

CONDITION ASSESSMENT AND TREATMENT RECOMMENDATIONS

for the

GRANDVIEW SCHOOL MONUMENTAL LIMESTONE ENTRANCE

HARPERS FERRY NATIONAL HISTORICAL PARK  
HARPERS FERRY, WEST VIRGINIA



Prepared for:  
Harpers Ferry National Historical Park  
Cultural Resources Department  
Harpers Ferry, WV

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## **DRAFT**

### **INTRODUCTION**

Lindy Gulick, NCR architectural conservator was contacted by Harpers Ferry National Historical Park in Harpers Ferry, West Virginia, to reassess the current conditions of the limestone and concrete elements of the Art Deco Monumental Entrance, the concrete foundation, surface staining and previous repairs on the brick elevation of the Grandview School Building. The assessment occurred on September 27, 2017. The entrance elements were accessed from a 20 foot ladder provided by the park. The brick and concrete elements were accessed from the ground. Photographs and field drawings were used to assess the current conditions of the limestone and concrete features.

The results of the assessment survey and treatment recommendations will be compiled into a current PMIS statement for the park to be used for future restoration funding and ultimately the conservation of the Art Deco Monumental Entrance. This project will be tied to a previous conservation project (PMIS statement #?) that was completed in July, 2017. The previous conservation project consisted of a general cleaning of the brick and limestone and spot repointing on the brick mortar. This proposed conservation project will complete the exterior conservation efforts for the building.

### **SCOPE OF WORK**

The general scope of work provided by Harpers Ferry Park Architect, Peter Dessauer, requests the current condition along with treatment recommendations for the following:

- Art Deco Monumental Limestone Entrance
- Concrete foundation
- Concrete steps, entrance, plinth base
- Brick surface conditions
  - Tar stains and splatters at east elevation
  - Surface brick mortar joints at east elevation

### **MOCK-UPS**

Mock-ups are recommended for all treatments and repairs before implementing treatment and should be performed under the supervision of an architectural conservator. Since cleaning was performed in July, 2017 it is unlikely that a large scale cleaning will be needed or recommended but this will depend on when the masonry repairs will be performed. If cleaning is necessary, recommendations will be provided as needed.

## CONDITIONS

### *Limestone Entrance Conditions*

The 1930s Art Deco Monumental Limestone Entrance consists of a limestone cornice, limestone pilaster cap, 1930s limestone emblem, brick pilasters, limestone pier canopy, limestone piers, limestone pier base, concrete steps and entrance, and concrete plinth base. The elements of the limestone entrance and concrete steps and entrance are in varying condition. The condition of the elements ranges from fair to poor condition. A reference photograph of the naming designation of the different elements of the entrance is included in Appendix A. All of the conditions described below in this document will be indicated on annotated photographs of each element and included in Appendix B.

Generally the limestone pier, limestone pier base, and concrete plinth base on the east elevation is in poor condition. The limestone pier, limestone pier base, and concrete plinth base on the west elevation is in fair condition.

The limestone blocks on the stone piers on both sides exhibit similar conditions including hairline or micro-cracking, cracks that roughly range from 1/8" to 1/4" wide and are either radiating or splitting cracks, stone losses on the corners, and little or no mortar remaining in any of the joints. Some of the cracking and deterioration on the east elevation stone pier could be associated with vertical bedding.

There are two plastic anchors located in two limestone blocks on the limestone pier canopy. It appears that the stone spalled around the plastic anchors during installation but the stone loss is very minor. The two larger stone blocks that make up the stone pier canopy appear to be heaving out of plane about an inch or less at the bottom. It is uncertain if the stones have moved over time or if they were just installed out of plane during the initial construction of the entrance. There is evidence of erosion on the face of the furthest limestone block on the east side on the stone pier canopy. There are not any other stone blocks that exhibit this type of erosion so it is likely a condition that is only inherent to this particular stone block.

The hairline cracks appear mainly on the faces of the stone while most of the larger cracks appear on the stone return. The larger cracks that appear on the stone return are mainly located on the east elevation of the entrance. There are several cracks that run the entire vertical length of the stone. Smaller hairline cracks appear alongside the larger, deeper cracks. In addition to the cracks on the stone return, there are also cracks that will need to be injected on the lower section of the stone pier on the west elevation. These cracks on the lower sections of the stone pier do not typically run the entire length of the stone block.

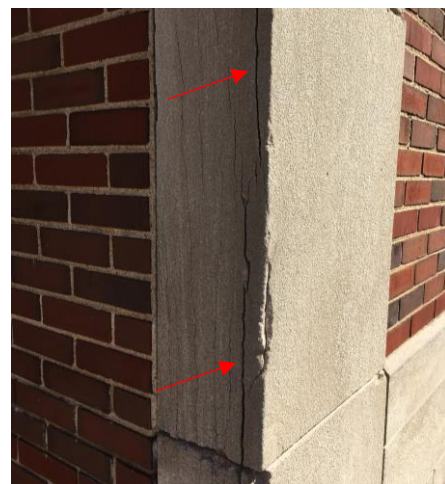


Figure 1. East Side of the Entrance showing the cracks in the limestone blocks on the stone pier. The red arrow indicates that the larger cracks will be injected.

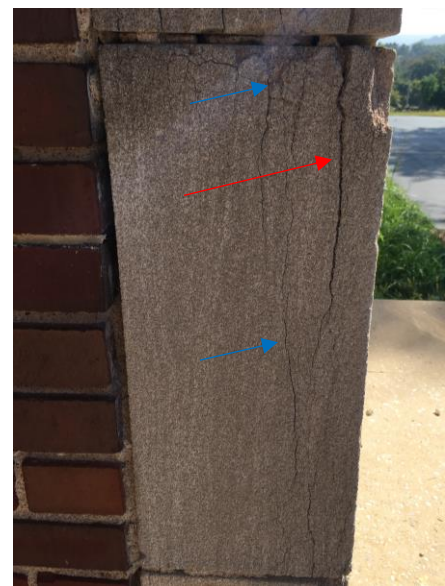


Figure 2. East Side of the Entrance showing the cracks in the limestone blocks on the stone pier. The red arrow indicates that the larger cracks will be injected and the blue arrow shows smaller hairline cracks and fissures.

If the stabilization on the limestone entrance is not repaired in the next year it is recommended that crack monitors be installed to monitor the movement of the cracks.

There are several areas of stone loss/voids on the face and return of the limestone panels. These stone losses appear mainly on the east side of the entrance on the corners or front faces of the limestone pier stones. Most of the losses are small, ranging from 2"- 4" of loss primarily on the corners. Small stone losses, 1" or smaller or small spalls will not be considered for patching repairs.



Figure 3. Example of cracking on the stone pier base on the west elevation (red arrow).

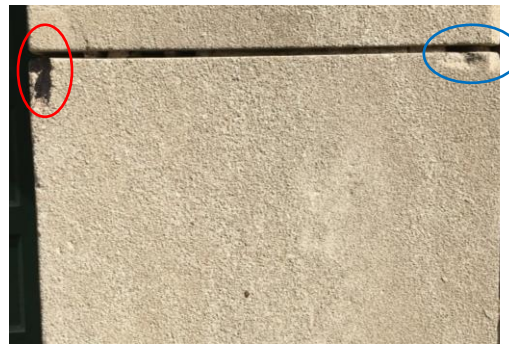


Figure 4. Example of an area to be patched on the east elevation of the stone pier base as indicated by a red circle. The blue circle indicates a spall that would not be repaired through patching. Note there is little to no mortar in the joint above.



Figure 5. Gypsum soiling on the underside of the stone pier canopy. The black sulfate crust is visible on the entire underside of the protected area.

There is gypsum soiling on the underside of the limestone pier canopy stone. The black sulfate crusts are caused by pollution and atmospheric soiling. A black sulfate crust builds up on the sheltered and protected areas that are not consistently rinsed with rain water.



Figure 6. Existing failed patch on concrete steps on the second step (red circle) along with a crack (red arrow).



Figure 7. Cracks along existing patches on the concrete plinth base, calcite from open joints

The bottom section of stones on both sides of the stone pier bases look like they are eroding possibly because of the dissolution of the binder in the limestone due to acid rain or from salt crystallization from salts that are used to treat snow/ice on the concrete plinth base. There is a cementitious material that has been smeared on the bottom base stones of the stone pier base on the east elevation.

#### ***Concrete Plinth Base, Concrete Steps and Entrance Conditions***

The concrete plinth base on the west elevation is in fair condition with the exception of several areas of failed patches from previous repairs, cracks that span the length of the base on the side and the front faces, and calcite deposits that are leaching from joints and open cracks. The concrete plinth base on the east elevation is in slightly worse condition due to more open cracks, cracks along existing patches, and failure of existing patches in addition to the listed conditions on the west elevation plinth.



The concrete steps and entrance is in fair condition. There is an embedded iron pin that is exposed on the riser of the first step. The first step tread shows iron staining and cracking along the step. The joints between the steps and the concrete plinth are open on both sides and there is a crack that spans the length of the step located on the second step. There is a failed patch on the tread of the second step that will need to be removed and re-patched. There is a patch that was installed during the July 2017 restoration on the tread of the first step. The patch matches the existing exposed aggregate concrete in texture but not in color. The patch can always be stained if needed to match the adjacent concrete. There are several hairline cracks that appear on the face of the concrete steps but these micro-cracks are likely too small to be injected.



Figure 8. Example of cracking that is typical on the concrete foundation, on all elevations.

#### ***Concrete Foundation Conditions***

There are roughly about 13 cracks along the concrete foundation. The cracks range in width from 1/8" to 1/4" and larger. There are some cracks with stone spall losses. Most of the cracks span the entire height of the concrete foundation which is about 2' high and appear on all elevations of the building.

#### ***Brick Surface Conditions***

**Tar Stains and Splatters-** On the east elevation there is a section of the brick wall and concrete foundation that has tar stains and splatters. This is the only noted occurrence of tar staining on the building.



Figure 9. Surface condition of the tar on the brick. Only visible on the east elevation.

**Brick Mortar Joint Repairs-** There is a 2' x 4' section of Portland repointing mortar on the east elevation completed during a previous restoration campaign. This section of gray portland cement mortar does not match the 1930s exposed aggregate buff-colored mortar that was originally used on the building. There are also other sections of brick mortar on the east elevation where the mortar does not match the original mortar. These areas are much smaller and range from a few square feet to a few inches of repointing mortar.

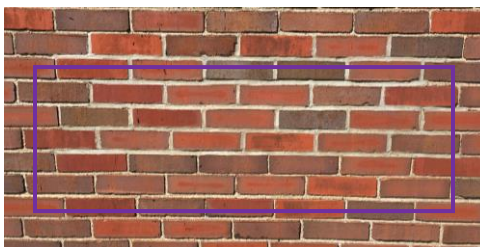


Figure 10. Previously installed portland cement mortar joints that are not compatible with the original mortar. See the purple box with the portland cement pointing mortar.

## **TREATMENT RECOMMENDATIONS**

### ***Limestone Entrance***

#### ***Hairline cracks***

A mock-up to treat the hairline cracks should be performed in order to determine the appropriate means and methods for treatment. If the cracks appear to be wide enough to take crack injection grout then they should be grouted (Jahn M-30 injection grout, or approved equal). If the cracks are too fine and grout is not able to be injected then the hairline cracks should be stabilized with a dilute lime putty that is color matched with mineral pigments to match the existing stone. If the dilute lime putty does not consolidate the hairline cracks then the entire limestone block should be consolidated with an ethyl silicate consolidant (the pre-treatment Conservare HCT (hydroxylating conversion treatment) with OH100, distributed by Prosoco, Inc. should be tested). A mock-up should be performed not on the limestone entrance but on a separate block of stone that closely resembles the texture and porosity of the original material. If the ethyl silicate consolidation is successful after a mock-up is performed, then all the stone blocks on the stone piers and stone pier bases should be consolidated 100% due to the deteriorated condition of the limestone. The ethyl silicate consolidation should be performed first before any repointing and patching or injecting repairs.

#### ***Larger Cracks/potential spall injection***

There are several large cracks ranging from 1/8"-1/4" wide in several locations on the stone piers and stone pier bases. These cracks should be filled with injection mortar to prevent additional deterioration. The cracks should be filled as deep as possible and flush to the stone. The cracks should first be injected with a 50/50 solution of denatured alcohol and water to flush out any dirt or debris and ensure that the crack injection material is able to seep as deep into the crack as possible. A color mixed injection grout (such as Cathedral Stone Products, Jahn M-30 #31, #32, Voidspan or approved equal) should be matched to the repair location with mineral pigments and injected until the repair is flush with the stone. Excess grout and overruns should be cleaned up immediately with a clean sponge and fresh water to prevent staining.

The four limestone stones that make up the east elevation of the stone pier have massive cracks that will need to be injected and reattached to the brick substrate. In order to anchor the limestone to the brick, holes will be drilled through the front face of the stone to take stainless steel dowels. The holes will be drilled to reach a depth greater than the deepest internal delamination (or to the brick substrate). The masonry drill bit should be slightly wider than the stainless steel dowel. The depth of the hole should be measured and the dowel cut to finish at least 1" below the outer surface. The drilled holes should be flushed with a 50/50 solution of water and denatured alcohol. A syringe will be used to inject the grout until the hole is no more than two thirds filled. The dowel is then pushed into the hole as far as it will go, and any seepage is cleaned away. When the grout has set, the tops of the dowel holes will be filled with a color matched restoration mortar mixed to match the surrounding stone. OR the Voidspan Cintec product can be used to re-anchor the limestone to the brick substrate. The process is very similar. The crack injection locations are illustrated on the annotated photographs in Appendix B.

#### ***Removal of plastic anchors***

The two plastic anchors should be removed from their location on the stone pier canopy using either needle-nose pliers or drilled out with masonry bits. The plastic anchors should be removed and the holes cleaned out with compressed air and then filled with a custom color matched restoration mortar (US Heritage HL60 Limestone Repair mortar, or approved equal). The spalls around the plastic anchors are not recessed enough to patch and will be left as is.

The two stones that are out of plane on the stone pier canopy will not be treated unless there is substantial movement.

### *Patching the limestone*

A sample of the existing stone should be sent to the manufacturer's lab to be color matched. The areas where patching will occur should be prepped and the material applied according to the manufacturer's specifications. The US Heritage HL60 Limestone Repair mortar can be used in areas where small repairs are needed because the product can be feathered to the edge. In other instances where deteriorated stone will need to be removed before patching can occur, other restoration products such as Conproco or Jahn restoration mortars can be used. The patches should be compatible to each individual repair location in color, texture, and finishing. This may require a few color matched samples of the approved material for custom mixing at each patch location. The patch locations are illustrated on the annotated photographs in Appendix B.

### *Detail cleaning to remove gypsum soiling*

The gypsum soiling on the underside of the stone pier canopy should be removed through either chemical or mechanical removal processes. A chemical to remove carbon crusts should be tested in a small discrete location (766 Limestone and Masonry Prewash, 942 Limestone and Marble Cleaner, Limestone and Masonry Afterwash, manufactured by Prosoco, could all be tested) to determine the effectiveness of chemical cleaning. If the chemical cleaning is not effective, mechanical cleaning can be used to remove the sulfate crusts. A micro-abrasive cleaning machine using finely crushed milled glass (IBIX H2O micro-abrasive cleaning machine) can be used to remove the sulfate crusts. The micro-abrasive cleaning procedure should be tested before large-scale treatment implementation.

### *Repointing Limestone elements*

The mortar joints between the limestone blocks on the entire monumental entrance should be repointed 100%. There is little to no existing mortar remaining in any of the mortar joints. If there is information on the original mortar that was used to repoint the limestone entrance then that should be used. A mortar analysis can be conducted on a sample of the existing mortar, if needed, and recreated to match the color, texture, and strength of the original mortar. The old failed mortar should be removed with hammers and chisels and replaced with the appropriate mortar mix.

### ***Concrete Plinth Base Treatment Recommendations***

The concrete plinth base should be cleaned with a non-ionic detergent and pressurized water to remove any mineral deposits that are leaching out of joints or open cracks prior to other restoration activities. The pressure washer should aid in removing or softening some of the mineral deposits. The deposits that remain after an initial detergent and water cleaning should be removed either with a scraper, scalpel, or if needed a micro-abrasive system. Care should be taken to carefully scrape away the deposits while avoiding scratching or abrading the concrete surface. The removal techniques should be tested in a small inconspicuous location before implementing large scale removal.

If there are losses in the existing patches or if the patches are not sound and need to be removed then they should be removed and replaced. The patches should match the repair properties of the concrete plinth base in color, texture, and porosity. Prior to implementing new patches, test slabs should be prepared using different amounts and types of aggregates, cements, and sands. The test slabs should be abraded to reveal the aggregate. The repair mix should be formulated as accurately as possible so that its appearance is matched closely to the original. If the patches are sound and appear to match the surrounding concrete then they should be kept in place. The cracks around the existing patches and new cracks not associated with patches should be injected with an injection grout that is color matched (Jahn Injection Grout, Voidspon, or approved equal).

Old patches that are stable but do not match the existing concrete can be toned or in-painted to match the surrounding stone. Concrete dyes can be used or potassium silicate paints.

### ***Concrete Steps and Entrance Treatment Recommendations***

The exposed ferrous pin located in the riser on the first step of the concrete steps should not be removed but treated in place. The ferrous pin should be cleaned with a stainless steel brush to remove loose corrosion and primed with a zinc rich primer and coated in a color that is compatible to the concrete.

The ferrous staining leaching from the cracks on the first step should be removed/ reduced through chemical cleaning or poulticing. The ferrous stain removal products should be tested first before large-scale implementation occurs. Products with oxalic acid or ammonium bifluoride and hydrochloric acid are generally used to reduce the appearance of ferrous stains, such as Super Iron Out, Prosoco's Ferrous Stain Remover, or Cathedral Stone Products Light Duty Rust Remover. These products can be generally applied as a paste, soaked in a cellulose material, or applied as a liquid gel cleaner. A mock-up of the products tested should be performed under the supervision of an architectural conservator. After cleaning, the cracks should be injected with a color matched restoration injection grout.

The additional hairline cracks and large cracks that span the length of the steps should be injected with a color matched injection grout (Jahn Injection Grout, Voidspan, or approved equal). Mortar joint/large cracks between the steps and the concrete plinths on both sides should be filled with a backer rod (cut to the appropriate dimension of the crack) and then repointed with a mortar that is compatible in color, texture, and hardness.

There is one instance where there is a failed patch that will need to be removed and replaced. The failed patch is located on the tread of the second step. The patch will be removed using hammer and chisels, prepared for a new patch, and patched with a patching material that matches the repair properties of the concrete steps.

The existing patch that was installed during the July 2017 restoration campaign on the proper right side of the first step should not be removed unless it has deteriorated or failed. The color can be slightly adjusted to better blend in with the surrounding concrete with either concrete stains or in-painted with potassium silicate paints.

### ***Concrete Foundation Treatment Recommendations-***

The cracks in the concrete foundation around the building should be injected with a crack and void injection grout (Jahn M-40, Crack and Void Injection Grout by Cathedral Stone, Inc., Voidspan product, or approved equal). The injection sites should be flushed with a 50/50 solution of denatured alcohol and water prior to crack injection. The injection grout should be color matched with mineral pigments to match the adjacent concrete color. The injection grout should be filled flush to the surface of the stone. If there are any voids or areas of losses not filled with the injection grout they should be patched with a concrete restoration material (Jahn M-90, Concrete Restoration Mortar, Cathedral Stone, Inc. or approved equal). The restoration patching material should be color matched with mineral pigments to match the adjacent stone. Because the patching repairs are minimal in scope and quantity, it is not recommended that matching aggregate be used in the restoration mix for these types of patches.

### ***Brick Surface Treatment Recommendations***

**Tar Stains and Splatters-** The tar should be removed from the brick and concrete through a variety of methods. Each method should be tested in a small inconspicuous location before implementing large-scale cleaning. The areas of tar that are thick should be removed first with scalpels and blades taking care to not scratch or scrape the brick. The thick tar buildup should be removed as best as possible and then dissolved with a chemical product. Sure Klean Asphalt and Tar Remover distributed by Prosoco could be tested along with a variety of solvents.



**Brick Mortar Joint Repairs-** There are several locations where inappropriate materials and colors were used to repoint select mortar joints. There is one location on the east elevation that was repointed with a gray Portland cement mortar. Since the Portland cement mortar is much harder than the adjacent bricks, it is recommended that the Portland cement mortar be left in place to prevent damaging the bricks further with removal procedures. In order to blend the existing repair with the surrounding brick and mortar it is recommended that the Portland repointing mortar be retooled to match the profile of the original mortar. This can be accomplished a few different ways. The Portland cement mortar can be scaled back using a scalpel or with a Dremel tool. The goal of the retooling is to remove the surface mortar so that the repair appears to have the same profile original mortar joints. The retooled surface can also be in-painted with stains or potassium silicate paints to match the original mortar if determined necessary.

The other additional areas where the repointing mortar does not match the surrounding mortar should be investigated to ensure that the mortar is sound. If the mortar is sound then it can be selectively in-painted with potassium silicate paints or stains mixed to match the original mortar. This would be a relatively simple solution rather than removing and replacing the mortar.

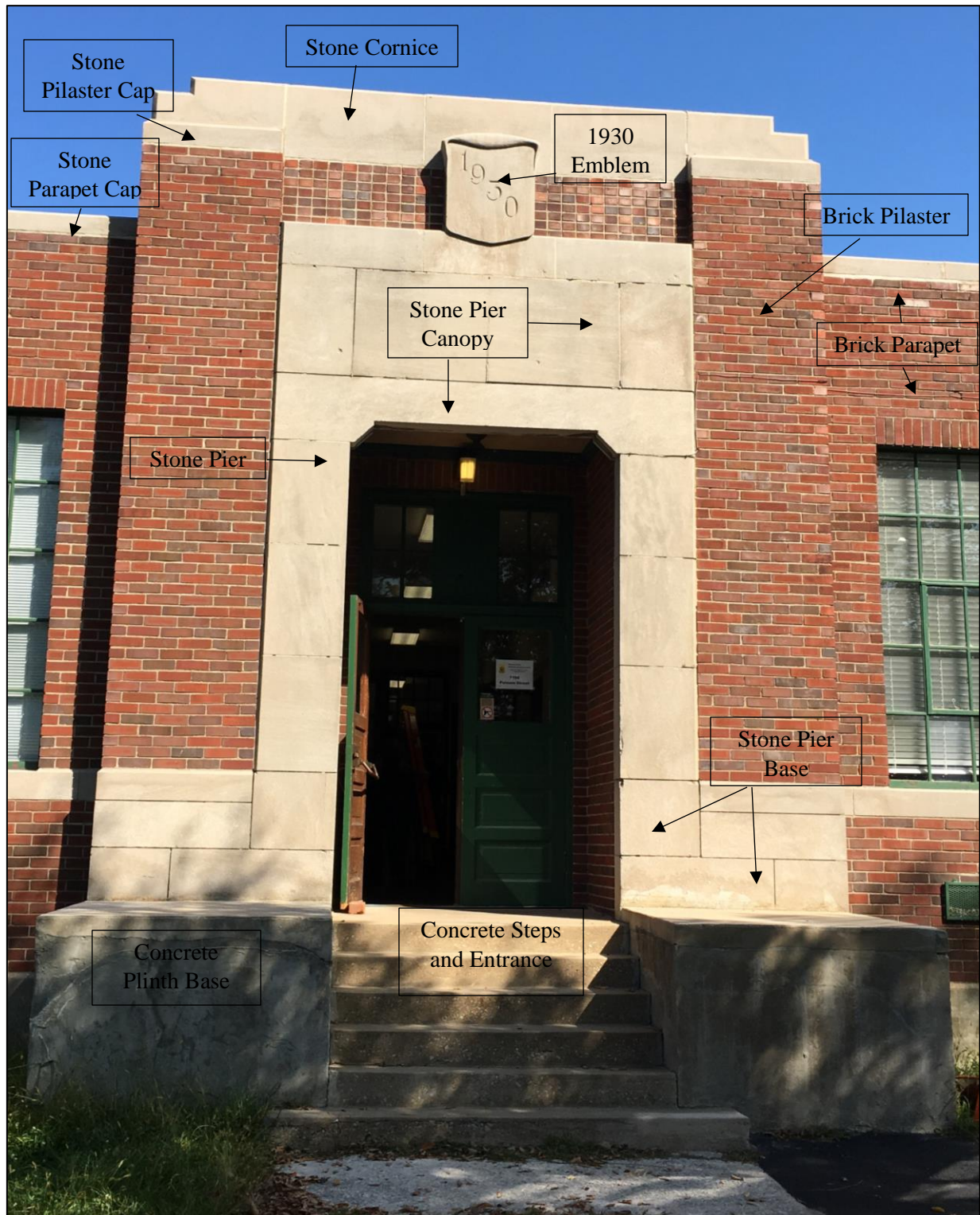
## **APPENDIX A**

### **ARCHITECTURAL KEY ELEMENTS FOR THE ART DECO MONUMENTAL ENTRANCE**

## **APPENDIX B**

### **ANNOTATED PHOTOGRAPHS OF CONDITONS OF THE LIMESTONE AND CONCRETE ELEMENTS OF THE ART DECO MONUMENTAL ENTRANCE**

**ARCHITECTURAL KEY ELEMENTS  
ART DECO MONUMENTAL ENTRANCE**

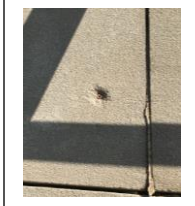


**Stone Cornice, Stone Pilaster Cap, 1930 Emblem, Stone Pier Canopy**

**CONDITIONS**



Condition: Embedded plastic anchor. Treatment: remove plastic anchor and patch void with a color matched restoration



Condition: Gypsum soiling (typical on underside). Treatment: chemical or micro-abrasive cleaning



Condition: Existing ferrous anchors holding wire in place in mortar joint. Treatment: If wire is being removed, patch limestone if needed, repoint.



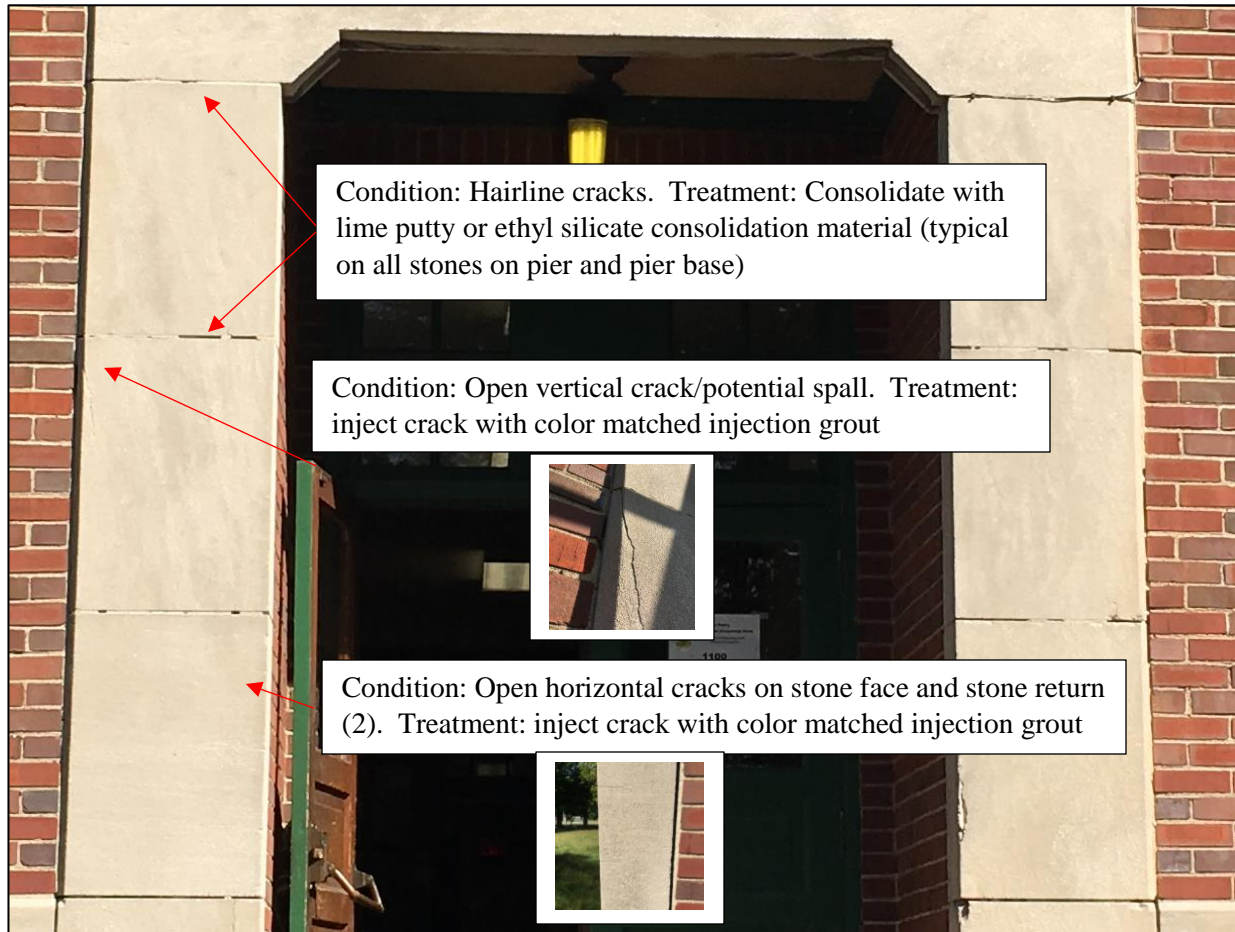
**GENERAL NOTES:**

- Repoint all mortar joints 100% (typical on all limestone elements) with appropriately matched mortar
- No additional cleaning other than to remove gypsum soiling from underside of stone pier canopy.



## Stone Pier- West Elevation

### CONDITIONS

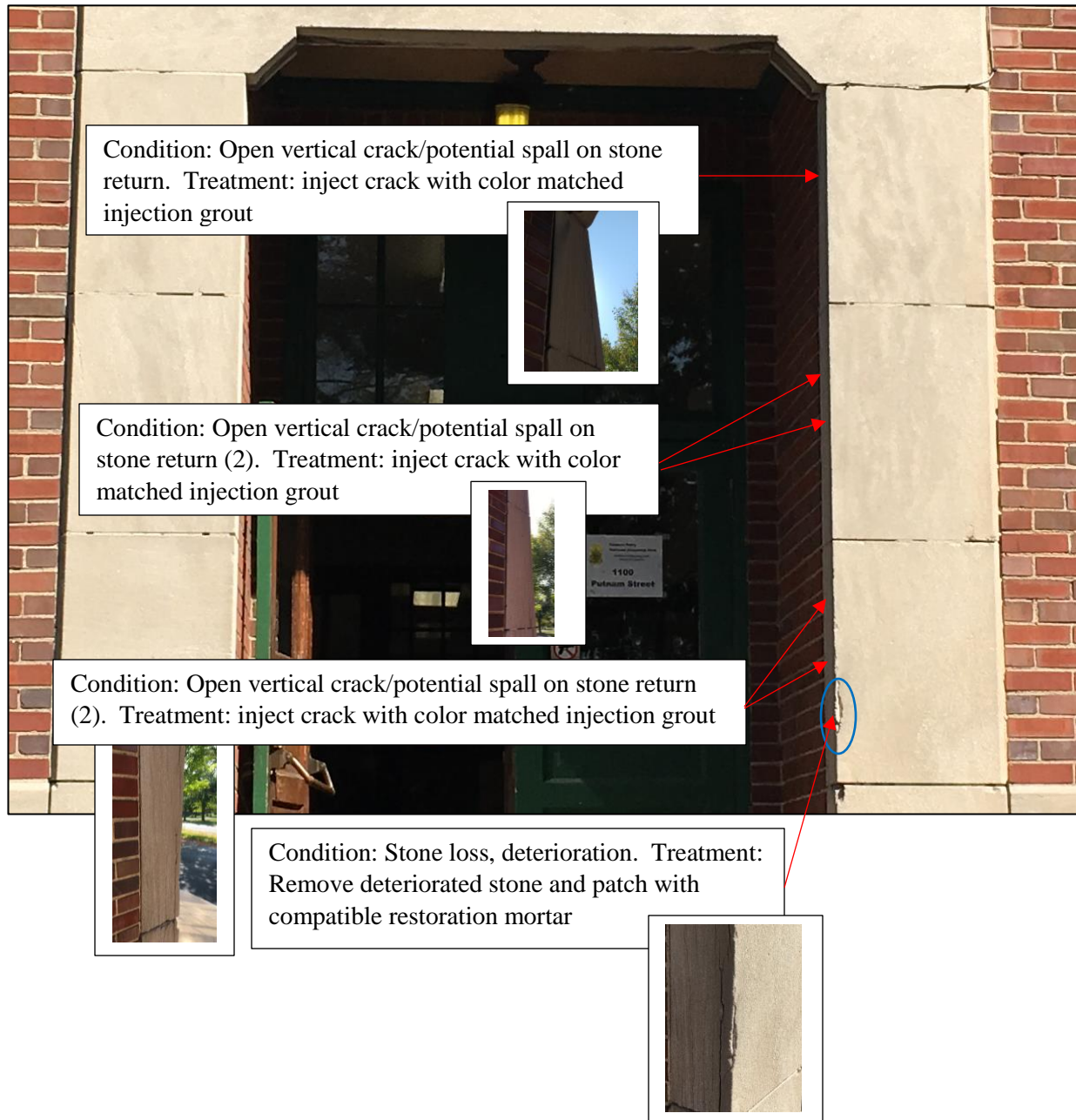


#### GENERAL NOTES:

- Repoint all mortar joints 100% (typical on all limestone elements) with appropriately matched mortar
- No additional cleaning other than to remove gypsum soiling from underside of stone pier canopy.
- Hairline cracks on the faces of the stones on the stone piers and stone pier bases (typical on most stones). Recommended to fill hairline cracks with a lime putty OR consolidate the entire stone block.

## Stone Pier- East Elevation

### CONDITIONS



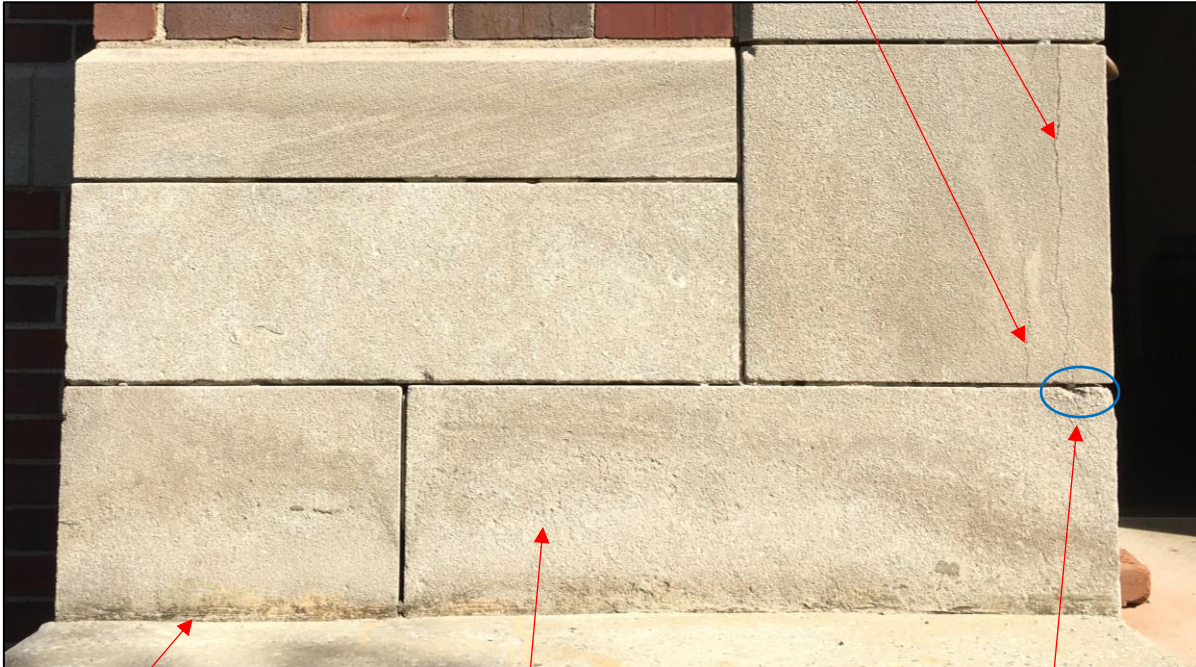
#### GENERAL NOTES:

- Repoint all mortar joints 100% (typical on all limestone elements) with appropriately matched mortar
- No additional cleaning other than to remove gypsum soiling from underside of stone pier canopy.
- Hairline cracks on the faces of the stones on the stone piers and stone pier bases (typical on most stones). Recommended to fill hairline cracks with a lime putty OR consolidate the entire stone block.
- Drill and install stainless steel pins in the face of the three stones on the limestone pier on the east elevation.

## Stone Pier Base- West Elevation

### CONDITIONS

Condition: Open vertical crack/potential spall on stone face (2). Treatment: inject crack with color matched injection grout



Condition: No mortar remaining in joint between limestone and concrete. Treatment: Fill with backer rod if needed and repoint with compatible mortar.

Condition: Stone loss, deterioration. Treatment: Remove deteriorated stone and patch with compatible restoration mortar.

Condition: Eroded stone surface. Treatment: no treatment recommendation other than reduce the amount of salt products used on the concrete



#### GENERAL NOTES:

- Repoint all mortar joints 100% (typical on all limestone elements) with appropriately matched mortar
- No additional cleaning other than to remove gypsum soiling from underside of stone pier canopy.
- Hairline cracks on the faces of the stones on the stone piers and stone pier bases (typical on most stones). Recommended to fill hairline cracks with a lime putty OR consolidate the entire stone block.

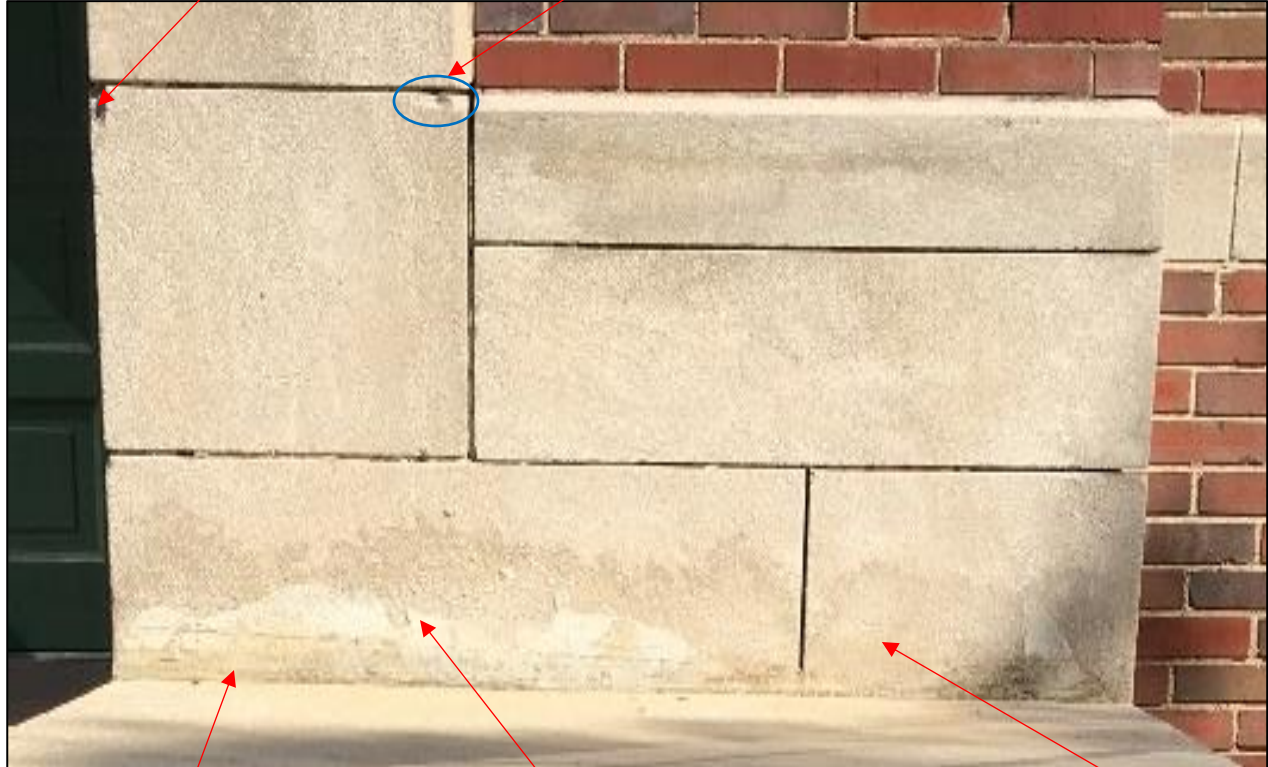


## Stone Pier Base – East Elevation

### CONDITIONS

Condition: Stone loss, deterioration, open cracks (1) and hairline cracks (on stone return). Treatment: Remove deteriorated stone and patch with compatible restoration mortar, inject crack with injection grout.

Condition: Stone loss. Treatment: No treatment recommended for such a small loss.



Condition: No mortar remaining in joint between limestone and concrete. Treatment: Fill with backer rod if needed and repoint with compatible mortar.

Condition: Concrete or cementitious material on the surface of the bottom stones on the stone pier base. No treatment recommendation to remove concrete smears

Condition: Eroded stone surface. Treatment: no treatment recommendation other than reduce the amount of salt products used on the concrete for future maintenance or use another de-icing product

#### GENERAL NOTES:

- Repoint all mortar joints 100% (typical on all limestone elements) with appropriately matched mortar
- No additional cleaning other than to remove gypsum soiling from underside of stone pier canopy.
- Hairline cracks on the faces of the stones on the stone piers and stone pier bases (typical on most stones). Recommended to fill hairline cracks with a lime putty OR consolidate the entire stone block.
- Drill and install stainless steel pins in the face of the topmost stone on the limestone pier base on the east elevation.

## Concrete Plinth Base- West Elevation (Side)

### CONDITIONS

Condition: Stone loss, failed patch. Treatment: Remove deteriorated stone and patch with compatible restoration mortar.



Condition: Open crack around previous repair. Treatment: inject crack with color matched injection grout

Condition: Open crack around previous repair. Treatment: inject crack with color matched injection

Condition: Calcite/mineral deposits leaching from open joints/cracks. Treatment: Manually remove calcite/mineral deposits with scrapers, or a micro-abrasion system

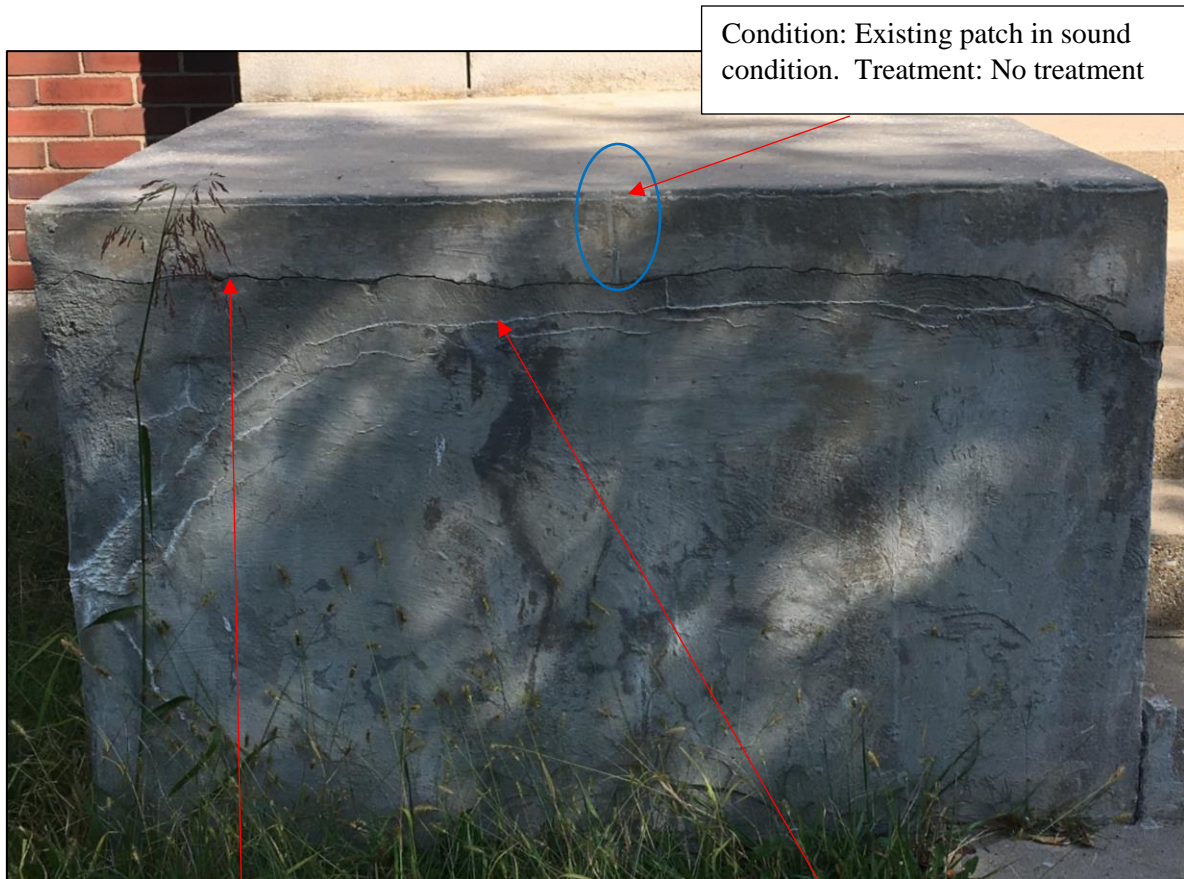
#### GENERAL NOTES:

- Additional cleaning may be needed to remove surface soiling, failed patch material, and biological soiling.



## Concrete Plinth Base- West Elevation (Front)

### CONDITIONS



Condition: Existing patch in sound condition. Treatment: No treatment

Condition: Open crack around previous repair (runs the length of the plinth base). Treatment: inject crack with color matched injection grout

Condition: Calcite/mineral deposits leaching from open joints/cracks. Treatment: Manually remove calcite/mineral deposits with scrapers, or a micro-abrasion system



#### GENERAL NOTES:

- Additional cleaning may be needed to remove surface soiling, failed patch material, and biological soiling.

## Concrete Plinth Base- East Elevation (Side)

### CONDITIONS



Condition: Open crack around previous repair (runs the length of the plinth base to the front), previous repair may not be sound. Treatment: inject crack with color matched injection grout OR remove existing repair and install new patch with compatible restoration mortar. Red arrow shows crack along repair, blue circle shows voids/losses in the previous repair.



### GENERAL NOTES:

- Additional cleaning may be needed to remove surface soiling, failed patch material, and biological soiling.



## Concrete Plinth Base- East Elevation (Front & Top)

### CONDITIONS

Condition: Open crack. Treatment: inject crack with color matched injection grout

Condition: Existing patch in sound condition. Treatment: No treatment, in-paint if necessary



Condition: Open crack around previous repair (runs the length of the plinth base from the front to the side), previous repair may not be sound. Treatment: inject crack with color matched injection grout OR remove existing repair and install new patch with compatible restoration mortar. Red arrow shows crack along repair, blue circle shows voids/losses in the previous repair.

### GENERAL NOTES:

- Additional cleaning may be needed to remove surface soiling, failed patch material, and biological soiling.

## Concrete Foundation

### CONDITIONS



Condition: Cracks along concrete foundation (typical on elevations).  
Treatment: Inject cracks with color matched injection mortar, patch larger areas not filled with injection grout with color matched restoration mortar (see red arrows indicating typical cracks in the foundation)

## **APPENDIX B**

### **ANNOTATED PHOTOGRAPHS OF CONDITONS OF THE LIMESTONE AND CONCRETE ELEMENTS OF THE ART DECO MONUMENTAL ENTRANCE**