

MEMORANDUM | March 14, 2023

2023 Brick Masonry Parapet Repairs

Pre-Construction Review

WJE PROJECT NO. 2022.4867

TO B Rae Lawson
Manager
Castle Park Association
6690 Edwards
Holland, Michigan 49423

FROM L. Ruther

We understand that the Castle Park Association (Association) has retained DC Byers, a restoration contractor, to perform isolated repairs to the masonry parapet/facade at the Castle building located at 6700 Bryant in Holland, Michigan (Figure 1). The Association has requested WJE review and provide comment on the proposed scope of work provided by DC Byers. Our review comments are included herein.



Figure 1. View of east facade, red box outlines the approximate extent of masonry to be repaired per our understanding of the project scope.

WJE has reviewed DC Byers proposal dated December 28, 2022, and offers the following comments, suggestions, and recommendations:

- Consider the following materials/products:
 - Masonry
 - Face Brick: ASTM C216, grade SW, type FBS; ASTM C67
 - Initial Rate of Absorption: Less than 25 grams per 30 square inches of surface area per minute. Individual units shall not vary by more than five percent.
 - Efflorescence: rated "not effloresced"
 - Provide brick samples to match the color range, texture and size of existing adjacent brickwork, to be selected by the Owner
 - Salvaged Brick: Remove all mortar from surfaces prior to reuse.
 - Mortar: Pre-bagged Spec Mix Type O; ASTM C270
 - No masonry cement should be used.
 - Use colored aggregates to obtain desired mortar color. If appropriately colored aggregates are not available for desired mortar color, use colored mortar pigments made from metallic oxides. Use the minimum quantity of pigments that will produce the desired results; an excess may seriously impair strength and durability. The maximum permissible quantity of most metallic oxide pigments is approximately 10 to 15 percent of the cement content by weight. Limit the use of carbon black pigment to 2 to 3 percent of cement by weight. For best results, premix color pigments with Portland Cement in large, controlled quantities to obtain uniform color.
 - Mortar to match the color of the original. Provide color mock-ups in the field for owner review and approval.
 - Sealant: 756 SMS Building Sealant manufactured by Dow Corning, color to be selected by Owner
 - Sheet Metal: Aluminum Sheet: ASTM B209, Alloy 3003, 3004, 3105, or 5005; temper suitable for forming and structural performance required, but not less than H14; 0.040 inches thick. High-performance-organic Finish: AAMA 2604, two coat, thermocured system containing not less than 70 percent polyvinylidene fluoride resin by weight; color to be selected by Owner.
 - Brick Masonry Cleaner: Use one-step chemical cleaner such as Sure Klean Limestone & Masonry Afterwash by ProsoCo, Inc.
 - Provide mock-up cleaning method for Owner and A/E review.
 - Water for prewetting, cleaning, and rinsing is to be clean, potable, with iron content less than two parts per million by weight. Periodically measure pH of rinse water run off until surface has returned to neutral, 6.5 to 7.5.
- Incorporate a reglet termination for the sheet metal cap over top of the corbeled masonry.
- Repointing:
 - Place mortar in areas with greater removal depths than surrounding areas, until uniform depth of at least $\frac{3}{4}$ inch or until sound mortar is encountered.
 - Place in successive layers not greater than $\frac{3}{8}$ inch.
 - Fully compact each layer and allow to become thumbprint hard before applying next layer.
 - After deeper removal areas have been filled with mortar to $\frac{3}{4}$ inch from the surface, place mortar in joints.
 - Place in layers not greater than $\frac{1}{4}$ inch.
 - Fully compact each layer and allow to become thumbprint hard before applying next layer.

- When mortar is thumbprint hard, tool joints to match original appearance of joints. Remove excess mortar from edges of joints by brushing at the end of each day.
- Cleaning:
 - Clean brick masonry surrounding removal/replacement areas daily after repairs are complete by removing mortar, dust, and loose particles. Do not wait for the entire elevation/project to be finished before initiating cleaning.
- Coordinate and plan for on-site operations with the Association in advance of executing the work:
 - Anticipated working hours
 - Identify work area for material storage/lay-down
 - Debris disposal
 - Clarify use of the Castle facilities (i.e. electric, toilets, etc.)
 - Building and work should be protected during all phases of construction.