North Mesa Brewer Arena Assessment

Los Alamos, NM

August 6, 2024

WILSON & COMPANY

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Existing Conditions Assessment

North Mesa Brewer Arena

Prepared for

Los Alamos County Public Works Department
Capital Projects and Facilities

August 6, 2024
WCI Project #: 23-100-035-09

Prepared by

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HIGHER RELATIONSHIPS

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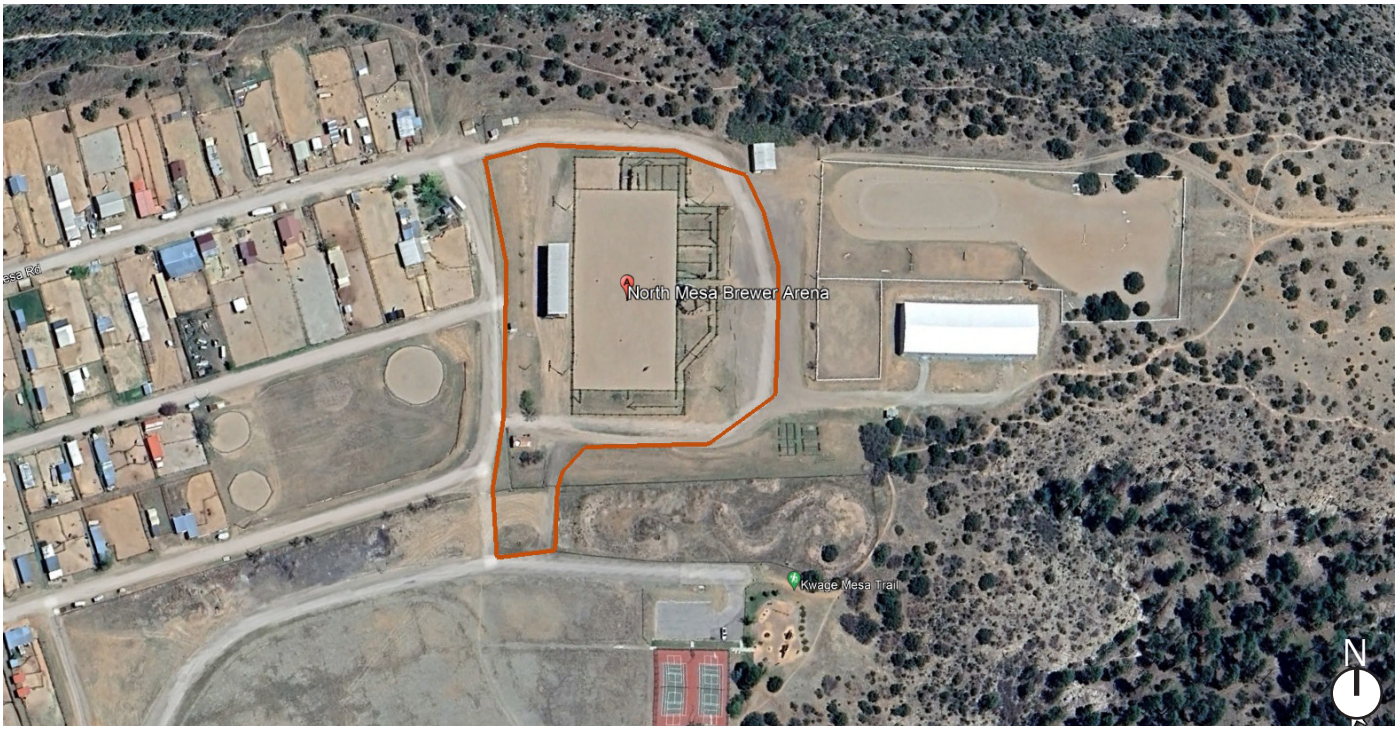
Contents

Introduction

This assessment will discuss the condition of the existing outdoor North Mesa Brewer Arena, with proposals for upgrades to the existing facilities. The North Mesa Brewer Arena is located off North Mesa Park Road in Los Alamos County. The current Arena facility is 20+ years old and is in need of Civil, Structural, Architectural, ADA, Mechanical and Electrical repairs and upgrades. This assessment will discuss the current site condition of the existing Restroom, Grandstand Pavilion and Announcer's Box and well as opportunities for repair and expansion within the existing facility.

Executive Summary

The work under this assessment included a field investigation to gather and document information critical to the design process, with Civil, Structural, Architectural, Accessibility, Mechanical and Electrical evaluations of existing site conditions. This documentation process was visual in nature and excluded sub-surface, destructive, or hidden conditions of the facility. The North Mesa Brewer Arena will require repair, upgrade and expansion to the existing facilities. Areas of focus will include existing site conditions, vehicular and pedestrian access, with condition assessments and proposals for upgrade and expansion of the existing site facilities, with ADA upgrades to or the addition of supplemental restrooms, demolition and replacement of the Grandstand , and demolition, abandonment or replacement of the Announcer's Box. Existing parking areas and pedestrian circulation routes do not meet ADA accessibility standards for year round site access, grading, pavement materials and signage. In addition, the existing Restroom facilities, fixtures and accessories do not meet ADA standards for accessible layout, functionality, convenience, comfort or signage. The Grandstand is structurally deficient and does not currently accommodate required seating capacity, or include required designated handicapped or wheelchair seating, with additional infrastructure, safety and signage deficiencies. Finally, the Announcer's Box is structurally deficient and does not include a ramp or personnel hoist-way for required facility access, with additional infrastructure, safety, and signage upgrades.



Aerial photo showing existing site boundary

Existing Conditions

a. Architectural

Announcer's Box

The Announcer's Box is structurally deficient and does not accommodate the required access, with additional infrastructure, safety and signage deficiencies. The Announcer's Box shall be located along an adjacent accessible route, with security barriers, including tactile and directional signage labeled with the Symbol of Accessibility. Based on the Structural assessment under this Study, the Announcer's Box should be either demolished, abandoned or replaced. The recommendation under this assessment is to abandon and secure the existing historic Announcer's Box, by sealing the existing entry door and remove the existing access stairway. It is further recommended to locate a new Announcer's Box into the new grandstand pavilion structure.

Grandstand Structure

The Grandstand structure is structurally deficient and does not currently accommodate the required seating capacity, or include the required designated handicapped or wheelchair seating, with additional infrastructure, safety, comfort and signage deficiencies. Based on the Structural assessment under this Study, the grandstand pavilion will need to be demolished and replaced with a new structure with a total seating capacity of 700 people. Grandstands are required to comply with Chapter 11 of the International Building Code and adopted State statutes. The Grandstand structure shall be located along adjacent accessible routes, provided with accessible entrances, security barriers, eight (8) undispersed grade level accessible wheel chair spaces, with including tactile and directional signage with the Symbol of Accessibility.

West view of Project Site

View of Announcer's Box

View of Bleachers

Aerial photo showing existing conditions

Restrooms

The existing restroom facilities, fixtures and accessories do not meet ADA standards for accessible layout, functionality, convenience, comfort or signage. Plumbing Elements and Facilities shall comply with Chapter 6 of the Accessibility Code, covering requirements for clearances, wheelchair accessible water closets and toilet compartments, lavatories and sinks, drinking fountains, accessories, including tactile signage with the Symbol of Accessibility complying with Chapter 7 of the Accessibility Code. Based on current budget allotments for the upgrades under this assessment, the recommendation is for the County to provide temporary, accessible mobile toileting facilities to accommodate future planned events at the facility.

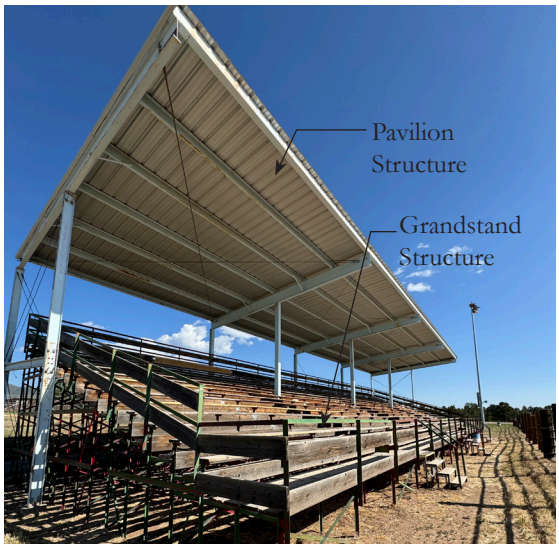
North side of Restrooms

Interior View of Restrooms

b. Civil

Site

Existing parking areas and pedestrian circulation routes do not meet ADA accessibility standards for year round site access, grading, pavement materials and signage. Accessible parking layout and quantities shall comply with Chapter 5 of the Accessibility Code and International Building Code (IBC) Chapter 11 and local zoning requirements, with stable and firm and slip resistant parking spaces, access aisles and walking surfaces, identified by signs with the International Symbol of Accessibility complying with Chapter 7 of the Accessibility Code. Based on the project's site area of approximately 190,381 square feet, a minimum of 190 off-street parking spaces is required. In compliance with accessible parking standards, this entails a minimum of 8 accessible parking spaces and 2 van-accessible spaces. Accessible parking spaces shall be located along adjacent accessible routes with parking for 2% of the total number of parking spaces provided. Accessible pedestrian routes shall consist of stable, firm and slip resistant walking surfaces with a slope of not more than 1:20 with a clear width of 36" to allow 5'-0" clear overall width.



South East side of Grandstands

Structural

a. Site Observations

Pavilion Structure

The Pavilion structure consists of a metal deck over Z purlins. The purlins frame into wide flange steel beams that frame into wide flange steel columns. The purlins are braced to the beams with 1½"x1½" steel angles. The roof diaphragm is cable cross bracing. The columns sit on 16" diameter concrete piers. Medium to light rust was observed on the columns. Anchor bolts and cable bolts were experiencing rust damage. Some of the concrete piers were cracked. The vertical cross

South side of Grandstands

bracing cables were sagging. The side frames have double channels horizontally framed at mid level. It appears that the Pavilion structure had been constructed at a previous site, disassembled, brought to the current location and reassembled in a slightly different way than originally.

Grandstand Structure

The Grandstand structure is a steel framed structure with 2x10 wood members used for stairs, walkways and seats. The steel frame consists of 1½"x1½"x1/8" steel angles used for beams, columns and braces. Rust was observed on many members of the frame. Rust was also observed on bolts securing the frame. Several angle members were buckled approximately ¼" or more. One column angle member appeared to have been hit by a vehicle and had buckled several inches. The wood walkways were missing boards and at some locations, the boards were not bolted to the steel frame. The wood boards appeared to be deteriorating.

Announcer's Box

The Announcer's Box stairs support frame has badly deteriorated steel columns, some with rusted cracks and openings. The frame supporting the landing has a buckled cross member. The landing frame also appears to have had steel supports cut off and removed. Rust was observed throughout the frame. The announcer's box is framed with wood boards and 2x joists. The wood appears deteriorated by exposure and water.

b. Evaluation

Pavilion Structure

The Pavilion structure shows signs of modification at current location after being moved from a previous location. Due to the out of plane bending of columns, the lack of functional cross bracing, and the compromised state of the roof beam webs, there is significant concern of structural instability and catastrophic failure under conventional loads.

Grandstand Structure

The Grandstand structure is in very poor condition. The missing or unbolted wood walkways and seats are a danger to occupants. The steel frame is buckled and rusted. The most critical is the buckled steel members. These members may fail catastrophically under a maximum load.

View under Announcer Box structure

North Side of Announcer's Box

West side of Announcer's Box

Announcer's Box

The Announcer's Box stair landing frame is in poor condition. The missing and damaged steel members may cause instability in the stairs and landing. The announcer's box floor appears deteriorated and poorly framed.

View of frame under Announcer's Box

c. Conclusion and Recommendations

Pavilion Structure

The Pavilion structure is showing signs of lateral displacements beyond allowable safe limits. Due to it being a repurposed structure in poor condition it should not be used by anyone. The Pavilion structure should be replaced completely.

Grandstand Structure

The Grandstand structure is in very poor condition and should not be used by anyone. The Grandstand structure should be replaced completely.

Announcer's Box

The Announcer's Box stairs and landing framing should be replaced. The announcer's box may be salvaged if it is redesigned and new floor and wall framing is installed. Also, new connections, especially to the columns, should be installed. It should not be used as it is. If repairs are not made it is recommended that it be demolished and replaced completely.

South side of Announcer's box structure

Southwest view of Site

Appendix

a. Pavilion Structure Comments/ Photographs

Cross Bracing

The Pavilion structure's cross brassing cables have been installed incorrectly and are currently slack. They won't function properly unless installed with turn buckles to allow for tightening and loosening based on ambient temperature.

Cable Bracing

It appears that the cable bracing eye bolts are installed through torch cut holes. These holes should not be torch cut, but should have been machined in the steel shop.

Column Welds

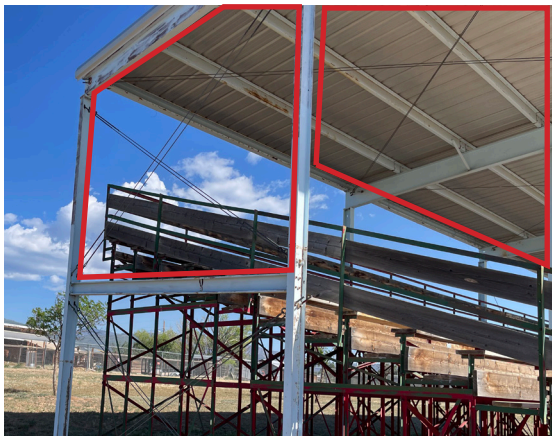
Column welds seen throughout the pavillion structure indicate modification of original site columns when assembled in the current site.

Missing Bracing

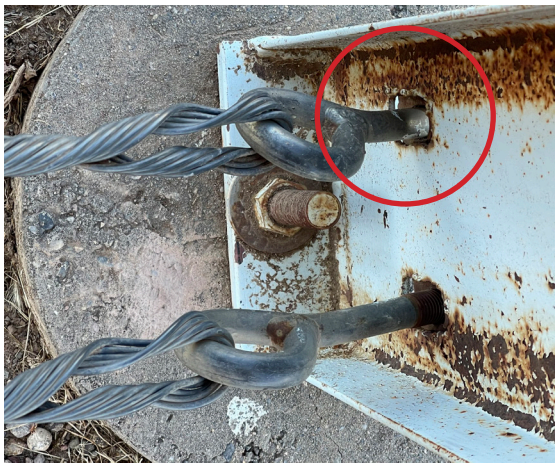
Torch cut cable cross bracing with missing cross bracing.

Cross Bracing Cable

Cross bracing cable is coming undone in several locations.

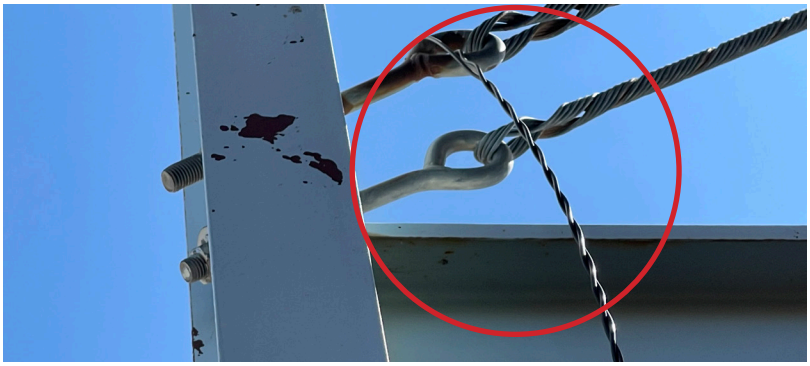


View of Pavilion cross bracing



View of cable bracing

View of column welds



View of cross bracing cable

View of missing cross bracing

Column Buckling

Local column flange buckling of an exterior column. The cause of the buckling appears to be caused by something colliding with the column. Possibly during construction or transportation. This reduces the compressive and bending strength of the column.

View of column buckling

Bending Column

This column is noticeably curved from the foundation to the middle of the column where it is braced and curved in opposite direction from brace location to roof location. This indicates either damage of the column during transportation to this site and assembly, or indicates that the structure has deformed since it was initially erected.

View of bending column

Lateral Web Bending

It was apparent that these beams were experiencing lateral web bending. There shouldn't be any web bending out of plane. Stiffeners or lateral beams should have been used to reduce the risk of that happening.

View of lateral web bending

Missing Cross Bracing Cables

Cross bracing cables are missing from this bay. It would be expected to see symmetrical cross bracing. Only one of the four bays in the rear of the Pavilion structure has cross bracing. It would be expected that two or four would be cross braced.

View of missing cross bracing cables

b. Grandstand Structure Comments/ Photographs

Buckled Column

Example of buckled column in Grandstand structure. There are several vertical, diagonal, and horizontal members have have buckled. It is difficult to determine if the buckling is due to damage that occurred during transportation and construction or due to structural loading beyond the capacity of the members. Regardless of the cause these buckled structural members have failed and are no longer capable of doing what they were designed to do.

Buckled Connection

This is an example of several places where one angle leg has been coped off the structural member at the connection. It is evident that the connection has buckled in compression. There should not be any buckling of any portion of these members. There were several of these connection failures that were seen.

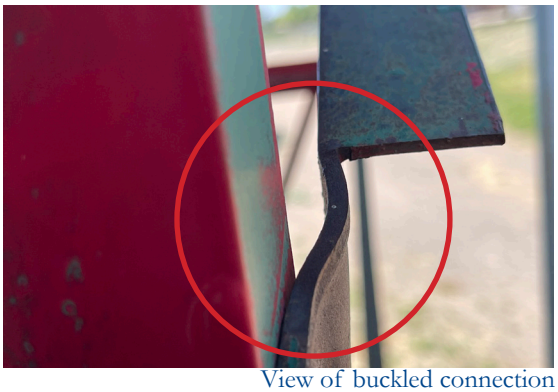
Failed Connection

This is an example of another Grandstand structural member connection failure. The coped angle is bending out of plane and the bolt appears to be coming loose. There are several of these connection failures that were seen.

View of buckled column

Local Prying Failure

This is an example of local prying failure due to buckling of lower vertical member.



View of buckled connection

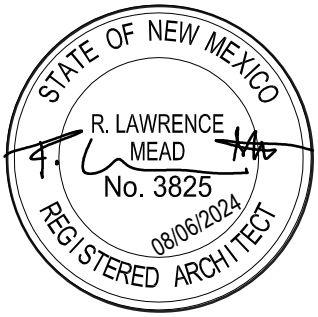
Structural Member Bucking Failure

This is an example of a diagonal structural member bucking failure. There were several of these types of buckled members seen throughout the Grandstand structure.

View of failed connection

View of prying failure

View of structural member buckling failure



I, Lawrence Mead, do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Architect under the laws of the State of New Mexico

I, John McNamara, do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Structural Engineer under the laws of the State of New Mexico

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