



# Ellen Phillips Samuel Memorial–Central Terrace Conditions Assessment

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## Final Report



Prepared for the City of Philadelphia by the  
Fairmount Park Historic Preservation Trust

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## 1.0 Introduction

The Ellen Phillips Samuel Memorial (Samuel Memorial), located on Kelly Drive in East Fairmount Park, was designed by Paul Cret and built between 1933 and 1961. The memorial consists of three, separate, landscaped plazas or terraces. Each plaza contains groupings of sculptures commemorating the history of America, and they are connected by a paved walking path along the river's edge. The custodians of the property are the Fairmount Park Art Association, Fairmount Park Commission, and the City of Philadelphia. Thousands of people drive on Kelly Drive and use the recreation path adjacent to this memorial every day.

The three terraces of the Samuel Memorial are The South Terrace, the Central Terrace and the North Terrace. The Central Terrace is the area of focus for this report. This Central Terrace, installed in 1938, is surrounded by Pennsylvania Sandstone curved walls and limestone niches on the north and south sides. This central plaza contains three large bronze sculptures with the *Spirit of Enterprise* by Jaques Lipchitz in the center, *Spanning the Continent* by Robert Laurent in the North Niche, and *Welcoming to Freedom* by Maurice Sterne in the South Niche. In addition to the bronze sculpture, the stone niches are flanked at each end by approximately five foot tall limestone figurative sculptures by J. Wallace Kelly, John B. Flannagan, Heinz Warneke, and Helene Sardeau. All sculptural elements are addressed through the Fairmount Park Art Association's ongoing annual conservation maintenance program.

The sandstone and limestone architectural elements of the terrace are currently displaying signs of severe deterioration. These architectural elements are the focus of this project. As part of this project these elements were surveyed and assessed to develop a strategy for their conservation. This report will address these needs through a thorough conditions assessment, treatment recommendations and masonry specifications for these stone elements.

## 2.0 Methodology

### 2.1 Numbering System

In order to address the needs of the architectural features of this sandstone and limestone central terrace, updated architectural drawings were completed. To develop these drawings, copies of the original plans for the memorial were acquired from the Fairmount Park Art Association Archives. These drawings were scanned with a drum scanner and digitized. These drawings in combination with measurements taken on site and digital photographs were used to create a base for documentation of the central terrace.

Each stone making up the terrace was given an alpha-numeric name based on each stone's location in the terrace. This naming system is composed of three letters and a number. The first of the three letters refers to the Niche of the Terrace the stone is located in: North or South. This is symbolized by an "N" for North and an "S" for South. The second letter of the name refers to the interior or exterior of the terrace. This is symbolized by an "I" for Interior and an "X" for Exterior. The third letter in each name distinguishes the East, Central or West sides of the terrace niche. These are symbolized with an "E" for East, "C" for Central, and "W" for West.

The three letters divide the central terrace into twelve separate sections. These sections are as follows: **N-I-E** (North Niche-Interior View-East Section), **N-I-C** (North Niche-Interior View-Central Section), **N-I-W** (North Niche-Interior View-West Section), **S-I-E** (South Niche-Interior View-East Section), **S-I-C** (South Niche-Interior View-Central Section), **S-I-W** (South Niche-Interior View-West Section), **N-X-E** (North Niche-Exterior View-East Section), **N-X-C** (North Niche-Exterior View-Central Section), **N-X-W** (North Niche-Exterior View-West Section), **S-X-E** (South Niche-Exterior View-East Section), **S-X-C** (South Niche-Exterior View-Central Section), **S-X-W** (South Niche-Exterior View-West Section). Each drawing produced for this report correlates with one of these twelve sections. Once each stone was categorized into one of the twelve sections, each stone was given a number.

## 2.2 Conditions Drawings

The measured drawings in conjunction with transparency paper and colored markers were used to visually document deterioration of the stone on each drawing while in the field. The glossary of conditions found below was used as a guide for determining the type of deterioration. These conditions were noted on a transparency over the drawings. The field notes were transferred to the measured drawings in AUTOCAD and became the Conditions Drawings. These drawings can be found in Appendix A.

<b>Glossary of Conditions</b>	
<b>Blistering</b>	Swelling accompanied by rupturing of a thin uniform skin both across and parallel to the bedding plane.
<b>Chipping</b>	Small pieces or larger fragments of masonry separating from the masonry unit, often at corners or mortar joints.
<b>Cracking</b>	A term describing narrow fissures from 1/16 to 1/2 inch wide in a block of masonry.
<b>Crumbling</b>	This condition is indicative of a certain brittleness or tendency of the masonry to break up or dissolve.
<b>Delamination</b>	A condition of stone in which the outer surface of the stone splits apart into laminae or thin layers and peels off the face of the stone. Delamination differs from spalling in that it is a condition confined to natural, primarily sedimentary, stone and is not a condition that occurs in manufactured products such as brick.
<b>Rising Damp</b>	The suction of groundwater into the base of masonry walls through capillary action. Moisture is drawn up into the building walls and released at the interior and exterior surfaces where a horizontal wet stain or tidemark is left.
<b>Surface Crust/Surface Induration</b>	The movement of moisture toward the surface of stone and the outer edges results in the formation of a hard crust on the surface parallel to the worked surface.
<b>Inadequate Patch</b>	An inappropriate patch repair that is not compatible with the original stone or does not match the original stone in texture and/or color.
<b>Efflorescence</b>	A whitish haze of soluble salts on masonry. Efflorescence itself may be more unsightly than harmful, but its presence on an older or historic masonry building often serves as a warning, indicating that water has found a point of entry into the structure.
<b>Biological Growth</b>	Micro flora utilizing the stone or mortar as a source of nutrients

### 2.3 Conditions Ratings

In addition to documenting specific deterioration conditions, each stone was given a condition rating from 1 to 5. The condition ratings are as follows:

Rating	Description	Corresponding Color
1	Very Good	Grass Green
2	Good	Lime Green
3	Fair	Yellow
4	Poor	Orange
5	Very Poor	Red

Each stone rating (1 through 5) was given a corresponding color and each stone was filled with its corresponding rating color. These drawings allow us to see patterns of deterioration and can be found in Appendix B.

### 2.4 Survey Spreadsheet

All recorded information was transferred to an excel spreadsheet. This spreadsheet was organized by Marker ID and contains data collected in the field. The categories of the spreadsheet include:

**Description-** Architectural Stone Type

**Current Conditions-** List of all conditions from the glossary that exist on the stone

**Condition Rating-** the numbered rating based on overall condition of the stone

**Notes-** any other information pertaining to the stone

**Treatment-** Recommended treatment based on conditions

The spreadsheet can be found in Appendix C.

### 2.5 Digital Photography

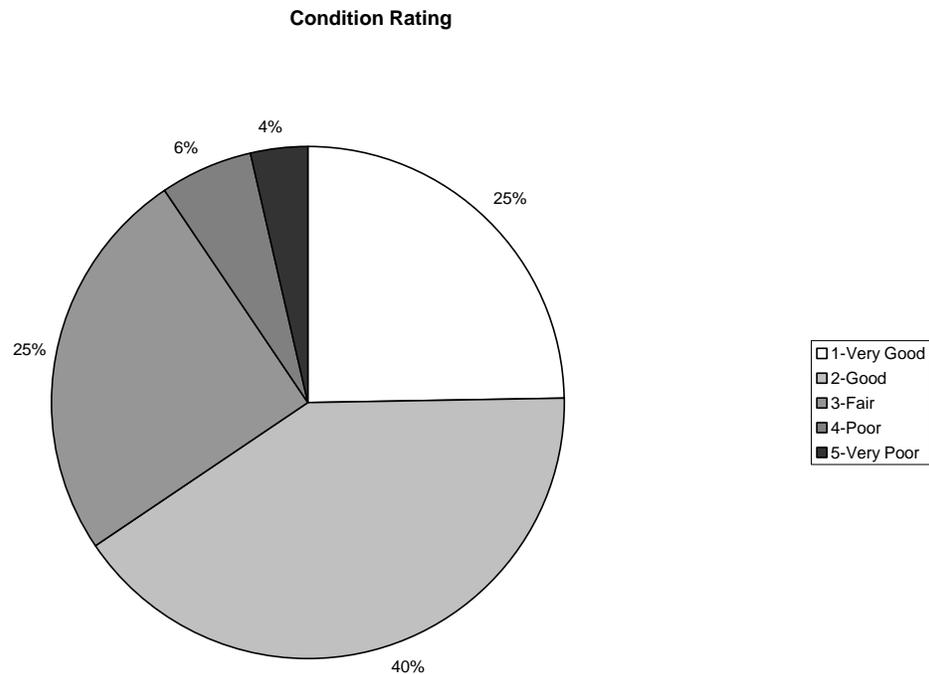
The Central Terrace of the Ellen Phillips Samuel Memorial was also documented with digital photography. These images can be found in Appendix D.

### 3.0 Observations

The Central Terrace of the Ellen Phillips Samuel Memorial is in need of attention. A combination of weathering, drainage/flooding issues, landscaping and inappropriate repairs have negatively affected the Pennsylvania Sandstone and Indiana Limestone portions of the Central Terrace. The most deteriorated areas of the terrace are the lower courses of the sandstone on the east, north and south sides of the terrace. These areas are adjacent to garden areas of mulch and retain moisture. This appears to be the number one cause of severe deterioration throughout the terrace.

There are also a significant amount of open mortar joints throughout the terrace. In addition to open mortar joints, many joints have been “re-pointed” using inappropriate cement mortar. This mortar was installed on joints throughout the monument and in most instances the original mortar was not cut back prior to the installation of the new mortar. As a result, the cement mortar was installed over the edges of the joints of the stones. The cement mortar is beginning to spall off and is taking some of the sandstone and limestone with it. This is the cause of many of the small chips and stone loss on arrises of the stone.

Although there are many stones of the Terrace that are in severe need of attention, a large percentage of the stones are in very good/good condition. The pie chart below gives an overall sense of the conditions of stones.



## 4.0 Treatment

**Detailed treatment specifications can be found in Appendix E. In addition, Cost Estimates for recommended Treatments can be found in Appendix F Recommended product information can be found in Appendix G**

### *4.1 Landscape*

Prior to treating any of the damaged stone elements of the Central Terrace landscaping issues need to be resolved. Currently, mulch retaining moisture is piled adjacent to the stone in the planting beds. These areas are mulched on an annual basis and the beds continue to rise higher on the walls of the terrace. A design construction project engineer should be consulted to determine an appropriate drainage plan for these areas. In addition, many trees are planted close to the terrace. This is part of the intended landscape plan. When/if site drainage work is addressed possible root issues should also be discussed. Root barrier products can prevent roots from passing by a certain area. If the walls were surrounded by one of these products root damage could be prevented. Bio-barrier® is one product that could be used for this purpose. Throughout the landscape/drainage planning process a conservator should be consulted to ensure the treatment is appropriate for the stone.

### *4.2 Re-pointing*

The entire Central Terrace is in need of re-pointing. This includes the removal of a past pointing campaign that consisted of Portland cement mortar. When installed the new mortar should be a soft lime based mortar and should be pointed flush with the stone.

### *4.3 Cleaning*

A cursory cleaning of the entire memorial should be completed.

### *4.4 Patching/Filling Cracks*

Many chipped/cracked areas of the Central Terrace are in need of repair to prevent further damage. Patch repair materials that match the stone in texture and color can be used to fill these voids.

### *4.5 Replacement*

Forty stones throughout the Central Terrace are in need of complete replacement. The majority of these stones are Pennsylvania Sandstone. The stones that need to be replaced are specified in the Survey Spreadsheet in the Treatment section. If Pennsylvania Sandstone that matches in color, texture and orientation is not available, a suitable substitute may have to be used.

### **5.0 Future Maintenance**

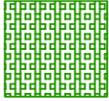
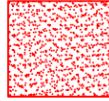
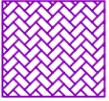
Regular and appropriate inspection and maintenance of this monument must occur once work has been completed. An annual inspection by a qualified masonry conservator should be performed to identify problems or potential problems before they cause permanent and irreversible damage. Other issues that will continue to require attention are landscaping and landscape maintenance.

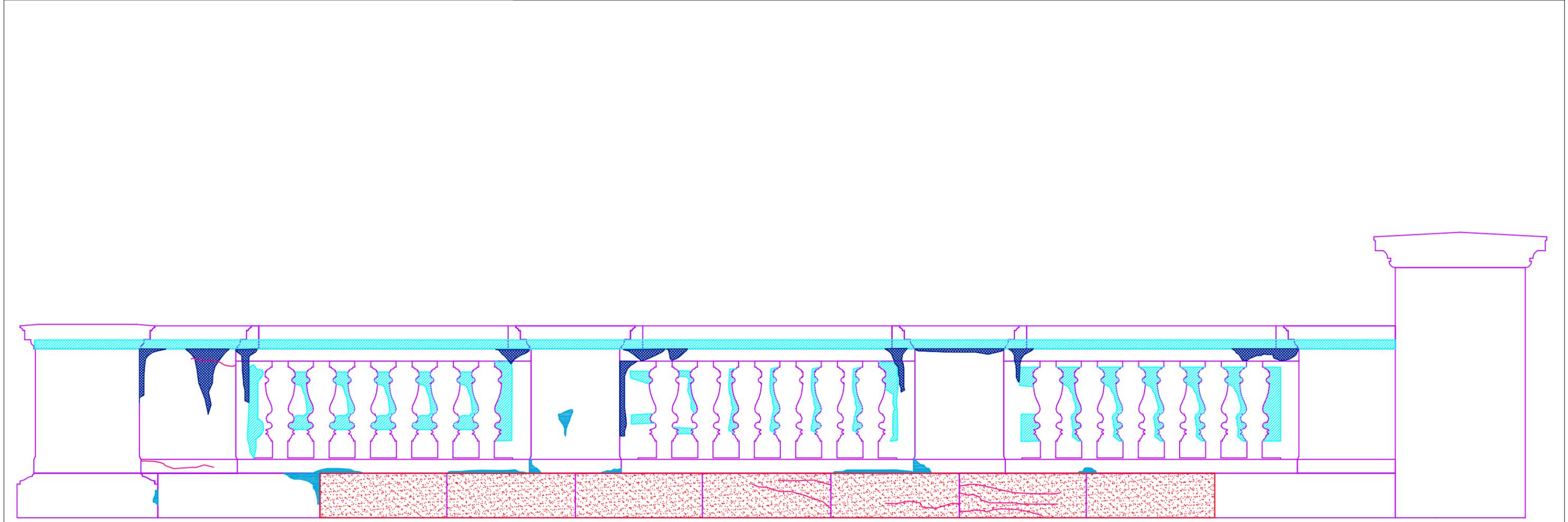
## Appendix A Condition Drawings

1. **N-X-E** (North Niche-Exterior View-East Section)
2. **N-X-C** (North Niche-Exterior View-Central Section)
3. **N-X-W** (North Niche-Exterior View-West Section)
4. **N-I-E** (North Niche- Interior View-East Section)
5. **N-I-C** (North Niche- Interior View-Central Section)
6. **N-I-W** (North Niche- Interior View-West Section)
7. **S-X-E** (South Niche-Exterior View-East Section)
8. **S-X-C** (South Niche-Exterior View-Central Section)
9. **S-X-W** (South Niche-Exterior View-West Section)
10. **S-I-E** (South Niche-Interior View-East Section)
11. **S-I-C** (South Niche-Interior View-Central Section)
12. **S-I-W** (South Niche-Interior View-Wast Section)

N-X-E balustrade

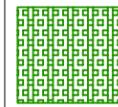
Conditions Key

- |   |            |   |               |   |                     |
|---|------------|---|---------------|---|---------------------|
|  | Blistering |  | Crumbling     |  | Inappropriate Patch |
|  | Chipping   |  | Delamination  |  | Rising Damp         |
|  | Cracking   |  | Efflorescence |  | Surface Crust       |



N-X-C semi-circle

Conditions Key



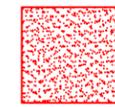
Blistering



Chipping



Cracking



Crumbling



Delamination



Efflorescence



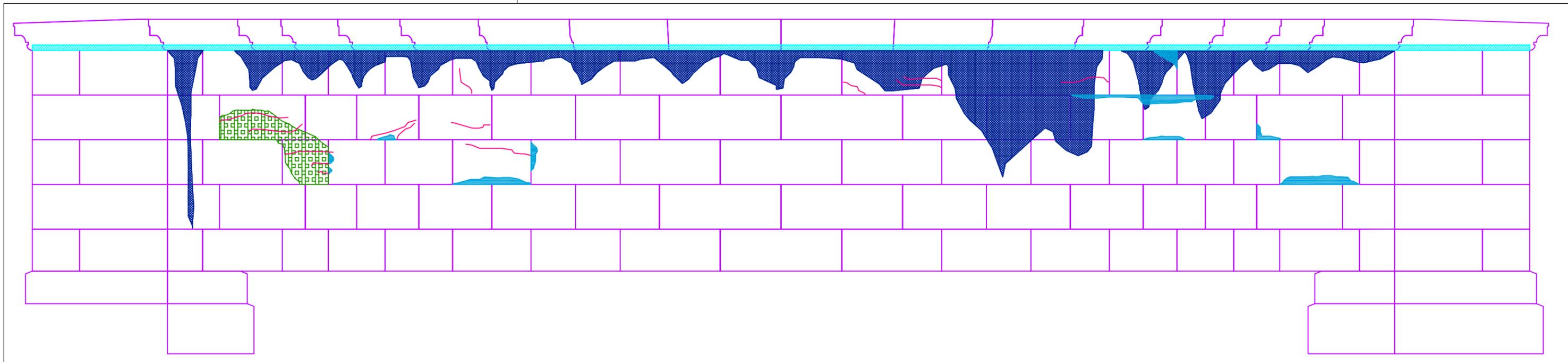
Inappropriate Patch



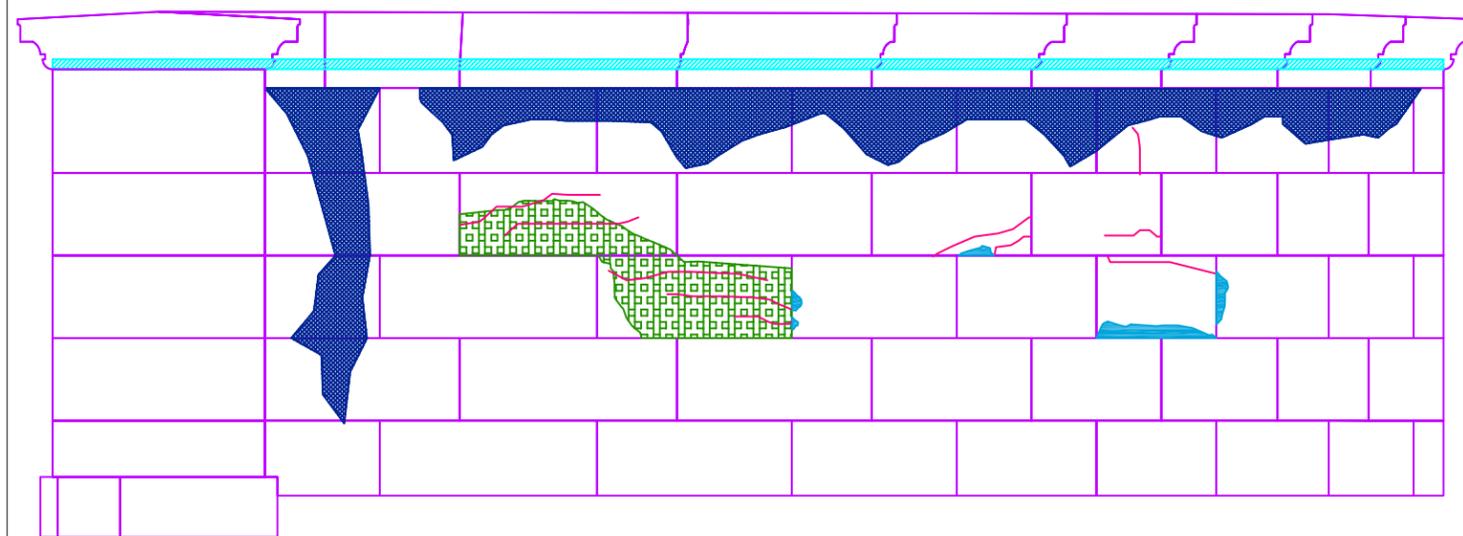
Rising Damp



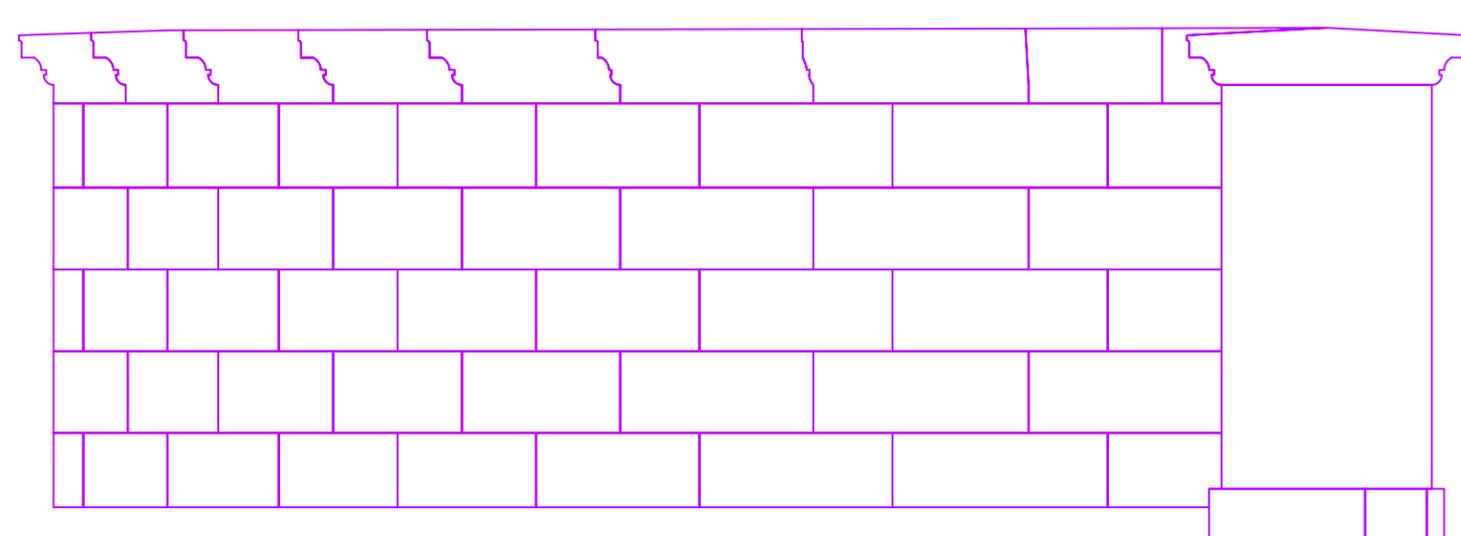
Surface Crust



N-X-C east elevation of semi-circle

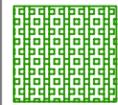


N-X-C west elevation of semi-circle



N-X-W balustrade

Conditions Key



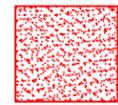
Blistering



Chipping



Cracking



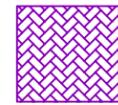
Crumbling



Delamination



Efflorescence



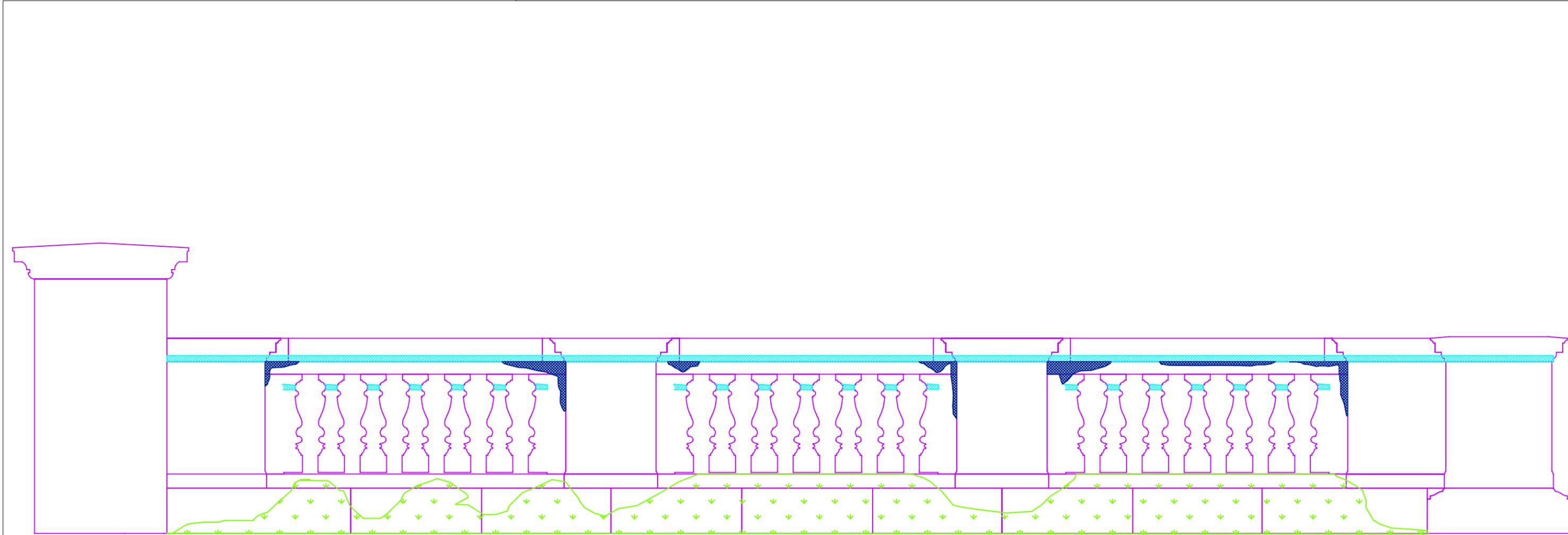
Inappropriate Patch



Rising Damp

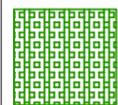


Surface Crust



N-I-E balustrade

Conditions Key



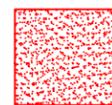
Blistering



Chipping



Cracking



Crumbling



Delamination



Efflorescence



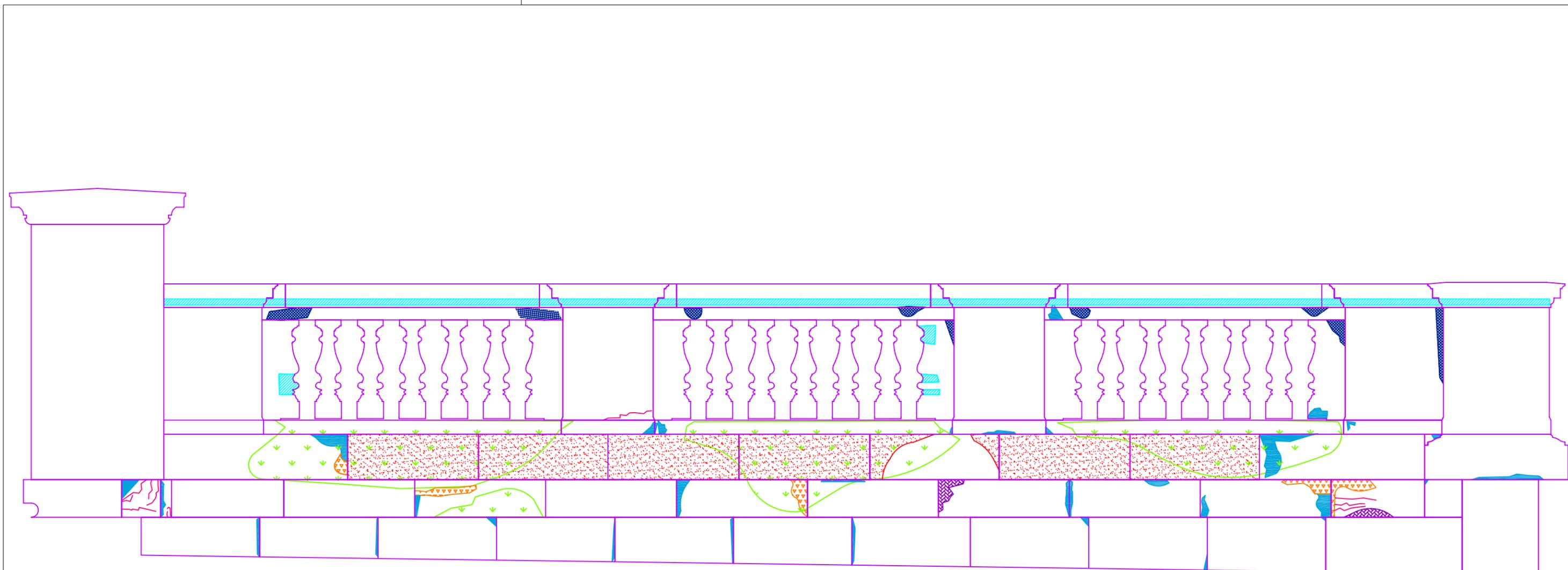
Inappropriate Patch



Rising Damp

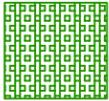
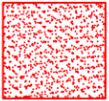


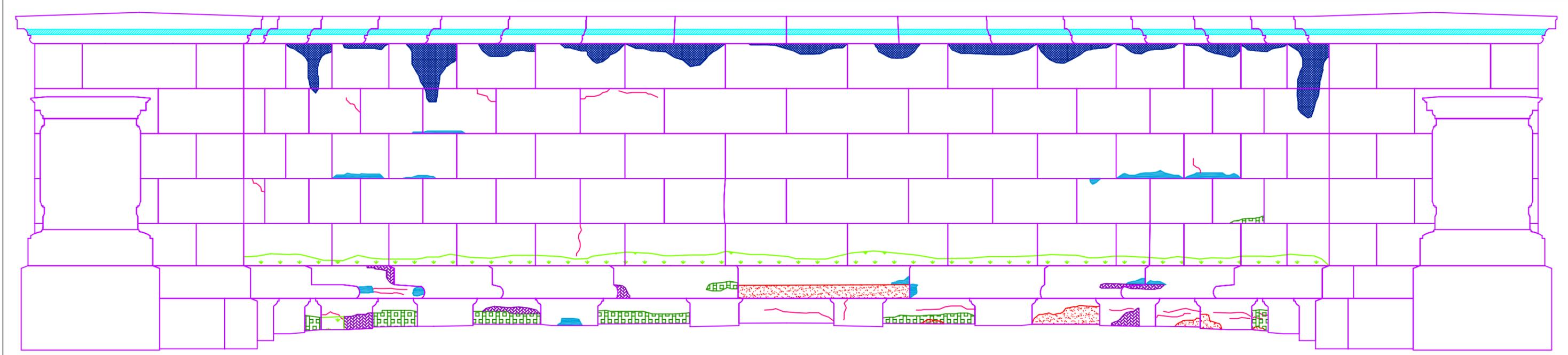
Surface Crust



N-I-C semi-circle

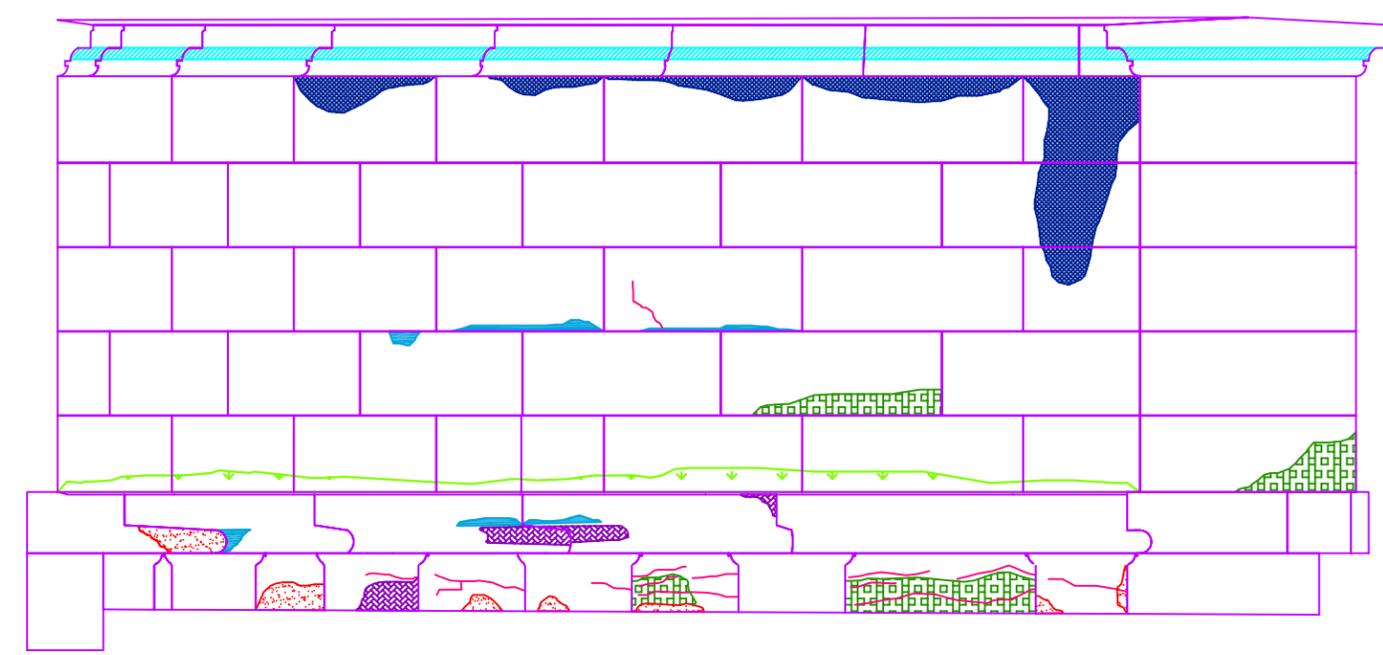
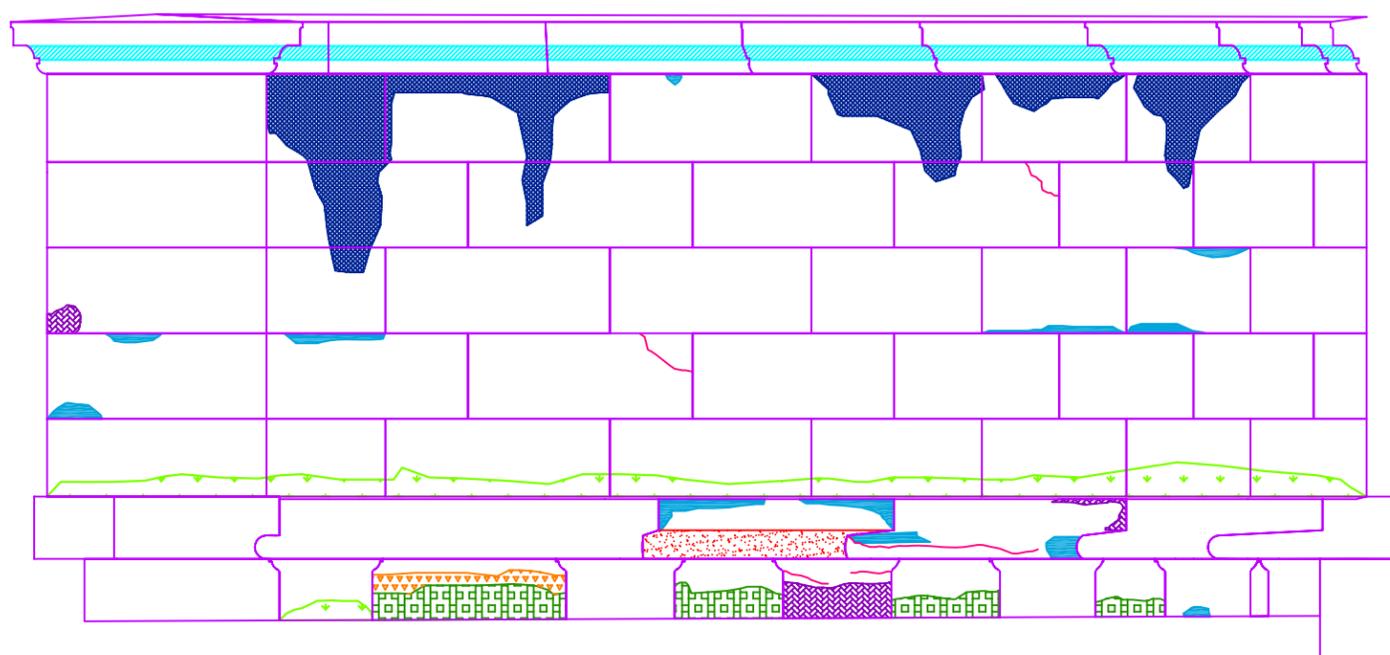
Conditions Key

- |   |            |   |               |   |                     |
|---|------------|---|---------------|---|---------------------|
|  | Blistering |  | Crumbling     |  | Inappropriate Patch |
|  | Chipping   |  | Delamination  |  | Rising Damp         |
|  | Cracking   |  | Efflorescence |  | Surface Crust       |



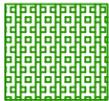
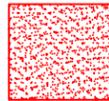
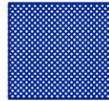
N-I-C west profile of semi-circle

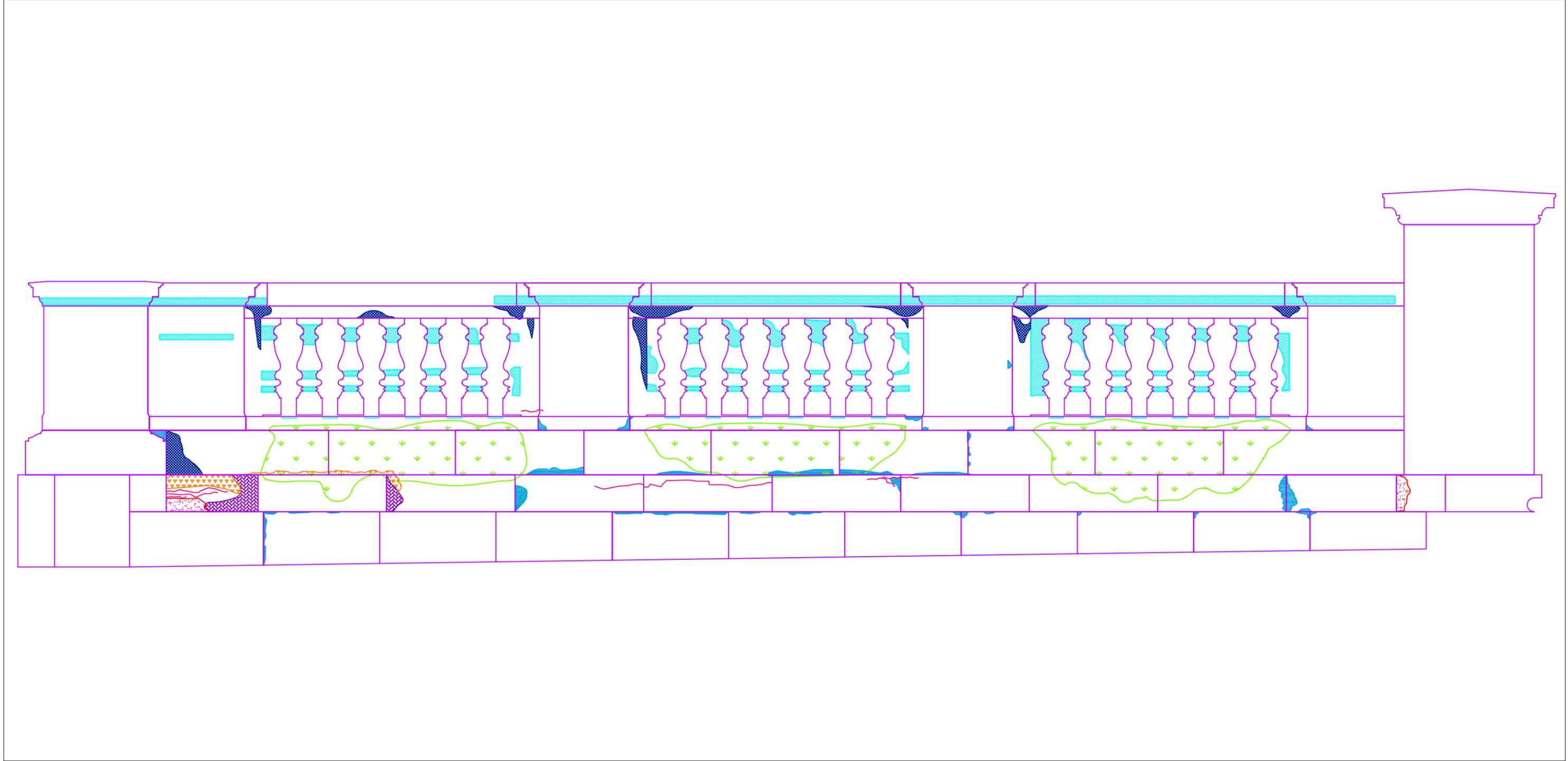
N-I-C east profile of semi-circle



N-I-W balustrade

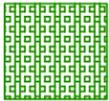
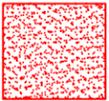
Conditions Key

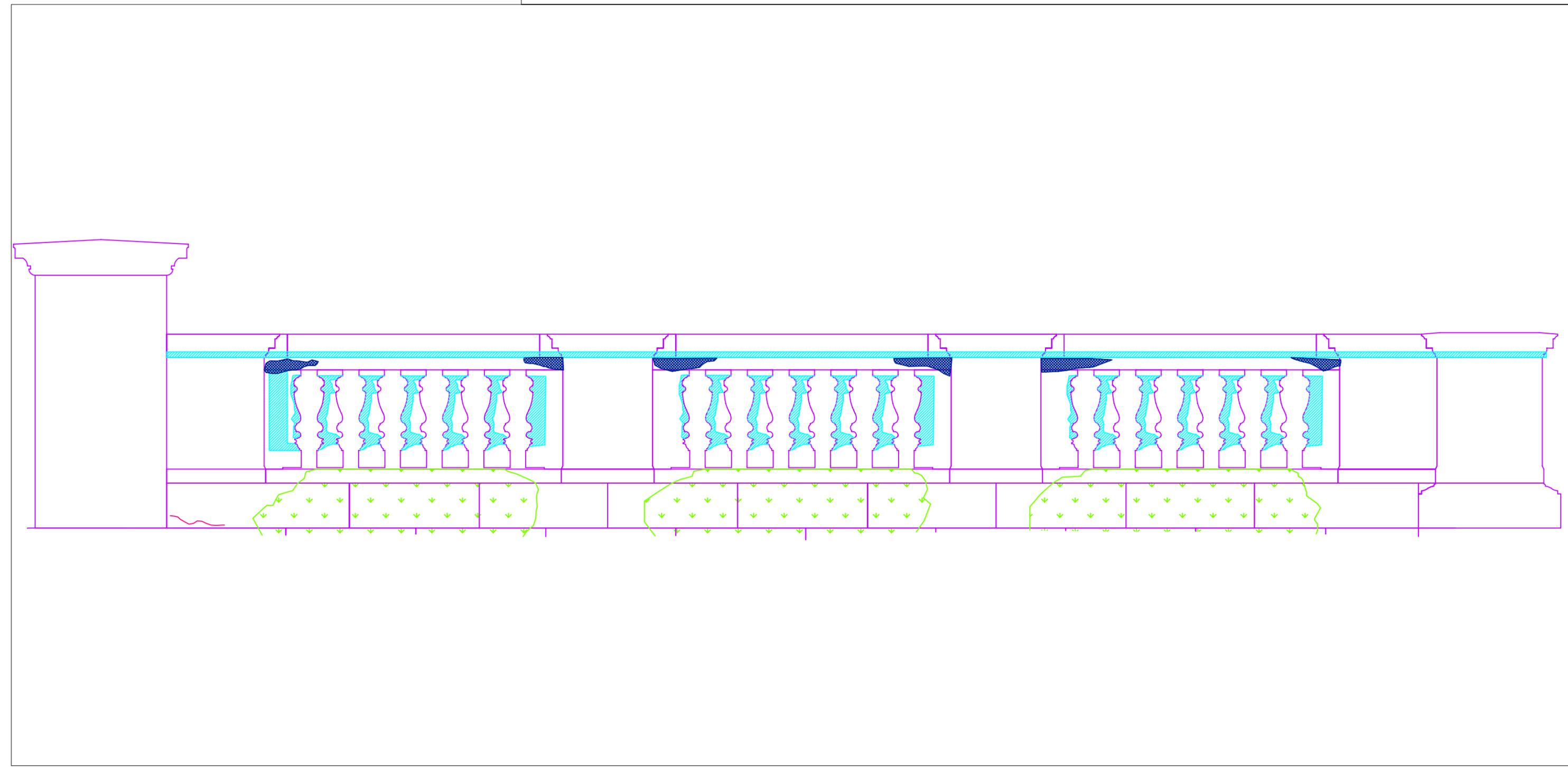
- |  |   |   |
|--|---|---|
|  Blistering |  Crumbling     |  Inappropriate Patch |
|  Chipping   |  Delamination  |  Rising Damp         |
|  Cracking   |  Efflorescence |  Surface Crust       |



S-X-E balustrade

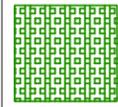
Conditions Key

	Blistering		Crumbling		Inappropriate Patch
	Chipping		Delamination		Rising Damp
	Cracking		Efflorescence		Surface Crust



S-X-C semi-circle

Conditions Key



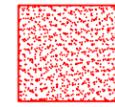
Blistering



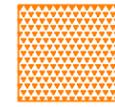
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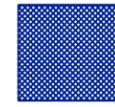
Cracking



Crumbling



Delamination



Efflorescence



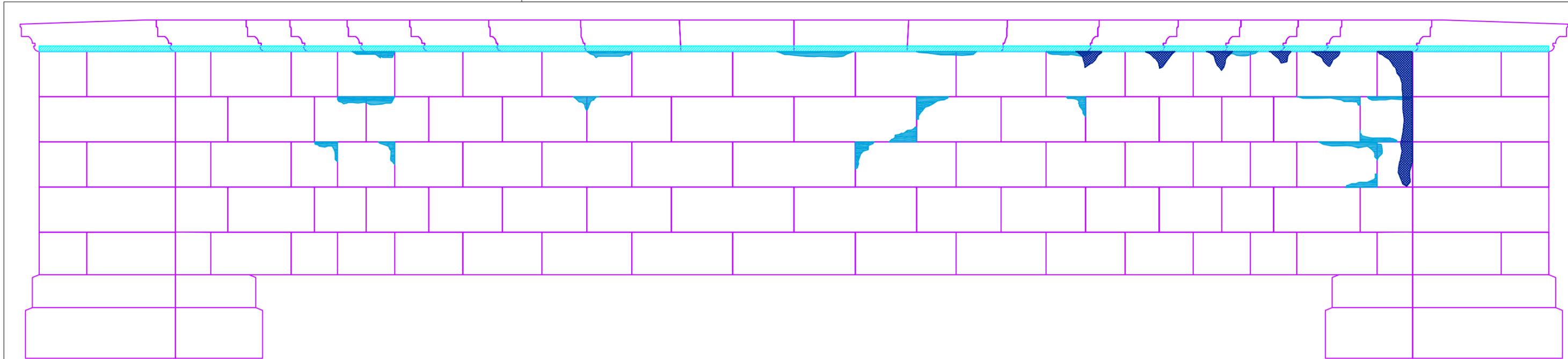
Inappropriate Patch



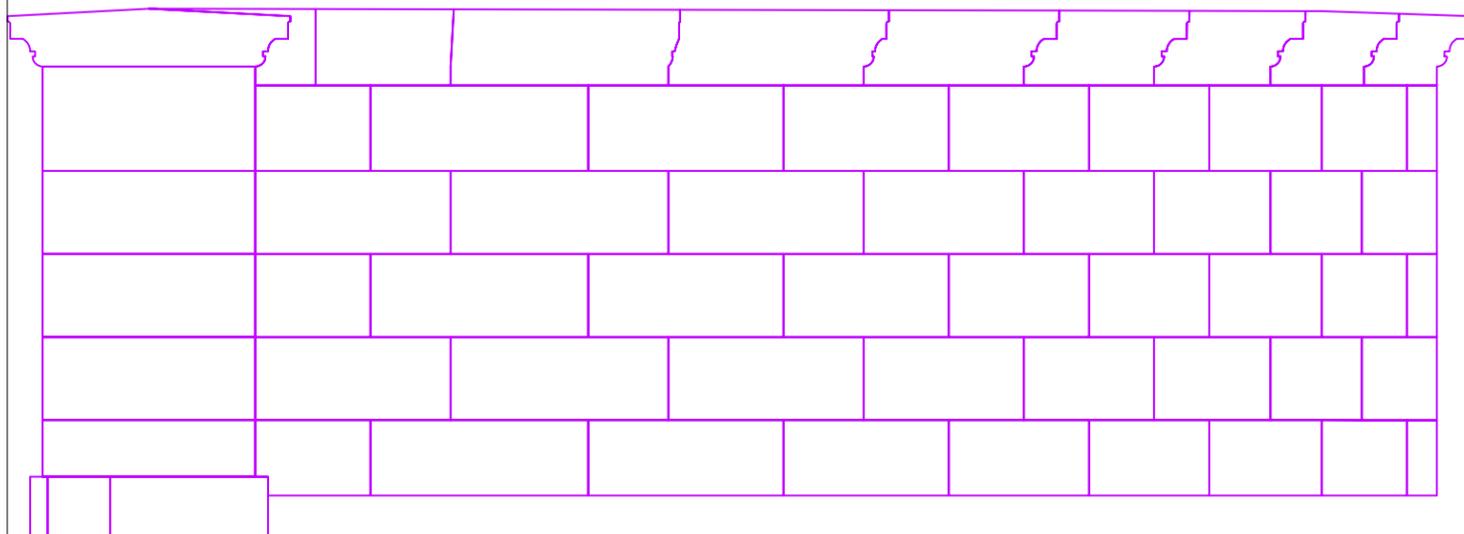
Rising Damp



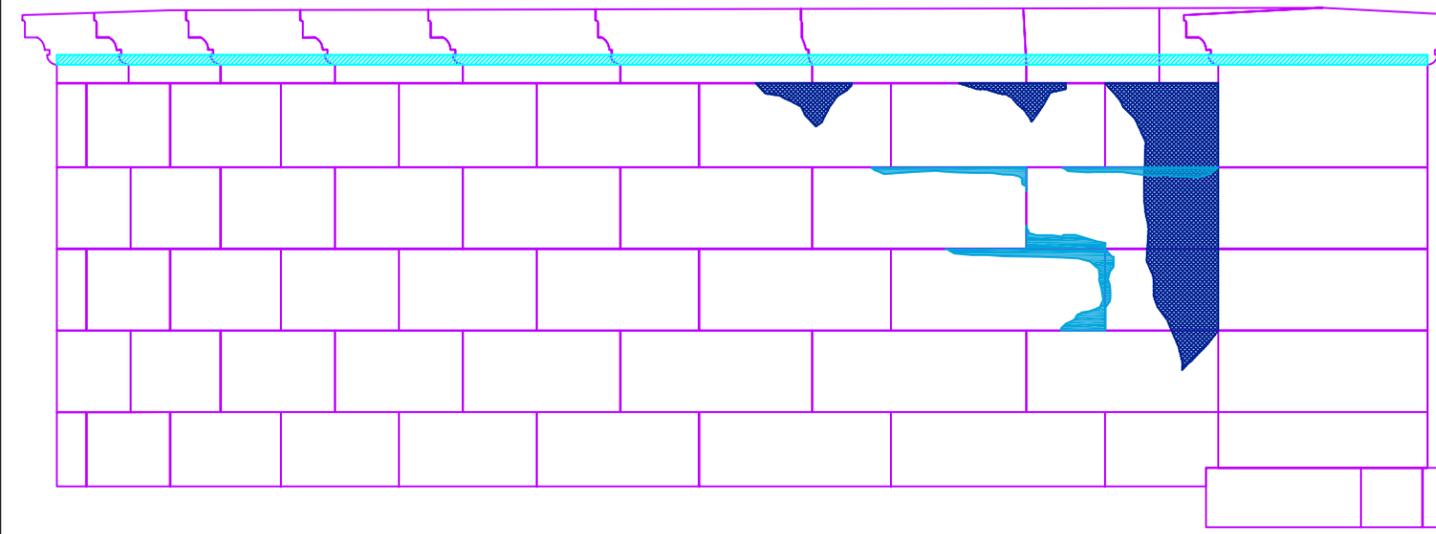
Surface Crust



S-X-C west elevation of semi-circle

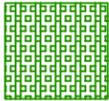


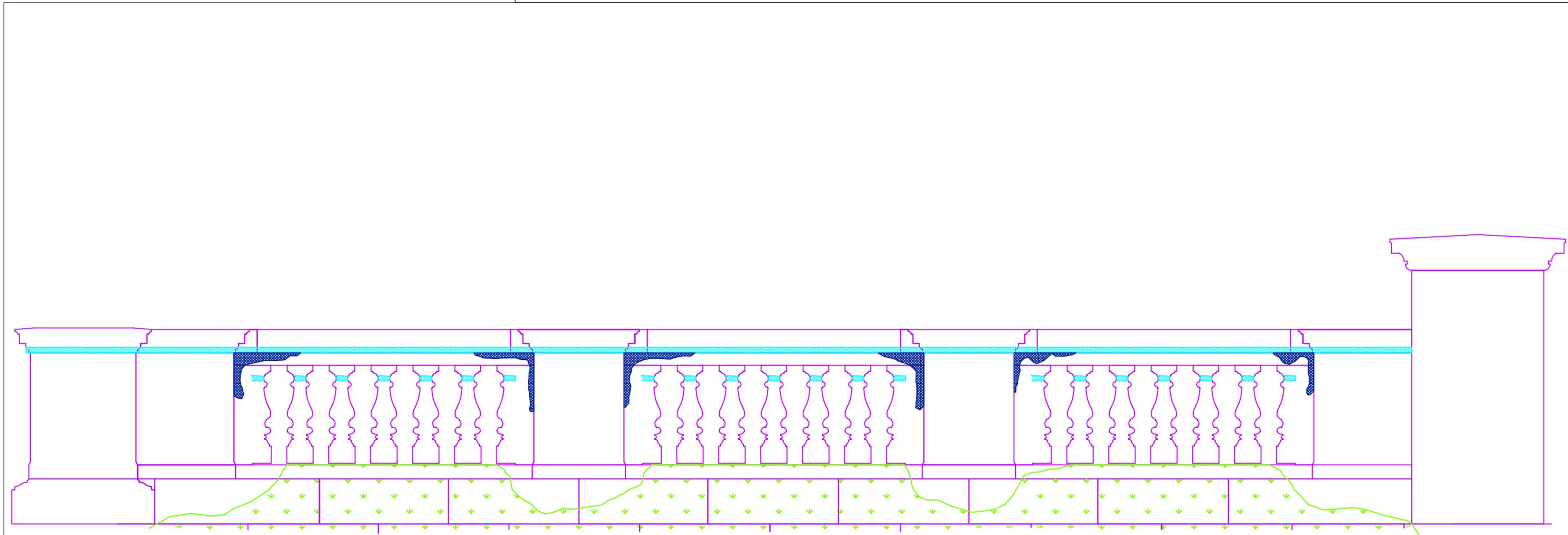
S-X-C east elevation of semi-circle



S-X-W balustrade

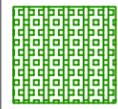
Conditions Key

	Blistering		Crumbling		Inappropriate Patch
	Chipping		Delamination		Rising Damp
	Cracking		Efflorescence		Surface Crust



S-I-E balustrade

Conditions Key



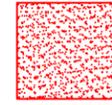
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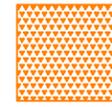
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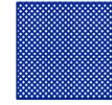
Cracking



Crumbling



Delamination



Efflorescence



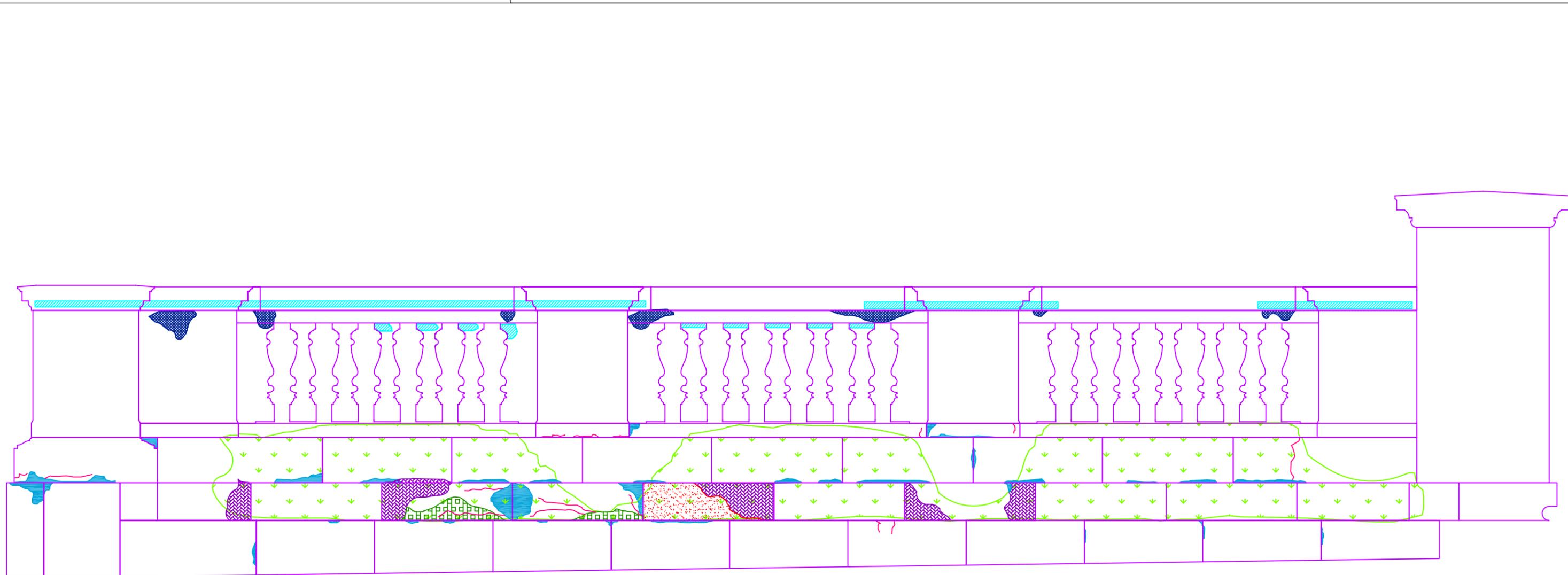
Inappropriate Patch



Rising Damp

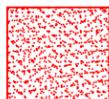
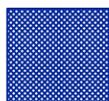


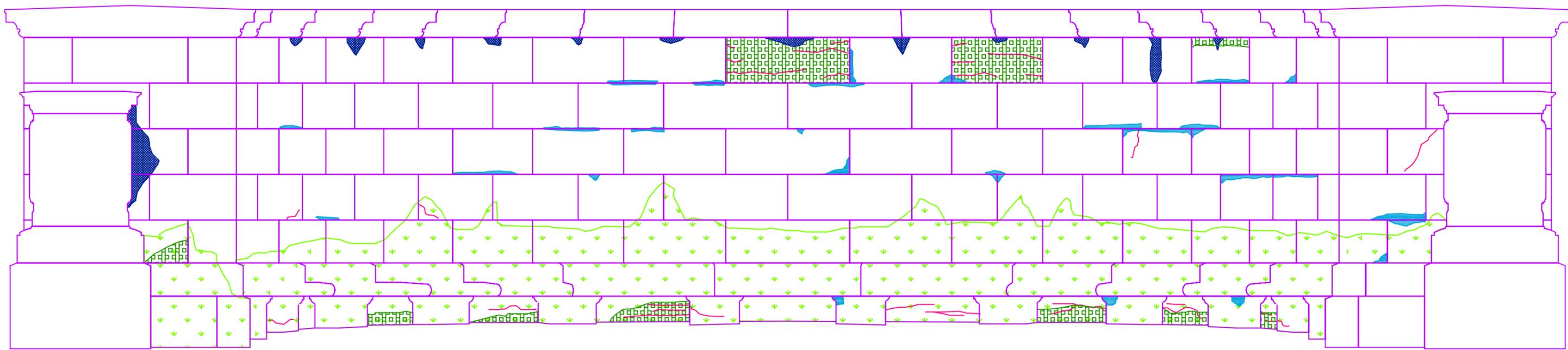
Surface Crust



S-I-C semi-circle

Conditions Key

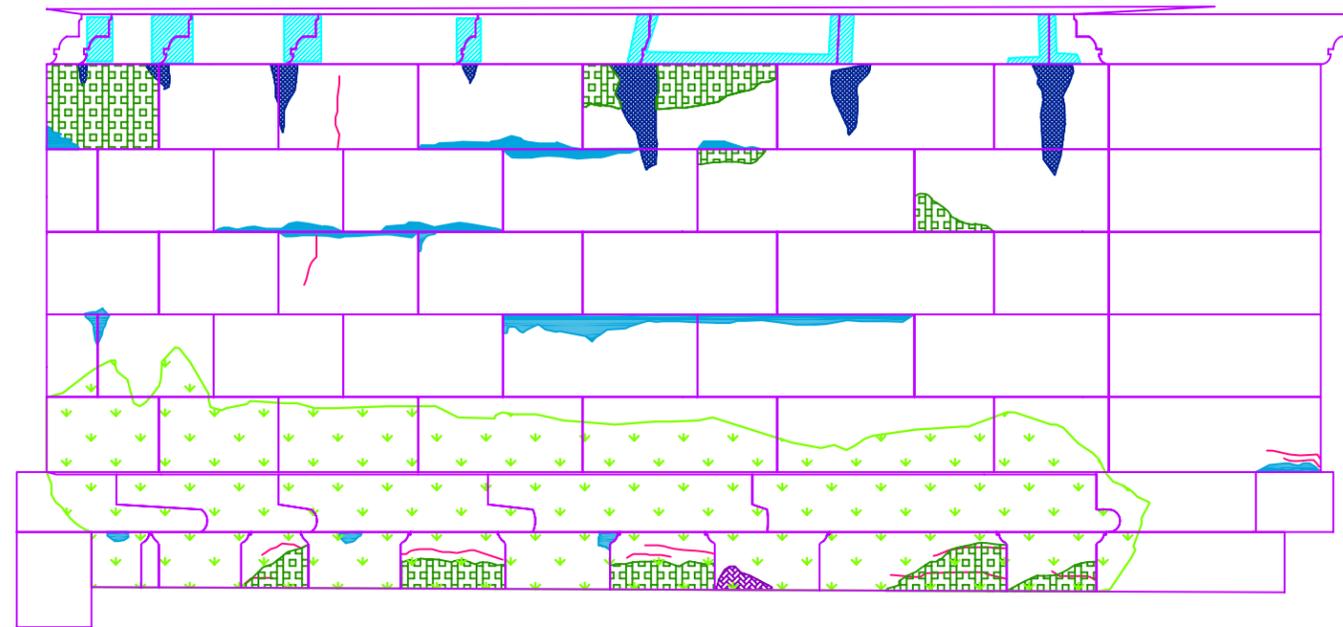
 Blistering	 Crumbling	 Inappropriate Patch
 Chipping	 Delamination	 Rising Damp
 Cracking	 Efflorescence	 Surface Crust



S-I-C east profile of semi-circle

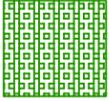
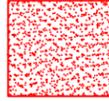


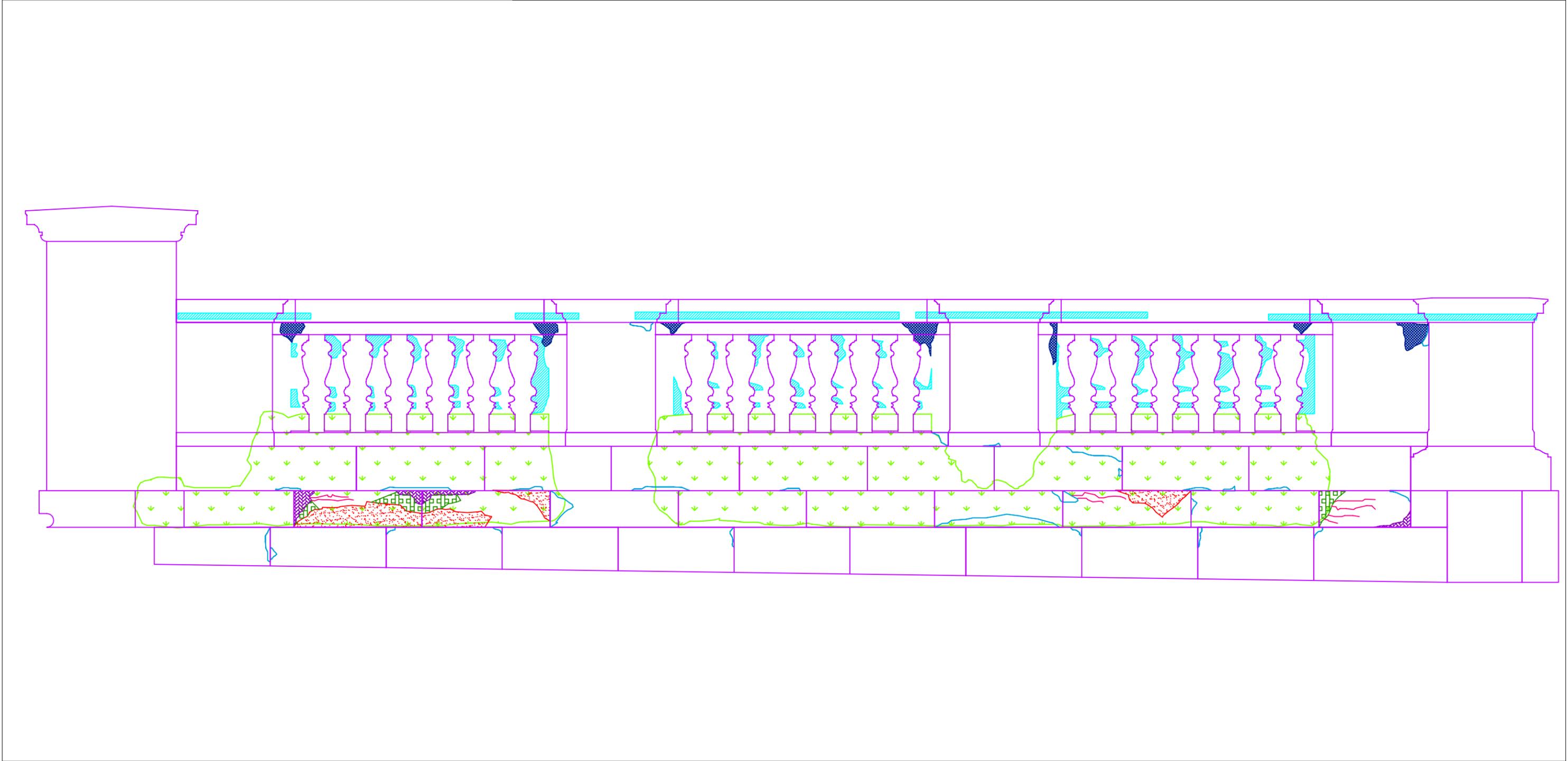
S-I-C west profile of semi-circle



S-I-W balustrade

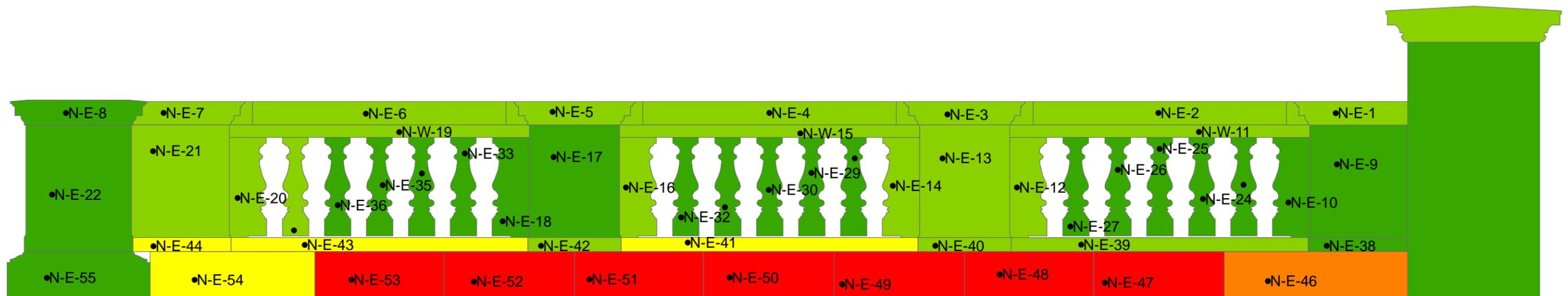
Conditions Key

	Blistering		Crumbling		Inappropriate Patch
	Chipping		Delamination		Rising Damp
	Cracking		Efflorescence		Surface Crust



## Appendix B Conditions Rating Drawings

1. **N-X-E** (North Niche-Exterior View-East Section)
2. **N-X-C** (North Niche-Exterior View-Central Section)
3. **N-X-W** (North Niche-Exterior View-West Section)
4. **N-I-E** (North Niche- Interior View-East Section)
5. **N-I-C** (North Niche- Interior View-Central Section)
6. **N-I-W** (North Niche- Interior View-West Section)
7. **S-X-E** (South Niche-Exterior View-East Section)
8. **S-X-C** (South Niche-Exterior View-Central Section)
9. **S-X-W** (South Niche-Exterior View-West Section)
10. **S-I-E** (South Niche-Interior View-East Section)
11. **S-I-C** (South Niche-Interior View-Central Section)
12. **S-I-W** (South Niche-Interior View-Wast Section)



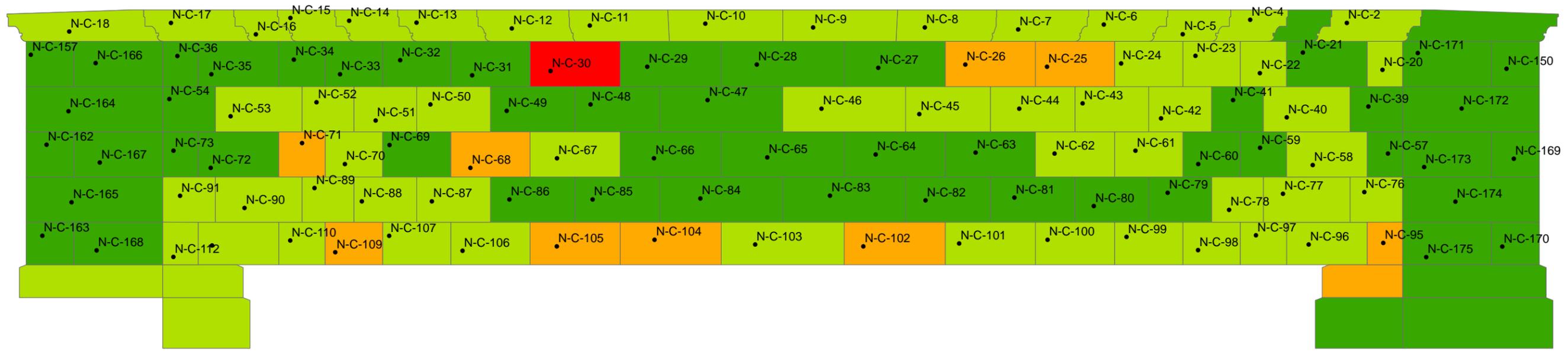
### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

## Ellen Phillips Samuel Memorial

North East Exterior Balustrade  
Overall Conditions Ratings

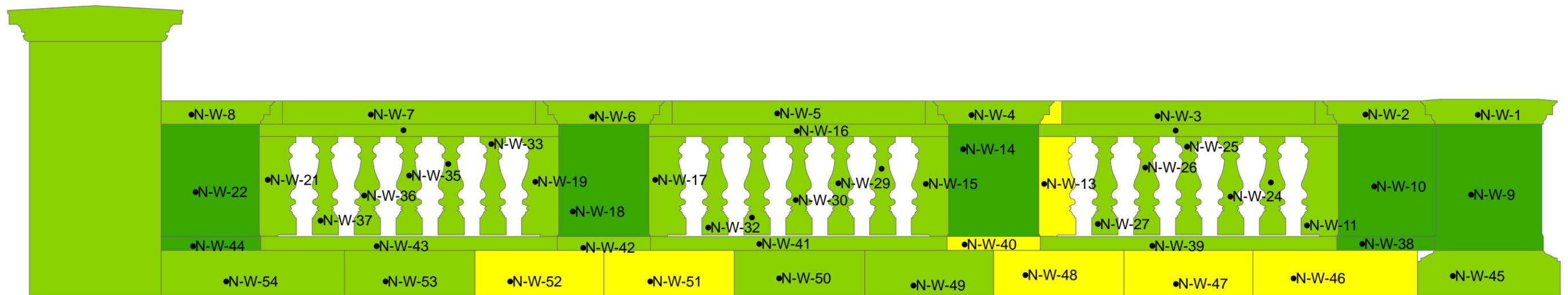


**Legend**

**Overall Conditions Ratings**

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 North Exterior Semi-circle  
 Overall Conditions Ratings

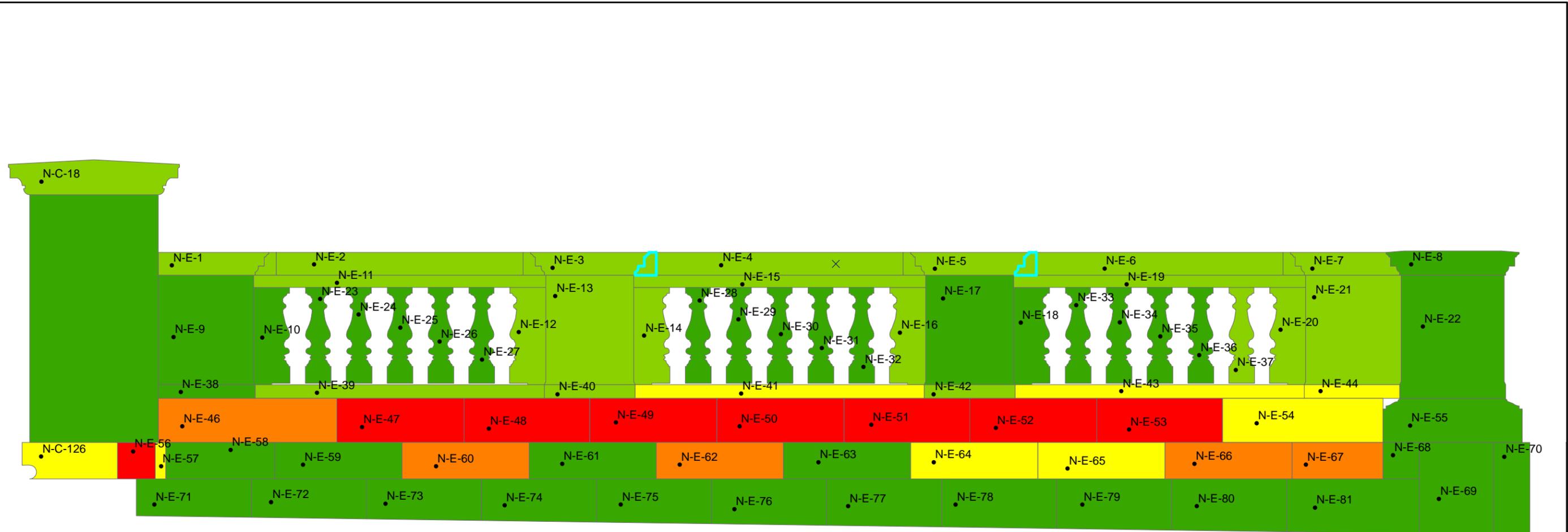


## Legend

### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 North West Exterior Balustrade  
 Overall Conditions Ratings

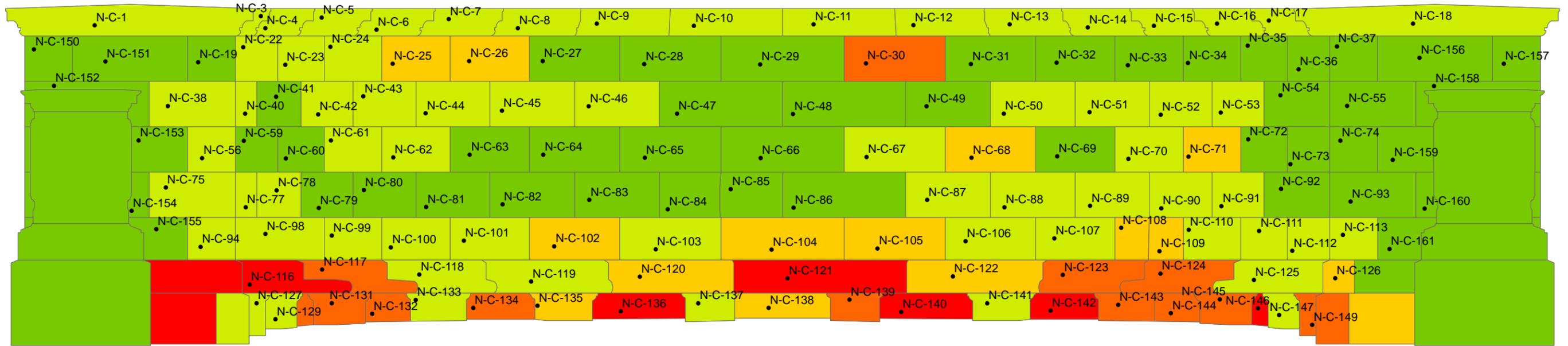


**Legend**

**Overall Conditions Ratings**

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 North East Interior Balustrade  
 Overall Conditions Ratings



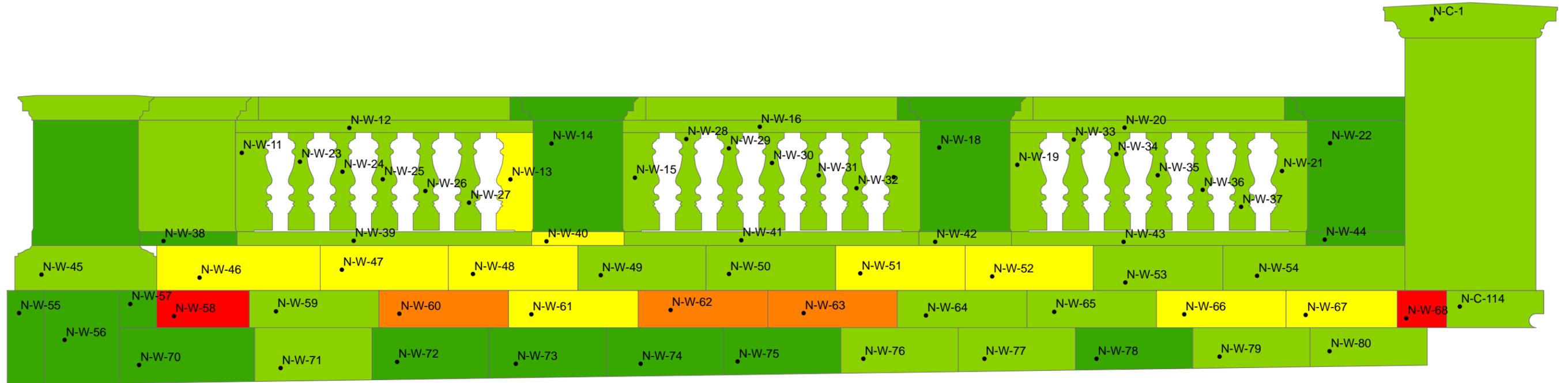
### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

## Ellen Phillips Samuel Memorial

North Interior Semi-circle  
Overall Conditions Ratings

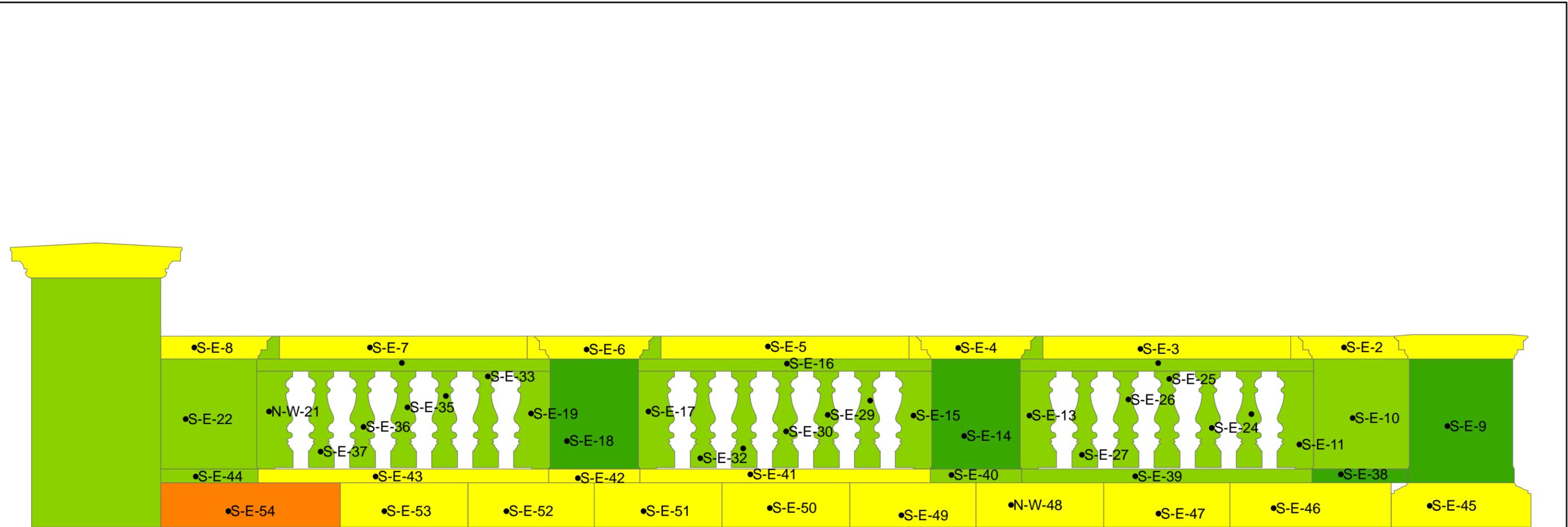


### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 North West Interior Balustrade  
 Overall Conditions Ratings



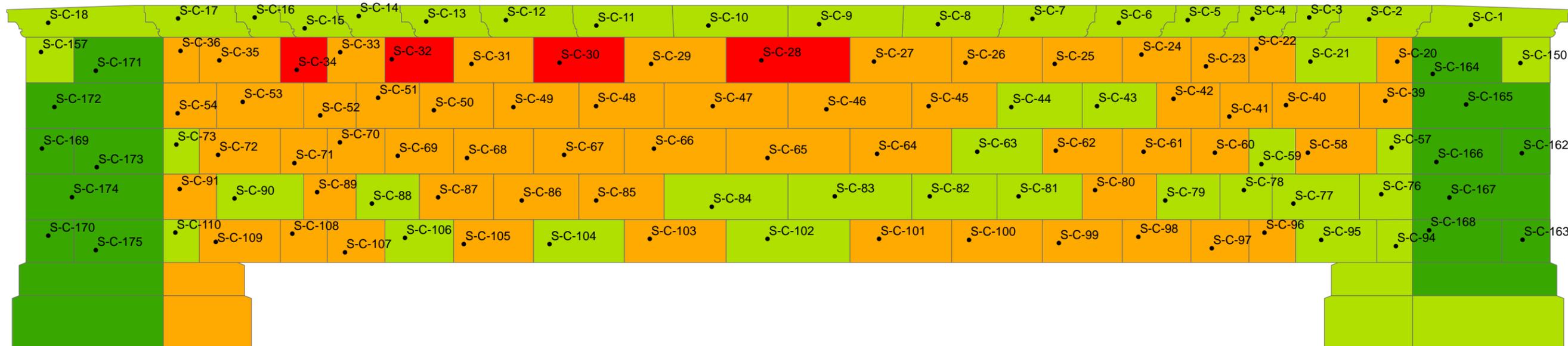
### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

## Ellen Phillips Samuel Memorial

South East Exterior Balustrade  
Overall Conditions Ratings



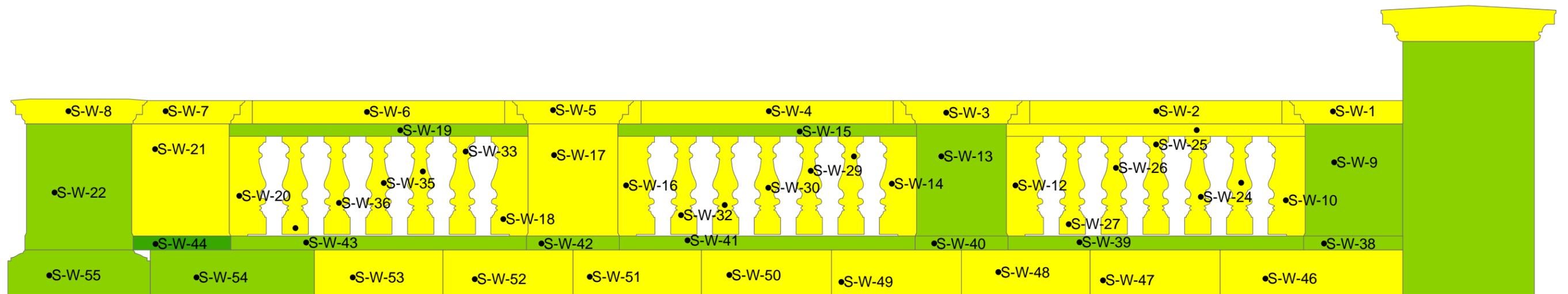
**Legend**

**Overall Conditions Ratings**

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

# Ellen Phillips Samuel Memorial

South Exterior Semi-circle  
Overall Conditions Ratings

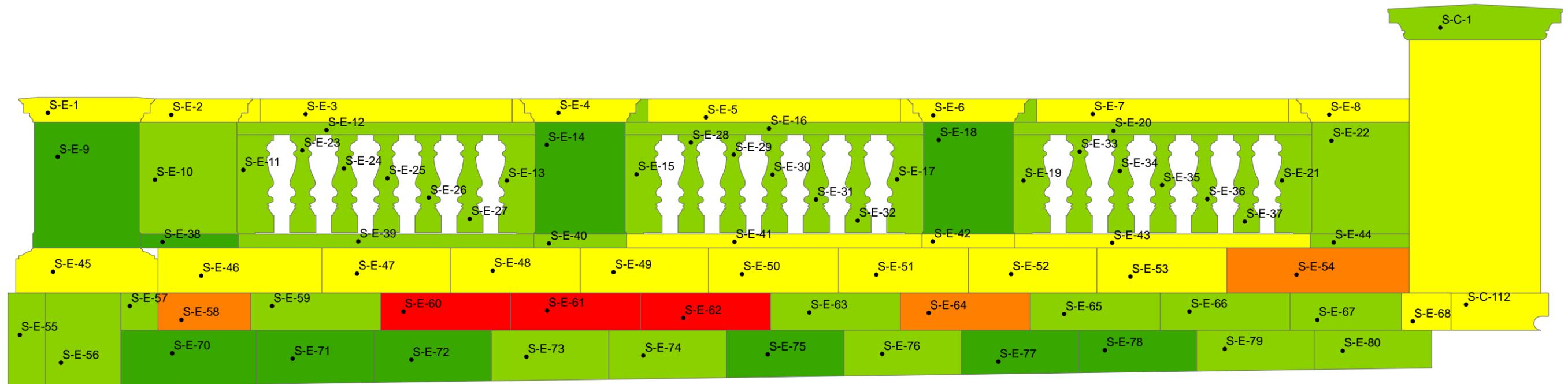


**Legend**

**Overall Conditions Ratings**

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 South West Exterior Balustrade  
 Overall Conditions Ratings



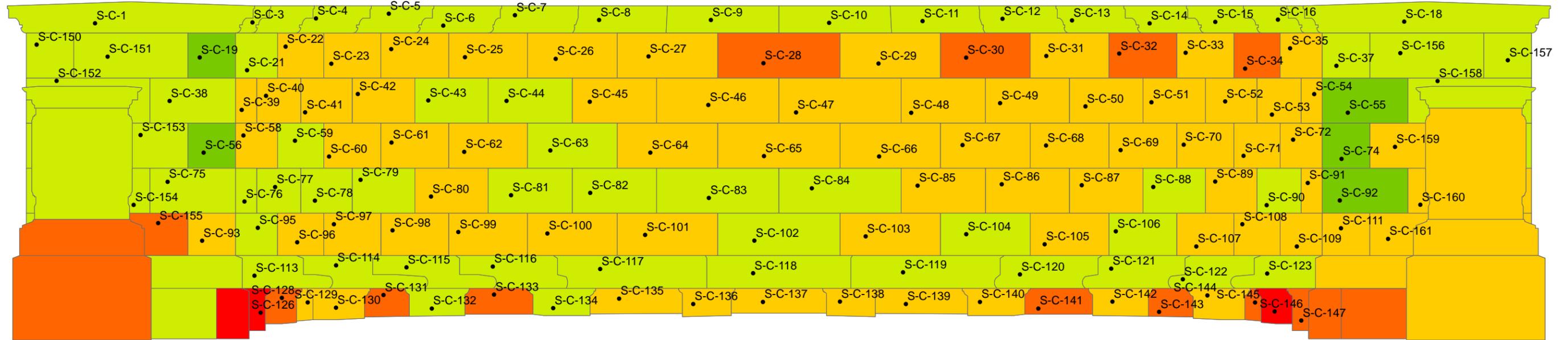
### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

## Ellen Phillips Samuel Memorial

South East Interior Balustrade  
Overall Conditions Ratings

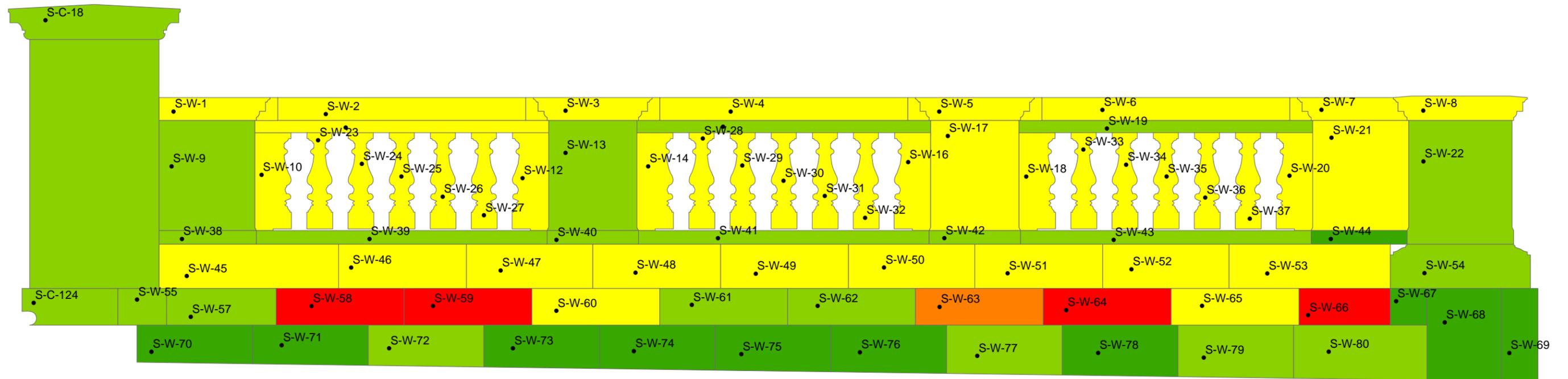


## Legend

### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

**Ellen Phillips Samuel Memorial**  
 South Interior Semi-circle  
 Overall Conditions Ratings



### Legend

#### Overall Conditions Ratings

- 1 - very good
- 2 - good
- 3 - fair
- 4 - poor
- 5 - very poor

# Ellen Phillips Samuel Memorial

South West Interior Balustrade  
Overall Conditions Ratings

**Appendix C**  
**SURVEY SPREADSHEET**

MARKER ID	DESCRIPTION	CURRENT CONDITIONS	CONDITION RATING	NOTES	TREATMENT	
1	N-C-1	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
2	N-C-2	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
3	N-C-3	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
4	N-C-4	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
5	N-C-5	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
6	N-C-6	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
7	N-C-7	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
8	N-C-8	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
9	N-C-9	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
10	N-C-10	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
11	N-C-11	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
12	N-C-12	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
13	N-C-13	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
14	N-C-14	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
15	N-C-15	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
16	N-C-16	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
17	N-C-17	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
18	N-C-18	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
19	N-C-19	end panel	bio-growth	1 - very good		Clean, Re-point
20	N-C-20	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
21	N-C-21	wall block	efflorescence	1 - very good		Clean, Re-point
22	N-C-22	wall block	chipping, efflorescence	2 - good		Clean, Re-point
23	N-C-23	wall block	efflorescence	2 - good		Clean, Re-point
24	N-C-24	wall block	efflorescence, bio-growth, chipping	2 - good		Clean, Re-point
25	N-C-25	wall block	efflorescence, chipping	3 - fair		Clean, Re-point, Patch
26	N-C-26	wall block	efflorescence, chipping, cracking	3 - fair		Clean, Re-point, Fill Crack, Patch
27	N-C-27	wall block	efflorescence, cracking	1 - very good	holes from metal anchors	Clean, Re-point, Fill Crack
28	N-C-28	wall block	efflorescence	1 - very good		Clean, Re-point
29	N-C-29	wall block	efflorescence	1 - very good		Clean, Re-point
30	N-C-30	wall block	efflorescence, chipping, cracking	4 - poor		Clean, Re-point, Patch, Fill Crack
31	N-C-31	wall block	efflorescence	1 - very good		Clean, Re-point

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32	<b>N-C-32</b>	wall block	efflorescence	1 - very good	Clean, Re-point
33	<b>N-C-33</b>	wall block	efflorescence	1 - very good	Clean, Re-point
34	<b>N-C-34</b>	wall block	efflorescence	1 - very good	Clean, Re-point
35	<b>N-C-35</b>	wall block	efflorescence	1 - very good	Clean, Re-point
36	<b>N-C-36</b>	wall block	efflorescence	1 - very good	Clean, Re-point
37	<b>N-C-37</b>	end panel	none	1 - very good	Clean, Re-point
38	<b>N-C-38</b>	end panel	chipping, efflorescence	2 - good	Clean, Re-point
39	<b>N-C-39</b>	wall block	efflorescence	1 - very good	Clean, Re-point
40	<b>N-C-40</b>	wall block	cracking	2 - good	Clean, Re-point, Fill Crack
41	<b>N-C-41</b>	wall block	none	1 - very good	Clean, Re-point
42	<b>N-C-42</b>	wall block	chipping	2 - good	Clean, Re-point
43	<b>N-C-43</b>	wall block	efflorescence, chipping	2 - good	Clean, Re-point
44	<b>N-C-44</b>	wall block	chipping, efflorescence	2 - good	Clean, Re-point
45	<b>N-C-45</b>	wall block	chipping, cracking	2 - good	Clean, Re-point, Fill Crack
46	<b>N-C-46</b>	wall block	chipping	2 - good	Clean, Re-point
47	<b>N-C-47</b>	wall block	none	1 - very good	Clean, Re-point
48	<b>N-C-48</b>	wall block	none	1 - very good	Clean, Re-point
49	<b>N-C-49</b>	wall block	none	1 - very good	Clean, Re-point
50	<b>N-C-50</b>	wall block	chipping, cracking	2 - good	Clean, Re-point, Fill Crack
51	<b>N-C-51</b>	wall block	chipping, cracking	2 - good	Clean, Re-point, Fill Crack
52	<b>N-C-52</b>	wall block	blistering	2 - good	Clean, Re-point, Fill Crack
53	<b>N-C-53</b>	wall block	efflorescence, blistering	2 - good	Clean, Re-point, Fill Crack
54	<b>N-C-54</b>	wall block	efflorescence	1 - very good	Clean, Re-point
55	<b>N-C-55</b>	end panel	none	1 - very good	Clean, Re-point
56	<b>N-C-56</b>	end panel	inadequate patch	2 - good	Clean, Re-point, Patch
57	<b>N-C-57</b>	wall block	efflorescence	1 - very good	Clean, Re-point
58	<b>N-C-58</b>	wall block	inadequate patch, chipping	2 - good	Clean, Re-point, Patch
59	<b>N-C-59</b>	wall block	none	1 - very good	Clean, Re-point
60	<b>N-C-60</b>	wall block	none	1 - very good	Clean, Re-point

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61	<b>N-C-61</b>	wall block	chipping	2 - good		Clean, Re-point
62	<b>N-C-62</b>	wall block	chipping	2 - good		Clean, Re-point
63	<b>N-C-63</b>	wall block	none	1 - very good		Clean, Re-point
64	<b>N-C-64</b>	wall block	none	1 - very good		Clean, Re-point
65	<b>N-C-65</b>	wall block	none	1 - very good		Clean, Re-point
66	<b>N-C-66</b>	wall block	none	1 - very good		Clean, Re-point
67	<b>N-C-67</b>	wall block	chipping	2 - good		Clean, Re-point
68	<b>N-C-68</b>	wall block	chipping, cracking, crumbling	3 - fair		Clean, Re-point, Fill Crack, Patch
69	<b>N-C-69</b>	wall block	none	1 - very good		Clean, Re-point
70	<b>N-C-70</b>	wall block	chipping	2 - good		Clean, Re-point
71	<b>N-C-71</b>	wall block	chipping, cracking, blistering	3 - fair		Clean, Re-point, Fill Crack, Patch
72	<b>N-C-72</b>	wall block	none	1 - very good		Clean, Re-point
73	<b>N-C-73</b>	wall block	none	1 - very good		Clean, Re-point
74	<b>N-C-74</b>	end panel	none	1 - very good		Clean, Re-point
75	<b>N-C-75</b>	end panel	blistering	2 - good		Clean, Re-point, Fill Crack
76	<b>N-C-76</b>	wall block	blistering	2 - good		Clean, Re-point, Fill Crack
77	<b>N-C-77</b>	wall block	chipping	2 - good		Clean, Re-point, Patch
78	<b>N-C-78</b>	wall block	blistering	2 - good		Clean, Re-point, Fill Crack
79	<b>N-C-79</b>	wall block	none	1 - very good		Clean, Re-point
80	<b>N-C-80</b>	wall block	none	1 - very good		Clean, Re-point
81	<b>N-C-81</b>	wall block	none	1 - very good		Clean, Re-point
82	<b>N-C-82</b>	wall block	chipping	1 - very good		Clean, Re-point
83	<b>N-C-83</b>	wall block	none	1 - very good		Clean, Re-point
84	<b>N-C-84</b>	wall block	none	1 - very good		Clean, Re-point
85	<b>N-C-85</b>	wall block	none	1 - very good		Clean, Re-point
86	<b>N-C-86</b>	wall block	none	1 - very good		Clean, Re-point
87	<b>N-C-87</b>	wall block	chipping	2 - good		Clean, Re-point
88	<b>N-C-88</b>	wall block	chipping	2 - good		Clean, Re-point
89	<b>N-C-89</b>	wall block	chipping	2 - good		Clean, Re-point
90	<b>N-C-90</b>	wall block	chipping	2 - good		Clean, Re-point

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91	<b>N-C-91</b>	wall block	blistering	2 - good		Clean, Re-point, Fill Crack
92	<b>N-C-92</b>	wall block	chipping	1 - very good		Clean, Re-point
93	<b>N-C-93</b>	end panel	none	1 - very good		Clean, Re-point
94	<b>N-C-94</b>	end panel	chipping	2 - good		Clean, Re-point
95	<b>N-C-95</b>	wall block	rising damp, chipping	3 - fair		Clean, Re-point, Patch
96	<b>N-C-96</b>	wall block	rising damp	2 - good		Clean, Re-point
97	<b>N-C-97</b>	wall block	rising damp	2 - good		Clean, Re-point
98	<b>N-C-98</b>	wall block	rising damp	2 - good		Clean, Re-point
99	<b>N-C-99</b>	wall block	chipping, rising damp	2 - good		Clean, Re-point
100	<b>N-C-100</b>	wall block	rising damp	2 - good		Clean, Re-point
101	<b>N-C-101</b>	wall block	chipping, rising damp	2 - good		Clean, Re-point
102	<b>N-C-102</b>	wall block	rising damp, cracking	3 - fair		Clean, Re-point, Fill Crack
103	<b>N-C-103</b>	wall block	rising damp	2 - good		Clean, Re-point
104	<b>N-C-104</b>	wall block	chipping, rising damp	3 - fair		Clean, Re-point, Patch
105	<b>N-C-105</b>	wall block	chipping, rising damp	3 - fair		Clean, Re-point, Patch
106	<b>N-C-106</b>	wall block	rising damp	2 - good		Clean, Re-point
107	<b>N-C-107</b>	wall block	rising damp	2 - good		Clean, Re-point
108	<b>N-C-108</b>	wall block	rising damp	3 - fair	incised graffiti	Clean, Re-point
109	<b>N-C-109</b>	wall block	rising damp	3 - fair	incised graffiti	Clean, Re-point
110	<b>N-C-110</b>	wall block	chipping, rising damp	2 - good		Clean, Re-point
111	<b>N-C-111</b>	wall block	rising damp	2 - good		Clean, Re-point
112	<b>N-C-112</b>	wall block	chipping	2 - good		Clean, Re-point
113	<b>N-C-113</b>	end panel	rising damp	2 - good		Clean, Re-point
114	<b>N-C-114</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
115	<b>N-C-115</b>	bench	bio-growth	2 - good	very soiled	Clean, Re-point
116	<b>N-C-116</b>	bench	chipping, cracking, crumbling, bio-growth	5 - very poor	very soiled	Replace
117	<b>N-C-117</b>	bench	chipping, cracking, inadequate patch, bio-growth	4 - poor	very soiled	Clean, Re-point, Patch, Fill Crack
118	<b>N-C-118</b>	bench	bio-growth	2 - good	very soiled	Clean, Re-point
119	<b>N-C-119</b>	bench	bio-growth	2 - good	very soiled	Clean, Re-point
120	<b>N-C-120</b>	bench	blistering, inadequate patch, bio-growth	3 - fair	very soiled	Clean, Re-point, Patch

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121	<b>N-C-121</b>	bench	chipping, crumbling, bio-growth	5 - very poor	very soiled	Replace
122	<b>N-C-122</b>	bench	cracking, bio-growth	3 - fair	very soiled	Clean, Re-point, Fill Crack
123	<b>N-C-123</b>	bench	chipping, inadequate patch, bio-growth	4 - poor	very soiled	Clean, Re-point, Patch
124	<b>N-C-124</b>	bench	chipping, inadequate patch, bio-growth	4 - poor	very soiled	Clean, Re-point, Patch
125	<b>N-C-125</b>	bench	chipping, bio-growth	2 - good	very soiled	Clean, Re-point
126	<b>N-C-126</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
127	<b>N-C-127</b>	bench	rising damp, bio-growth	2 - good		Clean, Re-point
128	<b>N-C-128</b>	wall block	blistering, crumbling, rising damp, bio-growth	4 - poor		Replace
129	<b>N-C-129</b>	bench	rising damp, bio-growth	2 - good		Clean, Re-point
130	<b>N-C-130</b>	wall block	blistering, rising damp, bio-growth	4 - poor		Replace
131	<b>N-C-131</b>	bench	cracking, rising damp, inadequate patch, bio-growth	4 - poor		Replace
132	<b>N-C-132</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor		Clean, Re-point, Fill Crack, Patch
133	<b>N-C-133</b>	bench	chipping, rising damp	2 - good		Clean, Re-point
134	<b>N-C-134</b>	wall block	blistering, chipping, rising damp, inadequate patch, bio-growth	4 - poor		Replace
135	<b>N-C-135</b>	bench	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
136	<b>N-C-136</b>	wall block	blistering, cracking, crumbling, rising damp, bio-growth	5 - very poor		Replace
137	<b>N-C-137</b>	bench	rising damp, bio-growth	2 - good		Clean, Re-point
138	<b>N-C-138</b>	wall block	cracking, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack
139	<b>N-C-139</b>	bench	chipping, cracking, rising damp, bio-growth	4 - poor		Replace
140	<b>N-C-140</b>	wall block	blistering, cracking, crumbling, rising damp, bio-growth	5 - very poor		Replace
141	<b>N-C-141</b>	bench	rising damp, bio-growth	2 - good		Clean, Re-point
142	<b>N-C-142</b>	wall block	blistering, crumbling, rising damp, bio-growth	5 - very poor		Replace
143	<b>N-C-143</b>	bench	blistering, cracking, inadequate patch, bio-growth	4 - poor		Replace
144	<b>N-C-144</b>	wall block	blistering, cracking, crumbling, rising damp, bio-growth	4 - poor		Replace

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145	<b>N-C-145</b>	bench	blistering, cracking, crumbling, bio-growth	4 - poor		Replace
146	<b>N-C-146</b>	wall block	blistering, cracking, crumbling, rising damp, bio-growth	5 - very poor		Replace
147	<b>N-C-147</b>	bench	rising damp, bio-growth	2 - good		Clean, Re-point
148	<b>N-C-148</b>	wall block	blistering, cracking, crumbling, rising damp, bio-growth	4 - poor		Replace
149	<b>N-C-149</b>	bench	chipping, cracking, crumbling, rising damp, surface crust/surface induration, bio-growth	4 - poor		Replace
150	<b>N-C-150</b>	wall block	bio-growth	1 - very good		Clean, Re-point
151	<b>N-C-151</b>	wall block	bio-growth	1 - very good		Clean, Re-point
152	<b>N-C-152</b>	wall block	bio-growth	1 - very good		Clean, Re-point
153	<b>N-C-153</b>	wall block	bio-growth	1 - very good		Clean, Re-point
154	<b>N-C-154</b>	wall block	bio-growth	1 - very good		Clean, Re-point
155	<b>N-C-155</b>	wall block	bio-growth	1 - very good		Clean, Re-point
156	<b>N-C-156</b>	wall block	bio-growth	1 - very good		Clean, Re-point
157	<b>N-C-157</b>	wall block	bio-growth	1 - very good		Clean, Re-point
158	<b>N-C-158</b>	wall block	bio-growth	1 - very good		Clean, Re-point
159	<b>N-C-159</b>	wall block	bio-growth	1 - very good		Clean, Re-point
160	<b>N-C-160</b>	wall block	bio-growth	1 - very good		Clean, Re-point
162	<b>N-C-162</b>	wall block	bio-growth	1 - very good		Clean, Re-point
163	<b>N-C-163</b>	wall block	none	1 - very good		Clean, Re-point
164	<b>N-C-164</b>	wall block	none	1 - very good		Clean, Re-point
165	<b>N-C-165</b>	wall block	none	1 - very good		Clean, Re-point
166	<b>N-C-166</b>	wall block	none	1 - very good		Clean, Re-point
167	<b>N-C-167</b>	wall block	none	1 - very good		Clean, Re-point
168	<b>N-C-168</b>	wall block	none	1 - very good		Clean, Re-point
169	<b>N-C-169</b>	wall block	none	1 - very good		Clean, Re-point
170	<b>N-C-170</b>	wall block	none	1 - very good		Clean, Re-point
171	<b>N-C-171</b>	wall block	none	1 - very good		Clean, Re-point
172	<b>N-C-172</b>	wall block	none	1 - very good		Clean, Re-point
173	<b>N-C-173</b>	wall block	none	1 - very good		Clean, Re-point
174	<b>N-C-174</b>	wall block	none	1 - very good		Clean, Re-point
175	<b>N-C-175</b>	wall block	none	1 - very good		Clean, Re-point
176	<b>N-E-1</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
177	<b>N-E-2</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point

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178	<b>N-E-3</b>	cap stone	surface crust/surface induration, bio-growth, efflorescence	2 - good		Clean, Re-point
179	<b>N-E-4</b>	cap stone	surface crust/surface induration, bio-growth, efflorescence	2 - good		Clean, Re-point
180	<b>N-E-5</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
181	<b>N-E-6</b>	cap stone	surface crust/surface induration, bio-growth, efflorescence	2 - good		Clean, Re-point
182	<b>N-E-7</b>	cap stone	surface crust/surface induration, bio-growth, efflorescence	2 - good		Clean, Re-point
183	<b>N-E-8</b>	cap stone	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
184	<b>N-E-9</b>	end panel	bio-growth	1 - very good		Clean, Re-point
185	<b>N-E-10</b>	wall block	surface crust/surface induration, bio-growth, efflorescence	1 - very good		Clean, Re-point
186	<b>N-E-11</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
187	<b>N-E-12</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	2 - good		Clean, Re-point
188	<b>N-E-13</b>	end panel	cracking	2 - good		Clean, Re-point, Fill Crack
189	<b>N-E-14</b>	wall block	chipping, surface crust/surface induration, efflorescence	2 - good		Clean, Re-point
190	<b>N-E-15</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
191	<b>N-E-16</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	2 - good		Clean, Re-point
192	<b>N-E-17</b>	end panel	chipping	1 - very good		Clean, Re-point
193	<b>N-E-18</b>	wall block	surface crust/surface induration, bio-growth, efflorescence	1 - very good		Clean, Re-point
194	<b>N-E-19</b>	wall block	cracking, efflorescence, bio-growth, surface crust/surface induration	2 - good		Clean, Re-point, Fill Crack
195	<b>N-E-20</b>	wall block	chipping, surface crust/surface induration, efflorescence, bio-growth	2 - good		Clean, Re-point
196	<b>N-E-21</b>	end panel	efflorescence, cracking, chipping, efflorescence	2 - good		Clean, Re-point, Fill Crack
197	<b>N-E-22</b>	end panel	none	1 - very good		Clean, Re-point
198	<b>N-E-23</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
199	<b>N-E-24</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point

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200	<b>N-E-25</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
201	<b>N-E-26</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
202	<b>N-E-27</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
203	<b>N-E-28</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
204	<b>N-E-29</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
205	<b>N-E-30</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
206	<b>N-E-31</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
207	<b>N-E-32</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
208	<b>N-E-33</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
209	<b>N-E-34</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
210	<b>N-E-35</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
211	<b>N-E-36</b>	baluster	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
212	<b>N-E-37</b>	baluster	surface crust/surface induration, bio-growth, cracking	2 - good		Clean, Re-point, Fill Crack
213	<b>N-E-38</b>	wall block	bio-growth	1 - very good		Clean, Re-point
214	<b>N-E-39</b>	wall block	rising damp, bio-growth, chipping	2 - good		Clean, Re-point
215	<b>N-E-40</b>	wall block	crumbling, bio-growth	2 - good		Clean, Re-point
216	<b>N-E-41</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
217	<b>N-E-42</b>	wall block	chipping	2 - good		Clean, Re-point
218	<b>N-E-43</b>	wall block	bio-growth, chipping, cracking	3 - fair		Clean, Re-point, Fill Crack, Patch
219	<b>N-E-44</b>	wall block	chipping, cracking	3 - fair		Clean, Re-point, Fill Crack, Patch
220	<b>N-E-45</b>		none			none
221	<b>N-E-46</b>	wall block	chipping, cracking, delamination, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
222	<b>N-E-47</b>	wall block	crumbling, rising damp, bio-growth	5 - very poor		Replace
223	<b>N-E-48</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
224	<b>N-E-49</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
225	<b>N-E-50</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
226	<b>N-E-51</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace

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227	<b>N-E-52</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
228	<b>N-E-53</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
229	<b>N-E-54</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack, Patch
230	<b>N-E-55</b>	wall block	bio-growth, chipping	1 - very good		Clean, Re-point
231	<b>N-E-56</b>	wall block	chipping, cracking, inadequate patch	5 - very poor		Replace
232	<b>N-E-57</b>	wall block	chipping, cracking, bio-growth, inadequate patch	3 - fair		Clean, Re-point, Fill Crack, Patch
233	<b>N-E-58</b>	wall block	none	1 - very good	composite replacement	Clean, Re-point
234	<b>N-E-59</b>	wall block	none	1 - very good	composite replacement	Clean, Re-point
235	<b>N-E-60</b>	wall block	delamination, chipping, rising damp, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
236	<b>N-E-61</b>	wall block	none	1 - very good	composite replacement	Clean, Re-point
237	<b>N-E-62</b>	wall block	chipping, delamination, rising damp, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
238	<b>N-E-63</b>	wall block	none	1 - very good	composite replacement	Clean, Re-point
239	<b>N-E-64</b>	wall block	chipping, inadequate patch, bio-growth	3 - fair		Clean, Re-point, Patch
240	<b>N-E-65</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
241	<b>N-E-66</b>	wall block	chipping, delamination, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
242	<b>N-E-67</b>	wall block	chipping, cracking, delamination, inadequate patch, bio-growth	4 - poor		Replace
243	<b>N-E-68</b>	wall block	bio-growth	1 - very good		Clean, Re-point
244	<b>N-E-69</b>	wall block	bio-growth	1 - very good		Clean, Re-point
245	<b>N-E-70</b>	wall block	bio-growth	1 - very good		Clean, Re-point
246	<b>N-E-71</b>	wall block	bio-growth	1 - very good		Clean, Re-point
247	<b>N-E-72</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
248	<b>N-E-73</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
249	<b>N-E-74</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
250	<b>N-E-75</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
251	<b>N-E-76</b>	wall block	bio-growth	1 - very good		Clean, Re-point
252	<b>N-E-77</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
253	<b>N-E-78</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
254	<b>N-E-79</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point

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255	<b>N-E-80</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
256	<b>N-E-81</b>	wall block	bio-growth	1 - very good		Clean, Re-point
257	<b>N-E-82</b>	wall block	bio-growth	1 - very good		Clean, Re-point
258	<b>N-W-1</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
259	<b>N-W-2</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
260	<b>N-W-3</b>	cap stone	surface crust/surface induration, bio-growth, chipping	2 - good		Clean, Re-point
261	<b>N-W-4</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
262	<b>N-W-5</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
263	<b>N-W-6</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
264	<b>N-W-7</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
265	<b>N-W-8</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
266	<b>N-W-9</b>	end panel	none	1 - very good		Clean, Re-point
267	<b>N-W-10</b>	end panel	chipping	1 - very good		Clean, Re-point
268	<b>N-W-11</b>	wall block	efflorescence	2 - good		Clean, Re-point
269	<b>N-W-12</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
270	<b>N-W-13</b>	wall block	cracking, surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point, Fill Crack
271	<b>N-W-14</b>	end panel	surface crust/surface induration, bio-growth	1 - very good		Clean, Re-point
272	<b>N-W-15</b>	wall block	surface crust/surface induration, bio-growth, efflorescence	2 - good		Clean, Re-point
273	<b>N-W-16</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
274	<b>N-W-17</b>	wall block	surface crust/surface induration, efflorescence	2 - good		Clean, Re-point
275	<b>N-W-18</b>	end panel	chipping, bio-growth	1 - very good		Clean, Re-point
276	<b>N-W-19</b>	wall block	efflorescence, surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
277	<b>N-W-20</b>	wall block	efflorescence, surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
278	<b>N-W-21</b>	wall block	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
279	<b>N-W-22</b>	end panel	bio-growth	1 - very good		Clean, Re-point
280	<b>N-W-23</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
281	<b>N-W-24</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
282	<b>N-W-25</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
283	<b>N-W-26</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point

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284	<b>N-W-27</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
285	<b>N-W-28</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
286	<b>N-W-29</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
287	<b>N-W-30</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
288	<b>N-W-31</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
289	<b>N-W-32</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
290	<b>N-W-33</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
291	<b>N-W-34</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
292	<b>N-W-35</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
293	<b>N-W-36</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
294	<b>N-W-37</b>	baluster	surface crust/surface induration	2 - good		Clean, Re-point
295	<b>N-W-38</b>	wall block	bio-growth	1 - very good		Clean, Re-point
296	<b>N-W-39</b>	wall block	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
297	<b>N-W-40</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
298	<b>N-W-41</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
299	<b>N-W-42</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
300	<b>N-W-43</b>	wall block	bio-growth	2 - good		Clean, Re-point
301	<b>N-W-44</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
302	<b>N-W-45</b>	wall block	bio-growth	2 - good		Clean, Re-point
303	<b>N-W-46</b>	wall block	delamination, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack
304	<b>N-W-47</b>	wall block	delamination, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack
305	<b>N-W-48</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
306	<b>N-W-49</b>	wall block	chipping, rising damp, bio-growth	2 - good		Clean, Re-point
307	<b>N-W-50</b>	wall block	chipping, rising damp, bio-growth	2 - good		Clean, Re-point
308	<b>N-W-51</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
309	<b>N-W-52</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
310	<b>N-W-53</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
311	<b>N-W-54</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
312	<b>N-W-55</b>	wall block	none	1 - very good		Clean, Re-point
313	<b>N-W-56</b>	wall block	none	1 - very good		Clean, Re-point
314	<b>N-W-57</b>	wall block	none	1 - very good		Clean, Re-point
315	<b>N-W-58</b>	wall block	cracking, crumbling, delamination, inadequate patch, bio-growth	5 - very poor		Replace

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316	<b>N-W-59</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
317	<b>N-W-60</b>	wall block	delamination, rising damp, inadequate patch, bio-growth	4 - poor		Replace
318	<b>N-W-61</b>	wall block	chipping, cracking, bio-growth	3 - fair		Clean, Re-point, Fill Crack
319	<b>N-W-62</b>	wall block	cracking, rising damp, bio-growth	4 - poor		Clean, Re-point, Fill Crack
320	<b>N-W-63</b>	wall block	chipping, cracking, rising damp, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
321	<b>N-W-64</b>	wall block	cracking, bio-growth	2 - good		Clean, Re-point, Fill Crack
322	<b>N-W-65</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
323	<b>N-W-66</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
324	<b>N-W-67</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
325	<b>N-W-68</b>	wall block	crumbling, delamination, rising damp, bio-growth	5 - very poor		Replace
326	<b>N-W-69</b>	wall block	none	1 - very good		Clean, Re-point
327	<b>N-W-70</b>	wall block	none	1 - very good		Clean, Re-point
328	<b>N-W-71</b>	wall block	chipping	2 - good		Clean, Re-point
329	<b>N-W-72</b>	wall block	none	1 - very good		Clean, Re-point
330	<b>N-W-73</b>	wall block	none	1 - very good		Clean, Re-point
331	<b>N-W-74</b>	wall block	none	1 - very good		Clean, Re-point
332	<b>N-W-75</b>	wall block	none	1 - very good		Clean, Re-point
333	<b>N-W-76</b>	wall block	chipping	2 - good		Clean, Re-point
334	<b>N-W-77</b>	wall block	chipping	2 - good		Clean, Re-point
335	<b>N-W-78</b>	wall block	none	1 - very good		Clean, Re-point
336	<b>N-W-79</b>	wall block	chipping	2 - good		Clean, Re-point
337	<b>N-W-80</b>	wall block	chipping	2 - good		Clean, Re-point
338	<b>S-C-1</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
339	<b>S-C-2</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
340	<b>S-C-3</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
341	<b>S-C-4</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
342	<b>S-C-5</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
343	<b>S-C-6</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
344	<b>S-C-7</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
345	<b>S-C-8</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
346	<b>S-C-9</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point

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347	<b>S-C-10</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
348	<b>S-C-11</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
349	<b>S-C-12</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
350	<b>S-C-13</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
351	<b>S-C-14</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
352	<b>S-C-15</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
353	<b>S-C-16</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
354	<b>S-C-17</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
355	<b>S-C-18</b>	cap stone	surface crust/surface induration, bio-growth	2 - good		Clean, Re-point
356	<b>S-C-19</b>	end panel	none	1 - very good		Clean, Re-point
357	<b>S-C-20</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
358	<b>S-C-21</b>	wall block	chipping, efflorescence, bio-growth	2 - good		Clean, Re-point
359	<b>S-C-22</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
360	<b>S-C-23</b>	wall block	efflorescence, bio-growth, chipping, cracking	3 - fair		Clean, Re-point, Fill Crack
361	<b>S-C-24</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
362	<b>S-C-25</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
363	<b>S-C-26</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
364	<b>S-C-27</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
365	<b>S-C-28</b>	wall block	blistering, chipping, cracking, efflorescence, bio-growth	4 - poor		Replace
366	<b>S-C-29</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
367	<b>S-C-30</b>	wall block	blistering, chipping, cracking, efflorescence, bio-growth	4 - poor		Replace
368	<b>S-C-31</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
369	<b>S-C-32</b>	wall block	chipping, cracking, efflorescence, bio-growth	4 - poor		Replace
370	<b>S-C-33</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
371	<b>S-C-34</b>	wall block	blistering, chipping, efflorescence, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
372	<b>S-C-35</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
373	<b>S-C-36</b>	wall block	blistering, chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Fill Crack
374	<b>S-C-37</b>	end panel	bio-growth	2 - good		Clean, Re-point
375	<b>S-C-38</b>	end panel	chipping, bio-growth	2 - good		Clean, Re-point

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376	<b>S-C-39</b>	wall block	chipping, efflorescence, bio-growth, cracking	3 - fair		Clean, Re-point, Fill Crack, Patch
377	<b>S-C-40</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
378	<b>S-C-41</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
379	<b>S-C-42</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
380	<b>S-C-43</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
381	<b>S-C-44</b>	wall block	chipping, efflorescence, bio-growth	2 - good		Clean, Re-point
382	<b>S-C-45</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
383	<b>S-C-46</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
384	<b>S-C-47</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
385	<b>S-C-48</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
386	<b>S-C-49</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
387	<b>S-C-50</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
388	<b>S-C-51</b>	wall block	chipping, efflorescence, bio-growth	3 - fair	graffiti	Clean, Re-point, Patch
389	<b>S-C-52</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
390	<b>S-C-53</b>	wall block	blistering, chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Fill Crack
391	<b>S-C-54</b>	wall block	blistering, chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Fill Crack
392	<b>S-C-55</b>	end panel	bio-growth	1 - very good		Clean, Re-point
393	<b>S-C-56</b>	end panel	none	1 - very good		Clean, Re-point
394	<b>S-C-57</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
395	<b>S-C-58</b>	wall block	chipping, efflorescence, bio-growth, cracking	3 - fair		Clean, Re-point, Fill Crack, Patch
396	<b>S-C-59</b>	wall block	chipping, efflorescence, bio-growth	2 - good		Clean, Re-point
397	<b>S-C-60</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
398	<b>S-C-61</b>	wall block	blistering, chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point
399	<b>S-C-62</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
400	<b>S-C-63</b>	wall block	chipping, efflorescence, bio-growth	2 - good		Clean, Re-point
401	<b>S-C-64</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
402	<b>S-C-65</b>	wall block	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
403	<b>S-C-66</b>	wall block	blistering, chipping, bio-growth	3 - fair		Clean, Re-point, Fill Crack
404	<b>S-C-67</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch

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405	<b>S-C-68</b>	wall block	chipping, bio-growth	3 - fair	Clean, Re-point, Patch
406	<b>S-C-69</b>	wall block	chipping, cracking, bio-growth	3 - fair	Clean, Re-point, Fill Crack, Patch
407	<b>S-C-70</b>	wall block	chipping, efflorescence, bio-growth	3 - fair	Clean, Re-point, Patch
408	<b>S-C-71</b>	wall block	chipping, efflorescence, bio-growth	3 - fair	Clean, Re-point, Patch
409	<b>S-C-72</b>	wall block	efflorescence, bio-growth	3 - fair	Clean, Re-point
410	<b>S-C-73</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
411	<b>S-C-74</b>	end panel	bio-growth	1 - very good	Clean, Re-point
412	<b>S-C-75</b>	end panel	bio-growth, bio-growth	2 - good	Clean, Re-point
413	<b>S-C-76</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
414	<b>S-C-77</b>	wall block	cracking, bio-growth	2 - good	Clean, Re-point, Fill Crack
415	<b>S-C-78</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
416	<b>S-C-79</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
417	<b>S-C-80</b>	wall block	chipping, cracking, bio-growth	3 - fair	Clean, Re-point, Fill Crack
418	<b>S-C-81</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
419	<b>S-C-82</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
420	<b>S-C-83</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
421	<b>S-C-84</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
422	<b>S-C-85</b>	wall block	blistering, chipping, bio-growth	3 - fair	Clean, Re-point, Fill Crack
423	<b>S-C-86</b>	wall block	chipping, bio-growth	3 - fair	Clean, Re-point, Patch
424	<b>S-C-87</b>	wall block	chipping, bio-growth	3 - fair	Clean, Re-point, Patch
425	<b>S-C-88</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
426	<b>S-C-89</b>	wall block	chipping, bio-growth	3 - fair	Clean, Re-point, Patch
427	<b>S-C-90</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point
428	<b>S-C-91</b>	wall block	chipping, efflorescence, bio-growth	3 - fair	Clean, Re-point, Patch
429	<b>S-C-92</b>	end panel	bio-growth	1 - very good	Clean, Re-point
430	<b>S-C-93</b>	end panel	chipping, bio-growth	3 - fair	Clean, Re-point, Patch
431	<b>S-C-94</b>	wall block	rising damp, bio-growth	2 - good	Clean, Re-point
432	<b>S-C-95</b>	wall block	rising damp, bio-growth	2 - good	Clean, Re-point
433	<b>S-C-96</b>	wall block	chipping, cracking, rising damp, bio-growth	3 - fair	Clean, Re-point, Fill Crack, Patch
434	<b>S-C-97</b>	wall block	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch

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435	<b>S-C-98</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
436	<b>S-C-99</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
437	<b>S-C-100</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
438	<b>S-C-101</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
439	<b>S-C-102</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
440	<b>S-C-103</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
441	<b>S-C-104</b>	wall block	chipping, rising damp, bio-growth	2 - good		Clean, Re-point
442	<b>S-C-105</b>	wall block	chipping, cracking, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack, Patch
443	<b>S-C-106</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
444	<b>S-C-107</b>	wall block	cracking, rising damp, inadequate patch, bio-growth	3 - fair		Clean, Re-point, Patch, Fill Crack
445	<b>S-C-108</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
446	<b>S-C-109</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
447	<b>S-C-110</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
448	<b>S-C-111</b>	end panel	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
449	<b>S-C-112</b>	wall block	cracking, rising damp, bio-growth	3 - fair		Clean, Re-point, Fill Crack
450	<b>S-C-113</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
451	<b>S-C-114</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
452	<b>S-C-115</b>	bench	bio-growth	2 - good	soiled; incised graffiti	Clean, Re-point
453	<b>S-C-116</b>	bench	bio-growth	2 - good	soiled; incised graffiti	Clean, Re-point
454	<b>S-C-117</b>	bench	bio-growth	2 - good	soiled; incised graffiti	Clean, Re-point
455	<b>S-C-118</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
456	<b>S-C-119</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
457	<b>S-C-120</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
458	<b>S-C-121</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
459	<b>S-C-122</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
460	<b>S-C-123</b>	bench	bio-growth	2 - good	soiled	Clean, Re-point
461	<b>S-C-124</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
462	<b>S-C-125</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
463	<b>S-C-126</b>	bench	blistering, cracking, crumbling, bio-growth	5 - very poor		Replace
464	<b>S-C-127</b>	wall block	blistering, cracking, rising damp	4 - poor		Clean, Re-point, Fill Crack

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465	<b>S-C-128</b>	bench	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
466	<b>S-C-129</b>	wall block	cracking, rising damp, bio-growth	3 - fair	Clean, Re-point, Fill Crack
467	<b>S-C-130</b>	bench	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
468	<b>S-C-131</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
469	<b>S-C-132</b>	bench	rising damp, bio-growth	2 - good	Clean, Re-point
470	<b>S-C-133</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
471	<b>S-C-134</b>	bench	rising damp, bio-growth	2 - good	Clean, Re-point
472	<b>S-C-135</b>	wall block	blistering, cracking, rising damp, bio-growth	3 - fair	Clean, Re-point, Fill Crack
473	<b>S-C-136</b>	bench	chipping, cracking, rising damp, bio-growth	3 - fair	Clean, Re-point, Fill Crack, Patch
474	<b>S-C-137</b>	wall block	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
475	<b>S-C-138</b>	bench	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
476	<b>S-C-139</b>	wall block	blistering, chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Fill Crack
477	<b>S-C-140</b>	bench	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
478	<b>S-C-141</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
479	<b>S-C-142</b>	bench	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
480	<b>S-C-143</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
481	<b>S-C-144</b>	bench	chipping, rising damp, bio-growth	3 - fair	Clean, Re-point, Patch
482	<b>S-C-145</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
483	<b>S-C-146</b>	bench	blistering, rising damp, inadequate patch, bio-growth	5 - very poor	Replace
484	<b>S-C-147</b>	wall block	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
485	<b>S-C-148</b>	bench	blistering, cracking, rising damp, bio-growth	4 - poor	Clean, Re-point, Fill Crack
486	<b>S-C-149</b>	wall block	chipping, bio-growth	2 - good	Clean, Re-point

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487	<b>S-C-150</b>	wall block	bio-growth	2 - good		Clean, Re-point
488	<b>S-C-151</b>	wall block	bio-growth	2 - good		Clean, Re-point
489	<b>S-C-152</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
490	<b>S-C-153</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
491	<b>S-C-154</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
492	<b>S-C-155</b>	wall block	blistering, efflorescence, bio-growth	4 - poor		Clean, Re-point, Fill Crack
493	<b>S-C-156</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
494	<b>S-C-157</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
495	<b>S-C-158</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
496	<b>S-C-159</b>	wall block	cracking, bio-growth	3 - fair		Clean, Re-point, Fill Crack
497	<b>S-C-160</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
498	<b>S-C-161</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
499	<b>S-C-162</b>	wall block	none	1 - very good		Clean, Re-point
500	<b>S-C-163</b>	wall block	none	1 - very good		Clean, Re-point
501	<b>S-C-164</b>	wall block	none	1 - very good		Clean, Re-point
502	<b>S-C-165</b>	wall block	none	1 - very good		Clean, Re-point
503	<b>S-C-166</b>	wall block	none	1 - very good		Clean, Re-point
504	<b>S-C-167</b>	wall block	none	1 - very good		Clean, Re-point
505	<b>S-C-168</b>	wall block	none	1 - very good		Clean, Re-point
506	<b>S-C-169</b>	wall block	none	1 - very good		Clean, Re-point
507	<b>S-C-170</b>	wall block	none	1 - very good		Clean, Re-point
508	<b>S-C-171</b>	wall block	none	1 - very good		Clean, Re-point
509	<b>S-C-172</b>	wall block	none	1 - very good		Clean, Re-point
510	<b>S-C-173</b>	wall block	none	1 - very good		Clean, Re-point
511	<b>S-C-174</b>	wall block	none	1 - very good		Clean, Re-point
512	<b>S-C-175</b>	wall block	none	1 - very good		Clean, Re-point
513	<b>S-E-1</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
514	<b>S-E-2</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
515	<b>S-E-3</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
516	<b>S-E-4</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
517	<b>S-E-5</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
518	<b>S-E-6</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
519	<b>S-E-7</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point

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520	<b>S-E-8</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair	Clean, Re-point
521	<b>S-E-9</b>	end panel	none	1 - very good	Clean, Re-point
522	<b>S-E-10</b>	end panel	efflorescence, bio-growth	2 - good	Clean, Re-point
523	<b>S-E-11</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
524	<b>S-E-12</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
525	<b>S-E-13</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
526	<b>S-E-14</b>	end panel	none	1 - very good	Clean, Re-point
527	<b>S-E-15</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	2 - good	Clean, Re-point
528	<b>S-E-16</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
529	<b>S-E-17</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
530	<b>S-E-18</b>	end panel	none	1 - very good	Clean, Re-point
531	<b>S-E-19</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	2 - good	Clean, Re-point
532	<b>S-E-20</b>	wall block	efflorescence, bio-growth	2 - good	Clean, Re-point
533	<b>S-E-21</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	2 - good	Clean, Re-point
534	<b>S-E-22</b>	end panel	surface crust/surface induration, efflorescence, bio-growth	2 - good	Clean, Re-point
535	<b>S-E-23</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
536	<b>S-E-24</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
537	<b>S-E-25</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
538	<b>S-E-26</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
539	<b>S-E-27</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
540	<b>S-E-28</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
541	<b>S-E-29</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
542	<b>S-E-30</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
543	<b>S-E-31</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
544	<b>S-E-32</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
545	<b>S-E-33</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
546	<b>S-E-34</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
547	<b>S-E-35</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
548	<b>S-E-36</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
549	<b>S-E-37</b>	baluster	surface crust/surface induration, bio-growth	2 - good	Clean, Re-point
550	<b>S-E-38</b>	wall block	bio-growth	1 - very good	Clean, Re-point

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551	<b>S-E-39</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
552	<b>S-E-40</b>	wall block	cracking	2 - good		Clean, Re-point, Fill Crack
553	<b>S-E-41</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
554	<b>S-E-42</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
555	<b>S-E-43</b>	wall block	rising damp, bio-growth	3 - fair		Clean, Re-point
556	<b>S-E-44</b>	wall block	rising damp, efflorescence, bio-growth	2 - good		Clean, Re-point
557	<b>S-E-45</b>	wall block	chipping, cracking, bio-growth	3 - fair		Clean, Re-point, Patch, Fill Crack
558	<b>S-E-46</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
559	<b>S-E-47</b>	wall block	chipping, rising damp, inadequate patch, bio-growth	3 - fair		Clean, Re-point, Patch
560	<b>S-E-48</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
561	<b>S-E-49</b>	wall block	chipping, rising damp, inadequate patch, bio-growth	3 - fair		Clean, Re-point, Patch
562	<b>S-E-50</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point
563	<b>S-E-51</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
564	<b>S-E-52</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
565	<b>S-E-53</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
566	<b>S-E-54</b>	wall block	chipping, cracking, rising damp, efflorescence, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
567	<b>S-E-55</b>	wall block	chipping, bio-growth	2 - good	iron stains	Clean, Re-point
568	<b>S-E-56</b>	wall block	chipping, bio-growth	2 - good	iron stains	Clean, Re-point
569	<b>S-E-57</b>	wall block	chipping, bio-growth	2 - good	iron stains	Clean, Re-point
570	<b>S-E-58</b>	wall block	chipping, rising damp, inadequate patch, bio-growth	4 - poor		Clean, Re-point, Patch, Fill Crack
571	<b>S-E-59</b>	wall block	bio-growth	2 - good	composite replacement	Clean, Re-point
572	<b>S-E-60</b>	wall block	blistering, chipping, cracking, rising damp, inadequate patch, bio-growth	5 - very poor		Replace
573	<b>S-E-61</b>	wall block	blistering, chipping, cracking, rising damp, bio-growth	5 - very poor		Replace
574	<b>S-E-62</b>	wall block	blistering, chipping, cracking, crumbling, rising damp, inadequate patch	5 - very poor		Replace
575	<b>S-E-63</b>	wall block	bio-growth	2 - good	composite replacement	Clean, Re-point
576	<b>S-E-64</b>	wall block	rising damp, inadequate patch, bio-growth	4 - poor		Clean, Re-point, Patch
577	<b>S-E-65</b>	wall block	bio-growth	2 - good	composite replacement	Clean, Re-point

**Ellen Phillips Samuel Memorial**  
Conditions Assessment

April 2007

578	<b>S-E-66</b>	wall block	bio-growth	2 - good	composite replacement	Clean, Re-point
579	<b>S-E-67</b>	wall block	bio-growth	2 - good	composite replacement	Clean, Re-point
580	<b>S-E-68</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
581	<b>S-E-69</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
582	<b>S-E-70</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
583	<b>S-E-71</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
584	<b>S-E-72</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
585	<b>S-E-73</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
586	<b>S-E-74</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
587	<b>S-E-75</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
588	<b>S-E-76</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
589	<b>S-E-77</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
590	<b>S-E-78</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
591	<b>S-E-79</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
592	<b>S-E-80</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
593	<b>S-W-1</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
594	<b>S-W-2</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
595	<b>S-W-3</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
596	<b>S-W-4</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
597	<b>S-W-5</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
598	<b>S-W-6</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
599	<b>S-W-7</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
600	<b>S-W-8</b>	cap stone	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
601	<b>S-W-9</b>	end panel	cracking, bio-growth	2 - good		Clean, Re-point, Fill Crack
602	<b>S-W-10</b>	wall block	rising damp, surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
603	<b>S-W-11</b>	wall block	efflorescence, bio-growth	3 - fair		Clean, Re-point
604	<b>S-W-12</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
605	<b>S-W-13</b>	end panel	chipping, bio-growth	2 - good		Clean, Re-point
606	<b>S-W-14</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
607	<b>S-W-15</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point

608	<b>S-W-16</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
609	<b>S-W-17</b>	end panel	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
610	<b>S-W-18</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
611	<b>S-W-19</b>	wall block	efflorescence, bio-growth	2 - good		Clean, Re-point
612	<b>S-W-20</b>	wall block	surface crust/surface induration, efflorescence, bio-growth	3 - fair		Clean, Re-point
613	<b>S-W-21</b>	end panel	chipping, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
614	<b>S-W-22</b>	end panel	bio-growth	2 - good		Clean, Re-point
615	<b>S-W-23</b>	baluster	surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point
616	<b>S-W-24</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Patch
617	<b>S-W-25</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
618	<b>S-W-26</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
619	<b>S-W-27</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
620	<b>S-W-28</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
621	<b>S-W-29</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
622	<b>S-W-30</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
623	<b>S-W-31</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
624	<b>S-W-32</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
625	<b>S-W-33</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
626	<b>S-W-34</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack

627	<b>S-W-35</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
628	<b>S-W-36</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
629	<b>S-W-37</b>	baluster	cracking, surface crust/surface induration, bio-growth	3 - fair		Clean, Re-point, Fill Crack
630	<b>S-W-38</b>	wall block	bio-growth	2 - good		Clean, Re-point
631	<b>S-W-39</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
632	<b>S-W-40</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
633	<b>S-W-41</b>	wall block	chipping, rising damp, bio-growth	2 - good		Clean, Re-point
634	<b>S-W-42</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
635	<b>S-W-43</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
636	<b>S-W-44</b>	wall block	bio-growth	1 - very good		Clean, Re-point
637	<b>S-W-45</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
638	<b>S-W-46</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
639	<b>S-W-47</b>	wall block	rising damp, bio-growth	3 - fair		Clean, Re-point
640	<b>S-W-48</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
641	<b>S-W-49</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
642	<b>S-W-50</b>	wall block	chipping, rising damp, efflorescence, bio-growth	3 - fair		Clean, Re-point, Patch
643	<b>S-W-51</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
644	<b>S-W-52</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
645	<b>S-W-53</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
646	<b>S-W-54</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
647	<b>S-W-55</b>	wall block	rising damp, bio-growth	2 - good		Clean, Re-point
648	<b>S-W-56</b>	wall block	bio-growth	2 - good		Clean, Re-point
649	<b>S-W-57</b>	wall block	bio-growth	2 - good		Clean, Re-point
650	<b>S-W-58</b>	wall block	blistering, cracking, crumbling, inadequate patch, bio-growth	5 - very poor		Replace
651	<b>S-W-59</b>	wall block	blistering, cracking, crumbling, inadequate patch, bio-growth	5 - very poor		Replace
652	<b>S-W-60</b>	wall block	chipping, bio-growth	3 - fair		Clean, Re-point, Patch
653	<b>S-W-61</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
654	<b>S-W-62</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
655	<b>S-W-63</b>	wall block	chipping, bio-growth	4 - poor		Clean, Re-point, Patch

656	<b>S-W-64</b>	wall block	chipping, cracking, crumbling, rising damp, bio-growth	5 - very poor		Replace
657	<b>S-W-65</b>	wall block	chipping, rising damp, bio-growth	3 - fair		Clean, Re-point, Patch
658	<b>S-W-66</b>	wall block	blistering, chipping, cracking, rising damp, inadequate patch, bio-growth	5 - very poor		Replace
659	<b>S-W-67</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
660	<b>S-W-68</b>	wall block	bio-growth	1 - very good		Clean, Re-point
661	<b>S-W-69</b>	wall block	bio-growth	1 - very good	iron stains	Clean, Re-point
662	<b>S-W-70</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
663	<b>S-W-71</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
664	<b>S-W-72</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
665	<b>S-W-73</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
666	<b>S-W-74</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
667	<b>S-W-75</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
668	<b>S-W-76</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
669	<b>S-W-77</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
670	<b>S-W-78</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point
671	<b>S-W-79</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
672	<b>S-W-80</b>	wall block	chipping, bio-growth	2 - good		Clean, Re-point
673	<b>S-W-81</b>	wall block	chipping, bio-growth	1 - very good		Clean, Re-point

**Appendix D**  
**Digital Images**



View of N-X-E Note the heavy shade causing biological growth and the mulched garden bed adjacent to the memorial.



View of N-I-E



N-X-C



North Niche of the Central Terrace



South Niche of the Central Terrace



View of North Niche of the Central Terrace



N-I-E 54 Example of a Crumbling piece of Pennsylvania Sandstone slated for replacement



N-I-E 57 Inappropriate patch repairs that are beginning to fail



N-I-E 63. Composite stone replacement that matches in character and is weathering favorably



N-I-E 67



N-I-C 115 This stone exhibits severe biological growth and rising damp.



N-I-C 116



N-I-C 117



Mulch Build-up on the  
Exterior, East side of the Central Terrace



Surface Crusts on the underside of the capstones.



Inappropriately applied Portland Cement mortar on a joint.



Portland Cement Mortar pulling away from the stone and taking some of the stone with it.

**Appendix E**  
**Masonry Specifications**

## **MASONRY SPECIFICATIONS: MASONRY REPAIR AND CONSERVATION**

### **PART 1- GENERAL**

#### **1.1 RELATED DOCUMENTS**

1. DRAWINGS (ELEVATIONS)
2. TREATMENT SPREADSHEET

#### **1.02 DESCRIPTION OF WORK**

The Ellen Phillips Samuel Memorial Central Terrace Masonry Repair Project addresses the repair and replacement of the Indiana Limestone and Pennsylvania Sandstone masonry of the Memorial. The Ellen Phillips Samuel Memorial is Public Art owned by the City of Philadelphia. These specifications include the replacement of specific limestone units, specific Pennsylvania Sandstone units, repointing, filling of cracks and losses, cleaning of biological growth and atmospheric soiling. This specification does not address the sculptural elements of the terrace or landscaping.

**1.02.01** Extent of masonry restoration work is indicated on the treatment spreadsheet and drawings and shall include, but not necessarily be limited to the following:

1. Replace specified deteriorated units with new first quality stone units to match in kind, size, tooling and character. If Pennsylvania Sandstone is not available use an approved substitute.
2. Remove Portland cement based pointing mortar and replace with appropriate bedding and pointing mortar
3. Fill cracking and losses in masonry units with appropriate stone repair material
4. Re-point all joints between stone units
5. Clean biological growth and organic materials from surface of the stone
6. Clean atmospheric soiling and crust from the surface of the stone

#### **1.02.02 General Requirements of the Work**

1. Units specified for replacement shall be carefully removed and retained for the owner to select and retain samples for archival purposes.
2. Mortar to be removed shall be extracted with an approved removal method.
3. Work shall be done with care necessary to avoid chipping or otherwise damaging existing masonry units.
4. Pointing tools shall be thinner than the joint width.
5. Work shall be done with care to avoid damage to the surrounding landscape, paving units and plantings.
6. The job site shall be secured with a temporary construction fence for the protection of both the public and the memorial

7. Statuary shall be protected for the duration of the work using methods approved by the City of Philadelphia Department of Public Property and the Fairmount Park Art Association.
8. Temporary sanitary facilities shall be provided by the contractor and situated within the construction fence.
9. Parking for two vehicles will be permitted near the monument on paved surfaces only.
10. Work shall not commence prior to review and approval of submittals and samples by project manager/conservator.
11. All debris, rubbish and other non-salvageable materials must be removed from the site during and after the masonry work.

### **1.03            QUALITY ASSURANCE**

#### **1.03.01        Single Source Responsibility for Stone and Mortar Materials**

1. Obtain first quality stone from identified single supplier.
2. Obtain mortar ingredients of uniform quality, including color and aggregate, from one manufacturer for each cementitious component.
3. Work shall be performed by an individual or firm of established reputation that is regularly engaged in and maintains a regular force of workers with five (5) years minimum experience in the reconstructing and repointing of historic stone masonry. If newly organized, personnel shall have previously established a reputation in the same field.

#### **1.03.02        Field Construction Mock-Ups:**

Prior to reconstruction of masonry or installation of new limestone or mortar, contractors must provide a mock-up to further verify reconstruction methods, color and textural characteristics and finish strike of the joint. Complete mock-ups under the following requirements:

1. Locate mock-ups on site in location indicated, or if not indicated, as directed by a representative of the City of Philadelphia (Project Manager).
2. Protect mock-ups from the elements with weather resistant material.
3. Retain mock-ups during construction as standard for judging completed masonry work.

**1.03.03**        A representative of the City of Philadelphia (Project Manager) shall review reconstructing, re-pointing and cleaning methods, materials and sample panels prior to Contractor proceeding with the work.

**1.04**            **SUBMITTALS**

**1.04.01**        **Contractor qualification information:** submit record of experience qualifying a firm as specialist in masonry restoration. As a minimum, this includes a written record indicating projects on which specialist has worked, with name, address, and telephone number of purchasers of the service, and the locations of work performed. The last three projects performed shall be included.

**1.04.02**        **Shop Drawings:** Submit shop drawings for limestone and sandstone replacements.

**1.04.03**        **Product Data:** Submit manufacturer's product data for each type of mortar ingredient and all other manufactured products, including certification that each type complies with specified requirements.

**1.04.04**        **Restoration Program:** Submit written program for each phase of restoration work including shoring, bracing and protection of surrounding materials on the site during operation. Describe in detail materials, methods and equipment used for each phase of restoration work.

**1.04.05**        **Cleaning Program:** Submit written program of procedures to be used in complying with this specification including written description of cleaning methods, materials and equipment proposed for use in cleaning and methods to be used to assure safety of visitors to the site.

**1.04.06**        **Alternative Methods and Materials:** If alternative methods and materials to those indicated are proposed for any phase of restoration work, provide written description, including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on the project for review and approval by the City of Philadelphia's Representative (Project Manager)

**1.04.07**        **Samples for Initial Selection Purpose:** Submit samples of the following materials:

1. Pennsylvania Sandstone
2. Indiana Limestone
3. Lime
4. Aggregate
5. Patching Material

**1.05**            **DELIVERY, STORAGE AND HANDLING**

**1.05.01**        Deliver masonry materials to project in undamaged condition

**1.05.02** Store replacement stone units and cementitious materials off the ground, under cover, and in a dry location.

**1.06** **PROJECT CONDITIONS**

**1.06.01** **Protection of Work:** During the project, cover top of walls or exposed walls with heavy waterproof sheeting at the end of each days work. Cover partially completed structures when work is not in progress.

**1.06.02** Extend cover a minimum of 24" down on both sides and hold cover securely in place.

**1.06.03** Prevent mortar staining on the face of masonry to be left exposed.

**1.06.04** Protect base of walls from rain-splashed mud and mortar splatter by using a waterproof covering spread on ground and over wall surface.

**1.06.05** Protect sills, ledges and projections from droppings of mortar.

**1.06.06** **Cold/Hot Weather Protections:** Do not execute masonry work unless air temperature is between 40° F and 80° F and will remain so for at least 48 hours after the completion of work.

1. Do not lay masonry units that are wet or frozen
2. Remove masonry damaged by freezing conditions
3. Clean masonry surfaces only when air temperatures are 40° F and above and will remain so until masonry has dried out, but not less than seven (7) days after completion of cleaning.

**1.07** **CONTRACTOR RESPONSIBILITY**

**1.07.01** Contractor is responsible and liable for compliance with all applicable Federal, State and local regulations pertaining to protection of workers, visitors to site, and persons occupying areas adjacent to site.

**1.07.02** Contractor shall comply with all rules and policy governing work performed in Fairmount Park and the City of Philadelphia

**PART 2** **PRODUCTS**

**2.01** **INDIANA LIMESTONE (Select Buff)**

**2.01.01** All limestone should be dry and free of Salts

1. Vickery Stone Company  
101 West Chester Pike  
P.O. Box 944  
Havertown, PA 19083

**2.02 PENNSYLVANIA SANDSTONE OR APPROVED ALTERNATIVE**

**2.02.01** All sandstone should be dry and free of salts

1. Vickery Stone Company  
101 West Chester Pike  
P.O. Box 944  
Havertown, PA 19083

**2.03 MORTAR AND GROUT MATERIALS**

**2.03.01** Hydrated/Hydraulic Lime: St Astier 3.5 Hydrated Hydraulic Lime or comparable approved substitute.

1. Available from Cava Marble and Building Material, Pennsylvania Limeworks and Virginia Limeworks.

**2.03.02 Aggregates for mortar:**

1. ASTM C 144 Bar Sand for pointing mortar. Produce mock up discs using white yellow and brown. Final sand will be decided by project manager.

**2.03.03** Water: Clean, non-staining, free of oils, acids, salts, alkalis and organic matter, potable

**2.03.04** Brushes: Soft, natural fiber bristle only

**2.03.05 Materials for Crack and Loss Repair**

1. Jahn M70, Patching Mortar for Limestone and Sandstone.  
Available- Cathedral Stone Products Inc. 7266 Park Circle Drive,  
Hanover Maryland 21076. (800) 684-0901.
2. Edison Coatings Custom System 45- Custom Color Match.  
Available- Edison Coatings, Inc. 3 Northwest Drive, Plainville, CT  
06062 (860) 747-2220 or (800) 697-8044.

**2.03.06 Cleaning and Biological Growth**

1. D/2 Technical Grade Architectural Antimicrobial. Available-  
Cathedral Stone Products, Inc. 7266 Park Circle Drive, Hanover  
Maryland 21076. (800) 684-0901.

**2.04 MORTAR MIXES**

**2.04.01** General: Do not use admixtures of any kind, including liquid or powder coloring pigments, air-entraining agents, accelerators, retardants, water repellent agents, anti-freeze compounds or other admixtures.

1. Do not use calcium chloride in mortar or grout.

**2.04.02**      **Measurement:** Measure cement and lime in a dry condition, with damp loose aggregate, by volume. Use a consistent measuring instrument.

**2.04.03**      Mixing- Mix materials in a clean dry box or mechanical batch mixer. Thoroughly mix cement, lime and aggregate materials together before adding any water. Then mix again adding water in small portions until mortar of desired consistency is reached. Use mortar within 30 minutes of final mixing; do not re-temper or use partially hardened material.

**2.04.04**      Mortar Proportions:  
1. Pointing Mortar- One (1) Part St. Astier Lime 3.5, Three (3) parts sand.  
2. Bedding Mortar- One (1) Part St. Astier Lime 3.5, Three (3) parts sand.

### **PART 3- EXECUTION**

#### **3.01**            **RECONSTRUCT AREAS OF DETERIORATED MASONRY WALLS**

**3.01.01**      Supply written program of all disassembly including rigging, shoring, scaffolding, bracing and any supports prior to execution of work.

**3.01.02**      Photo Document and label all masonry units, including orientation in masonry wall before dismantling. Labeling should be performed in a manner that does not permanently damage the masonry units. Labeling plan must be approved before dismantling can occur.

**3.01.03**      All disassembled masonry units must be properly stored off the ground on wooden pallets or boards in a manner to avoid chipping and damage. All attached mortar should be carefully removed and properly stored for review by owner. Owner will select sample to be retained for archival purposes. Contractor will properly dispose of remaining masonry units.

**3.01.04**      Mortar and debris remaining on the wall should be carefully cleaned out. At this point the Project manager will assess the condition of the adjacent pavers.

**3.01.05**      Rebuild masonry wall using pre-approved stone units. Build masonry sections to match and align with existing masonry, with joints and coursing to match surrounding masonry units. Special attention should be given to alignment and spacing. Do not exceed bedding joint thickness of more than the units in the adjacent section.

- 3.01.06** Cut back protruding bedding joints at the end of each workday to allow for finish pointing.
- 3.01.07** Remove debris, rubbish and other non-salvagable materials resulting from disassembly and reconstruction operations from the site prior to finish pointing this section.
- 3.01.08** Prepared joints shall be cleaned of mortar dust and dirt with a low pressure jet of air prior to applying new mortar.
- 3.01.09** Dampen all prepared joints with minimal but sufficient water before applying mortar. There shall be no standing water in the joints when the new mortar is applied.
- 3.01.10** Mortar shall be applied in several layers of ¼ inch, minimum, depth. Compact each layer with a pointing tool which is narrower than the joint width. Cure each layer to thumb-print hardness before application of succeeding layers.
- 3.01.11** Cure pointing to thumb-print hardness and tool to match existing work. The final layer of mortar shall be raked to be slightly recessed from the faced of masonry units by hand with soft, natural bristle brushed immediately after pointing
- 3.01.12** Clean any extraneous mortar from faces of masonry units by hand with a soft, natural bristle brushed immediately after pointing.
- 3.01.13** Final Cleaning: after mortar is thoroughly set and cured, clean masonry as follows:  
1. Remove large mortar particles by hand with wooden paddles and non-metallic scrapers or chisels.  
2. Brush with stiff nylon brush to remove residue.
- 3.02** **REMOVAL OF PORTLAND CEMENT MORTAR**
- 3.02.01** Remove all Portland cement based mortar on masonry walls and benches.
- 3.02.02** Mechanical methods shall employ the use of hand tools only unless another method is approved by project manager. Work shall be performed in a manner to avoid chipping of the stone.
- 3.02.03** Should the contractor encounter loose and damaged stone not indicated on the drawings, it will be brought to the attention of the City's representative or Project Manager.
- 3.02.04** Any vegetation, including weeds and vines should be carefully removed without disturbing the masonry.

- 3.02.05** Remove mortar debris, rubbish and other non-salvageable materials resulting from chipping out of mortar.
- 3.02.06** Re-point mortar joints using bedding mortar proportions. Re-point in ½ inch lifts of mortar, compact each layer with a pointing tool which is narrower than the joint width. Cure each layer to thumb-print hardness before application of succeeding layers.
- 3.02.07** Cut back protruding bedding joints at end of each workday to allow for finish pointing.
- 3.02.08** Remove debris, rubbish, and other non salvageable materials resulting from disassembly and reconstruction operations from the site prior to finish pointing of this section.
- 3.02.09** Prepared joints shall be cleaned of mortar dust and dirt with a low pressure jet of air prior to applying new mortar.
- 3.02.10** Dampen all prepared joints with minimal but sufficient water before applying mortar. There shall be no standing water in the joints when the mortar is applied
- 3.02.11** Mortar shall be applied in several layers of ½ inch, minimum, depth. Compact each layer with a pointing tool which is narrower than the joint width. Cure each layer to thumb-print hardness before application of succeeding layers.
- 3.02.12** Cure pointing to thumb print hardness and tool to match existing work. The final layer of mortar shall be raked to be slightly recessed from the faced of masonry units by hand with soft, natural bristle brushed immediately after pointing.
- 3.02.13** Clean any extraneous mortar from faces of masonry units by hand with soft, natural bristle brushes immediately after pointing
- 3.02.14** Cure pointing, keeping moist for a period of three (3) days minimum. Use moist burlap or plastic sheeting to protect mortar as required during the curing process.
- 3.02.15** Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and non-metallic scrapers or chisels.

**3.04**            **FILL CRACKS AND LOSSES IN MASONRY UNITS**

- 3.04.01**        After reconstruction of masonry wall, all cracks and voids in stone should be repaired as indicated on treatment spreadsheet.
- 3.04.02**        Contractor must submit in writing the product to be used and the installation instructions. One installer shall perform all crack filling and loss compensation work to insure standardized workmanship.
- 3.04.03**        Should the contractor encounter cracks, losses or damage to the limestone not indicated on drawings, it will be brought to the attention of a representative of the City or the Project Manager.
- 3.04.04**        Rake out debris from cracks by hand using chisels narrower than the crack width. Do not chip or spall faces or edges of masonry units. Use low pressure air to blow out any remaining debris in cracks.
- 3.04.05**        Dampen all prepared cracks with minimal but sufficient water before applying mortar. There shall be no standing water in the joints when new mortar is applied.
- 3.04.06**        Follow manufacturer's instructions for the installation of mortar for the crack. Fill crack in lifts of no more than 1/2 inch to surface of stone. Keep full flush with adjacent stone and match any profile, texture or character of the adjacent stone.
- 3.04.07**        Clean any extraneous fill material from faces of stone by hand with soft, natural bristle brushes immediately after pointing.
- 3.04.08**        Cure fill material, keeping moist for a period of three (3) days minimum. Use moist burlap or plastic sheeting to protect mortar as required during the curing process.
- 3.04.09**        For compensation of losses, follow manufacturer's instructions. Remove any mortar or extraneous material from area of loss by hand using chisels. Do not chip or spall faces or edges of masonry units.
- 3.04.10**        Dampen all prepared losses with minimal but sufficient water before applying mortar. There shall be no standing water on the stone when new mortar is applied.
- 3.04.11**        Follow manufacture's instructions for the installation of material to the area of loss. Fill crack in lifts of no more than 1/2 inch to surface of stone. Keep fill flush with adjacent limestone and match any profile, texture or character of the adjacent stone.

**3.04.12** Clean any extraneous fill material from faces of limestone by hand with a soft, natural bristle brushes immediately after pointing.

**3.04.13** Cure fill material, keeping it moist for a period of three (3) days minimum. Use moist burlap or plastic sheeting to protect mortar as required during the curing process.

**3.04.14** Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

**3.07** **CLEANING OF BIOLOGICAL GROWTH**

**3.07.01** After all reconstruction and realignment work has been completed, clean all biological growth from the surface of the walls and benches.

**3.07.02** Apply cleaning product, D-2 Technical Grade Architectural Antimicrobial by brush, roller or with a pump sprayer. Scrub thoroughly with a non-metallic, short fibered scrub brush.

**3.07.03** Allow the undiluted product to remain on the surface of the soiled limestone for 1 to 2 minutes, then lightly mist with water and continue scrubbing. Repeat misting with water and scrub as necessary.

**3.07.04** Rinse thoroughly with clean water with a hose or a pump sprayer. Do not use more than 60- 100PSI for rinsing on heavy areas.

**3.08** **CLEANING OF ATMOSHERIC SOILING/CRUSTS**

**3.08.01** Atmospheric soiling/surface crusts, can be successfully cleaned with water washing. After all biological growth has been removed, areas of atmospheric soiling/ surface crusts should be water washed.

**3.08.02** Wash stained areas with clean water from a hose fitted with a nozzle or pump sprayer. Do not use more than 60- 100 PSI for rinsing on heavy areas. Repeated washing of heavily soiled areas may be required.

**3.08.03** Rinse all debris from pavers and clean site at end of operation

**-END OF SECTION-**

**Appendix G**  
**Product Information**