

Restoring and Maintaining Historical, Cultural and Heritage Sites

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Gorkha Earthquake 2015 – Heritage Emergency

Huge Destruction

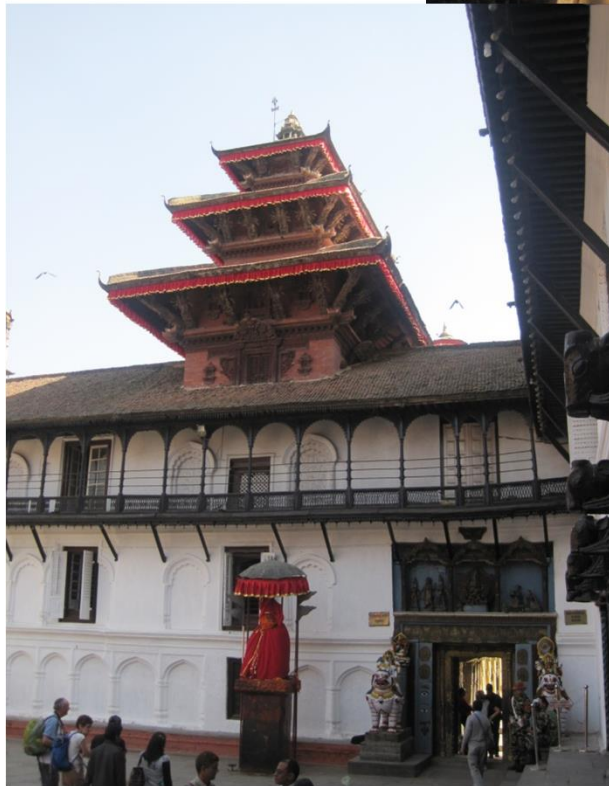
- 90% of listed monuments damaged
- Disrupted intangibles
- Severe damage to attributes and values of KVVHS
- Careless recovery – use of heavy equipments, storage
- A Snowballing Disaster
- 39th WHC

Outpouring of Voluntarism



Hanumandhoka MZ

The monuments

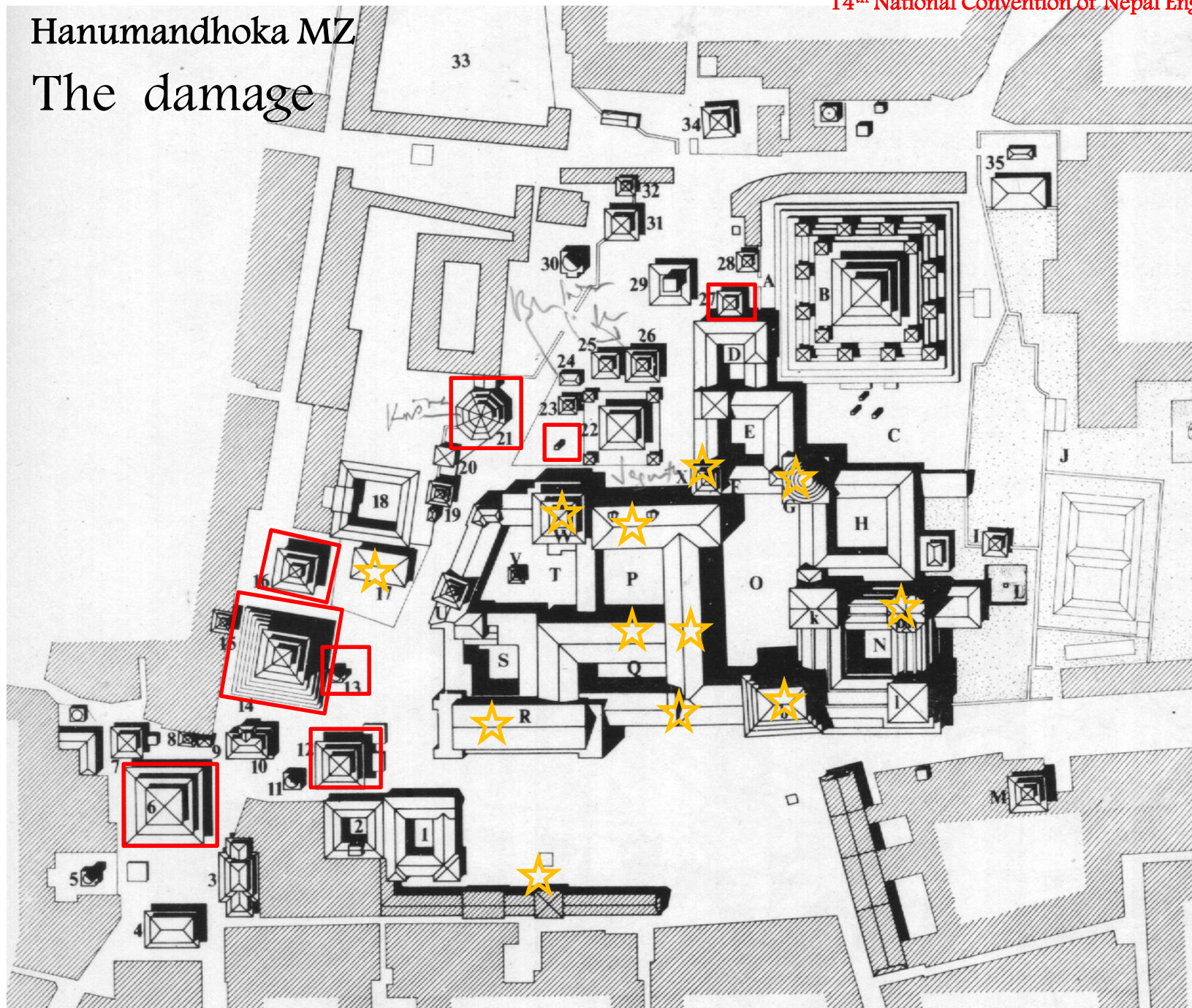


Hanumandhoka MZ

The damage

14th National Convention of Nepal Engineers Association





Patan MZ The damage



Harisankara

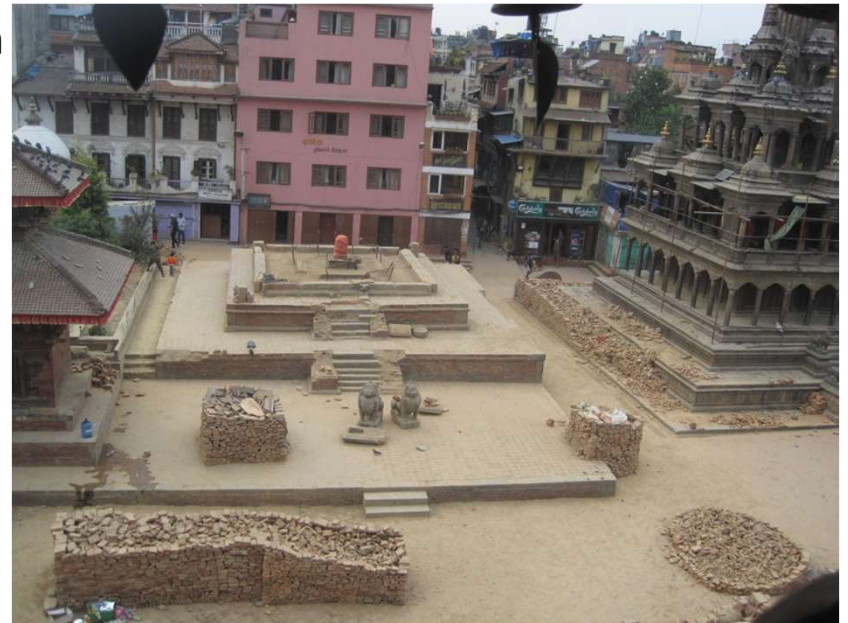
Taleju

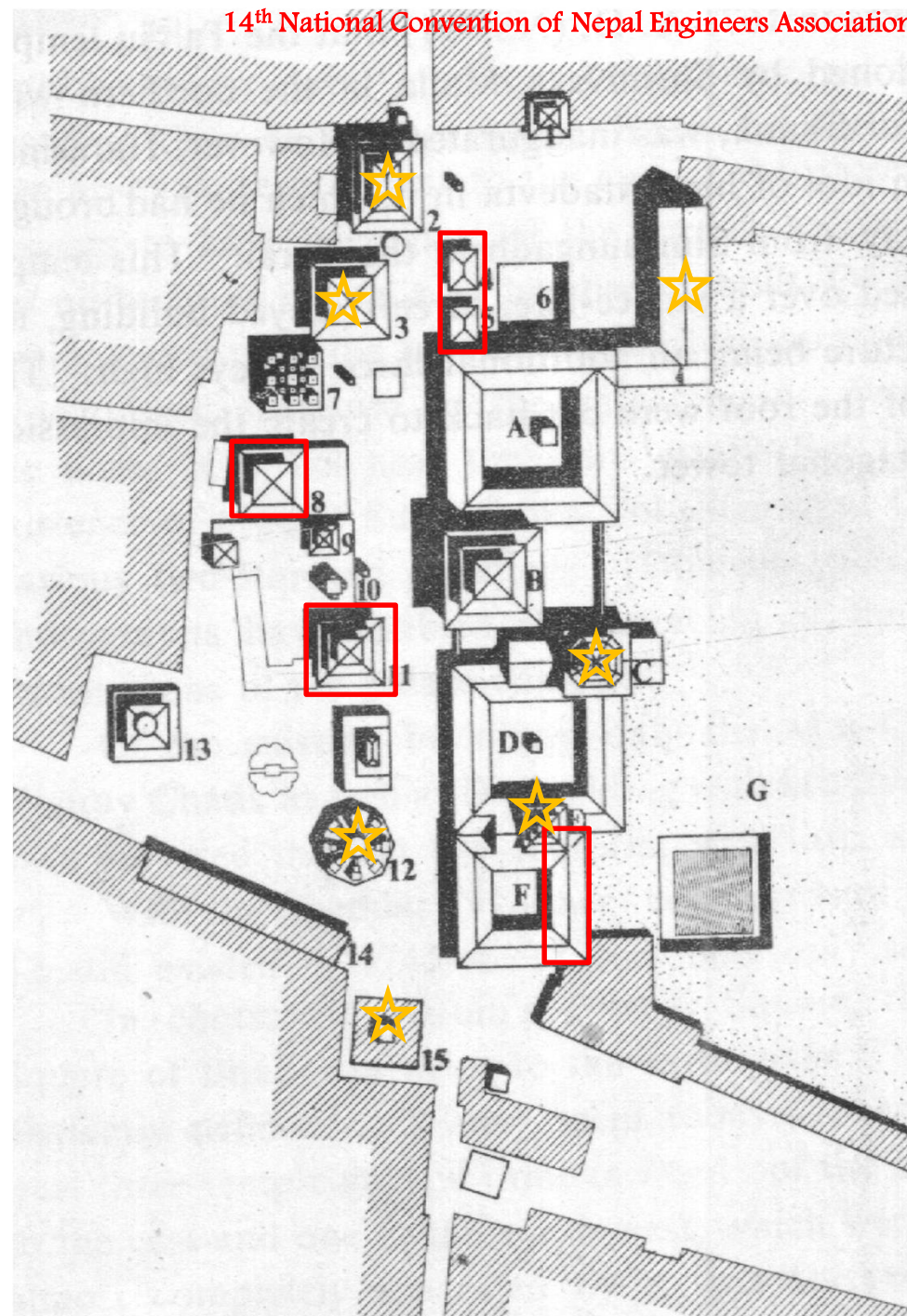


Patan MZ The damage



Charnarayan





Patan MZ
The damage

Hanumandhoka MZ



Kai (JCBs at Kasthamandap)

Gorkha Earthquake & Heritage Emergency Assessing the Damage

World heritage monuments

Heritage of urban residential buildings

Nature of damage –

- (i) Total collapse
- (ii) Partial damage
- (iii) Minor effect but Vulnerable

Two Broad Groups in Terms of Style, Technology, Period

Malla (tiered roof, brick and wood/mud)

Rana (desi kaida, brick and bajra, stucco)



Gaddibaithak , Hanumandhoka MZ



Dakhchowk, Hanumandhoka MZ

Assessing the damage – Malla Inheritance

Mud and brick?

Weak structure?

Poor technology?

Technological Development based on experience
rain, earthquake, fire

* symmetry, brick in mud mortar and wood,
timber ties and wedges, shear keys at top
and bottom of posts, solid brick stepped plinth,
wooden collectors and packed joist floor
diaphragms, window and door double frames,
proportions, cornices, ring ties, struts

Rotten joints

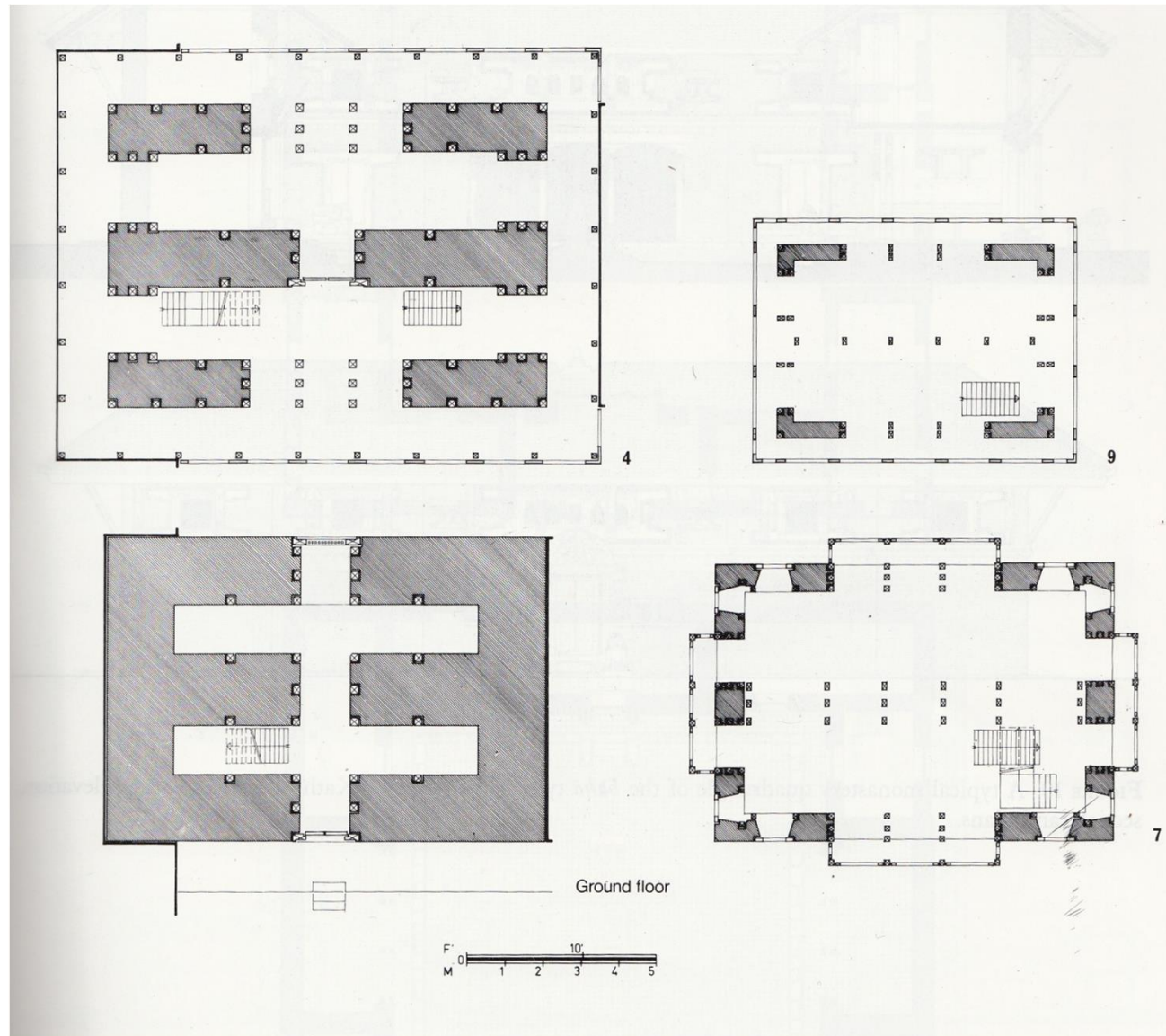
Mixed technologies

Poor or no maintenance

* Heavy roof, plinth ties, retaining foundations



Kashthamandap, Hanumandhoka MZ



Nautaledurbar, Hanumandhoka MZ

Nautaledurbar, Hanumandhoka MZ

The damage

- * technology modification
- * technology integration



Bhaktapur Durbar MZ

The damage

* Poor restoration * Misuse



Bhaktapur Durbar MZ

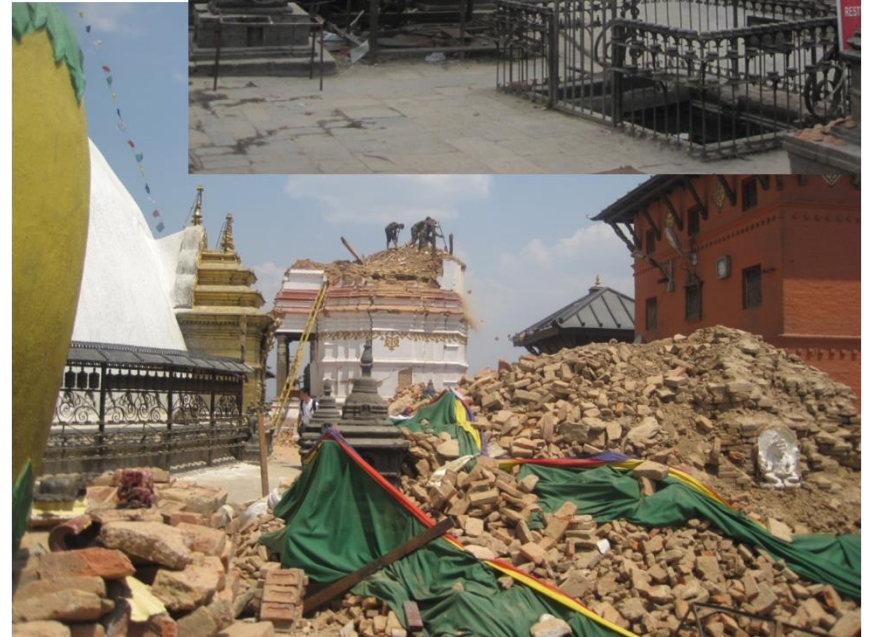
The damage

- * Technology modification
- * Partial strengthening



Swoyambhunath MZ

The damage



Hanumandhoka MZ

The damage

- * poor reconstruction
- * lack of maintenance



Trilokyamohan



Gorkha Earthquake 2015 – Heritage Emergency

- Not poor/weak initial design or construction
- Lack of maintenance and renewal of natural materials and joints: Collectors, connectors and connections
(joints/wedges/eaves/cornices)
- Damaging Interventions
- Introduced Asymmetries
- Incompatibilities

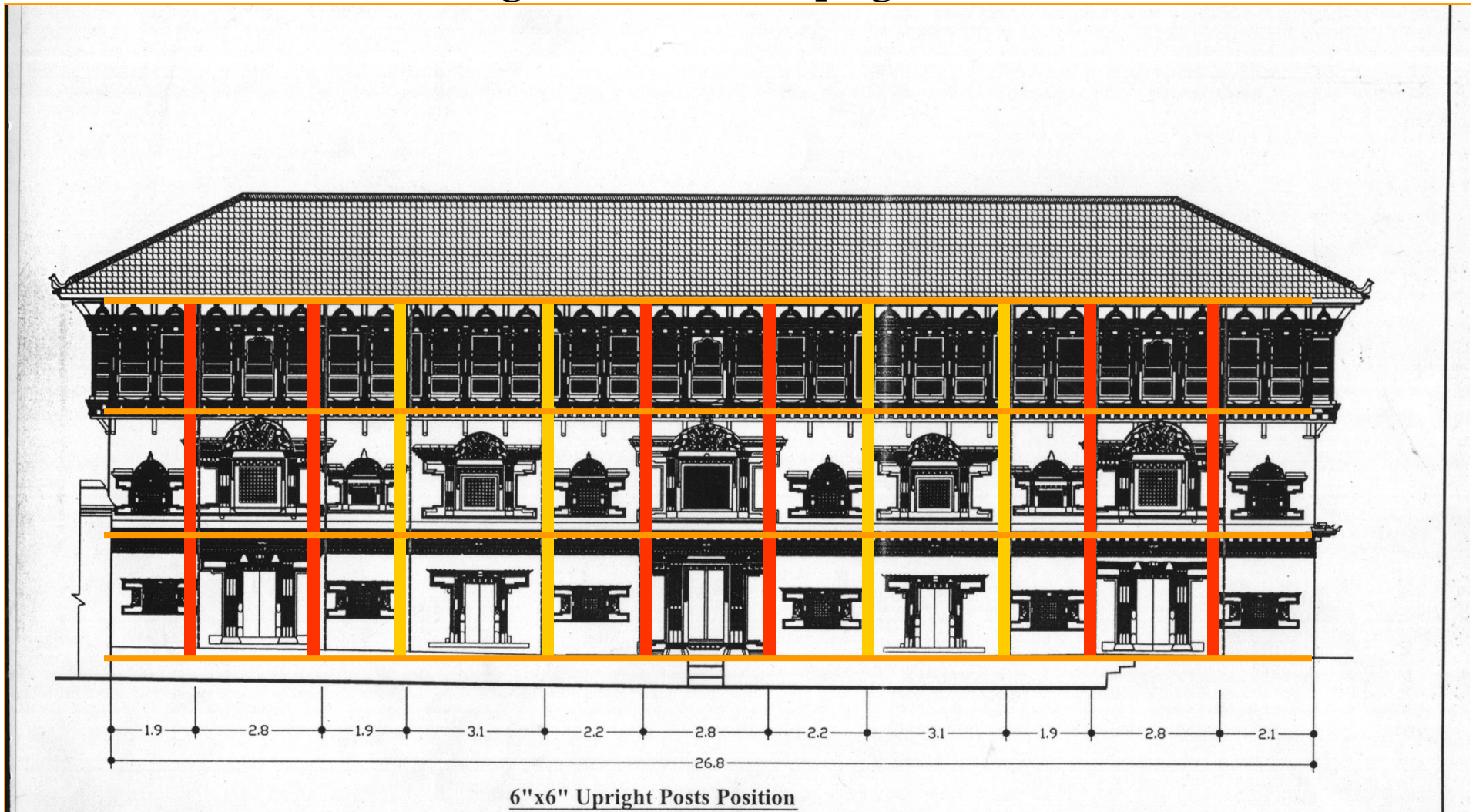
Bhaktapurdurbar MZ

Did remarkably well: Restored 2003~2008



55 Windows Palace, Bhaktapurdurbar MZ

Main Wall strengthened with Uprights and Horizontals





55 Windows Palace, Bhaktapurdurbar MZ



55 Windows Palace, Bhaktapurdurbar MZ

Periodic Restoration and Maintenance, Use of Natural Materials and Traditional Technology

Issues in focus

Technology, tradition and society

Strength

Earthquake resistance

Stability

Authenticity

Value/Meaning (Intangibles and community)

Integrity



Principle of AVI ~ Navikaran

Rebuilding Heritage – (technology, tradition and society)

Three key identity objective principles for AVI ~ Navikaran

glorification of the past – maximizing traditional technology and materials

avoiding mistakes of the recent past
(mixing technology and lack of maintenance)

future vision of social and cultural continuity



Nautaledurbar, Hanumandhoka MZ

Analyzing Performance of Heritage Buildings

THREE STEPS

- Avert high jacking by modern Earthquake Engineering Knowledge System and Recipe of Redesign
- Respect of traditional materials, methods, skills and knowledge
- Expound, Glorify and Promote these (1)
- Analyze interventions – both pre-concrete and post-concrete (2)
- Analyze state of maintenance and decay (3)

Saving Intangibles and Urbanism Community Participation and Leadership

- Just rebuilding and maintaining tangibles is not enough
- Skills, Rituals, OLVs (on top of OUVs)
- Restoring Livingness
- Connection to Faith and Belief system – conscious effort
- Restoring meaning to the community
- Affecting a 21st Century Nhu-guthi



Thank you for the Listen

