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12/10/14

O'Brien Construction  
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Job Name: 28 N. Saginaw  
Job Location: Pontiac, MI

## **Historic Window Site Review: Preliminary**

The following is the written Historic Window Site Review for the wood and steel windows for 28 N. Saginaw in downtown Pontiac, MI. This information was developed based on a physical site visit, discussion with the Mr. David Vivo of O'Brien Construction; and adherence to the guidelines for restoration and replication for Wood Window Preservation NPS Brief #9, and Steel Window Preservation NPS Brief #13. Likewise, in providing our recommendation for the restoration or replication of the wood and steel windows we are adhering to the guidelines that meet NPS and SHPO standards. Please note this is a preliminary site review, we need more access to the windows including more extensive access to opening windows for closer exterior inspection of the exterior surfaces, and checking operation of sash components. Once this is allowed we can provide a more accurate estimation of the necessary work and cost.

The wood windows are located on the North and West Elevations of the 14 story building as well as the Penthouse level [Photo 1]. These windows are a traditional wood double hung, chain and pulley operation. These windows are original to the building dating back to its initial construction in 1928. There are locations where over the years some selective replacement has taken place with an aluminum double hung window or fixed over awning units. All the windows appear to be white pine; this includes the frames, sashes, sill, and brick mould. All the sashes are one lite without any muntins. All sash are exterior putty glazed and are 1 ¾" thick, all side rails and top rails are 2" from glass to exposed sash edge, the bottom rail is 3 ½", and the meeting rail is 1 ¾". ¾". The exterior brick mould sits on the exterior wood sill and is 2 ¼" x 2", with adjacent perimeter caulk bead to the exterior masonry. The exterior sill face is 1 ¾" and the dimension from the stool edge to the sill edge is 7 ¼". All glass appears to be ¼" clear annealed. The remaining exposed wood components include ½" x ½" parting bead, ½" x 1 ⅜" sash trim, and 7/8" x ½" blind stop. The exterior surfaces of all wood windows are painted and are in fair condition, lead paint is assumed to be present [Photo 2]. The perimeter caulking is failing and should be tested for asbestos, which is usually present in a building of this age. The exterior putty glazing is in fair condition and failing, it should also be tested for asbestos [Photo 3].

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From the windows we had access to view; the following information is what we can provide as an overview. The upper sashes are painted shut, and the lower sashes are fastened shut or painted shut; their are some that operate but they do not function smoothly. They appear to have most of the hardware in place including the pulleys, chain, weights, and lock and keeper. The majority of the window glass is slightly hazed and weathered beyond just needing to be cleaned, this glass etching takes place over time. The existing windows had a metal fin weather stripping that is worn, broken, or missing in most cases. The exterior sills we could view were well intact with little open grain or decay. Some of the bottom sashes were very weathered, some with failed bottom rail corner joinery and decay [Photo 4].

The overall condition of the wood components is fair to good, but we would recommend a full survey of all the window openings to verify this. Existing interior storms would need to be removed for full access to the window openings; likewise, the ability to view the exterior sills and check the sash condition of the windows. I would comment that the windows are degrading and will do so if not addressed in the near future. Based on reading the evaluated condition of the windows in the Easement Monitoring Report, we see progressive breakdown since that assessment.

**Recommendation: Frame restoration and sash restoration or new sash replication.**

BlackBerry would recommend the full restoration of the existing frames, sashes, sills and brickmould; as well as retrofitting the existing sash, allowing for high performance energy efficient insulated glass. New sash stop and parting bead would be created since these items are in poor condition. New hardware would be included, but we would recommend fixing the upper sash in place to improve the thermal performance by lowering air infiltration. Those lower units that are to operate would require additional sash weights to accommodate the heavier insulated glass units. New weather-stripping should be added to upgrade the overall thermal performance. If not, all units are required to open, we would suggest fixing both the lower and upper sash which would save on material and restoration cost by about 7 to 10%. We would note that upon a full evaluation of the existing windows we might find that a full replication of the sash would be the best option since this could be more cost efficient than restoring the existing sashes, and we can eliminate the exterior putty glazing and provide a more durable long term product.

- All wood sashes would be removed and board up would be installed.
- All components would be cataloged, packaged, and shipped for restoration in our shop in Kalamazoo, MI.
- All frames would be restored in the field; all components would be stripped, epoxy patched and sanded as required. The perimeter caulking would be removed and replaced; and all components would be primed and have a two coat painted finish.
- We would expect lead and asbestos abatement would be required, but the Owner by law is responsible to provide a certified haz-mat report to identify these elements if they exist. BlackBerry is a licensed lead and asbestos abatement contractor and would include this work with our restoration and replication services.

- All sashes (if required), sash stops, parting bead, would be fully replicated matching the existing components. We would suggest Sapele as the wood of choice, and the new sash would include 5/8" insulated glass, low-e/argon, prime coat, and two finish coats. All hardware would be supplied.
- The restored and replicated components would be delivered to the site and re-installed in the restored frames. Final touch up and a punch list would be performed.
- The restored and replicated components would be delivered to the site and re-installed in the restored frames. Final touch up and a punch list would be performed.

## II. Existing Conditions: (336) Steel Double Hung Windows (Cold Rolled) @ (9100 Sq. ft.)

The steel windows are located on the South and East Elevations of the 14 story building as well as the Penthouse level. These windows are Voigtmann cold rolled steel double hung windows. They are original to the building dating back to its initial construction in 1928. There are locations where over the years some selective replacement has taken place and new aluminum fixed over projected awning windows has been installed. The typical configuration is both the upper and lower sash having two vertical muntins measuring 2" in width [Photo 5]. The operation is a chain and pulley balance system with steel weights very similar to a traditional wood double hung window. The steel frame and sash is galvanized sheet metal roll formed to create the resulting shape. These windows are fire rated and include 1/4" wire glass, which was common for the era of the structure [Photo 6]. The galvanizing has failed and corroded on about 50% of the exterior surface area [Photo 7]. For the most part there is no remaining paint on the exterior surface, so surface corrosion is visible on all sash, frames and sills. The exterior perimeter caulking has failed and should be tested for asbestos [Photo 8]. The interior surfaces are all painted and should be expected to be lead paint. The exterior sill face is 1 1/2", the frame jamb face 1 1/2", the frame jamb head 2". The sash bottom rail dimension is 3 1/4", the meeting rail 2", and the side rail 1 3/4". In comparing the sitelines to a wood double hung they are similar and as a result from a street view, look the same or very similar to the wood double hung windows on the building.

From the windows we had access to view; the following information is what we can provide as an overview. The upper sashes are painted or rusted shut, and the lower sashes are fastened or rusted shut in most cases. Those windows that do open do so with great effort because of the corrosion of the metal components including the sash edges, chain, and sash pockets.

One of the key factors is that all the glass would need to be replaced since all the glazing compound is dried out and brittle as well as the assumption that wire glass would not be acceptable for the future end user. We did not observe any corrosion to the point of the metal failing or requiring epoxy patching. Some sash and frames were dented and bent restricting some windows from operating fully or smoothly.

The overall condition of the steel windows is fair to poor, but we would recommend a full survey of all the window openings to verify this. The windows appear better than they really function or operate. The key difficulty to restore windows of this type is the problems in trying to stop the corrosion on the components we don't have access to the surfaces because they are hidden and internal. The exterior surfaces can be cleaned and painted but the operation of the window is difficult since we cannot get too many of the surface areas such as the interior frame and sash surfaces. Likewise, trying to deglaze and reglaze the sash units is very difficult since there are so many machined parts that strip and do not lend themselves to being reassembled.

**Recommendation: Replication with Wood or Aluminum Double Hung**

Because of the condition of the existing steel windows being poor to fair and the problems with long-term corrosion and operation we have to recommend full replacement. The two possible pathways to follow are a wood replica product that matches the existing wood windows on the North and West Elevations, or a new thermally broken aluminum window. We have seen both products used on NPS Tax Credit projects. This would involve direct discussion with SHPO and NPS to determine the appropriate pathway. A third option may involve replacement of all windows both wood and steel with an approved thermally broken aluminum window. This could be considered if a full survey shows the condition of both types of windows on the building to be in need of replacement.

Replication would involve strict attention to the critical exterior sitelines assuring the same profile, shape, and dimension of the original windows. This process can be accomplished with both wood and aluminum commercial window products designed for a structure of this height and performance requirements.

**Budget Pricing: Full Replication with Aluminum Double Hung \$735,000.00**

**Full Replication with Wood Double Hung \$ 950,000.00**

**Budget Pricing: BlackBerry has over 25 years' experience in historic window restoration and replication, as well as commercial glazing and window replacement. Our budget pricing is based on that experience and completion of many historic projects implementing various approaches. I would caution that we have only been able use approximate square foot estimates for this budget pricing because of the duration of time we were provided to complete this information. To establish accurate pricing we would need to view the exterior elevation from lift and get accurate quotes from our material vendors. Our budget pricing allows for the design, fabrication, restoration, and installation of all wood windows. This includes all shop drawings, glazing, hardware, and product finishing. Pricing allows for all material, labor (non-union), employment, insurance, staging, delivery, and supervision. I would note that while we have made consideration for staging, it should not be assumed that all those cost for swing staging, or lifts is included. More specific information must be provided prior to our creating pricing with that accuracy.**

Sincerely,

\_\_\_\_\_MKS\_\_\_\_\_

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Michael K. Shields

President

BlackBerry Systems, Inc.

## 28 N. Saginaw—Typical Window Photographs



1. Wood Double-Hung Windows



2. Wood Double-Hung, Upper Sash Meeting Rail



3. Wood Double-Hung Meeting Rail, Jamb, Parting Bead, and Blind Stop



4. Wood Double Hung Sill and Outside Casing,



5. Cold Rolled Steel Double-Hung Window



6. Steel Double Hung Upper sash meeting rail and lower sash bottom rail

## 28 N. Saginaw—Typical Window Photographs



7. Steel Double Hung Sill, Bottom Rail, and Muntins



8. Steel Double Hung Window Top Rail, Casing and Muntins