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Stella Lensing

Symmes, Maini, McKee Associates, Site Department

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Public Schools as Open Space and Recreational Resources in Massachusetts

Stella Lensing, Landscape Designer
Symmes, Maini, McKee Associates, Site Department

Introduction

In the United States, public school land provides valuable and accessible open space and recreational resources to the communities in which they are located, contributing to the existing network of greenways. There are 351 towns and cities within Massachusetts with 1,934 schools and approximately 980,459 students (www.educationbug.org). Massachusetts is 5,284,440 acres (2,138,536 ha ±) in area and has a population of slightly over six (6) million people according to the 2000 Census. The existing bicycle and long distance trail network in Massachusetts comprises approximately 1,483 miles (927km) (MassGIS, 1999, 2004) and there are 1,382,723 (560 000 ha ±) acres of protected open space (MassGIS, 2009). Approximately 145,173 acres (58 750 ha ±) of the protected open space is classified as recreational open space. About 48,472 acres (19 615 ha ±) of recreational open space is part of school property in Massachusetts. The average acreage of school properties (including public and private institutions) is approximately 43 acres, indicating sizeable amounts of protected open space accessible for recreational use. In other words, about 10% of protected open space statewide is classified as recreational land, and 3.5% is school land.

Background

A brief history of public school design in the 19th century and in the 20th century in the United States reveals how schools have evolved from one-room school houses to highly sophisticated facilities in our towns and cities. Brubaker (1998) reports that schools were typically two to four storey buildings located on small sites. These schools were built on quarter-acre sites and the playgrounds were about one tenth of an acre (Brubaker, 1998). In the 1890's, the designs started to change and a three-story 16-room school classroom building with a larger site became more common (Brubaker, 1998). By the late 19th century and early 20th century, schools became larger and schools were built on 5-10 acre lots. After World War II, school design changed and new construction of schools took place due to the necessity created by the baby boom, resulting in overcrowding. These structures, influence by "Modern Architecture", were simple and inexpensive to build and renovate (Brubaker, 1998). Since the 1950's schools have experienced increases and decreases in student enrollment numbers due to several factors, specifically change in population and overall birth rate fluctuations within communities. The baby boom influenced a rise of elementary school-age students and when these students where in high school in the 1960's it led to these schools being either renovated or re-built to satisfy demand (Brubaker, 1998). There was brief hiatus in construction activity until the late 1980's when it was clear that, due to neglect and a change in demographics, that

school facilities were in short supply and the existing schools were either outdated or dilapidated. The 1990s saw a renewed increase in school design and construction (Graves, 1993). There are three main reasons for new school construction: An increase in student enrollment; a change in educational program requirements; and the need to remodel and renovate existing school buildings in disrepair (Graves, 1993). In Massachusetts, many communities have identified the need to replace or renovate their schools for one or all of these reasons.

Goals and Objectives

This paper explores two questions. Firstly, is there a relationship between new school projects and open space resources through planning and design of schools in Massachusetts? Secondly, do schools strategically form part of a larger greenway and open space network in Massachusetts?

Methods

Considering the research questions stated above, this paper examines three case studies of schools designed by SMMA within the past ten years to find out whether there is a relationship between new school projects and open space resources. The chosen projects are located in three communities in Massachusetts with varying population densities and sizes. In Somerville, an elementary school located in a dense urban city was replaced. Swampscott High School, located in eastern Massachusetts found a new site to house the school building and associated fields. Hudson High School strove for a new school building to replace the old while preserving pristine playing fields and a stadium. Information about these case studies was acquired through personal communication with design team members of these projects at SMMA.

Discussion

The Dr. Albert F Argenziano School at Lincoln Park, Somerville Massachusetts

The Dr. Albert. F Argenziano School at Lincoln Park in Somerville is a school (grades K-8) located adjacent to a public recreational field of approximately 7.8 acres (3ha ±) along Washington Street. The school is bounded by a commuter rail and Washington Street in Union Square on the north, and a dense residential street on the southern boundary. The City of Somerville is located approximately two miles (3.2km) north of Boston, occupying about four square miles (1 065 ha ±) with an estimated population of 77,500 as of the 2000 Census (Somerville City Web site, 2008). Approximately 5.5% of the land in Somerville is classified as open space (MassGIS, 2009).

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In 2004, SMMA was selected to redesign a new elementary school. One of the major challenges was the limited space available to construct a new school while keeping the existing school in operation for the duration of the construction activities (Lukacic, 2010). Designers initially planned to build the new school on Lincoln Park, a City park, adjacent to the school in order to decrease the disruption of the students and teaching staff. After the completion of the proposed school, the land that contained the old building would be restored as recreational open space to compensate for the land used to house the new school. SMMA produced three alternative solutions for the exact location of the new school of which one was chosen. However, the neighbours were not in favour of this alternative, as it would change access to the ball field and change the view from their homes (Lukacic, 2010). After much debate, it was agreed that the new school would be constructed on the same parcel of land where the existing building was located. This posed the problem of finding a place where the students and staff could be housed for the duration of construction of the new school. At the time, two abandoned schools became available to the city for use as schools for the duration of construction. Students and staff were divided and required transportation to these two separate locations for two years. In addition to the social impact of separating friends, siblings, and colleagues, the city also had to spend more resources on upgrading these facilities to a suitable standard (Lukacic, 2010). While this turned out to be a temporary social hardship for the community, the benefits seemed to outweigh the costs. During the demolition and construction phases of the project, a portion of the park was used as a staging area for construction activities, facilitating access to the site from Washington Street and the minimizing the impact of construction activities on traffic. In addition, students did not experience disruption to their school days due to construction and there were no safety concerns associated with construction activities for students. Once the construction had been completed, the public park was restored and the facilities were upgraded, providing the community with an improved park. According to Lukacic, additional benefits of the final design and location of the building are:

- The building acts as a visual and acoustical buffer between the park and the commuter rail line. The building was also acoustically designed to block out the train noise from the classrooms (Poinelli, 2010).
- The school has a greater civic presence because of its close proximity and relationship to Washington Street, a major thoroughfare of Somerville.
- The original integrity and contiguous nature of the open space has been retained; and the new school did not require any land from the City Park.

Lukacic also points out a few points to ponder about the final design:

- The park is not visually accessible from Washington Street and therefore it is not known as a destination to visitors or newcomers to the city. The park is more like a neighbourhood park instead of the city park that it is.
- Although the school has a greater civic presence, the park does not enjoy the same status.

Somerville is a very densely populated community with limited land resources. Connections to other parks within the City and opportunities for future connections into a greater greenway network system seem minimal, if they exist at all. SMMA, together with the community, were able to design a new school while still protecting the integrity and character of a precious resource in Somerville.

Swampscott High School and Senior Centre, Swampscott, Massachusetts

Swampscott is a densely populated seaside community with only 3 square miles (800 ha ±) of land, located 15 miles (24km) north of Boston. The town has limited land resources with only 17% of the land classified as open space (347 acres/140 ha) (MassGIS, 2009). The town has a population of approximately 13,000 (Swampscott Town Web Site, 2010).

The development of public facilities is a constant challenge in this community due to the limited land resources. The existing High School was originally designed as a Middle School and no longer served the needs of the community. In 1958 the school received an addition and was converted to the High School. In 2002, as part of a SMMA conducted system-wide masterplan, the town identified six possible locations for a new high school (Poinelli, 2010). When SMMA was awarded the project to design the new high school it was evident that the town did not have any land available to accommodate the new school. The existing school site was not a suitable choice to develop the new school for numerous reasons (Lawlor, 2010). Various proposals called for locating two schools (during construction) with double the number of students, requiring triple the number of parking spaces on a site that could barely accommodate one school (SMMA, 2003). In addition to size constraints, there were also potential environmental impacts on the site and traffic impacts to the neighbourhood. All these proposals also required a taking of land from an adjacent landowner that was not keen on having a large school as an abutter. The overall cost to construct the new school would have been far higher than constructing a new school on an alternative site (SMMA, 2003). Philips Park, a well utilized park serving its surrounding neighbourhoods in the downtown area, was originally selected for the new school but was found unsuitable due to soil issues, the presence of a wetland and the loss of a well-used public park (Lawlor, 2010). It was concluded that Swampscott really did not have any land available to build a new school. The town then decided upon Jackson Park, twenty-four (24) acres (10 ha) in size, as the most suitable location due to its geographical location and because the supporting infrastructure was already in place (Lawlor, 2010). Jackson Park had recreational amenities including ball fields, an ice-skating rink, a federally protected wetland, and an undeveloped woodlot with an abandoned scout camp. It is bounded by a small neighbourhood elementary school in the west and by an active quarry site in the east. One of the constraints of building a new school on open space and parkland within a town is that the land is protected from development. Therefore, the town generated the idea to exchange land under Article 97 of Massachusetts General Laws. This meant that for every one acre of public land that was taken to build the new school, the town had to exchange two acres of land comparable in quality. The

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design team at SMMA was able to limit the development of the new school to ten and a half (10.5) acres (4.3 ha ±) of protected land at Jackson Park, and were able to compensate the use of this land with twenty-six (26) acres (10.5 ha ±) of land that was equally suitable for recreational fields. The twenty-six acres is comprised of a 5.7-acre (2.4 ha) easement that was donated by an adjacent landowner, Aggregate Industries, and the land reclaimed as recreational facilities, including an easement, from the Tedesco Country Club directly adjacent to the Forest Avenue High School site. The future Swampscott extension of the Marblehead Rail Trail is located between the Forest Avenue site and the Tedesco Country Club easement, linking Swampscott to Marblehead and Salem (Rails to Trails Conservancy, 2010). This trail will link open space and recreation resources at Forest Avenue and the Tedesco Country Club in Swampscott to cultural and natural resources in Marblehead and Salem.

At the same time Swampscott was in great need of two facilities, a new High School and a new Senior Centre. When planning for the new High School began in 2001, the community recognised the need for a new senior centre and proceeded to creatively meet the needs of both these age groups simultaneously (Poinelli, 2008). Since land was not available to accommodate two separate facilities, the town had to make a decision. The solution is a 200,000 square foot (18 580m²) high school with a 7,500 square foot (697m²) senior centre that opened in 2007. There are several benefits to combining these two facilities: The financial benefits include reduced construction costs from shared central mechanical and electrical systems, reducing the cost of having duplicated systems as well as economy of scale. Additional benefits include the new-found social connection between students and senior citizens. Students provide seniors with tutorials on computer skills, email, cell phone use, and the use of other digital devices. Seniors teach students lifestyle skills such as cooking (Poinelli, 2008). In addition to the extended open space network, the new school also provides other community resources. An indoor walking track is located within the school building and is accessible to the senior centre, making it accessible to the public without compromising the safety of students.

Hudson High School

Hudson is a town located in the central part of the state, located about 40 miles (64km) west of Boston. The town has a population of approximately 15,000 and is 7,600 acres (3 076 ha) in size. Hudson has 1,102 acres (446 ha) of open space (14.5% is protected as open space) (MassGIS, 2009). The town of Hudson selected SMMA to design a new High School in 2000. Hudson High School is located along the Assabet River. The school site is located on three parcels of land comprising approximately 50 acres (21 ha ±) including the school structure, parking areas, athletic fields, track and football stadium. The Assabet River lies along its easterly border and a vegetated wetland is located on the northeast portion of the site with adjacent residential communities to the south and west.

The project included the demolition of the existing structure following the construction of a new 222,000 square foot (20, 625m²) building. Since the original high school property contained fields and a track and football stadium that had to be retained in place, it was a challenge to design a school with a new and extended program that would fit on the site during the construction phase, while maintaining operation of the existing school. The shape of the structure was influenced by the site conditions and constraints. The school was designed to wrap around the existing structure and consists of two storey classroom spaces facing the Assabet River with public spaces including a library, gymnasium, cafeteria, and auditorium. The academic wings include classroom arranged in pods wrapping around large group instruction spaces. This unusual configuration facilitates 21st Century educational theories (Poinelli, 2010). Access to the classroom and the public spaces can be controlled independently, allowing for the use of these spaces beyond school hours. This design feature promotes the use of this school as a community resource, including the fields and stadium. An additional resource is the special education and early childhood development wing located on the ground floor near the main entrance. High School students gain experience and learn life skills while working in this facility. Members of the community gain an additional day care centre for their young children.

The closest trailhead of the Assabet River Rail trail, a regional greenway, is located about 0.9 miles (1.4km) away where it extends south towards Marlborough, north towards Stow, Maynard, and Acton (Assabet River Rail Trail web site, 2010). The school site has the potential to become an additional trailhead with access to open space and recreational resources such as the Assabet River.

Conclusion

The cases discussed in this paper vary in terms of their size, location, and proximity to greenways and open space networks. School sites comprise a sizeable amount of recreational open space resources state-wide. In Somerville where land is a limited resource, the school planning and design process played a key role in the protection and enhancement of a small neighbourhood park. The original Swampscott High School Site at Forest Avenue is designated as a future termination point for a major bike trail connecting three communities, and the new High School Site at Jackson Park is contiguous with more open space, providing the opportunity for future trail development and open space protection. In a town where space could not be found initially to construct a new school, more open space was found and protected, showing that school construction does play a role in protecting open space resources. In the case of Hudson High School, the recreational and open space resources was a major factor contributing to the location and shape of the new school building, proving that these resources are an important consideration for the school planning and design process. Due to the proximity of the school to the Assabet River Rail Trail, the site has the potential to become a termination point via a trail branching from the Rail Trail.

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Community schools –schools that cater to recreational and cultural needs in addition to the educational needs of children have become a staple (Graves, 1993). In these three cases, the building committees pursued a process of community engagement where residents were very much involved in the planning and design process of their schools in order to better integrate these facilities and provide services to the community. The construction and planning of new schools can be a useful tool for communities to protect open space resources, and increase the connections to a regional greenway network. However, it is not clear from the research done here whether designers and communities are aware of and do consider local connections to greenway networks during the planning and design phase of a new school project.

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