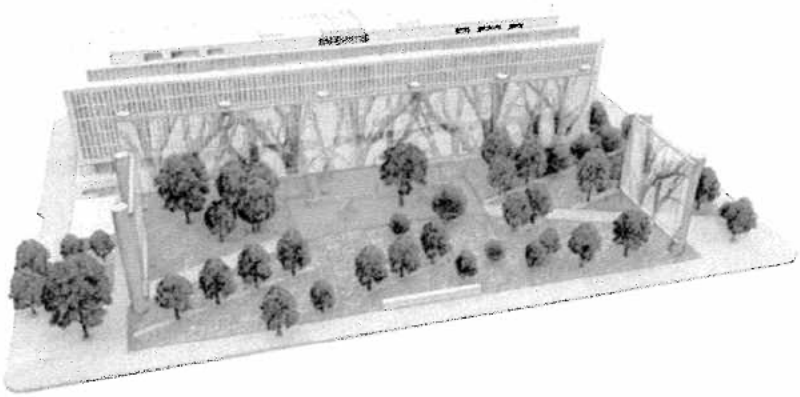
National Mall & Memorial Parks
National Park Service
U.S. Department of the Interior

Total Cost of Facility Ownership: Dwight D. Eisenhower Memorial

November 28, 2012



Prepared by:
Booz Allen Hamilton

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Introduction

Background and Purpose

The United States Congress authorized the Eisenhower Memorial Commission (EMC) to establish a memorial to commemorate President Dwight D. Eisenhower's accomplishments and achievements as the Supreme Commander of the Allied Forces in Europe in World War II and as the 34th President of the United States, and perpetuate his memory and his contributions to the United States. The EMC is responsible for the design and construction of the Eisenhower Memorial. The Eisenhower Memorial will be constructed in Washington, D.C., on a 4.15 acre plot which is bounded by Independence Avenue to the north, 4th Street SW to the east, 6th Street SW to the west, and the Lyndon Baines Johnson Building to the south. Maryland Avenue SW currently bisects the site diagonally. This plot will include an information center, landscaped areas, sculptures, and steel tapestries.

The site is located within the national Park Service (NPS), National Mall and Memorial Parks (NAMA) land assignment. Upon completion, the NPS will assume responsibility for overall stewardship of the Eisenhower Memorial, which includes funding and performing all necessary operations, interpretation, maintenance, and recapitalization activities. Like other similar high-profile assets on the National Mall, the responsibility for maintaining this highly visible national monument brings with it considerable fiscal and other resources challenges.

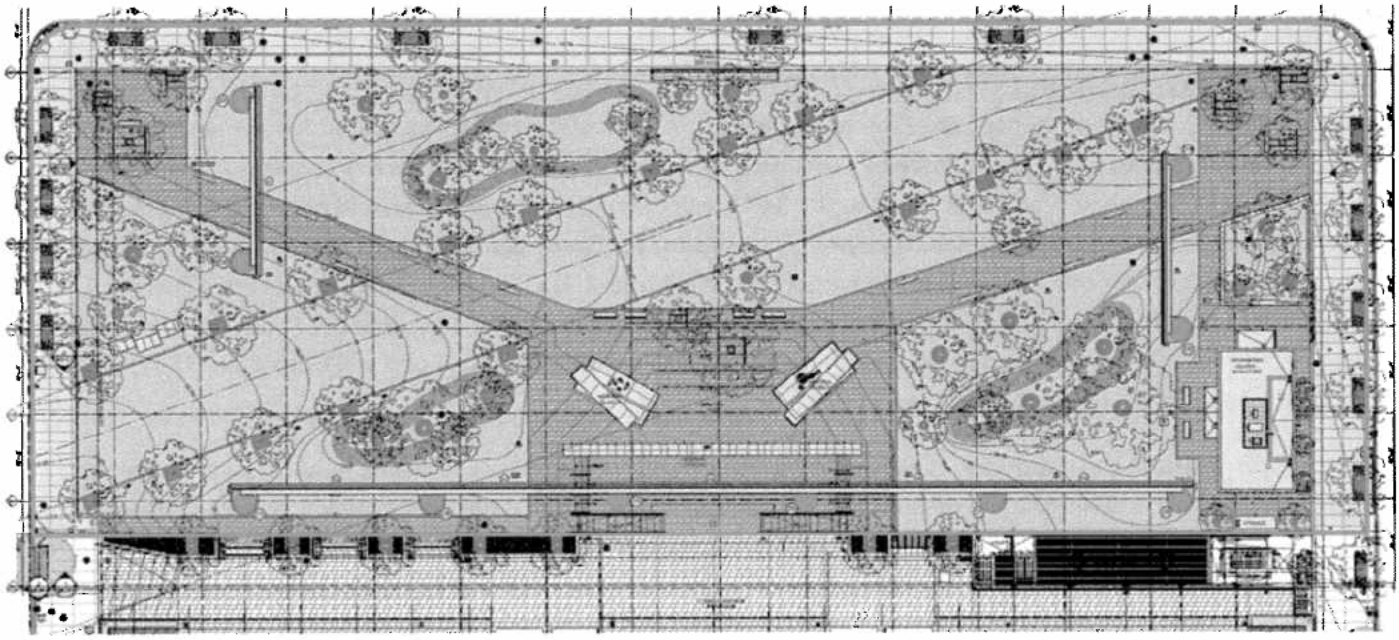
To help forecast financial obligations of the new memorial the NPS and EMC conducted a Total Cost of Facility Ownership (TCFO) analysis. The purpose of this TCFO analysis is to enable the NPS to better understand the long-term financial and resource requirements created by the Eisenhower Memorial. This analysis establishes cost estimates for the operations and maintenance (O&M), preservation, and recapitalization activities required to properly maintain the memorial and site. Industry standard data for O&M and recapitalization was applied, where available. Other cost estimates were based on prior TCFO analyses at the Martin Luther King, Jr. National Memorial, the World War II National Memorial, and other parks as relevant. For unique elements of the memorial, interviews with NAMA operations staff and members of the EMC design team were used to inform the basis of the cost estimates. In building the inventory of the memorial and site, the 90% design drawings were used.

The results of the analysis will also provide information needed for communications with NPS, Congressional, or other special interest groups concerning the O&M requirements of the Eisenhower Memorial. This report and accompanying Microsoft Excel ® spreadsheet present the results of this TCFO analysis.

Scope

The scope of this TCFO analysis was limited to the area of the Eisenhower Memorial that falls inside the sidewalk curbs on the three sides that border streets, and a line on the south side of the memorial that falls 50 feet from the face of the Lyndon B. Johnson Building. Specifically, the NPS will assume responsibility for the maintenance of the sidewalks around the memorial, but the curbs will continue to be the responsibility of the District of Columbia Department of Transportation. The planter walls and stairways from the Lyndon B. Johnson promenade that border the Eisenhower Memorial will not fall under the maintenance responsibilities of the NPS. The scope of the analysis is highlighted over the memorial site plan in Figure 1.

Figure 1. Scope of Eisenhower Memorial TCFO Analysis



Methodology

Booz Allen Hamilton (Booz Allen) conducted a TCFO analysis of the Dwight D. Eisenhower Memorial from August 30 to November 30, 2012. Booz Allen met with representatives from NAMA, the EMC, and Gilbane Building Company in early September to kick off the project, explain the TCFO process, confirm the scope, and determine resources available.

Booz Allen provided signed non-disclosure agreements for all staff working on this analysis, as requested by the EMC. The Gilbane Building Company provided to Booz Allen the 90% Construction Documents for the Eisenhower Memorial, including architectural drawings and specifications, dated September 17, 2012. In addition, a representative of the Gilbane Building Company provided Booz Allen a tour of the steel tapestry mock-ups, as well as supporting documentation, including:

- Submission for Preliminary Design Approval to the National Capital Planning Commission (NCPC)
- Tapestry Engineering and Technical Data Summary
- Construction Documents Presentation from L'Osservatore International dated August 1, 2012
- Lighting Design Schedules
- Photographs of the steel tapestry mock-ups in place in front of the Lyndon B. Johnson Building

Equipment Inventory

Based on this documentation, Booz Allen developed an inventory of all assets and components ("equipment") included in the Eisenhower Memorial. Each equipment item was assigned to an asset using NPS facility management logic. The assets created for the Eisenhower Memorial are as follows:

- Information Center
- Memorial Blocks
    - Memorial Block 1
    - Memorial Block 2
- Memorial Grounds

- Memorial Overlook
- Steel Tapestries
    - East Tapestry
    - South Tapestry
    - West Tapestry
    - Tapestry Lighting

Assets were sub-divided where appropriate and equipment assigned to these sub-areas, such as the different rooms of the Information Center. Each item was described, assigned a material where appropriate, classified according to equipment type, and categorized using UniFormat system groupings. Equipment was counted or measured based on quantity or area information provided in the drawings, or where such information was not provided, using the scale provided in the drawings to measure distances and areas. Where useful, copies of the drawings were imported into Trimble SketchUp © and quantities were measured in that program. In addition, each item was referenced based on where it was found in the architectural drawings and any unique or additional information was recorded in a "Notes" field.

Booz Allen provided a draft of this "Equipment Inventory" to the client for review, and made changes based on comments from NAMA, the EMC, and Gilbane Building Company.

Activity Inventory

After documenting all equipment included in the Eisenhower Memorial, Booz Allen assigned operations and maintenance activities to each item, as necessary, using RS Means ® industry standard activities and any requirements specific to NAMA and the unique items documented in the Equipment Inventory. Due to the Eisenhower Memorial's similarities with the Martin Luther King, Jr. (MLK) Memorial, several unique maintenance requirements from the MLK Memorial were applied to the Eisenhower Memorial. A list of these activities can be found in the Detailed Assumptions section.

Due to the unique nature of the steel tapestry design proposed for the Eisenhower Memorial, Booz Allen met with NAMA, the EMC, and Gilbane Building Company to develop a maintenance protocol for the steel tapestries at the Eisenhower Memorial. The results of this discussion were incorporated into unique cost build-ups created for the Eisenhower Memorial.

All maintenance activities were documented in an "Activity Inventory" in the TCFO analysis. Information used to create cost estimates for these activities included work type, frequency of the activity, labor categories performing the activity, labor hours required to perform the activity, and material, labor, and equipment costs. Costs were pro-rated for each equipment item based on the documented count or quantity of the equipment for which the activity was applied.

Work types. Five types of activities were applied in the TCFO analysis. These work types are defined as follows:

- Preventive Maintenance (PM): regularly scheduled periodic maintenance activities (within one year)
- Recurring Maintenance (RM): work activities that recur based on normal wear patterns on a periodic cycle of greater than one year
- Component Renewal (CR): planned replacement of a component or system that will reach the end of its useful life based on condition and life cycle analysis within the facility's lifetime

- Facility Operations (FO): work activities performed on a recurring basis related to the normal performance or function of an asset throughout the year which intends to meet daily operational needs and activities for which a facility or item is intended to be used. Includes custodial activities.
- Unscheduled Maintenance (UM): work that may be required due to unforeseen circumstances

Frequency. The frequency of is defined depending on the activity Work Type.

- For the work type FO, then the frequency means the number of times per year that the activity will be performed. In other words, frequency = X times per year.
- For all other work types, the frequency is the interval of years between which the activity will be performed, i.e frequency = every X years.

Labor costs. For all activities except for those related to the steel tapestries, labor costs were assumed to be in-house and used Federal Wage Rate Schedules for the Washington, District of Columbia Wage Area, issued October 7, 2011. Labor categories were assigned a wage grade and step based on past TCFO models for the NPS. The wage grades and steps can be adjusted for each labor category on the "Assumptions" tab in the Excel spreadsheet, if desired. Markups were applied to all wage grade base rates, including workers comp (varies by labor category) and average fixed overhead of 16.3%.

For activities performed to maintain the steel tapestries, the model uses contracted labor rates, which are the same as the RS Means® base labor rates including the markups applied to in-house labor as well as contractor's overhead (16%) and profit (15%).

For activities performed by crews with mixed labor categories, the TCFO analysis uses a weighted average of the labor categories for hourly costs, but breaks out hours required by each labor category in the crew.

Cost scheduling and analysis parameters. The TCFO analysis plots out the costs for each activity based on the required frequency over a 50-year timeframe, assuming that the NPS will begin maintenance of the memorial in 2013. The Excel file can be adjusted to evaluate shorter time frames as well.

Costs can be viewed in current year (2012) dollars or in inflated dollars. When viewing inflated figures, note that an annual inflation rate of 2% has been applied in the model, such that costs in each succeeding year are inflated by 2% above the previous year's dollar values. This inflation rate can be adjusted in the Excel file.

In addition, all costs have been adjusted using the park's location factor of 1.13.

Other general assumptions.

- Some components of the site will be maintained under existing park-wide service contracts: HVAC systems are the only known contract that will be used. However, information on the cost of including the Eisenhower Memorial in the HVAC contract was not provided, so activities are modeled for HVAC systems. All other work is assumed to be completed by park staff
- Interpretative requirements, security infrastructure and staffing (US Park Police) and special events support have not been incorporated into the model
- Programmed replacement of 10% of granite paving joints have been included as an Unscheduled Maintenance activity, based on experience with the World War II Memorial

- The estimated design life (EDL) of most components are based on industry standard sources and park experience
- Electrical costs have been estimated for the memorial, based on the rates and assumptions used for the Martin Luther King, Jr. Memorial TCFO

Summary TCFO Results (Dashboard)

The analysis below is based on the figures and charts found in the Excel spreadsheet tab labeled "Dashboard-Results." In the Excel file, functionality is built in to allow the user to change basic model parameters and view different results. The figures cited below assume a 50-year timeframe with costs shown in current year dollars. In some cases, inflated amounts are shown. Inflated costs are based on a 2% annual inflation rate.

Summary by Work Type

The results presented here show the total estimated life-cycle costs of the Eisenhower Memorial, broken out by work type.

- This analysis estimates that the NPS should spend a total of almost **$37.1 million** on operations and maintenance and recapitalization of the memorial over a 50-year timeframe.
- On an annualized basis, this means that NAMA will require approximately **$740,000** per year to keep the memorial in good condition.

Part of this figure includes Component Renewal (CR) requirements, which do not occur on an annual basis and could be competitive for capital project funding. Over a 50-year timeframe, the Eisenhower Memorial will require **$7 million** for CR activities, **19%** of the total life-cycle cost.

- If CR needs are not factored into the total O&M budget required for the memorial, the baseline expense required to properly maintain the Eisenhower Memorial is approximately **$600,000** per year.

Summary Results

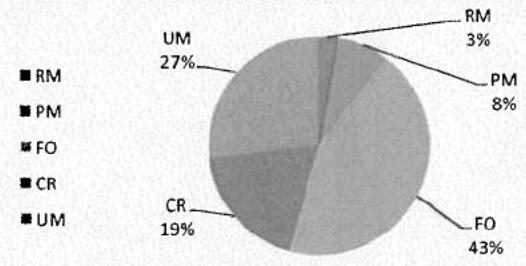
Total Life Cycle Costs (over 50 years)

	Current Year $	Inflated $
Recurring Maintenance (RM)	$ 1,029,749	$ 1,936,148
Preventive Maintenance (PM)	$ 2,942,951	$ 5,136,873
Facility Operations (FO)	$ 16,241,347	$ 28,347,969
Component Renewal (CR)	$ 6,981,547	$ 12,948,738
Unscheduled Maintenance (UM)	$ 9,940,917	$ 17,551,972
TOTAL	$ 37,136,512	$ 65,921,700
Capital Project Planning (CR)	$ 6,981,547	$ 12,948,738
Baseline Expense (Less CR)	$ 30,154,964	$ 52,972,962

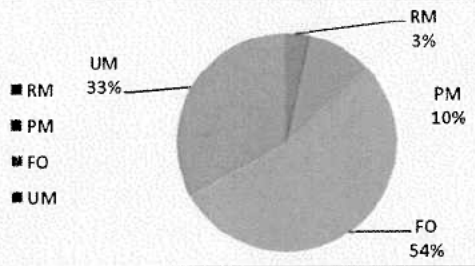
Annualized Costs

	Current Year $	Inflated $
RM	$ 20,595	$ 38,723
PM	$ 58,859	$ 102,737
FO	$ 324,827	$ 566,959
CR	$ 139,631	$ 258,975
UM	$ 198,818	$ 351,039
TOTAL	$ 742,730	$ 1,318,434
CR	$ 139,631	$ 258,975
Baseline	$ 603,099	$ 1,059,459

O&M Portfolio Cost by Work Type (Including CR)



O&M Portfolio Cost by Work Type (Baseline Less CR)



Facility Operations (FO) activities account for the largest share of the cost, at 43 percent of the total. This is primarily due to the high frequency of such activities as washing and re-stocking the bathrooms of the Information Center and performing landscape maintenance such as raking leaves and snow removal.

Unscheduled Maintenance (UM) activities account for the second largest share of the total cost, at 27 percent of the total. The driving cost for UM activities is the repair and replacement of the masonry joints in the memorial's paved walkways and plazas.

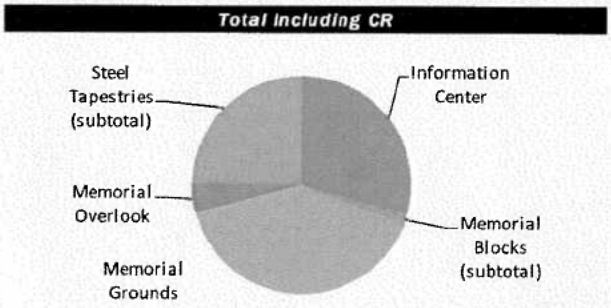
Summary by Asset

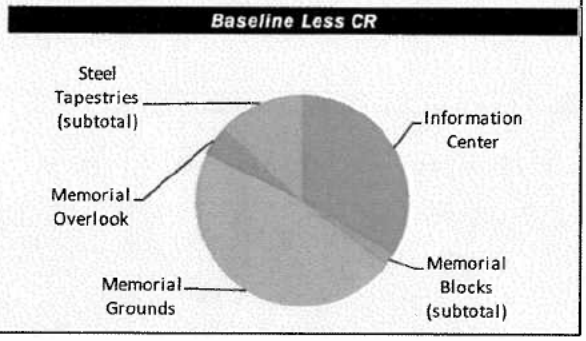
The TCFO analysis also shows projected cost estimates for each asset as defined in the Equipment Inventory. Figures are presented for the total estimated costs including CR requirements and excluding CR requirements.

Projected Costs by Asset

Total Life Cycle Costs (over 50 years)

	Total Including CR		Baseline Less CR	
Information Center	$ 10,838,001	29.2%	$ 10,112,753	33.5%
Memorial Blocks (subtotal)	$ 560,599	1.5%	$ 513,236	1.7%
Memorial Block 1	$ 307,341	0.8%	$ 283,659	0.9%
Memorial Block 2	$ 253,258	0.7%	$ 229,576	0.8%
Memorial Grounds	$ 14,925,689	40.2%	$ 14,130,681	46.9%
Memorial Overlook	$ 1,565,524	4.2%	$ 1,495,064	5.0%
Steel Tapestries (subtotal)	$ 9,246,698	24.9%	$ 3,903,231	12.9%
Tapestry (East)	$ 525,308	1.4%	$ 467,562	1.6%
Tapestry (South)	$ 1,738,716	4.7%	$ 1,483,882	4.9%
Tapestry (West)	$ 528,631	1.4%	$ 467,562	1.6%
Tapestry Lighting	$ 6,454,043	17.4%	$ 1,484,226	4.9%
TOTAL	$ 37,136,512	100.0%	$ 30,154,964	100.0%





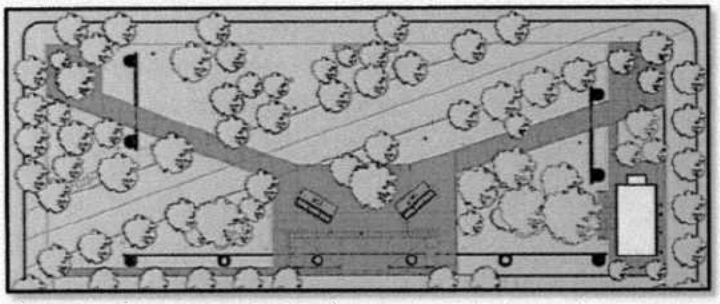
The Memorial Grounds comprise the majority of the memorial's total estimated life cycle costs, at about **40%** of the total if CR requirements are included and almost **47%** of the total if CR needs are not considered. The primary activity driving this cost is the UM requirement to repair or replace the masonry joints in the memorial's walkways and plazas.

The Steel Tapestries account for **25%** of the memorial's total life cycle costs when CR requirements are included. However, the primary cost included for the Steel Tapestries modeled in this analysis was the replacement of the LED fixtures every eight (8) years. If CR activities are not considered, the baseline maintenance cost projected for the Steel Tapestries is only **13%** of the total projected life cycle costs of the memorial.

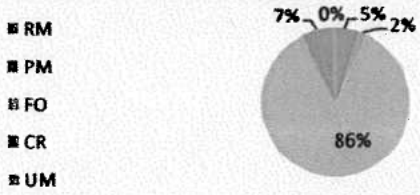
Information Center. The Information Center is the only building in the memorial. The primary costs associated with the building have to do with regular custodial activities (FO) that occur on a daily or weekly basis. For example, it is assumed that the bathrooms will be cleaned daily and that the park will have to unstop toilets twice a week. In addition, the Information Center accounts for half of the total memorial's RM activities for such items as re-painting interior walls.

Work Type Cost Breakdown per Asset

Select an asset ▶ Information Center



Information Center Cost by Work Type



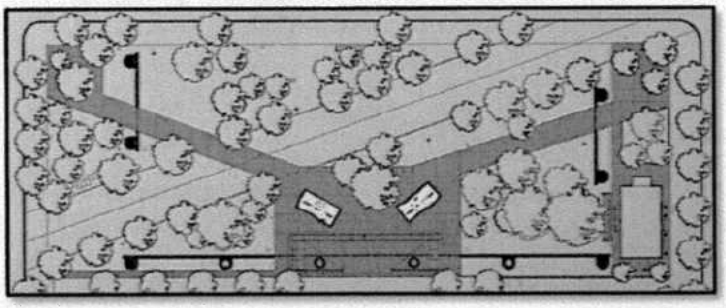
Information Center as Percentage of Total Eisenhower Memorial TCFO

Work Type	Information Center	Total Site	%
RM	$ 523,854	$ 1,029,749	50.9%
PM	$ 239,395	$ 2,942,951	8.1%
FO	$ 9,300,030	$ 16,241,347	57.3%
CR	$ 725,248	$ 6,981,547	10.4%
UM	$ 49,474	$ 9,940,917	0.5%
Total	$ 10,838,001	$ 37,136,512	29.2%

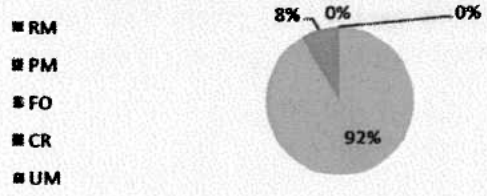
Memorial Blocks. The Memorial Blocks are the two pedestals that host several sculptures in the memorial core. The majority of the costs for these items can be attributed to FO activities for pressure washing the limestone sculptures and CR requirements for the LED fixtures that illuminate these assets.

Work Type Cost Breakdown per Asset

Select an asset ▶ Memorial Blocks (subtotal)



Memorial Blocks (subtotal) Cost by Work Type



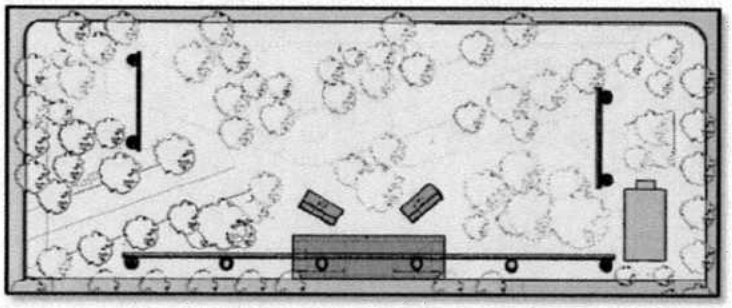
Memorial Blocks (subtotal) as Percentage of Total Eisenhower Memorial TCFO

Work Type	Memorial Blocks (subtotal)	Total Site	%
RM	$ -	$ 1,029,749	0.0%
PM	$ -	$ 2,942,951	0.0%
FO	$ 513,236	$ 16,241,347	3.2%
CR	$ 47,364	$ 6,981,547	0.7%
UM	$ -	$ 9,940,917	0.0%
Total	$ 560,599	$ 37,136,512	1.5%

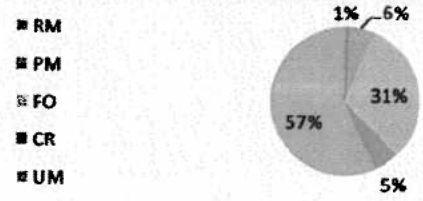
Memorial Grounds. The Memorial Grounds account for the largest share of costs projected for the memorial. Almost **60%** of the costs for the Memorial Grounds is related to UM activities to repair or replace the memorial walkways' masonry joints, which is estimated at 10% of all joints replaced per year. In addition, FO activities, such as pressure washing the paved areas, leaf removal, and snow removal, account for **31%** of the cost of maintaining the Memorial Grounds.

Work Type Cost Breakdown per Asset

Select an asset ▶ Memorial Grounds



Memorial Grounds Cost by Work Type



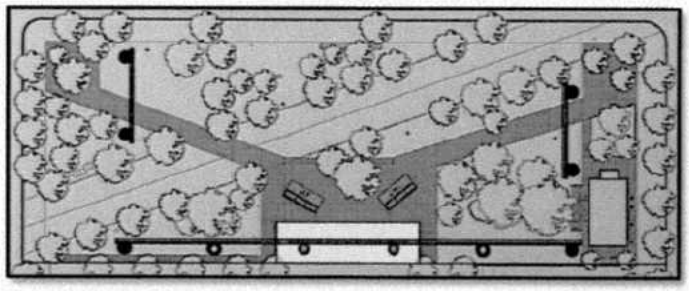
Memorial Grounds as Percentage of Total Eisenhower Memorial TCFO

Work Type	Memorial Grounds	Total Site	%
RM	$ 79,255	$ 1,029,749	7.7%
PM	$ 919,429	$ 2,942,951	31.2%
FO	$ 4,630,203	$ 16,241,347	28.5%
CR	$ 795,008	$ 6,981,547	11.4%
UM	$ 8,501,795	$ 9,940,917	85.5%
Total	$ 14,925,689	$ 37,136,512	40.2%

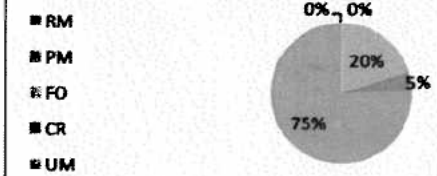
Memorial Overlook. The Memorial Overlook includes the raised platform at the south end of the memorial, the overlook wall, and the stairs and ramps used to access the overlook from the memorial core area. As this area is primarily made up of paving, the most significant cost here is the UM activity to replace or repair masonry joints.

Work Type Cost Breakdown per Asset

Select an asset ▶ Memorial Overlook



Memorial Overlook Cost by Work Type



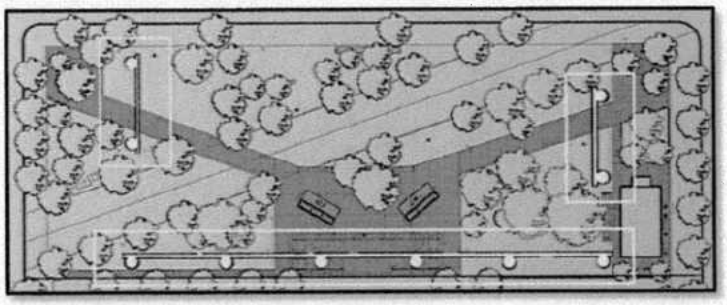
Memorial Overlook as Percentage of Total Eisenhower Memorial TCFO

Work Type	Memorial Overlook	Total Site	%
RM	$ 1,228	$ 1,029,749	0.1%
PM	$ 238	$ 2,942,951	0.0%
FO	$ 313,653	$ 16,241,347	1.9%
CR	$ 70,460	$ 6,981,547	1.0%
UM	$ 1,179,944	$ 9,940,917	11.9%
Total	$ 1,565,524	$ 37,136,512	4.2%

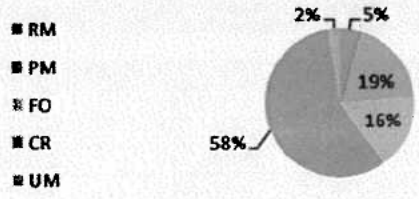
Steel Tapestries. As mentioned previously, the primary cost estimated for the Steel Tapestries is the replacement of the LED fixture that illuminates the tapestries. This CR activity accounts for **58%** of the total cost projected for the tapestries. The second most significant cost item is the annual inspection and washing of the tapestries. On an annual basis, the PM on the Steel Tapestries is under **$36,000**.

Work Type Cost Breakdown per Asset

Select an asset ▶ Steel Tapestries (subtotal)



Steel Tapestries (subtotal) Cost by Work Type

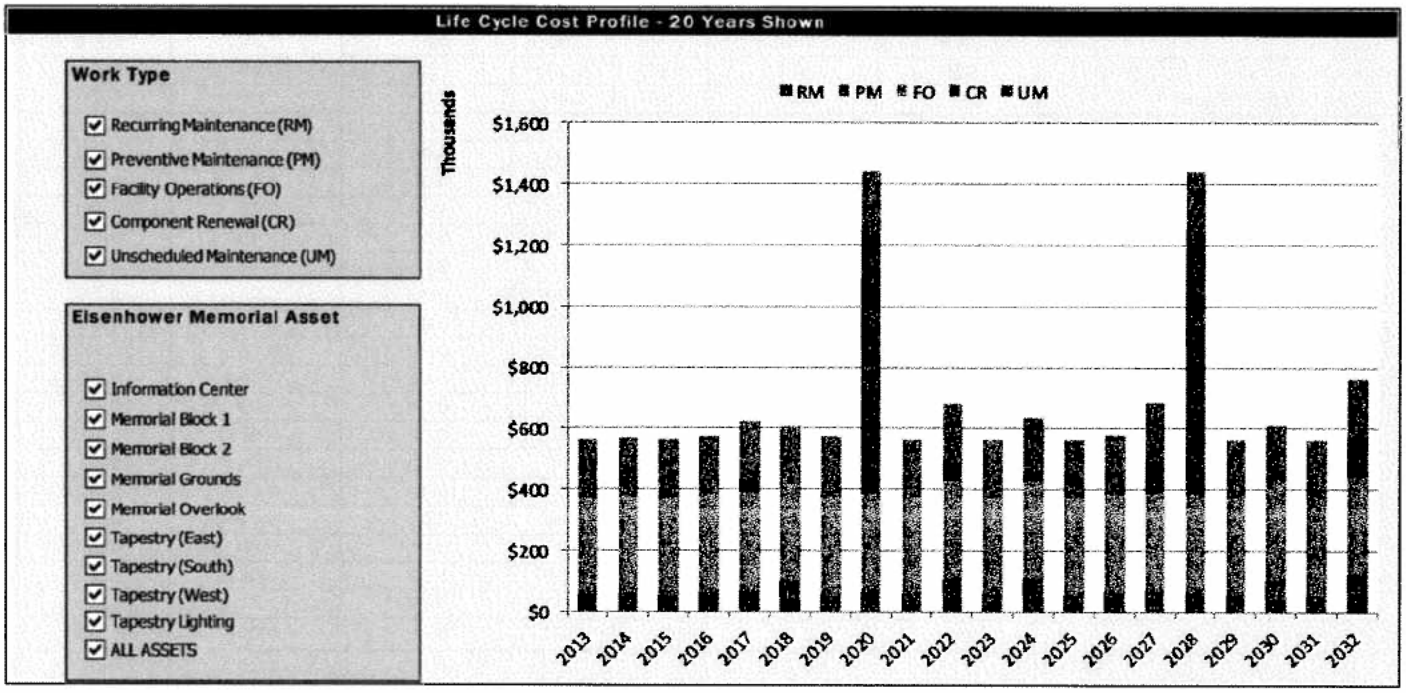


Steel Tapestries (subtotal) as Percentage of Total Eisenhower Memorial TCFO

Work Type	Steel Tapestries (subtotal)	Total Site	%
RM	$ 425,413	$ 1,029,749	41.3%
PM	$ 1,783,888	$ 2,942,951	60.6%
FO	$ 1,484,226	$ 16,241,347	9.1%
CR	$ 5,343,467	$ 6,981,547	76.5%
UM	$ 209,704	$ 9,940,917	2.1%
Total	$ 9,246,698	$ 37,136,512	24.9%

Life Cycle Cost Profile over 20 Years

Due to the fact that the activities applied to the memorial do not all occur in the same year, a 20 year cost profile is provided to illustrate years in which the NPS will have more significant costs due to RM or CR requirements. In the next 20 years, the most significant cost spikes are due to the requirement to replace the Steel Tapestry LED fixtures every 8 years. In the Excel file, this graph can be adjusted using the menus at the left, to see cost profiles by work type and memorial asset.



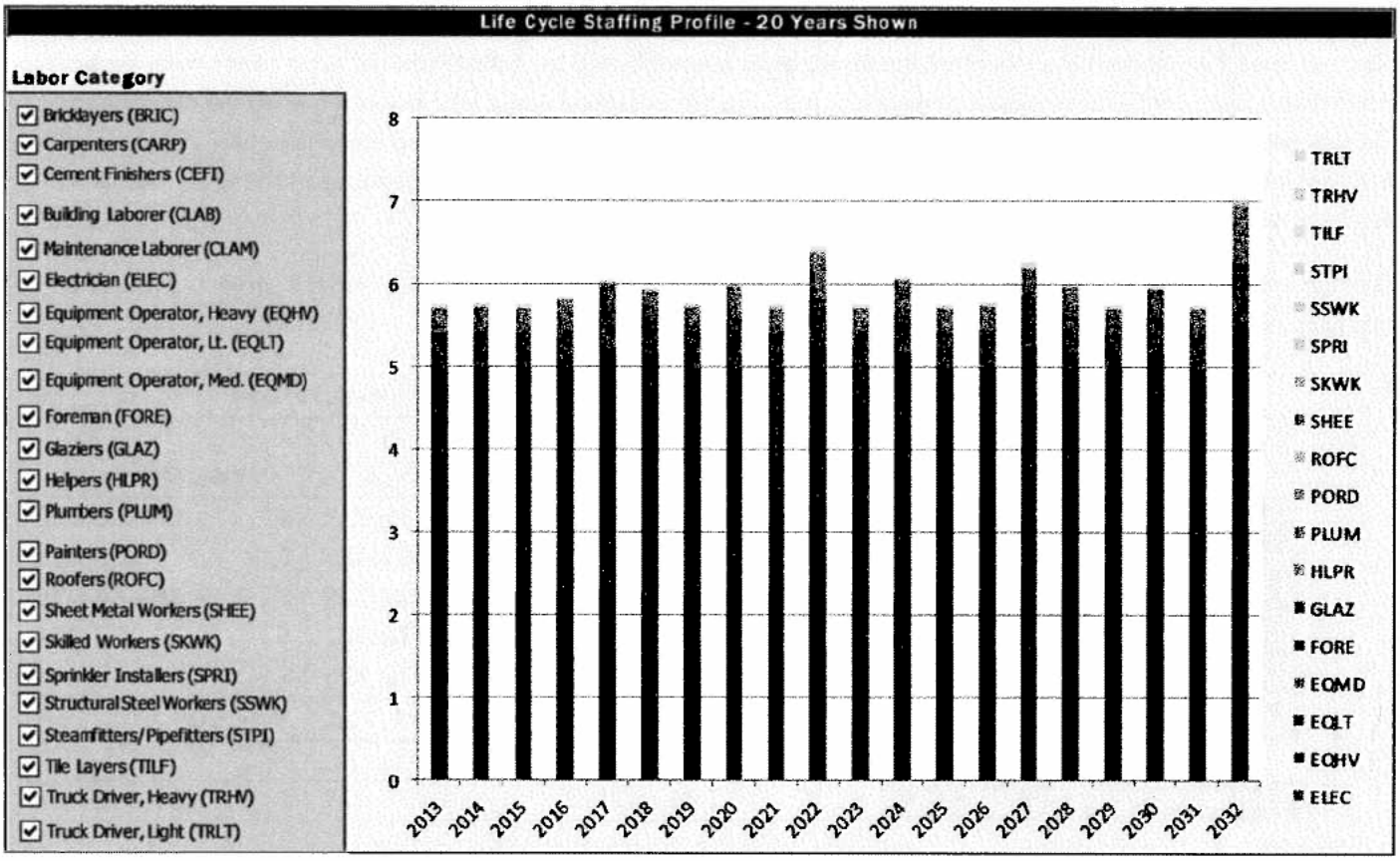
Staffing Requirements

The TCFO analysis projects the memorial's staffing requirements by labor category or work skill. It is estimated that the memorial will require an average of 6 FTEs per year to perform the recommended maintenance activities.

Eisenhower Memorial Total Full Time Equivalent Requirement (Annualized)

Work Skill	Labor Code	FTE Allocation by Work Type					Total
		RM	PM	FO	CR	UM	
		FTEs	FTEs	FTEs	FTEs	FTEs	FTEs
Bricklayers	BRIC	0.02	0.00	0.00	0.01	1.60	**1.64**
Carpenters	CARP	0.01	0.00	0.00	0.01	0.00	**0.02**
Cement Finishers	CEFI	0.01	0.00	0.00	0.00	0.00	**0.01**
Common Building Laborer	CLAB	0.01	0.21	0.45	0.03	0.00	**0.70**
Common Maintenance Laborer	CLAM	0.03	0.12	2.60	0.04	0.00	**2.79**
Electricians	ELEC	0.01	0.03	0.38	0.04	0.00	**0.45**
Equipment Operator (Light)	EQLT	0.00	0.00	0.01	0.00	0.00	**0.02**
Equipment Operator (Medium)	EQMD	0.00	0.00	0.00	0.00	0.00	**0.00**
Equipment Operator (Heavy)	EQHV	0.00	0.00	0.00	0.00	0.00	**0.00**
Foreman	FORE	0.00	0.00	0.00	0.01	0.00	**0.01**
Glaziers	GLAZ	0.00	0.00	0.00	0.00	0.00	**0.00**
Helper	HLPR	0.00	0.00	0.00	0.00	0.00	**0.00**
Plumbers	PLUM	0.01	0.02	0.29	0.02	0.00	**0.34**
Painters	PORD	0.02	0.00	0.00	0.00	0.00	**0.03**
Roofers	ROFC	0.00	0.00	0.00	0.00	0.00	**0.01**
Sheet Metal Worker	SHEE	0.00	0.00	0.00	0.00	0.00	**0.00**
Skilled Workers	SKWK	0.00	0.01	0.00	0.00	0.00	**0.01**
Sprinkler Installers	SPRI	0.00	0.00	0.00	0.00	0.00	**0.00**
Structural Steel Workers	SSWK	0.00	0.00	0.00	0.00	0.00	**0.00**
Steamfitters or Pipefitters	STPI	0.00	0.00	0.00	0.00	0.00	**0.00**
Tile Layers	TILF	0.00	0.00	0.00	0.00	0.00	**0.00**
Truck Driver (Heavy)	TRHV	0.00	0.00	0.00	0.00	0.00	**0.00**
Truck Driver (Light)	TRLT	0.00	0.00	0.00	0.00	0.00	**0.00**
Totals		0.13	0.39	3.73	0.17	1.61	**6.03**

FTE requirements are also plotted over a 20 year timeframe to show how recommended activities alter the staffing profile required on a year-by-year basis. This graph can be adjusted to view individual labor categories over the 20 year period.



Comparison of Results with Previous TCFO Studies for NAMA

As part of the presentation of summary findings, it was requested that the results developed for the Eisenhower Memorial be compared with the results of previous TCFO analyses that Booz Allen performed for NAMA. Previous TCFO analyses conducted were for the Martin Luther King, Jr. Memorial and for the World War II Memorial.

It is clear from the comparison below that the Eisenhower Memorial and the MLK Memorial, which are similar in size and features, have very similar projected maintenance requirements. The World War II Memorial, on the other hand, was estimated to cost almost triple the estimate for the Eisenhower and MLK Memorials, despite not having any Unscheduled Maintenance costs modeled. This may be attributed to the sizable water features of the World War II Memorial, which the other two memorials do not have.

If Component Renewal (CR) costs are not included in the comparison, the Eisenhower Memorial is projected to be the least costly of these three memorials to operate and maintain.

Total Life Cycle Costs (over 50 years) In Current Year Dollars

	Eisenhower Memorial	MLK Memorial	WWII Memorial
Recurring Maintenance (RM)	$ 1,029,749	$ 1,015,219	$ 10,660,190
Preventive Maintenance (PM)	$ 2,942,951	$ 1,987,487	$ 9,908,439
Facility Operations (FO)	$ 16,241,347	$ 25,827,729	$ 58,454,576
Component Renewal (CR)	$ 6,981,547	$ 1,278,927	$ 30,062,354
Unscheduled Maintenance (UM)	$ 9,940,917	$ 1,572,429	$ -
TOTAL	**$ 37,136,512**	**$ 31,681,791**	**$ 109,085,558**
Capital Project Planning (CR)	$ 6,981,547	$ 1,278,927	$ 30,062,354
Baseline Expense (Less CR)	**$ 30,154,964**	**$ 30,402,864**	**$ 79,023,204**

Annualized Costs (over 50 years) In Current Year Dollars

	Eisenhower Memorial	MLK Memorial	WWII Memorial
Recurring Maintenance (RM)	$ 20,595	$ 20,304	$ 213,204
Preventive Maintenance (PM)	$ 58,859	$ 39,750	$ 198,169
Facility Operations (FO)	$ 324,827	$ 516,555	$ 1,169,092
Component Renewal (CR)	$ 139,631	$ 25,579	$ 601,247
Unscheduled Maintenance (UM)	$ 198,818	$ 31,449	$ -
TOTAL	**$ 742,730**	**$ 633,636**	**$ 2,181,711**
Capital Project Planning (CR)	$ 139,631	$ 25,579	$ 601,247
Baseline Expense (Less CR)	**$ 603,099**	**$ 608,057**	**$ 1,580,464**

References

Resource	Date
Construction Documents Presentation from L'Osservatore International	August 1, 2012
Flight 93 National Memorial TCFO Study	2012
Interviews with National Mall & Memorial Parks, Chief of Maintenance and Civil Engineer	Sept – Nov 2012
Interviews with the Eisenhower Memorial Commission	Sept – Nov 2012
Interviews with the Gilbane Building Company	Sept – Nov 2012
Lighting Design Schedules	2012
Martin Luther King Jr. Memorial TCFO Study	2010
Photographs of the steel tapestry mock-ups in place in front of the Lyndon B. Johnson Building	2012
RS Means Commercial New Construction	2012
RS Means Facility Maintenance and Repair	2012
Submission for Preliminary Design Approval to the National Capital Planning Commission (NCPC)	2012
Tapestry Engineering and Technical Data Summary	2012
World War II Memorial TCFO Study	2004