

CONCEPTUAL DESIGN COST PLAN

for

Historic Boat Museum
Grand Canyon National Park
Grand Canyon, Arizona

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BASIS OF ESTIMATE

Cost Plan Prepared From

Drawings

- Existing building drawings - 4 sheets
- Floor plans - 2 sheets
- Structural plans - 4 sheets
- Exterior Perspective
- Historic preservation plans - 5 sheets

Mechanical, Electrical and Structural Narratives

Discussions with the Project Architect and Engineers

Conditions of Construction

The pricing is based on the following general conditions of construction

A start date of June 2011

A construction period of 10 months

There will not be small business set aside requirements

The contractor will be required to pay prevailing wages

There are no phasing requirements

The general contractor will have full access to the site during normal business hours

EXCLUSIONS

Lead paint abatement, PCB removal, or any other hazardous material abatement - separate NPS Contract

Hose bibs

Air handling units

Telephone/data 'active' equipment - including hubs, routers, servers and switches

Security equipment

Domestic and fire water booster pumps

Public address

Photovoltaic panels

Utility connection charges or fees

Temporary display lighting

Utility connection charges or fees

Compression of schedule, premium or shift work, and restrictions on the contractor's working hours

Design, testing, and inspection fees

Architectural and design fees

Scope change and post contract contingencies

Assessments, taxes, finance, legal and development charges

Builder's risk, project wrap-up and other owner provided insurance program

Cost escalation beyond a start date of June 2011

AREAS

Areas

	SF	SF	SF
Enclosed Areas			
Basement - existing	1,207		
First floor - existing	5,553		
First floor - addition	4,061		
 SUBTOTAL, Enclosed Area	<hr/>	10,821	
 Covered area			
 SUBTOTAL, Covered Area @ ½ Value	<hr/>		
 TOTAL GROSS FLOOR AREA		<hr/>	10,821

SCHEME A COMPONENT SUMMARY

	Gross Area: 10,821 SF	
	\$/SF	\$x1,000
A10. Foundations	4.85	52
A20. Basement Construction	0.00	0
<i>Substructure (A)</i>	4.85	52
B10. Superstructure	46.17	500
B20. Exterior Enclosure	57.77	625
B30. Roofing, Waterproofing & Skylights	15.70	170
<i>Shell (B)</i>	119.63	1,295
C10. Interior Construction	4.67	51
C20. Stairways	0.46	5
C30. Floor, Wall & Ceiling Finishes	9.29	101
<i>Interiors (C)</i>	14.42	156
D10. Conveying Systems	0.00	0
D20. Plumbing Systems	6.88	75
D30. Heating, Ventilating & Air Conditioning	24.05	260
D40. Fire Protection Systems	3.00	32
D50. Electrical Systems	25.00	271
D.50: Telecommunications	5.35	58
<i>Services (D)</i>	64.28	696
E10. Equipment (Group I)	10.93	118
E20. Furnishings	0.00	0
<i>Equipment & Furnishings (E)</i>	10.93	118
F10. Special Construction	0.00	0
F20. Selective Building Demolition	15.21	165
<i>Special Construction & Demolition (F)</i>	15.21	165
<i>Total Building Construction (1-13)</i>	229.32	2,482
G10. Site Preparation	0.97	11
G20. Site Paving, Structures & Landscaping	4.21	46
G30. Utilities on Site	4.39	48
<i>Total Site Construction (14-16)</i>	9.57	104
<i>Subtotal Direct Construction Cost (1-16)</i>	238.90	2,585
Location Factor		Included in Unit Rates
Remoteness Factor	9.00%	21.53 233
Federal Wage Rate Factor		Included in Unit Rates
Arizona Contractor's Tax	6.80%	16.26 176
Contingency for Development of Design	15.00%	35.86 388
<i>Total Direct Construction Cost</i>	312.55	3,382

SCHEME A COMPONENT SUMMARY

Standard General Conditions		39.44	427
Government General Conditions	5.00%	15.62	169
Historic Preservation Factor		Included in Unit Rates	
Subtotal Net Construction Cost		367.60	3,978
Overhead and Profit	5.00%	18.39	199
Estimate Net Construction Cost		385.99	4,177
Contracting Method Adjustment (Best Value)	5.00%	19.31	209
Escalation to Midpoint (October 2011)	4.00%	15.43	167
Bond and Insurance		Included in General Conditions	
TOTAL ESTIMATE OF BASE CONSTRUCTION		420.74	4,553

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>A10. Foundations</u>				
Building addition foundations				
Reinforced concrete including excavation				
Column footings	11	EA	800.00	8,800
Porch column footings	3	EA	600.00	1,800
Stem wall footings and stem wall at raised floor	184	LF	150.00	27,600
Wall footing	160	LF	75.00	12,000
Thickened slab wall footing and slab edge	90	LF	25.00	2,250
				52,450

A20. Basement Construction

				0
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B10. Superstructure

Structural upgrades and repairs to roof structure

Replace damaged 2" x 3" roof decking at north/east corner of building - allow	24	HR	75.00	1,800
Plywood sheathing 3/4" over existing roof deck	7,500	SF	2.75	20,625
Steel angle 4" x 4" x 12" long with two adhesive anchors to concrete wall, and two bolts at steel beam	11	EA	500.00	5,500
Continuous steel angle 4" x 8" with adhesive anchors to concrete wall at 24" o.c., and two rows of screws to wood decking at 4" o.c.	160	LF	90.00	14,400
Continuous steel channel C12x20.7 with adhesive anchors to concrete wall at 24" o.c., and welded to steel joists	214	LF	110.00	23,540

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Continuous steel bent plate connection bolted to roof trusses and roof deck	240	LF	100.00	24,000
Double steel channel posts MC12x31 anchored to floor slab and to concrete walls, 14'-0" tall	12	EA	2,600.00	31,200
Miscellaneous structural repairs				
North stair				
Repair concrete support column and slab	1	LS	5,000.00	5,000
North elevation				
Repair concrete lintel above windows, 4'-0" wide	5	EA	1,500.00	7,500
East elevation				
Repair crack in concrete wall	1	LS	2,000.00	2,000
Existing concrete floor slabs				
Miscellaneous patching, openings and infills	1	LS	5,000.00	5,000
Clean and prepare floor slab, install new concrete topping slab 3" over 2" insulation				
Basement	1,207	SF	6.00	7,242
Main floor	5,553	SF	6.00	33,318
Equipment pads at curbs at mechanical room	1	LS	5,000.00	5,000
Columns and bracing at new building addition				
Steel wide flange columns				
14'-0" tall	14	EA	2,000.00	28,000
20'-0" tall	5	EA	2,500.00	12,500
28'-0" tall	4	EA	3,000.00	12,000
Steel bracing allowance - bays measured	4	EA	5,000.00	20,000
Floor structures				
Reinforced concrete slab on grade including base	2,581	SF	9.00	23,229
Steel framed floor structure over crawl space including metal decking and concrete topping	1,480	SF	30.00	44,400
Expansion joint cover between new slab and existing building	72	LF	100.00	7,200

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sloped roof structure				
Steel and wood beam framing including wood decking to match existing roof structure				
Main roof	3,740	SF	30.00	112,200
Lower roof	1,510	SF	30.00	45,300
Rooftop equipment pads and curbs	1	LS	5,000.00	5,000
Flat roof structure				
Steel and wood framed roof including wood decking	120	SF	30.00	3,600
				499,554

B20. Exterior Enclosure

Building addition exterior walls				
Pneumatically impacted stabilized earth exterior walls including exposed finish both sides	1,140	SF	40.00	45,600
Framed exterior walls above rammed earth walls and between roof structures including finish	700	SF	50.00	35,000
Roof edge fascia	310	LF	75.00	23,250
Expansion joint	28	LF	100.00	2,800
Rooftop equipment screen at new cooler	1	LS	10,000.00	10,000
Paint underside of exposed covered walkway	400	SF	5.00	2,000
Paint exposed walkway columns	3	EA	250.00	750
Exterior wall repairs				
Repair stonework where non-original structures are removed	160	HR	75.00	12,000
Replace deteriorated stone (+/- 50 SF)	40	HR	75.00	3,000
General cleaning and re-pointing at stonework	2,230	SF	5.00	11,150
Replace wood fascia				
3" x 8"	144	LF	30.00	4,320
4" x 12" with 3" x 4" molding	320	LF	55.00	17,600
Treat exposed reinforcing steel at walls and cover with grout	40	HR	75.00	3,000
Remove mastic from concrete walls	40	HR	75.00	3,000
Remove louver, infill opening in concrete wall 4'-0" x 5'-0"	1	EA	5,000.00	5,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Clean and refinish				
Roof overhangs/soffits	1,760	SF	4.00	7,040
Decorative wood frieze	1,240	SF	4.00	4,960
Large wood brackets	17	EA	400.00	6,800
False balcony woodwork	1	LS	2,000.00	2,000
Exposed concrete walls	1,690	SF	4.00	6,760
Plaster walls at clerestory	190	SF	4.00	760
Interior face of concrete walls	8,540	SF	1.00	8,540
Windows and louvers				
Curtainwall with louvers tuned for sun control	1,440	SF	150.00	216,000
New windows to match existing at				
Entrances and clerestories	410	SF	75.00	30,750
Install new window and trim in existing opening				
5'-0" x 9'-0"	2	EA	6,000.00	12,000
6'-0" x 9'-0"	1	EA	7,000.00	7,000
12'-0" x 10'-0"	2	EA	15,000.00	30,000
Clean, repair and refinish existing windows	760	SF	20.00	15,200
Clean, repair, reglaze and refinish existing windows	320	SF	40.00	12,800
Remove louver in existing window system, install window section to match existing	1	EA	4,000.00	4,000
Allowance for manually operated window sections	10	EA	500.00	5,000
Allowance for motorized window/vent units at Main floor and clerestories	10	EA	3,000.00	30,000
Allowance to restore manual operation to operable window sections	80	HR	75.00	6,000
Louvers, vents and screens - allow	1	LS	5,000.00	5,000
Lead paint abatement - excluded				NIC

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Exterior doors				
Entrance door - double	1	EA	5,000.00	5,000
Oversized double entrance door for boat loading in existing wall	1	EA	10,000.00	10,000
Wood/glass double entrance door to match existing	1	EA	5,000.00	5,000
Wood/glass double entrance door and transom to match existing	1	EA	8,000.00	8,000
Crawl space access door	1	EA	2,000.00	2,000
Repair/refinish existing doors - single	2	EA	3,000.00	6,000
				625,080

B30. Roofing, Waterproofing & Skylights

Insulation				
Rigid insulation	12,220	SF	4.50	54,990
Roofing				
Rolled composition roofing	12,100	SF	5.00	60,500
Built-up flat roof	120	SF	15.00	1,800
Roofing upstands and sheetmetal				
Perimeter metal fascia/flashing	620	LF	25.00	15,500
Roof to wall flashing	92	LF	25.00	2,300
Expansion joint	72	LF	100.00	7,200
Upstand, cant and flashing	64	LF	25.00	1,600
Parapet cap	32	LF	25.00	800
Gutters and downspouts (North elevation only)				
Gutters	120	LF	35.00	4,200
Downspouts, 25'-0"	4	EA	1,500.00	6,000
Miscellaneous flashing, caulking and sealants	1	LS	15,000.00	15,000
				169,890

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>C10. Interior Construction</u>				
Partitions				
Interior metal stud partitions including gypsum board and paint finish				
Standard	1,990	SF	12.00	23,880
Plumbing - double stud	170	SF	16.00	2,720
Interior windows and sidelights				
Interior windows at retail and entrance	160	SF	60.00	9,600
Interior doors including frames and hardware				
Entrance - double	1	EA	5,000.00	5,000
Standard - single	2	EA	1,600.00	3,200
Standard double	1	EA	2,800.00	2,800
Balustrades and rails				
Railing at stair opening	15	LF	225.00	3,375
				50,575
<u>C20. Stairways</u>				
Existing basement stairway				
Patch and repair existing stair, install new railings	1	LS	5,000.00	5,000
				5,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>C30. Floor, Wall & Ceiling Finishes</u>				
Flooring including base				
Premium for integral colored concrete floor finish				
Main floor	5,533	SF	3.00	16,599
Addition	4,061	SF	3.00	12,183
Sealer at basement floor	1,207	SF	2.00	2,414
Walls				
Furring at existing exposed exterior concrete wall now an interior wall				
	980	SF	8.00	7,840
Special wall finishes - not required				
				NIC
Columns and bracing				
Clean and paint existing steel columns				
	168	LF	25.00	4,200
Paint new steel columns				
	348	LF	15.00	5,220
Paint exposed steel bracing - allow				
	1	LS	5,000.00	5,000
Ceilings				
Paint exposed steel trusses, framing and decking				
Existing roof structure				
	5,587	SF	3.00	16,761
New roof structure				
	3,740	SF	3.00	11,220
Suspended gypsum board and paint at restrooms				
	475	SF	14.00	6,650
Paint exposed ceiling at basement				
	1,207	SF	2.00	2,414
Allowance for acoustical treatment or ceilings at theater				
	1	LS	10,000.00	10,000
				100,501

D10. Conveying Systems

0

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>D20. Plumbing Systems</u>				
Sanitary fixtures and local connection pipework - motion activated flushing valves	16	Fx)		
Water closets	8	EA	1,375.00	11,000
Urinals	2	EA	1,325.00	2,650
Lavatories	4	EA	1,300.00	5,200
Sinks				
Service type	1	EA	1,650.00	1,650
Drinking fountains, dual-level	1	EA	2,500.00	2,500
Sanitary waste, vent and service pipework				
Floor drains and sinks, < = 6", complete with connection pipework, trap primers	3	EA	2,250.00	6,750
Rough-in sanitary fixtures, including waste, vent, domestic hot and cold water	16	EA	2,000.00	32,000
Condensate drainage, < 1"	1	LS	1,500.00	1,500
Mechanical make-up, < 1-1/2"	1	LS	2,250.00	2,250
Water treatment, storage and circulation				
Instantaneous hot water heating, electric - under counter type, 2 kW	2	EA	750.00	1,500
Natural gas for condensing boiler	1	LS	5,000.00	5,000
Surface water drainage				
Roof drain at flat roof	1	EA	2,500.00	2,500
Trade demolition - see demolition section				Demolition
				74,500

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>D30. Heating, Ventilation & Air Conditioning</u>				
Heat generation and chilling equipment				
Condensing boiler, 255 mbth	1	EA	7,000.00	7,000
20 ton fluid cooler	1	EA	15,500.00	15,500
Chemical water treatment	1	LS	5,750.00	5,750
Solar thermal heating hot water systems				
Solar panels and storage tank, 4' x 8' collectors (8 each)	256	SF	85.00	21,760
Thermal expansion compensation and circulation Inclusive of expansion tanks, air separators, chilled and hot water pumps				
	1	LS	15,000.00	15,000
Pipework, fittings Radiant slab heating and cooling, inclusive of connection pipework, fittings, manifolds, valving, switch-over etc.				
	9,614	SF	12.00	115,368
Air handing equipment - not required				
				NIC
Air distribution and return Galvanized sheet metal ductwork				
	1	LS	5,000.00	5,000
Diffusers, registers and grilles				
	1	LS	2,000.00	2,000
Controls and instrumentation Window switches, relief vents, radiant heating and cooling systems				
	9,614	SF	5.00	48,070
Test and balance air systems				
	224	HR	75.00	16,800
Unit ventilation/exhaust fans				
Toilet exhaust fan, 500 cfm	1	LS	3,000.00	3,000
Theater exhaust system	1	LS	5,000.00	5,000
Trade demolition - see demolition section				
				Demolition
				260,248

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>D40. Fire Protection Systems</u>				
Fire protection				
Automatic wet fire sprinkler system	10,821	GSF	3.00	32,463
				32,463
<u>D50. Electrical Systems</u>				
Including 225 A service, machine, equipment and user convenience power, lighting, fire alarms and security rough-in	10,821	SF	25.00	270,525
Photovoltaic Panels - excluded				NIC
Trade demolition - see demolition section				Demolition
				270,525
<u>D5030. Telecommunications</u>				
Telephone and communications				
Telephone/data	10,821	SF	3.50	37,874
Public address - not required				NIC
Audiovisual rough-in	1	LS	20,000.00	20,000
				57,874
<u>E10. Equipment (Group I)</u>				
Prefabricated compartments and accessories				
Toilet partitions	8	EA	1,000.00	8,000
Urinal screens	1	EA	350.00	350
Toilet accessories	1	LS	4,000.00	4,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Shelving, millwork and casework				
Shelving				Excluded
Janitor closet				Excluded
Miscellaneous storage shelving				
Casework				
Information/help desk	20	LF	700.00	14,000
Restroom vanities	12	LF	225.00	2,700
Retail display cabinets and shelving - allow	1	LS	40,000.00	40,000
Miscellaneous millwork and wood trim	1	LS	10,000.00	10,000
Chalkboards, insignia and graphics				
Interior signage and graphics	10,821	SF	1.50	16,232
Exterior building mounted signage or monument sign	1	LS	10,000.00	10,000
Marker boards and bulletin boards - allow	1	LS	3,000.00	3,000
Light control and vision equipment				
Window blinds and shades - not required				NIC
Amenities and convenience items				
Entrance mat	1	EA	2,000.00	2,000
Miscellaneous equipment and accessories	1	LS	8,000.00	8,000
Special use equipment				
Exhibits and displays at Orientation Area, Indoor Demonstration and Display Area (budget provided by The Sibbett Group)				
Display cost				Excluded
Soft costs (35%)				Excluded
Audio-visual systems (budget provided by The Sibbett Group)				
Exhibit area				Excluded
Theater				Excluded
Theater seating - excluded				NIC
				118,282

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
<u>E20. Furnishings</u>				
				0
<u>F10. Special Construction</u>				
				0
<u>F20. Selective Building Demolition</u>				
Building demolition				
Complete removal of existing non-historic building additions	2,600	SF	9.00	23,400
Demolition and disposal				
Remove interior construction including partitions, equipment, mechanical and electrical systems				
Basement	1,207	SF	4.00	4,828
Main level	5,553	SF	2.00	11,106
Roofing, insulation and flashing	7,500	SF	1.50	11,250
Wood framed mezzanine	1	LS	5,000.00	5,000
Miscellaneous demolition	1	LS	5,000.00	5,000
Cut openings in existing concrete wall and strengthen new opening				
7'-0" x 10'-0"	2	EA	7,000.00	14,000
10'-0" x 10'-0"	1	EA	10,000.00	10,000
Hazardous material abatement - excluded				NIC

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Temporary construction				
Scaffolding and work platforms	1	LS	50,000.00	50,000
Weather protection	1	LS	10,000.00	10,000
Protection of existing construction to remain	1	LS	10,000.00	10,000
Fencing, barriers and barricades	1	LS	10,000.00	10,000
				164,584

G10. Site Preparation

Grading and compaction				
Building pad preparation	3,692	SF	1.50	5,538
Modify grade around building for positive drainage - allow	1	LS	5,000.00	5,000
				10,538

G20. Site Paving, Structures and Landscaping

Pedestrian paving				
Stone paving over concrete base				
Entry	360	SF	20.00	7,200
East walkway - allow	1	LS	5,000.00	5,000
Stairs, steps and ramps				
Existing west entry stair				
Restore steps and install railings - not required in Scheme B				NIC
New west entry ramp				
Wood framed walkway/ramp	370	SF	25.00	9,250
Metal railing	54	LF	150.00	8,100
North stair				
Repair/replace existing concrete and stone as necessary	1	LS	5,000.00	5,000
Modify/repair existing railings	1	LS	1,000.00	1,000

<i>Item Description</i>	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Entry trellis - not required				NIC
Future outdoor patio paving and rammed earth wall/guardrail - excluded				NIC
Site lighting at entry's, steps and ramps	1	LS	10,000.00	10,000
Site drainage				
Grade adjustments - see grading				Grading
Catch basins and drains - not required				NIC
Landscaping - not required				NIC
				45,550

G30. Utilities on Site

Allowance for general utility upgrades to domestic and fire water, sewer, gas	1	LS	35,000.00	35,000
Electrical connection to pole mounted transformer	100	LF	75.00	7,500
Telecommunications/signals (allowance)	1	LS	5,000.00	5,000
				47,500

	Quantity	Unit	Rate	Total
<u>General Conditions</u>				
Construction duration based on 10 months of construction				
Site Staff / Labor				
Project Manager , part time	10	MO	5,000.00	50,000
General Superintendent	10	MO	15,000.00	150,000
Secretary /administrator - not required				NIC
Site & building layout/survey	1	LOT	5,000.00	5,000
Temporary Facilities				
Office trailer -1 ea	10	MO	1,000.00	10,000
Office Equipment & Furniture	1	LOT	5,000.00	5,000
Storage Shed	10	MO	200.00	2,000
Toilets	10	MO	1,000.00	10,000
Temporary Utilities and Set Up				
Telecomm. equipment and usage	10	MO	1,000.00	10,000
Temporary Power and Lighting	7,305	SF	1.50	10,958
Temporary Heat	5	MO	2,000.00	10,000
Water, potable	10	MO	500.00	5,000
Clean-up				
Periodic	10	MO	1,000.00	10,000
Final	1	LOT	5,000.00	5,000
Dumpsters and debris hauling	10	MO	2,000.00	20,000
Miscellaneous				
Job office supplies	10	MO	500.00	5,000
Equipment				
Truck - 1 each	10	MO	1,000.00	10,000
Forklift - 1 each	10	MO	1,500.00	15,000
Small tools and consumables	10	MO	1,000.00	10,000
Hoisting & rigging			Provided by sub-trades, included in unit pricing	
Miscellaneous Permits	1	LS	10,000.00	10,000
Bonds and Insurance @ 1.50 %	2,585,113	JOB	1.50%	38,777

	<i>Quantity</i>	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Mobilization /Demobilization				
Mobilization	1	LS	20,000.00	20,000
Demobilization	1	LS	15,000.00	15,000
				<hr/>
				426,734