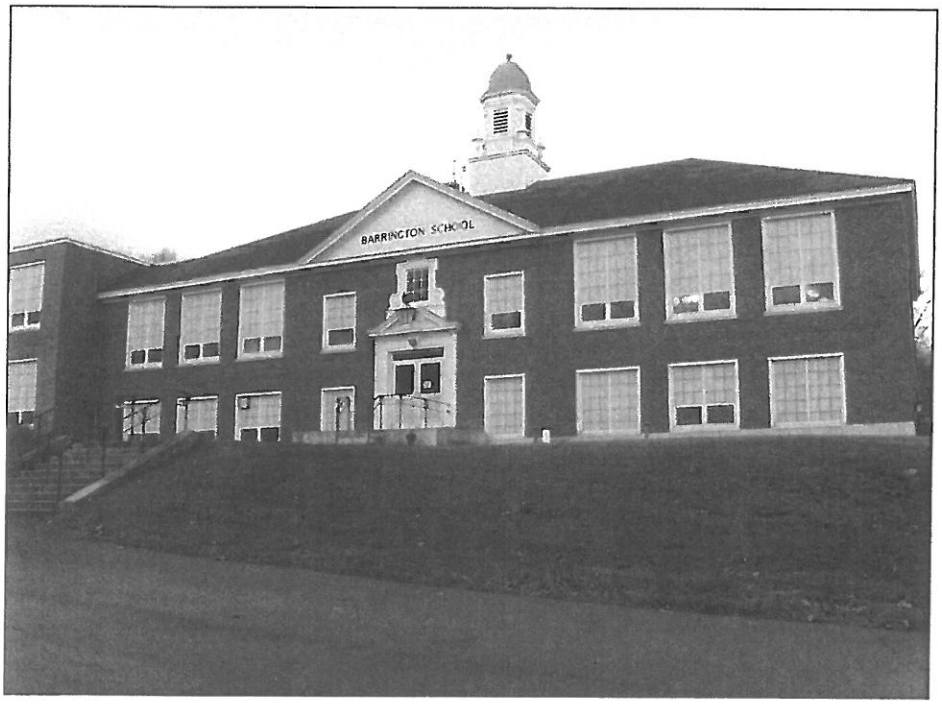
FINAL REPORT
BARRINGTON TOWN OFFICES
STUDY FOR REMEDIATION, RENOVATION OR RELOCATION



FOR

THE TOWN OF BARRINGTON, NEW HAMPSHIRE

FEBRUARY 2011

THE H.L. TURNER GROUP Inc.

TURNER GROUP

ARCHITECTS • ENGINEERS • BUILDING SCIENTISTS

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INTRODUCTION

The existing Town Office Building is located at 137 Ramsdell Lane at the corner of Route 9. It is a brick façade building that dates back to the 1930's when the easterly wing of the building was constructed to originally serve the Town of Barrington as a school. In the mid 1950's, a single story addition was constructed to the west that essentially doubled the footprint of the building. Then in the early 1960's, a second level was added to the 50's wing.

Drainage issues around the building have been an ongoing problem for years. The Local Government Center (LGC) identified a problem in September 2007. After flooding that occurred in the early spring of 2010, indoor air quality and suspected mold issues were identified as symptoms of the ongoing moisture intrusion. As indoor air quality degraded to the point that it became a serious health issue in the Town Office, mold testing was ordered in the spring of 2010. Tests were conducted by Desmarais Environmental, Inc. and the Scott Lawson Group. Although there were a small number of samples tested, the results did reveal a high potential for mold growth within some of the wall cavities of the building, particularly those areas below window openings.

In late October, the Town issued a Request for Qualifications for an architectural/engineering firm to complete a comprehensive evaluation of the existing Town Office Building to determine if it could be remediated and renovated for future use. The Town retained The H.L. Turner Group Inc. (TTG) on November 8, 2010 to complete the comprehensive evaluation of the existing building, but in addition, we were tasked to look at alternatives for the Town Offices, including construction of a new building.

The H.L. Turner Group Inc. was charged by the Board of Selectmen to complete the following tasks:

1. Complete a thorough evaluation of the existing Town Office Building and:
    - Identify all necessary remediation work, costs, and schedule to complete long-term air quality improvements.
    - Identify necessary site improvements and costs.
    - Identify all recommended ADA improvements and associated costs.
    - Identify other improvements and costs related to electrical, mechanical, and/or structural issues.

2. Review all recently completed reports on the existing building including architectural studies and indoor air sampling results and reports.

3. Complete a cost effective evaluation of alternatives for a new Town Office Building to be located:

    - At the Town owned Clark-Goodwill site.
    - At the Town owned Route 125 site.
    - At a site identified as the Calef site.

4. For the new office building study, identify the space needs for the Town of Barrington staff and define capital and operating costs.

Starting in early November through early January, TTG worked diligently to complete the above tasks while actively working with the Building Committee to develop a recommendation for the Town of Barrington on how best to proceed forward with this project.

This report summarizes the findings of our evaluation and the results of our meetings with the Building Committee.

EXECUTIVE SUMMARY

On November 17, 2010, The H.L. Turner Group Inc. conducted an on-site, in-depth evaluation of the building. This included an evaluation of the structural elements, mechanical, and electrical components, and an in-depth review of the architectural features of the building, including the current ADA provisions. In addition, we studied the site surrounding the building and walked the sites proposed for a new office building. The results of these evaluations are discussed in part throughout the body of this report. A detailed summary and spreadsheets identifying particular issues and the costs associated with rectifying these issues are included in Appendix A.

Based on evaluation of all the data compiled previously and during this study phase, as well as discussion of the various issues and a review of all the costs involved, it is the recommendation of the Barrington Building Committee and The H.L. Turner Group Inc. that the existing building which currently houses the Barrington Town Offices be remediated, renovated, and upgraded to continue to serve as the Town Office Building. Furthermore, it is recommended that the Selectmen for the Town of Barrington approve a warrant article for a bond issue to appropriate the sum of $3,740,000 for the remediation, renovations, and upgrades.

There is no question that indoor air quality has become a health issue at the existing office building. It has resulted in the need to vacate the office space used by the Town on

the upper level of the 1930's wing and to relocate to the lower level of the 1950's/1960's wing. Health issues have forced several employees to work at other buildings. The Local Government Center, the Town's Attorney, and three separate consultants: Desmarais Environmental, The Scott Lawson Group, and The H.L. Turner Group Inc. have recommended that the Town fix the building or vacate it. If nothing is done, the Town will need to completely vacate the building and look at temporary facilities elsewhere.

THE ISSUES

Moisture Intrusion

The main culprit has been moisture intrusion. The site drainage and grading around the building has been an issue for years, with the situation coming to a head in the early spring of 2010 when heavy rains caused flooding in the building. Site drainage issues and a lack of any moisture barrier allowed water to enter the building through the slab and the foundation walls, while lack of maintenance and the age of some of the building components have allowed water to enter the building through the walls, windows, and roof. Following the flooding, mold was suspected to be the cause of some of the health issues that were being experienced. Mold testing was ordered in early April 2010 and the Town retained Desmarais Environmental. The microbial analysis from Desmarais has suggested that airborne mold spores within the occupied space at the time of the sampling are not greater than the amounts found outdoors. However, the air within the wall cavity at one location was found to be harboring predominately Stachybotrys spores. Active Stachybotrys growth can produce very harmful Mycotoxins. The findings in the Desmarais report were confirmed by similar testing protocol conducted by The Scott Lawson Group and outlined in their reports of June and July 2010. All available reports are presented in their entirety in Appendix B.

Mold and mildew are generic terms that commonly refer to various types of fungi or micro-organisms that depend on other organisms to survive. There are over 100,000 known species of fungi, and this means that the patterns of mold growth and mold activity can be variable over a wide range of environmental conditions. Generally mold propagates by disseminating large numbers of spores, which become airborne, travel to new locations and, under the right conditions, germinate. Molds excrete enzymes which allow them to digest organic materials such as paper and wood; two very common building materials. It is a known fact that the existence of mold can lead to health issues for the occupants of a building where the mold exists. It is not fully understood if the health issues are a direct result of the mold or the Mycotoxins that they can produce.

To thrive and germinate, mold spores require a favorable environment. It is important to note that if these favorable conditions are not present, meaning just one of the key elements for mold growth is missing, the mold spores will remain dormant, and in this state they can do little to no harm. Just what are the conditions that constitute a favorable environment? The most important factor in mold growth is the presence of moisture in

the air, or in the object on which the mold is growing. Moisture in the air is measured as relative humidity. In general, the higher the relative humidity the more readily mold will grow. Most, but not all common molds found in the Northeast require relative humidity to be at least 60%. If areas become wet as a result of water intrusion, this increases their susceptibility to mold growth. Other environmental factors that contribute to mold growth in the presence of moisture are proper temperatures, between 40 degrees F and 140 degrees F (for most common fungus), and of course an organic food source.

Mold spores are everywhere. They exist outside; they exist normally in every room, on every object, and on every person. To create a mold free space takes a sophisticated effort of decontamination of materials, use of highly effective filtration of air systems, and air locks and air pressure gradients between the mold free space and the adjacent space. The most effective control strategy to keep mold levels close to ambient conditions is to eliminate moisture sources in the building by providing an effective envelope barrier to water as a liquid and as a vapor, and to keep the relative humidity of the air within the building spaces below 60%.

The walls of the existing building are constructed of Concrete Masonry Units (CMU) with a facing of brick on the exterior. There is no air space between the brick and the CMU block and the CMU block cores are unfilled. The R-rating of the existing wall is about an R-4. By its nature, brick masonry absorbs water. Over time it can diffuse into the CMU and then under certain vapor pressure conditions be released into the building air. The cells within the CMU block, where the air is moist or water has gained access, is an ideal location for the propagation of mold spores.

Mold in the building at levels less than those considered to be amplified reservoirs may not present a problem to most occupants. However, some occupants may be susceptible to a particular species at levels that are lower than those considered to represent amplified reservoirs. Regardless of levels, active mold growth is a sign of undesired and perhaps uncontrolled levels of moisture (liquid and vapor) in the building space or within the building components. The water source may include roof leaks, moisture entering through the walls and window openings, poor ventilation of the inside space, and poor site drainage allowing water in through the foundation and up through the floor slab. Based on our on-site evaluation, we have identified each of these issues at the existing Town Office Building.

In a separate report prepared by members of Turner Building Science & Design, LLC, are comments on the contents of the Desmarais and Scott Lawson reports (See Appendix B). Based on the information we gathered while on-site and on the microbial sampling work completed by the aforementioned firms, we feel the building can continue to be occupied provided a number of conditions are met. These include:

1. Locate and remediate the active microbial reservoirs.

2. Control building water leakage to minimize the amount of moisture getting into the interior space.

3. Control the indoor space humidity levels with improved ventilation and air conditioning to minimize condensation and high relative humidity levels.

4. Upgrade building components (windows for example) and insulation to increase surface temperatures and further control condensation.

Some of our observations with regard to the former reports include the fact that both firms agree that the indoor air levels within the occupied spaces are low for mold spores. The Scott Lawson Group continues to test the indoor air levels and the spore counts do not appear to be increasing. However, both firms have verified the existence of mold spores in the wall cavities (i.e. in the hollow of the CMU block). The Desmarais report raises concerns about Mycotoxins produced by the microbial agents.

It is our conclusion, based on very limited sampling completed to date, that the building materials may be harboring mold reservoirs. If these reservoirs exist, airborne sampling completed to date suggests that the reservoirs are not feeding spores to the occupied spaces of the building. However, the presence of active mold growth within a building is not a condition that should exist, and we do not recommend continuation of environmental conditions that produce microbial growth. Furthermore, neither firm explored other likely areas for the existence of mold spores such as in the attic where the roof may be leaking, spaces above the ceilings where stained ceiling tiles were noted, carpeting covering the slabs-on-grade, and especially the paper documents in the lower level storage room.

During our investigation, with the help of members of the Building Committee, we made a series of drill holes at four locations throughout the building. Holes were drilled in the walls of the 30's wing and the 50's/60's wing (see the attached Site Observation Report in Appendix A in the Architectural Evaluation section). At each hole it indicated that the brick is tight up against the CMU with no air space. In each hole the core of the CMU block was observed to be dry with no indication of mold. Observations were visual only, aided by a scope camera. No sampling for mold was done and no humidity readings were taken. We did take samples of the masonry block from each wing of the building. The samples were sent to New Hampshire Materials Testing Laboratory to determine the chemical composition of the CMU. The results are included in Appendix A following the Site Observation Report in the Architectural Evaluation Section. One theory that was put forth by Desmarais Environmental was that high levels of carbon in the block could provide a food source for mold. The chemical breakdown indicates 0.9% carbon content in the CMU from the 1950's/1960's wing, and almost 9% carbon content in the CMU from the 1930's wing. It is our opinion that masonry products typically have a high pH level or high alkalinity, and this is not a very hospitable environment for mold growth. However there could be sufficient nutrients in any moisture that has found its way into the wall cavity to support the growth of mold.

Based on sampling results of others and our own observations, The H.L. Turner Group Inc. is recommending that some additional investigation and sampling be conducted in order to pinpoint the mold reservoirs throughout the building. It is these areas that will then be targeted for remediation, as opposed to the entire building. One of the most difficult areas to remediate is within the cores of the CMU walls. This would involve opening the cores from the top and flushing them out with a biocide designed to kill active mold growth. Then the core would be treated with a benign inhibitor to stymie future growth. As a final step, the cores would be sealed airtight. However, there is a caveat when it comes to treating the CMU cores with a biocide. The chemicals that are used to formulate an effective biocide may have harmful affects on the occupants of the building. Therefore if such a process is adopted, it is important to make sure that all the biocide product has completely dissipated from the CMU or has been diluted to very low levels once the mold has been remediated.

Air Infiltration and Heat Loss

Another key issue with the existing building envelope is air infiltration, particularly around the window frames. As part of the building evaluation we performed a blower door test to get an idea of the air leakage rate for the building. The test was conducted with the exterior doors closed and all interior doors open, including the corridor doors to large office spaces and the corridor doors at the stairwells. The average of the readings from the blower door test indicated an air exchange rate of .76 air changes per hour. For comparison, a well-constructed, new building would have an air infiltration rate of .3 to .5 air changes per hour. This difference can represent as much as 5 to 6 BTU's per hour, per square foot in heating cost for the Town Office Building. This represents about a 50% savings in energy costs. This is illustrated on the energy savings graph at the end of this section. So even though new windows would have a small increase in terms of the R-value or thermal resistance, with proper installation, flashing, and sealing around the rough opening, they would make an appreciable difference in terms of cutting down on air infiltration. Furthermore, new windows would fix the condensation issue.

In addition to the blower door test, we also used an infrared camera to determine areas of heat energy variation in the structure, which can pinpoint areas of heat loss, air leakage, and possible pockets of moisture in the walls. This technique is known as thermography. In its engineering application, thermography is used to study heat energy variations over the surface of a structure. Variations in the structure's thermal resistance can, under certain conditions, produce temperature variations on its surfaces. Leakage of air through the structure that is warmer or cooler than the building structure can affect the amount of heat energy at the surface. This means that missing or improper placement of insulation, thermal bridging, and air leaks in a building's enclosing structural components can be located using thermography.

The most common use of thermography is to locate faults and defects in thermal insulation in exterior walls and roofs, and to determine their nature and extent. The task of taking thermographic images can also be used to confirm whether or not the wall or

roof examined has the promised insulation and air tightness characteristics. Insulation deficiencies do not necessarily lead to increased air infiltration. If building insulations are improperly installed, air pockets will form in the building structure. Since these air pockets have a different thermal conductivity than areas where the insulation is properly installed, the air pockets can be detected during the survey.

It is often possible to detect moisture in a structure by using an infrared camera. This is because the wetted area has different heat conductivity properties and different thermal capacity (i.e. specific heat) to store heat than the surrounding material. The presence of water changes the overall thermal conductivity and the overall thermal mass of the building material. Thermal conductivity is a material's ability to conduct heat, while thermal mass is its ability to store heat.

Building defects related to moisture may only show up when heat energy (for example, from the sun) has been applied to the surface of the wall. In the case of the exterior walls of a building, the images taken during the day may appear cooler (blue to dark blue) since the wet areas, due to their conductive and/or thermal capacitive affect, have not absorbed as much heat as the surrounding area. Areas detected in blue to dark blue may indicate internal moisture within the wall cavity, but it may also indicate that there is moisture on the surface of the wall as well. A relatively small amount of water from dew, water running down the siding from melting snow, ice, or gutter runoff may be detected as dark blue patches on the surface of the wall.

A series of infrared photos were taken all around the building. Some of these photos are included in Appendix C. Many of the exterior photos indicated that heat is radiating through the wall as a result of little to no insulation. Some of the interior photos indicate air leakage and possible moisture around the windows. Thermal images taken in the attic of the 1930's wing show air leakage at the intersection of the wall and ceiling.

An infrared inspection alone should never be used as the sole decision point for further actions. Suspicious findings should always be verified using other methods, such as moisture meters, humidity and temperature data logging, and probably the best method: selective demolition to see what's below the surface.

The moisture intrusion, air infiltration, and heat loss issues can all be rectified by upgrading the entire building envelope. This includes first and foremost, a new wall system, which includes a vapor barrier, rigid insulation, an air barrier, an air space, and siding installed on the outside of the existing building. This will produce a wall with an R-rating of R-25+, which is comparable to a new building. Also included would be more attic insulation in the 1930's wing and a proposed new sloping roof for the 1960's wing.

We are proposing that the insulation for the new pitched roof be located at the roof plane providing a tempered attic space for mechanical equipment, as well as a better thermal rating for the roof system. With a new roof and new insulation, a rating of R-35 to R-40 could be achieved. It is anticipated that the new pitched roof would be constructed of

wood trusses spaced at 24-inches on center. The trusses would run north to south and be configured to overhang the face of the building by about 18 to 24 inches. The overhang will help to keep water away from the face of the building.

ADA Compliance

There are a number of areas throughout the building that do not meet current ADA standards. The building is constructed with four distinct and separate levels; not including the former Selectman's meeting room in the lowest level of the 1930's wing. Access between the lower levels is currently provided by two ramps; both however are too steep to meet ADA standards. The only access between the upper levels is a set of stairs. There are two exterior doors that provide ADA access; one to the lower level of the 1950's/1960's wing and one to the Selectman's meeting room. But once inside, there is no access beyond those points. The recommendation therefore is an elevator to provide access to all levels. A ramp is proposed from the upper parking lot through the main entrance at the north side of the building into a lobby area. From the lobby area, access is provided to all other levels by an elevator. A lift device would provide access to and from the Selectman's meeting room.

Other ADA issues include all the handrails and guardrails on the stairs. The handrails do not extend the appropriate distance beyond the last riser and the guardrails at the top of the stairs are not high enough.

The two existing restrooms on the upper level of the building located in the 1930's wing do not meet many ADA standards. Violations include insufficient clear space in front of the door (both inside and outside of the restrooms), and a lack of rear and side transfer grab bars. The mounting heights and locations of existing toilet tissue dispensers, soap dispensers, paper towel dispensers, and mirrors do not meet minimum and/or maximum mounting height requirements. The "clear floor space" requirements for each fixture do not meet the current ADA requirements, and the heights of the existing toilet and urinals do not meet the proper height requirements. There is one additional restroom at the "north" end of the lower level. This restroom is assumed to have met code when it was constructed, but if a major building modification is undertaken, it should be either brought up to current code or abandoned.

More information on the accessibility options can be found in the architectural section of the building evaluation reports in Appendix A.

RENOVATION OF THE EXISTING BUILDING

After a review of all the data and cost implications of renovating the existing building versus the construction of a new Town Office Building, the Building Committee and The H.L. Turner Group Inc. are recommending that the existing office building be fully renovated. The overall renovations shall consist of the following:

1. Conduct further testing to pinpoint the location of mold throughout the building. The testing to date was limited to taking air samples inside the occupied spaces and testing of the wall cavities at a few locations. The proposal is to expand the areas to be tested to include suspected areas that could be harboring mold including under carpets, in the attic space, wall cavities under windowsills, in the wood window frames, the fabric partitions, and even the paper documents stored in the archives.

2. As part of the renovation work all items such as carpet, partitions, etc. that contain mold shall be removed from the building. This shall require a certain amount of demolition. Other areas where mold is found such as in wall cavities shall be remediated by flushing with a biocide treatment, adding an inhibitor to prevent future growth, and finally sealing the wall cavity. Most of the existing interior finishes shall be demolished during the renovation and removed from the building.

3. All paper documents stored in the building shall be removed and copied on new paper or on electronic media. Historic documents or other documents of significance that need to remain in their original form can be decontaminated. The process is similar to historic restoration and is very expensive. Therefore, we do not recommend the cleaning of all old documents, but rather replacement. Please note that this cost is <u>not</u> included in the final numbers for the renovation. Appendix E includes information on mold removal from books and paper documents. This issue would have to be considered regardless of whether the Town stays in the existing building or moves to a new office building.

4. All remaining interior areas shall be thoroughly cleaned and prepared for the new finishes. The interior surface of the perimeter walls shall be sealed with a spray-on, open cell, breathable foam.

5. Complete site work around the building to include waterproofing of the foundation, improved drainage through the installation of drainage pipe, and a crushed stone drip edge around the perimeter of the building. Other site improvements include improved site lighting and improvements to the exterior railing, stairs, and walkways. This site work is intended to supplement the work completed last November.

6. Meanwhile the exterior of the building shall be fitted with a new skin. This shall consist of an external air barrier, a drainage plane, and a minimum of 3-inches of rigid foam, an air space, and new siding. Several options are being considered for new siding including "Hardiplank" cement board siding, vinyl siding, and metal siding. As of the writing of this report, a final decision has not been made. A sketch, SK-A1, of the proposed wall construction is included at the end of this section.

7. A new sloped roof shall be added to the 1960's wing. The roof shall improve the drainage of water away from the building, provide for enhanced insulation, and provide a tempered space for locating mechanical equipment.

8. Renovation work shall consist of upgrades to the mechanical and electrical systems throughout the building. The major work will include a new radiant heating system and a new central ventilating and air conditioning system. The existing oil-fired boilers are only a few years old and therefore will be part of the heating system for the renovated building.

9. Complete upgrades to bring the building in compliance with ADA standards, including the addition of an elevator and upgrades to stairways and bathrooms.

10. Provide a records storage room that addresses issues where the Town is currently non-compliant with the guidelines of The New Hampshire Department of State "Best Practice for Vital Records Preservation".

11. Repair all remaining areas and add finishes and new furniture.

12. Test, monitor, and commission all areas and systems within the building.

We performed a cost evaluation for several options related to renovation of the existing Town Office Building. They are as follows:

- Renovate the existing Town Office Building to include removal and/or remediation of all mold, address all moisture intrusion and air infiltration, building envelope, insulation and mechanical systems, address ADA issues, etc., as described above in items 1 through 12. The total cost for the renovation of the 18,800 square foot building is approximately $154 per square foot for a total construction cost of $2,900,066. The construction cost includes materials, labor, and the contractor's general conditions, overhead and profit. The total project cost is $3,740,000, and in addition to construction, includes all ancillary and soft costs such as architecture and engineering, construction administration, new furniture, a generator, and a 9.5% contingency.

- Renovate the existing Town Office Building to include removal and/or remediation of all mold, address all moisture intrusion and air infiltration, building envelope, insulation and mechanical systems, address ADA issues, etc., but excluding a new roof for the 1960's wing, no work in the proposed SAU and recreation spaces, minimum site work, no generator and no "clerk-of-the-works". The total cost for the renovation of the 18,800 square foot building is approximately $129 per square foot for a total construction cost of $2,425,169. The construction cost includes materials, labor, and the contractor's general conditions, overhead and profit. The total project cost is $3,038,000 and in addition to construction includes all ancillary and soft costs such as architecture and engineering, construction administration, an allowance for 50% new furniture, and a 10.0% contingency.

- Renovate the existing Town Office Building to include the removal of the 1960's wing (i.e. the upper level of the 1950's/1960's wing) and include a new sloped roof over the 1950's wing. In addition, perform all other work described in items 1 through 12 above. The construction cost for demolition of 5,100 square feet and the renovation of 13,700 square feet is approximately $191 per square foot or $2,613,450. The construction cost includes materials, labor, and the contractor's general conditions, overhead and profit. The total project cost is $3,408,000 and in addition to construction includes all ancillary and soft costs such as architecture and engineering, construction administration, new furniture, a generator, and a 10.0% contingency.

For a complete breakdown of the costs see Appendix D.

Renovation of the existing office building can also mean appreciable savings in energy costs. A building's energy consumption may be expressed in terms of British Thermal Units (BTU's) per hour, per square foot. For a properly constructed new building, the average energy usage is typically about 10 to 10.5 BTU's per hour, per square foot. The existing Town Office Building currently has an energy usage rate of about 23.5 BTU's per hour, per square foot. With the renovations proposed this can be reduced by 13.2 BTU's per hour, per square foot to 10.3 BTU's per hour, per square foot. The savings are realized by better insulation in the roof (1.4 BTU's per hour savings), reduction in the air infiltration around the windows (5.9 BTU's per hour savings), insulation in the walls (5.4 BTU's per hour savings), and insulation on the basement walls and floor (.5 BTU's per hour savings). This type of improvement leads to substantial savings in energy costs. For example, with oil at $3.00 per gallon a savings of $12,000 per year can be realized. If oil goes to $5.00 per gallon the savings jump to $20,000 per year. A graphic illustrating the improvements discussed above is included at the end of this section. The figures for BTU's per hour, per square foot and the cost savings listed on the graph are based on the average degree-day formula.

This proposal represents a significant expenditure for the Town of Barrington. However, the structural condition of the existing building is sound and with the extent of the renovations recommended herein, the life expectancy of the newly renovated building could easily approach 100 years provided the building and building systems are properly and regularly maintained and upgraded as required.

EVALUATION OF A NEW TOWN BUILDING

Our scope of work for the Town Hall relocation study included a cost effective evaluation of alternatives for a new Town Office Building to be located at the Town owned Clark-Goodwill site, at the Town owned Route 125 site, and at a site identified as the Calef site. Reference Figures 1, 2, and 3 at the end of this section.

Clark-Goodwill Site

Prior to our assessment of the existing Town Hall site, The H.L. Turner Group Inc. and Charter Weeks visited the Town owned parcel referred to as the Clark-Goodwill site, which has been identified as a possible location for not only a new Town Hall, but other public buildings and recreation spaces, with the idea of creating a multi-usage civic space. This 34 acre site, identified as Lot 234-0001 on Town tax maps, is an undeveloped, wooded site with variable terrain including wetlands, areas of ledge, areas of level terrain and areas of sloping terrain, and approximately 60 feet of elevation difference across the parcel. It has approximately 760 linear feet of frontage and is about 1 mile east of the existing Town Hall. It is our understanding that the Town has obtained a NHDOT driveway permit and the State permits necessary to construct a wetland crossing and to excavate gravel from the site.

The site offers great potential for any number of uses, and could function very well as the home of a new Town Hall, while also providing a source of gravel material for the Town Highway Department. Among the benefits of using the parcel is its proximity to the center of Town, it is already owned by the Town, and for the numerous potential possibilities for future expansion on the property. Site development costs would be the greatest up-front burden, because there is no infrastructure serving any part of this site. Any construction would require clearing and grubbing for driveways, parking, and the structure, site grading to establish a usable building site and road profiles, importation and exportation of fill material, and establishment of utilities, including electrical service, stormwater management, water supply, septic system construction, and mechanical system fuel supply. Certain aspects of these costs could be phased in and coordinated with the site work that will be required to begin excavating gravel. Prior to commencing any site development beyond gravel mining, additional State permits will be required, including an amended Alteration of Terrain permit.

Calef Site

This property is an undeveloped 12-acre parcel identified on Tax Map 239 as Lot 1. It is a mostly level site in both the Residential Zone and Commercial Zone, with frontage on Mallego Road and Route 125. It is adjacent to the post office in the center of Barrington. According to a visual observation of the site and the Complete Summary Appraisal Report dated March 3, 2000 by Madden Appraisal Services, this property offers a lot of potential for development of a new Town Hall. The primary drawback is that the lot is privately owned and would have to be purchased. While construction on this lot would

involve addressing many of the same challenges that exist at the Clark-Goodwill site (clearing, grading, importing fill materials, establishment of utility services), the relatively flat terrain of the land on the Calef site will result in reduced site work costs, and its proximity to the post office and the center of Town will create a center of civic services.

Route 125 Site

There is an additional site that is being considered for development. Located on Route 125 approximately 3 miles south of Route 9, there is a 125-acre parcel identified as Lot 13.1 on Tax Map 265. The site provides 2,300 feet of frontage on Route 125 and is undeveloped and wooded, with some areas of wetlands and a 50' power line easement crossing the site from north to south. Based on our review of the Preliminary Geotechnical Investigation by JGI, dated January 19, 2000, it is clear that much like the Clark-Goodwill site, this property presents many challenges to development. The topography is variable and will require a lot of earthwork to be functional. Any proposal will require clearing and grubbing of significant areas, there will likely be ledge blasting and rock removal, and there are no utilities servicing the site. On a positive note, the size of the parcel lends itself to any number of uses and additional development beyond the Town Hall. It also fronts on a major state road, and is already owned by the Town of Barrington. The property isn't centrally located in Town, but its size could allow for the establishment of a public complex, offering various public services and amenities.

Study of the Space Requirements

In addition to looking at the above sites for a proposed new building, we completed a study to identify the space needs for the Town of Barrington staff. The space needs study did not include space needs for the School Administrative Offices or the Recreation Department. The space needs study was general in nature and included a basic assessment of how much space was needed for the current staff for each department, with some allowance for expansion, and included storage space and core facilities.

The study addressed the requirements of the various offices, departments, and the individuals that would be assigned to those functions. There is also consideration given to core spaces such as copier rooms, break rooms, meeting rooms, restrooms, a server room, and mechanical spaces. The complete list of space descriptions is given on the four-page listing at the end of this section. Following the space descriptions is a space relationship diagram to depict the space relationship between the offices.

Prior to the discovery of mold in the existing Town Office Building, the Town offices occupied approximately 11,333 square feet of space. Both the Selectmen and an architectural firm (Team Design) hired in 2006 came up with a proposal to provide approximately 11,600 square feet of space, which included space for the Recreation Department. We conducted interviews with the Town Manager and some of the department heads to get their input on needed space and came up with a minimum space

requirement for 10,577 square feet. The estimated national average based on standard practices and general guidelines dictates that a space consisting of 9,207 square feet is needed for the Town Offices. Based on the above figures, TTG is recommending a new building with usable office space of 10,800 square feet. The space program square foot breakdown is given on the spreadsheet at the end of this section.

We performed an evaluation for several options related to the construction of a new Town Office Building. They are as follows:

- Construct a new 10,000 square foot Town Office with a full basement. The basement will be unfinished and used for storage and the placement of mechanical equipment. (Note: Although TTG's recommendation from the space needs study calls for about 11,000 square feet of space, a portion of that included space for mechanical equipment and records storage is located in the basement of this proposed building.) The total cost for materials and labor is $196 per square foot. To this we added the cost of the site work $34 per square foot. Along with the contractor's general conditions, overhead and profit, the total for construction is $2,875,000. The total project cost is $3,607,000 and in addition to construction includes all ancillary and soft costs such as architecture and engineering, construction administration, an allowance for 50% new furniture, a generator, and a 10% contingency.

- Construct a new 11,500 square foot Town Office Building that is a slab-on-grade. All offices, storage, and mechanical equipment will be on one level with no basement. The total cost for materials and labor is $156 per square foot. To this we added the cost of the site work $28 per square foot. Along with the contractor's general conditions, overhead and profit, the total for construction is $2,642,500. The total project cost is $3,329,124 and in addition to construction includes all ancillary and soft costs such as architecture and engineering, construction administration, an allowance for 50% new furniture, a generator, and a 10% contingency.

- Construct a new 8,500 square foot Town Office with a full walk-out style basement. Finish 4,000 square feet of space in the basement for office/meeting space. The total usable space shall be 12,500 square feet on two floors. The remaining 4,500 square feet shall be used for mechanical equipment, some storage, and future office space. The total cost for materials and labor is $169 per square foot. To this we added the cost of the site work $27 per square foot. Along with the contractor's general conditions, overhead and profit, the total for construction is $3,065,625. The total project cost is $3,834,123 and in addition to construction includes all ancillary and soft costs such as architecture and engineering, construction administration, an allowance for 50% new furniture, a generator, and a 10% contingency.

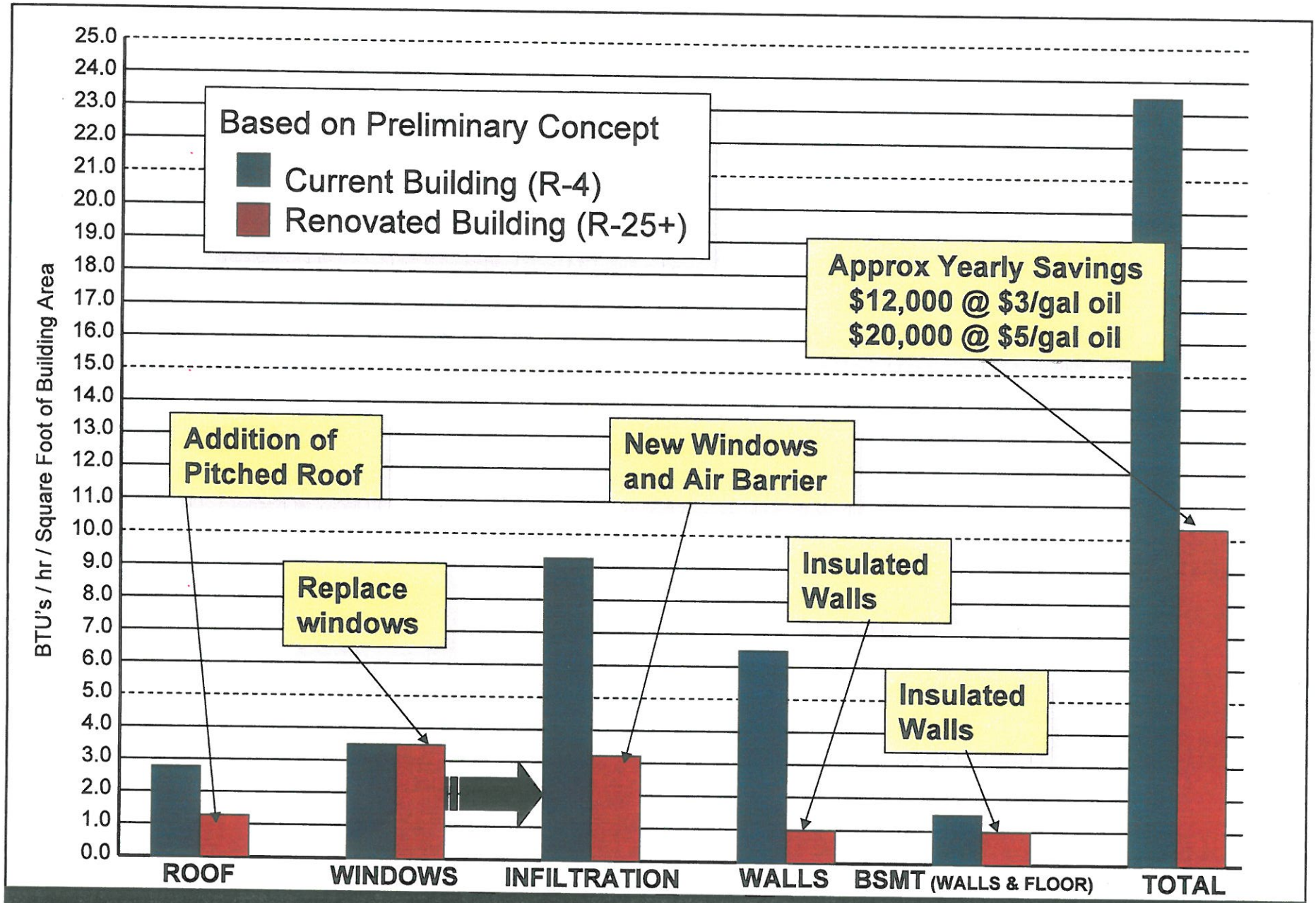
The above total costs include a $320,000 to $340,000 allowance for site development depending on a slab-on-grade versus a full foundation. Development of the Clark-Goodwill site is estimated to be $340,000, while development of the site on Route 125 is estimated to be $400,000. There are a few more challenges with the site on Route 125 including the existence of several ledge outcroppings. Compared to the Clark-Goodwill site, the relatively flat terrain of the land on the Calef site will result in reduced site work costs; however, the Town does not own this land, so the cost of purchasing the parcel must be added to the bottom line. For a complete breakdown of the costs see Appendix D.

Our opinion of cost for new construction is based on several sources including RS Means Building Construction Cost Data. For over 60 years RS Means has been actively engaged in construction cost publishing and consulting throughout North America. At the end of Appendix D, we have included a table from RS Means that shows typical square foot construction costs for a two to three story town office building.

We have calculated the projected operating costs for a new Town Office Building and for renovation of the existing Town Office Building over a 20-year period. At 10,000 square feet plus a full basement, the new building would have substantially less occupied space than the existing building. It is expected that the School Administrative Offices and the Recreation Department would occupy over 8,000 square feet in the renovated building. These entities would not be accommodated in the new building and the total building-to-building cost comparison reflects that difference.

The present day value of the 20-year operating costs is detailed in Appendix D. Based on an annual inflation rate of 2.5% the costs are:

- Renovated Town Office Building - $2,632,600
- New Town Office Building - $1,890,500



Energy Savings

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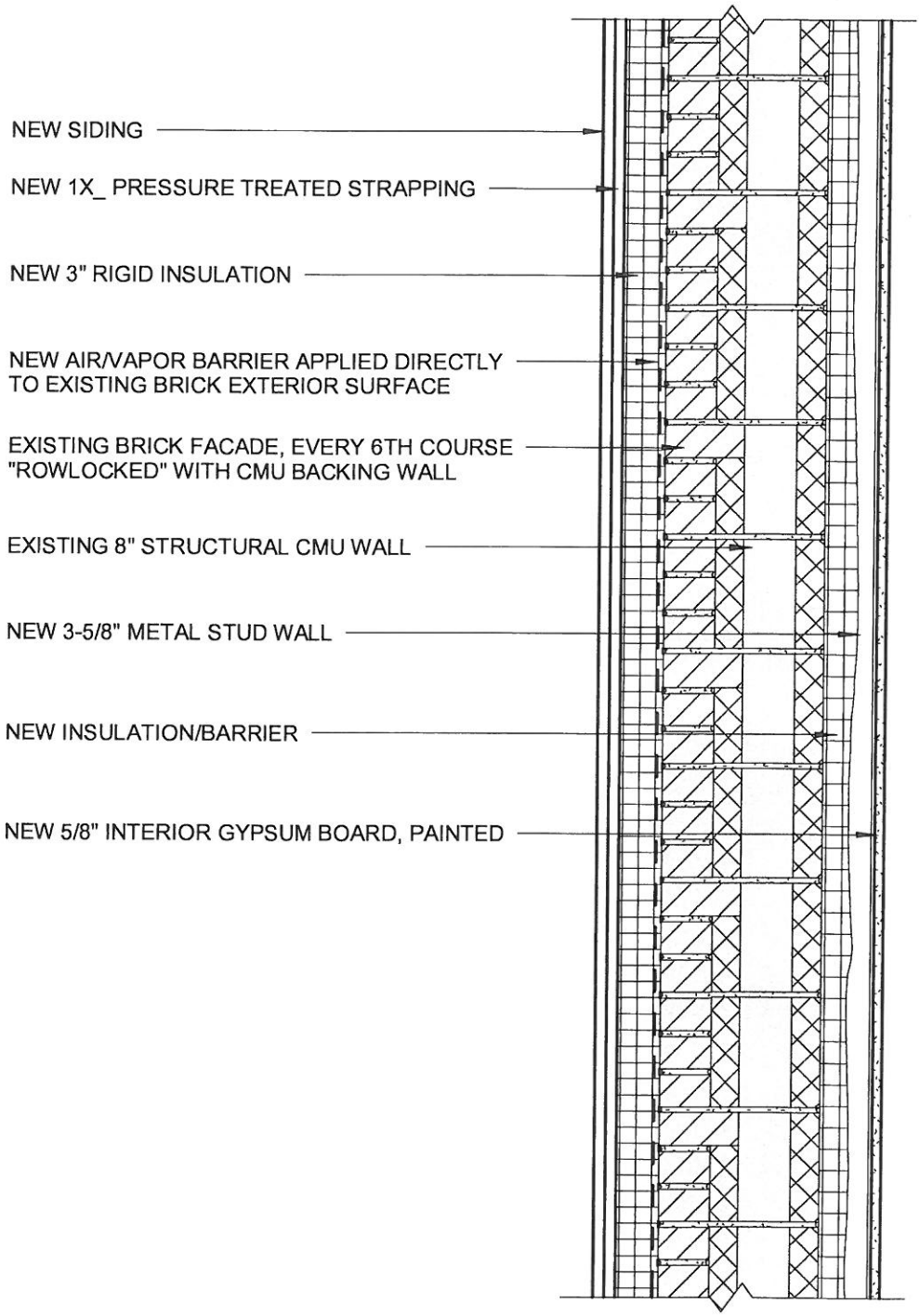
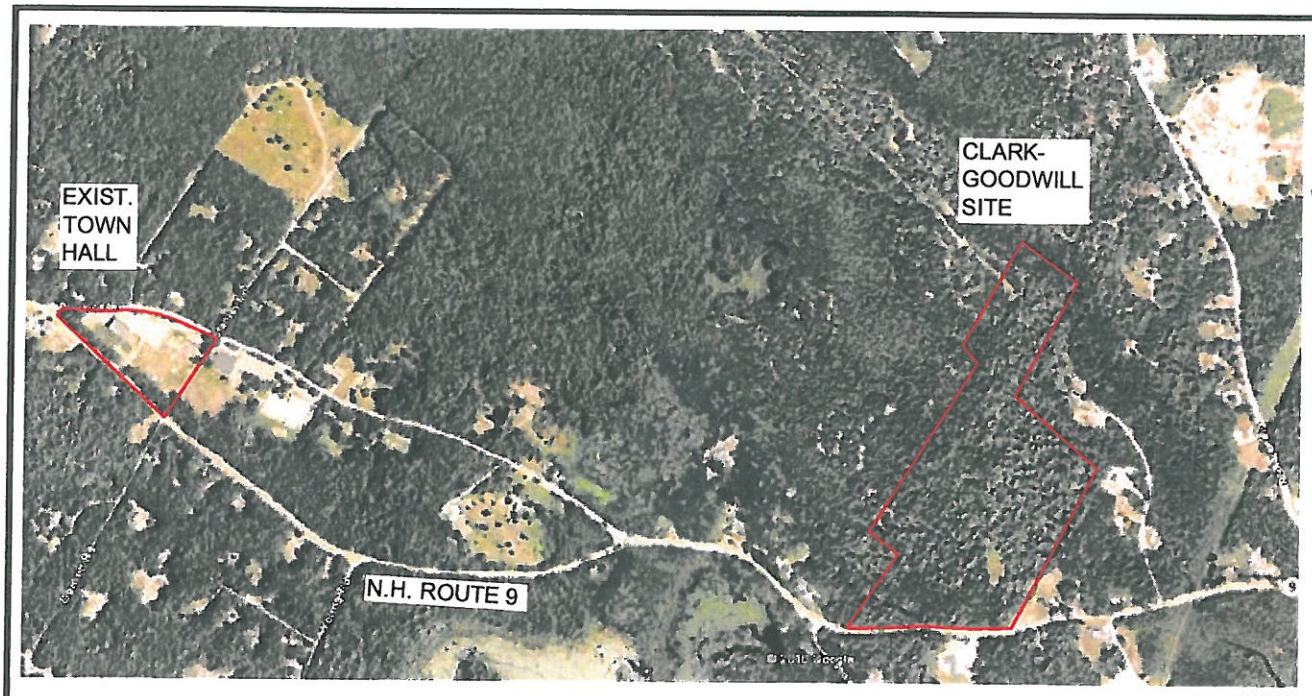


1

PROPOSED WALL SECTION

Scale: 1" = 1'-0"

TURNER GROUP	THE H.L. TURNER GROUP ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS BUILDING SCIENTISTS 27 LOCKE ROAD CONCORD, NEW HAMPSHIRE 03301 P:603.228.1122 F:603.228.1126 W:www.hlturner.com CONCORD, NH HARRISON, ME DANVILLE, VT. LITTLETON, MA NEW HAVEN, CT	PROPOSED WALL SECTION **BARRINGTON TOWN HALL** 137 RAMSDELL LANE BARRINGTON, NH	Proj. No.: 3632 SK-A1 Ref Sht: Date: 01/20/11



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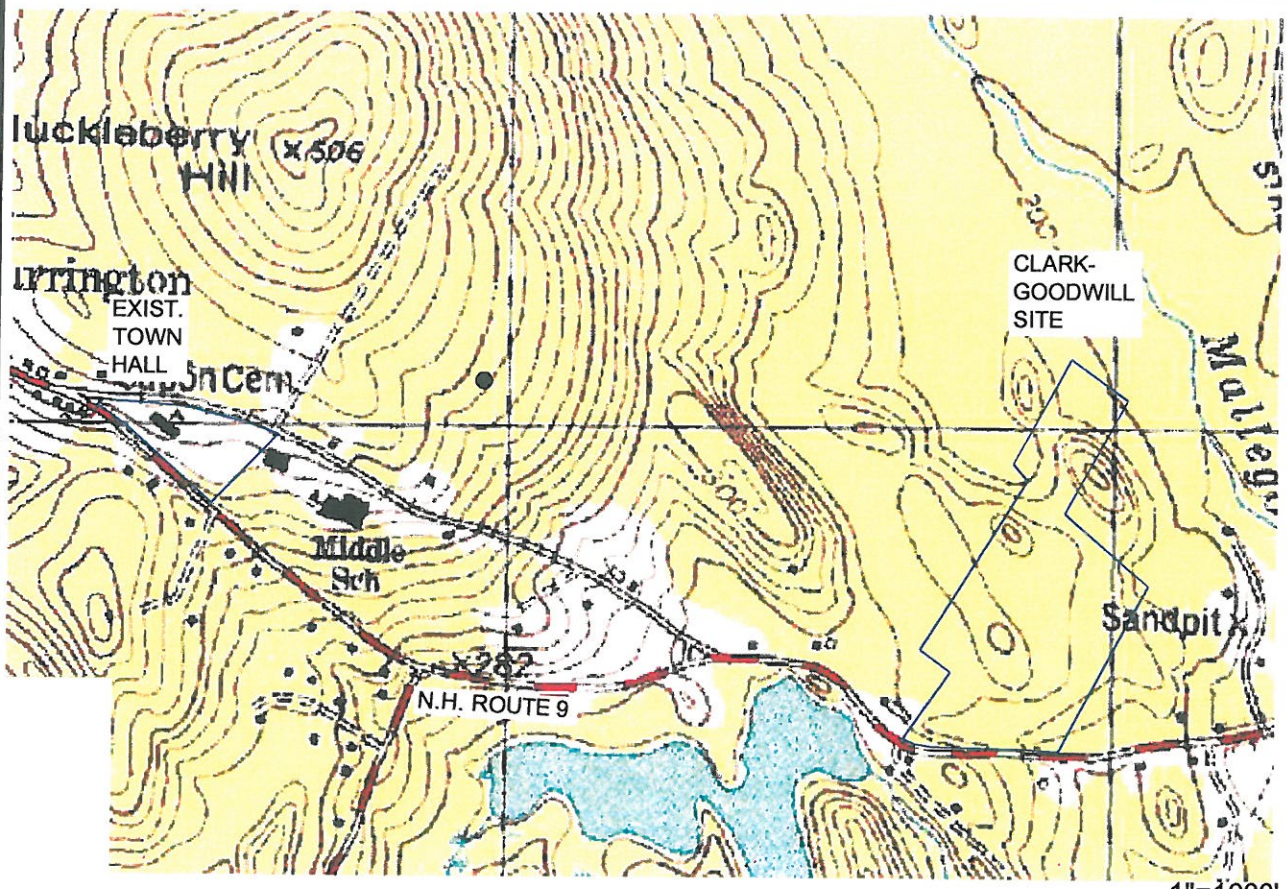

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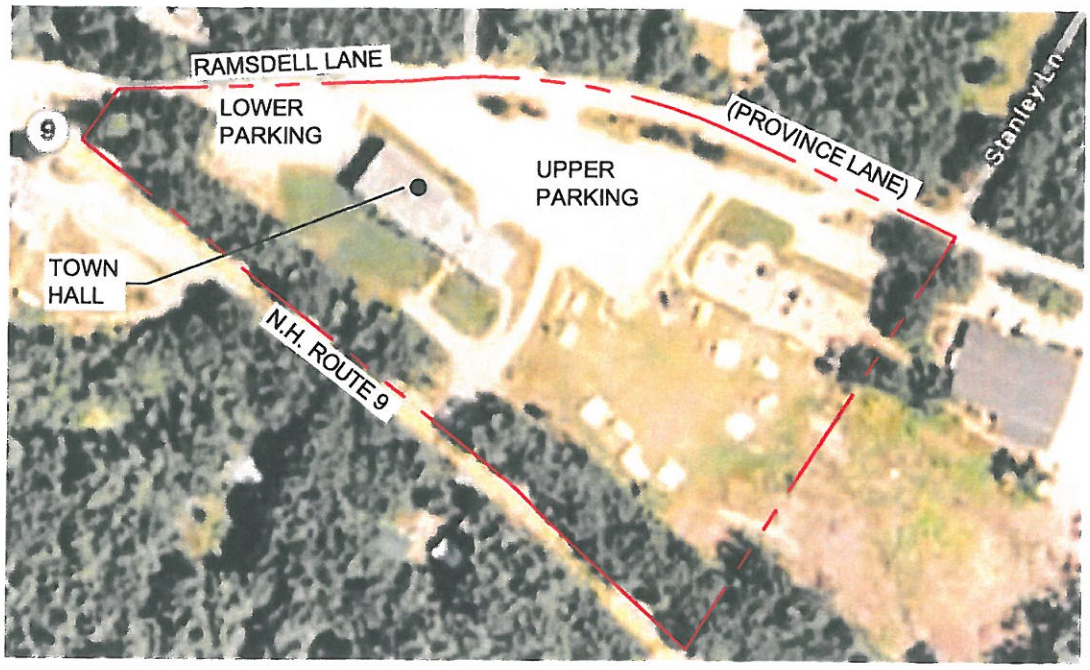

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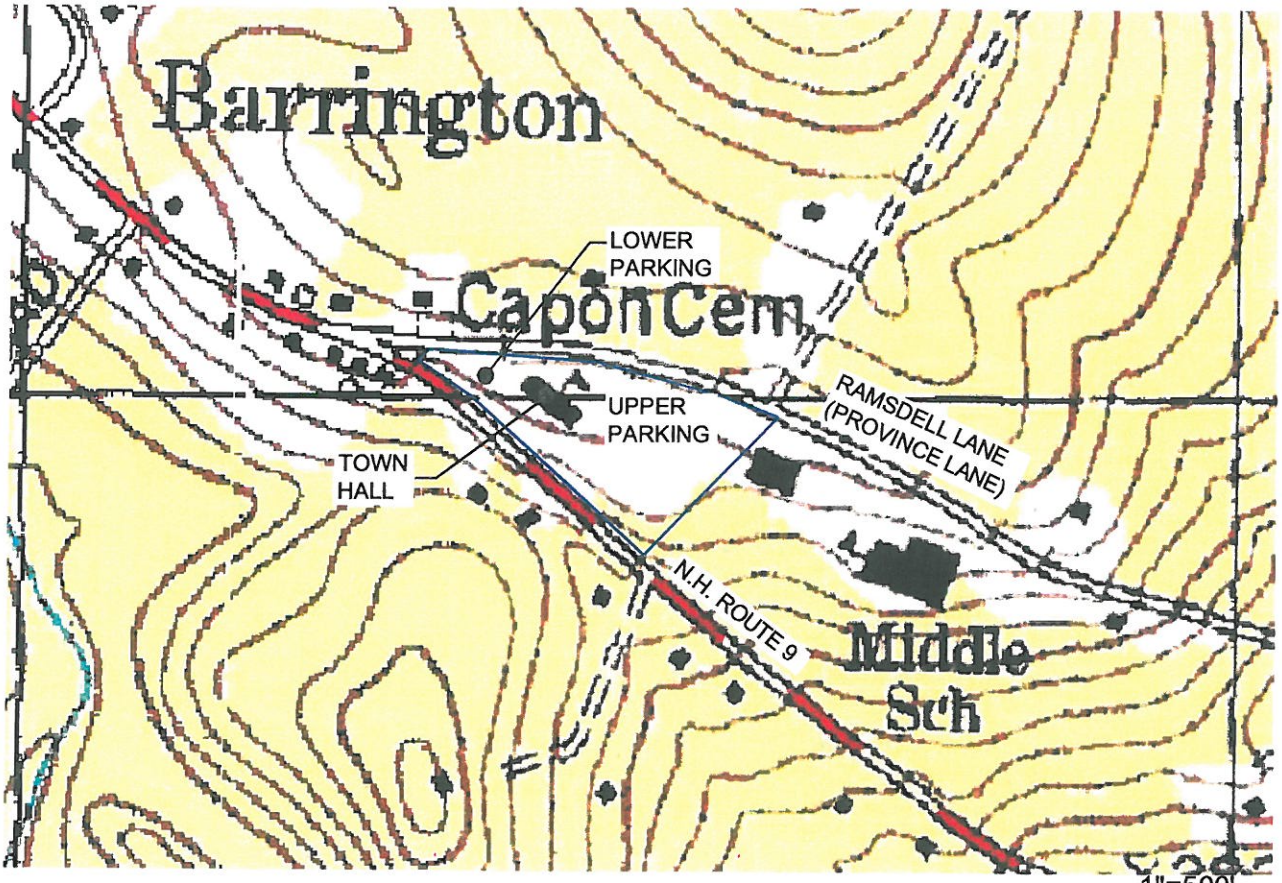

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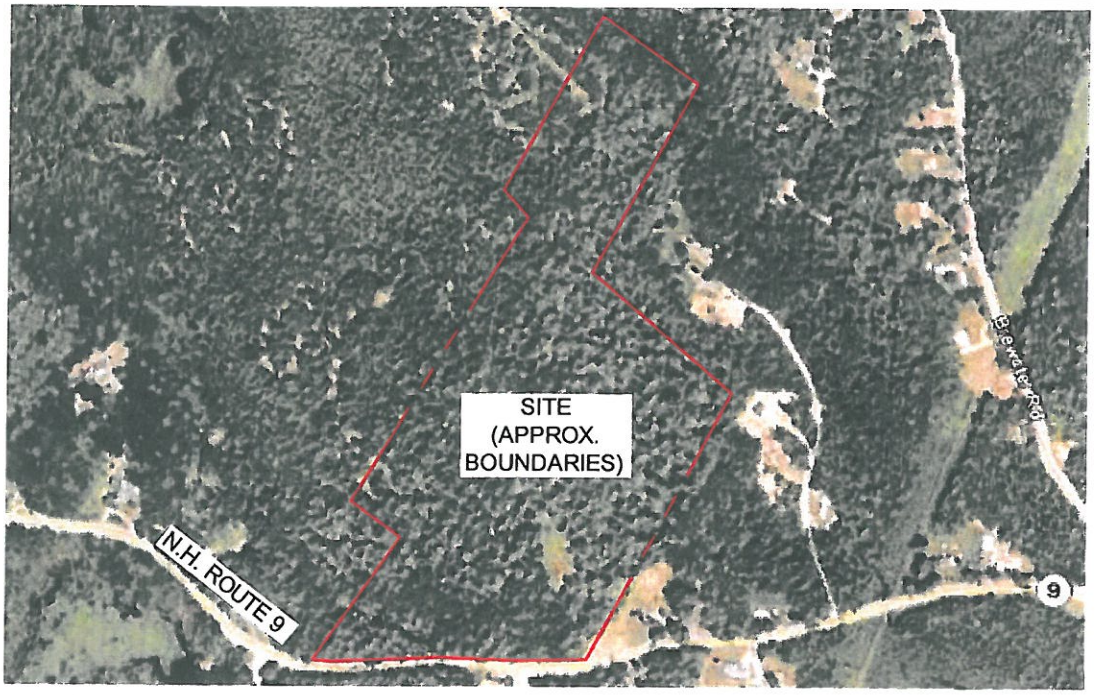

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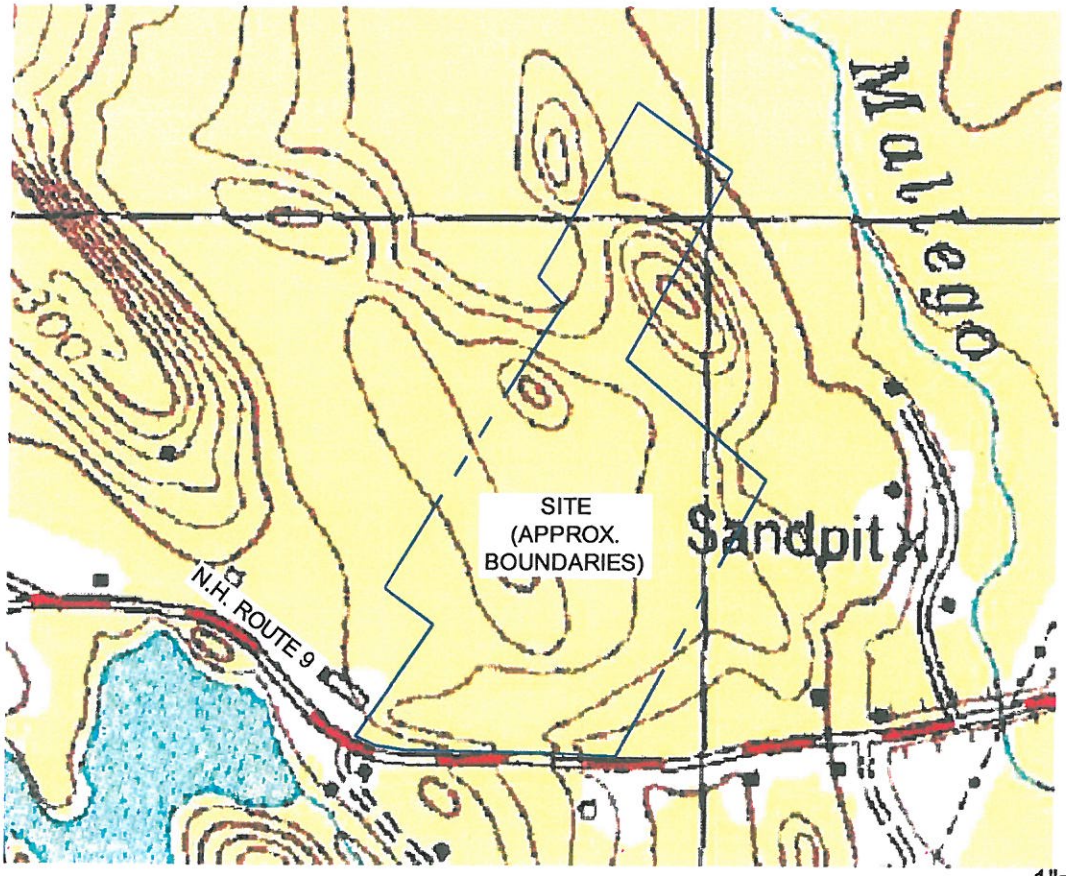

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Space Descriptions
New Municipal Building
Barrington, NH

Updated: 12.11.10

DRAFT

Selectman's Office

3 People
Transaction counter needed (space for 2)
View to public counter
Secure Fire Proof Storage
Counter / window for public (2 spaces)
Public Records Computer Near by
Adjacencies:
- Near Town Admin (Supervision)
- Near Road Agent (Present Connection)
- Near Finance/Welfare Office (Payments)
- Near Tax Collector (Folding Machine)
- Near Copy Room

Equipment:
- Computers
- Phones

Copy Room (Shared between Selectman, Financial / Welfare, Town Admin, and other offices)

Large Copy / Printer
Supplies
Layout space
Fax Machine
Mail Machine
Mail Boxes

Town Administrator Office

1 Person
Option 1 - Standard 120 sf office with nearby shared conf room
Option 2 - Larger office 180+ sf with meeting space in office
Adjacencies:
- Near Selectman's office
- Near Financial office
- Accessible to public not off directly off public space

Equipment:
- Computer
- Phone

Finance/Welfare Office

2 people (currently a Director and Asst Dir)
Part-time Accounts Payable Person
Discreet entrance for welfare (from public space)
Need conf space for private conversations
    Conf space could use computer hook up & telephone
    2 staff people & 2 adults
Adjacencies:
    Financial near Town Admin
Access to: long term records storage
In future maybe waiting area (If full-time Welfare Office)
People make appointments now
Equipment:
    Phone
    Computer

DRAFT

Road Agent Office (Shared with other transient staff)

1+ Person
Shared office
Adjacencies:
    Near Selectman's Office (for paperwork)
    Near Copy Room
Equipment:
    Phone
    Computer

Tax Collector Office

2 People
1 Shared person with Clerk
2.5 transaction counter / window space
Secure location to count money
Adjacencies:
    Near Clerk (Shared person & equipment)
Access to: long term records storage
Equipment:
    Computer
    Phone

Town Clerk Office

3 people
1 Shared person with tax
3 window transaction counters (extra large work desks)
Adjacencies:
    Near Tax Collector (Shared person & equipment)
Long work table
Equipment:
    Computer
    Phone

Copy Room (Shared between Tax Collector & Town Clerk)

- Copy / Printer
- Supplies
- Layout space
- Folding Machine

DRAFT

Building Dept

- Building Inspector (private office)
- Health Officer (possible private office)
- Receptionist / Admin Assistant
- Conf / meeting space
- Adjacencies:
  - Near Planning Departments
- Equipment:
  - Phone
  - Computer

Land Use (Planning / Zoning / Conservation)

- Space for files, Maps, Plans, etc
- Layout space (possible stand-up tables)
- Adjacencies:
  - Near Building Departments
- Equipment:
  - Phone
  - Computer

Copy Room (Shared between Land Use & Town Clerk)

- Copy / Printer
- Supplies
- Layout space

Break Room

- Space for 8 people (Away from the public)
- Counter with sink and cabinets
- Cork board
- Equipment:
  - Refrigerator
  - Microwave
  - Table
  - Chairs

Selectman's Meeting Room

- Space for selectmen meetings and zoning hearings and other town meetings
- Need table & Chairs for board
- Need chairs for audience

Community Meeting Room

- Meeting space for community actives i.e.:
  - Weight watchers, Boy Scouts, Girl Scouts, AA, Garden Club, etc
  - Can be used after business hours

Restrooms

Option 1: Separate Male & Female Restrooms
Option 2: Multiple Single Unisex Bathrooms

DRAFT

Janitor

Cleaning supply storage
Water with mop/utility sink

Records Room

Secure, Fire Proof, Protected
Storage shelves to get boxes off the ground
Organized and clearly divided
Common request from all departments

Supply Storage

Space for paper and office supplies
Easily accessible to all departments (direct adjacency not needed)
Locked storage (Secure)

Building Storage

Long term building items
Bulk items
Locked storage (Secure)

Server Room

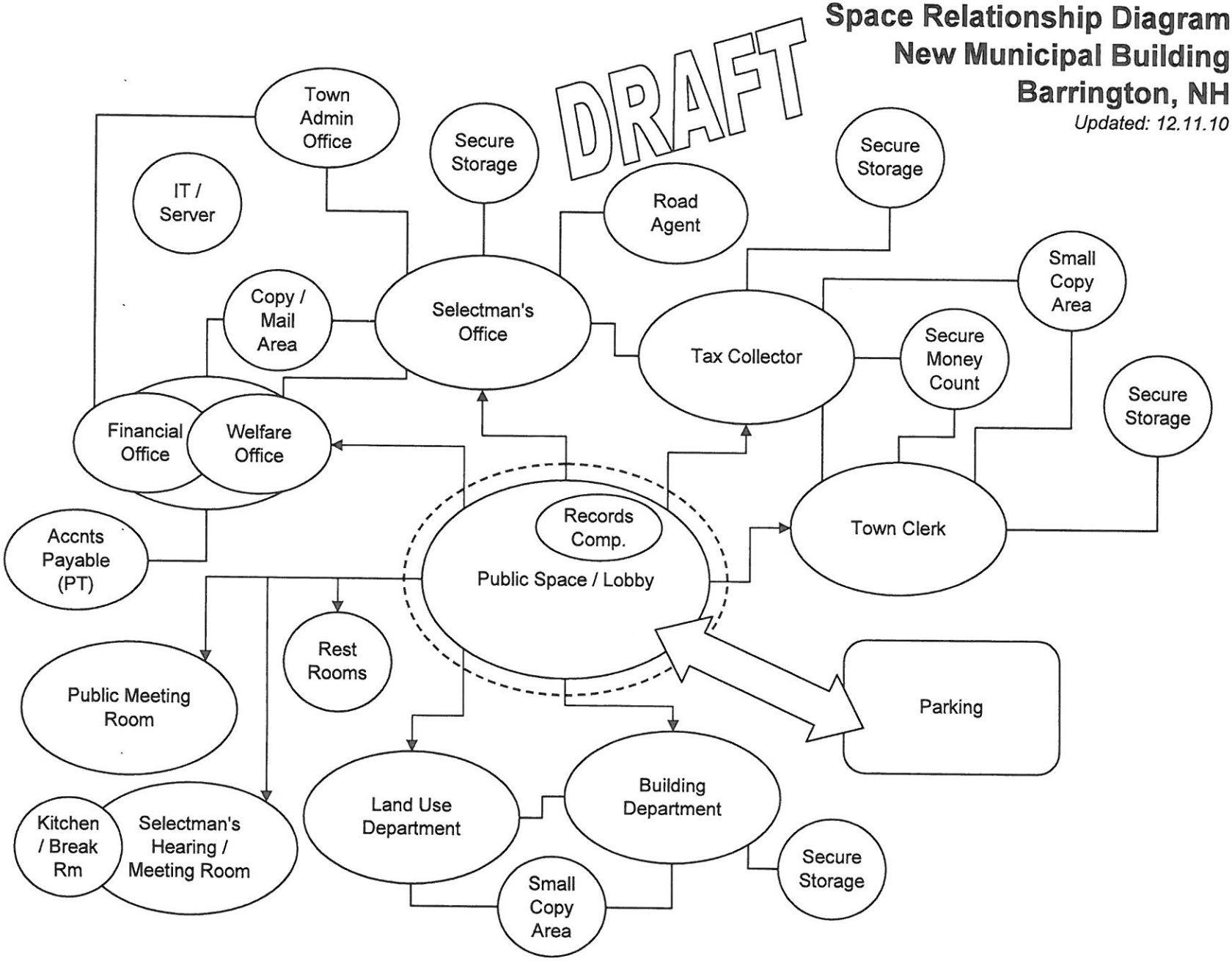
Present room is too large and unused
Temperature controlled (AC needed)

Lobby

Access to all transaction windows
Hard Floor Surface
Acoustic Baffles on wall
Records computer terminal

Space Relationship Diagram
New Municipal Building
Barrington, NH

Updated: 12.11.10



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Space Program
New Municipal Building
Barrington, NH
Updated: 12.11.10

		Existing Space (Premold)	Existing Space (Temp Area)	06 Team Design Plan	Selectman Plan	Requested*	National Average	TTG Suggested	Comments
Selectmen's Office	3	790 sf	795 sf	790 sf	950 sf	800 sf	480 sf	700 sf	
Shared Mail / Copy Area	0						120 sf	120 sf	Shared Copy Room
Town Administrator Office	1	125 sf	0 sf	125 sf	200 sf	160 sf	140 sf	140 sf	
Shared Conf Room	0			130 sf			160 sf		Possibly shared / scheduled (with Welfare)
Finance/Welfare Office	2	620 sf	0 sf	620 sf		360 sf	360 sf	450 sf	
Interview / Conf Room	0				100 sf	80 sf	160 sf	180 sf	Possibly shared / scheduled (with Town Admin)
Road Agent Office	1	195 sf	0 sf	160 sf	150 sf	160 sf	140 sf	180 sf	Possible shared office with several transit people
Facility Manger Office	1			150 sf					
Tax Collector Office	3	285 sf	425 sf	345 sf	750 sf	350 sf	480 sf	350 sf	
Private Money Counting Area	0					100 sf	120 sf	120 sf	Private area - Seating for 3-4 people shared between Clerk and Tax
Town Clerk Office (Private office)	1	285 sf	425 sf	120 sf	150 sf	160 sf	140 sf	140 sf	
Asst Town Clerk Office (wk area)	2	265 sf		395 sf	850 sf	400 sf	360 sf	420 sf	
Vital Record	0			140 sf					
Shared Copy Area	0							120 sf	Shared
Building Dept	1	870 sf	870 sf	590 sf		480 sf	360 sf	360 sf	
Building Inspector	1			155 sf	150 sf	140 sf	140 sf	140 sf	
Asst. Bullidng Inspect (Health)	1			100 sf		100 sf	140 sf	120 sf	
Planning / Zoning / Conservation	3	845 sf	845 sf	695 sf	700 sf	845 sf	480 sf	750 sf	
Planning Conf Room	0			150 sf	150 sf		120 sf		
Land Steward	0			180 sf					
Shared Copy Area	0							120 sf	Shared
Selectman's Meeting Room	0	1300 sf	1300 sf	1300 sf	2400 sf	1300 sf	1200 sf	1200 sf	
2nd Public Meeting Room	0	855 sf	0 sf	855 sf		850 sf		600 sf	Ideal if there is space
Break Room (Kitchen)	0	150 sf	205 sf	260 sf	375 sf	200 sf	225 sf	250 sf	Away from public space
Male Restroom (upstairs)	0	90 sf	0 sf	55 sf	100 sf	100 sf	150 sf	150 sf	
Male Restroom (downstairs)	0			55 sf					
Female Restroom (upstairs)	0	90 sf	0 sf	55 sf	100 sf	100 sf	150 sf	150 sf	
Female Restroom (downstairs)	0			55 sf					
Unisex Restroom	0	30 sf	30 sf					50 sf	Ideal if there is space (staff use)
Supply Storage	0	155 sf	155 sf	155 sf		150 sf	100 sf	100 sf	
Storage	0	90 sf	175 sf	160 sf	225 sf		300 sf	300 sf	
Storage Room 2	0	105 sf		115 sf					
Storage Room 3	0	110 sf		45 sf					
Records Room	0	370 sf	370 sf	370 sf	800 sf	740 sf	600 sf	600 sf	
Server Room	0	355 sf	355 sf	155 sf	100 sf	175 sf	120 sf	120 sf	
Janitor	0	85 sf	85 sf	85 sf	150 sf	85 sf	75 sf	75 sf	
Spare Offices	0	330 sf	155 sf						
Recreation	0				200 sf				
Subtotal:	20	8395 sf	6190 sf	8565 sf	8600 sf	7835 sf	6820 sf	8005 sf	
Circulation & Structure (25%)		2098.8 sf	1547.5 sf	2141.3 sf	2150 sf	1958.8 sf	1705 sf	2001.3 sf	Average % for most buildings
Mechanical (10%)		839.5 sf	619 sf	856.5 sf	860 sf	783.5 sf	682 sf	800.5 sf	Average % for most buildings
Total:		11333 sf	8356.5 sf	11563 sf	11610 sf	10577 sf	9207 sf	10807 sf	

Notes: *If the requested space was not commented on being bigger or smaller then it was kept the same size it currently is
All spaces are plus or minus 5% depending on fitting into a floor plan.

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