

Subject: Explanation of Major Differences between GRAEF Cost Update and WJE Peer Review

1. **Purpose of This Summary:**

- The Mitchell Park Domes Conservatory Task Force has been presented with two reports that outline technical options for the Mitchell Park Horticultural Conservatory.
- Milwaukee County staff was requested to provide a summary of major differences between the two reports.

2. **Background:**

- GRAEF has been working for Milwaukee County on the Domes since 1993 and provided seven **options** to repair or replace the Domes at the request of Milwaukee County with estimated costs from \$14M to \$64M. The options were “meant to help the community narrow options for further investigation; they [were] NOT project costs or budgetary estimates,” according to the GRAEF report.
- Wiss, Janney, Elstner Associates, Inc. (WJE) was requested to provide a peer review of GRAEF’s work by the National Trust for Historic Preservation and provided one **recommendation** with estimated costs from \$17.1M to \$18.6M.

3. **Discussion:**

- Both reports have an exceptional amount of detail and understanding of the core issues the Domes face, but neither report includes a total lifecycle cost analysis. This is a critical step that must be performed prior to committing to any repair strategy.
- Major components considered in the two studies:

<u>CORE ELEMENTS</u>	<u>GLASS REPLACEMENT</u>	<u>RE-COAT CONCRETE</u>	<u>WIRE MESH</u>
GRAEF OPTION 1	Broken Panes Only	Yes	Remove & Re-install
WJE REPORT	Broken Panes Only	Yes	Removal
<u>WATER INFILTRATION</u>	<u>WINDOW SEALS REPLACED</u>	<u>CAPS REPLACED</u>	<u>DOWNTUBE DRAINAGE REPAIRS[^]</u>
GRAEF OPTION 1	Where Required	No	Yes (\$1.78M)
WJE REPORT	At Hubs	Yes	At Hubs (\$300K)
<u>BUILDING CODE & ACCESSIBILITY</u>	<u>CODE COMPLIANCE ALLOWANCE</u>	<u>ADA UPGRADE ALLOWANCE</u>	<u>VEGETATION PROTECTION</u>
GRAEF OPTION 1	Yes	Yes	Yes
WJE REPORT	No (+\$440K)	No (+\$250K)	Yes

[^] Flushing & Drainage system still a large unknown in both reports due to lack of use for decades. Significant issues exist within system including mildew and pest concerns.

- **Programming Requirements Beyond Those in the GRAEF Report & WJE Peer Review:**

- In order for the Conservatory to continue to best serve the citizens, there are a multitude of issues beyond those covered in these two reports that the County should address before making a recommendation.
- Those issues should be addressed during the upcoming planning process and factored into any repair plans.

- **Long Term Planning, Fiscal Sustainability, and Financing of Projects for the Conservatory:**
 - WJE: “we would not expect concrete repairs would be needed for ten to fifteen years or more.”
 - As a plan is developed, a total lifecycle cost analysis must be completed for fiscal accountability.
 - Bond eligibility of the proposed work is an extremely critical factor for Milwaukee County.
 - In general, but very complex, only repairs that extend the serviceable life of that facility to or beyond the borrowing timeline are justified.
 - A repair project may require cash financing depending on the scope and lifespan of the proposed repairs.
 - More substantial repairs could potentially lower the total lifecycle costs and also allow them to be bond-financed.
 - Removal of mesh mandates regular inspections that are very intrusive to the plants and costly. “WJE has clarified that, in their professional opinion, if the Domes were properly repaired, yearly inspections would not be necessary, nor would it be necessary to re-install the mesh.”

- **Technical Approach:**
 - The technical approach WJE outlines could be sound for a shorter term repair (“10-15 years”). WJE states this “approach is a long-term repair...minimal, if any, future concrete repairs are anticipated.”
 - The leaking windows are partially due to failed seals that in some cases are over 50 years old.
 - There is potential in either repair scenario the Domes could continue to leak and cost growth occurs.
 - For the WJE report, this could result from not replacing all window seals.
 - For the GRAEF report, this could result from not replacing the pressure caps.
 - In both scenarios there is a significant concern related to the ability to ‘repair’ the existing internal drainage system back to a fully operational status in a cost effective manner.
 - Ideally, any repair strategy is a comprehensive building envelope solution that provides Milwaukee County a facility that does not have water infiltration via the building envelope for an extended period of time.

- **Architectural Integrity**
 - The pressure cap replacement, if completed, should factor in architectural integrity of the exterior.
 - The window replacement, if not wired glass, should be all encompassing for consistency, and it should also address water infiltration concerns in windows that are not yet broken, but may have decades-old window seals.
 - While addressing exterior matters at all locations, it would make sense to clean the exterior frame and provide a cost allocation for newly identified needs as the exterior is more closely reviewed.

- **One Point of Clarity:**
 - WJE states, “The only cost difference between Options 1 and 2 is the replacement of all wired glass with coated insulating glass at an additional cost of \$24 million.”
 - This is not an accurate statement, only pointed out for clarity. GRAEF’s Option 1 included only replacing broken glass; Option 2 replaced all glass with insulated, not wired, glass.
 - The County should re-visit the glazing (whether glass or other material) selection after the planning process is complete and when designs are taken to the next level.

- **Risk Associated with These Estimates, Options, and Recommendations:**
 - There is potential for substantial scope and cost growth with a project of this type, especially when choosing one of the shorter-term solutions.

- These estimates are not yet based on a thorough programming process, which is an accepted industry standard to limit the scope and cost growth risk.
- **Ongoing Inspection & Maintenance Issues Associated with the Concrete Frame**
 - As long as the concrete frame stays in place, the County will be required to perform routine, recurring inspections of the structure that will likely entail a hands-on component.
 - The inspections could include temporary Domes closures as well as recurring trimming of plants.
 - The inspections require a significant amount of time and funding, and will be a recurring cost that should be included in the total lifecycle cost analysis.

4. **Recommendations for the Task Force:**

- Any proposed repair scope and cost estimates should follow the planning needs process, which the Task Force is now launching,
- It is too early to make a recommendation that does not address the greater mission of the Horticultural Conservatory.
- The planning and programming process must include a total lifecycle cost analysis before a facility solution is selected. That analysis should include both a net present value and system lifecycle projection(s).