BAM STORY
A Brief Review on Bam Reconstruction process

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- Bam after the earthquake (some impacts)
- Rescue & relief
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- Temporary housing
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Bam

Before the earthquake
Bam and it’s context
AERIAL PHOTOGRAPH OF BAM CITY before the EARTHQUAKE
The palm gardens of Bam
The Urban fabric of Bam
The Typical Architecture of the city
The Cultural & Historical places

Bam before earthquake
The Cultural & Historical places
(Bam Citadel)

The history of the citadel goes back to 2500 years ago which is one of the biggest ancient adobe complexes of the world.
Livelihood

Bam before earthquake
Bam

After earthquake
characteristics of Bam earthquake

- Date: December 26 - 2003
- Time: 05:26:56 local hours (01:56:56 GMT)
- Magnitude: Mw 6.8 on the Richter scale
- Depth: 8.0 Km
- No. of Death: 31850

Significant Features

- Earthquake Occurrence in a Historical and Cultural city;
- Shallowness of it’s Epicenter and Severe Destruction;
- Heavy Human Losses in a Concentrated Zone.
Destroyed Areas
about 80% of city destroyed
- Number of death: around 31850
- Number of Casualties: around 17500
Financial Damages

Total amount of financial damages in different sections about 1/8 billion dollar
## Structural Damages

<table>
<thead>
<tr>
<th>TOTAL DAMAGED UNITS</th>
<th>TOTAL</th>
<th>50722</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>URBAN RESIDENTIAL &amp; COMMERCIAL UNIT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO BE RECONSTRUCTED</td>
<td>25562</td>
<td></td>
</tr>
<tr>
<td>TO BE REPAIRED</td>
<td>828</td>
<td></td>
</tr>
<tr>
<td><strong>RURAL RESIDENTIAL UNIT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO BE RECONSTRUCTED</td>
<td>24332</td>
<td></td>
</tr>
<tr>
<td>TO BE REPAIRED</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Bam after earthquake (earthquake effects)
RESCUE & RELIEF OPERATIONS

This phase is done by red crescent and participation of public and governmental capacities.
RESCUE & RELIEF OPERATIONS

The deaths were buried during traditional religious ceremonies in the cemetery.

Bam after earthquake (RESCUE & RELIEF)
DEBRIS REMOVAL

More than 12 million tons debris was removed
Emergency shelter

The tent is the best solution for emergency shelter that had been used in Bam.
Temporary housing

At first some camps were made for temporary housing but according to people’s opinion based on staying beside their destroyed houses, the shelters were made in the courts.

extending temporary shelter with local materials
Reconstruction of Bam
How will be reconstructed?

The Bam:

The role of people

Design Procedure

Contractors

Control and supervision system

Relocating

The role of Government

Construction System

Resources

The role of NGOs

In-Situ Construction

Reconstruction process
Fundamental Questions

The Bam:

1- Where will be reconstructed?
2- Who will reconstruct it?
3- How will be reconstructed?
4- Which approach is appropriate?
To Find an appropriate answer for all these questions the Steering Committee Had been formed
Which approach is appropriate?

- Reconstruction without development
- Reconstruction as an opportunity to have a fundamental changes in Bam.

✓ Reconstruction as an opportunity to have a plan in order to enable Bam through the development framework of country.
Where will Bam be reconstructed?

- Relocating (x)
- In-Situ Construction (√)

Reconstruction process
Who will reconstruct Bam?

- Reconstruction by the Government (X)
- Reconstruction by the People (X)
- Participatory Reconstruction (√)
Participatory Reconstruction

The Role of Government

Enabling people through providing:
- Grant & Loan Facilities
- Technical Guidance and Support
- Appropriate designs
- Resources
- Special Supports for the Poor and Disabled People

The Role of People

- Construction Management
- Supervision & Proceeding
- Participation for Provision of Their Building’s Plan and Approving it
Which technology and architectural design is suitable for Bam?

A Plan for logical Responses to All Ideas

(Technical Services & Materials Exhibition Complex)

Establishment of an exhibition to construct and introduce a sample of all proposing designs with the following features:

- Resistant
- Economical
- Climatic & Environmental Compatibility
- Long Life Operation
Technical Services & Materials Exhibition Complex
Categorizing the Residential and commercial damaged units

- **Not Seriously damaged unit**
  - not to continue

- **Damaged unit**
  - non-structural damage
    - repair unit
  - structural damage
    - unit has worth to be retrofit
    - retrofit
    - unit has NOT worth to be retrofit
    - demolition and construction

Inspection and evaluation of residential unit
Control and supervision system

- Establishment of a Comprehensive Supervisory Network
  - Site Supervision
  - Superior Supervision
- Establishment of the Soil Mechanic Laboratory to Indicate the Quality of Materials:
  - Quality Control of Resources at Their Origins
  - Quality Control of Materials during the Implementation
- Quality Control of Concrete during the implementation
- Quality Control of welding during the implementation
## Reconstruction operations

<table>
<thead>
<tr>
<th>CREDIT AMOUNT</th>
<th>1.7 billion $</th>
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<tbody>
<tr>
<td>By Government &amp; donors</td>
<td></td>
</tr>
<tr>
<td>Residential units</td>
<td>5.2 million m²</td>
</tr>
<tr>
<td>Recovered Agriculture area</td>
<td>625 ha.</td>
</tr>
<tr>
<td>Educational buildings</td>
<td>194 units</td>
</tr>
<tr>
<td>Governmental buildings</td>
<td>81 units</td>
</tr>
<tr>
<td>Religious buildings</td>
<td>52 units</td>
</tr>
<tr>
<td>Hospital &amp; health center</td>
<td>35 units (20000 m²)</td>
</tr>
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DOCUMENTATION OF RECONSTRUCTION

- Indexing Library Resources
- Strategies and Policymaking
- Public Participation
- Designing Process
- Technical Control, Monitoring and Evaluation
- Temporary Housing
- Projects Control
- Debris removal and recycling
- Organizing

- The role of governments, donors and international organization
- Physical losses
- Resources management
Residential Units
Residential Units
Urban Designing

The sample of implementation for urban designing in one major street as a pattern (It is called One way Street)

Reconstruction process
Mosques and holy shrines

Reconstruction process
Official Units

Reconstruction process
Heritage (Bam Citadel)

Reconstruction process
Sport complexes

Reconstruction process
Central library
Mola-Hadi Library

Reconstruction process
Educational Units

Reconstruction process
Reconstruction by NGOs

Reconstruction process
Lesson learned
The End
Thanks For Your Attention
Technical Services & Materials Exhibition Complex
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Sample buildings
Technical Services & Materials Exhibition Complex

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Sample buildings
Public Participation
Reconstruction process

Public Participation
Reconstruction process
Reconstruction process