

Prepared by Facilities Development, Public Works Department, City of Charlottesville

JACKSON AND LEE MEMORIAL MONUMENTS

The bronze statues are made of multiple castings, brazed together and anchored to cap slabs on the monument base structures with anchor bolts. The bronze work should be able to be removed for separate handling.

The monument bases are divided into multiple stone blocks that, once positioned and leveled, were grouted together with a Portland cement grout. The grout is in extremely good condition. The width of the seams is an impressive 3/16 inch wide, making removal problematic without stone damage.

The Jackson monument has two, multiple section (6), base layers, the first resting on a concrete foundation slab. The body of the monument is comprised of four stones, two curved ends and two flat sides. Although concealed, we suspect that the body was filled with Portland grout once the individual stones were set and leveled. Steel or iron pins could also have been used to assist in carving and installation. The Lee monument is similar but with only one, taller base layer.

Having no previous experience in performing this type of rigging, Facilities Development reached out to three companies with recognized achievements in this genre of moving. During our conversations, immediate concerns for relocating the monuments were identified:

1. Without knowing the exact installation of the stone base, in order to preserve its integrity and to minimize the potential for damage to the individual stones, our advisors recommended the stone bases and concrete foundation slabs be considered monolithic and moved as one unit.
2. Assuming the foundation slab is 24 inches thick, a minimal dimension for what appears to be a mass pour, the total height of the monument, excluding the bronze work, should be approximately 10 feet, well within the nominal clearance for utilities (Lee park clearance requires further evaluation). The move should not require attendance by the various utility service providers along the travel path.
3. Even with the bronze work removed, the weight of the stone base precludes hauling by normal road equipment. Transportation speeds of the custom lorry will be at a walking pace (approximately 3 mph). Navigation of turns will be considerably slower. Steep grades will need to be avoided, and normal traffic flow will be impacted.
4. Impact on the sites will be significant. The ground around the monuments will need to be excavated approximately 10 feet on each side of the base and two feet below the monument

foundation (30'x40'x4' estimate) in order to provide room for the lift gantry and to insert steel beams under the foundation. In addition, a construction road, 12' wide with an 8" stone base, will need to be built in each park, sufficient to carry the weight of the monument and specially designed lorry, from an adjacent street and level with the monument excavation. (While the cost estimate includes rebuilding the brick retaining wall and reestablishing grade at the excavations, it does not include other restoration or improvements.)

5. Lee Park presents additional challenges because of overhead utility service, extremely narrow streets at its only grade level point of access, at East Jefferson and 2nd Street, the skewed alignment between the monument and access road and a plethora of mature trees along the preferred access.
6. Facilities Development initially envisioned two relocation scenarios for the monuments, relocation within the City limits and delivery to a regional Civil War site. Due to the weight of the bases, the regional relocation option would require further research and analysis to determine the practicality of such a move and its cost.

Facilities Development has generated line-item estimates to relocate each of the monuments, based upon the particular site conditions in each park.

- The estimate for relocating the Jackson monument is \$370K.
- The estimate for relocating the Lee monument is \$330K.

NOTE: Facilities Development was advised the cost for raising and transporting each.

CONCEPTUAL ESTIMATE

Jackson Monument Relocation

Date September 19, 2016

DIVISION

ACTIVITY DESCRIPTION	QUANTITY	UNIT	COST PER UNIT	EXTENSION	
General Conditions					\$23,017.12
Permit	0	LS	\$215,856.00	\$4,317.12	
Site Protection, Existing Site, Fence	1	LS	\$5,000.00	\$5,000.00	
Portable Toilet, Existing Site	1	LS	\$200.00	\$200.00	
Excavation Protection, Existing Site	1	LS	\$500.00	\$500.00	
Site Protection, Proposed Site	1	LS	\$4,000.00	\$4,000.00	
Portable Toilets, Proposed Site	1	LS	\$200.00	\$200.00	
Excavation Protection, Proposed Site	1	LS	\$400.00	\$400.00	
Crane Rental	2	LS	\$1,200.00	\$2,400.00	
Testing & Inspection	1	LS	\$3,000.00	\$3,000.00	
Supervision	1	LS	\$3,000.00	\$3,000.00	
Demolition					\$4,200.00
Brick Wall	1	LS	\$1,000.00	\$1,000.00	
Site Concrete	1	LS	\$3,000.00	\$3,000.00	
Plant Material	1	LS	\$200.00	\$200.00	
Site Work, Existing Site					\$54,170.00
Soil Removal, Road	240	CY	\$40.00	\$9,600.00	
Soil Removal, Monument	150	CY	\$50.00	\$7,500.00	
Stone	210	T	\$25.00	\$5,250.00	
Restore Soil, Subsoil, Compact	400	CY	\$48.00	\$19,200.00	
Restore Soil, Top Soil, Roll	90	CY	\$66.00	\$5,940.00	
Reconstruct Brick Wall	1	LS	\$5,000.00	\$5,000.00	
Grass	2,800	SF	\$0.60	\$1,680.00	
Site Work, New Site					\$60,520.00

Soil Removal	90	CY	\$40.00	\$3,600.00	
Stone	100	T	\$25.00	\$2,500.00	
Pit Excavation	240	CY	\$50.00	\$12,000.00	
Concrete	190	CY	\$180.00	\$34,200.00	
Restore Site, Top Soil, Roll	100	CY	\$66.00	\$6,600.00	
Grass	2,700	SF	\$0.60	\$1,620.00	
Monument Relocation					\$100,000.00
Resource Estimate, Blake Moving & Rigging (Greensboro, NC)‡	1	LS	\$100,000.00	\$100,000.00	
SUBTOTAL					\$241,907.12
Contractor's O&P	25%		\$141,907.12		\$35,476.78
Contingency	25%		\$273,066.78		\$68,266.70
Engineering	8%		\$273,066.78		\$21,845.34
TOTAL					\$367,495.94

‡ This is a conceptual estimate based upon photographs and telephone conversations. A second estimate of \$150-175K per monument was provided by Expert House Movers, Chesapeake, VA.

ESTIMATE
Lee Monument
Date September 19, 2016

DIVISION

ACTIVITY DESCRIPTION	QUANTITY	UNIT	COST PER UNIT	EXTENSION	
General Conditions					\$21,375.52
Permit	2%	LS	\$213,776.00	\$4,275.52	
Site Protection, Existing Site, Fence	1	LS	\$3,500.00	\$3,500.00	
Portable Toilet, Existing Site	1	LS	\$200.00	\$200.00	
Excavation Protection, Existing Site	1	LS	\$400.00	\$400.00	
Site Protection, Proposed Site	1	LS	\$4,000.00	\$4,000.00	
Portable Toilets, Proposed Site	1	LS	\$200.00	\$200.00	
Excavation Protection, Proposed Site	1	LS	\$400.00	\$400.00	
Crane Rental	2	LS	\$1,200.00	\$2,400.00	
Testing & Inspection	1	LS	\$3,000.00	\$3,000.00	
Supervision	1	LS	\$3,000.00	\$3,000.00	
Demolition					\$4,200.00
Stone Wall	1	LS	\$1,000.00	\$1,000.00	
Site Concrete	1	LS	\$3,000.00	\$3,000.00	
Plant Material	1	LS	\$200.00	\$200.00	
Site Work, Existing Site					\$33,095.00
Soil Removal, Road	120	CY	\$40.00	\$4,800.00	
Soil Removal, Monument	150	CY	\$50.00	\$7,500.00	
Stone	105	T	\$25.00	\$2,625.00	
Restore Soil, Subsoil, Compact	200	CY	\$48.00	\$9,600.00	
Restore Soil, Top Soil, Roll	45	CY	\$66.00	\$2,970.00	
Reconstruct Stone Wall	1	LS	\$5,000.00	\$5,000.00	
Grass	1,000	SF	\$0.60	\$600.00	
Site Work, New Site					\$60,520.00

Soil Removal	90	CY	\$40.00	\$3,600.00	
Stone	100	T	\$25.00	\$2,500.00	
Pit Excavation	240	CY	\$50.00	\$12,000.00	
Concrete	190	CY	\$180.00	\$34,200.00	
Restore Site, Top Soil, Roll	100	CY	\$66.00	\$6,600.00	
Grass	2,700	SF	\$0.60	\$1,620.00	
Monument Relocation					\$100,000.00
Resource Estimate, Blake Moving & Rigging (Greensboro, NC)‡	1	LS	\$100,000.00	\$100,000.00	
SUBTOTAL					\$219,190.52
Contractor's O&P	25%		\$119,190.52		\$29,797.63
Contingency	25%		\$244,712.63		\$61,178.16
Engineering	8%		\$244,712.63		\$19,577.01
TOTAL					\$329,743.32

‡ This is a conceptual estimate based upon photographs and telephone conversations. A second estimate of \$150-175K per monument was provided by Expert House Movers, Chesapeake, VA.