

MARINE TAXONOMIC SERVICES, LTD.

Marine Biological Resources Report and Essential Fish Habitat Assessment for Avalon South Beach Restoration Project

July 24, 2024

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July 24, 2024

1 Introduction

Marine Taxonomic Services, LTD. (MTS) was contracted by Engineered Solutions Group Inc. to provide a marine biological assessment and essential fish habitat assessment for the Avalon South Beach Restoration Project (Project). MTS completed a survey and analysis of the resources occurring within the designated survey area and prepared the following report on the findings.

1-1 Project Location

The Project is located at South Beach in the city of Avalon located on Santa Catalina Island, California. The beach is located at the southeastern corner of Avalon Bay at latitude 33°20'34.96"N and longitude 118°19'27.61"W (Figure 1).

1-2 Project Description

This Project has three main elements, the demolition and replacement of damaged portions of the South Beach seawall, the demolition and replacement of the existing groin, and restoration of the beach profile.

The construction of an approximately 80-foot-long vertical cantilevered seawall is proposed between the intact existing seawall to the north and south of the wall replacement footprint. The existing seawall in this area will be demolished and replaced in kind. The seawall cap will incorporate a wave deflector. Buried riprap located in the area of construction may need to be removed and disposed off-site to allow for this construction to occur. Additionally, the existing groin that has failed will be demolished and replaced with a 50-foot groin, akin to the original structure but at a slightly different rotation. The wall and groin are to be comprised of interlocking steel sheet piles (hot-rolled PZ 27) or pre-stressed concrete sheet piles. Sheet piles shall be driven using vibratory or hammering techniques, or a combination of the two. The sheet piles will be capped with concrete and allowed adequate time to cure. Disturbance to sand and intertidal areas shall be minimized. An additional 6,000 cubic yards of clean sand from an upland source will be deposited to restore the beach profile and provide a buttress for the wall. Sand will be brought to the quarry at the southern tip of the island and transported on trucks to the Project site. To reduce potential erosion of this sand, a compatible but slightly larger grain size (~0.5 mm) of sand will be used for these purposes.



Figure 1. Vicinity map of the Avalon South Beach Restoration Project site and survey extent within Avalon Bay, Catalina Island, CA.

2 Methods

MTS staff completed a marine biological assessment at the Project site on May 15, 2024. A SCUBA diver survey was used to identify habitat types and species that occupy the Project survey area.

2-1 SCUBA Survey

During the survey, the diver swam throughout the Project area, inspecting the seafloor and existing structures. The diver was equipped with an underwater camera and took photos of species observed in the area. The diver identified species that were observed within the Project area or took photos to later be identified.

2-2 Sensitive Species and Essential Fish Habitat Assessment

A detailed assessment was conducted to determine any sensitive species holding special or protected status that may occur within, or adjacent to, the designated Project site. Species lists provided by the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) (USFWS 2023 and NMFS 2023a) were evaluated for sensitive species near the Project site. An analysis of the range and habitat preferences of those species was conducted through literature review. An Essential Fish Habitat (EFH) assessment was conducted through EFH GIS mapping software regularly maintained and updated by NOAA Fisheries (NMFS 2023b). Analysis of the requirements of those habitats was performed via literature review.

3 Results

3-1 Marine Habitats Surveyed

Marine habitats observed during the SCUBA survey within the Project site fell into four distinct categories: intertidal hard substrate, subtidal hard substrate, soft-bottom with sporadic boulders and cobble, and moorings and debris. Notable fauna observed included 9 unique species of marine vertebrates, 8 unique species of marine invertebrates, and 22 unique species of marine macroalgae (Table 1). Habitats mapped throughout the Project site during this survey are provided in Figure 2.

Table 1. Common marine species observed within the designated Project site during the SCUBA survey.

Common Name	Scientific Name	Conservation Status
Marine Vertebrates		
Blacksmith	<i>Chromis punctipinnus</i>	Least Concern
Garibaldi	<i>Hypsypops rubicundus</i>	Least Concern
Blue-banded goby	<i>Lythrypnus dalli</i>	Least Concern
Kelp bass	<i>Paralabrax clathratus</i>	Least Concern
Halfmoon	<i>Medialuna californiensis</i>	Least Concern
California sheephead	<i>Semicossyphus pulcher</i>	Vulnerable
Rock wrasse	<i>Halichoeres semicinctus</i>	Least Concern
Thornback ray	<i>Raja clavata</i>	Near Threatened
Shovelnose guitarfish	<i>Rhinobatos productus</i>	Near Threatened
Marine Invertebrates		
California Spiny Lobster	<i>Panulirus interruptus</i>	Least Concern
Owl limpet	<i>Lottia gigantea</i>	Least Concern
Orange encrusting bryozoan	<i>Antho karykina</i>	Least Concern
Pyrosome	<i>Pyrosoma atlanticum</i>	Least Concern
Sola anemone	<i>Anthopleura sola</i>	Least Concern
Tube worms	<i>Sabellidae sp.</i>	Least Concern
Volcano limpet	<i>Fissurella volcano</i>	Least Concern
Hydroids	<i>Aglaophenia sp.</i>	Least Concern
Macroalgae		
Green turf	<i>Prasiola crispa</i>	Least Concern
Red algae	<i>Plocamium cartilagineum</i>	Least Concern
Banded fanweed	<i>Zonaria farlowii</i>	Least Concern
Brown algae	<i>Dictyopteris undulata</i>	Least Concern
Bubble algae	<i>Colpomenia peregrina</i>	Least Concern
Giant kelp	<i>Macrocystis pyrifera</i>	Least Concern
Articulated coralline algae	<i>Corallina spp.</i>	Least Concern
Articulated coralline algae	<i>Bossiella spp.</i>	Least Concern
Brown algae	<i>Hydroclathrus clathratus</i>	Least Concern
Beanweed	<i>Scytosiphon lomentaria</i>	Least Concern
Sea lettuce	<i>Ulva sp.</i>	Least Concern
Feather boa kelp	<i>Egregia menziesii</i>	Least Concern
Jellyweed	<i>Gelidium coulteri</i>	Least Concern
Spaghetti algae	<i>Chaetomorpha linum</i>	Least Concern
Red turf algae	<i>Endocladia muricata</i>	Least Concern
Red algae	<i>Laurencia pacifica</i>	Least Concern
Brown algae	<i>Dictyota flabellata</i>	Least Concern
Filamentous brown algae	<i>Ectocarpus spp.</i>	Least Concern
Brown algae	<i>Petalonia binghamiae</i>	Least Concern
Red algae	<i>Polysiphonia nigrescens</i>	Least Concern
Red algae	<i>Prionitis lanceolata</i>	Least Concern
Brown filamentous algae	<i>Ectocarpus sp.</i>	
Nori	<i>Pyropia sp.</i>	Least Concern

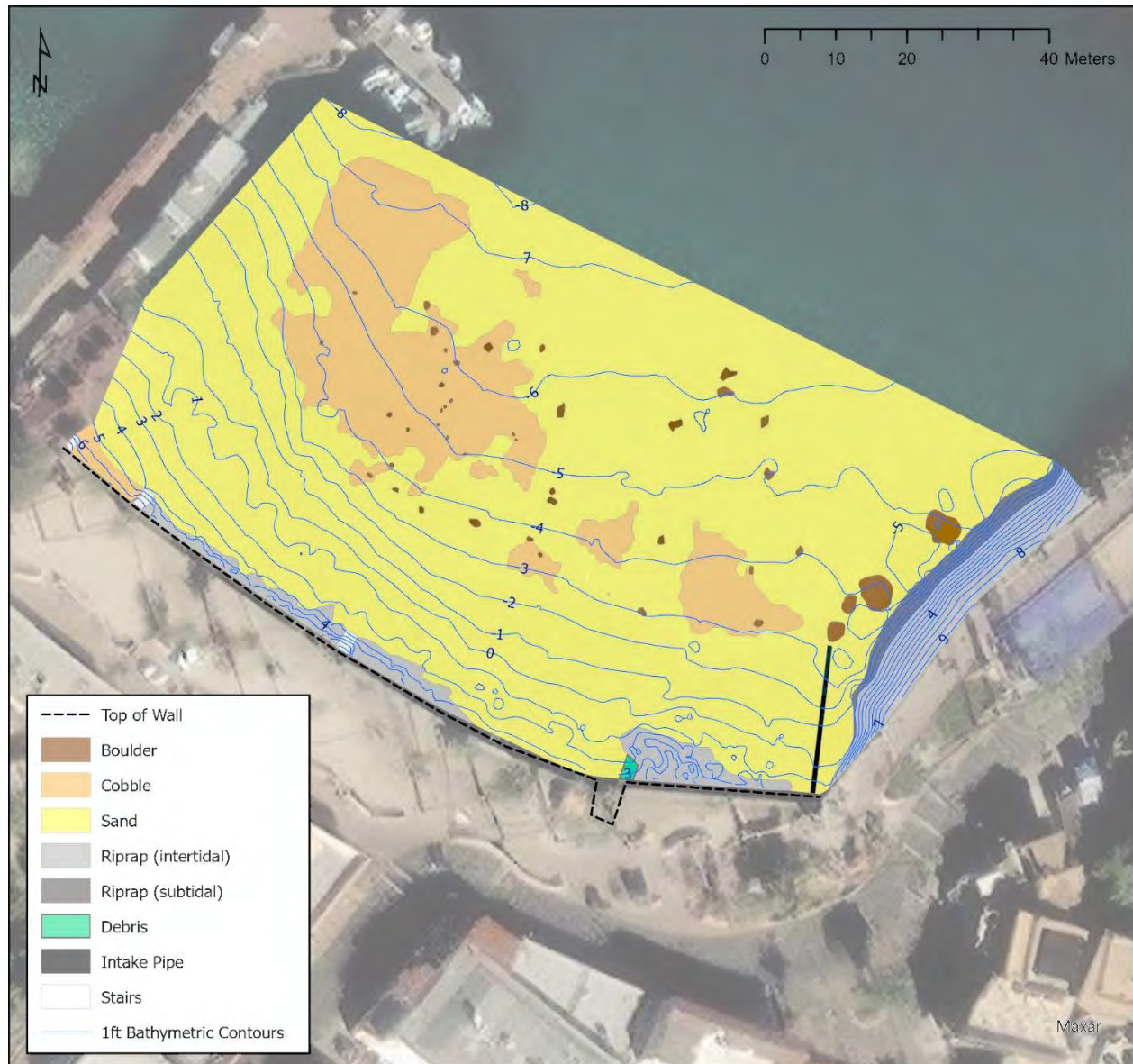


Figure 2. Map showing bathymetric contours and habitat types observed within the Project survey area.

3-1.1 Hard substrate – Intertidal

Intertidal hard substrate was defined by any hard substrate above the mean lower low water level. This substrate type was observed on the beach and along the riprap wall. Invertebrate species observed included owl limpet (*Lottia gigantea*), volcano limpet (*Fisurella volcano*), and sola anemone (*Anthopleura sola*). The upper intertidal rocks were dominated by green turf algae (*Prasiola crispa*). Other algae present in the intertidal region were bubble algae (*Colpomenia peregrina*), feather boa kelp (*Egregia menziesii*), red turf algae (*Endocladia muricata*), brown algae (*Petalonia binghamiae*), (*Prionitis lanceolata*), (*Polysiphonia nigrescens*), nori (*Pyropia* sp.), beanweed (*Scytosiphon lomentaria*), and sea lettuce (*Ulva* sp.).



Figure 3. Photos showing examples of intertidal hard-substrate within the Project area. Bottom right photo shows debris from failed groin wall.

3-1.2 Hard Substrate – Subtidal

Subtidal hard substrate was defined by any hard substrate below the mean lower low water level. This substrate type was observed along the riprap revetment. Vertebrate species observed in subtidal riprap included kelp bass (*Paralabax clathratus*), California sheephead (*Semicossyphus pulcher*), garibaldi (*Hypsypops rubicundus*), blacksmith (*Chromis punctipinnis*), rock wrasse (*Halichoeres semicinctus*), blue banded goby (*Lythrypnus dalli*), and halfmoon (*Medialuna californiensis*). Invertebrate species observed included pyrosomes (*Pyrosoma atlanticum*) and California spiny lobster (*Panulirus interruptus*). Macralgae included giant kelp (*Macrocystis pyrifera*), feather boa kelp (*Egregia menziesii*), bubble algae (*Colpomenia peregrina*), articulated coralline algae (*Bossiella* sp. and *Corallina* sp.), banded fanweed (*Zonaria farlowii*), brown algae (*Dictyota flabellata* and *Dictyopteris undulata*), jellyweed (*Gelidium coulteri*), and red algae (*Plocamium cartilagineum*). Additionally, a large intake pipe resides in the nearshore area of riprap and is host to similar species.

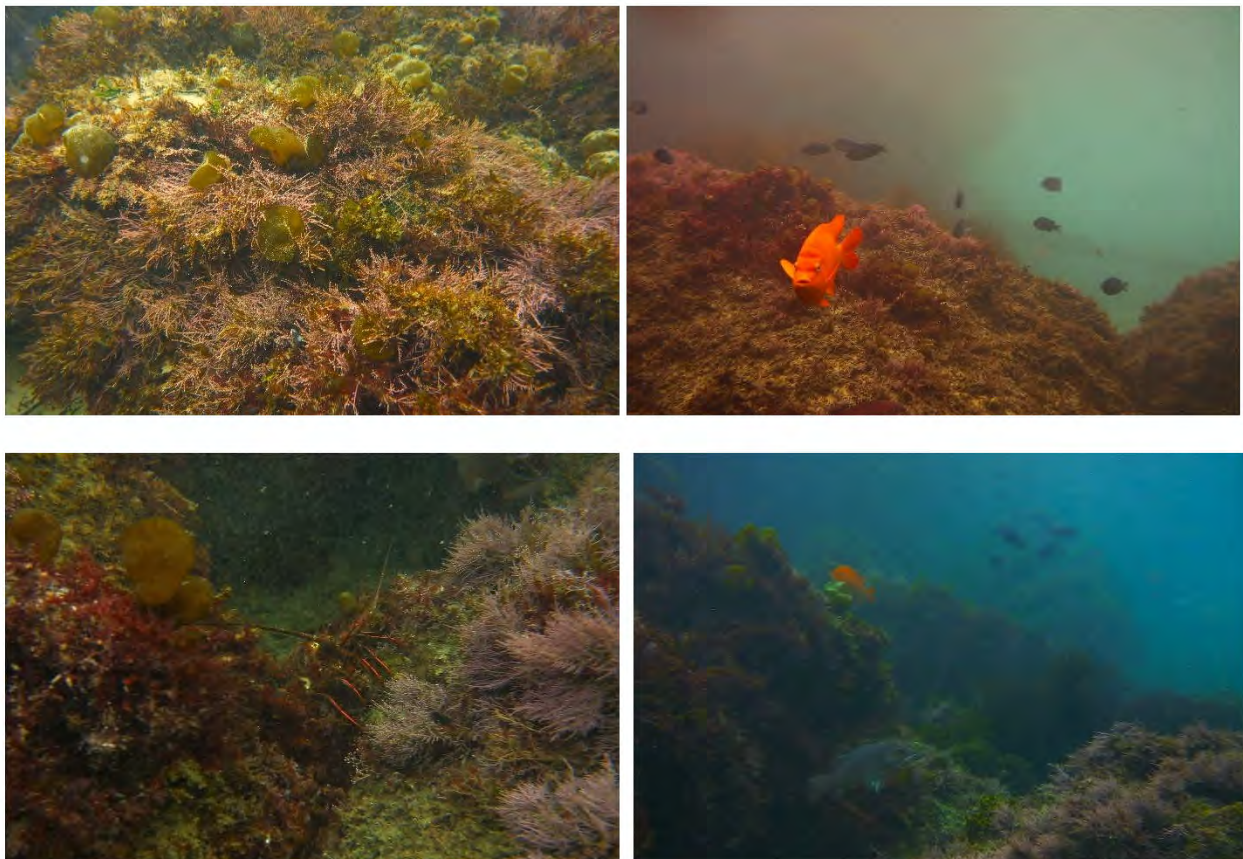


Figure 4. Photos showing examples of subtidal hard-substrate habitat.

3-1.3 Soft-Bottom with Sporadic Boulders and Cobble

The majority of the Project area surveyed consisted of soft-bottom habitat with sand of a medium grain size (~0.25 mm). The sandy areas were mostly barren with diatomaceous mats, drift algae, tubeworms (*Sabellidae* sp.), pyrosomes, kelp bass, few thornback rays (*Raja clavata*), and a single shovelnose guitarfish (*Rhinobatos productus*). Within the soft-bottom habitat there were sporadic small boulders which were host to macroalgal communities and cobble which were host to microalgal communities. Macroalgal species on boulders included red algae (*Laurencia pacifica*), beanweed, filamentous brown algae (*Ectocarpus* sp.), sea lettuce, articulated coralline algae, and juvenile giant kelp.



Figure 5. Photos showing soft-bottom habitat within the Project site.

3-1.4 Moorings and Debris

The row of moorings nearest to shore were observed for species composition as well as other anthropogenic debris present in the site. Chains, lines, and mooring balls were host to similar algal species seen on nearby hard substrate. Algal species included filamentous brown algae, beanweed, spaghetti algae (*Chaetomorpha linum*), bubble algae, articulated coralline algae, red algae (*Laurencia pacifica*), and brown algae (*Dictyopteris undulata*). Kelp bass were also seen near mooring lines and hydroids (*Aglaophenia* sp.) were observed on chains and lines.

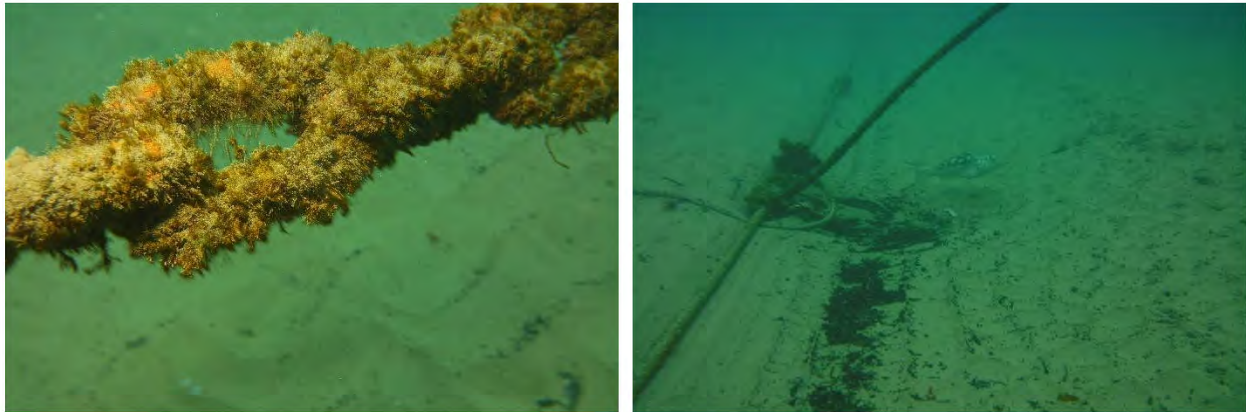


Figure 6. Photos of examples of marine species on moorings and other anthropogenic materials.

3-2 Sensitive Species

In addition to accounting for all marine species identified during the field survey, an exhaustive assessment was also conducted to determine other sensitive species holding special or protected status that may occur within, or adjacent to, the designated Project site. Based on species lists provided by USFWS and NMFS (USFWS 2023 and NMFS 2023a), an analysis of the range and habitat preferences of sensitive species that have a potential to occur within or nearby the Project site was completed (Table 2).

Table 2. Special status and protected species with the potential to occur within or near the study area (USFWS 2023 and NMFS 2023a).

Common Name	Species Name	Conservation Status	Likelihood to Occur
Marine Mammals			
Baird's Beaked Whale	<i>Berardius bairdii</i>	Protected	Unlikely
Blainville's Beaked Whale	<i>Mesoplodon densirostris</i>	Protected	Unlikely
Blue Whale	<i>Balaenoptera musculus</i>	Endangered	Unlikely
Bryde's Whale	<i>Balaenoptera edeni</i>	Protected	Unlikely
California Sea Lion	<i>Zalophus californianus</i>	Protected	Possible
Common Bottlenose Dolphin	<i>Tursiops truncatus</i>	Protected	Unlikely
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	Protected	Unlikely
Dall's Porpoise	<i>Phocoenoides dalli</i>	Protected	Unlikely
Dwarf Sperm Whale	<i>Kogia sima</i>	Protected	Unlikely
False Killer Whale	<i>Pseudorca crassidens</i>	Protected	Unlikely
Fin Whale	<i>Balaenoptera physalus</i>	Endangered	Unlikely
Gray Whale	<i>Eschrichtius robustus</i>	Endangered	Unlikely
Guadalupe Fur Seal	<i>Arctocephalus townsendi</i>	Threatened	Unlikely
Harbor Porpoise	<i>Phocoena phocoena</i>	Protected	Unlikely
Harbor Seal	<i>Phoca vitulina</i>	Protected	Possible
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered	Unlikely
Killer Whale	<i>Orcinus orca</i>	Endangered	Unlikely
Long-Beaked Common Dolphin	<i>Delphinus capensis</i>	Protected	Unlikely
Melon-Headed Whale	<i>Peponocephala electra</i>	Protected	Unlikely
Minke Whale	<i>Balaenoptera acutorostrata</i>	Protected	Unlikely
North Pacific Right Whale	<i>Eubalaena japonica</i>	Endangered	Unlikely
Northern Elephant Seal	<i>Mirounga angustirostris</i>	Protected	Unlikely
Northern Fur Seal	<i>Callorhinus ursinus</i>	Protected	Unlikely
Northern Right Whale Dolphin	<i>Lissodelphis borealis</i>	Protected	Unlikely
Pacific White-Sided Dolphin	<i>Lagenorhynchus obliquidens</i>	Protected	Unlikely
Pygmy Sperm Whale	<i>Kogia breviceps</i>	Protected	Unlikely
Risso's Dolphin	<i>Grampus griseus</i>	Protected	Unlikely
Rough-Toothed Dolphin	<i>Steno bredanensis</i>	Protected	Unlikely
Sei Whale	<i>Balaenoptera borealis</i>	Endangered	Unlikely
Short-Beaked Common Dolphin	<i>Delphinus delphis</i>	Protected	Unlikely
Short-Finned Pilot Whale	<i>Globicephala macrorhynchus</i>	Endangered	Unlikely

Sperm Whale	<i>Physeter macrocephalus</i>	Endangered	Unlikely
Spinner Dolphin	<i>Stenella longirostris</i>	Protected	Unlikely
Stejneger's Beaked Whale	<i>Mesoplodon stejnegeri</i>	Endangered	Unlikely
Steller Sea Lion	<i>Eumetopias jubatus</i>	Endangered	Unlikely
Striped Dolphin	<i>Stenella coeruleoalba</i>	Protected	Unlikely
Sea Turtles			
Green Turtle	<i>Chelonia mydas</i>	Threatened	Possible
Leatherback Turtle	<i>Dermochelys coriacea</i>	Endangered	Unlikely
Loggerhead Turtle	<i>Caretta caretta</i>	Endangered	Unlikely
Olive Ridley Turtle	<i>Lepidochelys olivacea</i>	Endangered	Unlikely
Birds			
Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Endangered	Unlikely
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Unlikely
Western Snowy Plover*	<i>Charadrius nivosus nivosus</i>	Threatened	Possible
California Brown Pelican**	<i>Pelecanus occidentalis</i>	Delisted	Possible

*Possible fly over.

**This species was delisted but still considered for impacts because it is fully protected by California Fish and Game Code.

Protected, rare, threatened, or endangered species that may occur within the region include green sea turtle (*Chelonia mydas*) (Federally Threatened) and the California brown pelican (Protected under Migratory Bird Treaty Act and California Fish and Game Code). Mammals protected under the Marine Mammal Protection Act with potential to occur in southern Avalon Bay (Bay) include harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*).

Green sea turtles (GST) are found throughout southern California and several sightings and strandings have confirmed their presence on Santa Catalina Island. The Project site lies within the proposed critical habitat designated by NMFS's latest report that is currently under review (NMFS 2023c). This area has been designated as having moderate conservation value due to foraging and resting behavior of GST documented in the region. It is unlikely that GST would enter the highly modified environment of Avalon Bay for transit or resting. GSTs primarily forage in eelgrass habitat, of which Avalon has none (Bernstein et al. 2011). Some GSTs also forage on macroalgae and invertebrates, but that niche is more common in juvenile pelagic stages where they feed on floating algal material such as *Sargassum*. Therefore, the presence of GST at the Project site is possible but highly unlikely.

The Hawaiian petrel (*Pterodroma sandwichensis*) (endangered) and the marbled murrelet (*Brachyramphus marmoratus*) (threatened) both have ranges that encompass the eastern Pacific region. There are no known nesting sites of either of these birds on Santa Catalina Island nor have there been any documented sightings of them. Furthermore, the Project site does not lie within any critical habitat ranges for either of these birds. The likelihood of Hawaiian petrels or marbled murrelets occurring in the Project site is, therefore, unlikely.

Western snowy plovers have nearby nesting sites in the Channel Islands but not on Santa Catalina Island. These birds breed and forage on sandy landscapes which do not occur within the Project site. Although these birds are not known to nest on Catalina Island, they have been observed on the island

(eBird). There is potential for snowy plovers to fly-over the Project site to reach sandy landscapes so they have been deemed as possible.

California brown pelicans were delisted from the federal list of endangered and threatened wildlife in 2009, however this species is still considered to be sensitive. The only long-term breeding colonies of California brown pelicans in the United States are on the near-by Anacapa and Santa Barbara Islands. The Channel Islands also provide roosting habitat for the birds, with major roosting areas occurring on offshore rocks of Santa Cruz Island and near the lighthouse on East Anacapa Island. The occurrence of California brown pelicans at the project site is thus likely.

Two pinniped species, California sea lions and harbor seals, reside on Santa Catalina Island. California sea lions do not breed on the island and the majority of them are found at Seal Rock located approximately 2.5 nautical miles from Avalon (Le Boeuf 2002). California sea lions have potential to be found near the Project site but are likely to be deterred by the modified nature of the site, as compared to the rest of the island, as well as the constant boat traffic that occurs within the bay. Harbor seals do breed on the island; however, they are found on the western side of the island, far from the Project site (Le Boeuf 2002). Both pinniped species are thus deemed possible but unlikely to appear within the Project site.

Common dolphin's and bottlenose dolphins have widespread distributions and are commonly observed in southern California nearshore environments. They are also often observed in the San Pedro Channel which separates the island from the mainland. These animals are often observed either swimming in the Channel or bow-riding vessels transiting to and from the island. The potential for the occurrence of these species within the Project site is low because dolphin species are rarely observed within highly modified shoreline environments such as Avalon Bay. Additionally, whale species such as the blue whale and the gray whale are often observed in the Channel, but the constraints of Avalon Bay would deem them unlikely to occur.

4 Essential Fish Habitat Assessment

This section provides an Essential Fish Habitat Assessment for EFH located within the designated Project site. This EFH includes an evaluation of proposed actions from the Project that could potentially impact EFH. The following section discusses the legal background and purpose of an EFH for managed species, fisheries, and Habitat Areas of Particular Concern (HAPCs) with potential to occur within the Project Site.

4-1 Essential Fish Habitat Background

The following EFH assessment for the proposed Project is provided in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSA) (Code of Federal Regulations (CFR) Title 50, Chapter VI, Part 600). The amendments require the delineation of “essential fish habitat” for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with the NMFS regarding the potential effects of their actions on EFH and respond in writing to the NMFS’s recommendations.

The MSA defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” For the purpose of interpreting the definition of essential fish habitat: “waters” includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle. A healthy ecosystem is defined under the MSA as, “an ecosystem where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself”.

The purpose of this EFH assessment is to comprehensively identify and analyze EFH occurring within the designated study area so that federal agencies can best determine whether the proposed Project would adversely affect designated EFH and identify possible conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH. The MSA requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the MSA, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. As such, the following EFH assessment, which includes an analysis of species managed by the Pacific Fishery Management Council (PFMC) that are known to utilize EFH within the study area, and an analysis of potential HAPCs within the study area, will provide all the information necessary for NMFS to conduct any future EFH consultations for the proposed Project.

4-2 Managed Fisheries with the Potential to Occur Within the Project Site

To adequately address EFH within the Project site, fish species managed by the PFMC that are known to either occur within the study area, have historically occurred within the study area, or depend upon those marine habitats that are known to occur within study area, were identified. This was accomplished through a thorough analysis of the habitat requirements of PFMC managed fish species (McCain et al. 2005 and Love et al. 2002), and by running an analysis using the latest EFH GIS software regularly maintained and updated by NOAA Fisheries (NMFS 2023b). In all, 92 fish species managed by the PFMC fall under the Coastal Pelagic Species Fisheries Management Plan (FMP), which includes the Finfish FMP (Table 3), and under the Pacific Groundfish FMP (Table 4). Additionally, 14 species specific FMPs are listed for this region (Table 5). During this survey, no species managed by PFMC were observed in the Project site.

Table 3. Fish species managed under the Coastal Pelagic Species FMP occurring within the study area.

Common Name	Species Name
Pacific sardine	<i>Sardinops sagax</i>
Pacific (chub) mackerel	<i>Scomber japonicus</i>
Northern anchovy	<i>Engraulis mordax</i>
Market squid	<i>Doryteuthis opalescens</i>
Jack mackerel	<i>Trachurus symmetricus</i>
Krill	<i>Euphausia pacifica</i> and <i>Thysanoessa spinifera</i>

Table 4. Fish species managed under the Pacific Coast Groundfish FMP.

Common Name	Species Name
Elasmobranchs	
Big skate	<i>Raja binoculata</i>
Leopard shark	<i>Triakis semifasciata</i>
Longnose skate	<i>Raja rhina</i>
Spiny dogfish	<i>Squalus suckleyi</i>
Roundfish	
Cabazon	<i>Scorpaenichthys marmoratus</i>
Kelp greenling	<i>Hexagrammos decagrammus</i>
Lingcod	<i>Ophiodon elongatus</i>
Pacific cod	<i>Gadus macrocephalus</i>
Pacific whiting (hake)	<i>Merluccius productus</i>
Sablefish	<i>Anoplopoma fimbria</i>
Rockfish	
Aurora rockfish	<i>Sebastes aurora</i>
Bank rockfish	<i>S. rufus</i>
Black rockfish	<i>S. melanops</i>
Black and yellow rockfish	<i>S. chrysomelas</i>
Blackgill rockfish	<i>S. melanostomus</i>
Blackspotted rockfish	<i>S. melanostictus</i>
Blue rockfish	<i>S. mystinus</i>
Bocaccio	<i>S. paucispinis</i>
Bronzespotted rockfish	<i>S. gilli</i>
Brown rockfish	<i>S. auriculatus</i>
Calico rockfish	<i>S. dallii</i>

Common Name	Species Name
California scorpionfish	<i>Scorpaena gutatta</i>
Canary rockfish	<i>Sebastes pinniger</i>
Chameleon rockfish	<i>S. phillipsi</i>
Chilipepper rockfish	<i>S. goodei</i>
China rockfish	<i>S. nebulosus</i>
Copper rockfish	<i>S. caurinus</i>
Cowcod	<i>S. levis</i>
Darkblotched rockfish	<i>S. crameri</i>
Deacon rockfish	<i>S. diaconus</i>
Dusky rockfish	<i>S. ciliatus</i>
Dwarf-red rockfish	<i>S. rufinanus</i>
Flag rockfish	<i>S. rubrivinctus</i>
Freckled rockfish	<i>S. lentiginosus</i>
Gopher rockfish	<i>S. carnatus</i>
Grass rockfish	<i>S. rastrelliger</i>
Greenblotched rockfish	<i>S. rosenblatti</i>
Greenspotted rockfish	<i>S. chlorostictus</i>
Greenstriped rockfish	<i>S. elongatus</i>
Halfbanded rockfish	<i>S. semicinctus</i>
Harlequin rockfish	<i>S. variegatus</i>
Honeycomb rockfish	<i>S. umbrosus</i>
Kelp rockfish	<i>S. atrovirens</i>
Longspine thornyhead	<i>Sebastolobus altivelis</i>
Mexican rockfish	<i>Sebastes macdonaldi</i>
Olive rockfish	<i>S. serranoides</i>
Pink rockfish	<i>S. eos</i>
Pinkrose rockfish	<i>S. simulator</i>
Pygmy rockfish	<i>S. wilsoni</i>
Pacific Ocean perch	<i>S. alutus</i>
Quillback rockfish	<i>S. maliger</i>
Redbanded rockfish	<i>S. babcocki</i>
Redstripe rockfish	<i>S. proriger</i>
Rosethorn rockfish	<i>S. helvomaculatus</i>
Rosy rockfish	<i>S. rosaceus</i>
Rougheye rockfish	<i>S. aleutianus</i>
Sharpchin rockfish	<i>S. zacentrus</i>
Shortraker rockfish	<i>S. borealis</i>
Shortspine thornyhead	<i>Sebastolobus alascanus</i>
Silvergray rockfish	<i>Sebastes brevispinis</i>
Speckled rockfish	<i>S. ovalis</i>
Splitnose rockfish	<i>S. diploproa</i>
Squarespot rockfish	<i>S. hopkinsi</i>
Sunset rockfish	<i>S. crocotulus</i>
Starry rockfish	<i>S. constellatus</i>
Stripetail rockfish	<i>S. saxicola</i>
Swordspine rockfish	<i>S. ensifer</i>
Tiger rockfish	<i>S. nigrocinctus</i>
Treefish	<i>S. serriceps</i>
Vermilion rockfish	<i>S. miniatus</i>

Common Name	Species Name
Widow rockfish	<i>S. entomelas</i>
Yelloweye rockfish	<i>S. ruberrimus</i>
Yellowmouth rockfish	<i>S. reedi</i>
Yellowtail rockfish	<i>S. flavidus</i>
Flatfish	
Arrowtooth flounder (turbot)	<i>Atheresthes stomias</i>
Butter sole	<i>Isopsetta isolepis</i>
Curlfin sole	<i>Pleuronichthys decurrens</i>
Dover sole	<i>Microstomus pacificus</i>
English sole	<i>Parophrys vetulus</i>
Flathead sole	<i>Hippoglossoides elassodon</i>
Pacific sanddab	<i>Citharichthys sordidus</i>
Petrable sole	<i>Eopsetta jordani</i>
Rex sole	<i>Glyptocephalus zachirus</i>
Rock sole	<i>Lepidopsetta bilineata</i>
Sand sole	<i>Psettichthys melanostictus</i>
Starry flounder	<i>Platichthys stellatus</i>

Table 5. Species-specific management plans

Common Name	Species Name
Albacore tuna	<i>Thunnus alalunga</i>
Bigeye tuna	<i>Thunnus obesus</i>
Blue shark	<i>Prionace glauca</i>
Broadbill Swordfish	<i>Xiphias gladius</i>
Common thresher shark	<i>Alopias vulpinus</i>
Dorado	<i>Salminus brasiliensis</i>
Krill-Euphausia pacifica	<i>Euphausia Pacifica</i>
Krill-Thysanoessa spinifera	<i>Thysanoessa spinifera</i>
Northern bluefin tuna	<i>Thunnus thynnus</i>
Other krill species	
Shortfin mako shark	<i>Isurus oxyrinchus</i>
Skipjack tuna	<i>Katsuwonus pelamis</i>
Striped marlin	<i>Kajikia audax</i>
Yellowfin tuna	<i>Thunnus albacares</i>

4-3 Habitat Areas of Particular Concern (HAPC) Observed Within the Project Site

HAPCs are present within the Project site. HAPCs are a discreet subset of habitats within an EFH that are distinguished by characteristics including their high ecological value and vulnerability to anthropogenic stressors (Figure 7).

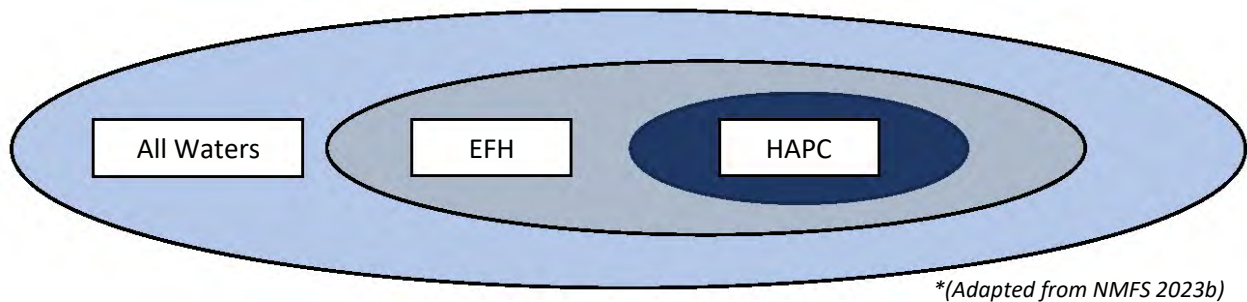


Figure 7. Figure depicting organization chart of essential fish habitat and habitats of particular concern.

Areas within designated EFH can also be designated as an HAPC based on one or more of the following characteristics (NMFS 2023b):

- 1) The importance of the ecological function provided by the habitat
- 2) Its sensitivity to human-induced environmental degradation
- 3) The extent of threats posed by development of the habitat
- 4) The rarity of the habitat type

HAPCs are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function (NMFS 2023b). The HAPC designation does not necessitate additional protections or restrictions upon an area, but the help to prioritize and focus conservation efforts (NMFS 2023b). Although these habitats are particularly important for healthy fish populations, other EFH areas that provide suitable habitats are also necessary to support and maintain sustainable fisheries and a healthy ecosystem (NMFS 2023b). Current HAPC types are estuaries, canopy kelp, seagrass, and rocky reefs.

The Project site does not hold any HAPCs.

5 Laws and Regulations

5-1.1 Coastal Zone Management Act of 1972

The Coastal Zone Management Act of 1972 is administered by the National Oceanic and Atmospheric Administration's (NOAA) Office of Ocean and Coastal Resource Management, provides for management of the nation's coastal resources and balances economic development with environmental conservation.

The Coastal Zone Management Act outlines two national programs. The National Coastal Zone Management Program includes 34 coastal programs. The goal of these programs is to balance competing land and water issues in the coastal zone. The National Estuarine Research Reserve System creates field laboratories that provide a greater understanding of estuaries and how humans affect them. The overall program objectives of the act are to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The Coastal Zone Management Act ensures that development projects in coastal areas are designed and permitted in a manner that is consistent with coastal zone land uses, maximizes public health and safety, and ensures that biological resources (e.g., wetlands, estuaries, beaches, and fish and wildlife and their habitat) within the coastal zone are protected. The California Coastal Commission enforces the Coastal Zone Management Act by certifying that any proposed project is consistent with the California Coastal Act of 1976 (as amended). The enforceable policies of the Coastal Zone Management Act are found in Chapter 3 of the California Coastal Act.

5-1.2 Rivers and Harbors Act (Section 10)

The USACE is authorized to regulate any activity within or over any navigable water of the United States pursuant to Section 10 of the Rivers and Harbors Act. Rivers and Harbors Act Section 10 jurisdiction is defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use, to transport interstate or foreign commerce" (33 Code of Federal Regulations 322). The San Diego Bay is considered a traditional navigable water regulated under Section 10 of the Rivers and Harbors Act.

5-1.3 Endangered Species Act of 1973

Species listed as endangered and/or threatened by the USFWS are protected under Section 9 of the federal Endangered Species Act, which forbids any person to "take" an endangered or threatened species. Take is defined in Section 3 of the act as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The U.S. Supreme Court ruled in 1995 that the term "harm" includes destruction or modification of habitat. Sections 7 and 10 of the Act may authorize "incidental take" for an otherwise lawful activity (a development project, for example) if it is determined that the activity would not jeopardize survival or recovery of the species. Section 7 applies to projects where a federally listed species is present and there is a federal nexus, such as a federal Clean Water Act (CWA) Section 404 permit (e.g., impacts on waters of the U.S.) that is required. Section 10, requiring an incidental take permit, applies when a federally listed species is present, but there is no federal nexus.

5-1.4 Magnuson-Stevens Fishery Management and Conservation Act, as amended 1996 (Public Law 104-267)

Federal agencies must consult with NOAA Fisheries on actions that may adversely affect EFH. EFH is defined as those “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” NOAA Fisheries encourages streamlining the consultation process using review procedures under the National Environmental Policy Act, Fish and Wildlife Coordination Act, the CWA, and/or the federal Endangered Species Act (ESA) provided that documents meet requirements for EFH assessments under Section 600.920(g). EFH assessments must include (1) a description of the proposed action, (2) an analysis of effects, including cumulative effects, (3) the federal agency’s views regarding the effects of the action on EFH, and (4) proposed mitigation, if applicable. The EFH is discussed in Section 5 of this report.

5-1.5 Marine Mammal Protection Act of 1972

The Marine Mammal Protection Act (MMPA) of 1972 prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. Congress passed the MMPA based on the following findings and policies: (1) some marine mammal species or stocks may be in danger of extinction or depletion as a result of human activities, (2) these species or stocks must not be permitted to fall below their optimum sustainable population level (depleted), (3) measures should be taken to replenish these species or stocks, (4) there is inadequate knowledge of the ecology and population dynamics, and (5) marine mammals have proven to be resources of great international significance.

The MMPA was amended substantially in 1994 to provide for: (1) certain exceptions to the take prohibitions, such as for Alaska Native subsistence, and for permits and authorizations for scientific research; (2) a program to authorize and control the taking of marine mammals incidental to commercial fishing operations; (3) preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; and (4) studies of pinniped-fishery interactions. Additionally, under the 1994 amendments to the MMPA, harassment is statutorily defined as any act of pursuit, torment, or annoyance that:

- Has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or
- Has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavior patterns, including, but not limited to migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B harassment).

NOAA Fisheries and USFWS administer the MMPA. The proposed Project must be analyzed to ensure that marine mammals protected under the MMPA would not be harassed or injured as a result of future activities in or adjacent to San Diego Bay. Any future Project activities that may result in Level A or B harassment, injury, or mortality would require consultation with NOAA Fisheries and USFWS under the MMPA.

5-1.6 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was enacted in 1918 to prohibit the killing or transport of native migratory birds, or any part, nest, or egg of any such bird, unless allowed by another regulation adopted in accordance with the MBTA. Under the MBTA, “take” means to kill, directly harm, or destroy individuals, eggs, or nests or to otherwise cause failure of an ongoing nesting effort. Migratory bird species that are protected by the MBTA is maintained by USFWS, which regulates most aspects of the taking, possession, transportation, sale, purchase, barter, exportation, and importation of migratory birds. The USFWS does not issue permits for “incidental take” of migratory birds that results from otherwise lawful activities such as construction of development projects.

5-1.7 Clean Water Act

The major federal legislation governing water quality is the Federal Water Pollution Control Act Amendments of 1972, commonly known as the CWA (33 United States Code [USC] 1251–1376), as amended by the Water Quality Act of 1987. The intention of the CWA is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Discharges into waters of the United States (WoUS) are regulated under CWA Section 404 and includes (1) all navigable waters (including all waters subject to the ebb and flow of the tide); (2) all interstate waters and wetlands; (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, or natural ponds; (4) all impoundments of waters mentioned above; (5) all tributaries to waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to waters mentioned above. Important applicable sections of the CWA are discussed below.

- **Section 401** requires any federal permit applicant that proposes an activity that may result in a discharge into WoUS to obtain certification from the state that the discharge will comply with the CWA. A 401 certification is provided by the Regional Water Quality Control Board (RWQCB) assigned to the Project’s region. A Section 401 certification from the San Diego RWQCB would be required this Project if a Section 404 permit and Rivers and Harbor Act (Section 10) permit is required.
- **Section 404** certification is required where USACE issues permits for discharge of dredged or fill material into WoUS. These permits typically include conditions to minimize impacts on water quality. Common conditions include: (1) USACE review and approval of sediment quality analysis before dredging; (2) a detailed pre- and post-construction monitoring plan that includes disposal site monitoring; and (3) requiring compensation for loss of WoUS.

5-1.8 California Eelgrass Mitigation Policy

Eelgrass, *Zostera* spp., is protected under the CWA as a habitat forming species and the resource is managed locally under the California Eelgrass Mitigation Policy (CEMP) as developed by NOAA fisheries (NMFS 2014). Additionally, due to the high ecological value of eelgrass as essential fish habitat, eelgrass is also designated as a habitat area of particular concern (HAPC) by NOAA Fisheries. The CEMP requires that an eelgrass survey be performed prior to construction to evaluate the presence of eelgrass and or potential eelgrass habitat.

NMFS has provided this policy to other state and federal agencies, including the California Department of Fish and Wildlife (CDFW), as guidance for handling project-related impacts on eelgrass habitat.

5-2 State

5-2.1 California Coastal Act of 1976

California ports, harbors, and coastline beaches are recognized as primary economic and coastal resources and as essential elements of the national maritime industry by the California Coastal Act of 1976. Decisions to undertake specific development projects are to be based on consideration of alternative locations and designs to minimize any adverse environmental impacts. The California Coastal Act is implemented by the California Coastal Commission (CCC).

5-2.2 California Endangered Species Act; Fully Protected Species

The California Endangered Species Act (CESA) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available should not be approved according to the CESA. For projects that affect both a state- and federally listed species, compliance with the federal ESA will satisfy the CESA if the CDFW determines that the federal incidental take authorization is consistent with the CESA under California Fish and Game Code Section 2080.1. Also, California Fish and Game Code Sections 3511, 4700, 5050, and 5515 prohibit take or possession of fully protected species.

5-2.3 California Fish and Game Code

Other sections of the California Fish and Game Code establish the Fish and Game Commission, as authorized by Article IV, Section 20, of the Constitution of the State of California. Under Sections 200-221 the Fish and Game Commission is responsible for regulating the take of fish and game, not including the taking, processing, or use of fish, mollusks, crustaceans, kelp, or other aquatic plants for commercial purposes. The Fish and Game Commission does regulate aspects of commercial fishing, including fish reduction; shellfish cultivation; take of herring, lobster, sea urchins, and abalone; kelp leases; leases of state water bottoms for oyster allotments; and aquaculture operations. The resource protection is responsible for setting recreational and commercial limits on species collection, collection method, and determines the conditions under which permits, or licenses may be issued or revoked by CDFW. The Fish and Game Commission also oversees the establishment of wildlife areas and ecological reserves and regulates their use and sets policy for CDFW.

CDFW is a state agency that manages native fish, wildlife, plant species, and natural communities for their ecological value and their benefits to people. CDFW oversees the management of marine species through several programs, some in coordination with NMFS and other agencies.

5-2.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act is the California or state equivalent of the federal CWA. It provides for statewide coordination of water quality regulations through the establishment of the State Water Resources Control Board (SWRCB) and nine separate RWQCBs that oversee water quality on a day-to-day basis at the regional/local level. The RWQCB regulates actions involving “discharging waste, or proposing to discharge waste, within any region that could affect the water of the state”

(Water Code Section 13260(a)), pursuant to provisions of the Porter-Cologne Act. Waters of the state (WoS) are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code Section 13050 (e)).

The RWQCB regulates WoS under Section 401 of the CWA. This requires states to certify that federally authorized activities comply with state water quality standards. A Water Quality Certification or a waiver must be obtained from the RWQCB if an activity requiring a Section 404 permit would affect WoS. Additionally, the RWQCB issues waste discharge requirements for discharges to WoS for fill of wetlands and other waters that are not regulated by Section 404 of the federal CWA.

5-3 Local

5-3.1 Catalina Island Local Coastal Management Plan

The Open Space Easement Agreement that was signed between the County of Los Angeles and the Santa Catalina Island Company allowed for the development of the island. This agreement also called for the preservation of the natural character of the Island and improvement of the Island’s access and recreational opportunities. The Santa Catalina Island Conservancy was established to manage the Island’s biotic resources in perpetuity. The California Coastal Act of 1976 calls for coastal areas such as Catalina to have a Local Coastal Plan (LCP) which recognizes and responds to the goals and requirements of the Open Space Easement Agreement, the Santa Catalina Island Conservancy, and the California Coastal act to ensure that the vast majority of the Island will remain in its natural state for future generations to enjoy. The main goals of this LCP are to provide shoreline access and recreation, resource protection, and control new development. The first goal is accomplished by increasing shoreline access and interior Island access, improved boater access, increase recreational activities, and expansion of the visitor season. The second goal is accomplished by preserving undisturbed areas, minimizing impacts or alteration of topography and natural resources, educating the public, improving habitat areas, and protecting sensitive environments. New developments must be compatible with these goals, ideally mitigating environmental impacts by channeling development into already developed or used areas.

6 Project Impact Analysis

6-1 Thresholds of Significance

The following significance criteria are based on Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines and provide the basis for determining the significance of biological resource impacts resulting from the proposed Project. The determination of whether a biological resource impact would be significant is based on the threshold described below and the professional judgment and recommendations of qualified MTS personnel.

Impacts are considered if the proposed Project would result in any of the following.

Threshold 1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

6-2 Project Elements

- Demolition and in-kind replacement of 80-foot-long vertical cantilevered seawall
 - Construction completed by landside vehicles and machinery.
 - Comprised of interlocking steel sheet piles or pre-stressed concrete sheet piles.
 - Use of vibratory, hammer, or a combination of both pile driving methods.
- Demolition and in-kind replacement of 50-foot groin
 - Nearshore construction completed by landside vehicles and machinery and potential for need of water vessels for offshore portions of groin.
 - Comprised of interlocking steel sheet piles or pre-stressed concrete sheet piles
 - Use of vibratory, hammer, or a combination of both pile driving methods.
- Restoration of beach profile with imported sands.
 - 6,000 cubic yards of sand imported from a clean upland source.
 - Sand to be compatible with naturally occurring sand, but of a slightly larger grain size to help retain the wall.

6-3 Project Impacts and Mitigation Measures

6-3.1 Construction Related Impacts

In general, construction activities from implementation of the proposed Project could cause construction-induced noise, increases in turbidity, and release of particulates and chemicals of concern into U.S. and State waters. These impacts fall under Threshold 1. A discussion of each of these potential construction-related impacts is provided below.

6-3.1.1 Construction Noise Impacts on Marine Resources

The use of large equipment and in particular the use of vibratory and pile driving methods for installation of sheet pile could result in construction-induced noise impacts. Construction-induced noise impacts from landside construction activity and overwater construction activities such as pile-driving could disrupt the behavior of piscivorous birds, marine mammals, and turtles (**Impact-1**). In-water construction associated with the proposed Project could generate enough underwater noise

to physically injure marine mammals, sea turtles, and fishes, should impact hammer or vibratory pile driving occur. In-water impact hammer or vibratory driving methods could potentially generate enough underwater noise to injure (Level A Harassment) or alter behavior (Level B Harassment) for marine mammals, green sea turtles, and fishes. It is unlikely that marine mammals or turtles will inhabit the area; however, noise can impact the foraging behavior of local piscivorous birds such as the California brown pelican. This impact is considered significant without mitigation.

6-3.1.2 Construction Water Quality Impacts on Marine Resources

Construction activities associated with pile driving activities and potential vessel use could increase levels of turbidity in waters within Avalon Bay in the absence of mitigation (**Impact-2**). This could occur either during activities such as pile driving, incidentally during vessel contact with bottom substrate, and by propeller wash in shallower water. Increases in water turbidity may occur as a result of displaced sediment from pile installation or removal. Increased sedimentation and turbidity can also be accompanied by lower dissolved oxygen content. In general, increased turbidity could limit the ability of sensitive piscivorous avian species to locate prey.

Construction activities could potentially result in impacts on protected species by the inadvertent introduction of pollutants such as fuel, oil, and/or other industrial and mechanical fluids into waters of the U.S., either from construction equipment, landside construction vehicles, construction vessels, and from partially completed structures (**Impact-3**). Additionally, the placement of sheet piles may involve pouring and curing concrete in the water if steel sheet piles with a concrete cap are used. Recently-cast concrete is known to increase the pH level of water it contacts, which has the potential to harm marine species. However, given the small amount of concrete to be poured, there will be no measurable and no significant alteration of pH. Thus, the impacts of the small amount of concrete used for this Project are less than significant.

6-3.1.3 Construction Impacts on Benthic Species

Direct impacts to the benthic community would include the loss or mortality of any benthic infauna and epifauna within areas of sand deposition (**Impact-4**). The area is not host to any particularly unique or sensitive species and adjacent soft-bottom habitat would be expected to provide alternative foraging habitat for motile species following the bottom disturbance. It is anticipated that the disturbed areas would be re-colonized by adult migration from adjacent areas as well as colonization by larval recruitment. As such, the impact of sand deposits on the beach are less than significant without mitigation.

6-3.2 Construction Related Mitigation Measures

6-3.2.1 Construction Noise Mitigation Measures for Marine Resources

Mitigation measures for reducing noise related impacts on sensitive marine mammals, turtles, and avian species (**Impact-1**) include construction monitoring during vibratory and impact driving activities (**Mitigation-1**). When these activities occur, a qualified biologist would monitor for sensitive species within 200 meters of the activity. The monitor would have the ability to reduce or temporarily stop noise producing activities if those activities were believed to impact or otherwise alter behavior of sensitive avian, marine mammal, or turtle species. The Project applicant shall take specific actions to reduce or temporarily stop noise-producing activities if the qualified biologist identifies that the activities are impacting the foraging behavior of sensitive avian species. These actions shall include,

but not be limited to, the installation of sound barriers, reducing intensity of pile driving, and restricting pile driving to periods when sensitive avian species are not present. Implementation of **Mitigation-1** would reduce impacts to sensitive piscivorous avian predators during the nesting season to less than significant by minimizing the effects of noise producing activities that could alter foraging behavior.

Potential impacts on marine mammals and green sea turtles (**Impact-1**) can be minimized by implementing the additional measures required under mitigation measure **Mitigation-1**. For these receptors this mitigation measure requires monitoring for hauled out marine mammals wherever noise generating activities are in excess of 90 dB root mean square (RMS) for harbor seals and 100 dB RMS for non-harbor seals (sea lions) or if the haul out is within 200 meters of the noise source. The noise level criteria are established by NOAA NMFS as noise levels for a Level B harassment (behavior alteration) of marine mammals when those mammals are hauled out. Protecting marine mammals against Level B harassment when hauled out also ensures protection against Level A harassment (injury). If marine mammals are hauled out within the zone where sound thresholds are exceeded, then the biological monitor will notify the contractor to halt or alter the noise generating activity such that construction noise is at or below 90 dB RMS or 100 dB RMS for harbor seals and non-harbor seals, respectively.

For portions of the proposed Project that generate in water noise such as impact hammer and vibratory pile driving, the biological monitor will monitor for marine mammals and sea turtles when in the water within 200 meters of the sound source. Given the work is occurring in the high intertidal and given the structures within Avalon Bay that may deflect and cause shadows for noise, this distance is sufficient to ensure protection of sensitive receptors when in the water. Like monitoring for hauled out animals, the biological monitor will have the authority to halt or modify work based on animal observations relative to the monitoring zone. There is no specific guidance for sea turtles, but they are often monitored alongside marine mammals to ensure their protection.

In addition, Project activities where impact hammer and vibratory pile driving occurs shall utilize a soft start for pile driving. This generally means performance of three pile strikes at reduced (approximately 50%) force, then waiting 30 seconds. This is repeated three times before starting pile driving at full force. This measure provides time for marine mammals, green sea turtles, and fishes to disperse from the sound source area in the event that the sound is a source of stress for the animal. Implementation of all elements of **Mitigation-1** would reduce impacts to less than significant.

6-3.2.2 Construction Water Quality Mitigation Measures on Marine Resources

Turbidity generated by in-water construction activities (**Impact-2**) can be reduced by implementing various measures required under **Mitigation-2**. These measures include contractor education and implementation of a few best management practices. Vessel operators shall be instructed regarding the impacts of propeller wash with regards to erosion of sediment and suspension of fine particulates; this will allow vessel operators to adjust operations, when possible, in ways that lessen impact. All vessels would be required to use depth sounders which are routinely checked to ensure vessels are positioned to avoid shallow water areas to the extent practical. Finally, when construction involves necessary bottom disturbance such as pile driving, silt curtains would be in place around the activity

to limit the spread of any turbidity generated during the bottom disturbing activity. Implementation of all aspects of **Mitigation-2** will reduce **Impact-2** to less than significant.

Construction crews will have appropriate spill kits on site and shall not fuel or clean equipment on site unless a spill containment structure is in place. As such, **Mitigation-3** would reduce impacts to less than significant.

6-4 Impacts and Mitigation Summary

Impact-1: Construction-induced noise impacts from landside construction activity and overwater construction activities such as pile-driving could disrupt the behavior of piscivorous birds, marine mammals, and turtles.

Mitigation-1: Implement sensitive species monitoring protocols during pile-driving activities.

Impact-2: Construction activities associated with pile driving activities and potential vessel use could increase levels of turbidity in waters within Avalon Bay in the absence of regulations

Mitigation-2: Contractor education and implementation of a few best management practices such as use of a silt curtain, reduction of propeller wash, and use of a depth sounder.

Impact-3: Construction activities could potentially result in impacts on protected species by the inadvertent introduction of pollutants such as fuel, oil, and/or other industrial and mechanical fluids into waters of the U.S.

Mitigation-3: Construction crews will have appropriate spill kits on site and shall not fuel or clean equipment on site unless a spill containment structure is in place.

Impact-4: Direct impacts to the benthic community would include the loss or mortality of any benthic infauna and epifauna within areas of sand deposition. This impact is considered less than significant without mitigation as there are no sensitive species and those present would quickly be replaced through migration or settlement.

6-4.1 Level of Significance After Mitigation

Implementation of **Mitigation-1** would reduce potential noise related impacts on piscivorous birds, marine mammals, and turtles. (**Impact-1**) to less than significant by requiring construction monitoring by a qualified biological monitor. The monitor would have the ability to reduce or temporarily stop noise producing construction activities if those activities were believed to impact or otherwise alter the behavior of any sensitive species. The monitor would be crucial in identifying when species are approaching or the monitoring zone to prevent Level B harassment and halting in-water pile driving activities until the species has left the construction area. Managing for Level B harassment (behavior) ensures protection against Level A harassment (injury).

Implementation of **Mitigation-2** would reduce impacts associated with **Impact-2** to less than significant levels by requiring implementation of training and construction measures, such as silt curtains, which will protect the foraging behavior of sensitive avian species from turbidity impacts.

Implementation of **Mitigation-3** would reduce **Impact-3** to less-than-significant levels by requiring construction crews to have appropriate spill kits on site and not allowing any on-site fueling unless proper barriers are in place.

Impact-4 is considered less than significant without mitigation due to the ability of organisms to quickly recolonize the areas of beach that could be smothered by imported sand.

7 Discussion

The biological communities present within the designated study area are typical of the bays and shorelines in the region, and are not notably diverse, unique, or sensitive. Fish and invertebrate species that were observed during SCUBA surveys throughout the Project site are generally considered common through the bays and shorelines of the region and would generally not be put at risk by activities such as those proposed by this Project.

The marine habitat within the Project site is generally composed of subtidal unvegetated soft-bottom with sporadic rock outcroppings, fields of cobble, and riprap lining the shoreline. Flora and fauna observed within the Project site were typical of species likely to occur within Avalon Bay. Two nearly threatened species were observed, thornback rays and shovelnose guitarfish, on the sandy bottom. These species are unlikely to be impacted by the placement of sand as the sand will be placed close to the wall and within the intertidal zone. The sand will then naturally migrate to the natural angle of repose. This would occur slowly and allow these fishes to move without burial. Additionally, commercially, and recreationally important California lobster was observed throughout the Project site associated with subtidal riprap. Invasive species seen include *Sargassum muticum* which has become extremely common in Southern California and the Channel Islands and is not of particular threat or concern.

The proposed Project would consist of construction and operational activities in marine environments. Construction related impacts on marine resources that could occur from this Project include construction-induced noise impacts, increases in turbidity, and release of particulates and chemicals of concern into U.S. or State waters. No permanent operational impacts are foreseen as a result of this project as all project elements are generally in-kind replacements.

Construction-induced noise impacts from overwater and in-water construction activities such as pile driving could disrupt the behavior of sensitive avian, marine mammal, and turtle species (**Impact-1**). In-water construction activities could generate enough underwater noise to physically injure marine mammals, sea turtles, and fish should impact hammer or vibratory pile driving occur during construction. However, the implementation of **Mitigation-1** would reduce these Project level impacts to less than significant. In-water construction activities that involve bottom sediment disturbance would also potentially result in temporary increases in turbidity, which could limit the ability of California brown pelicans and other sensitive piscivorous avian species to locate prey (**Impact-2**). However, this Project level impact would be reduced to less than significant with implementation of **Mitigation-2**, which requires implementation of various construction measures to reduce turbidity and its effects on foraging. Additionally, impacts to water quality could occur by accidental spills or fueling on-site (**Impact-3**) which is reduced by having proper spill kits and best management practices

in place (**Mitigation-3**). Finally, the placement of imported upland sediment onto the beach could result in a temporary loss of benthic and epibenthic species (**Impact-4**) which is considered less than significant without mitigation due to nearby soft-bottom habitat providing means for swift recolonization of the area.

It is not anticipated that the green sea turtle or other sensitive species noted above would be significantly impacted by the proposed improvement or construction activities. GSTs are not likely to be seen at the Project site due to the urbanized environment and lack of substantial eelgrass resources or floating macroalgae in the area. However, the pile driving associated with structural pile replacement may produce noise levels that can cause behavioral disruption of marine mammals and green sea turtles if they were to occur.

Many of the pacific coast groundfish and coastal pelagic fish species are unlikely to occur at the Project site due to the urbanized and shallow nature of the site as well as the lack of seagrass and kelp forest habitat. Although the Project site has moderate species diversity, the majority of species were found surrounding artificial structures such as riprap and moorings. The availability of such hard substrates provided by shoreline urbanization allows for these species to exist within the Project area by increasing the habitat complexity of the shoreline. Additionally, the Project area falls under essential fish habitats for many pelagic species such as several tuna and shark species but, due to the epipelagic nature of the area, these species are not likely to be encountered.

The purpose of this assessment was to determine whether proposed Project activities would have any effect on the surrounding marine environment, or to the marine flora and fauna reliant on the resources provided by this marine environment. Based on the analyses previously described in this assessment, it has been determined that any potential impacts caused by the Project to the marine environment, sensitive species, and marine mammals can be reduced to less than significant and impacts would be reduced if mitigation measures are followed.

8 References

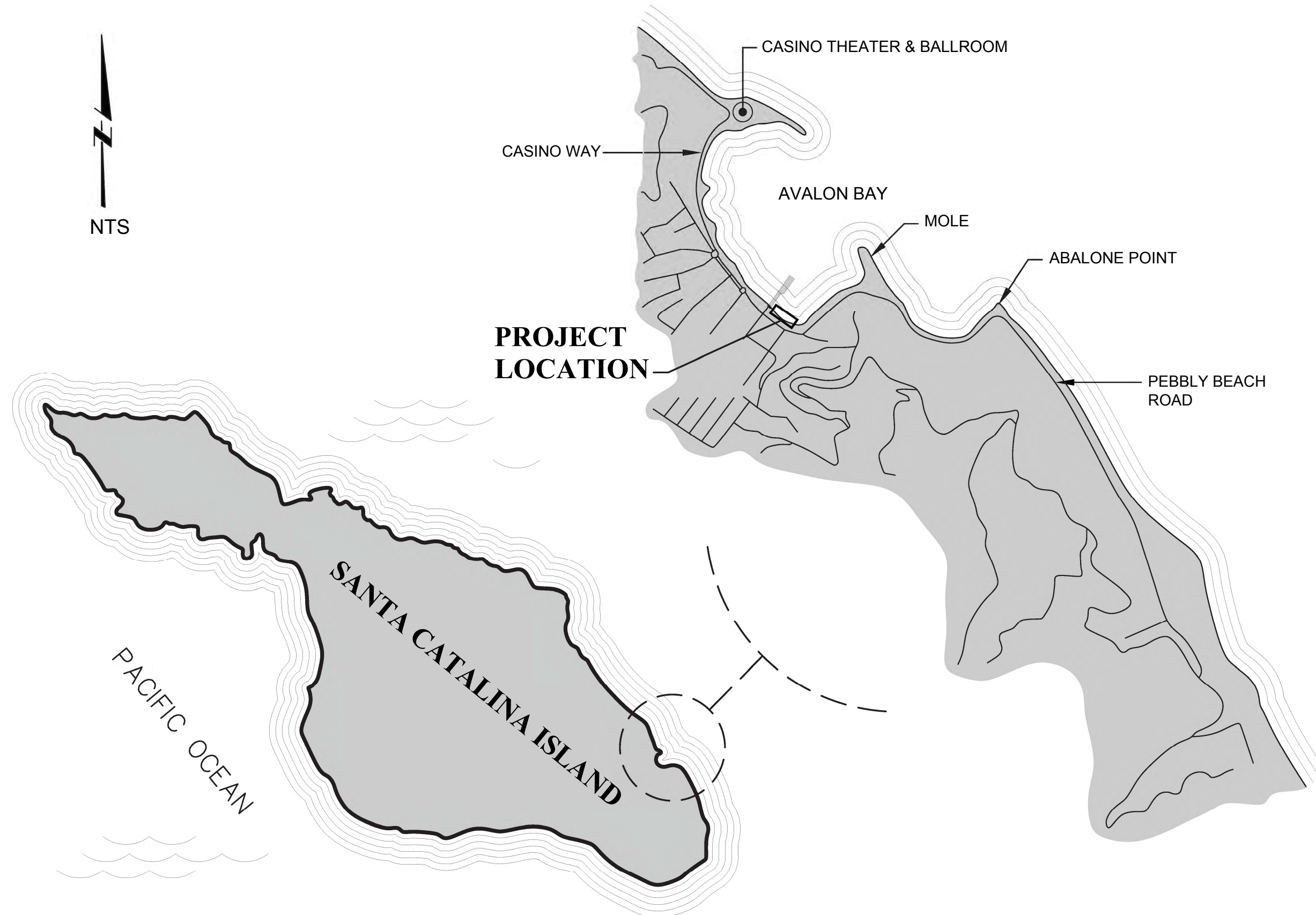
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Appendix A: Project Plans

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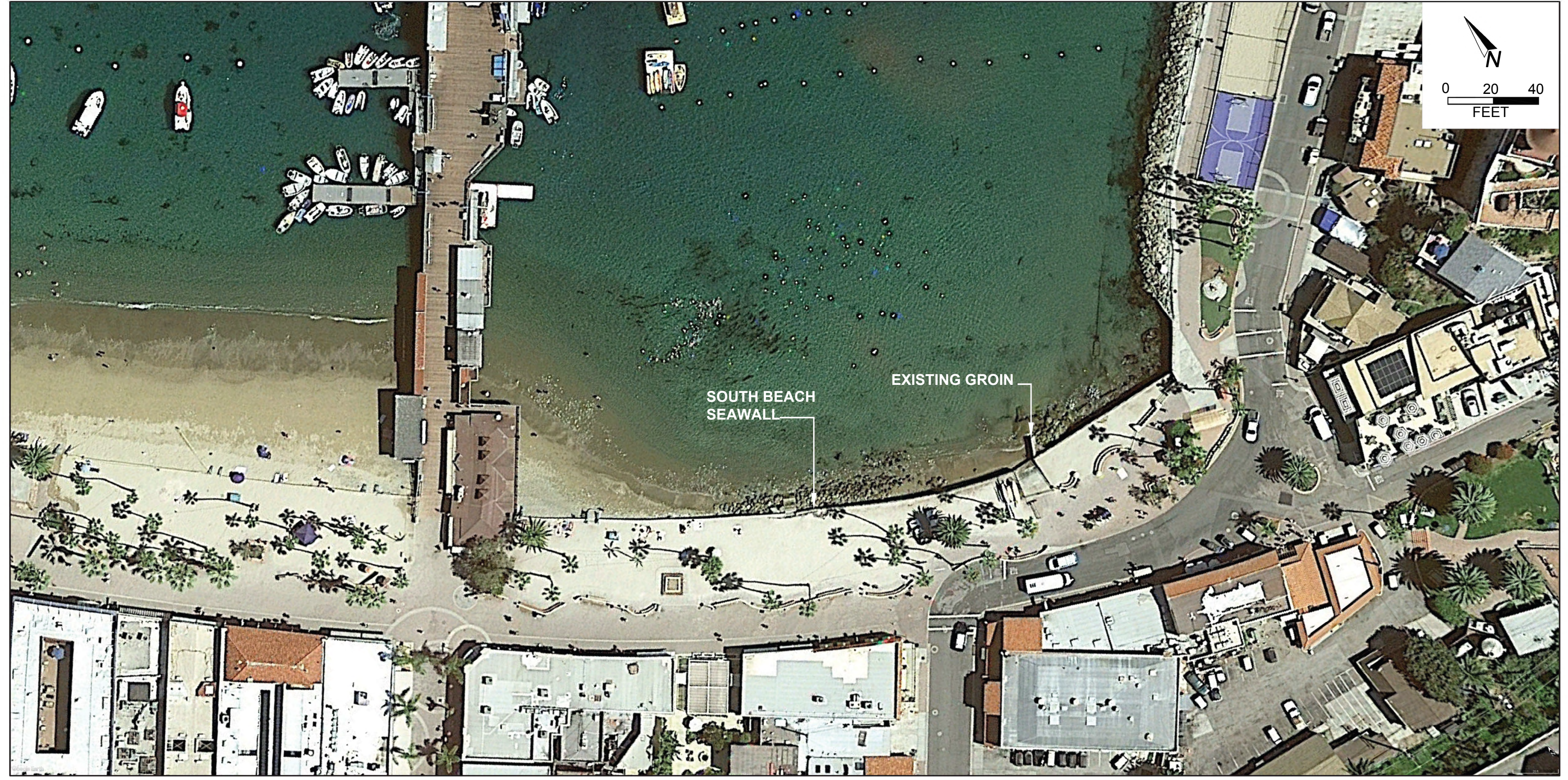


VICINITY MAP
NO SCALE

GENERAL NOTES

- GOVERNING CODE AUTHORITY: CITY OF AVALON.
- WORK SHALL COMPLY WITH 2022 CBC.
- CONTRACTOR TO COMPLY WITH ALL CAL/OSHA REQUIREMENTS.
- GENERAL NOTES AND TYPICAL DETAILS APPLY TO THE DRAWINGS UNLESS NOTED OR DETAILED OTHERWISE.
- WHERE DISCREPANCIES BETWEEN GENERAL NOTES AND DRAWINGS OCCUR, DRAWINGS TAKE PRECEDENCE.
- DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, USE SIMILAR DETAILS OF CONSTRUCTION SUBJECT TO REVIEW BY ENGINEER.
- THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURES. UNLESS OTHERWISE SHOWN, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR WILL SUPERVISE AND DIRECT THE WORK AND IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY FIELD REPRESENTATIVES OF THE ENGINEER DO NOT INCLUDE INSPECTIONS FOR PROTECTIVE MEASURES OR THE PROCEDURES REQUIRED FOR CONSTRUCTION. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION ARE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES, WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES WHICH ARE FURNISHED BY THE ENGINEER, WHETHER OF MATERIAL OR WORK, AND WHETHER PERFORMED PRIOR TO, DURING OR AFTER COMPLETION OF CONSTRUCTION, ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS, BUT THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND IS NOT TO BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
- ALL CONDITIONS SHOWN OR NOTED AS EXISTING ARE BASED ON BEST INFORMATION CURRENTLY AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS. NO WARRANTY IS IMPLIED AS TO THE ACCURACY OF SAME. FIELD VERIFY ALL CONDITIONS AND IMMEDIATELY BRING TO THE ATTENTION OF THE ENGINEER, WHEN IT BECOMES APPARENT, ANY CONDITIONS THAT DIFFER FROM THE CONDITIONS SHOWN HEREIN. THE ENGINEER WILL THEN PREPARE ADDITIONAL DRAWINGS AS MAY BE NEEDED TO ACCOMMODATE THE CONDITIONS AS BROUGHT TO THEIR ATTENTION.

PLANS FOR:
SOUTH BEACH RESTORATION
AVALON, CALIFORNIA



PROJECT LOCATION - GOOGLE EARTH
NO SCALE

SHEET INDEX

SHT. #	DWG. #	DESCRIPTION
1	T-1	TITLE SHEET
2	C-1	NOTES
3	C-2	SITE PLAN & WALL PROFILE
4	C-3	SHEET PILE DETAILS

STANDARD SPECIFICATIONS

- STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREENBOOK", CURRENT EDITION.)

PROJECT SCOPE OF WORK

THIS PROJECT CONSISTS OF THE FOLLOWING:

- REPLACE DAMAGED PORTIONS OF SOUTH BEACH SEAWALL
- DEMOLISH EXISTING GROIN AND REPLACE

ENGEO
Expect Excellence
3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900



DIRECTOR OF PUBLIC WORKS CATALINA ISLAND			CITY OF AVALON 410 AVALON CANYON ROAD AVALON, CALIFORNIA 90704 PHONE: (310) 510-0220 FAX: (310) 510-2478				<table><tr><th>REVISION</th><th>DATE</th></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>	REVISION	DATE											<table><tr><td>FULL SIZE: 24x36</td><td rowspan="3">SHEET TITLE: SOUTH BEACH RESTORATION TITLE SHEET</td></tr><tr><td>HALF SIZE: 11x17</td></tr><tr><td>DATE: 06/21/24</td></tr><tr><td colspan="2">NOTE: THIS DRAWING IS REDUCED AND NOT TO SCALE IF SHEET SIZE IS SMALLER THAN 24" x 36"</td></tr></table>	FULL SIZE: 24x36	SHEET TITLE: SOUTH BEACH RESTORATION TITLE SHEET	HALF SIZE: 11x17	DATE: 06/21/24	NOTE: THIS DRAWING IS REDUCED AND NOT TO SCALE IF SHEET SIZE IS SMALLER THAN 24" x 36"		<table><tr><td colspan="2">DRAWING NO. T-1</td></tr><tr><td colspan="2">SHEET 1 OF 4</td></tr></table>	DRAWING NO. T-1		SHEET 1 OF 4	
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DRAFT

WORK TO BE DONE

THE WORK TO BE DONE GENERALLY CONSISTS OF THE CONSTRUCTION OF A AN APPROXIMATELY 80-FOOT-LONG VERTICAL CANTILEVERED SEAWALL. THE WALL SHALL BE LOCATED BETWEEN THE INTACT EXISTING SEAWALL TO THE NORTH AND SOUTH OF THE WALL REPLACEMENT. THE SEAWALL CAP WILL INCORPORATE A WAVE DEFLECTOR.

THE CONTRACTOR SHOULD BE AWARE THAT BURIED RIPRAP MAY EXIST WITHIN THE GENERAL LIMITS OF WORK, AND THAT THE REMOVAL AND OFF-SITE DISPOSAL OF ANY RIPRAP ENCOUNTERED IS INCLUDED IN THE SCOPE OF WORK.

PILE DRIVING SPECIFICATIONS

1. RESPONSIBILITY. OWNER WILL ACCEPT NO RESPONSIBILITY FOR THE DRIVABILITY OF PILES AS SHOWN AND SPECIFIED. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO THE EXTENT OF ANY EXISTING RIPRAP, DEBRIS OR EXISTING WALLS THAT MAY BE BURIED ALONG THE PROPOSED SHEET-PILE ALIGNMENT PRIOR TO START OF WORK. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED DUE TO THE PRESENCE OF ROCK AND/OR DEBRIS ALONG THE SHEET-PILE ALIGNMENT THAT IS NOT REMOVED BY THE CONTRACTOR PRIOR TO SHEET-PILE INSTALLATION.
2. PILE LOCATIONS. STAKED-OUT PILE LOCATIONS SHALL BE PROTECTED FROM DAMAGE OR MOVEMENT. COST FOR REPLACING MOVED OR DAMAGED STAKES SHALL BE BORNE BY THE CONTRACTOR UNDER THIS SECTION OF WORK.
3. MATERIALS. STEEL SHEET PILES SHALL CONSIST OF INTERLOCKING, HOT-ROLLED PZ 27 (GRADE 50 STEEL) AS CALLED FOR ON THE PLANS, OR APPROVED EQUAL. CONCRETE PRE-STRESSED SHEET PILES AHLL BE CAST AT AN APPROVED PRE-CASTING YARD AS CALLED FOR ON THE PLANS
4. PILE HAMMER. STEEL SHEET PILES MAY BE DRIVEN TO GRADE INDICATED USING EITHER VIBRATORY OR CONVENTIONAL PILE HAMMER, OR BOTH. PRECAUTIONS MUST BE TAKEN DURING DRIVING TO ACHIEVE PLUMBNESS IN ALL DIRECTIONS, THAT PILES DO NOT BREAK OUT OF INTERLOCKS, AND THAT PILE HEADS ARE NOT DAMAGED BY IMPROPER DRIVING. CONCRETE PRE-STRESSED PILES HAVE BEEN DESIGNED TO BE JETTED TO WITHIN 3-FEET OF DESIGN TIP ELEVATION, THE VIBRATED OR DRIVEN TO FINAL DESIGN TIP ELEVATION.
5. ALIGNMENT. PROVIDE SUFFICIENT FALSEWORK TO MAINTAIN A STRAIGHT SHEET-PILE WALL. DO NOT EXCEED 1/8-INCH PER FOOT MAXIMUM DEVIATION FROM VERTICAL OVER ANY SECTION OF LENGTH. KEEP PILE CENTERLINE AT COMPLETION OF DRIVING WITHIN 2½ INCHES OF DESIGN LOCATION. ADJACENT SHEET PILES SHALL BE ALIGNED WITHIN ½ INCH OF EACH OTHER. PULLING PILES INTO POSITION WILL NOT BE PERMITTED.
6. DRIVING CRITERIA. DRIVE ALL PILES IN CONTINUOUS OPERATION TO PLAN TIP ELEVATION. ALL PILES SHALL PENETRATE TO AT LEAST THIS DEPTH, REGARDLESS OF THE DIFFICULTY OF DRIVING ABOVE THIS DEPTH. THE CONTRACTOR SHALL FURTHER BE REQUIRED TO MAINTAIN PILE BUTT ELEVATIONS TO WITHIN ±2 INCHES OF THAT SHOWN ON THE PLANS.
7. EXISTENCE OF ROCK. IT SHOULD BE NOTED THAT ANY OF THE INSTALLATION TECHNIQUES DESCRIBED ABOVE WILL MEET REFUSAL ON ANY RIPRAP OR DEBRIS LEFT IN PLACE. THE CONTRACTOR SHOULD BE AWARE OF THE POSSIBLE PRESENCE OF EXISTING RIPRAP AND DEBRIS EXTENDING TO AN UNDETERMINED DEPTH ALONG THE SHEET-PILE ALIGNMENT, WHICH WILL REQUIRE REMOVAL PRIOR TO SHEET-PILE INSTALLATION.

REINFORCED CONCRETE PILE CAP SPECIFICATIONS

1. CONCRETE
- A. MATERIALS. CONCRETE FOR PILE CAP SHALL CONFORM TO ASTM C-150, TYPE V PORTLAND CEMENT AGGREGATE TO MEET SPECIFICATION OF ASTM C-33; MAXIMUM AGGREGATE SIZE IS ¾ INCH. CONCRETE CLASS SHALL BE 660-C-4000P IN ACCORDANCE WITH SECTION 201-1.1.2 OF THE SSPWC. MAXIMUM ALLOWABLE SLUMP SHALL BE 4 INCHES. IN ACCORDANCE WITH ASTM C-143. CONCRETE CONTAINING CHLORIDES SHALL NOT BE USED.
- CONCRETE SHALL BE PRODUCED IN A READY MIX PLANT, IN ACCORDANCE WITH ASTM C-94.
- B. PLACEMENT. CONCRETE SHALL BE ADEQUATELY VIBRATED AND COMPACTED DURING PLACEMENT. CONCRETE SHALL BE CURED SEVEN (7) DAYS BY THE WET CARPET METHOD, OR OTHER METHOD APPROVED BY THE ENGINEER.
2. REINFORCING STEEL
- A. MATERIALS. ALL REINFORCING STEEL SHALL BE GRADE 60, CONFORMING TO ASTM A-615. ALL REINFORCING STEEL SHALL BE EPOXY COATED.

REINFORCEMENT SHALL BE SHOP FABRICATED PRIOR TO COATING, AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 284.

VISIBLE VOIDS IN THE COATING, REGARDLESS OF CAUSE SHALL BE PATCHED IF THE TOTAL AREA OF VOIDS EXCEEDS 0.25 PERCENT OF THE SURFACE OF THE BAR. BARS THAT REQUIRE SURFACE PATCHING LESS THAN 5 PERCENT OF THE TOTAL SURFACE AREA OF THE BAR MAY BE FIELD COATED WITH AN APPROVED PATCH MATERIAL SUPPLIED BY THE EPOXY FABRICATOR. BARS WHICH REQUIRE SURFACE PATCHING IN EXCESS OF 5 PERCENT OF THE TOTAL SURFACE AREA OF THE BAR WILL BE REJECTED.

- NOTE FOR #3 BARS WITH HOOK WELDED TO SHEETPILE:
1. STEEL SHALL BE ASTM GRADE A706.
2. DURING WELDING OF BAR HOOKS TO SHEETPILE, CARE SHALL BE USED TO MINIMIZE DAMAGE TO EPOXY COATING OF BAR HOOKS. NO REPAIR TO COATING DAMAGED BY WELDING IS REQUIRED, EXCEPT IN CASES WHERE POOR WELDING PRACTICES HAVE ALLOWED EXCESSIVE DAMAGE TO EPOXY COATING OF BAR HOOKS BEYOND THE IMMEDIATE SECTION OF BAR WELDED TO SHEETPILE. THE ENGINEER SHALL OBSERVE THE BAR HOOKS AFTER INSTALLATION AND DETERMINE WHICH, IF ANY, REQUIRE REPAIR OF THE EPOXY COATING. REPAIR SHALL UTILIZE A PATCHING MATERIAL AND REPAIR PROCEDURE APPROVED BY EPOXY FABRICATOR PRIOR TO USE.
- B. HANDLING AND PLACEMENT. ALL SYSTEMS FOR HANDLING COATED BARS SHALL HAVE PADDED CONTACT AREAS FOR THE BARS WHENEVER POSSIBLE. ALL BUNDLING BANDS SHALL BE PADDED AND ALL BUNDLES SHALL BE LIFTED WITH STRONG BACK, MULTIPLE SUPPORTS, OR A PLATFORM BRIDGE SO AS TO PREVENT BAR-TO-BAR ABRASION FROM SAGS IN THE BAR BUNDLE.

ALL FIELD CUTS SHALL BE IMMEDIATELY COATED WITH AN APPROVED PATCH MATERIAL SUPPLIED BY THE EPOXY FABRICATOR.

SPLICES OF REBAR SHALL HAVE A MINIMUM OVERLAP OF 18 INCHES.

- C. WELDING. ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE STRUCTURAL WELDING CODE AWS D1.4 - STEEL REINFORCEMENT AND SECTION 304-1.9 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

SITE ACCESS & STAGING NOTES

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ALLEYS, SIDEWALKS, PRIVATE DRIVEWAYS, AND PUBLIC STREETS AT ALL TIMES.

CONSTRUCTION EQUIPMENT AND ACTIVITIES PERFORMED ON THE SANDY BEACH AREA SHALL NOT RESTRICT LATERAL PUBLIC ACCESS.

CONSTRUCTION MATERIALS: DISTURBANCE TO SAND AND INTERTIDAL AREAS SHALL BE MINIMIZED. BEACH SAND EXCAVATED SHALL BE REDEPOSITED ON THE BEACH. LOCAL SAND OR COBBLES SHALL NOT BE USED FOR BACKFILL OR CONSTRUCTION MATERIAL.

CONSTRUCTION SCHEDULE: CONSTRUCTION ACTIVITIES SHALL CONFORM TO THE APPROVED SCHEDULES OF BOTH THE CITY OF AVALON AND THE CALIFORNIA COASTAL COMMISSION.

SPECIAL INSPECTION LIST

PROJECT NO. T3008.080.000		PERMIT NO.:	
PROJECT ADDRESS: SOUTH BEACH, AVALON			
DESCRIPTION OF TYPE OF INSPECTION REQUIRED (LOCATION, REMARKS, ETC.)	STRENGTH	CITY INSPECTOR	DATE
SHEETPILE INSTALLATION	PZ-27 SHEET PILES GRADE 50 STEEL		
CAST-IN-PLACE STRUCTURAL CONCRETE	F'c = 4000 psi		

DIRECTOR OF PUBLIC WORKS CATALINA ISLAND

APPROVED BY: BY DATE APPROVED BY:

DIRECTOR OF PUBLIC WORKS

DATE

CITY OF AVALON

410 AVALON CANYON ROAD
AVALON, CALIFORNIA 90704
PHONE: (310) 510-0220 FAX: (310) 510-2478



REVISION

DATE

FULL SIZE: 24x36
HALF SIZE: 11x17
DATE: 06/21/24
NOTE: THIS DRAWING IS REDUCED AND NOT TO SCALE IF SHEET SIZE IS SMALLER THAN 24" x 36"

SOUTH BEACH RESTORATION

SHEET TITLE:

NOTES & SPECIFICATIONS

DRAWING NO. T-2

SHEET 2 OF 4



3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900



80.0' LONG SEAWALL

PROPOSED SHEET PILE SEAWALL

CUTOUT FOR EXISTING STAIR

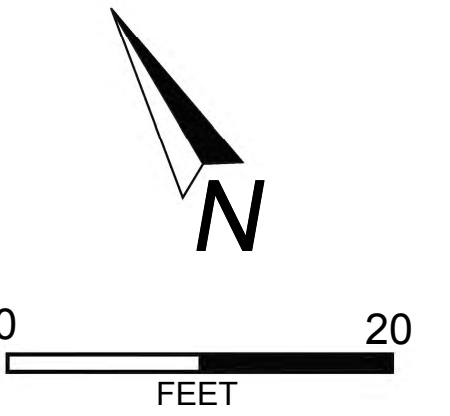
TOW EL. 10'

EL. 4.0'

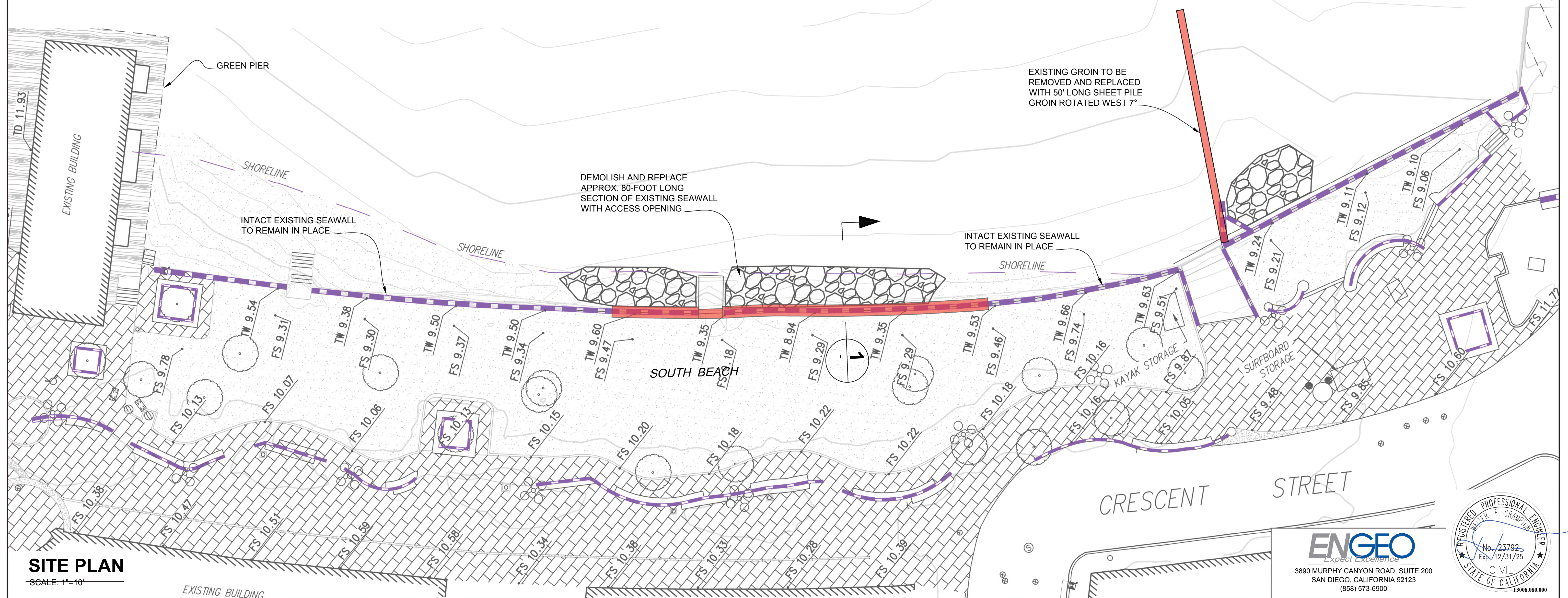
EL. 0'

EL. 4.0' BOTTOM OF CONCRETE COVER

EL. -20' BOTTOM OF SHEET PILE



SCALE: 1"=10'



~~SCALE: 1"=10'~~

DIRECTOR OF PUBLIC WORKS CATALINA ISLAND

APPROVED BY _____ BY _____ DATE _____

~~APPROVED BY:~~

~~DIRECTOR OF PUBLIC WORKS~~

DATE _____

410 AVALON CANYON ROAD
AVALON, CALIFORNIA 90704
PHONE: (310) 510-0220 FAX: (310) 510-2478



REVISION

DATE

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	HALF SIZE: 11x17
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DATE: 06/21/24

NOTE: THIS DRAWING IS
REDUCED AND NOT TO
SCALE IF SHEET SIZE IS
SMALLER THAN 24" x 36"

SHEET TITLE:

SITE PLAN



3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900



DRAWING NO. _____

C-2

SHEET
OF 4

