National Flood Insurance Program (NFIP) and Flood Insurance Rate Map (FIRM)

San Francisco Port Commission

October 23, 2007
Flood Insurance Rate Map (FIRM)

- FEMA manages the NFIP using a nationwide system of flood maps
- The FIRM:
  - Shows areas with 1% annual chance of flooding (100-year flood)
  - Includes bay and coastal flood hazards
  - Reflects current conditions
  - Does not reflect future conditions, such as sea level rise due to climate change
- Used as the basis for:
  - Insurance rating
  - Local floodplain management ordinance
Flood Zones

• Flood zones shown on the preliminary FIRM for San Francisco:
  – Zone A: Area of coastal flooding with no wave hazard, or waves less than 3 feet in height
  – Zone V: Area of coastal flooding subject to wave hazards
  – Zone X: minimally flood prone
Flood Zones on Preliminary FIRM
North Waterfront

Pier 45

Pier 27
Flood Zones on Preliminary FIRM Mission Bay Area

Sixth Street Off-Ramp

AT&T Park
Basic Requirements

- New and substantially improved structures in flood zones must be:
  - Elevated to or above flood elevation
  - Designed below flood elevation to resist flood damage
Protection of Structures in Zone A

Residential Structures

Lowest floor of living space must be at or above flood elevation

Flood Elevation — — —

Ground Elevation — — —

Area below flood elevation must be constructed of flood-resistant materials
Protection of Structures in Zone A

Commercial Structures

May be “floodproofed” to or above flood elevation

Flood Elevation

Ground Elevation

Area below flood elevation must be watertight
Protection of Structures in Zone V

All Structures

Lowest horizontal member must be at or above wave height

Wave Height Elevation

Ground Elevation

Walls below wave height elevation must be constructed of breakaway materials
Basic Requirements

• No new construction or substantial improvement seaward of mean high tide in Zone V

• Exceptions: extraordinary hardship or historic preservation

Pier 27-31 Area
Strategies for Addressing Piers

• Variances can be implemented for:
  – Historic structures
  – “Functionally dependent” uses, e.g. maritime uses requiring proximity to water

• FEMA may consider map change to remove Zone V designation based on height of waves and structural integrity of piers
Implementation of Ordinance

- Identify structures/parcels located in flood zones
- Incorporate elevation requirements into permitting process for new or substantially improved structures
- Check design details for elevation, use of flood resistant materials, design/calculations for floodproofing
- Require preparation/submittal of Elevation Certificates documenting lowest floor elevations
- Consider exempting piers in Embarcadero Historic District
Implementation of Ordinance

- City Administrator will serve as floodplain administrator
- City Attorney preparing floodplain management ordinance based on minimum NFIP criteria
- Procedures to be developed through collaboration among:
  - DBI
  - Planning
  - PUC
  - SFO
  - DPW
  - Port
  - Redevelopment
  - Treasure Island Project Office
Further Analysis of Piers

- Port staff has requested wave elevations under Piers 27-31, Piers 15-17 and Piers 30-32 from FEMA’s consultants.
- Port staff will supply additional data regarding the fill characteristics of Pier 45 and breakwaters (Fisherman’s Wharf, Pier 14, South Beach).
- Initial Port staff analysis indicates most piers are above the Total Water Elevation projected by FEMA.
### Table 1: Comparison of Selected Port Facility Elevations to FEMA Projections for Total Water Level (TWL) During a 100 Year Storm Event

<table>
<thead>
<tr>
<th>Facility or Pier No.</th>
<th>Elevation (ft.)</th>
<th>Preliminary TWL (ft.)</th>
<th>Elevation Diff. (ft.)</th>
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<td>Hyde St. Pier</td>
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<td>47</td>
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<td>45</td>
<td>13.4</td>
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<td>45 inner</td>
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<td>13.48</td>
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<td>31</td>
<td>12.8</td>
<td>8.86</td>
<td>3.96</td>
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<td>3.34</td>
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<td>27</td>
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<td>30/32</td>
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<td>94 (S end)</td>
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<tr>
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<td>13.1</td>
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<td>1.03</td>
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</tbody>
</table>

Table 1 Note: All elevations refer to NAVD 88 Datum.
Questions Regarding the FIRM and the NFIP:

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