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January 17, 2022

INSPECTION REPORT

Garber & Woodward Architects, Cincinnati.
William Henry Harrison Memorial, 1924
Indiana limestone, other granite, limestone and marble types

LOCATION: Mt. Nebo, North Bend, Ohio.
PROJECT NO. 21183
ADDRESS: 41 Cliff Rd
North Bend, OH 45052

INSPECTION

The inspection was performed on November 23rd, and 24th of 2021 by Marcin Pikus, Conservator of Stone and Architectural Features, of McKay Lodge Conservation Laboratory. Also in attendance was Meta von Rabenau - Ohio History Connection officer, Beverly Meyers and Father Dave Sunberg from the Harrison Symmes Memorial Foundation. The survey of the William Henry Harrison Memorial included visual inspection and photographic documentation of its exterior and interior components. The exterior walls of the obelisk were inspected and photographed using a small drone, as well as a camera equipped with a high-quality telephoto lens (200 mm). The survey included the interior of the original tomb, the vestibule, and the internal shaft of the obelisk. The survey also included the limestone benches on both sides of the obelisk, the adjacent sections of the retaining wall, the limestone balustrade across the terrace as well as the eagle adorned pylons located at the gateway to the site.

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The inspection was aimed at assessing the current condition of the monument and determining causes of deterioration, structural and superficial damage affecting the structure and the appearance of the tomb and the obelisk.

This report summarizes the observations made during this inspection.

DOCUMENTATION

The report is accompanied by TBD “key” digital images printed and as files on a disc. The images are referenced in the text below by image numbers. The images are printed on Epson® archival paper with Epson® Ultrachrome K3 lightfast inks. In addition, on an enclosed Verbatim® Ultralife™ Gold Preservation disc (DVD), there are TBD digital images.

DESCRIPTION

The William Henry Harrison Memorial is a large masonry structure and a burial site located on the Mt. Nebo, at North Bend, Ohio, overlooking the Ohio River, and of the corners of three states—Ohio, Indiana and Kentucky. It consists of two masonry structures, connected with each other, but erected separately – the tomb and the obelisk.

The tomb, originally a simple brick structure covered with sod, was built in 1841. Over the following years it had suffered a substantial deterioration, which was addressed by a commission (William Henry Harrison Memorial Committee) summoned to life by Horace Bonser in 1919. The tomb was then restored, and the currently present, rough-stone structure was built (Fig. 1). The official completion date is December 14th, 1922.



Fig.1. The W.H. Harrison Tomb after the improvements completed by Henry Harrison Memorial Committee 1922.

Two years later the President's tomb received a prominent addition – the nearly 62 ft tall obelisk structure, which was completed in the year of 1924 (Fig 2.).

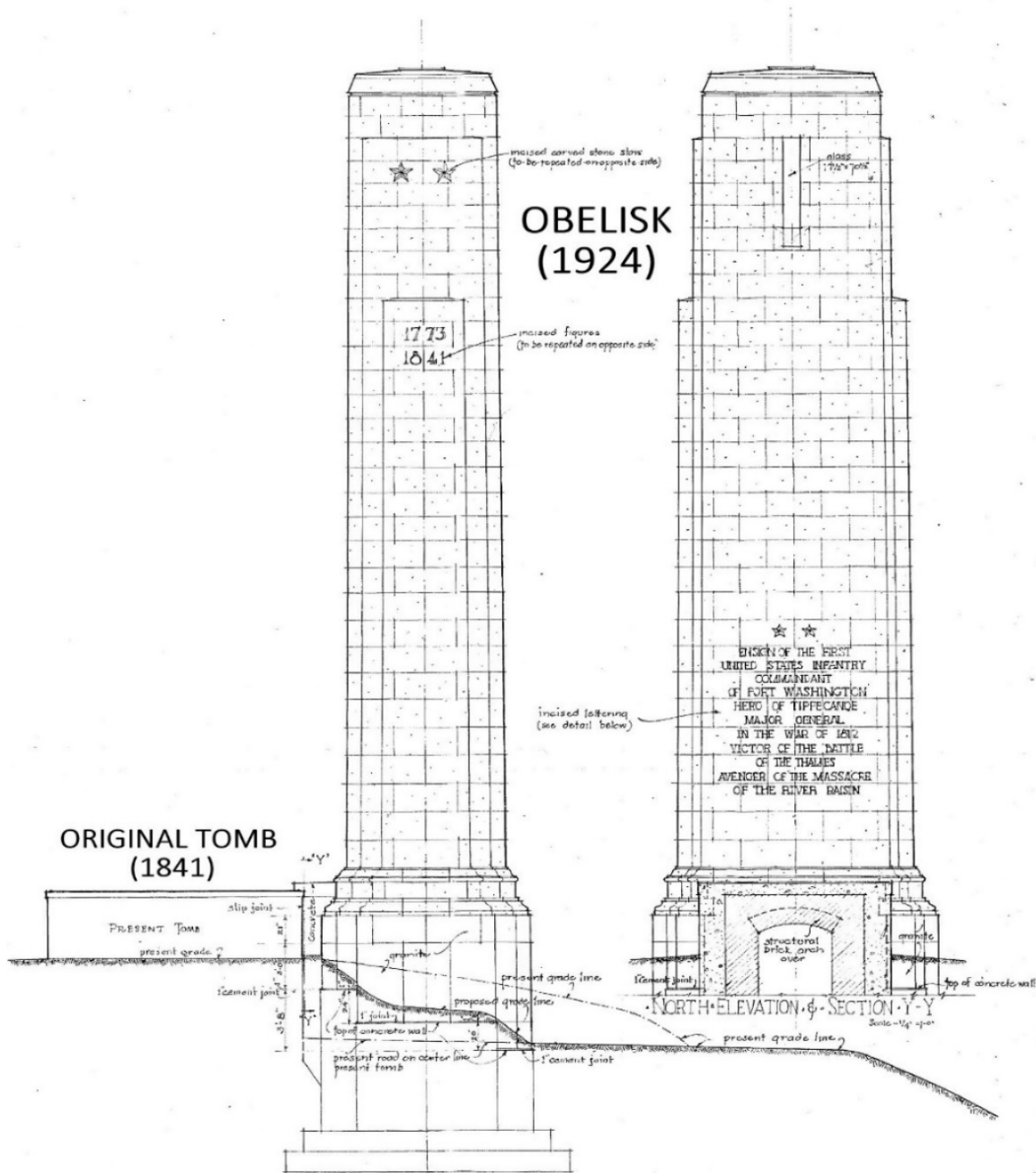


Fig 2. The proper right side and the front side view of the exterior of the William Henry Harrison Memorial. A fragment of a design drawing by Garber & Woodward Architects from December 1923.

EXTERIOR

THE TOMB

The tomb is a simple masonry structure, having the shape of a rectangular prism, approximately 16 feet long by 15 feet wide, which is partially buried under soil. Only the upper portions of its walls, can be seen above the ground level. The walls are built with creamy-white, porous stone blocks (most likely Indiana limestone) pointed with an off-white mineral mortar (images). The tomb's roof is covered with a rubber-membrane, which is covered with gravel (images). The back edge of the roof is equipped with a metal gutter which collects the rainwater. The downpipe is buried in the ground near the back wall, and it remains unknown how far away from the tomb building the rainwater is discharged (images). The walls also feature a metal sheeting just above the ground level. A waterproofing membrane, covering the wall under the metal sheeting can be seen in some areas (images).

The original entrance to the tomb features a large granite lintel with the word HARRISON carved in it. Currently this part can only be seen from the inside of the vestibule in the base of the obelisk (images).

THE OBELISK

The base of the obelisk (up to the water table level) is built of light-gray granite blocks, while the upper portion of the obelisk exterior is built with Indiana (Bedford) limestone. The joints between the stone blocks are pointed with mineral mortar. The total height of the obelisk is almost 62 feet. Its base is roughly 16 feet long by 12 feet wide. The roof of the obelisk is covered with a lead sheet cap and features a square steel hatch. The gap between the top edge of the stonework and the lead roof is filled with caulking.

The front (south) side of the obelisk features an inscription which reads: "WILLIAM HENRY HARRISON. SECRETARY OF THE NORTHWEST TERRITORY. DELEGATE OF THE NORTHWEST TERRITORY TO CONGRESS. TERRITORIAL GOVERNOR OF INDIANA. MEMBER OF CONGRESS FROM OHIO. OHIO STATE SENATOR. UNITED STATES SENATOR FOM OHIO. MINISTER TO COLOMBIA. NINTH PRESIDENT OF THE UNITED STATES."

The back (north) side inscription reads: "ENSIGN OF THE FIRST UNITED STATES INFANTRY. COMMANDANT OF FORT WASHINGTON. HERO OF TIPPECANOE. VICTOR OF THE BATTLE OF THAMES. AVENGER OF THE MASSACRE OF THE RIVER RAISIN."

The lowest course features two blocks on each side which feature the following: "MEMORIAL COMMISSION/ HORACE BONSER / STANLEY SHAFFER / RUSSELL WILSON" on the left-hand side, and: "GARBER & WOODWARD ARCHITECTS / 1924" on the right-hand side.

The left and right sides feature the dates of the birth and death of William Henry Harrison "1773" and "1841".

THE BENCHES

The base of the obelisk is flanked with a set of two curved limestone benches and short sections of a retaining wall (Images:).

THE BALUSTRADE

The terrace in front of the obelisk features a curved limestone balustrade installed on a concrete retaining wall. (Images).

THE PYLONS

The gateway to the tomb (located at the bottom of the knoll) is adorned by a pair of prismatic pylons, each featuring a sculpture of an eagle on its top. It is likely, that the shafts of the pylons may have been carved in a different type of stone than the bases and the capitols and the eagles. They seem to be unaffected by the microorganisms like other components of the pylons.

The front sides of both pylons feature inscriptions which read:

(proper right)-

WILLIAM HENRY HARRISON / 1773 – 1841 / THAT THE MEMORY OF OHIO'S FIRST
PRESIDENT AND GALLANT SOLDIER WILLIAM HENRY HARRISON MAY BE FITTINGLY
COMMEMORATED THIS MEMORIAL IS ERECTED

(proper left)

WILLIAM HENRY HARRISON / 1773 – 1841 / NINTH PRESIDENT OF THE UNITED STATES
/ HERO OF TIPPECANOE / MAJOR GENERAL IN THE WAR OF 1812 / UNITED STATES
SENATOR FROM OHIO / GOVERNOR OF THE TERRITORY OF INDIANA

Each of the pylons is accompanied by a quarter-circular limestone bench each side ended with a large stone prism. These ending blocks are decorated with small rectangular bas-reliefs depicting the United States coat of arms (Images:).

INTERIORS

THE GATES

The entrance to the inside of the obelisk is currently guarded by a set of two gates. The first, black painted, wrought-iron gate is likely a later addition, installed to protect the other, historic bronze door. The iron door is a rectangular frame, divided into eight fields, which are filled with spiral-shaped elements. (Image).

The second door is made of bronze and has a form of a rectangle divided by horizontal and vertical square tubes and bars of various thickness. (Image). The bronze door features a small plaque which reads: "ERECTED BY THE WILLIAM HENRY HARRISON MEMORIAL COMMITTEE 1922" (Image:). This date suggests it was the original gate to the tomb structure

before the obelisk was added in 1924. The gate seems to be contemporary with the bronze plaque installed on the wall inside the tomb structure. It is likely it was made by the same fabricator. In the doorway to the tomb interior there are holes which likely served as attachment points for the hinges and the latch receiver (Images:). The historic architect's drawings from 1923 indicate a presence of the bronze door in the tomb's entrance which are to be re-set in the entrance to the obelisk's vestibule (Images). They corroborate the theory that the bronze door was moved from the tomb's to the obelisk's entrance.

The entrance to the original tomb is guarded by a heavy, cage-style iron gate attached to the tomb's internal wall next to the door opening (Image).

MASONRY ELEMENTS OF THE OBELISK AND THE TOMB

The entrance to the interior of the tomb leads through an octagonal vestibule (the first level of the obelisk), featuring a black and red granite floor, off-white limestone walls and black marble (Nero Portoro) baseboards. (Images).

The doorway to the tomb and the upper portions of the tomb's walls are built with roughly tooled blocks of creamy-white porous stone (Images), while the burial vaults and the vaulted ceiling are made of red-colored brick (Images). The pointing mortar is applied haphazardly and in numerous areas overlaps the edges of the bricks (Images).

The barrel-arched tomb has 24 vaults containing the bodies of William Henry Harrison, his wife - Anna, their son, John Scott, and other members of the family. Several sealed vaults are unmarked, and there are a few vaults, which remain open and empty (Images).

THE BRONZE TABLET

A rectangular, bronze tablet, featuring a brief description of the events, which led to the creation of the William Henry Harrison's tomb in 1922 is mounted on wall across the entrance (Image).

The tablet features the following inscription (original spelling):

"AN [*sic*] HISTORICAL SKETCH OF HARRISON'S TOMB

I

HARRISON'S TOMB WAS BUILT IN 1841 TO SERVE AS A PERMANENT PLACE OF SEPULTURE FOR WILLIAM HENRY HARRISON AND HIS WIFE, AND AS TEMPORARY PLACE FOR MEMBERS OF HIS FAMILY. DURING THE COURSE OF MANY YEARS THE TOMB AND THE KNOLL UPON WHICH IT IS LOCATED, AS WELL AS THE SMALL CEMETERY ADJOINING, WERE SUFFERED TO FALL INTO DECAY AND RUIN, NOR WAS IT UNTIL SEVENTY EIGHT YEARS AFTER THE CONSTRUCTION OF THE TOMB, THAT LEGAL STEPS WERE TAKEN TO PRESERVE IT AND IT'S [*sic*] SACRED CONTENTS FOR POSTERITY.

II

ON THE FIRST DAY OF APRIL 1919, HORACE BONSER, A MEMBER OF THE GENERAL ASSEMBLY OF OHIO, FROM HAMILTON COUNTY, INTRODUCED A BILL WHICH HE HAD DRAWN. IN THE LOWER HOUSE, APPROPRIATING TEN THOUSAND DOLLARS FOR THE PURPOSE, AS THE BILL RECITES. "OF PLACING THE TOMB AND GROUND UPON WHICH THE TOMB OF WILLIAM HENRY HARRISON IS LOCATED, IN A SUITABLE AND DECENT CONDITION IN ORDER THAT THE MEMORY OF THE OHIO'S FIRST PRESIDENT AND GALLANT SOLDIER, WILLIAM HENRY HARRISON, MAY BE FITTINGLY COMMEMORATED." THIS BILL WAS PASSED BY BOTH HOUSES OF THE GENERAL ASSEMBLY AND AFTER RECEIVING THE SIGNATURE OF GOVERNOR COX, BECAME A LAW.

III

A COMMISSION COMPOSED OF HORACE BONSER, WILLIAM WHIPPLE SYMES AND ALFRED G. ALLEN WAS THEREUPON APPOINTED BY THE GOVERNOR, WHICH, AFTER OBTAINING TITLE TO THE PROPERTY FROM THE SURVIVING HARRISON HEIRS, UNDERTOOK THE WORK OF RECLAIMING THE TOMB AND THE TOMB SITE FROM ITS THEN RUINOUS AND NEGLECTED STATE.

IV

IN THE YEAR 1921 GOVERNOR DAVIS APPOINTED A NEW COMMISSION CONSISTING OF HORACE BONSER, WILLIAM WHIPPLE SYMES AND HALLIE STEPHENS CAINE, AND IT WAS THIS COMMISSION THAT CARRIED OUT THE WORK ORIGINALLY PLANNED BY THE FIRST COMMISSION. ON THE 24TH DAY OF OCT. 1921 AFTER ALL PRELIMINARY WORK HAD BEEN COMPLETED, GROUND BREAKING EXERCISES WERE HELD UPON THE SITE OF THE MEMORIAL GATEWAY AND WORK UPON IT FINALLY COMMENCED. DURING THE SPRING OF 1922 THE GATEWAY WAS COMPLETED AND THE PROPERTY SUITABLY GRADED AND PLANTED WITH APPROPRIATE SHRUBS AND FLOWERS.

V

IT IS IN ORDER THAT POSTERITY MAY BE IN POSSESSION OF ALL THE SALIENT FACTS LEADING UP TO THE REHABILITATION OF THE LAST RESTING PLACE OF ONE OF OUR COUNTRY'S GALLANT SONS AND PATRIOTS, THAT THE WILLIAM HARRISON'S MEMORIAL COMMISSION HAS CAUSED THIS TABLET TO BE ERECTED THIS 14TH DAY OF DEC. 1922

HORACE BONSER – CHAIRMAN
WILLIAM WHIPPLE SYMMES
HALLIE STEPHENS CAINE"

THE OBELISK'S SHAFT

The interior of the obelisk's shaft can be accessed through a manhole in the vestibule's ceiling. The hollow shaft is built with red-colored bricks and mineral mortar. The top portion of the obelisk can be accessed using an access ladder made of 27 wrought iron rungs mortared into the brick wall. The top section of the shaft features two narrow windows facing north and south and a fixed ladder allowing access to the roof hatch.

CONDITION

THE OBELISK (EXTERIOR)

LIMESTONE

The condition of the limestone portion of the obelisk shaft is fair. The limestone blocks are weathered and covered with biofilm in a form of black and grey staining. No structural issues, such as cracks or spalls could be noticed. The limestone surface is weathered. The pointing mortar appears to be largely deteriorated across the whole structure. **Only small portions of mortar seem to be in acceptable condition. Several areas in the upper portion of the obelisk exhibit a complete loss of mortar.** See images:

The limestone blocks walls of the tomb were recently renovated, and their condition (stonework and the pointing) is good, however it is unknown if the portions of the walls covered with soil were in the same good condition.

GRANITE

The granite blocks of the base of the obelisk are in good condition structurally, however the condition of their **surface can be described as poor** due to the **extensive delamination of the external layer of the stone** (approximately ¼ inch thick), which affected most of them. Also, the **granite** portion of the obelisk shows **extensive discoloration** in the form of **dark staining**, white-gray mineral deposits and rust staining. The condition of the **pointing mortar is poor**. Large portions of the **mortar** are significantly **weathered or missing**.

THE BENCHES, RETAINING WALLS AND BALUSTRADE

The issues found in the (Indiana) limestone architectural features surrounding the obelisk, such as benches, retaining walls and balustrade are **weathered** stone surface, **black and grey-colored biological discoloration** as well as failed or **missing pointing mortar**. All these elements are otherwise structurally sound.

The massive concrete **retaining wall** supporting the balustrade shows **two major structural cracks** (Images).

THE PYLONS

The condition of the pylons and the adjacent benches can be described as good, although some areas had suffered from mechanical damage. Both eagles perched atop of the pylons are weathered and are covered by a thick layer of biofilm with extensive, green-colored areas covered with lichen. The cornices of the capitols and the bases are similarly affected by these factors. The shafts of the pylons appear to be only partially affected by the biological growth and other forms of staining.

INTERIORS

THE VESTIBULE

The walls and the ceiling of the octagonal vestibule of the Memorial are clad with slabs of bright colored limestone. This type of limestone (characterized by very dense crystalline structure) resembles Tennessee pink limestone with its natural flaws (stylolites), however, being almost entirely covered with white efflorescence it's difficult to identify. Most of the slabs are structurally stable, however a few cracked slabs were found in the lowest course. Also, the slabs adjacent to the floor are most intensely eroded. Their surface exhibits extensive pitting, intense efflorescence and green biological staining (algae). All patterns of deterioration indicate that not only the whole structure is permanently infiltrated by water coming from the ground, but also periodically affected by water running down from the obelisk shaft. The efflorescence found on the molding above the entryway to the tomb, as well as on the slab near the right-hand corner of the obelisk's doorway show a clear pattern of water runs (images). Generally, the efflorescence is less intense and evenly distributed over the entire surface, while the lower portions of the walls show thicker salt deposits taking form of irregular stains. Also, the lower portions of the vestibule's walls appeared moist. The black marble (Nero Portoro) baseboards between the walls and the floor are heavily deteriorated. They suffered from the water infiltration and salt re-crystallization more than the other portions of the obelisk's interior (Images). Their condition is unrepairable. The condition of the black and red granite floor is surprisingly good, considering the deterioration of the adjacent baseboards. Its surface is soiled and scratched, yet no structural issues were found.

THE TOMB

The most significant problem observed within the tomb interior is water saturating the lower portions of the tomb's walls. The deterioration processes caused by the presence of the water include frostjacking, gradual substrate disintegration caused by water-soluble salts, presence of the microorganisms, such as algae and fungi, as well as extensive efflorescence and mineral deposit buildup. Eliminating the presence of water is a condition, without which other repairs such as cleaning and re-pointing would be short-lived.

The brick and the stone portions of the interior walls of the tomb are almost entirely covered with mineral deposits (Image). Their appearance results from the permanent presence of moisture within the porous structure of the masonry. The water which enters the structure of the walls from the outside is dissolving small quantities of salts and minerals contained in

masonry. In the evaporation process these salts and minerals crystalize on the surface, creating the efflorescence and a layer of mineral deposits. Such deposits can be **observed both on the stone and the brick** portions of the tomb's walls.

The existing pointing **mortar is badly deteriorated** and installed in a haphazard manner.

The doorway to the tomb exhibits multiple losses of the pointing mortar in the joints. Also, the **cementitious joint between the obelisk and the tomb appears detached from the stone substrate.**

THE OBELISK'S SHAFT

The internal shaft of the obelisk is built with red-colored brick and mortar. Due to constant exposure to **water infiltration through the faulty joints**, combined with freeze-thaw processes, the masonry components of the shaft were subject to extensive and widespread erosion. The overall surface of the brickwork is powdering, and the pointing mortar is partially deteriorated. Both **floors of the shaft** (above the ground level, and at the "attic" level) are **covered with a thick layer of the deteriorated material** (brick dust and mortar debris). Numerous areas show a **substantial loss of pointing mortar, particularly in the top section of the obelisk.**

RECOMMENDATIONS

The current condition of the William Henry Harrison Memorial calls for a **thorough conservation treatment** aimed at **resolving the problems related to water infiltration**, which in connection with its freezing and thawing is a major cause for the monument's **accelerated deterioration**. Addressing the failed pointing and providing a solution to the **permanently wet walls of the tomb and the obelisk should be a priority and the first step of the restoration efforts**, without which the repairs to the neglected interior, aimed at improving its appearance would be short-lived (**FIRST PHASE**). If unaddressed, the further deterioration of the faulty joints may eventually lead to a serious structural damage. Thus, the **re-pointing should also include the benches, the retaining walls and the balustrade.**

The problem of moisture present within the walls of the obelisk and the tomb should be resolved by **installing an effective damp proofing** system which would effectively prevent moisture rising by capillary action, known as rising damp. **Rising damp** is the effect of water rising from the ground into masonry. This phenomenon can be caused by insufficient waterproofing (or lack of one), insufficient external drainage, and misdirected rainwater downpipes.

The task of eliminating the **rising damp** problem **requires the removal of the soil from around the obelisk's base and the tomb structure, cleaning their surfaces, allowing them dry completely, assessing their condition, and eventually providing adequate damp proofing**

system, which will likely require an application of both vertical and horizontal membranes (and/or coatings). A damp proofing expert should be consulted when designing the damp proofing system for the whole structure and selecting an appropriate contractor.

The work related to the repairs and improvements inside the vestibule and the tomb (SECOND PHASE) should take place after the water ingress problems are resolved.

FIRST PHASE

- Cleaning and disinfecting the external surfaces of the obelisk, benches, retaining walls, balustrade, and pylons (D/2, Light Duty Restoration Cleaner, hot water pressure washer),
- Removal of the existing failing pointing mortar and re-pointing of all the joints of the obelisk structure (CONPROCO RePoint Type N, color TBD)
- Removal of the soil from around the obelisk and the tomb and cleaning the stone surface
- Assessing the condition of the exposed stone surfaces, investigating the sources of water infiltration and designing appropriate damp-proofing system,
- Installation of the damp-proofing system (TBD),
- Recreating the excavated areas,
- Re-designing the gutter downpipe allowing the rainwater to be directed away from the tomb's direct vicinity,
- Pointing the deteriorated sections of the existing pointing in the obelisk's shaft, filling the gaps between the brickwork and the backs of stone windows with mortar (CONPROCO RePoint Type N),
- Re-sealing the joint between the roof and the top edge of the stonework (top quality sealant TBD),
- Replacing the old and corroded hatch with a new stainless steel (or aluminum) hatch,
- Removal of the old and failing pointing mortar and re-pointing all the joints of the benches, retaining walls, balustrade, and pylons along with the adjacent benches, (CONPROCO RePoint Type N),
- Repairs to the pylon's bases and shafts (mortar fills, bonding the spalled elements),
- Repairs to the concrete retaining wall (two structural cracks) under the balustrade (HILTI SYSTEM),
- Consolidation of the Indiana limestone components of the Memorial with Hydroxylating Conversion Treatment HCT (PROSOCO).

SECOND PHASE

- Cleaning and re-pointing the interior walls of the vestibule (cleaning tests and developing a method TBD),
- Removal of the eroded, black marble baseboards and replacing them with new ones (Nero portoro marble),
- Cleaning, and sealing the floor,
- Cleaning the interior walls of the tomb (dry ice blasting to be tested),
- Removal of the existing failing pointing mortar and re-pointing the joints of the tomb,
- Removal of the historic bronze gate and carrying out repairs and refinishing,
- Removal of the bronze plaque and refinishing its surface,
- Refurbishing and recoating the wrought iron gates.

ADDITIONAL WORK

- Fabricate a light-weight, (possibly aluminum), portable ramp for added accessibility
- Replace the flag pulley