PFLUGER

KENT'S POINT

SITE ASSESSMENT, USE STUDY, AND RENOVATION COST ESTIMATE

DRAFT

Prepared for:

Town of Orleans
Conservation Department

June 1998

Prepared by:

east cape engineering, inc.
44 Route 28
Orleans, MA 02653
(508) 255-7120

Introduction:

East Cape Engineering, Inc. has been retained to perform an evaluation of the Kent's Point site. This evaluation is intended to provide options for municipal use of this site and the existing building, analyze and develop alternatives, and then provide a cost estimate for site development and building renovations. The alternatives developed for cost analysis are based on compliance with Town of Orleans Bylaws and Commonwealth of Massachusetts Building Regulations.

Site History:

The site known as Kent's Point was owned by Miss Charlotte Kent as obtained by her from her family. In 1988, the Orleans Town Meeting voted to acquire this property from Miss Kent. In doing so, the town obtained full use of 24.1 acres of the 27.7 acre parcel and leased the remaining 3.6 acres back to Miss Kent for the remainder of her life. This parcel includes the all the buildings on the site including a house, garage, workshop, tool shed, and a cottage. Miss Kent died this past spring, therefore the lease expired and the town obtained the use of the buildings and grounds on the property.

The house has been reported to have been constructed in the 1800's as a farm house and then moved from its original location to where it stands today in the early 1900's. The house has been used for a summer residence ever since. All the out buildings are in very poor condition including the cottage and are not worthy of evaluation due to their condition.

Current Condition:

The main house structure at Kent's Point is an older wood frame full cape house with a rear wing. The house was built in the 1800's and is of primitive construction. This section will describe the layout of the building and the condition of the rooms as identified in our inspections.

The first floor has a total floor area of approximately 1750 square feet with two additional spaces on the front and side which are covered porches. There is also a small detached structure butted up against the end of the building which consists of a small storage shed and an old "three hole" outhouse. The first floor contains a kitchen, bathroom, dining room, living room, parlor, and one bedroom. The condition of the structure on the first floor is poor. The ceilings and floors all sag, and there is evidence of water damage on most walls and ceiling. All the doors and windows are inoperable due to age and structural deterioration. The utility systems on the first floor are all substandard including all plumbing, heating, and electrical systems. There are several fireplaces in poor condition on the first floor. The structure will be discussed in more detail in later sections.

The second floor is accessed by a very narrow and steep set of stairs. The second floor area is approximately 1350 square feet. There are up to eight possible bedrooms on the second floor and a bathroom. All floors and ceilings severely sag and there is signs of water damage on the walls and ceilings. All the systems on the second floor are like the first floor, in poor condition and severely outdated and substandard. Doors and windows are inoperable and are in disrepair.

The basement is a full height foundation consisting of concrete block with a concrete floor. The basement runs at full height under about half of the house and is accessed in the house by a steep small set of stairs. The remainder of the foundation is a frost foundation with no access. The foundation walls and floors are in fair condition.

Refer to Figure 1 for the layout of the house

Building Systems Evaluation:

The existing utilities are all substandard and are in poor condition. This section will provide additional details on these systems. None of the systems described below are in compliance with current codes or regulations.

Heating System:

The heating system consists of a forced hot air oil fired system. The furnace is very old and is likely very inefficient. The oil tank which supplies the furnace is old and shows signs of leakage on the floor. The duct work is in fair condition, however there is asbestos wrap on many of the joints.

Water Supply:

Water is supplied to the house by a 2 inch well which is located in the basement of the building. Reports indicate that the quality of the water in the house is poor due to salt water intrusion. The pipes are in fair condition and appeared to have been upgraded. The hot water system is via a separate hot water heater which appears to be in poor condition. The piping system is in fair condition, however the hot water pipes are covered with asbestos insulation.

Electrical:

The electrical system is substandard. The system is an old fuse box type system with old wiring. Many of the outlets are dangerous and the lighting fixtures are old and worn.

Sewage System:

The sewage system was upgraded in 1990 to include a 1000 gallon septic tank, distribution box, and a leach pit with two feet of stone. There was no design plan available for the system, however the repair permit indicates the system was based on a five bedroom house. Based on the use of the house (seasonal) it is expected that the sewage system is in good working order. The total allowable daily flow to the system under the 1978 Title 5 regulations is 666 gallons per day which is constrained by the septic tank. The system is too close to the existing well and is undersized for the current number of potential bedrooms in the house (9).

Structural System:

The structural system in the house is ancient. The foundation consists of a full height block wall foundation under half of the house (half of the main cape and half of the wing in the back). The remainder of the foundation is a frost wall which has no access. The foundation is in fairly good condition and shows no sign of cracking or settling. The floor system is a mix of native unsawn timbers and old dimensional lumber. All the members show signs of decay and rot. The beam system which supports the floor joists is under sized but in fairly good condition. The system is so old and non homogenous that an analysis of the system can not be completed to determine an allowable floor loading. The wall system in the house is post and beam construction with lath and plaster partitions in between posts. There is no insulation in the walls. Some portions of the house have a fiberboard wall board. All the walls show signs of damage. All the beams that support the second floor and first floor ceiling are sagging. There was no access to look at the structure in the ceiling on the first floor, however, based on the thickness of the floor/ceiling as measured around the staircase, the members in the ceiling are a maximum of six inches thick. It is assumed that the materials in the ceiling are similar to what was found in the first floor system. The roof system and second floor ceiling system are similar to the rest of the structure including unsawn timbers. The condition of the roof and ceiling is poor with signs of leaks and sag.

Use Evaluation:

This section provides an overview of some potential uses of this building by the town. These options in this section do not take into account the condition of the building for these uses. It only looks at the location and space available within the confines of the building. After the use evaluation, an alternative will be selected and evaluated against the existing conditions of the building and the required codes to determine the cost to do renovation of the existing building to upgrade the building for the potential use option. The option for demolishing the buildings on site and returning the land to the natural state has also been included as an option.

1. Office Space: The entire building could be remodeled into office space. The existing building interior could be cut up into offices and reception areas. Based on the property location, the best town office use would be for the conservation department, the shell fish department, and the recreation and parks department. Based on the available floor space, between six and eight average sized offices could be constructed with reception areas on each floor.

2. Meeting Space: The first floor of the building could be renovated to provide meeting space for any number of town or public organizations to include town board meetings, local organizations such as Friends of Meeting House Pond or Friends of Pleasant Bay. The second floor could be used for office space or could be used as a caretaker apartment.

3. Low Impact Outdoor Assembly: The existing buildings would all be demolished and an open air picnic pavilion or amphitheater would be constructed in the area of the existing house. This option would be an expansion of the existing park theme and would allow for use for outdoor educational opportunities, public gatherings, private functions, etc.

4. Science Center: The first floor could be renovated to provide exhibit hall space and small lecture space for use as a science/agricultural/environmental science center. This option would also take advantage of the existing property for demonstration projects such as shoreline use, aquaculture, etc. The second floor could be used for office space for support of the center or for apartment space for caretakers or guest lecturers.

5. Historical Museum: This option would include renovation of the first floor in a similar nature to the science center, however tailor the space for use as a museum. The museum could be used to display either cape wide or Orleans specific historical items and also use for history lectures or meetings. The second floor could be used for office space for the town historical society or could also be divided to added additional exhibit space. As in other options, the second floor could also be used for a caretaker apartment.

6. Demolition of the Buildings: This option would include demolishing all the existing buildings, removing all improvements to include power and sewage system, and returning the site to a natural state.

These six options provide for a good range of alternatives for the town to consider and also provide enough variation for cost analysis . The site will support development of any of these alternatives. Issues involving zoning, site planning, and building code requirements will be evaluated for the most aggressive renovation option listed above, however, it appears that any of the uses listed above are allowed in accordance with Town of Orleans Zoning Bylaws.

Analysis of Alternative 4:

Alternative 4 was selected for detailed analysis and cost analysis due to the expected highest renovation cost, most difficult building code compliance issues, and that it will involve the largest number of people using the site for site planning purposes. In this analysis the review of the applicable bylaws and regulations will be detailed for the proposed use which will in turn be used to detail the renovation and site development requirements. After the analysis is complete, a cost estimate for construction will follow which will also include conclusions and recommendations.

1. Zoning:

This site is located in the Town of Orleans Residential Zone. A review of the zoning by-law indicates that the municipal or educational use is a permitted use in the Residential Zone. If the second floor was developed as an apartment as defined in the Orleans Zoning Bylaw, the use is not permitted in the Residential Zone and therefore would require a variance from the Board of Appeals. Office space or additional exhibit space would be permitted without a variance under the Zoning Bylaws.

A portion of the site is also in the Conservancy District, however, no activity has been proposed in this area in this evaluation. If the town decided to develop access to The River or Little Pleasant Bay from this property, a special permit from the Board of Appeals may be necessary.

2. MA Building Code, Sixth Edition:

The analysis of the building code outlines items that are specific to the proposed use and construction materials. Standard items that are required of all construction regardless of type are not specifically addressed in the analysis but have been considered in cost estimates.

Section 1: Requires architect or engineer supervision of project due to the size and non-residential use of the building.

Section 3: The proposed use group for the first floor is A-3 , and use group R-3 for the second floor. This is defined as mixed use, therefore if separation required per Section 5, the fire separation required is a 2 hour division.

Section 5: The construction of the building is Type 5B which is combustible unprotected. The allowable height is 20 feet with one story and a maximum floor area of 4200 square feet for use group A-3. Use group R-3 allows for 2 stories, a height of 35 feet and a floor area of 4800 square feet. The code requires spaces to meet the most restrictive requirement for mixed use. The result of this requirement is that the uses must be separated via a 2 hour rated fire separation to meet the requirements. The other option to avoid construction of a 2 hour fire separation is to install an automatic sprinkler system.

This allows the Use Group A-3 to have two stories and a height of 40 feet and a floor area increase of 200% and therefore would allow unseparated mixed use in accordance with Section 3 of the code. Due to residential use however a one hour fire separation would still be required even with sprinklers.

Section 7 and 9: Provides guidance on materials and systems for fire protection. These sections were consulted for cost estimating. These sections are specific to the proposed use since a sprinkler system or fire separation will be required.

Section 16: This section outlines the loading requirements for the floors based on use. The apartment live load requirement is 40 psf. The A-3 live load requirement is 100 psf.

Section 34: This section discusses requirements for alteration and change of use of existing buildings. This section requires that for assembly use groups (i.e. A-3), all requirements for new construction apply except for earthquake loads in accordance with section 3408. This section also addresses modifications to historic buildings. In order for the provisions of the historic building modification waivers to apply, the building must be listed on the National Historic Register or the Massachusetts Historic Commission Registry.

3. MADEP Title 5 Requirements:

An existing 1978 Code Title 5 sewage system serves this site. The existing design is suitable for a total daily flow of 666 gallons. Based on the proposed use of the building, the apartment is two bedrooms for a required design flow of 220 gallons , the first floor assembly use area requires a design flow of a maximum of 200 gallons. Therefore, based on this use analysis, the existing sewage system is adequate for any proposed future use. The system would require inspection to ensure it is functioning properly due to the change in use.

4. Handicap Accessibility (521 CMR):

Due to the planned public use of this facility, the main floor of the building must be renovated to meet the requirements of the Massachusetts Architectural Access Board. This means that parking, ramps, interior doorways, and bathrooms must meet the minimum design requirements of the regulations. It is our interpretation that since the apartment is a single unit, the handicap access requirements are not applicable.

5. Orleans Site Development Requirements:

In order to develop any site within the Town of Orleans that is not strictly residential, the requirements of the Orleans Zoning Bylaw site plan regulations are applicable. These requirements include the parking design, lighting, signs, landscaping, drainage, etc. Based on a review of the parking requirements, a parking area which includes 2 spaces

for the apartment and up to 18 spaces for the main floor, especially if used for lectures or meetings. The parking area is required to be paved and subsurface drainage must be installed.

6. Other Requirements:

Environmental Disposal Potential: An inspection of the building and sampling of the paint on the interior and exterior of the building was completed as part of this evaluation. The results of the evaluation indicate there is asbestos and lead paint that would require removal and proper disposal. This cost has been included in the cost estimates for renovation and demolition.

Traffic Considerations: The access to this site is extremely limited and inadequate. Frost Fish Lane is a one lane dirt road in an area which has many houses close to the road. The width of the layout is variable and does not support widening in all areas. Significant upgrade would be required to allow an increased use of the site.

Conservation Commission Approval: Approval of the project would require filing of a notice of intent with the Orleans Conservation Commission due to the proximity of the house to the top of the bank. A variance to Orleans Conservation Commission regulations may be required and additional controls including erosion control might be required if approved.

Evaluation of Code Requirements on the Existing Building:

Based on a review of the building codes as outlined in the above section and in review of the existing condition of the building, it becomes evident that the existing structure does not meet any of the current building codes. Significant code requirements such as ceiling heights, structural load requirements, insulation requirements, and door and hallway widths are all substandard within the building which makes renovation an impossibility. In order to have a publicly accessed building at this site a new structure would be required to be constructed which meets all the current building code requirements. The building is not on the historic register and therefore does not gain any relief from the codes. Even if it could gain relief, due to the condition, the town would have significant liability in allowing any public use of the structure without full compliance with the codes.

Since renovation of this building is not feasible, the cost estimates which follow are for demolition of the existing structures on site with three options for use. The three options costed include restoration of the site to natural conditions (Alternative 6), construction of an open air structure (Alternative 3), and constructing a new building for the proposed public assembly use (Alternative 4).

Description of the Proposed New Construction Requirements:

The description of the requirements for development of the proposed alternative includes the following components: demolition of all existing structures, construction of a new public assembly building which meets all the building code requirements and handicap access requirements, and upgrade of the existing access road to the building.

Demolition of the Existing Structures:

The demolition of the buildings would be in two phases. The first phase would be the removal of the hazardous materials including the lead paint and asbestos. Once this was complete, the remainder of the structures would be demolished and disposed off site. Any interior trim or fixtures in the house deemed historic or valuable could be removed prior to demolition.

Construction of the New Structure:

A new structure would be constructed on site to meet all the requirements of the building code to include fire protection, handicap access, and structural loading. The new building would be in the same footprint of the existing building and could be laid out in almost any configuration imaginable. A general floor plan was laid out within the existing foot print of the building which incorporated the features outlined in the proposal. From this floor plan and through the code requirements, a cost estimate was developed for this option. Based on requirements and costs for compliance with the codes and handicapped access, the building would be one story on the existing footprint. The floor area of the building would be maintained at 1750 square feet.

Upgrade of the Road:

The existing road is unsuitable to be used for increase public use. The cost estimate includes the cost of upgrading the road to handle two lanes of traffic. The estimate does not include legal and potential taking requirements of upgrading the road.

Other Requirements:

Other costs involved with the new building and new use of the site include running adequate utilities to the site including electric and water. It is assumed that the existing phone system is adequate. Additionally, a parking area near the building would be required and other site plan related requirements such as exterior lighting, signs, handicapped accessible walks and entrances would also be required.

Description of the Demolition and Return to Natural State Option:

The demolition costs would be as described above, except that the existing sewage system would also be abandoned and removed. Fill would be brought in to fill in the foundation holes on site. Additional costs to put the site back to a more natural state would include plowing up the existing driveway and covering with organic materials, seeding, and landscape plantings through out the site.

Description of the Demolition and Construction of Open Air Assembly Area:

The demolition would be as described in the sections above. This option would include development of the existing disturbed area to a low impact open air pavilion suitable for use for education or public or private functions. An open air gazebo styled pavilion would be constructed on a concrete slab. The area would be wide open to allow the most flexibility in use. A public bathroom facility would also be constructed on the site including a Title 5 Septic System to be used for park visitors or functions. The existing system may be suitable for this use, however, the cost estimate for this option includes construction of a new sewage system. It was also assumed the use of the site would not significantly increase and upgrade of the existing road would not be required.

Cost Estimate:

The following is the cost estimate for demolition and new construction as described above. As detailed in our proposal, the cost estimate is in the 15% accuracy range and has been weighted on the conservative side. These costs are developed for weighing the alternatives and should not be used to appropriate funds. Full architectural and engineering plans would be required prior to sending the project out for construction bids. The cost of this is also included in the estimate.

Option 1: Development of Alternative 4

Phase 1: Demolition:

Asbestos removal and disposal for duct wrap and pipe insulation:	$2,000
Lead Paint Removal from windows and doors as identified via sampling and proper disposal:	$10,000
Demolition of main house and out buildings and disposal	$30,000

Phase 2: Construction of New Town Building

Construction of Parking Lot, Drainage , repavement of the driveway, development of handicap parking near the building, regrading and excavation for construction of handicap access ramps:	$20,000
Construction of a new building using the existing footprint. The building would be laid out as shown on Figure 2 and be constructed to meet all code requirements. The floor area is approximately 1750 square feet:	$262,500
Upgrade Frostfish Lane to Orleans public road standards to allow for adequate traffic access:	$200,000
Run new utilities down Frostfish Lane including electric and water:	$20,000
TOTAL CONSTRUCTION ESTIMATE:	**$544,500**
Engineering, Architecture, Permits, Approvals, Meetings, Etc. (15%).	$81,875
Contingencies (10%)	$54,450
TOTAL ESTIMATE OPTION 1:	**$680,825**

Option 2: Development of Alternative 3

Phase 1: Demolition:

Asbestos removal and disposal for duct wrap and pipe insulation:	$2,000
Lead Paint Removal from windows and doors as identified via sampling and proper disposal:	$10,000
Demolition of main house and out buildings and disposal	$30,000

Phase 2: Construction of the Pavilion and Bathroom

Site work for grading, filling, and foundation preparation including purchase of fill	$15,000
Foundation construction including forming and concrete pouring for a slab foundation for the pavilion and a frost foundation for the bathroom:	$20,000
Construction of the pavilion structure and bathroom structure in accordance with all codes and regulations:	$75,000
Construction of a water supply well and sewage system to support the development of this alternative:	$15,000
Utility upgrades including power to provide service to the new structures:	$10,000
TOTAL CONSTRUCTION COST ESTIMATE:	**$177,000**
Engineering and Architectural Costs (15%)	$26,550
Contingencies (10%)	$17,700
TOTAL COST ESTIMATE OPTION 2:	**$221,250**

Option 3: Development of Alternative 6

Phase 1: Demolition:

Asbestos removal and disposal for duct wrap and pipe insulation:	$2,000
Lead Paint Removal from windows and doors as identified via sampling and proper disposal:	$10,000

Demolition of main house and out buildings and disposal	$30,000
Phase 2: Site Work and Landscaping:	
Filling and regrading in the area of the building demolition including removal of all foundations, well, septic system and all other existing site improvements and proper disposal:	$20,000
Grading and plowing up the existing driveway. Addition of organic material to support planting growth.	$15,000
Landscape plantings in accordance with prepared landscape plans to re-naturalize the developed areas. Includes shrubs, trees, and grasses:	$25,000
TOTAL CONSTRUCTION COST ESTIMATE:	**$102,000**
Contingencies (10%)	$10,000
Landscape Design (3%)	$3,060
TOTAL COST ESTIMATE FOR OPTION 3:	**$115,060**

Conclusions and Recommendations:

An analysis has been completed to provide an engineering cost estimate three alternatives for use of the Kent's Point Site. The path the analysis took varied from what was originally proposed due to the finding that the condition of the existing structures was such that renovation was not feasible. The three alternatives for which cost estimates were prepared provide the total range of costs for the site. The analysis indicates that even the lowest cost option of demolition and returning the site to a natural state will cost over $100,000. This is mainly due to the cost of demolition and removal. This report should provide the town the tools to make decisions on what to do with the site. The cost estimate for alternative four (nature center/education center) is representative of the cost of any type of town public use building which would include all the options listed including office space, educational use, or housing. The open air pavilion option was added to provide a use which would be in the spirit of conservation and current public use and remain a lower impact than construction of new buildings.

We expect this report meets the needs of the town. East Cape Engineering, Inc. would be glad to answer any questions the town has on the report or attend a meeting when this report is presented to the Conservation Commission.

PROFESSIONAL ENGINEER _____ DATE _____

Mark is engineer
upgrade of current plan
main Mary / studio