Use of Pervious Pavement at Marine Terminals

UNOLS Green Boats and Ports for Blue Waters IV Workshop
August 30, 2018

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Port Mission

To enhance the region's economy and quality of life by providing efficient cargo and air passenger access to national and global markets.

Port Vision

To be a prominent, innovative economic development engine while stewarding the region's community and environmental best interests.

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Port Fast Facts

- Three Airports including

  PDX, TTD, HIO

- Four Marine Terminals
- Seven Commercial & Industrial Parks
- Navigation Division operates Dredge *Oregon*

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PNW gateway for Finished Vehicle Logistics

Terminal 6

Columbia River

Port of Vancouver

Auto Warehousing

SUBARU

5

Auto Warehousing Company

Ford HYUNDAI

Honda America Co.

HONDA

Union Pacific Barnes Yard

CHRYSLER

GM Mercedes-Benz

BNSF Railway

Ford KIA NISSAN

HYUNDAI Mercedes-Benz

Toyota Logistic Services

LEXUS

SCION

TOYOTA

Willamette River

Terminal 4

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2007 T6 Berth 601 Pervious Pavement Project

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Initial Installation - Why Pervious Pavement ?

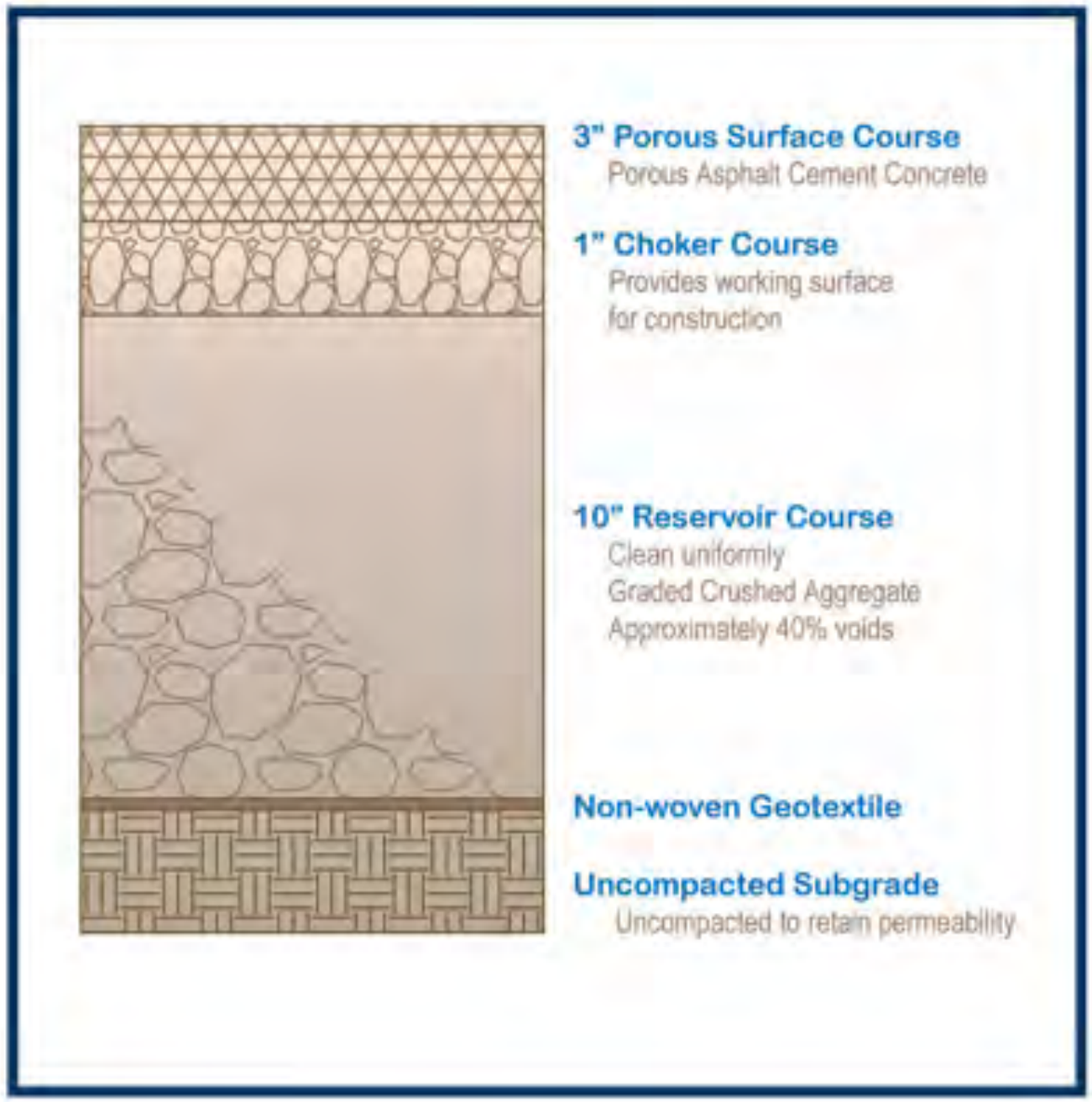
- Ability to respond quickly to tenant request
- Decreased permitting time especially regarding stormwater outfall
- Decreased design time because stormwater infrastructure is not necessary
- No City Stormwater system connection fees
- Ideal subsurface conditions at T6
  - Six to eight feet of Columbia River dredge sand
- Ideal facility use requirements
  - Light weight loading from new passenger vehicles

Initial Installation

- Total Project Area 45 acres
  - 35.7 acres of pervious pavement
  - Remaining 9.3 acres was completed with an impervious heavier pavement for truck lanes and “truckaway” area
  - Impervious areas drain to vegetated swale or onto pervious paved areas for infiltration

Pavement Cross Section

- 3” Porous open graded asphalt pavement
- 1” “Choker course
- 10” Coarse aggregate – uniformly graded clean crushed aggregate with approximately 40% void space
- Nonwoven Geotextile Fabric
- Uncompacted subgrade



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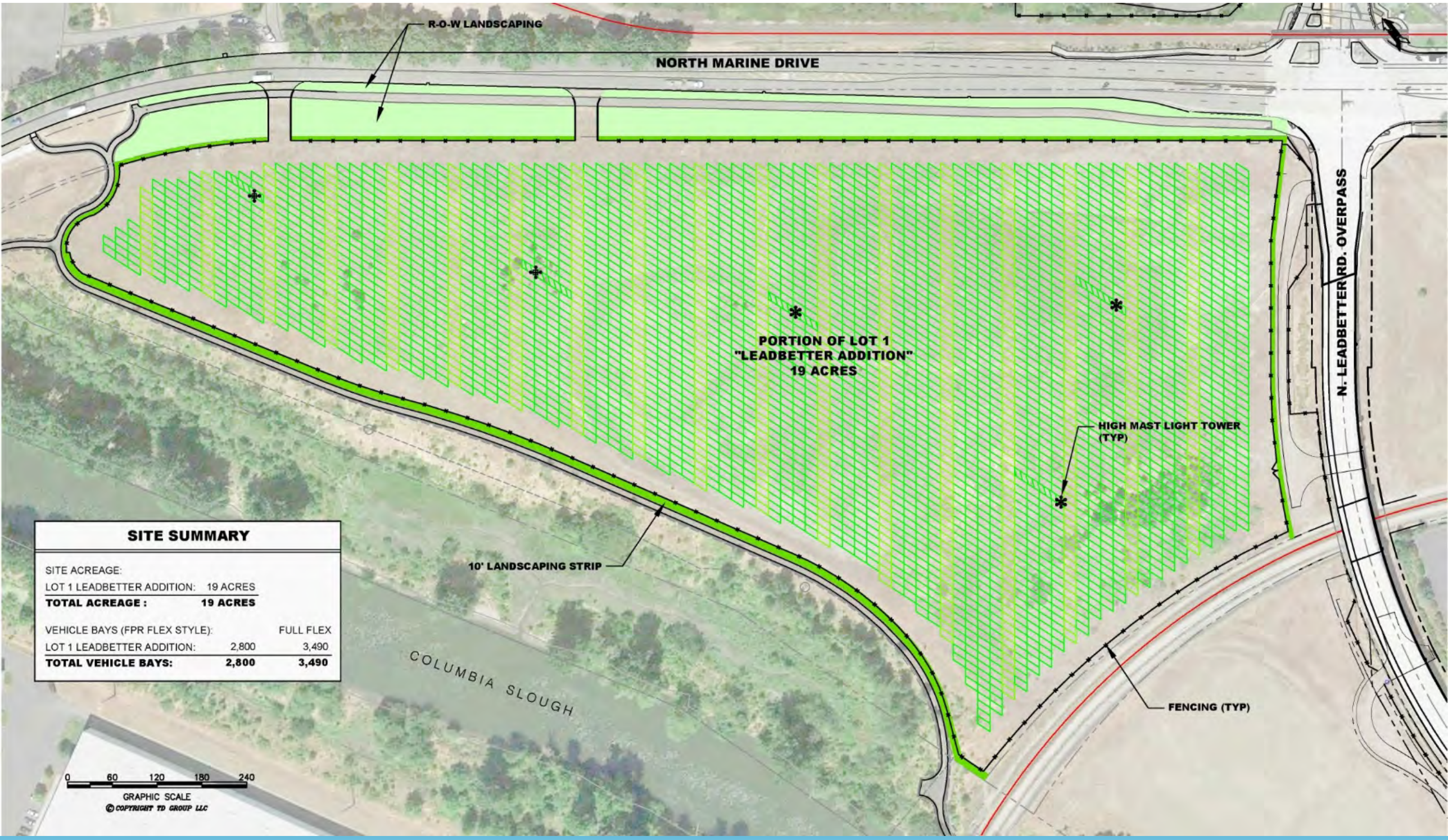
T6 Auto Staging Facility Site Plan



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Pervious Pavement Benefits

- The cost of initial installation is slightly higher than regular pavement.
- Significantly lower lifecycle costs more than offset the initial additional investment
  - Decrease in crack seal maintenance and seal coating
  - About the same overall surface maintenance as regular pavement (sweeping, painting, etc.)
  - No stormwater system cleanout or maintenance costs.

Pervious Pavement Benefits

- Environmental benefits
  - More natural hydrologic cycle – groundwater recharge
  - Pollutant reduction in the pavement section matrix
  - No downstream erosion issue due to reduced impact of storm surge to adjacent waterways
  - Snow and ice melts significantly faster resulting in less chemical application

Pervious pavement is an excellent stormwater management tool if the subsurface conditions are suitable and the proposed use/operation are compatible with onsite infiltration

Questions

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