

Option 3 (Combination Roof; Sloped-to-drain with single gable)



Figure A19: Option 3 South Elevation



Figure A20: Option 3 North Elevation



Figure A21: Option 3 Roof Plan

MAMMOTH CAVE HOTEL CONCEPTS



Figure A22: Option 3 Front Entry Perspective



Figure A23: Option 3 Back Entry Perspective

**United States Department of the Interior
National Park Service
Class C Construction Cost Estimate**

BASIS OF ESTIMATE

PROJECT INFORMATION

Project: Mammoth Cave Hotel; Roof Concept & Envelope Improvements Option 3
Park: MACA National Park; Roof System Replacement & Exterior Envelope Improvements
Park Alpha: MACA
PMIS Number: 240532
Estimate Date: Apr-18
Prepared By: MDPascatore
Company: GWWO Inc. / Architects
Address: 800 Wyman Park Drive, Suite 300
City, State Zip: Baltimore, MD 21211
Phone: 410-332-1009

BACKGROUND SUPPORTING MATERIAL (Scope of Work):

The Mammoth Cave Hotel was constructed in 1965. In 1992 a major addition was completed. The roof on the structure is a flat rubber roof membrane system that is approximately 27 years old. In 2014 a high-grade elastomeric material was applied to the entire roof system; in spite of on-going efforts to maintain the roof, it is in poor condition and at the end of its serviceable life. In 2013, a new visitor center was dedicated adjacent to the Hotel structure; the architectural motif of these two buildings are inconsistent. The Scope of Work includes concept design for a new roof system for the Hotel as well as improvements to the exterior envelope of the Hotel that will be more consistent with that of the new visitor center.

SOURCE OF COST DATA:

RS Means Building Construction Cost Data 2018
RS Means Assemblies 2018

ESTIMATE ASSUMPTIONS:

This estimate assumes that the existing roof will be demolished and a combination of new flat (sloped-to-drain) roofs and gabled roof will replace it.
Roof mounted equipment is assumed to be replaced in kind; this estimate assumes no problems currently exist that would require a different approach to the HVAC design.
This estimate does not include interior alterations beyond those implied for structural support of the roof.

MAJOR CHANGES FROM PREVIOUS ESTIMATE:

This is the initial cost estimate for this design concept.

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DESCRIPTION OF MARK-UP & ADD-ONS:

Location Factor:	<u>0.00%</u>	
Remoteness Factor:	<u>7.20%</u>	Site is 42 miles from published commercial center.
Wage Rate Factor:	<u>0.00%</u>	Not applicable.
State & Local Taxes:	<u>6.00%</u>	6.00 percent State sales tax on materials.
Design Contingency:	<u>30.00%</u>	
Standard. General Conditions:	<u>15.00%</u>	
Government General Conditions:	<u>5.00%</u>	
Historic Preservation Factor:	<u>0.00%</u>	Not applicable.
Contractor Overhead:	<u>10.00%</u>	
Contractor Profit:	<u>10.00%</u>	
Bonds and Permits:	<u>2.00%</u>	Bond
Contracting Method Adjustment:	<u>5.00%</u>	Project is expected to be a competitive negotiation.
Annual Inflation Escalation Factor:	<u>3.00%</u>	Assume midpoint of construction to be Fall 2019.
Time Until Project Midpoint (Months)	<u>18</u>	Number of months from estimate (or data) date until the projects midpoint of construction.

OTHER COMMENTS:

TOTAL COST OF FACILITY OWNERSHIP

UNDER DEVELOPMENT

MAMMOTH CAVE HOTEL CONCEPTS

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LINE ITEM COST SUMMARY

Project: Mammoth Cave Hotel; Roof Concept & Envelope Improvements Option 3
 Park: MACA National Park; Roof System Replacement & Exterior Envelope Improvements
 Park Alpha: MACA
 PMIS Number: 240532

Estimate By: MDPascatore
 Date: 04/01/18
 Reviewed By: Reviewer
 Date: Review Date

Summary Item 1 New Roof/Envelope

Total Cost: \$1,771,465

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	HVAC					
Level 3 Code	Fans Upblast	7	EA	\$ 2,000.00	\$14,000	
Level 3 Code	Inline Fans	2	EA	\$ 2,300.00	\$4,600	
Level 3 Code	Make Up Units	1	EA	\$ 18,000.00	\$18,000	
Level 3 Code	Ductwork	500	LBS	\$ 10.00	\$5,000	
Level 3 Code	Testing and Balancing	9	EA	\$ 1,000.00	\$9,000	
Level 3 Code	Controls	1	LS	\$ 15,000.00	\$15,000	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL HVAC		1	VALUE	\$ 65,600.00	\$65,600	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	ELECTRICAL					
Level 3 Code	SunPower PV panel	100	Unit	\$ 475.00	\$47,500	
Level 3 Code	PV panel rack mount	1	Unit	\$ 8,000.00	\$8,000	
Level 3 Code	200A AC disconnect, NEMA 3R	1	Unit	\$ 1,450.00	\$1,450	
Level 3 Code	Meter box for generation meter	1	Unit	\$ 160.00	\$160	
Level 3 Code	#10 AWG wiring	50	Unit	\$ 87.00	\$4,350	
Level 3 Code	#8 AWG wiring	7	Unit	\$ 118.00	\$826	
Level 3 Code	3/4" EMT conduit	1200	Unit	\$ 6.60	\$7,920	
Level 3 Code	150A Panel- 12 circuits	1	Unit	\$ 985.00	\$985	
Level 3 Code	SunPower 5000W Inverter, 3ph, 208V	6	Unit	\$ 3,625.00	\$21,750	
Level 3 Code	6"x6"x48" wire trough	1	Unit	\$ 380.00	\$380	
Level 3 Code	#1/0 AWG wiring (to feed PV Panel)	10	Unit	\$ 425.00	\$4,250	
Level 3 Code	#6 AWG ground wire (to feed PV Panel)	4	Unit	\$ 160.00	\$640	
Level 3 Code	2" EMT conduit (to feed PV Panel)	100	Unit	\$ 12.95	\$1,295	
SUBTOTAL ELECTRICAL		1	VALUE	\$ 99,506.00	\$99,506	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F10	SPECIAL CONSTRUCTION					
F1010	Misc. shoring/underpinning	1	LS	\$ 50,000.00	\$50,000	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL SPECIAL CONSTRUCTION		1	VALUE	\$ 50,000.00	\$50,000	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	SELECTIVE BUILDING DEMOLITION					
F2010	Misc. concrete slab-on-grade demolition	1	LS	\$ 2,500.00	\$2,500	
Level 3 Code	Brick veneer assembly demolition	12700	SF	\$ 3.00	\$38,100	
Level 3 Code	Glazing demolition	3300	SF	\$ 2.50	\$8,250	
Level 3 Code	Roof assembly demolition; one layer elastomeric, one layer built-up asphalt system, sheathing and 50% of insulation	240	SQ	\$ 160.00	\$38,400	
Level 3 Code	Roof assembly demolition; roof edge, soffit and fascia	1306	LF	\$ 1.50	\$1,959	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL SELECTIVE BUILDING DEMOLITION		1	VALUE	\$ 89,209.00	\$89,209	

TOTAL COST - New Roof/Envelope	1	VALUE	#####	\$1,771,465	
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Estimate By: MDPascatore
Date: 04/01/18
Reviewed By: Reviewer
Date: Review Date

Summary Item 2 New Gable/Roof at Southeast façade

Total Cost: Total Cost

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
A10	FOUNDATIONS					
A1010	New exterior column foundations	1	LS	\$ 6,800.00	\$6,800	
A1020	New concrete grade beams	1	LS	\$ 12,000.00	\$12,000	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL FOUNDATIONS		1	VALUE	\$ 18,800.00	\$18,800	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	SUPERSTRUCTURE					
B1020	New exposed glulam roof frmg. & deck	1	LS	\$ 33,150.00	\$33,150	
B1020	Reinforcement of existing roof frmg.	1	LS	\$ 15,000.00	\$15,000	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL SUPESTRUCTURE		1	VALUE	\$ 48,150.00	\$48,150	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	ROOFING					
Level 3 Code	Architectural roof shingles; Premium, self-adhering underlayment, 5/8" wood roof sheathing	23	SQ	\$ 550.00	\$12,650	
Level 3 Code	Gutters/Downspouts/Fascia	1	LS	\$ 5,000.00	\$5,000	
Level 3 Code	Roof accessories; snow guards, vents, other	1	LS	\$ 2,000.00	\$2,000	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
SUBTOTAL ROOFING		1	VALUE	\$ 19,650.00	\$19,650	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - New Gable/Roof at Southeast façade						
		1	VALUE	\$ 86,600.00	\$86,600	