

## SECTION 10 BENEFIT COST ANALYSIS INFO & PROPERTY SITE INVENTORIES

The Benefit Cost Analysis is done using FEMA methodology and benefit-cost module *BCA Software* version 4.5.5.

**For BCA information**, resources, technical assistance and to download BCA software, visit: <http://www.bchelpline.com/>

**To go directly to the BCA Reference Guide** – A must!

[http://www.bchelpline.com/BCAToolkit/resource\\_files/BCA\\_Reference\\_Guide.pdf](http://www.bchelpline.com/BCAToolkit/resource_files/BCA_Reference_Guide.pdf)

*Please see the Project Application Development Guide for additional information on BCA and worksheets.*

### DOCUMENT, DOCUMENT, DOCUMENT!

**IMPORTANT:** All BCA data **MUST** be fully documented and the source of the data (i.e. FEMA standard or default values) clearly described on the BCA Worksheet corresponding to the particular hazard you are proposing to mitigate.

- Documentation should include the source of the data (title, author, date)
- Data must be from a credible source. Credible sources include federal, state, county, regional, and local government agencies or qualified professionals such as licensed architects, engineers, and surveyors.
- Data obtained from sources *other* than those listed above, **MUST** include a complete discussion of the methodology used and how it was applied to the proposed mitigation project to establish data credibility.

**NOTE:** If you conduct your own benefit-cost analysis for this project, you must attach 1 paper copy of the full BCA printout for each structure involved in the project (including alternates) **and** an electronic version of the final BCA file report for the application to be considered complete

### WORKSHEETS - one worksheet for each structure, including alternates!

- 10.1 Flood Projects
- 10.2 Seismic Retrofit Structural – Public Buildings
- 10.3 Seismic Retrofit Non-Structural – Public Buildings
- 10.4 Seismic Retrofit – Residential
- 10.5 Roads and Bridges
- 10.6 Utilities (Infrastructure & Equipment)

## 10.2 PUBLIC BUILDINGS: STRUCTURAL RETROFIT WORKSHEET

This worksheet can be used for structural seismic retrofit projects for public properties/structures.  
 Use one worksheet per property/structure.  
 You must complete a worksheet for alternate structures.

The Benefit Cost Method chosen is:

- FEMA Full Data Module     
  FEMA Limited Data Module     
  Other-Please explain.

**Project Costs:** \$

**Project Benefits:**\$

**Benefit-Cost Ratio:**

**PROJECT SYNOPSIS:** Provide a *brief* description of the project, its purpose and public value.

### PROPERTY SITE INVENTORY

|  |  | Data Source/ Justification |
|--|--|----------------------------|
| <b>Structure Name</b>                          |  |                            |
| <b>Type of Facility</b> (for loss of function) |  |                            |
| <b>Owner Name</b>                              |  |                            |
| <b>Co-Owner Name</b>                           |  |                            |
| <b>Site Address (City, State, Zip)</b>         |  |                            |
| <b>County</b>                                  |  |                            |
| <b>Federal Congressional District</b>          |  |                            |
| <b>State Legislative District</b>              |  |                            |
| <b>Title Holder - <i>post mitigation</i></b>   |  |                            |
| <b>Date of Construction</b>                    |  |                            |

|   |    |  |
|---|----|--|
| <b>Pre-Event Fair Market Value</b>              |    |  |
| <b>Current Market Value</b>                     |    |  |
| <b>Parcel number</b>                            |    |  |
| <b>Lat. &amp; Long. (4 decimal places only)</b> |    |  |
| <b>Owner Occupied or Rental</b>                 |    |  |
| <b>Project Useful Life (in years)</b>           |    |  |
| <b>Mitigation Project Cost</b>                  | \$ |  |
| <b>Base Year of Costs</b>                       |    |  |
| <b>Annual Project Maintenance Cost</b>          | \$ |  |
| <b>Annual Operating Budget</b>                  | \$ |  |

**STRUCTURE AND SEISMIC DATA - PUBLIC STRUCTURAL RETROFIT**

|  |  | <b>Data Source/Justification</b>                                     |
|--|--|--|
| <b># of people served by this facility</b>                                     |  |  |
| <b>Soil Type</b>   |  |  |
| <b>Have geotechnical studies of soils at the building site been conducted?</b> |  | <b>If yes, cite source here and provide details in an attachment</b> |
| <b>Total building area (sq. ft.)</b>   |  |  |
| <b># of stories above grade</b>  |  |  |
| <b>Foundation Type</b>   | <input type="checkbox"/> basement <input type="checkbox"/> crawlspace <input type="checkbox"/><br>NA   |  |
| <b>Foundation Type</b>   | <input type="checkbox"/> piers <input type="checkbox"/> posts <input type="checkbox"/> piles<br><input type="checkbox"/> slab <input type="checkbox"/> other |  |
| <b>Base Flood Elevation</b>  |  |  |
| <b>First Floor Elevation</b>   |  |  |

|  |    |   |
|--|----|---|
| <b>Enclosed, heated square footage</b>   |    |   |
| <b>Area occupied (sq. ft.)</b>   |    |   |
| <b>Average # of occupants</b>  |    |   |
| <b>Does this building have historic significance?</b>                                  |    |   |
| <b>Have any seismic retrofits been completed for this building?</b>                    |    | If yes, cite source here and provide details in an attachment |
| <b>Have any seismic vulnerability or retrofit studies been done for this building?</b> |    | If yes, cite source here and provide details in an attachment |
| <b>Building Replacement Value (BRV) (\$/sf)</b>  | \$ |   |
| <b>Total Building Replacement Value</b>  | \$ |   |
| <b>Demolition damage threshold (%)</b>   |    |   |
| <b>Building Structural Type</b>  |    |   |
| <b>Building use (i.e. residential, retail, school, utility, etc.)</b>                  |    |   |
| <b>Expected time to be displaced from facility (days, months, etc.)</b>                |    |   |
| <b>One-time displacement costs(\$/sq ft.)</b>  | \$ |   |
| <b>Cost for temporary quarters (\$/sq.ft/month)</b>                                    | \$ |   |
| <b>Other displacement costs/month</b>  | \$ |   |
| <b>Loss of Rental Income (\$/month)</b>  | \$ |   |
| <b>Loss of Business Income (\$/month)</b>  | \$ |   |
| <b>Relocation time for project (months)</b>  |    |   |
| <b>One time relocation costs (\$/sq.ft)</b>  | \$ |   |
| <b>Rental cost during relocation</b>   | \$ |   |
| <b>Other relocation costs/month</b>  | \$ |   |
| <b>Building Type Before Retrofit</b>   |    |   |
| <b># of Stories before retrofit</b>  |    |   |
| <b>Design Level before retrofit</b>  |    |   |

|   |    |  |
|---|----|--|
| <b>Building Type After Retrofit</b>           |    |  |
| <b># of stories after retrofit</b>            |    |  |
| <b>Design level after retrofit</b>            |    |  |
| <b>Brief description of building contents</b> |    |  |
| <b>Estimated contents replace value</b>       | \$ |  |
|   |    |  |
|   |    |  |

**BC Narrative:**

**OCCUPANCY**

| ESTIMATED AVERAGE OCCUPANCY OF BUILDING | Weekdays |         |       | Weekends |         |       |
|---|----------|---------|-------|----------|---------|-------|
|   | Day      | Evening | Night | Day      | Evening | Night |
| Occupants                               |          |         |       |          |         |       |
| Days per week                           |          |         |       |          |         |       |
| Hours per day                           |          |         |       |          |         |       |
| Months per year                         |          |         |       |          |         |       |

**Please provide details on building occupancy:**

**HISTORICAL DAMAGE**

| Damage           | <u>Month/Year Occurred</u> | <u>Amount</u> | <u>%</u> | Data Source/Justification |
|------------------|----------------------------|---------------|----------|---------------------------|
| Current Damage:  |                            |               |          |                           |
| Previous Damage: |                            |               |          |                           |
| Previous Damage: |                            |               |          |                           |
| Previous Damage: |                            |               |          |                           |

**Comments:**