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The Philadelphia Girls' Rowing Club: An
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the Requirements for the Degree of Master of Science in Historic Preservation 2005.
Advisor: John D. Milner

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**THE PHILADELPHIA GIRLS' ROWING CLUB:
AN INCREMENTAL HISTORIC STRUCTURE REPORT**

Anna Stillner

A THESIS

IN

Historic Preservation

Presented to the Faculties of the University of Pennsylvania in
Partial Fulfillment of the Requirements for the Degree of

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INTRODUCTION

The Philadelphia Girls' Rowing Club sits on the east bank of the Schuylkill River in Philadelphia's Fairmount Park as part of a string of boathouses known collectively as Boathouse Row. A stone structure built in 1861 to house the Philadelphia Skating Club, the boathouse is the oldest house on boathouse row and bears the distinction of being one of the oldest continually occupied recreational structures in the country. Since the Philadelphia Girls' Rowing Club's occupancy in 1938, the structure also stands as one of the oldest women's recreational facilities in the country, the Philadelphia Girls' Rowing Club being one of the first women's rowing clubs to be established in the United States.¹ As part of Boathouse Row, a National Historic Landmark, the structure also neighbors the historical boat clubs of the Schuylkill Navy, founded in 1858 and considered the oldest sports governing body in the United States. Although some documentation already exists on the structure, understandably with all of its historical associations, no Historic Structure Report has been prepared for the building. Through undertaking a detailed investigation of the structure, one may inform future decisions concerning the maintenance and preservation of this significant boathouse. This paper seeks to examine the boathouse by documenting the cultural and design context in which the structure was built, investigating the condition of the structure, and describing the measures that may be taken to preserve it.

¹ Both Wellesley College, the oldest surviving organized women's rowing program (1875), and ZLAC Rowing Club, Ltd., recognized as the first women's rowing club in the United States (1892, San Diego), predate the organization of the Philadelphia Girls' Rowing Club. This latter club, however, did not build their permanent clubhouse on Mission Bay in San Diego, California until 1932. Wallace, "The ZLAC Rowing Club," 22.

The first part of the report will establish the historical significance of the Philadelphia Girls' Rowing Club by documenting its historical and cultural context. Through archival research and physical examination, the building's evolution and chronology of use will be outlined. Besides describing the early club history and background of the Philadelphia Skating Club and Humane Society and its transition to the Philadelphia Girls' Rowing Club, the narrative report will discuss the building's design and construction, including a profile of Philadelphia architect James C. Sidney, to whom the building's design is attributed. The developmental history of the section will conclude with a physical description of the building, complete with a description of modifications and structural stabilization work, as well as documentation of all exterior elevations and floor plans.

The second part of this report will assess the condition of the Philadelphia Girls' Rowing Club to determine the relative impact on the building's structure and character. Through on-site investigation, a conditions assessment survey was conducted, which describes the conditions of the building materials, elements, and systems and causes of deterioration. Conditions assessment mapping of all elevations and photographs of the building depict current conditions and problems. This section also provides a discussion of the materials testing and analysis performed as part of the study, specifically that of paint and mortar. Targeted for specific areas on the building, the testing and analysis presents a more accurate historic profile of the building and will contribute to future conservation projects.

The third part of the report will consider treatment and conservation strategies recommended to meet the preservation objective of the Philadelphia Girls' Rowing Club

building. An important factor will be the need for planning to prevent unnecessary deterioration of the structure in the future. The various preservation options will be prioritized in order to facilitate future conservation action. The last part of the paper will address the question of how one appropriately maintains and rehabilitates a recreational structure of historic value which is very much in use today.

Through an examination of the building's history and existing physical conditions, as well as the mechanisms of deterioration and financial constraints, this thesis will serve as the foundation for a program for the Philadelphia Girls' Club's stabilization, rehabilitation, and preservation. Such a program will reinforce the historic integrity of the boathouse and add to the significant cultural and historic character of Boathouse Row and the surrounding area.

SECTION I - DEVELOPMENTAL HISTORY AND SIGNIFICANCE

CHAPTER 1: HISTORICAL BACKGROUND AND CONTEXT

“The Schuylkill, sacred to the barge of mirth,
Its green banks consecrate to pleasure’s paths.”

“Fairmount! on whose tall top the waters lie,
Lifted as in a great baptismal font;
The height from whence the river deity
Pours, from his giant and refreshing urn,
The stream which slakes a grateful city’s thirst.”

“In the far landscape, winding slow,
---- the silvery line
Of tranquil Delaware.”

“Here, stranger, stay! these are the sacred grounds
Which knew the patriots in the days ago.
Here trod the noblest from the land has known.”

- *The New Pastoral (1855)*¹
Thomas Buchanan Read

In looking at the Philadelphia Girls’ Rowing Club today, one sees a structure largely unchanged from the days in which it was built. Situated between the boathouses of the Undine Barge Club (#13 Boathouse Row) and the Sedgeley Club (#15 Boathouse Row) on the east bank of the Schuylkill River, the Philadelphia Girls’ Rowing Club sits as one of the first permanent recreational buildings to be built along the river at that time. Its physical presence, along with the other boathouses of Boathouse Row, serves as a reminder that Philadelphians used the Schuylkill River for more than a source of water supply, but for recreational uses as well. However, whereas the other neighboring boathouses catered to the recreational activity of rowing, the Philadelphia Girls’ Rowing Club is the only building to have serviced the recreational needs of skating, as well.

¹ *Fairmount Park* (Philadelphia: Claxton, Remsen, and Haffelfinger, 1871), 8. Excerpt from the long poem *The New Pastoral* (1855) dealing with American pioneer life by Thomas Buchanan Read (1822-1872).

Indeed, when the City Councils authorized its construction in 1860, the stone building housed the headquarters of the Philadelphia Skating Club and Humane Society.

Prominently placed downstream from the bend in the Schuylkill River, the Club operated to cultivate the popularity of the sport, as well as to lead life-saving and rescue missions on the ice. This location not only ensured good surveillance and easy access to the water, but also served to anchor the string of boat and barge clubs that would emerge on the Schuylkill's east bank from the 1860s to the early 1900s. Over the years, these boat and barge clubs, with their parent organization, the Schuylkill Navy, gained national and international renown and firmly established Philadelphia's name in rowing history. Through their rowing prowess and regattas, they became one of the most notable features in Philadelphia. Thus, the two-and-a-half-story structure which today is home to the Philadelphia Girls' Rowing Club represents an important part of Philadelphia's history by referencing its recreational needs and use of the Schuylkill River, as well as becoming part of the acclaimed Boathouse Row.

In evaluating the full significance of the Philadelphia Girls' Rowing Club one must look at the historical context in which it was built. Understanding the importance of the Schuylkill River and its role within the city of Philadelphia provides much needed background in the events leading to the building's construction. To begin with, one must acknowledge that Philadelphia has always been a city inextricably linked to and closely defined by the river waters that border its Center City. When William Penn (1644-1718) founded the city of Philadelphia in 1682, he foresaw a "greene Country Towne" spreading between the Delaware and Schuylkill Rivers.² He contracted Thomas Holme

² Weighley, *Philadelphia: A 300-Year History*, 1.

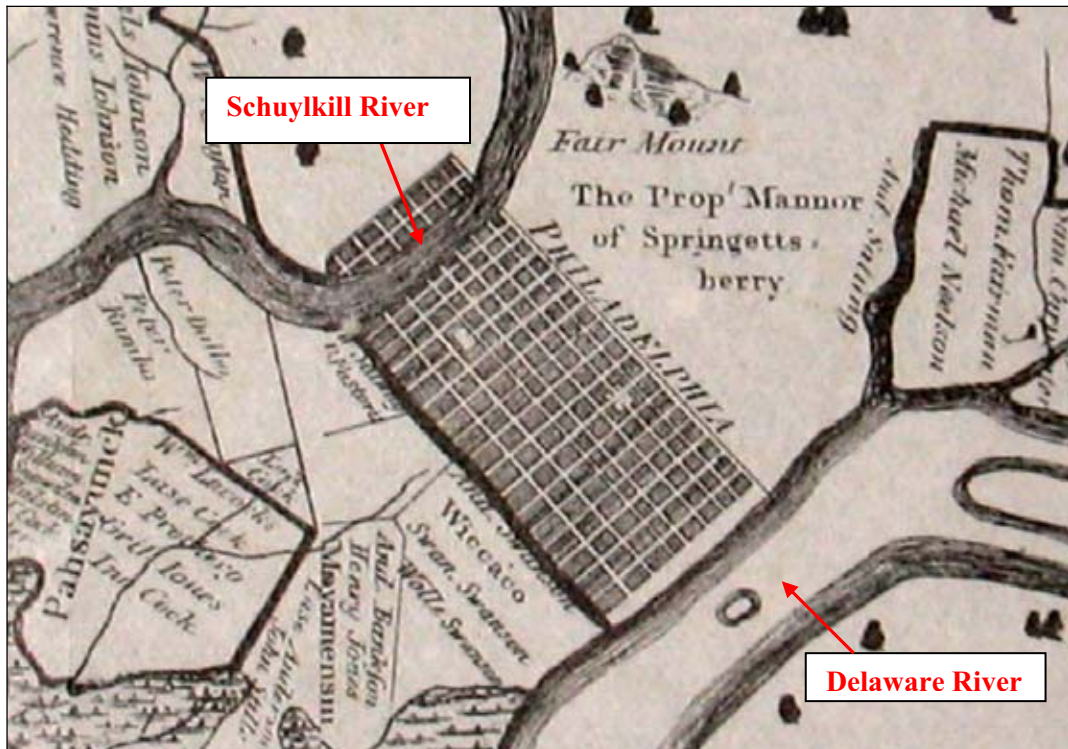


Figure 1: Detail of Thomas Holme Map of Philadelphia, 1681. (Facsimile. Free Library of Philadelphia, Map Collection.)

(1624-1695), his chief surveyor and planner, to design the layout of the city in a rectangular grid pattern with wide streets and several public spaces.³ This design, incorporating lots large enough to prevent the spread of fire, would prove to be the inspiration and format for most American cities. Philadelphia's location upon the narrowest part of the peninsula between the two rivers ensured that, as the city grew, the Delaware and Schuylkill Rivers would play a vital role in the city's development. In addition, Philadelphia was on a fall line, or the boundary separating the Piedmont plateau from the coastal plains, and thereby internally channeled by streams that could supply abundant water power.⁴ This characteristic would prove advantageous, in comparison to

³ Ibid., 4. The planned city was a rectangle of 1200 acres, stretching two miles in length from east to west beneath the two rivers, and one mile in width from the north to south. Ibid., 5.

⁴ Sweeney, *The History of the Penn Athletic Club Rowing Association*, 8.

other seaport cities - except, perhaps, Baltimore - and the Schuylkill River would soon become the main source for water in the city.

At the time of its founding, Philadelphia was part of a 45,000 square-mile grant in the New World that England's King Charles II gave to William Penn.⁵ Bestowed in order to pay off the loans Penn's father made to the King, the land was named Pennsylvania or "Penn's Woods". In what would turn out to be a successful marketing plan, Penn began selling land parcels to the Quakers and other dissenters, promising them religious freedom and the hope for starting a new life abroad. Before their arrival, the land was largely occupied by the Delaware (or Lenni-Lenape) Indians and various trading posts run by the Dutch, Swedes and Fins.⁶ Areas, such as the Schuylkill Valley and the Wissahickon Valley, which follows the Wissahickon Creek to the Schuylkill River, were covered with dense woodlands, rock outcroppings, and ancient trees. However, this peaceful, forested area which greeted the early colonists would not remain pristine for long. Their arrival upon the shores of the Delaware ushered in a period of rapid change and development, with Philadelphia soon becoming the political, cultural, and industrial capitol of the New World.

Although the early colonists settled near the shores of the Delaware River and quickly made the area bounded by Vine Street to the North, South Street to the South and Main Street to the West their central core, they eventually expanded outwards. By the late eighteenth century, the Schuylkill River, which once had served as a removed

⁵ Ibid., 4.

⁶ In the early 17th century, the Delaware Indians occupied the site of Philadelphia, living in villages as well as settlements within or near the current city limits. However, by the mid-century, the Delawares had been pushed north and east and they sold the whole western shore of the Delaware River to the Swedes and the Dutch.

Weighley, *Philadelphia: A 300-Year History*, 3.

boundary to the city, had become an integral part. Before this transpired, however, the river was used primarily as a place to fish by the Lenape and the early European settlers. The Lenape called the Schuylkill River "Ganshowahanna" or "falling waters," after the falls at what is now the western border of Philadelphia. It was also known as "Manayunk," or "where we drink," and a section of Philadelphia still goes by that name.⁷

When the Dutch came upon the Schuylkill River in 1628, they called it Varsche Rivierte or "little fresh water rivers." Indeed, the waters were always noted for being purer and colder than those of the Delaware River.⁸ The Schuylkill River's name is Dutch for "hidden creek" or "Schuyl Kil" and effectively describes the river at that time. Although used as a highway into the interior of the state, the Schuylkill River was primarily used as a location to fish, swim, and ice skate, as well as to perform baptisms.

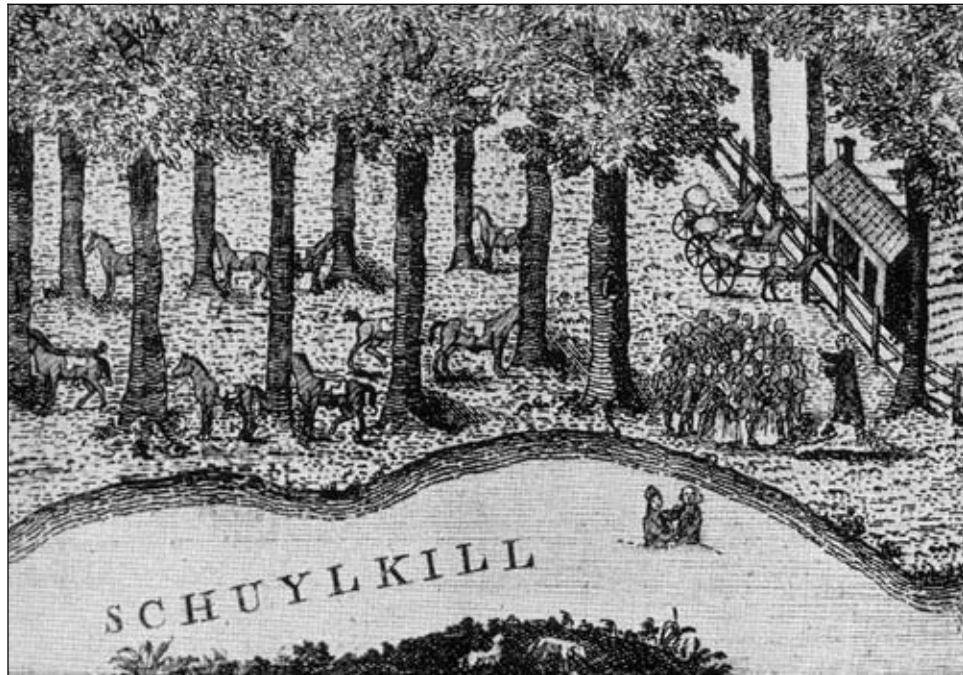


Figure 2: The "Baptisterion" at Spruce Street, Schuylkill River, as it was prior to the American Revolution. (Lithograph. *Fairmount Park* [Philadelphia: Claxton, Remsen, and Haffelfinger, 1871] 13.)

⁷ Lewis, *The Redemption of the Lower Schuylkill*, 4.

⁸ *Ibid.*, 2.

Yet, its distance from the more populated sections of the city prevented more residents from using its resources. Surrounded by groves of sycamores, oaks and willows, the Schuylkill River resembled a concealed, out-of-the-way sanctuary.

However, as the city's populations grew and more and more people were looking for recreational outlets, the Schuylkill became increasingly used for pleasure and recreation. With this increased activity, inns and hotels appeared along the riverbanks to cater to those who wished to use the area for fishing, hunting, sleighing or skating. One can imagine that the picturesque, rural setting would have been a refreshing change for those seeking an escape from city life. Yet, the early solitude and wilderness of the river was a feature of the past and would only become more developed, as civilization encroached upon the area during the eighteenth and early nineteenth centuries.

The next major change to the Schuylkill River occurred with the construction of the Fairmount Water Works and the Fairmount Dam in the early 19th century. Their erection in 1812 and 1819, respectfully, altered the characteristic of the river from that of a rushing, tidal stream to a calm, freshwater lake. The change was so dramatic that it eventually suppressed the Falls of the Schuylkill, further upstream. Stemming from the city's desire to secure a constant supply of uncontaminated drinking water after a devastating yellow fever epidemic (then thought by some to be a waterborne disease),⁹ the Fairmount Water Works was erected on the eastern bank of the Schuylkill at the base of hill, Fair Mount. The initial use of steam engines to pump the water eventually gave way to water power and the City built a dam across the river to power the water wheels.¹⁰

⁹ Klein, *Fairmount Park: A History and a Guidebook*, 15.

¹⁰ Frederick Graff, a Philadelphian engineer, designed and built the dam and mill house of the Waterworks. He was the driving force in changing to the hydraulic system by which the waterwheels supplied power. As a result of his influence and innovation, Philadelphia's water system became the most advanced



Figure 3: John T. Bowen, *View of Fairmount Waterworks with the Schuylkill River in the Distance*, 1838. (Lithograph. Free Library of Philadelphia, Print and Picture Collection.)¹¹

As a result, the river above the dam became a relatively calm, flat surface - ideal for rowing and, when frozen, skating.

Thus, it came as no surprise that the river soon became a center for rowing and racing sculls. Early boat races were common and many amateur rowing clubs formed. Although some sources claim that the University of Pennsylvania and the Atlanta Boat Club of New York City raced as early as 1801, the first recorded regatta on the Schuylkill occurred in 1833 between the Blue Devil and the Imp Barge Clubs.¹² With the increasing popularity of rowing, professional rowers began to dominate the sport and many races often involved gambling and bribery. In a movement to prevent the corruption and fixed

municipal system in the world, at that time. Visitors traveled from all over to marvel at the technological wonder and to admire the handsome buildings.

¹¹ By the mid-1800s, the Fairmount Waterworks and reservoir were among the best-known tourist attractions in the United States. J.T. Bowen's 1838 lithograph is typical of the many scenes produced during this period which depict the waterworks in a picturesque landscape with strolling visitors. Milroy, "Assembling Fairmount Park," 72.

¹² Sweeney, *The History of the Penn Athletic Club Rowing Association*, 21.

outcomes that were becoming so common, the Schuylkill Navy was formed in 1858. The nine Philadelphia boatclubs that then compromised the organization voiced their mission to “secure united action among the several clubs and to promote amateurism on the Schuylkill River.”¹³ In addition, its rules specifically prohibited rowers from accepting any wagered money. Anyone who broke these rules was subjected to mandatory

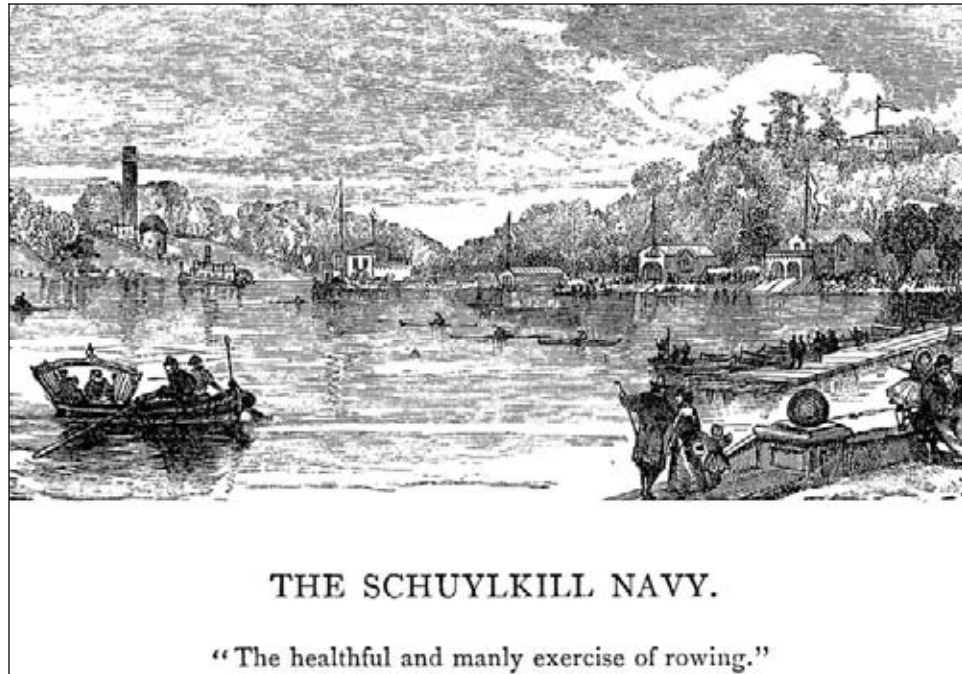


Figure 4: Barges of the Schuylkill Navy. (Lithograph. *Fairmount Park*, [Philadelphia: Claxton, Remsen, and Haffelfinger, 1871] 19.)

expulsion from the organization. The success of the Schuylkill Navy and other similar organizations across the nation led to the decline and eventual extinction of professional rowing.

Today, the Schuylkill Navy is comprised of ten clubs and exists as the oldest sports amateur governing body in the United States.¹⁴ Its purpose, then and now, is to unite the policies of the various Schuylkill River clubs and encourage and promote

¹³ *The Schuylkill Navy of Philadelphia: Her History and Records* (Philadelphia, n.d, ca. 1897-1898).

¹⁴ In actuality, there are eleven current member clubs, but since the last one joined in 2004 and is not located on Boathouse Row, but further upstream, it will not be discussed in this paper. The Club, named the Gillin Boat Club, houses Saint Joseph’s University and the boy’s team of Saint Joseph’s Prep.

amateur oarsmanship on the river.¹⁵ The charter members of the Navy include the following clubs: Camilla, Chebutco, Falcon, Independent, Keystone, Bachelors and Undine. Of these, only Bachelors and Undine now exist, the others being disbanded or incorporated into newer clubs. Current membership of the Schuylkill Navy on Boathouse

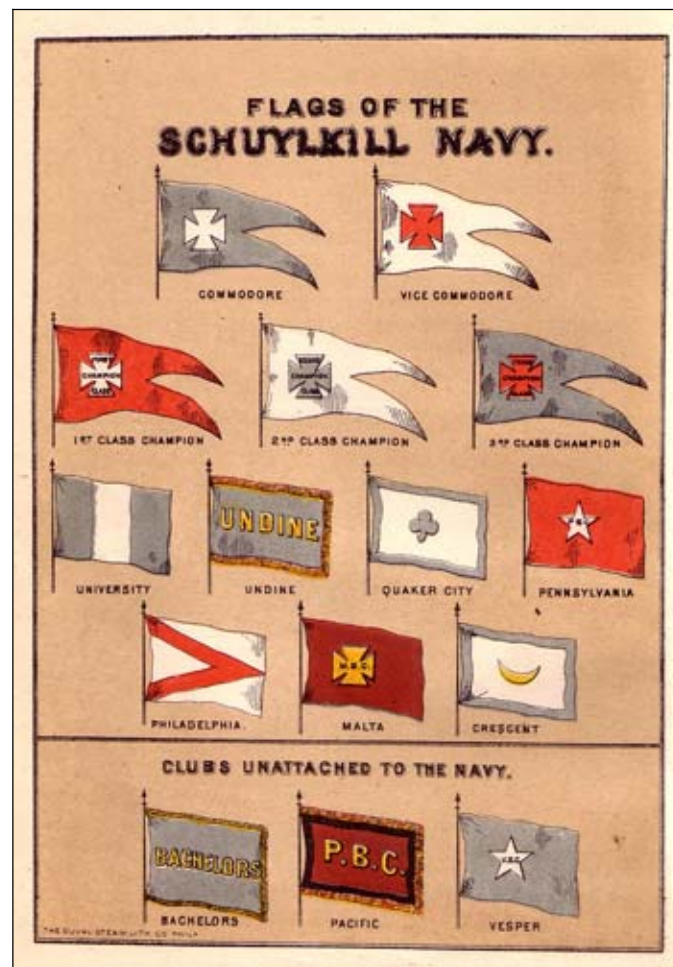


Figure 5: Early flags of the Schuylkill Navy. (Lithograph. *Fairmount Park*, [Philadelphia: Claxton, Remsen, and Haffelfinger, 1871] 20.)

Row consists of the University (joined 1858), Undine (1858), Bachelors (1859, resigned 1870, rejoined 1882), Malta (1865), Crescent (1868), Vesper (1870, resigned 1871, rejoined 1879), College Boat Club (1875), Fairmount (1916), Penn Athletic Club (1925), and Philadelphia Girls (1967). [Please refer to *Appendix A: The Schuylkill Navy and the*

¹⁵ Heiland, ed., *The Schuylkill Navy of Philadelphia*, 12.

Clubs of Boathouse Row for a more complete discussion.] In addition to these, at least 23 other clubs have belonged to the Navy at one time or another during its existence. The majority of these clubs have either dropped out, became inactive or were absorbed by other clubs, most occurring during the Civil War.¹⁶

Over the years, the Schuylkill Navy has participated in many events which helped publicize the growing sport in America and eventually established Philadelphia as a leading force in the rowing world. For instance, in 1872, member clubs formed a rowing escort for the funeral procession of General George G. Meade, the victor at the battle of Gettysburg. In 1876, the Navy hosted an international regatta as part of the Centennial Exposition in West Park, the largest such gathering at that time.¹⁷ Two years later, the Navy gave a rowing demonstration for President Rutherford B. Hayes. They also formed a large water pageant as part of the Constitutional Celebration of 1937, as well as demonstrating for other ceremonial occasions over the years. In addition, many of the Navy's premier oarsmen have been national and international champions. Of these, John B. Kelly, Sr. deserves mention as the first American to win the single in the 1920 Olympics.¹⁸ Previously, a Vesper Boat Club eight had won the 1900 Olympic gold medal. From the four Games of 1920, 1924, 1928 and 1932, all the oarsmen on the United States rowing team were from the Schuylkill Navy with the exception of the eights.

The Schuylkill Navy and its member clubs are very active in rowing and host many annual races. In 1953, the Navy convinced the Dad Vail Rowing Association,

¹⁶ Other clubs that joined but are no longer in existence are the following: Amateur (later absorbed by Bachelors), American, Atlantic, Crescent, Excelsior, Ione, LaSalle (replaced Crescent), Nautilus, Neptune, Pennsylvania (later becoming the United States Rowing Society), Philadelphia (later absorbed by University), Quaker City (absorbed by Fairmount), Union and Washington.

¹⁷ Mendenhall, *A Short History of American Rowing*, 13.

¹⁸ John B. Kelly, Sr. also won an Olympic gold medal in the double and claims 126 consecutive wins and six National titles.

which oversaw the Dad Vail Regatta, to move this regatta to Philadelphia. After years of using a variety of courses, the Dad Vail Rowing Association accepted the Philadelphians' offer to use the Schuylkill River and has remained here since.¹⁹ The Dad Vail Regatta is the largest collegiate regatta in the United States, with over 100 colleges and Universities from the United States and Canada. The regatta takes place during the weekend of the second Saturday of May and signifies the end of the spring rowing season. Other major regattas include the Thomas Eakins Head of the Schuylkill Regatta (sponsored by the University Barge Club), the Philadelphia Frostbite Regatta and the Schuylkill Banks Regatta. The Navy also sponsors other athletic activities, including a basketball league and an annual cross-country race. This running event has been held, with a few interruptions during World War II, since 1899.

¹⁹ Mendenhall, *A Short History of American Rowing*, 95.

CHAPTER 2: CHRONOLOGY OF DEVELOPMENT AND USE

The history of the Philadelphia Girls' Rowing Club is closely tied to the development of Fairmount Park. Built upon city land, The Philadelphia Skating Club and Humane Society, as it was called then, needed to secure permission from the City Councils before beginning construction on its clubhouse. The property that they favored was located along the eastern riverbank of the Schuylkill River, just south of Turtle Rock, and part of newly acquired land in the city's public park, Fairmount Park.¹ By exercising its power to create public parks and squares, a right given to it in the 1854 articles of the Act of Consolidation, the City had declared the property as an area "dedicated to public use as and for a Park, and the said area of ground shall be called and known by the name of 'Fairmount Park'."² Previously known as the Lemon Hill Estate, this property was purchased by the City in 1844.

Before further looking at Fairmount Park's development, however, one must address the history of the Lemon Hill Estate. In 1770, Robert Morris, a prominent merchant and superintendent of finance to the Colonial Government, purchased parcels of land along the Schuylkill and set up his county seat on land known as the "Hills." After a series of bad investments and finding himself financially overextended, Morris was forced to sell his holdings and was imprisoned for debt. In 1798, part of his estate was sold to Henry Pratt, who built the present mansion called "Lemon Hill." The area was embellished with extensive gardens and it became one of the most popular spots of Philadelphia, later known as Pratt's Garden. Finally, after going through various

¹ This land was located just north of the Fairmount waterworks.

² Klein, *Fairmount Park: A History and a Guidebook*, 21.

ownerships, the land was purchased by the City for \$75,000 in 1844.³ Interestingly enough, the City purchased Lemon Hill not for park purposes, but in order to prevent further commercial development and to stave off increased pollution.⁴ However, since the property was outside the old city limits, the City Councils demonstrated reluctance to spend any money on its improvements and, instead, chose to lease the land.⁵ This arrangement lasted until the late 1850s when the City regained full use of the property.

In addition to the Lemon Hill Estate, the City also acquired the adjoining Sedgeley Estate, a tract of 33 acres, in April 1857 and added it to the growing Fairmount Park. Shortly afterwards, they obtained the title to the land between the waterworks and Lemon Hill, in a move which secured the future site of Boathouse Row.⁶ This land was later safeguarded when, in 1867, the Pennsylvania General Assembly set aside a large area bordering the Schuylkill River “forever as an open public place.”⁷

In looking at the early laws pertaining to Fairmount Park’s development, one sees several ordinances pertaining to the demolition and construction of club and boathouses. These ordinances helped to shape the development and aesthetics of the structures which today make up Boathouse Row. For instance, one of the Lemon Hill leaseholders, who used the estate as a beer garden, had allowed several boat clubs to construct houses along the river, but these were deemed shoddy by the City and an embarrassment. So, in 1859,

³ White, *Fairmount, Philadelphia’s Park*, 19.

⁴ There was, however, an influential movement which, besides urging the city to purchase the estate to forestall any future development, identified the growing need for a public park in Philadelphia not only for environmental reasons, but for social ones, as well.

⁵ Making no attempt to develop a public park at that time, the city leased the property for ten years to a local entrepreneur, who sublet the estate’s mansion to be operated as a beer garden. Milroy, “Assembling Fairmount Park,” 75.

⁶ By this time, a growing number of citizens were lobbying for Fairmount Park’s expansion and acquisition of new public land. Besides preserving the Schuylkill River riverscape and surrounding grounds, the expansion would give Philadelphia a park as large as those in the great cities of Europe and rival the new Central Park in New York.

⁷ Fairmount Park Commission. *Laws Relating to Fairmount Park*. Philadelphia: 1933.

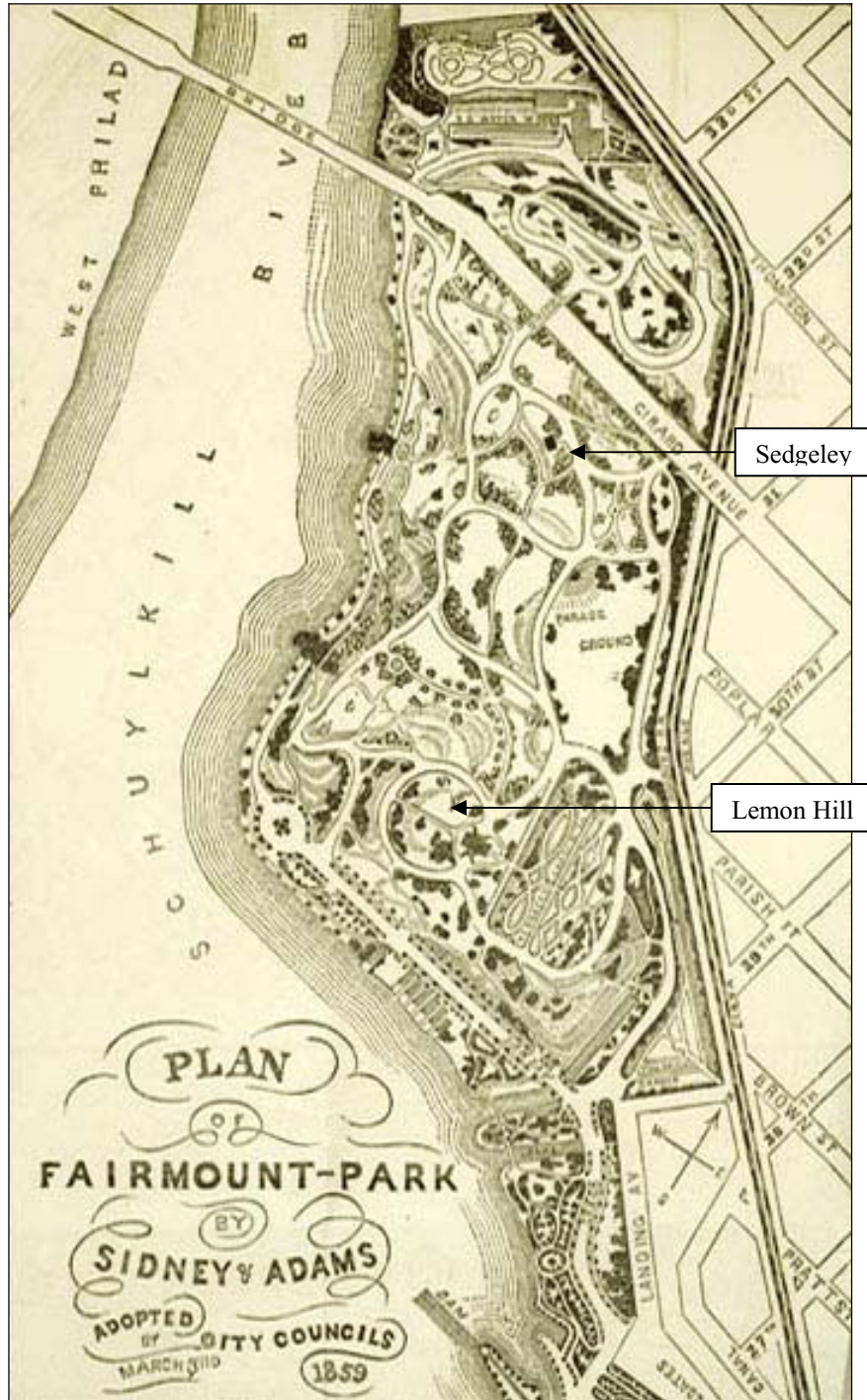


Figure 6: Sidney and Adams, *Plan of Fairmount Park*, 1859. (The Library Company of Philadelphia) Designed by James Clark Sidney and Andrew Adams, the plan provided relandscaping at and around Lemon Hill and included a grand carriage drive along the river's edge. The plan stipulated preservation of as much of the natural terrain and vegetation at Fairmount as possible.

a City ordinance condemned the boatsheds due to their rundown nature.⁸ A year later, the Schuylkill Navy and various boatclubs pressured the City Council to pass two ordinances which further impacted the riverfront development and use. The first ordinance permitted the construction of three boathouses by the Pacific Boat Club and the various clubs comprising the Schuylkill Navy, the second allowed for the Philadelphia Skating Club to erect a house. However, in 1867, the newly formed Fairmount Park Commission advocated the removal of all existing brick houses, favoring stone instead (preferably in the Victorian Gothic style).⁹ For 25 years, the Commissioners refused to even consider plans for any brick houses, in one instance even changing the specifications from brick to stone before granting permission for construction.¹⁰

When the Philadelphia Skating Club submitted their request to City Councils to build a riverbank clubhouse, they reflected the growing popularity of skating as a sport. Formed in 1849 by a group of gentlemen, the Club stated in their Articles of Association that their mission “shall be instruction and improvement in the art of skating, the cultivation of a friendly feeling in all who participate in the amusement, and the efficient use of proper apparatus for the rescue of persons breaking through the ice.”¹¹ The life-saving work of the Skating Club gained such prominence that it drew the attention of the older Philadelphia Humane Society and the two organizations soon merged in 1861 to form the Philadelphia Skating Club and Humane Society. No doubt the life-saving work carried out by its members made the club an attractive presence on the Schuylkill River.

⁸ Fairmount Park Commission. *Laws Relating to Fairmount Park*. Philadelphia: 1933.

⁹ Ibid.

¹⁰ Fairmount Park Commission. *Annual Reports*. 1868-present. Fairmount Park, Philadelphia.

¹¹ Lewis, *Skating and the Philadelphia Skating Club*, 22.

The Philadelphia Skating Club and Humane Society records mention that James C. Sidney was the architect in charge of the clubhouse's final design. Described as a "city architect," Sidney was also involved in staking off a plot of ground for the potential site that the Club's Executive Committee then selected as the spot to build their house. In a history of the Philadelphia Skating Club read at their Annual Banquet in January 9, 1895, this location is described as "a solid point of land projecting considerably out into the fore-bay" and the house as "undoubtedly the best situated on the river."¹² This history acknowledges that the Schuylkill River, as opposed to the Delaware River - a place where "out forefathers learned to skate," was a "long distance to travel for sport without the aid of public conveyance."¹³ However, once the omnibus lines began running to Fairmount in the early 19th century, more skaters were attracted to the Schuylkill River; and the later extension of the horse car system increased the location's accessibility.¹⁴

The Philadelphia Skating Club, and later its merged organization with the Philadelphia Humane Society, was a full-fledged society with elected officers, bylaws, and membership fees, in which its members took their job seriously. Members were required to wear a badge of a small silver skate on their left breast, as well as "to carry a small reel of stout twine, which could be thrown to skaters who had broken through the ice."¹⁵ Safety ladders, ropes, small boats on runners, life preservers, blankets, danger flags, axes and grappling irons were also employed in the rescue missions.¹⁶ By 1859,

¹² Ibid., 35.

¹³ Ibid., 16.

¹⁴ The history of the Philadelphia Skating Club goes on to describe buses and cars hanging out signs reading "Good Skating on Schuylkill" to advertise for the river's sport. Apparently, this proved very successful and hundreds turned out to skate.

¹⁵ *One Hundred Years of the Philadelphia Skating Club and Humane Society*, 6.

¹⁶ The safety ladders were attached with a 100-foot rope and could be shoved out over the ice to be grasped, or used to sustain the weight of a man pushed out to rescue a victim. In addition, the danger flags and ropes were used to mark air holes or weak spots in the ice.

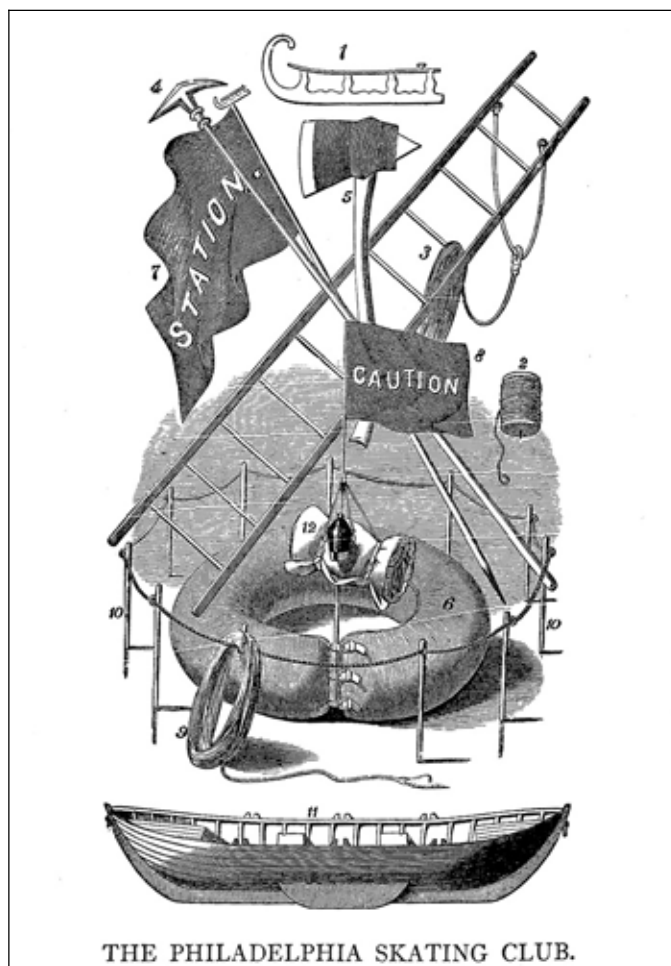


Figure 7: The Philadelphia Skating Club life-saving apparatus. (Lithograph. *Fairmount Park*. [Philadelphia: Claxton, Remsen, and Haffelfinger, 1871] 22.)

Club records list a total of 125 lives saved in the winter seasons and a number of medals were issued to its members for heroic acts.¹⁷ This rescue work also carried over into a police-like surveillance of the grounds, and the Club frequently needed to break up gangs and “rowdies” who participated in petty crimes and intimidated skaters. In addition, the Constitution and By-laws of the club stressed “the instruction and improvement in art of skating” and Club members sought to be fine examples of skaters themselves.

The need for a permanent clubhouse on the banks of the Schuylkill River was a defining moment in the Club’s history. As early as 1855, a movement was made to

¹⁷ Lewis, *Skating and the Philadelphia Skating Club*, 26.

appoint a committee to secure a piece of land on which to build. Early requests to the City were refused and the committee was discharged, until later forming again in January 5, 1860 for a successful application to the City's Committee on Public Property to build in Fairmount Park.¹⁸ The Club would now have a permanent headquarters for their meetings and storage for their ladders and life-saving apparatus.¹⁹ In addition, notes from the Club's Executive Committee also indicate a desire to provide hospitable quarters for new women members:

...as we are about changing our constitution for the purpose of electing ladies as members of the club, an it appears that it would be only just for us to provide some comfortable place for them to repair when becoming cold from being on the ice, as well as providing a comfortable place for ourselves, and a safe and convenient deposite for our apparatus, which is now becoming cumbersome.²⁰

The Club opened a stock subscription list in order to raise money for the construction, seeking assistance from not only their own members but also outsiders. Soon, Club member William S. Andrew was requested to prepare a design for the proposed structure, but was soon forced to increase the size of the house, to 60 feet long by 40 feet wide, in order to accommodate more members and increase dividends for the stockholders. In a calculated move, the Club wanted to include a basement to rent to boat and barge clubs, since the frame houses upon the river bank, that had previously housed them, were slated for removal by the City.²¹ James C. Sidney, a Philadelphia architect elected a member of the Club, altered the plans and prepared specifications for the builder. Once bids were received, the contract was given out October 18, 1860 to E. Bender & Co. (or Bender and

¹⁸ Apparently, the Club used the small amount of money (\$100 dollars) that they gave to the City for its purchase of nearby Sedgely Estate as leverage in their argument as to why they should be allowed to build on City property.

¹⁹ Before the erection of the house, all equipment and life-saving apparatus of the Club was stored at Fricka's Hotel - located downtown - and carried to and from the frozen river every day.

²⁰ Philadelphia Skating Club. Minutes. 1849-1874.

²¹ This city ordinance would also seek removal of the old Star Boat Club's fame house which stood partially in the area where they wanted to build.

Poulterer, contractors) for \$3,200 dollars and the building was completed in the spring of 1861 for a total cost of \$4,990 dollars, well over budget.^{22,23}

In looking at the building's background and development, one must include a description of the primary architect, James Charles Sidney (1819-1881). James C. Sidney was an architect, engineer, surveyor and landscape architect born in England. The Philadelphia Architects and Building Project (PAB), administered by the Athenaeum of Philadelphia, states that Sidney first appears in Philadelphia in the early 1840s employed by John Jay Smith, Librarian of the Library Company, as a cartographer.²⁴ He also worked for Smith's son, Robert Pearsall Smith, a prominent publisher of American maps at this time, producing *Sidney's Map of Ten Miles Around – Map of the Circuit of Ten Miles around the City of Philadelphia* (1847) and his *Map of the Township of Germantown with the Names of the Property Holders* (c.1848). In the mid-1840s, Sidney completed a series of designs for pattern books, most notably six plates published in Thomas Ustick Walter and Smith's *Two Hundred Designs for Cottages and Villas* (Philadelphia: Carey and Hart, 1846; second edition, 1847).²⁵ This publication presented an array of English pattern books by Goodwin, Loudon, Robinson, Lugar, Thomson and Papworth, as well as including some additional designs by Americans. In 1849, Sidney listed himself in the Philadelphia City Directory as a civil engineer. In 1850/1851 he formed a partnership with James P.W. Neff and City Directories list them as "engineers

²² Lewis, *Skating and the Philadelphia Skating Club*, 38; Philadelphia Skating Club. Minutes. January 8, 1862.

²³ Minutes from the Club meeting on September 26, 1860 include the specification that the "contractor for building the house shall be a member of the club," so, presumably, Bender was a member.

²⁴ "Philadelphia Architects and Building Project (PAB)." *Athenaeum of Philadelphia*, <http://www.philadelphiabuildings.org/>.

²⁵ For these designs, however, Sidney is listed not as architect, but as "delineator."

and architects” at 80 Walnut Street.²⁶ This firm provided some of the designs for Sidney’s leading publication, *American Cottage and Villa Architecture* (New York: D. Appleton & Co., 1850). This book depicted “a series of views and plans of residences actually built...with hints on landscape gardening, laying out of grounds, planting of trees, etc.” and was planned as a ten-part monthly series. Beginning in July 1850, the publication only appeared four or five times, but included a full 22 plates of structures by various American architects of the Northeast.

By around 1855, Sidney & Neff’s firm breaks up (1854/1855 City Directories do not list them) and Sidney began working for Robert Pearsall Smith’s firm in New York City. After returning to Philadelphia in 1857/1858, Sidney entered into a partnership with Andrew Adams in 1859. Lasting about a year, the partnership is listed as “rural architects, engineer and surveyors” at 520 Walnut Street with “particular attention paid to building and laying out of country seats, cemeteries and public grounds. Surveys and plans made for every kind of building or work requiring knowledge of engineering.”²⁷ During this short period, they won a design competition for Fairmount Park which was adopted in 1859. That same year, Sidney was praised in the November 1 issue of *The Gardener’s Monthly* as “the best landscape-gardener, perhaps in the country.”²⁸

Soon, Sidney formed another partnership with Frederick C. Merry (1812-1900) that lasted from 1861-1865, and they continued the work begun on Fairmount Park. In addition, he also designed several houses in Chestnut Hill, a suburban section of northwestern Philadelphia. By the mid-1860s, Sidney became an independent architect

²⁶ Philadelphia City Directories. Historical Society of Pennsylvania, Philadelphia.

²⁷ Ibid.

²⁸ “Philadelphia Architects and Building Project (PAB).” *Athenaeum of Philadelphia*, <http://www.philadelphiabuildings.org/>.

and spent the rest of his career designing schools for the Controllers of the Public Schools of Philadelphia. In addition, Sidney was one of the 19 signers of the application for the charter for the Pennsylvania Institute of Architects in 1861, as well as becoming a member of the American Institute of Architects (AIA) in 1870.

Sidney's design for the Philadelphia Skating Club and Humane Society building no doubt reflects the architectural style of the day, as well as his own work on cottage and villa architecture. Designed in the Italianate style, the stone, one-and-a-half-story building, does resemble a small Italian villa that fits comfortably on a riverside lot. In a historical report on the Club, conducted by one of its members Susan Anderson in 1980, the author aptly sees influences of Philadelphia architect Samuel Sloan (1815-1884) in the building's design. One of the most prolific American authors on architecture of the mid-nineteenth century, Sloan's *Model Architect*, first published in parts in 1851, directs the architect to consider the location and site when determining the style of a building, not placing as much emphasis on the use. After mentioning various styles, such as Gothic, 'debased' Gothic, Norman Gothic, cottage, etc., Sloan proceeds to describe the Italianate as a style appropriate for a site "not in the depths of the forest, but near some frequented highway within a few miles of the city."²⁹ The idea that the building's environment was integral to its design became popular during this time period and was reflected in the growing number of pattern books being published. Sidney's work experience, especially with public grounds and landscapes, as well as his own designs for pattern books would have exposed him to this design philosophy. Indeed in his book *American Cottage and Villa Architecture*, he explains how the Italianate was appropriate for "smooth, level spaces...and where the idea of quiet and ease alone prevails" and

²⁹ Sloan, *Model Architect*.

concludes that “this style is also, from its horizontal lines, very appropriate in some situation of the banks of rivers, where the site is not very elevated and where it is required to place the house at no great distance from the water.³⁰ Thus, it would seem fitting for Sidney to look towards the Italianate when planning the Philadelphia Skating and Humane Society’s house, the site located along the level banks of the Schuylkill - on parkland just outside Center City.



Figure 8: Samuel Sloan, “Italian Villa,” Plate XXIV, *Model Architect* (Lithograph. New York: Da Capo Press, 1975.)

Although simpler than many of the designs shown in Sloan’s *Model Architect* and Sidney’s own *American Cottage and Villa Architecture*, the Club headquarters does exhibit defining Italianate features, such as heavy use of ornamental brackets, wide overhanging eaves, and asymmetrical massing. Well-defined window moldings with curved pediments, as well as a prominent cupola are also distinguishing features. Interestingly enough, many of these traits correspond to Sloan’s model for his “Plain

³⁰ Sidney, *American Cottage and Villa Architecture*, 12.

Villa”: “...building with a simple plan, a hall running the full extent of the house, a center entrance, floor-to-ceiling windows and a cupola with balustrade.”³¹ Although the balustrade was removed in the beginning of the twentieth century, the structure remains very similar to its original design. However, the use of stone partially reflects Sidney’s preference for this building material. He writes of stone as the “most desirable as well as the most rural looking...[and] should be employed wherever the expense of obtaining it



Figure 9: The Philadelphia Skating Society, c. 1870, view looking northeast from the Schuylkill River. (Historical Society of Pennsylvania, Prints and Drawing Collection)

³¹ Anderson, “No. 14 Boat House Row,” 6; Sloan, *Model Architect*, Design XI, Plate XLVIII.

is not to great.”³² Whether the decision to use stone was Sidney’s or a combination of the Club’s Building Committee and interested City Council members, the final design set precedent, primarily in its material, for other clubhouses that would spring up along the nearby riverbank.

One other architect, besides Sidney, participated in the construction of the Philadelphia Skating Club’s headquarters, although to a lesser extent. Club minutes mention that William S. Andrews, another member of the Club and Philadelphia architect, was requested to prepare an early design for the proposed structure. However, as the necessity for a larger building and space to rent out to neighboring boatclubs grew, Andrews was delegated to a smaller role and Sidney took over the plans. Club minutes mention that on March 22, 1861, Mr. Andrews presented a “drawing for the closets and drawers for the members and Board Surgeons room in the club house,” later being paid \$90.00 for “making drawings, specifications and superintending for Club House on Fair Mont Park.”³³ Not much is know about Andrews other than that he spent most of his professional career as an assistant to John McArthur, Jr. (1823-1890), architect of the Philadelphia City Hall and Pardee Hall at Lafayette College in Easton, Pa, and that their last collaborative effort was on the U.S. Post Office at 9th and Chestnut Streets in Philadelphia, designed by Alfred B. Mullet (1834-1890).^{34,35}

With the completion of the Philadelphia Skating Club’s house in 1861, the Club readily occupied the space and began to rent out the basement to meet its stockholders’

³² Ibid.

³³ Philadelphia Skating Club. Minutes. 1849-1874.

³⁴ “Philadelphia Architects and Building Project (PAB).” *Athenaeum of Philadelphia*. <http://www.philadelphiabuildings.org/>.

³⁵ In addition, Andrews was one of the 19 signers of the application for the charter for the Pennsylvania Institute of Architects in 1861 and was elected an associate member of the AIA in 1870. That same year, he was also among the first candidates recommended for the Philadelphia Chapter of the AIA.

demands. The building was well adapted to the needs of a rowing club, being constructed so as to afford ample storage room for boats and equipment in the basement. In addition, the building provided its members the comfort of a dressing room, bath, ladies' waiting room and men's waiting room, including a room for the Board of Surgeons. The University Barge Club and the Undine Barge Club were the first tenants, staying a number of years until they received permission from the Fairmount Park Commission to build their own boatclubs. Interestingly, a number of these members also joined the Philadelphia Skating Club, thereby maintaining a dual membership. Later in 1884, the house was rented to the Iona Boat Club, the lease providing the tenant club the use of the boat-room floor all year round and the entire house during the summer months (or non-skating season). In addition, they were allowed to share the ladies' room all year with the Philadelphia Skating Club and Humane Society. This arrangement, undoubtedly, served all parties advantageously.³⁶ The last tenant to rent space in the building was the Sedgeley Club, the first women's boat club in operation on the Schuylkill River. They occupied the house from 1897 to 1902.

During the 1860s to about 1870, skating's popularity reached its zenith in Philadelphia and the Philadelphia Skating Club and Humane Society prospered. However, once the sport's popularity began to wane, it became harder to retain and increase membership, leaving the Club financially vulnerable. Tensions with the club tenants increased over financial and maintenance matters, as well as over the conflict of interests

³⁶ Apparently, in the 1880s, the house maintained a janitor during the rowing season who also oversaw the Club's management of the ice-boat and life-saving apparatus during the winter months. A local newspaper article from this period, which profiled the Schuylkill Navy and its Clubs, describes this help as an Englishman named Hare. William Robinson Tucker Scrapbook (1878-1893), Historical Society of Pennsylvania, Philadelphia.

for the dual members.³⁷ At the beginning of the twentieth century, interest in skating on the river declined to such a degree (largely due to the development of artificially frozen indoor rinks) that the club began to look elsewhere. Finally, in 1937, they bought land from Haverford College with plans to build their own skating rink in Ardmore, PA. Once the Club departed their riverfront house, the Philadelphia Girls' Rowing Club moved into the vacated building the next year.

The Philadelphia Girls' Rowing Club was founded on May 4, 1938 to develop the sport of rowing for women athletes. Primarily wives of oarsmen, the founding seventeen members wished to compete in the mostly all-male sport and formed the all-women club, the second of its kind.³⁸ After renting from the Philadelphia Skating and Humane Society for a number of years, the Club obtained full ownership of the house around 1965. A member of the Schuylkill Navy since 1967, the Club is considered the oldest active women's club of its kind in existence.³⁹ Today, the Philadelphia Girls' Rowing Club offers programs for all level of competitive and recreational rowers. Since the 1980s, the Club has sponsored the Bill Braxton Memorial Regatta, the last regatta of the fall season.

³⁷ Boating season was nine months, as opposed to the skating season's short three, so the Philadelphia Skating & Humane Society felt that since the boatclub tenants were using the space for more time, they should be better compensated by the leasees.

³⁸ Robinhold, interview by author, 12 October 2005.

³⁹ The Schuylkill Navy of Philadelphia, "Clubs and History," *The Schuylkill Navy of Philadelphia*, <http://www.boathouserow.org/>.



Figure 10: A Philadelphia Girls' Rowing Club eight in practice, Schuylkill River, 2004.
(Photograph by author)

CHAPTER 3: PHYSICAL DESCRIPTION AND BUILDING CHRONOLOGY

EXTERIOR DESCRIPTION

The Philadelphia Girls' Rowing Club (#14 East River Drive) stands as a one-and-a-half-story building on the eastern bank of the Schuylkill River in Philadelphia's Fairmount Park. Nestled between the boathouses of Undine Barge Club (#13 East River Drive) and The Sedgeley Club (#14 East River Drive), the stone structure sits second from the end in the line of boathouses known collectively as Boathouse Row. Designed in 1860 by Philadelphia architect James C. Sidney to house the headquarters of the Philadelphia Skating Club and Humane Society, the Italianate style building faces East River Drive in a northeast orientation¹ and backs onto the Schuylkill River.² All stories are clad in gray stone cut in well-defined asymmetrical blocks and placed in a random pattern. Records from The Philadelphia Skating Club and Humane Society indicate that three types of stone were purchased for the clubhouse's construction: stone from Fairmount Park, "Falls stone and Leiperville stone".³

The building rests on a stone foundation and is topped by a square, wooden cupola. Three arched window openings punctuate the west, north and east sides; an arched, wooden door on the south side of the cupola opens out onto the roof. All cupola sides have been covered with white asbestos siding. A hipped roof, double-pitched in the

¹ Although the building faces the northeast, for all purposes of this paper, the author will refer to the structure as sitting on a north-south axis. Thus, the northeast elevation is referenced as the north elevation, etc. . . .

² East River Drive is now called John B. Kelly Drive, but for purposes of this paper, it will be referred to as the former.

³ Philadelphia Skating Club. Minutes. 1849-1874.



Figure 11: The Philadelphia Girls' Rowing Club, north and west elevations, 2005. (Photograph by author)



Figure 12: The Philadelphia Girls' Rowing Club, north and east elevations, 2005. (Photograph by author)

front, covers the building and incorporates four chimneys, two of which contain a pair of terra cotta stacks. This roof, as well as the hipped roof of the cupola, was originally covered with tin,⁴ but has since been recovered. Likewise, the gray aluminum gutters and downspouts placed around the building are newer additions, the original being tin with “round tin spouting.”⁵ The roof has remnants of a balustrade previously lining its edge.⁶ In addition, a prominent painted-wood and bracketed cornice sits at the top of the first story walls and cupola. The boathouse has a stone water table separating the first story from the basement. One notable feature is that the front of the building has a semi-octagonal shape, with the back of the building extending wider than the front by four feet and measuring two bays deep. Specifically, the front measures 32 feet four inches by 37 feet deep, then increases in width to 40 feet, at a further depth of 23 feet.⁷

The front façade has a central door opening flanked by two window openings facing East River Drive and two others which are beveled. A set of granite steps, with iron railing, leads up from the sidewalk to the recessed, wood-framed entrance door. The painted-wood door is topped with a three light transom and keystone arch. Two iron sconces hang on either side of the door and a pair of flood lights shine down from the eaves. All four windows feature a four over four light, double-hung sash with painted-wood framing and stone sill. As with the entrance door, these four windows are arched with a keystone and have stone moldings. The basement level contains one four light casement window, with stone lintel, on the west angled wall. The window sits behind a

⁴ Perpetual Survey No. 13630 of the Franklin Fire Insurance Company of Philadelphia for The Philadelphia Skating Club and Humane Society, 10 December 1891. Historical Society of Pennsylvania, Philadelphia.

⁵ Ibid.

⁶ The building’s balustrade will be discussed in more detail in the “Modifications and Renovations” section of this chapter.

⁷ Policy No. 12,081 of the Philadelphia Mutual Assurance Company for The Philadelphia Skating Club and Humane Society, 1 April 1942. Historical Society of Pennsylvania, Philadelphia.

hinged, metal bar grill and safety gate. *[Please see Appendices B and C for photographs and drawings of all building elevations.]*

The east elevation features six window openings on the first floor and four window openings at the basement level. Three of the first-floor windows, in the front section of the building, have four over four light, double-hung sashes with painted-wood framing and stone sills. In addition, each contains an arched opening with a keystone and stone moldings, and is covered with an iron bar grill. The two first-floor windows, in the back section of the building, are similar in design, except that the bottom sash has been replaced with a single pane of glass and they do not have iron bar grills. The other window at this level is considerably smaller and contains a three light casement window with painted-wood framing and stone lintel. The basement-level window openings feature six light casement windows, covered with hinged, metal bar grills and safety gates. An iron fence protrudes from the front section of the wall and connects to the adjoining boathouse, blocking off the back of the properties from the well-used pedestrian path along Boathouse Row.⁸

The south elevation facing the Schuylkill River has an enclosed porch at ground level topped with a cedar deck, fascia and cross-brace railing. Three large, pull-down doors punctuate the back bay porch and lead out to a cement drive. From here, a wooden floating dock provides clubhouse access to the water. The first-floor level of the building features a central door, with transom, flanked by two window openings, the outside ones cut to the floor. All contain keystone arches, painted-wood framing and stone moldings. In addition, the window openings also have stone sills and are covered by iron grill gates.

⁸ Although an exact date of its installation is not known, historic photographs indicate that the fence was put in place some time after 1974. Most likely, the fence was installed for security measures, since the area between the boathouses is often used for shell storage by the Philadelphia Girls' Rowing Club.

The panes of glass used in the door and windows appear to be newer additions and not original to the building.

A description of the south elevation would not be complete without addressing the issue of lighting. In addition to having the back deck and porch lit with a pair of flood lights, a series of mounted lights outline the main architectural features of the building's south elevation. This lighting project is part of a larger program, begun by the City of



Figure 13: Boathouse Row at night, looking northeast from the Schuylkill River, 1990s. (Free Library of Philadelphia, Print and Picture Collection)

Philadelphia and supported by the Fairmount Park Commission, to highlight the riverfront structures along Boathouse Row as a tourist attraction. Introduced in 1979, the project stemmed from the City's effort to redefine and enhance the city's image by night and included lining the boathouses' roofs, edges of decks and windows with tiny white lights on the riverside for a "Tivoli Gardens appearance" and floodlighting the fronts of

the buildings on the East River Drive side.⁹ This past spring, a new LED-based lighting system replaced the old incandescent system, making it more energy efficient, durable, and cost effective. The new system encompasses more than 12,000 individually controllable nodes which may be programmed for colorful lighting sequences in addition to simple white light.¹⁰ Overall, the lights create a festive image and provide a unified statement of city pride.

Returning to the building's exterior description, the west and final elevation contains five window openings on the first story and four at the basement level. As with the rest of the building, the first-story windows feature four over four light, double-hung sashes with painted-wood framing and stone sills. In addition, these all have arched openings with keystone and stone moldings. The fifth window opening at this level is smaller and occupies a small stone subsection with stone lintel; it contains painted-wood framing and a hinged, double-pane window. The four basement window openings contain six light casement windows covered with hinged, metal bar grills and safety gates. An iron fence protrudes from the back section of the wall. This feature is part of fencing that prevents trespassers from accessing the back of the boathouse or dock.¹¹

INTERIOR DESCRIPTION

The first floor of the Philadelphia Girls' Rowing Club is comprised of five rooms, including one bathroom, and two main hallways. The front entrance opens into a meeting

⁹ City of Philadelphia News Release. Office of the City Representative, Frank L. Rizzo, Mayor. 26 September 1978. Philadelphia Historical Commission.

¹⁰ Specifically, the nodes are Color Kinetics iColor Flex SL, a flexible, LED-based "string light." Each node is driven by a Color Kinetics' Chromasic microchip which allows for light programming. Allen, Peter Van, "Darkened Boathouse Row Will Emerge Colorfully," *Philadelphia Business Journal* 12 (January 2005): 4.

¹¹ Closely resembling the fence on the front, west side of the building, this fence was also added after 1974.

room which features a small kitchen in the back. With a long stretch of counters blocking off the kitchen from the rest of the room, access to the kitchen is from the side hallway. Originally, this space was part of a separate room which an 1891 fire insurance survey of the property describes as being lined with six closets on the north wall.¹² The Philadelphia Girls' Rowing Club, however, removed this wall some time in the second half of the twentieth century and rebuilt it further south, so as to open up the front room and install a modern kitchen. *[Please see Appendix C for 1895 and 2005 floor plans of the building - both of the first floor.]*

Notes from the Philadelphia Skating Club and Skating Society indicate that this front room was originally used as a waiting room for the men. In addition, they also refer to the room being accessed from the central hall.¹³ In the 1960s, however, the west wall of the hallway was removed, thus integrating the hallway space with the room.¹⁴ Since this interior wall was load-bearing and left the space structurally compromised, a steel beam was later installed in 1989 to provide support.¹⁵ Although the early floors of the room were constructed with yellow pine, today they are covered with gray linoleum. Likewise, the plastered walls of the room have been covered with painted wood panels. They do, however, feature the original ten-inch molded base. In addition, a false wall covered with painted plywood was constructed on the western wall in order to cover up a series of scaffold jacks that were installed in the early 1990s as part of a structural stabilization project. At around the same time, the original plastered ceiling was covered

¹² Unless otherwise noted, information pertaining to the early structure's construction and plan is taken from Perpetual Survey No. 13630 of the Franklin Fire Insurance Company of Philadelphia for The Philadelphia Skating Club and Humane Society, dating from December 10, 1891.

¹³ Philadelphia Skating Club. Minutes. 1849-1874.

¹⁴ Apparently, this work was conducted by one of the Club members' husbands.

¹⁵ This work was conducted by a pair of contractors which included one of the Club members, Dona File, and her father.

with a drop ceiling featuring acoustical tiles.¹⁶ The original ceilings here, and throughout the first floor, are 14 feet high.

Turning from the central hall in the direction of the adjoining kitchen and cupboard room, one finds another small passageway that leads out into the back, south room. This passageway also contains a doorway leading into the basement. The cupboard room features a porcelain sink, modern stove and wooden cupboards, painted white. These cupboards do not appear in the 1891 fire insurance survey of the structure and, judging from their style, were most likely added in the early twentieth century. An examination of the space does reveal, however, an original sink back and moldings. As in the front room, the wood floor is covered with gray linoleum. The painted plaster ceiling is in place.

From the cupboard room, a doorway leads into the back, south-facing room. Spanning the width of the building, this room features a large, stone fireplace along the west wall. An original stone plaque is centrally fixed above the mantel, depicting the Philadelphia Skating Club's insignia of an ice skate and Club initials.¹⁷ Currently, the room is used as a meeting space and practice room for rowing. Ergometers or "ergs," which are machines that simulate the rowing motion and are used to improve performance, line the floor. When used by the Philadelphia Skating Club and Humane Society, the space functioned as a ladies waiting room.¹⁸ The room features a deep,

¹⁶ Both the false wall and ceiling projects were conducted under the supervision of Club member Dona File. In an October 2005 interview with the author, Ms. File revealed that she found an old skate and skating program in the ceiling while undertaking the project. These dated from The Philadelphia Skating and Humane Society's early occupation of the building and were subsequently replaced before the drop ceiling was installed.

¹⁷ In John L. Lewis' *Skating and the Philadelphia Skating Club*, published in 1895, the Club's badge is described as being a "silver skate, an inch and a quarter long, worn on the left breast."

¹⁸ Philadelphia Skating Club. Minutes. 1849-1874.



Figure 14: The Philadelphia Skating Club's insignia of an ice skate and Club initials over the fireplace. (Photograph by author, 2005)

pronounced plaster cornice and molded wood baseboard - both original. Some time in the later half of the twentieth century, the walls were covered with dark wood paneling. The room retains the early yellow pine floors. A central door on the south wall leads out onto the back deck.

Directly opposite this door is a doorway leading in to the central hall. Upon entering this hallway from the south room, one immediately passes a door leading to the stairway accessing the cupola on the left-hand side before turning right into the Club's dressing room. White-painted, wooden lockers line the walls of the dressing room, interrupted by windows and the doorway into the bathroom. Although the Philadelphia Skating Club and Humane Society used the room for their Board of Surgeons, the Philadelphia Girls' and Rowing Club, then and now, use the space to change clothes

before and after rowing practice.¹⁹ The 1891 fire insurance survey of the property, however, does depict closets lining the wall, in a similar fashion to that which exists today, but most likely these were used for storage. The survey describes these closets in much detail:

...a series of 37 small closets 23 inch deep x 7 feet high, 45 more above them, and pan'l'd door each; the latter are reached by a plain ladder and open on a gallery on 3 sides of the room 28 feet wide, constructed of 1 x 4 dressed boards, supported on 3 x 4 joists and beams and ¾ inch iron rods passing thro' the beams and secured to the ceiling joists; all of y. pine.

The floors are also yellow pine, but they have been covered with carpet. In addition, the plaster ceiling and walls are covered with acoustical-tiles and wallpaper, respectively.

A doorway on the north wall leads into the main bathroom of the building. The bathroom features a tiny corner toilet, sink and shower stall. The floor is covered with white tile and the walls are painted plaster. This room is described in the 1891 fire insurance survey of the property as the "Toilet Room" with "open wash stand with white marble top counters, sink and 5 white ware bowls; plated faucet each, for cold water; 2 iron rods 1 1/8 inch diameter to support the top; back and sides 12 inch of marble." These sinks were lined along the west wall of the room and are today replaced with the shower. The report continues to outline an "enclosure of boards 27 inch x 32 inch x 8 feet high, with pan'l'd door; zinc sides and floor" used for showering, as well as a zinc floor covering the yellow pine floors, "spring seat water closets and iron hopper." Since the room is still used for showering, a window vent has been added to the north window or the room. The northeast window contains wooden paneled shutters.

The basement of the clubhouse is comprised of one room, over eight feet high,

¹⁹ Ibid.



Figure 15: Basement stair, old stinger and new treads visible, along with original stair opening and platform. (Photograph by author, 2005)



Figure 16: Metal pulley at top of basement stair, shows evidence of rope and pulley system. (Photograph by author, 2005)

with a cement floor. The walls are 16 inch to 18 inch thick.²⁰ Wooden steps lead from the first floor in the west passageway to the basement space. A close examination of the stair reveals old stringer and new treads fixed in an original stair opening and platform.²¹ A metal pulley fixed to the wall at the top of the stair shows evidence of a rope and pulley system. In this scenario, the steps would have been hinged at the top and raised and lowered by the rope and pulley. The 1891 fire insurance survey of the building includes a description of such a stair with an ash rail and post. Descending the stairs, one notices three arched openings along the south wall, leading out into the enclosed porch. Each contains a pair of wooden, painted, curved-head doors that slide across iron rails. Although no longer in use, their description appears in the 1891 fire insurance survey and



Figure 17: Original wooden doors with iron rails and rollers, basement, south wall. (Photograph by author, 2005)

²⁰ Perpetual Survey No. 13630 of the Franklin Fire Insurance Company of Philadelphia for The Philadelphia Skating Club and Humane Society, 10 December 1891. Historical Society of Pennsylvania, Philadelphia.

²¹ The mortice and tendon construction of the ceiling joists include the stair opening and platform, a factor which would only have been possible if the opening was built at the same time as the rest of the structure.

they most likely date from the structure's early history. From the enclosed porch, three arched, pull-up doors lead out to the back drive and dock.

Although the basement is today used for rowing equipment and shell storage, the basement was originally intended to store life-saving apparatus of the Philadelphia Skating Club and Humane Society.²² At that time, the ceiling and walls were plastered. The plaster remains on the basement walls, but has been removed on the ceiling, exposing the frame structure. Evidence of this plastered ceiling remains in the lath marks



Figure 18: Basement with stair and columns - both wooden and cast iron, view looking north. (Photograph by author, 2005)

²² Philadelphia Skating Club. Minutes. 1849-1874.

outlined with plaster on the ceiling joists. A look at the framing of the basement reveals two parallel beams supported by columns. Four of these columns are cast iron and fluted. Single joists span the area, except where double and triple joists flank the stair. In addition, a triple joist runs beneath the northern wall of the south room.

Returning to the first floor, stairs lead to the cupola from the central hallway. Enclosed with three flights, the stairs make half turns at each landing. One side of the stair features a plain grain rail and three-foot-high post. The floors and plastered walls are unfinished. The cupola, standing 13 by 13 by 10 feet high, is constructed of wood. The walls and the ceiling are plastered. As on the first floor, yellow pine covers the floor and the walls feature a six-inch molded base. In addition, two-inch moldings surround the windows and door. A rounded-head wooden door is set up one step and leads out onto the roof. Currently, this space is used for miscellaneous storage by the Club.

MODIFICATIONS AND RESTORATIONS

The Philadelphia Girls' Rowing Club remains largely unchanged from the days in which it was built. The building's exterior has experienced little alteration and, for the most part, closely resembles the original structure. This is all the more surprising, given the number of tenants that the building has had over the years. *[Please see Appendix B for historic and current photographs of the exterior.]* One of the first notable exterior changes occurred at the back of the boathouse. Some time in the early 1930s, the back porch became enclosed to create an extension of the basement space. At this time, the original deck railing was replaced with one of wood pickets. In 2001, the Club replaced the deck, owing to deterioration of the wood. With approval of the Philadelphia

Historical Commission, the following components were removed and replaced: decking, deck railing, deck structure, roofing and flashing, boat bay porch roof structure, porch door, threshold, wood subsill, frame and casing. This project sought to replicate the original cross-brace railing of the deck, but to keep the 1930 proportions. An 1891 Philadelphia fire insurance survey of the property gives a good description of this deck. The survey reads: “A wooden verandah, one story, 5 ¼ feet projection by 40 feet long, supported by three by four yellow pine joists and seventeen brackets three feet by eight feet.” The survey continues to detail the railing or balustrade: “three feet high, of twelve three by four chamfered posts and rails; two one ¼ by three braces between the posts; cap rail and mouldings.”²³ Thus, the design of the existing deck closely resembles that of the original. In addition, however, the cedar railing was threaded with thin horizontal stainless-steel wires, in order to meet code.

The building underwent some minor exterior renovations in the 1990s. These include repairing and replacing the roof in 1994. Although originally covered with tin, hot asphalt roofing and shingles then covered the surface. The re-roofing project included removing all pole gutters and rotted sheathing and installing smooth modified bitumen over the prepared roof surface. In order to closely resemble the original tin metal roof, the roof was coated with a Weatherbarrier elastomeric coating in “Colonial Red.” In addition, bitumen flashing was installed and new lead-coated, copper downspouts were added to four locations. A gray aluminum metal edge was also fabricated and installed to all roof perimeters. The building also received new seamless gutters and four-inch, round downspouts at the front eaves.

²³ Perpetual Survey No. 13630 of the Franklin Fire Insurance Company of Philadelphia for The Philadelphia Skating Club and Humane Society, 10 December 1891. Historical Society of Pennsylvania, Philadelphia.

The same year, the Club received permission from the Philadelphia Department of Licenses & Inspections to restore the original existing chimneys using gray mortar and replace four of the existing terra cotta stacks. This project closely followed the original chimney measurements in terms of height, width and length. Six years later, in 1997, the Philadelphia Girls' Rowing Club replaced the front door to the boathouse with one resembling the previous door. Part of the work required using the same paint scheme, which was approved for the exterior trim, on the door and surround.

Another exterior modification involved the removal of a balustrade that topped the back portion of the building. Whether this balustrade was original is not known, but a photograph, dated from 1899 and housed in the Schuylkill Navy records, portrays this element clearly. *[Please see Appendix B, Figure 31.]* In addition, the 1891 fire insurance survey, previously mentioned, includes this description: "also a balustrade around the South part of the roof three feet high, with plain balusters of one by five boards and three feet spaces. Top rail four by four, bottom three feet by nine feet and one feet by five feet cap; all painted wood, round tin spouting."²⁴ A small illustration accompanies this detail.

A note should be included about the first floor windows and frames. Close examination of the windows in the dressing room reveal evidence of hinge marks in the moldings. These would have been used to hang pairs of interior shutters, resembling existing ones in the shower/bathroom. Indeed, the splayed jambs around the windows would have accommodated the shutters when open. In addition, notched wooden ledges rest along the bottom of these jambs which would have been used to slide bars in place,

²⁴ Perpetual Survey No. 13630 of the Franklin Fire Insurance Company of Philadelphia for The Philadelphia Skating Club and Humane Society, 10 December 1891. Historical Society of Pennsylvania, Philadelphia.



Figure 19: Shower/Bathroom, north wall. Detail of historic interior shutters. Arrows point to the notches where bars were slipped into place for security purposes. (Photograph by author, 2005)

thereby locking the shutters closed. *[See also Figure 26 in Chapter 5 for another photo of the wooden, security piece.]* Since this system would have been used for security purposes, it is most likely that all the windows on the first floor, of similar size, would have had shutters. Unfortunately, the modern plywood paneling on the walls in the

northwest and south rooms obscures these splayed jambs, so evidence of original shutters is not visible. However, historic photographs and documents support this conclusion.²⁵

STRUCTURAL STABILIZATION AND WORK

Standing upriver from the Philadelphia Girls' Rowing Club and looking at its western elevation, one can see prominent misalignment of the window sills, indicating structural damage due to differential settlement of the masonry walls. [*Please see Appendix D for exterior photographs showing window distortion.*] According to Thomas V. Dowd, a structural engineer who has done extensive work on the boathouse, some of the soils do not have sufficient bearing capacity, and the subsurface conditions are "treacherous."²⁶ Soil borings indicate that, in selected areas, substantial bearing capacity is not reached until 35.37 feet below grade. This soil characteristic is found at the river's edge along East River Drive at Boathouse Row. Consequently, most boathouses exhibit similar differential settlement, with the part of the structure near the river subsiding while the part near the Drive remaining in place. To complicate the situation, the building's wooden pilings had failed and were affecting the stability of the structure.²⁷ To address this condition, Mr. Dowd prepared designs for an extensive structural stabilization project in the late 1980s to the early 1990s.

²⁵ Exterior photographs from 1933 seem to depict interior shutters, especially in the back meeting room. In addition, the 1891 fire insurance survey includes as note that windows on the first floor had "inside close shutters."

²⁶ Dowd, Thomas V., P.E., interview by author, 19 September 2005.

²⁷ All the original boathouses were on wooden piles. Most boathouses were constructed before the river wall was built, a project of the Works Project Administration (WPA) in the late 1920s. Before this time, the area from the drive to the river's edge was a beach. The project involved building this wall and backfilling behind it in order to bring the ground up to the current level that we see today. As a result of this change, layers of silt formed: the lower layer formed naturally by the river and the upper ones replaced for grade.



Figure 20: West elevation, arrows indicate where structural stabilization project occurred, 2003.
(Photograph by author)

The work primarily took place beneath the front two westerly windows, where visual damage is extreme. First, he installed mini-piles, or three-inch pipes, on either side of the wall and casted a concrete yoke beam onto either side, as well. Mini-piles were founded in that and a concrete beam was locked to the wall. This was done through tunneling and casting the concrete beam across. In addition, a needle beam was inserted through the wall and tied to the concrete on the sill. The idea was to lock the building to prevent further settlement. Mr. Dowd stresses that he did not attempt to raise the settled portion of the building, since such an operation would create significant risk to the walls, framing systems, finishes, and mechanical systems. After monitoring the building's movement

with gauges, Mr. Dowd concludes that the building has not moved, at least to his knowledge.²⁸ However, the Club continues to monitor this situation carefully.

The Philadelphia Girls' Rowing Club had previously undergone repairs to the interior ceiling joists in 1988. A failed beam over the front clubroom on the first floor was affecting the stability of the ceiling and roof. This failure was attributed to the 1960s removal of the interior partition wall, mentioned earlier. Mr. Dowd, again, was the structural engineer on the project. Although he did fix the beam failure, the inside of the club sustained some structural problems, the most notable being a slant in the meeting-room floor. At that time, he measured the building's foundation and found it to be fairly level, except in the area where the structural work had taken place. Here, the floor drops 5/8th of inch to foot, accelerating in the west corner near the kitchen counter. Work to level the floor may be in the future, but, according to Mr. Dowd would be very expensive and may not be the best use of the Club's money.

²⁸ Mr. Dowd has also done structural work on other boathouses in Boathouse Row. A long-time rower himself, he is a member of the Fairmount Rowing Club.

CHAPTER 4: EVALUATION OF SIGNIFICANCE

The significance of the Philadelphia Girls' Rowing Club rests on many levels. First, its physical presence serves as a reminder that Philadelphia used the Schuylkill River for more than a source of water supply, but for recreational uses such as rowing and skating. With the formation of various boat and barge clubs along the river during the early nineteenth century, the Schuylkill became a mid-Atlantic hub for rowing. The water's calm and flat conditions made rowing and the fashionable sport of skating ideal for the river setting. Furthermore, as the city of Philadelphia grew, more and more people were drawn to its pastoral banks to escape city life, the advent of Fairmount Park only working to increase the popularity of the area. As a result, from the 1860s until the early 1900s, clubhouses were built along the east bank of the Schuylkill River to service this recreational need and their construction reflects the use of the river at that time.

The Philadelphia Girls' Rowing Club building, by first housing the Philadelphia Skating Club and then its merged organization with the Philadelphia Humane Society, stands as a lasting emblem of Philadelphia's skating history and social clubs. Through its early association with the boat clubs along the river – by proximity and tenant arrangements – the building also exhibits a part of Philadelphia's tradition of rowing. This rowing history touches upon the nation's trend in the mid-nineteenth century for the amateur rower to be defined and separated from the professional, the former soon eclipsing the latter. With the inhabitation and later ownership of the building by the Philadelphia Girls' Rowing Club, the structure continues its association with the sport of rowing, but adds the distinction of housing an all-women club in the predominantly all-

male sport. Considered the second club of its kind and the oldest active women's rowing club in existence, the Philadelphia Girls' Rowing Club deserves recognition for its contribution to the sport of rowing for women athletes. Thus, the building not only reflects Philadelphia's rowing history, but also the sport's evolution.

The stone structure's significance continues by its association with the Schuylkill Navy and Philadelphia's Boathouse Row. Built on a prominent location directly downstream from the bend in the river, the building served to anchor the string of boat and barge clubs that emerged on the Schuylkill's east bank during the last half of the nineteenth century. Over the years, these boat and barge clubs, with their parent organization the Schuylkill Navy, gained national and international renown and firmly established Philadelphia's name in rowing history. Through their rowing prowess and regattas, they became one of the most notable features in Philadelphia. Declared a National Historic Landmark, the stretch of ten boathouses along East River Drive was nominated to the National Register in February of 1987. Besides being a member of Boathouse Row and the Schuylkill Navy, the Philadelphia Girls' Rowing Club at #14 Boathouse Row also bears the distinction of being listed on the Philadelphia Register of Historic Places (1/5/84).

Today, the two-and-a-half-story building stands largely unchanged from the days in which it was built. Although experiencing structural problems due to settlement and foundation failure, the structure's integrity remains high and, with proper maintenance and management, should continue to last well into the future. Built by Philadelphia architect James C. Sidney in 1860, the building's Italianate style enhances and embellishes its more utilitarian function, typical of architecture at that time. Furthermore,

the remarkable fact that the recreational building is still use only adds to the historic and cultural significance of the property.

SECTION II – CONDITIONS ASSESSMENT AND CONSERVATION ISSUES

CHAPTER 5: CONDITIONS ASSESSMENT AND SURVEY OF BOATHOUSE

All buildings deteriorate, some more rapidly than others depending on their maintenance and environment. Deterioration of the Philadelphia Girls' Rowing Club has been an ongoing issue dating back to its early history. From its inhabitation by the Philadelphia Skating and Humane Society, the building has been under the charge of the Club's House Committee. Club minutes from the mid-1860s to 1890 frequently cite maintenance issues having to do with renting out their facilities to various boatclubs, primarily the University and Undine Barge Clubs. Since the Philadelphia Skating and Humane Society occupied the house primarily in the winter months for skating season, club tenants were allowed to use the entire building in the summer months for their boating season.¹ However, since none of the clubs inhabited the space all year round, it was difficult to take responsibility for maintenance problems, no party wanting to put money into the upkeep of the building that it would rather spend elsewhere, such as on equipment. For instance, Club notes mention problems having to do with "defraying expenses for repairing the gas-making machine, because the tenant burned the gas; to even repairing the house."² In addition, a member of the House Committee expressed concern in 1890, that the Club's riverside balcony was "so rotten as to be dangerous and require[d] repairs."³ Although repaired shortly thereafter, Club records indicate, at least

¹ Skating season usually lasted three months, while the boating season usually lasted nine.

² Lewis, *Skating and the Philadelphia Skating Club*, 46; Philadelphia Skating Club. Minutes. 1849-1874.

³ William Robinson Tucker Scrapbook (1878-1893). Historical Society of Pennsylvania, Philadelphia.

three other times, that new decking was installed in the back of the building. In all cases wood deterioration was cited as the main culprit.⁴

As the prosperity of the Philadelphia Skating Club and Humane Society declined in the early twentieth century and skating lost its popularity, money for maintenance dwindled even further. Even though the occupation and subsequent ownership of the building by the Philadelphia Girls' Rowing Club added much needed energy, the Club's reliance on membership dues as its primary income left little money allocated for building maintenance. This matter continues to this day, with the Club's more pressing needs for expensive boating equipment outweighing the more constant demands for maintenance (though no less important). Besides the age of the building and its deferred maintenance over the years, the Club's location along the riverbank has contributed to its most devastating and serious problems. Situated low along the river, the building is subjected to constant flooding during heavy rains, not only from the rising river during storms, but also from overflow from East River Drive's road surface. Combined with faulty drainage and other mechanisms that allow water to enter the building, water, in its various states, appears to be one of the most common causes for the building's deterioration. However, perhaps more long-lasting and debilitating is the nature of the soil's sub-surface conditions. The soil's low bearing capacity, featuring many layers of river silt and fill, causes settlement-related problems and contributes to the building's localized foundation failure. This condition, seen all along Boathouse Row, greatly affects the building's deterioration and is one of its most extensive and visible problems today.

⁴ The most recent project took place in 2001 and involved rebuilding the deck and installing a cross-brace railing, similar to the one built c.1895. However, in order to meet current building code, the decking also includes stainless-steel wires threaded through the railing for additional support.

In order to present a complete picture of the building and help determine the historical integrity of the structure, an in-depth survey of the existing conditions at the Philadelphia Girls' Rowing Club was undertaken. This survey was designed to document certain elements and assess the current condition of building materials and systems. Through on-site examination of the building, the survey addressed the following: the building's exterior materials and features; structural systems; vertical and horizontal closure systems; environmental modification systems; utility systems; and protection systems. Information gathered during the survey was documented through various photographs included in the report. After determining the main exterior building conditions and possible causes for deterioration, each of the identified conditions was mapped out on drawings using AutoCAD. Both these drawings and pertinent photographs are located in Appendix D of the report.

The first part of this survey includes analysis of the significant exterior building materials used in the construction of the Philadelphia Girls' Rowing Club. Understanding the material properties of a building is essential to its maintenance. Buildings will inevitably deteriorate, but through close analysis of their materials, one may better predict in what manner and at what rate. Tracking the performance and deterioration of these materials will determine what intervention is reasonable, prudent and cost effective. The primary exterior materials found in the Philadelphia Girls' Rowing Club building are: granite, mortar, terra cotta, wood, copper downspouts, lead flashing, wrought iron, and glass. These materials are assessed through discussion of the building's systems performance. This will include a description of the current system designs, their function and condition.

STRUCTURAL SYSTEM

The structural system of the Philadelphia Girls' Rowing Club building consists of load-bearing stone masonry walls with wood floor and roof framing. The building's plan is such that the lower level contains post and beam construction with wood joists; the main level has load-bearing partitions supporting the ceiling joists. The masonry walls are a combination of one foot four inches and one foot six inches thick at the basement level and one foot four inches thick on the first floor.⁵ Window and door openings in the masonry walls are spanned by keystone arches on the first floor, with basement window openings appearing underneath stone lintels.⁶ The large, three-bay openings in the basement's south facade are also topped with keystone arches.

Overall, the structural system of the building is compromised due to differential settlement and foundation failure. Occurring primarily in the front portion of the west wall, this localized foundation failure reflects itself in the distorted appearance of the wall. The displacement not only affects the masonry and mortar, but also the window openings and window units themselves. Several of the glass panes in the two windows over this failure are broken, most likely from this movement over the years. In addition, large cracks run from the corners diagonally downwards from these same windows. Cracking is frequently associated with structural movement patterns, so it comes as no surprise that they exist in this location. *[Please see Drawing 10 on the next page, as well as Figure 44 in Appendix D.]*

The foundation failure of the building is most likely due to several reasons. A

⁵ Philadelphia Historic Commission, "No. 14 Boat House Row," Project Files; Dowd, "Structural Drawings: The Philadelphia Girls' Rowing Club," Drawing no. S-1, 15 June 1988.

⁶ In addition, two small window openings on the first floor also have stone lintels.



Drawing 10: West Elevation, Conditions Assessment (AutoCAD drawing by author, 2005)

1990 report issued by the Schuylkill Navy which assessed the conditions of Boathouse Row concluded that most of the boathouses were built on piles.⁷ Assuming that the Philadelphia Girls' Rowing Club shares this characteristic, this would subject the building to foundation failure when changes in the ground water table exposed the tops of the piles to wet and dry fluctuations, promoting rot. Once this happened, the pile caps and wall would subside.⁸ The report also suggests that where piles have decayed and are no longer supporting the buildings, the pile caps act as footings and exert stress into the

⁷ This report was compiled by a team of architects and engineers, including a geologist and historian, hired by the Schuylkill Navy. Their work included assessing the problems and priorities of each of the twelve boathouses and evaluating the site conditions. The project team was comprised of members from the following: Kieran, Timberlake & Harris; Vinokur-Pace Engineers; Landmark Engineering; Fairmount Park Commission; and consultants Richard E. Mabry, PE and Robert D. Cook, Bryn Mawr College, Department of Geology.

⁸ Thomas V. Dowd, a structural engineer who has worked on several buildings on Boathouse Row, as well as on the Philadelphia Girls' Rowing Club, also points out to the author that nearby underground springs could also be the cause for the pile failure.

soil.⁹ Attributed to the Philadelphia Girls' Rowing Club, this condition would indicate that some of the present settlement could be the result of decayed piles and inadequate pile support. Furthermore, the subsurface conditions of the soil, providing little resistance, would only add to the settlement of the buildings.¹⁰

In looking at the rest of the building, one sees further evidence of structural instability, although not as serious or to such an extent. For instance, the left section of the north wall exhibits cracks radiating downwards from the window and from the stone articulation separating the first floor from the basement. *[Please see Drawing 7 in Appendix D.]* In this case, however, the cracks are most likely due to differential settlement, as well as to the stress concentration found in the reentrant corners of the window. Moving to the back of the building, one sees evidence that the boat bay extension has settled. Once exhibiting a vertical opening near the interface of the addition and the original structure, the enclosed porch now has a steel bracing/tie system to hold it to the building.¹¹ (Figure 45)

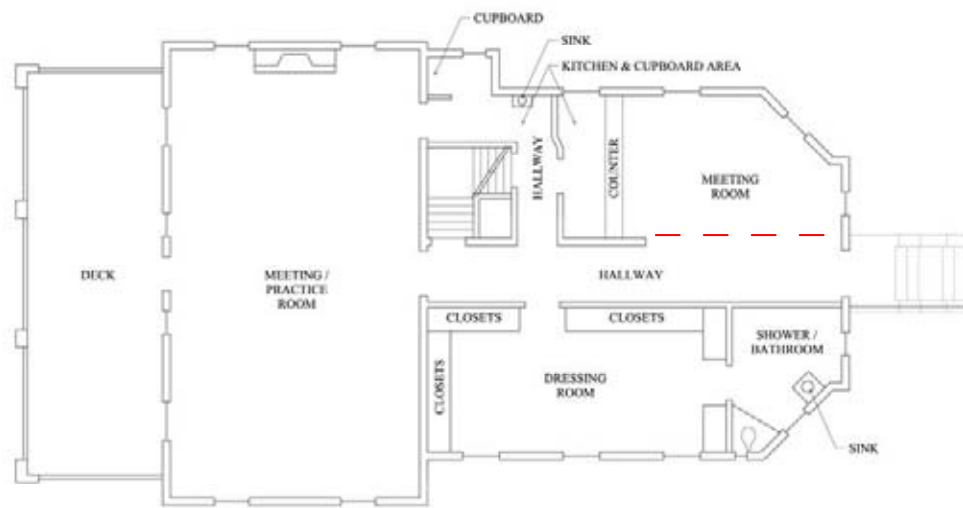
Evidence of structural failure may also be seen in the building's interior, primarily in the basement and front meeting room. The first floor's north meeting room demonstrates structural problems through a severely slanting floor. Located above the west section of the house that has received extensive structural foundation work, the slope is most likely caused by this foundation failure. The floor drops five-eighths of an

⁹ Kieren, Timberlake & Harris, "Philadelphia Boathouse Row Study: A Comprehensive Study of the Existing Conditions of Boathouse Row," 8.

¹⁰ According to test soil borings drilled at several boathouses between 1960 and 1987, the soil is composed of successive strata of fill, silt, residual soil and decomposed rock. Included in the 1990 Schuylkill Navy report, these test results also indicate that the fill materials consisting of brown micaceous silt and sand with brick, stone cinders, roots and gravel were encountered from the ground surface to depths of three to twelve feet. Kieren, Timberlake & Harris, "Philadelphia Boathouse Row Study," 7.

¹¹ Kieren, Timberlake & Harris. "Philadelphia Boathouse Row Study: A Comprehensive Study of the Existing Conditions of Boathouse Row." Philadelphia: Schuylkill Navy, 1990, photographs.

inch to every foot and accelerates in the southwest corner near the kitchen.¹² Although the Club hopes to rebuild the floor in the near future, it does not have the finances to undertake such a job at this time. So, in the meantime, a Club member experienced in construction has installed scaffold jacks in the basement (Figure 46) and behind a false wall in order to provide support and stabilize the floor and wall. In addition, the 1960s removal of one of the interior load-bearing walls, which separated this front room from the central hallway, has also compromised the structural stability of the building's ceiling and roofing system. Although a steel beam was added in 1989 to provide support, along with a suspended ceiling, the area continues to demonstrate structural instability and most likely adds to the floor's slant. (Figure 47)



Philadelphia Girls' Rowing Club

FLOOR PLAN - FIRST FLOOR
2005



Drawing 6: Floor plan, first floor, 2005. (AutoCAD drawing by author, 2005) Marked area in front meeting room show where the interior supporting wall was removed.

¹² This measurement was determined at an on-site visit with structural engineer Thomas V. Dowd in October 2005.

Besides the scaffold jacks along a portion of the west wall, the basement demonstrates further evidence of foundation settlement and potential structural problems. Looking at the floor, one can see a considerable depression in the concrete beneath one of the cast iron fluted columns. This subsidence has compromised the column's support of the ceiling joists to such an extent that, at some point over the years, an added block of wood has been placed between the top of the column and the ceiling joist in an effort to maintain stability. (Figure 48) In addition, an inspection of the ceiling joists finds at least one with water damage. The damp condition and frequent floods in the basement, exposing the wood members to water, provides an environment where wood rot may develop and seriously affect structural stability. This would have negative ramifications for the rest of the building's structural system.

Returning to the exterior wall system, the structural integrity of the stone masonry depends greatly on the material's current condition. Although the masonry itself demonstrates no cracking, the stone exhibits weathering and soiling of the stone surface, primarily from rainwater and atmospheric pollutants. Surface erosion and soiling of the stone intensifies at the corners of the building, along the stone articulation separating the raised basement from the first floor, and on the stone arches and lintels above the windows and doors. *[Please see Drawings 7-10 in Appendix D for a full depiction.]* This tendency makes sense because these areas are more exposed to the elements and wind abrasion. Furthermore, the relative open nature around the building leaves the facades more open to wind-driven rain. In any orientation, stronger wind speeds result in more surface wetting, so the building has a greater potential for increased water penetration in the building material. In addition, the stone appears darkened beneath the



Figure 21: Northwest elevation, detail showing soiled stone, especially along the stone articulation separating the raised basement and first floor and on the building's corners. (Photograph by author, 2005)



Figure 22: West elevation, detail of building's masonry, coarse-grained and soiled granite. (Photograph by author, 2005)

two lamps on either side of the front door. Made of iron, these lamps would chemically react with water from rainfall and start to corrode, thereby staining the underneath stone with its runoff. (Figure 49)

A type of rough-hewn granite, an igneous rock, the building's masonry is dense and coarse-grained.¹³ Although predominantly gray, the stone has mineral constituents easily visible to the eye.¹⁴ The masonry's coarse grain size affects the stone's porosity and permeability, as well as its resistance to weathering and corrosion. The rough texture and increased surface area of the rock, allows for more water to enter the stone, thereby exerting more internal stress and subjecting the stone to microcracks and surface scaling. As a result, all elevations exhibit some degree of stone decay, with surface erosion at areas of water runoff. In addition, the relatively large face of the stone allows it to be more sensitive to chemical attack, presenting a larger surface area to the action of atmospheric pollutants that are deposited on it, primarily in the form of acid rain.

The primary cause for the masonry's deterioration seems to be water. Water, in its various states, is the most common cause of any building's deterioration. There are multiple ways in which water can get inside a wall: seepage from the roof or ceiling, penetration through walls, directly as rainfall, through capillary action, as condensation, as absorption by hygroscopic materials and from high humidity.¹⁵ It is probable that water is penetrating the building through each of these mechanisms. Water, as precipitation, has entered the building through the damaged windows and faulty drainage system; water as vapor and liquid has found ingress via damaged stones and weak or

¹³ The Historic American Building Survey's entry for Boathouse Row (HABS No. PA-1650), identifies the exterior stone of the Philadelphia Girls' Rowing Club as granite.

¹⁴ Granites consist of alkali feldspars and quartz with varying amounts of other minerals, such as micas and hornblende, in an interlocking and granular texture. Herz, "Geological Sources of Building Stones," 52.

¹⁵ Amoroso, Giovanni, and Vasco Fassima, *Stone Decay and Conservation*, 12.

missing mortar joints. Condensation can form when the surface temperature is below the dew point of water vapor. Water molecules at the surface join together and form a film at which point liquid may penetrate the surface. Hygroscopic absorption may occur where there are soluble salts at the surface due to their propensity of absorbing large amounts of water.¹⁶ Finally, located in the Mid-Atlantic region, the building and its interior are subject to extreme seasonal fluctuations in relative humidity.

Since the durability of stone is mainly dependent on its internal structure and composition, as well as the environment to which it is exposed, the presence of water within the stone and the building's damp conditions weakens the exterior stone structure. Those areas with high water exposure may be vulnerable to organic activity such as lichen growth, especially in those areas where there is no direct sunlight. The survey found the water stains at the base of the building's down spouts not only indicative of a poor drainage system, but also reflective of an area that may lead to biogrowth. In addition, the temperature variations in Philadelphia, being in the Mid-Atlantic region, provide a high number of freeze-thaw cycles that may damage the building material.

The growth of vegetation around the building may also damage the stone masonry and its mortar joints. Ivy grows heavily on the east façade, especially in the corner where the front part of the building widens to the back portion. The ivy climbs up to the roofline and in the course of this paper's study has spread horizontally outwards on both sides. (Figure 51) Self-clinging climbers do not usually cause damage to wall surfaces, but ivy supports itself by aerial roots and where these penetrate cracks or joints they may cause structural damage. In addition, they make the building skin dirty and insect-

¹⁶ Inspection of the building finds little, if any, evidence of salt encrustation on the exterior or interior.

ridden.¹⁷ Its dense cover can also hide defects in the fabric of the building or hinder maintenance work.

Inspection of the masonry's mortar finds evidence of cracking and missing mortar where the mortar joints and beds have begun to fail. Some of these cracks appear in the mortar between the stone units and are most likely the result of settlement cracks. However, where the mortar has failed, up to an inch of exposed stone is seen in the joints. (Figure 51) This allows moisture to sit in the joints, accelerating the weathering of the stone. The joints have also been tuckpointed in several areas of the building with Portland cement instead of the original lime mortar. However, the new mortar does not match the color or consistency of the original and the various campaigns are obvious and unsightly.¹⁸ As cement is a much harder material than lime, it will weather differently

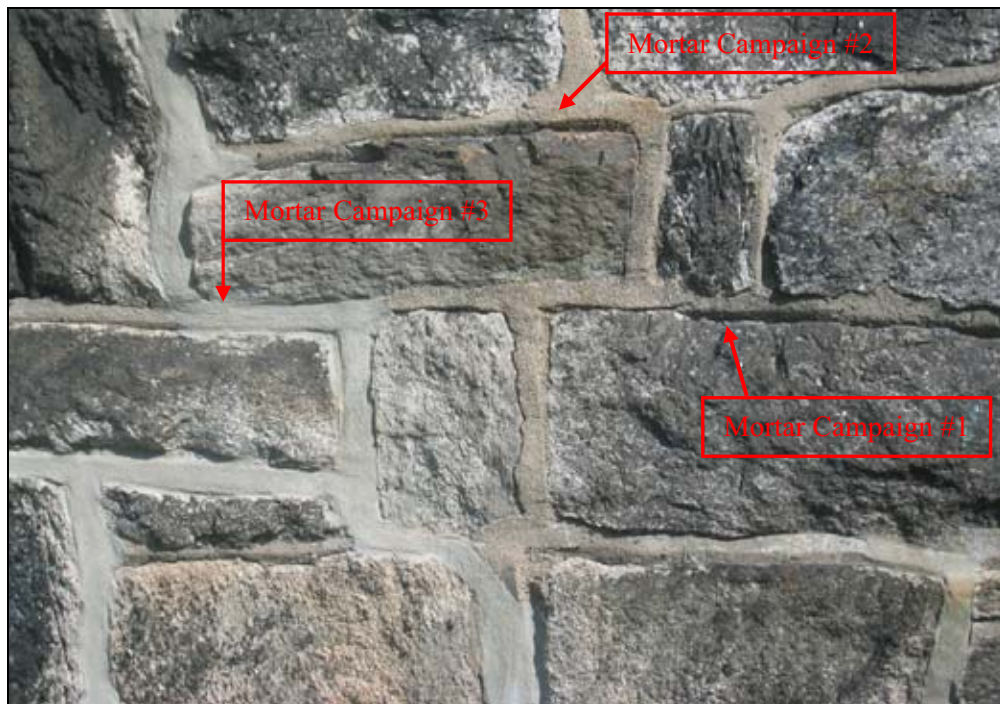


Figure 23: West elevation, detail. View showing three different mortar campaigns with unmatched mortar and style. (Photograph by author, 2005)

¹⁷ Shore, Bertram Charles Glossop, *Stones of Britain*, 23.

¹⁸ The gray cement mortar of more recent campaigns stands out from the earlier, more brown-hued, ones. In addition, the more recent ones do not have the same granular consistency and appears too smooth.

than the areas that have not been re-pointed. On the whole, this repointing occurs in the lower portions of the building, especially around the foundation failure of the west wall. It seems that the earlier mortar campaigns utilized more of a ridge profile versus the ribbon pointing of the later campaigns. These different styles also present a problem because the projecting edges of the mortar, extremely uneven in some parts, divert water flow along the top surfaces of the pointing, increasing the likelihood of penetration of the joint.

Although a stone load-bearing wall is a very stable structure due both to its design and the inert nature of the material, its longevity depends greatly on the quality and condition of its mortar joints. The original lime-based mortar acts as both a cushioning and adhesive material so that, if these joints are allowed to deteriorate, the stone will become unstable and could potentially destabilize the entire wall. The new cement mortar, however, is much harder than the stone and does not share the plastic quality of lime mortar which allows it to act as a cushion against movement. The stronger but more brittle cement mortar, if stressed, will crack and, because of the strong adhesive bond between the cement and the stone, will most likely crack the stone unit as well. Cement mortar can also introduce salts into the system which will accelerate the weathering of the masonry.

VERTICAL CLOSURE SYSTEM

Vertical closure systems function to provide a selective barrier between the interior and the exterior of a building. This selective barrier should be adjustable and variable in that it needs to accommodate changing aspects of the environment, including

those of security and view. The primary components of these systems in the building include walls, windows and doors. The walls may be both foundation walls and those above grade. These vertical closure systems, involving both static and moving parts, deal with issues of water exclusion, heat modulation, and vapor transmission.

The Philadelphia Girls' Rowing Club building, being constructed with solid masonry walls, may be said to have thick single-layer walls, since it is this stone mass which separates the outside from the inside. These walls not only provide a barrier from exterior elements but also have a structural role. Although the structural performance and condition of the walls are discussed above, it should be noted that the existence of cracks, either due to differential pressure or to a high volume of water, contribute to the reduced water resistance of the walls. For instance, the cracks which run diagonally from the corners of the windows on the West and North facades are areas where moisture may be drawn into the material, thus leading to accelerated deterioration of the fabric. These cracks seem to be formed along the vertical center line of the joints and are most likely contributed to by the abrupt change in geometry of the façade with the window placement.

Like walls, windows must also provide a barrier to the elements. Windows, however, should also be transparent and allow for light and visibility. The majority of the windows in the Philadelphia Girls' Rowing Club building are double-sash with the glass panes set in wooden frames. The windows along the South wall of the back meeting room have been replaced and do not match the four over four light character of the others on the first floor. The windows in the cupola have also been replaced and their frames have been covered in vinyl siding. In addition, the front window in the shower/bath room has been installed with a metal exhaust fan at the top. (Figure 52)

Presumably, this was added as part of an effort to increase ventilation in the room when Club members use the shower facilities.

Although in varied degrees, all windows exhibit peeling paint on their wooden frames. The paint chips and cracks allow water damage to the wood frames which accelerates deterioration. Over time, this damage may lead to wood rot and compromised structural stability of the frames. Likewise, the loose and cracked mortar around the rough openings of the windows allow water to enter the wall, foundation and building interior, thereby increasing the possibility for deterioration.¹⁹ In addition, the broken glass panes of the two front windows on the western elevation are a potential place for leakage.²⁰

The last major component of vertical closure systems is the doors. The Philadelphia Girls' Rowing Club building has five doors puncturing its façade: the front entrance to the north, the back door leading out to the riverside balcony, and the three boatshed doors which lead out to the south drive. Philadelphia Historical Commission files indicate that the front entrance door was replaced in 1997 with a wood-paneled replica of the original.²¹ However, the original wooden doorframe still remains, as well as the lights above the transom. The frame seems to be in fairly good condition, although it exhibits peeling paint, especially near the base. The back balcony door is not original, having been added at some time in the mid-twentieth century. This door, along with the front entrance one, appears to have a good-fitting jamb and provides a good barrier from

¹⁹ This loose and cracked mortar occurs mostly around the window openings of the basement in the West elevation.

²⁰ In this case, the glazing compound loses adhesion to the glass and water enters through small cracks in the compound, exposing it to freeze-thaw cycles. As a result, the glazing compound becomes more brittle and cracked over time and eventually falls off. Meanwhile, the glass may be subject to more cracks, since the pressure differential across the pane of the window will be affected.

²¹ Philadelphia Historical Commission, "No. 14 Boat House Row," Project Files.

the exterior and interior environment. The three doors of the lower enclosed porch are also new additions. Added in 2004, the steel-enforced polyurethane garage doors fit well in their wood frames and effectively close off the boat basin from the outside.²²

HORIZONTAL CLOSURE SYSTEM

The purpose of the horizontal closure system is primarily to divert water from the building site. The system generally includes: the roof, gutters, flashing, downspouts, and other forms of water-directing tools. The roof in this system is not only acting to divert water and insulate the building but is also as a structural element as well which stabilizes the tops of the walls and stiffens the entire system.

The horizontal closure system of the Philadelphia Girls' Rowing Club building consists of a hipped roof over the main building and cupola, aluminum gutters and downspouts, and metal flashing above the eaves and around the chimney bases. Both the hipped roofs of the main structure and cupola, although originally covered in tin, have been replaced with a modified bitumen surface and several waterproofing coats.²³ This project also included replacing the wood sheathing which had been damaged by wood rot. The presence of wood rot indicates previous water damage, most likely from the earlier asphalt roofing and shingles. In addition, some areas of the main roof demonstrate fairly shallow surfaces where water has begun to gather towards the center of the plane rather than being directed down the slope and into the gutter. Although it is not leaking as of yet,

²² It should be noted that the original sliding wood doors, which were used before the back porch was enclosed, are still present in the basement. Although no longer in use, they are still attached to their iron rail and rollers.

²³ According to building permits submitted to the Philadelphia Department of Licenses and Inspections, this roof replacement project included specifications to use Weatherbarrier "Colonial Red" Elastomeric Coating, 1650 finish grade, in order to simulate the original tin metal roof. This roofing project took place in May of 1994.



Figure 24: Main roof, looking south towards the Schuylkill River. The shallow surfaces are where water gathers into ponds, thereby increasing the potential for leakage and failure. Evidence of the balustrade appears along the roof edges. (Photograph by author, 2005)

it can be expected that a failure will eventually occur at the points where the water is forming into ponds. Not only does the weight of the water add stress to the structure but the standing water will accelerate weathering either by the freeze/thaw mechanism or by penetration.

The next most significant elements within the horizontal closure system are the aluminum gutters and downspouts, both of which appear to be in good condition. One downspout on the west elevation is crushed near the top half which may impede water flow during heavy downpours. (Figure 53) The stone masonry shows signs of weathering at the base of the downspouts, most likely due to splashing from improper water drainage at the ground level. Erosion at the base of the building seems common. Erosion around the base of the building can reverse the grade which currently slopes away from the building and allow water to flow back into the structure. In addition, the

aluminum flashing above the gutters and at the top of the eaves shows signs of rust. The corrosion is most likely due to overflow of the gutters and drainoff of the roof. (Figure 54)

ACTIVE SYSTEM

The active systems of a building include the various mechanical and electrical systems which may be divided into the following categories: environmental modification systems, protection systems, and utilities systems.

ENVIRONMENTAL MODIFICATION SYSTEM

The Philadelphia Girls' Rowing Club's heating system is provided by a forced, hot air heater located in the stairs to the cupola. Three ceiling diffusers and one wall grille for the shower room are used to distribute the heat throughout the building. (Figure 55) Historically, heating would have also been provided by the wood-burning fireplaces, especially the large limestone one in the back riverfront room. Still working, this back fireplace is used occasionally in the winter months.²⁴ A 1911 fire insurance survey indicates that the building was heated by gas stoves. The terra cotta chimney stacks that stand on the front portion of the roof would correspond to this heating method. Inspection of their surface shows evidence of paint peeling, which leaves the terra cotta vulnerable to water damage. (Figure 56) In addition, a 1938 fire insurance survey of the property makes note that the building was formerly heated by a hot air furnace located in

²⁴ It should also be noted that the building's cupola does not have any insulation nor the basement have any insulation in its joints, thus lowering the efficiency of heating the structure.



Figure 25: South meeting room, west wall. View of limestone fireplace. (Photograph by author, 2005)

the basement.²⁵ A gas furnace is also located in the locker room near the back south wall. Since the early 1900s, gas cooking has been available in the kitchen in the form of a gas range.²⁶

The Philadelphia Girls' Rowing Club building has no central air conditioning. The space is cooled by utilizing the large, open windows for air circulation and cooling breezes. The building's position leaves room on all sides to take advantage of the cross

²⁵ At that time, the furnace was found dismantled in the basement and it seems that the building went without heat for a couple years, or at least until 1942 – a fire insurance survey from that year notes that the building was not heated. Fire Insurance Surveys, Historical Society of Pennsylvania, Philadelphia.

²⁶ Philadelphia fire insurance surveys of the building from 1911 and 1938 make reference to a “gas range” and, in 1942, one mentions “gas cooking” in the kitchen. Ibid.

breezes blowing across the river. In addition, the boat bay doors may be opened to cool the air. Fans are also used by the Club during the hot Philadelphia summers.

PROTECTION SYSTEM

The building's security system is minimal and very basic. Iron grills line all basement windows and the majority of those on the first level. Historically, interior shutters would have been used to shut tightly over the window openings. Although only one shutter remains, located in the shower/bathroom, evidence of their security use



Figure 26: Locker room, east wall. Detail shows trace of shutter protection system. (Photograph by author, 2005)

remains in the form of the notched wooden pieces on either side of the window. Used to hold security bars in place over the shutters, they would have prevented the shutters from being pushed inwards. Some time after 1975, iron fences were installed to block off the west side of the property near the water and to protect the boathouse storage space,

adjoining the Undine boathouse, to the east. A pair of floodlights hanging below the eaves on the front facade, as well as out back on the south wall and enclosed porch, provide much-needed light for the exterior. The Boathouse Row lights that outline features on the building's riverfront, also illuminate the back of the property. Overall, the building has no fire protection or suppression systems. Although no fire alarms, detectors or exit signs, there are two CO₂ fire extinguishers near the kitchen and one small, wall fire extinguisher in the basement. In addition, emergency battery units are used throughout the structure. These appear in the entrance near the front door, in the back meeting room and in the basement near the boat bay doors. While the basement also has one emergency light at the bottom of the stairs, the cupola has no emergency lighting or lights in the stair. It should be noted that an existing fire hydrant is located between the building and its neighbor the Sedgeley Club.

UTILITIES SYSTEM

When built, the Philadelphia Girls' Rowing Club building would have had cold running water and have been connected to a sewer system. The 1891 fire insurance survey of the building describes cold water for the "open wash stand" with "5 white ware bowls, plated faucet each," as well as for the "shower bath."²⁷ However, by the early twentieth century, hot water was made available through a coal tank heater in the basement. Examination of the basement reveals remnants of old sewer pipes, along with newer ones. Hydraulic systems are a potentially damaging feature to the fabric of any building. Any flaw or failure in the system may precipitate water contamination and

²⁷ Fire Insurance Surveys, Historical Society of Pennsylvania, Philadelphia.

material decay. In addition, the fact that much of this system is installed in concealed areas means that any failures may go unnoticed until the damage has become irreversible.

At the time of construction, the Philadelphia Girls' Club building most likely used gas lighting. Fire insurance surveys from the beginning of the twentieth century indicate that gas lighting remained in the building through the 1930s, only to be switched to electric in the early 1940s. This transition corresponds with the move of the Philadelphia Skating and Humane Society from the premises and the new occupation of the building by the Philadelphia Girls' Rowing Club. Today, most of the lighting is modern with incandescent type lighting fixtures and primarily fluorescent lights in the basement. However, the presence of natural light is strongly felt throughout the building due largely to the large, tall windows. On the building's exterior, electrical conduit lines have undergone many installations and the metal clamps and screws locking these tubes to the exterior masonry have left holes in the stone. This occurs primarily on the back façade where the decorative lights are hung and should be watched carefully, since the holes allow water to enter the wall and building interior.

With the building being over 100 years old, the current electrical system is at least third-generation service, distribution and wiring. The original power source most likely was gas, but would have eventually changed to electric. The basement offers a good look at the service and one can see early wiring, as well as modern nonmetallic sheathed wiring running along the ceiling joists and walls. Also located in the basement are the gas meter, PECO meter and control transponder and an open electrical box with.²⁸ Since the building has endured changes to the power system over the years, it has had to withstand numerous changes to the structure's fabric.

²⁸ A modern fuse box is also located in the stairs to the cupola.

PAINT ANALYSIS

In order to identify the chromochronologies of historic buildings, paint analyses are performed on various decorative finishes. Through basic stratigraphic analysis, one may document the paint histories of certain buildings and provide the basis for an authentic repainting campaign during their restoration phases. For this report, samples were removed from interior and exterior trim, in order to determine preliminary representation of the original and subsequent color schemes, and form the basis for future investigation by others. Removal of samples was dictated by type and accessibility. For instance, at the time the building was built, it was likely that the exterior trim, such as window and door frames, cornices, etc., would have been painted the same color rather than having particular moldings or details highlighted in accent colors. Therefore, samples were obtained from a typical window frame and front door frame. Samples were also taken from all the major components of the cupola cornice, such as crown molding, fascia, soffit, bed molding and bracket, to see if any details were highlighted in different colors. Since it is likely that the main building cornice and cupola cornice received that same treatment, samples were not obtained from the former.¹

Interior paint samples were chosen to study the original and subsequent color schemes of the wood trim. It is likely that all the wood trim in each room was painted the same color, as well as throughout the building. So, samples were taken from door and window frames in the back South room and the locker room. In addition, samples were taken from a window frame in the front West room. Although the plaster cornice in the

¹ In addition, the height of the main cornice (from the ground) prevented easy access for sample removal.

back south room appears original, it was too high to obtain adequate samples at that time. Samples were also obtained from the painted lockers in the locker room, as well as the hallway cabinets to assess paint layering.²

Once paint chips were removed from targeted locations and prominent painted elements, each sample location was recorded on a drawing and map, thereby helping to extend later microscopic findings to the large scale in order to determine patterns and trends. In addition, all sample locations were photographed. In all, samples were taken from a total of thirteen locations, both inside and outside the building. The stratigraphy of these samples was then analyzed. All analyses, from sample preparation to microscopy, were conducted in the Architectural Conservation Laboratory at the University of Pennsylvania. The detailed analyses and photographs of select samples, along with their location maps, are located in Appendix E.³

Preparation and analysis of the samples consisted of the following: A small portion of each sample was selected and embedded in Bioplast™ Liquid Casting Plastic, a polyester/methacrylate resin. These embedded samples were cut with a Buehler™ Isomet, a diamond edge micro-saw, and polished with alumina powder, Buehler™ Micropolish II 0.05 micron, on felt cloth. The samples were then examined with a stereo-binocular microscope (Nikon Optiphot 2-Pol) under normal reflected light using quartz-halogen illumination. Using a 35 mm Nikon camera attached to the microscope,

² It should be pointed out that the layout of the current lockers does not match the 1891 Fire Insurance plan of the building, thus indicating that they were added at a later date.

³ Those samples consisting of severely flaking layers and/or no visible substrate provided little information and were therefore not included in the Appendix.

photomicrographs were taken of the samples.⁴ Each un-bedded sample was also studied under normal reflected light using a Nikon Transformer XN compound microscope.

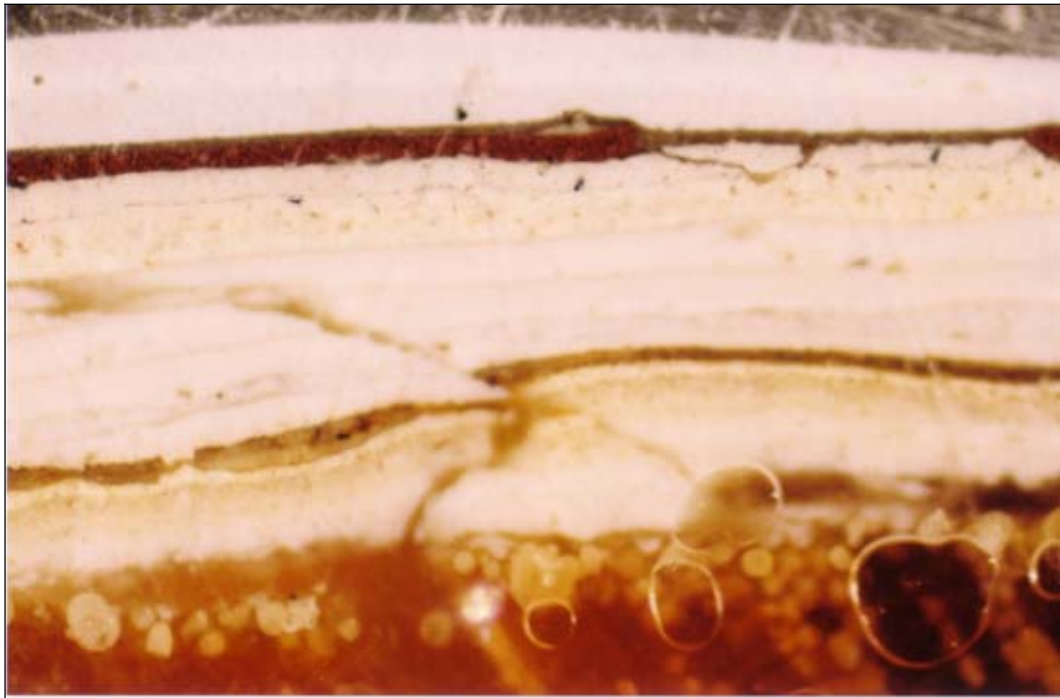
Visual analysis revealed an inconsistent number of painting campaigns among the samples, but a similar type of color scheme. A single campaign is demonstrated by what can be assumed to be a finish coat, a lack of dirt layers and homogeneous pigment particle sizes among the layers. The number of campaigns visible varied according to the element from which the sample was removed and the degree of deterioration in that location, although effort was made to take samples from protected locations.⁵ The samples indicate that all exterior trim was first painted a green color. From here, various paint layers of green and white (potentially a primer) were used to decorate the front door molding, window trim and cupola cornice. Although the date is not known specifically, some time in the mid-to-late-twentieth century (judging from the top and more recent layers), white replaced green as the dominant paint color. Today, the exterior window trim and front door molding exhibit a light blue-grey color. The brackets and molding of the cupola cornice are also painted in this color. Judging from photographs and Philadelphia Historical Commission records of the building, this last paint campaign (light blue-grey) was completed in the 1990s.

The interior trim of the Philadelphia Girls' Rowing Club demonstrates a more varied painting character. In the South room, the door and window moldings show an early painting campaign of white. Although Sample No. 7, representing the door molding from this room, does not include a complete stratigraphy of paint layers, closer examination of other samples from this location reveals a similar stratigraphy as to what

⁴ Kodak Color Print Film, Gold 200 GB135-24, was used to take the photographs.

⁵ These locations were in corners and away from edges or unprotected areas.

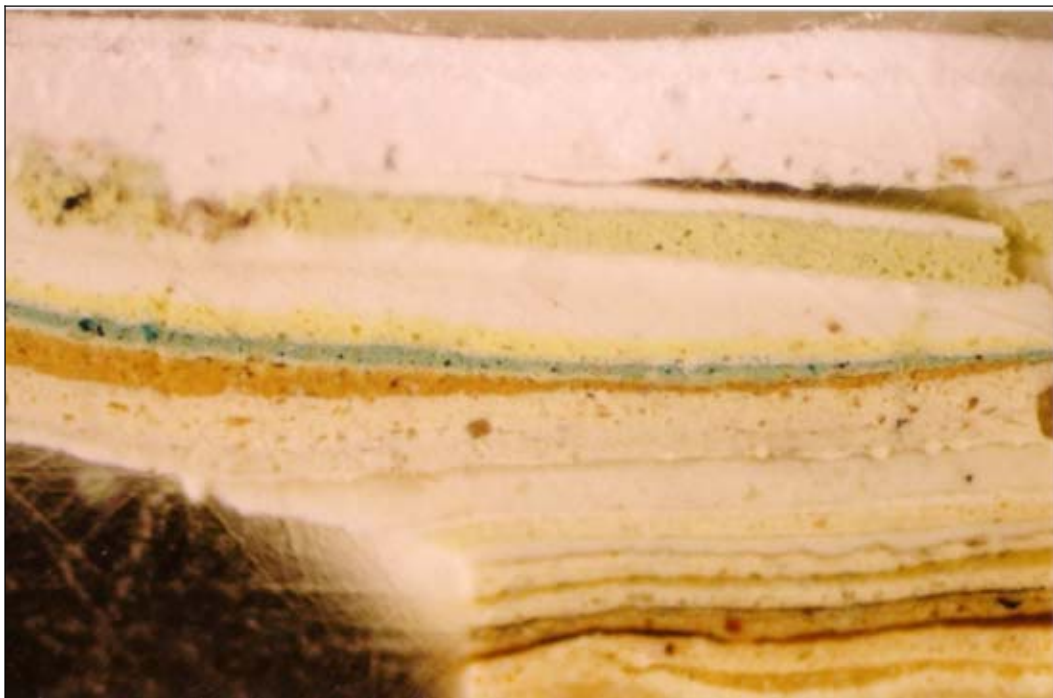
was found in the room's window molding and corresponding Sample No. 8. Thus, several campaigns of white were used throughout the years on the trim in this back room. Likewise, white paint seems to be the dominant color used to cover the window trim in the front North-West room. The paint sample (Sample No. 10) taken from one of the windows on the west wall reveals many early layers of white paint. However, at some time in the mid-twentieth century, judging from the layer's placement near the top of the stratigraphy, a brownish-red coat of paint was used to cover the window molding. Since the room has undergone many alterations from the 1960s onwards, such as wood paneling (unpainted) and a dropped ceiling, this color change does not appear surprising. Yet, the Club eventually reverted back to white and the current window trim reflects this choice.⁶



Paint Sample No. 10

⁶ The room's many alterations over the years, most notably the removal of the interior supporting wall which divided the room from the central hallway and the creation of the small kitchen space along its South wall, leave no original doors or frames. Therefore, a complete study of the door trim was not possible and no corresponding paint samples were taken from this room.

The paint samples taken from the locker room on the east side of the building demonstrate the continued preference to use white for door and window trim. Both Samples #11 and #13, representing moldings taken from the entry door and one of the east windows, respectively, exhibit early paint campaigns of white. Sample #13, however, goes on to indicate that further campaigns of light brown-yellow, pale yellow and light green were used on the window trim. The paint sample of the window bead reveals a



Paint Sample No. 13

multi-layered stratigraphy that indicates that the trim was painted many times over the years. This would seem fitting, since the room's closeness to the bath and shower room, would have been exposed to very humid and damp conditions, perhaps necessitating more touch-ups. In addition, the room's more private nature, as opposed to the other more public and formal rooms of the first floor, probably gave more freedom for the Club members to experiment with paint colors.

The paint samples removed from the locker molding in the east room and the cupboard in the side hallway indicate that these have always been painted in white. Although both are not original to the building's construction, the molding from the lockers exhibits a greater number of paint layers. Presumably, their constant use makes them more susceptible to wear and tear, thus necessitating more paint jobs. In all, their paint schemes match those of the rest of the building's interior trim.

MORTAR ANALYSIS

Mortar analysis was also conducted on the Philadelphia Girls' Rowing Club in order to determine the proportional makeup of its historic mortar, as well as to categorize its physical properties. Through studying the mortar type and its components, one may inform future restoration efforts where compatible mortar preparation is needed. In addition, the physical properties of its granular materials can be used as a means of classification for comparative purposes, as well as to predict the properties of its aggregated, porous building materials. Mortar analysis was conducted on a sample taken from the mortar around one of the window frames.⁷ This analysis followed the procedures outlined in "Experiment #8: Mortar Analysis, Simple Method" and "Experiment #1 Sieve Analysis and Microscopic Observation of Granular Samples," as specified in Teutonico (1988).⁸ As in the paint analyses, all experiments were conducted in the Architectural Conservation Laboratory at the University of Pennsylvania. All mortar analysis data may be found in Appendix E.

⁷ Specifically, the sample was taken from mortar surrounding the far right basement window on the west elevation.

⁸ Teutonico, *A Laboratory Manual for Architectural Conservators*. 77, 113-119.



Figure 27: West elevation, detail of basement window where the mortar sample was taken. (Photograph by author, 2005)



Figure 28: Detail of mortar sample before lab analysis. (Photograph by author, 2005)

Mortars are systems of binders, aggregates, water, and additives in various proportions. Although several factors that affect the condition and performance of a mortar are not revealed in mortar analysis, such as the original winder/binder ration, the mixing and placing method, the rate of drying, and the cleanliness and condition of the aggregate, the identification of aggregates for matching is possible.⁹ The first experiment involved microscopical examination of the sample for the following characteristics: layer structure (if any), color, texture, inclusions, hardness of each layer. A portion of the sample was then powdered using a mortar and pestle and dried in an oven at 110° C for several hours, before being weighed with a balance. The sample was then moistened with water and subjected to the addition of 14% solution of hydrochloric acid in order to dissolve the binder. After agitating for several hours, water is slowly added to the remaining sample material and the liquid is filtered to separate the fines from the heavier solid particles (aggregate). Once the fines are collected and dried in the oven, the sand is washed with de-ionized water, dried again and weighed. The dry aggregate is also weighed. The characterization of the aggregate is determined by examining it through a stereo binocular microscope, recording the physical characteristics by color, particle shape and size.¹⁰ In addition, the sand is sieved through a small standard sieve set to determine the particle size distribution.¹¹ The amount of each particle size is expressed as a percentage of the whole (both % passing or retained). *[Please see the Mortar Analysis Data Sheet in Appendix E for more specifics.]*

⁹ Mack, and Spewiek., “Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings.”

¹⁰ Color of particles was determined using the Munsell System of Color Notation. This may be found through the American Society for the Testing and Materials Standards (ASTM) “D1535-01: Standard Practice for Specifying Color by the Munsell System.” In addition, ASTM “C144-93: Standard Specification for Aggregate for Masonry Mortar” was used.

¹¹ The sand was sieved according to ASTM “C136-84a: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.”

Mortar testing revealed that the binder in the sample was most likely lime-based (calcium carbonate). For mortars that contain a binder based on calcium carbonate and/or magnesium carbonate, testing the mortar with hydrochloric acid will result in a reaction, typically vigorous, that liberates carbon dioxide. Thus, the sample's vigorous reaction clearly indicates that the binder is based on calcium or magnesium carbonate, or a combination thereof. It is more difficult to ascertain the presence of either clays or portland cement which may be found in conjunction with lime-based mortars. More tests would have to be performed to determine if any additives, clays, or Portland cements are present in the mortar and what their physical and mechanical properties might be.

The gravimetric analysis of the sample reveals that the sample contains an even assortment of various sized aggregates, most likely sand or crushed rock. Determining the weight percentages of the various fractions and the characteristics of the aggregate (especially grain size distribution), help indicate factors such as texture, strength, and function of the mortar. For the most part, the aggregate portion of mortars lends color, bulk, and strength to the final product.¹² The sand added some color and moderate strength to the mortar. In addition, the low-sphericity and sub-rounded nature of the aggregate, are characteristics that lend the mortar the property of low shrinkage and good vapor permeability (an important attribute that allows water vapor pass to easily pass from inside the building and out the mortar - not through the building's stones).¹³

The second experiment involved further sieve analysis and microscopic observation. As used above, particle size distribution of granular samples is determined by separating groups of particles by mechanical sieving. The results of this experiment,

¹² McKee, *Introduction to Early American Masonry, Stone, Brick, Mortar, and Plaster*, 61.

¹³ Meng, "Characterization of Pore Structure for the Interpretation of Moisture Transport," 156.

in the form of data charts and a particle grain size distribution graph, are located in Appendix D. In general, the aggregate has a mix of both round and angular grains. The sample falls within the “10YR” color family on the Munsell Chart, the larger particles appearing more “gray-brown” than the more fine “light yellowish brown” ones. The sample aggregate is retained at a greater rate in the larger sieve sizes (greater than 600 μ m), demonstrating that it contains larger individual grains.

These results and those of the previous mortar test help to provide a more complete profile of the mortar used in the Philadelphia Girls’ Rowing Club. Through examination of physical properties, such as grain shape, size and sorting, one may inform future work on mortar analysis. This may include studying the porosity, permeability, density and strength of the mortar. These analyses give approximate information and should be carried out alongside other types of analyses (i.e. petrographic, x-ray diffraction, etc.) in order to derive the maximum possible information about the mortar type and its components.

SECTION III – TREATMENT AND CONSERVATION STRATEGIES

CHAPTER 7: HISTORIC PRESERVATION OBJECTIVES

The degree to which to conserve a building varies from project to project and depends on many factors. In selecting a treatment approach for a building, the intended use of a property, funding prospects, and the findings of an investigation are all taken into consideration. Depending on these variables, including historical significance, physical condition and intended interpretation, it may be necessary to present a number of alternate treatments. When selecting an appropriate treatment approach, one may turn to *The Secretary of the Interior's Standards for the Treatment of Historic Properties* for its basic guiding principles. Developed to help protect irreplaceable cultural resources in the United States by promoting consistent preservation practices, the Standards are a widely accepted means of planning for and undertaking work that preserves historic materials and elements. The Standards outline four distinct options for treatment that are interrelated: Preservation, Rehabilitation, Restoration, and Reconstruction. These are defined as follows:

Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.

Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.

Restoration is undertaken to depict a property at a particular period of time in its history, while removed evidence of other periods.

Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.¹

¹ *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. U.S. Department of the Interior. Washington, D.C.: National Park Service, 1995.

These treatments, with their accompanying Guidelines, not only offer a model process to follow when planning for treatment and providing technical and design recommendations, but also provide a consistent conservation philosophy.

Taking into consideration these Standards and the variety of factors unique to the Philadelphia Girls' Rowing Club building, the most appropriate treatment recommendation would be a combination of preservation and rehabilitation, with emphasis on the former. The building currently stands very little altered from its original state, a remarkable achievement given its age and numerous tenants. Therefore, maintaining the existing historic materials and property's form should be paramount. The fact that the building is still being used as a boathouse, after all of these years, makes preserving its function, as well as its physical structure, important. Although restoration of certain interior features will be recommended, especially in the front meeting room, as well as a return to the original exterior and interior paint scheme, these decisions depend on the Club's budget and funding initiatives and are secondary to the overall preservation objective.

The prescribed interventions should maintain the historic character and integrity of the structure. Historically significant on its own, as well as part of Boathouse Row, the building contributes to the rich architectural and cultural heritage of the area. As a result, all interventions should be sympathetic to the environment and retain the unique character of the landmarked structure. According to Bernard M. Feilden, Director Emeritus at the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM), preservation involves the maintenance of the resource

itself in addition to the prevention of auxiliary deterioration sources.² This maintenance requires following a regular schedule for cleaning, housekeeping, general conditions inspections, and repairs.³ A building simply maintained allows its use to continue and beauty to be admired even as it exhibits the ravages of time. These conditions will be included in the treatment and conservation strategies of the next chapter. As John Ruskin wrote in “The Lamp of Memory, II,” if a monument is properly maintained there will be no need for restoration.⁴ Most importantly, preserving the building’s recreational use should also address the question of how does one appropriately maintain and rehabilitate a recreational structure of historical value which is still very much in use today.

² Feilden divided acknowledged interventions to cultural resources into seven categories, from minimum degrees of intervention: prevention of deterioration, preservation, consolidation, restoration, rehabilitation, reproduction, and reconstruction. Feilden, *Conservation of Historic Buildings*, 9.

³ Feilden, *Conservation of Historic Buildings*, 9-11.

⁴ Ruskin, “The Lamp of Memory, II,” 323.

CHAPTER 8: TREATMENT RECOMMENDATIONS AND IMPLICATIONS

Since preserving the Philadelphia Girls' Rowing Club building is a priority, care should be taken that all treatments and recommendations not adversely affect the material, character, and significance of the historic structure. However, since water is the most common cause for deterioration in buildings, a comprehensive plan is required to deal effectively with the inherent water problems of the site. Subject to flooding from both the road surface and the rising river during storms, the present soil sub-surface remains in a state of liquification, saturated with dammed-up water. The Schuylkill Navy conditions report of Boathouse Row states that it is "possible that surface water management problems are the original cause of local foundation failures, which continue to aggravate all current foundation problems and local building movements."¹ The report goes on to explain that poor site drainage is the result of too few site drains and ineffective curbs along East River Drive. Besides mapping or plotting all drains surrounding the Philadelphia Girls' Rowing Club, including those along the East River Drive curb and sidewalk, it may be helpful to look at water drainage throughout the entire Boathouse Row site. This might reveal general trends as to where water flows after it enters the buildings' drains and downspouts and if it flows to city storm sewers or to culverts in the river wall. Since an ineffective drainage system will adversely affect all structures along Boathouse Row, all drainage repair work to the Philadelphia Girls' Rowing Club building should take into consideration the larger site drainage system along Boathouse Row.

¹ Kieran, Timberlake & Harris, "Philadelphia Boathouse Row Study: A Comprehensive Study of the Existing Conditions of Boathouse Row," 6.

Effective and carefully monitored drainage is critical to the preservation of the Philadelphia Girls' Rowing Club structure. It is important to realize that any deferment may precipitate progressive damage of associated building systems that will be costly to repair. Therefore, the building's drains should be regularly cleaned and checked. All downspouts and gutters should be inspected as well, replacing all bent or damaged ones. In addition, all rusted flashing should be replaced along the eaves. Concrete runoffs should be added and/or replaced to those areas that are prone to discharge water into the side yards. These should not be angled towards the building, which allow water to collect against walls and foundations, but sloped so that the water flows away from the intersection with the wall in an uninterrupted stream to the river. This is especially critical around the wall deformation on the west elevation. On the roof, all water should be directed to low points so that it is conducted towards drains and not allowed to pool. Since inadequate roof drainage causes leaking and deterioration of roof and structural systems, a problem in the past, inspection should target this area. The longevity of the system will be increased if debris and heavy snows are periodically removed from the roof. In addition, it is important to see that all rainwater from the site and roof be conducted to the river edge.

In order to preserve the Philadelphia Girl's Rowing Club building, one must also address the various settlement-related problems. Although distortion of the west wall looks severe, photographs dating from the 1970s show similar configuration and past monitors used to gauge crack movement showed no signs of movement. Most likely caused by a local pile failure, the structural failure increases the likelihood for water to enter the building interior, lessening structural capacity of joists and reaching foundations.

The on-going saturation of the wall may lead to further settlement or movement. In order to preclude further damaging settlement to the Philadelphia Girls' Club building, it is recommended that further investigation be performed to completely define the subsurface, foundation and structural conditions of the boathouse. This comprehensive foundation investigation would include test borings of the soil around the building in order to precisely determine what type of soil exists. That way, if a new foundation system needs to be injected into the soil, the Club will be better prepared.

In addition, crack monitoring, such as the gauge used by structural engineer Thomas V. Dowd in his structural work on the building in the late 1980s, may be used to test the magnitude of settlement.² This monitoring system may also be used in the cracks on the in the north façade and on the back porch to check for continued movement. The building's basement should also be routinely inspected for further settlement of the floor, especially occurring at the column locations.³ Masonry cracks, especially on the west wall, should be repointed to prevent further water intrusion.

Part of the monitoring plan should include inspection of the screw jacks used in the basement and first floor. These jacks should periodically be surveyed to make sure that they are in good contact with each joist and that they are tightened sufficiently. In addition, the joist ends above the screw jack locations should be reviewed for signs of water damage. Rising damp from water leaking through the settlement cracks may rot the joists. A full examination of all structural wooden members, primarily in the

² A monitoring program would establish vertical and horizontal control points and monitor these locations by precision means on a periodic basis over a period of time, for instance semi-annually for three to five years.

³ Remedial construction may be needed in the future for the floor slabs in the boat room.

basement, should be conducted and assessed for further deterioration, replacing those that show signs of rot.

The development of a comprehensive maintenance plan is integral to all conservation work for hundred-year-old-plus structures. Instead of continuing the general pattern of crisis management of building problems, where immediate needs are answered, the Club should prepare a full schedule for routine maintenance. This plan should include the following: gutters should be cleared of debris at least once a year; a regular repointing schedule should be established, including all stone walls, and continued indefinitely; all nearby vegetation should be trimmed away from the building so that trees do not touch roofs and ivy does not grow in mortar joints, especially on the east elevation; a regular repainting schedule for all exterior woodwork should also be set up.^{4,5} It is recommended that the Club, perhaps spearheaded by the House Committee, organize the maintenance schedule in the form of a calendar which includes all maintenance tasks to be accomplished each year, with their corresponding cost estimates, consultants and recommended contractors. A useful organizational tool, the schedule should also allow for twice yearly inspection by a professional consultant to administer both the maintenance and the inspection.⁶

In order to preserve the historic masonry of the Philadelphia Girls' Rowing Club and slow down the inevitable and progressive deterioration of the stone, repointing is a necessary treatment. Repointing is probably the most common operation practiced in

⁴ Dense vegetation, especially ivy, can also hide defects in the fabric of the building or hinder maintenance work. When stonework is sound, the main problem is to keep growth away from gutters and paint work. The Club should regularly prune the fast-growing plant to limit root penetration and excessive growth and inspect the condition of the wall.

⁵ The terra-cotta chimney stacks on the roof should also be included in the repainting schedule.

⁶ Since the Club has professional contractors and architects as members, they may also be appropriate consultants, or at least be involved in the inspection.

preserving and restoring old masonry buildings.⁷ If well-done, it is not only a safeguard to the physical structure, but an important contribution to the maintenance of the historical character of the building. However, when done badly, it is often difficult and expensive to correct, causing irreparable damage to the physical structure of the building as well as to its appearance. When choosing the type of mortar to be used in repointing, consideration must be given to matching the old mortar in color, texture, strength and hardness (density and porosity). The Philadelphia Girls' Rowing Club building shows signs of multiple repointing campaigns, especially on the west elevation above the structural foundation work. Close examination reveals that newer mortars do not exhibit compatibility of material or matching of color and texture. Most likely cement, the newer mortar campaigns stand out by their dark gray color and sometimes sloppy and raised joints. In addition, the conditions survey located several areas with cracked and loose mortar, especially around the basement window openings.⁸

Since many cases of stone decay are directly linked to a porous stone being pointed with impervious mortar, care should be taken in selecting the new mortar for the boathouse. The Philadelphia Girl's Rowing Club building already shows signs of deterioration and erosion in its stone masonry, possibly due to the fact that all moisture absorbed in the wall is held in suspension in the softer textured stone, as well as to numerous freeze-thaw cycles. Since hard cement mortar will cause softer materials to

⁷ McKee, *Introduction to Early American Masonry, Stone, Brick, and Plaster*, 71.

⁸ Besides resulting from differential and foundation settlement, cracking is a frequent occurrence when using hard cement mortar with stone that is not appropriate. Cracking of cement mortar may also result from faulty application.

disintegrate, cement pointing should be avoided.⁹ Although mortar analysis was conducted on an early mortar from the building, continued tests should be performed to determine if any additives, clays or Portland cements are present and what their physical and mechanical properties might be. The correct color additive may also be determined, so any future repointing will be standardized and sympathetic in appearance. The recommended mortar composition will most likely be a lime-sand mortar (a softer mortar) mixed with portland cement in a ratio of one part cement to two or three parts of lime. Once the type of mortar is determined and before repointing, all loose and deteriorated mortar should be removed.¹⁰ It is also important to use a standard technique and style in the mortar's application, using recessed joints to make it less susceptible to damage.¹¹

Although the primary conservation strategy is to preserve the property's historic materials, form and function, one variation would be to restore the paint system on the exterior and interior trim. Although not a priority to the structure's conservation, the wooden trim, especially on the exterior, needs repainting so the Club may wish to revert back to the building's original color scheme. Paint research and analysis conducted through the course of this paper demonstrated that the exterior trim was painted a dark green color and most of the interior trim was painted white.¹² Since the building has undergone relatively few alterations and remains similar to its early days, it seems fitting

⁹ It is best to repoint with mortar having the same density and absorbency as the stone in the building.

¹⁰ The joints may be raked out by hand to a depth of about one inch, taking care not to enlarge the width of the joints.

¹¹ After review of historic photographs of the building, using a recessed mortar would also replicate the early style of application.

¹² Please see Chapter 6: Materials Testing and Analysis for more specifics on the exterior and interior trim.

that historic colors should be recommended for use. Color samples may be matched and field checked before the painting project begins.¹³

Another conservation strategy, in variation to the overall preservation objective, would be the restoration of the interior-bearing wall in the front meeting room.

Depending on available funds, the Club may choose to reconstruct the wall that was removed in the 1960s. Not only would this action recreate the central hallway of the building plan, but it would reinstate the structural stability compromised by its removal.

If the continued use of the property is to be maintained, a degree of rehabilitation is recommended in order to facilitate all members. Today, the Club has about 100 members and some of the building's systems should be updated in order to accommodate them. However, it is important that all work still retain the historic character of the building as much as possible. First, life safety requirements should be updated.

Emergency lighting systems should be provided at means of egress throughout the boathouse and at all exterior door exits. Lighting "EXIT" signs must be located at all means of egress. Fire alarm systems, with early warning smoke detecting alarms monitored to a central agency should be provided, as well. Fire protection around the cooking equipment in the kitchen should also be ensured. The Club should consider the possibility for installing a sprinkler fire protection system.

Care should be taken to inspect the utilities system routinely in order to detect the slightest of problems and to motivate a response. As the power consumption in the building increases with its growing occupancy, the need for frequent testing of this system also increases. Electrical circuits and gas meters should be routinely tested for

¹³ Further work on the paint analysis may provide scientific reference values in two color systems for each color match: Munsell and CIE LAB – L*a*b*. The L*a*b* values are tied in with the use of the spectrophotometer and allow more accuracy of color evaluation and specification.

“leaks,” as well as their fittings and seals. In addition, lighting fixtures should be provided with protective guards and/or lens in the lower boat level storage area. Finally, wiring should be upgraded to conform to the latest National Electrical Code. It is advisable to undertake a full code review by an M/P/E consultant for a more complete mechanical systems evaluation.

CONCLUSION

This historic structure report is intended to provide documentary, graphic, and physical information about the Philadelphia Girl's Club building's history and existing condition. It is meant to be used as a tool for the preservation planning and maintenance of the historic property. However, this report acknowledges that it is not all-inclusive and includes analysis of only those building elements and systems that may be affected by proposed (but necessary) work to preserve and protect the building. Thus, this report may be considered part of an incremental preparation or a partial historic structure report. Future research and documentation may be required before undertaking any extensive work, especially related to structural stabilization.

The conservation approaches outlined in this paper were described to provide the Club members with the knowledge and understanding of the preservation issues they may face in the continued inhabitation of the structure. It is hoped that the author has established the importance of the Philadelphia Girl's Club building and its historical significance. However, the report was also conducted with the understanding that a compromise must be made between caring for the historical property and financial, interest, skill, and time limitations.

APPENDIX A.

THE SCHUYLKILL NAVY

AND

THE CLUBS OF BOATHOUSE ROW

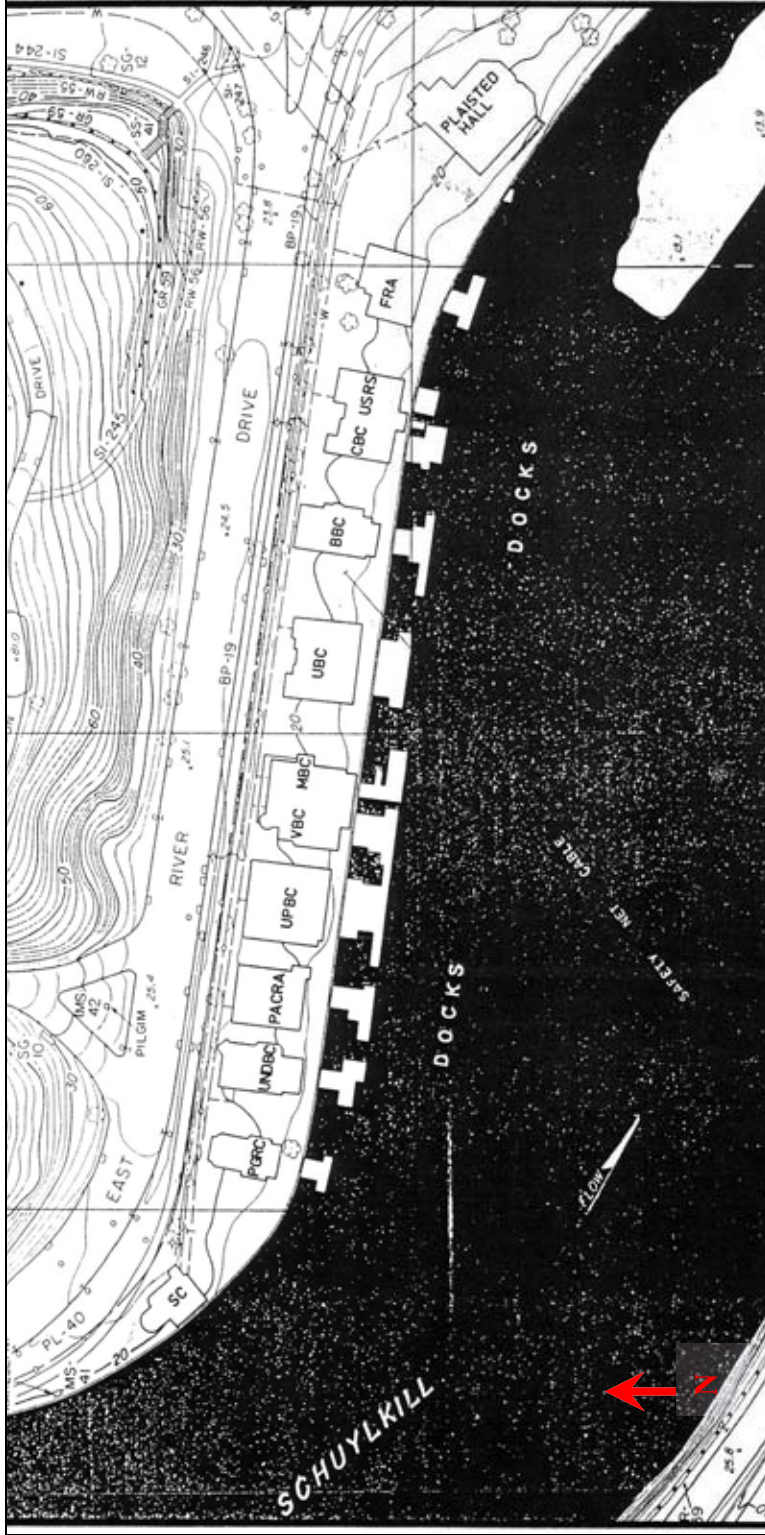


Figure 29: Site Plan - Boathouse Row, Philadelphia, PA

SITE PLAN KEY

- | | | | |
|------|--|-------|--|
| FRA | - #2 East River Drive, Fairmount Rowing Association | MBC | - #9 East River Drive, Malta Boat Club |
| USRS | - #3 East River Drive, Quaker City Barge Club | VBC | - #10 East River Drive, Vesper Boat Club |
| BBC | - #4 East River Drive, U.S. Rowing Society, Penn. Barge Club | UPBC | - #11 East River Drive, University of Penn. Boat Club |
| BBC | - #5 East River Drive, Crescent Boat Club | PACRA | - #12 East River Drive, Penn Athletic Club Rowing Assoc. |
| UBC | - #6 East River Drive, Bachelors Barge Club | UNDBC | - #13 East River Drive, Undine Barge Club |
| | - #7 East River Drive, University Barge Club | PGRC | - #14 East River Drive, Philadelphia Girls' Rowing Club |
| | - #8 East River Drive, Philadelphia Barge Club | SC | - #15 East River Drive, Sedgeley Club |

APPENDIX A. THE SCHUYLKILL NAVY AND THE CLUBS OF BOATHOUSE ROW

The Schuylkill Navy began on October 5th, 1858 with nine clubs and approximately 300 members. Today, the Navy includes ten clubs and over 3,000 participating rowers.^{1,2} Through the years, however, at least 23 other clubs have belonged to its ranks, either dissolving, dropping out, or being integrated into other clubs. For the most part, these clubs made their home on the banks of the Schuylkill River in what is now called Boathouse Row. At present, Boathouse Row contains the following active clubs: Bachelors, College, Crescent, Fairmount, Malta, Penn Athletic Club, Philadelphia Girls, Undine, University and Vesper.³ These boathouses exhibit a wide variety of architectural styles prevalent during the late 19th century, although additions have unfortunately changed the appearance of quite a few. In addition to housing the Schuylkill Navy clubs, Boathouse Row also sponsors other scholastic and collegiate clubs, sharing the use of their facilities. For instance, Fairmount Rowing Association currently hosts both the boys and girls rowing programs of Episcopal Academy and Vesper Boat Club hosts the Bryn Mawr College rowing team. The following paragraphs will give a brief description of these clubs and their respective houses.

The *Fairmount Rowing Association* (#2 East River Drive⁴), organized in 1870, occupies the newest boat house structure on Boathouse Row. Built in 1904, the Georgian Revival building is connected to the stone boathouse of the Quaker City Barge Club.

¹ The Schuylkill Navy of Philadelphia, "Clubs and History," <http://www.boathouserow.org/>.

² The Gillin Boat Club, founded in 2002, joined the Navy September 20, 2004, making it an eleventh member of the organization. However, since the boathouse is not located on Boathouse Row but further down Kelly Drive and across from the Canoe Club, it will not be included with the other clubs.

³ Other clubs associated with these boat houses over the years have included Sedgely, LaSalle, West Philadelphia and another Ione.

⁴ Plaisted Hall occupies #1 Boat House Row, but since it does not house any boat clubs, will not be discussed in this paper.

Fairmount originally had taken over the equipment and the boathouse of the Pacific Barge Club around 1880. For 30 years they used this small stone structure, before deciding that they needed a larger building and hired Philadelphia architect Walter D. Smedley (1862-1939) to design the present boathouse. In addition to their boathouse at #2 East River Drive, they later absorbed the Quaker City Barge Club and acquired the use of its boathouse at #3 East River Drive. The Fairmount Rowing Association has been one of the more active clubs in the Navy, joining the organization in 1916 and having over 50 National Championships.⁵

The *Quaker City Barge Club* (#3 East River Drive) was organized on October 17, 1858 and joined the Navy shortly thereafter. First known as the Camilla Boat Club, they occupied the western half of the clubhouse originally erected by the Pacific Boat Club in 1860. After the Quaker City Barge Club became inactive in 1932, the Fairmount Rowing Association incorporated this house into its building at #2 East River Drive. During the club's 74-year existence, they entered many races and held the honor of competing in the first Four-Oared Shell with Coxswain race in 1870.

The *Pennsylvania Barge Club* (#4 East River Drive) was founded in 1861 and joined the Schuylkill Navy in 1865. Their clubhouse is Eastlake in appearance and was built in 1892 by Philadelphia architect Louis Hickman (1863-?). Although a second-floor addition was added in 1912 to accommodate the need for more space, after World War II and the Korean War, the club was not able to rebuild its membership lost to the service and it ceased active operations in 1955. That same year, the club gave its building to the Schuylkill Navy for its headquarters. Besides this use, the building now houses the

⁵ Sweeney, *The History of the Penn Athletic Club Association*, 8.

United States Rowing Society (formerly the Schuylkill Navy Association), the Philadelphia Scholastic Rowing Association, the Middle States Regatta Association, the Dad Vail Rowing Association, the National Association of Amateur Oarsmen and the United States Rowing Association. On January 1, 1974, the United States Rowing Society renamed the building the “Hollenback House” to honor one of its former presidents, William M. Hollenback, Jr.

The *Crescent Boat Club* (#5 East River Drive) was organized in 1867 by members of the Pickwick Barge Club and the (first) Ione Barge Club. At this time they occupied space in the Camilla Barge Club (later known as the Quaker City Barge Club). They joined the Schuylkill Navy on February 3, 1868 and erected their house in 1869-1871 in conjunction with the Pennsylvania Barge Club. In 1891, they enlarged the house by adding a second story. The Crescent Boat Club resigned from the Navy in 1951 and turned their house over to the LaSalle Rowing Association. Later, the Crescent Boat Club reoccupied the house, renting it to various collegiate and scholastic teams.⁶

The *Bachelors Barge Club* (#6 East River Drive) was organized July 4, 1853 and claims the distinction of being the oldest boat club along the Schuylkill River. That same year, they joined the Schuylkill Navy only to resign in October 1870 and rejoin in August 1882. According to club records, the club occupied two boathouses constructed during the period prior to 1860, first a small frame house which they replaced with a similar brick house. In 1860, they received permission to erect a stone house at the same time as the Pacific Boat Club. This brownstone house was designed in a Gothic Revival style, but in 1893 was replaced with the current brick house. Designed by the architecture firm

⁶ These teams include the LaSalle College High School, the North Catholic High School and the St. Joseph’s University Women’s teams, among others.

of Hazlehurst & Huckel, the clubhouse reflects a Mediterranean style with Pompeiian brick on the ground floor and pebble-dashed stucco on the second story. That the clubhouse is brick is notable, since the Fairmount Park Commission had in 1867 enacted a policy which advocated for the removal of all existing brick houses and, from then on, refused to permit the construction of brick structures in the park. The Bachelors Barge Club has a long history in racing, including members racing in the 1924 (with both the four and single), 1928 (with the single) and 1932 (with the double) Olympics.

The *University Barge Club* (#7 East River Drive) was organized in April 25, 1854 and is one of the founding members of the Schuylkill Navy. Originally limited to students and graduates of the University of Pennsylvania, it still maintains a rule that a certain number of its overall membership have connections with the University. The Club is also considered the earliest organized athletic program at the University. One of the largest boathouses today, the structure was erected in 1870-1871 to replace the small brick house owned by the University Barge Club but occupied by the Philadelphia and Washington Boat Clubs in 1868. The University Barge Club housed their equipment in the Philadelphia Skating Club building with the Undine Barge Club. Constructed to also house the Philadelphia Barge Club (#8 East River Drive), the boathouse underwent many alterations over the years, most notably in 1893 and 1901, and its present Shingle style reflects none of the original Second Empire architecture. In 1932-1933, the University Barge Club absorbed the Philadelphia Barge Club and took over the entire building.

The *Malta Boat Club* (#9 East River Drive) was founded in February 1860 and is the only club to trace its existence to rowing on the Delaware River. Here, they owned a boat and boathouse at Smith's Island before moving to the Schuylkill River in 1863 and

joining the Schuylkill Navy in August 1865. At this point, they also purchased the house and boat owned by the Excelsior Boat Club, before erecting an ornamental stone boathouse in 1873. Built with the Vesper Boat Club, the structure underwent modifications in 1880 and 1901, the latter completed by the distinguished firm of G.W. & W.D. Hewitt. The club had earlier absorbed the Keystone Boat Club in 1871.

The *Vesper Boat Club* (#10 East River Drive) was founded in 1865, but originally operated under the name Washington Barge Club until 1870. They joined the Schuylkill Navy on August 22, 1865, resigned on February 9, 1871 and rejoined July 6, 1879. Under their former name, they shared a clubhouse with the Philadelphia Barge Club on the site of the present #7 and #8 East River Drive. In 1872, they joined forces with the Malta Boat Club to construct their present houses at #9 and #10 Boat House Row. The Club holds the record for the most Schuylkill Navy victories and rowing records, the majority occurring during the middle of the twentieth century with rower Jack Kelly, Jr.

The *College Boat Club of the University of Pennsylvania* (#11 East River Drive) was founded in 1872 by students of the University of Pennsylvania shortly after the University moved from Center City to West Philadelphia. Although the University was also represented in rowing by the University Barge Club early on, the club later broke with the college, leaving students to form the College Boat Club. Before erecting their boathouse in 1875, they housed their boats with the Quaker City Barge Club. The club received membership in the Schuylkill Navy in April 1875. The original College Boat Club forms the core of the present site. Constructed in a Victorian Gothic style, the stone building underwent many alterations from 1920 onwards and now has several stuccoed additions.

The *West Philadelphia Rowing Club* (#12 East River Drive) was founded in 1871 and originally occupied a site on the west bank of the Schuylkill River above Gray's Ferry Avenue. The club joined the Schuylkill Navy in 1873 and erected a stone boathouse at its present site in 1878. It later changed its name to the *Penn Athletic Club Rowing Association* as that club became affiliated with the West Philadelphia, replacing the West Philadelphia Club as a member of the Schuylkill Navy in 1925. Unsympathetic, stuccoed additions were added to the structure in 1868 and 1981 consisting primarily of locker room facilities. The Penn Athletic Club Rowing Association gained prominence in the 1920s and 1930s through its famous rower John B. Kelly, Sr. John B. Kelly, Sr. competed in every event in sculling and collected the greatest number of championship ever won by an individual. Besides becoming the only man to win both the Single and Double events in the 1920 Olympics and winning the Doubles again in the 1924 Games, he later served as the Commodore of the Schuylkill Navy (1935-40) and President of the National Association of Amateur Oarsmen or NAAO (1954-55).⁷

The *Undine Barge Club* (#13 East River Drive) was organized in May 1856 and joined the Schuylkill Navy in 1858 as one of the founding members. Originally occupying a small frame house along the Schuylkill River, the club was forced to move when the City condemned the structure in 1859. From here, the club served as tenants in #14 Boat House Row and opened the first of the upriver clubhouses in 1876. Called "Castle Ringstetten," this house was built by Furness and Hewitt (1871-1876). They later commissioned Furness and Evans (1881-1886) to design the lower house at #13 East River Drive in 1882. The club boasts a long history of rowing entries and victories.

⁷ The Schuylkill Navy of Philadelphia, "Clubs and History," <http://www.boathouserow.org/>.

The *Philadelphia Girls' Rowing Club* (#14 East River Drive) was organized in 1938 by primarily wives of oarsmen who wished to compete in the mostly all-male sport. They were the second all-women club formed and today are considered the oldest active women's club of its kind in existence. They first rented from the Philadelphia Skating Club and Humane Society and around 1965 obtained full ownership of the house. They joined the Schuylkill Navy in 1967. Through occupying the oldest building on Boathouse Row, along with the Quaker City Barge Club, the club joins the ranks of many other boat clubs to rent space in the building. Over the years, the Skating Club has rented to the Undine Barge Club (1860-1882), the University Barge Club (1860-1870), the 2nd Ione Club (1884-1895) and the Sedgeley Club (1897-1902). By hosting the Sedgeley Club, it holds the honor of housing one of the the first women's boat club in operation along the Schuylkill River. The stone building was erected in 1860 in an Italianate style and attributed to Philadelphia architect James C. Sidney (c.1819-1881). Despite its many tenants, the building has remained remarkably unaltered throughout its history. In addition, the Philadelphia Girls' Rowing Club has won many local and national titles.

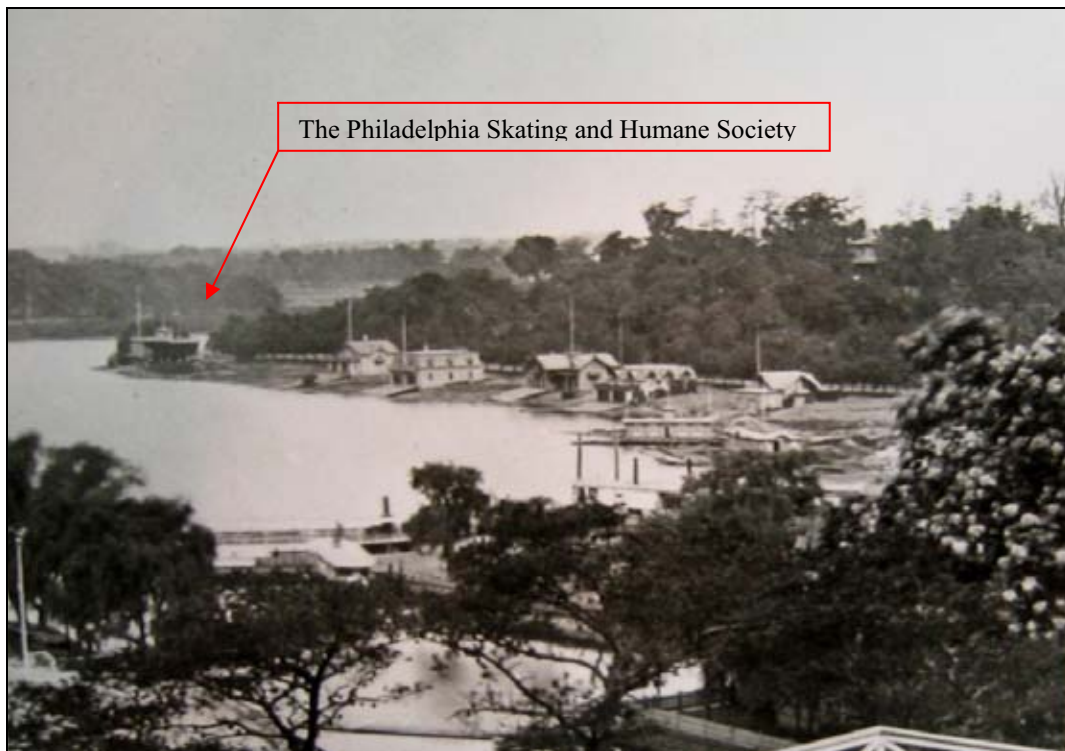
The *Sedgeley Club* (#15 East River Drive) was formed in 1897 as the Bicycle, Barge and Canoe Club. That same year they changed their name to the Sedgeley Club and occupied quarters in #14 Boat House Row. In 1902, they applied for permission from the Fairmount Park Commission to build a new building. Designed by Philadelphia architect Arthur H. Brockie (1875-1946), the clubhouse was built using a combination of the Shingle and Colonial Revival styles and included the old lighthouse which has stood on this point since the early 19th century. The Sedgeley Club ceased operating as a rowing club by World War II and today limits its activities to social functions. Its boat

slip has since been removed, members' boats being stored in the Public Canoe House.

The National Society of the Colonial Dames of America, Chapter II, currently shares the clubhouse with the Sedgeley Club.

APPENDIX B.

HISTORIC AND CURRENT PHOTOGRAPHS



The Philadelphia Skating and Humane Society

Figure 30: Boathouse Row, looking northwest from the Fairmount Waterworks, 1870s. (Free Library Philadelphia, Print and Picture Collection)



Figure 31: The Philadelphia Skating and Humane Society, east and south elevations, 1899. (Historical Society of Pennsylvania, Prints and Drawing Collection)



Figure 32: The Philadelphia Skating Society, view from back deck looking east towards the Fairmount Waterworks, c.1865. (Free Library of Philadelphia, Print and Picture Collection)



Figure 33: The Philadelphia Girls' Rowing Club, view from back deck looking east, 1987. (Free Library of Philadelphia, Print and Picture Collection)



Figure 34: The Philadelphia Girls' Rowing Club, north elevation, 1933. (Philadelphia Historical Commission, "No. 14 Boat House Row," Project Files.)



Figure 35: The Philadelphia Girls' Rowing Club, south elevation, 1933. (Philadelphia Historical Commission, "No. 14 Boat House Row," Project Files.)



Figure 36: The Philadelphia Girls' Rowing Club, north and west elevations, 1974. (Philadelphia Historical Commission, "No. 14 Boat House Row," Project Files.)



Figure 37: The Philadelphia Girls' Rowing Club, north and east elevations, 1974. (Philadelphia Historical Commission, "No. 14 Boat House Row," Project Files.)



Figure 38: The Philadelphia Girls' Rowing Club, North elevation, 2004. (Photograph by author)



Figure 39: The Philadelphia Girls' Rowing Club, east elevation, 2005. (Photograph by author)



Figure 40: The Philadelphia Girls' Rowing Club, south elevation, 2004. (Photograph by author)

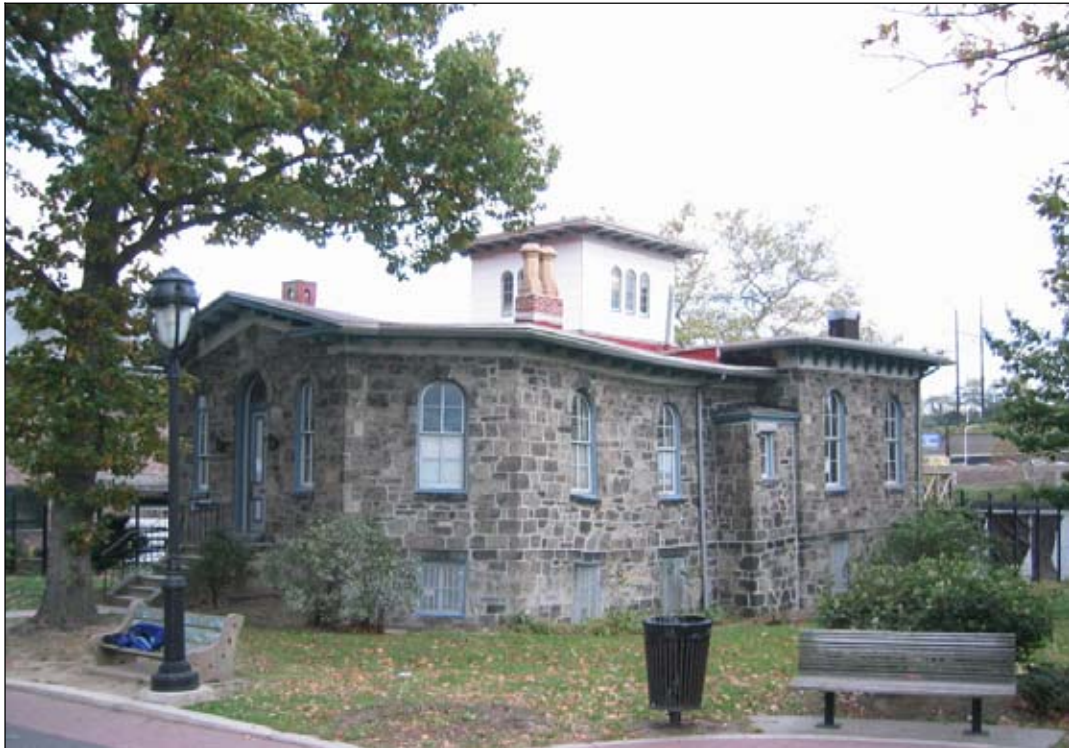


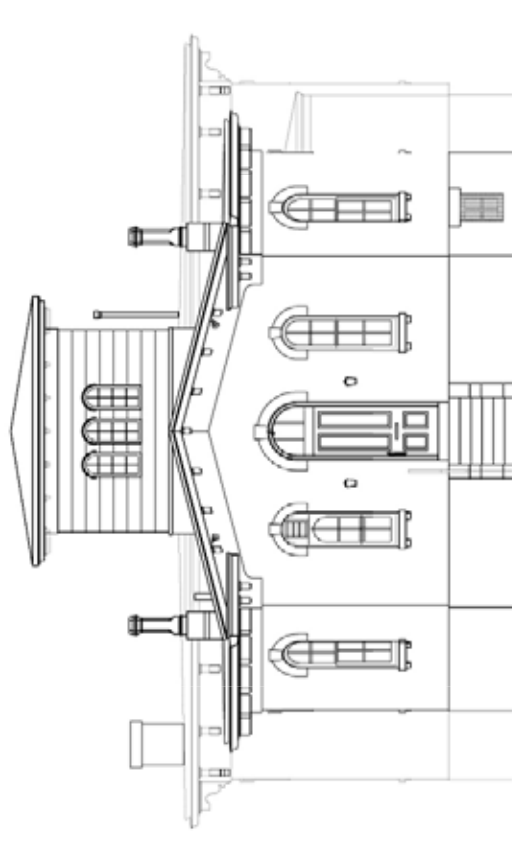
Figure 41: The Philadelphia Girls' Rowing Club, west elevation, 2004. (Photograph by author)

APPENDIX C.

EXTERIOR ELEVATIONS AND FLOOR PLANS

OF

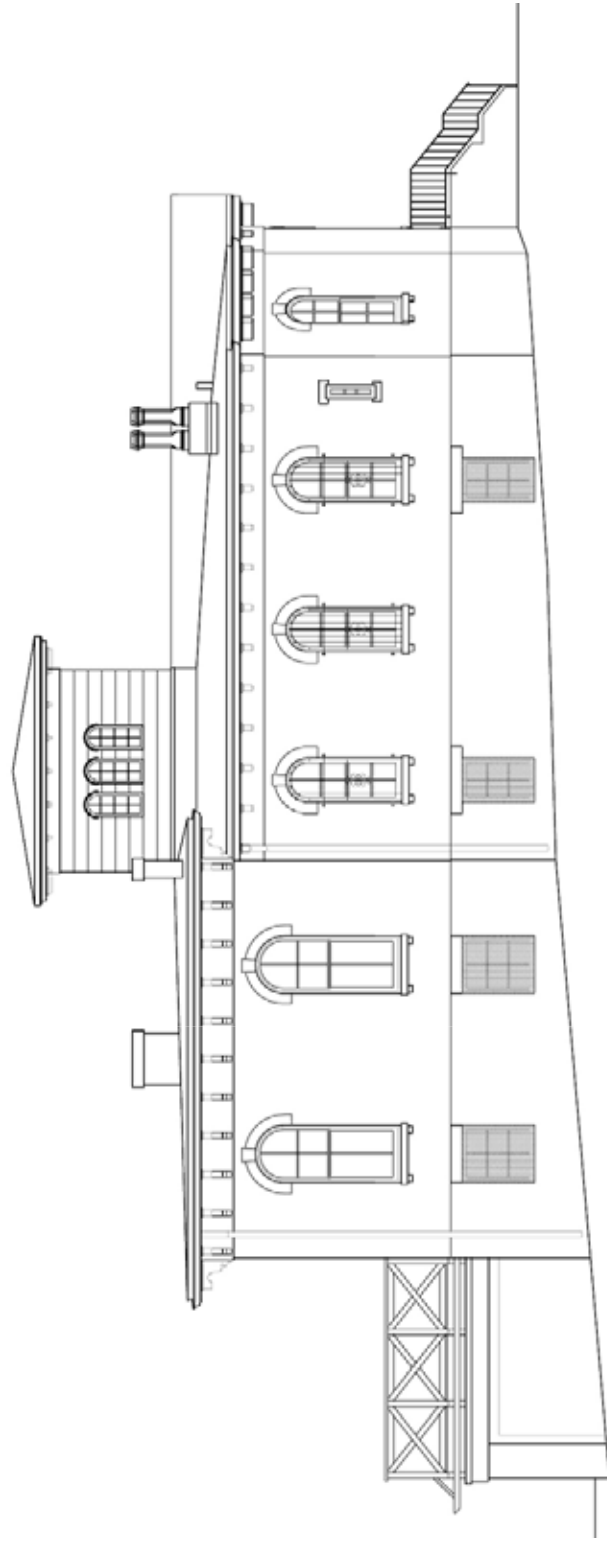
THE PHILADELPHIA GIRLS' ROWING CLUB



Philadelphia Girls' Rowing Club
NORTH ELEVATION
2005

Drawing 1: North Elevation (AutoCAD drawing by author, 2005)



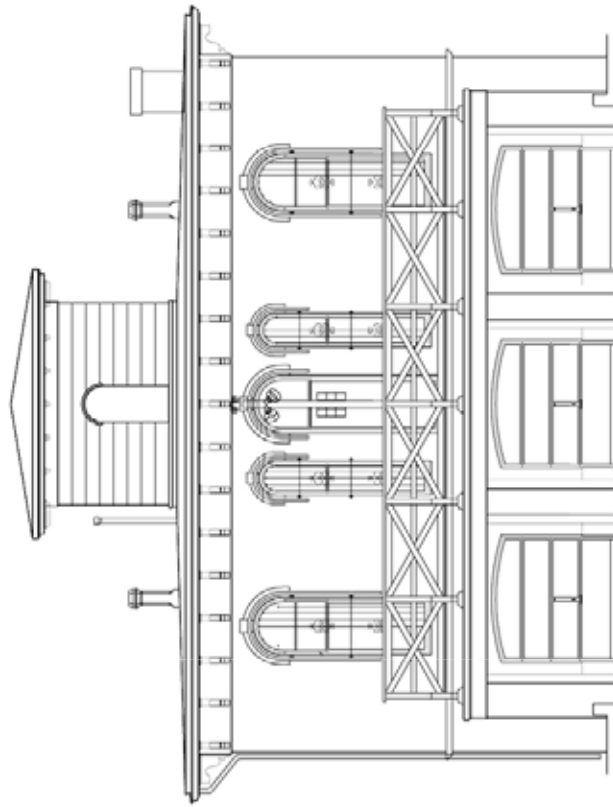


Philadelphia Girls' Rowing Club

EAST ELEVATION
2005

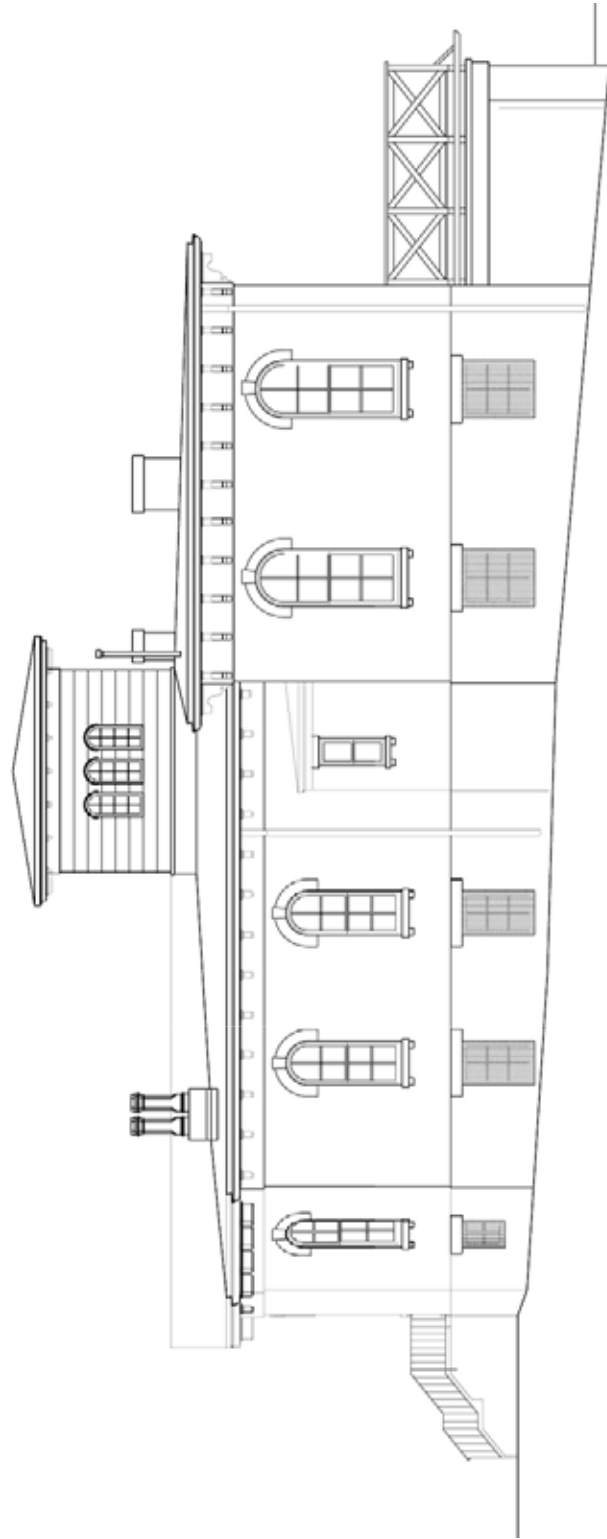
Drawing 2: East Elevation (AutoCAD drawing by author, 2005)





Philadelphia Girls' Rowing Club
SOUTH ELEVATION
2005

Drawing 3: South Elevation (AutoCAD drawing by author, 2005)

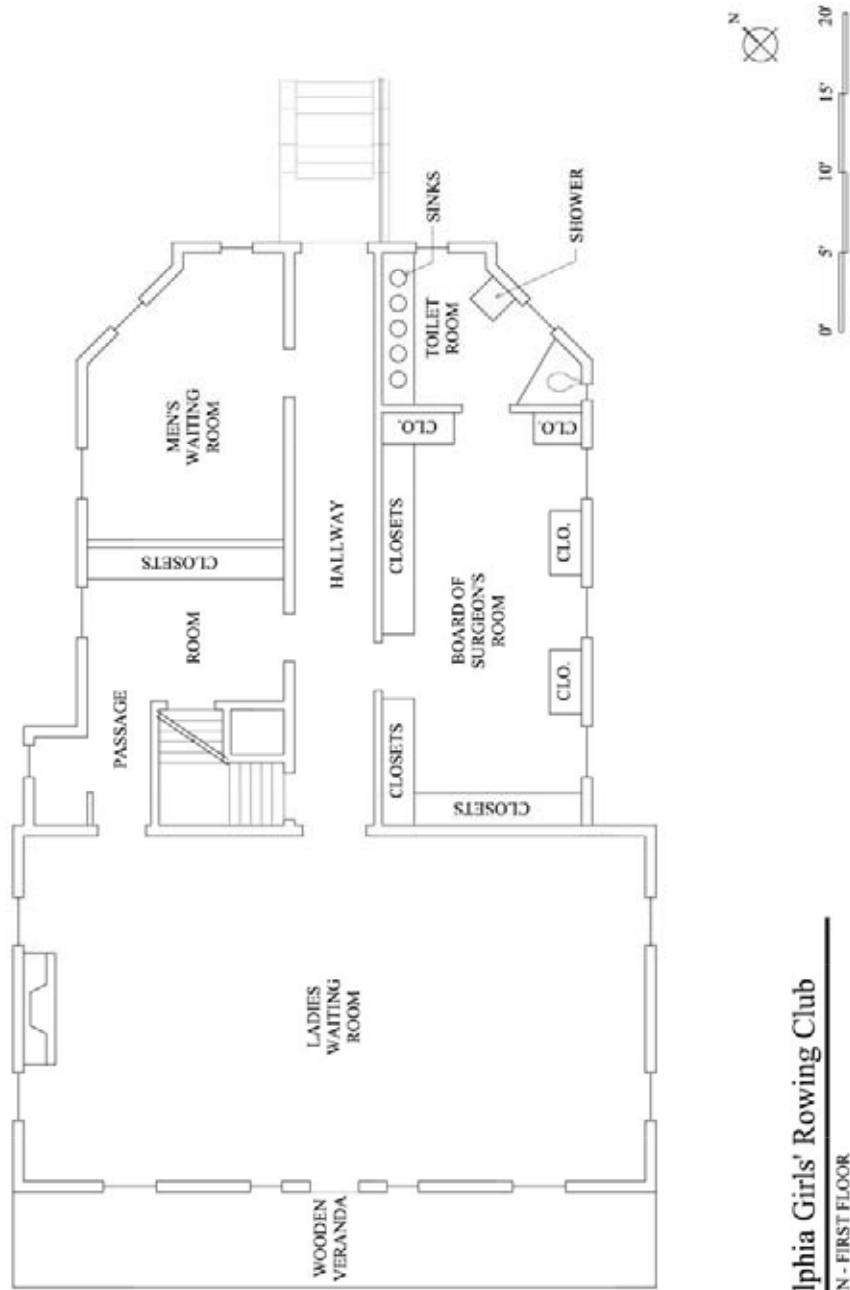


Philadelphia Girls' Rowing Club

WEST ELEVATION
2005



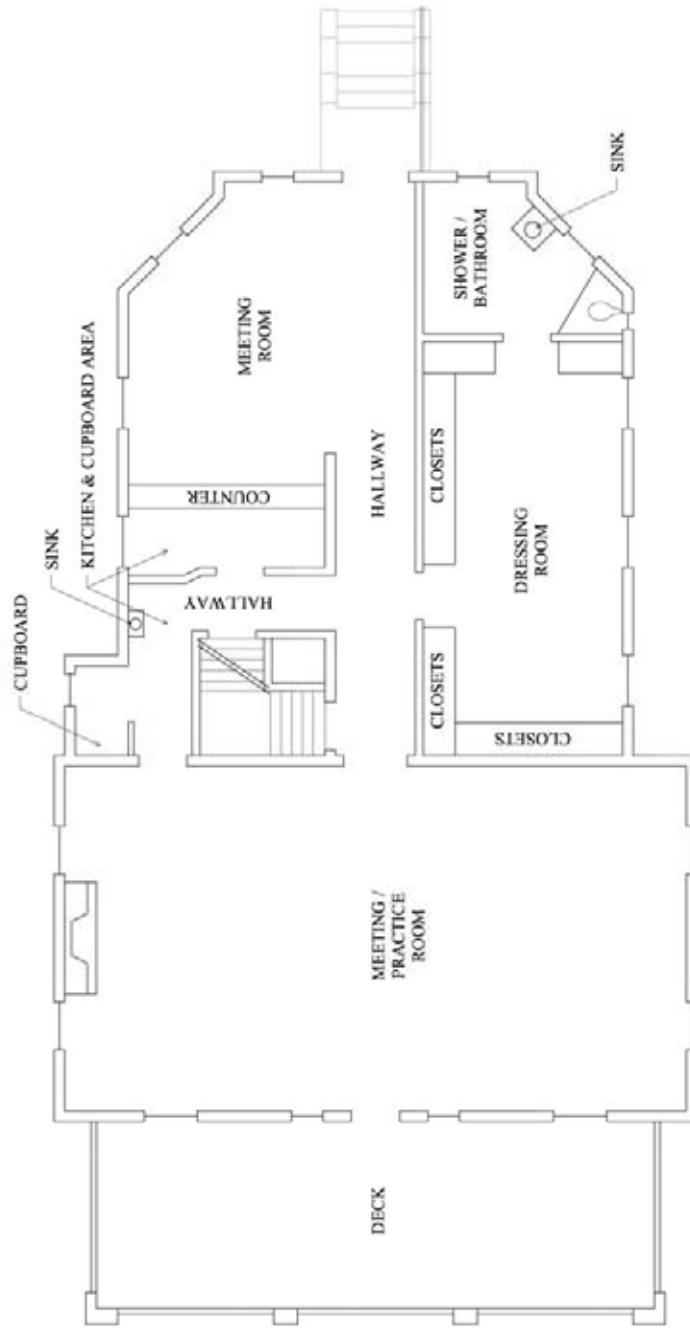
Drawing 4: West Elevation (AutoCAD drawing by author, 2005)



Philadelphia Girls' Rowing Club

FLOOR PLAN - FIRST FLOOR
c. 1891

Drawing 5: Floor Plan, first floor, c. 1891 (AutoCAD drawing by author, 2005)



Philadelphia Girls' Rowing Club

FLOOR PLAN - FIRST FLOOR
2005

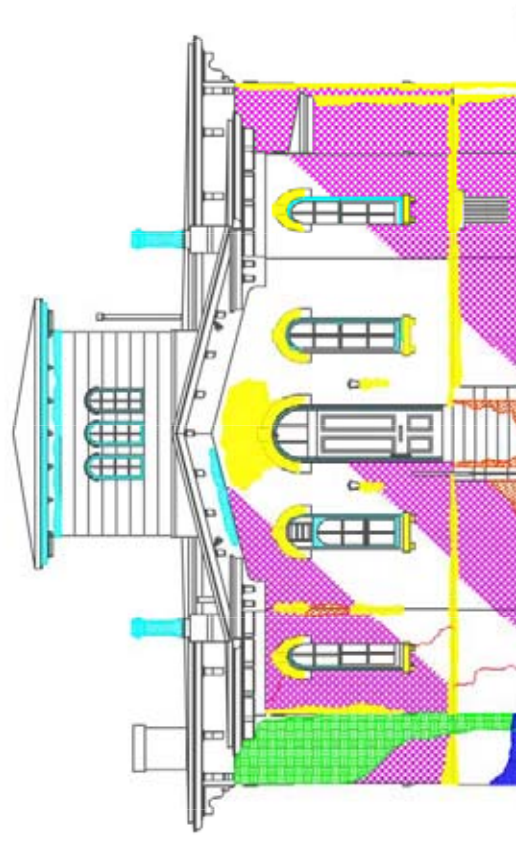
Drawing 6: Floor Plan, first floor, 2005 (AutoCAD drawing by author, 2005)

APPENDIX D.

CONDITIONS ASSESSMENT MAPPING

AND

PHOTOGRAPHS



Conditions Key

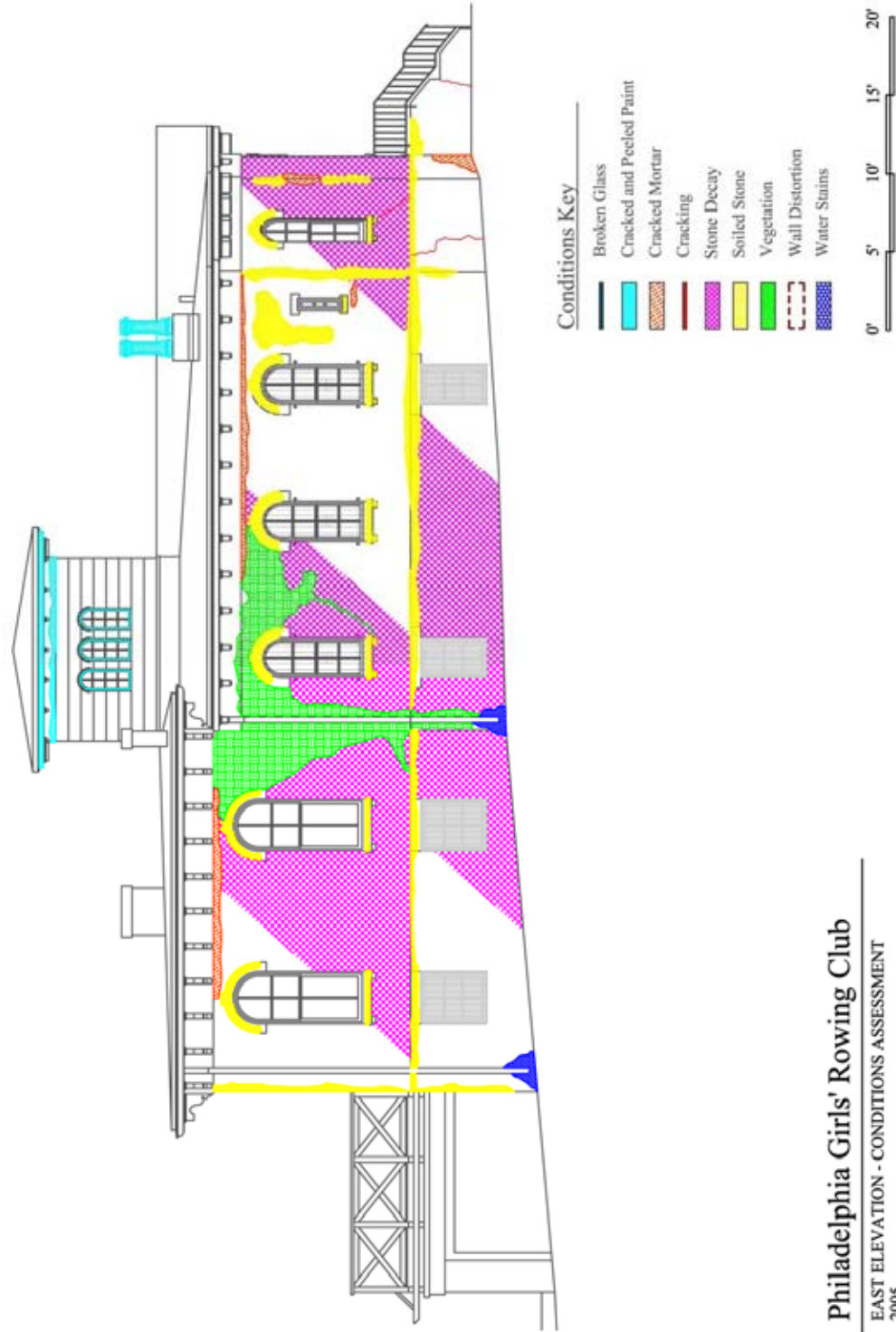
- Broken Glass
- Cracked and Peeled Paint
- Cracked Mortar
- Cracking
- Stone Decay
- Soiled Stone
- Vegetation
- Wall Distortion
- Water Stains

0' 5' 10' 15' 20'

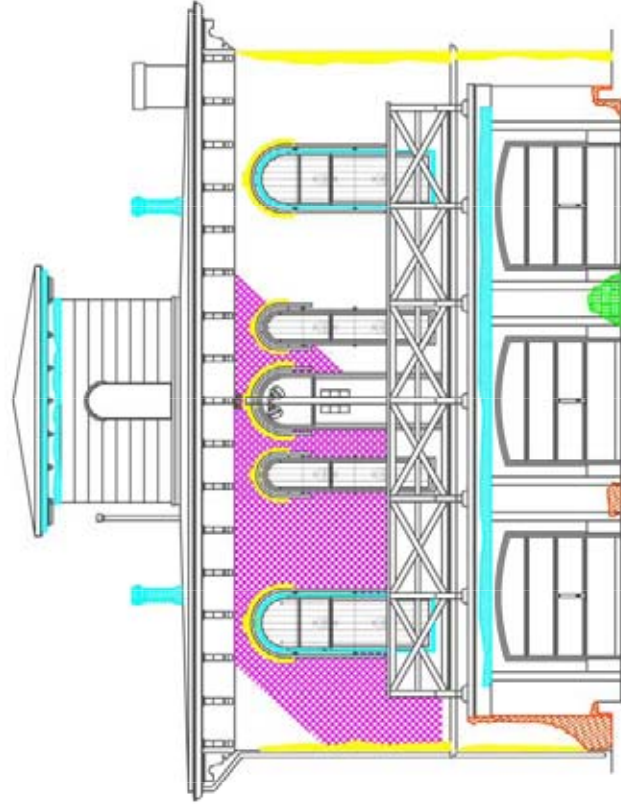
Philadelphia Girls' Rowing Club

NORTH ELEVATION - CONDITIONS ASSESSMENT
2005

Drawing 7: North Elevation, Conditions Assessment (AutoCAD drawing by author, 2005)



Drawing 8: East Elevation, Conditions Assessment (AutoCAD drawing by author, 2005)



Conditions Key

- Broken Glass
- Cracked and Peeled Paint
- Cracked Mortar
- Cracking
- Stone Decay
- Soiled Stone
- Vegetation
- Wall Distortion
- Water Stains

0' 5' 10' 15' 20'

Philadelphia Girls' Rowing Club
 SOUTH ELEVATION - CONDITIONS ASSESSMENT
 2005

Drawing 9: South Elevation, Conditions Assessment (AutoCAD drawing by author, 2005)



Drawing 10: West Elevation, Conditions Assessment (AutoCAD drawing by author, 2005)



Figure 42: West elevation. View lateral showing wall displacement, especially in the marked area. (Photograph by author, 2005)¹



Figure 43: West elevation, detail. View showing window distortion.

¹ Unless otherwise noted, all following photographs were taken by the author in 2005.



Figure 44: West elevation, detail. Evidence of cracking in mortar beneath window corners.



Figure 45: West and south elevations, detail. View showing bracing units on back enclosed porch.



Figure 46: Basement interior, west wall. View showing scaffold jacks holding up wall and floor above.



Figure 47: Front meeting room, north wall. View showing sheathed steel beam where interior load-bearing wall once stood. Photo also depicts suspended ceiling.



Figure 48: Basement, looking eastwards. View of cast iron fluted column and ceiling joist. Wood shows signs of rotting deterioration.



Figure 49: North elevation, detail. View shows staining of stone underneath the iron lamp, most likely due to the metal's chemical reaction with water from rainfall.



Figure 50: East elevation, looking south towards the river. View shows vegetation in the form of ivy on the wall surface.



Figure 51: West elevation, detail. Loose and missing mortar from around rough window opening.



Figure 52: North elevation. Detail of window with addition of metal exhaust fan. Stone surface soiling is also visible, especially on the keystone arch and sill.



Figure 53: West elevation. Detail shows crushed aluminum downspout which may impede water flow during heavy downpours.



Figure 54: West Elevation, detail of roof. View shows rusting flashing along edge.



Figure 55: South meeting room. Detail shows ceiling wall diffuser.



Figure 56: West elevation, detail of roof. View shows flaking paint on terra cotta chimney stacks.



Figure 57: East elevation, detail. View shows iron rod grilles over window openings.



Figure 58: West elevation, detail. View show metal rods and grille over basement window opening.



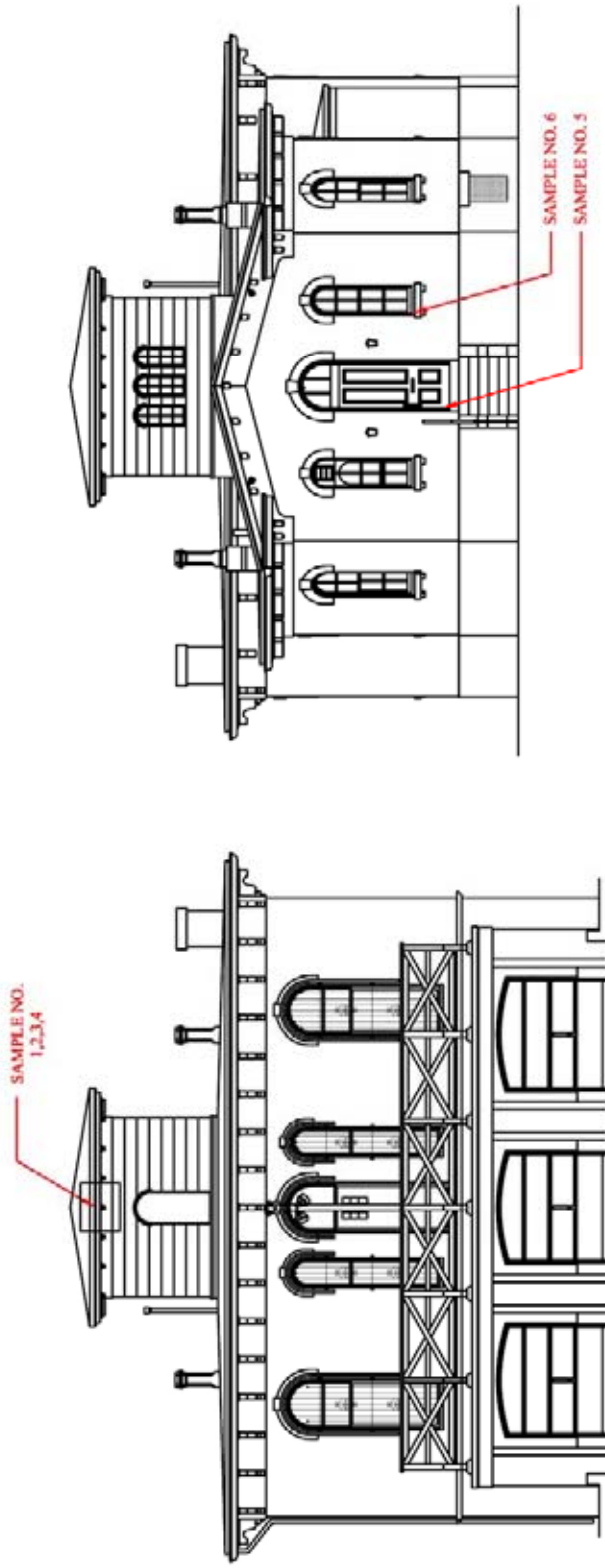
Figure 59: Basement, beside back bay door. Detail shows examples of modern light switches and power outlets.



Figure 60: Basement, ceiling detail beneath stair opening. View shows remnants of old electrical wiring, along with newer additions.

APPENDIX E.

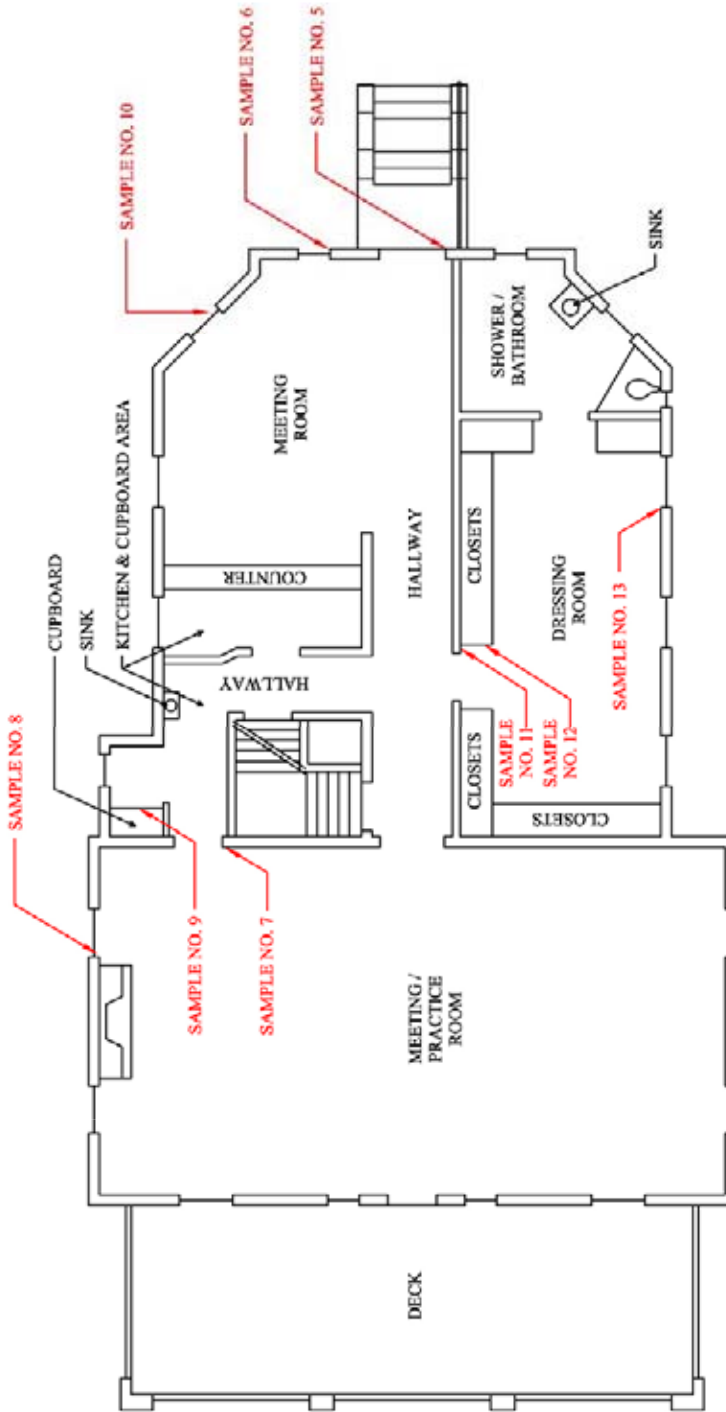
FINISHES AND MORTAR ANALYSIS DATA



EXTERIOR PAINT SAMPLE LOCATIONS

Philadelphia Girls' Rowing Club

Drawing 11: Exterior Paint Sample Locations, 2005



FINISHES MAP

Philadelphia Girls' Rowing Club

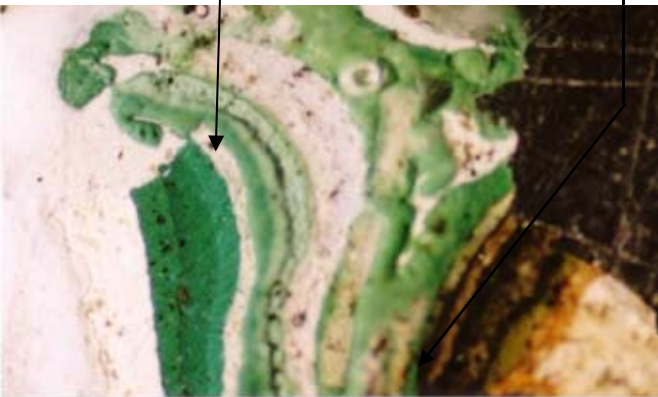
FLOOR PLAN - FIRST FLOOR
2005


Drawing 12: Finishes Map, 2005

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 1	Type/Location: fascia, cupola - south elevation
Objective: 10x	Substrate: wood
	
<ul style="list-style-type: none"> 8) white - grey 7) white - darker 6) white - bright 5) green 4) dirt layer 3) green 2) white (primer) 1) substrate 	
<p><i>Comments:</i> The vertical and diagonal lines indicate cracks in the paint layers.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 2	Type/Location: bracket, cupola - south elevation
Objective: 10x	Substrate: wood
<p>17) light blue-grey 16) white 15) white 14) dark green 13) dark green 12) bright green 11) white 10) dirt layer 9) light green 8) white 7) light green 6) white 5) dark green 4) light tan 3) mint green 2) off white (primer) 1) substrate</p> <p><i>Comments:</i> The brown/black layers at in the bottom are interpreted as part of the substrate.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 3	Type/Location: soffit, cupola - south elevation
Objective: 10x	Substrate: wood






- 13) white
- 12) white
- 11) dark green
- 10) dark green
- 9) bright green
- 8) white
- 7) bright green
- 6) light green
- 5) white
- 4) dark green
- 3) light tan
- 2) green
- 1) off white (primer)

Comments: Since swirling occurs in the bottom layers, due to paint build-up near the crown molding, two photographs were included for better accuracy.

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 4	Type/Location: crown molding, cupola - south elevation
Objective: 10x	Substrate: wood
	
<ul style="list-style-type: none"> 4) white 3) white 2) dark green 1) substrate 	


Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 5	Type/Location: front door molding, north elevation
Objective: 10x	Substrate: missing
	
<p>16) light blue-grey</p> <p>15) white</p> <p>14) white – more cream</p> <p>13) white</p> <p>12) white</p> <p>11) dark green</p> <p>10) dirt layer</p> <p>9) dark green</p> <p>8) white</p> <p>7) dark green</p> <p>6) white</p> <p>5) bright green</p> <p>4) white</p> <p>3) dark green</p> <p>2) off white</p> <p>1) dark green</p> <p><i>Comments:</i> The horizontal voids indicate weak paint layers separating from each other.</p>	


Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 6	Type/Location: exterior window trim, north elevation
Objective: 10x	Substrate: wood




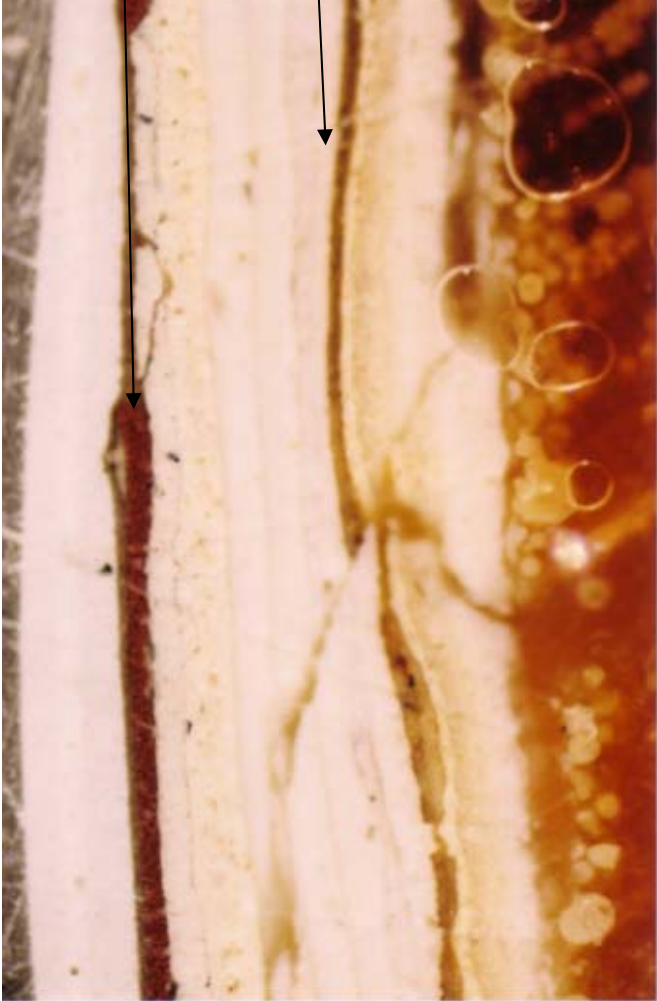
- 16) light blue-grey
- 15) white
- 14) white
- 13) white
- 12) dark green
- 11) dirt layer
- 10) dark green
- 9) dark green
- 8) white
- 7) dark green
- 6) white
- 5) dark green
- 4) white
- 3) dark green
- 2) off white (primer)
- 1) substrate


Comments: The substrate is separating from the first paint layers.


Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 7	Type/Location: South room door molding, north wall
Objective: 10x	Substrate: wood
	
<p style="text-align: center;"> 3) white 2) white 1) substrate </p> <p><i>Comments:</i> This sample demonstrates the bottom two paint layers only.</p>	


Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 8	Type/Location: South room window molding, west wall
Objective: 10x	Substrate: wood
	
<ul style="list-style-type: none"> 11) white 10) white 9) white 8) white – gray 7) white 6) off white 5) dark brown 4) off white 3) off white 2) off white (primer) 1) substrate 	
<p><i>Comments:</i> Water bubbles caught beneath the cover slide may be seen on the substrate layer. In addition, Layer #8's dark brown color may be due to a separation in the paint layers - not a new layer.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 9	Type/Location: side hallway cabinet/cupboard, south wall
Objective: 10x	Substrate: wood
	
<p>3) white</p> <p>2) white (primer)</p> <p>1) substrate</p> <p><i>Comments:</i> The voids indicate paint layers separating from the substrate.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 10	Type/Location: North-West room window molding, west wall
Objective: 10x	Substrate: wood
	
<ul style="list-style-type: none"> 12) white 11) white 10) white 9) dark brown-red 8) white 7) off white 6) white 5) white 4) white 3) off white 2) off white (primer) 1) substrate 	
<p><i>Comments:</i> Cracking of the paint layers is seen, as well as and water bubbles caught beneath the cover slide. The brown, horizontal line below Layer #4 is interpreted as a separation of paint layers, rather than a separate layer.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 11	Type/Location: East room door molding, west wall
Objective: 10x	Substrate: wood
	
<p>7) white</p> <p>6) white</p> <p>5) white</p> <p>4) dirt layer</p> <p>3) white</p> <p>2) white</p> <p>1) substrate</p> <p><i>Comments:</i> The photograph shows evidence of paint flaking.</p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 12	Type/Location: East room closet/locker molding, west wall
Objective: 10x	Substrate: wood
	
<p>8) white</p> <p>7) white</p> <p>6) white</p> <p>5) white</p> <p>5) dirt layer</p> <p>4) white</p> <p>3) white</p> <p>2) white</p> <p>1) substrate</p>	
<p><i>Comments: The darker horizontal and vertical lines indicate paint flaking and breakage.</i></p>	

Finishes Analysis	
Project/Site: University of Pennsylvania, Thesis 2005	
Location: The Philadelphia Girls' Rowing Club, Philadelphia	Date Sampled: October 1, 2005
Analysis Performed By: A. Stillner	Date Analyzed: October 10, 2005
Microscope: Nikon Alphaphot-2 YS2	Camera: Nikon CoolPix 5000
Light Source: normal reflected light	Casting Material: Bioplast™ Liquid Casting Plastic
Description of Sample	
Sample No. 13	Type/Location: East room window bead, east wall
Objective: 10x	Substrate: wood
	
<ul style="list-style-type: none"> 15) white 14) white 13) cream-grey 12) white 11) pale yellow 10) pale mint green 9) light brown-yellow 8) off white 7) off white 6) off white 5) off white 4) white 3) off white 2) light brown-yellow 1) off white 	
<p><i>Comments:</i> Voids in Layers #1 & #12 reveal paint cracking. The substrate and primer layers, below Layer #1, are not included in the photograph.</p>	

MORTAR ANALYSIS DATA SHEET

Fines:	Color: 10YR 7/3 – 8/4	Wt: 0.01g	Wt %: 1.42%			
	Organic Matter: No clear indication of organics					
	Composition: Most likely clay					
Acid Soluble Fraction:	Filtrate Color: 10YR 7/3	Wt: 0.38g	Wt %: 39.20%			
	Description of Reaction: Vigorous, high effervescence with the addition of HCL					
	Composition: Calcium or magnesium carbonate					
Aggregate:	Color: Gley1 6/N, 10YR 7/3	Wt: 0.57g	Wt %: 59.38%			
	Grain Shape: Overall “sharp” sand (low sphericity and sub-rounded)					
	Mineralogy: Silica or crushed rock					
	Sieve Analysis:	<u>Screen</u>	<u>Microscopic examination</u>	<u>% retained</u>	<u>% passing</u>	<u>Color</u>
		8	-	5.34%	94.66%	-
		16	Very coarse, low sphericity, sub-rounded, medium-poor sorting	37.02%	62.44%	10YR7/3
		30	Coarse, low sphericity, sub-rounded, well-sorted	63.05%	36.41%	10YR7/3
		50	Medium, low sphericity, sub-rounded, well-sorted	79.77%	19.69%	10YR8/4, 10YR7/4
100		Fine-very fine, high sphericity, sub-rounded, well-sorted	88.24%	11.22%	10YR8/4, 10YR7/4	
200		Very fine-silt, high sphericity, sub-rounded, well-sorted	95.11%	4.35%	10YR8/4	
pan	Silt, high sphericity, sub-rounded, well-sorted	100.00%	0.00%	10YR8/4		
ASSESSMENT						
Mortar Type: Lime-based mortar						
Fines: Clay, possibly some cement						
Acid Soluble: Significant portion of mortar is acid soluble w/ vigorous reaction w/ HCL						
Aggregate: Overall well-sorted with even distribution of sizes; silica-crushed rock combination						

MORTAR ANALYSIS: SIEVE ANALYSIS CHARTS AND GRAPHS

Data/Observation: Mortar Sample A

M_c = Mass of container = 3.54g

M_1 = Mass of original sample + container = 5.30g

M_s = ($M_1 - M_c$), Mass of original sample = 1.76g

The following chart is a record of sieve number, sieve size, M_c , M_2 , M_r ($M_r = M_2 - M_c$), $\%M_r$, $\%M_{rt}$, $\%M_{pt}$, particle size, color, shape, sorting and magnification.

M_r = retained sample weight

$\%M_r$ = each fraction's weight percentage

$\%M_{rt}$ = the total percentage retained for a given sieve

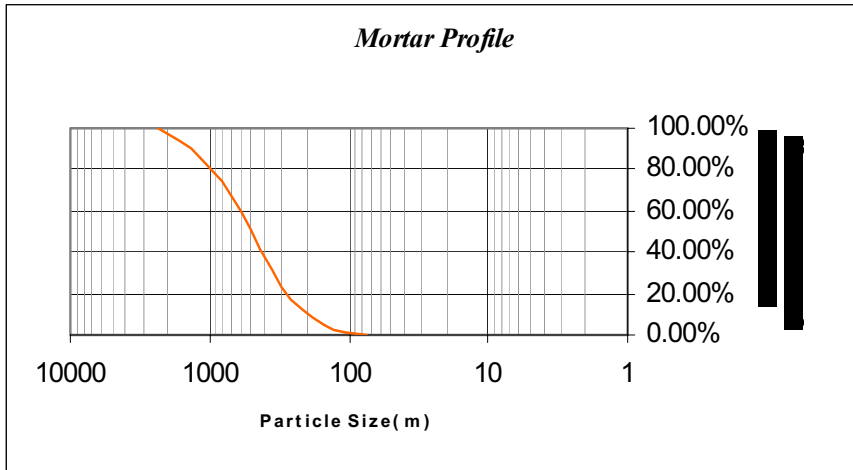
$\%M_{pt}$ = the total percentage passing for a given sieve

Sieve Number	Screen Size (μ)	M_c (g)	M_2 (sample + cont.) (g)	M_r ($M_2 - M_c$) (g)	$\%M_r$ (M_r / M_s)*100%	$\%M_{rt}$ $\Sigma \%M_r$ (on or above)	$\%M_{pt}$ 100% - $M_{rt}\%$
8	2360	3.54	4.18	0.64	36.36%	36.36%	63.64%
16	1180	3.45	3.73	0.28	15.91%	52.27%	47.73%
30	600	3.50	3.83	0.33	18.75%	36.36%	63.64%
50	300	3.50	3.81	0.31	17.61%	88.64%	11.36%
100	150	3.44	3.54	0.10	5.68%	94.32%	5.68%
200	75	3.46	3.51	0.05	2.84%	97.16%	2.84%
Pan	<75	3.50	3.55	0.05	2.84%	100.00%	0.00%

$$\text{Record } M_L \% = \frac{M_s - \Sigma M_r}{M_s} \times 100\% = 0.00\%$$

Sieve Number	Particle Size	Color (Munsell)	Sphericity	Roundness	Sorting	Magnification
8	Granules	10YR/7/2 gray brown	low	angular	fair	11.5x
16	Very coarse	10YR/6/4 light yellowish brown	low	angular	fair	11.5x
30	Coarse	10YR/7/4 very dark brown	low	angular	good	30x
50	Medium	10YR/6/4 light yellowish brown	low	subrounded	good	30x
100	Fine	10YR/6/4 light yellowish brown	high	rounded	good	30x
200	Very fine	10YR/6/4 light yellowish brown	high	rounded	very good	30x
Pan	Silt	10YR/6/4 light yellowish brown	high	subrounded	very good	30x

Particle Size Distribution Graph for Mortar Sample A:



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