

Pre-fabrication Review: *Spatial Weaving*, Kat Quay

Report Date: March 25, 2024

These comments are based on proposal documents and email correspondence with the artist.

Project Overview:

Artist Kat Quay proposes a wall mounted sculpture, *Spatial Weaving*, for the Austin-Bergstrom International Airport's West Gate Terminal. The sculpture references Austin's growing tech industry and binary systems, and is intended to generate visual disconnections in spatial perception. The 48-foot-wide x 12-foot high x 18-inch deep steel sculpture will be composed of openwork steel grates and perforated steel three-dimensional forms, mounted in a gridded, overlapping configuration that will produce moiré patterns and other optical effects.

Materials and fabrication:

The sculpture is constructed of two types of steel: stainless and carbon steel. Modular elements will be fabricated separately and parts will be joined during installation.

Contractor Hensel Phelps Construction will construct a main frame of carbon steel 2" square tubing, to be bolted and welded directly to the metal wall struts. The structure will be primed with Sherwin Williams Steel Spec 4012 gray primer (an alkyd). The artist reports that Steel Spec 4012 was specifically recommended for this project by Sherwin Williams employee Zak Galla due to its formulation as a stand-alone protective coating.¹

Quay and fabricator Stephen Marchio will construct eight auxiliary frames, or "art bays," of 1" stainless steel angle iron, sized 69.5" wide x 139.75" high x 12" deep to allow them to slot into the main frame during installation. During fabrication, holes will be drilled into the art bays to receive the bolts that will affix them to the main frame.

Sculptural elements will be cut from flat carbon steel grates and perforated stainless steel sheet. To promote corrosion resistance, all carbon steel components will be coated with Permalac EF clearcoat, an acrylic topcoat. Some bent forms will be fashioned from stainless steel perforated sheet, in some cases edged with stainless steel strap attached with stainless hardware. Certain grate or perforated elements will require individual supportive frames so that they can be affixed at the correct angles to produce the optical effects. Those smaller frame constructions will also be fabricated by the artist and Marchio of 1" stainless steel angle iron, to which will be attached the sculptural elements using stainless steel hardware.

The bent forms, coated carbon steel gridded elements, and small individual constructions will be attached to the art bays using stainless steel screws and binding barrels, positioned so as to produce the visual effects intended.

Materials and fabrication comments and recommendations:

The greatest danger to the longevity of the artwork is corrosion of the carbon steel elements – namely, the main frame and the carbon steel components of the art bay constructions. Corrosion prevention relies on the alkyd primer and the acrylic coating. Accordingly, great care should be taken with application of those anti-corrosion coatings.

¹ Kat Quay, personal communication: email 3/19/2024.

Both anti-corrosion coatings specified are appropriate and can be expected to have satisfactory long-term stability and adhesion. However, all anti-corrosion coatings require renewal; no coating is known that has an indefinite lifespan (the lifespan of the sculpture as estimated by the artist). The lifespan before coating failure and corrosion depends greatly on the surface preparation, application, and the installation environment.

- The longevity of both coatings will be improved with meticulous surface preparation and application.
- It is imperative that the Permalac coating completely covers every surface of all carbon steel elements in the art bays, including complete coverage of all internal surfaces of the gridded metal components. Follow the manufacturer's instructions for application and pay particular attention to corners and edges.
- The Permalac EF manufacturer estimates the lifespan of the coating in an interior setting as 8 – 10 years, and further states, "It should still be reapplied as necessary to maintain the finish and its protective capabilities. Reapplication window for Permalac is every 3 – 5 years or as you see the finish begin to wear down with time."²
- No color stability testing was reported for Permalac EF, though it is marketed as "non-yellowing."³ In general, acrylic coatings do demonstrate good colorfastness.
- Sherwin Williams Protective Coatings Representative Elena Aimes reports that test results are available for the Sherwin Williams Steel Spec 4012 Primer. They were requested but not received in time to be included in this review.⁴ In general, industry standard is 10 – 20 years with good surface preparation and application.
- The exact color of primer was not yet determined as of this writing, but it will be one of two grays. Either choice should have good colorfastness. The alkyd primer may nonetheless chalk or darken slightly over time. The color shift would not be expected to be significant or even noticeable; however, it does mean that any touch-up spots may not match precisely.
- Stainless steel is corrosion-resistant, but it is not corrosion proof. Any eventual corrosion development on the stainless components would be expected to be minor.
- The stainless steel hardware specified is appropriate. It will be difficult to access hardware once the piece is installed; double check all fasteners are in place prior to installation.

Installation:

The artist reports, "the exact placement height wise [will be] determined by Page Architects / Structures TX to attach directly to the Terminal steel beam structure while avoiding HVAC and electrical systems behind the wall."⁵

Hensel Phelps Construction will install the main frame. The main frame will be bolted and welded directly to the metal wall studs; the specifications for that installation have been reviewed and approved by engineering firm Structures TX.

Once the main frame is installed, the art bays will be slotted into the main frame through the front of the frame and positioned to rest on a lower brace element. They will be bolted to the

² "Permalac Usage & Maintenance: Original, EF, and NT": product information sheet. See also the Permalac EF Technical Data Sheet, which includes a summary of corrosion resistance test results. In a highly corrosive environment, corrosion developed at 100 hours. Time to failure will be significantly longer in benign conditions.

³ The "Permalac EF Technical Data Sheet" reports "no visible degradation" to the coating after 1000 hours of high UV exposure; however, that is believed to be reporting physical degradation rather than color stability.

⁴ Personal communication (phone call), 20 and 22 March 2024. If those results are obtained, they may pinpoint an expected lifespan more exactly. It is important to note that time to failure will be significantly longer in benign conditions than in aggressively corrosive test conditions.

⁵ Kat Quay, cover letter dated 14 March 2024.

main frame with stainless steel hardware, and further stabilized by fastening the art bays to each other using a system of stainless steel screws and barrels.

Installation comments and recommendations:

- Take care during installation to not scratch or abrade the anti-corrosion coatings. It may be prudent to plan in advance for on-the-spot repair of any coatings damaged during installation, as access will be limited after installation.
- The site may experience a fair amount of vibration due to foot traffic / transport cart traffic. Additionally, the artwork is cantilevered out from the wall, increasing the potential for vibration. Vibration can loosen hardware over time. Ensure all hardware is sufficiently tightened during installation as hardware will be difficult to access after installed.
- The installation height is likely to be high enough to prevent accidental breakage or vandalism.
- Because the main frame is welded to wall studs, be aware that de-installation will require cutting the main frame.

Maintenance:

The artist recommends regular dusting. In addition, though the materials specified are acceptably durable, both coatings will require eventual maintenance.

Maintenance comments and recommendations:

- Inspect the artwork periodically for coatings failure and corrosion development.
- Inspect the artwork periodically for loosened hardware.
- Occasional coatings renewal should be anticipated. Budget accordingly. The product information for both Steel Spec 4012 and Permalac include explicit instructions for reapplication/renewal; follow manufacturer's instructions exactly to ensure the best long-term durability. Note that the main frame will be permanently attached to the wall. Main frame primer renewal may require deinstallation of some or all of the art bays so that the primer surfaces can be adequately accessed, prepared and the new primer applied.
- The interstices of the artwork and the 6" gap between the artwork and the wall may be colonized by spiders and webbing insects. Particularly if the coatings are beginning to fail, insect webbings can accelerate corrosion, since webs hold moisture against the surface of the artwork. Periodic dusting will remove any insect colonization. Instruct dusters to be sure to dust behind the artwork as well as on the horizontal upwards-facing surfaces.

General recommendations:

- Information that should be retained in the AIPP file includes:
 - Specifications for all materials used, including hardware (so that any needed replacements can be easily purchased).
 - Contact information for Hensel Phelps Construction and Stephen Marchio.
 - Detailed installation diagrams, including all dimensions, exact placement of the sculpture, exact placement of all mounting hardware, any sub-surface wall features, and the location of any building infrastructure behind the wall.
- Artist's statement re:
 - intended appearance: the degree of corrosion, abrasion or scratches, breakage, discoloration, or other alterations that would be considered acceptable before the alteration would need to be addressed, or before the sculpture would need to be de-installed.
 - How to proceed when coatings renewal is needed. Contact information for all parties who may be involved in coatings renewal. How to proceed if the exact coatings products specified are no longer available when renewal is needed.

- Whether or not it would be permissible to re-site the artwork in the future, and if so, the degree of change that would be permissible, including whether it would be permissible to modify the placement of the art bays, and whether it would be permissible to install a smaller grouping of art bays or an individual art bay.