

The **Indoor Environmental Quality** section addresses ventilation and air quality, including selection of materials to avoid irritating or harmful fumes; lighting; thermal comfort; and daylighting and views. Key features of this section that relate to appearance are as follows:

- Control environmental tobacco smoke to minimize exposure to building occupants and ventilation systems, through design of both buildings and outdoor smoking areas.
- Design buildings to maximize daylight and views for occupants.

The **Innovation and Design Process** section addresses innovative performance in technologies not otherwise addressed by LEED-NC and encourages the participation of a LEED Accredited Professional on the project team. It does not necessarily relate to building or site appearance, although the flexibility of the innovation credit allows design that may affect appearance.



*Example green roof plantings.*

A list of the specific LEED-NC prerequisites and credits that apply to installation appearance is available through the Navy Installation Appearance Guide (IAG) on the NAVFAC Portal, and several additional opportunities are identified below.

The IAG does not incorporate the LEED-DoD Antiterrorism Standards Tool, resulting in several potential conflicts; however, the overall concepts apply to site or building design.

The list of recommended credits is given in Table 8.1. Additional information on LEED-NC, including intent, requirements, submittals, and technologies and strategies, is available from the U.S. Green Building Council (USGBC) website ([www.usgbc.org](http://www.usgbc.org)).



## 8.4 LEED for Neighborhood Development

Prerequisites and credits for LEED-ND, which is currently in a pilot version, are applied in four categories. These categories are applicable to most site or building improvements on military installations, as summarized from the LEED-ND pilot version.

Evaluation of LEED-ND is not included in the LEED-DoD Antiterrorism Standards Tool. Although the recommendations below appear to conform with AT/FP requirements, they require further evaluation to determine whether application of the recommendations is appropriate for a given site. The full list of recommended prerequisites and credits is given in Table 8.2.

The **Smart Location and Linkage** section addresses the location of the site; its surroundings, and rights-of-way. Key features of this section that relate to appearance are as follows:

- Conserve wetlands and water bodies.
- Preserve steep slopes in a natural state.
- Protect and enhance wildlife habitat and wetlands through site design, restoration, and conservation management.

The **Neighborhood Pattern and Design** section addresses the urban design of a development as a whole, including integration of uses, connection to the surrounding community, and pedestrian accessibility. Key features of this section that relate to appearance are as follows:



*Recommended LEED-ND strategies. The top two images illustrate preservation and restoration of habitat and wetlands. The bottom two images illustrate examples of the reuse of historic buildings.*





Recommended LEED-ND strategies, from top: bus shelters to encourage transit use; parking lots located behind buildings, with vegetation and a clear pedestrian paths through the lot; and a park incorporating a playing field and stormwater swales.

**Table 8.2 Recommended LEED-ND Credits and Prerequisites**

LEED for Neighborhood Development (LEED-ND) Appearance Items	
<b>Smart Location and Linkage</b>	
Prereq 4	Wetland and Water Body Conservation
Prereq 6	Floodplain Avoidance
Credit 8	Steep Slope Protection
Credit 9	Site Design for Habitat or Wetlands Conservation
Credit 10	Restoration of Habitat or Wetlands
<b>Neighborhood Pattern and Design</b>	
Credit 6	Reduced Parking Footprint
Credit 7	Walkable Streets*
Credit 9	Transit Facilities
Credit 12	Access to Public Spaces
<b>Green Construction &amp; Technology</b>	
Credit 4	Building Reuse and Adaptive Reuse
Credit 5	Reuse of Historic Buildings
Credit 6	Minimize Site Disturbance through Site Design
Credit 7	Minimize Site Disturbance through Construction
Credit 11	Solar Orientation
Credit 13	On-Site Renewable Energy Sources

\* Note: Although baseline requirements for this credit are expected to conform with AT/FP regulations, several of the additional measures conflict.

Source: USGBC LEED-ND Rating System, excerpted by EDAW



- Reduce parking footprints and locate parking lots at sides or behind buildings, to increase pedestrian orientation and to mitigate adverse environmental effects of parking facilities.
- Design “walkable streets” to encourage pedestrian activity and promote public health through pedestrian-oriented architectural and site design elements.
- Incorporate transit facilities, such as bus shelters and informational signage.
- Provide public spaces for passive or active use, to encourage public health and enjoyment of the outdoors.

The **Green Construction and Technology** section addresses the sustainable and energy-saving features integrated into the development. Key features of this section that relate to appearance are as follows:

- Renovate, or reuse historic buildings.
- Minimize site disturbance through site design and during construction.
- Orient buildings to maximize passive solar design.
- Incorporate on-site renewable energy sources, such as photovoltaic panels, wind turbines, solar thermal, or geothermal systems.

The **Innovation and Design Process** section is similar to that of LEED-NC: it addresses innovative performance in technologies not otherwise addressed and encourages the participation of a LEED Accredited Professional on the project team. These features do not necessarily relate to building or site appearance, although the flexibility of the innovation credit allows design that may affect appearance.

Additional information on LEED-ND, including intent, requirements, and submittals for each credit, is available from the USGBC website ([www.usgbc.org](http://www.usgbc.org)).

## 8.5 Sustainable Sites Initiative

Another key sustainability reference is the Preliminary Report on the Standards and Guidelines for Sustainable Sites™, which is the first report of the Sustainable Sites Initiative, an interdisciplinary partnership between the American Society of Landscape Architects (ASLA), the Lady Bird Johnson Wildflower Center, and the United States Botanic Garden. The goal of this initiative is to develop national standards and guidelines for sustainable land development and management practices, metrics to assess site performance, and a rating system to recognize achievement.

The Sustainable Sites Initiative incorporates more comprehensive criteria for sustainable landscape and site design than any existing LEED rating system, and many of its strategies that relate to site appearance may be addressed as strategies to earn LEED credits as well. It is noteworthy that the USGBC is participating in the Product Development Committee for the Sustainable Sites Initiative and has committed to incorporate the final Sustainable Sites standards and guidelines into future iterations of LEED rating systems.

As with the LEED resources, the recommendations provided through the Sustainable Sites Initiatives may not fully conform with the general recommendations of the LEED-DoD Antiterrorism Standards Tool, which takes precedence when interpreting any design standards.

The Sustainable Sites Initiative identifies goals, strategies, and potential tools outlining specific techniques that may be used to attain the goals. Strategies addressing appearance of a site are given in the following section.



The **Soils** section addresses maintaining and improving soil health, avoiding harmful soil amendments, creating a net zero waste site, and reducing greenhouse gas emissions. Key strategies that relate to appearance are as follows:

- Where soil disturbance is unavoidable, protect soils to minimize damage;
- Improve health of degraded soils through soil restoration, reuse, and rehabilitation to achieve conditions similar to regional reference soils;
- Reuse materials on-site;
- Incorporate compost and mulch recovered from landscape trimmings as a soil amendment;
- Minimize soil erosion;
- Build soil organic matter.

The **Hydrology** section addresses valuing all water on the site, maintaining or regenerating healthy hydrologic processes, and promoting water quality and healthy aquatic habitats. Key strategies that relate to appearance are as follows:

- Eliminate potable water use in the landscape;
- Manage water on site;
- Use vegetation to achieve target water balance conditions through interception (precipitation that is retained by above-ground vegetated components before it reaches the soil) and evapotranspiration (transfer of water to the atmosphere by evaporation from soil and vegetation and by transpiration of vegetation);
- Maintain or enhance infiltration to reach target water balance conditions;
- Maintain or achieve target surface runoff levels;
- Maintain or enhance physical condition and biological communities of on-site and off-site receiving water bodies;
- Filter pollutants to maintain or enhance the water quality of on-site and off-site receiving water bodies.

The **Vegetation** section addresses maintaining vegetation to enhance ecosystems. Key strategies that relate to appearance are as follows:

- Conserve existing appropriate vegetation;
- Repair and/or restore vegetation to maximize the ecosystem services provided by plants;
- Select appropriate vegetation for the site;
- Design the site to minimize short- and long-term management resources and encourage natural ecological processes;
- Ensure that vegetation is produced, installed, and maintained through sustainable practices;
- Prevent waste generation during maintenance, especially by recovering landscape trimmings for composting.

The **Materials** section addresses managing materials efficiently; selecting sustainable materials; reducing energy use; and avoiding materials, that can harm humans and the environment. Key strategies that relate to appearance are as follows:

- Reclaim and reuse materials;
- Reduce the urban heat island effect;
- Use landscape lighting with low operational energy.

The **Human Well-Being** section addresses managing resources efficiently; designing conditions to promote health benefits, enhancing cognitive function, and promoting positive social dynamics. Key strategies that relate to appearance are as follows:

- Provide opportunities for interaction with nature;
- Provide spaces for physical activity;
- Provide opportunities for passive experiences with nature.

Additional information on the Sustainable Sites Initiative is available from the American Society of Landscape Architects website ([www.asla.org](http://www.asla.org))



## 8.6 Recommended Strategies

This section identifies key sustainability strategies that are recommended to meet the goals of the LEED rating systems and the Sustainable Sites Initiative. For each strategy, benefits are identified, and specific implementation recommendations to achieve the strategy, including technologies and materials, are addressed. Cross-references are provided to the appropriate LEED or Sustainable Sites Initiative source, to direct the user of this document to the specific requirements and benchmarks that will achieve the identified strategy. Additional references are provided where applicable.



Examples of alternative transportation: bicycling and bus transit.

### 8.6.1 Alternative Transportation

Provide incentives for alternative transportation, including transit, carpooling, and bicycling.

Benefits of alternative transportation include:

- Reduced vehicle emissions and fuel consumption
- Reduced vehicular traffic congestion
- Increased air quality
- Decreased area devoted to parking
- Increased pervious area and water quality

#### RECOMMENDED TOOLS + TECHNIQUES

- Provide sidewalks to interconnect all main buildings to each other.
- Provide bus shelters at all bus stops.
- Provide bicycle racks at all main buildings.
- Provide showering / change facilities at major administrative buildings or employment centers
- Provide multi-use trails and bicycle lanes along roads as designated in the IAP.
- Provide electric cart parking spaces at the entry to major buildings to encourage use of alternative energy vehicles.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Human Well-Being goals and can help achieve the following LEED Credits:

#### *Sustainable Sites*

- Credit 4.1: Alternative Transportation: Public Transportation Access
- Credit 4.2: Alternative Transportation: Bicycle Storage & Changing Rooms
- Credit 4.4: Alternative Transportation: Parking Capacity



## 8.6.2 Reduced Development Footprint

Locate new land uses in existing areas, rather than development on pristine or undeveloped sites.

Benefits of a reduced development footprint include:

- Increased walkability among buildings
- Reduced vehicular trips
- Reduced impervious surfaces
- Increased water quality
- Reduced heat island effect
- Reduced costs of earthwork and utility construction

### RECOMMENDED TOOLS + TECHNIQUES

- Site new buildings near existing buildings, parking areas, and utility corridors.
- Reduce parking areas where parking lots are underutilized or inefficient.
- Consider multi-story buildings instead of horizontal one-story buildings where building uses allow this.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Human Well-Being goals and can help achieve the following LEED Credits:

#### *Sustainable Sites*

- Credit 1: Site Selection
- Credit 4.4: Alternative Transportation: Parking Capacity
- Credit 5.1: Site Development: Protect or Restore Habitat
- Credit 5.2: Site Development: Maximize Open Space
- Credit 6.1: Stormwater Design: Quantity Control
- Credit 6.2: Stormwater Design: Quality Control

## 8.6.3 Cool Roofs and Pavements

Solar Reflectance Index (SRI) is a measure of a material's ability to avoid solar heat absorption. Materials with the highest SRI values have the greatest cooling ability.

"Cool" roofs are designed to reflect the sun's energy and thus lower the roof surface temperature. On a hot summer day, traditional roofing materials such as asphalt may reach temperatures up to 70 degrees hotter than cool roofs. Light-colored roofing materials, which have high albedo or solar reflective capabilities, can significantly mitigate the urban heat island effect. Vegetated roofs are another effective type of cool roof that also manages stormwater.

Cool paving materials, similar to cool roofs, reduce the temperature of the paved surface itself as well as the transfer of heat to the surrounding area. There are two types of cool paving materials: lighter-colored materials and porous materials, which are addressed in the Permeable Pavers and Porous Pavement section.

Both cool roofing and cool paving materials have high SRI values.

Benefits of cool surfaces include:

- Reduced heat island effect
- Reduced energy costs for heating and cooling
- Increased air quality



*Example of a cool roof.*



## RECOMMENDED TOOLS + TECHNIQUES

- Provide high albedo (i.e., high SRI) roof materials where architecturally appropriate while recognizing wind and storm resistance, cost and durability.
- Provide high albedo pavements, such as concrete, for walkways and selected parking areas, instead of asphalt.

**CROSS-REFERENCES** This strategy can help achieve the following LEED Credits:

### *Sustainable Sites*

- Credit 7.1: Heat Island Effect: Non-Roof
- Credit 7.2: Heat Island Effect: Roof

## 8.6.4 Porous Pavements

Porous pavements are materials that absorb stormwater and allow it to seep into the ground. These systems improve the quality and decrease the amount of stormwater runoff, which reduces stormwater infrastructure and pollution to water bodies.

Porous pavements include varieties of concrete and asphalt that are designed with voids in the surface to facilitate absorption of water.

Performance of porous pavements can be extended with proper maintenance. Vacuum sweeping should be provided at least twice a year. Avoid the broadcast of sand over porous pavements after a snow event, as sand can clog the voids of the porous pavements.

Benefits of porous pavements include:

- Reduced quantity of storm water runoff
- Increased quality of storm water runoff
- Increased groundwater recharge
- Reduced costs of storm drain pipes, vaults, and ponds

- Reduced land area associated with storm water management ponds
- Increased pervious area for open space, recreation, and habitat

## RECOMMENDED TOOLS + TECHNIQUES

- Provide porous pavers in lieu of asphalt in parking areas where this is suitable relative to the number of cars and daily use.
- Provide porous paving such as gravel, stone dust, or mulch on walking trails, instead of asphalt.
- Provide open grid grass pavers at overflow parking areas.
- At NASP Corry Station, some of the extensive abandoned runway asphalt can be ground and recycled on site as a porous pavement for the roads needed to maintain the slash pine forest stands. These roads should be tied in to the exercise trail loop for pedestrian access and recreational use. The remaining ground asphalt is a building material resource that can be reused on other sites.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Hydrology goals and can help achieve the following LEED Credits:

### *Sustainable Sites*

- Credit 5.1: Site Development: Protect or Restore Habitat
- Credit 6.1: Stormwater Design: Quantity Control
- Credit 6.2: Stormwater Design: Quality Control
- Credit 7.1: Heat Island Effect: Non-Roof

### *Water Efficiency*

- Credit 1.1: Water Efficient Landscaping: Reduce by 50%
- Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation





*Crumbling runway asphalt at Corry Station.*



*Example of porous pavements at parking areas.*

## 8.6.5 Tree Planting

In addition to enhancing aesthetics, trees provide significant functions that improve the air, water, and soil at a site.

Benefits of trees include:

- Increased air and water quality
- Sequestering of carbon
- Reduced heat island effect
- Reduced storm water runoff
- Increased walkability of an installation
- Reduced energy costs for buildings with trees on south and west sides
- Increased wildlife habitat

### RECOMMENDED TOOLS + TECHNIQUES

- Provide shaded walkways between and among major buildings to encourage walking.
- Provide tree islands in parking areas to provide shade and reduce heat gain of pavement.
- Provide deciduous trees on south and west sides of major buildings to shade summer sun and allow winter sun to penetrate.
- Provide shade trees at building entries, break areas, and housing areas where social gatherings are likely to occur.
- Provide evergreen trees for screening of objectionable views.
- At NASP Corry Station, demolish abandoned runway asphalt and replace with slash pine forest stands that are managed in an ecologically sound manner for sustained forest yields, watershed health, and wildlife habitat. Connecting isolated forest fragments will facilitate wildlife movement and increase yield. Native shrubs and plants should be encouraged as undergrowth and edge plantings, buffers should always be maintained around the wetland areas, and habitat encouraged with brush piles in cleared areas. Mature trees and old snags should be maintained for habitat and seed source as part of the management plan for the forest.



- The forest roads used to maintain the timber stands, and provide recreational access, should be constructed of ground asphalt recycled on site from the runway demolition.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative’s Soils, Hydrology, and Vegetation goals and can help achieve the following LEED Credits:

*Sustainable Sites*

- Credit 5.1: Site Development: Protect or Restore Habitat
  - Credit 5.2: Site Development: Maximize Open Space
  - Credit 6.1: Stormwater Design: Quantity Control
  - Credit 6.2: Stormwater Design: Quality Control
  - Credit 7.1: Heat Island Effect: Non-Roof
  - Credit 7.2: Heat Island Effect: Roof
- Water Efficiency*
- Credit 1.1: Water Efficient Landscaping: Reduce by 50%
  - Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation



## 8.6.6 Bioinfiltration Systems

Vegetated swales and raingardens are examples of bioinfiltration systems, or landscaped features designed to treat stormwater runoff on a development site. These small-scale stormwater practices may be incorporated into parking lots, planted medians, or parkways.

Swales and raingardens can effectively manage stormwater for small storm events with rainfall under two inches. Raingardens, which are planted with wildflowers and grasses that thrive in wet soil, allow 30% more water to soak into the ground than conventional lawns.

Benefits of swales and raingardens include:

- Reduced stormwater runoff into area ponds
- Increased water quality of runoff
- Increased recharge of groundwater
- Increased wildlife habitat
- Reduced lawn area maintenance
- Reduced costs of engineered pipe systems

### RECOMMENDED TOOLS + TECHNIQUES

- Provide rain gardens or other bioretention swales within or adjacent to parking areas where appropriate and space allows.
- Provide bioretention swales along primary roads without curb sections.



- Disconnect downspouts from underground drainage system and allow rain water to infiltrate into French drains or rain gardens adjacent to the building where appropriate.
- Provide sand filter curb drains in place of standard engineered curb inlets where appropriate.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Hydrology and Vegetation goals and can help achieve the following LEED Credits:

*Sustainable Sites*

- Credit 5.1: Site Development: Protect or Restore Habitat
- Credit 5.2: Site Development: Maximize Open Space
- Credit 6.1: Stormwater Design: Quantity Control
- Credit 6.2: Stormwater Design: Quality Control
- Credit 7.1: Heat Island Effect: Non-Roof

*Water Efficiency*

- Credit 1.1: Water Efficient Landscaping: Reduce by 50%
- Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation

### 8.6.7 Vegetated Roofs

Vegetated or green roofs are a best management practice in which conventional flat or sloped roofs are covered with a waterproof membrane, soil, and vegetation.

Intensive green roofs typically have a 2'-3' soil depth and can support shrubs and small trees. Intensive green roofs require regular irrigation and drainage systems.

Extensive green roofs have a soil depth of one to six inches and support grasses, forbs, and groundcovers.

A semi-intensive green roof includes components of both extensive and intensive green roofs, with some shallow planting areas interspersed with deeply-planted areas.

To retrofit roofs with green elements, evaluate the existing structures to determine whether it can support the load of saturated soil. A licensed structural engineer should perform this analysis.

Benefits of vegetated roofs include:

- Reduced storm water runoff
- Increased water quality of storm water runoff
- Reduced heat island effect
- Reduced energy costs for heating and cooling
- Longer roof lifespan

**RECOMMENDED TOOLS + TECHNIQUES**

- Provide vegetative roof systems to reduce stormwater runoff, reduce heat island effect, and create wildlife habitat.



*Example of a green roof.*  
Source: [www.arlingtonva.us](http://www.arlingtonva.us)



**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Hydrology and Vegetation goals and can help achieve the following LEED Credits:

*Sustainable Sites*

- Credit 6.1: Stormwater Design: Quantity Control
- Credit 6.2: Stormwater Design: Quality Control
- Credit 7.2: Heat Island Effect: Roof

*Water Efficiency*

- Credit 1.1: Water Efficient Landscaping: Reduce by 50%
- Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation

### 8.6.8 Rainwater Recycling

Rainwater running off rooftops can be collected in rain barrels or cisterns and reused in lawn and landscape watering. Small rain barrels typically hold between 50 - 100 gallons of water. Cisterns are generally larger than rain barrels, and they may be pre-manufactured or designed specially for a site. Cisterns may be installed above-ground or underground, with typical capacities ranging from 100 to over 10,000 gallons.

Benefits of collecting and reusing rainwater include:

- Reduced storm water runoff
- Decreased cost of potable water for landscape irrigation

#### RECOMMENDED TOOLS + TECHNIQUES

- Provide rain barrels or cisterns at downspouts of administrative, housing, and other support buildings where appropriate to collect and distribute harvested water.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Hydrology goals and can help achieve the following LEED Credits:

Sustainable Sites

- Credit 6.1: Stormwater Design: Quantity Control
- Credit 6.2: Stormwater Design: Quality Control

*Water Efficiency*

- Credit 1.1: Water Efficient Landscaping: Reduce by 50%
- Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation

### 8.6.9 Exterior Lighting

Light pollution is caused by waste light from buildings or exterior lighting that produces glare, is directed upward, or spills off the site.

Benefits of minimizing light pollution include:

- Increased visibility of the night sky
- Reduced disruption to nocturnal wildlife

#### RECOMMENDED TOOLS + TECHNIQUES

- Provide full cutoff exterior light fixtures that do not exhibit glare or light spill upward.

**CROSS-REFERENCES** This strategy addresses Sustainable Sites Initiative's Materials goals and can help achieve the following LEED Credits:

Sustainable Sites

- Credit 8: Light Pollution Reduction



*Lighting with full cut-off fixtures can eliminate light spill.*



## 8.6.10 Renewable Energy

Alternative energy production can provide a reliable, clean energy source for use in daily operations as well as to guard against outages due to poor weather or other emergencies.

Most on-site energy production systems may be incorporated without any effect to the appearance of the installation. Alternative energy sources located on-site should be designed to complement the installation's buildings and site design. The most common renewable energy systems are photovoltaic panels and wind turbines.

### Solar Power

Photovoltaic panels, or PVs, are a technology that produces electricity with solar power. They can be incorporated into the roof of a building, either flat or sloping.

Photovoltaic panels can be linked to the existing utility grid. The PVs on a building could offset demand on the local utility, typically occurring when production of solar power is greatest, during the day.

### Wind Power

Wind turbines generate electrical power through harvesting the wind. The best known image of wind power is that of wind farms and large turbines common in rural settings. Less known, but a growing sector of the industry, are small-scale or "micro" turbines that may fit on a building or serve as a sculptural element on a site. Similar to solar power, wind energy may be used to supplement the energy supply, where buildings remain linked to the energy grid.

Rooftop-mounted micro-turbines work most effectively when mounted at least 40 feet off the ground to maximize wind speed and clear of adjacent obstructions such as trees or buildings. Unlike large turbines found on wind farms, the

small-scale turbines are less likely to produce nuisance effects like noise or vibrations.

Benefits of renewable energy applications include:

- Reduced energy costs
- Increased independence from fossil fuels
- Increased independence from power grid

### RECOMMENDED TOOLS + TECHNIQUES

- Provide solar powered light fixtures in remote areas of the installation that are away from the power grid.
- Provide roof mounted solar panels on selected buildings where appropriate.
- Provide micro wind turbines on selected buildings in industrial or airfield districts where appropriate.

### CROSS-REFERENCES

These strategies addresses Sustainable Sites Initiative's Materials goals and can help achieve the following LEED Credits:

#### *Energy & Atmosphere*

- Credit 2: On-Site Renewable Energy



*Example of wind turbines.*

*Source: Ohio State University*



The following table provides a summary of the sustainability strategies discussed in this chapter. It is advisable to consult the LEED-DoD Antiterrorism Standards Tool found on the Whole Building Design Guide web portal.

Sustainability - Key Strategies  		
STRATEGY	TOOLS	BENEFITS
<b>ALTERNATIVE TRANSPORTATION</b>	<ul style="list-style-type: none"> <li>• PROVIDE SIDEWALKS TO INTERCONNECT ALL MAIN BUILDINGS TO EACH OTHER</li> <li>• PROVIDE BUS SHELTERS AT ALL BUS STOPS</li> <li>• PROVIDE BICYCLE RACKS AT ALL MAIN BUILDINGS</li> <li>• PROVIDE SHOWERING / CHANGE FACILITIES AT MAJOR ADMINISTRATIVE BUILDINGS OR WORKPLACES (E.G., FRCSE, HOSPITAL, ETC.)</li> <li>• PROVIDE MULTI-USE TRAILS AND BICYCLE LANES AS DESIGNATED IN THE IAP</li> <li>• PROVIDE ELECTRIC CART PARKING SPACES AT THE ENTRY TO MAJOR BUILDINGS TO ENCOURAGE USE OF ALTERNATIVE ENERGY VEHICLES</li> </ul>	<ul style="list-style-type: none"> <li>• REDUCED VEHICLE EMISSIONS AND FUEL CONSUMPTION</li> <li>• REDUCED VEHICULAR TRAFFIC CONGESTION</li> <li>• INCREASED AIR QUALITY</li> <li>• DECREASED AREA DEVOTED TO PARKING</li> <li>• INCREASED PERVIOUS AREA AND WATER QUALITY</li> </ul>
<b>REDUCED DEVELOPMENT FOOTPRINT</b>	<ul style="list-style-type: none"> <li>• SITE NEW BUILDINGS NEAR EXISTING BUILDINGS, PARKING AREAS, AND UTILITY CORRIDORS</li> <li>• REDUCE PARKING AREAS WHERE PARKING LOTS ARE UNDERUTILIZED OR INEFFICIENT</li> <li>• CONSIDER MULTI-STORY BUILDINGS WHERE APPROPRIATE INSTEAD OF SINGLE-STORY BUILDINGS</li> </ul>	<ul style="list-style-type: none"> <li>• INCREASED WALKABILITY AMONG BUILDINGS</li> <li>• REDUCED VEHICULAR TRIPS</li> <li>• REDUCED IMPERVIOUS SURFACES</li> <li>• INCREASED WATER QUALITY</li> <li>• REDUCED HEAT ISLAND EFFECT</li> <li>• REDUCED COSTS OF EARTHWORK AND UTILITY CONSTRUCTION</li> </ul>
<b>COOL ROOFS AND PAVEMENTS</b>	<ul style="list-style-type: none"> <li>• PROVIDE HIGH ALBEDO ROOF MATERIALS WHERE ARCHITECTURALLY APPROPRIATE WHILE RECOGNIZING WIND AND STORM RESISTANCE, COST AND DURABILITY</li> <li>• PROVIDE HIGH ALBEDO PAVEMENTS, SUCH AS CONCRETE, FOR WALKWAYS AND SELECTED PARKING AREAS, INSTEAD OF ASPHALT</li> </ul>	<ul style="list-style-type: none"> <li>• REDUCED HEAT ISLAND EFFECT</li> <li>• REDUCED ENERGY COSTS FOR HEATING AND COOLING</li> <li>• INCREASED AIR QUALITY</li> </ul>
<b>POROUS PAVEMENTS</b>	<ul style="list-style-type: none"> <li>• PROVIDE POROUS PAVERS IN LIEU OF ASPHALT IN PARKING AREAS WHERE APPROPRIATE WITH RESPECT TO NUMBER OF CARS AND DAILY USE</li> <li>• PROVIDE POROUS PAVING SUCH AS GRAVEL, STONE DUST, OR MULCH ON WALKING TRAILS, INSTEAD OF ASPHALT</li> <li>• PROVIDE OPEN GRID GRASS PAVERS AT OVERFLOW PARKING AREAS</li> </ul>	<ul style="list-style-type: none"> <li>• REDUCED QUANTITY OF STORM WATER RUNOFF</li> <li>• INCREASED QUALITY OF STORM WATER RUNOFF</li> <li>• INCREASED GROUNDWATER RECHARGE</li> <li>• REDUCED COSTS OF STORM DRAIN PIPES, VAULTS, AND PONDS</li> <li>• REDUCED LAND AREA ASSOCIATED WITH STORM WATER MANAGEMENT PONDS</li> <li>• INCREASED PERVIOUS AREA FOR OPEN SPACE, RECREATION, AND HABITAT</li> </ul>



<p><b>TREE PLANTING</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE SHADED WALKWAYS BETWEEN AND AMONG MAJOR BUILDINGS TO ENCOURAGE WALKING</b></li> <li>• <b>PROVIDE TREE ISLANDS IN PARKING AREAS TO PROVIDE SHADE AND REDUCE HEAT GAIN OF PAVEMENT</b></li> <li>• <b>PROVIDE DECIDUOUS TREES ON SOUTH AND WEST SIDES OF MAJOR BUILDINGS TO SHADE SUMMER SUN AND ALLOW WINTER SUN TO PENETRATE</b></li> <li>• <b>PROVIDE SHADE TREES AT BUILDING ENTRIES, BREAK AREAS, AND HOUSING AREAS WHERE SOCIAL GATHERINGS ARE LIKELY TO OCCUR</b></li> <li>• <b>PROVIDE EVERGREEN TREES FOR SCREENING OF OBJECTIONABLE VIEWS</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>INCREASED AIR AND WATER QUALITY</b></li> <li>• <b>SEQUESTERING OF CARBON</b></li> <li>• <b>REDUCED HEAT ISLAND EFFECT</b></li> <li>• <b>REDUCED STORM WATER RUNOFF</b></li> <li>• <b>INCREASED WALKABILITY OF AN INSTALLATION</b></li> <li>• <b>REDUCED ENERGY COSTS FOR BUILDINGS WITH TREES ON SOUTH AND WEST SIDES</b></li> <li>• <b>INCREASED WILDLIFE HABITAT</b></li> </ul>
<p><b>BIOINFILTRATION SYSTEMS</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE RAIN GARDENS OR OTHER BIORETENTION SWALES WITHIN OR ADJACENT TO PARKING AREAS WHERE APPROPRIATE</b></li> <li>• <b>PROVIDE BIORETENTION SWALES ALONG PRIMARY ROADS WITHOUT CURB SECTIONS</b></li> <li>• <b>DISCONNECT DOWNSPOUTS FROM UNDERGROUND DRAINAGE SYSTEMS AND ALLOW RAIN WATER TO INFILTRATE INTO FRENCH DRAINS OR RAIN GARDENS ADJACENT TO THE BUILDING</b></li> <li>• <b>PROVIDE SAND FILTER CURB DRAINS IN PLACE OF STANDARD ENGINEERED CURB INLETS</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>REDUCED STORMWATER RUNOFF INTO AREA PONDS</b></li> <li>• <b>INCREASED WATER QUALITY OF RUNOFF</b></li> <li>• <b>INCREASED RECHARGE OF GROUNDWATER</b></li> <li>• <b>INCREASED WILDLIFE HABITAT</b></li> <li>• <b>REDUCED LAWN AREA MAINTENANCE</b></li> <li>• <b>REDUCED COSTS OF ENGINEERED PIPE SYSTEMS</b></li> </ul>
<p><b>VEGETATED ROOFS</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE A VEGETATED ROOF FOR FLAT ROOF APPLICATIONS, WHERE STRUCTURAL LOADS PERMIT AND THIS FEATURE IS ARCHITECTURALLY APPROPRIATE TO THE BUILDING USE AND WITHIN THE PROJECT'S BUDGET LIMITATIONS.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>REDUCED STORM WATER RUNOFF</b></li> <li>• <b>INCREASED WATER QUALITY OF STORM WATER RUNOFF</b></li> <li>• <b>REDUCED HEAT ISLAND EFFECT</b></li> <li>• <b>REDUCED ENERGY COSTS FOR HEATING AND COOLING</b></li> <li>• <b>INCREASED ROOF REPLACEMENT CYCLE</b></li> </ul>
<p><b>RAIN WATER RECYCLING</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE RAIN BARRELS OR CISTERNS AT DOWNSPOUTS OF SELECTED ADMINISTRATIVE, HOUSING, AND SUPPORT BUILDINGS TO COLLECT AND DISTRIBUTE HARVESTED WATER</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>REDUCED STORM WATER RUNOFF</b></li> <li>• <b>DECREASED COST OF POTABLE WATER FOR LANDSCAPE IRRIGATION</b></li> </ul>
<p><b>EXTERIOR LIGHTING</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE FULL CUTOFF EXTERIOR LIGHT FIXTURES THAT DO NOT EXHIBIT GLARE OR LIGHT SPILL UPWARD</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>INCREASED VISIBILITY OF THE NIGHT SKY</b></li> <li>• <b>REDUCED DISRUPTION TO NOCTURNAL WILDLIFE</b></li> </ul>
<p><b>RENEWABLE ENERGY</b></p>	<ul style="list-style-type: none"> <li>• <b>PROVIDE SOLAR POWERED LIGHT FIXTURES IN REMOTE AREAS OF THE INSTALLATION THAT ARE AWAY FROM THE POWER GRID</b></li> <li>• <b>PROVIDE ROOF MOUNTED SOLAR PANELS ON SELECTED BUILDINGS</b></li> <li>• <b>PROVIDE MICRO WIND TURBINES ON SELECTED BUILDINGS IN INDUSTRIAL OR AIRFIELD DISTRICTS</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>REDUCED ENERGY COSTS</b></li> <li>• <b>INCREASED INDEPENDENCE FROM FOSSIL FUELS</b></li> <li>• <b>INCREASED INDEPENDENCE FROM POWER GRID</b></li> </ul>



# IAP Example Projects and Recommendations

The following IAP Example Projects were selected by the installation in a workshop setting after the analysis was completed. These IAP Example Projects are intended to be concept plans for a set of specific improvements for such items as landscape, architecture, or signage.

Each of these projects identifies issues of appearance and offers a set of recommendations to improve or mitigate those issues. For each site, a plan is prepared as well as a “before and after” simulation to communicate visually the set of improvements.

These design drawings should be used as conceptual diagrams to procure funding for the project. Once funding is secure, the drawings may subsequently be given to a contractor to use as a basis for a design/build method of delivery.



## LIST OF PROJECTS

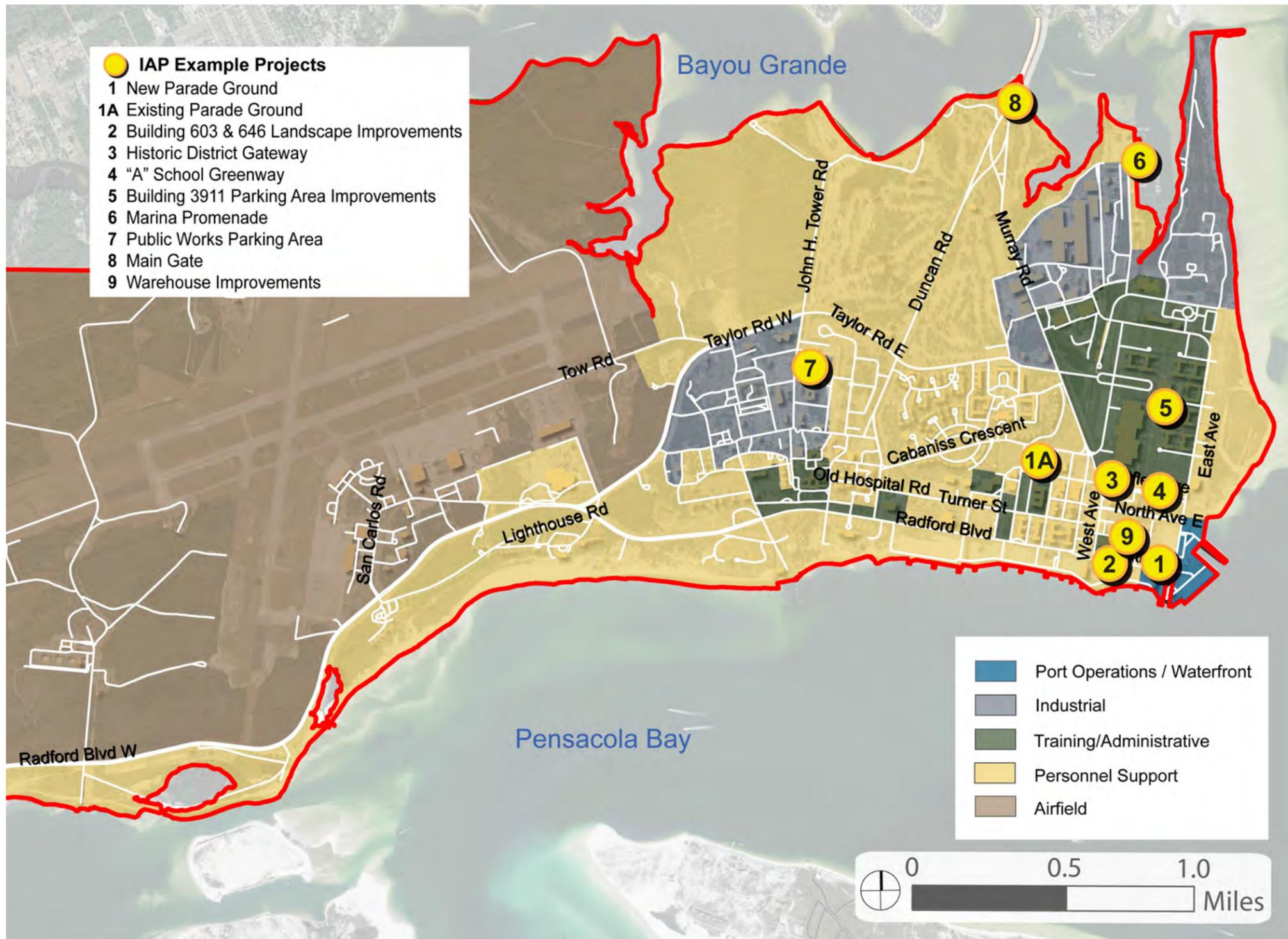
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## Pensacola Overall Site Plan

### List of NAS Pensacola IAP Example Projects:

- Project 1: New Parade Ground
- Project 1A: Existing Parade Ground
- Project 2: Building 603 and 646 Landscape Improvements
- Project 3: Historic District Gateway
- Project 4: "A" School Greenway
- Project 5: Building 3911 Parking Area Improvements
- Project 6: Marina Promenade
- Project 7: Public Works Parking Area
- Project 8: Main Gate
- Project 9: Warehouse Improvements





The existing site is in the process of building demolition and will be graded and seeded, but with no programmed use.



Existing Conditions



Simulated Conditions after Improvement

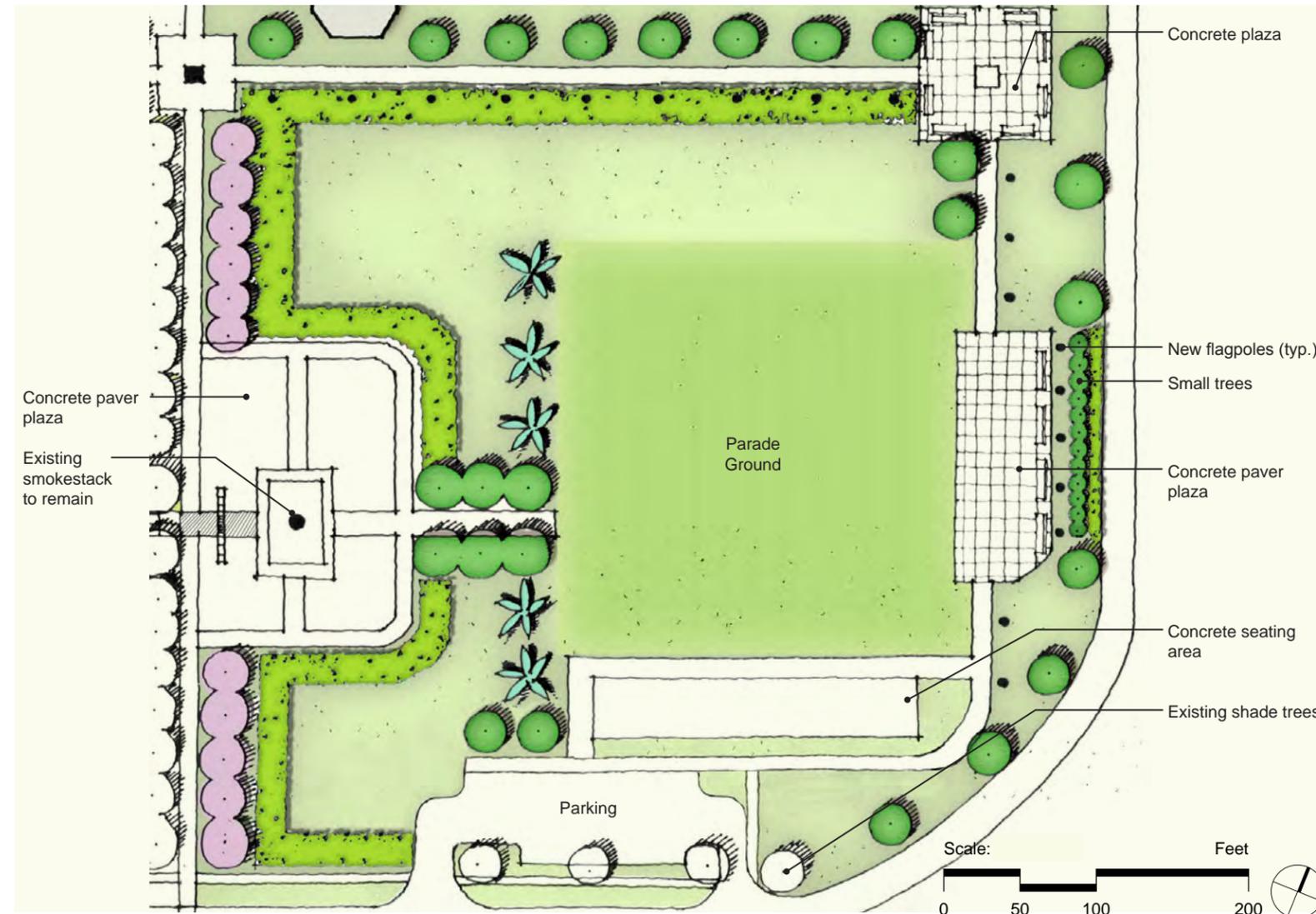
## Project 1 - New Parade Ground

### Existing Conditions

The site lies in an area in the southeast corner of the installation that has had significant building demolition recently, leaving behind fallow land without a specific future building program. It is currently graded and seeded, with one historic icon remaining – a smokestack from the nineteenth century. Its location near the waterfront and its spectacular bay views suggests that the site should not remain fallow, but should be improved as a positive open space for use by sailors and visitors alike. Its current condition offers no walking paths, shade, or seating.

### Recommendations

The recommendation for this parcel east of the smokestack is to relocate the parade ground here. This Special Project is intended to be an example of design concepts to be applied on a parade ground area and not

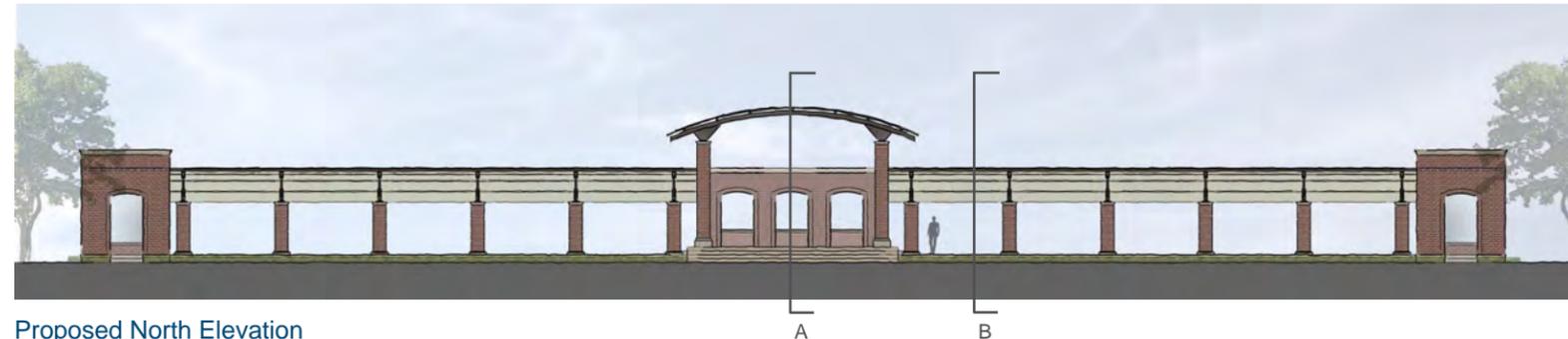


Proposed Site Plan





Existing Conditions



Proposed North Elevation

## Project 1A - Existing Parade Ground

### Existing Conditions

NAS Pensacola is composed of a collection of architectural styles which is reflective of its long history as a Navy installation. The prominent Parade Grounds structure should be influenced by multiple styles and facilitate to unify them as a whole, rather than emulate only one. The existing Parade Grounds structure follows the Georgian architectural style, but does not complement the more contemporary designs on the base.

### Recommendations:

A new Parade Ground structure should be constructed that would join contemporary architecture with traditional. A rhythm of brick piers and arch-shaped openings echo the Georgian architectural detailing found on many buildings on the base.

### Justification:

The new Parade Ground structure will unify architectural styles and will complement existing styles on the installation.



Influencing Elements



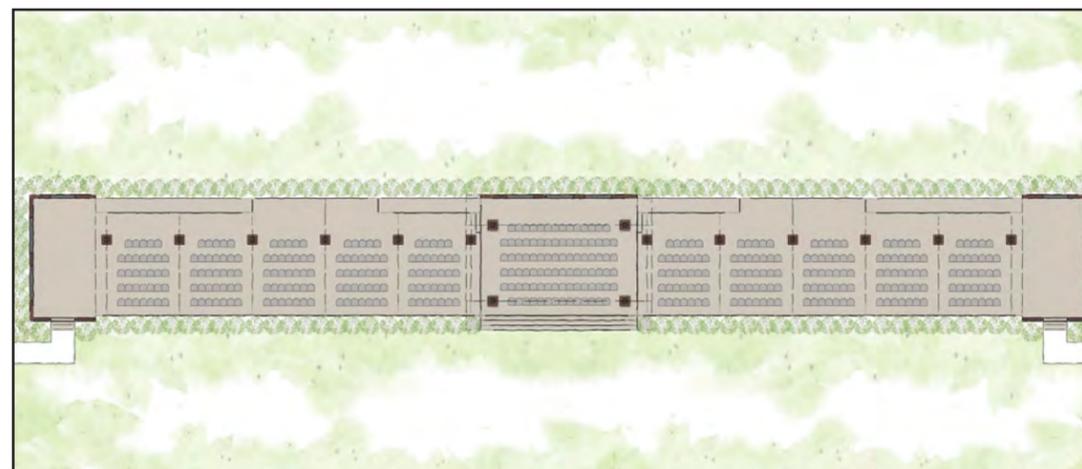
Section A



Section B



Proposed Site Plan



Proposed Floor Plan





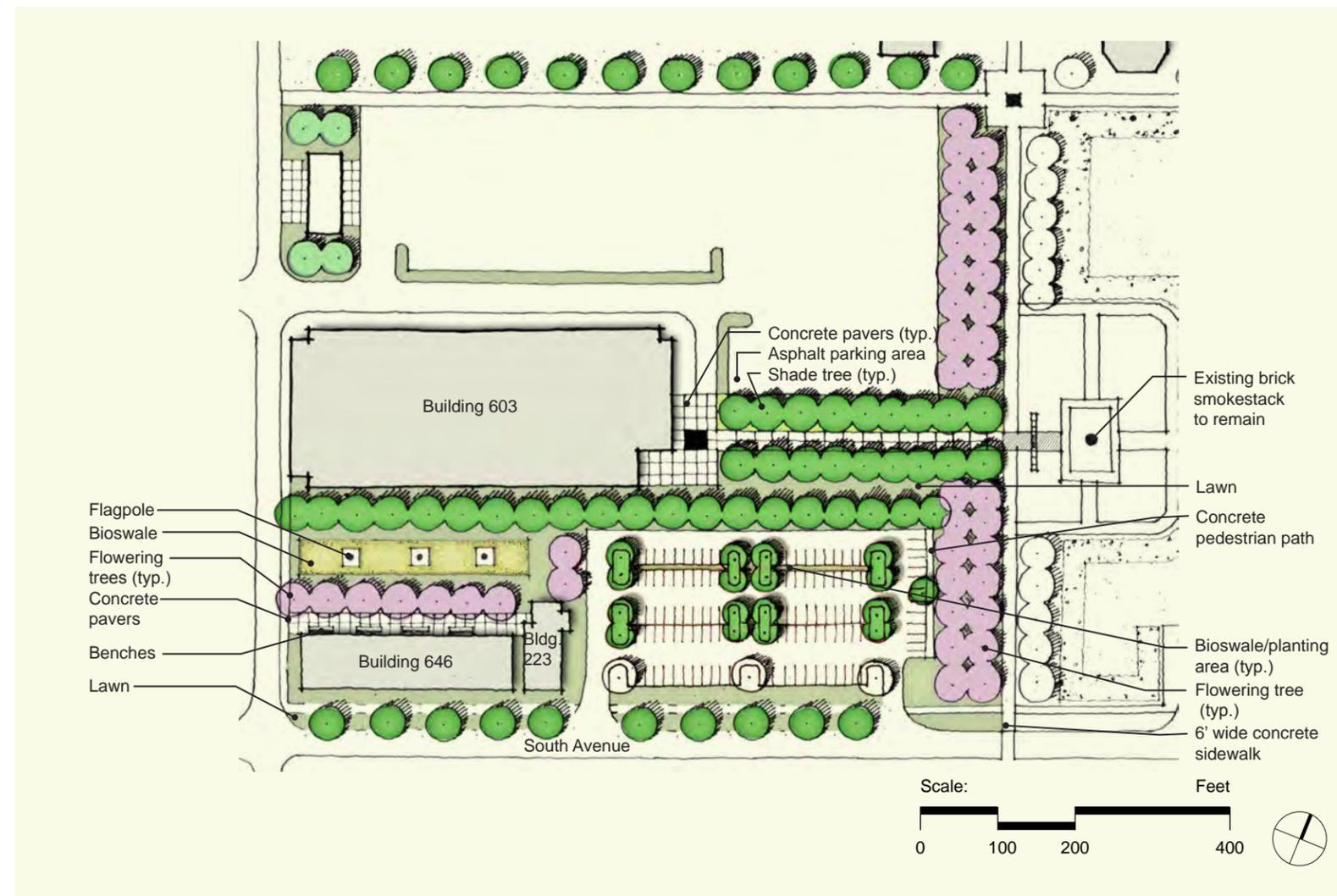
The existing site features barren paved areas used for parking, with no amenities such as walkways, trees, or seating.



Existing Conditions



Simulated Conditions after Improvement



Proposed Site Plan

## Project 2 - Building 603 and 646 Landscape Improvements

### Existing Conditions

Buildings 603 and 646 lie in the historic area adjacent to the former port function, an area that has witnessed significant demolition recently. Where older buildings have been removed, the areas have been graded and seeded, but are otherwise unimproved. These areas suffer from a lack of spatial definition, walkways, shade, and seating. Building entries are not well defined and paths from parking to building entries are fragmented or absent.

### Recommendations

The landscape between and around these two buildings should be improved through the addition of concrete walks, shade trees, site furniture, and wayfinding signage. It is proposed that a small area of parking at the east end of the existing parking field be removed and replaced closer to the buildings, north of the existing parking. In this manner, the parking will be closer to the building entries and the eastern area can become part of a larger landscaped allee of trees that run north and south. Additional planted islands should be placed into the existing parking to provide locations for needed shade trees. Concrete walks should be added to connect parking to building entries for safe pedestrian circulation. Bioswales are suggested adjacent to the parking and in between buildings to capture storm water runoff and cleanse it through vegetation. Finally, a series of benches, trash receptacles, and bicycle racks should be provided for the convenience of sailors and employees alike.

### Justification

The improvements to the landscape will create a safer, beautiful, and comfortable setting for personnel who use and visit the buildings. The walkways will guide and direct visitors to entries, while the trees will provide cooling shade, both of which will contribute to a more walkable facility.



## Project 3 - Historic District Gateway

### Existing Conditions

The intersection of Murray Road and Moffett Road lies at the entry to the historic district of the installation and is currently configured as a five-way intersection. This condition is confusing for drivers trying to navigate and unsafe for pedestrians trying to walk. This condition is exacerbated by a free right turn southbound on Murray Road and a hard left movement on Moffett Road as it crosses Murray Road toward the "A" School. In addition to safety concerns, the parking configuration between buildings 630 and 3460 lack design organization and are in conflict with the diagonal pedestrian movement 'desire-line' between the historic "A" School and the NATTC and Exchange buildings.

### Recommendations

It is recommended that the larger area around the Murray-Moffett Roads intersection be reconfigured to create a signature gateway to the historic district as well as resolve the traffic, pedestrian and parking conflicts. The suggested design uses a 'hippodrome' shape commonly found in a number of other places around the base to create a safe one-way movement connecting to Ellyson Avenue going south and West Avenue going North. The north-end of the 'hippodrome' serves as a gateway to the "A School" with an outdoor airplane exhibit at its center, while the south-end serves as a visual backdrop for the primary pedestrian walkway with a ceremonial flagpole. The one-way traffic movement minimizes conflict at a number of places and allows for an easy and safe entry and exit from the south-east end of the base. The reconfigured parking is consolidated into a single lot while allowing an elegant, safe and comfortable pedestrian movement with tree shading and interesting landscape treatments along the way.

### Justification

The existing intersection is both unsafe and unattractive. The improvements will transform the area to a safe and comfortable walking environment, as well as an elegant and dignified entry landscape to the historic district.



Section through plaza



Aerial photograph showing unsafe intersection of five streets.



Proposed Site Plan



## Project 4 - "A" School Greenway

### Existing Conditions

The area between the "A" School and the historic district is well defined with a linear lawn and a pair of walkways that cross east / west from Murray Road toward Building 3912. While the walks provide a framework, there are no trees or site furnishings for the comfort and convenience of pedestrians, and therefore, use is minimal.

### Recommendations

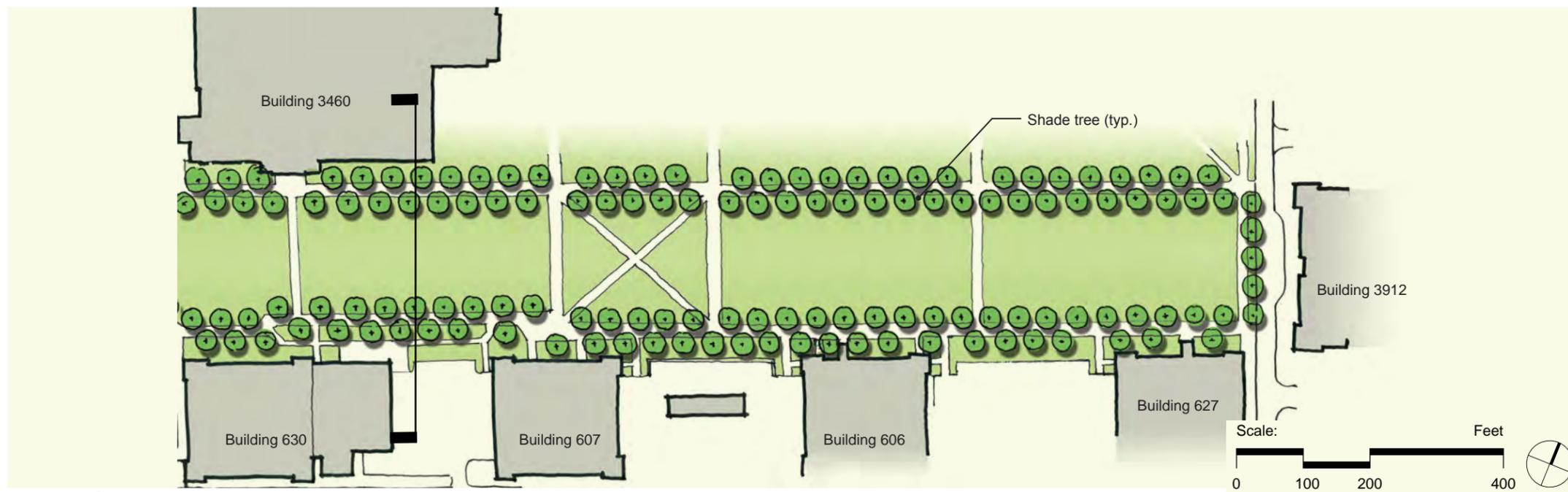
It is proposed to improve this area into a true greenway with shade trees, pedestrian light, benches, trash receptacles, and bicycle racks. The shade trees should be provided in two pairs, each pair flanking one walkway. Pedestrian lights should be provided for nighttime safety at approximately 100' centers. Site furniture should be provided periodically along each walkway.

### Justification

The menu of improvements will provide a level of pedestrian comfort and safety that will encourage more use of the walkways. Such pedestrian trips reduce vehicular trips and improve personal health and fitness.



Section through greenway



Proposed Site Plan



Currently, there are no trees or site furnishings for the comfort and convenience of pedestrians.





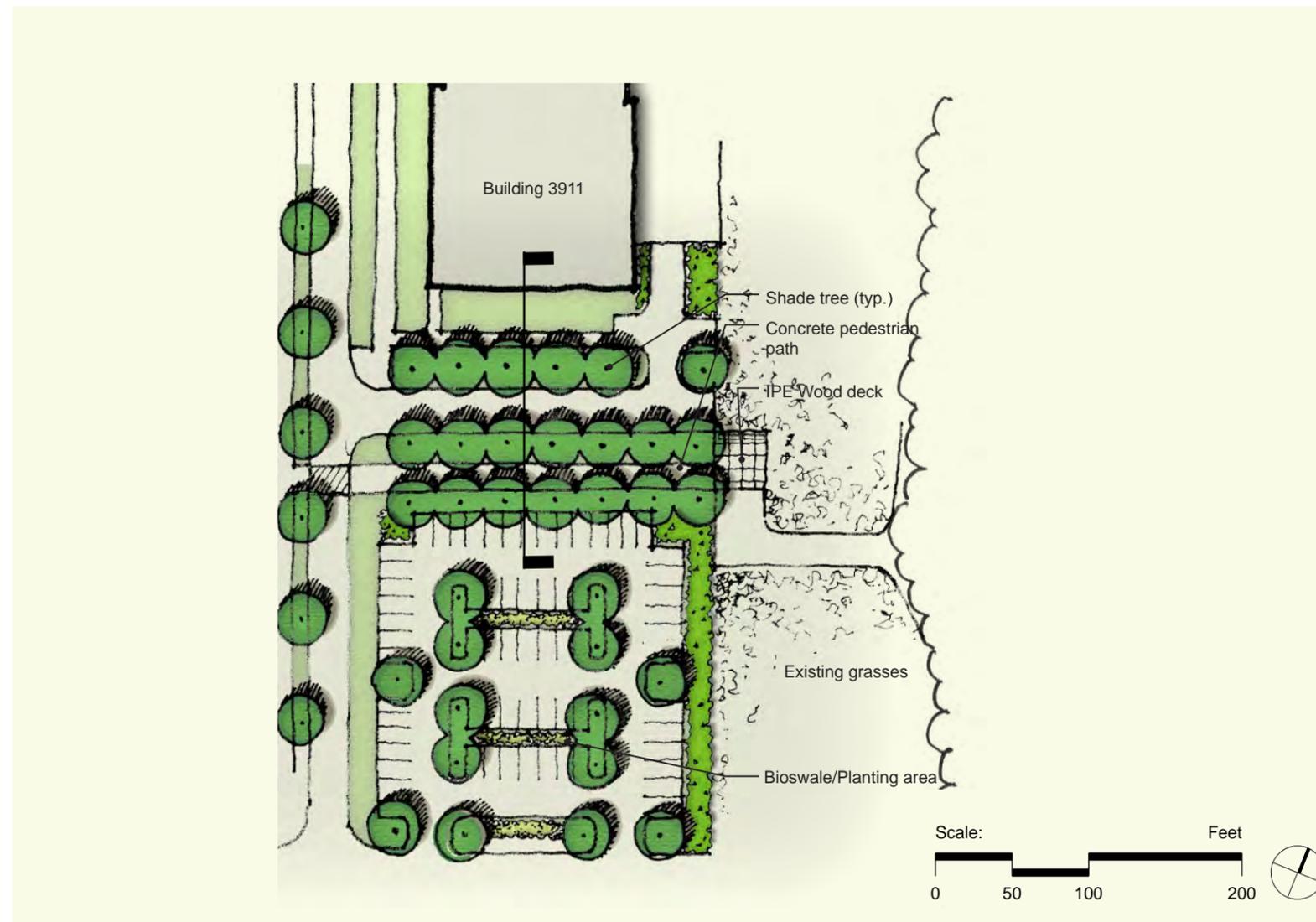
The existing walk does not lead to the shore and natural area.



The existing parking offers no shade and is not screened from the road or from the natural area.



Section through Building 3911 parking area



Proposed Site Plan

## Project 5 - Building 3911 Parking Area Improvements

### Existing Conditions

The parking area at Building 3911 is a simple carpet of asphalt, absent any planted islands. The parking area connects directly to a natural shore area that is a recreational asset, but it interrupts access by pedestrians from the residential quarters across the street. A service drive further obscures the view and the access to the waterfront from the rest of the installation. The parking area itself is unscreened from views from the adjacent street and the natural area.

### Recommendations

It is recommended that the parking area be restriped and oriented in an east/west direction to reduce visual impact and to allow for the creation of bioswales between parking trays. These bioswales should be 10' wide and planted continuously with water tolerant native plantings that will absorb and cleanse storm water runoff. In addition, new planted islands should be created and feature shade trees to reduce heat island effect. A new 10' wide walkway should be provided in between the parking and the service drive without any vehicular crossings to maximize pedestrian access and safety from the residential areas to the shore. Finally, a deck should be provided at the terminus of the walkway and the entry to the natural area as an overlook and gathering space. This should be made of recycled plastic timbers for maximum durability in the waterfront environment.

### Justification

The natural area and shoreline adjacent to it is a tremendous recreational resource that is currently underutilized as access to it is compromised by parking and service areas. The project will provide a safe and comfortable walk to the shore for sailors and visitors alike.

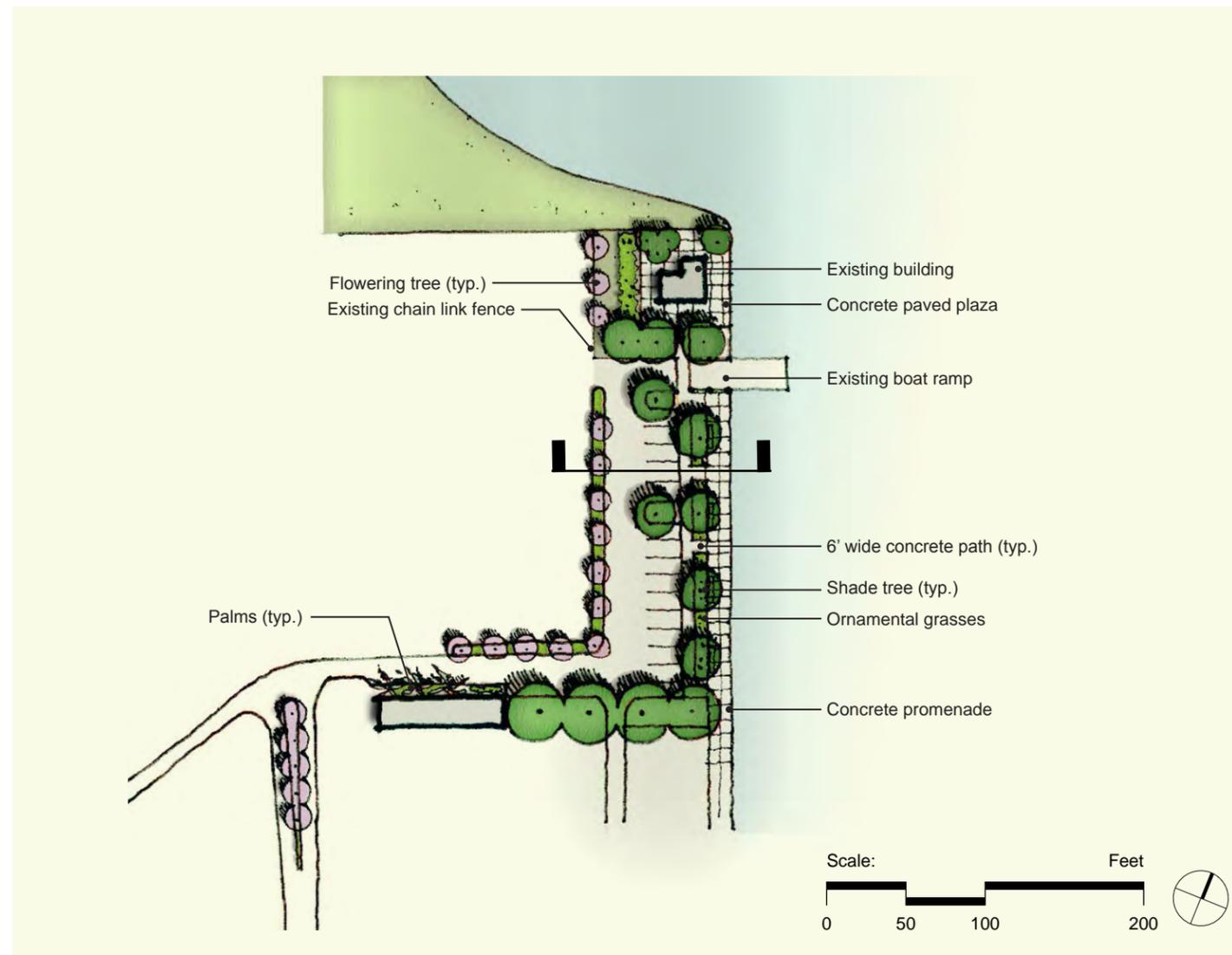




The existing parking area is completely unmarked and offers no distinction between vehicular and pedestrian areas.



Section through marina parking lot and promenade



Proposed Site Plan

## Project 6 - Marina Promenade

### Existing Conditions

The marina is a great recreational resource, but it offers no site amenities or shade for the comfort of users. It is simply an undifferentiated plane of concrete. There is no separation of areas for vehicles and pedestrians, creating an ambiguous and unsafe walking environment. Finally, storm water runs directly into the bay from the pavement without any treatment or reduction in volume.

### Recommendations

The project is a proposal to delineate, through striping on existing pavement, the areas for parking, as distinct from areas for pedestrians. These areas would also feature concrete curb stops as well. The area immediately adjacent to the water's edge would feature two low impact development strategies: at water's edge is proposed a 10' wide paved walkway comprised of porous concrete pavers; west of that would be an area of a bioswale, between the parking area and the promenade. Taken together, these two improvements would act in concert to reduce and cleanse storm water runoff. Finally, a series of planted islands are proposed with shade trees to reduce heat island effect and provide cooling shade for visitors.

### Justification

The project will provide pedestrian safety as well as comfort for sailors and visitors alike. The porous paving and bioswale will provide tangible improvements to water quality and reduce water runoff quantity. The landscaped areas will both beautify the area and reduce heat island effect, making the area more useful throughout the year.

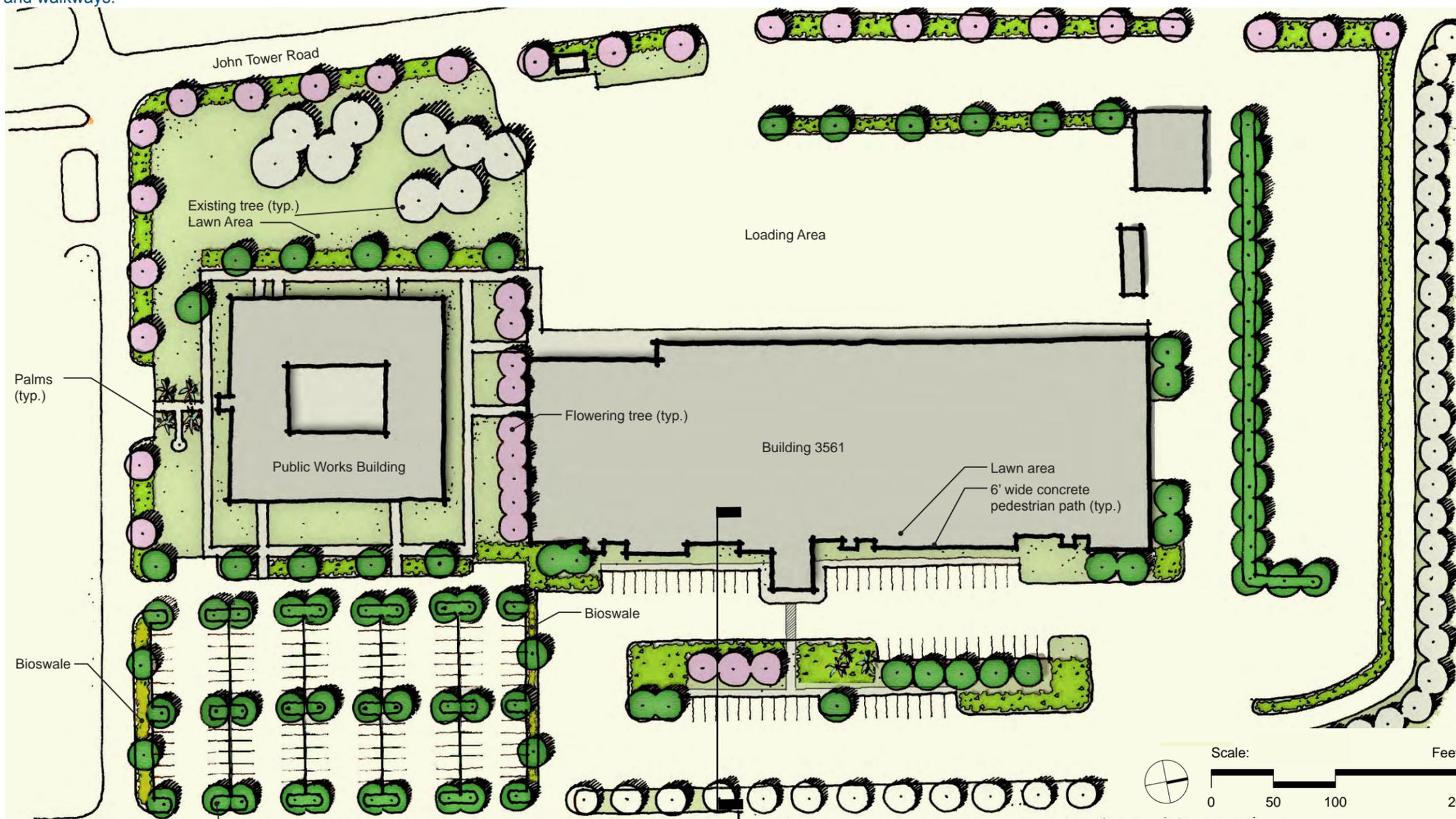




Existing parking areas are devoid of shade and walkways.



Section through bioswale and parking area



Proposed Site Plan

## Project 7 - Public Works Parking Area

### Existing Conditions

The existing parking fields and service areas at both the public work building and its neighbor, building 3561, are largely undifferentiated asphalt. The public works lot has planted islands at each end of its trays, but these are without trees. The parking at building 3561 is devoid of any planting and is incompletely striped. There are no walkways from parking to building entries at 3561 and little screening of service areas.

### Recommendations

The parking area at the public works building should have a series of planted islands created in the middle of the lot to reduce the visual impact of the rows of parked cars. These islands should be planted with shade trees to reduce heat island effect. At the north and south ends of the parking fields should be placed bioswales to capture the storm water runoff and cleanse it prior to its infiltration into the ground water. At building 3561, a large underutilized paved area east of the building should be removed to create the opportunity for a significant planted area with shade trees and a bioswale. Areas around the north and west of this building should have selective pavement removal in 15' wide strips to create landscape buffer strips, to be planted in evergreen trees. Finally, a series of concrete walks should be provided on the east side of building 3561 and in the proposed planted area to provide safe and clear pedestrian access from parking to building.

### Justification

The landscape improvements will both beautify and shade the paved areas of parking. Proposed walks will increase pedestrian safety. Landscape buffer strips will screen service areas from exterior views, crating a cleaner and greener appearance.





Entry-side view of Main Gate



Exit-side view of Main Gate



Front (North-East) Elevation- Existing Sign Wall & Proposed Crash Attenuator Walls



Side (North-West) Elevation

## Project 8 - Main Gate

### Option 1

#### Existing Conditions:

A more significant entry is recommended to announce NAS Pensacola. There is an opportunity to communicate the architectural character of the base as a coastal installation with both contemporary and historic architectural elements.

#### Recommended Improvements:

New tensile canopies should be constructed to create a strong statement to visitors entering the base. This design speaks to the enchanting maneuvers of the Blue Angels pilot team, which is stationed at NAS Pensacola. The brick piers take a more traditional role and address the long history of the base and its buildings.

#### Justification:

Tensile canopies will provide a strong image to installation visitors and the brick piers will complement existing styles on the installation.

#### NOTE:

- This project is recommended to be constructed as part of AT/FP modifications to be designed for the entry gate. This Special Project and its projected budget does not include the modifications required to address those AT/FP requirements and should be viewed as an add-on.

#### Influencing Elements

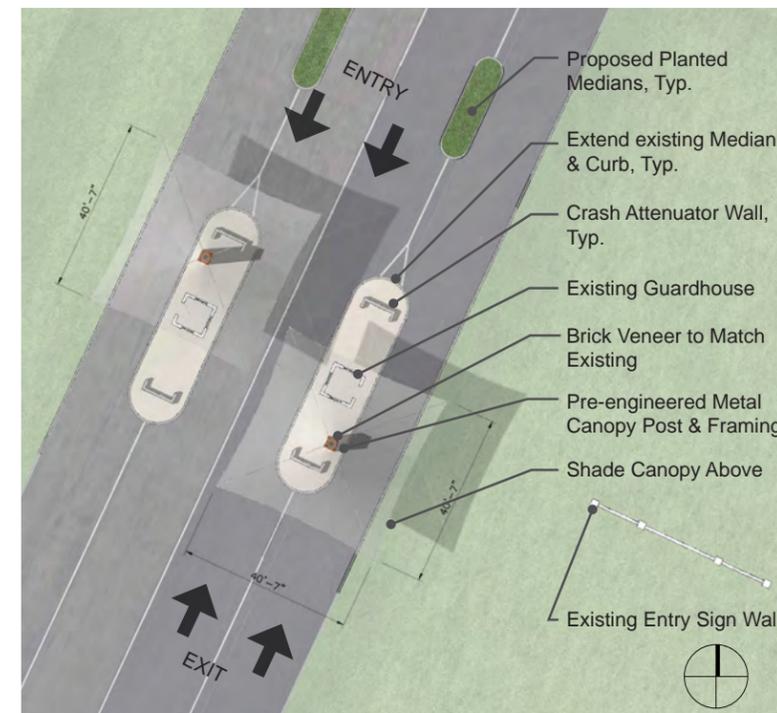


Examples of traditional architecture found on base.

Examples of contemporary elements found on base.



Proposed Site Plan



Proposed Enlarged Plan





Entry-side view of Main Gate



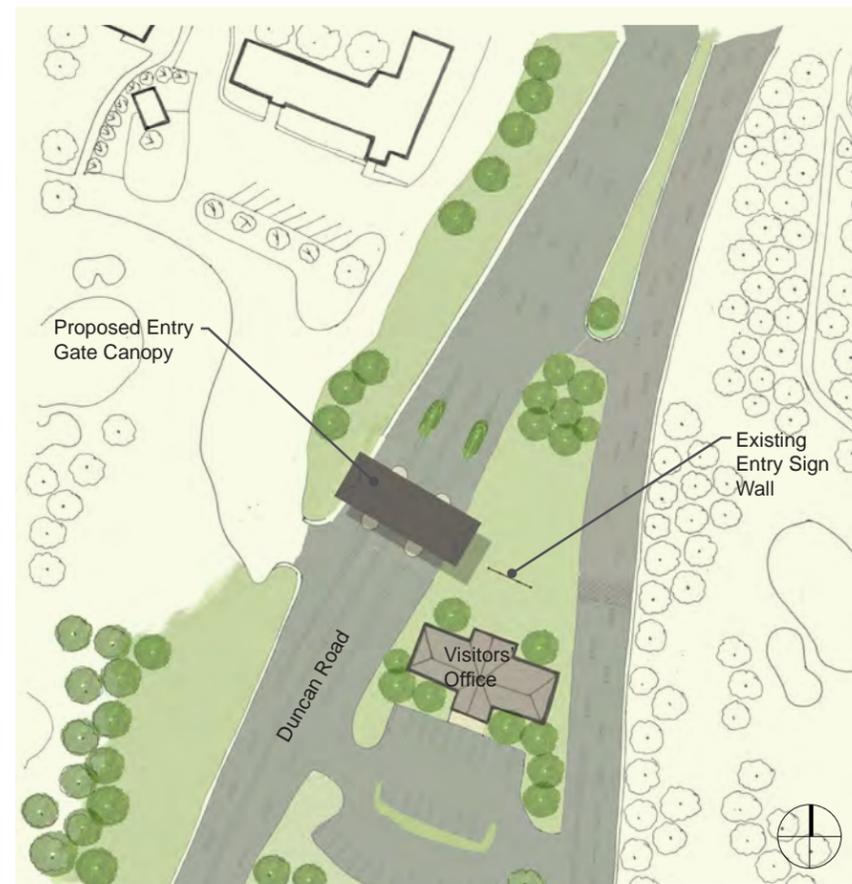
Exit-side view of Main Gate  
Existing Condition



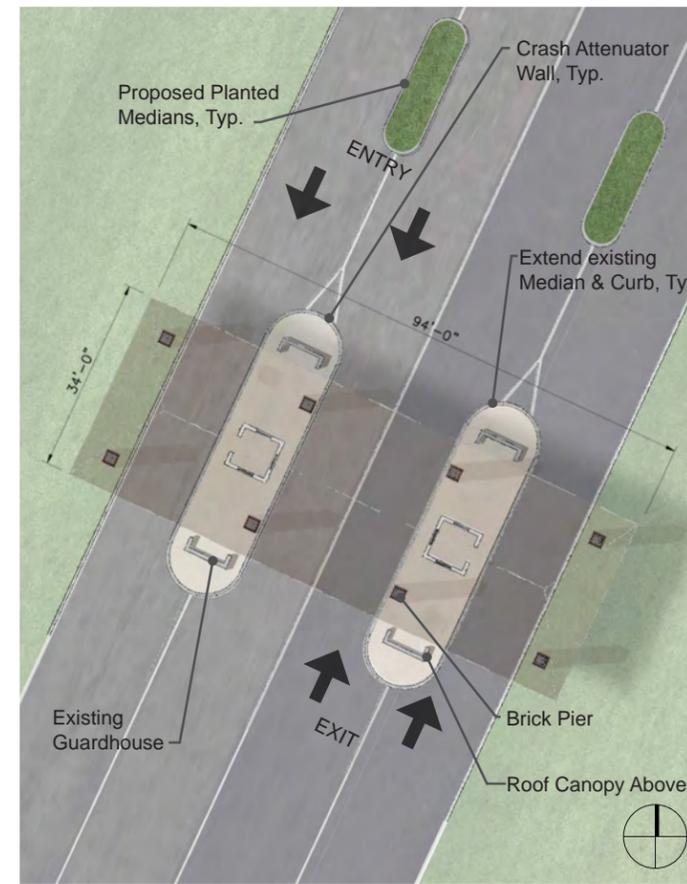
Front (North-East) Elevation- Proposed Roof Canopy



Side (North-West) Elevation



Proposed Site Plan



Proposed Enlarged Plan

Influencing Elements



Examples of traditional architecture found on base.

Project 8 - Main Gate

Option 2

**Existing Conditions:**

A more significant entry is recommended to announce NAS Pensacola. There is an opportunity to communicate the architectural character of the base as a coastal installation with both contemporary and historic architectural elements.

**Recommended Improvements:**

This option shows a strong, traditional canopy and brick piers that welcome visitors to the base. One continuous roof, adorned with dormers, protects the two existing guardhouses, which are also of the traditional architecture style. The existing structures and proposed canopy complement one another.

**Justification:**

This solution speaks to the character of the Annapolis of the Air Historic District, one of the most distinct districts at NASP. The traditional design also emulates the entry canopies found at NASP Corry Station.

**NOTE:**

- This project is recommended to be constructed as part of AT/FP modifications to be designed for the entry gate. This Special Project and its projected budget does not include the modifications required to address those AT/FP requirements and should be viewed as an add-on.

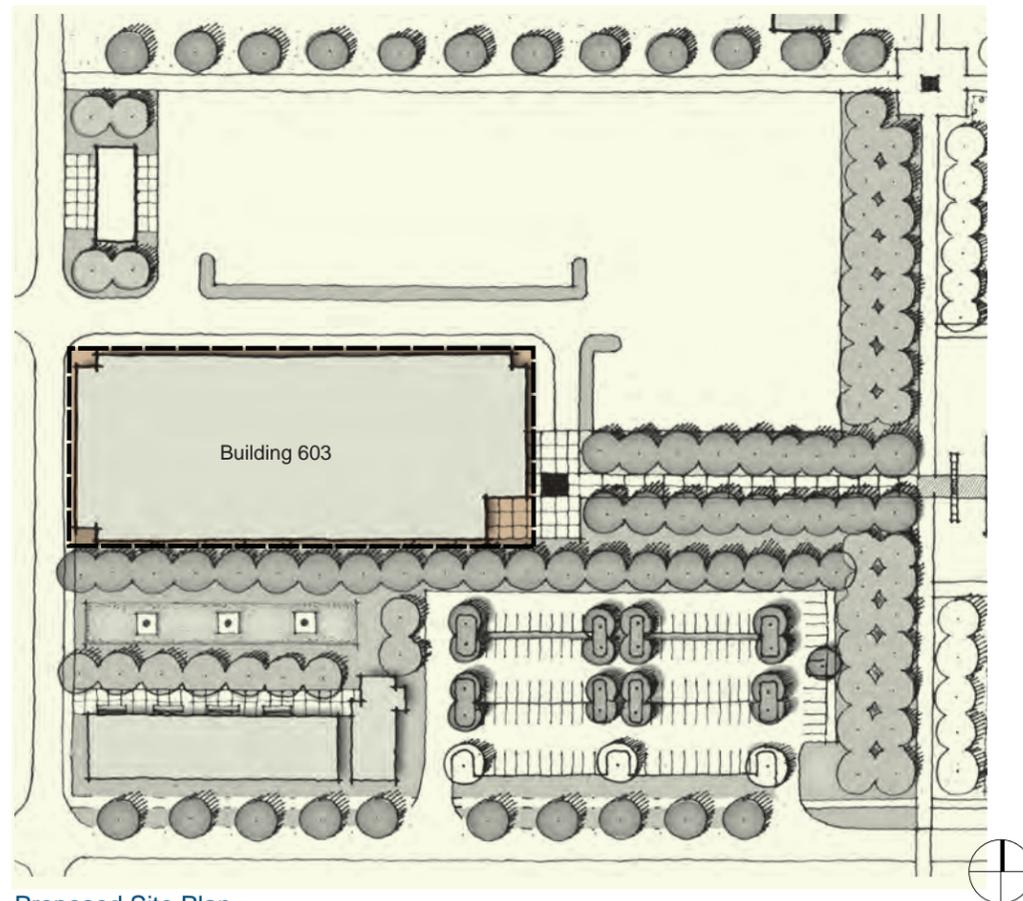




Existing Condition



Proposed North Elevation



Proposed Site Plan



Proposed Elevation Detail

## Project 9 - Warehouse Improvements

### Potential Issues

Originally built in 1937, Warehouse Building 603 was improved in 1988 and now serves as administrative offices. Despite converting functions, the exterior remains to appear very industrial and quite unwelcoming. The canopies are used to hold exposed mechanical equipment, which not only creates an unappealing façade, but more importantly, a liability for the base.

### Recommendations

The mechanical equipment should be relocated from atop the existing canopies and onto the roof, out of public view. This will increase the visual appeal of the building and provide a safer place for visitors. Ornamental handrails should replace the existing on all sides. New ramps, wider stairs, and shade trees will improve appearances and benefit users by providing a pleasant outdoor gathering space.

### Justification

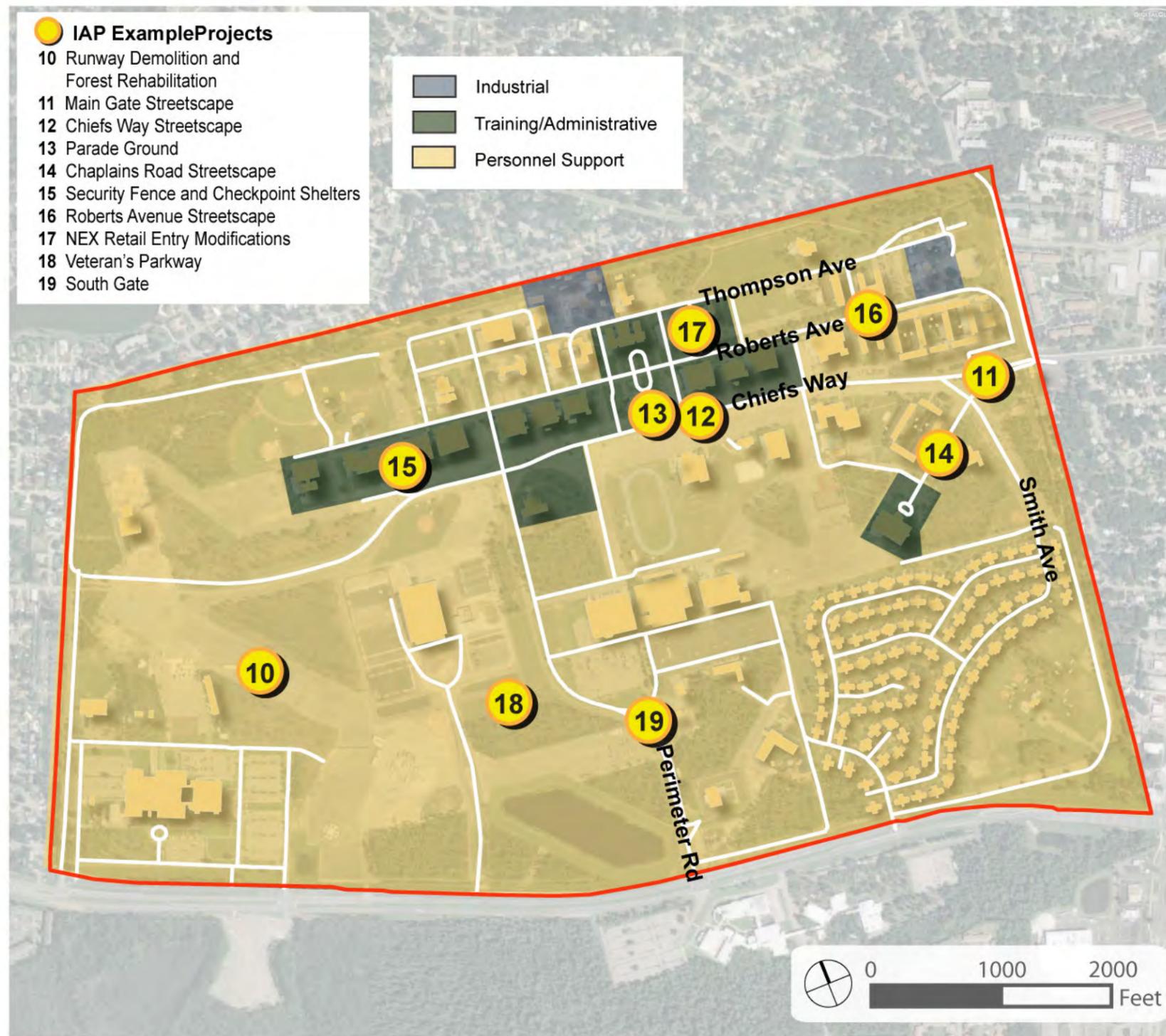
Exterior improvements to Building 603 will allow its canopy to be used as an entry feature instead of as a mechanical feature. Building 603 will become a visual asset to the installation.



Influencing Elements



## NASP Corry Station Overall Site Plan



### List of NASP Corry Station IAP Example Projects:

- Project 10: Runway Demolition and Forest Rehabilitation
- Project 11: Main Gate Streetscape
- Project 12: Chiefs Way Streetscape
- Project 13: Building 501 Forecourt
- Project 14: Chaplains Road Streetscape
- Project 15: Security Fence Replacement
- Project 16: Roberts Avenue Streetscape
- Project 17: NEX Retail Entry Modifications
- Project 18: Veteran's Parkway
- Project 19: South Gate





Existing Conditions



Existing Conditions



Simulated Conditions after Improvement



Simulated Conditions after Improvement

## Project 10 - Runway Demolition and Forest Rehabilitation

### Existing Conditions

NASP Corry Station was originally a Naval Air Station, and as such, featured three runways, each thousands of feet long. Over time, the airfield function was relocated and the runways became obsolete. Some of these runways, notably along Chief's Way, have been adaptively reused as roadways. Other areas have been demolished and reused as a storm water pond or a building site. Yet today, there are over fifty acres of abandoned runway still in existence, with no chance that it will ever be used again in the future for that purpose. These areas are visually unattractive and contribute to excess storm water runoff as well as heat gain in the atmosphere.

### Recommendations

It is recommended that over time, these runway areas are selectively demolished and either made available as building sites or reverted to forest. This proposal suggests that the areas be reforested with seedlings, except in the area where the proposed Veteran's Parkway, asphalt exercise trails, and airplane static display are located. In this manner, these new forested areas would blend into existing forested areas to create a larger, and more viable habitat for plants and animals. This effort would create a new landscape buffer from exterior views as well as a new recreational resource for the installation.

### Justification

The demolition of vast areas of runway will improve the visual environment as it also reduces storm water runoff and heat gain effect. The new forested areas will be a beautiful recreational resource, as well as a valuable habitat. The forested area will also serve as an effective landscape buffer to views of the installation from the perimeter, enhancing its community appeal.





No sidewalk on south side of entry drive inside base creates pedestrian hazards.



Excessive asphalt and faded striping create a confusing entry intersection.



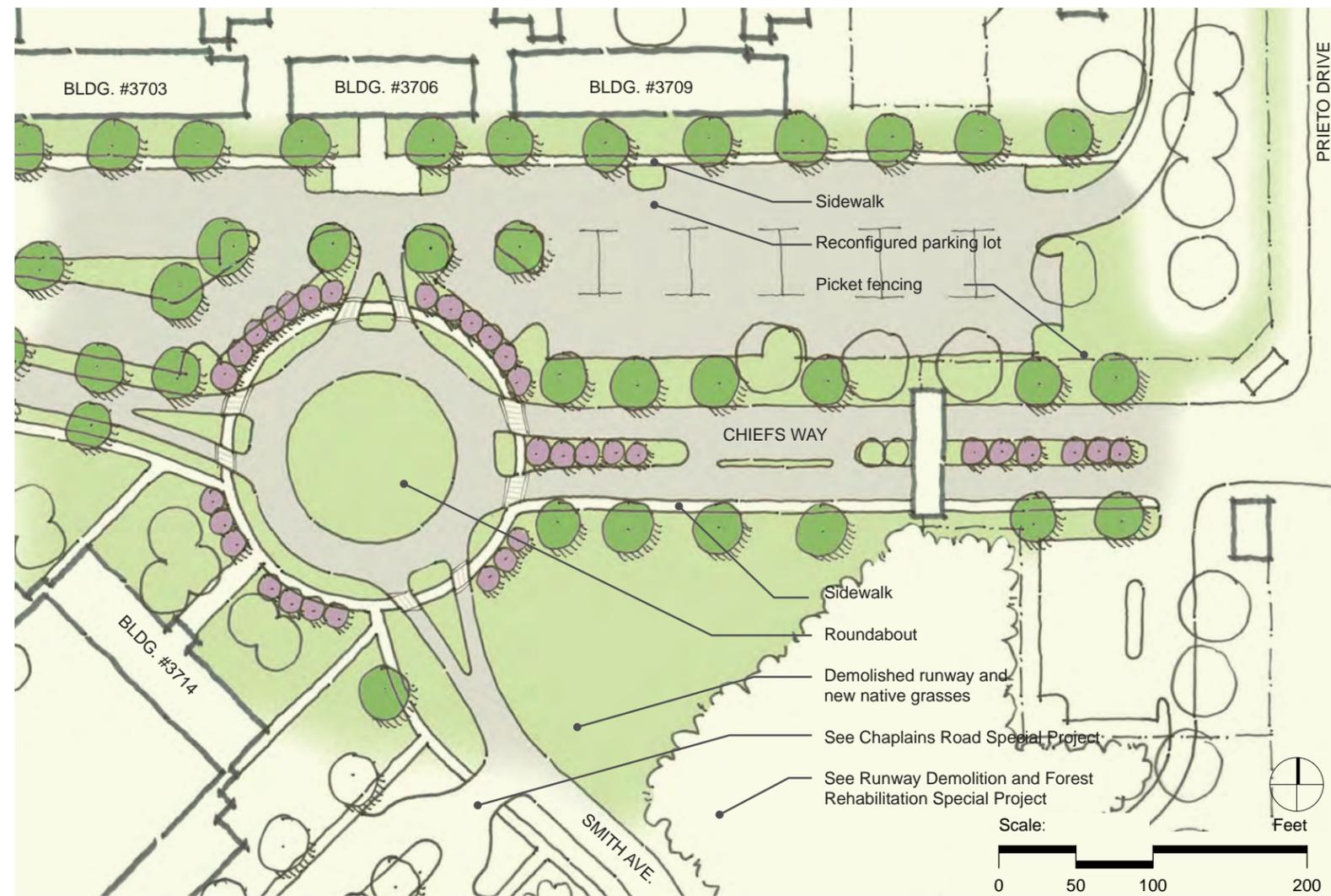
Disparate entry features require a consistent landscape to help unify the entry experience.



Existing Conditions



Simulated Conditions after Improvement



Proposed Site Plan

## Project 11 - Main Gate Streetscape

### Existing Conditions

The Main Gate on the east side of the installation is well marked and well landscaped, creating a positive image of the installation at its perimeter. However, as a sailor or visitor passes through the gate into the installation, the initial impression is a visually and physically confusing intersection. This is attributable to the fact that the paved areas are remnants of former runways, and while this adaptive reuse is a good practice, the roadway is demarked only with painted lines set atop the expanse of runway pavement. This is difficult to comprehend for first time users and visually unappealing. The stretches of paving are undifferentiated and are not defined by curbs, plantings, or other fixed streetscape elements. This confusion is compounded by the fact that several roads intersect at this area, making for dangerous travel for both pedestrians and vehicles.

### Recommendations

It is proposed that the intersection area be resolved into a roundabout, a circular roadway defined by concrete curbs and edged by lawn panels with street trees. In this manner, the vehicular cartway will be clearly evident. A system of sidewalks is also proposed to provide equal clarity for pedestrians. Well marked painted crosswalks are included in the proposal to eliminate pedestrian/vehicular conflicts. In particular, a sidewalk is proposed on the south side of Chief's Way to facilitate safe pedestrian movement to the gate itself. Landscape buffer areas of 15'-20' are proposed between the roadway and adjoining parking fields to screen the parking and to provide selective access. The roundabout itself is proposed to be flanked by flowering trees for seasonal interest.

### Justification

The streetscape improvements will reduce pedestrian/vehicular conflicts making the installation safer and more walkable. The roundabout will serve to calm traffic as it provides orientation and wayfinding for visitors. Landscaped areas will beautify the arrival experience, as well as reduce impervious area and heat island effect.





Continuous asphalt makes the separation of pedestrian and vehicular zones unclear and therefore unsafe.



Street trees, crosswalks, intersections, and bus stops fail to create a coherent or cohesive streetscape.



Existing Conditions



Simulated Conditions after Improvement

## Project 12 - Chiefs Way Streetscape

### Existing Conditions

Chiefs Way courses east to west, connecting training facilities to each other and their parking fields. It is not a true road, but rather a piece of an abandoned runway, demarked by paint stripes. It is unsafe for pedestrians to cross and unsafe for vehicles to drive, as it is not curbed. The parking fields are also demarked solely by paint. This creates an unattractive and unsafe heart to the installation. It also creates a barrier for pedestrians when attempting to move from training facilities to recreational areas. Finally, the marching lane in this area is separated from parking only by curb stops, creating an unsafe, undignified area for this activity.

### Recommendation

The project is to transform the runway into its functional elements – street, parking, and marching lane. The concept is to selectively demolish the runway to provide a curbed street, defined parking fields, and a marching lane – all separated from each other by landscaped buffers. It is proposed that the roadway be positioned south of its current location by 100', and that the majority of parking be north of the road. Then the majority of users would not need to cross a road to get to training facilities after parking. Parking fields would be separated from each other as well with landscape islands containing bioswales. A roundabout is proposed at the west end, to provide traffic calming and a new direct road to the VA Clinic. Landscaped islands are proposed with shade trees and walkways for a more comfortable walking environment. Finally, the marching lane features shade trees, additional lights with flags, porous pavers, and benches.

### Justification

The improvements to Chiefs Way would transform it from an unsafe expanse of asphalt to a safe and clearly marked vehicular and pedestrian realm. The removal of abandoned runways will reduce impervious surface. The addition of landscaped buffers will make the area more attractive and safe for pedestrians. The porous pavers and bioswales will reduce and cleanse storm water runoff. The marching lane improvements will not only beautify the area, but also instill a sense of pride in a most visible area of the installation.



Proposed Site Plan





Landscape at building 501 stops at marching lane.



Continuous asphalt overwhelms building 501.



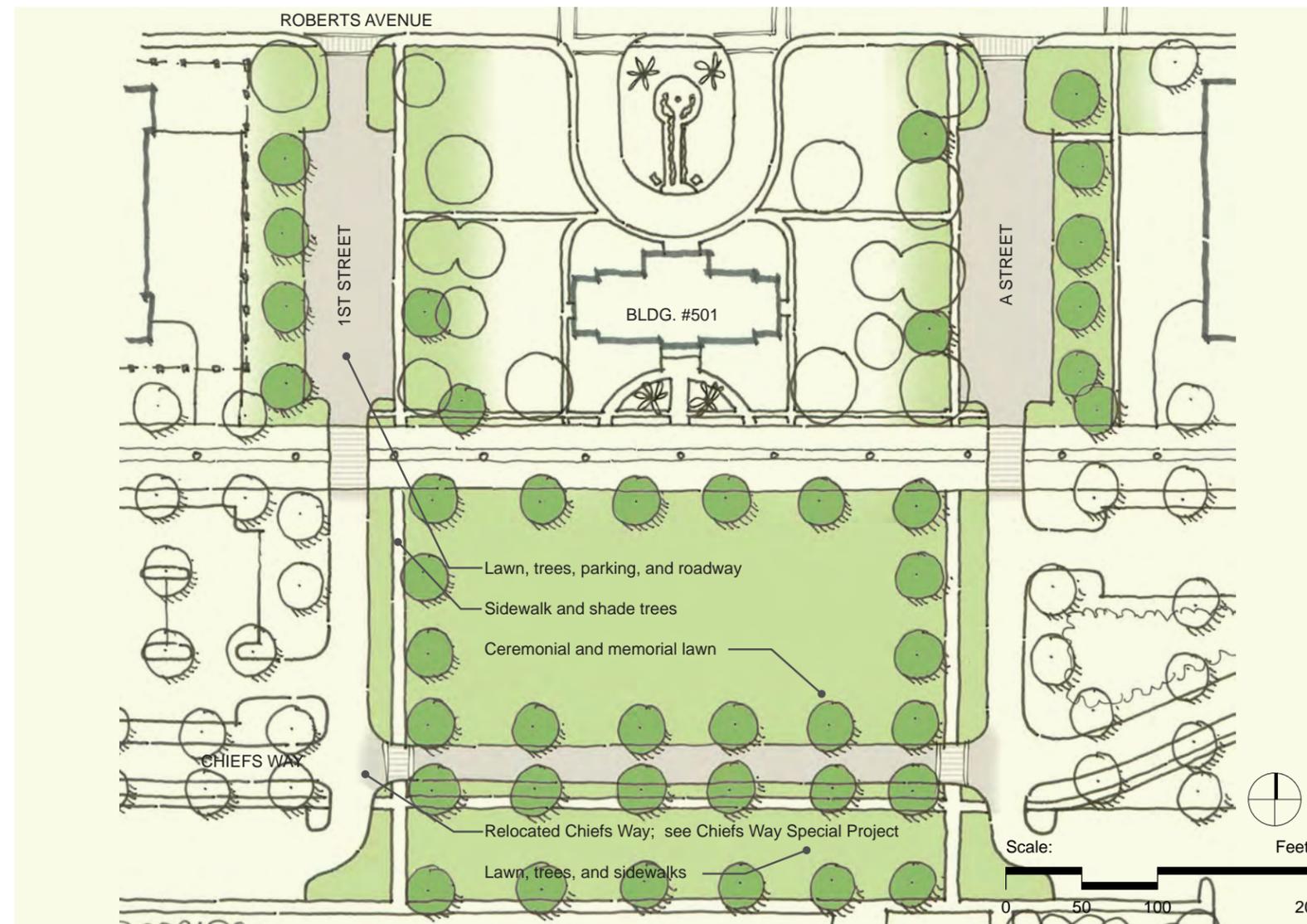
Parking lot separates building 501 and athletic fields.



Existing Conditions



Simulated Conditions after Improvement



Proposed Site Plan

## Project 13 - Building 501 Parade Ground

### Existing Conditions

The area south of building 501 is an undifferentiated plane of asphalt, the remnants of an abandoned runway which is currently painted to demark roadway and parking. The marching lane is part of that area and is demarked from the parking fields by temporary curb stops. This presents a harsh and bleak impression of what should be the heart of the installation. It is also unsafe for pedestrians to traverse from parking area to the building.

### Recommendations

The project is to selectively demolish an area of the runway to create a new green, complete with lawn and trees. This will create a front yard for the building befitting its historic character and dignity. It may also create a new place for parades, celebrations, and graduations. The area is just over two acres in size and is envisioned as a landscape that will provide a new center, but also a safe connective space for pedestrians to traverse north and south from training facilities to recreational facilities. The green space will also provide visual and physical relief from the rhythm of parking fields that courses some 3000' in length from east to west. Included in the project are benches, trash receptacles, and bicycle racks to furnish the space for passive recreation on a daily basis. Finally, it is envisioned that the space may be an appropriate site for future memorials or commemorative markers, becoming the civic heart to the installation as well.

### Justification

The site improvements will collectively create a civic center to the installation, beautifying and softening the existing parking area. The lawn will serve to increase pervious area while providing a comfortable surface for passive recreation and celebrations. Walks will improve pedestrian safety and the trees will provide a comfortable walking environment. Finally, the green will provide for the dignified setting for historic building 501, one which will instill pride for sailors and visitors alike.





Isolated stands of slash pine on base have been mapped for management as harvestable timber.



Existing Conditions



Simulated Conditions after Improvement

## Project 14 - Chaplains Road Streetscape

### Existing Conditions

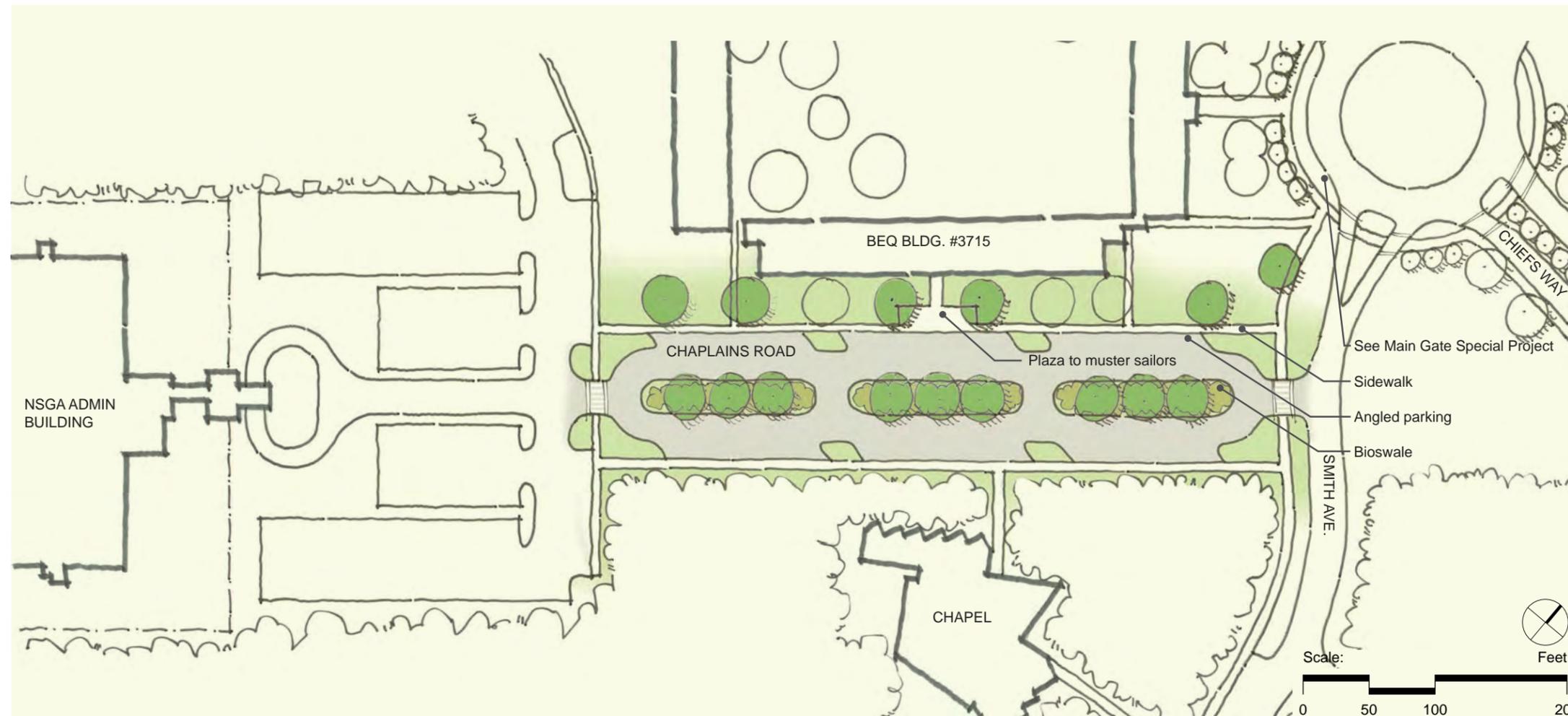
Chaplains Road is a cul de sac that serves buildings 3715, the chapel, and the NSGA Administration. It is one of the remnant runways that course throughout the installation, and as such is a large, flat plane of asphalt, without curbs or other attributes of a road section. Because of this, traffic patterns and parking angles are indeterminate. While travel lanes are painted, they are unclear after dark, making for an unsafe vehicular and pedestrian environment. The road is shaded on one side with existing forest, but the west side features only sporadic trees and no walkways.

### Recommendations

The project is to specifically define travel lanes, parking areas and sidewalks within the extent of the paved area. This area is approximately 100' wide, so the intent is to create one way travel lanes of 18' width, with angled parking on each side. The center of the pavement is to be demolished and replaced by a bioswale, to capture storm water runoff and allow it to percolate into the ground. The perimeter edges of the road and parking are to be curbed for clear definition, with periodic planted islands. New concrete sidewalks are proposed on both sides of the road, aligning with the back of curbed parking spaces. Shade trees are included along the north side of the road and also in the bioswale area to assist in reducing heat island effect.

### Justification

The project will mitigate an expanse of open asphalt paving by defining the areas for vehicular travel, parking, and pedestrian use. This will make the road safer for all. In addition, the bioswales in the center of the road will reduce and cleanse storm water runoff. Street trees on the north side will make for a more comfortable walking environment.



Proposed Site Plan





Existing Conditions



Building 514

The guard booth and security fencing surrounding Mast Hall, located across the street to the south.

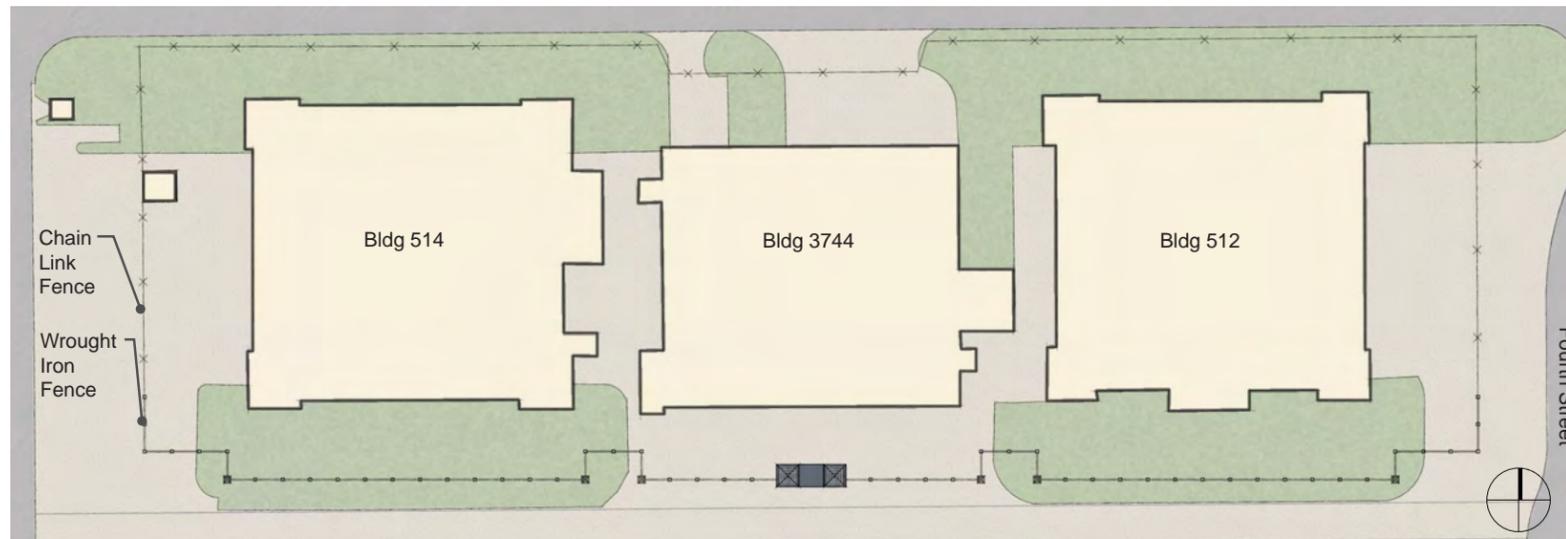
Influencing Elements



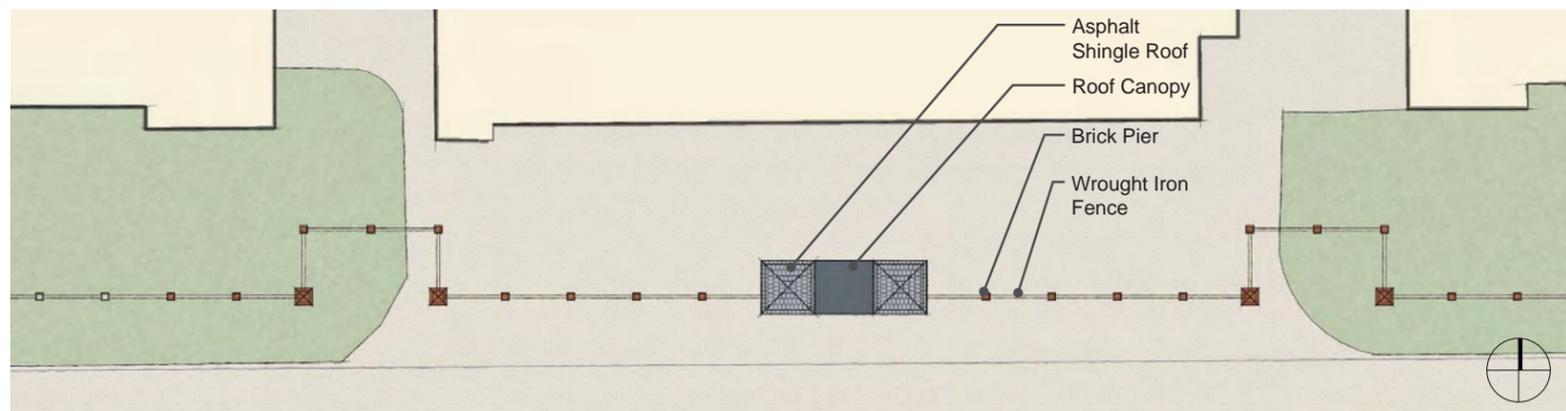
Proposed South Elevation



Proposed South Elevation, Guard Booth Structure



Proposed Site Plan



Proposed Enlarged Plan

## Project 15 - Security Fence and Checkpoint Shelters

### Existing Conditions

The existing guardhouses to the Cryptologic Training Halls are inappropriate in comparison to the surrounding context and the new guardhouse at Mast Hall across the street. This is an area of traditional architecture and the guardhouses should represent this character.

### Recommendations

Construct a new guardhouse and security fence. Elements of the guardhouse should emulate the towers at the corners of the former hangar buildings (Bldgs 514 and 512) and the fencing should follow the form of the adjacent Mast Hall fence. This new design unites nearby traditional and contemporary architecture, as well as creates an attractive face when traveling down Chief's Way, directly to the south of the buildings.

### Justification

Constructing a new guardhouse and security fence will allow for a more pleasant perimeter to Buildings 514, 3744, and 512.





Sidewalk on south side of Roberts Avenue is too narrow for existing pedestrian traffic.



Lamp posts are in the middle of a narrow sidewalk, and the west half of Roberts Avenue lacks street trees on the south side.



Existing Conditions



Simulated Conditions after Improvement

## Project 16 - Roberts Avenue Streetscape

### Existing Conditions

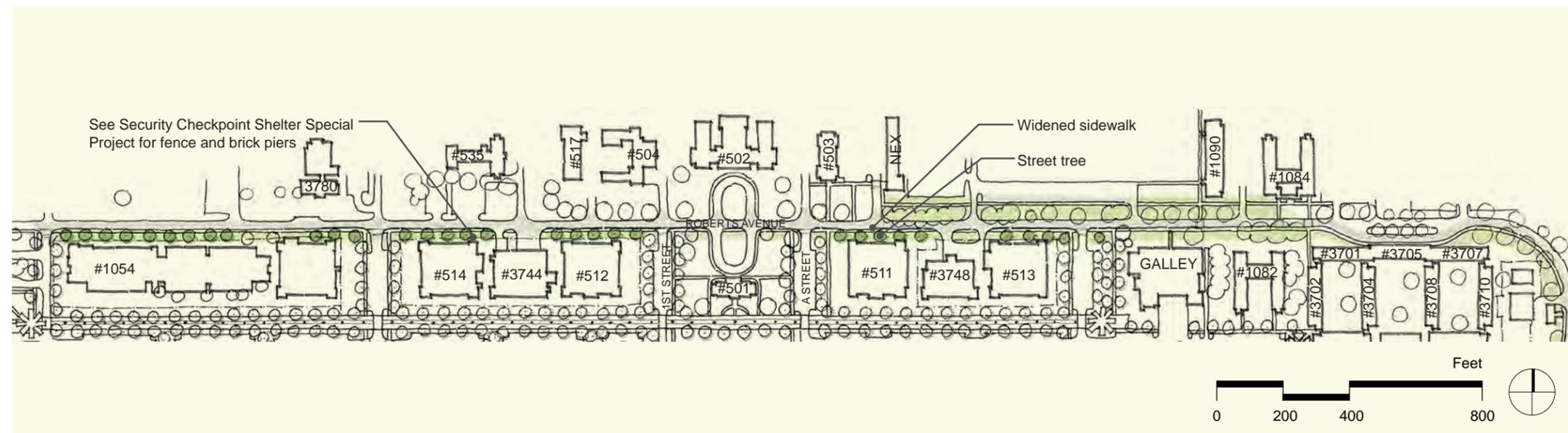
Roberts Road was formerly the main street of NASP Corry Station in its formative days as a Naval Air Station. When the airfield was abandoned, the runway became Chief's Way, the main vehicular access and parking location for the vast majority of training and administrative buildings that align with that runway. Because of the residential areas on the east side of the facility on Roberts Road, there is still today a significant amount of pedestrian activity along the road. The road features narrow sidewalks, intermittent street trees, and only periodic street lighting. In addition, many utility areas are sited on the Roberts Road side of buildings and these are unscreened, creating an unsightly, uncomfortable walking environment.

### Recommendations

It is recommended that sidewalks along the road be widened to 6' minimum for ease of walking in pairs and that street trees be placed in such a manner to fill gaps in existing canopy. The intent is to provide a continuous tree canopy on the south side of the street. In addition, pedestrian lights along the sidewalk should be provided for evening safety. Finally, two areas of utility services should be screened with a decorative steel fence, featuring brick piers at regular intervals and evergreen shrubs to visually screen the utilities.

### Justification

Roberts Road is a historic roadway that today carries a significant amount of pedestrian traffic between the training facilities and the residential areas. The addition of wider sidewalks, street lights, and street trees will improve the safety and comfort of sailors and encourage walking. The screening of utilities will make the walk a more scenic one.



Proposed Site Plan





Existing Conditions



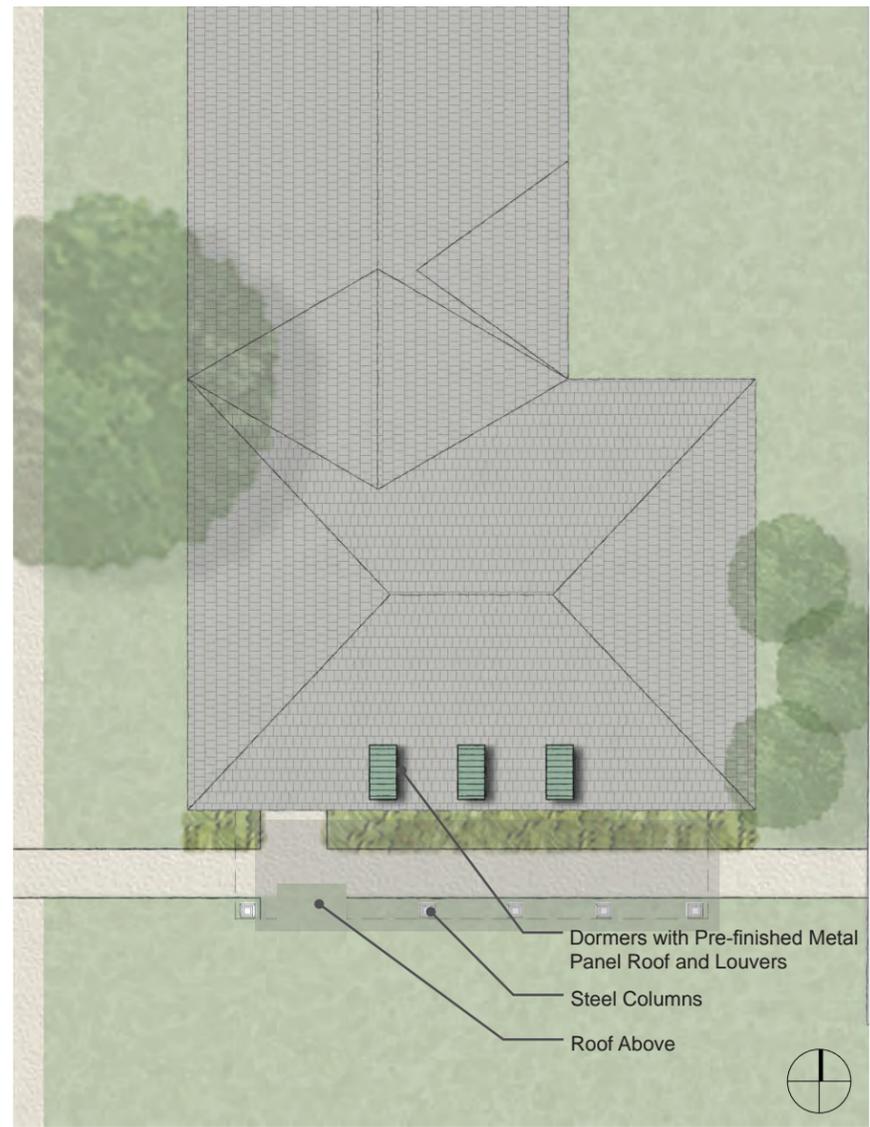
Proposed Site Plan



Influencing Elements



Proposed South Elevation



Proposed Enlarged Plan

## Project 17 - NEX Retail Entry Modifications

### Existing Conditions

Located across Second Street from the NASP Corry Station Historic District, the functional character of Building 540 does not respond to the historical nature of its surroundings. The existing entrance and entry canopy for Building 540 lack proper definition.

### Recommendations

Construct a new entry canopy on the south side of the building. This recommendation involves transitioning the store entrance from the west side to the south side. By making this move, an attractive face will be seen from Roberts Ave and it will enhance the overall character of NASP Corry Station. Design structure to be evocative of nearby administrative Building 503 and other Georgian architectural style buildings found in the historic district.

### Justification

By moving the main entry to the NEX from the west side to the south side and using a design similar to Building 503, the NEX building will connect more with other buildings on the base and reflect an architectural style similar to the buildings in the historic district.





Existing gate at northeast corner of Naval Hospital leading to helicopter landing pad.



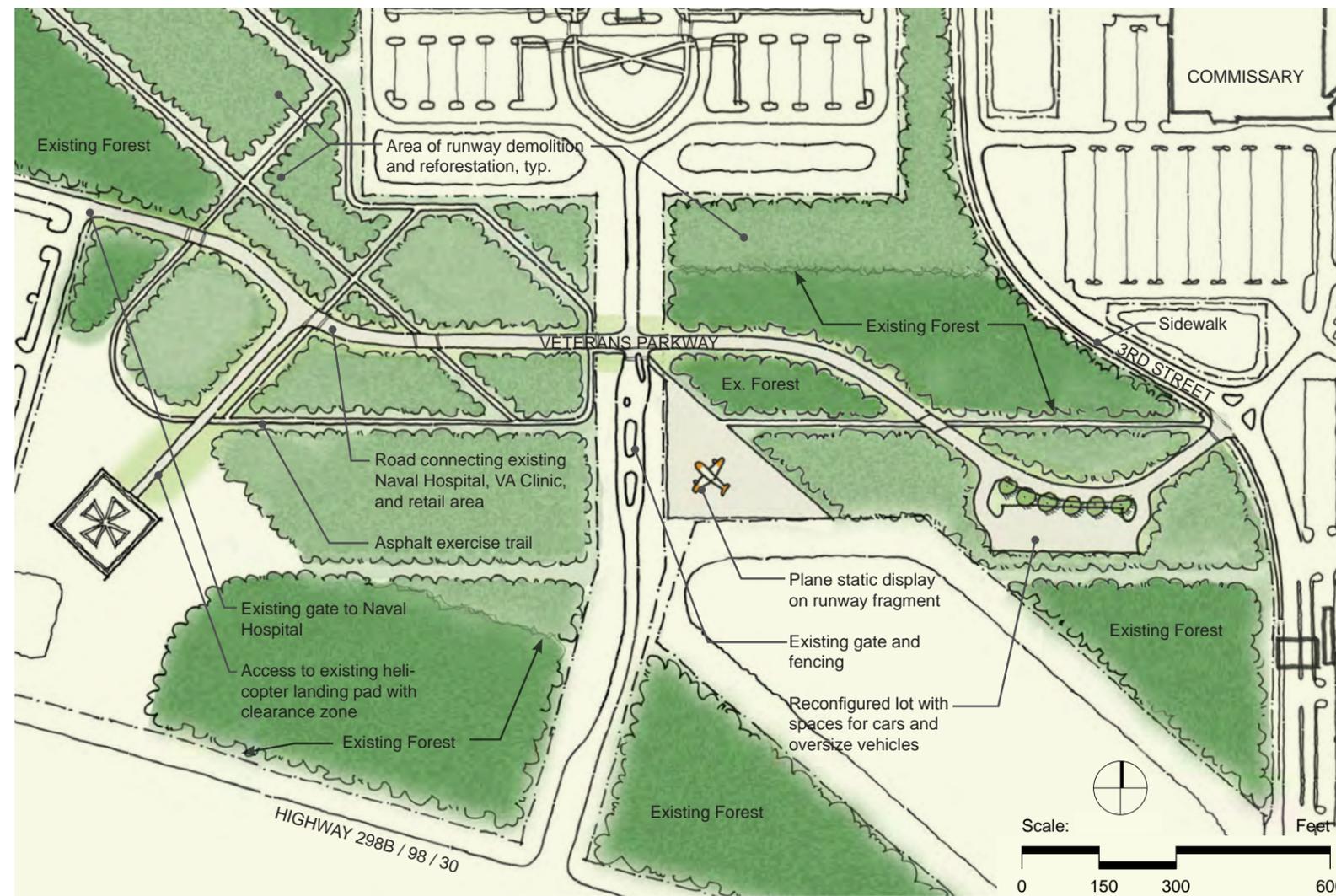
Existing gate and fencing leading to VA Clinic.



Existing Conditions



Simulated Conditions after Improvement



Proposed Site Plan

## Project 18 - Veteran's Parkway

### Existing Conditions

The Naval Hospital and the VA Clinic are both vital service facilities for the installation and each serves primarily individuals from outside the installation. Each has a prominent and separate entry road from U.S. 98. Many individuals visit both the medical buildings and also the commissary in the same trip, and currently must exit the installation and re-enter at the South gate. This creates additional congestion at that gate and needless traffic on U.S. 98.

### Recommendations

The project is to create an internal road that connects the Naval Hospital, VA Clinic, and commissary behind the secured perimeter. In this manner, individuals from outside the installation can make a seamless trip from medical facility to commissary. The proposed road follows to a large extent the area of abandoned runway and thus can be created mostly through selective demolition of that runway into a cartway that is 26' wide. There is a small area of existing forest through which this road must pass, and therefore, a small area of clearing and new road construction is required to complete the connection north of the existing security gates. An asphalt trail system that follows the edges of the historic runways is included in the work to provide paths for exercise as well as to mark the location of the old runways. A plane displayed on a runway pad would be visible across the pond. Finally, the areas of demolished runway should be reforested with new seedlings to blend into the overall reforestation strategy of project 1.

### Justification

The new parkway will provide seamless access from within the installation to the Naval Hospital, VA Clinic, and commissary, no longer necessitating exiting and re-entering the installation. This will ease congestion at the South Gate and also provide direct access to sailors to use these facilities from within the installation. The asphalt path will encourage walking and recreational use, while the reforestation will provide habitat, reduce impervious surface, and reduce stormwater runoff.

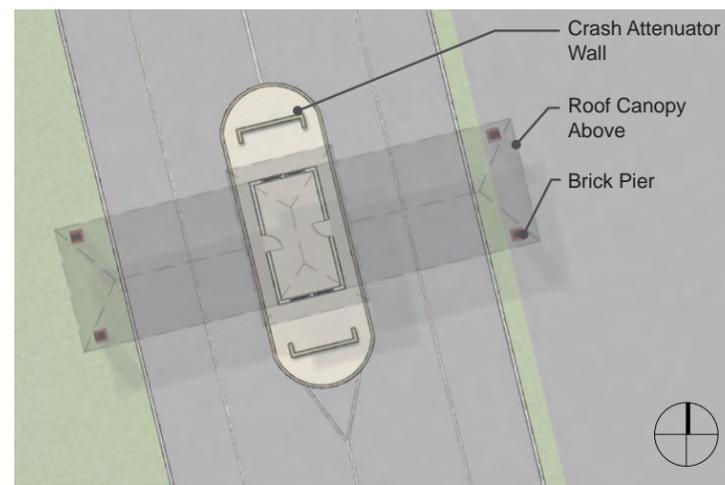




Existing Conditions



Proposed South Elevation



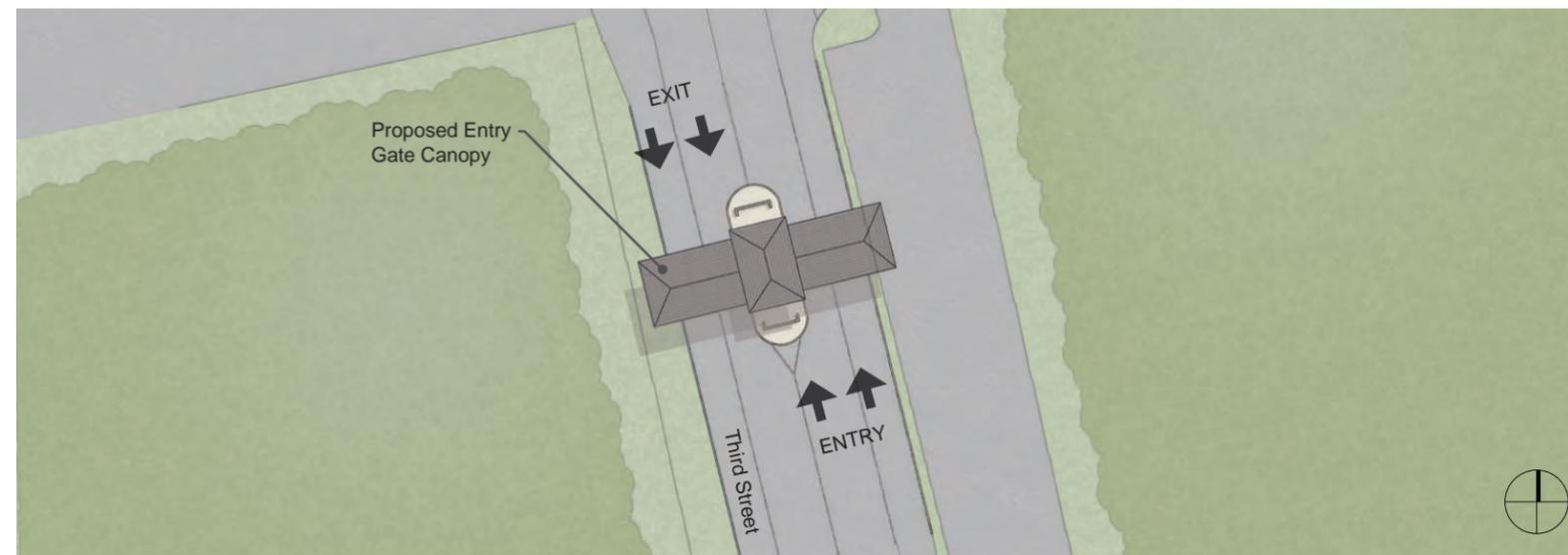
Proposed Enlarged Plan



Proposed West Elevation



Influencing Elements



Proposed Site Plan

## Project 19 - South Gate

### Existing Conditions

The existing canopy does not communicate the architectural and historic character of the base.

### Recommendations

A new gate structure is proposed that incorporates the guard booth into the standing seam metal canopies. A traditional design is evocative of the existing East Entry Gate and speaks to the historic buildings located on the base.

### Justification

The new gate structure will provide an appearance that references the architectural and historic character of the base.

### NOTE:

- This project is recommended to be constructed as part of AT/FP modifications to be designed for the entry gate. This Special Project and its projected budget does not include the modifications required to address those AT/FP requirements and should be viewed as an add-on.



## Appendix - Cost Estimates

As part of the planning process for the development of the Installation Appearance Plans, a cost estimate was developed for each of the IAP Example Projects. The cost estimate is based upon the menu of recommended improvements to landscape, architecture, or signage. Each IAP Example Project has a unique set of recommendations, and therefore each cost estimate is unique, without a specific limit or budget.

The costs reflected in the estimates are based upon industry standard estimating resources such as RS Means 2008 and historical data in the location of the installation. The estimate includes labor, materials, overhead, and profit for each pay item and assumes that the work is to be performed by a private contractor. It is executed in this fashion so that an installation can add or deduct items as budgets dictate. Since plans were drawn based upon GIS maps, a contingency is applied to

each estimate, attributable to the imprecision of the data.

Cost estimates assume a start date in fiscal year FY09. The estimates are prepared based on professional judgment of probable future market value for the construction of the project. It does not however ensure control over the escalating costs of labor, materials or equipment. In addition, it does not have influence over the contractor's methods of determining bid prices, as well as competitive bidding, market or negotiating conditions for every portion of the construction work by the selected general contractor and its subcontractors. It is strongly recommended that the first task of any design/build effort that follows any of these IAP Example Projects be the commission of a field survey to create an accurate base plan, from which accurate design documents can be created.



## LIST OF COST ESTIMATES

Project 1	New Parade Ground .....	10-3
Project 1A	Existing Parade Ground.....	10-3
Project 2	Building 604 and 646 Landscape Improvements .....	10-4
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<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 1 - New Parade Ground</b>				
Porous paving (parking)	12,000	sf	\$12.00	\$144,000
Concrete plaza	15,000	sf	\$5.00	\$75,000
Concrete pavers	35,000	sf	\$7.00	\$245,000
Concrete sidewalks (6")	10,000	sf	\$5.00	\$50,000
Pedestrian walk lights	20		\$3,000.00	\$60,000
Flagpoles	19		\$2,000.00	\$38,000
Benches	10		\$2,000.00	\$20,000
Trash receptacles	5		\$1,000.00	\$5,000
Lawn topsoil preparation	160,000	sf	\$0.75	\$120,000
Shade trees	19		\$600.00	\$11,400
Palms	5		\$1,000.00	\$5,000
Flowering trees	21		\$300.00	\$6,300
Shrubs	700		\$40.00	\$28,000
Lawn	18,000	sy	\$1.00	\$18,000
<b>SUBTOTAL</b>				<b>\$825,700</b>
<b>15% CONTINGENCY</b>				<b>\$123,855</b>
<b>TOTAL</b>				<b>\$949,555</b>
<b>ROUNDED TOTAL</b>				<b>\$950,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total</u>
<b>Project 1A- Existing Parade Ground</b>				
Site preparation	1	Allowance	52,290.00	\$52,290
Floor Slab on Grade	5,950	SF	26.00	\$154,700
Concrete Slab and Stairs	139	CY	1,059.00	\$147,201
Column Footing	16	EA	338.00	\$5,408
Brick Column	249	LF	394.00	\$98,106
Structural Steel Roof Joists	1	LT	73,874.00	\$73,874
KalWall Roofing System	5,076	SF	122.00	\$619,272
Brick Wall	2,390	SF	100.00	\$239,000
Pavers	1,021	SF	83.00	\$84,743
Seating	432	EA	403.00	\$174,096
<b>SUBTOTAL</b>				<b>\$1,648,690</b>
<b>20% CONTINGENCY</b>				<b>\$329,738</b>
<b>TOTAL</b>				<b>\$1,978,428</b>
<b>ROUNDED TOTAL</b>				<b>\$1,978,500</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 2: Building 604 and 646 Landscape Improvements</b>				
Demolition (parking)	8,400	sf	\$2.00	\$16,800
Asphalt (parking)	16,000	sf	\$4.00	\$64,000
Concrete curb	600	lf	\$35.00	\$21,000
Concrete pavers	16,000	sf	\$7.00	\$112,000
Concrete sidewalks (6')	8,500	sf	\$5.00	\$42,500
Pedestrian walk lights	10		\$3,000.00	\$30,000
Parking lot lights	10		\$6,000.00	\$60,000
Flagpoles	3		\$2,000.00	\$6,000
Benches	6		\$2,000.00	\$12,000
Trash receptacles	4		\$1,000.00	\$4,000
Shade trees	81		\$600.00	\$48,600
Flowering trees	40		\$300.00	\$12,000
Bioswale	10,000	sf	\$10.00	\$100,000
Lawn	22,000	sy	\$1.00	\$22,000
<b>SUBTOTAL</b>				<b>\$550,900</b>
<b>15% CONTINGENCY</b>				<b>\$82,635</b>
<b>TOTAL</b>				<b>\$633,535</b>
<b>ROUNDED TOTAL</b>				<b>\$634,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 3: Historic District Gateway</b>				
Demolition of existing road / parking	76,000	sf	\$2.00	\$152,000
Asphalt road / parking	88,000	sf	\$4.00	\$352,000
Concrete curb at roads	3,000	lf	\$35.00	\$105,000
Concrete sidewalks	15,000	sf	\$5.00	\$75,000
Roadway / parking lights	20	ea	\$6,000.00	\$120,000
Pedestrian walk lights	10	ea	\$3,000.00	\$30,000
Site grading / drainage			allowance	\$100,000
Benches	5	ea	\$2,000.00	\$10,000
Trash receptacles	5	ea	\$1,000.00	\$5,000
Shade trees	210	ea	\$600.00	\$126,000
Flowering trees	20	ea	\$300.00	\$6,000
Lawn	24,000	sy	\$1.00	\$24,000
<b>SUBTOTAL</b>				<b>\$1,105,000</b>
<b>15% CONTINGENCY</b>				<b>\$165,750</b>
<b>TOTAL</b>				<b>\$1,270,750</b>
<b>ROUNDED TOTAL</b>				<b>\$1,271,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 4: "A" School Greenway</b>				
Shade trees	140		\$600.00	\$84,000
Pedestrian lights	28		\$3,000.00	\$84,000
Benches	10		\$2,000.00	\$20,000
Trash receptacles	4		\$1,000.00	\$4,000
Bicycle racks	2		\$1,000.00	\$2,000
<b>SUBTOTAL</b>				<b>\$194,000</b>
<b>15% CONTINGENCY</b>				<b>\$29,100</b>
<b>TOTAL</b>				<b>\$223,100</b>
<b>ROUNDED TOTAL</b>				<b>\$224,000</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 5: Building 3911 Parking Area</b>				
Demolition (parking)	6,500	sf	\$2.00	\$13,000
Concrete sidewalk (6')	2,500	sf	\$5.00	\$12,500
Pedestrian lights	4		\$3,000.00	\$12,000
Wood deck overlook	1,000	sf	\$50.00	\$50,000
Benches	4		\$2,000.00	\$8,000
Trash receptacles	2		\$1,000.00	\$2,000
Shade trees	35		\$600.00	\$21,000
Bioswales	3,500	sf	\$10.00	\$35,000
<b>SUBTOTAL</b>				<b>\$153,500</b>
<b>15% CONTINGENCY</b>				<b>\$23,025</b>
<b>TOTAL</b>				<b>\$176,525</b>
<b>ROUNDED TOTAL</b>				<b>\$177,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 6: Marina Promenade</b>				
Demolition (parking)	10,000	sf	\$2.00	\$20,000
Concrete pavers	2,500	sf	\$7.00	\$17,500
Porous paving (promenade)	2,000	sf	\$12.00	\$24,000
Pedestrian lights	5		\$3,000.00	\$15,000
Benches	6		\$2,000.00	\$12,000
Bollards	40		\$1,000.00	\$40,000
Trash receptacles	4		\$1,000.00	\$4,000
Bicycle racks	1		\$1,000.00	\$1,000
Shade trees	13		\$600.00	\$7,800
Palm trees	4		\$500.00	\$2,000
Flowering trees	22		\$300.00	\$6,600
Lawn	600	sy	\$1.00	\$600
Bioswales	1,600	sf	\$10.00	\$16,000
<b>SUBTOTAL</b>				<b>\$166,500</b>
<b>15% CONTINGENCY</b>				<b>\$24,975</b>
<b>TOTAL</b>				<b>\$191,475</b>
<b>ROUNDED TOTAL</b>				<b>\$192,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Cost</u>
<b>Project 7: Public Works Parking Area</b>				
Demolition (parking)	45,000	sf	\$2.00	\$90,000
Concrete curbs (parking islands)	750	lf	\$35.00	\$26,250
Concrete walks (6')	3,500		\$5.00	\$17,500
Benches	4		\$2,000.00	\$8,000
Trash receptacles	2		\$1,000.00	\$2,000
Shade trees	85		\$600.00	\$51,000
Palms	4		\$1,000.00	\$4,000
Flowering trees	35		\$300.00	\$10,500
Shrubs	400		\$40.00	\$16,000
Bioswales	6,000	sf	\$10.00	\$60,000
Lawn	2,500	sy	\$1.00	\$2,500
<b>SUBTOTAL</b>				<b>\$287,750</b>
<b>15% CONTINGENCY</b>				<b>\$43,163</b>
<b>TOTAL</b>				<b>\$330,913</b>
<b>ROUNDED TOTAL</b>				<b>\$331,000</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total</u>
<b>Project 8 - Main Gate Option #2</b>				
Site Preparation	1	Allowance	11,735.00	\$11,735
Demolish Main Gate Canopy Structure	1	EA	35,954.00	\$35,954
Column Footing	8	EA	351.00	\$2,808
Brick Columns	8	EA	7,346.00	\$58,768
Median Island	2	EA	20,505.00	\$41,010
Dryvit on Fascia & Underside of Exposed Roof Area	414	SY	64.00	\$26,496
Navy Seal	4	EA	8,539.00	\$34,156
Signage	2	EA	3,600.00	\$7,200
Crash Attenuating Walls	4	EA	3,033.00	\$12,132
Shingle Roof	3,196	SF	9.00	\$28,764
Prefinished Metal Panel Dormers	8	EA	8,073.00	\$64,584
Painting	3,729	SF	12.00	\$44,748
<i>SUBTOTAL</i>				\$368,355
<i>20% CONTINGENCY</i>				\$73,671
<i>TOTAL</i>				\$442,026
<b><i>ROUNDED TOTAL</i></b>				<b>\$442,000</b>

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Total</u>
<b>Project 9 - Warehouse Improvements</b>				
Demolish Canopy, Concrete Walkway, Ramp & Asph	5,200	SF	21.00	\$109,200
Excavate Footer of Concrete Walkway, Ramp etc.	94	CY	7.00	\$658
Concrete Floor System & Ramp	8,822	SF	38.00	\$335,236
Concrete Stair	442	SF	19.00	\$8,398
Hand Rail & Guard Rail	1,255	LF	96.00	\$120,480
Metal Canopy	706	LF	253.00	\$178,618
Painting	1,255	SF	6.00	\$7,530
<i>SUBTOTAL</i>				\$760,120
<i>20% CONTINGENCY</i>				\$152,024
<i>TOTAL</i>				\$912,144
<b><i>ROUNDED TOTAL</i></b>				<b>\$912,000</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
<b>Project 10 - Runway Demolition &amp; Forest Rehabilitation</b>				
Runway Demolition	1,520,000	SF	\$2.00	\$3,040,000
Reforestation	1,520,000	SF	\$0.50	\$760,000
<i>SUBTOTAL</i>				\$3,800,000
<i>15% CONTINGENCY</i>				\$570,000
<i>TOTAL</i>				\$4,370,000
<b><i>ROUNDED TOTAL</i></b>				<b>\$4,370,000</b>

<b>Project 11 - Main Gate Streetscape</b>				
Runway Demolition	30,000	SF	\$2.00	\$60,000
Concrete Patching	10,000	SF	\$5.00	\$50,000
Concrete Pavement (Roadway)	10,000	SF	\$6.00	\$60,000
Concrete Walks	8,000	SF	\$5.00	\$40,000
Concrete Curb	2,000	LF	\$35.00	\$70,000
Street Lights	10	EA	\$3,000.00	\$30,000
Bed Preparation	25,000	SF	\$0.50	\$12,500
Shade Trees	34	EA	\$600.00	\$20,400
Flowering Trees	34	EA	\$300.00	\$10,200
Lawn	2,800	SY	\$1.00	\$2,800
<i>SUBTOTAL</i>				\$355,900
<i>15% CONTINGENCY</i>				\$53,385
<i>TOTAL</i>				\$409,285
<b><i>ROUNDED TOTAL</i></b>				<b>\$410,000</b>

<b>Project 12 - Chief's Way Streetscape</b>				
Runway Demolition	355,000	SF	\$2.00	\$710,000
Concrete Curbs	21,500	LF	\$35.00	\$752,500
Concrete Patching	40,000	SF	\$5.00	\$200,000
Concrete Walks	30,000	SF	\$5.00	\$150,000
Concrete Roadway	11,000	SF	\$6.00	\$66,000
Street Lights	30	EA	\$3,000.00	\$90,000
Promenade Lights/Flags	50	EA	\$4,000.00	\$200,000
Benches	20	EA	\$2,000.00	\$40,000
Trash Receptacles	10	EA	\$1,000.00	\$10,000
Bicycle Racks	5	EA	\$1,000.00	\$5,000
Bioswales	10,000	SF	\$10.00	\$100,000
Bed Preparation	235,000	SF	\$1.00	\$235,000
Shade Trees	360	EA	\$600.00	\$216,000
Lawn	26,000	SY	\$1.00	\$26,000
Ornamental Grasses (Parking Islands)	2,000	EA	\$25.00	\$50,000
<i>SUBTOTAL</i>				\$2,850,500
<i>15% CONTINGENCY</i>				\$427,575
<i>TOTAL</i>				\$3,278,075
<b><i>ROUNDED TOTAL</i></b>				<b>\$3,279,000</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
<b>Project 13 - Building 501 Parade Ground</b>				
Runway Demolition	120,000	SF	\$2.00	\$240,000.00
Concrete Patching	20,000	SF	\$5.00	\$100,000.00
Concrete Walks	12,000	SF	\$5.00	\$60,000.00
Benches	6	EA	\$2,000.00	\$12,000.00
Trash Receptacles	3	EA	\$1,000.00	\$3,000.00
Bicycle Racks	2	EA	\$1,000.00	\$2,000.00
Bed Preparation	108,000	SF	\$1.00	\$108,000.00
Shade Trees	42	EA	\$600.00	\$25,200.00
Lawn	12,000	SY	\$1.00	\$12,000.00
<i>SUBTOTAL</i>				\$562,200.00
<i>15% CONTINGENCY</i>				\$84,330.00
<i>TOTAL</i>				\$646,530.00
<b><i>ROUNDED TOTAL</i></b>				<b>\$647,000.00</b>

<b>Project 14 - Chaplain's Road Streetscape</b>				
Concrete Demolition	15,000	SF	\$2.00	\$30,000.00
Concrete Patching	2,200	SF	\$5.00	\$11,000.00
Concrete Walks	6,600	SF	\$5.00	\$33,000.00
Bed Preparation	5,000	SF	\$1.00	\$5,000.00
Shade Trees	15	EA	\$600.00	\$9,000.00
Lawn	560	SY	\$1.00	\$560.00
Bioswale	9,800	SF	\$10.00	\$98,000.00
<i>SUBTOTAL</i>				\$186,560.00
<i>15% CONTINGENCY</i>				\$27,984.00
<i>TOTAL</i>				\$214,544.00
<b><i>ROUNDED TOTAL</i></b>				<b>\$215,000.00</b>

<b>Project 15- Security Fence Replacement</b>				
Site Demolition	1	Allowance	\$10,000.00	\$10,000.00
Chain Link Fence	1120	LF	24	\$26,320.00
Site Concrete	4000	SF	8	\$31,600.00
Pier Footers	58	CY	405	\$23,490.00
Pier Curbs	104	CY	395	\$41,080.00
Piers	1	LS	95,000	\$95,000.00
Guard Buildings with Canopy	1	LS	119,580	\$119,580.00
Rod Iron Fence	820	LF	389	\$318,980.00
<i>SUBTOTAL</i>				\$666,050.00
<i>15% CONTINGENCY</i>				\$99,907.50
<i>TOTAL</i>				\$765,957.50
<b><i>ROUNDED TOTAL</i></b>				<b>\$800,000.00</b>

<b>Project 16 - Robert's Avenue Streetscape</b>				
Concrete Sidewalk	18,000	SF	\$5.00	\$90,000.00
Street Lights	45	EA	\$3,000.00	\$135,000.00
Utility Screen	200	LF	\$300.00	\$60,000.00
Street Trees	32	SF	\$600.00	\$19,200.00
<i>SUBTOTAL</i>				\$304,200.00
<i>15% CONTINGENCY</i>				\$45,630.00
<i>TOTAL</i>				\$349,830.00
<b><i>ROUNDED TOTAL</i></b>				<b>\$350,000.00</b>



<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
<b>Project 17 - NEX Retail Entry Modifications</b>				
Site Demolition	1	Allowance	\$7,500.00	\$7,500.00
Erosion Control Fence	300	LF	\$8.00	\$2,400.00
Temporary Protection	1	LS	\$7,250.00	\$7,250.00
Asphalt & Curb	1	LS	\$10,750.00	\$10,750.00
Utilities	100	LF	\$163.00	\$16,300.00
Landscaping	1	LS	\$5,500.00	\$5,500.00
Column Footers	15	CY	\$535.00	\$8,025.00
Canopy	1	EA	\$175,850.00	\$175,850.00
<b>SUBTOTAL</b>				<b>\$233,575.00</b>
<b>15% CONTINGENCY</b>				<b>\$35,036.25</b>
<b>TOTAL</b>				<b>\$268,611.25</b>
<b>ROUNDED TOTAL</b>				<b>\$269,000.00</b>

<b>Project 18 - Veteran's Parkway</b>				
Runway Demolition	680,000	SF	\$2.00	\$1,360,000.00
Concrete Road	15,000	SF	\$5.00	\$75,000.00
Asphalt Trail	15,000	SF	\$4.00	\$60,000.00
Street Lights	20	EA	\$3,000.00	\$60,000.00
Bed Preparation	75,000	SF	\$1.00	\$75,000.00
Shade Trees	5	EA	\$600.00	\$3,000.00
Lawn	8,400	SY	\$1.00	\$8,400.00
Reforestation	680,000	SF	\$0.50	\$340,000.00
<b>SUBTOTAL</b>				<b>\$1,981,400.00</b>
<b>15% CONTINGENCY</b>				<b>\$297,210.00</b>
<b>TOTAL</b>				<b>\$2,278,610.00</b>
<b>ROUNDED TOTAL</b>				<b>\$2,279,000.00</b>

<b>Project 19 - South Gate</b>				
Site Demolition	1	Allowance	\$20,000.00	\$20,000.00
Erosion Control	800	LF	\$7.89	\$6,312.00
Site Work	1	EA	\$131,035.00	\$131,035.00
Concrete Footers	67	CY	\$430.00	\$28,810.00
Precast Panels	105	EA	\$115.00	\$12,075.00
Guard House and Canopy	1	EA	\$345,094.00	\$345,094.00
Crash Attenuating Walls	2	EA	\$3,250.00	\$6,500.00
Signage	1	LS	\$14,500.00	\$14,500.00
<b>SUBTOTAL</b>				<b>\$564,326.00</b>
<b>15% CONTINGENCY</b>				<b>\$84,648.90</b>
<b>TOTAL</b>				<b>\$648,974.90</b>
<b>ROUNDED TOTAL</b>				<b>\$649,000.00</b>



# Appendix B- References

## **WEB SITES**

*DoD Minimum Anti-Terrorism Standards for Buildings (UFC 4-010-01),*  
[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_010\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_010_01.pdf)

*Installation Appearance Guidelines (IAG),*  
<https://portal.navfac.navy.mil/portal/wpage/portal/BD/IAG/II>

*LEED for New Neighborhood Development, Pilot, Draft Project Checklist,*  
<http://www.usgbc.org/ShowFile.aspx?DocumentID=4109>

*LEED - DoD Antiterrorism Standards Tool,*  
[http://www.wbdg.org/tools/leed\\_atfp.php](http://www.wbdg.org/tools/leed_atfp.php)

*Low Impact Development (UFC 3-210-10),*  
[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_3\\_210\\_10.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_3_210_10.pdf)

*Navy Physical Security (OPNAVINST 5530.14C),*  
[http://www.combatindex.com/mil\\_docs/pdf/opnav/5500/5530-14C.pdf](http://www.combatindex.com/mil_docs/pdf/opnav/5500/5530-14C.pdf)

*Sustainable Development (UFC 4-030-01),*  
[http://www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_030\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_030_01.pdf)

## **PRINT MEDIA**

*Base Exterior Architecture Plan; Pensacola, Saufley Field, & Corry Station, 2006.*

*Integrated Natural Resources Management Plan for the Naval Air Station Pensacola Complex, 2001*

*Naval Air Station Pensacola Master Plan (pre-final); 2007 .*





DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
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WASHINGTON NAVY YARD DC 20374-5065

NAVFACINST 9830.1  
CHE  
09 June 2003

NAVFAC INSTRUCTION 9830.1

From: Commander, Naval Facilities Engineering Command

Subj: SUSTAINABLE DEVELOPMENT POLICY

- Ref:
- (a) Executive Order 13101, 14 Sep 98, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
  - (b) Executive Order 13123, 3 Jun 99, Greening the Government Through Efficient Energy Management
  - (c) Planning and Design Policy (PDP) Statement 98-01, 18 Jun 98, Design of Sustainable Facilities and Infrastructure
  - (d) PDP Statement 98-02, 18 Jun 98, Criteria Supporting the Design of Sustainable Facilities and Infrastructure
  - (e) PDP Statement 98-03, 18 Jun 98, Procurement of Sustainable Facilities and Infrastructure Through Architect-Engineer (A-E) and Related Contracts
  - (f) NAVFAC ltr 4000 Ser EICO/dot of 05 Jul 02
  - (g) NAVFACINST 11101.85H, Navy Family Housing Project Standards

1. Purpose. To reduce the total cost of ownership of shore facilities by implementing sustainable development concepts and principles.
2. Background. References (a) and (b) require federal agencies to adopt the concept of sustainable development and its supporting principles.
3. Cancellation. References (c) through (f) are hereby cancelled.
4. Policy.
  - a. Reduce the life-cycle cost of shore facilities by incorporating sustainable development concepts and principles in the planning, programming, design, construction, operation and maintenance, sustainment, restoration, and modernization of all facilities and infrastructure projects to the fullest extent possible, consistent with mission, budget, and client requirements.
  - b. NAVFAC shall use the U. S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED™) Green Building Rating System (<http://www.leedbuilding.org>) as a tool in applying sustainable development principles and as a metric to measure the sustainability achieved through the planning, design, and construction processes.

5. Applicability. Except as noted below, this instruction applies to all construction, renovation, and repair projects costing over \$750K. Construction, renovation, and repair projects costing under \$750K shall incorporate sustainable development concepts and principles to the fullest extent possible.

a. All applicable projects shall meet the LEED™ Certified level, unless justifiable conditions exist that limit the pursuit and accomplishment of the LEED™ credits necessary for achieving the Certified level. The selection of sustainable features toward LEED™ certification shall focus on the credits addressing life cycle costs, increased operational efficiency, and increased worker productivity. Capital Improvements Business Line managers at cognizant Engineering Field Divisions and Engineering Field Activities will work together with clients to choose high visibility and showcase projects for submission to USGBC for LEED™ certification. If submitted, project funds must be used.

b. The current version, LEED™ 2.1, addresses construction, renovation, and repair for commercial and high-rise residential buildings. As the USGBC develops new rating systems (e.g., Commercial Interiors, Existing Buildings, Residential Construction, Multiple Buildings, and Campus Facilities) and updates existing versions, NAVFAC will evaluate them for adoption.

c. Construction, renovation, and repair projects not covered by LEED™ Version 2.1 shall use the LEED™ checklist (<http://labs21.lbl.gov/docs/EPC2.0Checklist.xls>) to the fullest extent possible where the credit strategies can be applied. Efforts to reach higher levels of accredited performance are encouraged to ensure sustainability consistent with mission, budget, and customer requirements.

d. Host Nation and NATO funded projects will not be required to meet LEED™ certification. However, sustainable development principles should still be applied to the maximum extent possible. Use sustainable development as a technical qualification selection factor for A-Es involved with Host Nation and NATO projects.

e. The principles of sustainable development shall be used as a technical qualification selection factor when evaluating developers.

f. In accordance with Appendix G of reference (g), Navy Family Housing construction improvement projects shall implement the EPA Energy Star Label Homes Program. PPV projects shall also implement the EPA Energy Star Label Homes Program.

6. Responsibilities. NAVFAC is responsible for reducing the total cost of ownership through sustainable development of Navy shore facilities, including planning, programming, design, construction, operations and maintenance, sustainment, restoration, and modernization of all shore facilities projects. NAVFAC's Chief Engineer is responsible for implementation of the Sustainable Development program.

a. Changes during construction that the Resident Officer in Charge of Construction (ROICC) determines could adversely affect the sustainability of a project must be approved by

the Capital Improvements Business Line (CIBL) manager at cognizant Engineering Field Divisions and Engineering Field Activities.

b. An additional resource supplementing the LEED™ website is the Whole Building Design Guide (WBDG), a gateway site (<http://www.wbdg.org/>) for up-to-date information on integrated "whole building" design techniques and sustainable design strategies and technologies. The WBDG is supported by NAVFAC and will serve as a primary source for sustainable development information.

7. Action. Effective immediately, NAVFAC shall begin implementing this instruction.

a. Planners - Identify the sustainable strategies for each project and program appropriate funding.

b. Designers - Use as the tool for applying sustainable design principles and as a metric to measure the sustainability achieved. Designers shall prepare a life cycle economic analysis of the sustainable strategies and features of the building, and an energy cost model (e.g., DOE-2, Energy Plus, Energy-10) that addresses all building system costs, such as the building envelope, HVAC, and electrical systems.

c. Administrative Contracting Officers - Ensure best value source selections include sustainable development qualifications as part of the technical evaluation process. All A-E selections shall include sustainable development qualifications.

d. ROICCs - Ensure sustainable strategies in the design phase have been incorporated in the construction phase.

e. CIBL Leaders/Managers – Oversee design and construction of applicable projects to ensure compliance with this instruction.



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