

A historical black and white photograph of Santa Fe Plaza, showing a wide open space with many people walking and standing. There are several trees, some with bare branches and some with leaves. In the background, there are buildings and a tall, thin tower or monument. The overall scene is a busy public square.

Feasibility Study for the
Soldier's Monument

At the Santa Fe Plaza

Executive Summary Presentation

Tina M. Reames FAIA, PLA
CSR architects

Acknowledgements

City of Santa Fe

Mark Scott, City Manager

Facilities Division, Public Works Department

Sam Burnett, Director

John C. Dillon, Construction & Building Project Administrator

Historic Preservation Division, Planning & Land Use Department

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Nikki Brown - Design Professional

Luchini Trujillo Structural Engineers, Inc.

Eric Trujillo, P.E. – Structural Engineer

Worthen Memorials, Inc.

Loren Worthen - Materials & Construction Consultant

New Mexico Travertine, Inc.

Jim Lardner - Stone Specialist

Introduction and Purpose

- CSR architects was selected to determine the physical and financial feasibility of options the city of Santa Fe had for the Soldier's Monument.
 1. Restoration of original monument as it was prior to 2020.
 2. Restoration of the monument without the offensive language present on the plaque.
 3. Relocation of the monument to a new, but undetermined location.

Background

- The Soldier's Monument was erected in 1869.
- This Monument is the oldest historic constructed element still present in the Plaza today.
- The Monument commemorates those who gave their lives during the Civil War and those who died in skirmishes with Native Americans during this time.
- The designers and builders are unknown, but it is believed to have been constructed by local craftsmen using locally available materials and fabrication processes.



Background

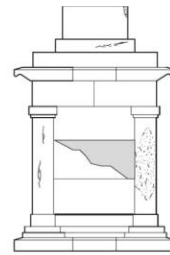
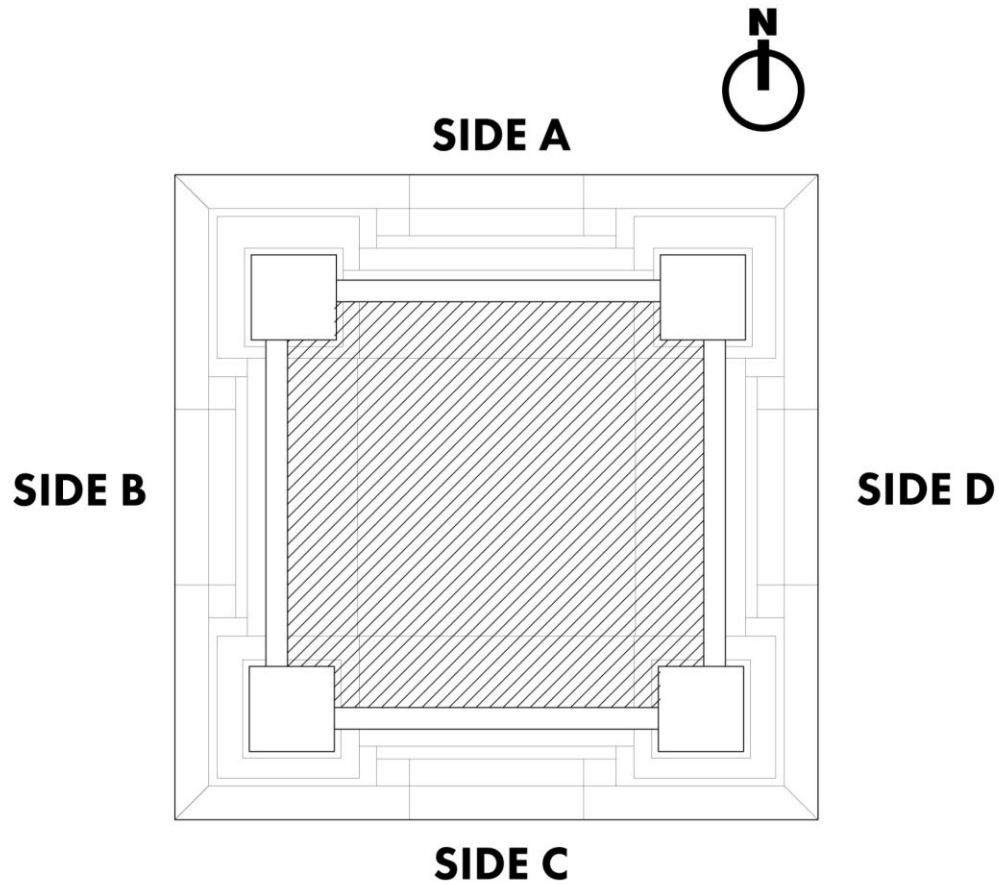


- The Monument occupies approximately 64 square feet at its base, measuring approximately 8' x 8'.
- It measures approximately 30 feet from historic grade to the top of the obelisk.
- Comprised of roughly 9 pieces of sandstone at the base, the lowest level of the monument is now partially buried.
- It has 4 sandstone "columns" at each corner, framing the 4 marble plaques.

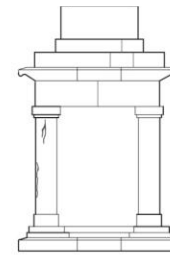
Background

- The Monument was damaged during the 2020 protests; the obelisk was toppled.
- The marble plaque with the inscription depicting Native Americans as “savages” was damaged.
- Removal of a portion of the marble slab made it apparent that the interior of the monument is filled with rubble, stone, bits of concrete, and dirt.
- The 2006 Sante Fe Plaza Cultural Landscape Report by Morrow Reardon Wilkinson Miller, LTD, landscape architects, does not indicate that there are any sacred relics or burial items inside the monument.
- The base of the Monument rests on the Plaza grade which is lower than the present-day grade with sidewalks and grass.

SOLDIER'S MONUMENT ELEVATIONS AS IT STAND TODAY

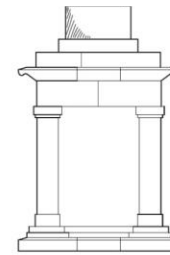


SIDE A
Broken plaque where
the harmful language
was present.

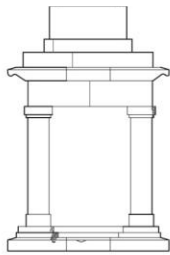


SIDE B
BATTLE OF LA
GLORIETA
MARCH 28, 1862
&
BATTLE OF PERALTA
APRIL 15, 1862

MAKER'S MARK:
J.&.M.McGEE.Sc

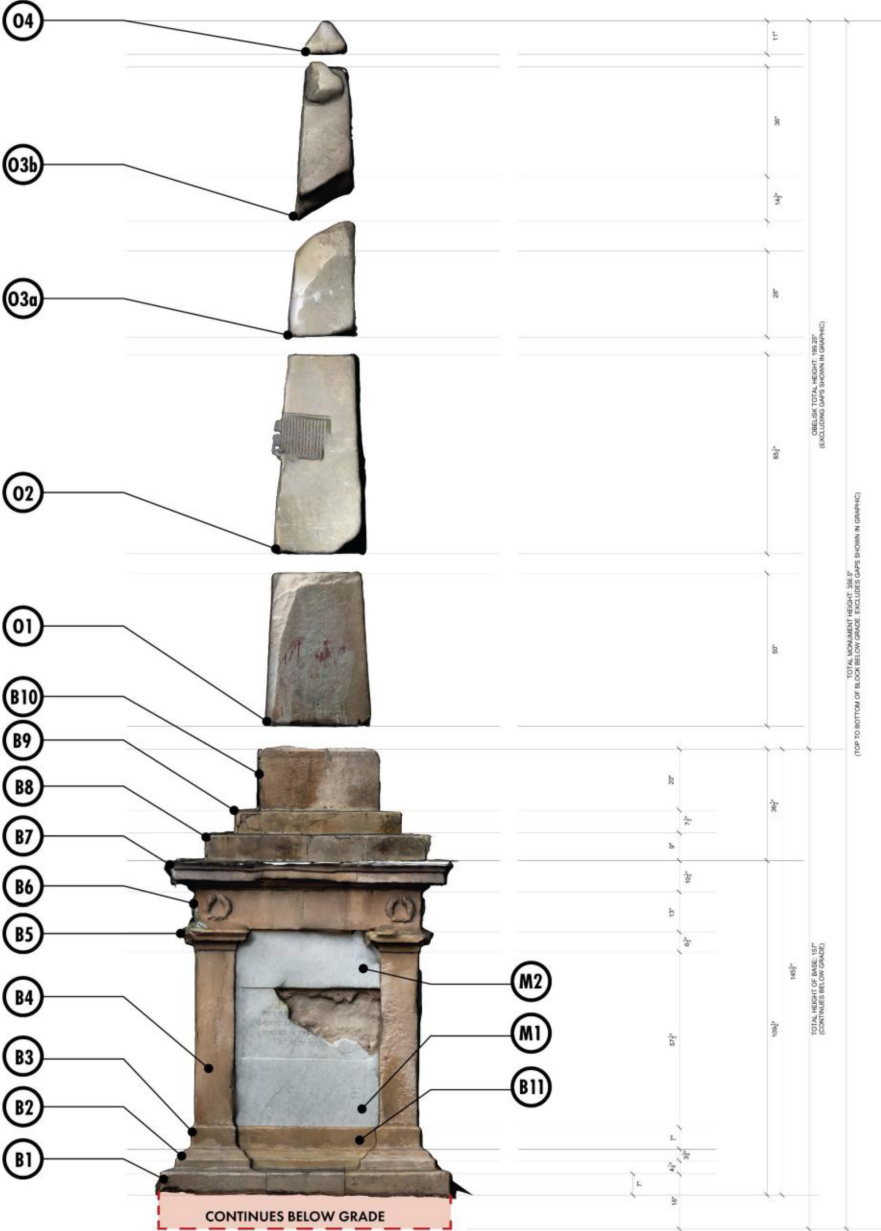
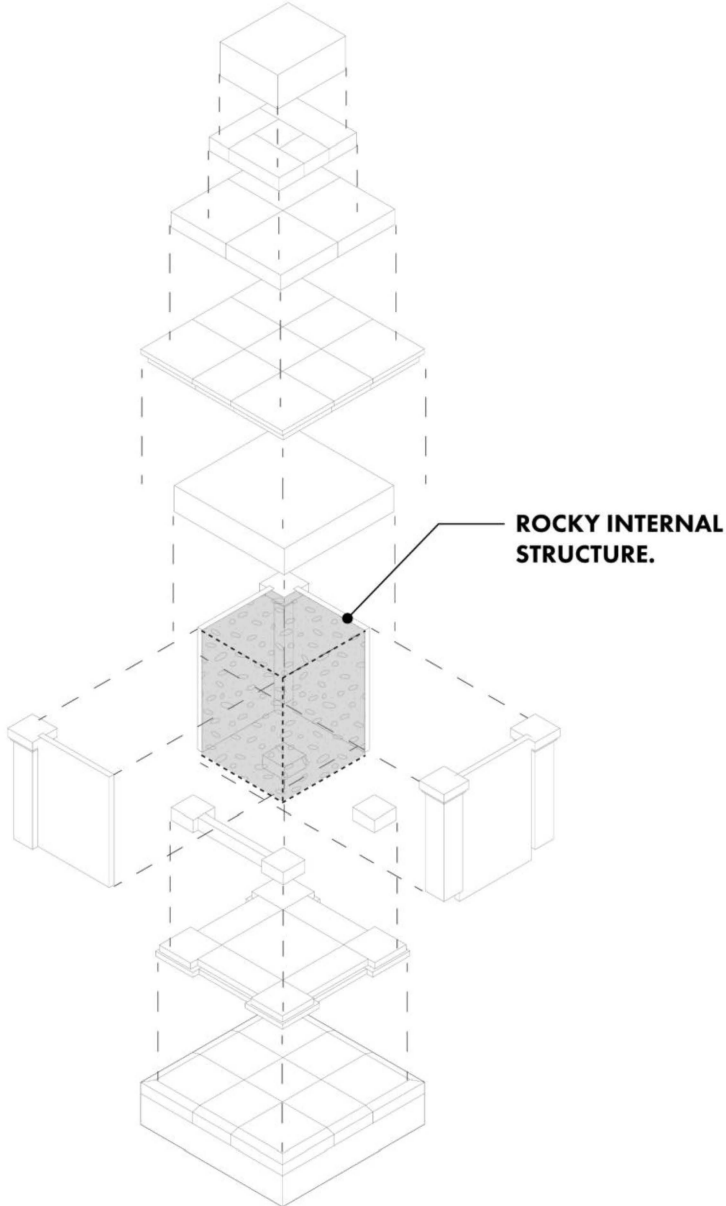


SIDE C
BATTLE OF LA
VALVERDE
FEBRUARY 21, 1862



SIDE D
"MAY THE UNION BE
PERPETUAL"
ERECTED
1866 - 7 - 8

EXPLODED ISO OF THE MONUMENT



* ALL OTHER CARVED MARBLE PLAQUES WILL BE NOTED AS: **M3**

Limitations or Exclusions

1. No Materials Testing was conducted, only visual inspection.
2. No Design and Construction Phase Services are provided, however we measured and provided diagrammatic drawings to fully understand the monument components.
3. All Options are ultimately inconclusive based on Structural Findings and further Structural Observation and Design needed for the rebuilding of the monument.



Deliverables



1. Final Assessment Report with opinion of construction costs. One reproducible hard copy, bound, with a digital copy on a flash drive. Site evaluation photos, monument plans, elevations, or other miscellaneous information collected were provided.

Option #1 - Rebuild Existing Obelisk Portion of Monument Using Historic Material Only					
Santa Fe Soldier's Monument					
Item No.	description	unit	cost including	quantity	subtotal
1	Carefully transport obelisk pieces to Plaza Site				
	Crane - 1 day	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
2	Prepare new keyed joints				
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
3	Rebuild obelisk (contingent on all existing pieces fitting together with no missing pieces)				
	Crane - 5 days	Ea.	\$30,000.00	5	\$150,000.00
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
4	Seal all gaps between stone with new mortar				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
5	Remove portions of flaking sandstone at base				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
6	Clean existing plinth base, marble, and obelisk using the mildest means				
	Stone Mason (# of man hours)	Ea.	\$125.00	80	\$10,000.00
7	Remove existing marble and cut into thinner piece to engrave				
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
OPTION #1 REBUILD and REPAIR SUBTOTAL					\$274,000.00
CONTINGENCY @ 15%					\$41,100.00
Subtotal					\$315,100.00
Overhead @ 10%					\$31,510.00
Subtotal					\$346,610.00
Profit @ 10%					\$34,661.00
Subtotal					\$381,271.00
Bond @ 2%					\$7,625.42
Subtotal					\$388,896.42
NMGRT @ 8.1875%					\$31,216.56
OPTION #1 REBUILD and REPAIR GRAND TOTAL					\$420,112.98

Option #1 – Rebuilding Obelisk with Historic Stones

Scope:

Reassemble the obelisk using existing stones and keeping the current plinth and foundation.

Considerations:

Pros:

- Preserve historical value.

Cons:

- The plinth base is in poor condition, and its deficiencies are left unaddressed.
- No mechanical connections so there is no ductility.
- Both the dry stacked obelisk and plinth base may not meet current International Existing Building Code (IEBC) requirements for structural integrity when performing substantial repair.
- Moisture intrusion issues will persist.

Recommendation:

Least preferred option. Only consider if historical preservation is the top priority. If selected, the following plinth and foundation exceptions apply:

- Expect continued deterioration from moisture and freeze-thaw cycles.
- The City must acknowledge non-compliance with IEBC and a special exception may be necessary.

Option #2A - Rebuild Existing Obelisk Portion of Monument Using Historic & New Material					
Santa Fe Soldier's Monument					
Item No.	description	unit	cost including	quantity	subtotal
1	Carefully transport obelisk pieces to Plaza Site				
	Crane - 1 day	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
2	Prepare new keyed joints				
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
3	Cut new obelisk pieces (contingent on field measuring and establishing pieces to replace)				
	Crane - 2 days	Ea.	\$30,000.00	2	\$60,000.00
	Indian Buff or Silver Buff Limestone	Ea.	\$25,000.00	1.1	\$27,500.00
4	Rebuild historic/new obelisk				
	Crane - 5 days	Ea.	\$30,000.00	5	\$150,000.00
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
5	Seal all gaps between stone with new mortar				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
6	Remove portions of flaking sandstone				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
7	Clean existing plinth base, marble, and obelisk using the mildest means				
	Stone Mason (# of man hours)	Ea.	\$125.00	80	\$10,000.00
8	Remove existing marble and cut into thinner piece to engrave				
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
OPTION #2A REBUILD SUBTOTAL					\$361,500.00
CONTINGENCY @ 15%					\$54,225.00
Subtotal					\$415,725.00
Overhead @ 10%					\$41,572.50
Subtotal					\$457,297.50
Profit @ 10%					\$45,729.75
Subtotal					\$503,027.25
Bond @ 2%					\$10,060.55
Subtotal					\$513,087.80
NMGRT @ 8.1875%					\$41,185.36
OPTION #2A REBUILD GRAND TOTAL					\$554,273.15

Option #2A – Rebuilding Obelisk with Historic and New Material

Scope:

Mechanically connect original stones and replace damaged ones with new material (using damaged historical stones as thinner face materials). Keep the current plinth and foundation.

Considerations:

Pros:

- Preserve as much original material as possible.
- Improves obelisk stability with mechanical connections.

Cons:

- The plinth base is in poor condition, and its deficiencies are left unaddressed.
- Risk of damaging weathered stone during repairs (including the top stones of the plinth).

Recommendation:

Second least preferred option. Only consider if preservation is the top priority. Without rebuilding the plinth and foundation, the same limitations as Option 1 apply.

Option #2B - Rebuild Existing Obelisk Portion of Monument Using New Material					
Santa Fe Soldier's Monument					
Item No.	description	unit	cost including	quantity	subtotal
1	Carefully transport obelisk pieces to Plaza Site				
	Crane - 1 day	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
2	Use existing obelisk pieces as interpretive exhibit				
	Crane - 1 day	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
3	Cut new obelisk pieces				
	Crane - 2 days	Ea.	\$30,000.00	2	\$60,000.00
	Indiana Buff or Silver Buff Limestone	Ea.	\$45,000.00	1.1	\$49,500.00
4	Carefully reconstruct existing monument base (replace any pieces that break)	Ea.	\$85,000.00	1.1	\$93,500.00
	Add recommended structural footing	Ea.	\$50,000.00	1	\$50,000.00
	Estimated (# of man hours)	Ea.	\$125.00	160	\$20,000.00
5	New obelisk install				
	Crane - 5 days	Ea.	\$30,000.00	5	\$150,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
6	Seal all gaps between stone with new mortar				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
7	Remove portions of flaking sandstone				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
8	Clean existing plinth base, marble, and obelisk using the mildest means				
	Stone Mason (# of man hours)	Ea.	\$125.00	80	\$10,000.00
9	Remove existing marble and cut into thinner piece to engrave				
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
OPTION #2B REBUILD SUBTOTAL					\$574,000.00
CONTINGENCY @ 15%					\$86,100.00
Subtotal					\$660,100.00
Overhead @ 10%					\$66,010.00
Subtotal					\$726,110.00
Profit @ 10%					\$72,611.00
Subtotal					\$798,721.00
Bond @ 2%					\$15,974.42
Subtotal					\$814,695.42
NMGR @ 8.1875%					\$65,395.28
OPTION #2B REBUILD GRAND TOTAL					\$880,090.70

Option #2B – Rebuild Obelisk with All New Material

Scope:

Construct a new obelisk with entirely new stone pieces. Display the original pieces nearby.

Considerations:

Pros:

- Allows for modern construction of the obelisk for improved durability.
- If the original pieces are displayed within the banco and fence area, it creates an opportunity for grading improvement to minimize moisture content changes in the surrounding soils of the monument.

Cons:

- Loses historical value.

Recommendation:

Preferred option if the monument remains in its current location. This option requires building the plinth for long-term stability. With a new plinth, this becomes the best choice for preserving the original site.

Option #3 - Relocate Entire Existing Monument to Another Site Chosen by the City of Santa Fe					
Santa Fe Soldier's Monument					
Item No.	description	unit	cost including O&P (2017)	quantity	subtotal
1	Dig and construct new footing for monument relocation				
	Equipment	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	40	\$5,000.00
2	Carefully deconstruct existing monument, label each piece	Ea.			\$0.00
	Truck/trailer	Ea.	\$30,000.00	1	\$30,000.00
	Crane - 1 day - transport to new site location (assumed within 20 miles)	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	160	\$20,000.00
3	Carefully reconstruct existing monument base (replace any pieces that break)	Ea.	\$85,000.00	1.1	\$93,500.00
	Crane - 5 days - transport to new site location (assumed within 20 miles)	Ea.	\$30,000.00	5	\$150,000.00
	Add recommended structural footing	Ea.	\$50,000.00	1	\$50,000.00
	Estimated (# of man hours)	Ea.	\$125.00	160	\$20,000.00
4	Carefully transport obelisk pieces to new site location				
	Crane - 1 day	Ea.	\$30,000.00	1	\$30,000.00
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
5	Prepare new keyed joints				
	Estimated (# of man hours)	Ea.	\$125.00	24	\$3,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
6	Rebuild obelisk (contingent on all existing pieces fitting together with no missing pieces; replace missing pieces)	Ea.	25,000.00	1.1	\$27,500.00
	Crane - 5 days	Ea.	\$30,000.00	5	\$150,000.00
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
7	Seal all gaps between stone with new mortar		13,000.00	1	\$13,000.00
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
8	Remove portions of flaking sandstone				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
9	Clean existing plinth base, marble, and obelisk using the mildest means				
	Stone Mason (# of man hours)	Ea.	\$125.00	80	\$10,000.00
10	Remove existing marble and cut into thinner piece to engrave				
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
OPTION #3 RELOCATE SUBTOTAL					\$743,000.00
CONTINGENCY @ 15%					\$111,450.00
Subtotal					\$854,450.00
Overhead @ 10%					\$85,445.00
Subtotal					\$939,895.00
Profit @ 10%					\$93,989.50
Subtotal					\$1,033,884.50
Bond @ 2%					\$20,677.69
Subtotal					\$1,054,562.19
NMGRT @ 8.1875%					\$84,649.29
OPTION #3 RELOCATE GRAND TOTAL					\$1,139,211.48

Option #3 – Relocate Monument to New Site

Scope:

Move the monument to a new site and rebuild with improved connections and new foundations.

Considerations:

Pros:

- Fully resolves structural issues and moisture issues.
- Improves obelisk stability with mechanical connections.
- Opportunity to raise the base above surrounding finish grade.
- Damage stones can be replaced.

Cons:

- The monument will no longer be at its original site.

Recommendation:

Preferred option if the monument is moved. Relocation provides the greatest opportunity to strengthen and provide a new foundation support.

Option #4 – Clean Existing Monument Plinth and Replace One Marble Panel

Option #4 - Clean Existing Monument Plinth and Replace One Marble Panel					
Santa Fe Soldier's Monument					
Item No.	description	unit	cost including O&P	quantity	subtotal
1	Seal all gaps between stone with new mortar				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
2	Remove portions of flaking sandstone at base				
	Stone Mason (# of man hours)	Ea.	\$125.00	24	\$3,000.00
3	Clean existing plinth base, marble, and obelisk using the mildest means				
	Stone Mason (# of man hours)	Ea.	\$125.00	80	\$10,000.00
4	Remove existing marble and cut into thinner piece to engrave				
	Estimated (# of man hours)	Ea.	\$125.00	48	\$6,000.00
	Specialized Equipment	Ea.	\$30,000.00	1	\$30,000.00
OPTION #4 CLEAN PLINTH BASE & REPLACE MARBLE PANEL ONLY SUBTOTAL					\$52,000.00
CONTINGENCY @ 15%					\$7,800.00
Subtotal					\$59,800.00
Overhead @ 10%					\$5,980.00
Subtotal					\$65,780.00
Profit @ 10%					\$6,578.00
Subtotal					\$72,358.00
Bond @ 2%					\$1,447.16
Subtotal					\$73,805.16
NMGRT @ 8.1875%					\$5,924.31
OPTION #4 CLEAN PLINTH BASE & REPLACE MARBLE PANEL ONLY GRAND TOTAL					\$79,729.47

NOTE:

Option #4 was a supplemental option added at the request of the City Manager, Mark Scott.

Opinion of Construction Cost Summary

Option # 1 – Rebuild Existing Obelisk Portion of Monument Using Historic Material Only	\$420,112.98
Option # 2A – Rebuild Existing Obelisk Portion of Monument Using Historic and New Material	\$554,279.15
**Option # 2B – Rebuild Existing Obelisk Portion of Monument Using New Material	\$880,090.70
Option # 3 – *Relocate Entire Existing Monument to Another Site Chosen by the City of Santa Fe ...	\$1,139,211.48
Option #4 – Clean Existing Monument Plinth and Replace One Marble Panel	\$79,729.47

NOTE: Option #4 was a supplemental option added at the request of the City Manager, Mark Scott.

Opinion of Construction Cost

*ALL Options are ultimately inconclusive based on Structural Findings and further structural observation and design needed for the rebuilding of the monument.

**Option #2B and Option #3 are the most viable and preferred for the long-term stability and code compliance. (See Structural Report)

***Option #3 assumes the new site location is within 20 miles of the Plaza. These are estimated costs that do not include any additional design or engineering costs.

PLEASE NOTE: these amounts are based on consultation with both Worthen Memorials, Inc. for constructability, and New Mexico Travertine, Inc. (NMT) for replacement of sandstone pieces. They include a 15% contingency, Overhead and Profit, Bond, and New Mexico Gross Receipts Tax.



Thank you

Tina M. Reames, FAIA, PLA – CSR architects