December 22, 2023

City of Billings
Attn: John Caterino
PO Box 1178
Billings, MT 59103

RE: **Babcock Theatre Marquee Assessment**
2812 2nd Avenue North
Billings, MT 59101

Mr. Caterino,

Per the request from the City of Billings, a condition assessment of the Babcock Theatre Marquee in Billings, Montana was performed by members of Cushing Terrell's Structural and Building Enclosure groups on the morning of November 2, 2023. The assessment was requested by the City of Billings in response to recently observed water infiltration through the ceiling of the marquee along with the visible deterioration of the street facing façade.

The Babcock Theatre was originally constructed in 1907 and has since been through several building renovations. One of these remodels occurred in 1955. During that construction period, the current north facing marquee was installed. It is believed that most of the marquee exterior facing components along with internal structural and electrical components remain original with upgrades/repairs performed as required since its original construction.

Figure 1: Historical Reference Photo of Marquee After its Construction in 1955 (Photo Date Unknown)

Field Observations - Marquee Structure

The structural frame of the marquee extends from the wall of the building approximately 12 feet utilizing what is believed to be a steel support framing with a sheet steel roof decking secured over the top. The support structure was then tied back to the brick wall using six steel cables attached at the wall and outer perimeter of the marquee structure. These steel cables are attached to 2" by 2" by 3/16" angle iron which is anchored directly to the steel roof deck supports.

The perimeter signage of the marquee was constructed using light gauge sheet metal secured over steel angle framing. The perimeter signage was also braced back to the roof deck using 1.5" by 1.5" by ¼" painted angle iron which is also attached to the roof mounted angle iron mentioned above.

The underlying structural framing of the marquee is believed to be in good condition with only minor surface corrosion observed to the steel cabling, angle iron bracing and connection points.

Field Observations - Roofing Systems

The roofing/waterproofing system of the interior of the marquee was installed utilizing a hot asphalt, moped in place roofing system installed directly over a sheet metal deck attached to the signs underlying structure. The asphalt roofing system was also observed with an elastomeric coating applied over top of the asphalt. The installed elastomeric coating is most likely not original to the built-up roofing system and was probably installed many years ago in response to previous leaks and deterioration to the underlying roofing. While on site, both the elastomeric coating and the asphalt built-up roofing were observed to be in poor condition with considerable deterioration to both throughout. Water was also observed dripping through the bottom side of the marquee and onto the sidewalk below.

The main roof area of the marquee drains back towards the building (to the south) and into an internal gutter that sits within the exterior wall line of the building. The internal gutter runs east and west along the entire width of the sign. One small, approximately one inch in diameter, drain outlet is located on the far east side of the internal gutter. While on site, this drain outlet was found mostly blocked with debris and appears inadequate in size to drain the approximate 270 square feet of sign roof area. The connecting piping of the drain outlet was located while on site and was found ran through the ceiling and exterior wall cavity of the Babcock Theatre's adjacent business to the East (Montague's Jewelers). Any recommended revisions to the marquee's drainage system would prove difficult given the drain lines inadequate sizing and rout path through the adjacent space.

The internal gutter within the space inset in the wall was also observed to have been roofed using a moped in place built-up roofing system. This gutter area, however, did not include the added elastomeric coating over the asphalt roofing. The roof system installed through the internal gutter was found in poor condition similarly to the roofing installed throughout the main roof area of the marquee.

A plywood wall substrate board is attached to the building at and above the roof to wall transition where the internal gutter meets the building. The observed wall substrate boards were also visibly deteriorated and in poor condition throughout. The condition of the roof to wall transition and its adjacent wall substrates most likely contributes to the water infiltration currently observed through the sign.

Along the north side of the marquee roof, the roofing system transitions upwards approximately six inches prior to its intersection with the signs interior metal paneling. The change in elevation at the roof to panel transition is adequate, however roofing materials do not currently transition under and/or behind the metal paneling. This lack of waterproofing through the transition most likely contributes to water infiltration through the roofing system.

Field Observations - Interior Metal Paneling

Painted sheet metal paneling covers the interior facing portions of the marquee sign. Access panels and openings are located throughout these panels which provide access and protection to the internal electrical components used to light the exterior signage. The metal paneling was observed to remain in sound condition with only minor surface wear observed. However, as referenced above, the paneling does not provide a watertight transition to the roof nor do the panels appear to keep the signs electrical components adequately protected from the weather.

Field Observations - Exterior Signage

It is believed components making up the exterior marquee's visible signage are largely original. The street facing sign was constructed using painted sheet metal components which surround a sign rail board that lights up from behind and holds removable lettering. The underlying soffit area of the marquee was also constructed with sheet metal installed over the signs structure. Inset can lights hang within the soffit area while hundreds of light bulbs line the perimeter of the sheet metal signage. Along with the light bulbs, neon lighting accents are inlaid in the metal "Babcock" lettering and also wrap the vertical volute above the signs center. After viewing the sign lite up at nighttime, the neon lettering and accents was observed working throughout. The underside soffit lights were also all on with one light appearing dimmer than the others. Seven of the accent bulbs on the west side of the sign and two accent bulbs on the east side of the sign were observed not working, most likely burnt out.

The sheet metal paneling of the sign mostly appeares in fair condition with only surface degradation to the paint and some rusting of the bottom sides of the "Babcock" lettering observed throughout. One, approximately 1' by 1' area of the underside soffit, where water was observed dripping through, was found in bad condition, and rusted through. The sheet metal in this area could easily be pushed through if hand pressure was applied to the metal. It is believed the sign was originally painted utilizing lead-based products. An assessment of the paint's makeup should be performed by a qualified industrial hygienist prior to any exterior signage remediation.

Field Observations - Electrical

The marquee's electrical components lie mostly within the interior and exterior paneling of the sign. Openings in the internal paneling provided Cushing Terrell with an observation window to see some of these components. It is believed that most of the electrical wiring of the sign is original to its construction. Repairs and replacements to components over the years is also evident.

Some of the original/older looking wiring is believed to be coated with asbestos and would most likely require abating prior to any replacement of signage electrical components.

Observing the sign at nighttime indicates the electrical components currently in place are working. However, functionality of the sign long term will require a full replacement of the marquee's electrical components and wiring at some point in the near future.

Repair Recommendations - Steel Cabling

In conjunction with replacement of the marquee roofing system, Cushing Terrell recommends the existing support cabling be cleaned free of rust and deterioration prior to installation of a cold galvanizing repair paint over the entirety of the existing cables.

Removal of roof and paneling components for repair or replacement may reveal additional deteriorated structural elements. If additional deterioration is found, Cushing Terrell recommends further evaluation of the revealed issues with repairs performed as required at that time.

Repair Recommendations - Roofing System

In response to the poor condition and water infiltration observed throughout the marquee roof, Cushing Terrell recommends the system be removed and replaced throughout the signs main roof area and internal gutter. In addition to removal of the roofing system, it is recommended that the wall substrates adjacent the building also be removed and replaced.

Removal and replacement of the roofing system could be accomplished by tearing off the existing roofing system in its entirety down to the existing sheet metal decking. Prior to installation of a new roof membrane, tapered insulation, installed sloping from north to south should be utilized to help promote drainage of the sign's roof area. Tapered insulation should also be installed throughout the internal gutter area to further promote drainage to the outlet. Upon installation of the tapered insulation throughout, Cushing Terrell recommends a primed gypsum cover board such as Densdeck Prime be mechanically fastened throughout the roof area with a 60-mil, reinforced Ethylene Propylene Diene Terpolymer (EPDM) single ply membrane adhered to the cover board throughout.

Along with installation of the Densdeck and EPDM throughout the roof area, it is recommended that Densdeck be used to replace the wall substrate boards behind the internal gutter with EPDM baseflashings adhered over the top. This will adequately protect and waterproof the roof to wall area at the building. EPDM baseflashings will also need to be installed underneath the inside wall face paneling to ensure a watertight connection between the new roofing system and the paneling.

Revisions to the roof drain outlet would also be necessary when the marquee is re-roofed. Removal of the sheet metal decking around the drain outlet will most likely be necessary so a drain body can be attached to the outlet piping. A drain assembly will help adequately seal the new roof system to the drain outlet and will also help prevent debris from clogging the drain pathway, further promoting proper drainage of the system.

Repair Recommendations - Internal Metal Paneling

Removal and replacement of the signs internal paneling will be necessary to ensure a water-tight transition at the signs new roof to wall transition. New paneling will also protect the signs somewhat exposed, underlying electrical components. Achieving this would require a design and installation that permits the panels to be easily removed or with access points matching those currently in place to allow for service and or future replacement of enclosed electrical components. A Premanufactured, exposed fastener, metal panel with sheet metal transition

flashings could be installed throughout to accomplish this. Since the metal paneling occurs on the interior sides of the sign, it is not believed modifications to the panels will affect any historical appearance or significance of the sign.

Repair Recommendations - Exterior Signage

At minimum, Cushing Terrell recommends the deteriorated sheet metal at the underside of the sign be cut out with new metal stitched in its place. This would require the underside soffit area, currently painted red, to be repainted throughout to ensure a seamless appearance over the sheet metal repair. Abatement of the lead paint throughout this area may also be required if analysis indicates lead is present in the current materials.

A full restoration of the sign's exterior would be much more in depth. Restoration would require removal of all the signs exterior light fixtures and neon. Removal of those components would be necessary so all existing paint could be stripped from the sign, exposing the raw metal. This would allow for repairs on the sheet metal skin throughout. Upon completion of the repairs, the sign could then be re-painted using care to match the original sign's appearance throughout with new light fixtures and neon installed upon paint/repair completion.

Cost Estimates

Costs associated with the restoration of historical marquees can very greatly. These costs can be greatly affected depending on the depth and overall scope of the restoration pursued. Below are preliminary budgets associated with the repair recommendations outlined above. If the City of Billings desires to pursue a complete historical restoration of the marquee, Cushing Terrell recommends that contractors qualified to perform the work be engaged to help understand the anticipated costs associated with this type of work.

Repair Recommendation:	Budget Cost:
Steel Cabling Clean/Repaint	$4,000
Roof Abatement	$5,500
Roof Replacement	$35,000
Interior Paneling Replacement	$15,000
Electrical Components Replacement	$30,000
Under Soffit Repair/Repaint	$2,500
Lead Paint Analysis	$1,500
Exterior Signage Full Restoration	$150,000+

Please see the attached photographs which further outlines the findings of this assessment. Feel free to contact me at bradygauer@cushingterrell.com or 406-896-6142 should you need further assistance.

Sincerely,

Brady J. Gauer,
Roofing and Building Enclosure
cushingterrell.com

Figure 2: Overview of Babcock Theatre Marquee from Street

Figure 3: Overview of Babcock Theatre Marquee Underside

Figure 4: Nighttime View of Sign's West Side

Figure 5: Nighttime View of Sign's East Side

Figure 6: Overview of Marquee Interior East Side Metal Paneling

Figure 7: Overview of Marquee Interior North Side Metal Paneling

Figure 8: Overview of Marquee Interior West Side Metal Paneling

Figure 9: Deteriorated Built-Up Roofing system with Elastomeric Coating over Marquee Steel Roof Decking

Figure 10: Deteriorated Built-Up Roofing system with Elastomeric Coating over Marquee Steel Roof Decking

Figure 11: Deteriorated Built-Up Roofing at South End of Marquee Along Transition to Internal Gutter

Figure 12: Internal Gutter Underneath South Wall of Marquee

Figure 13: Location of Small Drain Outlet in East Corner of Internal Gutter

Figure 14: Condition of Deteriorated Wall Substrate Boards Above Internal Gutter

Figure 15: Locations of Underlying Structural Elements Supporting Metal Roof Decking and Exterior Marquee Paneling (Approximately 4' O.C.)

Figure 16: Marquee Support Cabling and Angle Iron Bracing

Figure 17: Cable Tie Back Connection at Roof Level

Figure 18: Cable Tie Back Connections at Exterior Wall

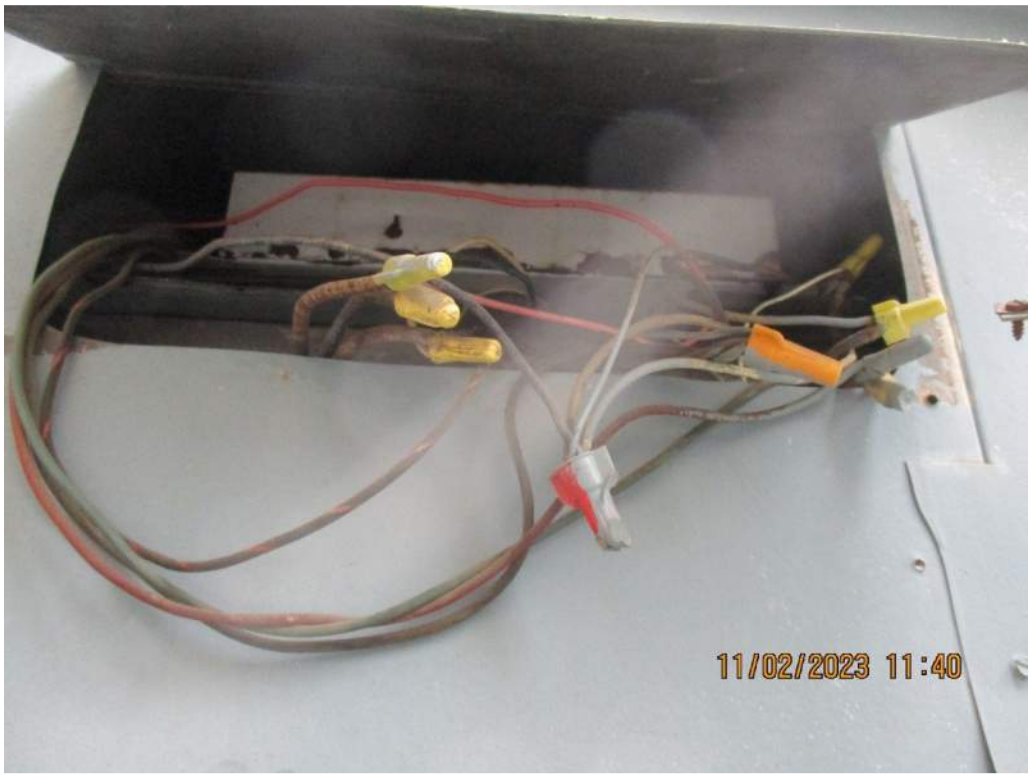

Figure 19: Electrical Wiring Within Interior Paneling Access Locations - Typical

Figure 20: Typical Light Ballast Under Protective Cover at Interior Paneling

Figure 21: Interior Lighting Withing Exterior Paneling of Marquee

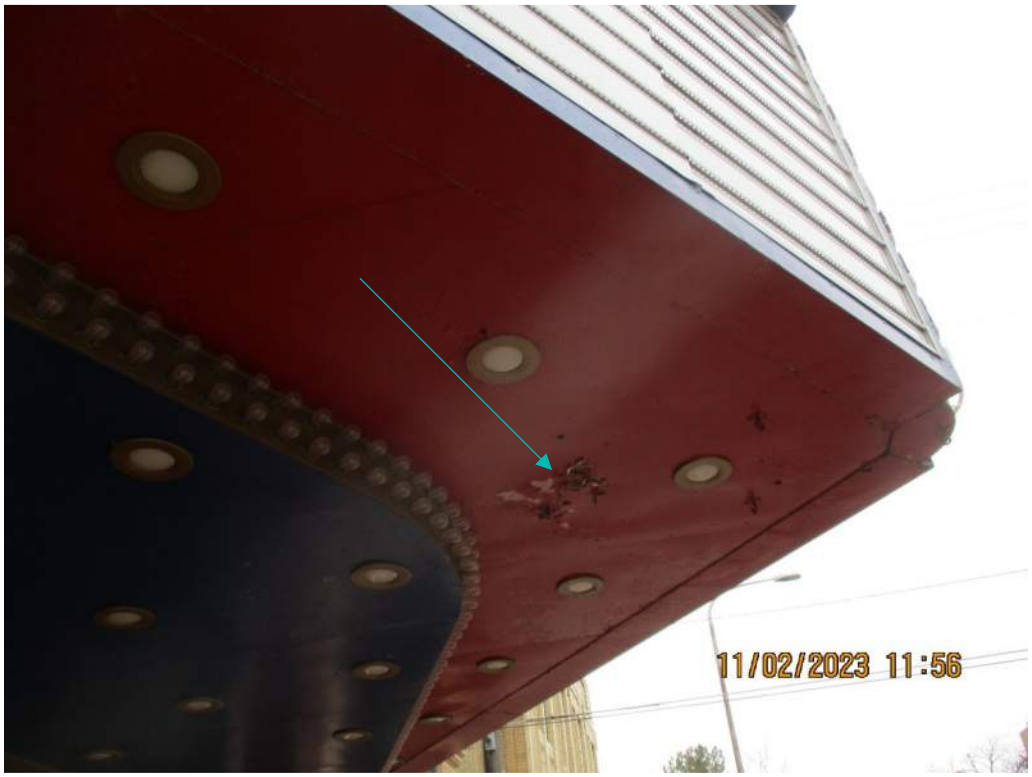

Figure 22: Deteriorated Soffit Metal Below Observed Water Leaking

Figure 23: Observed Deterioration at Underside of "Babcock" Lettering