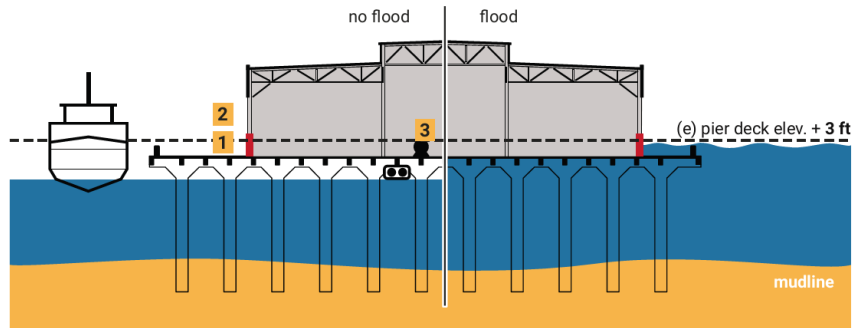
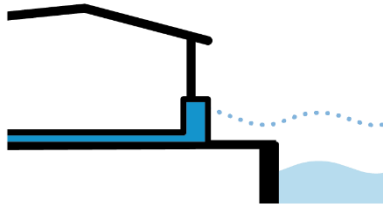


Dry Floodproofing

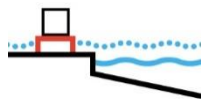
Flood Adaptation Measure



PHYSICAL INFRASTRUCTURE



SHORELINE LOCATION:



Asset Specific

Dry-floodproofing scheme on pier shed. ©Port of San Francisco

1. Walls are sealed with waterproof coatings and/or impermeable membranes, over layers of masonry, or concrete.
2. Doors, windows and other openings below flood elevation are equipped with permanent or removable shields.
3. Protect in place or relocate utilities.

DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	CONSTRUCTION COST
25+ years	Low	Living with Water	TBD

COASTAL FLOOD HAZARDS MITIGATED:



Sea Level Rise



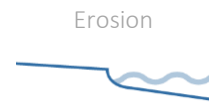
Storm Surge



Groundwater



Waves



Erosion

MEASURES COMPATIBILITY:		ECOSYSTEM SERVICES: Measure may affect these shoreline values			
Flood	Seismic	Aquatic Habitat	Terrestrial Habitat	Water Quality	Carbon Storage
All	All	—	—	—	—

DESCRIPTION:

A dry floodproofed structure is made watertight below the level that needs flood protection to prevent floodwaters from entering. Making the structure watertight requires sealing the walls with waterproof coatings, impermeable membranes, or a supplemental layer of masonry or concrete." Dry floodproofing includes:

- Using waterproof membranes or other sealants to prevent water from entering the structure through the walls.
- Installing watertight shields over windows and doors.
- Installing measures to prevent sewer backup.

Dry Floodproofing

Flood Adaptation Measure



<p>CONSIDERATIONS:</p> <ul style="list-style-type: none"> • Installation must be paired with a warning system to alert responsible parties of the need to install removable barriers. • The warning must be received far enough in advance to ensure sufficient time to install the measures. • May be more appropriate for commercial and institutional buildings. 	<p>ADVANTAGES:</p> <ul style="list-style-type: none"> • Dry floodproofing is less costly than other retrofitting measures (e.g., elevating) but more expensive than wet floodproofing. • Does not require the additional land that may be needed for levees and seawalls. • May be fundable under FEMA mitigation grant programs 	<p>DISADVANTAGES:</p> <ul style="list-style-type: none"> • May not be used to bring a substantially damaged or substantially improved residential structures into compliance with the community's floodplain management ordinance or law. • Dry floodproofing requires human intervention and adequate warning to install protective measures. • Does not minimize the potential for damage from high-velocity flood flows and wave action. • Ongoing maintenance is required. • Flood shields may not be aesthetically pleasing. • May contribute to a false sense of security before and during storms. • May reduce the likelihood of residents to evacuate.
<p>CONSTRUCTION IMPACTS TO THE PUBLIC:</p> <ul style="list-style-type: none"> • Site-specific construction impacts are required for initial installation. • Deploying measures for tidal events would be disruptive for individual properties. 	<p>SEA LEVEL RISE ADAPTATION OPPORTUNITIES:</p> <ul style="list-style-type: none"> • TBD 	<p>CASE STUDIES:</p> <ul style="list-style-type: none"> • New York City
<p>DESIGN OPPORTUNITIES:</p>		
<p>Ecological Enhancements</p> <ul style="list-style-type: none"> • TBD 	<p>Urban Design</p> <ul style="list-style-type: none"> • TBD 	<p>Form</p> <ul style="list-style-type: none"> • TBD

SITE-SPECIFIC CONSIDERATIONS:

- Installation must be paired with a warning system to alert responsible parties of the need to install removable barriers. The warning must be received far enough in advance to ensure sufficient time to install the measures.
- Based on the building code, may not be permitted for new structures. Not permitted in FEMA V zones.
- May be more appropriate for commercial and institutional buildings.

Dry Floodproofing

Flood Adaptation Measure



INSTALLATION AND CONSTRUCTABILITY CONSIDERATIONS:

- This form of floodproofing requires that the building be properly anchored to resist flotation, collapse, and lateral movement.
- It also may require the reinforcement of walls to withstand flood forces and impact forces generated by floating debris.

OPERATIONS AND MAINTENANCE CONSIDERATIONS:

- Property owners must have sufficient warning before a flood event to install all flood shields. They also must be in sufficient physical health to perform these activities before the flood waters arrive.
- The dry floodproofing components must be inspected and maintained on a regular basis since the materials can deteriorate over time.
- Owners should regularly inspect flood shields and closures to ensure a proper fit, and should check walls, floors, and floodproof coatings for cracks and potential leaks.