

Contract No. 1443CX400095024
Historic Industrial Site Analysis
Allied Textile Printing Site
Paterson, New Jersey

F. REQUIREMENTS AND RECOMMENDATIONS

Introduction

The ATP site is a critical sector of the Paterson industrial core and comprises some of the oldest building stock in this industrial community. The site of approximately 7 acres is centrally located in the Great Falls/S.U.M. Historic District. The Great Falls/S.U.M. Historic District embodies the theory presented by Alexander Hamilton in his 1791 Report on Manufacturers that the best way to insure American independence from Europe was by establishing industries in the United States. It is a significant site where the American Industrial Revolution began, and the first planned industrial area in the United States (HAER NJ-1).

The ATP site, in its current condition, is recognized as one of the most problematic areas within the larger Great Falls/S.U.M. Historic District, yet its ultimate treatment is critical to the future of the historic district. Integrating the ATP site back into the fabric of the larger historic district should be of the highest priority, and treatment of the edges of the ATP site are particularly important in the success of development decisions.

The Secretary of the Interior has established professional standards to be followed in the preservation and protection of all cultural resources listed on the National Register of Historic Places. The recommendations in this report have been developed in compliance with the Secretary of the Interior's standards and aim at:

1. Protecting important edges of the project site to maintain its full visual and physical integration in the larger Great Falls/S.U.M. Historic District.
2. Providing an important terminus to the vistas along Mill and Van Houten Streets.
3. Identifying a critical mass of extant historic walls and site features that are representative of the site's historic significance.
4. Avoiding a fragmentary retention of historic walls and site features that fails to allow successful interpretation of the site's history to the general public.
5. Enhancing the pedestrian experience in the historic district for tourists and residents by extending and linking the existing pathway system through the site and by providing interpretation.
6. Through the retention of certain site elements, finding a balanced interpretation of significant periods of construction, types of construction, and a representative continuum of industrial history and processes over time.

Finally, it is critical to maintain the historical association of the site with the Allied Textile Processors (ATP) period of significance. This last major period of significance of the site, which began with the

ATP Processor's large-scale consolidation of the site at the end of the 1930s, includes the period between 1938 and the closing of the site's manufacturing operations in 1983 during which the growing popularity of synthetic fabrics such as nylon, acetate, and rayon had a great impact on Paterson and the production of silk in this country. The historic ATP banner sign spanning the site entrance at the juncture of Mill and Van Houten Streets provides a readily recognizable image to accomplish this link.

Summarizing what is left of the site's historical, physical and archeological significance is the task of this report, and determining to what extent structures and site features can or should be retained, focusing on their structural stability, will provide support for valid future redevelopment decisions and allow for a viable/flexible new use. The recommendations contained herein apply to the site as a whole and are not directed to a specific development or developer.

Note to reader: Supporting documentation for the discussion of each recommendation which follows is found in Section D of this report, Investigation and Analysis. The references are by page number of Section D unless specifically noted otherwise. In addition, the recommendations, where applicable, are keyed to the Requirements and Recommendations Map which follows this section. Furthermore, conceptual drawings and maps are inserted following this section in order to illustrate one possible way in which the recommendations, both mandatory and suggested, can be accomplished.

A. Site Organization

The Secretary of the Interior's Standards for Preservation, Standard No. 2, states that "The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided." The following recommendations are based on the requirements of that standard.

Overall Development: Refer to material found beginning on Page D-1. The site was not randomly developed in the early period, but was an ordered layout resulting from existing features which dictated the orientation and placement of the original primary mill buildings.

1. Overall Site Generators:

- a. Street layout.
- b. Locations of water including raceways and river, and the access to the water.
- c. Property lines, both the early mill lots and the later subdivision which was in place prior to 1874.
- d. Power requirements (i.e., building placement on the lot as required in order to generate the fall between head race and tail race needed to drive the wheel or turbine).

Recommendation A-1: That any new development of the site *must* reflect the ordered layout of the original development.

Secondary Development: New development must also reflect the presence of historic boundaries, access, corridors, and open space which resulted from the early development of the site and which were strengthened by time as they became significant features of the site. These elements include:

2. Site Access: Historically, the site has been accessed from Van Houten Street via

bridges over the Lower Raceway as noted on Page D-3. The three existing bridges are in their historic locations although they themselves are not original.

Recommendation A-2: That access to new development *must* be limited to bridges at the historic locations. The design of any new bridges shall reflect the early steel truss and wood plank design (See Figure 60).

3. **Entry Courts:** The two entry courts on the site, one at the Gun Mill and the other at the Todd Mill, break the line of buildings which edged the street and create courts surrounded on three sides. As noted beginning on Page D-4, the open area or entry court at the Gun Mill is the more significant.

Recommendation A-3a: That the Gun Mill entry court as presently framed by the Middle Raceway, the Gun Mill, and the remains of the south walls of the Mallory Mill and Waverly Mill *must* be retained. Testing *must* be accomplished to determine the extent of cobblestone paving remaining in the entry court. Depending on the amount remaining, it is suggested that the original paving be restored or, if limited in amount, new paving of a similar nature be installed.

Recommendation A-3b: That the historic ATP banner sign at the entry to the Gun Mill entry court *must* be retained, renovated, and incorporated into any new development.

4. **Access Routes:** By 1874, a series of connecting access routes through the site had developed and these were generally framed by the older of the buildings. These are described on Page D-3 in the first article, Original Site Organization and Development History.

The most significant of these access routes were the three which served as roadways from the street entries to remote portions of the site: 1) the one between the Passaic and Waverly Mills; 2) the roadway from the Gun Mill to the river along the west side of the Mallory Mill; and 3) the one between the Gun Mill and the Boiler Plant which provided access to the western portion of the site. Limited excavation has revealed the presence of cobblestone paving beneath the bituminous topping in various locations of these roadways.

Recommendation A-4: That portions of the three most significant access ways *must* remain open as illustrated on the Requirements and Recommendations Map and *must* be framed to retain their historic boundaries in accordance with recommendations included in Recommendation Series C and D. Testing *must* be accomplished to determine the extent of cobblestone remaining in the access way locations. Depending on the amount remaining, it is suggested that the original paving be restored or, if limited in amount, new paving of a similar nature be installed.

5. **Pedestrian Ways:** Refer to "Site Context" beginning on Page D-12 and to Page D-3 for information on the historic footbridge. Existing sidewalks along Van Houten and Mill Streets provide potential pedestrian access to the south side of the site. Overlook Park adjoins the site at the west end. The existing raceway pathway, one of the area's

most positive assets, though poorly maintained, terminates behind the Essex Mill near the spillway of the Middle Raceway. This termination requires pedestrians on the historic trail to retrace their steps. Another existing pathway system at Great Falls Park extends along the north side of the Passaic River parallel to the site. Although poorly maintained, and in need of work, it has the potential for incorporation into a pedestrian network if it can be connected to the historic district in such a way that a continuous interpretive walk is the result.

Recommendation A-5: That public pedestrian walkways *must* be provided through the site, located such that they will connect the points of termination for existing pedestrian systems outside the site which are noted on the Requirements and Recommendations Map.

- a. As part of this recommendation, it is suggested that consideration be given to the reconstruction of a pedestrian footbridge across the Passaic River at the north termination of the historic roadway from the Gun Mill to the river, a location which is close to the historic location of the former pedestrian footbridge.
- b. It is also suggested that consideration be given to extending the existing pedestrian pathway behind the Essex Mill by constructing a pedestrian bridge over the Middle Raceway at the location where the historic spur was. This will enable construction of a pathway to the edge of the bluff from which the river and a large part of the ATP site can be viewed.

6. Middle Raceway: Refer to "Development of the Raceway System" beginning on Page D-8. The Middle Race, and that portion of it which has been removed, is significant to the ATP site on the basis of historical significance, archeological potential, and because it provided an open space and vista in what was a densely developed site until its removal just prior to 1931.

Recommendation A-6a: That the missing portion of the Middle Raceway *must* be adequately interpreted. Included as part of the interpretation shall be the provision of an open vista over the route of the race, and stabilization of the stone wall at the river including removal of the later cinder block wall supported by it.

- a. As part of this recommendation it is suggested that consideration be given to the development of an overlook at the edge of the bluff at the approximate location of the historic spillway. This can be combined with the suggested pathway included in Recommendation A-5.

Recommendation A-6b: That the historic head race and tail race which served the Gun Mill *must* be adequately interpreted.

- b. It is also suggested that consideration be given to the reconstruction of the flume that was fed by the Middle Raceway.

B. Archeological Sensitivity

The Secretary of the Interior's Standards for Preservation, Standard No. 8, states that "Archeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken." The following recommendations provide measures to comply with that standard.

Archeology, as it applies to the ATP site, is expanded from the concept of historic remains found in the ground to that of industrial archeology which analyzes all site remains including equipment, shops, and buildings in addition to those in-ground remains. In addition to the protection of resources as required by the Secretary's standard, the goal is to develop a better understanding of the historic mill processes and how they affected the site's architectural and engineering development.

Because of a lack of in-ground testing, and because of the uncontrolled thick undergrowth, the dangerous conditions of the ruins, and the piles of construction debris on the site, the archeological work done as a part of this study was necessarily limited and constitutes a sensitivity survey.

Recommendation B-1: Because of the access limitations caused by undergrowth, condition of the ruins, and piles of debris, a visual field survey of the entire site *must* be undertaken after clearing of undergrowth and debris and before any of the ruins are disturbed and before any ground excavation takes place. The purpose is to simply observe those areas where access was limited during this study in order to determine if additional information can be added to that already recorded.

Recommendation A-6a and A6b on Page F-4 of this report require the interpretation of the missing portion of the Middle Raceway which roughly ran from the west side of the Gun Mill to the river as shown on the Requirements and Recommendations Map. In order to carry out these recommendations it is necessary to determine the location of the missing part of the raceway.

Recommendation B-2: A stage one cultural resources survey *must* be carried out in the zone labeled B-2 on the Requirements and Recommendations Map. Following research of primary documentation in addition to the material contained herein, limited test excavations should establish the following:

- a. Location of raceway.
- b. Location of flume which served the Gun Mill.
- c. Whether the portion of areaway covered with building slabs was filled or if it was bridged and is still extant.

This study found that a large portion of the ATP site contains areas that do not reveal indications of potentially significant in-ground remains, but which require further investigation before being dismissed.

Recommendation B-3: This area consists of the west end of the site where evidence indicates that there was only one building period. The assumption is that the site was leveled by the quarrying operations on Mt. Morris and that the building slabs were placed generally on top of the underlying rock. One boring was made in this area as

part of the geotechnical investigation conducted for this study. It went down 8 feet before hitting bedrock which, if the assumption is correct, means that the boring was in a location where the quarrying went deeper than in surrounding areas and required the addition of fill material to level out the site.

This assumption needs confirmation, through a limited number of borings, test excavations, and/or ground penetrating geotechnical methods, that the strata underlying the building remains is as assumed by this study.

Just as the study found areas with no indication of potentially significant in-ground remains, so did it develop zones which have indications that in-ground remains of potential historical significance are present.

Recommendation B-4: That sufficient work *must* be carried out by a qualified industrial archeologist to raise the existing sensitivity survey to a stage one cultural resources survey. This work consists of two phases.

Phase one is a research phase to add to the information already developed as part of this study. This consists of research of primary documents including S.U.M. company records, city records, and industry documents. The information gained will allow the formulation of an in-field testing program.

The second step is to conduct in-field reviews and/or in-field test excavations limited to those areas where the development plan for the site indicates that construction impact will occur within the zones indicated below. Construction impact is defined as disturbance of the ground or removal of ruins.

The last operators of the ATP site consolidated numerous machine manufacturing and silk cloth producing factories into a single plant that integrated the various processes of printing synthetic cloth into one modern process. To do this, they adapted all sorts of earlier facilities to their needs; connecting parallel buildings to create the spaces for their production line, and in-filling open areas between buildings as simply and economically as possible, then adjusting the floor heights to create level shop floors in the various plants they were joining into the one system. The usual method was to fill lower floor levels to the desired height with loose fill materials and then pour concrete slabs on the fill.

Zone B-4a: Before the removal of the mill debris, remains of each mill or shop should be studied in order to determine and record what the shop settings and processes may have been. Sites of deep below ground features should be easy to locate, but will require the removal of concrete floors and fill debris. Some sophistication will be necessary to record and analyze the sites so that the evolution of several periods of use can be recorded. For example, a filled turbine setting probably was adapted from a water wheel pit and, in fact, several types of each water engine may have been present over time.

In mill cellars and yards, systematic test excavations will be required to establish stratigraphic conditions as well as the presence of early foundations and deposits of diagnostic artifacts.

Just as the site evolved from a collection of individually owned factory buildings into a site where the buildings were joined together into a single plant, so did the network of raceways evolve. What started as a collection of head and tail races providing power to individual buildings eventually became a system of sewers into which the dirty water from the manufacturing process was discharged to the river, and finally into a collection system from which water and sewage could be pumped to the city's sewer system.

The raceway system on the ATP site is not mapped although the general location of most of the head races, flumes, and tail races is known. Occasionally, the deep holes and trenches of the raceways both inside the plants and outside as well were completely filled, but just as often they were bridged over or spanned by new construction or were used to bury oil tanks and other new facilities.¹

Zone B-4b: This zone includes the raceway network on the outside of the building and consists of the head races which transported water from the Lower Raceway to the factories and the tail races which discharged water from the factories to the river.

A limited number of test excavations is required in the front of the buildings and in the rear in order to verify the location of the head races and tail races, to determine the method of construction, and to confirm that all have been filled in. In this regard, refer to Recommendation F-1.

Zone B-4c: Within the buildings many of the raceways were open while others were enclosed. In most instances the type of construction is unknown. As the buildings have evolved many of them were filled, but there are others which were simply bridged over with concrete slabs.

Removal of some existing construction plus a limited number of test excavations is required in order to locate and record the raceway system and to determine the type(s) of construction. In addition, trenches which are open beneath slabs must be located. In this regard, refer to Recommendation F-1.

Zone B-4d: Of special importance are the areas which housed the water wheels and turbines within each of the factories. As noted on the Requirements and Recommendations Map, they are directly related to the raceway network location.

Removal of concrete slabs, fill debris, and a limited number of test excavations will be required to locate and record the condition and construction of the wheel pits, turbines, etc. The goal is to find the remains of such sites and, if present, to evaluate their potential significance as cultural resources.

¹ Arthur Rosen, personal communication.

It is emphasized that the requirement for the stage one cultural resources survey is limited to those areas where the development plan for the site indicates that construction impact will occur within the zones indicated described above and as shown on the Requirements and Recommendations Map.

It is strongly recommended that the industrial archeological information be gathered as soon in the site development process as possible in order that the developers can proceed with knowledge of what they should avoid and/or what mitigation procedures they should expect to employ before the work is carried out.

C. Specific Elements to be Retained

The Secretary of the Interior's Standards for Preservation, Standard No. 2, states that "The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided."

As a result of historical analysis, analysis of the historic integrity of the site, and the analysis of the condition and potential of the remaining building elements, recommendations are being made for the retention of specific elements.

1. **Buildings:** For the purpose of this report, a "building" is defined as a ruin which retains a sufficient amount of its exterior walls so that its basic form is recognizable. Three buildings were identified for in-depth analysis, the Gun Mill, the Todd Mill, and the Boiler Plant. Of these, only the Gun Mill is recommended for retention for reasons enumerated in Section D, Investigation and Analysis.

A number of potential methods for reuse of the remaining historic elements of the Gun Mill were reviewed, including:

- a. **Stabilization of the extant elements for retention as a ruin.**

This method has some potential, depending on the overall site design and the method of interpretation selected for the historic features on the site. In addition, it is the easiest to accomplish from a technical standpoint because interpretation of the current building code will allow retention of these walls as free standing "ruins" by stabilizing the masonry, but without structural bracing. On the negative side, however, is the fact that this method will fail to properly define the mass of the original building.

- b. **Reconstruction of a two-story building utilizing the extant walls following significant restoration of the brownstone.** This method will require the construction of a new structural steel frame within the perimeter of the stone walls to support the loading of new floors and roof and to provide lateral bracing for the existing stone walls.

On the positive side, this method will have the effect of retaining the building in its historic state. From a construction standpoint, it will be more difficult than leaving the walls as ruins because it will

require structural bracing of the masonry in order to comply with current codes. There are a number of negative aspects, including the fact that capping the building at two stories will not adequately portray the mass which existed in this entry forecourt to the site until the 1920s. This method will also fail to capitalize on the opportunity to recapture the visual importance of the building as seen from Van Houten Street.

- c. Reconstruction of a two-story building as described above, but with steel tubing or some other material outlining the original four-story shape of the building including the tower. In addition, it is suggested that a bell similar to the original be reinstalled in the frame of the tower.

From a positive standpoint, this method preserves the building in its historic state -- illustrating the fact that changes were made on the site over time and that the removal of the upper stories was part of that story. As with the method above, it will require the addition of a structural frame in order to brace the existing walls and to carry the load of new floors and roof.

From a negative standpoint, the original massing will not be replicated, but it is felt that the construction of a "wire frame" to delineate the original massing will overcome this handicap to a large degree. Industrial life was ordered by the bell during the period of the building's significance and its replacement will provide a symbol and focal point for the site.

- d. Reconstruction of the original building utilizing the extant walls and reconstructing them to their original height using salvaged brownstone from the site. This method will require the construction of a steel frame within the stone walls to support floor and roof loading and to provide lateral bracing for the existing walls.

From a positive standpoint, this method will most nearly replicate the original massing of the site. However, the doing so will, in turn, require actions that may be difficult. Among them are the facts that:

- 1) Current building codes prohibit the existing walls from carrying the weight of the new walls. The weight of any new stone construction will have to be carried by new steel shelf angles and the load transferred to a free standing steel frame.
- 2) The Secretary of the Interior's Standards for Reconstruction, Standard No. 1, states that "Reconstruction shall be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential in the public understanding of the property."

Given the lack of detailed historic photographs or drawings found to date, it will be difficult to match the original appearance and construction of the missing building sufficiently to comply with this standard.

- 3) The Secretary of the Interior's Standards for Restoration, Standard No. 6, states that "Deteriorated features from the restoration period shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials."

The ability to adequately match the appearance of new stone wall construction to existing stone construction is questionable. Even if the stone salvaged on the site is a good color match, it will be difficult to match the stone dressing and to artificially weather it to match the existing.

Recommendation C-1: That the Gun Mill *must* be retained, stabilizing the walls and installing structural bracing as required by the building code for the manner in which it will be retained. It is suggested that the original massing and shape of the building and tower shall be indicated through the use of steel tubing, or similar material, to outline the shape.

- a. As part of this recommendation it is suggested that the Gun Mill be utilized as a public space for the interpretation of the history of power in the historic district. The Gun Mill, through its evolution, has been powered by water, by steam, and by electric power.
 - b. Consideration should also be given to the reconstruction of the original water wheel along with operating displays of an early water power system utilizing wooden shafts, and an early steam powered system, both of which existed in the building.
 - c. Other suggestions for consideration include the reconstruction of the flume at the head race and interpretation of the tail race, as suggested in Recommendation A-6b, and construction of a stairway to allow the extension of the pedestrian pathway suggested in Recommendation A-5 to reach the street level.
2. Walls: Freestanding portions of walls were also analyzed, and it is recommended that, in three locations, sections of wall must be retained, stabilized, and either incorporated into new construction or preserved as ruins. It is further suggested that three other sections be retained and reused or maintained as ruins if they can be incorporated into the site development design.

Recommendation C-2a: That the existing remains of the south wall of the Waverly Mill *must* be retained, stabilized, and incorporated into the design of the development, as a free-standing component. This wall is an architecturally significant indicator of industrial design of the period and

provides an important terminus to Mill Street. For additional information, refer to the Waverly/Mallory Mills Sector discussion in Section D, and in particular the Building Condition and the Conclusions portions which begin on Page D-95.

- a. Stabilization at a minimum shall include retention of historic materials, the reconstruction of missing features on the portion of wall to be retained, and the design of an appropriate termination at the top of the wall at a line somewhat above the stringcourse over the first floor window openings.
- b. This historic wall shall be free-standing in that it shall not be incorporated as a part of a new wall.

Recommendation C-2b: That the majority of the existing remains of the brownstone walls of the Knipscher & Maass buildings fronting the river *must* be retained, stabilized, and utilized in the design of the development. These walls are among the most important on the site because they were among the earliest on the site, because the story of the river's flooding can be interpreted through the early sealing up of the basement (or river level) windows, and because of the view they present when seen from the north side of the river. For additional information, refer to the Knipscher & Maass Sector discussion in Section D, and in particular the Building Condition and the Conclusions portions which begin on Page D-82.

Recommendation C-2c: That the remaining walls of the Passaic Mill on the south side and a portion of the west side, as noted on the Requirements and Recommendations Map, *must* be retained, stabilized, and utilized in the design of the development. Their importance in defining the edge along the street, the edge of the historic access way, and the sawtooth roof form is significant. For additional information, refer to the Passaic Sector discussion in Section D, and in particular the Conclusions portion on Page D-100.

Recommendation C-2d: It is suggested that the portion of the Waverly Mill wall, as noted on the Requirements and Recommendations Map, be incorporated as part of new construction if the design can adequately lend itself to its use.

Recommendation C-2e: It is also suggested that the north portion of the section of Boiler Plant indicated on the Requirements and Recommendations Map be incorporated in the design of the development either as part of a new wall or as a stabilized ruin. The history of the site can be interestingly interpreted through the various construction campaigns which are in evidence in the wall, beginning with the earliest construction on the site to some of the most recent. For additional information, refer to the Gun Mill Sector discussion in Section D, and in particular the Boiler Plant Condition and the Conclusions portions which begin on Page D-74.

- a. It is suggested that consideration be given to the development of a pedestrian pathway adjacent to the wall or to the use of the stabilized

walls as garden walls or in other similar ways.

Recommendation C-2f: It is suggested that the portions of the stone walls at the east and south sides of the Knipscher & Maass Dye House on the west side of the former Middle Raceway location, and as shown on the Requirements and Recommendations Map, be retained, stabilized, and incorporated into the design of the development. Their importance in defining the edge of the Middle Raceway and the edge of the historic access way to the western portion of the site is significant. For additional information, refer to the Gun Mill Sector discussion in Section D, and in particular the River Walls Condition and the Conclusions portions which begin on Page D-70.

3. **Independent Elements:** One independent element was identified for in-depth analysis, the stack at the Boiler Plant to the north of the Gun Mill. It is recommended for further research and analysis and, depending on the results, for retention in the development design as described below. For additional information, on the stack refer to the Gun Mill Sector discussion in Section D, and in particular the Boiler Stack Condition and the Conclusions portions which begin on Page D-74.

Recommendation C-3: The significance of the Boiler Plant stack with its SSD lettering in the brickwork is as a symbol of the former industrial site which, in its period of operation, had numerous stacks which could be seen from any vantage point in Paterson. Its reuse, however, is clouded by the possible inability to comply with current codes, especially if incorporated as part of new construction rather than as a freestanding element. It is suggested that the code compliance implications be further researched with the goal being to retain the stack. For further discussion on the code issue, refer to the Structural Restraints article in Section E, Regulatory Restraints, beginning on Page E-6.

D. Edges and Boundaries

The Secretary of the Interior's Standards for Preservation, Standard No. 2, states that "The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided."

As a result of historical analysis and analysis of the historic integrity of the site, historic boundaries and edges were reviewed. These included both the edges and boundaries which continue to be formed by remaining wall elements and those which are only formed by foundations of historic walls. Further discussion of the historic edges and boundaries is found in the Original Site Organization and Development History article in Section D, beginning on Page D-1.

1. **Remaining Walls Form Edges and Boundaries:** As a result of the analysis described above, only one location on the interior of the site was identified as significant. The south and east walls of the portion of the Boiler Plant north of the Gun Mill, as indicated on the Requirements and Recommendations Map, have historically formed the edges of access ways. In this instance, they are especially significant for at least

three reasons: 1) the building, or at least its foundation, is one of the oldest on the site, 2) its location forms part of the principal site entry, and 3) the two walls formed an intersection of the access roads. The existing walls, however, are of relatively new construction. In addition, the south wall is only fifteen feet from the Gun Mill, a dimension which is too narrow to be used for vehicular access.

Recommendation D-1: That the edges formed by the historic wall locations of the Boiler Plant as described above *must* be retained in the design of the new development. The interpretation of the edges may be accomplished through the use of new walls constructed as part of new development or by other devices such as garden walls, hedge lines, etc. If the space between the Gun Mill and the edge in question is to be used for vehicular access, it will be permissible to shift the "wall" location to the north to provide the minimum clearance required.

2. **Former Walls Form Edges and Boundaries:** As a result of the historic analysis, four locations were identified as significant. In each instance they helped form the boundary of a historic site entry or provided the edges of historic access roads on the site. Of these, it is recommended that three locations must be interpreted either through construction of new walls or by other devices incorporated in the development design. In the fourth location, it is recommended that it must be interpreted as part of the site development.

Recommendation D-2a: That the location of the former south wall of the Mallory Mill and a portion of the west wall of the mill, as indicated on the Requirements and Recommendations Map, *must* be the location of the walls for new construction which is described in Recommendation E-1.

Recommendation D-2b: That the location of the former east wall of the Knipscher & Maass Dye House, as indicated on the Requirements and Recommendations Map, *must* be interpreted either through landscaping devices or by the construction of a new wall as part of the development design.

Recommendation D-2c: If the design of the new construction massing which is described in Recommendation E-1 extends further north than the location of the wall described in Recommendation D-2a, then its west wall *must* be in the location of the former northern portion of the west wall of the Mallory Mill as indicated on the Requirements and Recommendations Map. If, however, the new construction does not extend this far to the north then there is no requirement for interpretation of this portion of the former wall.

Recommendation D-2d: That the location of the former east wall of the original Waverly Mill building, as shown on the Requirements and Recommendations Map, *must* be interpreted by placing the east wall of the new construction massing described in Recommendation E-1 in this location.

- a. It is suggested that the design of the wall for the new construction incorporate elements of the ruins of the Waverly east wall to the extent that they can be made compatible with the new materials.

E. Massing

The Secretary of the Interior's Standards for Preservation, Standard No. 2, states that "The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided."

The site was characterized by the density of construction and by the face which was presented to Mill Street and Van Houten Street. This face had two components, one being the line of buildings along Van Houten Street and along Mill Street adjacent to the site, and the other being the view as seen at the end of Van Houten Street looking west and from Mill Street looking north.

Because of the importance of the site as seen from outside, and because of the priority being given to the entry at the Gun Mill location, it is important that the massing in this location be such that the sense of density and the wall created by the buildings be recreated.

1. Waverly/Mallory Mill Building Complex: As seen from Mill Street looking north, the face of the Waverly and Mallory Mill buildings provided the "wall" of the ATP site. In addition, they framed the north side of the entry to the site, and formed one edge of the site's primary interior roadway. The recreation of the edges provided by these walls and the massing it provided is of high priority. Recommendations A-3, A-4, C-3a, D-2a, D-2c, and D-2d all relate to this issue.

Recommendation E-1: That design of the site *must* include new red brick construction having a minimum footprint as shown on the Requirements and Recommendations Map, with a height approximately the same as the original buildings (forty-five feet above grade), and with a facade design compatible with the historic mill buildings. The shade of red brick used must be similar to that used in the original Waverly Mill and Mallory Mill construction. The use of the existing south wall of the Waverly Mill is discussed in Recommendation C-2a. The placement of the south and west walls of the new construction must be as recommended in D-2a.

- a. In the event that development plans require construction of a mass in excess of that provided by the minimum footprint and required height, this may be achieved by extending the north wall of new construction to the north with the walls on the east and west sides extending along the line of the original buildings. See Recommendation D-2c.

2. Gun Mill Building: As seen from Van Houten Street looking west, the face of the Gun Mill forms the "wall" of the site just as the Waverly/Mallory Mill buildings did when viewed from Mill Street. Similarly, the Gun Mill also framed the west side of the site entry. Restoration of the existing walls is called for in Recommendation C-1, which also discusses the importance of massing and spells out the preferred process for achieving this recommendation.

Recommendation E-2: That massing of the original Gun Mill building *must* be achieved as described in Recommendation C-1.

F. Site Preparation and Monitoring During Construction

From a geotechnical standpoint, two features of the site separate it from the more usual insofar as subsurface conditions are concerned. These features are the unknown location and/or condition of the raceway system and the presence of historic building elements, some of which are being recommended for retention and stabilization. For more information, refer to the report prepared as a result of the subsurface investigation performed as part of this project.²

1. **Raceways and Tunnels:** The network of head races, flumes and tail races which transported water from the Lower Race to the river is not mapped, although the general location of most of the waterways is known. What is not known is whether or not these waterways were abandoned, backfilled, or merely spanned by new construction. In addition, it is known that underground tunnels have existed on the site, due in large part to the continual renovation and joining of the buildings where existing spaces were often bridged over. These underground waterways and tunnels represent a possible source of settlement and are a primary geotechnical concern.

Recommendation F-1: Following site clearing operations, further geotechnical investigations consistent with the proposed development plan will be required. As part of that geotechnical investigation, the presence of underground tunnels and/or waterways *must* be confirmed prior to finalizing the location of future construction. It is recommended that seismic reflection be utilized to provide subsurface data regarding the locations of subsurface waterways and tunnels. The seismic reflection method involves recording acoustic energy that reflects off subsurface layers and returns to the surface. This process will generate a subsurface profile of the buried channels which will permit mapping. This work should be done in concert with the archeological work in Recommendation B-1.

2. **Historic Building Elements to be Retained:** Critical to the development of the site is the preservation of certain existing walls, foundations and elements which represent the site's historic value. Ground vibrations caused by construction operations such as blasting, pile driving, and compaction have a potential to cause damage to adjacent structures. Some of these operations may not necessarily be part of the site development work, but the potential for damage through vibration is present and should be controlled.

Recommendation F-2: That vibration monitoring *must* be performed during periods of construction or other potentially disruptive activities adjacent to or near portions of the historic structures or elements that are to be preserved. The vibration control limits set forth by Konon and Schuring in 1983 should be utilized as vibration criteria. Further, monitoring of existing damage (i.e., cracks) *must* be performed throughout construction operations to preserve the condition of the remaining elements.

² PMK Group, Report, Subsurface Investigation, 1995.