Cost Estimating Format for Large Projects
Training Module

PARTICIPANT'S WORKBOOK

Federal Emergency Management Agency

Cost Estimating Format for Large Projects
Training Module
Participant's Workbook

UNIT 1 - INTRODUCTION
Participant Notes

Cost Estimating Format for Large Projects
Training Module

UNIT 1 - INTRODUCTION
EXERCISE SCENARIOS

UNIT 1 - INTRODUCTION
Exercise Scenarios

Read the following project descriptions. Determine if the CEF should be used for each project, and a give a reason for your decision. Assume that the event that caused the damage has been declared a disaster and that the Applicant is eligible.

Project 1

Three buildings on a high school campus sustained damage during an earthquake. The Applicant has prepared preliminary estimates of the damage as follows:

- Gymnasium: $500,000
- Multi-Purpose Room: $30,000
- Classroom Building 1: $150,000

Due to nature of the damage, the Applicant intends to hire one contractor to complete all of the work to repair the facilities.

Project 2

During a flood, several thousand cubic yards of mud, gravel, and rock are deposited on the roads, parking lots, and open areas of a county park and recreation center. The county has not yet begun work to restore the park to its pre-disaster condition. The preliminary estimate for removing the deposits, which will be done by contractors, is $100,000.

Project 3

A flood has demolished a 400-foot long flood control structure that provides protection to an airport runway. Under FEMA's Flood Control Works policy, permanent restoration of the facility is not eligible. However, FEMA has agreed that proposed construction of an emergency earthen levee to provide protection up to the level of a 5-year flood would be eligible. The Applicant wants to get a grant estimate from FEMA before beginning the work.

Project 4

The city hall is damaged during a hurricane. The city has completed emergency repairs (replacing doors, boarding up windows, and repairing mechanical and electrical systems) at a cost of $75,000 to keep the building functioning. However, the roof must be replaced due to major damage, and permanent repairs to windows, doors, and interiors must be completed. Additionally, the city is interested in installing hurricane shutters for hazard mitigation. Preliminary costs have not been developed for the work that must be completed.

Project 5

A school building is severely damaged during a tornado. The Applicant wants to restore the building before the new school year starts and has proceeded with an aggressive reconstruction schedule. Construction, which began 30 days ago, is expected to be complete in 90 days.

UNIT 2 – THE CEF SPREADSHEET
Participant Notes

Cost Estimating Format for Large Projects
Training Module

UNIT 2 – THE CEF SPREADSHEET

CEF Fact Sheet

-

Date of Estimate:	
FEMA Region:	
Preparer(s):	
Applicant Name:	
Project Title:	
Damaged Facility:	
Declaration Number:	
Project Number:	
PA ID No.:	
Date of Inspection:	
Event Date(s)	
Work Category:	
Type of Work: *(Enter New, Repair, etc.)*	
Scope:	

CEF Notes

-

Damaged Facility:		
Applicant Name:		
Project Number:		
Date of Estimate:		
Preparer(s):		
Part A Notes:	A.1 - A.2 -	
Part B Notes:	B.1 - B.2 -	
Part C Notes:	C.1 - C.2 - C.3 - C.4 -	
Part D Notes:	D.1 - D.2 - D.3 -	
Part E Notes:	E.1 -	
Part F Notes:	F.1 - F.2 -	
Part G Notes:	G.1 -	
Part H Notes:	H.1 - H.2 - H.3 -	
Miscellaneous Notes & Comments: *Use mouse to Activate Cursor:*		

CEF Part A Estimate

-

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty	Units	Unit Price	City Adj Factor	Total Cost
Completed							
	Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Completed - Permanent Total	$ -
	Non-Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Completed - Non-Permanent Total	$ -
Uncompleted							
	Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Uncompleted - Permanent Total	$ -
	Non-Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Uncompleted - Non-Permanent Total	$ -
						TOTAL PART A BASE CONSTRUCTION COST	$ -

			-					
			$ -	$ -	$ -	$ -	$ -	Total
PART A	"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)							$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)							$ -
	Part A Total		$ -	$ -	$ -	$ -	$ -	$ -
PART B	General Requirements and General Conditions							
B.1	General Requirements	Range Low to High	Enter % in Appropriate Column					
	Safety & Security - Airports, Ports & Govt. Owned Marinas	4.0% 6.0%						
	Temporary Services & Utilities	0.0% 1.0%						
	Quality Control	0.0% 1.0%						
	Submittals	0.0% 5.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
B.2	General Conditions (4.25%)		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part B Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through B SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART C	Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low to High	Enter % in Appropriate Column					
	Preliminary Engineering Analysis	15.0% 20.0%						
	Working Drawings	2.0% 10.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.2	Facility or Project Constructability		Enter % in Appropriate Column					
	Facility or Project Type and Complexity	(See IG for Values)						
			$ -	$ -	$ -	$ -	$ -	$ -
C.3	Access, Storage & Staging Contingencies	Range Low to High	Enter % in Appropriate Column					
	Access Contingencies	1.0% 4.0%						
	Storage Contingencies	1.0% 4.0%						
	Staging Contingencies	1.0% 4.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale	0.0%	☐	☐	☐	☐	☐	
			0%	0%	0%	0%	0%	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through C SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART D	General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead	7.7%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
D.2	GC's Insurance, Payment & Performance Bonds	3.3%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.					
	Repair/Retrofit	10.0%	New Contruction ☐		Repair/Retrofit ☐			
D.3	General Contractor's Profit		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part D Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through D SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E	Cost Escalation Factors									
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F	Plan Review and Construction Permit Cost									
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G	Applicant's Reserve for Change Orders									
G	Applicant's Reserve for Change Orders	7.0%								
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H	Applicant's Project Management and Design Costs									
H.1	Applicant's Project Management - Design Phase	1.0%								
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)	0.0%		$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)	0.0%		$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services	3.0%		$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase	6.0%								
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF COMPLETED WORK									$0

			-					
			$ -	$ -	$ -	$ -	$ -	Total
PART A	"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)							$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)							$ -
	Part A Total		$ -	$ -	$ -	$ -	$ -	$ -
PART B	General Requirements and General Conditions							
B.1	General Requirements	Range Low to High	Enter % in Appropriate Column					
	Safety & Security - Airports, Ports & Govt. Owned Marinas	4.0% 6.0%						
	Temporary Services & Utilities	0.0% 1.0%						
	Quality Control	0.0% 1.0%						
	Submittals	0.0% 5.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
B.2	General Conditions (4.25%)		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part B Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through B SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART C	Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low to High	Enter % in Appropriate Column					
	Preliminary Engineering Analysis	15.0% 20.0%						
	Working Drawings	2.0% 10.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.2	Facility or Project Constructability		Enter % in Appropriate Column					
	Facility or Project Type and Complexity	(See IG for Values)						
			$ -	$ -	$ -	$ -	$ -	$ -
C.3	Access, Storage & Staging Contingencies	Range Low to High	Enter % in Appropriate Column					
	Access Contingencies	1.0% 4.0%						
	Storage Contingencies	1.0% 4.0%						
	Staging Contingencies	1.0% 4.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale	0.0%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through C SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART D	General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead	7.7%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
D.2	GC's Insurance, Payment & Performance Bonds	3.3%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.					
	Repair/Retrofit	10.0%	New Construction ☐	Repair/Retrofit ☐				
D.3	General Contractor's Profit		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part D Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through D SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E	Cost Escalation Factors									
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F	Plan Review and Construction Permit Cost									
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G	Applicant's Reserve for Change Orders									
G	Applicant's Reserve for Change Orders		7.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H	Applicant's Project Management and Design Costs									
H.1	Applicant's Project Management - Design Phase		1.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services	☐	3.0%	$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase		6.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF UNCOMPLETED WORK									$0

Total Project Summary

-

		Completed	Uncompleted	Total
PART A	**"Base Costs" for Construction Work In Trades**	**$ -**	**$ -**	**$ -**
	A.1 Permanent Work	$ -	$ -	$ -
	A.2 Non-Permanent Job Specific Work (From Part A Estimate)	$ -	$ -	$ -
PART B	**General Requirements and General Conditions**	**$ -**	**$ -**	**$ -**
	B.1 General Requirements	$ -	$ -	$ -
	B.2 General Conditions	$ -	$ -	$ -
PART C	**Construction Cost Contingencies (Design and Construction)**	**$ -**	**$ -**	**$ -**
	C.1 Standard Design-Phase Scope Contingencies	$ -	$ -	$ -
	C.2 Facility or Project Constructability	$ -	$ -	$ -
	C.3 Access, Storage, and Staging Contingencies	$ -	$ -	$ -
	C.4 Economies of Scale in New Construction	$ -	$ -	$ -
PART D	**General Contractor's Overhead and Profit**	**$ -**	**$ -**	**$ -**
	D.1 General Contractor's Home Office Overhead Costs	$ -	$ -	$ -
	D.2 General Contractor's Insurance, Payment, and Performance Bonds	$ -	$ -	$ -
	D.3 Contractor's Profit	$ -	$ -	$ -
PART E	**Cost Escalation Allowance**	**$ -**	**$ -**	**$ -**
PART F	**Plan Review and Construction Permit Costs**	**$ -**	**$ -**	**$ -**
	F.1 Plan Review Fees	$ -	$ -	$ -
	F.2 Construction Permit Fees	$ -	$ -	$ -
PART G	**Applicant's Reserve for Construction**	**$ -**	**$ -**	**$ -**
PART H	**Applicant's Project Management and Design Costs**	**$ -**	**$ -**	**$ -**
	H.1 Applicant's Project Management - Design Phase	$ -	$ -	$ -
	H.2 Architecture & Engineering Design Contract Costs	$ -	$ -	$ -
	H.3 Project Management - Construction Phase	$ -	$ -	$ -
	Complete Project Total for Completed and Uncompleted Work	$ -	$ -	$ -

UNIT 3 – DEVELOPING PART A
Participant Notes

Cost Estimating Format for Large Projects
Training Module

UNIT 3 – DEVELOPING PART A
EXERCISE

Unit 3
Exercise

Johnstown School:

The exercise consists of a CEF Fact Sheet and Part A for the project in question.

- Read the description below.
- Individually determine what problems, if any, exist with the CEF Part A Estimate.
- Participants should review only 2 pages - the CEF Fact Sheet and the CEF Part A Estimate.
- Concentrate on the items included in the scope of work and the organization of Part A, not on possible differences of opinion regarding engineering or eligibility.
- Participants have 10 minutes to review the project.

Description:

Johnstown School on Learning Curve in Johnstown, CA was damaged by an earthquake on April 4, 1999. The disaster was declared and both the Applicant and facility are eligible. Most of the damage on the campus was to the main classroom building and was a direct result of the disaster. The project has been determined to be a large project and suitable for estimating using the CEF.

The main classroom building contains four large classrooms (A, B, C & D) divided by a central corridor. Each classroom has four large windows which were smashed by the earthquake. The exterior concrete walls and slab suffered extensive cracking and the concrete around and between the windows has spalled. The interior plaster wall finishes were also cracked. The scope of repair work includes: epoxy injection of concrete walls & slab; patching concrete spalls; repair/replacement windows; paint walls; patch and paint cracks in interior plaster walls and ceilings. The epoxy injection work has already been completed. The rest of the work is outstanding.

A Hazard Mitigation Proposal (HMP) was submitted to in fill the broken window in each classroom. The bays would be filled in with concrete and tied into the existing walls using dowels to increase the strength of the building. The HMP has already been reviewed and approved.

CEF Fact Sheet

Johnstown School District - Earthquake Damage Repair and Hazard Mitigation

Date of Estimate:	September 10, 1999
FEMA Region:	IX
Preparer (s):	FEMA
Applicant Name:	Johnstown School District
Project Title:	Earthquake Damage Repair and Hazard Mitigation
Damaged Facility:	Johnstown School Main Classroom Bldg. (Classrooms A, B, C & D)
Facility Location:	4220 Learning Curve, Johnstown, California
Declaration Number:	FEMA-1482-CA
Project Number:	3720
PA ID No.:	037-12345
Date of Inspection:	August 21, 1999
Event Date(s):	April 4, 1999
Work Category:	E
Type of Work:	REPAIR
(Enter New, Repair, etc.)	HMP
Scope:	The scope of repair work includes: epoxy injection of concrete walls & slab; patching concrete spalls; repair/replacement windows; paint walls; patch and paint cracks in interior plaster walls and ceilings. The epoxy injection work has already been completed. The rest of the work is outstanding. A Hazard Mitigation Proposal (HMP) was submitted to in fill the broken windows in each classroom. The bays would be filled in with concrete and tied into the existing walls using dowels to increase the strength of the building. The HMP has already been reviewed and approved.

CEF Part A Estimate

Johnstown School District - Earthquake Damage Repair and Hazard Mitigation

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty.	Units	Unit Price	City Adj. Factor	Total Cost
Completed							
	Permanent						
							$0
						Completed - Permanent Total	**$0**
	Non-Permanent						
						Completed - Non-Permanent Total	**$0**
Uncompleted							
	Permanent						
	STRUCTURAL REPAIRS						
	Conc. Patch walls, incl. Chipping, cleaning, & grout		400.00	SF	$6.70	1.112	$2,980
	2.0 Site Work - Demolition						
	Interior painting, walls, 2 coats, sand finish, spray	099-224-0980	4,000.00	SF	$0.26	1.180	$1,227
	Selective demolition		1.00	LS	$10,000.00	1.056	$10,560
	Remove and reset windows	020-754-5080	12.00	EA	$117.00	1.056	$1,483
	Epoxy inject up to 0.25" wide	037-330-0100	750.00	LF	$33.50	1.155	$29,019
	Concrete (in-place, incl. forms, rebar, finish walls)	033-130-4250	16.00	CY	$500.00	1.155	$9,240
	Casement windows, incl. Frame, screen, trim	086-120-0840	16.00	EA	$285.00	1.044	$4,761
	Paint exterior perimeter walls (2 CT)	099-124-0410	4,000.00	SF	$0.26		$0
	Interior painting, walls, 2 coats, sand finish, spray	099-224-0980	4,000.00		$0.26	1.180	$1,227
	Drywall, nailed or screwed to studs 5/8", taped & finished	092-608-0250	4,000.00	SF	$1.24	1.180	$5,853
	TOTAL STRUCTURAL WORK						**$66,350**
	UPGRADES						
							$0
	TOTAL UPGRADES						**$0**
	STRUCTURAL HAZARD MITIGATION (HMP)						
	Install tension ties	060-512-7038	320.00	EA	$18.25	1.091	$6,371
	Drilling concrete (4" deep)	050-515-0700	320.00		$9.35	1.041	$3,115
	Drilling (each additional Inch)	050-515-0750	320.00	EA	$7.92	1.041	$2,638
	Install bolts 15" long, 3/4" dia.	060-512-0600	320.00	EA	$6.20	1.091	$2,165
							$0
	TOTAL HMP						**$14,289**
	NON-STRUCTURAL WORK						
							$0
	TOTAL NON-STRUCTURAL WORK						**$0**
						Uncompleted - Permanent Total	**$80,639**
	Non-Permanent						
	Scaffolding rental	015-255-4100	4.00	EA	$1,250.00	1.00	$5,000
						Uncompleted - Non-Permanent Total	**$5,000**
						TOTAL PART A BASE CONSTRUCTION COST	**$85,639**

UNIT 4 – SELECTING CEF FACTORS
Participant Notes

UNIT 5 – APPLYING THE CEF
Participant Notes

Cost Estimating Format for Large Projects
Training Module

UNIT 5 – APPLYING THE CEF
EXERCISE

UNIT 5 – APPLYING THE CEF
Exercise

The facility, a one-story elementary school building with an attached gymnasium/multipurpose room, was damaged during a tornado. The gymnasium must be replaced. The school building sustained major damage to doors, windows, the roof, and the interior.

For each of the attached, perform the following tasks.

1. Describe the source of line items to be used in Part A.

2. Indicate whether the line items in Part A should be adjusted for:

   - overhead and profit; and

   - geographic location.

3. Assess the general applicability of Factors B through H and determine which factors should be applied. It is not necessary to analyze the specific subfactors of Parts B and C.

Note any differences that would occur due to the type of work (repair, retrofit, and so on) being completed.

Scenario 1: No Work Completed

In Scenario 1, the Applicant has not started work to restore the facility, other than installation of security fencing and removal of scattered debris. The Applicant has retained an A&E firm to begin design work, and intends to contract the restoration work out. The Applicant does not have recent cost data that could be used to estimate the cost of the work.

Source of data for Part A:

Adjustments to Part A:

- Overhead and profit?

- Geographic location?

Application of factors:

Part B: General Requirements

Part C: Contingencies

Part D: Overhead and Profit

Part E: Escalation

Part F: Fees

Part G: Applicant's Reserve

Part H: Project Management

Scenario 2: A&E Report Available

In Scenario 2, the Applicant has not started work to restore the facility, other than installation of security fencing and removal of scattered debris. The Applicant has retained an A&E firm to handle the design work and provide engineering services during the bid process and construction. The firm has produced an A&E report with a construction cost estimate, and this report is available to the project formulation team.

The Applicant intends to contract the restoration work out but has not yet begun the process of soliciting bids.

Source of data for Part A:

Adjustments to Part A:

- Overhead and profit?

- Geographic location?

Application of factors:

Part B: General Requirements

Part C: Contingencies

Part D: Overhead and Profit

Part E: Escalation

Part F: Fees

Part G: Applicant's Reserve

Part H: Project Management

Scenario 3: Bid/Construction Contract Available

In Scenario 3, the Applicant has not started work to restore the facility; however, using appropriate procurement procedures, the Applicant has retained a contractor who will soon begin work. The bid documents, with the contractor's unit costs, are available to the project formulation team.

The Applicant had previously retained an A&E firm to handle the design work and provide engineering services during the bid process and construction.

Source of data for Part A:

Adjustments to Part A:

- Overhead and profit?
- Geographic location?

Application of factors:

Part B: General Requirements

Part C: Contingencies

Part D: Overhead and Profit

Part E: Escalation

Part F: Fees

Part G: Applicant's Reserve

Part H: Project Management

Scenario 4: Work Partially Completed

In Scenario 4, the Applicant has completed demolition of the damaged gymnasium building and has cleared the site. The Applicant was required to retain an environmental engineering firm to test for asbestos and to monitor air quality during demolition. The contractor who performed the demolition work is not the same contractor who has won the contract to restore the facility.

Assume that Scenario 4 is otherwise the same as Scenario 3. Describe how the CEF would be applied differently.

Source of data for Part A:

Adjustments to Part A:

- Overhead and profit?
- Geographic location?

Application of factors:

Part B: General Requirements

Part C: Contingencies

Part D: Overhead and Profit

Part E: Escalation

Part F: Fees

Part G: Applicant's Reserve

Part H: Project Management

UNIT 6 – PRACTICAL EXERCISE
Participant Notes

Cost Estimating Format for Large Projects
Training Module

UNIT 6 – PRACTICAL EXERCISE
EXERCISE

Los Angeles County Medical Center, Administration Building (Category E)

Project Description

The Los Angeles County Medical Center, Administration Building at 999 First Street, Los Angeles, California (Region IX) was damaged as a result of an earthquake on April 1, 1999. The earthquake was declared as FEMA disaster FEMA-0000-DR-CA. The facility is owned and operated by Los Angeles County, an eligible Applicant, PA-ID Number 999-99999. The Medical Center functions as an intermediate care facility and the work is under project number 9999.

Constructed in 1928, the Administration Building is a 31,100 square foot one-story structure with a partial basement. The building sits on a hillside covered by wild grasses and shrubs and is removed from the rest of the buildings comprising the medical campus. The building had an occupancy permit at the time of the disaster. No significant pre-existing conditions were identified. The existing plans indicate that the building has not been significantly modified since its construction.

The building consists of reinforced concrete foundations, floors, perimeter walls, and cross walls with wood frame interior partitions and roof. Interior and exterior walls and ceilings include painted plaster or stucco finish. The roof consists of clay tile over 1' x 6' sheathing.

The Applicant has submitted an A&E report which includes a preliminary estimate of $400,000 to restore the building to pre-disaster condition and function. The building replacement cost has been estimated at $90 per square foot or approximately $2.8 million. All functions have been relocated to adjacent buildings until building repairs are complete.

Damage Description

The damage was verified by FEMA based on a field inspection conducted on May 1, 1999. The major items of repair include:

- Cracking and spalling of basement walls and columns,
- Horizontal and diagonal cracks in reinforced concrete exterior walls,
- Cracks in the concrete walls and floor slab,
- Plaster cracking or spalling of approximately 25% of the wood framed walls and ceilings,
- Exterior stucco cracking or spalling,
- Split or splintered framing members in walls, floor framing, and ceiling panel system,
- Splitting and/or warping of wood framed roof and walls, and
- Displacement or damage of clay tile roofing.

Scope of Work

Detailed information of crack widths and lengths were reviewed in accordance with FEMA publication 306, 307 and 308. As a result of this review the eligible scope of work and repair methods include the following:

- Epoxy inject cracks in concrete columns (19 LF),
- Patching concrete spalls (4 SF),
- Epoxy inject cracks in concrete basement walls and floor slab (817 LF),

- Epoxy inject cracks in concrete exterior walls (257 LF),
- Demolish and replace 8" concrete wall (6.5 CY),
- Remove and replace floor beams (54 BF),
- Remove and replace 6" slab-on-grade (3 CY),
- Remove and replace 1' x 3' reinforced strip footing (13 CY),
- Remove and replace wood framed porch roof (14,700 CF),
- Remove and replace wood framed roof (2,455 SF),
- Remove and replace wood framed walls (1,225 SF),
- Patch and paint cracks in interior plaster walls (13,610 SF),
- Patch and paint cracks in interior plaster ceilings (7,775 SF),
- Remove and replace stucco over wood (200 SF),
- Reset/replace displaced or damaged clay roof tiles (3,110 SF),
- Replace casement windows (25 EA),
- Paint exterior (11,603 SF), and
- Paint interior walls (613 SF).

In addition to the repair scope of work, the following ADA upgrades in compliance with FEMA Policy (see page 23 of the IG) have been recommended based on:

- Construct new sidewalks and ramps (1,300 SF), and
- Modify existing ramps to code (1,300 SF).

The Applicant has requested a Hazard Mitigation Proposal (HMP) to tie the roof diaphragm to the perimeter walls. The Subgrantee has performed a cost-benefit analysis that complies with FEMA Policy Number 9526.1 regarding cost effectiveness. The hazard mitigation scope of work that passed the cost-benefit analysis includes:

- Drilling of 1" diameter holes through concrete perimeter walls (215 EA),
- Installation of tension ties (215 EA), and
- Installation of ¾" diameter machine bolts and washers (215 EA).

The Applicant has completed minor repairs using force account labor in order. It has been determined by FEMA that the force account work was part of the permanent repair of the building. Documentation of the following costs has been submitted and reviewed by FEMA:

- Labor (20 hrs @ $67.82/hr),
- Benefits (20 hrs @ $37.46/hr),
- Materials ($1,200), and
- Equipment ($750).

<u>Information relating to the calculation of the CEF factors</u>

- The project is in the preliminary stages of the design phase. Quantities were estimated based on record drawings provided by the Applicant and verified during the site inspection.

- Based on the Applicant's design and construction timelines for eligible work, that were reviewed and concurred with by FEMA, it is estimated that there are 7 months of eligible

work until the completion date. This timeframe includes design (1.5 months), bid/award (1.5 months), and construction (4 months).

- Building complexity, interior work congestion, and the degree of difficulty of the repair work is considered moderate. Traffic and storage limitations at the site are minimal.

- The Applicant has provided local costs for plan check fees and building permits based on the approved scope of work. Construction permit fees are estimated at $1,675 and plan review fees are estimated at $1,325.

- The Applicant, state, or regional agency does not maintain average weighted unit price data (derived from contract history); therefore, the most current R. S. Means cost data publications are the recommended source of cost data to develop the CEF.

- The following City Cost Indices for Los Angeles County has been established by the PAO from 1999 R. S. Means data.

Division	**Category**	**Index**
2.0	Sitework	105.1
3.0	Concrete	115.2
4.0	Masonry	114.4
5.0	Metals	105.8
6.0	Wood & Plastics	108.5
7.0	Thermal & Moisture	116.3
8.0	Doors & Windows	103.7
9.0	Finishes	115.9
10.0 – 14.0	Total Division 10–14	103.4
15.0	Mechanical	108.3
16.0	Electrical	116.6
1.0 - 16.0	Weighted Average	110.6

- The Applicant does not plan to solicit bids for the project before the CEF will be prepared. However, the Applicant plans to complete repairs using a general contractor.

CEF Fact Sheet

-

Date of Estimate:	
FEMA Region:	
Preparer(s):	
Applicant Name:	
Project Title:	
Damaged Facility:	
Declaration Number:	
Project Number:	
PA ID No.:	
Date of Inspection:	
Event Date(s)	
Work Category:	
Type of Work: *(Enter New, Repair, etc.)*	
Scope:	

CEF Notes

-

Damaged Facility:		
Applicant Name:		
Project Number:		
Date of Estimate:		
Preparer(s):		
Part A Notes:	A.1 - A.2 -	
Part B Notes:	B.1 - B.2 -	
Part C Notes:	C.1 - C.2 - C.3 - C.4 -	
Part D Notes:	D.1 - D.2 - D.3 -	
Part E Notes:	E.1 -	
Part F Notes:	F.1 - F.2 -	
Part G Notes:	G.1 -	
Part H Notes:	H.1 - H.2 - H.3 -	
Miscellaneous Notes & Comments: *Use mouse to Activate Cursor:*		

CEF Part A Estimate

-

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty	Units	Unit Price	City Adj Factor	Total Cost
Completed							
	Permanent						
					$ -		$ -
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					$ -		$ -
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					$ -		$ -
					$ -		$ -
						Completed - Permanent Total	$ -
	Non-Permanent						
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					$ -		$ -
					$ -		$ -
						Completed - Non-Permanent Total	$ -
Uncompleted							
	Permanent						
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CEF Part A Estimate

-

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty	Units	Unit Price	City Adj Factor	Total Cost
					$ -		$ -
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Uncompleted - Permanent Total							$ -
	Non-Permanent						
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					$ -		$ -
					$ -		$ -
Uncompleted - Non-Permanent Total							$ -
TOTAL PART A BASE CONSTRUCTION COST							$ -

										-
				$ -	$ -	$ -	$ -	$ -		Total
PART A			"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)									$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)									$ -
			Part A Total	$ -	$ -	$ -	$ -	$ -		$ -
PART B			General Requirements and General Conditions							
B.1	General Requirements	Range Low	to High	Enter % in Appropriate Column						
	Safety & Security - Airports, Ports & Govt. Owned Marina	4.0%	6.0%							
	Temporary Services & Utilities	0.0%	1.0%							
	Quality Control	0.0%	1.0%							
	Submittals	0.0%	5.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
B.2	General Conditions (4.25%)			☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part B Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through B SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -
PART C			Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low	to High	Enter % in Appropriate Column						
	Preliminary Engineering Analysis	15.0%	20.0%							
	Working Drawings	2.0%	10.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
C.2	Facility or Project Constructability			Enter % in Appropriate Column						
	Facility or Project Type and Complexity	(See IG for Values)								
				$ -	$ -	$ -	$ -	$ -		$ -
C.3	Access, Storage & Staging Contingencies	Range Low	to High	Enter % in Appropriate Column						
	Access Contingencies	1.0%	4.0%							
	Storage Contingencies	1.0%	4.0%							
	Staging Contingencies	1.0%	4.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
C.4	Economies of Scale		0.0%	☐	☐	☐	☐	☐		
				0%	0%	0%	0%	0%		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part C Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through C SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -
PART D			General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead		7.7%	☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
D.2	GC's Insurance, Payment & Performance Bonds		3.3%	☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
		New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.						
		Repair/Retrofit	10.0%	New Contruction ☐		Repair/Retrofit ☐				
D.3	General Contractor's Profit			☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part D Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through D SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E			Cost Escalation Factors							
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F			Plan Review and Construction Permit Cost							
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G			Applicant's Reserve for Change Orders							
G	Applicant's Reserve for Change Orders		7.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H			Applicant's Project Management and Design Costs							
H.1	Applicant's Project Management - Design Phase		1.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)		0.0%	$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)		0.0%	$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services		3.0%	$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase		6.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF COMPLETED WORK									$0

			-					
			$ -	$ -	$ -	$ -	$ -	Total
PART A	"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)							$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)							$ -
	Part A Total		$ -	$ -	$ -	$ -	$ -	$ -
PART B	General Requirements and General Conditions							
B.1	General Requirements	Range Low to High	Enter % in Appropriate Column					
	Safety & Security - Airports, Ports & Govt. Owned Marinas	4.0% 6.0%						
	Temporary Services & Utilities	0.0% 1.0%						
	Quality Control	0.0% 1.0%						
	Submittals	0.0% 5.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
B.2	General Conditions (4.25%)		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part B Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through B SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART C	Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low to High	Enter % in Appropriate Column					
	Preliminary Engineering Analysis	15.0% 20.0%						
	Working Drawings	2.0% 10.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.2	Facility or Project Constructability		Enter % in Appropriate Column					
	Facility or Project Type and Complexity	(See IG for Values)						
			$ -	$ -	$ -	$ -	$ -	$ -
C.3	Access, Storage & Staging Contingencies	Range Low to High	Enter % in Appropriate Column					
	Access Contingencies	1.0% 4.0%						
	Storage Contingencies	1.0% 4.0%						
	Staging Contingencies	1.0% 4.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale	0.0%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through C SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART D	General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead	7.7%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
D.2	GC's Insurance, Payment & Performance Bonds	3.3%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.					
	Repair/Retrofit	10.0%	New Construction ☐	Repair/Retrofit ☐				
D.3	General Contractor's Profit		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part D Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through D SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E	Cost Escalation Factors									
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F	Plan Review and Construction Permit Cost									
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G	Applicant's Reserve for Change Orders									
G	Applicant's Reserve for Change Orders		7.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H	Applicant's Project Management and Design Costs									
H.1	Applicant's Project Management - Design Phase		1.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services	☐	3.0%	$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase		6.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF UNCOMPLETED WORK									$0

Total Project Summary

-

		Completed	Uncompleted	Total
PART A	**"Base Costs" for Construction Work In Trades**	**$ -**	**$ -**	**$ -**
	A.1 Permanent Work	$ -	$ -	$ -
	A.2 Non-Permanent Job Specific Work (From Part A Estimate)	$ -	$ -	$ -
PART B	**General Requirements and General Conditions**	**$ -**	**$ -**	**$ -**
	B.1 General Requirements	$ -	$ -	$ -
	B.2 General Conditions	$ -	$ -	$ -
PART C	**Construction Cost Contingencies (Design and Construction)**	**$ -**	**$ -**	**$ -**
	C.1 Standard Design-Phase Scope Contingencies	$ -	$ -	$ -
	C.2 Facility or Project Constructability	$ -	$ -	$ -
	C.3 Access, Storage, and Staging Contingencies	$ -	$ -	$ -
	C.4 Economies of Scale in New Construction	$ -	$ -	$ -
PART D	**General Contractor's Overhead and Profit**	**$ -**	**$ -**	**$ -**
	D.1 General Contractor's Home Office Overhead Costs	$ -	$ -	$ -
	D.2 General Contractor's Insurance, Payment, and Performance Bonds	$ -	$ -	$ -
	D.3 Contractor's Profit	$ -	$ -	$ -
PART E	**Cost Escalation Allowance**	**$ -**	**$ -**	**$ -**
PART F	**Plan Review and Construction Permit Costs**	**$ -**	**$ -**	**$ -**
	F.1 Plan Review Fees	$ -	$ -	$ -
	F.2 Construction Permit Fees	$ -	$ -	$ -
PART G	**Applicant's Reserve for Construction**	**$ -**	**$ -**	**$ -**
PART H	**Applicant's Project Management and Design Costs**	**$ -**	**$ -**	**$ -**
	H.1 Applicant's Project Management - Design Phase	$ -	$ -	$ -
	H.2 Architecture & Engineering Design Contract Costs	$ -	$ -	$ -
	H.3 Project Management - Construction Phase	$ -	$ -	$ -
	Complete Project Total for Completed and Uncompleted Work	$ -	$ -	$ -

FEDERAL EMERGENCY MANAGEMENT AGENCY

PROJECT WORKSHEET

O.M.B. No. 3067-0151
Expires April 30, 2001

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 30 minutes. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the forms. You are not required to respond to this collection of information unless a valid OMB control number is displayed in the upper right corner of the forms. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, Paperwork Reduction Project (3067-0151). **NOTE:** Do not send your completed form to this address.

DECLARATION NO. FEMA- ____-DR- ____	PROJECT NO.	FIPS NO.	DATE	CATEGORY
DAMAGED FACILITY			WORK COMPLETE AS OF: _____ : _____ %	
APPLICANT	COUNTY			
LOCATION			LATITUDE --/--/--	LONGITUDE --/--/--
DAMAGE DESCRIPTION AND DIMENSIONS				
SCOPE OF WORK				

Does the Scope of Work change the pre-disaster conditions at the site? ☐ Yes ☐ No

Special Considerations issues included? ☐ Yes ☐ No Hazard Mitigation proposal included? ☐ Yes ☐ No

Is there insurance coverage on this facility? ☐ Yes ☐ No

PROJECT COST

ITEM	CODE	NARRATIVE	QUANTITY/UNIT	UNIT PRICE	COST
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
				TOTAL COST	

PREPARED BY:

Cost Estimating Format for Large Projects
Training Module

UNIT 1 - INTRODUCTION
EXERCISE SOLUTIONS

UNIT 1 - INTRODUCTION
Exercise Solutions

Read the following project descriptions. Determine if the CEF should be used for each project, and give a reason for your decision. Assume that the event that caused the damage has been declared a disaster and that the Applicant is eligible.

Project 1

Three buildings on a high school campus sustained damage during an earthquake. The Applicant has prepared preliminary estimates of the damage as follows:

- Gymnasium: $500,000
- Multi-Purpose Room: $30,000
- Classroom Building 1: $150,000

Due to the nature of the damage, the Applicant intends to hire one contractor to complete all of the work to repair the facilities.

Solution: Because the Applicant intends to use one contractor to complete all work, all work to restore the school could be considered one project and the CEF applied to the project as a whole.

Project 2

During a flood, several thousand cubic yards of mud, gravel, and rock are deposited on the roads, parking lots, and open areas of a county park and recreation center. The county has not yet begun work to restore the park to its pre-disaster condition. The preliminary estimate for removing the deposits, which will be done by contractors, is $100,000.

Solution: The CEF should not be used for debris removal activities, even though (in this case) the work is necessary to restore the facility to its pre-disaster condition.

Project 3

A flood has demolished a 400-foot long flood control structure that provides protection to an airport runway. Under FEMA's Flood Control Works policy, permanent restoration of the facility is not eligible. However, FEMA has agreed that proposed construction of an emergency earthen levee to provide protection up to the level of a 5-year flood would be eligible. The Applicant wants to get a grant estimate from FEMA before beginning the work.

Solution: The CEF should not be used for emergency work activities.

Project 4

The city hall is damaged during a hurricane. The city has completed emergency repairs (replacing doors, boarding up windows, and repairing mechanical and electrical systems) at a cost of $75,000 to keep the building functioning. However, the roof must be replaced due to major damage, and permanent repairs to windows, doors, and interiors must be completed. Additionally, the city is interested in installing hurricane shutters for hazard mitigation. Preliminary costs have not been developed for the work that must be completed.

Solution: Even though some work on the building has been done, it is likely that the remaining work, regardless of whether the proposed mitigation measures are included, will be far more costly than the work that has been completed. Therefore, the CEF could be used for this facility. Before making the decision to use the CEF, however, the project team should renew the design and construction timeline to ensure that permanent work will take longer than four months to reach a state of being 90% complete (reference pages 36 and 38 of the IG).

Project 5

A school building is severely damaged during a tornado. The Applicant wants to restore the building before the new school year starts and has proceeded with an aggressive reconstruction schedule. Construction, which began 30 days ago, is expected to be complete in 90 days.

Solution: In terms of time, the project is less than 50 percent complete; however, the project is less than four months from completion. Therefore, the CEF should not be used.

Cost Estimating Format for Large Projects
Training Module

UNIT 3 – DEVELOPING PART A
EXERCISE SOLUTIONS

Unit 3

Exercise Solutions

Johnstown School:

The following is a list of text book solutions for the exercise.

- *Epoxy injection work is listed as uncompleted instead of completed (as stated in the description and CEF Fact Sheet).*
- *Missing Item Numbers for all components.*
- *Missing Units for interior painting and drilling concrete.*
- *Inconsistent line items, e.g. drywall and window replacement items are included but not discussed in the scope.*
- *Duplicated line items for interior painting.*
- *The line items are not itemized by division (harder to check City Adj. Factor and for duplication).*
- *Missing Division Numbers for the selective demolition.*
- *Poor description of selective demolition – no details or quantities.*
- *A Lump Sum item for selective demolition has been included.*
- *The concrete for the window in-fill is in repair not HMP.*
- *The City Adjustment Factor for exterior painting is missing and therefore the calculation is wrong*

Cost Estimating Format for Large Projects
Training Module

UNIT 5 – APPLYING THE CEF
EXERCISE SOLUTIONS

Unit 5
Exercise Discussion and Solutions

Scenario 1: No Work Completed

In Scenario 1, the Applicant has not started work to restore the facility, other than installation of security fencing and removal of scattered debris. The Applicant has retained an A&E firm to begin design work, and intends to contract the restoration work out. The Applicant does not have recent cost data that could be used to estimate the cost of the work.

Source of data for Part A:

- *Because the Applicant does not have recent cost data, the team should use R.S. Means cost data to develop the estimate.*
- *Work should be separated into repair (school building) and replacement (gymnasium).*

Adjustments to Part A:

- Overhead and profit? *Subcontractor overhead and profit should be included in Part A.*
- Geographic location? *Line items should be adjusted using the cost indexes from R.S. Means.*

Application of factors:

Part B: General Requirements: *Check unit costs first to review if safety and security, temporary services, quality control, submittals and general contractor's on-site project management are included in the Part A costs, then apply Part B factor if not already included.*

Part C: Contingencies: *Yes. Each part C factor should be reviewed for inclusion. The constructability factor, C.2, would not be applied to the non-complex gymnasium construction.*

Part D: Overhead and Profit: *Check unit costs first, then apply if appropriate and not already included. Overhead and Profit should already be included in "as-bid" costs, therefore the Part D factor should not be added. A&E cost estimates should be carefully reviewed to see if Overhead and Profit for the general contractor has been included.*

Part E: Escalation: *Yes, after a review of the design and construction timeline has been completed and the months to the mid-point of uncompleted construction determined.*

Part F: Fees: *Yes, assuming they have not been waived.*

Part G: Applicant's Reserve: *Yes, construction has not commenced, and approved change orders would be eligible.*

Part H: Project Management: *Yes, project management costs are eligible. If actual completed A&E costs are known, they can be included in Part A and the H.2 factor would <u>not</u> be used.*

Scenario 2: A&E Report Available

In Scenario 2, the Applicant has not started work to restore the facility, other than installation of security fencing and removal of scattered debris. The Applicant has retained an A&E firm to handle the design work and provide engineering services during the bid process and construction. The firm has produced an A&E report with a construction cost estimate, and this report is available to the project formulation team.

The Applicant intends to contract the restoration work out but has not yet begun the process of soliciting bids.

Source of data for Part A:

The team should review the A&E cost estimate to ensure that all costs are necessary, reasonable, and tied to the eligible scope of work. If the estimate meets these criteria, line items from the estimate may be used. Otherwise, the team should use an appropriate source (such as Means).

The A&E costs should be evaluated for the inclusion of factors B-H. If the estimate is based on "as-bid" costs, the Part A, unfactored costs should be extracted. The unfactored or "stripped" costs should then be factored using the CEF as appropriate. Work should be separated into repair (school building) and replacement (gymnasium).

Adjustments to Part A:

- Overhead and profit? *The team should ensure that the A&E line items include subcontractor overhead and profit.*

- Geographic location? *If the A&E firm based its estimate on local costs, an adjustment is not appropriate.*

Application of factors:

The line items should be reviewed to see if any of the factors are accounted for in unit costs.

Part B: General Requirements: *Check unit costs first to review if safety and security, temporary services, quality control, submittals and general contractor's on-site project management are included in the Part A costs, then apply Part B factor if not already included.*

Part C: Contingencies: *Yes. Each part C factor should be reviewed for inclusion. The constructability factor, C.2, would not be applied to the non-complex gymnasium construction.*

Part D: Overhead and Profit: *Check unit costs first, then apply if appropriate and not already included. Overhead and Profit should already be included in "as-bid" costs, therefore the Part D factor should not be added. A&E cost estimates should be carefully reviewed to see if Overhead and Profit for the general contractor has been included.*

Part E: Escalation: *Check unit costs first, then apply if appropriate and not already included.*

Part F: Fees: *Yes, assuming they have not been waived.*

Part G: Applicant's Reserve: *Yes, construction has not commenced, and approved change orders would be eligible.*

Part H: Project Management: *Yes, H1 and H3 only. The cost of the A&E work should be known and can be included in Part A.*

Scenario 3: Bid/Construction Contract Available

In Scenario 3, the Applicant has not started work to restore the facility; however, using appropriate procurement procedures, the Applicant has retained a contractor who will soon begin work. The bid documents, with the contractor's unit costs, are available to the project formulation team.

The Applicant had previously retained an A&E firm to handle the design work and provide engineering services during the bid process and construction.

Source of data for Part A:

The team should review the bid to ensure that all costs are necessary, reasonable, and tied to the eligible scope of work. If the estimate meets these criteria, unit costs from the bid may be used. Otherwise, the team should use an appropriate source (such as Means).

Work should be separated into repair (school building) and replacement (gymnasium).

Adjustments to Part A:

- Overhead and profit?
  No; the bid should include subcontractor overhead and profit.

- Geographic location?
  No; the bid should reflect the cost of completing work in this location.

Application of factors:

- *The line items should be reviewed to see if any of the factors are accounted for in unit costs.*

Part B: General Requirements: *No, the bid should already include the contractor's General Requirements.*

Part C: Contingencies: *No, the bid should already include the contractor's Contingencies.*

Part D: Overhead and Profit: *No, the bid should already include the contractor's Overhead and Profit.*

Part E: Escalation: *No, the bid should already include the contractor's Escalation.*

Part F: Fees: *Yes, assuming they have not been waived.*

Part G: Applicant's Reserve: *Yes, construction has not commenced, and approved change orders would be eligible.*

Part H: Project Management: *Yes, H1 and H3 only. The cost of the A&E work should be known and can be included in Part A.*

Scenario 4: Work Partially Completed

In Scenario 4, the Applicant has completed demolition of the damaged gymnasium building and has cleared the site. The Applicant was required to retain an environmental engineering firm to test for asbestos and to monitor air quality during demolition. The contractor who performed the demolition work is not the same contractor who has won the contract to restore the facility.

Assume that Scenario 4 is otherwise the same as Scenario 3. Describe how the CEF would be applied differently.

Source of data for Part A:

Work should be separated into completed and uncompleted work. The actual cost of demolition should be included in Part A for completed work.

Adjustments to Part A:

- Overhead and profit? *For completed work, these costs should already be included;*
- Geographic location? *For completed work, these costs should already be included.*

Application of factors:

Part B: General Requirements: *No, actual costs are available.*

Part C: Contingencies: *No. There are no contingencies for actual costs.*

Part D: Overhead and Profit: *No, actual costs are available.*

Part E: Escalation: *No, actual costs are available.*

Part F: Fees: *Yes, assuming they have not been waived and have not been included in Part A.*

Part G: Applicant's Reserve: *No, actual costs are available.*

Part H: Project Management: *H.1 and H.3 only. The cost of the environmental firm should be known and should be included in Part A.*

Cost Estimating Format for Large Projects
Training Module

UNIT 6 – PRACTICAL EXERCISE
EXERCISE SOLUTIONS

CEF Fact Sheet

-

Date of Estimate:	
FEMA Region:	
Preparer(s):	
Applicant Name:	
Project Title:	
Damaged Facility:	
Declaration Number:	
Project Number:	
PA ID No.:	
Date of Inspection:	
Event Date(s)	
Work Category:	
Type of Work: *(Enter New, Repair, etc.)*	
Scope:	

CEF Notes

-

Damaged Facility:		
Applicant Name:		
Project Number:		
Date of Estimate:		
Preparer(s):		
Part A Notes:	A.1 - A.2 -	
Part B Notes:	B.1 - B.2 -	
Part C Notes:	C.1 - C.2 - C.3 - C.4 -	
Part D Notes:	D.1 - D.2 - D.3 -	
Part E Notes:	E.1 -	
Part F Notes:	F.1 - F.2 -	
Part G Notes:	G.1 -	
Part H Notes:	H.1 - H.2 - H.3 -	
Miscellaneous Notes & Comments: *Use mouse to Activate Cursor:*		

CEF Part A Estimate

-

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty	Units	Unit Price	City Adj Factor	Total Cost
Completed							
	Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Completed - Permanent Total	$ -
	Non-Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
						Completed - Non-Permanent Total	$ -
Uncompleted							
	Permanent						
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CEF Part A Estimate

-

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty	Units	Unit Price	City Adj Factor	Total Cost
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					$ -		$ -
Uncompleted - Permanent Total							$ -
	Non-Permanent						
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
					$ -		$ -
Uncompleted - Non-Permanent Total							$ -
TOTAL PART A BASE CONSTRUCTION COST							$ -

										-
				$ -	$ -	$ -	$ -	$ -		Total
PART A			"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)									$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)									$ -
			Part A Total	$ -	$ -	$ -	$ -	$ -		$ -
PART B			General Requirements and General Conditions							
B.1	General Requirements	Range Low	to High	Enter % in Appropriate Column						
	Safety & Security - Airports, Ports & Govt. Owned Marina	4.0%	6.0%							
	Temporary Services & Utilities	0.0%	1.0%							
	Quality Control	0.0%	1.0%							
	Submittals	0.0%	5.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
B.2	General Conditions (4.25%)			☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part B Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through B SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -
PART C			Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low	to High	Enter % in Appropriate Column						
	Preliminary Engineering Analysis	15.0%	20.0%							
	Working Drawings	2.0%	10.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
C.2	Facility or Project Constructability			Enter % in Appropriate Column						
	Facility or Project Type and Complexity	(See IG for Values)								
				$ -	$ -	$ -	$ -	$ -		$ -
C.3	Access, Storage & Staging Contingencies	Range Low	to High	Enter % in Appropriate Column						
	Access Contingencies	1.0%	4.0%							
	Storage Contingencies	1.0%	4.0%							
	Staging Contingencies	1.0%	4.0%							
				$ -	$ -	$ -	$ -	$ -		$ -
C.4	Economies of Scale		0.0%	☐	☐	☐	☐	☐		
				0%	0%	0%	0%	0%		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part C Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through C SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -
PART D			General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead		7.7%	☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
D.2	GC's Insurance, Payment & Performance Bonds		3.3%	☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
		New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.						
		Repair/Retrofit	10.0%	New Contruction ☐		Repair/Retrofit ☐				
D.3	General Contractor's Profit			☐	☐	☐	☐	☐		
				$ -	$ -	$ -	$ -	$ -		$ -
			Part D Total	$ -	$ -	$ -	$ -	$ -		$ -
			PART A through D SUBTOTAL	$ -	$ -	$ -	$ -	$ -		$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E			Cost Escalation Factors							
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F			Plan Review and Construction Permit Cost							
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G			Applicant's Reserve for Change Orders							
G	Applicant's Reserve for Change Orders		7.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H			Applicant's Project Management and Design Costs							
H.1	Applicant's Project Management - Design Phase		1.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)		0.0%	$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)		0.0%	$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services		3.0%	$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase		6.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF COMPLETED WORK									$0

			-					
			$ -	$ -	$ -	$ -	$ -	Total
PART A	"Base Costs" for Construction Work-In Trades							
A.1	Permanent Work (From Part A Estimate)							$ -
A.2	Non-Permanent Job Specific Work (From Part A Estimate)							$ -
	Part A Total		$ -	$ -	$ -	$ -	$ -	$ -
PART B	General Requirements and General Conditions							
B.1	General Requirements	Range Low to High	Enter % in Appropriate Column					
	Safety & Security - Airports, Ports & Govt. Owned Marinas	4.0% 6.0%						
	Temporary Services & Utilities	0.0% 1.0%						
	Quality Control	0.0% 1.0%						
	Submittals	0.0% 5.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
B.2	General Conditions (4.25%)		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part B Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through B SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART C	Construction Cost Contingencies							
C.1	Design-Phase Scope Contingencies	Range Low to High	Enter % in Appropriate Column					
	Preliminary Engineering Analysis	15.0% 20.0%						
	Working Drawings	2.0% 10.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.2	Facility or Project Constructability		Enter % in Appropriate Column					
	Facility or Project Type and Complexity	(See IG for Values)						
			$ -	$ -	$ -	$ -	$ -	$ -
C.3	Access, Storage & Staging Contingencies	Range Low to High	Enter % in Appropriate Column					
	Access Contingencies	1.0% 4.0%						
	Storage Contingencies	1.0% 4.0%						
	Staging Contingencies	1.0% 4.0%						
			$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale	0.0%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through C SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -
PART D	General Contractor's Overhead and Profit							
D.1	GC's Home Office Overhead	7.7%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
D.2	GC's Insurance, Payment & Performance Bonds	3.3%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	New Construction	10.0%	Select a top box for the type of project, and applicable bottom boxes to apply the factor.					
	Repair/Retrofit	10.0%	New Construction ☐	Repair/Retrofit ☐				
D.3	General Contractor's Profit		☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	Part D Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through D SUBTOTAL		$ -	$ -	$ -	$ -	$ -	$ -

				-						
				$ -	$ -	$ -	$ -	$ -		Total
PART E	Cost Escalation Factors									
		Months	Monthly Factor							
E	Cost Escalation Factor			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through E SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART F	Plan Review and Construction Permit Cost									
F.1	Plan Review Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
F.2	Construction Permit Fees									
	(List Individual Requirements Separately)									
				$ -	$ -	$ -	$ -	$ -	$	-
	Part F Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through F SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART G	Applicant's Reserve for Change Orders									
G	Applicant's Reserve for Change Orders		7.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	PART A through G SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
PART H	Applicant's Project Management and Design Costs									
H.1	Applicant's Project Management - Design Phase		1.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
H.2	A/E Design Contract Cost									
	Above Average Complexity (Curve A)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Average Complexity (Curve B)	☐	0.0%	$ -	$ -	$ -	$ -	$ -		
	Basic Construction Inspection Services	☐	3.0%	$ -	$ -	$ -	$ -	$ -		
				$ -	$ -	$ -	$ -	$ -	$	-
H.3	Project Management - Construction Phase		6.0%							
				$ -	$ -	$ -	$ -	$ -	$	-
	Part H Total			$ -	$ -	$ -	$ -	$ -	$	-
	PART A through H SUBTOTAL			$ -	$ -	$ -	$ -	$ -	$	-
	TOTAL OF UNCOMPLETED WORK									$0

Total Project Summary

-

		Completed	Uncompleted	Total
PART A	**"Base Costs" for Construction Work In Trades**	**$ -**	**$ -**	**$ -**
	A.1 Permanent Work	$ -	$ -	$ -
	A.2 Non-Permanent Job Specific Work (From Part A Estimate)	$ -	$ -	$ -
PART B	**General Requirements and General Conditions**	**$ -**	**$ -**	**$ -**
	B.1 General Requirements	$ -	$ -	$ -
	B.2 General Conditions	$ -	$ -	$ -
PART C	**Construction Cost Contingencies (Design and Construction)**	**$ -**	**$ -**	**$ -**
	C.1 Standard Design-Phase Scope Contingencies	$ -	$ -	$ -
	C.2 Facility or Project Constructability	$ -	$ -	$ -
	C.3 Access, Storage, and Staging Contingencies	$ -	$ -	$ -
	C.4 Economies of Scale in New Construction	$ -	$ -	$ -
PART D	**General Contractor's Overhead and Profit**	**$ -**	**$ -**	**$ -**
	D.1 General Contractor's Home Office Overhead Costs	$ -	$ -	$ -
	D.2 General Contractor's Insurance, Payment, and Performance Bonds	$ -	$ -	$ -
	D.3 Contractor's Profit	$ -	$ -	$ -
PART E	**Cost Escalation Allowance**	**$ -**	**$ -**	**$ -**
PART F	**Plan Review and Construction Permit Costs**	**$ -**	**$ -**	**$ -**
	F.1 Plan Review Fees	$ -	$ -	$ -
	F.2 Construction Permit Fees	$ -	$ -	$ -
PART G	**Applicant's Reserve for Construction**	**$ -**	**$ -**	**$ -**
PART H	**Applicant's Project Management and Design Costs**	**$ -**	**$ -**	**$ -**
	H.1 Applicant's Project Management - Design Phase	$ -	$ -	$ -
	H.2 Architecture & Engineering Design Contract Costs	$ -	$ -	$ -
	H.3 Project Management - Construction Phase	$ -	$ -	$ -
	Complete Project Total for Completed and Uncompleted Work	$ -	$ -	$ -

FEDERAL EMERGENCY MANAGEMENT AGENCY

PROJECT WORKSHEET

O.M.B. No. 3067-0151
Expires April 30, 2001

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 30 minutes. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the forms. You are not required to respond to this collection of information unless a valid OMB control number is displayed in the upper right corner of the forms. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, Paperwork Reduction Project (3067-0151). **NOTE:** Do not send your completed form to this address.

DECLARATION NO. FEMA- ____-DR- ____	PROJECT NO.	FIPS NO.	DATE	CATEGORY
DAMAGED FACILITY			WORK COMPLETE AS OF: _____ : _____ %	
APPLICANT	COUNTY			
LOCATION			LATITUDE --/--/--	LONGITUDE --/--/--
DAMAGE DESCRIPTION AND DIMENSIONS				
SCOPE OF WORK				

Does the Scope of Work change the pre-disaster conditions at the site? ☐ Yes ☐ No

Special Considerations issues included? ☐ Yes ☐ No Hazard Mitigation proposal included? ☐ Yes ☐ No

Is there insurance coverage on this facility? ☐ Yes ☐ No

PROJECT COST

ITEM	CODE	NARRATIVE	QUANTITY/UNIT	UNIT PRICE	COST
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
			/		
				TOTAL COST	

PREPARED BY:

CEF Fact Sheet

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

Date of Estimate:	August 1, 1999
FEMA Region:	IX
Preparer (s):	FEMA
Applicant Name:	Los Angeles County
Project Title:	Earthquake Damage Repair and Hazard Mitigation
Damaged Facility:	LA Medical Center - Administration Building
Facility Location:	999 First Street, Los Angeles, California
Declaration Number:	FEMA-0000-DR-CA
Project Number:	9999
PA ID No.:	999-99999
Date of Inspection:	May 1, 1999
Event Date(s):	April 1, 1999
Work Category:	E
Type of Work:	REPAIR
(Enter New, Repair, etc.)	HMP
	UPGRADES
Scope:	The scope of repair work includes: epoxy injection of concrete columns, walls and floor slab; patching concrete spalls; partial demolition and replacement of concrete wall; repair/replacement of interior partition walls and floor beams; remove and replace 6" slab-on-grade; remove & replace 1' x 3' reinforced strip footing; repair of damage to wood frame walls and roof; patch and paint cracks in interior plaster walls and ceilings; patch and paint cracks and spalls in stucco; reset dispalced clay roof tiles and remove /replace damaged tiles; replace casement windows; and painting of the interior and exterior walls. A Hazard Mitigation Proposal (HMP) was submitted to tie the roof diaphragm to the peremeter walls. The scope of work includes installation of tension ties to the roof system. In addition to the HMP scope of work, upgrades to the existing exterior ramps and sidewalks and the construction of new ramps and sidewalks has been recomended for ADA compliance.

CEF Notes

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

Damaged Facility:		LA Medical Center - Administration Building
Applicant Name:		Los Angeles County
Project Number:		9999
Date of Estimate:		August 1, 1999
Preparer (s):		FEMA
Part A Notes:	A.1 -	Construction costs based on 1999 R.S. Means unit costs with appropriate city index for CSI division of work and force account records submitted by the applicant.
	A.2 -	Construction costs based on 1999 R.S. Means unit costs with appropriate city index for CSI division of work.
Part B Notes:	B.1 -	General Requirement costs added for Safety & Security (4%), Temporary Utilities and Services (1%), Quality Control (0.5%), and Submitals (2%)
	B.2 -	4.25% - Standard CEF factor used for General Conditions
Part C Notes:	C.1 -	2% - Repair, Haz. Mit. - Scope of work is well defined, equivalent to working drawings stage
	C.2 -	2% - Project complexity is minimal to moderate
	C.3 -	0% - Access, storage, and staging are adequate for repair, upgrade, and HMP.
	C.4 -	0% - Project is too small for economies of scale factor
Part D Notes:	D.1 -	7.7% - Standard CEF factor used for GC's Home Office Overhead
	D.2 -	3.3% - Standard CEF factor used for GC's Insurance, Payment & Performance Bonds
	D.3 -	10% - Standard CEF factor used for GC's Profit
Part E Notes:	E.1 -	Cost Escalation Factor: Total duration = 7 months; Monthly factor 0.188% Design = 1.5 months; Bid/Award = 1.5 months 1/2 of Construction = 2 months
Part F Notes:	F.1 -	Plan Review Fees are based on Los Angeles County requirements
	F.2 -	Construction Permit Fees are based on Los Angeles County requirements
Part G Notes:	G.1 -	6.9% - Standard CEF factor used for Applicant's Reserve for Change Orders
Part H Notes:	H.1 -	1% - Standard CEF factor used for Project Management - Design Phase
	H.2 -	10.4% - Standard CEF factor used for A/E Design Contract Costs
	H.3 -	6% - Standard CEF factor used for Project Management - Construction Phase
Miscellaneous Notes & Comments: *Use mouse to Activate Cursor:*		(1) Upgrades (ADA Compliance) are required due to local building requirements. A detailed scope of work for completeing ADA upgrades is included in Part A. (2) A general contractor/subcontractor will be retained in order to complete repairs. (3) Completed Force Account received factors H.1, H.2 and H.3

CEF Part A Estimate

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty.	Units	Unit Price	City Adj. Factor	Total Cost
Completed							
	Permanent						
1	Labor without benefits	Force Account	20.00	HRS	$67.82	1.000	$1,356
2	Benefits	Force Account	20.00	HRS	$37.46	1.000	$749
3	Materials	Force Account	1.00	LS	$1,200.00	1.000	$1,200
4	Equipment	Force Account	1.00	LS	$750.00	1.000	$750
					Completed - Permanent Total		**$4,056**
	Non-Permanent						
					Completed - Non-Permanent Total		**$0**
Uncompleted							
	Permanent						
	STRUCTURAL REPAIRS						
	1.0 General Requirements						
5	Conc. Patch walls, incl. Chipping, cleaning, & grout	018-030-1030	4.00	SF	$14.50	1.106	$64
	2.0 Site Work - Demolition						
6	Selective demolition, wood frame, joists 2x8	020-714-4240	300.00	LF	$0.61	1.051	$192
7	Selective demolition, floor sheating & flooring	020-704-7200	3.00	EA	$72.50	1.051	$229
8	Demo, conc., 8" walls, bar reinforced, over 6 CF	020-704-1450	175.50	CF	$30.00	1.051	$5,534
9	Conc. Removal, footings 1' x 2'	020-754-1000	15.00	LF	$11.15	1.051	$176
10	Demo, slab on grade, 6", bar rein., over 8 SF	020-704-1250	162.00	SF	$15.85	1.051	$2,699
11	Building Demo, incl. 20 mi haul, exclu. Dump fees, CF	020-604-0700	14,700.00	CF	$0.25	1.051	$3,862
12	Dump charges, typical urban city, fees only	020-612-0100	59.00	T	$55.00	1.051	$3,410
13	Remove and reset windows	020-734-5020	25.00	EA	$61.00	1.051	$1,603
	3.0 Concrete						
14	Epoxy inject up to 0.25" wide	037-330-0100	1,093.00	LF	$22.00	1.152	$27,701
15	Conc. In-place, incl. Forms, rebar, finish walls, 8", to 8' high	033-172-4950	6.50	CY	$32.50	1.152	$243
16	Conc. In-place, footings, strip, 1' x 3', reinforced	033-130-3950	13.00	CY	$172.00	1.152	$2,576
17	Conc., in place, slab on grade, 6 " thick	033-130-4700	3.00	CY	$122.00	1.152	$422
	6.0 Woods and Plastics						
18	Framing Joists, 2' x 8'	061-114-2613	400.00	LF	$1.75	1.085	$760
19	Framing, heavy mill timber beams, 4' x 8'	061-304-0262	54.00	BF	$2.08	1.085	$122
20	Framing, rafters to 4 12 pitch, 2' x 6'	061-120-5000	1,090.00	LF	$1.32	1.085	$1,561
21	Framing, roofs, facia boards 2' x 8'	061-120-5880	195.00	LF	$2.42	1.085	$512
22	Sheating, plywood on roof 1/2" pneumatic nailed	061-154-0103	2,455.00	SF	$0.88	1.085	$2,344
23	Framing walls, studs, 8' high, 2' x 4', pneumatic nailed	061-128-5147	615.00	LF	$0.95	1.085	$634
24	Sheating, plywood on walls, ext. CDX 1/2" pneumatic nailed	061-154-0607	1,225.00	SF	$0.98	1.085	$1,303
	7.0 Thermal and Moisture Protection						
25	Roof deck insulation, extruded polystyrene, 25 PSI, 4", R-20	072-203-1946	2,455.00	SF	$1.56	1.163	$4,454
26	Prepared roll roofing, 3-plies glass fiber felt, lapped 19" mopped	075-204-0400	25.00	SQ	$170.00	1.163	$4,943

CEF Part A Estimate

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

Item No.	Item Description Title / Component Description	Div. # or Cost Code	Qty.	Units	Unit Price	City Adj. Factor	Total Cost
	8.0 Doors and Windows						
27	Casement windows, incl. Frame, screen, trim	086-120-8040	25.00	EA	$296.00	1.037	$7,674
	9.0 Finishes						
28	Paint exterior perimeter walls (2 CT)	099-124-0410	10,990.00	SF	$0.26	1.159	$3,312
29	Stucco, 3 coats, 1" thick, float finish on wood frame	092-304-0010	5.00	SY	$20.50	1.159	$119
30	Ceilings, gypsum drywall, finished, screwed to joists, 1/2"	092-604-0100	2,455.00	SF	$1.22	1.159	$3,471
31	Drywall, nailed or screwed to studs 5/8", taped & finished	092-608-0250	613.00	SF	$1.29	1.159	$917
32	Exterior painting, stucco, rough, oil base, paint 2 coats, spray	099-106-1600	613.00	SF	$0.34	1.159	$242
33	Interior painting, walls, 2 coats, sand finish, spray	099-224-0980	613.00	SF	$0.26	1.159	$185
34	Interior painting, ceilings, 2 coats, sand finish, spray	099-224-0980 099-224-1800	2,455.00	SF	$0.33	1.159	$939
	TOTAL STRUCTURAL WORK						**$82,200**
	UPGRADES						
35	Construct new sidewalks and ramps	025-128-0350	1,300.00	SF	$3.30	1.051	$4,509
36	Adjust exterior ramps to code (50 %)	025-128-0350	1,300.00	SF	$1.65	1.051	$2,254
	TOTAL UPGRADES						**$6,763**
	STRUCTURAL HAZARD MITIGATION (HMP)						
37	Install tension ties	060-512-7038	215.00	EA	$18.25	1.083	$4,249
38	Drilling concrete (4" deep)	050-515-0700	215.00	EA	$9.35	1.058	$2,127
39	Drilling (each additional Inch)	050-515-0750	215.00	EA	$7.92	1.058	$1,802
40	Install bolts 15" long, 3/4" dia.	060-512-0600	215.00	EA	$6.20	1.083	$1,444
41	Install washers 3" x 3" x 3/16"	060-512-5500	215.00	EA	$0.63	1.083	$147
	TOTAL HMP						**$9,768**
	NON-STRUCTURAL WORK						
42	Backfill by hand, compaction in 6" layers, hand tamp	022-204-0300 022-204-0010	32.00	CY	$34.45	1.051	$1,159
43	Conc., in place, grade walls, 8 " thick, 8' high	033-130-4200	21.00	CY	$320.00	1.152	$7,741
44	Conc., in place, slab on grade, 6 " thick	033-130-4700	11.00	CY	$122.00	1.152	$1,546
45	Clay tile, spanish, 171 pcs per SQ, red	073-202-0600	32.00	SQ	$535.00	1.163	$19,911
46	Plaster, repair cracking and paint	092-154-0010 099-224-0840	21,385.00	SF	$1.05	1.159	$26,024
47	Stucco over wood, remove, replace, and paint	020-732-0300 092-304-0010 099-106-1400	200.00	SF	$1.79	1.159	$415
	TOTAL NON-STRUCTURAL WORK						**$56,796**
						Uncompleted - Permanent Total	**$155,527**
	Non-Permanent						
49	Scaffolding rental	015-255-4100	12.00	EA	$1,250.00	1.11	$16,590
49	Temporary fencing	015-304-0200	200.00	LF	$8.15	1.11	$1,803
						Uncompleted - Non-Permanent Total	**$18,393**
						TOTAL PART A BASE CONSTRUCTION COST	**$177,975**

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

		REPAIR	HMP	UPGRADES			Total
PART A	"Base Costs" for Construction Work-In Trades						
A.1	Permanent Work (From Part A Estimate)	$ 4,056					$ 4,056
A.2	Non-Permanent Job Specific Work (From Part A Estimate)						$ -
	Part A Total	$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART B	General Requirements and General Conditions						
B.1	General Requirements	Range Low	to High	Enter % in Appropriate Column			
	Safety & Security - Airports, Ports & Govt. Owned M	4.0%	6.0%				
	Temporary Services & Utilities	0.0%	1.0%				
	Quality Control	0.0%	5.0%				
	Submittals	0.0%	5.0%				
				$ -	$ -	$ -	$ -	$ -	$ -
B.2	General Conditions (4.25%)						
				$ -	$ -	$ -	$ -	$ -	$ -
	Part B Total			$ -	$ -	$ -	$ -	$ -	$ -
	PART A through B SUBTOTAL			$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART C	Construction Cost Contingencies						
C.1	Design-Phase Scope Contingencies	Range Low	to High	Enter % in Appropriate Column			
	Preliminary Engineering Analysis	15.0%	20.0%				
	Working Drawings	2.0%	10.0%				
				$ -	$ -	$ -	$ -	$ -	$ -
C.2	Facility or Project Constructability			Enter % in Appropriate Column			
	E	(See IG for Values)					
				$ -	$ -	$ -	$ -	$ -	$ -
C.3	Access, Storage & Staging Contingen	Range Low	to High	Enter % in Appropriate Column			
	Access Contingencies	1.0%	4.0%				
	Storage Contingencies	1.0%	4.0%				
	Staging Contingencies	1.0%	4.0%				
				$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale	0.0%					
				0%	0%	0%	0%	0%	
				$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total			$ -	$ -	$ -	$ -	$ -	$ -
	PART A through C SUBTOTAL			$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART D	General Contractor's Overhead and Profit						
D.1	GC's Home Office Overhead	7.7%					
				$ -	$ -	$ -	$ -	$ -	$ -
D.2	GC's Insurance, Payment & Performance Bo	3.3%					
				$ -	$ -	$ -	$ -	$ -	$ -
D.3	General Contractor's Profit	10.0%					
				$ -	$ -	$ -	$ -	$ -	$ -
	Part D Total			$ -	$ -	$ -	$ -	$ -	$ -
	PART A through D SUBTOTAL			$ 4,056	$ -	$ -	$ -	$ -	$ 4,056

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

			REPAIR	HMP	UPGRADES			Total
PART E	Cost Escalation Factors							
		Months / Monthly Factor						
E	Cost Escalation Factor		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through E SUBTOTAL		$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART F	Plan Review and Construction Permit Cost							
F.1	**Plan Review Fees**							
	(List Individual Requirements Separately)							
			$ -	$ -	$ -	$ -	$ -	$ -
F.2	**Construction Permit Fees**							
	(List Individual Requirements Separately)							
			$ -	$ -	$ -	$ -	$ -	$ -
	Part F Total		$ -	$ -	$ -	$ -	$ -	$ -
	PART A through F SUBTOTAL		$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART G	Applicant's Reserve for Change Orders							
G	**Applicant's Reserve for Change Orders**	7.0%	☐	☐	☐	☐	☐	
			$ -	$ -	$ -	$ -	$ -	$ -
	PART A through G SUBTOTAL		$ 4,056	$ -	$ -	$ -	$ -	$ 4,056
PART H	Applicant's Project Management and Design Costs							
H.1	**Applicant's Project Management - Design Ph**	1.0%	☑	☐	☐	☐	☐	
			$ 41	$ -	$ -	$ -	$ -	$ 41
H.2	**A/E Design Contract Cost**							
	Above Average Compexity (Curve A)	☐ 0.0%	$ -	$ -	$ -	$ -	$ -	
	Average Complexity (Curve B)	☐ 0.0%	$ -	$ -	$ -	$ -	$ -	
	Basic Construction Inspection Services	☑ 5.0%	$ 203	$ -	$ -	$ -	$ -	
			$ 203	$ -	$ -	$ -	$ -	$ 203
H.3	**Project Management - Construction Phase**	6.0%	☑	☐	☐	☐	☐	
			$ 243	$ -	$ -	$ -	$ -	$ 243
	Part H Total		$ 487	$ -	$ -	$ -	$ -	$ 487
	PART A through H SUBTOTAL		$ 4,542	$ -	$ -	$ -	$ -	$ 4,542
	TOTAL OF COMPLETED WORK							**$4,542.27**

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

				REPAIR	HMP	UPGRADES			Total
PART A	"Base Costs" for Construction Work-In Trades								
A.1	Permanent Work (From Part A Estimate)			$ 138,996	$ 9,768	$ 6,763			$ 155,527
A.2	Non-Permanent Job Specific Work (From Part A Esti			$ 18,393					$ 18,393
	Part A Total			$ 157,389	$ 9,768	$ 6,763	$ -	$ -	$ 173,920
PART B	General Requirements and General Conditions								
B.1	General Requirements	Range Low	to High	Enter % in Appropriate Column					
	Safety & Security - Airports, Ports & Govt. Owned M	4.0%	6.0%	4.00%	4.00%	4.00%			
	Temporary Services & Utilities	0.0%	1.0%	1.00%	1.00%	1.00%			
	Quality Control	0.0%	1.0%	0.50%	0.50%	0.50%			
	Submittals	0.0%	5.0%	2.00%	2.00%	2.00%			
				$ 11,804	$ 733	$ 507	$ -	$ -	$ 13,044
B.2	General Conditions (4.25%)			☑	☑	☑	☐	☐	
				$ 6,689	$ 415	$ 287	$ -	$ -	$ 7,392
	Part B Total			$ 18,493	$ 1,148	$ 795	$ -	$ -	$ 20,436
	PART A through B SUBTOTAL			$ 175,882	$ 10,916	$ 7,558	$ -	$ -	$ 194,355
PART C	Construction Cost Contingencies								
C.1	Design-Phase Scope Contingencies	Range Low	to High	Enter % in Appropriate Column					
	Preliminary Engineering Analysis	15.0%	20.0%						
	Working Drawings	2.0%	10.0%	2.00%	2.00%	2.00%			
				$ 3,518	$ 218	$ 151	$ -	$ -	$ 3,887
C.2	Facility or Project Constructability			Enter % in Appropriate Column					
	E	(See IG for Values)		2.00%	2.00%	2.00%			
				$ 3,518	$ 218	$ 151	$ -	$ -	$ 3,887
C.3	Access, Storage & Staging Contingen	Range Low	to High	Enter % in Appropriate Column					
	Access Contingencies	1.0%	4.0%						
	Storage Contingencies	1.0%	4.0%						
	Staging Contingencies	1.0%	4.0%						
				$ -	$ -	$ -	$ -	$ -	$ -
C.4	Economies of Scale		0.0%	☐	☐	☐	☐	☐	
				$ -	$ -	$ -	$ -	$ -	$ -
	Part C Total			$ 7,035	$ 437	$ 302	$ -	$ -	$ 7,774
	PART A through C SUBTOTAL			$ 182,917	$ 11,353	$ 7,860	$ -	$ -	$ 202,130
PART D	General Contractor's Overhead and Profit								
D.1	GC's Home Office Overhead		7.7%	☑	☑	☑	☐	☐	
				$ 14,085	$ 874	$ 605	$ -	$ -	$ 15,564
D.2	GC's Insurance, Payment & Performance Bo		3.3%	☑	☑	☑	☐	☐	
				$ 6,036	$ 375	$ 259	$ -	$ -	$ 6,670
D.3	General Contractor's Profit		10.0%	☑	☑	☑	☐	☐	
				$ 18,292	$ 1,135	$ 786	$ -	$ -	$ 20,213
	Part D Total			$ 38,413	$ 2,384	$ 1,651	$ -	$ -	$ 42,447
	PART A through D SUBTOTAL			$ 221,329	$ 13,737	$ 9,511	$ -	$ -	$ 244,577

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

				REPAIR	HMP	UPGRADES			Total
PART E	Cost Escalation Factors								
		Months	Monthly Factor						
E	Cost Escalation Factor	5	0.188%	$ 2,080	$ 129	$ 89	$ -	$ -	$ 2,299
	PART A through E SUBTOTAL			$ 223,410	$ 13,866	$ 9,600	$ -	$ -	$ 246,876
PART F	Plan Review and Construction Permit Cost								
F.1	**Plan Review Fees**								
	Los Angeles County requirements			$ 1,200	$ 75	$ 50			
				$ 1,200	$ 75	$ 50	$ -	$ -	$ 1,325
F.2	**Construction Permit Fees**								
	Los Angeles County requirements			$ 1,500	$ 100	$ 75			
				$ 1,500	$ 100	$ 75	$ -	$ -	$ 1,675
	Part F Total			$ 2,700	$ 175	$ 125	$ -	$ -	$ 3,000
	PART A through F SUBTOTAL			$ 226,110	$ 14,041	$ 9,725	$ -	$ -	$ 249,876
PART G	Applicant's Reserve for Change Orders								
G	**Applicant's Reserve for Change Orders**		6.9%	$ 15,577	$ 967	$ 670	$ -	$ -	$ 17,214
	PART A through G SUBTOTAL			$ 241,687	$ 15,008	$ 10,395	$ -	$ -	$ 267,090
PART H	Applicant's Project Management and Design Costs								
H.1	**Applicant's Project Management - Design Ph**		1.0%	$ 2,417	$ 150	$ 104	$ -	$ -	$ 2,671
H.2	**A/E Design Contract Cost**								
	Above Average Compexity (Curve A)	☐	9.5%	$ -	$ -	$ -	$ -	$ -	
	Average Complexity (Curve B)	☑	7.4%	$ 18,000	$ 1,118	$ 774	$ -	$ -	
	Basic Construction Inspection Services	☑	3.0%	$ 7,251	$ 450	$ 312	$ -	$ -	
				$ 25,250	$ 1,568	$ 1,086	$ -	$ -	$ 27,904
H.3	**Project Management - Construction Phase**		6.0%	$ 14,501	$ 900	$ 624	$ -	$ -	$ 16,025
	Part H Total			$ 42,168	$ 2,619	$ 1,814	$ -	$ -	$ 46,600
	PART A through H SUBTOTAL			$ 283,855	$ 17,627	$ 12,209	$ -	$ -	$ 313,691
	TOTAL OF UNCOMPLETED WORK								**$313,691**

Total Project Summary

Los Angeles County - Earthquake Damage Repair and Hazard Mitigation

		Completed	Uncompleted	Total
PART A	**"Base Costs" for Construction Work In Trades**	**$ 4,056**	**$ 173,920**	**$ 177,975**
	A.1 Permanent Work	$ 4,056	$ 155,527	$ 159,583
	A.2 Non-Permanent Job Specific Work (From Part A Estimate)	$ -	$ 18,393	$ 18,393
PART B	**General Requirements and General Conditions**	**$ -**	**$ 20,436**	**$ 20,436**
	B.1 General Requirements	$ -	$ 13,044	$ 13,044
	B.2 General Conditions	$ -	$ 7,392	$ 7,392
PART C	**Construction Cost Contingencies (Design and Construction)**	**$ -**	**$ 7,774**	**$ 7,774**
	C.1 Standard Design-Phase Scope Contingencies	$ -	$ 3,887	$ 3,887
	C.2 Facility or Project Constructability	$ -	$ 3,887	$ 3,887
	C.3 Access, Storage, and Staging Contingencies	$ -	$ -	$ -
	C.4 Economies of Scale in New Construction	$ -	$ -	$ -
PART D	**General Contractor's Overhead and Profit**	**$ -**	**$ 42,447**	**$ 42,447**
	D.1 General Contractor's Home Office Overhead Costs	$ -	$ 15,564	$ 15,564
	D.2 General Contractor's Insurance, Payment, and Performance Bonds	$ -	$ 6,670	$ 6,670
	D.3 Contractor's Profit	$ -	$ 20,213	$ 20,213
PART E	**Cost Escalation Allowance**	**$ -**	**$ 2,299**	**$ 2,299**
PART F	**Plan Review and Construction Permit Costs**	**$ -**	**$ 3,000**	**$ 3,000**
	F.1 Plan Review Fees	$ -	$ 1,325	$ 1,325
	F.2 Construction Permit Fees	$ -	$ 1,675	$ 1,675
PART G	**Applicant's Reserve for Construction**	**$ -**	**$ 17,214**	**$ 17,214**
PART H	**Applicant's Project Management and Design Costs**	**$ 487**	**$ 46,600**	**$ 47,087**
	H.1 Applicant's Project Management - Design Phase	$ 41	$ 2,671	$ 2,711
	H.2 Architecture & Engineering Design Contract Costs	$ 203	$ 27,904	$ 28,107
	H.3 Project Management - Construction Phase	$ 243	$ 16,025	$ 16,269
	Complete Project Total for Completed and Uncompleted Work	$ 4,542	$ 313,691	$ 318,233

FEDERAL EMERGENCY MANAGEMENT AGENCY

PROJECT WORKSHEET

O.M.B. No. 3067-0151
Expires April 30, 2001

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 30 minutes. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the forms. You are not required to respond to this collection of information unless a valid OMB control number is displayed in the upper right corner of the forms. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, Paperwork Reduction Project (3067-0151). **NOTE:** Do not send your completed form to this address.

DECLARATION NO.	PROJECT NO.	FIPS NO.	DATE	CATEGORY
FEMA- 0000 -DR- CA	9999	999-99999	August 1, 1999	E

DAMAGED FACILITY
Los Angeles Medical Center

WORK COMPLETE AS OF:
5/1/99 : 10 %

APPLICANT
Los Angeles County

COUNTY
Los Angeles County

LOCATION
999 First Street, Los Angeles, California

LATITUDE
--/--/--

LONGITUDE
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DAMAGE DESCRIPTION AND DIMENSIONS

Constructed in 1928, 31,100 SF one-story structure. Earthquake damage includes: c racking and spalling of basement walls and columns; horizontal and diagonal cracks in reinforced concrete exterior walls; cracks in the concrete walls and floor slab; plaster cracking or spalling of approximately 25% of the wood framed walls and ceilings; exterior stucco cracking or spalling; split or splintered framing members in walls, floor framing, and ceiling panel system; splitting and/or warping of wood framed roof and walls; displacement or damage of clay tile roofing.

SCOPE OF WORK

Epoxy inject cracks in concrete columns (19 LF); patching concrete spalls (4 SF); epoxy inject cracks in concrete basement walls (817 LF); epoxy inject cracks in concrete exterior walls (257 LF); demolish and replace 8" concrete wall (6.5 CY); remove and replace floor beams (54 BF); remove and replace 6" slab-on-grade (3 CY); remove and replace 1' x 3' reinforced strip footing (13 CY); remove and replace wood framed porch roof (14,700 SF) remove and replace wood framed roof (2,455 SF); remove and replace wood framed walls (1,225 SF); patch and paint cracks in interior plaster walls (13,610 SF); patch and paint cracks in interior plaster ceilings (7,775 SF); remove and replace stucco over wood (200 SF); reset/replace displaced or damaged clay roof tiles (3,110 SF); replace casement windows (25 EA); paint exterior (11,603 SF); paint interior (613 SF); construct new sidewalks and ramps (1,300 SF); modify existing ramps to code (1,300 SF); drilling of 1" diameter holes through concrete perimeter walls (215 EA); installation of tension ties (215 EA); installation of ¾" diameter machine bolts and washers (215 EA); and restore electrical and plumbing service to the building.

Does the Scope of Work change the pre-disaster conditions at the site? ☐ Yes ☒ No

Special Considerations issues included? ☐ Yes ☒ No Hazard Mitigation proposal included? ☒ Yes ☐ No

Is there insurance coverage on this facility? ☐ Yes ☒ No

PROJECT COST

ITEM	CODE	NARRATIVE	QUANTITY/UNIT	UNIT PRICE	COST
1	9999	See attached CEF spreadsheet for itemized unit price estimate	1 / LS	$318,233	$318,233.00
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				TOTAL COST	$318,233.00

PREPARED BY: John Smith