

**From:** Scala, Mary Joy  
**Sent:** Friday, October 23, 2015 9:24 AM  
**To:** Ehman, Doug  
**Subject:** BAR Action - Lee Park 101 E Market Street - October 20, 2015

October 23, 2015

Doug Ehman  
Department of Parks and Recreation  
Parks Division Manager  
1300 Pen Park Rd.  
Charlottesville, VA 22901

**Certificate of Appropriateness Application**

BAR 15-10-03  
Lee Park-101 E. Market Street  
Tax Parcel 330195000  
City of Charlottesville, Owner/Mike Doug Ehman, Parks Division Manager, Applicant  
Repairs at Lee Park, concrete work, retaining wall and masonry, repair stairs

Dear Applicant,

The above referenced project was discussed before a meeting of the City of Charlottesville Board of Architectural Review (BAR) on October 20, 2015. The following action was taken:

**Schwarz moved to find that the proposed Lee Park improvements satisfy the BAR's criteria and are compatible with this property and other properties in the North Downtown ADC district, and that the BAR approves the proposal as submitted, minus the replacement of the wall at the Linden tree.  
Keesecker seconded. (7-0).**

This certificate of appropriateness shall expire in 18 months (April 20, 2017), unless within that time period you have either: been issued a building permit for construction of the improvements if one is required, or if no building permit is required, commenced the project. The expiration date may differ if the COA is associated with a valid site plan. You may request an extension of the certificate of appropriateness *before this approval expires* for one additional year for reasonable cause.

Upon completion of the project, please contact me for an inspection of the improvements included in this application. If you have any questions, please contact me at 434-970-3130 or [scala@charlottesville.org](mailto:scala@charlottesville.org).

Sincerely yours,

Mary Joy Scala, AICP  
Preservation and Design Planner

**Mary Joy Scala, AICP**  
Preservation and Design Planner  
City of Charlottesville  
Department of Neighborhood Development Services  
City Hall - 610 East Market Street  
P.O. Box 911  
Charlottesville, VA 22902  
Ph 434.970.3130 FAX 434.970.3359  
[scala@charlottesville.org](mailto:scala@charlottesville.org)

**CITY OF CHARLOTTESVILLE  
BOARD OF ARCHITECTURAL REVIEW  
STAFF REPORT  
October 20, 2015**



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Manager, Applicant

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**Background**

Lee Park is an entire city block in the North Downtown ADC District. It is comprised of approximately 45,435 square feet, and located between First Street North and Second Street Northeast and between East Market Street and East Jefferson Street. There is a cast bronze monument of Confederacy General Robert E. Lee, and his horse, Traveller. The Park was donated to the City of Charlottesville in July 1918 after Paul Goodloe McIntire purchased the property from Charles Venable-whose Southall-Venable homestead had occupied the property for nearly a century. The home was demolished and created into a formal plaza.

**Application**

The City of Charlottesville's Department of Parks and Recreation has allocated funding to replace the failing retaining walls. The two types of walls- masonry and cast-in-place concrete, are failing at different places around the park. The concrete sidewalks, original to the park or built shortly after, need repair or replacement. There are several instances where the surface level has been displaced, causing a vertical change in the surface area, creating a greater threshold as identified by the ADA Accessibility Guide (ADAAG). The handrails do not comply with the full extent of the ADAAG recommendations for grab bars and handrails.

Repair steps for the masonry wall include cleaning the stone with water and mild soap (performed on a trial basis), removal of damaged stones and installing a closely matching replacement. Then the surface should be covered with a parge coating with tooling profiles that match existing walls. Prior to this, it is recommended that samples of the existing parge coat get sampled to identify constituent materials, their relative proportions and air content. In addition, a perforated drain pipe placed in a drainage course behind the wall will suffice to evacuate water behind the wall.

Special attention will be made at the American Linden Tree-the replaced structural system will be made capable to resist the anticipated loadings. The replacement system here is a cast in place retaining wall, with Catocin greenstone veneer to match the existing wall.

Concrete caps need to be cleaned of dirt, scale, oil, grease and other matter by means of water, and stiff brush. In many locations the repair can utilize a mechanical bond to supplement the properties of the concrete repair material. In some locations it may be required to supplement the concrete patch with reinforcing steel anchored with epoxy anchors.

Sidewalk replacements generally include replacing the entire width of sidewalk from transverse joint to transverse joint. It will be replace in kind in accordance with the City of Charlottesville standard Sidewalk Detail. With the sidewalk that exceeds threshold the walks can be milled down.

## **Criteria and Guidelines**

### **Review Criteria Generally**

*Sec. 34-284(b) of the City Code states that,*

*In considering a particular application the BAR shall approve the application unless it finds:*

- (1) That the proposal does not meet specific standards set forth within this division or applicable provisions of the Design Guidelines established by the board pursuant to Sec.34-288(6); and*
- (2) The proposal is incompatible with the historic, cultural or architectural character of the district in which the property is located or the protected property that is the subject of the application.*

### **Pertinent Standards for Review of Construction and Alterations include:**

- (1) Whether the material, texture, color, height, scale, mass and placement of the proposed addition, modification or construction are visually and architecturally compatible with the site and the applicable design control district;*
- (2) The harmony of the proposed change in terms of overall proportion and the size and placement of entrances, windows, awnings, exterior stairs and signs;*
- (3) The Secretary of the Interior Standards for Rehabilitation set forth within the Code of Federal Regulations (36 C.F.R. §67.7(b)), as may be relevant;*
  - 1. A property will be used as it was historically or will be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.*
  - 2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.*
  - 3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectured features or elements from other historic properties, will not be undertaken.*
  - 4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.*
  - 5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*
  - 6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*
  - 7. Chemical or physical treatment, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*
  - 8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*
  - 9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale, proportion, and massing to protect the integrity of the property and its environment.*
  - 10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*
- (4) The effect of the proposed change on the historic district neighborhood;*
- (5) The impact of the proposed change on other protected features on the property, such as gardens, landscaping, fences, walls and walks;*
- (6) Whether the proposed method of construction, renovation or restoration could have an adverse impact on the structure or site, or adjacent buildings or structures;*
- (8) Any applicable provisions of the City's Design Guidelines.*

### **Pertinent Design Review Guidelines - Site Design and Elements**

### *C. Walls and Fences*

- 1. Maintain existing materials such as stone walls, hedges, wooden picket fences, and wrought-iron fences.*
- 2. When a portion of a fence needs replacing, salvage original parts for a prominent location.*
- 3. Match old fencing in material, height, and detail.*
- 4. If it is not possible to match old fencing, use a simplified design of similar materials and height.*
- 5. For new fences, use materials that relate to materials in the neighborhood.*
- 6. Take design clues from nearby historic fences and walls.*
- 7. Chain-link fencing, split rail fences, and vinyl plastic fences should not be used.*
- 8. Traditional concrete block walls may be appropriate.*
- 9. Modular block wall systems or modular concrete block retaining walls are strongly discouraged, but may be appropriate in areas not visible from the public right-of-way.*
- 10. If street-front fences or walls are necessary or desirable, they should not exceed four (4) feet in height from the sidewalk or public right-of-way and should use traditional materials and design.*
- 11. Residential privacy fences may be appropriate in side or rear yards where not visible from the primary street.*
- 12. Fences should not exceed six (6) feet in height in the side and rear yards.*
- 13. Fence structure should face the inside of the fenced property.*
- 14. Relate commercial privacy fences to the materials of the building. If the commercial property adjoins a residential neighborhood, use brick or painted wood fence or heavily planted screen as a buffer.*
- 15. Avoid the installation of new fences or walls if possible in areas where there are no fences or walls and yards are open.*
- 16. 16) Retaining walls should respect the scale, materials and context of the site and adjacent properties.*
- 17. Respect the existing conditions of the majority of the lots on the street in planning new construction or a rehabilitation of an existing site.*

## **Pertinent Design Review Guidelines – Public Design & Improvements**

### **A. Introduction**

*Public spaces define the spatial organization of the City, forming the basis for social, cultural, and economic interaction. The Downtown Pedestrian Mall is the centerpiece of the community. Charlottesville's historic parks, trails, boulevards, cemeteries, playgrounds, and other open spaces help balance the desired urban density and promote healthy living and quality of life. Public spaces accommodate multiple functions and provide social venues. The historic uses and organization of public spaces represent a timeline of cultural practices and values of the community. Significant features should be identified and respected when changes are proposed. New public spaces and improvements should reflect contemporary design principles and values.*

*Charlottesville has a rich history of public improvements, which include public buildings, bridges, streetscape landscaping and lighting, street furniture, monuments, public art, fountains, and signage. Many of these improvements have been made within the historic districts, and there will be the opportunity to create additional such amenities in future years. All changes or improvements require BAR review and approval, and should be compatible with the general architectural features and character of an area or district. Repairs and maintenance should match original materials and design, and should be accomplished in a historically appropriate manner.*

*All public improvements should reflect the quality and attention to detail and craftsmanship of the overall historic districts' character.*

#### *B. Plazas, Parks & Open Spaces*

- 1) Maintain existing spaces and important site features for continued public use consistent with the original design intent,*
- 2) Maintain significant elements in a historic landscape: grave markers, structures, landforms, landscaping, circulation patterns, boundaries, and site walls.*
- 3) Design new spaces to reinforce streetscape and pedestrian goals for the district. These areas offer the opportunity to provide visual focal points and public gathering spaces for the districts.*
- 4) New landscaping should be historically and regionally appropriate, indigenous when possible, and scaled for the proposed location and intended use.*
- 5) Exterior furniture and site accessories should be compatible with the overall character of the park or open space.*
- 6) Repairs and maintenance work should match original materials and design, and should be accomplished in a historically appropriate manner.*
- 7) Avoid demolishing historic buildings to create open spaces and parks.*

#### *D. Streets, Walks, & Curbs*

- 1) Retain historic paving or curbing.*
- 2) If any historic paving or curbing is uncovered in future public projects, consider reusing it or parts of it in the new project.*
- 3) Make street paving consistent throughout districts.*
- 4) When widening existing streets provide sidewalks, street trees, and other elements that maintain the street wall and emphasize the human scale.*
- 5) Limit paved areas to streets, driveways and pedestrian areas.*
- 6) Consider using some type of distinctive crosswalks at key intersections or crossings.*
- 7) Avoid faux techniques or appearances in materials, such as stamped asphalt or concrete.*
- 8) When sidewalks must be repaired, match adjacent materials in design, color, texture, and tooling.*
- 9) Avoid variation in sidewalk and curb materials.*
- 10) When sidewalks need replacement, use a paving unit, such as brick or concrete with a tooled or saw cut joint that relates to the scale of the districts.*
- 11) Avoid excessive curb cuts for vehicular access across pedestrian ways.*
- 12) Where curb cuts are necessary, they should be consistent with other curb cuts in the area.*
- 13) Do not block sidewalks with street furniture elements.*
- 14) Remove obsolete signs and poles.*

#### *E. Street Trees & Plantings*

- 1) Maintain existing plantings in public rights of way.*
- 2) Replace damaged or missing street trees with appropriate species. New street trees should be planted in appropriate locations. Consult the City-approved plant list.*
- 3) Install plantings in areas like medians, divider strips, and traffic islands.*
- 4) Locate planters so that they do not block sidewalks.*

#### *F. Lighting*

- 1) In pedestrian areas, use smaller-scaled light fixtures that do not create a glare.*
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- 5) Light color and intensity should be consistent throughout a general area or subarea of a*

*historic district. Use similar lamping (bulb type) and/or wattage to maintain a consistent quality of light.*

- 6) *Provide street lighting fixtures with flat lenses that are shielded and directed down to the site in order to reduce glare and prevent uplighting.*

### **Recommendations and Discussion**

Although this work could be considered maintenance, the age, significance and prominent location of the park, and its walls, trees, and walkways, warrant the BAR's scrutiny of the proposed repairs. Staff commends Parks for the careful planning.

### **Suggested Motion**

Having considered the standards set forth within the City Code, including City Design Guidelines for Site Design and Elements and for Public Design and Improvements, I move to find that the proposed Lee Park improvements satisfy the BAR's criteria and are compatible with this property and other properties in the North Downtown ADC district, and that the BAR approves the proposal as submitted (or with the following modifications...).

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**Recommendations and Discussion**

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**Suggested Motion**

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# City of Charlottesville, VA Repairs at Lee Park Feasibility Study

October 20, 2014  
FINAL DRAFT

**Prepared for:**

City of Charlottesville  
Department of Parks and Recreation  
1300 Pen Park Rd.  
Charlottesville, VA 22901

**Contact:**

Doug Ehman  
Parks Division Manager

**Prepared by:**

**LINE + GRADE**  
CIVIL ENGINEERING

418 East Main Street  
Charlottesville, VA 22902  
TEL: 434.962-2430  
line-grade.com

**Contact:**

Daniel C. Hyer, PE  
dhyer@line-grade.com





- [3] Purpose**
  - [3] Intent of Feasibility Study + Scoping Narrative
- [3] Historic Significance**
  - [3] Lee Park
  - [4] Identification of Original Elements
  - [4] Southall - Veneble Residence 1829-1918
  - [6] Establishment of Lee Park (approximately 1918 - 1924)
  - [8] City Park (approximately 1924 - Current)
  - [8] Preservation
- [9] Lee Park - Site Evaluation**
  - [9] General Site Information
  - [9] Retaining Walls
    - [9] Stone Masonry Retaining Walls
    - [12] Retaining Wall at the American Linden Tree
    - [12] Concrete Retaining Wall
  - [13] Concrete Walks
  - [13] Handrails
- [14] Summary**
- [15] Recommendations: Scope of Repair Work**
  - [15] Stone masonry Retaining Walls
  - [16] Stone Retaining Wall at the American Linden Tree
  - [17] Concrete Caps
  - [17] Sidwalks
  - [17] Handrails
- [18] Appendix A: Field Notes**
- [20] Appendix B: Construction Cost Estimate**

**Purpose**

**Intent of Feasibility Study + Scoping Narrative**

The City of Charlottesville's Department of Parks and Recreation has allocated funding to replace failing retaining walls at Lee Park. In support of this work, Line and Grade was commissioned by the Parks and Recreation Department to perform a Feasibility Study and develop a Scoping Narrative to identify and categorize the extent of necessary repairs to the park's retaining walls, as well as identify additional hardscape repairs at the Park.

This document serves to inform the City of the Historic Significance of Lee Park, identify original hardscape elements and features, propose conceptual repair strategies as well as provide order of magnitude costs associated with the various repair items.

**Historic Significance**

**Lee Park**

Lee Park consists of an entire city block within the National Register Historic District in downtown Charlottesville, VA. The park is located between First Street North and Second Street Northeast and between East Market Street and East Jefferson Street.

Comprised of approximately 45,435 square feet (1.04 AC), the park is home to a monument of the Confederacy General Robert Edward Lee and his horse, Traveller, see Photograph 1. The cast bronze monument was placed atop a white granite pedestal at the highest point in the park where several radial walking paths converge. The statue, a 1-2/3 sized bronze casting of the General and his horse has been cataloged as an "Individually Designated National Register Property."

The park was donated<sup>1</sup> to the City of Charlottesville on July 20th, 1918 after Paul Goodloe McIntire purchased the property from Charles Venable on May 30th, 1917, whose Southall-Venable homestead had occupied the property for nearly a century prior. The Southall-Venable home was demolished after being purchased by McIntire to create a formal landscaped plaza, including the monument of Lee.

The statue of Lee was unveiled and presented to the City of Charlottesville on May 21, 1924 during a Confederate Army reunion ceremony.<sup>2</sup>

In the years that followed, and up until the present day, additional or replacement

<sup>1</sup> The property was gifted to the City for the price of \$10.00. See the original Deed in Figure 1. (Resource: City of Charlottesville Website)

<sup>2</sup> The photograph of the opening ceremony of the park, shown on the plaque below the monument is actually a photograph of the ceremony at Jackson Park. Supposedly, the dedication ceremony at Lee Park was heavily attended by members of the Ku Klux Klan.

J. N. Priggs (REAL)

STATE OF VIRGINIA.  
County of Albemarle, to-wit:-

I, JOHN N. PRIGGS, a Notary Public in and for the County aforesaid, do hereby certify that J. N. Priggs, whose name is signed to the writing above and hereto annexed, bearing date on the 17th day of July, 1918, has acknowledged the same before me in my County aforesaid. My commission expires the 10 day of January, 1920. Given under my hand this 10 day of July, 1918.

John N. Priggs  
NOTARY PUBLIC.

To the Clerk's Office of the Corporation Board of the City of Charlottesville, Virginia.

On the 20th day of July, 1918, the foregoing instrument of writing was presented and admitted to record, and together with the certificate of acknowledgment recorded in Deed Book No. 33, page 5.

Wests:-  
C. E. Thomas, Clerk.

\*\*\*\*\*

WHEREAS, William U. Watson purchased the property hereinafter described at the instance and request of Neil C. McIntire, who desired to erect thereon a statue of General Robert E. Lee and to present said property to the City of Charlottesville, Va. as a memorial to his parents, the late George H. McIntire and Catherine A. McIntire, said property to be used as a park.

AND WHEREAS, his said Neil C. McIntire has requested said William U. Watson to convey said property to said City of Charlottesville, as evidenced by his writing in this deed.

NOW KNOW ALL MEN BY THESE PRESENTS, that this 14th day of June, 1918, between William U. Watson, of the first part, and City of Charlottesville, a Municipal Corporation, of the second part, and Neil C. McIntire of the third part.

Witness my hand and seal this 14th day of June, 1918.

That for and in consideration of the premises and of \$10.00 cash in hand paid by the party of the second part to the party of the first part, the receipt whereof is hereby acknowledged, the said party of the first part here by SHEPHERD ROBERTSON, HIS AND CONVEYS unto the party of the second part, all that certain lot or parcel of land lying and situate on the South side of Jefferson Street in the City of Charlottesville, Va., and bounded on the North by said Jefferson Street, on the West by North First Street, on the South by Market Street and on the East by North Second Street, and being the same property in all respects, conveyed to the said William U. Watson by Charles S. VENABLE and wife, by deed dated 25th day of May 1917, recorded in the Clerk's Office of said City, D. B. 30, page 200. A reference being made to said Deed for a more complete description of said property.

This conveyance is made upon condition that the said property be held and used in perpetuity by said City as a public park, and that no buildings be erected thereon, but the authorities of said City shall at all times have the right and power to control, regulate and restrict the use of said prop-



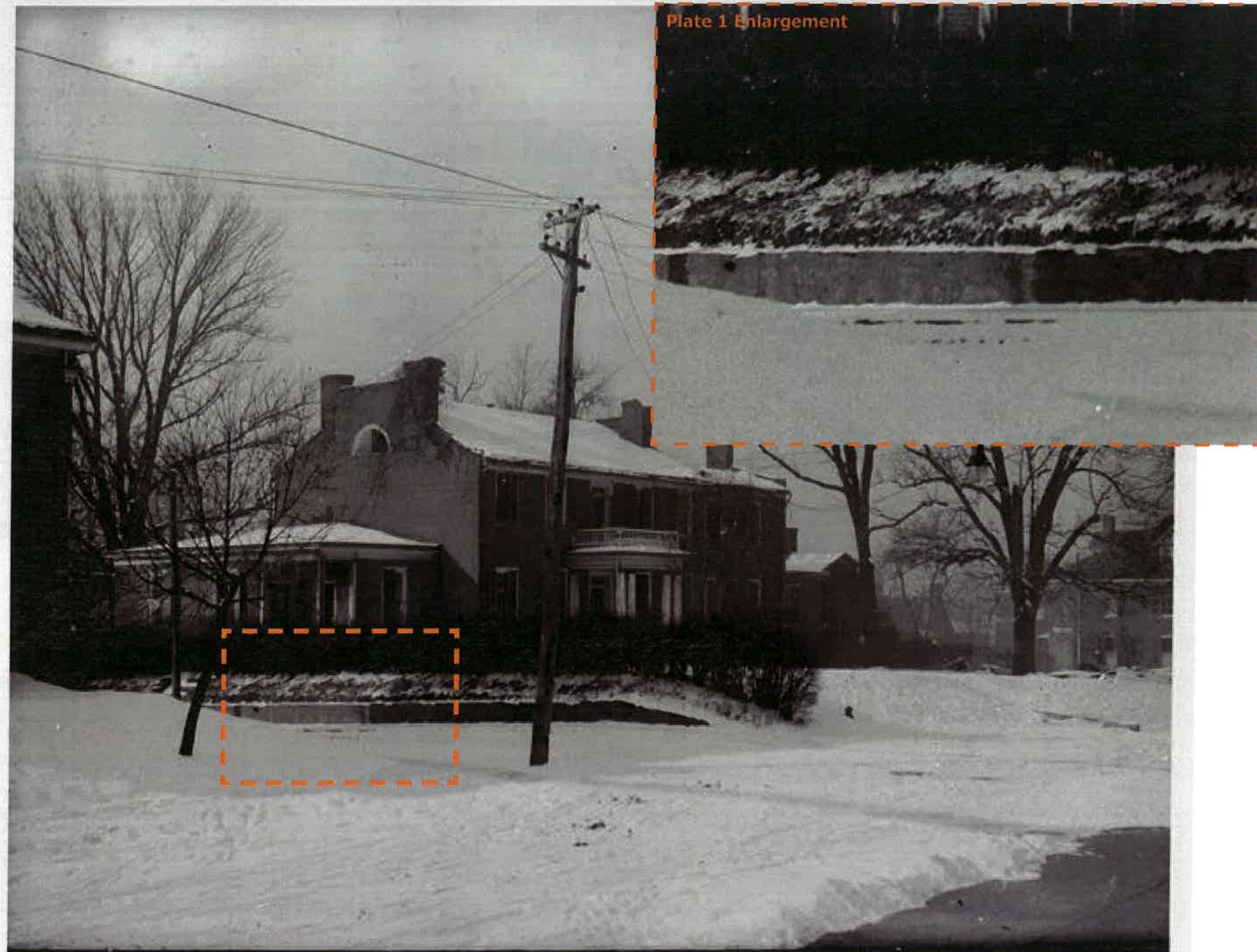
Figure 2 - Image from Charlottesville GIS



Photograph 1 - Robert E. Lee Monument

Figure 1 - Original Park Deed





Citation: Holsinger Studio Collection, ca. 1890-1938, Accession #9862, Special Collections, University of Virginia, Charlottesville, Va.

Catalog Record: <http://search.lib.virginia.edu/catalog/uva-lib:744806>

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Page Title: Southall Venable House Charlottesville

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Plate 1

landscape and hardscape elements have been added to the park, including additional sidewalk corridors, trees and shrubs, site lighting and metal handrails.

Lee Park continues to serve the Charlottesville community by playing host to a number of festivals and other outdoor events each year.

### Identification of Original Elements

To the extent that elements at Lee Park can be identified as "original" depends largely on the more refined question: to which period of the park's history are the various elements original?

For the purposes of this study, the various attributes Lee Park under consideration within this study have been associated with one of three time periods:

- Southall-Venable Residence (1829-1918)
- Establishment of Lee Park (approximately 1918 – 1924)
- City Park (approximately 1924 – Current)

#### Southall-Venable Residence 1829-1918

As can be seen from Plate 1, the Southall-Venable residence was located toward the northeast corner of the property (nearest the intersection of Second Street Northeast and East Jefferson Street). Within the frame of Plate 1, a retaining wall can be observed along the west boundary of the property. Within the Plate, the retaining wall appeared to be of similar stature to the walls as they still exist; additionally, the topography of the berm directly adjacent to the wall appears remarkably similar to the topography of Lee Park in the vicinity of the retaining walls.

As observed from Plate 1, the surface of the retaining wall appears "smoother" than the current stone walls at Lee Park, see Plate 1, and Plate 1 Enlargement.

Historically, rough cut stone masonry walls (similar to those at Lee Park), "were often covered with mortar or stucco either to protect badly deteriorated walls, or to decorate them".<sup>3</sup> Remnants of such a parge<sup>4</sup> coating still remain in isolated locations of the stone walls, see Photographs 2 through 5.

It can reasonably be proposed that the random rubble, dry stack field stone retaining walls on the east and west boundaries of Lee Park were originally covered with a parge coating; perhaps not entirely covered, but at least significantly covered. The parge coat was decorated with tooling marks made to resemble raised beads as can be seen in Photographs 2 through 5.<sup>5</sup>

<sup>3</sup> Mark London, *Masonry - How to Care for Old and Historic Brick and Stone*, The Preservation Press, 142

<sup>4</sup> Parging, also known as "rendering" is a thin coat of mortar applied directly to the surface of a masonry wall. Parging was often used as a measure of protecting the masonry wall from damages associated with water infiltration.

<sup>5</sup> The tooling marks on the east and west walls were observed to be slightly different.





Photograph 2 - Remaining Parge Coating Along East Elevation (note raised read tooling marks)



Photograph 3 - Remaining Parge Coating Along West Elevation (note double struck tooling marks)



Photograph 4 - Parge Coating along East Elevation near 2nd Street Stairway



Photograph 5 - Remaining Parge Coating Along West Elevation



Establishment of Lee Park (approximately 1918 – 1924)

Following McIntire's purchase of the property, and the subsequent donation of the property to the City of Charlottesville, the parcel was converted into a landscaped public plaza providing radial sidewalks from the public streets toward the monument location, as well as a new concrete cap atop the existing parge coated stone retaining walls.

Plate 2 contains an image from the Holsinger Studio Collection, a part of the Special Collections Department at the University of Virginia, which displays the arrangement of the parks hardscape, elements which remain largely unchanged to this day.

At the time the photograph was taken, the bronze monument of Lee and his horse had yet to be installed on the white granite pedestal at the center of Lee Park. This would place the date of the photograph somewhere between 1918 and 1924 (and probably closer to 1924).

The great American Linden tree<sup>6</sup>, located adjacent to the west boundary retaining wall of the park along First Street North (Photograph 6), was not captured within view-frame of Plate 2. The sister American Linden tree (identified by the green arrow on Plate 2) can, however, still be seen at the Park. Thus, it can be assumed that both trees were originally present when the park was opened.

Other observations from Plate 2, as they relate to this time period include:

- The concrete sidewalk connecting the southwest corner of the park with the central plaza was not present upon the park's opening;
- The concrete sidewalk connecting the northwest corner of the park with the central plaza was not present upon the park's opening;
- There are no metal handrails provided at the stairways (see Plate 2 Enlargement, Page 7); and
- The Concrete Millstone (Plate 3, Page 7), as can be seen along the left edge of the Plate 2 can still be found in its original location.

City Park (approximately 1924 – Current)

In many respects, Lee Park remains largely unchanged to this day, see Figures 2 through 4. However, there are a number of noteworthy reforms.

Two additional radial sidewalks have been provided to afford pedestrian access from the northwest and southwest corners of East Market Street and First Street North, as well as East Jefferson and First North Street to the centrally located monument. The additional concrete sidewalks measure approximately seven feet wide, whereas the original radial sidewalks measured fourteen feet wide.

<sup>6</sup> The American Linden (*Tilia americana*) tree is native to eastern North America. The American Linden is also called Basswood. American Linden trees can range in height from 60 to 120 feet, and is considered a medium-to-large deciduous tree.



Citation: Holsinger Studio Collection, ca. 1890-1938, Accession #9862, Special Collections, University of Virginia, Charlottesville, Va.

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Photograph 6 - American Linden Tree



Plate 2 Enlargement - Note: No Handrails at Stairs



Plate 3

Citation: Holteger Audio Collection, ca. 1900-1938, Accession #0862, Special Collections, University of Virginia, Charlottesville, Va.  
Catalog Record: <http://search.lib.virginia.edu/catalog/eva-lib-144406>  
Online Access: <http://search.lib.virginia.edu/catalog/eva-lib-1051289>  
Page Title: Millstone, Lee Park  
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Photograph 7 - Aerial Image from the Early 1940's (City of Charlottesville Neighborhood Development Services Department Archives)



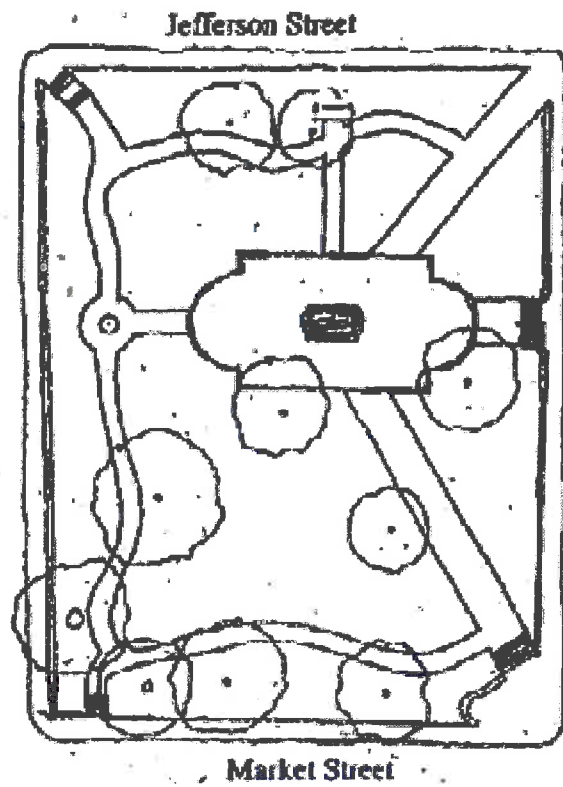


Figure 2 - Lee Park 1924

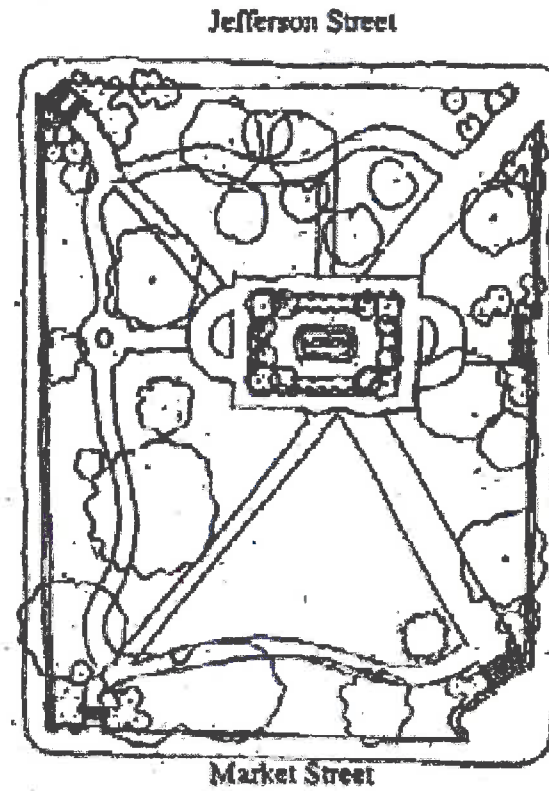


Figure 3 - Lee Park Prior to 1976

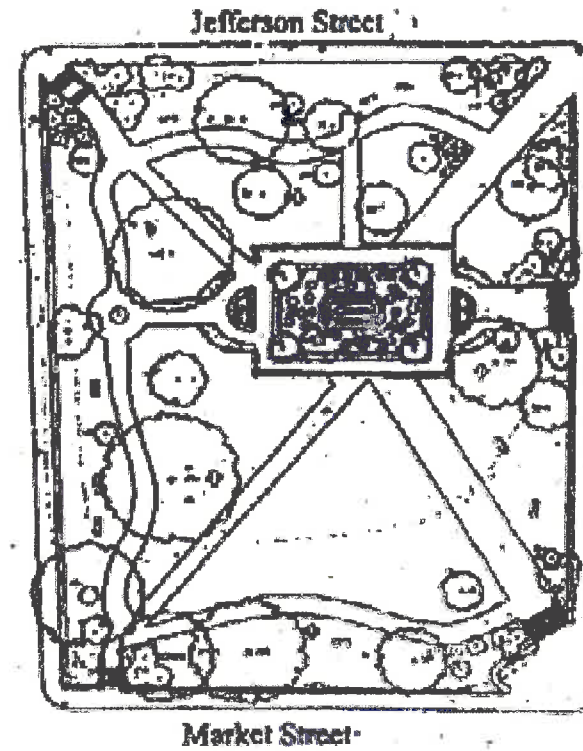


Figure 4 - Lee Park 1998 (Proposed)

According to archival aerial imagery, the new sidewalk was in place prior to 1950, see Photograph 7, Page 7.

Renovation plans were developed by Gregg Blear Landscape Architects in 1998, which proposed to remove and replace certain landscaping elements, as well as provide new, contextually sensitive plantings including Dogwoods, White Oak and Japanese Maple, see Figure 5. The approved renovation plan included keeping the original tables, chairs and benches within the site as they "perform distinct and lively functions in this formal urban park."<sup>7</sup>

At some point in the park's history, metal handrails were installed at each of the stairwells. The handrails appeared to be steel and have been finished with glossy black paint. The actual date of the handrail installation remains unknown.

### Preservation

Lee Park is located within the Charlottesville-Albemarle County Courthouse Historic District (Figure 6), as well as an Architectural Design Control District. As such, any work proposed within Lee Park will be subject to review by Charlottesville's Board of Architectural Review (BAR). The nine member board will review the work proposed at Lee Park and offer recommendations to City Council regarding the direction of the project in order to identify and protect the historic integrity and character of the site.



Figure 6 - Historic District

For the purposes of this Feasibility Study and Scoping Narrative, it has been determined that the most appropriate period of significance from which to base repair concepts should be the time period referred to above as the Establishment of Lee Park, 1918 – 1924.



Figure 5 - Section from 1998 Renovation Plans by Gregg Blear Landscape Architects

<sup>7</sup> City of Charlottesville Board of Architectural Review Staff Report dated February 10, 1998



# Lee Park – Site Evaluation

## General Site Information

Lee Park occupies an entire city block within Downtown Charlottesville. Topographic elevations range from 476' to 488' above sea level, see Figure 7. The park is landscaped with an assortment of hedges and trees including two very large American Linden Trees. There are a total of two fire hydrants within the parcel boundary, overhead utilities on Second Street and First Street, as well as gas, water, sewer and storm drain utilities within the adjacent right-of-ways.

Retaining walls border the site on three of the four sides.

## Retaining Walls

There are two types of retaining walls present at Lee Park: Stone Masonry and Cast-In-Place Concrete.

### Stone Masonry Retaining Walls

The retaining walls along the east and west boundaries (First Street North and Second Street Northeast, respectively) are best described as random rubble, dry stack, fieldstone walls, see Sketch 1. Figure 8 displays an example of a random rubble stone wall pattern<sup>8</sup>. The stone masonry walls can be classified as "random" because there was no apparent attempt to lay the stone in distinct layers<sup>9</sup>, see Photograph 8.

Additionally, the wall can be classified as dry stack because mortar was not observed between the bedding planes of the stones. At one point in history; it was believed that, "[...] the best stone structures are those that maintain a stable equilibrium without assistance. Mortar should be used primarily to fill voids after rocks are settled in place. Once hardened, the mortar may further stabilize the pile, but it should not be used to prop up the stones."<sup>10</sup> This account further supports the suggestion that the stone walls were, at one point, covered with a parge coating.

In sporadic locations throughout the stone retaining walls, remnants of the parge coating remain, see Photograph 9. Based on field notes, it has been estimated that up to ninety per cent of the wall area has lost the parge coating. Generally,

<sup>8</sup> Figure as provided by James Ambrose, *Simplified Design of Masonry Structures* (A Wiley-Interscience Publication, 1991), 93, Figure 6.2.  
<sup>9</sup> James Ambrose, *Simplified Design of Masonry Structures* (A Wiley-Interscience Publication, 1991), 92.  
<sup>10</sup> James Ambrose, *Simplified Design of Masonry Structures* (A Wiley-Interscience Publication, 1991), 92.



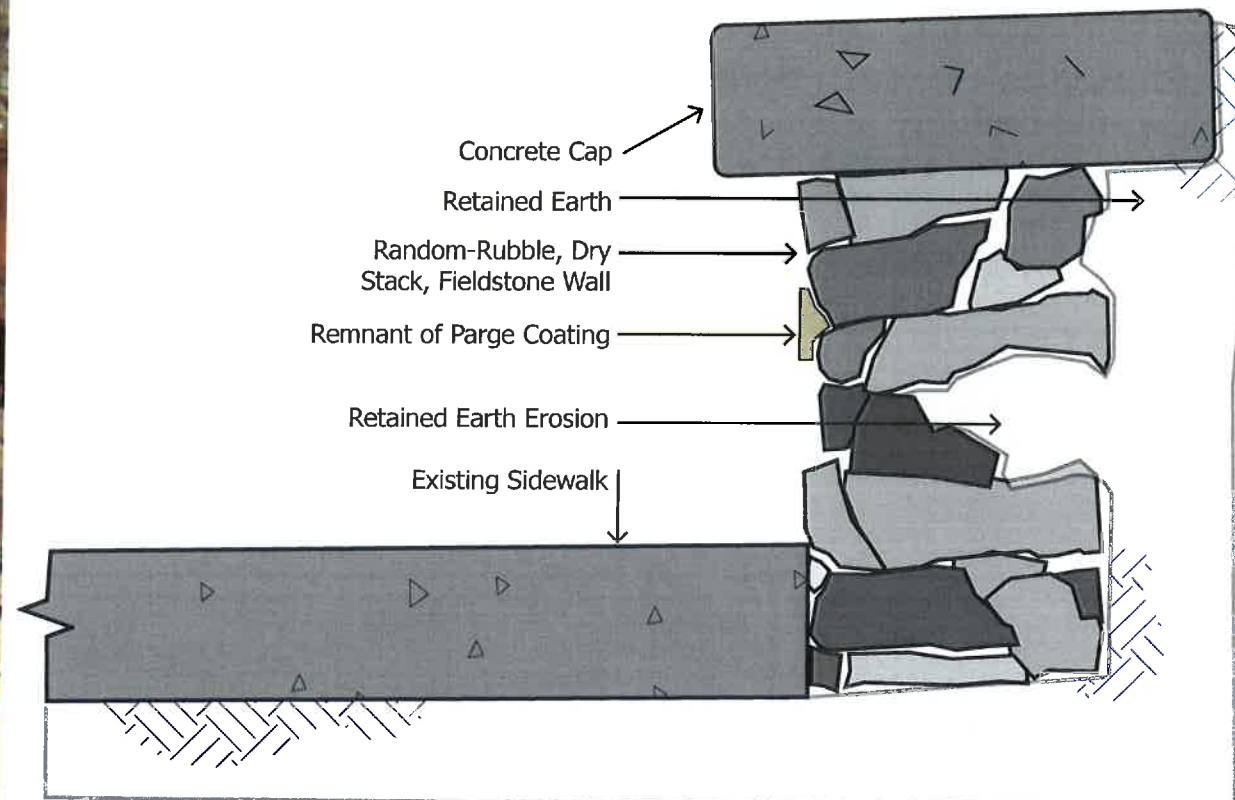
Photograph 8 - Existing Wall



Figure 7 - Lee Park GIS Topo



Photograph 9 - Existing Wall (Remnant Parging)



Sketch 1 - Existing Wall Assembly

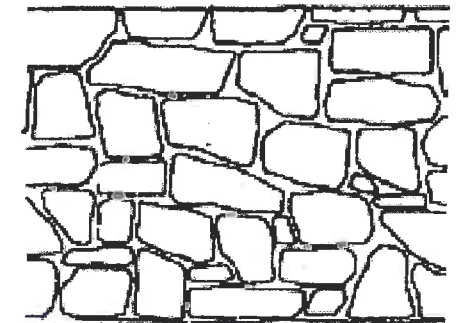


Figure 8

"[...] the best stone structures are those that maintain a stable equilibrium without assistance. Mortar should be used primarily to fill voids after rocks are settled in place. Once hardened, the mortar may further stabilize the pile, but it should not be used to prop up the stones."<sup>10</sup> This account further supports the suggestion that the stone walls were, at one point, covered with a parge coating.

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<sup>10</sup> James Ambrose, *Simplified Design of Masonry Structures* (A Wiley-Interscience Publication, 1991), 92.





Photograph 10 - Stacked Stone + Parge Coating



Photograph 11 - Existing Wall Showing Concrete Cap Dislocation

the only location where the parge coat remained corresponded with the joints between stones, see Photograph 10. This may be due to the porous nature of the stone, "Every kind of stone is more or less porous; it absorbs moisture from a damp atmosphere, from rain, from groundwater [...] the action [water migration] may cause the surface to break off..."<sup>11</sup>

The stone retaining wall along First Street North averaged approximately 24 inches high, measured from the existing sidewalk surface to the top of the concrete cap; along Second Street Northeast: 18 inches. At one location, the wall extended to approximately 48 inches in height (See Retaining Wall at the American Linden Tree, below).

Both stone retaining walls were checked for relative plumb at ten foot intervals along the east and west elevations, see Appendix A for recorded field notes. Eighteen of forty-two cataloged observations were found to be 'relatively' plumb, (approximately 43%). Generally, the areas where the wall was out of relative plumb, the degree of lateral variance was on the order of 1 to 2 inches.

Of course, the degree of "out of plumb" may be insignificant as far as these stone walls are concerned. In the past, as well as in the modern times, earth retaining structures are often deliberately battered, or sloped, along one or both faces of the wall, see Figure 9.<sup>12</sup> One may expect that a typical retaining wall batter is roughly 1:10 (or, also common, 1 inch per foot), thus over the height of the stone walls, 1 to 2 inches out of plumb may be deliberate. Consequently, where the wall surface was observed as "relatively plumb;" the wall may have experienced some degree of lateral displacement. In either case, the outer face of the wall is varied, as can be easily observed at the project site.

Observations from the field indicated that the thickness of the stone retaining walls was also varied. Adding an additional layer of complexity to the width determination

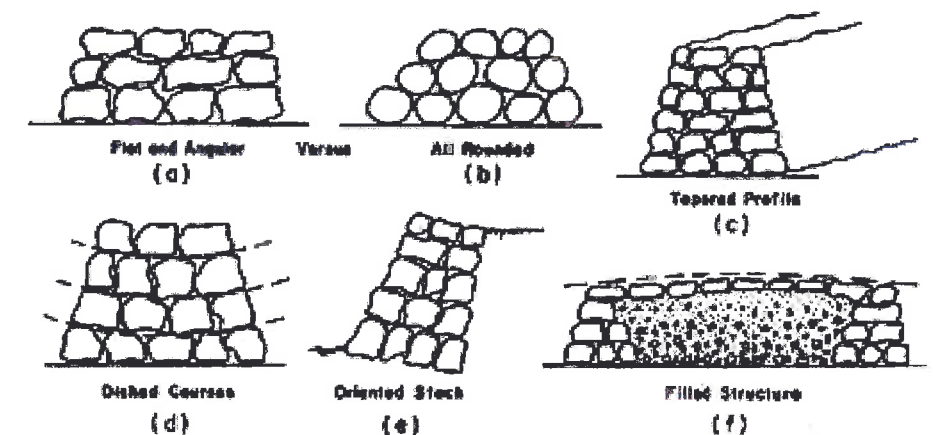


FIGURE 9.1. Good rock piles.

Figure 9 - Example Stacked Stone Walls

11 Harley J. McKee, Introduction to Early American Masonry, Stone, Brick, Mortar and Plaster (National Trust for Historic Preservation and Columbia University, 1973), 33.

12 "Good Rock Piles" as published by James Ambrose, Simplified Design of Masonry Structures (A Wiley-Interscience Publication, 1991), 92.





Photograph 12 - Erosion of Retained Earth



Photograph 13 - Concrete Cap Cast Atop of Stone Wall

was the apparent erosion of the earth fill from behind the wall into the wall cavity. The most reliable field measurements from various locations around the project site indicated the stone retaining walls to be roughly 14 to 16 inches thick at mid-height of the wall.

Conversations with a local Geologist, Mary Loose Deviney, have revealed the stone used to build the walls was likely a Catoclin greenstone metamorphosed basalt, which is common to the Blue Ridge. According to a Radford University Geology web page, an exposure of the Catoclin greenstone can be seen on Interstate 64 near the top of Afton Mountain<sup>13</sup>. Replacement, or nearly matching, Catoclin greenstone can be sourced from local quarries.

In one isolated condition, nearly the entire stone masonry assembly below the concrete cap was displaced from the wall, see Photograph 12. While this condition was not typical, it does display how the retained earth has migrated within the wall cavity.

The stone retaining walls have been capped with a concrete bench, or coping. The concrete cap measures approximately 6 inches thick by 17.5 inches wide. Based on the consistently observed migration of concrete into the stone wall assembly, it would appear that the stone wall served as the bottom form when the concrete was placed, see Photograph 13. This mass of the concrete on top of the stone wall, approximately 110 pounds per foot, serves to provide stability to the stone walls by counteracting the eccentricity of the lateral loads.

The concrete cap exhibited transverse cracking at regular intervals, generally 15 to 20 feet. Where the transverse crack coincided with lateral displacement of the cap (see Photograph 11, Page 10), there was no indication that the concrete cap contained longitudinal reinforcing steel. Because non-destructive testing techniques, such as Surface Penetrating Radar, were not included as a part of the field investigation, it does remain possible that reinforcing steel exists in the concrete cap.

The concrete appeared to be poorly consolidated, as well as mixed with a disproportionate amount of large aggregate (stone), see Photograph 14. The large aggregate did appear to be angular and not rounded as other concrete structures in the area, from around the same time period, have displayed<sup>14</sup>. Additionally, the concrete cap appeared to have a stratified layer throughout, approximately 1.5 inches below the top surface. However, the layer did appear to be cohesive with the other concrete.

In isolated locations throughout the project vicinity, the concrete cap has been chipped or broken, see Photograph 15. These locations have been recorded on the field notes provided in Appendix A.



Photograph 14 - Concrete Cap Revealing Exposed Aggregate



Photograph 15 - Damaged Concrete Cap (Note Absence of Reinforcement)

<sup>13</sup> URL: <http://www.radford.edu/jtso/GeologyofVirginia/Rocks/GeologyOfVARocks2-6f.html>

<sup>14</sup> Beta Bridge, built circa 1924.

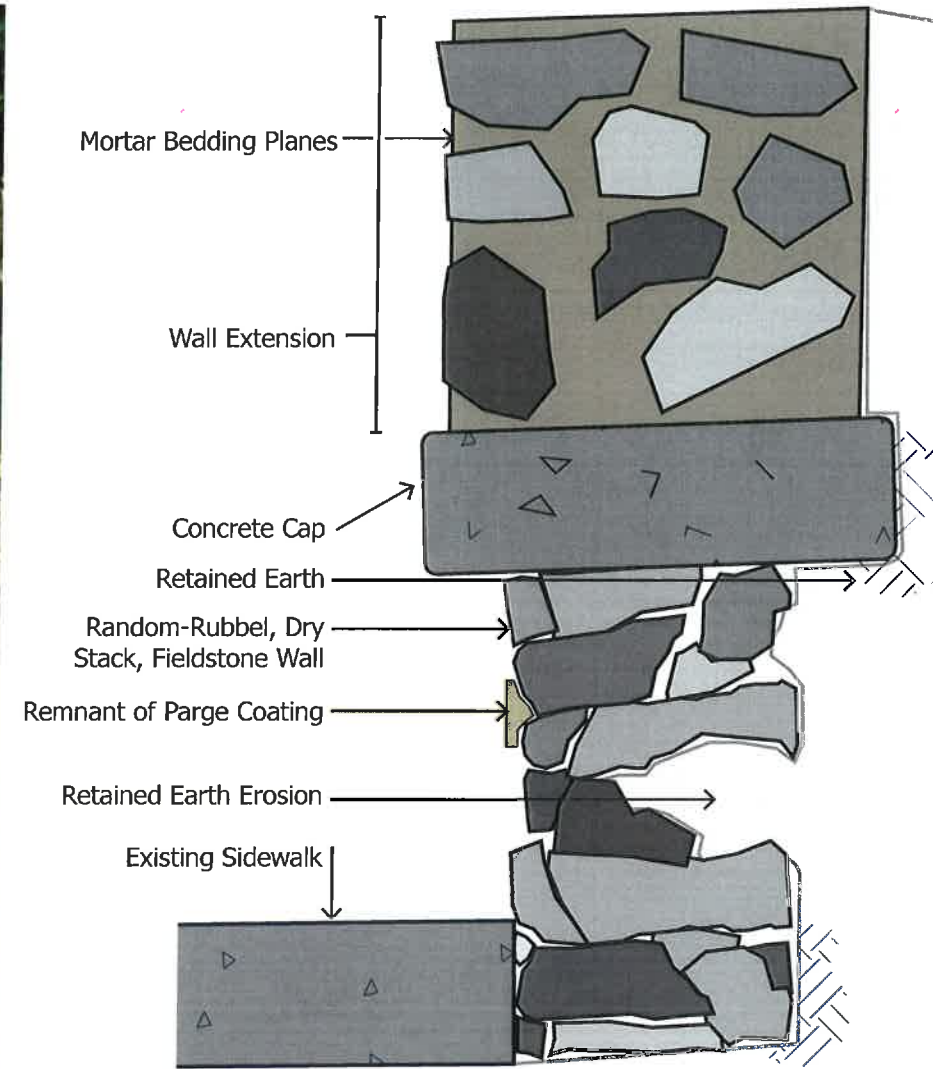




Photograph 16 - Retaining Wall Extension at the American Linden Tree



Photograph 17 - Retaining Wall Extension



Sketch 2 - Existing Retaining Wall at the American Linden Tree

Retaining Wall at the American Linden Tree

Near the southwest corner of the park, there is an apparent retrofit extension of the stone retaining wall, stretching approximately 30 linear feet. From field observations, it would appear the wall height was increased to retain the soil mass of the American Linden tree directly adjacent to the wall. The retrofit portion of wall tapers on both ends with a peak in the center measuring approximately 47.5 inches above the adjacent sidewalk surface, see Photographs 16 and 17.

The retrofit stone work along the retaining wall was constructed in a different manner than that of the original dry stack, random rubble stone wall. One primary difference being: the stone within the retrofit wall extension have been bedded in mortar and not dry stacked, see Sketch 2. As can be observed from Photograph 16, there is an aesthetic (not to mention structural) difference of appearance between the two portions of the wall.

Measuring lateral displacement along the stone wall extension was not without a degree of complication, as the wall extension was likely built atop a portion of the wall which was already displaced and out of plumb; as evidenced by the different degrees of batter, see Photographs 16 and 17. Nonetheless, the relative lateral displacement appeared to be on the order of approximately 6 inches. Significant cracking along this portion of the wall was also observed. Cracks were measured up to 1-1/4 inches wide.

Van Yahres Tree Company was consulted regarding the root structure of the tree and the feasibility of replacing the wall most adjacent to the tree. A representative from Van Yahres<sup>15</sup> indicated that the root structure of the American Linden tree can be assumed to migrate laterally up to 2 to 3 times the height of the tree, while remaining within the top 2 or 3 feet of the soil.

Regarding the location of the current and future retaining wall, the root system of the American Linden tree will only grow where there is room to grow. Therefore, because a retaining wall currently exists, a replacement retaining wall will pose no threat to the health of the tree.

Additionally, because the root structure has been able to migrate unhindered toward the east, temporary stabilization methods such as guy wires or other shoring measures will not be necessary as a part of the repair execution.

Unexpectedly, the American Linden tree contains a void within the primary trunk of the tree measuring approximately 5 feet in diameter.

Concrete Retaining Wall

As can be seen from Plate 1 (page 4), the Southall-Venable property gently sloped toward the South. When the park was established, the two stone retaining walls on either side remained in place. Where no retaining wall existed along the south

<sup>15</sup> Dave Rosene a Certified Arborist and General manager for Van Yahres provided his professional opinion regarding the trees. He can be reached at 434.982.8733.





Photograph 18 - Concrete Wall with Integral Concrete Cap



Photograph 19 - Transverse Crack in Concrete Retaining Wall

boundary a cast-in-place concrete retaining wall was constructed, see Photograph 18.

The concrete retaining wall along the front of the property was constructed shorter than the stone retaining walls. On average, the concrete retaining wall measured 15 inches high - measured from the sidewalk surface to the top of the concrete cap. The concrete cap, which appeared to have been cast integral with the wall, was measured as 11.5 inches wide; narrower than the concrete caps atop the stone walls.

Generally, the wall appeared in sound condition. However, full depth full height transverse cracks were noticed at regular intervals along the wall's elevation, see Photograph 19. This may suggest that the wall does not contain reinforcing steel to prevent concrete shrinkage cracks.<sup>16</sup>

Concrete Walks

As previously discussed, the concrete sidewalks within the park were either built original with the park (1918-1924) or added at a later date. In either case, the majority of the sidewalk walking surfaces appeared sound and free of visible damage.

As indicated in the Field Notes (Appendix A), there are a number of concrete walk areas identified as in need of repair. Areas of sidewalk, similar to that shown in Photograph 19, would be typical of a portion of sidewalk identified to be repaired or replaced.

Also, isolated areas of the walking surface have been displaced, causing a vertical change in the walking surface greater than the threshold identified by the ADA Accessibility Guide (ADAAG).<sup>17</sup> In these areas, the walking surface could be milled down to comply with the recommended change in level thresholds.

Handrails

Each of the four stairways have been retrofit to include a metal handrail, see Photographs 20 and 21. The railings appeared to be steel, based on the moderate level of surface rust / corrosion. The handrails have been painted black with a glossy paint and are of a "traditional" profile and terminate with a forged Lamb's Tongue on at the lowest landing surface.

The current handrails do not comply with the full extent of the ADAAG recommendations for grab bars and handrails.<sup>18</sup>



Photograph 19 - Typical Concrete Sidewalk Damage



Photograph 20 - Lamb's Tongue Termination



Photograph 21 - Metal Handrail

<sup>16</sup> Concrete cracks at regular intervals likely indicate shrinkage of the concrete during the hydration (curing) process. Under modern building codes, the minimum requirements for reinforcing steel is intended to control such cracking.

<sup>17</sup> The "changes in level" exceed the threshold established by the ADAAG in a number of locations; however, these locations may or, may not, correspond with the Accessible Route within the Park.

<sup>18</sup> For more information on the ADAAG recommendations for grab bars and handrails see Section 4.26 of the current ADAAG.



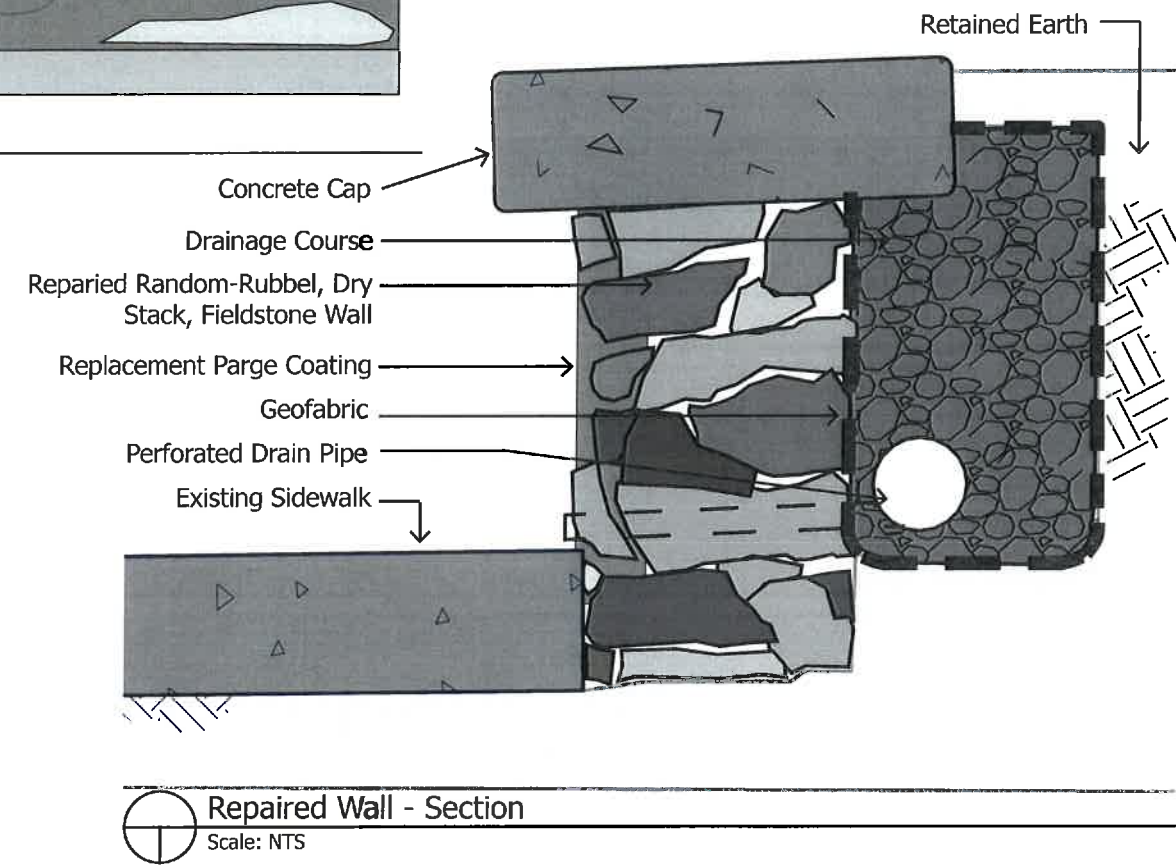
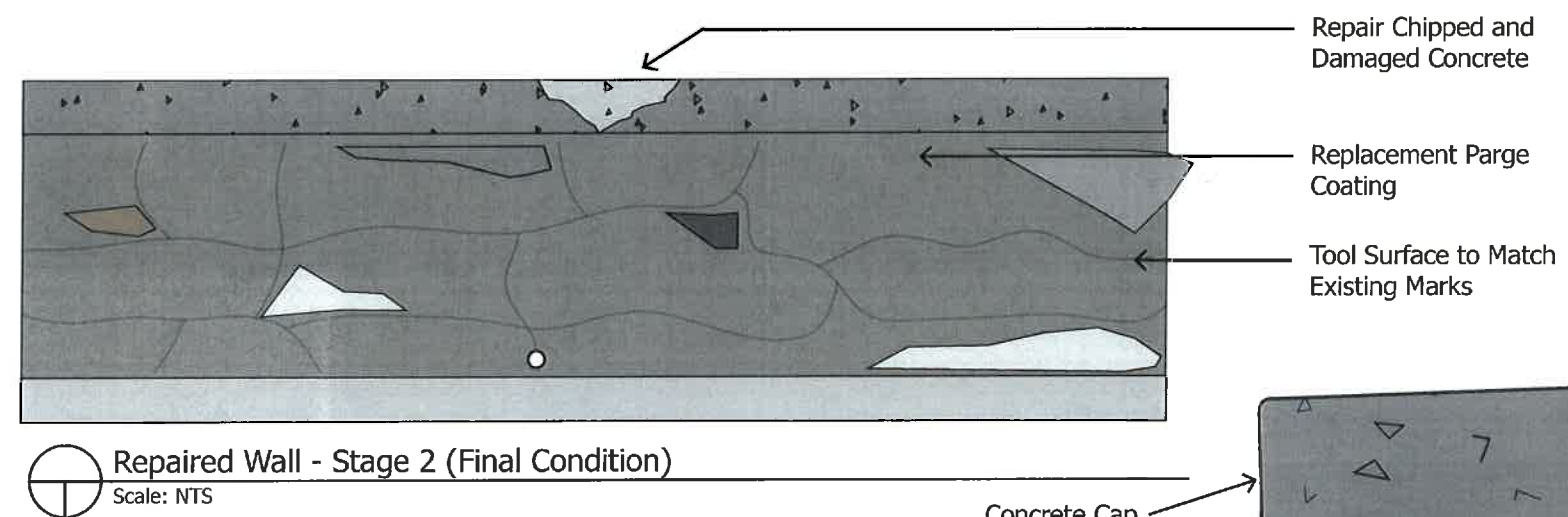
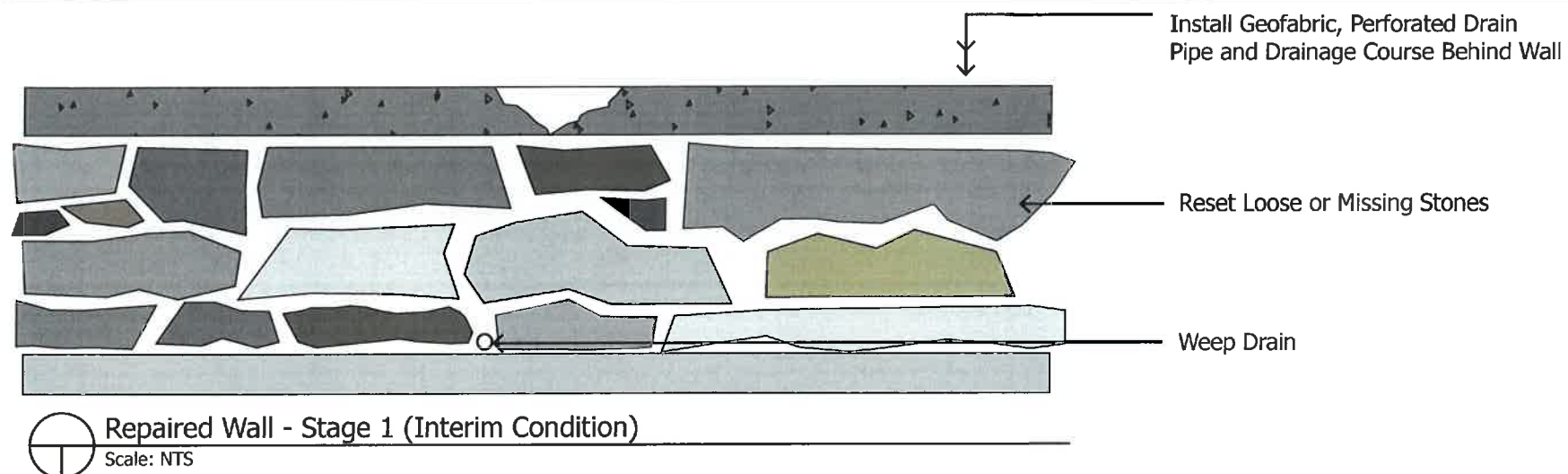
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## Summary

- Historically, it was common to build low retaining structures out of dry stacked stone. The use of angular stones, stacked in random patterns, has proven worthy to stand the test of time losing little, if any, stability. Seventy-five percent of the stone wall area at Lee Park can be categorized as stable and in need of aesthetic treatment to restore the original appearance and texture of the wall.
- Even though the majority of the wall surface areas have lost roughly 90% of parge coating surface treatment, the Catocin greenstones have remained mostly undamaged. Some of the stones, between 15-20 percent, indicate moderate damage whether cracked, broken or missing.
- Along First Street North, the southern-most 70 linear feet of the wall has shifted substantially. While it appears that the wall's center of gravity in this region remains in the middle third of the wall,<sup>1</sup> the wall will likely continue to shift under the surcharge load from the tree, as well as the growing root system.
- The existing retaining wall extension has been constructed using a different masonry practice than the remainder of the stacked stone walls, namely, by including a mortar setting bed.
- The cast-in-place concrete cap, appears to be comprised of poorly consolidated concrete and of a disproportionately large amount of large aggregate. However, despite the transverse cracking and stratification crack, the concrete appears sound and serviceable.
- Erosion of the retained earth appears to be a common condition behind the stacked stone walls.
- The concrete retaining wall along East Market Street appears in solid, serviceable condition, despite the regular transverse cracking.
- The concrete walking surface and the metal handrails within the park do not comply with the AADAG recommendations for change in level.

---

<sup>1</sup> A rule of thumb regarding wall stability.



## Recommendations: Scope of Repair Work

Prior to the development of Contract Documents, it is recommended that several exploratory excavations be performed behind the typical stone masonry wall to confirm the observations made from the front of the wall.

### Stone Masonry Retaining Walls

Where the stone masonry walls have been identified as solid and serviceable, the typical repair should include cleaning of the stone with water and mild soap<sup>1</sup>, removal of broken, chipped or otherwise damaged stones, and installing a closely matching replacement stone within any voids greater than 12 square inches.

Then, the surface should be covered with a parge coating with tooling profiles to match the existing walls.

Prior to installing the replacement parge coat, it is recommended that samples of the existing parge coat be acquired for material testing to identify constituent materials, their relative proportions, and air content. The analysis should be executed in accordance with ASTM Test Method C1324. It is recommended that at least one sample from the east and west walls be analyzed.

If material testing is not included to support the repair work, a replacement parge coating mix may be proportioned as: 2 parts of lime, 1 part Portland cement and 9 parts of sand.<sup>2</sup> At a minimum, the existing parge coat should be broken down to a powder with a wooden mallet and soaked in a solution of diluted hydrochloric acid to identify the size, color and range of sand grains.

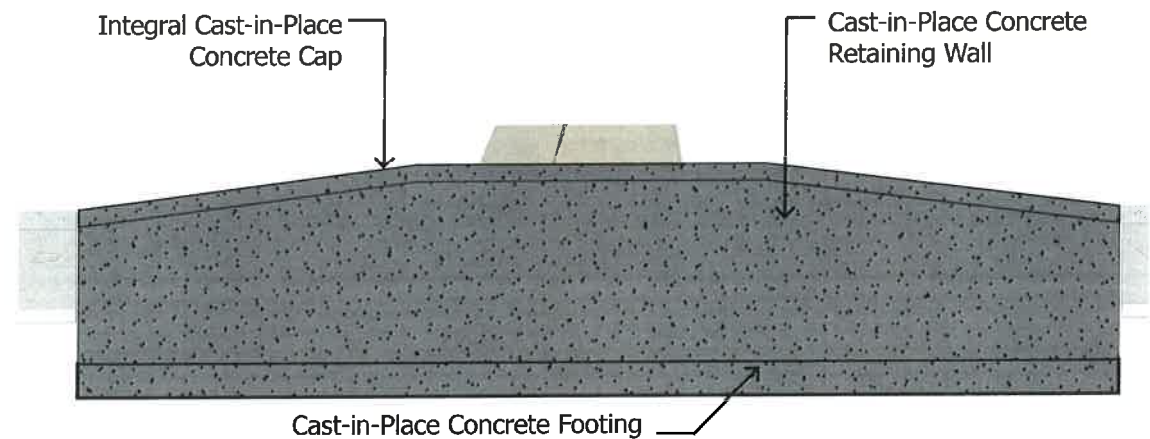
It is recommended that the replacement sand mix meet the gradation requirements of ASTM C144. Parge coating or mortar mixes with excessive fines typically lead to shrinkage cracks.

Prior to repairing the entire wall elevation, a sample area comprised of approximately 10 linear feet of wall should be repaired as a trial to assess the adequacy of the parge coating mix, color and texture, as well as the Contractors ability to repair and prepare the stone substrate.

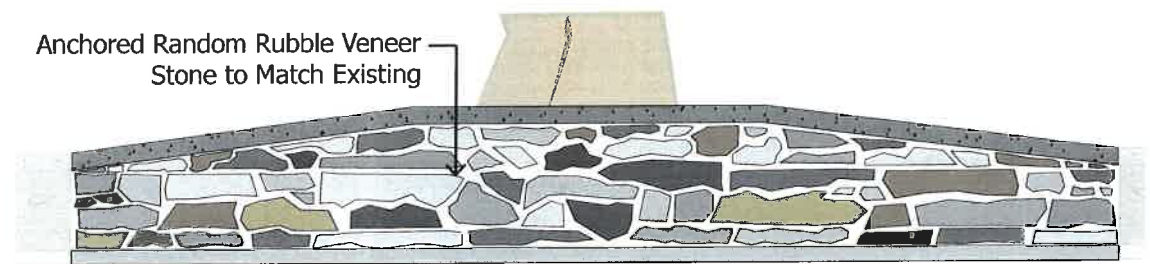
In addition to the above mentioned repairs, drainage provisions will also be required to manage any water behind the wall. A perforated drain pipe placed in a drainage course behind the wall will suffice. The water can then be evacuated from the perforated drain pipe via weep holes.

<sup>1</sup> Cleaning methods should be performed on a trial basis to determine suitability.

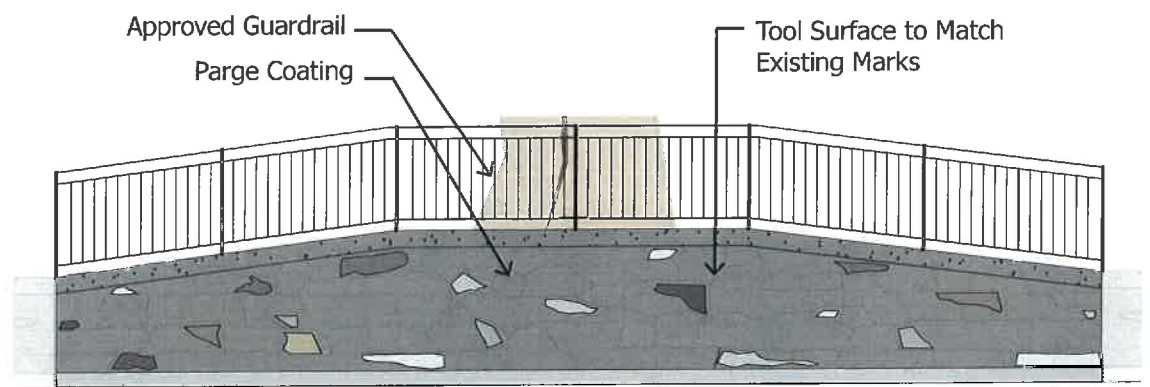
<sup>2</sup> A higher portion of lime may be required to prevent shrinkage and cracking.



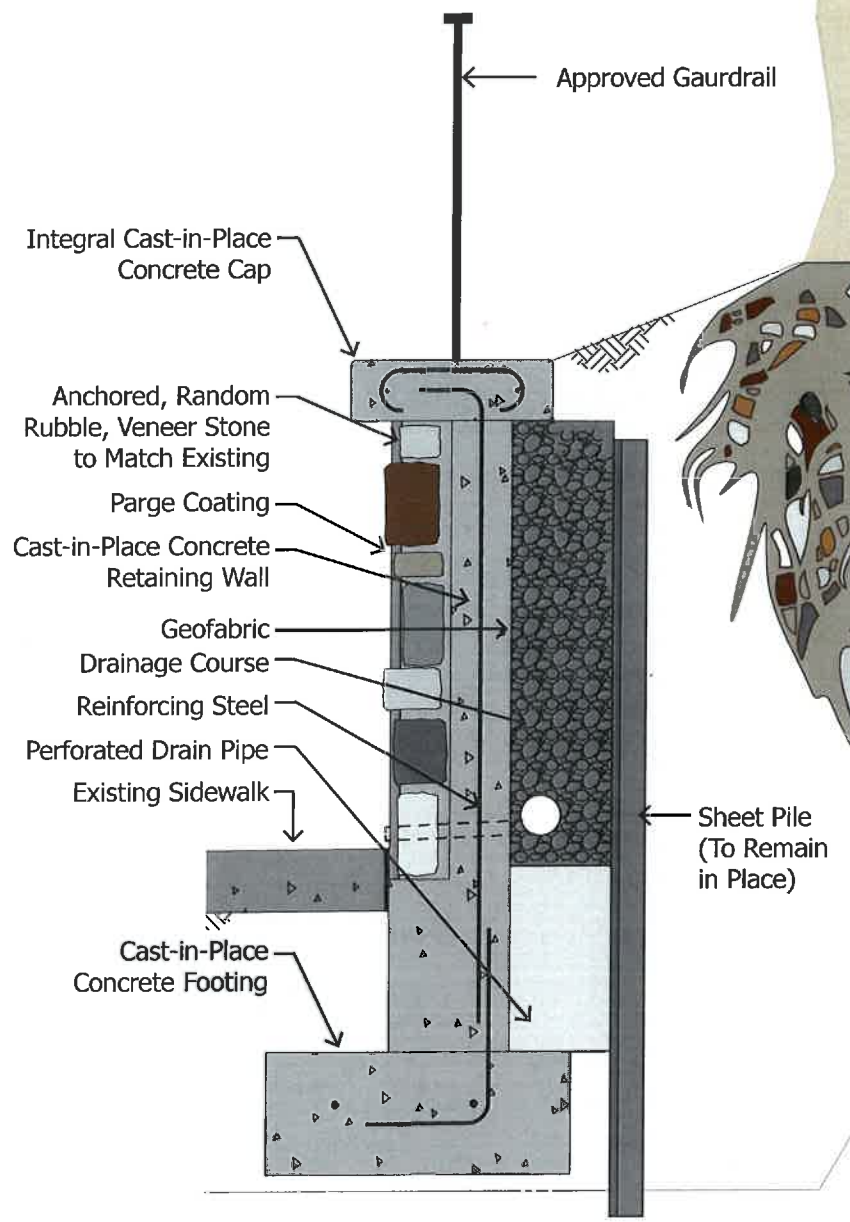
Repaired Wall - Stage 1 (Concrete Retaining Wall)  
Scale: NTS



Repaired Wall - Stage 2 (Interim Condition)  
Scale: NTS



Repaired Wall - Stage 3 (Final Condition)  
Scale: NTS



Repaired Wall - Section  
Scale: NTS

**Stone Retaining Wall at the American Linden Tree**

The existing stone masonry wall(s) adjacent to the American Linden tree will need to be replaced with a structural system capable to resist the anticipated loadings.

The earthen embankment behind the wall will need to be retained during the demolition of the existing wall and construction of the replacement structure. Based on the proximity of the American Linden tree, it is recommended that temporary sheet piles be installed within approximately 1 foot of the existing back of wall. Sheet piles can be driven into place and require a minimal footprint.

After the temporary earth retaining structure has been installed, the removal and replacement work can begin.

The replacement structural system, as proposed here, is comprised of a cast-in-place retaining wall with Catocin greenstone veneer to match the existing wall. The stones will be mortar set and anchored to the concrete backup. The stone veneer will reduce the required width of the replacement retaining wall assembly, keeping the temporary retaining provisions as far away from the tree as possible.

The stone veneer will be coated with a parge coating to match the rest of the wall.

The temporary sheet piles can remain in place following the installation of the retaining wall, and will serve as an additional measure of redundancy. Like the typical wall repair, a perforated drain pipe will be placed behind the concrete retaining wall to manage water behind the structure.

The elevation of the wall will appear similar to the existing wall extension with tapers on either side of the tree.

As the wall tapers upward to retain the earth adjacent to the tree, the difference in height between the top of the wall and the surface of the sidewalk exceeds the minimum threshold specified by the International Building Code. As such, a guard system should be installed. A typical guardrail system has been shown within the conceptual repair scheme. Actual railings will be determined during the development of Construction Documents and will be subject to approval by the Board of Architectural Review.

A concrete cap to match the existing concrete caps will be included as a part of the repair.

The sidewalks adjacent to the retaining wall will be removed and replaced as a part of this work. The granite curbing will be salvaged, cleaned, stored, and reinstalled.

Expansion provisions shall be provided between proposed concrete retaining wall and adjacent stone masonry walls.



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### **Concrete Caps**

The concrete caps should be cleaned of all dirt, scale, oil, grease and other foreign matter by means of potable water under medium pressure and by scraping with a stiff brush. Use of cleanings solvents or other cleaning products should be avoided if at all possible.

In all cases, the patch configuration shall be kept as simple as possible. Areas indicated to be repaired shall be saw cut around the perimeter to the patch area to produce a vertical edge (1/2 inch minimum). Afterward, the surface to receive the repair patch should be roughened to provide a surface profile of 1/8 inch.

Areas to be patched shall be repaired with a material having the following minimum performance characteristics:

- Bond Strength: 1,500 psi (ASTM C-882)
- Compressive Strength: 4,000 psi at 28 days (ASTM C-39 and C-109)
- Shrinkage: 0.05% max at 28 days (ASTM C-157)
- Entrained Air: 6 ± 2% (ASTM C-173 and C-231)

In many locations, the repair can utilize a mechanical bond to supplement the properties of the concrete repair material. However, in isolated locations, it may be required to supplement the concrete patch with reinforcing steel anchored with epoxy anchors.

### **Sidewalks**

Areas significant enough for sidewalk replacement generally include replacing the entire width of sidewalk from transverse joint to transverse joint. In such cases, the walk can be replaced in kind in accordance with the City of Charlottesville standard Sidewalk Detail.

Where the vertical change in the sidewalk surface exceed the threshold recommendations of the ADA Accessibility Guide, the concrete walks can be milled down.

### **Handrails**

The metal handrails should be repainted. Prior to applying a replacement coat of paint, the existing surface rust and loose mill scale shall be removed in accordance with the replacement paint manufacturer recommendations.

The replacement paint finish in the metal handrails shall match the existing finish as approved by the City and the Engineer.

The surface should a prime and intermediate coat of low VOC epoxy polyamide mastic to properly prepare the steel surface. Followed by a high solid polyurethane coat comprised of a two-component, acrylic polyurethane resin coating.

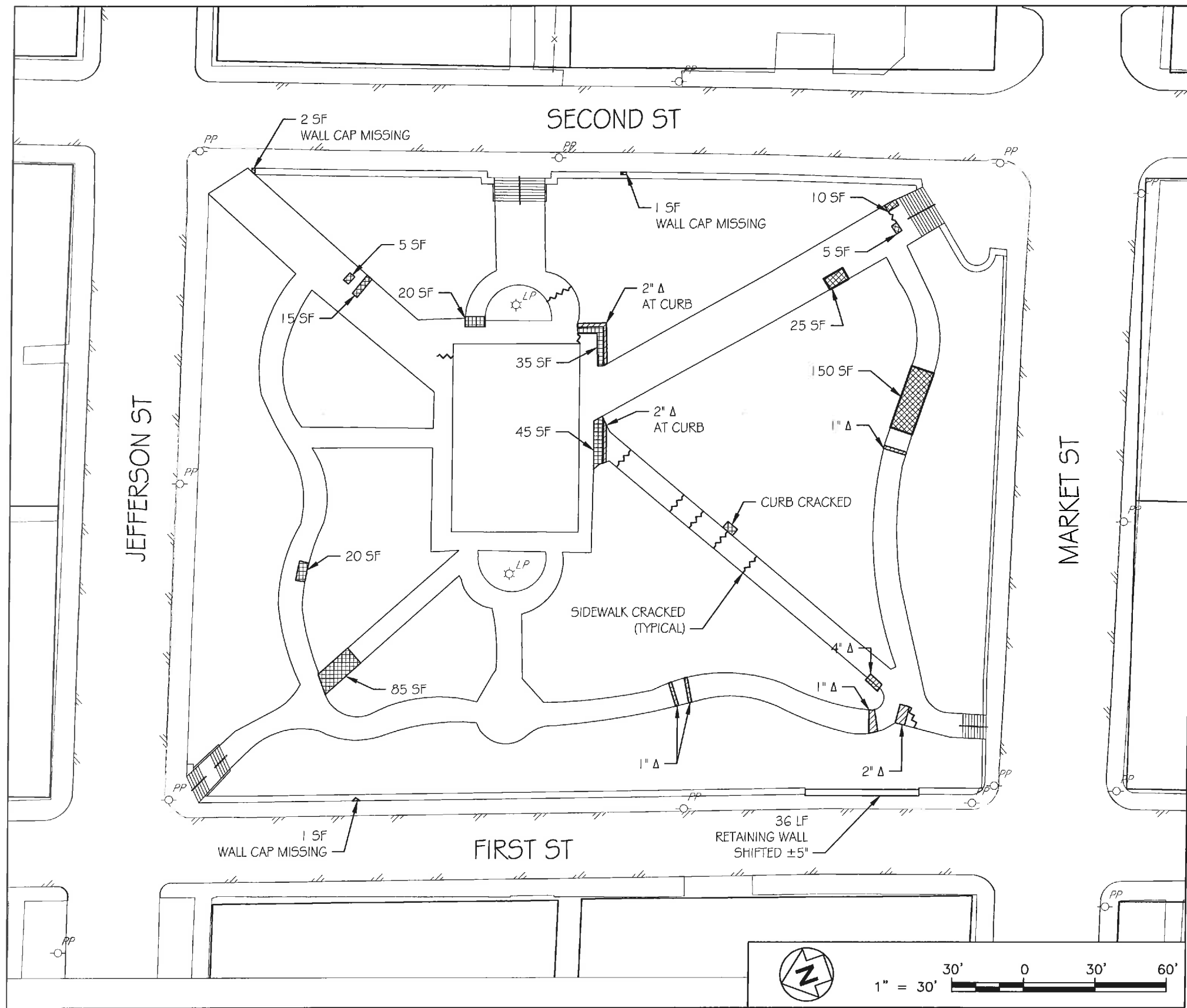
**Appendix A: Field Notes + Sketches**

STATION	PARGE COATING CONDITION		STONE CONDITION		OUT OF PLUMB (IN)	HEIGHT (IN)	FIELD REMARKS
	G/F/P	% Missing	G/F/P	% Missing			
<b>West Wall along 1st Street</b>							
10+00 - 10+10	P	90	F	>10	PLUMB	23.5	Wall cap 17.5" in width (typical throughout wall)
10+10 - 10+20	P	75	G	5-10	PLUMB	24	
10+20 - 10+30	P	80	G	>5	PLUMB	23.5	
10+30 - 10+40	P	80	F	10	PLUMB	23.5	Sta. 10+45 - coping cracked/chipped. Stone crush apparent.
10+40 - 10+50	P	75	G	5-10	PLUMB	24	
10+50 - 10+60	F	50	G	>5	PLUMB	23.5	
10+60 - 10+70	P	85	G	>5	PLUMB	24	
10+70 - 10+80	P	80	G	5	PLUMB	24	
10+80 - 10+90	P	90	F	10-15	PLUMB	23	
10+90 - 11+00	P	90	F	10	PLUMB	24	
11+00 - 11+10	P	90	F	10	PLUMB	24	
11+10 - 11+20	P	85	F	5-10	2"	24.5	
11+20 - 11+30	P	95	F	25	2.5"	24	
11+30 - 11+40	P	75	F	10	1"	24	
11+40 - 11+50	P	90	P	15	1"	23.5	
11+50 - 11+60	P	90	P	40	1" - 2"	24	
11+60 - 11+70	P	90	P	10	1"	23.5	
11+70 - 11+80	P	90	F	10	2"	23.5	
11+80 - 11+90	P	90	P	>10	2"	22/25	22 to front face of cap, 25 to back face of stone cap
11+90 - 12+00	P	75	P	>10	5"	40.5	11+94 - 12+20.50, Additional wall cast on top of retaining wall, Sta. 12+04 - 1.5" crack in coping stone (below newer cast wall section)
12+00 - 12+10	F	60	P	15	(+) 5"	47.5	
12+10 - 12+20	P	70	F	5	1"	29	
12+30 - 12+40	P	80	F	0	1"	24	
12+40 - 12+45	P	90	F	10	1"	24	
<b>East Wall along 2nd Street</b>							
30+00 - 30+10	F	10	G	0	PLUMB	19.5"	All joints cracked along stones, no stones displaced or crumbling.
30+10 - 30+20	P	30	F	10	(+) 2"	19"	All joints cracked.
30+20 - 30+30	F	10	G	0	(+) 1"	19.5"	
30+30 - 30+40	F	10	G	0	PLUMB	19.5"	
30+40 - 30+50	F	10	G	0	(+) 1"	19"	
30+50 - 30+60	F	20	G	0	(+) 1"	19"	
30+60 - 30+70	P	50	G	0	(+) 2"	19"	
30+70 - 30+80	P	60	G	10	(+) 2"	19"	
30+80 - 30+90	P	40	F	10	(+) 2"	19.5"	
30+90 - 31+00	F	10	G	0	(+) 1"	19"	
31+00 - 31+10	P	10	G	0	(+) 2"	19"	
31+10 - 31+15	F	20	G	0	(+) 1"	19"	
<i>(Stairwell: 31+15 - 31+35)</i>							
31+35 - 31+40	P	30	G	0	(+) 1"	19"	
31+40 - 31+50	P	60	G	0	(+) 2"	19"	
31+50 - 31+60	F	25	G	0	PLUMB	19.5"	
31+60 - 31+70	F	25	G	0	PLUMB	19"	
31+70 - 31+80	P	40	F	10	PLUMB	14.5"	
31+80 - 31+90	P	60	G	0	PLUMB	10"	
31+90 - 32+00	P	75	F	10	PLUMB	6"	


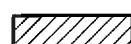


**Date:**  
October 16-17, 2013

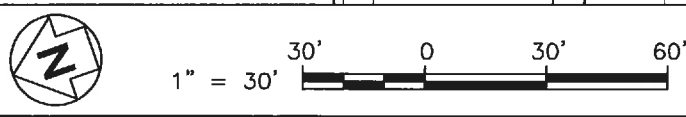
**Abbreviations:**  
(M/D) = Missing / Degraded  
(L) = Loose  
(C/M) = Cracked Missing

**Rating System**  
G = Good  
F = Fair  
P = Poor



**LEGEND:**

-  CONCRETE SIDEWALK REPAIR
-  CHANGE IN WALKING SURFACE
-  VERTICAL CHANGE IN WALKING SURFACE
-  CRACK IN CONCRETE



**Appendix B: Construction Cost Estimate**

Stone Masonry Retaining Walls \$ 59,487.50

Retaining Wall at the American Linden Tree \$ 130,532.50

Miscellaneous Repair Items \$ 18,007.81

**Combined Total \$ 208,027.81**

<b>Stone Masonry Retaining Walls</b>				
ITEM DESCRIPTION	QUANTITY	UNITS	\$/UNIT	COST
Manual Structure Excavation	30	CY	\$ 200.00	\$ 6,000.00
No. 57 Stone Drainage Course	20	TN	\$ 40.00	\$ 800.00
Perforated Pipe Underdrain	410	LF	\$ 3.00	\$ 1,230.00
Geotextile Fabric	410	SY	\$ 2.00	\$ 820.00
Select Matl. Ty. 1 Min. CBR30	40	TN	\$ 30.00	\$ 1,200.00
Restore Existing Stone In Place (Clean + Salvage)	550	SF	\$ 20.00	\$ 11,000.00
Parging - Exterior Wall Face	615	SF	\$ 20.00	\$ 12,300.00
Stone Masonry Installation (Stone Replacement)	65	SF	\$ 70.00	\$ 4,550.00
Re-Set Concrete Cap	1	LS	\$ 4,000.00	\$ 4,000.00
Temporary Traffic Control	1	LS	\$ 1,500.00	\$ 1,500.00
Mobilization	1	LS	\$ 4,190.00	\$ 4,190.00
<i>Sub-Total</i>				\$ 47,590.00
<i>25% Estimating Contingency</i>				\$ 11,897.50
<b>Construction Cost Estimate</b>				<b>\$ 59,487.50</b>

<b>Retaining Wall at the American Linden Tree</b>				
ITEM DESCRIPTION	QUANTITY	UNITS	\$/UNIT	COST
Dismantle and Remove Exst. Wall (Full Height)	1	LS	\$ 8,000.00	\$ 8,000.00
Install Sheet Pile Permanent Shoring	750	SF	\$ 40.00	\$ 30,000.00
Dismantle & Remove Existing Retaining Wall	50	LF	\$ 200.00	\$ 10,000.00
Clean/Salvage Existing Stone	250	SF	\$ 20.00	\$ 5,000.00
Manual Structure Excavation	15	CY	\$ 200.00	\$ 3,000.00
No. 57 Stone Drainage Course	10	TN	\$ 40.00	\$ 400.00
Perforated Pipe Underdrain	50	LF	\$ 3.00	\$ 150.00
Geotextile Fabric	100	SY	\$ 2.00	\$ 200.00
Select Matl. Ty. 1 Min. CBR30	7	TN	\$ 30.00	\$ 210.00
Concrete Class A3	15	CY	\$ 900.00	\$ 13,500.00
Approved Guardrail	40	LF	\$ 80.00	\$ 3,200.00
Reinforcing Steel	1200	LB	\$ 1.25	\$ 1,500.00
Stone Masonry Cladding	250	SF	\$ 70.00	\$ 17,500.00
Temporary Traffic Control	1	LS	\$ 2,500.00	\$ 2,500.00
Mobilization	1	LS	\$ 9,266.00	\$ 9,266.00
<i>Sub-Total</i>				\$ 104,426.00
<i>25% Estimating Contingency</i>				\$ 26,106.50
<b>Construction Cost Estimate</b>				<b>\$ 130,532.50</b>

<b>Miscellaneous Repair Items</b>				
ITEM DESCRIPTION	QUANTITY	UNITS	\$/UNIT	COST
Concrete Cap - Partial Depth Repair	25	SF	\$ 75.00	\$ 1,875.00
Sidewalk Demolition	415	SF	\$ 8.75	\$ 3,631.25
Sidewalk Replacement	415	SF	\$ 10.00	\$ 4,150.00
Sidewalk Surface Milling	50	SF	\$ 25.00	\$ 1,250.00
Paint Pedestrian Railings	1	LS	\$ 3,500.00	\$ 3,500.00
<i>Sub-Total</i>				\$ 14,406.25
<i>25% Estimating Contingency</i>				\$ 3,601.56
<b>Construction Cost Estimate</b>				<b>\$ 18,007.81</b>