CITY OF TEMPE
HISTORIC PRESERVATION COMMISSION

Meeting Date: 07/13/2022
Agenda Item: 5

Memorandum

To: Historic Preservation Commission

From: Zachary J. Lechner, Historic Preservation Officer

Date: July 7, 2022

Subject: Agenda Item #5: Update on the recent graffiti remediation at the Hayden Flour Mill Complex

Logan Simpson recently provided the Tempe Historic Preservation Office with a graffiti abatement report and an updated historic preservation treatment plan (HPTP) for the Hayden Flour Mill complex. Logan Simpson subcontracted with Construction Cleaning Pros, LLC to remove graffiti on the 1918 Mill and the 1951 Silos. The work was completed in June 2022. Per its contract with the City, Logan Simpson completed an HPTP for the Mill Complex, which was approved by Interim Historic Preservation Officer (HPO) Robbie Aaron in December 2021 (the document was updated in June 2022). Because of the Flour Mill Complex's central importance to Tempe's history, it was designated Historic in the Tempe Historic Property Register in 2018. Special care had to be taken to remove graffiti without damaging the surface of the buildings. To complete the work, Logan Simpson followed the Secretary of the Interior's Standards for the Treatment of Historic Properties, noting that "preservation is the preferred treatment when prioritizing the retention of the existing form, integrity, and materials of an historic property and will be utilized for [the Hayden Flour Mill Complex] treatment plan."

Construction Cleaning Pros utilized two chemicals— Taginator and Tagaway—to remove graffiti on the exterior elevations of the Mill and Silos. During the planning stages for the project in 2021, HPO John Southard rejected a proposal to use Si-Coat, an anti-graffiti chemical, after the graffiti removal was completed, due to a concern that Si-Coat's semi-gloss finish would clash with the matte finish of the paint on the Flour Mill and Silos. Mr. Southard's view, which I share, is echoed in the HPTP.

As with other historic buildings located in unactivated areas of the city, preventing new graffiti at the Flour Mill Complex is extremely difficult. While the Silos and portions of the Mill are surrounded by chain link and wrought iron fencing, and are useful in deterring vandals, they are not impregnable. It is even more difficult to prevent tagging on the west and north side of the Mill itself, since they are accessible from Mill Avenue and Rio Salado Parkway, respectively. In short, graffiti at the site will continue to be a concern until a developer can activate the area, thereby making the site no longer attractive—or accessible—to vandals. The HPO, in consultation and collaboration with the HPC, City Facilities, and the Police Department, will continue to monitor the site and determine which graffiti prevention and remediation measures are appropriate in the future.

ATTACHMENTS:

1. Updated Historic Preservation Treatment Plan for Graffiti Abatement of the Hayden Flour Mill Complex

2. Results of Graffiti Abatement at the Hayden Flour Mill Complex

A Historic Preservation Treatment Plan for Graffiti Abatement of the Hayden Flour Mill Complex, Tempe, Arizona

Prepared for:
City of Tempe
Engineering and Transportation Department-Engineering Division

Prepared by:
Penelope Cottrell-Crawford, M.L.A.
John Southard, M.A.
Jennifer Levstik, M.A.

Submitted by:
Jennifer Levstik, M.A.

LOGAN SIMPSON

Logan Simpson
177 North Church Avenue, Suite 607
Tucson, Arizona 85701

December 2021 (Revised June 2022)
Submittal #2
Logan Simpson Technical Report No. 215192a

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INTRODUCTION

The purpose of this report is the completion of a historic preservation treatment plan for graffiti abatement of the exterior envelope of the Hayden Flour Mill and silos (mill), located at 119 South Mill Avenue, in Tempe, Arizona (Figure 1). The building is owned and managed by the City of Tempe (CoT). The preservation of the exterior envelope requires that a historic preservation treatment plan be in place to prioritize protection of the existing historic fabric and to provide clear methods to minimize adverse effects to this locally significant resource.

On behalf of CoT, Logan Simpson and their subconsultant, Construction Cleaning Pros, LLC (CCP) were contracted to complete exterior preservation efforts through graffiti removal/abatement of the mill complex (mill and silos) following the Secretary of the Interior's Standards for Treatment of Historic Properties (NPS 2017). The National Park Service (NPS) standards outline four preferred treatment methods: *Preservation*, *Rehabilitatio*n, *Restoration,* and *Reconstruction*. Preservation is the preferred treatment when prioritizing the retention of the existing form, integrity, and materials of an historic property and will be utilized for this treatment plan. Using Preservation as a treatment option entails adherence to the following eight numbered standards:

1. A property will be used as it was historically or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

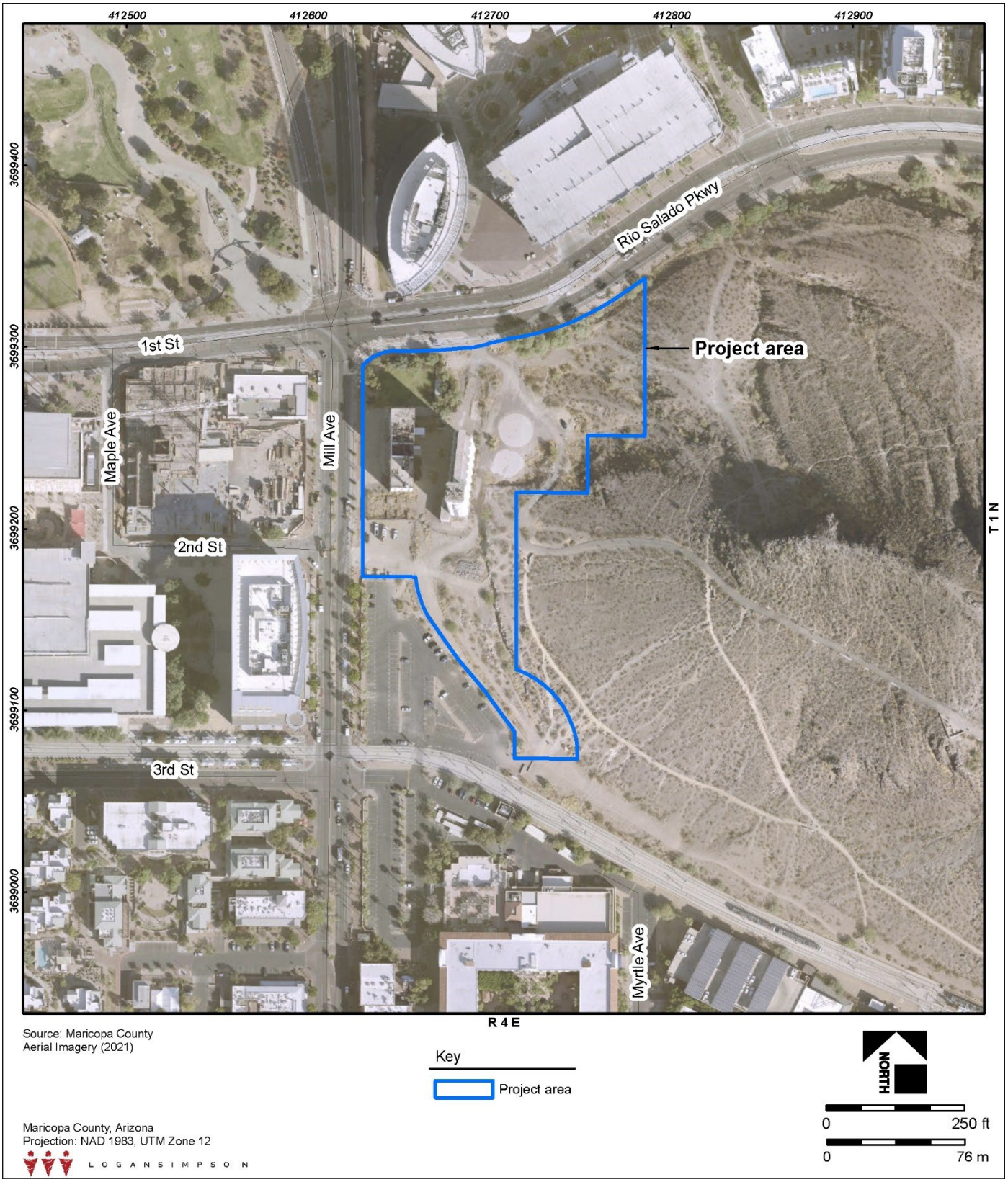

412500
412600
412700
412800
412900
3699400
3699300
3699200
3699100
3699000
Rio Salado Pkwy
1st St
2nd St
3rd St
Maple Ave
Mill Ave
Myrtle Ave
Project area
T 1 N
R 4 E
Source: Maricopa County
Aerial Imagery (2021)
Key
Project area
NORTH
0
250 ft
0
76 m
Maricopa County, Arizona
Projection: NAD 1983, UTM Zone 12
LOGANSIMPSON

Figure 1. Project area map.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Preservation as a treatment approach is appropriate in this case when the objective is to retain the building's form, features, and materials as it currently exists. This is achieved through providing an outline and methods by which the gentlest means possible are employed to remove contemporary graffiti and retain the mill's 1918 appearance and the silo's 1951 appearance.

DEVELOPMENTAL HISTORY

The Hayden Flour Mill was established by Charles Trumbull Hayden (b.1825-d.1900). Hayden is generally regarded as the founder of the City of Tempe and was an industrial pioneer credited with building Arizona's second flour mill and influencing the growth of Tempe as a center for processing and shipping of agricultural products (*Arizona Republic* [AR] 11 July 1918:9; Vargas et al 2008:96). Hayden was born in Connecticut and found his way to Arizona by 1858, having previously made a career in freighting and commerce throughout the southwestern region of the United States. In 1870, Hayden partnered with other local entrepreneurs to form the Tempe Canal Company and, by 1871, the Tempe Canal was partially complete (Vargas et al 2008:44). A further extension, known as Hayden's Ditch, ran to Hayden's mill site at the western base of Tempe Butte and was completed in 1874, shortly before the completion of the mill (Vargas et al 2008:44). While awaiting the construction of the mill, Hayden ran a cable across the Salt River from the western base of the butte and installed a ferry to provide passage during high water. The location of the ferry, called Hayden's Ferry, would serve as the place name for what would later become the City of Tempe (*The Weekly Arizona Miner* [WAM], 24 December 1874:4; Vargas et al 2008:45).

The original mill was built of adobe and timber (Figure 2). The mill's early operations included the expansion of the original store, located on the west side of what is now Mill Avenue, to create separate living quarters, a courtyard, and eventually a second floor (Vargas et al 2008:45). His early success also encouraged rapid expansion of his milling equipment and of the mill itself. The *Arizona Weekly Citizen* reported that production was doubled to keep up with demand (*Arizona Weekly Citizen* 27 March 1880:1; Vargas et al 2008: 45 [*Weekly Arizona Miner* 1877a; *Phoenix Herald* 1881b]). After decades of playing a pivotal role in the early development of Tempe, Charles Hayden passed away in 1900. The business was transferred to his eldest child, Carl Hayden, who would go on to serve as Arizona's first Congressman in 1912. Over the next several years, the mill experienced difficulties, including temporarily closing in 1914, suffering a fire that destroyed the adobe mill in 1917, and myriad of financial difficulties throughout the 1920's (Vargas et al 2008:51).

In 1918, the mill was rebuilt with cast-in-place concrete and in 1924 was updated to run on electricity from Roosevelt Dam, thereby becoming "one of the first major purchasers of electric power in Tempe" (Figure 3; *AR* 11 July 1918:9; Vargas et al 2008:96). A grain elevator and silos were erected in 1951 by the Mayer-Osborn

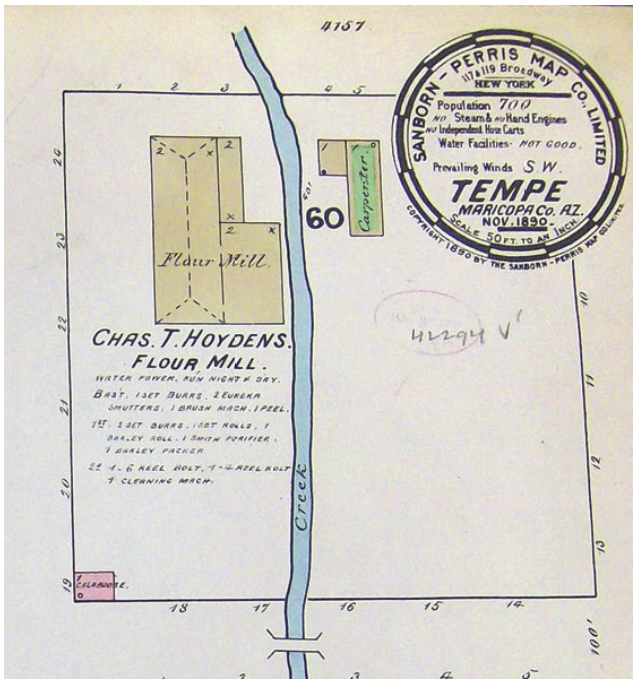


Figure 2. 1890 *Sanborn-Perris Fire Insurance* map detail of Hayden's adobe mill and the adjacent waterway (Image from Vargas et al 2008:45).

Figure 3. Detail of 1926 historic photograph, view of East elevation, looking west. The Sack Storage building, visible on the rear of the Mill building, is no longer extant. (Image from Vargas et al 2008:226; Courtesy of Salt River Project [Historic Photographs collection, Tempe from hillside 4-3-21-26]).

Figure 4. South and west elevations, view northeast, as pictured in 1966 (photograph by Mary Leonard, courtesy of *Arizona Republic* 07 August 1966: E1).

Construction Company of Denver and were constructed of reinforced, poured-in-place concrete, "which took 11 days of continuous pouring to complete" (Figure 4; Vargas et al 2008:235 [Michael Wilson Kelly-Architects 2002:24]). The Hayden Flour Mill persisted throughout the 20th century, finally closing its doors in 1998. The mill, silos, and other associated structures and objects still function as a visual and symbolic landmark for the City of Tempe.

Evaluation of Significance

The Hayden Flour Mill complex is significant at both the local and state levels under National Register of Historic Places (NRHP) Criteria A and C. Eligibility under Criterion A is based on its association with one of the earliest successful and longest-running merchant flour mills in Arizona and eligibility under Criterion C is based on the complex's existence as the oldest standing reinforced concrete building in Tempe. Established in 1874 by Charles T. Hayden, the mill was built on the south side of the Salt River and was located to take advantage of the "Tempe Crossing site," one of two important fords on the river (THPR 2017). The location of the mill served as a landmark at the juncture of transportation routes throughout the state and region, and its success was integral to the subsequent development of the City of Tempe. By 1882, the mill was recorded as one of the

largest merchant mills in the Salt River Valley. The original mill building was constructed of adobe and was destroyed by fire in 1917, at which point construction of a concrete building commenced. The mill's success continued throughout the 20th century, expanding when other merchant flour mills in the region were forced to close or consolidate (MacRostie 2016). The Hayden Flour Mill was continuously owned and operated by members of the Hayden family until 1981, when it was sold to Bay Sate Milling Company of Quincy, Massachusetts. The period of significance previously assigned to this property is 1918 to 1966 (MacRostie 2016). The National Park Service has made a preliminary determination that the property meets the National Register Criteria and is recommended as eligible for listing in the NRHP (MacRostie 2016).

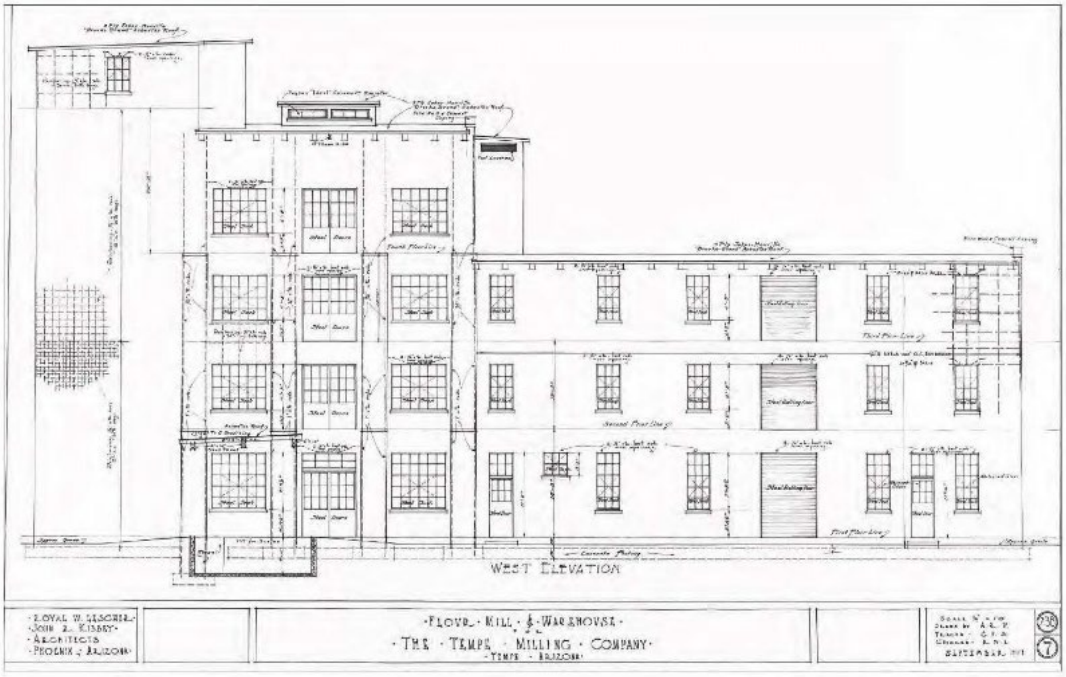
The Hayden Flour Mill complex is comprised of numerous buildings, structures, and objects; this plan focuses on two buildings located near the center of the 5.08-acre Hayden Flour Mill property. The mill building (1918) is a cast-in-place, reinforced concrete building which features a rectangular footprint with a stepped profile (stepped to the north) and ranges in height from three to five stories (Figures 5 and 6). The mill building has two rooftop additions, one built ca. 1955 to 1958 and one constructed in 1966 (Vargas et al 2008:96). The second building, a grain elevator and numerous silos, was constructed in 1951 of cast-in-place reinforced concrete. The 151-foot-tall grain elevator sits at the south end of the building; 14 117-foot-tall external silos arranged in two parallel rows of seven silos extend northward from the grain elevator. Interstitial silos are sandwiched between the external silos.

TREATMENT AND WORK RECOMMENDATIONS

Per the scope of work, the exterior walls of the building and silos are in need of graffiti abatement. Presently, the exterior of the Hayden Flour Mill complex has areas where the buildings have been painted with acrylic-based paint, graffiti and over spray, and areas which have previously been painted over to cover the graffiti, without being sensitive to the historical paint color and sheen (Figure 7). The color and sheen of the building has been extrapolated from historic images and existing conditions, which suggest that over time it has exhibited a matte finish and was generally of an off-white color with sections of red or brown paint along the foundation.

Historic Preservation Treatment Objectives

As noted earlier, Preservation is the preferred treatment objective per the Secretary of the Interior's Standards when repair of deteriorated features is necessary. As outlined in the scope of work for this project, graffiti on the exterior fabric of the mill and silos will be remediated, where necessary, repainting of the exterior with historically matched colors and sheen will follow. Paint colors and sheen will be matched on site in cooperation with a paint consultant who will complete a scape test in various locations below the existing paint layer to find the most suitable color. The following subsections of this plan outline the preservation strategy and functional requirements to carry out the proposed exterior graffiti abatement to the mill and silos.



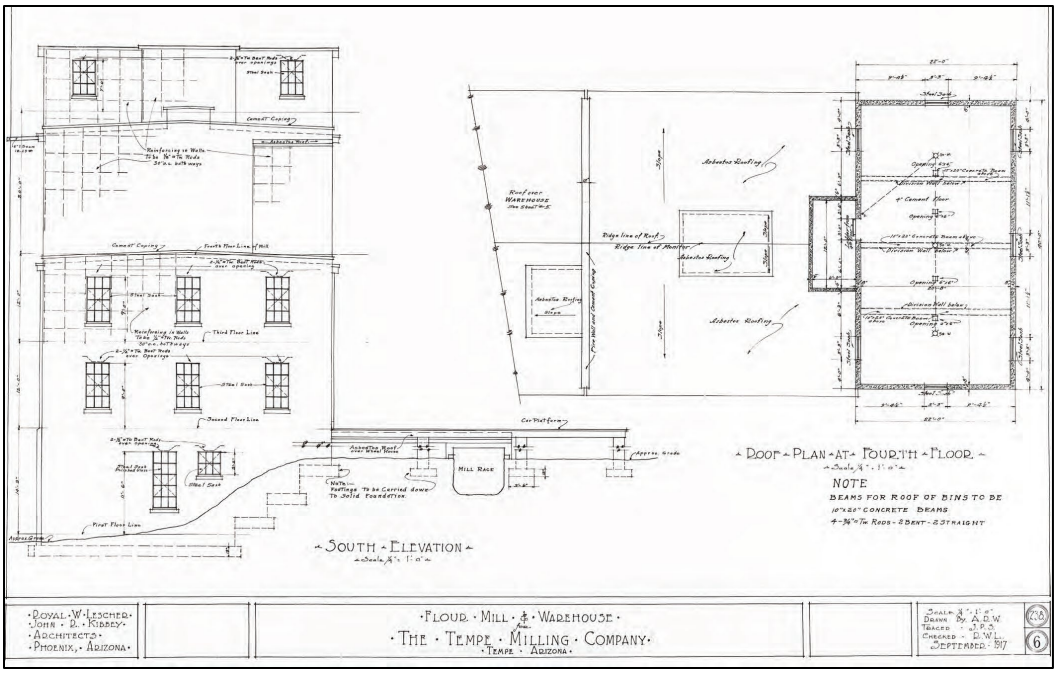


Figure 5 (top). Lescher & Kibbey Architects, West elevation as-built drawing of the Flour Mill (1917) (Image courtesy of Vargas et al 2008). Figure 6 (bottom). Lescher & Kibbey Architects, South elevation as-built drawing of the Flour Mill (1917) (Image courtesy of Vargas et al 2008).

Figure 7. Examples of typical exterior paint and graffiti at the mill, including areas which have been vandalized and subsequently painted as an abatement strategy (Logan Simpson 2021).

Requirements for Work

The overall preservation plan consists of exterior graffiti abatement to the mill and silos, followed by repainting, where needed, using paint that matches the historic colors and sheen. The abatement will be completed in two phases as outlined below:

Staging and Sequencing

1. Approval of the historic preservation treatment plan for exterior graffiti abatement will be approved by CoT HPO prior to start of any abatement activities.

2. Install temporary non-ground disturbing construction fence, cones, or other structures to indicate location of work areas. Post signage indicating the contractors, and any applicable laws as appropriate.

3. Erect scaffolding around the mill and silos as necessary. Scaffolding will be freestanding with no connection or anchorage to building. For areas where the use of ladders or scaffolding is required, all Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) requirements will be followed (Personal communication Lisa Lautz, Construction Cleaning Pros, November 24, 2021).

4. The work will be conducted in two phases. Phase 1 will include the application of Taginator or Tagaway (graffiti removers) to the abatement areas. Taginator/Tagaway was chosen as the graffiti remover because it is considered one of the top-performing products in the industry (Personal communication Lisa Lautz, Construction Cleaning Pros, November 24, 2021). The two products will be used in conjunction since they are designed to work on different types of surfaces (Taginator/Tagaway 2021). These products are effective

on aerosol latex and enamel paints, lacquers, permanent marker inks, acrylics, traffic line coatings high temperature engine paints, and adhesives. Both products are fast acting, free rinsing, and biodegradable (Appendix A. Safety Data Sheet Taginator, Safety Data Sheet Tagaway; Taginator/Tagaway 2021).

The abatement areas are divided into three locations. Abatement Area 1 is defined by the east elevation of the mill where 11 occurrences of graffiti range in size from 2 feet to 360 sq feet. The graffiti in this area is located on painted concrete surfaces, concrete masonry units, and steel doors. The locations of these areas also vary in height and extend up to 18 feet tall. Where applicable, scaffolding or an articulated lift will be used to access these locations. Abatement Area 2 includes the rooftop of the mill where at least four occurrences of acrylic-based paint or indelible marker graffiti ranging in size from 2 square feet to 400 square feet exist. The maximum elevation for this abatement area is 16 feet. Abatement Area 3 is comprised largely of the the west, north, and south elevations of the silos, where graffiti has been previously painted over in at least three locations with an acrylic-based paint on concrete walls and steel doors. The graffiti extends up to 16 feet high in this area. Where applicable, scaffolding or an articulated lift will be used to access these locations.

5. Prior to the application of Taginator/Tagaway, the product will be tested on an inconspicuous area to make sure it does not adversely affect the substrate. Once the product has been applied it will be allowed to soak into the graffiti anywhere from 10 to 15 seconds for Tagaway and 5 to 20 minutes for Taginator. Following the application of Taginator/Tagaway in the abatement areas, mobile power washing equipment will be used. The contractor will rinse the walls and doors with low pressure (less than 1,200 pounds per square inch [psi]) warm-to-hot temperature water to avoid damaging the historic fabric. Abatement Area 2 will be washed first, to allow run off from the roof before washing Abatement Area 1. Once these two areas have been washed, an articulated boom lift and commercial-grade paint sprayer will be used to apply the product to the silos in Abatement Area 3. The silos will also be power washed after treatment. After all areas are clean and dry, an historically matched paint will be applied to locations that were historically painted using a commercial-grade paint sprayer and/or paint brushes. A commercial-grade paint sprayer will be used to apply and blend the paint with any existing paint surfaces. Any historically unfinished wall materials will be left bare. The painted areas will be left to cure for 72 hours and reassessed to make sure the color and sheen reflects the buildings 1918 appearance and the silos 1951 appearance. This will be achieved through matching previous scrape test samples against the newly applied paint. Upon completion of Phase 1, the CoT HPO will review all work and provide the Historic Preservation Commission a written synopsis of the work and results

6. Phase 2, if determined advisable by the CoT HPO, may include the application of protective coating such as SI-Coat 531 AG. SI-Coat 531 AG is an anti-graffiti coating recommended by CCP to aid easy abatement of future graffiti when and if it should occur (Personal communication Lisa Lautz, Construction Cleaning Pros, November 24, 2021). However, the Si-Coat 531 AG data sheet identifies it as a semi-gloss, hydrophobic protective coating. Its semi-gloss appearance is unlikely to match the existing sheen of the mill and silos. Further, *Preservation Brief 1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings* (PB1), generally counsels against the application of hydrophobic (water repellent) coating to

historic masonry, defined by the authors of the bulletin as "[including] stone, brick, architectural terra cotta, cast stone, concrete and concrete block" (Mack and Grimmer 2000). Specifically:

> Water-repellent coatings are frequently applied to historic masonry buildings for the wrong reason. They also are often applied without an understanding of what they are and what they are intended to do. And these coatings can be very difficult, if not impossible, to remove from the masonry if they fail or become discolored. Most importantly, the application of water-repellent coatings to historic masonry is usually unnecessary.

PB1 cautions against the possibility of subflorescence developing in historic masonry following the application, noting the following:

> Excessive moisture in masonry walls may carry waterborne soluble salts from the masonry units themselves or from the mortar through the walls. If the water is permitted to come to the surface, the salts may appear on the masonry surface as efflorescence (a whitish powder) upon evaporation. However, the salts can be potentially dangerous if they remain in the masonry and crystallize beneath the surface as subflorescence. Subflorescence eventually may cause the surface of the masonry to spall, particularly if a water-repellent coating has been applied which tends to reduce the flow of moisture out from the subsurface of the masonry. Although many of the newer water-repellent products are more breathable than their predecessors, they can be especially damaging if applied to masonry that contains salts, because they limit the flow of moisture through masonry.

PB1 does identify some applications as appropriate. Graffiti prevention is one of the "instances when a water-repellent coating may be considered appropriate to use on a historic masonry building." However, even then, it is not preferred. Per PB 1,

> Anti-graffiti or barrier coatings are another type of clear coating—although barrier coatings can also be pigmented—that may be applied to exterior masonry, but they are not formulated primarily as water repellents. The purpose of these coatings is to make it harder for graffiti to stick to a masonry surface and, thus, easier to clean. But, like water-repellent coatings, in most cases the application of anti-graffiti coatings is generally not recommended for historic masonry buildings. These coatings are often quite shiny which can greatly alter the appearance of a historic masonry surface, and they are not always effective. Generally, other ways of discouraging graffiti, such as improved lighting, can be more effective than a coating. However, the application of anti-graffiti coatings may be appropriate in some instances on vulnerable areas of historic masonry buildings which are frequent targets of graffiti that are located in out-of-the-way places where constant surveillance is not possible.

Should the CoT HPO determine application of a protective coating to be appropriate, a product such as Si-Coat 531 AG (clear) will be applied using paint sprayers to cover treated areas. Application of the selected

product shall follow all manufacturer's recommendations (see Appendix A for Si-Coat 531 AD manufacturer's data sheet; should an alternate coating be selected, manufacturer recommendations for that product are to be followed). As in Phase 1, scaffolding and an articulated boom lift will be utilized to access targeted areas. Prior to application of a protective coating, the selected product will be tested on an inconspicuous area to ensure its sheen matches that of the building. Upon completion of Phase 2, the CoT HPO will review all work and provide the Historic Preservation Commission a written synopsis of the work and results.

Equipment and Tools Required

7. Scaffolding, an articulated lift, mobile power washing unit, and a water truck will be utilized to perform all necessary tasks as part of this project. Upon completion of abatement activities, all scaffolding will be disassembled, and the contractor will perform a site clean-up and haul off any debris, containers, and materials used during the project.

Supplies and Materials

8. Taginator/Tagaway products will be used to remove graffiti. The product is both Eco-Friendly and U.S. Environmental Protection Agency (EPA)-compliant and will be tested on an inconspicuous area before use on the abatement areas to ensure that it does not damage the substrate. Should the CoT HPO determine the application of a protective coating to be appropriate, an anti-graffiti product such as Si-Coat 531 AG will be applied to areas of the complex determined by the CoT HPO to be at high risk of future graffiti incidents. See Appendix A for Taginator and Si-Coat 531 AG manufacturer's data sheets.

SUMMARY

This plan will act as the guiding document for the preservation of the exterior envelope of the mill and silos and has been established to ensure that the Secretary of the Interior's Standards are followed. Moreover, the plan seeks to protect and preserve Hayden Flour Mill's historic character-defining features and materials to continue the legacy of stewardship by the City of Tempe. Future graffiti and other vandalism-related damage consistent with that described in this report should be remediated using the strategies outlined in this report and the recommendations of the CoT HPO. Graffiti and damage not consistent with that described in this report will require evaluation from qualified cultural resources professionals and should not be abated until said professionals provide a recommended treatment strategy.

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APPENDIX A: MANUFACTURER'S DATA SHEETS

SAFETY DATA SHEET SDS: TAGINATOR®

Section 1—Identification

Product Identifier: TAGINATOR®

Product Use: Graffiti Remover Liquid for Masonry Surfaces.

Manufacturer's Name: Equipment Trade Service Co. Inc.

Address: 20 East Winona Avenue Norwood, PA 19074 USA

24 Hour Emergency Telephone: ChemTel 800-255-3924
General Telephone: 1-610-583-7657 8 AM— 4 PM EST. M—F
Website: www.etscompany.com

Section 2—Hazard's Identification

Classifications: Skin Corrosion Category 1B, Eye Damage Category 1, Acute Toxicity—Oral Category 4, Flammable Liquid Category 3 (Although will not sustain flame, See notes sections 5 & 9)
Symbols: Corrosion, Flame **Signal Word:** Danger
Hazard Statement: Causes severe skin burns and eye damage. Harmful if swallowed.
Flammable liquid and vapor (Although will not sustain flame, See notes sections 5 & 9)
Precautionary Statements:
Prevention: Wash hands and skin thoroughly after handling. Wear eye and face protection. Wear Protective liquid proof gloves and clothing. Do not eat, drink or smoke when using this product. Do not breathe mist or spray. Keep only in original plastic container. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Use explosion proof electrical/ventilating/lighting/equipment/ Use only non sparking tools. Take precautionary measures against static discharge.
Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do not induce vomiting. Immediately call a poison center / doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower. Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Storage: Store locked up.
Disposal: Dispose of contents / container in accordance with local, state, federal and international regulations.
Environmental: Biodegradable

NFPA Rating:
0=Safe, 4=Danger; Health (Blue) 2 Flame (Red) 1 React (Yellow) 0 Special (White) Alk

Section 3—Composition / Information on Ingredients

Component	CAS#	% By Weight
Propylene glycol methyl ether acetate	108-65-6	1—5
Potassium Hydroxide	1310-58-3	5—10

In compliance with OSHA HCS and UN GHS, Trade Secret / Confidential business information has been omitted.

Section 4—First Aid Measures

Inhalation: Unusual Exposure to mist will irritate respiratory system. Move Person to fresh air and keep comfortable.
Eyes: Contact will cause burns. Continually flush with water. Remove contact lenses if present and easy to do and seek medical attention.
Skin: Contact will cause skin irritation or burning. Remove contaminated clothing, flush skin with water for 15 minutes. Wash contaminated clothing before reuse.
Ingestion: Swallowing will cause burning to mouth, throat and digestive system. Corrosive if swallowed, wash mouth, seek immediate medical attention. Call poison Control. Do not induce vomiting unless directed to do so by medical personnel.

Always seek medical attention if complications develop.

Section 5—Fire Fighting Measures

Note: Product will not sustain combustion, burning or flame per ASTM D4206
Suitable Extinguishing Media: C02, Dry Chemical, Foam, Water Spray
Unsuitable Extinguishing Media: None Known
Unusual Fire & Explosion Hazards: May produce toxic fumes of carbon monoxide if burning. Empty containers may contain residue. Do not pressurize, cut, heat, or expose containers to flame.
Special Protection & Procedures: Cool fire-exposed containers. Do not enter confined fire space without proper protective equipment including NIOSH approved self-contained breathing apparatus.

Section 6—Accidental Release Measures

Personal Precautions: Keep unnecessary people away; isolate area and deny entry. Stay upwind. Do not eat, drink or smoke while cleaning up.
(Also see section 8).

Protective Equipment: EYES: Chemical Safety goggles and or face shield **SKIN:** Gloves, Nitri or PVC, waterproof boots, waterproof clothing. Keep personal water rinse near by **RESPIRATORY:** Chemical mist respirator in poorly ventilated areas.

Emergency Procedures: Use appropriate safety equipment. Eliminate sources of ignition. Collect and contain all spill with absorbent material for disposal. Cover drains. Contain large spills and pump into suitable tank for disposal.

Waste Disposal methods: Obey all local, state and federal regulations.

Section 7—Handling and Storage

Precautions & Conditions for Safe Handling: Do not get in eyes, on skin or on clothing. Keep container closed when not in use. Do not mix with other chemicals. Avoid breathing mist. No eating, drinking or smoking. Wash hands after use. Store in a well ventilated place. Keep cool. Do not store near open flame or heat. Do not store near incompatible materials. Do not take internally. Transfer material only to approved, properly labeled containers. KEEP OUT OF REACH OF CHILDREN.

Incompatible Materials: Strong acids, alkalies and oxidizers.

Section 8— Exposure Controls/ Personal Protection

Exposure Limits	OSHA PEL	ACGIH TLV	Other
Propylene glycol methyl ether acetate	Not Available	Not Available	Not Known
Potassium Hydroxide	Not Listed	2 mg/ m3	Not Known

Ventilation: Local & mechanical recommended
Personal protective equipment (PPE): EYES: Chemical Safety goggles and or face shield **SKIN:** Gloves, Nitrile or PVC, waterproof boots, waterproof clothing. Keep personal water rinse near by **RESPIRATORY:** Chemical mist respirator in poorly ventilated areas.

SDS: TAGINATOR®

Section 9—Physical and Chemical Properties

Appearance / Color: Liquid, Reddish Brown
Odor: Fresh and clean scented
pH: High Alkaline & Solvent blend
Melting Point: Does Not Apply
Freezing Point: Less than –10Degrees F.
Boiling Point: Not Available
Flash Point: 112.1 Degrees F. Small Scale closed cup ASTM D3278. **Note:** Product will not sustain combustion, burning or flame per ASTM D4206, therefore ships not flammable.
Evaporation Rate: Not Available
Lower Flammable Limit: Not Available
Upper Flammable Limit: Not Available
Vapor Pressure: Not Available
Vapor Density: Not Available
Relative Density / Specific Gravity: 1.088 gm/ml
Solubility(ies): Complete in water
Partition Coefficient: n-octanol/water: Not Available
Auto-ignition Temperature: Not Available
Decomposition Temperature: Not Available
Viscosity: Thin Liquid
V.O.C Content: Less than 30% (by weight)

Section 10—Stability and Reactivity

Reactivity: Not available / none known
Chemical Stability: No decomposition, if handled and stored according to specifications.

Possibility of hazardous reactions: Avoid incompatible materials.

Conditions to avoid: Heat, sparks, flame.

Materials to avoid: Strong acids, oxidizers, Aluminum and other alloys.

Hazardous decomposition products: May produce toxic fumes of carbon monoxide if burning. Empty containers may contain residue. Do not pressurize, cut, heat, or expose containers to flame.

Section 11—Toxicological Information

Signs and symptoms of overexposure:

Acute Effects:
Inhalation: Exposure to mist will irritate or burn respiratory system.
Eyes: Contact will cause burns.
Skin: Contact will cause skin irritation or burning.
Ingestion: Swallowing will cause burning to mouth, throat and digestive system.
Target Organ Effects: None are known
Chronic Effects: None are known
Carcinogenicity: None are known
Germ Cell Mutagenicity: None are known
Reproductive Toxicity: None are known

Medical Conditions Aggravated by Exposure: None are known

Section 12—Ecological Information

Persistence and degradability: All components contained in the product are classified as "readily biodegradable". This product is expected to be inherently biodegradable.

Bio-accumulative potential: There is no evidence to suggest bioaccumulation will occur.

Section 13—Disposal Considerations

Obey all local, state, federal and international regulations.

Section 14—Transportation Information

U.S. Department of Transportation (DOT)

UN/NA Number: UN1760
Proper Shipping Name: UN1760, Corrosive Liquid, N.O.S., (potassium Hydroxide), 8, PGII
Hazard Class: 8 (Corrosive)
Packing Group: II
Labels Required: Corrosive

U.S. / Canada Emergency Response Guide #: 154

International Maritime Organizations (IMDG)

UN/NA Number: UN1760
Proper Shipping Name: UN1760, Corrosive Liquid, N.O.S., (potassium Hydroxide), 8, PGII
Hazard Class: 8 (Corrosive)
Packing Group: II
Labels Required: Corrosive

Section 15—Regulatory Information

[WHMIS Classification]:

[OSHA]:

[SERA]:

[TSCA]:

Section 16— Other Information

Date SDS Prepared: May 1st 2015 **Revised:** May 1st 2021
The information in this SDS was obtained from sourced which we believe to be reliable. However, the information is provided without any warranty, expressed or implied. We do not assume responsibility and expressly disclaim liability for loss, damage or expense rising out of, or in any way connected with the handling, storage, use or disposal of the product. This SDS may not be applicable if the product is used as a component of another product.

Prepared in accordance with the OSHA Hazard Communication Standard (HCS) to conform with the United Nations (UN) Globally Harmonized System of Classification and Labeling of Chemical (GHS)

Si-COAT® 531AG™

Remarkable® Anti-Graffiti Protective Coating - Clear

Technical Data Sheet

INTRODUCTION

Si-COAT® 531AG™ Remarkable® Anti-Graffiti Protective Coating has been formulated as a spray grade alternative to Si-COAT 531^G Remarkable Anti-Graffiti Protective Coating. It is a clear, semi-gloss, permanent (non-sacrificial) single application anti-graffiti protective coating suitable for use over metal, concrete, brick, stone, wood, fiberglass and pre-existing coatings. This single component, room temperature vulcanizing (RTV), moisture cure polysiloxane anti-graffiti protective coating provides excellent durability and long service life.

As a result of its specific chemistry, Si-COAT 531AG Remarkable Anti-Graffiti Protective Coating forms chemical bonds with the host surface to enhance adhesion properties without the need for abrasive blasting, priming, and extensive site preparation.

Due to the hydrophobicity of the coating, most graffiti-tagging can easily be removed from protected surfaces using water under low pressure. For best results, graffiti tagging should be removed from Si-COAT 531AG as soon as possible using a cold water pressure washer at 1200 psi.

PRODUCT CHARACTERISTICS AND PRACTICAL INFORMATION

Gloss Level	Semi-gloss
Volume Solids	70%
Typical Thickness Application Rate	7 ± 2 mil (127 to 229 micron) dry film thickness (DFT).
	7 to 13 mil (181 to 327 microns) wet film thickness (WFT).

Approximate Theoretical Coverage

DFT	5 mils (127 µ)	9 mils (229 µ)
sq. ft/US gal	225	125
sq. m/L	5.5	3.1

Allow appropriate loss factor:
Practical Coverage = Theoretical Coverage x [100% - Loss%].
Coverage will vary with the substrate and porosity of surface.

Method of Application: Airless spray, brush or roller

Application Temperature Range: 41 to 140˚F (5 to 60˚C) [ambient]

Drying Time:

Skin-over Time	20-30 minutes*
Tack-free Time	60-90 minutes*
Cure Through	4 to 6 hours*
Full Physical Characteristics	7 days*

**At standard conditions [77°F (25°C) and 50% relative humidity – 10 mils wet film thickness]*

REGULATORY DATA

Flash Point	104˚F (40˚C) minimum
VOC	1.96 lb/US gallon (235 g/liter)

PHYSICAL PROPERTIES

(Typical properties - values not to be used as specifications)

Uncured	
Appearance	Thick Paint
Viscosity	2,000± 1,000 cP
Sag	20 minimum (Leneta Anti-Sag Meter)
Cure System	Neutral, moisture cure
Cured At Standard Conditions* for 7 Days	
Durometer Hardness (ASTM D2240, Shore A)	40 points
Tensile Strength (ASTM D412)	150 psi (11 kg/cm^2)
Elongation at Break (ASTM D412)	100%
Temperature Stability	Continuous: -76 to 392°F (-60 to 200°C)

**At standard conditions 77°F (25°C) and 50% relative humidity*

SURFACE PREPARATION & CLEANLINESS

All surfaces to be coated should be free of dirt, dust, chalking paint, mortar spatter, all loose rust, all loose mill scale, old caulking, grease, oil, release agents, curing compounds, laitance and other foreign matter including frost.

COATING APPLICATION

Mixing: Si-COAT 531AG is supplied as a one-part coating (no component mixing necessary). However, since the coating is a thixotropic gel it is necessary to **mix by an air powered agitator (300 – 400 rpm) for a minimum of 5 minutes**, to ensure an even consistency of coating is obtained without air in suspension.

Application: All surfaces should be clean and dry prior to application. The coating should be applied in a manner that prevents runs, sags, drips, spills, etc. and that completely covers surfaces without holidays (gaps). The temperature of the surface to be coated should be between 41 and 140˚F (5 and 60˚C) and environmental & substrate temperature should be at least 5˚F (3˚C) above the dew point prior to and during application.

When working with Si-COAT 531AG in high humidity and/or high temperature environments, it is recommended to use a pail lid adapter fitted with an agitator. This will prevent the product from skinning over and curing in the pail during application.

It is recommended that Si-COAT 531AG is applied using an Airless Sprayer; however, brush, or roller are also suitable methods of application for small surface areas. It is necessary to apply at a rate that will achieve a minimum of 5 mils (127 µ) DFT. Roller and brush application will require multiple coats to achieve desired DFT.

csl silicones inc.

Results of Graffiti Abatement at the Hayden Flour Mill Complex, Tempe, Arizona

[Circa 1918] The Third Mill (Built with concrete still stands today)

Prepared for:
City of Tempe
Engineering and Transportation Department-Engineering Division

Prepared by:
Christopher P. Garraty, PhD., RPA

LOGAN SIMPSON

Logan Simpson
51 W Third Street, Suite 450
Tempe, Arizona 85281

June 2022
Submittal #1
Logan Simpson Technical Report No. 215192b

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LIST OF FIGURES

INTRODUCTION

This technical report addresses the results of graffiti abatement of the exterior envelope of the City of Tempe (CoT)-owned Hayden Flour Mill Complex—including the main mill building and adjacent silos—located at 119 South Mill Avenue in Tempe, Maricopa County, Arizona (Figure 1). The graffiti abatement of the exterior envelope was completed in accordance with a historic preservation treatment plan (HPTP; Cottrell-Crawford et al. 2022) for the management and preservation of the exterior envelope of the mill complex in perpetuity. The HPTP provides guidelines and methods to be implemented to protect and preserve the existing historic fabric of the mill complex and minimize adverse effects to this locally significant resource in accordance with the Secretary of the Interior's Standards for Treatment of Historic Properties (NPS 2017). The National Park Service (NPS) standards outline four preferred treatment methods: *Preservation*, *Rehabilitatio*n, *Restoration,* and *Reconstruction*. Preservation is the preferred treatment when prioritizing the retention of the existing form, integrity, and materials of an historic property and will be utilized for this treatment plan. Logan Simpson prepared the HPTP for the mill complex and contracted with Construction Cleaning Pros, LLC (CCP) to complete the graffiti abatement work on the exterior envelope.

This brief report focuses exclusively on the results of the graffiti abatement. The reader is referred to the HPTP for an overview of the NPS standards, the developmental history of the mill complex, a National Register of Historic Places (NRHP)-eligibility assessment, and treatment requirements for the exterior envelope of the mill complex. The preparation of the HPTP and implementation of the graffiti abatement work were completed in compliance with the CoT Historic Preservation Ordinance (Chapter 14A) and in coordination with the CoT Historic Preservation Officer (HPO).

GRAFFITI ABATEMENT METHODS AND RESULTS

The plan for graffiti abatement involved two phases of work. Phase I involved the application of a chemical treatment (Taginator/Tagaway) to remove the graffiti on the exterior elevations of the mill complex. Phase II involved application of a second chemical treatment (SI-Coat 531 AG) as an anti-graffiti coating to allow the City to rapidly cleanup and remove future graffiti tags on the exterior walls of the mill complex (Cottrell-Crawford et al. 2022). Most of the graffiti tags were located on the eastern elevation of the mill building (Area 1), the south-facing exterior walls at the roof of the mill building (Area 2), and the silos to the east of the building (Area 3). In general, the graffiti tags were concentrated in areas hidden from view of the bustling traffic and street life along Mill Avenue and Rio Salado Boulevard. Figures 2–4 show photographic examples of the graffiti on the exterior walls in Areas 1, 2, and 3 prior to the abatement work.

CCP completed Phase I of the graffiti abatement between May 23 and May 31, 2022, using the Taginator and Tagaway chemical treatments, a mobile power washing unit, and water truck. Scaffolding and an articulated lift were set up prior to starting the abatement work to allow safe access to graffiti tags at higher elevations on the exterior walls. Taginator and Tagaway were used in conjunction with one another since they are designed to work on different types of surfaces. Both products are fast acting, free rinsing, and biodegradable (see Cottrell-Crawford et al. 2022). The abatement methods generally involve applying the Taginator/Tagaway products, as appropriate, and then rinsing the surface with low pressure water (warm to hot temperature).

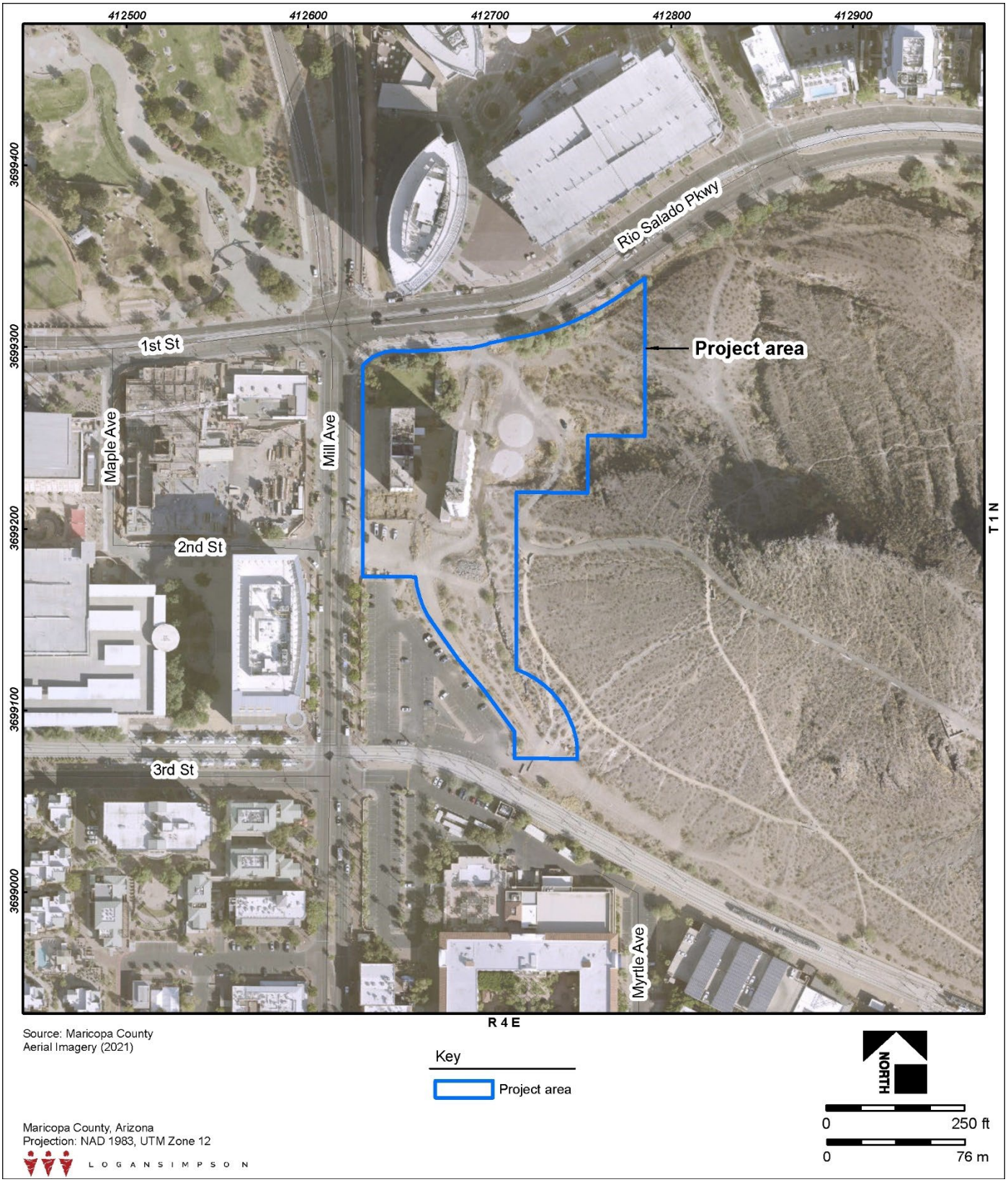


Figure 1. Map of the Hayden Mill complex property.

Figure 2. Photograph of exterior graffiti on the east elevation of the mill complex (Area 1). Photograph taken on April 16, 2021, facing northwest.

Figure 3. Photograph of exterior graffiti on the south-facing roof area the mill complex (Area 2). Photograph taken on April 16, 2021, facing north.

Figure 4. Photograph of exterior graffiti on the west elevation of the silos (Area 3) that had been previously painted over as an abatement strategy. Photograph taken on April 16, 2021, facing southeast.

Nearly all the graffiti was removed from the exterior elevations of the mill complex following completion of the Phase I treatment. One exception is the west elevation of the mill building (Area 1), where presumably a City employee had recently attempted to paint over a large tag rendered in green spray paint with the initials, “NMP.” The painting-over effort was incomplete and did not cover the higher-elevation of the graffiti tag, thus leaving visible the uppermost portion of the green spray-painted initials (Figure 5). Furthermore, the paint color selected to cover the spray paint did not closely match the existing paint color on the exterior wall of the mill. This painting-over effort took place sometime between the initial documentation of the graffiti on April 16, 2021 (see Figure 2) and the implementation of the abatement work on May 23, 2022.

On June 24, 2022, the CoT HPO canceled Phase II of the of the graffiti abatement work, i.e., application of Si-Coat 531 AG, based on concern about whether the anti-graffiti coating would affect the historical appearance and sheen of the building exterior (see Cottrell-Crawford et al. [2022] concerning potential problems with its application). Prior to its application, Si-Coat 531 AG would need to be tested on an inconspicuous area of the mill to make sure it matches the correct sheen prior. It would need to be approved by the CoT HPO for application over the entire exterior surface. As of the date of this report, the city has no plans to test the Si-Coat 531 AG product on the mill’s exterior walls. Furthermore, per the HPTP, a future assessment will be required to assess and determine the mill’s historical exterior paint color and sheen. Once the appropriate color is identified, it is recommended that the city use that paint color for any future remediation efforts or repainting work for the mill’s exterior envelope.

Figure 5. Photograph showing exterior graffiti tags on the east elevation of the mill complex (Area 1), including the area where the city's earlier painting-over effort is incomplete. Photograph on June 13, 2022, facing northwest.

The graffiti abatement work was completed in accordance with the work requirements outlined in the HPTP for this project (Cottrell-Crawford et al. 2022). The graffiti abatement was approved by the CoT HPO through review and approval of the HPTP, which was approved by interim HPO Robbie Aaron on December 28, 2021 (note that the HPTP was later revised and updated in June 2022). The abatement work was completed with the appropriate Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) safety requirements. The application of Taginator/Tagaway was completed in accordance with the staging sequence and guidelines outlined in the HPTP. The CoT HPO will evaluate the application and appropriateness of the Si-Coat 531 AG anti-graffiti coating as well as approve an appropriate exterior paint color in accordance with the guidelines outlined in the revised HPTP prior to approving its use.

Aerial Photogrammetry of the Mill Complex

Logan Simpson completed aerial photogrammetry of the mill complex following completion of the graffiti abatement work on June 13–15, 2022. The photogrammetry entailed use of an unmanned aerial vehicle (UAV, or drone) to take aerial photographs were used to create detailed drawings of the standing architecture within the mill complex and identify historic or modern fabric/elements. The ultra-high resolution aerial imagery (5 cm/pixel) was captured using a DJI Phantom 4 Pro UAV unit fitted with a 1-inch CMOS, 20-megapixel camera sensor capable of recording 4k video at 60 frames per second and taking images at a maximum size of 5472 x 3078 pixels. Logan Simpson completed the UAV flights in compliance with all FAA regulations using FAA-

certified remote pilots to operate the UAV. The project area was reviewed for potential flight hazards and aeronautical sectional charts were consulted to determine airspace accessibility.

Logan Simpson used imaging software to orthorectify, mosaic, and georeference the imagery and produce an aerial image far superior to the satellite imagery commonly viewed in Google Earth and Bing Maps. In addition, Logan Simpson also generated sub-decimeter elevation model and 3D models of the mill complex building and structures. The aerial photogrammetry results are summarized in Appendix A. Logan Simpson will submit the raw data and models to the CoT HPO as a separate deliverable.

Management Recommendations for Future Historic Preservation Treatments of the Hayden Mill Complex Exterior Envelope

As explained in the approved HPTP for this project (Cottrell-Crawford et al. 2022), the exterior walls of the Hayden Flour Mill complex include areas where the building and structures have been painted with acrylic-based paint, graffiti, and over spray, and areas which have previously been painted over to cover the graffiti, without being sensitive to the historical paint color and sheen. The color and sheen of the building generally extrapolated from historic images suggest that it exhibited a matte finish and a mostly off-white color, with sections of red or brown paint along the foundation; however, a more precise method for assessing the historical color of exterior walls is recommended. For example, paint colors and sheen could be matched onsite in cooperation with a qualified expert, who could do a scrape test in various locations below the existing paint layer to find the most suitable color. All future abatement efforts or modification efforts for the mill exterior should be completed in accordance with the guidelines and protocols outlined in the approved HPTP.

REFERENCES

Cottrell-Crawford, Penelope, John Southard, and Jennifer Levstik
2022 *A Historic Preservation Treatment Plan for Graffiti Abatement of the Hayden Flour Mill Complex, Tempe, Arizona*. Technical Report No. 215192a, Logan Simpson, Tempe, Arizona (revised 2022 version).

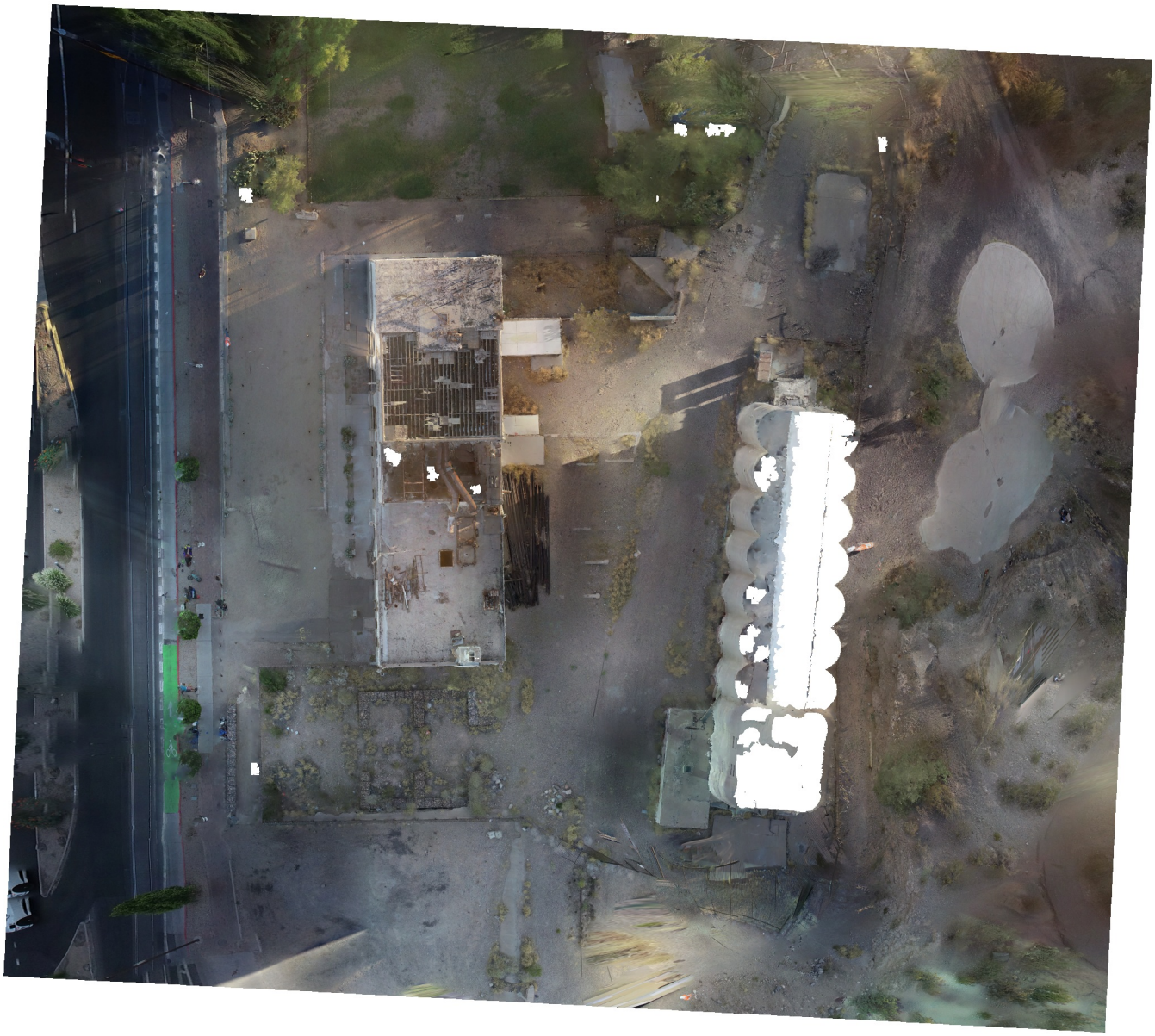
National Park Service
2017 Secretary of the Interior's Standards for the Treatment of Historic Properties. National Park Service, Washington, D.C.

APPENDIX A: SUMMARY OF PHOTOGRAMMETRY RESULTS

Agisoft Metashape

Processing Report

21 June 2022



Survey Data

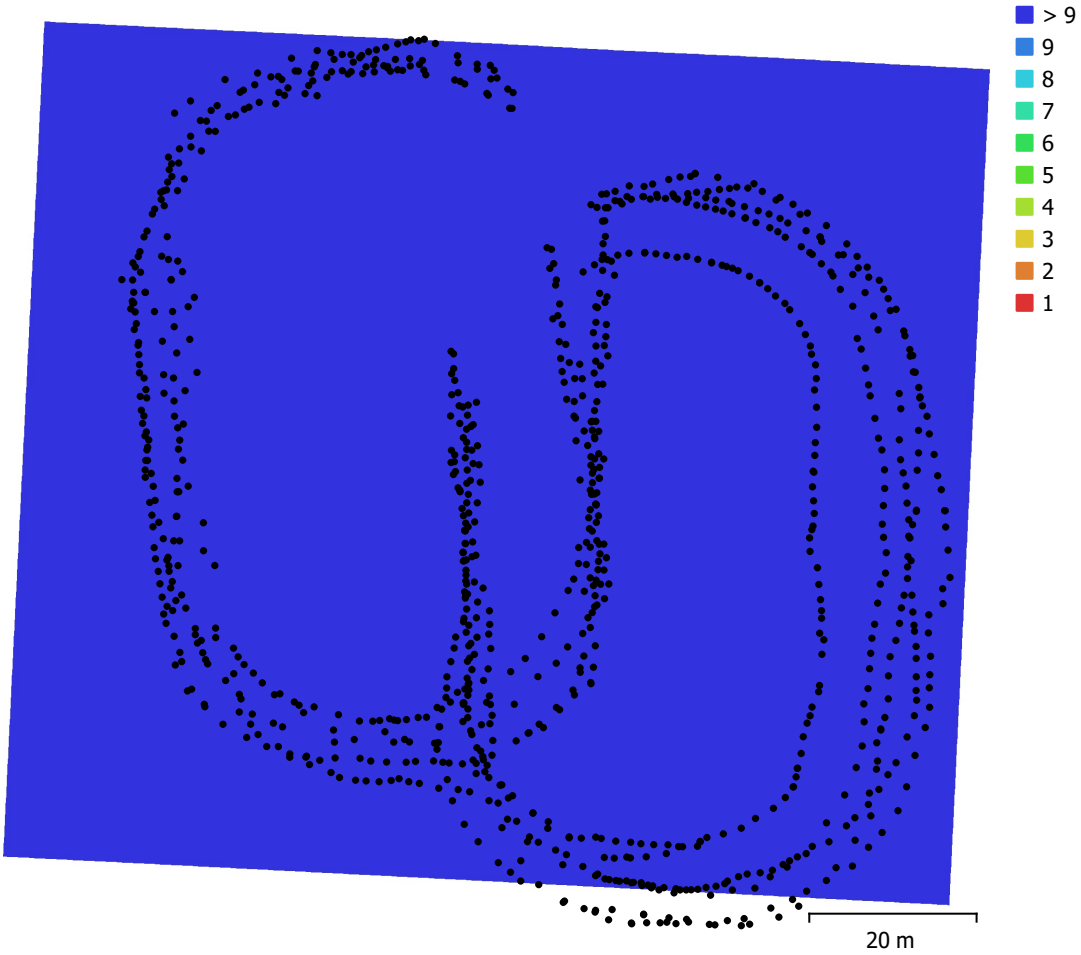


Fig. 1. Camera locations and image overlap.

Number of images:	994	Camera stations:	985
Flying altitude:	35.5 m	Tie points:	785,024
Ground resolution:	8.19 mm/pix	Projections:	2,807,843
Coverage area:	0.0113 km²	Reprojection error:	1.51 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6310 (8.8mm)	5472 x 3648	8.8 mm	2.41 x 2.41 µm	No

Table 1. Cameras.

Camera Calibration

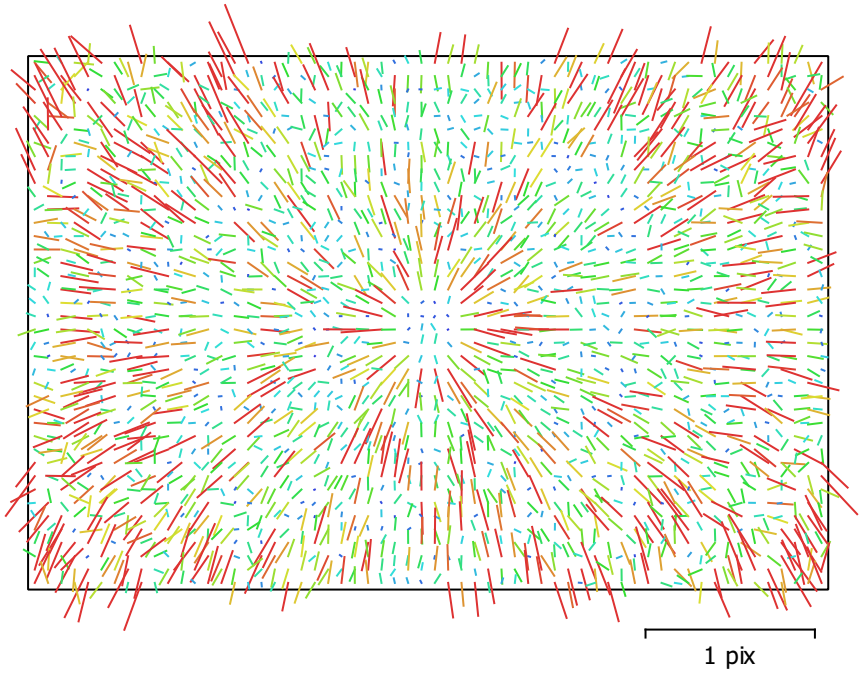


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

994 images

Type	Resolution	Focal Length	Pixel Size
Frame	**5472 x 3648**	**8.8 mm**	**2.41 x 2.41 µm**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	**3640.66**	0.035	1.00	-0.03	0.04	-0.63	0.02	-0.23	0.24	-0.21	0.19	-0.03	-0.08
Cx	**5.9591**	0.044		1.00	-0.01	-0.01	0.01	0.00	-0.00	0.00	0.00	0.93	-0.02
Cy	**-0.826446**	0.036			1.00	-0.24	-0.00	-0.01	0.01	-0.01	0.00	-0.03	0.74
B1	**0.759061**	0.028				1.00	-0.05	-0.01	0.00	-0.00	-0.00	-0.00	0.02
B2	**-0.275804**	0.021					1.00	-0.00	-0.00	-0.00	0.00	-0.08	0.00
K1	**0.00855599**	3.9e-05						1.00	-0.97	0.92	-0.86	0.00	-0.03
K2	**-0.0593205**	0.00018							1.00	-0.99	0.95	-0.00	0.01
K3	**0.103435**	0.00034								1.00	-0.99	0.00	-0.01
K4	**-0.0595285**	0.00022									1.00	-0.00	0.00
P1	**0.000109238**	3.5e-06										1.00	-0.03
P2	**-0.00106619**	2.2e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

Fig. 3. Camera locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
0.899185	0.9328	2.7339	1.29563	3.02537

Table 3. Average camera location error.
X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

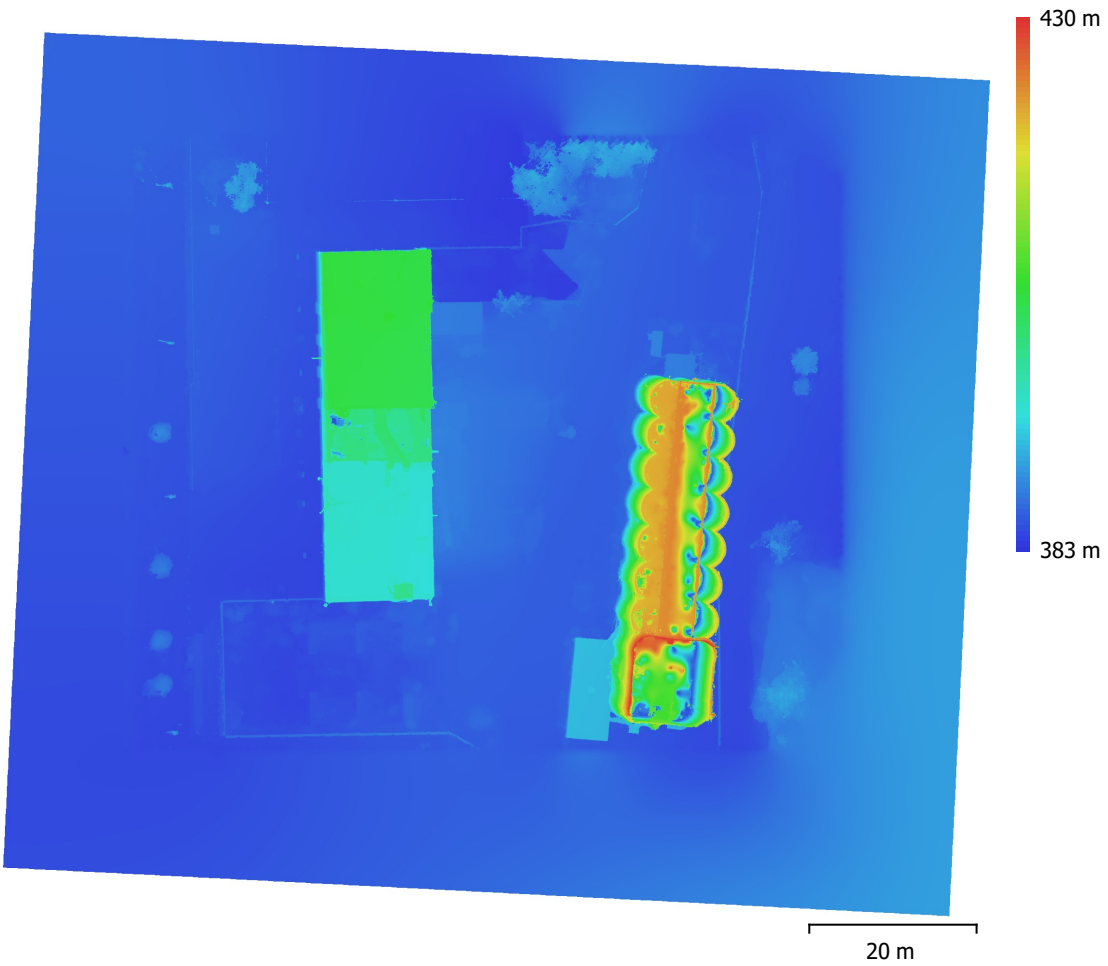


Fig. 4. Reconstructed digital elevation model.

Resolution:	1.64 cm/pix
Point density:	0.373 points/cm²

Processing Parameters

General	
Cameras	994
Aligned cameras	985
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	785,024 of 987,698
RMS reprojection error	0.176461 (1.51205 pix)
Max reprojection error	0.544809 (59.851 pix)
Mean key point size	6.10813 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	4.02531
Alignment parameters	
Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Key point limit per Mpx	1,000
Tie point limit	4,000
Exclude stationary tie points	No
Guided image matching	Yes
Adaptive camera model fitting	Yes
Matching time	9 minutes 3 seconds
Matching memory usage	308.19 MB
Alignment time	18 minutes 36 seconds
Alignment memory usage	983.70 MB
Date created	2022:06:17 15:13:12
Software version	1.7.3.12473
File size	81.59 MB
Depth Maps	
Count	983
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	1 hours 54 minutes
Memory usage	12.69 GB
Date created	2022:06:17 17:30:40
Software version	1.7.3.12473
File size	5.99 GB
Dense Point Cloud	
Points	85,463,113
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	1 hours 54 minutes
Memory usage	12.69 GB
Dense cloud generation parameters	
Processing time	6 hours 55 minutes

Memory usage	38.47 GB
Date created	2022:06:18 00:26:35
Software version	1.7.3.12473
File size	1.92 GB
Model	
Faces	17,092,621
Vertices	8,560,137
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096, 4 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	1 hours 54 minutes
Memory usage	12.69 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	42 minutes 30 seconds
Memory usage	42.75 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	9 minutes 56 seconds
UV mapping memory usage	6.30 GB
Blending time	14 minutes 53 seconds
Blending memory usage	4.09 GB
Blending GPU memory usage	2.04 GB
Date created	2022:06:19 03:20:10
Software version	1.7.3.12473
File size	750.10 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Processing time	1 hours 54 minutes
Memory usage	12.69 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	4096
Face count	High
Enable ghosting filter	Yes
Processing time	3 hours 38 minutes
Memory usage	7.52 GB
Date created	2022:06:19 08:27:30
Software version	1.7.3.12473
File size	740.16 MB
DEM	
Size	7,294 x 6,548
Coordinate system	WGS 84 (EPSG::4326)
Reconstruction parameters	

Source data	Dense cloud
Interpolation	Enabled
Processing time	1 minutes 11 seconds
Memory usage	303.17 MB
Date created	2022:06:19 11:55:01
Software version	1.7.3.12473
File size	139.70 MB
Orthomosaic	
Size	14,408 x 12,890
Coordinate system	WGS 84 (EPSG::4326)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	1 hours 21 minutes
Memory usage	4.77 GB
Date created	2022:06:19 12:38:26
Software version	1.7.3.12473
File size	12.53 GB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.3 build 12473
OS	Windows 64 bit
RAM	63.90 GB
CPU	Intel(R) Core(TM) i7-7700K CPU @ 4.20GHz
GPU(s)	NVIDIA GeForce GTX 1080 Ti