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Updating the City of Los Angeles' Tsunami Preparedness Plan, from Venice Beach to the Port of Los Angeles

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INTRODUCTION

Background:

- The City of Los Angeles, California is located on the Pacific Ring of Fire = earthquakes & tsunamis
- The City has 10 miles of coastline at risk of inundation by tsunamis
- Tsunami inundation maps were recently updated

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CITY'S UPDATED INUNDATION ZONES

INTRODUCTION

- The City needed to update their tsunami preparedness plan
- The City applied for & received an Urban Area Security Initiative (UASI) grant
- The City awarded a design/build contract to Willdan to update:
  - Tsunami Response Plan Annex
  - Tsunami Emergency Information Brochures
  - Tsunami Signs

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INTRODUCTION

This presentation will focus on:

- Challenges in implementing the project & how they were resolved
- Recommendations for similar efforts
- Unresolved issues that need to be addressed

PROJECT CHALLENGES – ANNEX

Updating the Tsunami Annex

- The Tsunami Annex is one of the hazard-specific annexes that supplements the City's overall Emergency Operations Plan
- Primary challenges:
  - New format
  - Additional required information

PROJECT CHALLENGES – BROCHURES

Updating the Tsunami Brochures

- Update maps/evacuation routes for each inundation zone
- Update overall content & layout
- Translate into 4 foreign languages
- Meet ADA requirements:
  - Large Print
  - Braille

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PROJECT CHALLENGES – SIGNS

Developed guidelines for installing tsunami signs

- Tsunami signs not in 2010 CA MUTCD
- Tsunami signs are experimental in CA
- Only minimal guidelines are provided
- Researched other guidelines

TYPES OF TSUNAMI SIGNS (CALTRANS)

EM-1A (CA)
TSUNAMI EVACUATION ROUTE Sign

EM-1B (CA)
TSUNAMI HAZARD ZONE / IN CASE OF EARTHQUAKE GO TO HIGH GROUND OR INLAND Sign

EM-1C (CA)
ENTERING / LEAVING TSUNAMI HAZARD ZONE Signs

EM-1E (CA)
TSUNAMI HAZARD ZONE Sign

PROJECT CHALLENGES – SIGNS

Sign Installation Factors

- 3 separate project areas
- 21 square miles & 10 miles of beaches
- 120 existing signs
- Estimated 400 new signs
- Typical signing & striping plans not adequate

PROJECT CHALLENGES – SIGNS

Data Collection Using GPS

- Project required GIS record → GPS data
- Used hand-held GPS units to collect data
  - Customized drop-down menus
  - Built-in camera
- Data downloaded into GIS program
- Export data into spreadsheet and plot on map

PROJECT CHALLENGES – SIGNS

How Did It Work?

- Surveyed existing tsunami signs
- Identified new sign locations on map with inundation zones & evacuation routes
- In the field, identified exact locations of new signs & collected data
- Produced spreadsheets & maps showing sign locations & sign actions

PROJECT CHALLENGES – SIGNS

Sign Installation

- Contractor used spreadsheet, maps & photos to install signs
- Willdan inspector recorded actual sign locations & comments using GPS unit
- Spreadsheet used as punch list

PROJECT CHALLENGES – SIGNS

Sign Installation (cont)

- Final tally:
  - Removed 20 signs
  - Relocated 30 signs
  - Installed 450 new signs at 300 locations, including 100 new signs on/at beaches
- Provided data to City for their records in both GIS and spreadsheet/map formats

UNRESOLVED ISSUES

Issues Needing Resolution

- Sign locations/evacuation routes in urban areas
- Sign design & size
- Where/how to install beach signs

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Questions?