



JOE DEREUIL ASSOCIATES, LLC
STRUCTURAL ENGINEERS

LIMITED STRUCTURAL ASSESSMENT

Of

Glulam Arches at the Malcolm Yonge Center

925 E Jackson St.

Pensacola, FL 32501



Reviewed By:

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Pensacola, FL

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LIMITED ASSESSMENT of:
Glulam Arches at the Malcolm Yonge Center
Pensacola, Florida

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1.0 Executive Summary

The seven (7) glue laminated wood arches supporting the roof are severely damaged. The damage is the result of long-term moisture exposure combined with the accompanying effects of certain wood destroying organisms. The condition of the arches is very poor and they are nearing failure. The building is thereby deemed unsafe for occupancy. Temporary shoring will be required at all arches if repairs are attempted.

Our structural condition survey of the arches is presented as Exhibit A to this document and addresses arch deflection, delamination, and decay. The overall rating for all seven arches is 20. This rating represents a (near) failure condition. This rating system is based on NAVFAC MO-111.1, Inspection of Wood Beams and Trusses.

We do not yet know if partial replacement and/or strengthening of the arches will be deemed economically feasible, however the general approaches to repair may involve the following.

Glue laminated wood arches may be repaired by replacing sections/segments of the arch, paying close attention to the jointing details. Joint details may involve steel rods, steel plates, bolts, screws, FRP, and/or glue. Alternatively, they may be strengthened/supplemented with structural steel shapes including hollow structural shapes, steel channels and/or plates.

It is recommended that the condition of the entire facility be evaluated as a subsequent task to this initial limited assessment to determine if it is feasible to repair/rehabilitate or if it would be better to demolish and rebuild. The recommended evaluation should include a study of walls, roof, windows, doors, flooring, plumbing, hvac and electrical systems along with continued assessment of the interior and under-roof portions of the arches. We anticipate replacement of the windows on the east/west walls. We were informed that one of the HVAC units is not operational. A comprehensive repair cost estimate should be prepared and evaluated as part of the feasibility study and must include structural and non-structural components.

2.0 Background

The Malcom Yonge Center appears to have been constructed around 1961. There are seven glue laminated wood arches supporting the building. These arches create a barrel shaped roof. The exterior walls are comprised of concrete blocks. The building is used for indoor sports, including basketball.

On March 22, 2023, we were informed that the City of Pensacola had recently closed the Malcolm Yonge Center due to concerns over the structural integrity of the glue laminated wood arches which provide the primary support for the barrel shaped roof. We visited the site shortly after being notified of the concerns and again a few weeks later. Our primary purpose on site was to assess the exposed portions of the glue laminated arches.

During our recent site visits on March 24th and April 19th we conducted a limited visual assessment of exterior portions of the structure. We visually assessed the arches and took photos to document our findings. We also probed the members with a screw driver.

The damage to the arches appears to have been concealed by the plywood covering on the side and the metal flashing on the top. We do not know when these coverings were installed or if they are original to the building.

Original construction documents and maintenance records were neither provided nor reviewed as part of our efforts.

3.0 General Conditions

There are seven glue laminated wood arches supporting the building. The arches are spaced at approximately 18-ft on center. They are ~24-ft tall, span ~100-ft, measure 9.5" wide by 23.5" deep and consist of 14 laminations each. The arches extend beyond the roof edge about 10-ft and are therefore exposed to the elements. The top of the exposed arches are capped with metal flashing and the sides of the arches were painted and then covered with 1/2" plywood.

The arches bear in steel 'buckets' and are supported by concrete buttresses. The exterior surface of the steel buckets appear to be in good condition. The concrete buttresses (aka., foundation) appears to be in good condition based on our above-grade visual observations. The arches support tongue and groove wood decking and presumably wood joists.

The exterior walls are comprised of concrete block masonry and other glazing systems. We noticed signs of stair stepped cracking along the block walls just west of the north lobby entrance. While the cracking is not severe, it is indicative of differential foundation movement or excessive settlement.

We also noticed termite damage in the wood casework around the exterior lobby doors on the north side of the building. A complete inspection of the entire facility for wood destroying organisms should be conducted by appropriate personnel.

The damage to the arches involves heavy decay, severe delamination and have produced some deflection. The delamination and decay are worst on the exposed (exterior) portion of the arches. The gaps caused by the worst delamination measure up to 1/4" wide and continue across the full width of the member. The arch delamination and moisture damage continues inside the building, or past the drip edge for 5 to 15 feet, or more, depending on arch location. The damage to the glue laminated arches is severe and as a result, the building is not safe for occupancy.

4.0 List of Deficiencies

Structural deficiencies include decay, delamination and deflection of seven (7) glue laminated wood arches as described in Exhibit A, Inspection Condition Rating Chart. This damage is present in the exposed portion of the arches, outside of the edge of the building roof but also extends into the condition portion of the building a limited distance.

We also noticed stair stepped cracking of the exterior concrete block wall located on the west side of the north lobby entrance.

There is termite damage to some of the casework around the north lobby entry doors.

While not in our scope of work, other potential non-structural deficiencies may be identified in subsequent or supplemental assessments by others and could include termite damage to casework, faulty windows, inoperable HVAC systems or other components.

5.0 General Recommendations

We recommend that the building not be occupied at this time. It should be temporarily shored up if occupancy is required for any length of time such as during the future assessment or repair phase.

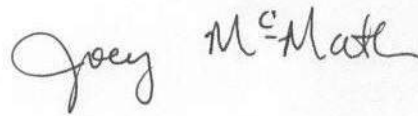
An inspection of the entire facility for wood destroying organisms should be conducted by appropriate personnel and a report provided.

We recommend proceeding with a continued comprehensive building assessment to include all structural and non-structural systems. The comprehensive assessment must include a cost analysis addressing all required repairs.

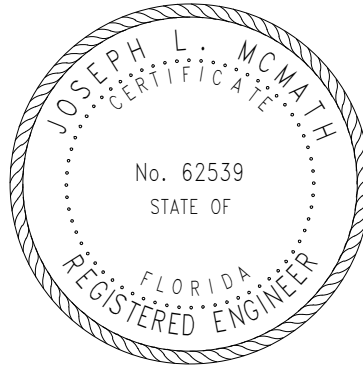
The feasibility of repair versus demolish/rebuild should be evaluated and presented as part of a comprehensive building assessment.

Sincerely,

JOE DEREUIL ASSOCIATES, LLC



Joseph "Joey" L. McMath, III,
FL PE #62539



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Exhibit A

Malcolm Yonge Center: Glue Laminated Wood Arch Inspection Condition Rating Chart

Arch ID No.	Location	DISTRESS CONDITION					OVERALL CONDITION RATING	Location
		Deflection	Delamination	Checks & Splits	Decay near Arch End	Decay near Roof Drip Edge		
1	East of Crown	40	20	N/A	20	40	20	Southernmost arch.
	West of Crown	40	20	N/A	20	40		
2	East of Crown	40	20	N/A	20	40	20	
	West of Crown	40	20	N/A	20	40		
3	East of Crown	40	20	N/A	20	40	20	
	West of Crown	40	20	N/A	20	40		
4	East of Crown	40	20	N/A	20	40	20	Mid-length of Building
	West of Crown	40	20	N/A	20	40		
5	East of Crown	40	20	N/A	20	40	20	
	West of Crown	40	20	N/A	20	40		
6	East of Crown	40	20	N/A	20	40	20	
	West of Crown	40	20	N/A	20	40		
7	East of Crown	40	20	N/A	20	40	20	Northernmost arch.
	West of Crown	40	20	N/A	20	40		

Condition Rating Guide:

- 100 = Perfect condition; No further action until next inspection
- 80 = minor maintenance required; program future preventative maintenance
- 60 = major maintenance required; evaluate repair options and estimate costs to plan repairs
- 40 = Immediate maintenance required; evaluate repair options and cost
- 20 = Failure situation; evaluate repair vs. demolition

Rating Guide Notes:

- (1) For each arch, a rating of 0 to 100 is ascribed to each distress condition
- (2) The lowest rating for any distress condition becomes the overall rating of the arch.
- (3) Where two adjacent arches have overall ratings of 40, the ratings of both shall be changed to 20.

Observation Notes:

- A) We did not observe the crown (hinge region) of arches 2-6.
- B) We only observed the crown (hinge region) of arches 1-7 from the ground, and a up-close inspection was not conducted.
- C) Plywood covering prevents viewing of north face of west end of most arches.
- D) Plywood covering prevents viewing of north face of the east end of most arches.
- E) Delaminations past the roof drip edge and into the building (towards crown) on at least 4 of the arches for distances of 5 to 15-ft or more.

Exhibit B – Photos



**North Side of Building
(Looking SW)**

NOTE: Arch #7 is on north side and #1 is in the rear of the photo



**North Side of Building
(Looking South)**



**Top of Arch #7 at North Side of Building
(Looking South)**



Inside of Bldg
(Looking South towards south wall)



Inside of Bldg – Arch #3 Passing Through East Wall

**NOTE: Notice delamination near bottom of Arch
(Looking South)**



**Inside of Bldg – Top of Arches
(Looking South)**



**South Side of Bldg
(Looking North)**



**Arch #1 at South Side of Bldg
(Viewing West End of Arch)**



**Arch #1 in foreground of photo at South Side of Bldg
(Viewing West End of Arches; Looking NE)**



Arch #1 at South Side of Bldg
(Viewing West End of Arch at Concrete Buttress)
NOTE: Excessive / Severe Decay



Arch #1 at South Side of Bldg
(Viewing West End of Arch at Concrete Buttress)
NOTE: Excessive / Severe Decay



**Arch #1 at South Side of Bldg
(Viewing West End of Arch at Concrete Buttress)
NOTE: Excessive / Severe Decay**



Arch #1 at South Side of Bldg
(Viewing West End of Arch between Concrete Buttress and west wall)
NOTE: Excessive / Severe Decay & Delamination



Arch #1 at South Side of Bldg
(Viewing West End of Arch between Concrete Buttress and west wall)
NOTE: Excessive / Severe Decay & Delamination



**Arch #1 at South Side of Bldg
(Viewing West End of Arch at west wall)
NOTE: Severe Decay & Delamination**



**Arch #1 at South Side of Bldg
(Viewing West portion of Arch at west wall)
NOTE: Delamination**



Arch #1 at South Side of Bldg
(Viewing West portion of Arch between west wall at top of Arch)
NOTE: Delamination



**Arch #2; West End near SW corner of Bldg
(Viewing West portion of Arch at Concrete Buttress)
NOTE: Severe delamination & decay**



Arch #2; West End near SW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress)
NOTE: Severe delamination & decay



**Arch #2; West End near SW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress)
NOTE: Severe delamination & decay**



**Arch #2; West End near SW corner of Bldg
(Viewing West portion of Arch near west wall of building)
NOTE: Severe delamination & decay**



**Arch #6; West End of Arch near NW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress)**

NOTE: Severe delamination & decay



**Arch #6; West End of Arch near NW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress)**

NOTE: Severe delamination & decay



**Arch #6; West End of Arch near NW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress and Near West Wall)
NOTE: Severe delamination & decay**



**Arch #6; West End of Arch near NW corner of Bldg
(Viewing West portion of Arch just above Concrete Buttress and Near West Wall)
NOTE: Severe delamination & decay**



**Arch #6; West End of Arch near NW corner of Bldg
(Viewing West portion of Arch bearing on Concrete Buttress)**

NOTE: Severe delamination & decay with screwdriver easily penetrating member



Arch #7 in Photo Foreground; East End of Arch near NE corner of Bldg

NOTE: Severe delamination & decay



Arch #7 in Photo Foreground; East End of Arch near NE corner of Bldg
NOTE: Severe delamination & decay



Arch #7; East End of Arch near NE corner of Bldg

NOTE: Severe delamination & decay



Arch #6 in Photo Foreground; East End of Arch near NE corner of Bldg

NOTE: Severe delamination & decay



Arch #4 in Photo Foreground; East End of Arch

NOTE: Severe delamination & decay



Arch #3 in Photo Foreground; East End of Arch

NOTE: Severe delamination & decay



Arch #3 in Photo Foreground; East End of Arch

NOTE: Severe delamination & decay



Arch #4 in Photo Foreground; East End of Arch
NOTE: Severe delamination & decay



**Arch #7 & Cracked CMU Wall at North Side of Bldg
(Looking South)**



Termite Damage at North Lobby Entrance



Typical Window Condition
(Note obvious damage and poor condition of framing and glazing)

Exhibit C – Disclaimers

This report does not express or imply any warranty of the structure but only addresses the condition of the portion which was readily accessible and observable at the time of inspection.

It should be noted that the above report is based on visual observations and that there is no claim, either stated or implied, that all conditions were observed.

This report does not constitute construction documents for the Recommendations made herein. The Recommendations are of a general nature. A proper set of bid documents should be prepared by qualified professional engineers or architects prior to bidding for services to execute the Recommendation herein.

No physical testing was performed, and no calculations have been made to determine the adequacy of the structural system or its compliance with accepted building code requirements.

The visit to the referenced building does not constitute a design and the structural system for the building cannot be warranted.