connection with Fire Protection @ 2%	1	ls	852.85	853	
	General Contractor's overhead and profit @ 3%	1	ls	1,304.86	1,305	
	Sub-total				**44,800**	
	General Requirements/General Conditions	3.00%			1,344	
	Escalation to mid-point of construction (4Q2015)	8.94%			4,125	
	Design Contingency	12.50%			6,284	
	Permit Fee	1.00%			566	
	Construction Contingency					
	Add Alternate - Sprinkler System to Base Bid			**Total Net Add**	**57,119**	