CHALLENGES OF EMERGENCY RELIEF ROAD CONSTRUCTION IN DEVELOPING COUNTRIES

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NATURAL DISASTER REQUIRING EMERGENCY RELIEF

EPICENTRE
Date: December 26, 2004
Time: 07:58 (UTC+7)
Magnitude: 9.2

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ROADWAY DAMAGE

- Tsunami as high as 30m
- Estimate 230,000 deaths in 11 countries including 174,000 in Indonesia
- 500,000 homeless
- Critical infrastructure disappeared or in ruin

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BRIDGE DAMAGE

BRIDGE SPANS LIFTED AND CARRIED HUNDREDS OF METERS
BRIDGE DAMAGE

• TSUNAMI RESHAPED THE ACEH COASTLINE
• PRE-TSUNAMI BRIDGE ABUTMENTS ARE NOW THE INDIAN OCEAN

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BRIDGE DAMAGE
EMERGENCY ROAD CONSTRUCTED BY INDONESIAN MILITARY

- CONSTRUCTED OF AGGREGATE BASE
- DUST WHEN DRY, MUDDY WHEN WET

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TEMPORARY BRIDGES

- LIMITED LOAD CAPACITY
- EROSION FROM COASTAL ENVIRONMENT

Immediate Response
Government of Indonesia Military (TNI)

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Temporary bridges built immediately after the tsunami that are close to the ocean are subject to corrosion and are prone to collapse under the weight of heavy construction vehicles.
TEMPORARY BRIDGES

CRUDE FERRIES RUN BY LOCALS PROVIDED ACCESS ACROSS WATERWAYS ALONG EMERGENCY ROUTE
BALANCING QUICK EMERGENCY RELIEF WITH LONG-TERM RECONSTRUCTION

• DISASTER RELIEF PUTS PRESSURE ON AID ORGANIZATIONS FOR THE SHORT-TERM NEED TO REDUCE SUFFERING
• IMMEDIATE RELIEF NEEDS MUST BE BALANCED WITH REBUILDING
• USAID ENTERED INTO A MEMO OF UNDERSTANDING TO DESIGN AND RECONSTRUCT THE NATIONAL COASTAL ROAD
ADHERE TO FINANCIAL CONSTRAINTS

- AMBITIOUS TARGETS FOR RECONSTRUCTION PROVED UNREALISTIC
- FOCUS SHIFTED TO QUALITY, SAFETY AND DURABILITY AT EXPENSE OF QUICK COMPLETION
LEADERSHIP

• OUTREACH PROGRAM TO RESOLVE COMMUNITY ISSUES AND GAIN COMMUNITY ACCEPTANCE

• FUNDING LIMITS PREVENTED IDEALISTIC OPTIONS (VIADUCTS AND TUNNELS)
• DEBATES ON ALIGNMENT THREATENED TO DELAY PROJECT SCHEDULE
SET REASONABLE EXPECTATIONS

• MORE THAN 3,800 PARCELS ACQUIRED
• MAJORITY OF LANDOWNERS AT TIME OF TSUNAMI WERE KILLED
• OFFICIAL RECORDS REGARDING LAND AND TITLES WERE WASHED AWAY
CONSIDER LOCAL CONSTRAINTS

- ACEH REGION HAD 30 YEARS OF INSURGENCY PRIOR TO TSUNAMI
- OPPORTUNITIC INDIVIDUALS ATTEMPTED TO OBSTRUCT CONSTRUCTION FOR PERSONAL GAIN (HIGHER OR UNJUST PAYMENT, ADDITIONAL DRAINAGE FACILITIES, AND ACCELERATE LAND COMPENSATION)

- CONCERNS ABOUT RELOCATING GRAVESITES, IMPACT WITH LOCAL CUSTOMS AND BELIEFS
BLENDING INTERNATIONAL AND LOCAL STANDARDS

RUDIMENTARY CONSTRUCTION METHODS WERE FREQUENTLY EMPLOYED BUT QUALITY WAS NOT COMPROMISED
BLENDING INTERNATIONAL AND LOCAL STANDARDS

NEW ROAD WAS ALIGNED THROUGH ACEH’S UNIQUE BLEND OF RAINFOREST, SWAMPS AND LIMESTONE HILLS
TECHNOLOGY TRANSFER OF INTERNATIONAL STANDARD OF:

- ROADWAY DESIGN
- CONSTRUCTION METHODS
- QUALITY CONTROL
- SAFETY
- ENVIRONMENTAL MANAGEMENT
REBUILDING THE LOCAL ECONOMY

LONG AFTER THE PROJECT IS COMPLETE THE LEGACY WILL NOT JUST BE A NEW ROAD BUT HIGHER STANDARD THAT WILL IMPROVE THE QUALITY OF FUTURE ACEH ROADS
CONCLUSION

• SET REASONABLE EXPECTATIONS BASED ON LOCAL CONDITIONS
• STRONG LEADERSHIP – GRANT AGREEMENTS CARRY AUTHORITY
• MAINTAIN FOCUS WITHIN FINANCIAL CONSTRAINTS