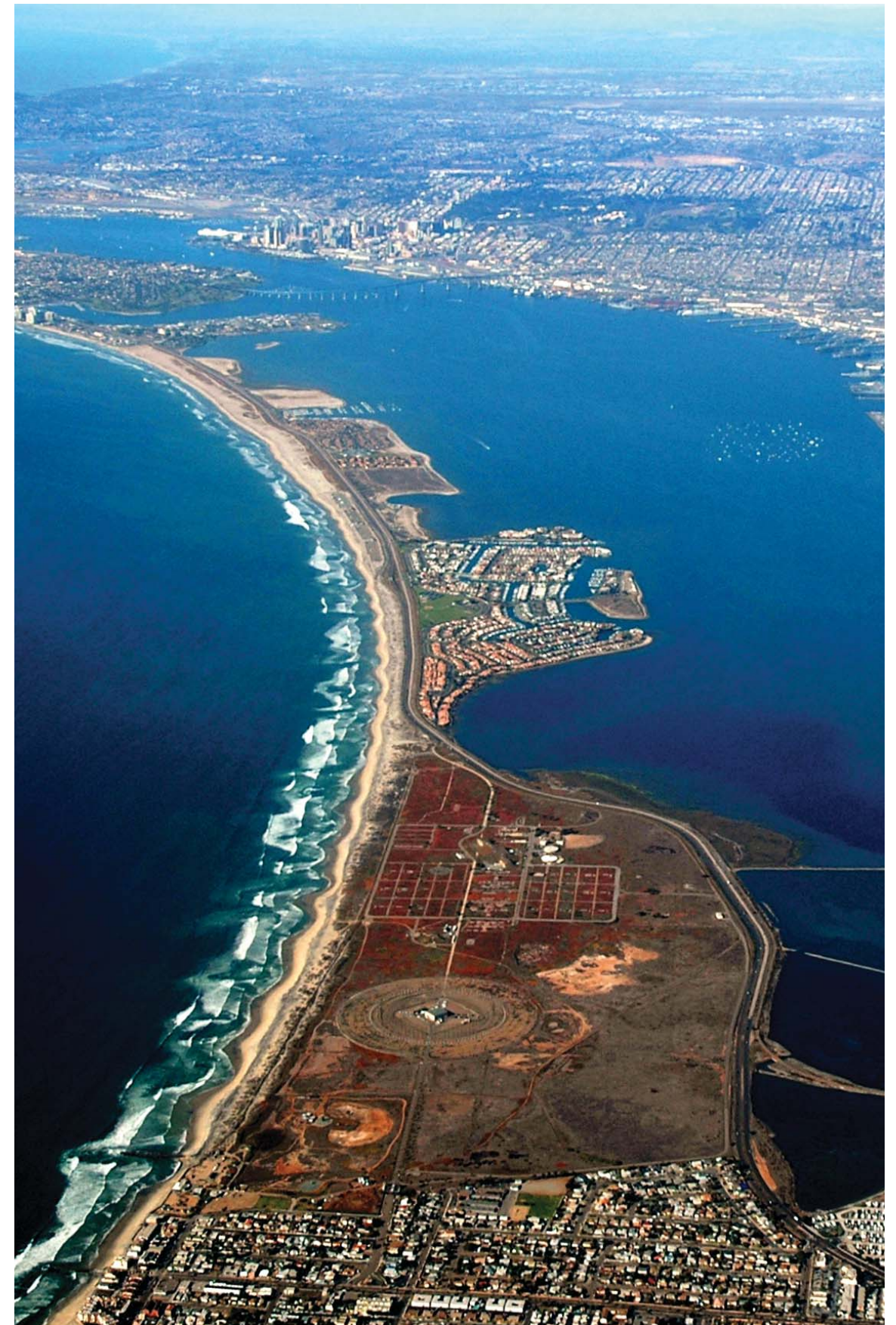


NAVAL BASE CORONADO COASTAL CAMPUS

Design Features



Design Features of the Area Development Plan and Design Guidelines

for
Commander Naval Installations Command,
Naval Base Coronado
and
Navy Region Southwest



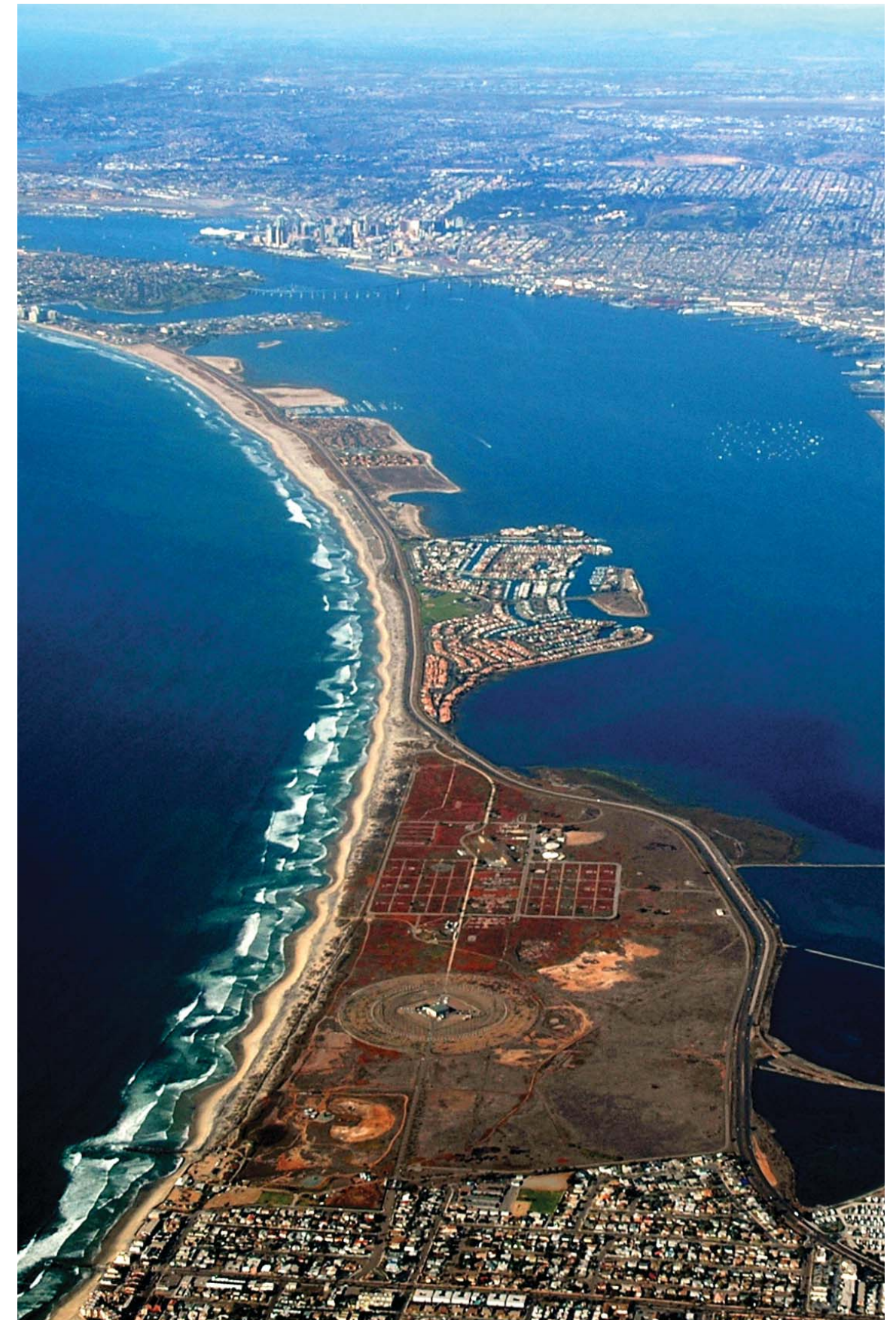
Prepared by:

RJC Architects, Inc.

320 Laurel Street, San Diego, California 92101

www.rjcarchitects.com 619.239.9292

28 Aug 2015



Executive Summary

EXECUTIVE SUMMARY

The Naval Base Coronado Coastal Campus Area Development Plan (ADP) identifies capacity for development of the existing Silver Strand Training Complex South (SSTC-S) in support of the Naval Special Warfare (NSW) community. The ADP provides detailed information on programmed Military Constructions (MILCONS) for that location and provides a detailed, visionary document to guide the development of a new Coastal Campus for the Naval Base Coronado Coastal Campus (NBC CC).

The NBC CC is being developed to prepare NSW forces to carry out assigned missions. The NBC CC will:

1. Resolve critical facility deficiencies. Existing facilities provide only 42% of required space, are poorly configured, and are in generally poor condition.
2. Generate / sustain capabilities close to home, improving the quality of life for 3,400 sailors.
3. Consolidate operations, training and logistics. Currently, activities are fragmented across 60 facilities in four geographically separated locations.

The NBC CC will provide primacy, privacy, and proximity to NSW operations, training and logistics.

The ADP is intended to ensure overall project conformity and consistency with the EIS and to provide straightforward design guidelines and standards for the NBC CC. The ADP has been developed through planning workshops and design charrettes conducted in March 2015. In the course of these workshops and design charrettes, participants identified program requirements, analyzed the site, and developed a plan that provides flexibility and long-range capacity. Design workshop and charrette participants worked collaboratively to develop the planning vision outlined in this ADP.

The EIS for NBC CC allows for phased development of approximately 1,459,000 SF of new facilities on the SSTC-S site, along with the necessary site grading, utility and transportation infrastructure, landscape and hardscape improvements, as well as parking for 2,784 privately owned vehicles (POVs) and government owned vehicles (GOVs).

NBC Coastal Campus ADP Planning Vision:

In support of current and future missions, the ADP supports the creation of a state of the art campus that will optimize the world-wide effectiveness of special operations warfighters. The campus will support operational, logistical, training, and administrative functions and will be adaptable to meet future mission requirements. While the campus is organized to maximize functional effectiveness, the ADP recognizes that functionality includes enriching the daily experience of the warfighters and enablers stationed there. Functionality also includes provision of appropriate settings for ceremony and ritual, and the campus will invest each occupant with a sense that they each contribute to a cause greater than self.

Through the EIS and the ADP planning sessions, eight design goals have emerged. The ADP is the product of a collaborative effort to achieve these goals.

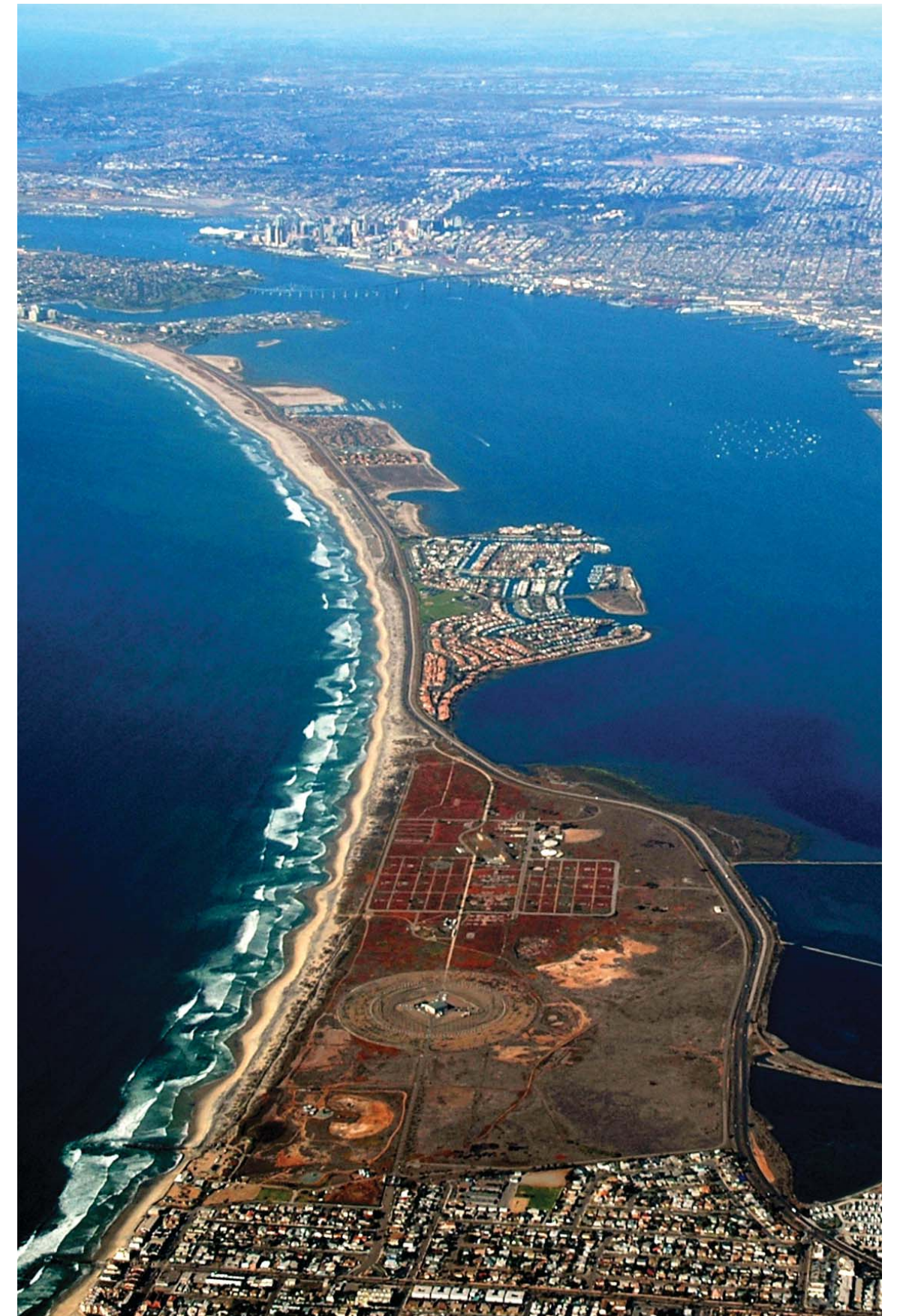
GOALS

1. **Create a true campus.**
2. **Create a campus design that is specific to its place.**
3. **Create secure and functional mission areas.**
4. **Create a plan that allows for phased development.**
5. **Develop new facilities that embody a Modern Environmental style.**
6. **Take full advantage of the climate.**
7. **Be good stewards of the natural and cultural environment.**
8. **Utilize building materials and systems that minimize maintenance costs and maximize enduring value.**



SSTC-S Aerial Image

Introduction



Background

PURPOSE

In support of current and future missions, the ADP envisions creation of a state of the art campus that will optimize the world-wide effectiveness of special operations warfighters. The campus will support operational, logistical, training, and administrative support functions and will be adaptable to meet future mission requirements.

LOCATION

Naval Base Coronado (NBC) is a consolidated Navy installation created in 1997, incorporating seven separate Naval installations under one Commanding Officer. Today, NBC comprises eight Navy installations in San Diego and Los Angeles counties:

- Naval Air Station North Island (NASNI)
- Naval Amphibious Base (NAB) Coronado
- Silver Strand Training Complex (SSTC)
- Naval Outlying Landing Field (NOLF) Imperial Beach
- Naval Auxiliary Landing Field (NALF) San Clemente Island
- Camp Michael Monsoor
- Remote Training Site Warner Springs
- Camp Morena

The Naval Base Coronado Coastal Campus (NBC CC) will be developed on the SSTC-S, located on the Silver Strand, a narrow, sandy isthmus separating the San Diego Bay from the Pacific Ocean. Much of the SSTC-S has been preserved for the protection of natural and cultural resources.

The SSTC-S is bordered by a developed portion of the City of Coronado to the north and the City of Imperial Beach to the south, with San Diego Bay to the east and the Pacific Ocean to the west. The NBC CC will be constructed on a developable area of approximately 167 acres on the SSTC-S.

HISTORY

The mission of SSTC is to support the Navy and Marine Corps amphibious, expeditionary, and special warfare training by providing local land, sea, and airspace support services, material, and training facilities that will help Naval and Marine Corps forces achieve and maintain the highest level of operational readiness.

The SSTC-S, located between the City of Imperial Beach and Silver Strand State Beach, near Coronado, has been a naval shore facility for over ninety years. Beginning in the early 1960's SSTC-S served as a site for Basic Underwater Demolition / SEALs (BUD/S) training, and it continues to serve as the site for Advanced Training Command (ATC).

Navy

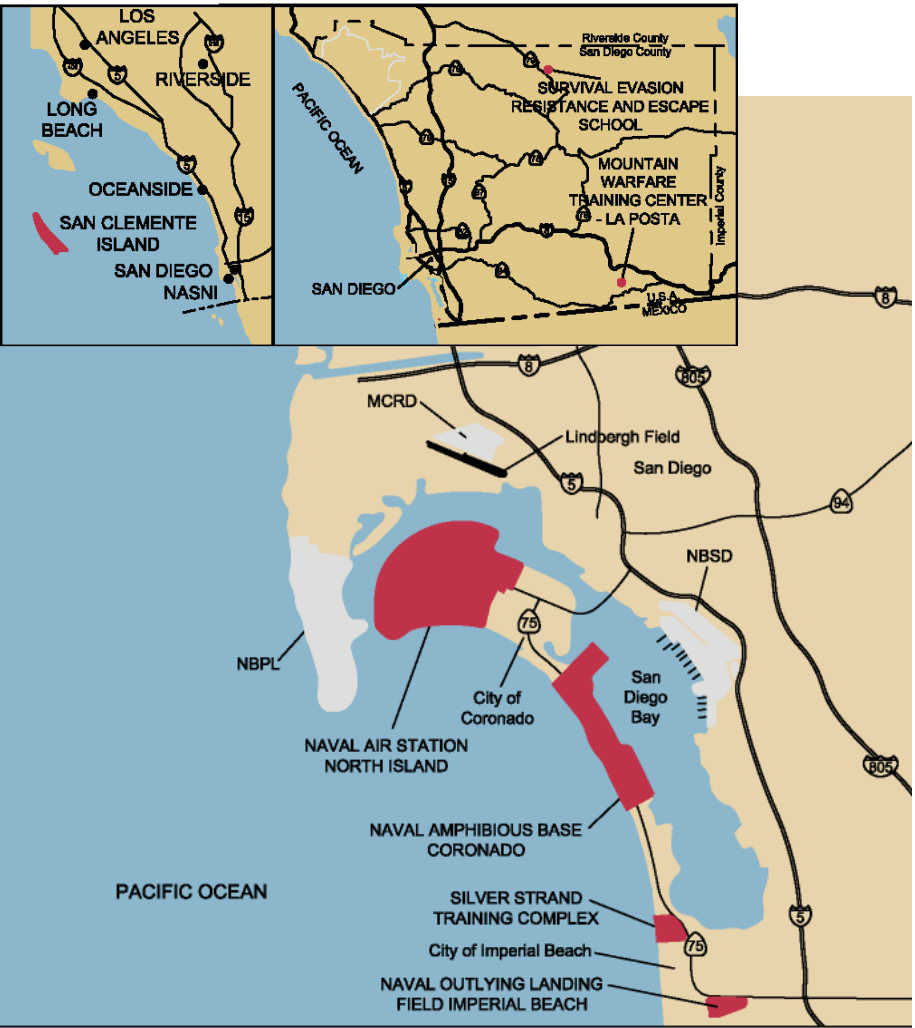
Initially created in 1920 as the Navy Radio Compass Station, the base was renamed in 1940 as the Navy Direction Finder Station (NDFS) when a permanent direction finding station was established. During World War II, WAVES (Women Accepted for Voluntary Emergency Service) engaged in Signals Intelligence operations were stationed at NDFS. By 1953, the base was known as Naval Radio Receiving Facility (NRRF) Imperial Beach, and in 1965 it received a Wullenweber Circular Disposed Antenna Array, the last of its type to be built. The Wullenweber was a large circular antenna array used for radio direction finding. It was used by the military to triangulate radio signals for radio navigation, intelligence gathering and search and rescue. Because its huge circular reflecting screen looks like a circular fence, the antenna was referred to by locals as the "Elephant Cage." The Wullenweber ceased operation in 1999.

Army

In 1942, the United States Army took ownership of 412.14 acres in Coronado Heights and designated it Fort Emory, named after Brigadier General William Emory. The area was used for harbor defense during the war, and there were two gun bunkers, Battery Imperial and Battery Grant. Armament of the base consisted of the four 155mm guns of Battery Imperial and two 6 inch guns of Battery Grant. Coastal radars were authorized in 1943. Construction of a 16 inch battery was completed in 1944, but the guns were never mounted. These guns would have supplemented another 16 inch battery, Battery Ashburn, at Fort Rosecrans. The land upon which the fort was located was declared surplus after the war and in 1950 the site was finally transferred to the Navy integrating with NDFS.

Naval Special Warfare

In recent years the SSTC-S has accommodated the Naval Special Warfare Advanced Training Command (ATC), which was established as a shore activity in December of 2006. The command supports more than 30 advanced training courses, seven detachments and 15 training sites across the country, including detachments in Alaska and Hawaii.



Naval Base Coronado Installation Diagram (1997 Installations)

Vision / Mission

VISION / MISSION

The Area Development Plan (ADP) for the NBC CC supports the creation of a state of the art campus that provides all the operational, logistical, training, and administrative functions and will be adaptable to meet future mission requirements. The ADP for NBC CC is based on preliminary planning developed during the preparation of an Environmental Impact Statement (EIS). In a series of workshops and design charrettes, stakeholders came together and established broad goals for the new campus.

ACKNOWLEDGMENTS

The EIS and ADP have all benefited from input from a wide range of stakeholders, including representatives from:

- Naval Facilities Engineering Command Southwest (NAVFAC SW)
- Naval Facilities Engineering Command Southwest Coastal Integrated Products Team (NAVFAC SW IPT)
- Naval Base Coronado (NBC)
- Navy Region Southwest (NRSW)
- Naval Special Warfare Command (NSWC)
- Naval Special Warfare Group ONE (NSWG-1)
- SEAL Teams ONE, THREE, FIVE, SEVEN
- SEAL Team SEVENTEEN
- Logistics Support Unit (LOGSU) ONE
- Training Detachment (TRADET) ONE
- Naval Special Warfare Group TEN (NSWG-10) Detachment Coronado
- Naval Special Warfare Group TEN (NSWG-10) Special Reconnaissance Team ONE (SRT-1)
- Naval Special Warfare Group TEN (NSWG-10) Cultural Engagement Unit (CEU)
- Naval Special Warfare Group ELEVEN (NSWG-11)
- Naval Special Warfare Center Advanced Training Command (NSWCEN ATC)

GOALS

Goal 1: Create a true campus. Create logical, comprehensible connections between facilities, functions, neighborhoods, and campuses by creating a connected transportation network of great streets, sidewalks, and bike paths providing safe, convenient and comfortable walks throughout the campus. Concentrate development to create a “walking campus.”

Goal 2: Create a campus design that is specific to its place. Maximize views from common areas to the Pacific Ocean and San Diego Bay. Segregate pedestrian and bike paths from vehicular movement to the maximum extent possible, and create view corridors that connect those pathways to the water.

Goal 3: Create secure and functional mission areas. Maximize efficiency through careful analysis of the proximity relationships of individual campus buildings. Recognize that many of the NBC CC buildings have large equipment / logistics yards, and utilize the buildings and enclosure walls to segregate and control access to these yards. Create buildings that have “front” doors as well as “back doors.” Comply with all AT/FP security standards.



Training Image

Goal 4: Create a plan that allows for phased development. Minimize the impacts of new development on on-going service missions.

Goal 5: Develop new facilities that embody a Modern Environmental style. The ADP envisions a campus that is recognized as a model of sustainable development, particularly with respect to energy and water conservation. The long term plan aims for a “net-zero” campus.

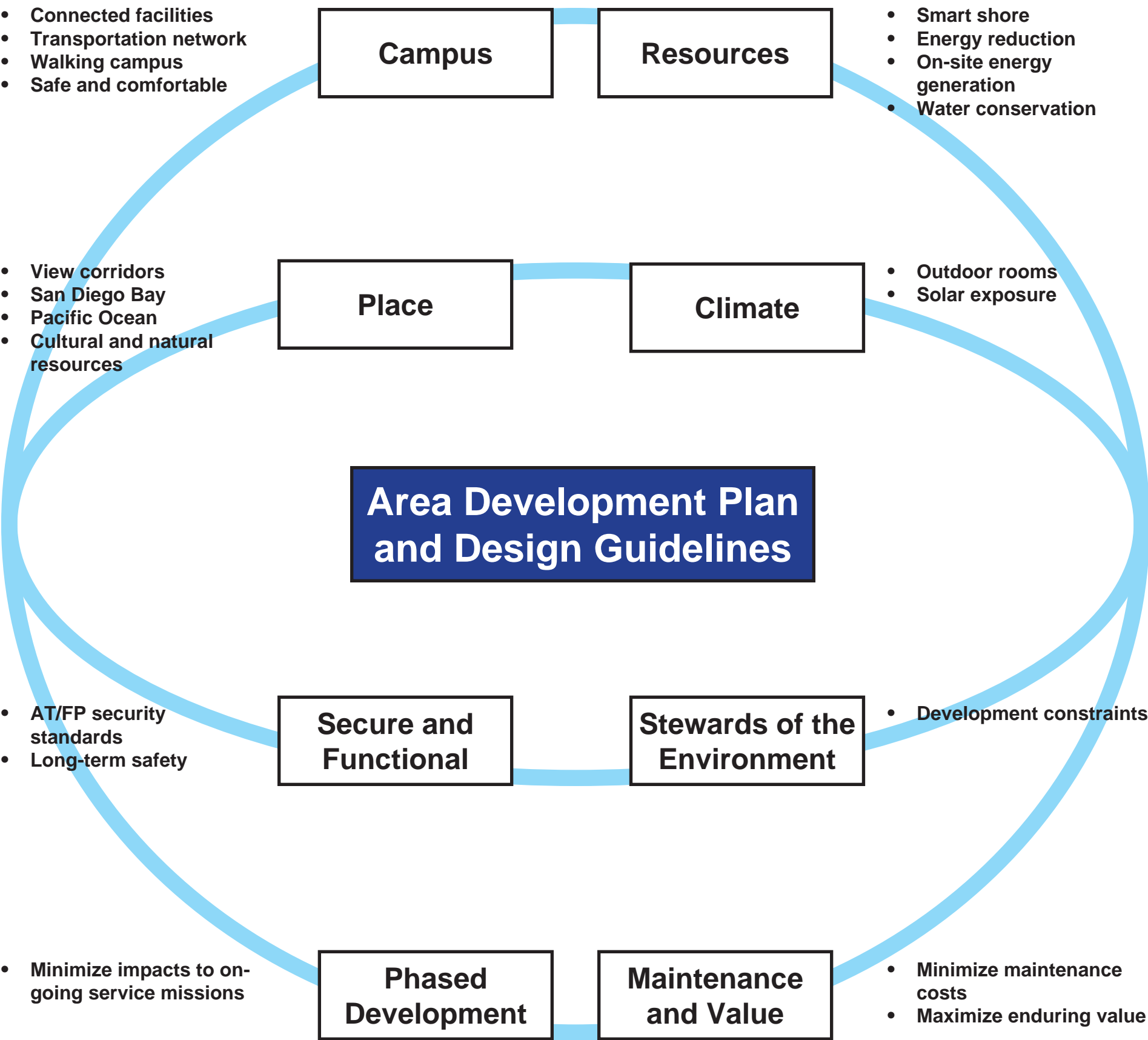
- Optimize integrated operations, utilities, and computer systems to provide synthesized command and control and enable an unified approach to shore management that reduces cost and optimizes resources in a cyber secure manner.
- Reduce energy consumption by a minimum of 30% beyond baseline Title 24 and ASHRAE standards.
- Maximize on-site energy generation through use of photovoltaic panels. Even if funding is not immediately available to achieve the campus’ net-zero goal, all buildings will be designed, at minimum, to be “photovoltaic ready.”
- Conserve water. Maximize water efficiency in plumbing and landscape design, and explore opportunities to treat and recycle wastewater.

Goal 6: Take full advantage of the climate. Site the buildings so that they define meaningful open space and create “outdoor rooms” to maximize return on investment. Optimize solar exposure. Whenever possible, orient the buildings so that east and west solar exposures are limited.

Goal 7: Be good stewards of the natural and cultural environment. Respect all the development constraints outlined in the EIS.

Goal 8: Utilize building materials and systems that minimize maintenance costs and maximize enduring value.

Strategic Planning Guidance and Operational Drivers



STRATEGIC PLANNING GUIDANCE

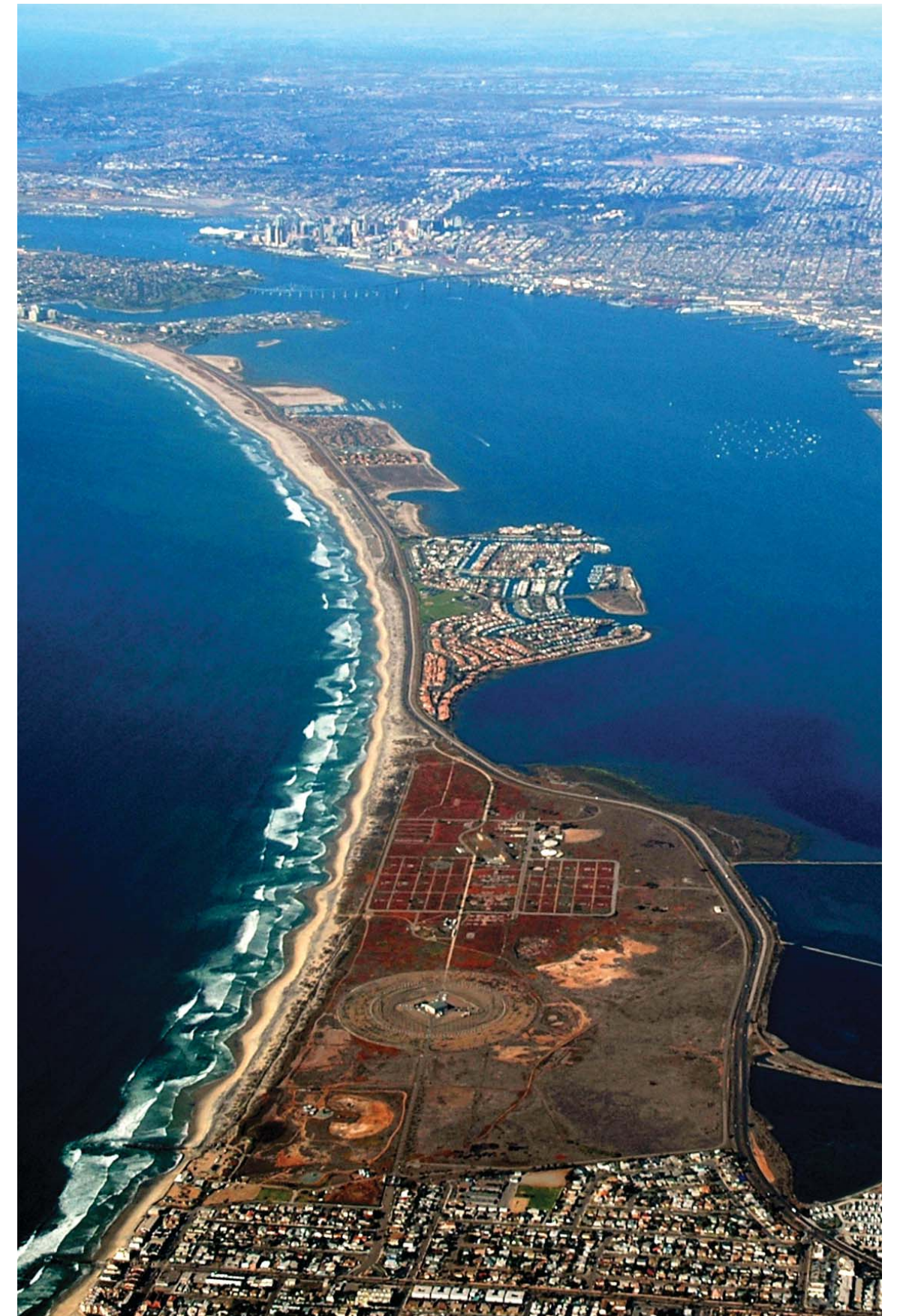
As part of the EIS, there was an extensive physical planning effort to provide a basis for the analysis of environmental impacts. The selected EIS alternative included demolition of the largest bunker on the site (Building 99) to increase the extent of developable area.

The EIS established project boundaries and a broad range of development constraints based on minimizing environmental impacts and maximizing protection of sensitive habitat, natural resources, and cultural resources. Coastal Campus infrastructure funding was secured in 2014. The cost estimates for infrastructure planning were calculated through quantity-of-materials surveys based on the selected EIS alternative.

The ADP should be understood as the latest phase of an extended environmental and physical planning process - an extension and a refinement of that earlier planning. The ADP seeks to improve the functional, perceptual, and experiential qualities of the selected EIS alternative through achievement of the project goals. Specific strategic planning concepts and operational drivers to achieve our planning goals are enumerated in Part III.

ADP Planning Process Diagram

Analysis



Environmental Considerations



SSTC-S Site Image



Bunker 99 Exterior Image

EXISTING CONDITIONS

At present, the SSTC-S is primarily used for maritime and field training but does provide limited infrastructure for classrooms, administration, and storage to support military training. It extends approximately 1.3 nautical miles along the Pacific Coast and encompasses approximately 548 acres of land owned by the Federal government from the mean high tide line on the bayside to the mean high tide line on the oceanside. SSTC-S also includes inland training areas and facilities inside a fenced area and oceanside beach and boat training lanes. In direction with the development boundaries developed in the EIS, NBC CC will be constructed on a developable area of approximately 167 acres on the SSTC-S.

SITE ACCESS

Regional access to SSTC-S is provided by Interstate 5 (I-5); local access is provided by State Route 75 (SR-75) and Palm Avenue.

Primary access to the site will be provided from SR-75 in the northern portion of SSTC-S. Access will be facilitated by additional turn lanes on SR-75, improved ingress and egress from SR-75, and a new Entry Control Point (ECP) constructed by P-947. The ingress / egress to SR-75 will be signalized. The improvements to SR-75 will include a new southbound right-turn lane and a lengthened northbound left-turn lane into the proposed Coastal Campus. These improvements will occur within the California Department of Transportation (Caltrans) right-of-way on land owned by the government.

The ECP will provide standard vehicle identification checks, personal identification checks, and truck inspection checks, along with parking. Design of the ECP and sentry house must, at minimum:

- Ensure the proper level of access control for all traffic to the Coastal Campus.
- Minimize headlight glare directed at the Coronado Cays.
- Accommodate peak traffic flows.

The existing southern controlled access gate will remain open; however, use of this gate will be limited to comply with the EIS.

SENSITIVE NATURAL RESOURCES

SSTC-S also includes areas of sensitive natural resources. Natural resources include an area of wetlands and vernal pools in the southeast portion of the site. There are several federally listed wildlife species on SSTC-S including San Diego fairy shrimp, Western Snowy Plover, and Light-footed Ridgway's Rail (formerly known as Light-footed Clapper Rail). Federally listed plant species include the salt marsh bird's beak.

The development boundaries established in the NBC CC EIS are incorporated into the ADP to limit new development to previously disturbed area in order to minimize impact on sensitive natural resources. These boundaries are shown on the Developable Area Plan in Part II.

TSUNAMI

The threat of flooding by tsunami is a potential hazard because of the adjacency of SSTC-S to the ocean. Tsunamis are long, shallow, high-velocity ocean waves that are typically generated by seismic activity. Historically, the highest recorded tsunami in San Diego County was 4.6 feet, following the 1960 Chilean earthquake. An earthquake along the San Clemente Fault, which shows evidence of vertical separation parallel to the coastline, could generate a tsunami along the California coast, and tsunamis could also be triggered by seismic activity on the subduction zones of the Pacific Rim. Associated currents could be strong enough to damage structures along the coastline. The elevated northern portion of the SSTC-S is outside the tsunami inundation area; however, the southern (lower elevation) area, including the paved area once occupied by the Wullenweber, is within the inundation area.

Historic and Cultural Resources

ARCHAEOLOGICAL AND CULTURAL RESOURCES

A total of 10 archaeological resources within the ADP have been identified, of which nine have been assessed as not eligible for the National Register of Historic Places (NRHP). One archaeological site, CA-SDI-5,454/12,270, has been recommended for inclusion on the NRHP. Required future upgrades to the existing electrical system at SSTC-S, which is partially within CA-SDI-5,454/12,270, would not require additional ground disturbance within the boundaries of the site. CA-SDI-5,454/12,270 will not be adversely affected.

There is archaeological evidence of prehistoric use and occupation of the general area. Proposed ground-disturbing off-site traffic, access, and utilities improvements have the potential to impact cultural resources. Although no cultural resources or historic properties have been identified at these locations, they have not been entirely surveyed for cultural resources. Additionally, the proposed utilities improvements are within paved streets with no ground surface visibility, and the access and ground-disturbing traffic improvements are within areas of sand or fill deposits.

The Coastal Campus will be developed in compliance with National Historic Preservation Act (NHPA) Section 106. Potential impacts to cultural resources from proposed off-site traffic, access, and utilities improvements will be addressed through the following measures:

- Development boundaries are incorporated into the ADP to limit new development to previously disturbed area in order to minimize impact on archaeological and cultural resources. The Navy will coordinate with California Department of State Parks and Caltrans for cultural resource surveys for the proposed ground-disturbing off-site traffic and access improvements.
- A Monitoring and Discovery Plan will be prepared and implemented prior to the start of ground-disturbing construction activities for the off-site utilities and traffic improvements, and this plan will provide protocols in the event that archaeological material is accidentally encountered during construction of the project. If previously unknown resources are identified during construction, the lines of communication and measures outlined in the Monitoring and Discovery Plan will be followed.

- Cultural resources monitoring will be required during mechanical excavation associated with the off-site utilities, access, and traffic improvements.
- The accidental discovery of human remains during mechanical excavation shall be addressed in compliance with Native American Graves Protection and Repatriation Act (NAGPRA) for remains found on military Federal lands, and through consultation with the Native American Heritage Commission (NAHC) for remains found on nonmilitary Federal lands and non-Federal lands.



Fort Emery



Wullenweber Antenna Array

HISTORIC AND CULTURAL RESOURCES

Ten World War II-era and Cold War-era buildings / structures are located on SSTC-S, and seven of the building / structures were recommended as eligible for the NRHP. These structures include the Wullenweber Antenna Array and the six buildings / structures identified as contributing elements of the non-contiguous Fort Emery Coastal Battery Historic District. The Fort Emery Coastal Battery Historic District includes Building 98, Building 99, Building 100, Building 911, the Building 912 fuel tank pits, and Battery Imperial. After a review meeting requirements of Section 106 of the NHPA, consultation with the State Historic Preservation Officer (SHPO), and other parties, a Memorandum of Agreement (MOA) has been developed and executed.

Actions necessary to mitigate the adverse effects of planned development on historic resources are outlined in the MOA. These mitigating actions have been completed, and Building 99 is slated for demolition. The Wullenweber Antenna Array - with exception of a segment preserved for historic purposes - has been demolished.

Demolition of Building 99 expands the developable area of the SSTC-S by approximately 4.6 acres. This demolition requires:

- Preparation of a detailed demolition plan to maximize reuse of existing material and minimize off-site construction waste disposal
- Abatement measures if asbestos containing building materials or lead-based paint are determined to be present during demolition.

Traffic Analysis

CAMPUS TRAFFIC

The goals of the Campus from a traffic standpoint are to provide an efficient and secure entry control point, encourage non-vehicle based trips for activity within the Campus, and support mission readiness by providing adequate roadway connections.

A new entry control point (ECP) will be established at the north side of the site with a connection point to SR-75. Traffic control, safety features, and multi-mode connections will be incorporated into the design of the ECP. Traffic delays and queues from security processing at the ECP are based on the number of inbound processing lanes, the type of security procedures in place, and the amount of storage provided for vehicles. It is recommended a minimum of three inbound processing lanes be provided, with a design that allows flexibility for more. The ECP should have two travel lanes for approximately 800 feet from the intersection with SR-75 to provide storage area off of the highway.

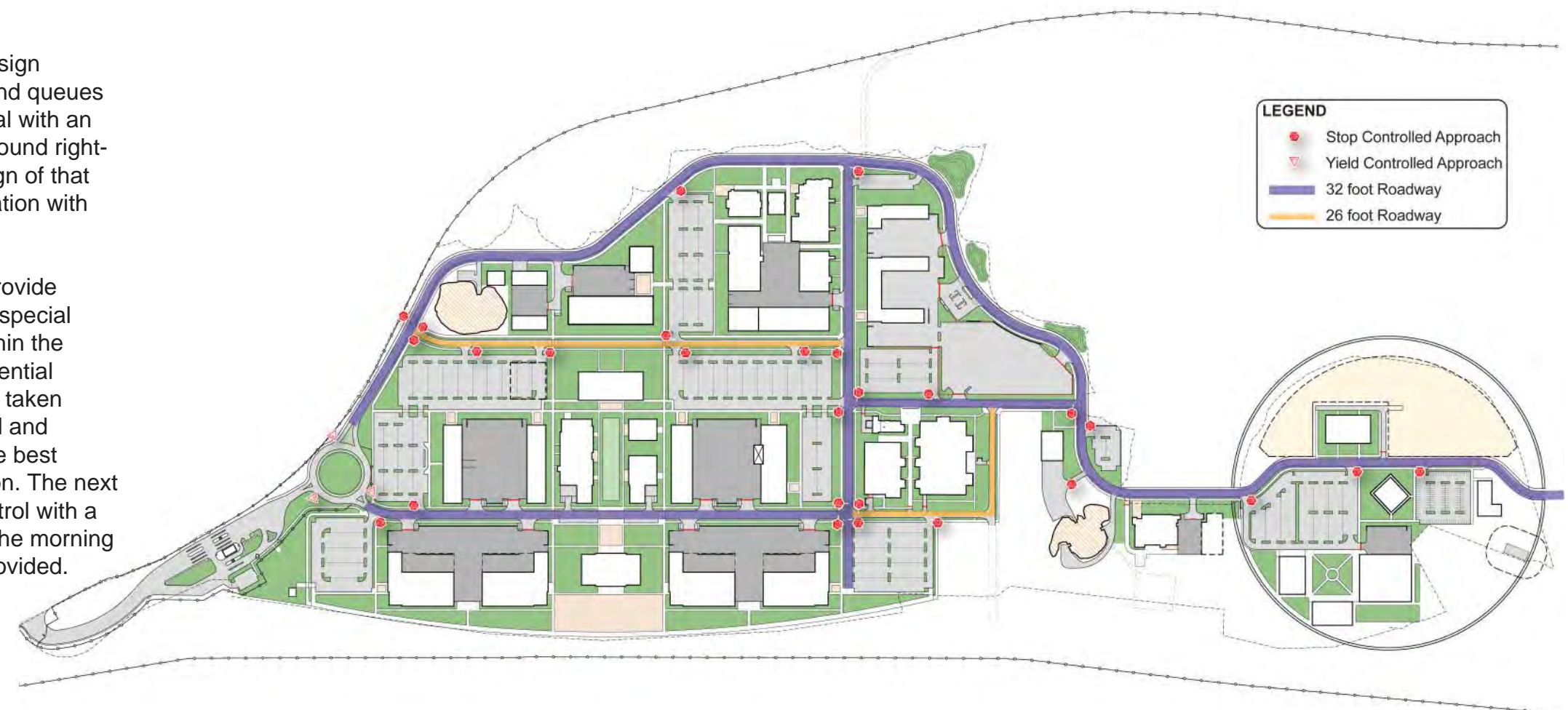
For the new intersection with SR-75, preliminary design concepts were evaluated to determine the delays and queues that Campus users would experience. A traffic signal with an extended northbound left-turn lane and new southbound right-turn lane was found to be the best option. The design of that connection will ultimately be established in coordination with Caltrans.

The first two intersections internal to the Campus provide access to the majority of parking areas and require special traffic consideration. The first major intersection within the Campus is located within the response zone for potential threats at the ECP and security features need to be taken into consideration. Several options were considered and a roundabout configuration was found to provide the best balance of traffic flow and security at this intersection. The next intersection along Road 1 requires all-way stop control with a separate right-turn lane to assist traffic flow during the morning peak. Concepts of these intersection layouts are provided.

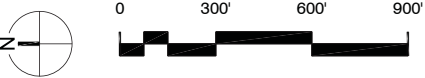
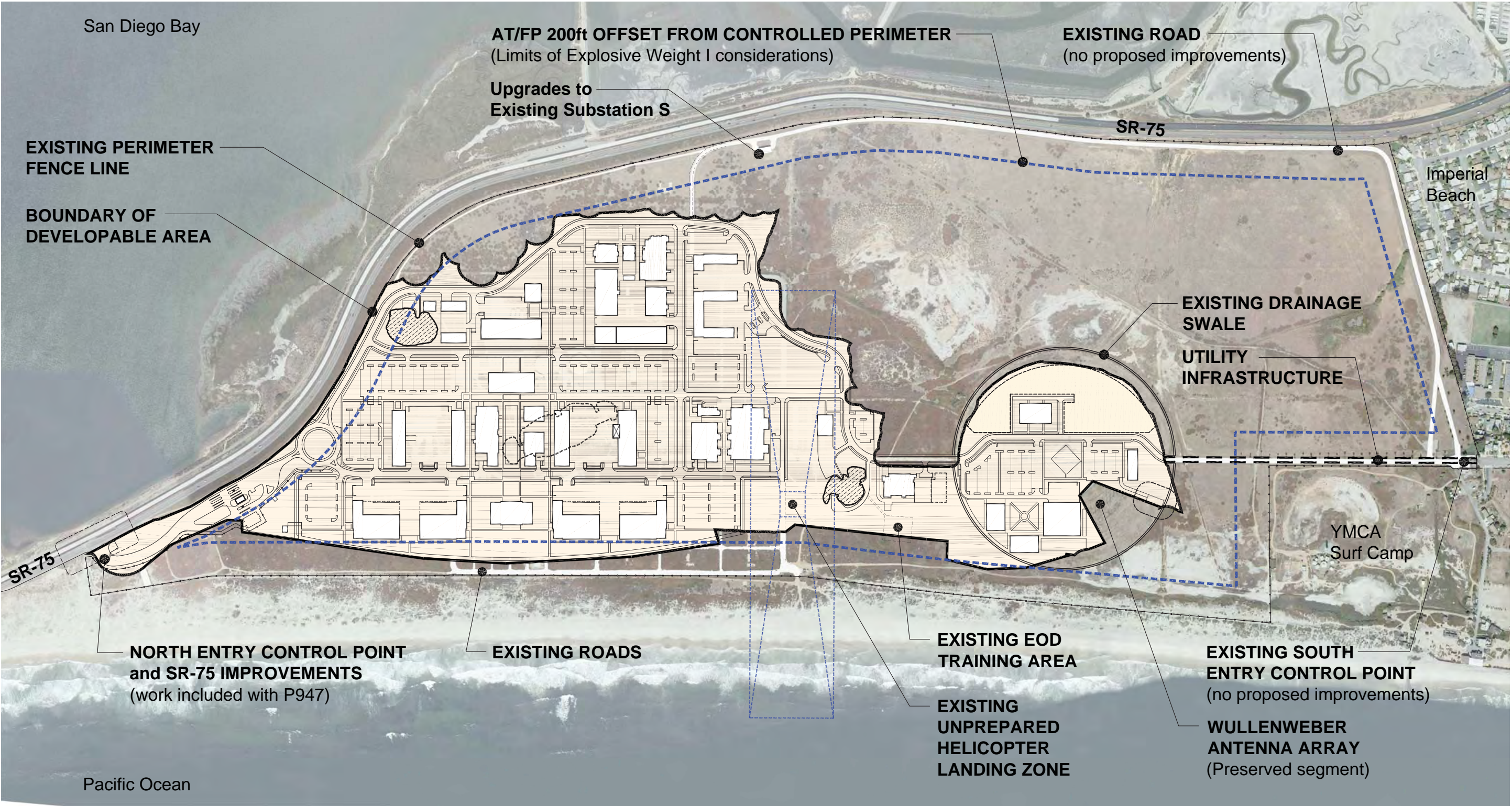
The following features were identified for roadways internal to the Campus:

- 32ft wide (curb-to-curb) roadway widths, except for Street C and a section of roadway around P876 which are 26ft curb-to-curb to restrict trucks and slow traffic.
- Multi-use paths are provided throughout the Campus to provide pedestrian and bicycle connections.
- Raised roadway crosswalks are provided at key locations where the multi-use path crosses roadways.
- Driveway widths and curb radii recommendations are made to provide adequate access and circulation for large trucks and emergency response vehicles.
- Parking lots are sized appropriately with access points that work with the overall circulation patterns of the Campus.

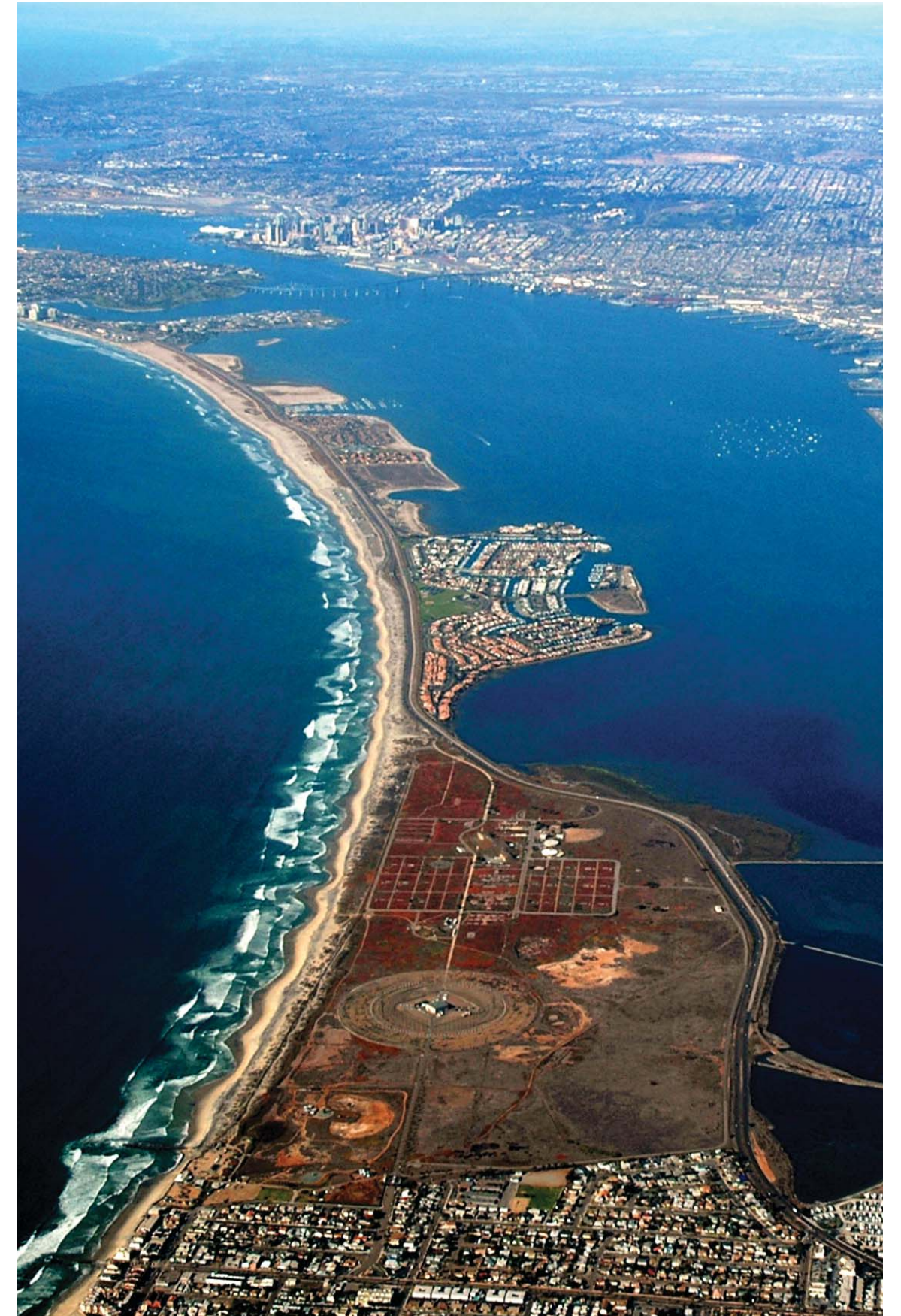
The existing “South Gate” will become a secondary entry control point and should have limited use, especially during the peak commute hours. The NBC CC EIS requires limits usage of the South Gate. Access through the existing South Gate will be limited to authorized personnel only.



Developable Area Plan



Development Plan



Regulating Plan



P797 / P893 Conceptual Rendering



P797 / P893 Conceptual Rendering

PURPOSE

The Regulating Plan is the controlling document and principal tool for implementing the Coastal Campus. The terms listed and described serve as a reference to explain the elements of the Regulating Plan.

LAND USES

Land uses at the Coastal Campus include the following:

- **Operations:** Facilities supporting active mission requirements.
- **Training:** Facilities supporting the training and development of personnel.
- **Logistical Support:** Facilities providing mission support to operations.
- **Headquarters:** Command facilities.
- **Community Support:** Facilities that support the campus community including retail, personnel support, and public safety buildings.
- **Circulation & Parking:** Streets, pedestrian, bike lanes, and parking areas.
- **Landscaped and Open Space.**
- **Undeveloped Areas:** These areas fall outside the developable area and contain sensitive environmental habitats and cultural resources.
- **Potentially Explosive / Hazardous Materials:** Facilities and locations containing MPPEH, RSLs, and portable armories.

BUILDING USES

Building uses can generally be characterized as:

- **Administration and Training:** Office, classroom and vocational training facilities.
- **Light Industrial:** Shop and warehouse facilities. Ground floor access is required.
- **Storage:** Personal and operational storage facilities not characterized as warehouse. Ground floor access is desired.
- **Community Support:** Retail facilities, personnel & family support, public safety.

Regulating Plan

BUILDING DEVELOPMENT STANDARDS

In addition to the requirements listed below, all buildings shall conform to the Building Design Standards identified in Part V.

Maximum and Minimum Building Heights

- Buildings shall not exceed 45ft in height, except for the paraloft tower, which shall not exceed 120ft in height.
- Buildings shall not be less than 15ft in height except utility structures which shall be a minimum of 8ft in height.

Building Form and Massing

- Buildings shall be one or two story structures.
- Buildings shall typically have parapets. Sloped roofs are permitted only to provide variety in building expression.
- Buildings shall use off-setting planes, changes in materials, and articulating elements to reduce their apparent bulk and mass.
- Building entries must be clearly defined.

Articulating Elements

- At the building entries, glazed quarterdecks should provide “eyes on the street” to reinforce visual security while inviting pedestrian entry.
- When possible, stairs, elevators, and other vertical services should be located at perimeter walls to break down the scale of large buildings.
- Exterior trellises, canopies and shading devices shall be used to provide texture and interest.

Special Buildings

- Smaller training facilities, headquarters buildings, and facilities located around the central mall should have a higher degree of articulation and should utilize accent materials more extensively.

Maintainability

- Select building materials and systems that are highly durable.
- Evaluate options by using a life-cycle cost analysis.
- Create a campus that can be maintained utilizing existing NBC resources.

Bird Friendly Design

- Incorporate features to reduce and prevent birds from colliding with buildings. Appropriate features include corners, atria, or courtyards so that birds do not get trapped; shielded outside lighting directed away from native habitats to minimize attraction to light-migrating song birds; and landscaping that is designed to keep birds away from the building’s facade.
- Use non-reflective or opaque glass, external shades on windows, ultraviolet patterned glass, angled glass, and louvers to reduce bird collisions.

Anti-Nesting / Anti-Perching

- Utilize anti-perching devices on light poles, rooftops, and other perching locations to prevent raptors and avian predators from perching near sensitive avian species.
- Install anti-nesting devices on appropriate structures to prevent prey species from nesting on buildings.
- Design roofs to prevent nesting and loafing by birds on rooftops.
- Provide access to rooftops in order to manage predators that may nest there.



P797 / P893 Conceptual Rendering

SITE DEVELOPMENT STANDARDS

In addition to the requirements listed below, all buildings shall conform to the Site and Landscape Design Standards identified in Part V.

Building Organization

- Buildings with service and delivery yards shall be organized so that the building massing surrounds and screens views into the yards.
- Site walls shall be designed to be compatible with buildings when utilized to secure and screen service yards.
- Pedestrian walks shall provide clear, comprehensible paths of travel that connect buildings and POV parking areas.
- Front entries shall be separated from rear, service entries.
- Building siting shall help define view corridors to the Pacific Ocean and San Diego Bay.

Building Envelope

Horizontal building envelopes are established to conform to AT/FP requirements, as clarified below:

- To reduce construction costs, inhabited building areas shall generally have 65ft standoffs from roadways or parking areas. Exemptions may be granted based upon specific program requirements.
- Uninhabited building areas such as stairways and utility rooms may encroach on the 65ft stand-off.
- Warehouse facilities may encroach into the 65ft standoff to allow fire access. A 30ft minimum stand-off is recommended for these facilities.

Site Elements

- Site elements such as trellis structures, site walls, seat walls and other site furnishings shall be utilized to enhance the pedestrian environment, to screen service yards from views, and to facilitate the creation of outdoor rooms or gathering areas.

Site Circulation

PURPOSE

The site circulation plans are an integral part of the regulating plan and provide guidance on the development of site circulation systems.

Vehicular Circulation and Parking Plan

This plan identifies four road types:

- *Perimeter Road*: Provides access between the north and south sides of the Coastal Campus.
- *Primary Service Road*: Provide a clear and direct route for Government Owned Vehicles including large tractor trailers to access the various service yards.
- *Private Owned Vehicles (POV) Road*: Provides a clear and direct route to parking lots without interfering with service traffic.
- *Fire Lane / Secondary Service Road*: Provide the limited required access with the minimum required street width.

The plan also identifies parking areas with quantities for each lot. Parking is evenly distributed throughout the campus, including the required ABA and motorcycle parking.

Sidewalks and Bikeways Plan

This plan identifies paths for pedestrian and bicycle circulation. A combined bicycle/pedestrian network will be twelve feet wide. The network provides direct access between all facilities, while offering opportunities for recreation, physical fitness and leisure. The plan also identifies opportunities for electric cart charging stations.

Fire Access Plan

This plan provides a high-level approach to consistent fire access throughout the campus. It depicts fire vehicle circulation network of streets and fire lanes.

Trash and Recycling Plan

The trash / recycling plans identify trash / recycling enclosure locations for all proposed projects. The intent of the plan is to provide facilities that are accessible to service providers but also respect the character of the campus.

Signage and Wayfinding Plan

This plan identifies the various directional and building identification sign types to ensure order and separation of vehicular and pedestrian traffic, while providing clear, attractive, concise directions and information. The sign types include:

- *Campus Entry Monument*: Low-profile horizontal wall with base identification.
- *Vehicular Directional Sign*: Larger scale signs to provide direction to primary campus zones.
- *Street Signs*: Pole mounted signs at street intersections.
- *Building Identification Sign*: Wall mounted building numbers. Any additional signage, including building names, will be determined on a project by project basis by NBC and NSWC.
- *Pedestrian Directional Sign*: Buildings identified by building number.

Road names identified in this document are placeholders for reference. Official road names will be determined by NBC and NSWC.



Pedestrian Circulation Paths



Combined Service and Walk Paths



Various Site Circulation Paths

Green Infrastructure

PURPOSE

The Green Infrastructure Plan depicts all open space elements on the Coastal Campus. Its intent is to plan for open space areas that thread through developed areas to preserve sensitive environmental habitat, encourage outdoor social functions, and buffer land uses requiring separation.

Green infrastructure is an important concept at the more detailed planning level as well since it reflects a more sustainable development pattern where open spaces are integral parts of the installation plan, enjoyed by installation employees. They also serve to naturally manage and filter storm water, reducing risk to flooding and improving water quality.

The following plans identify some of the ways these open space elements will be utilized.

Landscape and Stormwater Management

The Landscape and Stormwater Management plan on page III-37 identifies various landscape zones to be developed with unique character. Trees will only be planted in some of these zones in an effort to discourage raptor habitat.

The Coastal Campus will naturally manage stormwater to reduce flooding risk and improve water quality by employing the following guidelines:

- Landscape will be native, drought tolerant and coastal tolerant.
- Preserve and recreate natural landscape features. Minimize impervious surfaces to create functional and appealing site drainage that treats stormwater as an amenity, rather than a waste product.
- Group plants with similar environmental characteristics.
- Streets and stormwater management systems shall be concurrently designed.
- Bioswales shall be routed and designed to minimize safety hazards.
- Parking lots and service areas will include some pervious pavements, drains to subgrade recharge basins, and bioswales in planting.
- Building roofs will drain to Bioswales integrated into LID landscape zone.

Perimeter Edges

The Perimeter Edges plan on page III-39 identifies five perimeter edge categories that will each be developed to further define the landscape zones.

- *Beach Transition*: Transition from formal, geometrically structured landscaping to a naturalized coastal dunes environment.
- *Main Entry*: Visual buffer from entry to habitat area.
- *Perimeter Road/Cultural Boundary*: Mitigate stormwater impacts and provide transition to cultural resource area.
- *SR-75 View*: Visual buffer from state highway.
- *Developable Area/Sensitive Habitat*: Control runoff to wetlands areas.

Open / Green Spaces, Plazas, and Gathering Areas

The Open Spaces, Plazas, and Gathering Areas plan on page III-41 identifies potential gathering areas, plazas, and a network of attractive landscape walks and bike paths.

- *Open / Green Spaces*: Landscaped areas that accommodate stormwater management, AT/FP stand-offs, and passive recreation opportunities.
- *Plazas*: Formal outdoor gathering spaces that are framed by buildings or architectural landscape features. Plazas can be an extension of the buildings' public entrance. They can also accommodate special events.
- *Gathering Areas*: Informal spaces that create opportunities for people to meet for a conversation, share ideas, and create community bonds. In many cases they are simple as a bench or seat wall along one of the walks.
- *Landscaped Walks and Bike Paths*: Take advantage of the land created by the 65 ft AT/FP stand-offs to provide a connected network separated from vehicular circulation.

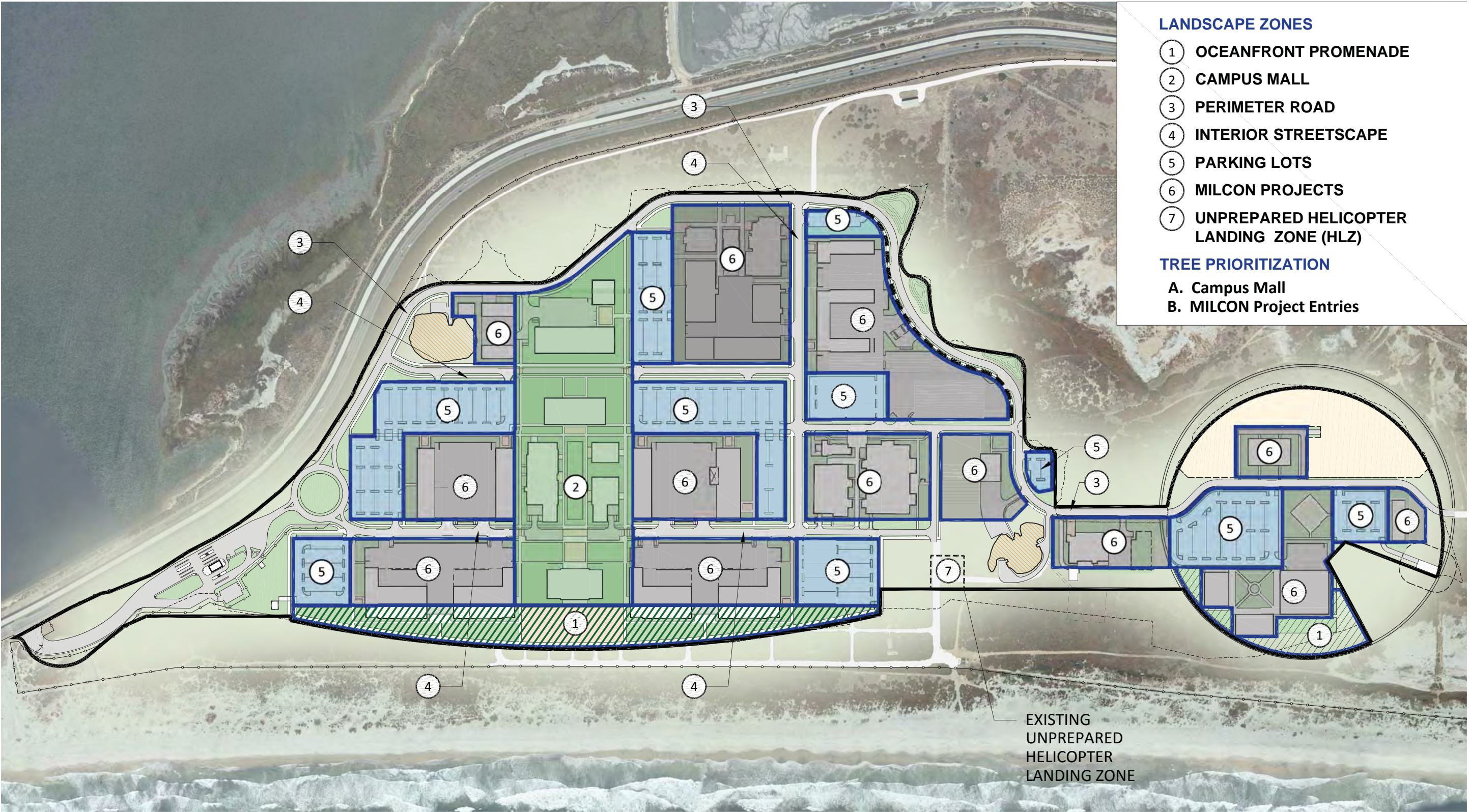


Naturalized Coastal Dunes Environment



Informal Gathering Area

Green Infrastructure: Landscape and Stormwater Management



Sustainable Development: Site Planning and Landscape

GOALS AND OBJECTIVES

The objective of the Sustainable Development Plan is to define an optimal infrastructure development strategy to inform future implementation plans. The Plan aims to achieve a sustainable campus vision with regards to:

- Site Planning and Landscape
- Mobility Planning
- Stormwater and Wastewater Management
- Energy Use and Generation

SITE PLANNING

Low Impact Development

The campus aims to be a Low Impact Development (LID), minimizing impact on the local ecosystem while maximizing the effectiveness of the site’s natural resources and amenities. The EIS established criteria and boundaries for development as well as locating utilities and amenities for future use, all of which are implemented in the Area Development Plan (ADP).

Open Space

The NBC CC proposes the concept of a promenade park system to provide a beautiful front door for both bayside and oceanfront buildings. This park system will function as an amenity for the site while minimizing the development’s impact on adjacent private properties. This green space will vary in its composition and functions, but create a green network tying the campus together both functionally and aesthetically.

The open areas of the promenades are intended to remain uncluttered and are not used for laydown activities or storage. In addition to their inherent aesthetic appeal, native planting in these locations will also filter stormwater and recharge groundwater systems.

More formalized open space will function as social gathering areas, memorial and reflection spaces, or possible drill and group activities before or after deployments.

LANDSCAPE

Native Plantings

Native Planting Areas will be used throughout the campus including promenades, and AT/FP setbacks around buildings. Plantings must be consistent with the Area Development Plan and Design Guidelines developed for the NBC CC, and comply with AT/FP requirements.

Planted areas shall strategically distribute plants amongst raw ground cover to reduce requirements for extensive irrigation across large open areas. Use a xeriscape approach to reduce maintenance costs while promoting biodiversity and on-site stormwater filtration.

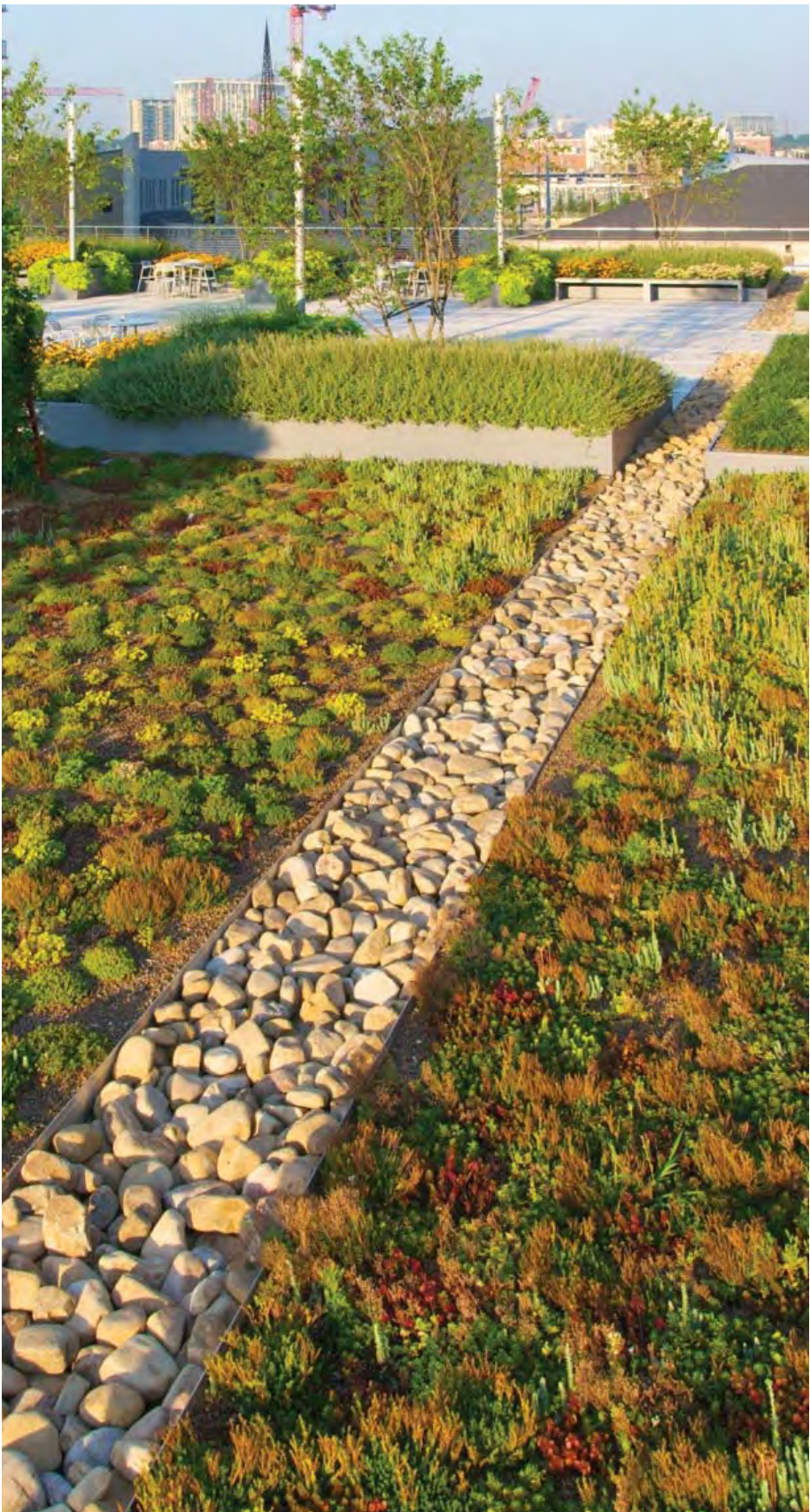
All proposed planting palettes, landscaping designs, and installation of trees will be submitted for review and approval by NBC NRO and Navy Landscape Architect and will use native, drought-tolerant plants appropriate for the site. Invasive plant species will not be included in landscape plantings.

Site Trees

The EIS process set a tree replacement policy of a one-to-one ratio as they currently exist on site. New trees will be located in what are deemed high-priority areas in the following order of importance:

- At the campus core
- At primary entrances to buildings
- Along primary pedestrian walkways
- Along primary streets
- Within parking lots

Similarly, these locations correspond to ideal locations for proposed photovoltaic canopies. Both options provide shading, articulate a street/walkway rhythm, guide pedestrian connections, reduce heat island effect, and can contribute to elevated campus aesthetics. Trees will be provided where photovoltaic canopies are not feasible.



Xeriscape Landscaping Features

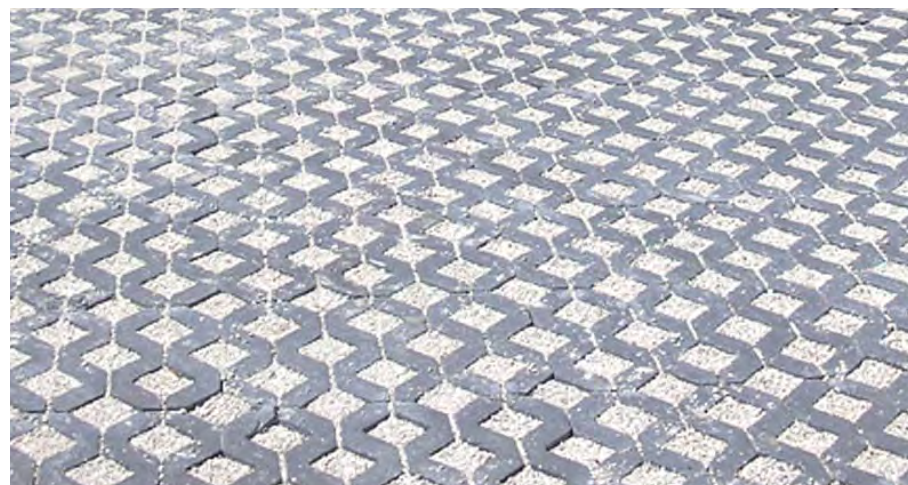
Sustainable Development: Site Planning and Landscape



Porous Concrete



Pervious Pavement



Pervious Pavement



Flush Curb Cut



Pervious Pavement

HARDSCAPE

Streets and Parking

Parking lots for POVs include pervious surfaces to maximize on-site infiltration. Consider pervious concrete or light-colored pervious unit pavers in parking, walkway, and street design for the highest heat island mitigation.

Flush curbs or curb cuts can be used to help channel stormwater into bio-swales or other stormwater retention systems. Implement integrated bio-swales between parking stalls for further stormwater management. These locations can also be candidates for shade trees when appropriate.

Consolidated parking lots are configured and located proximate to high-volume user requirements, promoting walkability between sites. The result is a reduction in traffic, vehicle miles traveled, and overall carbon footprint for the campus.

Heat Island Mitigation

Low albedo paving materials such as light-colored concrete or unit pavers will be used to reduce the amount of asphalt on site. These strategies in combination with landscape and softscape principles previously outlined will dramatically reduce the overall campus heat island effect.

In locations where large trucks or GOVs are parked, more substantial paving in strategic zones and lanes will be designed for the increase loading. When asphalt is required, light-colored, porous products should be considered to allow water to drain through the pavement surface to a stone recharge bed for sub-surface infiltration.

Stormwater Beautification Areas

The stormwater beautification areas are landscaped open spaces designed with bio-swales and other low impact stormwater management strategies. They are an important component in heat island mitigation.

High priority Shaded Circulation

Primary pedestrian pathways should be shaded with trees or architectural trellis.

Sustainable Development: Site Planning and Landscape

GREEN ROOFS AND WALLS

Green Roofs

For buildings that may not have maximized solar access due to orientation, and occupied by inhibiting equipment, consider green roofs for stormwater management. Although California rainfall is not excessive, the green roof can alleviate stormwater runoff in a heavy rain event. Select plant species according to survival rates within drought or dry conditions.

With its low albedo surface, green roofs reduce heat island effect in comparison to standard roofs as well as increase evapotranspiration, which helps cool the air.

Capture and redistribute excess water in connection with other water reclamation systems with the MILCON boundaries. This strategy shall be second to rooftop solar equipment when inappropriate or unfunded.

Vegetated Screens and Walls

Consider vegetated screens and walls in the design of individual building exterior walls and perimeter elements. Vertical vegetation has multiple benefits including increased building envelope efficiency, heat island effect reduction, and biophilic aesthetic appeal. Feed vegetated walls and screens by redirected stormwater runoff from building roofs, and subsequently filtered and re-used on-site.



Vegetated Screen Wall

LIGHTING

Exterior Lighting

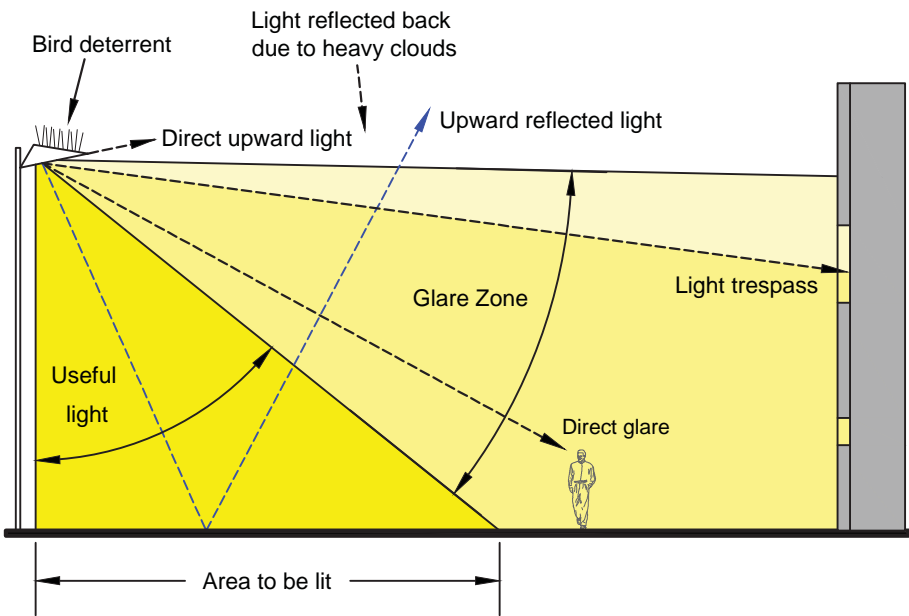
Exterior lighting will be strategically distributed throughout the campus to reduce the total number of fixtures and power consumption. Fixtures will be limited in height, no taller than the maximum height restrictions of MILCON buildings. Solar-powered, LED lighting will be the standard for campus energy reduction. Lighting will tie into a campus-wide smart monitoring system that operates in reaction to movement.

Night Lighting

To minimize light pollution, the NBC CC will implement strategies outlined by the International Dark-Sky Association (IDA) for exterior lighting during night hours. Minimizing night lighting will not only contribute to the campus energy efficiency and reduce disruption to neighboring ecosystems and communities. Shielded and downward-directed light fixtures shall be provided to meet code requirements and as required for security. All exterior light fixtures will be outfitted with deterrent measures to prevent raptor perching and shielding to conform with EIS requirements.



Green Roof System



Dark Skies Lighting Diagram



Solar Powered Exterior LED Lighting

Sustainable Development: Mobility Planning



Bikeshare Docking Station



Electric Car Charging Station and Designated Parking

MOBILITY PLANNING

The proposed NBC CC aspires to be a model of environmental performance and sustainable design. In relation to mobility, this aspiration suggests implementation of various strategies to reduce vehicle miles traveled (VMT) to the site by 40 and 60 percent relative to the forecast baseline. No single solution achieves this performance. Rather, it depends upon a package of solutions including off-site transit improvements or shuttle services, on-campus bicycle and pedestrian facilities, vehicle share options, financial incentives, and parking management. These diverse elements work together to incentivize personnel to drive less, and walk, bike or ride transit more.

Bicycle Network

Increasing the use of bicycles for commuting and short trips on and around campus will improve the environmental performance of the campus as well as the quality of life and health of those who participate.

A Campus Bicycle Program will include the following elements:

- Designated bike lanes through and around the entire NBC CC, with connections to existing neighboring bike trails.
- Key facilities will include ample bicycle racks and secure bicycle lockers with adjacent showers and locker rooms available for bicycle commuters.
- Bikeshare docking stations at key locations for short, intra-campus trips.

Electric Vehicles

Electric charging stations will be provided with each MILCON project to encourage the use of GOV electric utility vehicles (i.e. carts and small trucks) and electric POVs on campus. NBC will coordinate POV electric charging station management and processing with the Navy Exchange (NEX) project.

Transit Incentives and Parking Demand Reduction

Other campus transit-incentive programs to be evaluated at NBC CC include:

- Shuttle service between NBC CC and key local destinations such as regional transit stations, local commercial hubs, and other military facilities along the Silver Strand.
- Carshare vehicle pods within parking lots for occasional trips, errands or commuting on and around campus.
- A Transit Incentive Program (TIP) that provides a tax-free subsidy per month to those using transit, vanpooling or rideshare programs commuting to and from campus.

The success of sustainable mobility packages requires a diverse approach that includes transit service improvements; shuttle and guaranteed-ride-home services; bicycle network improvements; bicycle parking and facilities; bikeshare and carshare programs; carpooling and vanpooling; and financial incentives that are tied to parking subsidy costs. By implementing this package of mobility options, NBC CC will be a model of sustainable mobility while freeing capital and land that would otherwise be used for parking for more functional or aesthetically pleasing functions.

Sustainable Development: Stormwater Management

STORMWATER MANAGEMENT

Stormwater runoff will be utilized as a resource rather than as waste. Facilities and their surrounding areas will be designed to minimize stormwater runoff, minimize the pollutants that enter stormwater runoff, and to remove pollutants from runoff. A distributed stormwater management system reduces the volume of stormwater generated from the site and the size and extent of storm drain pipes, as stormwater is infiltrated and detained throughout the site.

Stormwater can be managed and treated within individual MILCON development boundaries, or grouped with adjacent MILCONs. Priority will be given to self-contained stormwater quality management for individual MILCONs or groups of MILCONs. The groupings can collectively reduce their footprint, and simplify phased construction and eliminate the need for centralized stormwater management facilities during early phases of the NBC CC. Each MILCON and surrounding site should be evaluated for feasibility of distributed / low impact design style stormwater quality Best Management Practices (BMPs).

Stormwater Best Management Practices

Key components of the stormwater regulations include:

- Permanent stormwater BMPs are required for all runoff
- Emphasis on Low Impact development: small distributed BMPs
- Permanent stormwater BMPs are designed based on either stormwater volume or stormwater flow rate
- BMPs are designed to treat at least 85% of the annual runoff

Opportunities for stormwater BMP construction exist on the site in several locations including the helicopter flight path Right of Way (ROW) and a gas pipeline ROW. These areas are to be designed as multi-purpose stormwater facilities home to native plantings, within the overall landscaping scheme, improving the aesthetic nature of the campus. MILCONs in locations that are potentially tributary to these stormwater BMP sites will drain toward the off-site BMPs, with BMP construction phased with the construction of the MILCONs that drain to the BMPs.

In addition to stormwater management BMPs, the site will require a storm drain system to convey runoff from storms larger than the BMP design storm. After treatment within BMPs, discharge from the stormwater quality BMPs will be directed to the storm drain system for discharge from the site.

Existing SSTC-S outfall is currently near capacity (NBC CC will not increase site outfall with the implementation of these stormwater BMPs).

The design of stormwater management for the individual MILCONs should be coordinated to provide a cohesive appearance and to simplify maintenance. The stormwater BMPs will comprise a significant portion of the landscaped area for most MILCONs. Neither the short duration of inundation nor the saturated soils associated stormwater treatment facilities in San Diego will significantly restrict the choice of plant materials for BMPs. Vegetated buffer strips and swales are a common part of a stormwater BMP treatment, and both provide treatment due to a dense growth of vegetation within a few inches of the soil surface. Bioretention BMPs will be landscaped with a xeri plant palette that will require little/no supplemental irrigation.

Stormwater Beautification Areas

Open spaces on campus, whether they be promenades, parks, or areas within AT/FP setbacks around buildings, can be utilized as stormwater beautification areas, as a component of the open space or in its entirety. These maximize on-site infiltration, eliminating the need for a centralized campus stormwater facility. The beautification areas can be a space for gathering and attractive plantings as a habitable space with a naturalized and garden-like character.

Rainwater Harvesting

Rainwater collection and storage for use in purposes such as landscape irrigation and facility non-potable uses can reduce the amount of water that must be imported into the project. Stormwater capture and reuse will be considered for individual MILCONs to offset the need for imported water for site irrigation. Other uses such as laundry may be assigned to reclaimed water based on the quality of the reclaimed supply.

Streets

Streets will be designed to maintain the safety of the corridor’s transportation by handling larger amounts of stormwater runoff with open channel bioswales in lieu of enclosed storm drain piping. Cross slope of these streets will be designed such that the street drains toward a bioswale on one or both sides of the street, or towards a median, to collect stormwater runoff as part of the campus stormwater conveyance network. Bioswales collect and transport water to open space and retention areas. They are designed to reduce pollutants through infiltration and reduced runoff velocity, while also enhancing the natural appeal of the corridor.

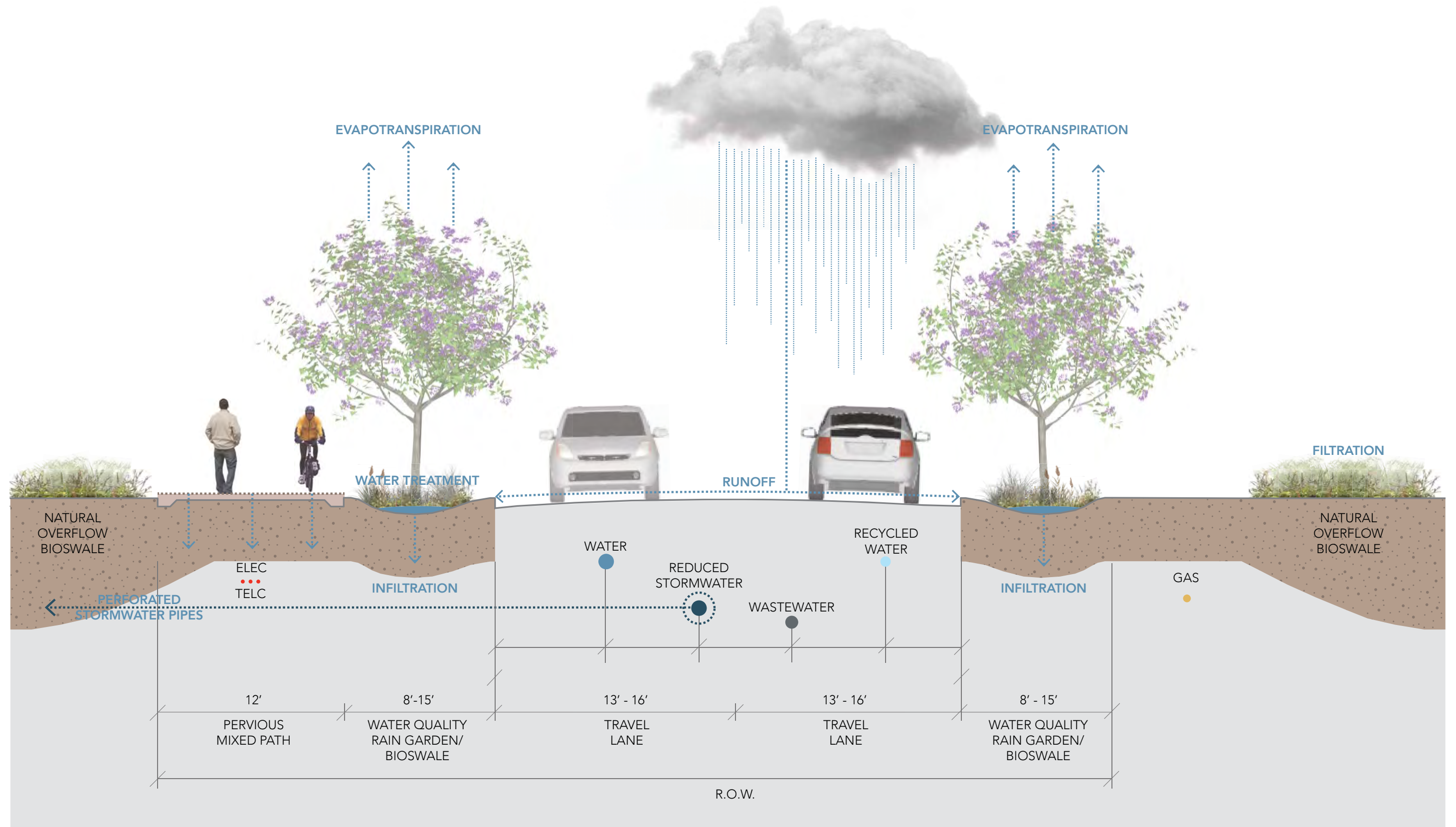
Parking Lots and Service Yards

Parking lots will be designed with pervious pavements over subgrade drainage basins that distribute stormwater. Service areas will be designed with modular subgrade drainage systems that distribute stormwater.



Stormwater Beautification Areas

Sustainable Development: Stormwater Management



Sustainable Development: Water Management

CAMPUS WATER MANAGEMENT PLAN

The water management plan for the NBC CC has two goals: to reduce the use of potable water by treating and reusing wastewater; and to limit stormwater discharge to pre-development levels. With California in deep drought and water supplies scarce, the state is searching for every possible way to minimize the use of potable water. Through reasonable efforts in rainwater capture and water reuse NBC CC can reduce potable water use by up to 50%. In addition, rainwater that falls on impervious surfaces, excluding water captured on roofs for indoor use, can be reintroduced into the ground to recharge the aquifer.

Implementing LID principles, on-site water will be managed with a slow, spread, and soak strategy. This is achieved through design of site materials, landscaping, flow control devices, and centralized facilities or water treatment zones.

The water strategy is intended to reduce the overall water use for the campus by approximately 50% compared to a standard water use approach. The water savings are realized by replacing some of the off-site, imported potable water with reclaimed water. The potential reduction in water use will depend on the water uses within each MILCON.

Basic campus water management strategy plan consists of:

- Rainwater harvesting.
- Wastewater re-use.
- Stormwater management.



Rainwater Harvesting

RAINWATER HARVESTING

Capturing and using rainwater for non-potable uses offers great potential to reduce the need for potable water. In the absence of green roofs, all MILCON buildings with toilets should be considered for rainwater harvesting. The large rooftops at NBC CC provide ideal opportunities to capture rainwater before it hits the ground. Rainwater can be captured on roofs and stored in cisterns for future use inside buildings and can supplement reclaimed water from greywater or blackwater systems. Rainwater storage can take several forms: above ground building-scale cisterns, below ground building-scale cisterns and multiple-building or district scale cisterns. Where possible cisterns should be located above ground to allow water distribution to occur using gravity without the use of pumps. The decision to share cisterns between adjacent, same-year MILCONs should be based on an engineering cost analysis.







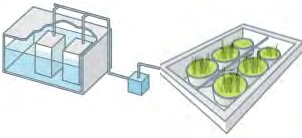

Prior to discharging into the cistern, captured rainwater should be screened to divert solids including bird droppings. This rainwater collection, storage and reuse system should be designed to also accommodate greywater reuse.

WASTEWATER TREATMENT AND REUSE

Anticipating forthcoming water conservation mandates, the NBC CC should be provided with a reclaimed water distribution network to deliver reclaimed water to landscape irrigation and to specific non-potable uses.

This section discusses four potential typologies for wastewater treatment and re-use. These systems offer a range of costs and benefits and include:

- Greywater Irrigation Systems for subgrade irrigation use.
- Greywater Harvesting Systems for exterior and interior non-potable uses.
- Tidelands Tertiary Treatment (Blackwater) Systems for exterior and interior non-potable uses.
- Direct Potable Re-use for all campus uses.

WASTEWATER TREATMENT SYSTEM	APPLIED SCALE FOR TREATMENT SYSTEM
 GREYWATER IRRIGATION SYSTEM	 MILCON PROJECT
 GREYWATER HARVESTING SYSTEM	 MILCON PROJECT
 TIDAL WETLANDS TERTIARY TREATMENT SYSTEM (BLACKWATER)	 MILCON PROJECT / CAMPUS SCALE
 FULL ADVANCED TREATMENT SYSTEM (BLACKWATER)	 CAMPUS SCALE

Applied Scale for Wastewater Treatment

Sustainable Development: Water Management

GREYWATER

A core strategy for reducing the demand for potable water is to “use” water more than once. Greywater is “used” water from lavatory sinks, showers, laundry facilities and equipment condensate that does not include food waste or human waste. By contrast blackwater refers to human waste – in other words sewage. Using treated greywater for toilet flushing and “hosing down” facilities and vehicles can reduce water use by 10-35% depending upon the building program.

While greywater lacks the potential pathogens found in blackwater it still must be treated. Greywater must be filtered to remove solids and may be supplemented by UV or other treatment techniques.

Greywater can be used for irrigation, equipment and vehicle washing, flushing toilets, and any other non-potable uses. Reclaimed water will be used to irrigate site plant material until the plants become established, gradually reducing the watering to only maintain plant health.

From a technical standpoint, the recommended greywater treatment systems are most appropriate at the individual project scale.

A dual plumbing distribution system should be considered for each building. The screened rainwater together with the treated greywater can then be distributed for toilet flushing.

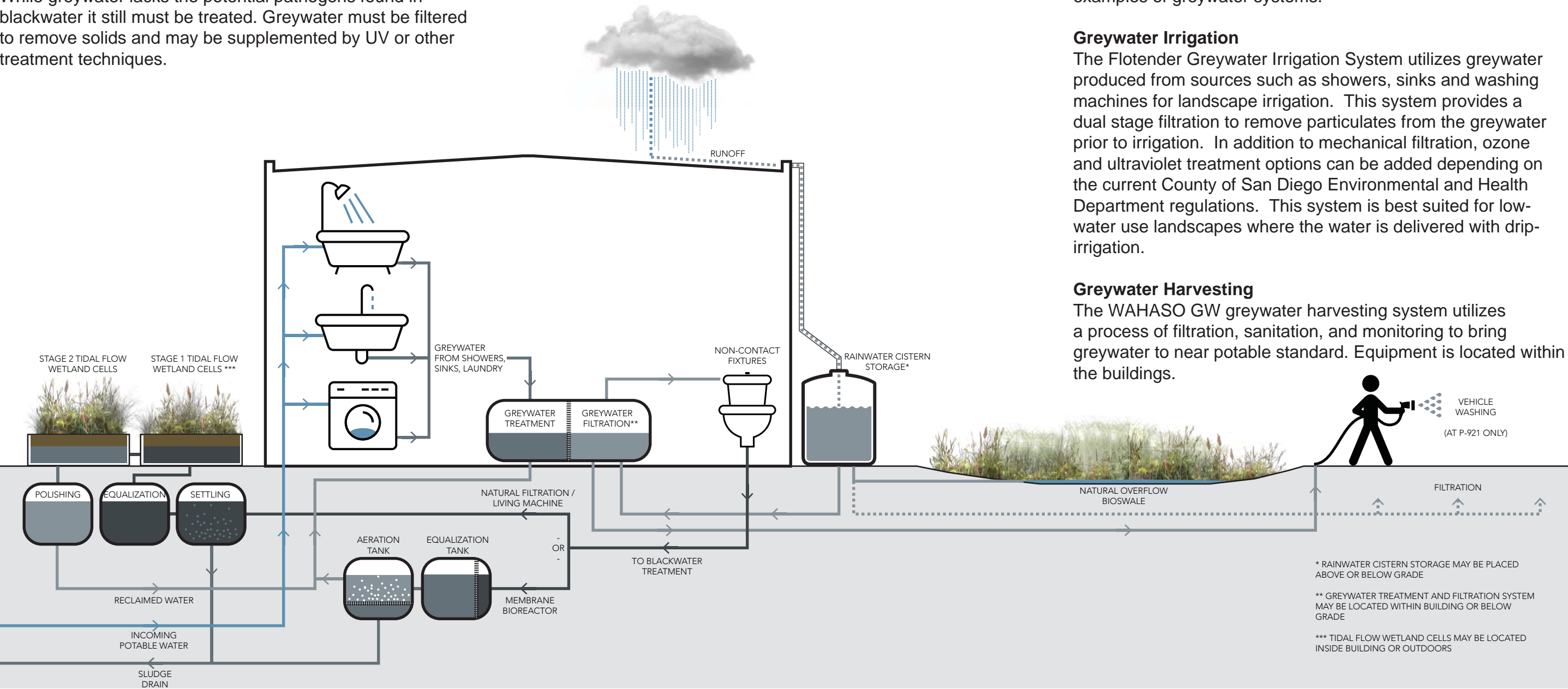
As the regulations governing greywater use in San Diego county are quickly evolving, MILCONs at the NBC CC should anticipate changing standards by requiring each building be plumbed for both potable and non-potable water. This would make the buildings “greywater ready.” The following are representation examples of greywater systems.

Greywater Irrigation

The Flotender Greywater Irrigation System utilizes greywater produced from sources such as showers, sinks and washing machines for landscape irrigation. This system provides a dual stage filtration to remove particulates from the greywater prior to irrigation. In addition to mechanical filtration, ozone and ultraviolet treatment options can be added depending on the current County of San Diego Environmental and Health Department regulations. This system is best suited for low-water use landscapes where the water is delivered with drip-irrigation.

Greywater Harvesting

The WAHASO GW greywater harvesting system utilizes a process of filtration, sanitation, and monitoring to bring greywater to near potable standard. Equipment is located within the buildings.



Schematic Greywater Reuse Process Diagram

Sustainable Development: Water Management

BLACKWATER

As an alternative to greywater reuse, blackwater (sewage) reuse should be considered for NBC CC. The plan currently dictates that wastewater generated within the campus will be collected in a standard wastewater collection system and delivered to a recycling facility. Blackwater is an invaluable resource within a comprehensive water management program. Blackwater can supply 100% of all flushable uses and up to 60% of total non-potable uses across campus.

Tidal Wetlands Tertiary Treatment Systems

The US Marine Corps is installing a Living Machine system at the Marine Corps Recruit Depot (MCRD) for blackwater recycling. The treated blackwater will be used for sub-surface irrigation, reducing their overall need for municipal freshwater intake. The Living Machine is designed to function like a natural ecosystem to cyclically reuse water. A series of tanks with pumps process and clean the water to a suitable standard for non-contact uses through mechanically separated filtration and polishing systems, in combination with organic filtration systems.

A component of a Living Machine, or other on-site wastewater treatment is a constructed wetland habitat for natural treatment and cleaning of blackwater. In addition to its water conservation benefits, a Living Machine System or equivalent and serve as a campus aesthetic amenity and educational demonstration of innovative and aggressive water reuse in a region of water shortage. The NBC CC master plan has ample outdoor open space that could house these types of landscapes for water treatment. Strategically placing constructed wetlands proximate to clusters of MILCONs will reduce the overall infrastructure costs of wastewater treatment.

Exterior blackwater treatment natural filtration landscapes are often less expensive to build than other wastewater treatment options because they are primarily passive systems, with lower operating and maintenance costs. The passive nature of constructed wetlands makes them more durable than other mechanized wastewater treatment systems, allowing for longer lifespans and in result, increasing life-cycle cost benefits.

Direct Potable Reuse

One of the options for treatment of the on-site sewage is to incorporate a modular reclamation wastewater treatment system. This process is also called Direct Potable Reuse (DPR) and would utilize reverse osmosis treatment or other advanced wastewater treatment system. Effectively, this would have an inflow of blackwater and have an outflow of potable water for all uses at the campus.

Although DPR is more expensive than other treatment options, it would have the unique benefit of maximizing water re-use on the campus and, as a result, having no increase in sewage flows from the campus to the City of Imperial Beach. The DPR has higher cost because it requires a Full Advanced Treatment (FAT) of sewage and a comprehensive treatment train. The treatment train for DPR includes secondary wastewater treatment, followed by reverse osmosis membrane technology, and then advanced oxidation. Finally, due to the extremely thorough removal of everything but the water molecules themselves, this process also includes adding minerals and other additives to the water to deliver the final flow of potable water.

The challenges of DPR are that the regulations and guidelines of implementation are still in the development stages. Although this option is considered the greenest of options, it is also the most expensive. In addition to the treatment train previously mentioned, the treatment system would require storage and space to mitigate surges of sewage inflows and peaks of water demand.

The advantages of the DPR are several. With this option, there would be no change in the sewage flows to the City of Imperial Beach treatment facility; and, therefore, this option would avoid several costs, including any and all costs associated with initial capacity fees and monthly sewer and water fees and any and all costs associated with sewer pipe upgrades within the City of Imperial Beach.



Living Machine System

Sustainable Development: Energy Use and Generation

ENERGY USE AND GENERATION

The Coastal Campus will utilize a three-pronged approach to optimizing energy use with emphasis on reducing energy use first, supplemented by on-site energy generation. Strategies include:

- **Passive Design:** MILCON projects designed to optimize building envelope performance through integrated design.
- **Load Reduction:** High efficiency building systems will further reduce energy demand.
- **Renewable Energy Infrastructure:** Photovoltaic and solar thermal generation systems.

At NBC CC, the buildings will be the primary consumers of energy. Accordingly, in order to achieve targeted energy use reductions overall, energy loads at the building scale must first be optimized prior to the sizing and design of any significant campus-wide energy infrastructure.

As technology develops and becomes commercially available, consider those that contribute to long-term sustainability, energy efficiency, durability, and minimize maintenance.



Shading Techniques

PASSIVE DESIGN STRATEGIES

Before a single electrical switch or mechanical system is turned on, passive design strategies have the potential to create the greatest overall energy savings benefit, with no additional cost or modification of user behavior. Passive technologies such as optimized building massing and orientation, access to daylight, natural ventilation, thermal mass, proper wall/glazing ratio, and shading strategies will each contribute to significant reductions in campus-wide baseline energy use.

Optimized Building Orientation

The single-most significant factor contributing to building energy use is the building's orientation and massing. Massing decisions depend on the specifics of the building's particular site and intended use. Densely populated buildings with high internal loads benefit from thinner floor plans which can dissipate more of their internal heat to the outside through the exterior wall. Sparsely populated buildings benefit from compact floor plans where solar heat gains have less surface area to dissipate and can be retained to minimize heating loads. In general, buildings perform best when oriented to maximize available free energy from the sun and wind.



Daylighting Techniques

Access to Daylight

Provide access to daylight for all regularly-occupied spaces used for visual tasks. Passive strategies, combined with daylight harvesting technology, can significantly reduce lighting demand while simultaneously boosting occupant productivity.

Wall / Glazing Ratio

The ratio of glazing to the overall wall area has a dramatic effect on solar heat gain within a space, significantly effecting loads associated with heating and cooling. A high ratio of glazing-to-wall area can result in a building being too cold in the winter due to heat loss through the glass, or too hot in the summer due to direct sunlight. Conversely, a low ratio of glazing-to-wall can limit effectiveness of daylighting strategies and forfeit free heat provided by the sun.

Natural Ventilation

By taking advantage of the natural movement of air as a result of temperature and pressure differences, natural ventilation can be used to offset energy demands associated with space heating and cooling. Natural ventilation has the capacity to reduce the hours outside of the comfortable range to fewer than 2% of occupied hours. Through proper orientation and operability, fresh air can be supplied and exhausted without the need for mechanical equipment. This requires careful design of the facility to allow for breezes across occupied areas and will limit the aspect ratio of the building, but is highly effective in reducing energy use.

Shading

Passive solar control through the use of shading devices is critical to optimizing solar resources throughout the year. Combined with daylighting and thermal mass strategies, properly designed shading can both mitigate heat gain during the summer, and take advantage of heat storage in the winter. Photovoltaic canopies can provide shade along south-facing facades, attached or unattached to the building, which combines passive and energy-generating strategies.

Sustainable Development: Energy Use and Generation

LOAD REDUCTION STRATEGIES

Once buildings have been optimally sized and oriented using passive strategies, the next step to further energy use savings is utilization of high efficiency mechanical, electrical, and plumbing equipment. Strategies include:

Exterior Lighting

- Efficient Lighting Technologies (including LED and OLED)
- Efficient Lighting Layouts (a mix of task lighting and overhead lighting)
- Occupancy sensors or timers on lighting
- Daylight harvesting through skylights and appropriate side-lighting

Plug Loads

- Efficient equipment procurement (EnergyStar or better)
- Building Management Systems and Smart Controls

Space Heating and Cooling

- Reduction in space conditioning loads through efficient envelope design, proper orientation, and solar shading
- Increased efficiency of mechanical units through proper selection and sizing
- Increased operational efficiency of mechanical systems through optimized control systems

Domestic Water

- Low Flow water fixtures to reduce hot water demand
- Dual-flush fixtures to reduce water consumption
- Solar thermal systems for hot water

RENEWABLE ENERGY INFRASTRUCTURE

After loads have been reduced to a minimum through passive strategies and high-performance equipment, the final strategy for optimized energy performance is to take advantage of on-site renewable energy resources.

Photovoltaics

In order to achieve the desired goal of net zero energy production that offsets campus energy demand, a combination of rooftop, pedestrian shade, and parking photovoltaic arrays is recommended.

Rooftops with higher solar incidence are most suited for photovoltaic production due to their orientation and building height. Of these buildings, a 0.67 multiplier for roof array area is assumed, allowing the resultant area to be used for the assumed rooftop equipment and required circulation. Panels will lay flat on the roof with no tilt, with an AC/DS rating factor of 69%. The roof structures of these buildings will be designed to support an additional 5 lb/sf of additional weight.

Pedestrian photovoltaic shade canopies will act as a connective tissue of the campus, creating a network of shaded walkways from POV parking areas to primary destinations around campus. POV parking lots are additional candidates for large photovoltaic arrays to be installed, shading the parking areas and contributing to campus energy production. Photovoltaic canopies will be located in what are deemed high-priority areas in the following order of importance:

- Along primary pedestrian connecting walkways
- Canopies on southern building facades and building entries
- Within POV parking lots
- Within small-scale vehicle areas in GOV parking lots



Photovoltaic Arrays

Solar Thermal

Solar thermal is recommended for buildings with high anticipated water-use intensities, primarily driven by high occupancies, shower use, and pools.

MILCONs with program that are primary candidates for solar thermal systems are as follows:

- P-889, P-890, P-892, P-964, P-904
- P-966
- P-952
- P-776
- P-200

Other MILCONs will be required to explore solar thermal system cost effectiveness. This requirement satisfies EISA's Section 523 requirement for "30 percent of the hot water demand in new Federal buildings (and major renovations) to be met with solar hot water equipment, provided it is life-cycle cost-effective." The 30% requirement is a minimum; MILCONs have the potential to exceed the mandate and should strive for 100% of the hot water demand to be met by solar thermal generation. There will be no district-scale solar thermal system at NBC CC, so all MILCONs will be analyzed on a case by case basis. Individual MILCONs will house their respectively sized solar thermal panel systems and necessary storage tanks on site.



Rooftop Solar Collectors

Development Program and Phasing Plan

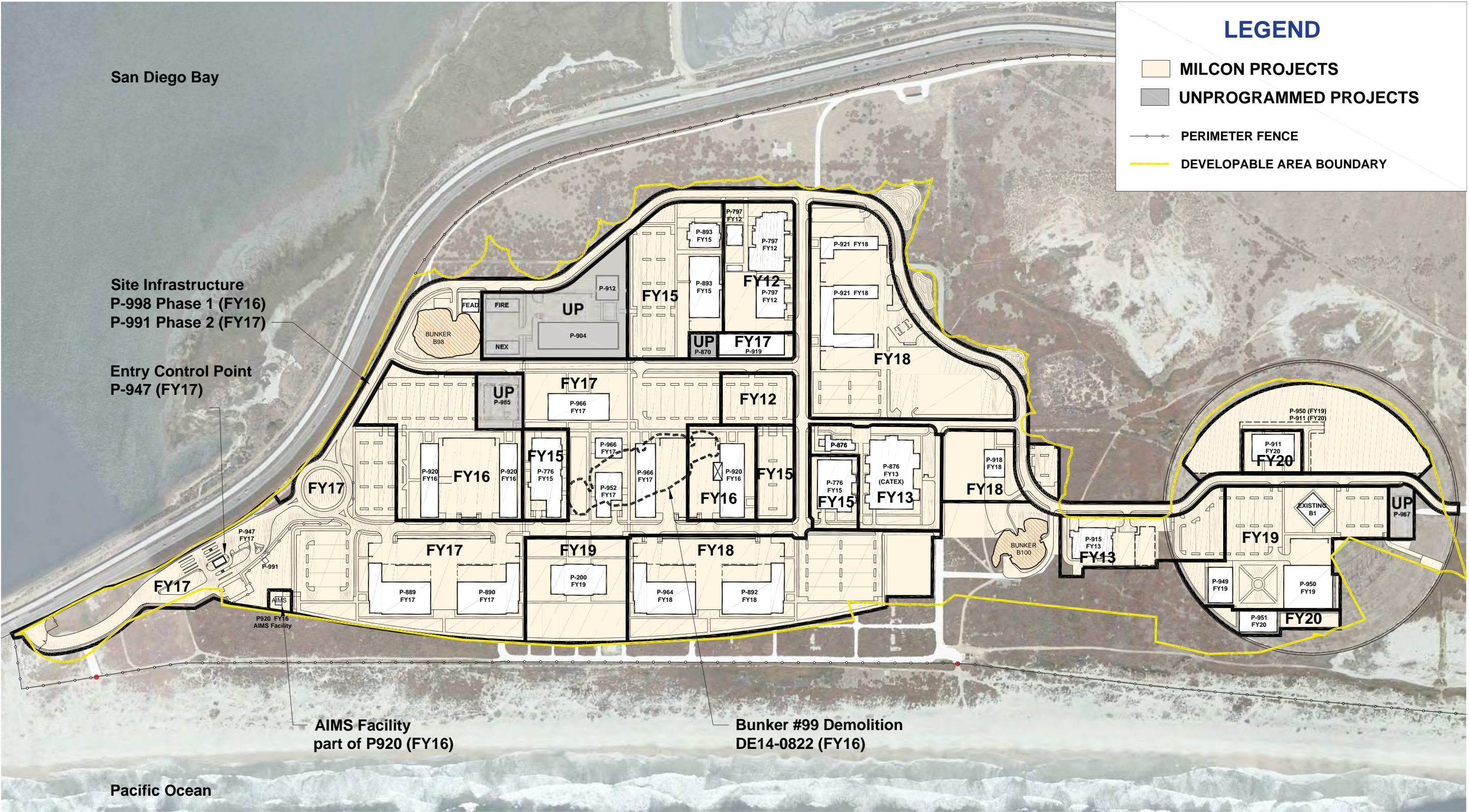
SUMMARY

The Development Program and Phasing Plan summarizes all current projects, programmed and un-programmed, considered by the ADP.

The Phasing Plans depict MILCON funding by fiscal year and provide a visual aid to understanding campus build-out.

FY	AWARD	PNO	TITLE	PA	SF
2012	Q4/2015	P797	Operations Facility	\$42.0M	104,000 sf
2013	Q4/2014	P876	Operations Facility	\$30.8M	80,000 sf
2013	Q4/2015	P915	Operations Facility	\$10.0M	25,000 sf
2015	Q4/2015	P776	Operations Facility	\$41.7M	80,000 sf
2015	Q4/2015	P893	Operations Facility	\$28.6M	70,000 sf
2016	Q1/2016	DE14-0822	Bunker Demolition	\$18.7M	N/A
2016	Q1/2016	P998	Utilities	\$4.9M	N/A
2016	Q3/2016	P920	Operations	\$47.8M	120,000 sf
2016					
2017	Q3/2017	P991	Utilities	\$84.8M	N/A
2017	Q3/2017	P947	New North Gate	\$13.8M	N/A
2017	Q3/2017	P919	Operations	\$21.3M	40,000 sf
2017	Q3/2017	P889	Operations	\$55.7M	100,000 sf
2017	Q3/2017	P890	Operations	\$41.4M	100,000 sf
2017	Q3/2017	P952	Training	\$14.0M	40,000 sf
2017	Q4/2017	P966	Operations	\$45.5M	90,000 sf
2018	Q3/2018	P918	Training	\$13.0M	23,000 sf
2018	Q3/2018	P921	Operations	\$46.6M	100,000 sf
2018	Q3/2018	P964	Operations	\$50.7M	100,000 sf
2018	Q3/2018	P892	Operations	\$66.8M	100,000 sf
2019	Q3/2019	P200	Administrative	\$19.6M	44,000 sf
2019	Q3/2019	P949	Training	\$15.2M	38,000 sf
2019	Q3/2019	P950	Training	\$18.8M	47,000 sf
2020	Q3/2020	P911	Training	\$15.5M	43,000 sf
2020	Q3/2020	P951	Operations	\$14.9M	35,000 sf
UP	-	P904	Operations Facility	\$25.4M	43,700 sf
UP	-	P912	Administrative	\$7.5M	11,000 sf
UP	-	P870	Operations	\$9.0M	25,000 sf
UP	-	P967	Operations	\$5.3M	11,000 sf
UP	-	P965	Administrative	\$13.5M	35,000 sf
UP	-	-	NEX / MWR	\$6.0M	6,000 sf
UP	-	P1015	Fire Station	\$9.9M	17,000 sf

Phasing Plan: Composite



Phasing Plan: FY12-FY15 MILCON Projects Awarded



Phasing Plan: FY16 MILCON Projects Awarded



Phasing Plan: FY17 MILCON Projects Awarded



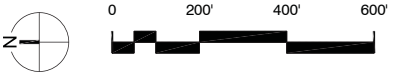
Phasing Plan: FY18 MILCON Projects Awarded



Phasing Plan: FY19 MILCON Projects Awarded



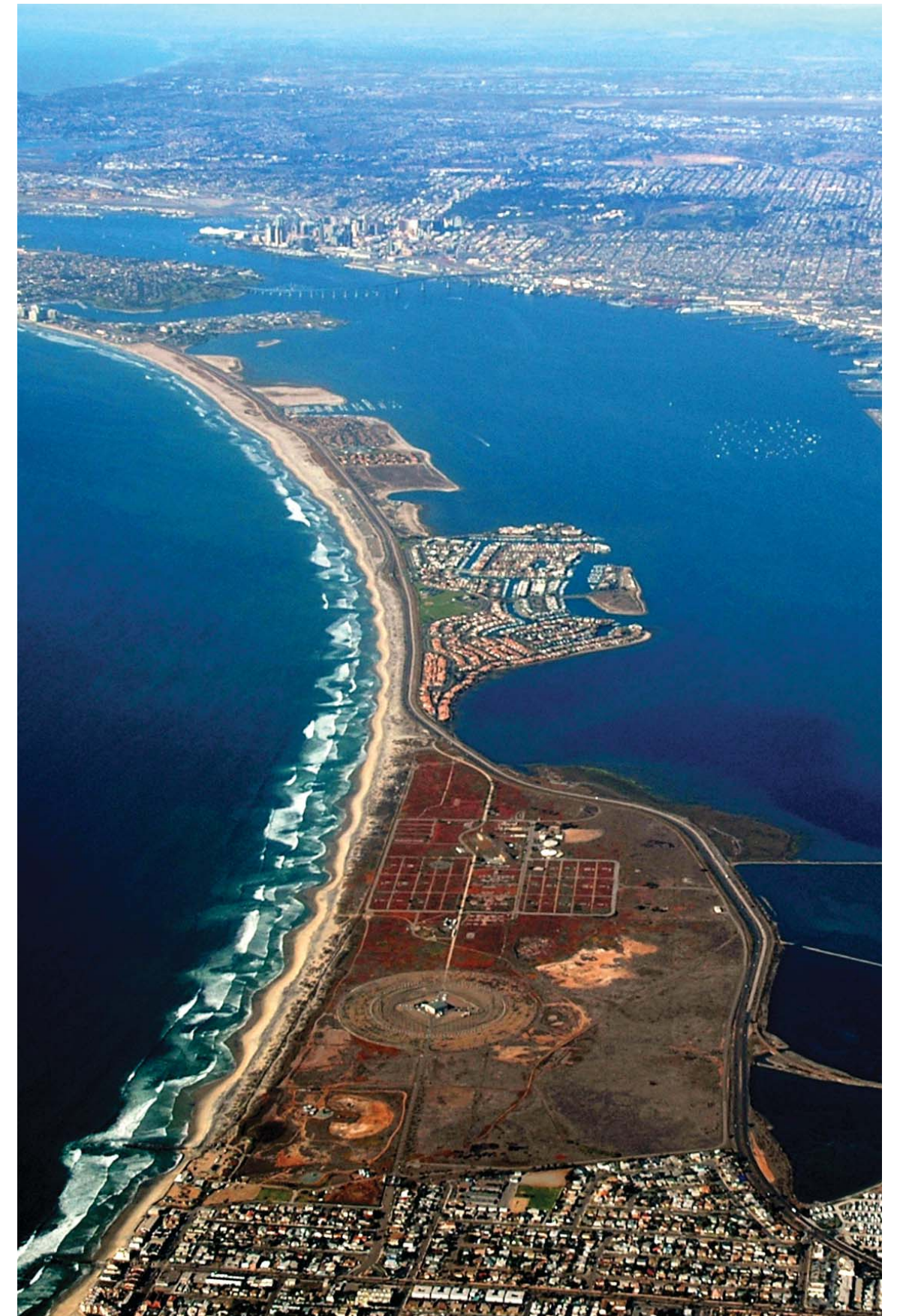
Phasing Plan: FY20 MILCON Projects Awarded



Phasing Plan: Unprogrammed Projects



Design Guidelines



Introduction

INTRODUCTION TO THE GUIDELINES

The purpose of these guidelines is to establish standards to apply when designing NBC Coastal Campus' physical environment. The guidelines provide a framework for the enhancement of the visual setting of the Coastal Campus through siting, design, style, building colors and materials, site elements, and landscape for all campus improvements.

These design guidelines provide direction for:

- **Building Design Standards:** Building design, building entrances, building renovations and additions, and building colors and materials.
- **Site Design Standards:** Vehicular circulation, pedestrian and bicycle circulation, parking, building siting, gates and fences, walls and enclosures, trellises, arcades and canopies, sustainable design elements, site walls, pavements, site furnishings, and site lighting.
- **Landscape Architecture:** Landscape and low impact development, plant materials, irrigation, perimeter edges, open spaces, plazas and gathering areas, signage and wayfinding, monuments and static displays.

SUSTAINABLE DESIGN

When appropriate, new construction and major renovations shall follow Guiding Principles Validation requirements and third party sustainable design certification requirements.

Third party certifiers currently accepted for use on the Coastal Campus projects include USGBC's LEED® (Leadership in Energy and Environmental Design) rating system and Green Building Initiative's Green Globes rating system. Other certifiers may be approved in the future. Refer to latest policies and mandates outlined in the WBDG (wbdg.org) NAVFAC Sustainable Development Program web page.

Sustainability certification goals include employing integrated design principles; optimizing energy performance; protecting and conserving water; enhancing indoor environmental quality; and reducing environmental impact of materials.

Each third party certifier achieves these goals using varying methods. Although not all credits have the potential to affect installation appearance, the designer should be fully familiar with all of the certifier's credits and potential design impacts.



Building Design Standards

BUILDING DESIGN

Modern Environmental Theme

Simple, well proportioned building elements, thoughtfully composed in response to functional requirements, with consideration of impacts on and from the surrounding environment.

Contextual Camouflage

- Buildings blend into surroundings as benign entity.
- Perimeter buildings have a more public facade.
- Massing and features share character elements that convey campus continuity.
- Building massing helps define courtyards and service areas.

BUILDING ENTRANCES

Building entrances have an important role in a building’s appearance and function. Entrances on new buildings shall be clearly defined through formal, spatial, and/or material hierarchy. This will constitute a clear point of entry.

Characteristics

- Primary Building Entrances must be easily identifiable with a clear and understandable path from site parking and circulation.
- Use of landmark elements can be elevators, stairs or other elements of the building; or site plazas or forecourts.
- Building entrances are defined with architectural elements such as shading elements, color changes, building transparency and upgraded materials.

Building Lobbies

Building lobbies shall be designed as an integral component of the building entries and shall promote a feeling of openness and connection to the exterior. To promote openness and a professional image, access control shall be provided between the lobby and other interior spaces.

Characteristics

- Simple rooms, 1 or 2 story height.
- High ratio of glass, abundant natural light.
- Appropriate to building use and architecture design.
- Durable materials, articulated and well detailed.
- Entry doors shall be glazed storefront type.

BUILDING ADDITIONS & RENOVATIONS

All building additions or renovations shall be compatible with the existing building in terms of aesthetics, scale, form, material, orientation, and style. Incompatible additions and renovations shall be removed and replaced with compatible designs that are sensitive to the building’s design, function, and location. In cases where removal and replacement are not feasible, incompatible additions and renovations shall be modified to make them compatible with the style of the building.



P876 Conceptual Rendering



John Finn Hall - NBC NASNI

Building Design Standards



P797 Conceptual Rendering



P893 Conceptual Rendering

TRELLISES AND CANOPIES

Objective

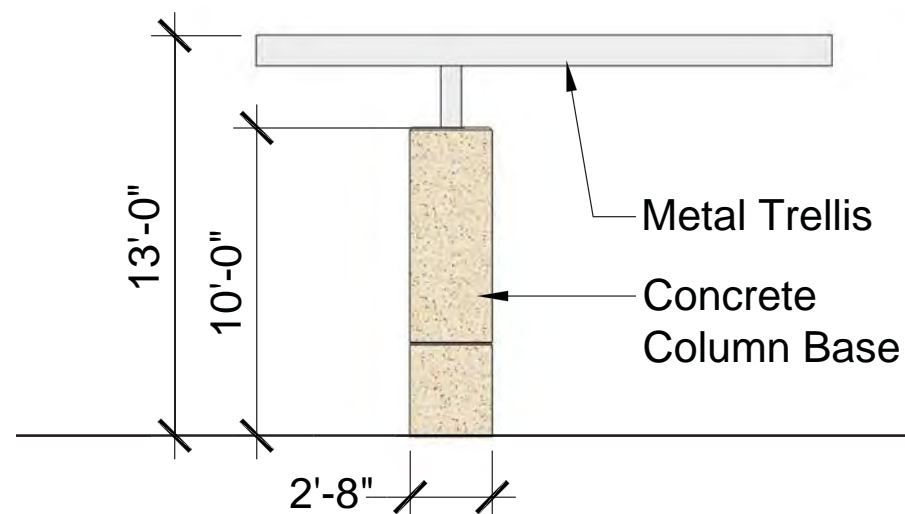
Trellis systems shall be designed to be an integral part of the building's architecture.

Guidelines

- Announce building entrances and create a means of way-finding to the front door.
- Provide a transition from building to the exterior.
- Visually link stand-alone shade structures elements to the architecture.
- Enhance the architectural facade and provide cover from the elements where appropriate.
- Trellis shall be constructed of steel tube columns embedded in concrete.
- Horizontal shade elements shall be constructed of bent steel plates creating a chevron section and supported by steel tube framing.
- All metal shall be painted with high performance epoxy coating with semi-gloss finish.

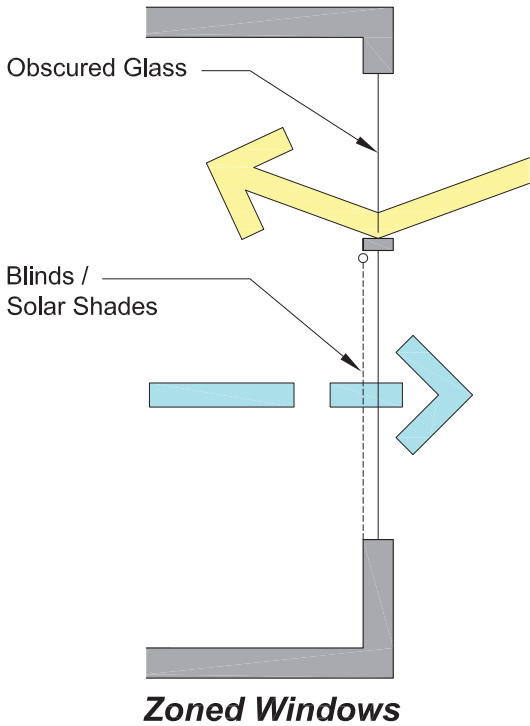
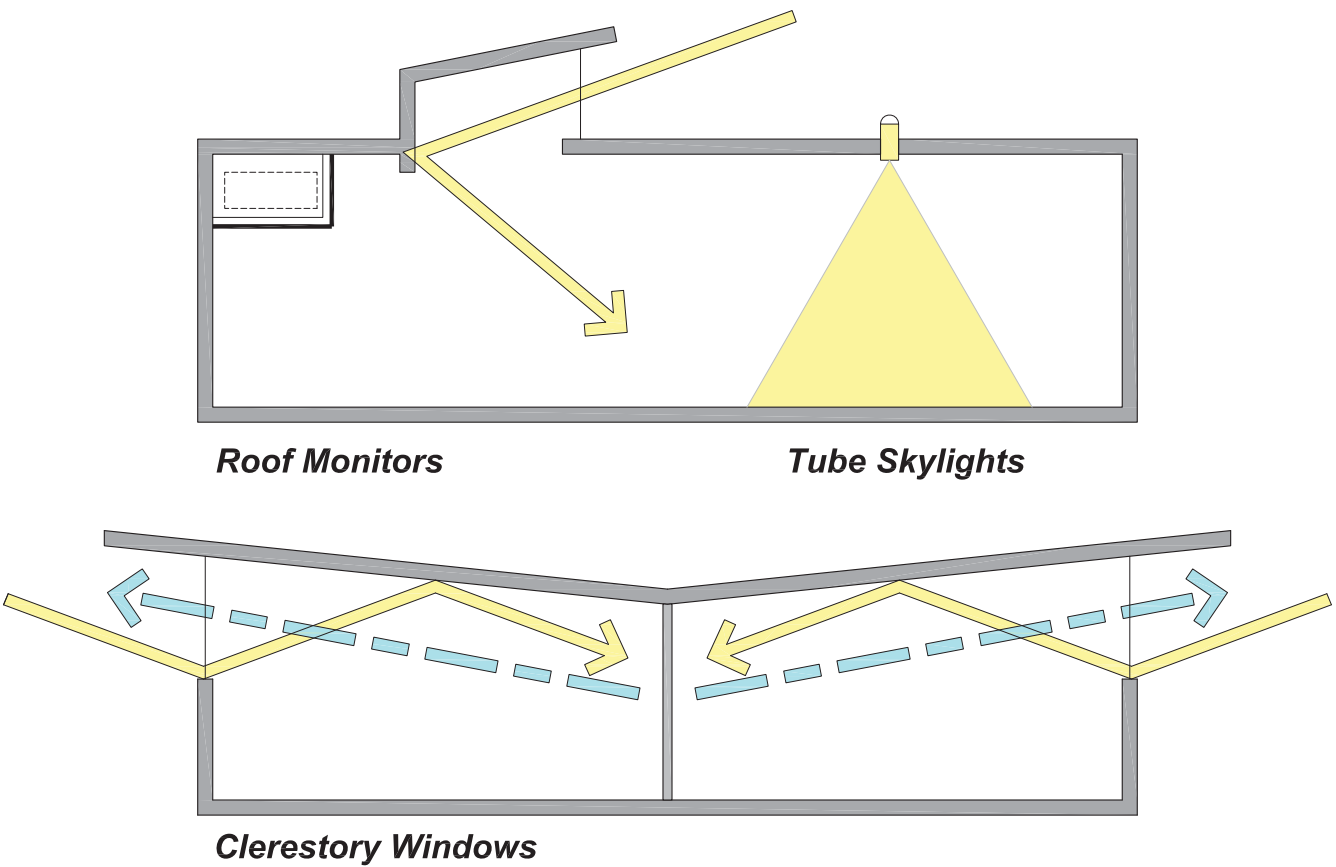


P876 Conceptual Rendering



Trellis / Canopy Detail

Building Design Standards



Daylighting Strategy Diagrams

SUSTAINABLE BUILDING ELEMENTS

Objective

Sustainable building elements incorporate campus sustainability and LEED goals by integrating energy conservation, water conservation, and sustainable materials into building design.

Sustainable Building Elements

- Roof-mounted photovoltaic systems.
- Building-integrated photovoltaic systems at trellis, shade structures, and building entries.
- Green roofs at selected locations such as Headquarters buildings and the TRADET training building.
- Building sun-control systems.

Daylighting Strategies

Daylighting strategies shall be incorporated into the design of all buildings.

- Zoned perimeter windows with vision and daylighting sections.
- High (transom) windows.
- Roof monitors and modular tube-type skylights.
- Glazed interior office walls.

Sustainable Materials

Materials selections shall be consistent with LEED criteria.

- Regionally sourced materials.
- Materials with recycled content.
- Rapidly renewable materials applied in select locations such as building lobbies.



Building Integrated Photovoltaic (BIPV)



Green Roof System

Building Design Standards

BUILDING PRIMARY MATERIALS

Tilt-up Concrete Panels

- Concrete panels (integral color, stained or coated applications).
- Joint materials shall match panel colors.
- Variety achieved with use of form liners and surface treatments such as sandblasting or concrete additives.
- Cast-in-place or precast concrete are also acceptable.

Concrete Masonry Units

- 8" x 16" units in 4" or 8" heights.
- Acceptable face textures include precision, shotblast, split face, and scored.
- Variety of coursing patterns appropriate to building design.

Exterior Doors, Windows & Storefronts

- Designs shall conform to AT/FP blast requirements.
- Exterior doors and frames shall be steel with factory-applied coating.
- Windows and storefronts shall be aluminum with factory-applied Polyvinylidene Fluoride (PVDF) finish.

Glazing

- Exterior glazing shall be clear insulated units (Solarban 70 or equivalent).
- Obscured glazing (ceramic fritting or applied film) shall be used where limited vision is desired.
- Spandrel sections shall have sputter coat finish that harmonizes with the glazing color.
- Translucent structural sandwich fiberglass polymer panels shall be used at warehouses and to provide daylighting into buildings.

Louvers and Sun Control Devices

- Aluminum or steel with PVDF finish.

Miscellaneous Metals

- Metal trellis and handrails: 3-coat moisture cured urethane coating.
- Miscellaneous flashing: Shall be pre-finished to match adjacent surface.

BUILDING ACCENT MATERIALS

Metal Cladding

- Aluminum Composite Panels with PVDF finish.
- Concealed fasteners - stainless steel or non-corrosive materials.

Stone Tile Veneer

- Travertine and limestone, 12" x 24" minimum tile size.
- Thin-set tile or composite panel applications.
- Clear penetrating sealer.

Porcelain Tile Veneer

- 12" x 24" minimum size. Plank and large rectangular shapes are acceptable.
- Thin-set tile or composite panel applications.
- Factory finish.

Cement Plaster

- Shall be used only in limited applications such as soffits.
- 3 coat system with integral color.
- Fine sand float finish.
- Clear penetrating sealer.

Low Maintenance Materials

- The NBC CC facilities are subject to the corrosive effects of an oceanfront site. All material selections must be carefully considered to minimize future maintenance.
- All material selections must be based on a life-cycle cost analysis that includes consideration of long-term maintenance costs.
- All fasteners on exterior envelope, exposed or concealed, to be non-corrosive.



Stone Veneer



Metal Louvers with Metal Cladding and Concrete

Building Design Standards



PRIMARY BUILDING COLORS



SECONDARY BUILDING COLORS



ACCENT COLORS

BUILDING COLOR DESIGN GUIDE

Objective
To provide a coordinated color palette for the Coastal Campus.

- General Guidelines**
- Keep the color palette simple.
 - Use only the approved colors throughout the campus.
 - Building accessories such as ladders, downspouts, utilities and other equipment shall be painted the building body color to limit visual contrast.

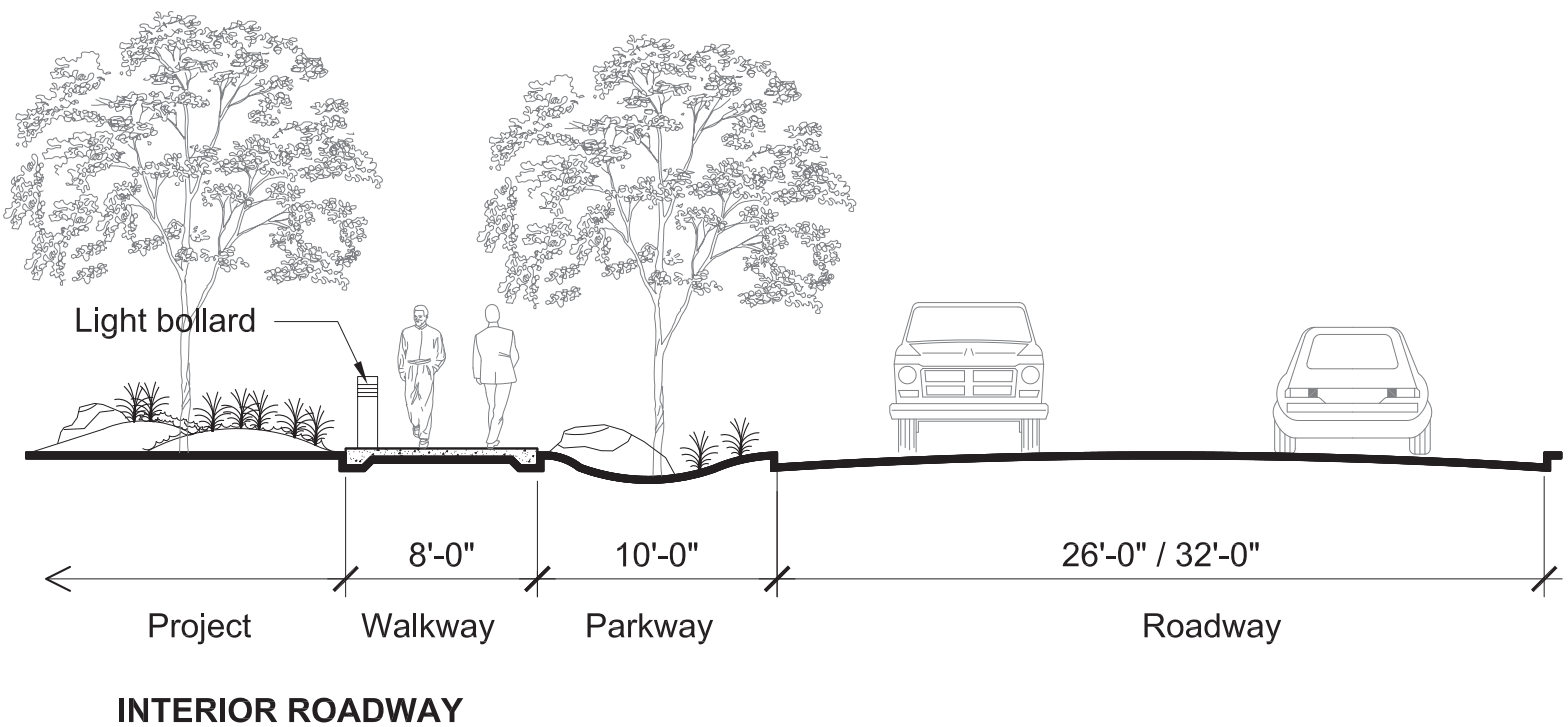
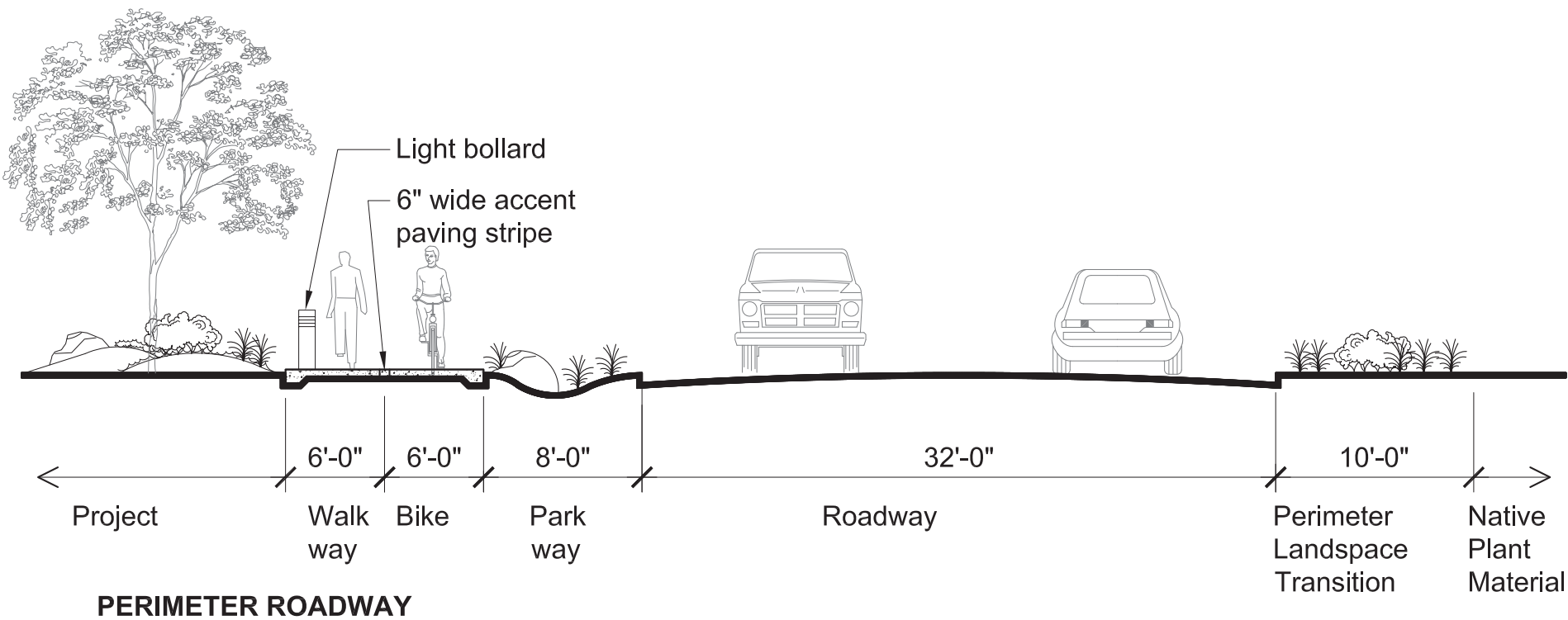
Use of the Color Palette
The Coastal Campus is similar in scale to districts found on many installations. Consequently a single color theme has been developed that will be applied in differing combinations across the campus.

Primary Building Colors: Provide a color palette for primary building elements such as exterior walls. Colors will be used in differing combinations to provide variety and interest. Each building shall use no more than 4 primary building colors.

Secondary Building Colors: Provide a consistent color standard throughout the campus for secondary building elements such as doors, windows, storefronts, fascias and trellis.

Accent Colors: Shall be used for signage and wayfinding elements, metal wall panels, and interior and exterior feature walls.

Site Design Standards



VEHICULAR CIRCULATION

Objective

Provide clarity to the circulation hierarchy for the safety and convenience of all users. Improve installation appearance by providing a coordinated streetscape system of pavements, lighting, signage, site furnishings, and landscaping.

Streets

- Provide traffic striping consistent with California MUTCD standards.
- Use consistent sidewalk design to reinforce streetscape continuity.
- Use standard street lighting to provide continuity throughout.
- Coordinate the design of street signs to optimize communication, and minimize clutter.
- Utilities within the street corridor shall be installed underground or screened from view.
- Signs, hydrants, poles, head-walls, fences, and similar obstructions shall be set back from the curb a minimum of 2-1/2 ft. Where there is no curb, a minimum set back of 10 ft is recommended.
- Use planting to reinforce street hierarchy, establish streetscape continuity, and screen negative views.

Crosswalks

- All intersections carrying pedestrian traffic shall have developed crosswalks.
- Provide traffic calming tabletops at major pedestrian crossings.
- At a minimum, crosswalks shall have white painted lines. Mid-block crosswalks shall be clearly striped and signed and lighted for pedestrian safety.
- Enhanced pavements are encouraged for high visibility and Main Gate access.
- Provide accessible pedestrian ramps at all crosswalks.
- Provide lighting for the purpose of safety and sight-line distances at crosswalks.

Site Design Standards

PEDESTRIAN AND BICYCLE CIRCULATION

Objective

Provide a convenient, safe, comfortable, accessible, and continuous pedestrian network throughout the installation.

General

- Walkways shall be lit, and shade shall be provided for pedestrian comfort and for the aesthetically pleasing enhancement of the installation.
- Utilize enhanced pavements at plazas, courtyards or other high-visibility areas.
- Curbs are the minimum acceptable separation devices from vehicular circulation.
- All parkways shall be landscaped.
- All sidewalks shall be ABA accessible with ramps provided, where required by law.
- Avoid steps where possible. Where required, steps shall have a minimum of two risers, handrails, a non-slip finish, and safe lighting levels.
- Crosswalks and pedestrian ramps shall be provided at intersections and key pedestrian crossings. Crosswalks shall be appropriately designated, striped and lighted.

Types

- *Mixed Pedestrian / Bike Path:* Shall be 12 ft wide with 6 ft wide pedestrian and bike sections. Separate from vehicular traffic by a 10 ft wide minimum planting strip. Provide 6" wide accent paving stripe at center.
- *Primary Sidewalks / Service Paths:* Link normal activity centers and carry moderate amounts of pedestrian traffic. Walks shall be 8 ft wide and separated from vehicular traffic by a 10 ft wide planting strip.
- *Secondary Walks:* Provide necessary linkages for continuity of the system, but are infrequently used or carry low volumes of traffic. Walks shall be 5 ft minimum width.
- *Recreational Trails (other than mixed path):* Shall be asphalt or decomposed granite for trails less than 5% in slope, and asphalt for steeper trails.

Walkways

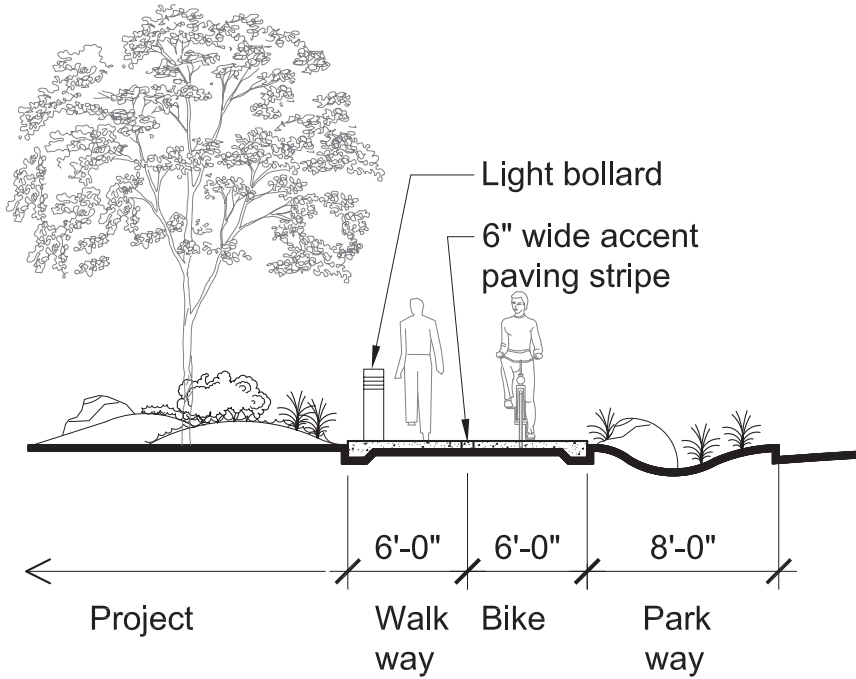
- Provide accessible paths of travel from parking areas to building entries.
- All sidewalks shall be concrete with a non-skid finish pitched toward a drainage facility at 2% slope. When repairs are made to existing sidewalks, the new walkway shall be aligned and finished to match the existing.
- Cross slopes shall not exceed 2%.
- When repairs are made to existing walks, remove the old pavement to an existing joint that has been saw-cut. The new walk shall be finished to match the existing.
- Light bollards shall be set 8" from the edge of walk and allow a 48" wide minimum path of travel.

Stairs

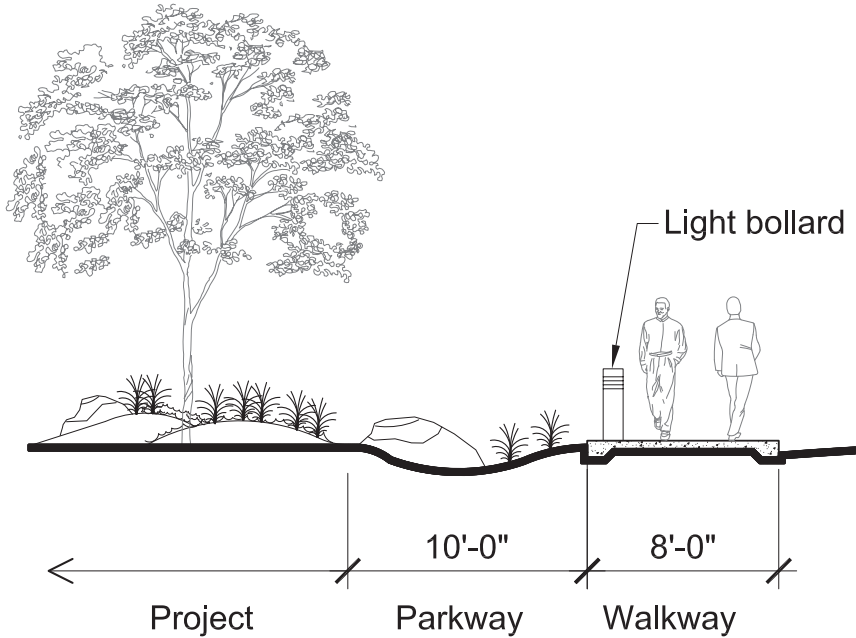
- Where possible, avoid the use of stairs on walks. Where stairs are required, always use two or more risers together.
- Stairs shall be equal in width to the walkway they serve. Treads and risers shall be uniform in dimension for all steps.
- Stairs shall provide a non-slip, contrasting band at each tread nosing.
- Provide handrails and safe levels of lighting at all stairs.
- Stairs shall have a natural concrete finish.

Ramps

- Construct ramps in accordance with ABA standards. Include railings, guardrails, guide rails, and handrails, as required.
- If possible, avoid ramps in sidewalks by maintaining a less than 5% slope.
- Integrate ramps with surrounding development, and landscaping. Integrate planters or other landscape features where possible.

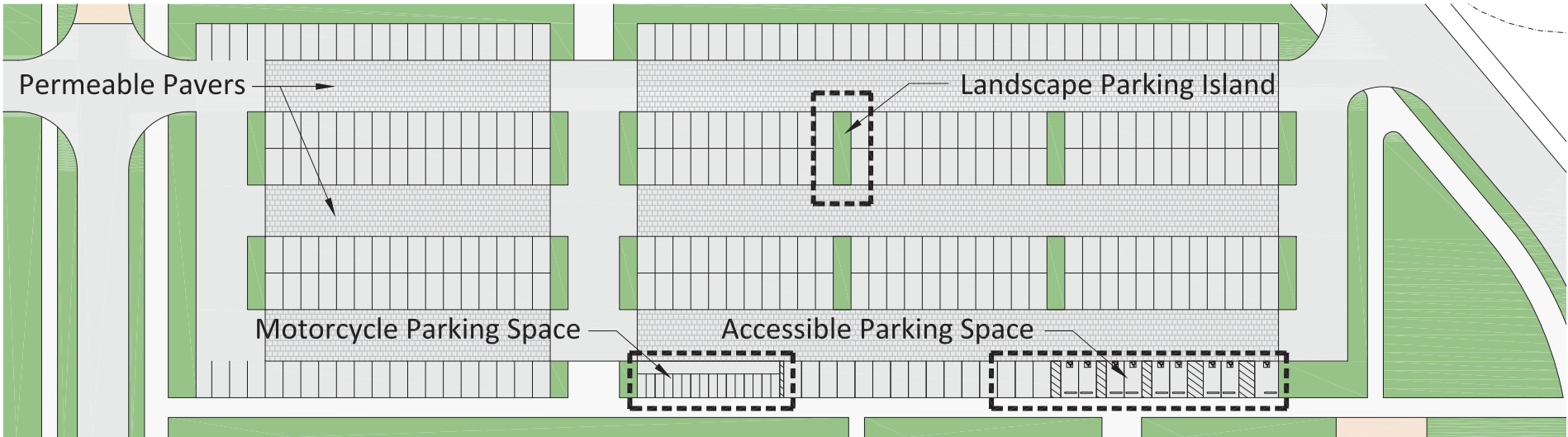


BICYCLE AND PEDESTRIAN PATH

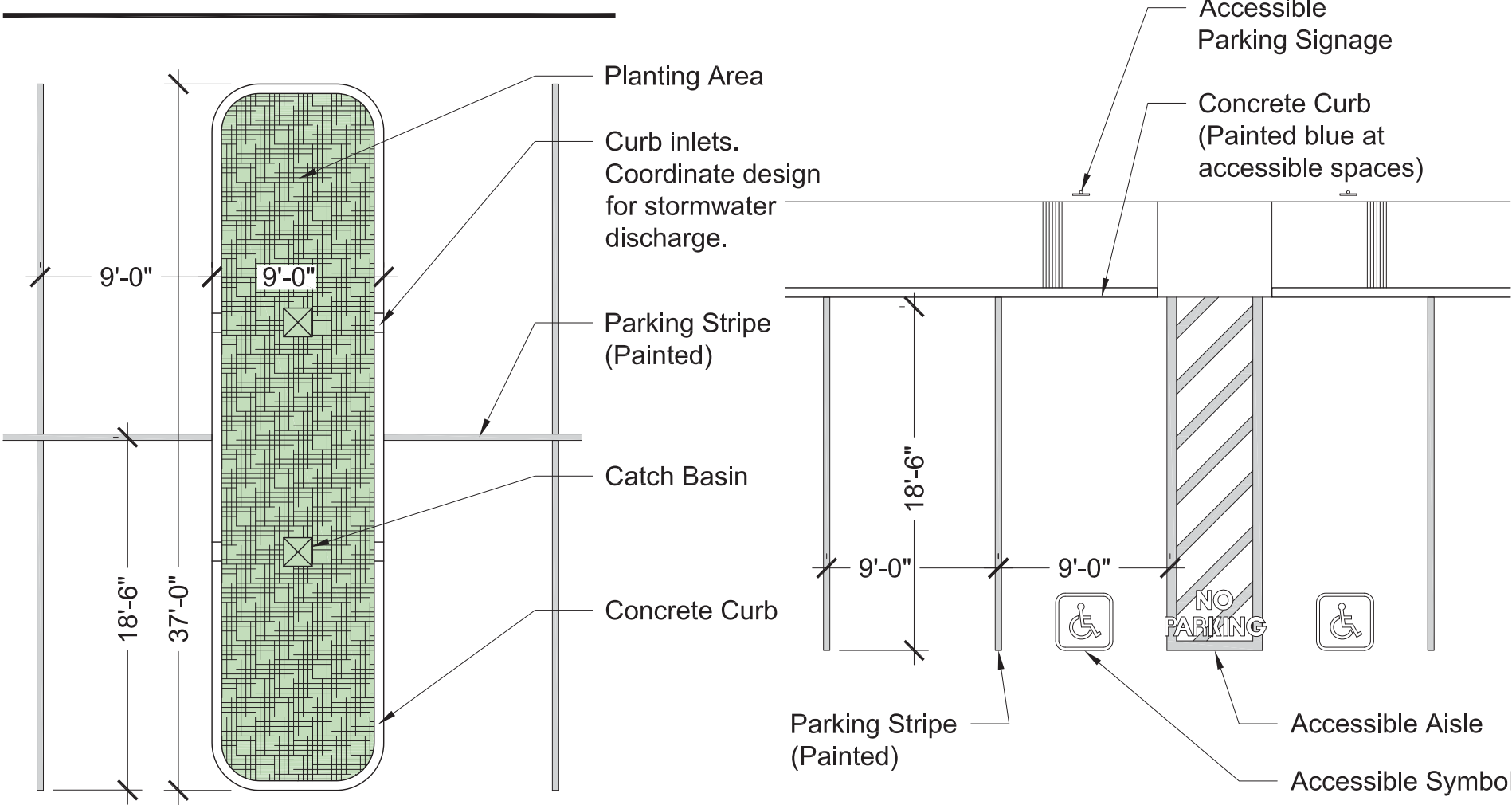


ALTERNATE PATH @ INTERIOR STREET

Site Design Standards



TYPICAL PARKING LOT LAYOUT



TYPICAL LANDSCAPE PARKING ISLAND

STANDARD AND ACCESSIBLE PARKING SPACE

PARKING

Objective

Improve parking efficiency, safety, and appearance while minimizing the amount of surface paving, encouraging carpooling and alternative modes of travel.

General

- Utilize standard off-street parking layouts, curbing, and striping in conformance with UFC 3-201-01. Standard POV parking layouts shall be applied installation-wide.
- Utilize 90-degree parking-lot layouts with two-way aisles for optimum efficiency and ease of circulation. 60-degree parking layout with one-way aisles may be used when required by size or space restrictions.
- Provide accessible parking spaces as required.
- Utilize landscape strips adjacent to streets and buildings, end islands, interior islands, and median islands to landscape a minimum of 10% of the parking area. See Plant Materials for parking area planting guidelines.
- Use permeable paving at drive aisles to reduce stormwater runoff.

Design Standards

- Standard Vehicle Parking Space: 9'-0" x 18'-6".
- Accessible Vehicle Space: 9'-0" x 18'-6".
- Accessible Aisle: 5'-0" for accessible space and 8'-0" for van-accessible parking space.
- Drive Aisles: 26'-0".
- Motorcycle Parking Space: 4'-6" x 9'-0". Parking surface shall be concrete to prevent kickstands from penetrating bituminous pavement in warm weather.

Site Design Standards

GATES AND FENCES

Objective

- Promote a campus environment by minimizing the use of gates and fencing. Where required, fences should run between buildings rather than around them.
- Provide attractive entry elements in a well-landscaped setting that is consistent with the installation's design theme.
- Gates and fences shall be compatible in design and shall incorporate signage consistent with these guidelines.

GATES

General Guidelines

- Comply with UFC 4-022-01 Security Engineering: Entry Control Facilities/ Access Control Points.
- The Main Entry Control Point (ECP) shall have a greater prominence and scale than that of secondary entries.
- Where visible from public areas, provide decorative metal perimeter fencing and landscaping consistent with the campus architectural theme.
- Provide traffic striping and signage.
- Oversized vehicle yards, utility and trash enclosures, and yards with special security concerns will be screened.
- Gates requiring additional security measures to meet AT/FP requirements shall utilize designs that are visually unobtrusive (i.e., berm, ditches, and low boulders).

Types

- *Entry Control Points:* The proposed north ECP will provide an attractive arrival to campus, while maintaining the appropriate level of base security.
- *Central Campus Gates:* Pedestrian gates and fire access only gates shall be compatible in design with the Central Campus fencing.
- *Service Area Access:* Operable single-arm device with access control. Gates shall permit fire department access.

FENCES

General Guidelines

- Chain link fencing shall be limited to the installation perimeter, ATC training area, and southern perimeter of the vehicle maintenance complex. Chain-link fencing shall not be used in the Central Campus area.
- Fence design should match security requirements.
- Fence height shall be selected to respond to specific need. Standard heights include: 42 inches, 6 ft, 8 ft, and 12 ft.
- Fences adjacent to high-voltage facilities shall be adequately grounded.
- Screen fences shall be designed to resist wind load.
- Soften screen fences with plant materials in key locations when space is available.

Types

- *Perimeter Fencing:* Shall be black vinyl-coated chain-link to match NBC standard.
- *Central Campus Fencing:* Vertical steel posts with industrial coating. Posts shall have enclosed end caps.



Example of Perimeter Fencing



Example of Central Campus Gate



Example of Central Campus Fencing



Example of Service Area Access Control

Site Design Standards

WALLS AND ENCLOSURES

Objective

Locate and screen service facilities in a manner compatible with the campus architectural theme.

General

- Locate service areas at the least visually obtrusive side of a building.
- Locate loading docks at the back of buildings and provide adequate access.
- Walls and enclosures must be attractive, functional, and compatible with the campus architectural theme.
- Walls shall provide a durable and secure enclosure, special division, or screening, and shall be appropriate to the conditions and requirements for each location.
- Razor ribbon or barbed wire on top of screen walls and enclosures is not permitted.

Architectural Screen Walls

- Screen walls shall be used at service areas, highly visible locations, or where complete view blockage is required.
- Wall height shall be selected to respond to the function of the wall. Where access is required, install gates in accordance with these guidelines.
- Wall materials shall be concrete or CMU in appropriate color and finish.
- Soften the walls with plant materials or mounding when space is available. Landscaping shall comply with AT/FP guidelines.

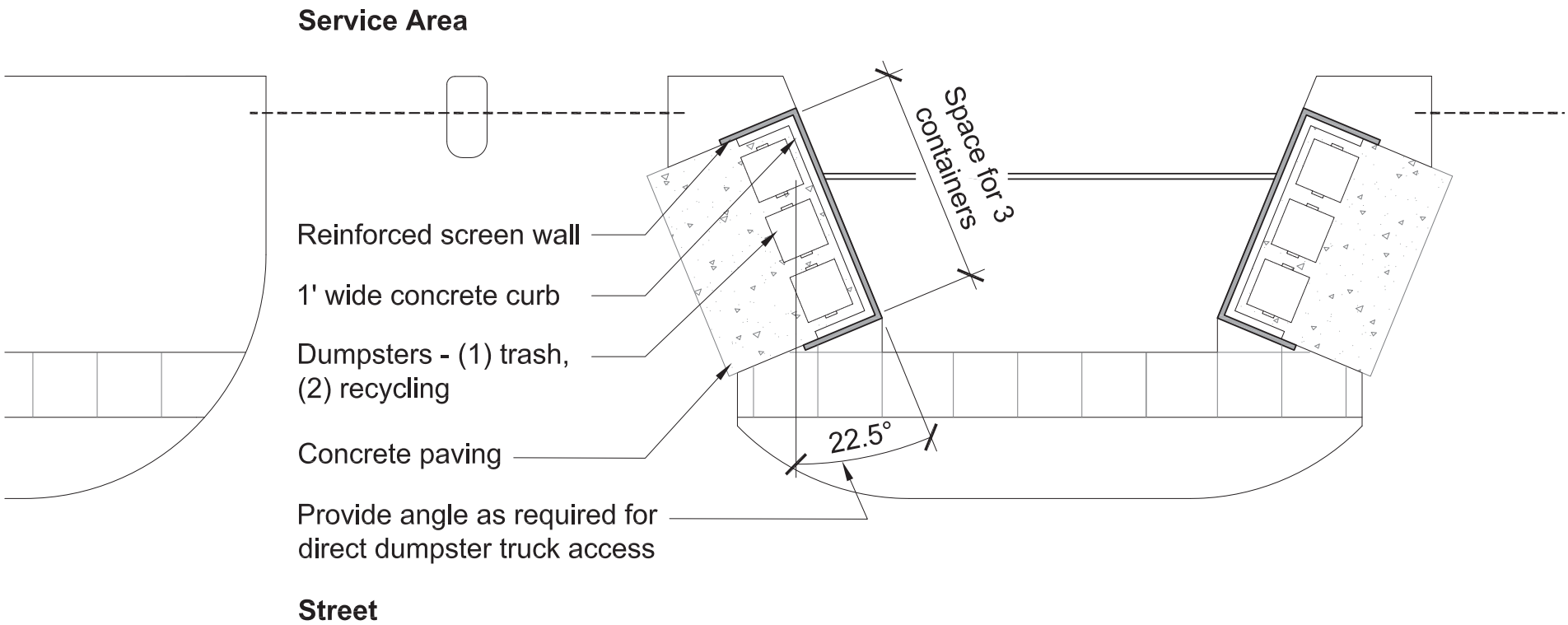
Enclosures

Enclosures shall be provided at trash / recycling facilities, emergency generators, and site utility structures. They shall be compatible in design with adjacent building or screen walls.

- Trash / recycling enclosures shall be located outside primary architectural areas, and shall not be a dominant feature in view of buildings or outdoor spaces.
- Provide solid covers over trash / recycling enclosures to reduce stormwater pollution and discourage birds. Height shall allow dumpster lids to fully open.
- Enclosures shall be durable, attractive, and constructed of materials compatible with the adjacent building.
- Design trash / recycling enclosures with sturdy materials that will sustain heavy use without degrading their appearance.
- Angle trash / recycling enclosure to allow direct access to dumpsters.

Other Utility Screening

- Place utility lines underground, and locate new utility surface structures in low-visibility locations.
- Screen existing above-ground utility structures with solid walls or, if budget is limited, screen fences. Where possible, soften utility screening with landscaping.
- Locate utility boxes to avoid conflict with sidewalk use. Avoid placing utility boxes at the front or entrances of buildings.
- Paint un-screened utility structures. Wherever possible, to be compatible with adjacent architecture or color schemes.



Trash Enclosure Plan Diagram

Site Design Standards



Cast-in-place Seat Walls



Cast-in-place Site Accent Wall



Natural Stone Site Wall



Gabion Site Wall

MISCELLANEOUS SITE WALLS

Objective

Miscellaneous site walls are used to provide functional seating, signage, screening, and stormwater site elements. They shall be designed to provide visual interest in public spaces such as entry plazas and courtyards

General Guidelines

- Walls shall be designed to withstand harsh coastal conditions.
- Walls shall be durable, resistant to vandalism and easy to maintain.
- Seat walls shall be located at entry plazas, courtyards, public spaces, and near circulation paths. When feasible, seat walls shall be located to take advantage of views.
- Site accent walls shall be used to define entry plazas, courtyards and public spaces. They shall also be used as supporting structures for campus wayfinding signage.
- Gabion walls shall be used as an integral part of the stormwater management system and shall be used to create bioswales or detention areas.

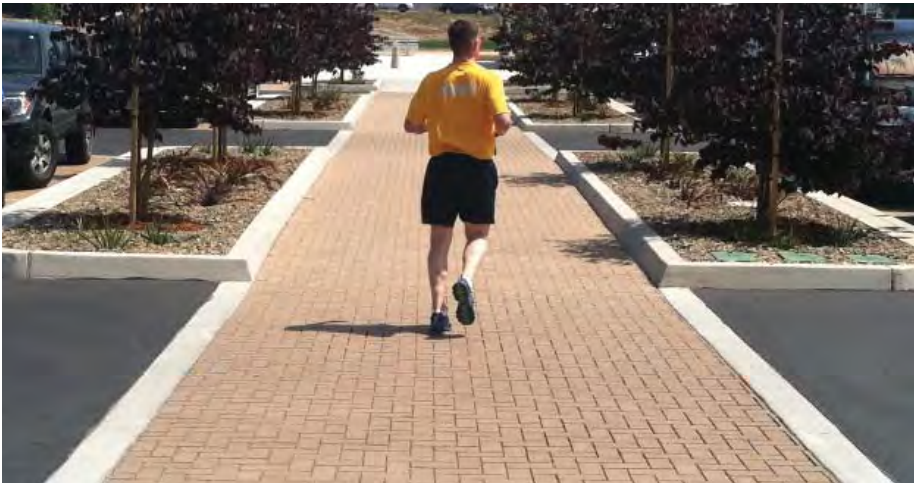
Types

- *Seat Walls:* Cast-in-place concrete or natural stone.
- *Site Accent Walls:* Cast-in-place concrete, concrete masonry units, or natural stone.
- *Gabion walls:* Marine grade wire mesh cages. Where feasible, use rubble from demolished Bunker 99 as fill material.

Site Design Standards



Cast Concrete Accent Finishes



Permeable Unit Pavers



Accent Pavement



Walkway with Accent Finishes



Decomposed Granite Path

PAVEMENTS

Objective

Improve installation appearance by providing a coordinated system of pavements, lighting, signage, site furnishings, and landscaping.

Paving Materials

- Use natural colored concrete to simplify future repairs.

Standard Walkway Pavement

- Broom finish.

Accent Pavements

- #50 retarded finish.
- 3/8" pea gravel aggregate at pedestrian walks.
- 1-1/2" pea gravel aggregate at street intersection.
- Permeable unit pavers.

Soft Pavements

- Decomposed Granite.
- Gravel.

Fire Lanes

- Combination of concrete and decomposed granite or gravel.

Site Design Standards

SITE FURNISHINGS

Objective

To provide site furnishings that meet user needs and fit within the context of the site and architecture. Site furnishings shall be able to withstand harsh coastal conditions, shall be durable, resistant to vandalism and easy to maintain.

AT/FP Devices

- Avoid concrete or plastic Jersey barriers because of their appearance. These devices may be used on a temporary basis only.
- Acceptable barrier alternatives include decorative barricades, precast concrete planters and concrete bollards.
- Earthen and natural barriers may be used where space permits. In association with berms, depressions may also function as low-impact storm-water retention and treatment basins.

Bollards

Bollards may be used in select locations to control traffic movement and separate vehicular traffic from pedestrians. For use as AT/FP devices, bollards must be specifically designed and installed to provide the required degree of impact protection.

- Selected bollards may be removable to permit occasional service and emergency vehicle. For force protection, bollards shall not be removable unless required for emergency access.
- Removable bollards shall be designed to be removed by hand or immediately available equipment.
- Bollards shall be of a standardized design throughout the installation.

Planters

Locate planters in selected plaza, courtyard, building entry, or other pavement locations where landscaping is necessary to highlight a building entry or reduce the visual impact of large pavement areas.

- Planters may be used as AT/FP devices if designed and installed to meet desired degree of impact resistance.

Bicycle Racks

Locate bicycle racks in accordance with the Pedestrian & Bicycle Network Plan or in response to demonstrated or anticipated user need.

- Place bicycle racks at conveniently accessible locations near building entrances, out of the way of traffic, but open to visual surveillance.
- Bicycle racks shall not detract from the visual quality of the building's entrance.
- Bicycle racks shall be powder-coated steel.

Drinking Fountains

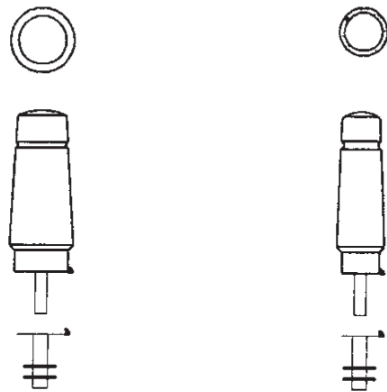
Locate drinking fountains in response to demonstrated or anticipated user need, where the level of activity can justify them, such as at recreation areas or heavily used outdoor eating areas.

- Drinking fountains shall be accessible and installed on a concrete pad, with sufficient clearance for easy maintenance and access.
- Drinking fountains shall be precast concrete.

Shelters and Kiosks

Locate shelters in response to demonstrated or anticipated user need such as at recreation areas or heavily used outdoor eating areas.

- Shelters shall be factory-finished and compatible with the installation's theme.
- Shelters shall be installed on concrete pads, with sufficient clearance for easy access and maintenance.
- Information kiosks shall be prefabricated and of the same design as the shelters.
- Lighting at shelters and kiosks, where required, shall be integrated with structure.



Removable Bollard



Removable Bollard



Bicycle Racks



Shelters and Kiosks

Site Design Standards

SITE FURNISHINGS

Trash Receptacles and Ash Urns

Locate trash receptacles near seating and gathering areas, shelters, building entries, and other appropriate locations.

- Trash receptacles and ash urns shall be accessible, located away from pedestrian traffic flow, and be in compliance with AT/FP standoff distances.
- Trash receptacles shall be precast concrete with lids designed to discourage birds.
- Ash urns shall be precast concrete and located away from entrances in appropriate designated smoking areas.



Trash Receptacle



Ash Urn



Barbeque (BBQ) Equipment

Benches and Tables

Locate benches and tables in response to demonstrated or anticipated user need. Select or develop settings that take advantage of views, shade, and access.

- Picnic tables and benches shall be precast concrete unless a temporary or movable version is required.
- Set benches and tables with a two-foot minimum clearance from adjacent sidewalks.
- Install tables and benches on concrete pads with sufficient clearance to accommodate access and maintenance.



Precast Concrete Table



Precast Concrete Bench

Barbeque (BBQ) Equipment

Locate barbeque equipment in proximity to shelter areas.

- BBQ grill shall be heavy duty and rated for charcoal use.
- Hot ash coal receptacle shall be precast concrete and placed adjacent to grill.

Tree Grates

Locate tree grates at locations where trees are placed within hardscape areas.

- Tree grates shall be precast concrete or engineered stone.
- Tree grates shall be 5 ft square configuration.

Parcourse Fitness Equipment

Combine parcourse fitness equipment with jogging paths or along fitness trails.

- All equipment shall be heavy duty rated.
- Material shall be steel with powder coat finish.
- Provide varying height heavy duty pull-up stations, dip stations, sit-up stations, and various plyometric workout stations.



Parcourse Fitness Equipment



Tree Grate

Site Design Standards



Pedestrian Light Fixture



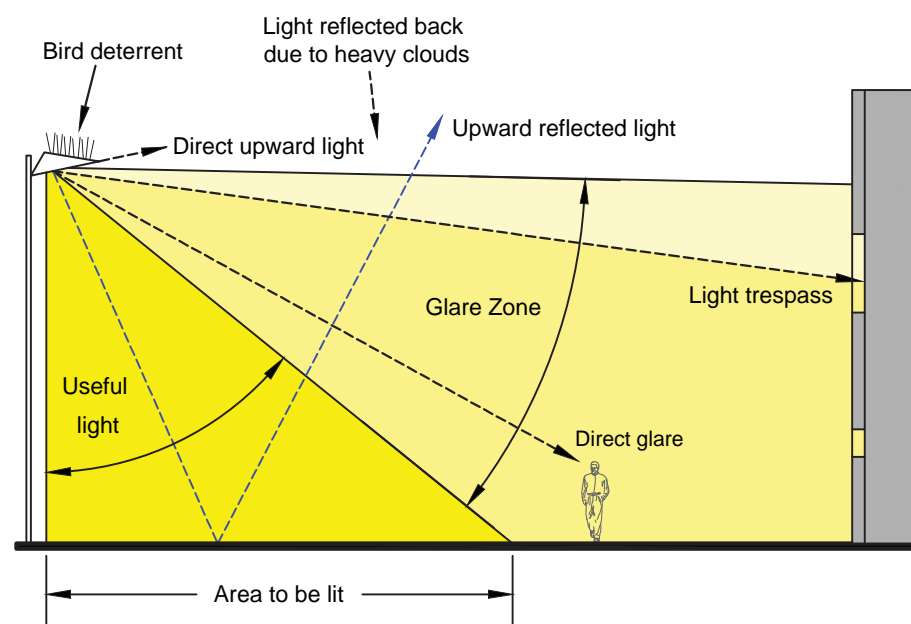
Street / Parking Light Fixture



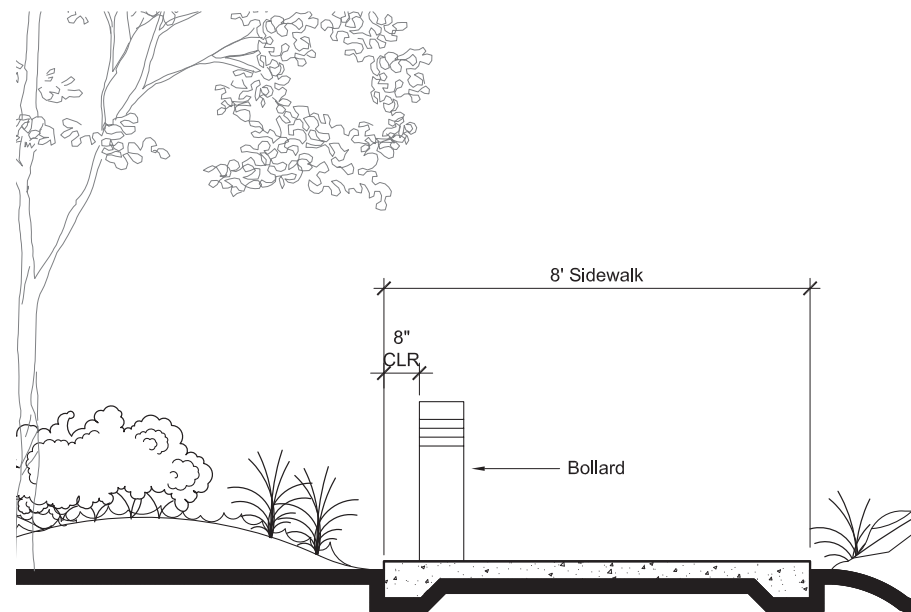
Street Fixture with Integral Photocell



Precast Concrete Light Bollard



Dark Skies Lighting Diagram



Sketch of Bollard Location

SITE LIGHTING

Objective

Lighting shall present a uniform appearance and provide desired illumination levels for safety, security, and night-time orientation. Light fixtures shall be selected for economy of operation, maintenance, and repair.

General Guidelines

- All exterior lighting shall be LED or induction with integrated photocells.
- Illumination levels shall be as recommended by UFC 3-530-01 Design: Interior and Exterior Lighting and Controls.
- Illumination levels at parking and pedestrian areas shall be as recommended by the Illuminating Engineers Society (IES) or 0.5 FT candles.
- Illumination levels at building-mounted lighting shall be as recommended by use.
- Lighting shall be used at intersections, crosswalks, or in areas with high night-time activity.
- Streetlights shall be located on alternate sides of the street. Pole height and spacing as required to achieve the recommended lighting levels.
- Parking area lights shall be located in the interior of the parking area, between stalls. End islands are reserved for landscaping. Pole height and spacing, as required to achieve the recommended lighting levels.
- Provide lighting in plazas, courtyards, and at bus stops to provide a feeling of comfort and safety.
- Provide lighting for all flagpoles, high-visibility memorials, and static displays. Avoid up-lighting whenever possible.
- Provide bird-deterrent devices at all poles above 15 ft.
- All lighting shall be shielded and directed downward in compliance with the EIS.

Types

- *Streets and Parking Lot Lighting:* Optically controlled fixtures with black powder-coated finish mounted on matching poles.
- *Pedestrian Lighting:* Concrete bollards.
- *Building-Mounted Lighting:* Optically controlled vandal-resistant fixtures with a protective wire guard or shatterproof lens. Color shall harmonize with adjacent wall surface.

Site Design Standards

IMPROVEMENTS AND MAINTENANCE

Objective

Improve installation aesthetics while reducing on-going maintenance costs through the use of low-maintenance building materials, low-maintenance drought-tolerant landscaping, and proper allocation of resources.

General

- Improve building, and thereby installation appearance, through proper and timely maintenance of existing building facades, and the removal of inappropriate, high-maintenance additions.
- Site and building design shall ensure that a clean, finished appearance can be maintained under minimum Common Output Levels Standards (COLS) as defined by NRSW and NBC.
- Reduce maintenance costs by replacing maintenance-intensive plants with durable, drought-tolerant plantings.
- Utilize hardscape or xeriscape in lieu of water intensive landscaping to conserve water and reduce maintenance costs.
- To conserve landscape water resources, current NAVFAC SW irrigation water management practices will be used to optimize the efficient use of water to maintain a healthy and functional landscape with optimal irrigation system performance. This includes compliance with all applicable watering limitations.



P797 / P893 Conceptual Rendering



P797 / P893 Conceptual Rendering

Landscape Architecture



Planting Character



Planting Character



Planting Character

PLANT MATERIALS

Objectives

- Use plant materials to improve the appearance of the Installation, reduce the amount of pavement, and reduce solar heat gain and glare.
- Design the landscape system to reduce potable water consumption for irrigation by 50% over conventional means.
- Plantings shall be selected from the approved plant list.
- All plant material shall be drought and coastal tolerant, and appropriate for the NBC Coastal Campus. Artificial turf shall be provided at Training and Headquarter areas.
- Select plantings that reinforces the Coastal landscape character and comply with AT/FP requirements.
- All proposed planting palettes, landscaping designs, and installation of trees would be submitted for review and approval by NBC NRO and Navy Landscape Architect.
- To comply with the terms of the USFWS Informal Concurrence Letter, which allows for a one-for-one replacement of existing trees, select trees that do not encourage birds to roost or nest.

Landscape Planning / Design

- Employ basic principles of landscape design in the planning and execution of all new and renovated landscapes. Comply with UFC 4-010-01 DoD Minimum Anti-terrorism Standards for Buildings.
- To protect wildlife and possible nesting habitat, existing mature trees shall not be removed without prior consultation with and approval from the NBC NRO. Vegetation removal shall be planned to occur during the non-nesting season (September 1 through February 14).
- No plants shall have significant disease, root or maintenance problems. All plants, with minor exceptions, shall maintain an acceptable natural form with no pruning at their mature size, and as appropriate for the designated space / use.
- Group plants with similar environmental characteristics, such as sun exposure and water requirements. Adjust plant palettes to accommodate micro-climates.
- Use plants in the landscape to improve energy conservation and make the immediate environment more comfortable for its inhabitants.

- Use plants to break, guide, and deflect wind and to filter out dust and dirt. Plant tall, dense shrub masses with irregular spacing on the windward side of places where people gather, recreate, or work. Avoid breaks in the windscreen planting which would cause the wind to funnel through and increase velocity.
- Break up paved areas with planting and shade trees to reduce ambient air temperatures through transpiration and to stabilize surface temperature.
- Plant shade trees next to buildings and in parking lots to reduce glare and reflected heat from building walls and parking lot surfaces. Shade trees also protect parked cars from the heat and ultraviolet rays of the sun.
- Reduce surface water run-off and encourage percolation of surface water with the introduction of landscaped areas and permeable pavement in large paved expanses such as parking lots.
- Avoid soil erosion and dust problems with a plant cover on steep slopes and barren areas.
- Separate all ground cover / shrub areas from the artificial turf with a physical element such as a walk, curb, or wall.
- Where space permits and AT/FP guidelines are not compromised, use plant materials for screening objectionable views such as surface parking lots, storage areas, service courts, trash containers, and substations.
- Install tree root barriers where trees are within 5-feet of any hardscape.

Notes

- All tree selections must comply with EIS requirements.
- Adjacent trees cannot touch.
- Tree must be trimmed to maintain open canopy to prevent nesting by predators.
- No tree may be planted west of the EIS action footprint.

Landscape Architecture



Cercidium 'Desert Museum' (Desert Museum Palo Verde)



Prosopis chilensis (Thornless Chilean Mesquite)



Rosmarinus 'Huntington Carpet' (Huntington Blue)



Achillea millefolium (Yarrow)



Senecio mandraliscae (Blue Chalk Sticks)



Armeria maritime (Sea Pink Trift)

PLANTING PALETTE

The planting palette for all projects shall be reviewed and approved by the NBC NRO and the NAVFAC SW Landscape Architect.

Trees

Brahea edulis
Cercidium 'Desert Museum'
Cercis occidentalis
Chamaerops humilis
Chilopsis linearis
Geijera parvifolia
Metrosideros excelsa
Prosopis chilensis

Common Name

Rock Palm
Desert Museum Palo Verde
Western Redbud
Mediterranean Fan Palm
Desert Willow
Australian Willow
New Zealand Christmas Tree
Thornless Chilean Mesquite

Groundcover

Abronia maritime
Achillea millefolium
Agave lophantha 'Splendida'
Aloe nobilis
Aloe rudikoppe 'Little Gem'
Aloe species
Armeria maritima
Baccharis pilularis
Carex divulsa
Carex flacca
Carex pansa
Carissa 'Green Carpet'
Fragaria chiloensis
Iva hayesiana
Juniperus horizontalis 'Wiltonii'
Rosmarinus 'Huntington Carpet'
Senecio mandraliscae
Sisyrinchium bellum

Common Name

Red Sand Verbena
Yarrow
Center Stripe Agave
Golden Toothed Aloe
Little Gem Aloe
Aloe
Sea Pink Trift
Coyote Bush
European Grey Sedge
Blue Sedge
California Meadow Sedge
Prostrate Natal Plum
Sand Strawberry
Poverty Weed
Blue Carpet Juniper
Huntington Blue
Blue Chalk Sticks
Blue-Eyed Grass

Landscape Architecture



Aloe striata (Coral Aloe)



Cistus 'Sunset' (Sunset Rockrose)



Helictotrichon sempervirens (Blue Oat Grass)



Calandrinia grandiflora 'Jazz Time' (Rock Purslane)



Hesperaloe parvifolia (Red Yucca)



Salvia clevelandii (Cleveland Sage)

PLANTING PALETTE

Shrubs

Aeonium arboretum 'Zwartkop'
Agave americana 'Varieties'
Agave bracteosa
Agave desmetiana 'Variegata'
Agave parryi var. truncata
Aloe striata
Aristida purpurea
Artemesia californica
Calandrinia grandiflora 'Jazz time'
Carex spissa
Cistus salviifolius 'Prostratus'
Cistus 'Sunset'
Dasylirion wheeleri
Diets bicolor
Encelia californica
Euphorbia rigida
Festuca californica
Galvesia speciosa
Helictotrichon sempervirens
Hesperaloe parvifolia
Hesperoyucca whipplei
Heteromeles arbutifolia
Juncus acutus
Lantana 'Star Landing'
Leymus condensatus 'Canyon Prince'
Lotus scoparius
Muhlenbergia rigens
Muhlenbergia dubia
Mimulus aurantiacus
Nassella lepida
Nassella pulchra
Opuntia littoralis
Phormium spp.
Rhamnus californica
Rhus integrifolia
Rosmarinus 'Arp'
Salvia apiana
Salvia clevelandii
Salvia leucantha
Salvia mellifera
Yucca species

Common Name

Large Purple Aeonium
Century Plant Varieties
Agave bracteosa
Variegated Smooth Agave
Artichoke Agave
Coral Aloe
Purple Three Awn
Coastal Sage
Rock Purslane
San Diego Sedge
Sageleaf Rockrose
Sunset Rockrose
Desert Spoon
Fortnight Lily
Bush Sunflower
Silver Spurge
California Fescue
Island Bush Snapdragon
Blue Oat Grass
Red Yucca
Chaparral Yucca
Toyon
Spiny Rush
Star Landing Hardy Lantana
Canyon Prince Wild Rye
Deer Weed
Deer Grass
Pine Muhly
Bush Monkey Flower
Foothill Needlegrass
Purple Needlegrass
Prickly Pear
New Zealand Flax
Coffee Berry
Lemonadeberry
Arp Rosemary
White Sage
Cleveland Sage
Mexican Sage
Black Sage
Yucca



Irrigation Controller Enclosure



Plastic Valve Boxes



Low Volume Bubbler

IRRIGATION

Objective

To provide adequate volume and frequency of irrigation water to maintain plant health. This is achieved by zoning plant types according to the plant's irrigation watering requirement, exposure to the sun, shade, wind, topography and soils.

General

- Provide permanent high efficiency drip-irrigation systems. Do not use spray irrigation except when establishing hydroseeded areas or when conditions warrant the use of overhead spray.
- Irrigation systems shall be separately metered from other water usage.
- Install irrigation controllers and controller communication systems that are compatible with the site central control hub.
- Provide sufficient irrigation during hot and dry periods for the first year for new landscapes to become established. After the first year, gradually reduce irrigation to encourage deep rooting and drought tolerance.
- The irrigation system shall be designed to prevent runoff, overspray, low-head drainage and from irrigation water going into areas not intended for irrigation.
- All MILCON projects shall comply with all water allocation programs adopted by NAVFAC SW.

Types

- On-surface inline emitter dripline for all planting beds.
- Pop-up low volume bubblers or small radius spray emitters for all trees.
- Point source hard piped low volume emitters where plants are spaced 5-feet to 8-feet apart. Multi-outlet emission devices are not permitted.

Specific Irrigation Requirements

- *Irrigation controller* - Verify make and model with the NAVFAC SW water manager.
- *Controller enclosure* - Heavy duty stainless steel pedestal mount with dome antenna.
- *Water meter* - Install in-line on the reduced pressure backflow preventer, not in the ground.
- *Flow sensor* - Size for lowest flow, not the size of the mainline.
- *Valve boxes* - Plastic, sand colored with rodent protection such as "Box Guard" or equivalent. All openings to be fully enclosed to prevent rodent damage.
- *Spare wires* - Provide one spare wire to each valve manifold and label as such. For example, four valve manifolds would require four (4) spare wires total.
- *Zoning* - Irrigation must be zoned according to plant groups with the same water requirements and solar exposure.



In-line Emitter Dripline Tubing

Landscape Architecture

OPEN SPACE AND COMMON AREAS

PERIMETER EDGES

Objective

Provide a consistent physical appearance along the public right-of-way that compliments the natural character of the site and enhances its visual appearance from the adjacent State Scenic Highway.

Guidelines

- Locate perimeter fencing behind the installation boundary and provide a landscape buffer with plantings, berms, and bioswales.
- Provide screening of obtrusive areas or objectionable views with permanent fencing, walls, berms and/or screening plant materials.
- Provide landscape treatments on barren earth slopes to improve aesthetics, reduce run-off, prevent erosion, reduce glare, and create micro-climatic areas near buildings.
- Screening materials shall be set back 60 ft. from perimeter fence for visibility by security patrols.

OPEN SPACES, COMMON AREAS AND ACTIVITY NODES

Objective

Provide attractive common and open-space elements for passive and active recreational use, as well as visual relief.

Guidelines

- Designs shall be conscious of the functional requirements of the particular space, and be in context with the architectural themes of adjacent buildings and the character of the surrounding landscape.
- Provide landscaping in open space as a contrast to the expanse of pavement in the developed portions of the installation.
 - Provide adequate site furnishings to accommodate anticipated uses.
 - Place site furnishings in locations appropriate to the uses of the space.
 - Preserve view corridors to provide visual connectivity to other visual or open space areas.

PLAZAS AND COURTYARDS

Objectives

Plazas are spaces used for gathering of large groups of people and emphasize active rather than passive use. Provide plazas to create outdoor meeting and ceremonial spaces; enhance the entrances to buildings; and spatially or visually connect otherwise dissimilar buildings.

Courtyards are spaces surrounded by buildings and are typically smaller and more intimate than plazas, emphasizing passive uses that relate closely to uses within the building. A courtyard may emphasize planting. Provide courtyards that are more private spaces separated from public areas; present pleasant views from the interiors of buildings; make comfortable break areas from work tasks and environments; and support more sensitive training environments.

Guidelines

Plaza and courtyards shall respond to their architectural setting, climatic conditions, and intended use.

- Locate courtyards and plazas in response to user requirements.
- The design shall encourage mingling and social interaction. Include benches or seat walls.
- Material selection shall reinforce the architectural character and site design concept of adjacent buildings Utilize site furnishings from the approved site furnishing list.
- Consider the relationship of sun exposure to shade, which is critical to the usability of the plaza.
- Accommodate convenient pedestrian connections. Tree grates can be used to allow planting without diminishing the expanse of paving areas.
- Plazas shall be accessible to emergency vehicles.
- Lighting shall provide general illumination for safety, but may also feature accent or mood lighting.
- Plazas and courtyards shall conform to the Architectural Barriers Act (ABA) requirements.



Exterior Plaza



Perimeter Edge

Landscape Architecture

SIGNAGE AND WAYFINDING

Objectives

The purpose of the Signage System Guidelines is to guide the administration, design, implementation, and maintenance of signs as applied on NBC Coastal Campus property.

The guidelines describe the graphic and visual standard policies and procedures for the application of signs to new facilities, the upgrading of sign systems, and the general maintenance of signs.

The sign standards and specifications are intended to:

- Establish sign continuity throughout campus.
- Ensure consistency in presentation (color, materials, typography, etc.).
- Promote legibility and readability through effective use of graphic and typographic techniques.
- Develop signs that are functional and economical, serving the needs of staff and visitors.
- Develop signs which are easy to install and maintain.
- Minimize the proliferation of signs through careful planning and placement.
- Provide for flexible application in recognition of environmental and architectural differences between the various facilities.

Sign Messaging

- Messages should be consistent and clear.
- Messages should be brief and supported by highly visible symbols where appropriate.
- Direct people to things and places in front or beside them, but not behind them.
- Each destination or service should be listed individually on a separate line.
- Messages should be grouped by direction of travel. For instance, all destinations that require a right turn appear consecutively with a right arrow beside the first message of the group.
- Messages should always follow a consistent order.

Typography

- Typically, Helvetica Regular is used for all messaging on directional signs.
- Helvetica Bold is used for identification signage.
- The proper kerning—the space between letters—is critical for legibility. Kerning=1% em.
- All messages should appear in upper and lower case “Title Case” on signs, except prepositions (and, to), and on certain customer information and regulatory signs where complete sentences are used.
- Upper case letters may be used on signs used for identification only.

Arrow

- Arrow direction should be restricted to 90-degree angles, with 45-degree angles used only when absolutely necessary. No other angles are permitted.
- Typically, an arrow that points up indicates “straight ahead” although it is occasionally used at stairs, ramps or elevators to indicate a necessary upward change in level.
- The order for directional arrows on vehicular directional signs should follow “left”, “right”, “straight”.

Letter and Arrow Dimensions

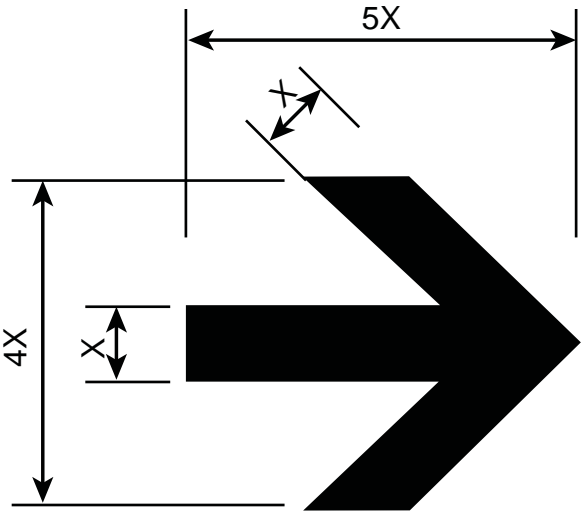
- Design the letter and arrow size in accordance with the design of the location.
- Roads less than 25 mph: 3-inch lowercase letter and arrow shaft height.
- Roads 26 mph to 35 mph: 4-inch lowercase letter and arrow shaft height.
- Roads 36 mph to 45 mph: 6-inch lowercase letter and arrow shaft height.
- Adjust the designated length size as follows:
 - 150 ft reading distance: min. 3” lowercase letter height.
 - 200 ft reading distance: min. 4” lowercase letter height.
 - 300 ft reading distance: min. 6” lowercase letter height.
 - 400 ft reading distance: min. 8” lowercase letter height.
 - Increase the lowercase letter height 1” for every additional 50 ft or part thereof.

ABCDEFGHIJKLM
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
1234567890

Helvetica Regular Font Type

ABCDEFGHIJKLM
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
1234567890

Helvetica Bold Font Type



Standard Signage Directional Arrow

Landscape Architecture

Sign Placement Guidelines

- Place signs to avoid obstructions such as vegetation or utility poles, and to the inside of sight triangles at intersections.
- Place signs a minimum of 2 feet from the roadway to a maximum of 6 feet from the roadway. Adjust according to site conditions and road design speed the slower the speed the closer to the street.
- The bottom of the sign letters must be a minimum of 30 inches above the ground for design speeds of 30 mph and below, and 36 inches above the ground for design speeds above 30 mph.

Color

Signage shall adhere to the following guidelines. In accordance with this ADP, colors are identified by Pantone number and name which are more universally matched than FED-STD paint colors.

- Sign posts shall have painted enamel surfaces in gray Pantone #17-4405 TPX.
- Signs panels shall be porcelain enameled aluminum in one of the following accent colors:
 - Pantone 7544C
 - Pantone 141C
 - Pantone 7407C
 - Pantone 5773C
- On directional signs, the band behind the arrows shall be Bluesteel Pantone #18-4222 TPX (FED-STD 35109).
- District Neutral – For signage located off-site or outside of the Installation perimeter fence the color shall be “Gray” Pantone # 12-0404 TPX (FED-STD 36650).

Seals

All monument signs shall include the official Navy emblem to emphasize the Navy “brand”. Entry monument signs may also include the host Installation (NBC) logo, NRSW logo, or NSWC logo as appropriate to balance the design.



Navy Emblem



NRSW Logo



NBC Logo



NSWC Logo



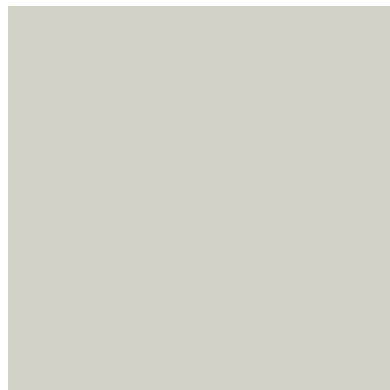
Pantone 19-4052 TCX



Pantone 18-4222 TCX



Pantone 17-4405 TPX



Pantone 12-0404 TPX



Pantone 7544C



Pantone 141C



Pantone 7407C



Pantone 5773C

Landscape Architecture

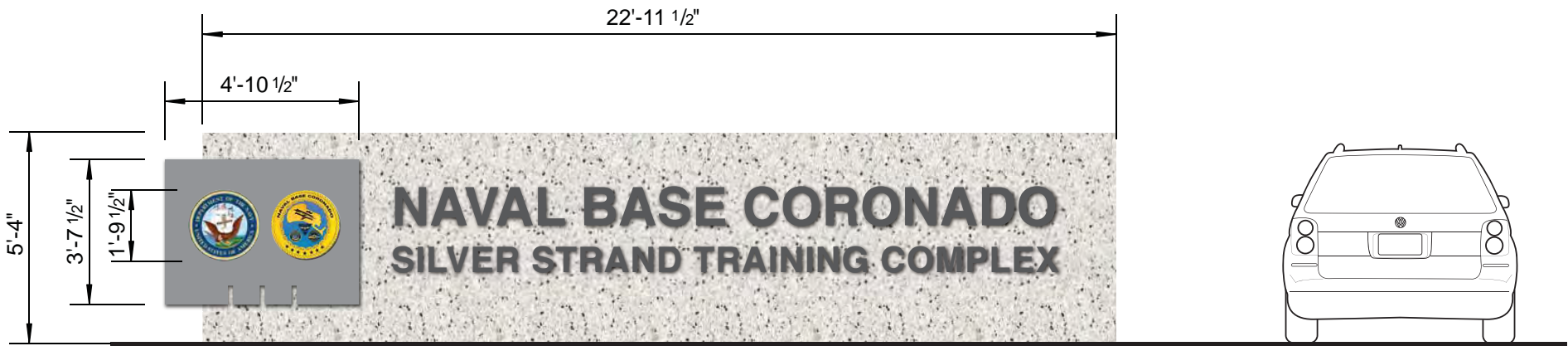
Sign Design Guidelines

Signage shall adhere to the following guidelines:

Site Entry Monument Sign

Entry monument signs are located outside the security gate at Installation and Special Area primary vehicle entries. The monument signs will identify Naval Base Coronado and the name of the Installation or Special Area. All monument signs shall include the official Navy emblem to emphasize the Navy “brand”. Entry monument signs may also include the host Installation (NBC) logo, NRSW logo, or NSWC logo as appropriate to balance the design. Sign wall length shall be adjusted to fit site conditions.

- Size: height 5'-4"; length 22'-11 1/2"; thickness 12"
- Mounting: mounted to concrete pad, dimensions as required per engineering
- Graphics: Helvetica Regular, upper case
- Illumination: Ground Mounted



Site Entry Monument Sign

Primary and Secondary Directional Sign

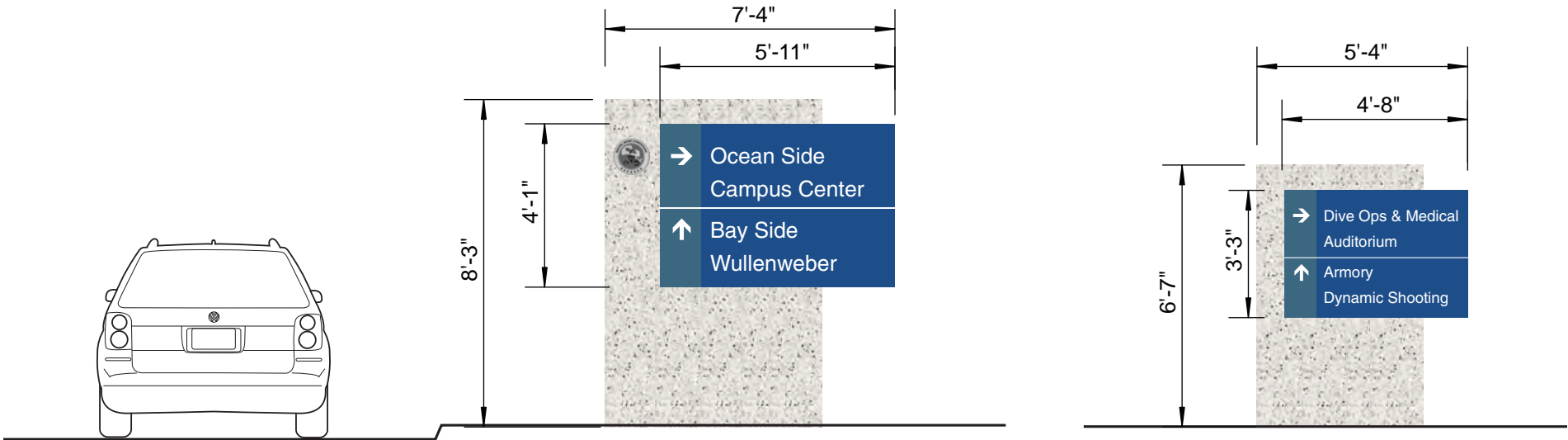
Directional signs provide district information for motorists and pedestrians. Signage may occur on both sides and unused panels should remain blank.

Primary Directional

- Size: height 8'-3"; length 7'-4"; thickness 12"
- Mounting: mounted to concrete pad, dimensions as required per engineering
- Graphics: Helvetica Regular
- Illumination: Non-Illuminated

Secondary Directional

- Size: height 6'-7"; length 5'-4"; thickness 10"
- Mounting: mounted to concrete pad, dimensions as required per engineering
- Graphics: Helvetica Regular
- Illumination: Non-Illuminated



Primary and Secondary Directional Signs

Landscape Architecture

Building Number Sign

Bold numbers are required to clearly identify building for visitors and public safety crews. Building numbers shall be located at prominent corners facing streets. Larger buildings and those located on corners may require more than one sign.

- *Size:* height 5'-0"; length 4'-6"; thickness 2"
- *Mounting:* mounted to building with concealed fasteners
- *Graphics:* Helvetica Bold
- *Illumination:* Non-Illuminated

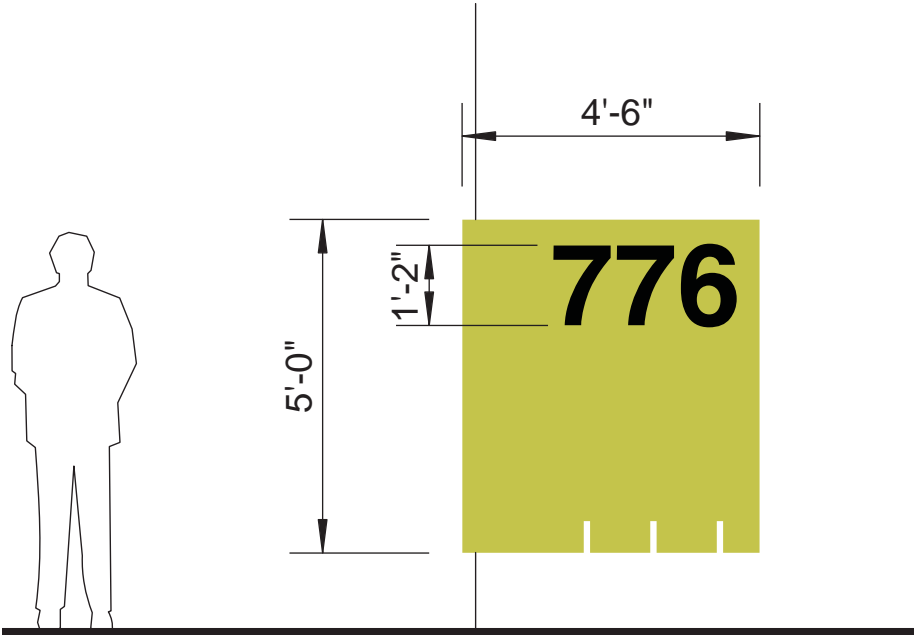
Pedestrian Directional Sign

Directional signs provide district information for pedestrians. Signage may occur on both sides and unused panels should remain blank.

- *Size:* height 6'-0"; length 3'-1"; thickness 2"
- *Mounting:* mounted to concrete pad, dimensions as required per engineering
- *Graphics:* Helvetica Regular, upper case
- *Illumination:* Non-Illuminated



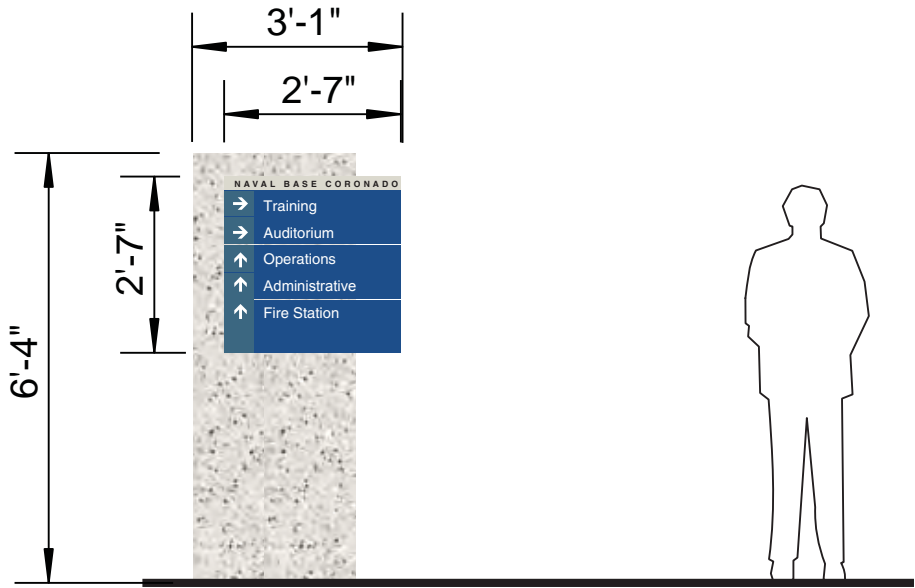
Building Number Sign Conceptual Rendering



Building Number Sign Detail



Pedestrian Directional Sign Detail



Pedestrian Directional Sign Detail

Landscape Architecture

Street Sign

The street sign identifies the name of streets at an intersection or change in street name.

- *Size:* height 9'-0"; length 4'-2"; thickness 2"
- *Mounting:* Direct burial per engineering
- *Graphics:* Helvetica Regular
- *Illumination:* Non-Illuminated

Information Sign

Information & regulatory signage provides details and instruction on potential hazards such as tsunami inundation, and evacuation routes.

- *Size:* height 10'-9"; length 2'-6"; thickness 2"
- *Mounting:* Direct burial per engineering
- *Graphics:* Standard symbol
- *Illumination:* Non-Illuminated

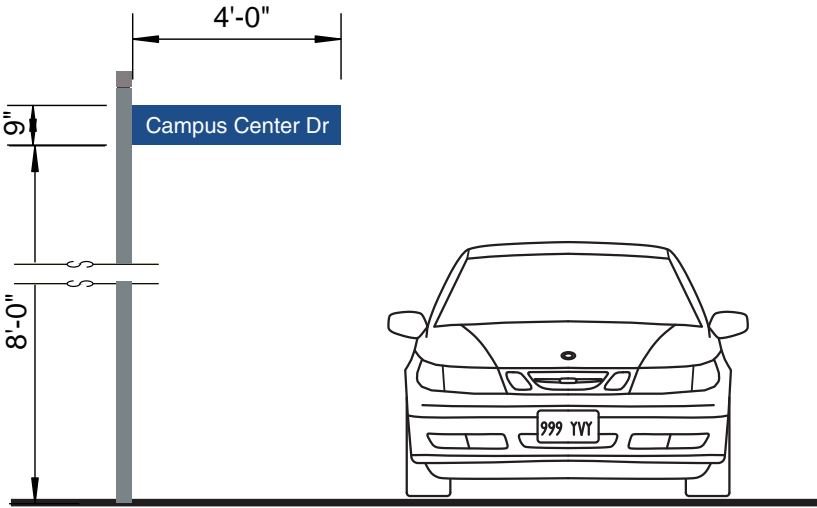
Environmental and Interpretive Sign

Environmental and interpretive signage identifies and describes environmentally sensitive areas such as vernal pools, snowy plover, or environmental constraints.

- *Size:* height 5'-2"; length 2'-0"; thickness 2"
- *Mounting:* Direct burial per engineering
- *Graphics:* Helvetica Regular
- *Illumination:* Non-Illuminated



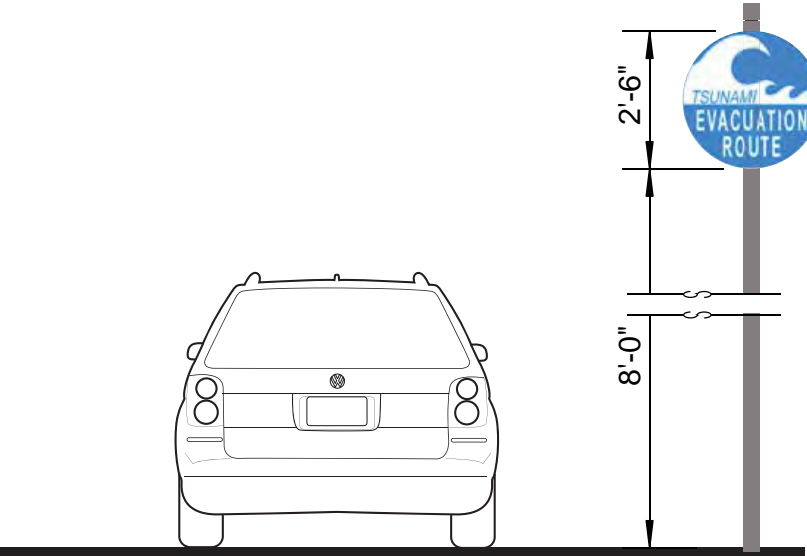
Street Sign Detail



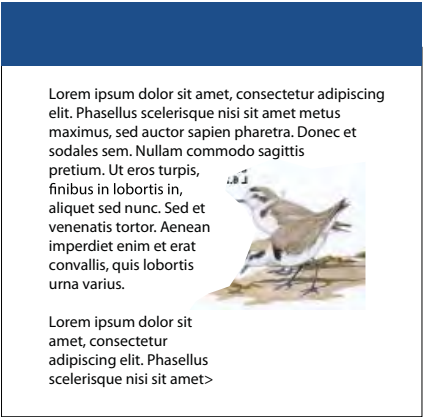
Street Sign Detail



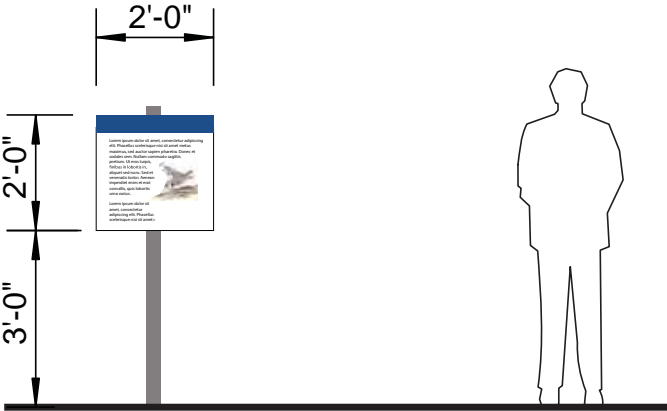
Information Sign Detail



Information Sign Detail



Environmental and Interpretive Sign Detail

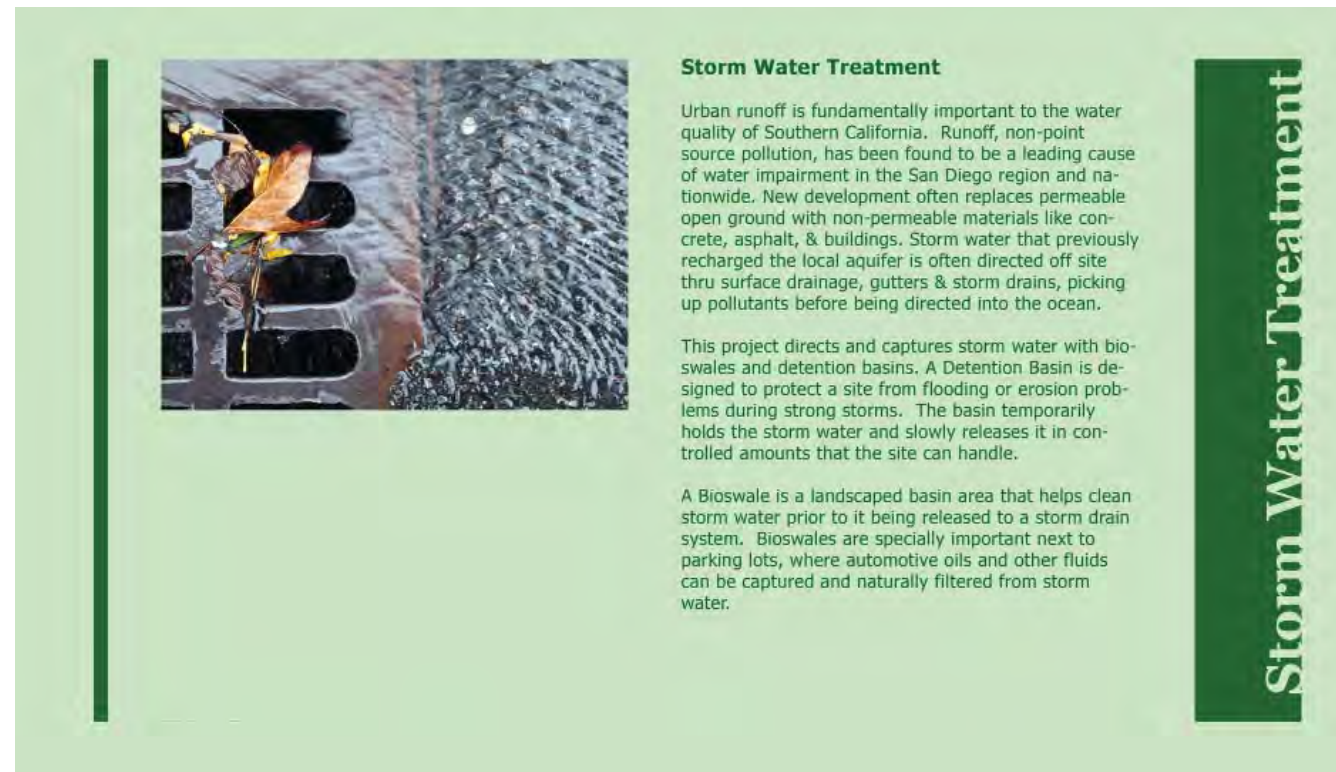


Environmental and Interpretive Sign Detail

Displays



Flagpoles



Informative Static Display

FLAGPOLES, MONUMENTS AND STATIC DISPLAYS

Flagpoles

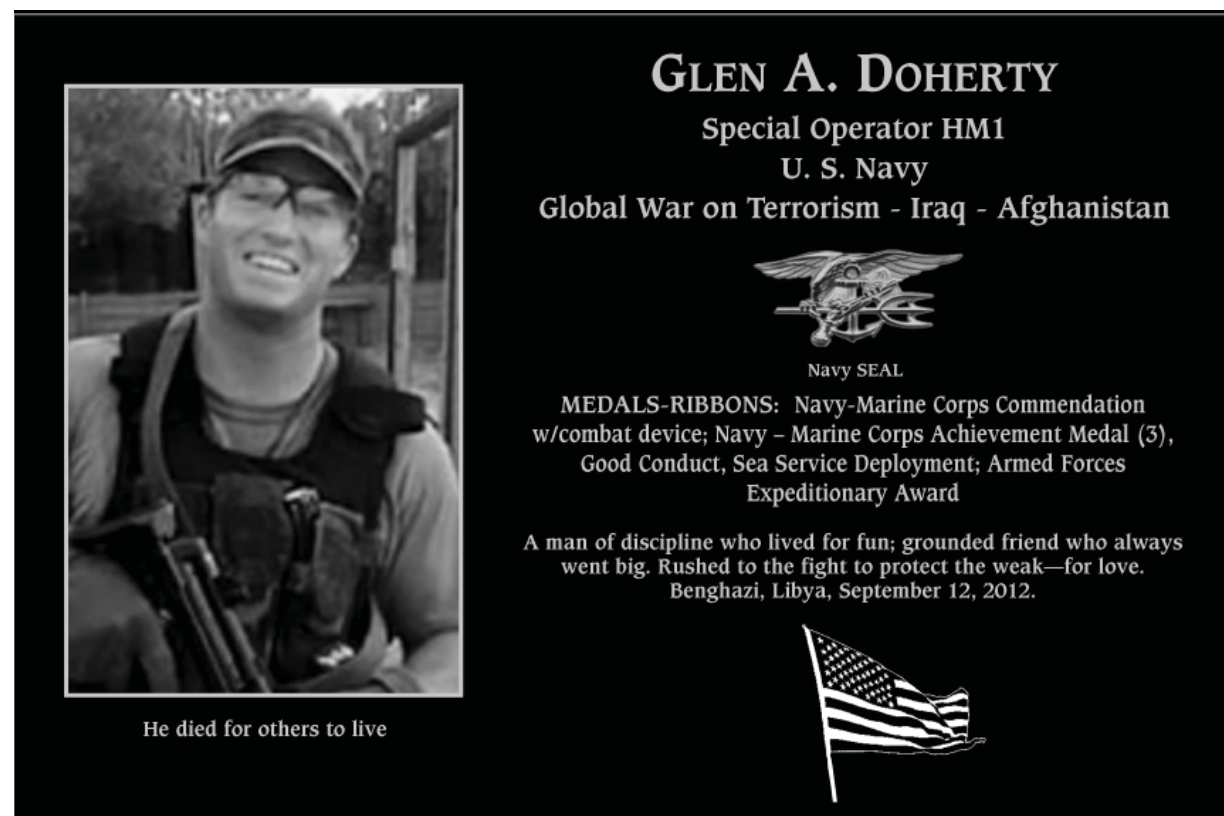
- Provide flagpoles in entry plazas of command buildings:
P-200
P-912
- Provide flagpoles at Entry Control Point
- Flagpoles shall be outfitted with anti-perch devices.

Monuments

- Identify opportunities for privately funded monuments and displays that pay tribute to outstanding contributions or valor, convey a sense of history, and contribute to the Campus identity. Privately funded monuments and gifts must comply with SECNAV Instruction 4001.2J.
- Monuments and display items shall be integrated into the landscape or architectural environment to avoid a fragmented or temporary appearance.
- The scale of the item shall be appropriate to the space it will occupy.
- Materials shall be selected for consistency with building elements, durable and ease of maintenance.
- Monument placement must be coordinated through NBC Planning to ensure an appropriate level of site approval.

Static Displays

- Provide information on Green Building Design and Construction and other informative static displays.

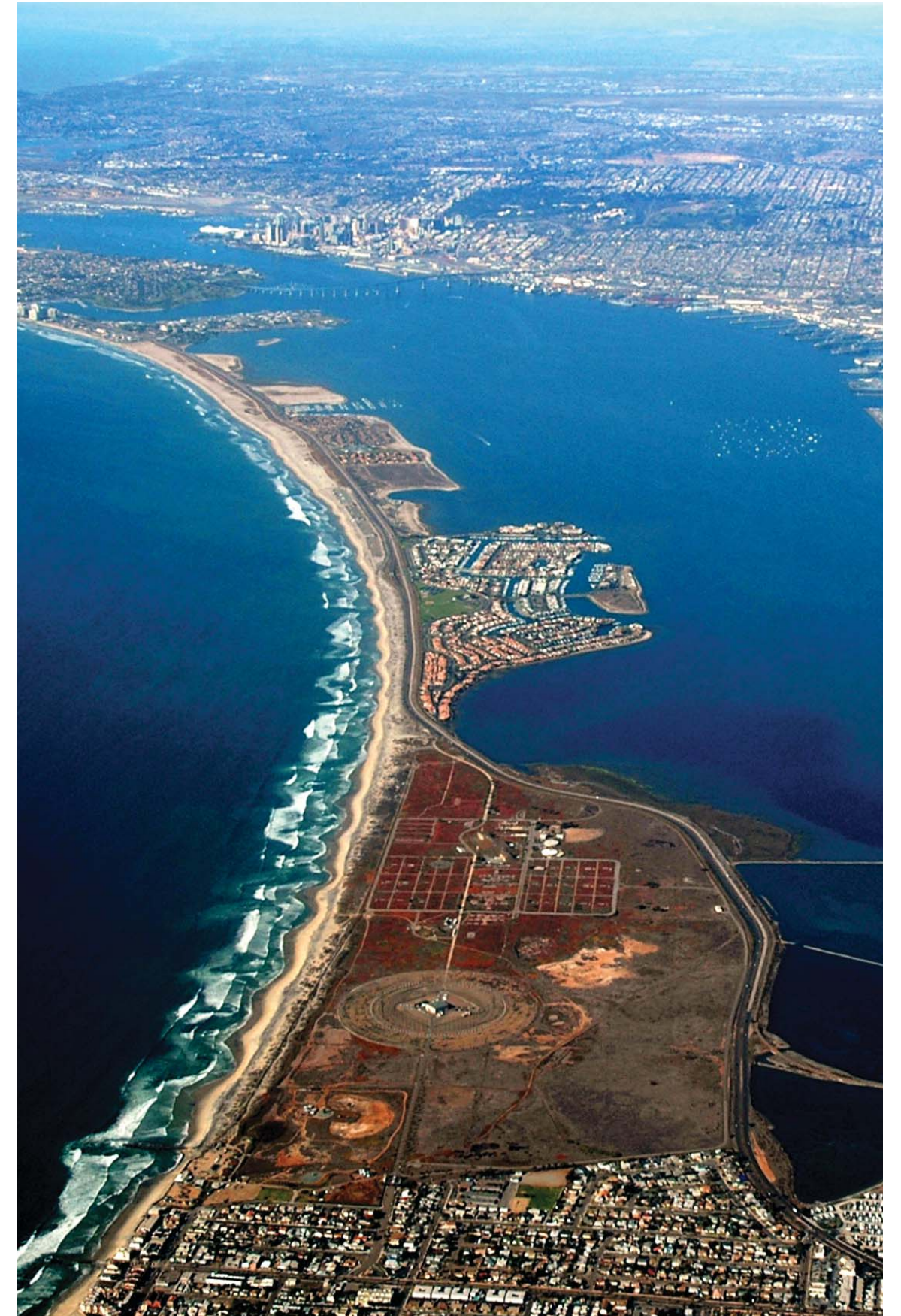


Privately Funded Monument



Privately Funded Monument

Tree Survey



Tree Survey



● Cupressus macrocarpa
(Monterey Cypress)



● Eucalyptus spp.
(varies)



● Nicotiana glauca
(Tree Tobacco)



● Pinus pinea
(Italian Stone Pine)



● Phoenix spp.
(Date Palm)



● Salix spp.
(Willow)



● Sambucus mexicana
(Mexican Elderberry)



● Syagrus romanzoffiana
(Queen Palm)



● Washington robusta
(Mexican Fan Palm)

PURPOSE

A tree survey conducted on 4/7/2015 quantified the total number of existing trees within the developable portion of the NBC Coastal Campus prior to construction.



The total number of trees will serve as a “tree count” guide as identified in the USFWS Informal Consultation Letter. The intent of the letter is to reduce the effects of nesting predators by providing a 1:1 ratio of removed trees. The total quantity of proposed Campus tree plantings shall not exceed the existing tree count.

Nine tree and palm species were identified in this survey as shown in the photos. Colored circles next to each tree are used to identify where a particular species is located on the Campus as shown on the following tree survey sheets.

Tree Survey



LEGEND

	Tree Species (Common Name)	Quantity
	Cupressus macrocarpa (Monterey Cypress)	75
	Eucalyptus spp. (varies)	15
	Nicotiana glauca (Tree Tobacco)	62
	Pinus pinea (Italian Stone Pine)	2
	Sambucus mexicana (Mexican Elderberry)	1
	Syagrus romanzoffiana (Queen Palm)	2
	Washingtonia robusta (Mexican Fan Palm)	4
TOTAL trees		161
TOTAL trees in developable area		158

Tree Survey



LEGEND

Tree Species (Common Name)	Quantity
<div></div> Eucalyptus spp. (varies)	1
<div></div> Phoenix spp. (Date Palm)	1
<div></div> Salix spp. (Willow)	1
<div></div> Syagrus romanzoffiana (Queen Palm)	2
<div></div> Washingtonia robusta (Mexican Fan Palm)	63
TOTAL trees	68
TOTAL trees in developable area	2