ABSTRACT
MASONRY RESTORATION

EXPERT AT CLEANING,
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HISTORIC MASONRY

CENTRAL UTAH RELOCATION CENTER (TOPAZ)
WAKASA MEMORIAL STONE ASSESSMENT REPORT

December 14, 2022

SUBJECT PROPERTY

Wakasa Memorial Stone
Current Location:
Topaz Museum
55 West Main St.
Delta,Utah
United States of America

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Brick Stone Terra-Cotta Mortar Adobe Stucco Concrete

REPORT PREPARED FOR:

Topaz Museum Board
55 West Main St.
Delta, Utah 84624

REPORT PREPARED BY:

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HISTORICAL BACKGROUND

The history of the subject stone is both important and intriguing. The events surrounding it have been well documented by others. The *National Parks Service January 2020 Central Utah Relocation Center (Topaz) National Historic Landmark Condition Assessment Report* and its associated footnotes and bibliography provides a comprehensive history. For those wanting an in depth history, I highly recommend reading this report.

For the purposes of this report and for general context as it pertains to the stone, the most pertinent timeline dates and events are as follows:

June 1943 - Stone used to construct a monument near where Mr. James Hatsuaki Wakasa was shot and killed on April 12, 1943. The stone is believed to be native to the surrounding area and was obtainable close by the Central Utah Relocation Center (commonly known as Topaz). Shortly after its construction, the stone monument was "...torn down and the rocks which were used in this construction have been completely removed from sight" (p. 42 - The Power of Place").

Fall 2020 - Archeologists Jeffrey Burton and Mary Farrell locate the subject stone (almost all underground) near where Mr. Wakasa is believed to have been shot and killed.

July 27, 2021 - As a response to potential vandalism, the Topaz Museum Board unearths the stone, loads it onto a trailer, transports, and unloads it to an area behind (south) of the Topaz Museum located at 55 West Main St. Delta, Utah.

PROJECT OVERVIEW

The stone commonly referred to as *Wakasa Memorial Stone* or *Wakasa Monument* (herein after referred to "the stone") now rests in what is intended to be a temporary location until decisions can be made respecting its future. Concern has arisen over the following:

A) The current condition / fitness of the stone and if conservation or stabilization measures are prudent now, or when it may be moved.
B) The expected durability of the stone in its next location and setting.

SCOPE OF REPORT

Per the agreement with the Topaz Museum Board (herein after referred to TMB), the scope of this report is to opine regarding:

A) "The current condition of the stone in terms of its cohesiveness and/or fragility."
B) "The feasibility of lifting, re-situating, moving and/or transporting the stone to another location."
C) "The potential durability of the stone in an exterior environment with natural climatic and other exposure conditions, or a protected interior environment."

This report and analysis is based upon observations of the visible apparent conditions of the stone and information provided to me before, during and after my on-site inspections on Oct. 24, 2022, November 1, 2022 and November 10, 2022. It does not claim to be an itemization of all conditions and is intended only to provide the client with a general idea of the issues observed during the on-site inspections. Although care was taken to perform a proper and thorough inspection, no representation is made regarding the existence of latent or concealed defects. No warranty or guarantee is expressed or implied.

The observations were limited to being primarily visual. No destructive tests were performed to reveal unseen conditions. No laboratory or advanced non-destructive analysis was performed. This report is not intended to address all life / safety issues.

My opinions may change and this report may be amended as more information becomes available to me.

STONE ASSESSMENTS DATES

On the dates listed below, I spent a considerable amount of time carefully assessing the stone. The assessment dates occurred while the stone is at its current location (in the

courtyard area directly behind (south of) the Topaz Museum building at 55 West Main St. Delta, Utah).

- October 24, 2022
- November 1, 2022
- November 10, 2022

In addition to my assessments, to the best of my knowledge, the stone has also recently been assessed by three other professionals:

1) Eric H. Christiansen, Professor of Geology at Brigham Young University in Provo, Utah. Eric's report primarily assesses the stone from a geological and petrological perspective. I don't see that Mr. Christiansen's report is dated, but the best I can tell it was written sometime in 2022.
2) Kimberleigh Collins-Peynaud, Objects Conservator in Sandy, Utah. It is reported that Kimberleigh was onsite assessing the stone on June 23, 2022 and September 10, 2022. Her report dated September 25, 2022.
3) Rachel Adler, Architectural Conservator, Vanishing Treasures Program, National Parks Service, Regions 6,7 and 8. It appears Rachel's assessment is summarized in Section 4.1 in the National Parks Service Central Utah Relocation Center (Topaz) National Historic Landmark Condition Assessment Report dated January 2022.

The above mentioned assessments from two separate architectural conservators and a geologist provide important interdisciplinary perspectives and broader context.

EXISTING CONDITION

With few notable exceptions, the results of my assessment of the existing condition of the stone *very* closely align with Section 4.1 in the National Parks Service Central Utah Relocation Center (Topaz) National Historic Landmark Condition Assessment Report dated January 2022 and therefore do not merit repeating.

I felt an understanding of the means, methods and equipment used during the unearthing and relocation of the stone would provide valuable insight into its current condition and help me better opine regarding the 3 items defining my scope of work as previously outlined above. At my request, the TMB authorized my viewing of the video recording clips taken from multiple perspectives during the unearthing of the stone from the Topaz site, loading it onto a trailer and unloading at its existing site.

CHARACTERIZATION OF PREDOMINANT SURFACES AS THE STONE IS CURRENTLY SITUATED IN THE COURTYARD BEHIND THE TOPAZ MUSEUM IN DELTA, UTAH

Beginning with the current south side and moving around the stone in a counter clockwise direction:

A) The **south side** is characterized by the presence of substantial cracks and natural fissures that intersect forming approximately 90 degree angles in a cross shape (+). The stability and cohesiveness of these fissured areas is of concern. It is this surface that was facing predominantly skyward during its approximate 80 years at Topaz. Facing skyward for this amount of time likely facilitated the puddling of water from rain, stone and ice in and around the cracks. Gravitational forces likely facilitated water infiltration into these fissures. Water expands approximately 8-9% in volume when frozen. As a consequence, repeated freezing and thawing cycles exerts substantial expansive force in fissures, which often result in a weakened and less cohesive stone. It is not known to what extent distress may have been caused from this process in the subject stone.

B) The **east side** is characterized as constituting the east "end" of the stone. It has a substantial horizontal crack across its entire end that extends from the + crack on the south side.

C) The **north side** is characterized by a continuation of the horizontal crack from the east side. This crack is located near the upper level of the north elevation. It fades and terminates approximately 1/2 the distance across the north side of the stone. The lower 1/2 of the north side is covered with caliche and the remaining top 1/2 is desert varnish.

D) The **west side** constitutes the west "end" of the stone. The defining feature on the west side is a large awkward downward bend on the end of the stone. This unexpected dropped shape created difficulty dislodging the stone from the ground during unearthing. The downward pointing bend extends off the west end of the pallet and below the top surface of the pallet, and is not currently supported except by a wood board the equipment operator placed at an angle under it - likely to keep the stone from rocking during loading, transporting and unloading.

E) The **skyward facing surface** consists primarily of "desert varnish." Desert varnish is described by Eric H. Christensen, Professor of Geology at Brigham Young University in Provo, Utah as a dark iron-manganese deposit formed by the rock surfaces being exposed to the atmosphere in arid and semi-arid environments. There is a significant amount of surface loss on this surface. I "sounded" the skyward / desert varnish surface by lightly tapping it with the end of hand held metal rods and listening to the resulting sounds. Areas sounding higher in pitch are typically cohesive, while areas sounding lower in pitch typically indicates hollowness or separation of layers. Based on the results of the sounding, large areas of the desert varnish surface appear to have developed hollowness, delamination or other distress. This condition is typical of many skyward facing stone surfaces. The condition also preceded the unearthing and relocation of the stone.

F) The **underside** is not readily visible at this time due to it resting on the carpet covered pallet. A thorough documentation and assessment of this surface is needed at a later date - perhaps when the stone is moved to its next location.

ORIENTATION OF THE STONE AT TOPAZ *PRIOR TO UNEARTHING*

Video clips show the orientation of the stone while at Topaz, and prior to its unearthing and extraction from the hole.

- The south side *as currently situated on the pallet in the courtyard behind the Topaz Museum* was predominantly facing skyward.
- The east end *as currently situated on the pallet in the courtyard behind the Topaz Museum* was pointed approximately toward the north-north-east, and the west end pointed approximately toward the south-south-west.

POTENTIAL IMPACTS TO THE STONE DURING UNEARTHING, LOADING, TRANSPORTING AND UNLOADING

In is not tenable to suggest no impact to the stone occurred during its unearthing, loading, transporting and unloading by TMB. Neither is it tenable to suggest no impact to the stone would have occurred if different means, methods and equipment were used. It is a large, awkwardly shaped and approximately 2400 pound stone that poses significant challenges when handled. The actual impact to the stone during unearthing and relocation is difficult to determine with certainty. However, based on my study of the videos and observing the physical stone itself, it is reasonable to conclude the stone was impacted to some degree during the unearthing and relocation process as a result of the following:

A) Very light impact when contacted with metal spade shovels and a small hand held gardening shovel may have resulted in minor and very short and shallow surface scratches / scrapes. The personnel hand shoveling the soil away from the stone were quite careful however.
B) Abrasion and surface loss when the silver metal hook on the end of the yellow strap impacted the stone while tugging it to dislodge the stone from the soil.
C) The yellow strap rigged around the stone in a variety of ways was tightly tugged by the skid steer. This could potentially have caused some degree of additional separation or weakness to the cracked areas in the stone as it was pulled. Any weakening or deleterious impact to the cohesiveness of the cracked areas is very difficult to establish with certainty.
D) Abrasion resulting from friction between the fine silty soil as the stone was dragged from the site of its unearthing to the side of the road where it was loaded onto the cardboard and carpet covered wooden pallet prior to loading it onto the trailer. The extant native fine silty soil likely minimized impact to the stone when compared to other soils consisting of larger and coarser grains.
E) It is quite likely the current top side of the stone where the desert varnish is predominant sustained surface loss as a result of the unearthing and relocation of the stone. As the stone was being tugged via the yellow strap while dislodging it from the soil in the bottom of the hole, the stone rotated which resulted in substantial areas of the desert varnish coming in direct contact with the silty soil at grade. It was in this position that the stone was dragged toward the road prior to it being loaded. Page 27 of the January 2022 NPS report states that “stone fragments found at the site where the stone was removed match the color and texture of areas on the main body of the stone that exhibit evidence of loss.” See photos 16-19 of the NPS report. I do not know if the referenced stone fragments were collected by the NPS personnel. Neither do I know where they are currently located.

F) Scrapes and possible loss of surface material resulting from impact of the metal forks extending from the skid steer as the equipment operator moved and situated the stone onto the wooden pallet prior to loading it onto the trailer.

G) Two separate roughly triangular shaped fragments measuring approximately 9”-10” in length are currently detached from the host stone and are kept in the Topaz Museum. Based on the video clips, one fragment appears to have been gravity resting from the very beginning near the cross crack (+) on the then skyward facing surface. This fragment was picked up and removed by hand. The other fragment separated from the host stone as the equipment operator was attempting to load the stone onto the wooden pallet. He noticed it, stopped work as a result, picked it up off the ground and handed to one of the other people helping with the unearthing and relocation process. The specific location of the origin of these two fragments on the north and south sides the host stone has been established and photographed. Future conservation techniques to reattach the fragments are fairly simple and straightforward.

It should be noted that the skid steer operator / rigger is highly skilled operating the skid steer and moving large, awkward and heavy objects. The team performing the unearthing and loading of the stone at Topaz did a reasonable job based on their level of experience and knowledge doing such work. However, the assistance of experienced and knowledgeable professionals such as an archeologist and a stone professional with significant insight into potential weakness or fragile areas in natural stones would have been beneficial. Having an experienced stone professional involved with the process, by keeping a watchful eye on what the stone itself may have been experiencing and identifying fragile and areas of potential weakness (vulnerable areas), would have reduced the impact to the stone. The extent of impact to the stone and its relative cohesiveness and fragility is difficult to fully determine.

There are many factors that make analyzing the means and methods of unearthing the stone and any impact to it challenging. Among them are the various iterations rigging and securing the strapping around the stone, the specific locations of the straps when forces are exerted by pulling / tugging, changing the direction and angles of pulling / tugging the straps, strap to stone contact, stone to soil contact etc.

When watching the video clips, it proved challenging to determine if what may appear to be a crack, is an actual crack, shadow, small root etc. It is difficult to tell with a high degree of certainty, but after comparing the cracks / fissures visible in the stone in the video clips, with the physical stone I observed and photographed during my on-site assessments, I did not detect new cracks resulting from the unearthing and relocation process.

The stone consists of a lot of thick and dense mass. With respect to development of cracks, this is in its favor.

ADDITIONAL OPINIONS AND RECOMMENDATIONS MOVING FORWARD

1) Remove the yellow rigging strap currently wrapped around the stone. Because the weight of the stone may be compressing the strap onto the carpet covered pallet securing it tightly in place, it may be necessary to carefully cut the strap near both bottom sides of the stone and leave the remaining strap piece in place under the stone.
2) I believe the potential risk of the stone sustaining further deleterious impact out weighs the potential benefit of lifting, handling and situating it into a low wooden frame filled with pea gravel or similar material as recommended in the NPS report dated January 2022. However, there are other simple things that can be done to help mitigate the risks associated with the weight load distribution on the wooden pallet. One option to consider is to strategically situate several small engineered blocks of medium to high compressive strength foam board in the space between

the top and bottom wood boards of the existing pallet. This should be performed by professionals.

3) For now, hold off on proceeding with any preservation or restoration treatments. Performing preemptive conservation treatments prior to handling and moving stone often result in unintended consequences that may result in further distress to the stone. This includes *not* coating, painting or spraying the stone with anything (including latex or acrylic additives) as recommended in the report by geologist Eric H. Christiansen.
4) Thoroughly document the 2 triangular shaped stone fragments. Properly label and store them in a secure location. Have a competent stone conservator re-adhere the fragments in their original location after the stone is moved to its final location.
5) There is always potential for the stone to sustain damage as a result of moving it, (human error, equipment malfunction, unforeseen conditions etc.). However, I do believe it is more likely than not that the stone can be successfully moved to its next location *if thoughtfully planned and executed by experienced professionals.* These professionals should consist of a team of a trusted equipment operator / rigger, a stone professional with significant insight into potential weakness or fragile areas on natural stones and possibly others. A written plan should be developed and reviewed by TMB, NPS, WMC and SHPO for critique and comments.
6) Consider utilizing LIDAR technology to produce 3D images of the currently visible and accessible surfaces of the stone. These images may be useful to more accurately map and document existing conditions.
7) Because of the following, I'm very uncomfortable with the stone being in an outside, unprotected setting in its final destination.

    - The potential of fragmentation. The most pronounced cracks are wide, long and converging. This points to possible large scale weakness. The smaller and finer cracks pose risks for possible surface loss. An outside unprotected setting lends itself to exasperating these weaknesses.
    - Exposure to the deleterious effects of freeze / thaw cycling and wind erosion.
    - Potential damage to the fragile desert varnish (especially those that resulted in a lower pitch when sounded) and other distressed surface layer areas.
    - Risk of vandalism.