

V. HARBOR DEPTHS, CHANNEL DESIGN AND PROPOSED CONSTRUCTION AND DREDGING

A. DISCUSSION: For the most part, projects that involve dredging and construction require a comprehensive design and review process that can occur years before actual site operations commence. In order to identify and minimize navigational safety and coordinated vessel movement issues well ahead of time, the Operations/Navigation Safety Subcommittee will keep apprised of these types of projects (for up to three years).

The Subcommittee will facilitate timely assessment of navigational safety concerns during the concept stages so that appropriate modifications, if any, can be made. Additionally, the Subcommittee will work with the Coast Guard to ensure navigational risks are appropriately addressed through project modification and/or operational mitigation measures. The Subcommittee will review all projects for impacts to navigational safety and will:

1. Collect more information if necessary
2. Brief the full committee on “impacting” projects
3. Recommend follow-up action such as:
 - a. Further subcommittee review
 - b. Postpone action to later date (wait until project concept solidifies).

B. HARBOR DEPTHS:

1. Following are the current procedures and frequency of checking harbor and berth depths at the Port of Los Angeles (POLA) and the Port of Long Beach (POLB):
 - a. Procedures: POLA/POLB check harbor and berth depths with lead line sounding and electronic sounding equipment.
 - i. For lead line sounding, one lowers a weighted chain marked in one-foot increments into the water until it hits bottom. The number of marks counted on the chain at the water line indicates the depth, which is then tide-corrected to Mean Lower Low Water (MLLW).
 - ii. For electronic sounding equipment, one records digitally and graphically the time it takes a sound wave to travel from an instrument near the surface to the bottom and back. This information is then tide-corrected to MLLW.
 - iii. Both ports currently have an automated sounding process using the latest positioning technology and a Geographic Information System (GIS). Once the harbor and berth depth soundings are complete, both ports forward data (sounding charts) to the respective Port Pilots and Terminal Operators. Both Ports make

their respective depth sounding data available to NOAA. Dangers to Navigation found during the survey are reported to USCG and then broadcasted via the Local Notice to Mariners.

- iv. When depths less than charted depths are found within the port complex, the data may be provided to the Office of Coast Survey for application to NOAA Charts. Once received by Coast Survey, the data are reviewed to ensure they meet *National Ocean Survey (NOS) Hydrographic Surveys Specifications and Deliverables*.

Information pertaining to NOS Specs and Deliverables is located at:

<http://www.nauticalcharts.noaa.gov/hsd/specs/specs.htm>

The email and regular mail addresses for data submission to Coast Survey are:

ocs.ndb@noaa.gov

Department of Commerce, NOAA
Nautical Data Branch N/CS26
1315 East West Hwy
Silver Spring, MD 20910

The Office of Coast Survey is responsible for the hydrographic data received and reviewed to ensure that it meets *(NOS) Hydrographic Surveys Specifications and Deliverables plotted on NOAA charts*.

- b. Frequency: Historically, reduced water depth due to silt settlement only minimally affects POLA and POLB. Therefore, the committee considers the current frequency of sounding checks adequate. With minor variations, both ports check depth with similar frequency usually at the request from pilots, tenants, the Dredge Committee, or as required by the Ports' capital programs. This typically results in POLA and POLB checking the available water depth and performing soundings at least at one to three year intervals for terminals. POLA and POLB check certain wharves with known shoaling problems more often, and check as available wharves that accommodate vessels needing lesser drafts. Divers inspect under-wharf slope biannually and immediately advise of situations such as embankment sloughing under the wharves or out-of-place riprap. In POLA, cruise terminals are surveyed, dived, and sounded monthly and oil terminal berths are sounded annually. Container and drybulk berths are sounded every three years. All other berths (including out-of-service berths) are sounded at least every five years. POLA continually inspects backland behind the wharves for settlement that may also indicate sloughing. Approximately annual fathometer soundings, taken parallel to the wharf and about 12' outboard of the pier-head line, verify the existing water depth. If POLA finds irregularities, it orders additional soundings to confirm the available water depth.

Note: POLB is developing a new program in 2017 that will further define the

frequency of sounding throughout Harbor District waters. This new program will be provided to the Harbor Safety Committee for review and input and is expected to be implemented by 2018.

POLA and POLB also receive sounding requests from port tenants, pilots, properties/operations staff, engineering division staff, executive management and the Coast Guard.

The Corps performs soundings at Weapons Support Facility Seal Beach as requested. The Corps may sound annually, but severe weather can drive sounding requirements, as changes in depth appear to result from tidal slough action in the National Wildlife Refuge aboard the Weapons Support Facility Seal Beach. The Corps completed its last dredging in 2010. The controlling depth is -39 feet at MLLW (May, 2012).

2. Findings: The Committee finds the current procedures and frequency of checking harbor and berth depths are adequate and no changes are needed.

C. CHANNEL DESIGN PLANS: POLA and POLB, deep-water constructed ports, do not have siltation problems like natural river ports. The only sediments deposited in the ports are carried by the Los Angeles River, Dominguez Channel, and several smaller local storm drains. Due to the dry local climate, these channels carry significant quantities of water only on rare occasions during the winter, and silt settles out near the inlet mouth. The ports need only dredge occasionally to maintain berth side design water depths.

The Harbors usually have very localized shoaling problems. They occur mainly in the immediate vicinity of the pier-head lines, when propeller or bow thruster action causes localized sloughing of the under-wharf embankments. Soft bottom conditions mitigate the effect of shoaling and ongoing maintenance dredging restores design water depth.

Expanding commercial facilities and increasing ship sizes often reduce maneuvering room near marinas and other facilities. This reduces the mariner's margin of error, and can contribute to hazardous situations, damage claims and undesirable maneuvering constraints from wake and prop wash. Although options may be limited, those designing new berths and terminals should plan for future comparable marina spaces and similar facilities. Since this can create short-term misunderstandings, developers should designate specific areas for commercial and recreational activities in a manner that minimizes potential conflicts and dangers. This long-term benefit to property and safety should be considered an integral element of any significant design.

1. **PORT OF LONG BEACH:** All 65 deep-water berths lay within three miles of the open sea, and are reached via the Main Channel with depths of minus 76 feet (-23.2m) at Mean-Lower-Low-Water (MLLW). Dredging outside the Long Beach Breakwater Entrance Channel has deepened that area to minus 76 feet (-23.2m) at MLLW.

The Port is currently engaged in a capital development program (CDP) that includes but is not limited to dredging, terminal redevelopment, transportation, and public safety projects. Major components of the CDP include capital dredging in the West Basin and

Inner Harbor Turning Basin, and in-water fill within the East Basin. The CDP includes the Middle Harbor Redevelopment Program, the replacement of the Gerald Desmond Bridge spanning the Back Channel, several rail infrastructure projects, and proposed security operations and support facilities. Though not a Port project, the State of California through Caltrans is currently engaged in the replacement of the Commodore Schuyler Heim Bridge (SR-47) spanning the Cerritos Channel. It will be converted from a lift bridge to a fixed bridge. *See*, Chapter IX.B., “Bridges.”

Southern California Edison will raise the 66kV powerlines over the Cerritos Channel to a height of 234 feet at Mean High Water. Pending regulatory and environmental approvals, this project should begin in 2019 and complete by 2020.

In addition to the CDP, the Port has a program for maintenance dredging. Both CDP dredge projects and the maintenance dredging program are conducted under the oversight of the Port’s Dredge Committee. The Dredge Committee is comprised of representatives from the Engineering and Planning Bureaus, Trade Division, and Jacobsen Pilots. The Dredge Committee is responsible for receiving requests as well as reviewing and prioritizing maintenance dredging needs, proposing prioritization to Port management, and executing the maintenance dredging program. The Dredge Committee also conducts planning efforts to identify, scope, and prioritize capital dredging needs. Capital dredging projects are managed by the Port’s Program Management Division with support from the Engineering Bureau. Construction of capital projects and maintenance dredging are managed by the Port’s Construction Management Division. By centralizing all dredging requests and planning for dredging through the Dredge Committee, the Port is able to plan, track, and execute dredging in accordance with permits issued by the U.S. Army Corps of Engineers.

Major components of the Port’s CDP and maintenance dredging program are described in the paragraphs that follow. The construction schedule for these and all other Port projects are updated monthly and can be found on the Port’s website at:

http://www.polb.com/economics/contractors/future_work/default.asp

Note that construction schedules for the projects shown in this schedule are, in some cases conceptual, because the California Environmental Quality Act (CEQA) process is currently underway. Other schedules are more certain because the CEQA process has been concluded and a project has been approved by the Board of Harbor Commissioners.

a) Major Transportation Programs/Projects

The replacement of both the Commodore Heim and Gerald Desmond Bridges spanning the Cerritos and Back Channels, respectively are underway. The new Commodore Heim Bridge is a fixed span. The new replacement for the Gerald Desmond Bridge will provide for an increased vertical clearance to allow larger ships to pass through the Back Channel and into Long Beach Inner Harbor. The existing Gerald Desmond Bridge is scheduled to be demolished and removed. *See*, Chapter IX.B., “Bridges.”

b) Major Terminal Redevelopment Programs/Projects

The Middle Harbor Terminal Redevelopment consists of combining Piers D, E, and F to form a modern contiguous 305-acre container terminal. This program includes new truck gates, buildings, wharf structures, rail mounted gantry cranes (RMG), container and intermodal rail yards, dredging, landfill, paving and striping, and utility infrastructure. The project includes filling of Slip 1 at Pier E and part of the East Basin, wharf and dike reconstruction at Pier E, as well as dredging to widen and deepen Slip 3 at Pier E and Pier D. Dredging within Slip 3 has been completed to a depth of minus 55 feet MLLW, Slip 1 has been filled, and 152 acres of the new terminal constructed. Work is underway to include the demolition of a portion of the wharf at Pier F and filling a portion of the east Basin. The last part of fill for the entire program and last wharf segment will be constructed between 2018 and 2019. When complete, a total of 65 acres of new land should be created by this project.

c) Capital and Maintenance Dredging

The Port plans to demolish and remove the intake forebay of the NRG power plant located on Terminal Island in 2018. The forebay is located on the west side of the Back Channel north of the Gerald Desmond Bridge and south of the Inner Harbor Turning Basin. To date, a portion of the forebay has been demolished and the remainder of the submerged structure marked by buoys.

The Port is in the middle of a three-year Deep Draft Navigation Study with the U.S. Army Corps of Engineers. The Study will be completed in 2017 and is expected to result in a plan for the deepening of some navigation channels.

The Port will continue to dredge throughout the Harbor District to maintain berth and channel depths. Maintenance dredging maintains permitted depths and eliminates minor hazards caused by sediment deposition or vessel prop wash anomalies occurring on the bottom.

d) Public Safety

The Port is currently conducting a master planning effort for proposed public safety operational and support facilities. Two replacement fire stations are being planned for Fire Station 15 and Fire Station 20 at Pier F and Pier D respectively and a protected boat basin to accommodate Port Security, Police Department, and Fire Department vessels is being planned at Pier F. The Port is in the process of procuring a second new state of the art fire boat (VIGILANCE) to replace the an aged, existing fireboat in 2017. VIGILANCE is the sister ship to PROTECTOR which was commissioned for service in 2016.

2. PORT OF LOS ANGELES: The Main Channel, Turning Basin, East and West Basin, East Basin Channel, and Cerritos Channel are dredged to minus 53 feet at MLLW.

POLA performs maintenance dredging as required to maintain the depth of all of its berths.

Major Terminal Redevelopment Programs/Projects

Phase 1 of the redevelopment of the Port's YTI terminal is underway. Larger gauge crane rails, on-shore improvements and Dredging along berths 212 through 220.

The construction schedule for these and all other Port projects are updated monthly and can be found on the Port's website at:

<http://portoflosangeles.org/>

F. U.S. ARMY CORPS OF ENGINEERS: The Corps of Engineers maintains the Federal Channels in Los Angeles/Long Beach Harbor. The channels and project depths are:

Los Angeles Harbor:

| <u>Federal Channels in the POLA</u> | <u>Current Depth</u> |
|-------------------------------------|----------------------|
| Main Channel | -53 feet |
| Turning Basin | -53 feet |
| West Basin | -53 feet |
| East Basin | -53 feet |
| North Channel (Pier 300/400) | -53 feet |
| Pier 300 Turning Basin | -81 feet |
| Approach and Entrance Channels | -81 feet |

Long Beach Harbor:

| <u>Federal Channels in the POLB</u> | <u>Current Depth</u> | <u>Current Width</u> |
|-------------------------------------|----------------------|----------------------|
| Main Channel | -76 feet | 360 – 1500 feet |
| Back Channel | -52 feet | 220 feet |
| Inner Harbor (Turning Basin) | -52 feet | 1190 feet |
| Cerritos Channel | -50 feet | 325 feet |
| Channel 2 | -37 to -55 feet | 150 – 250 feet |
| Channel 3 | -36 to -45 feet | 150 – 200 feet |

Some of the channels have been dredged to depths deeper than the Federal project depth by the Port and are maintained by the Port.