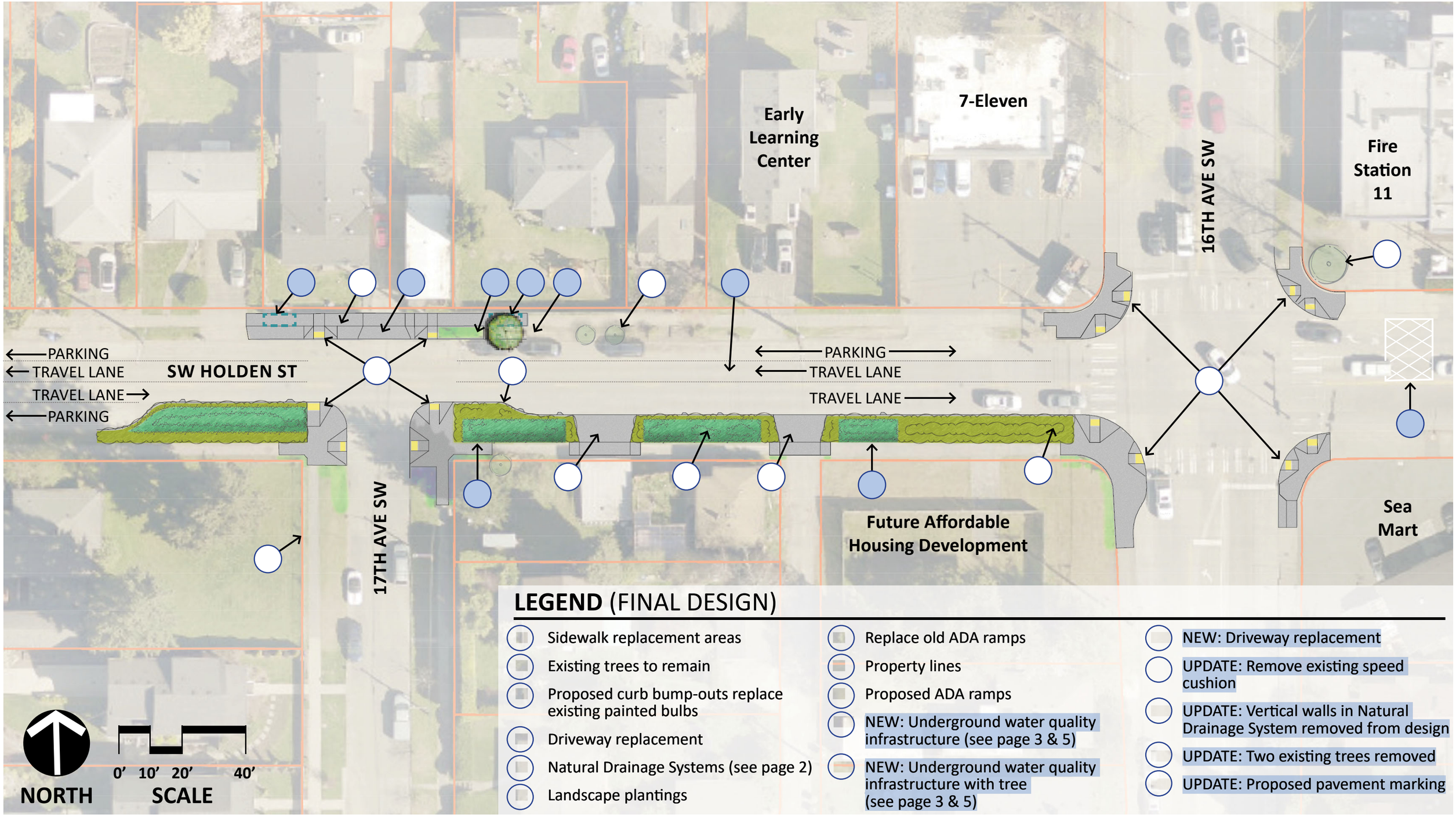
NATURAL DRAINAGE SYSTEM (NDS): PLAN

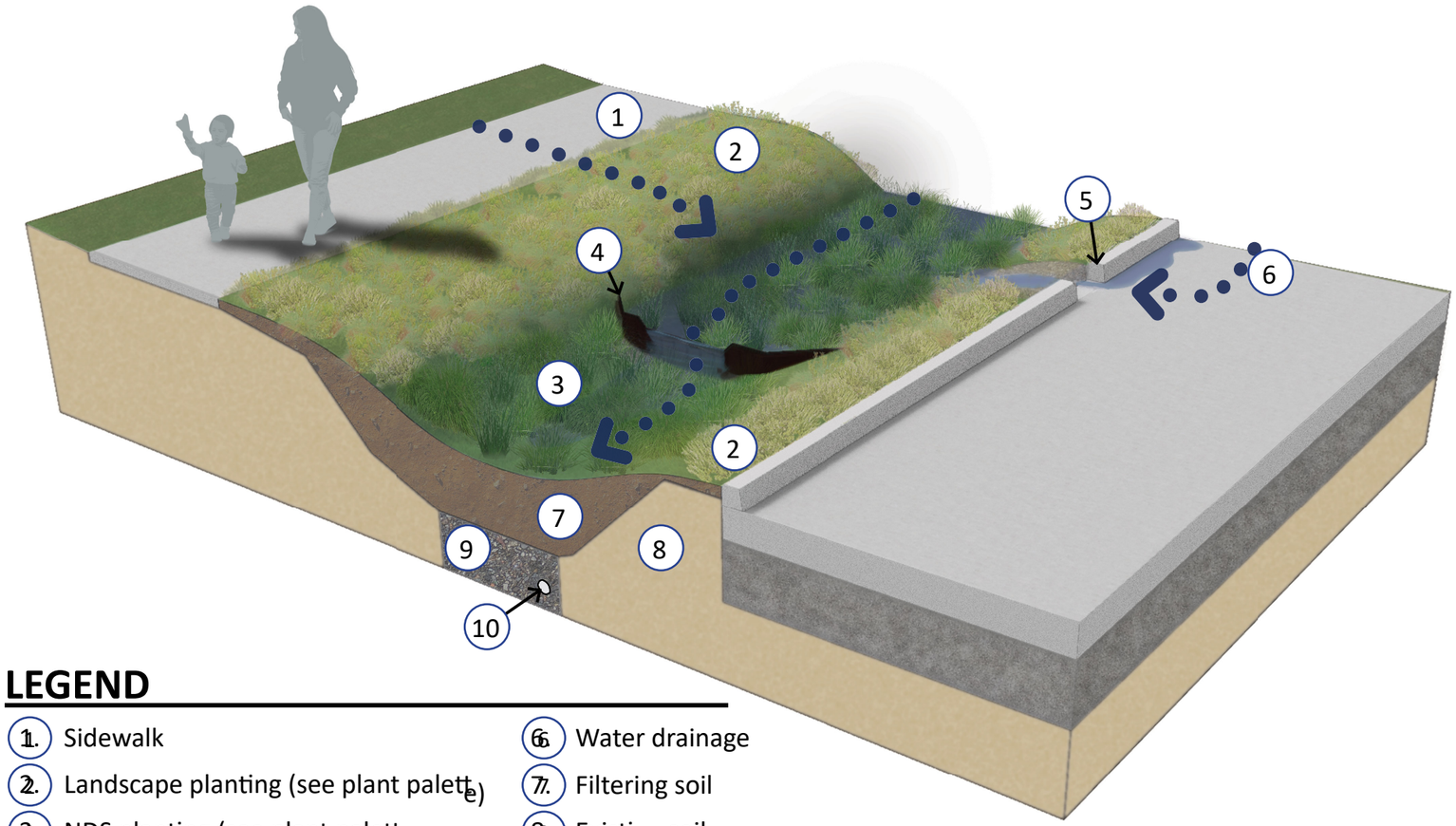


LEGEND (FINAL DESIGN)

- Sidewalk replacement areas
- Existing trees to remain
- Proposed curb bump-outs replace existing painted bulbs
- Driveway replacement
- Natural Drainage Systems (see page 2)
- Landscape plantings
- Replace old ADA ramps
- Property lines
- Proposed ADA ramps
- NEW: Underground water quality infrastructure (see page 3 & 5)
- NEW: Underground water quality infrastructure with tree (see page 3 & 5)
- NEW: Driveway replacement
- UPDATE: Remove existing speed cushion
- UPDATE: Vertical walls in Natural Drainage System removed from design
- UPDATE: Two existing trees removed
- UPDATE: Proposed pavement marking

NATURAL DRAINAGE SYSTEM (NDS): 3D DRAINAGE DIAGRAM

Stormwater from streets and sidewalks enters the Natural Drainage System. Deep-rooted plants and spongy soils temporarily hold and clean polluted stormwater.



LEGEND

1. Sidewalk
2. Landscape planting (see plant palette)
3. NDS planting (see plant palette)
4. Vertical barrier for slowing water
5. Curb cut
6. Water drainage
7. Filtering soil
8. Existing soil
9. Drainage rock
10. Underdrain

STAY IN TOUCH

SPU is in the final design phase of this project. We're happy to answer questions and provide additional information about the project, including its impacts and benefits to your neighborhood. Please visit the website below to sign up for project updates.

Contact: Wan-Yee Kuo, Senior Project Manager
Email: Wan-Yee.Kuo@seattle.gov
Phone: (206) 684-3957
Visit: www.seattle.gov/utilities/HoldenNDS

PLANT PALETTE

Selected plants represent a mix of native and ornamental species that are adapted to Natural Drainage System environments and align with the SPU Stormwater Manual's guidelines.

NDS Planting

Juncus patens 'Elk Blue'
Spreading Rush

Juncus effusus 'Quartz Creek'
Soft Rush

Carex elata 'Bowels Golden'
Gold Sedge

Landscape Planting

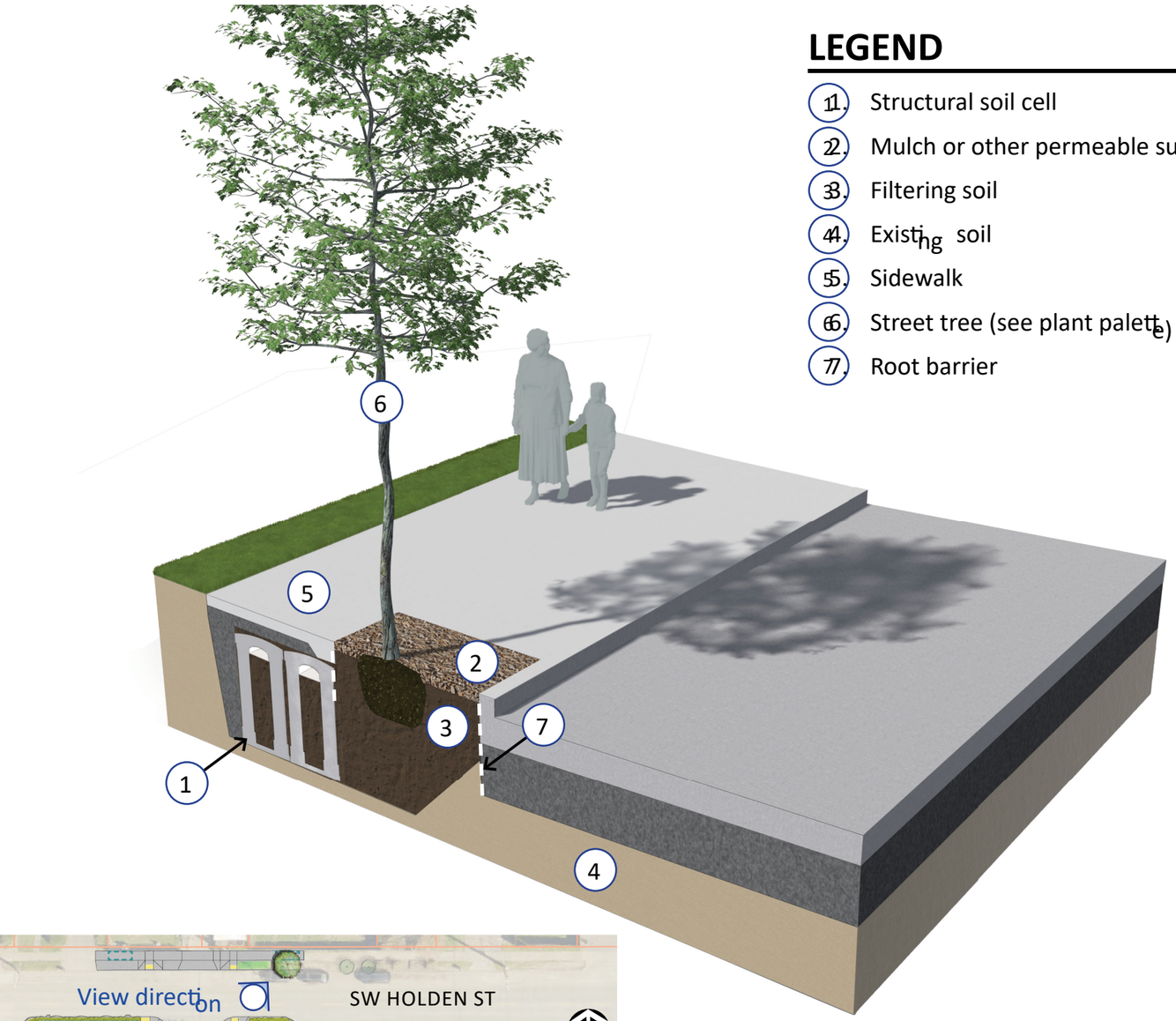
Lavandula angustifolia 'Hidcote Blue'
Hidcote Blue English Lavender

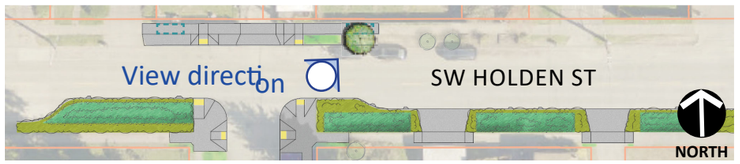
Helianthemum 'Henfield Brilliant'
Sun Rose

Geranium macrorrhizum
Hardy Geranium

NATURAL DRAINAGE SYSTEM (NDS): WATER QUALITY INFRASTRUCTURE WITH TREE

Stormwater from the street enters the tree planting pit which contains structural soil cells and filtering soil. Tree roots and spongy soils temporarily hold and clean polluted stormwater.





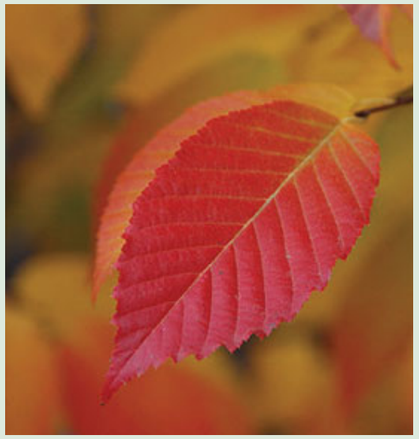
LEGEND

1. Structural soil cell
2. Mulch or other permeable surface
3. Filtering soil
4. Existing soil
5. Sidewalk
6. Street tree (see plant palette)
7. Root barrier

PLANT PALETTE

The American hornbeam was chosen for its adaptability to wet conditions, compact size, and deep root system. Its tolerance for periodic flooding makes it ideal for water quality infrastructure planting.

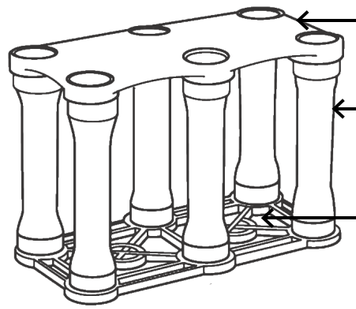
Tree Planting



Carpinus caroliniana
American Hornbeam

STRUCTURAL SOIL CELLS EXPLAINED

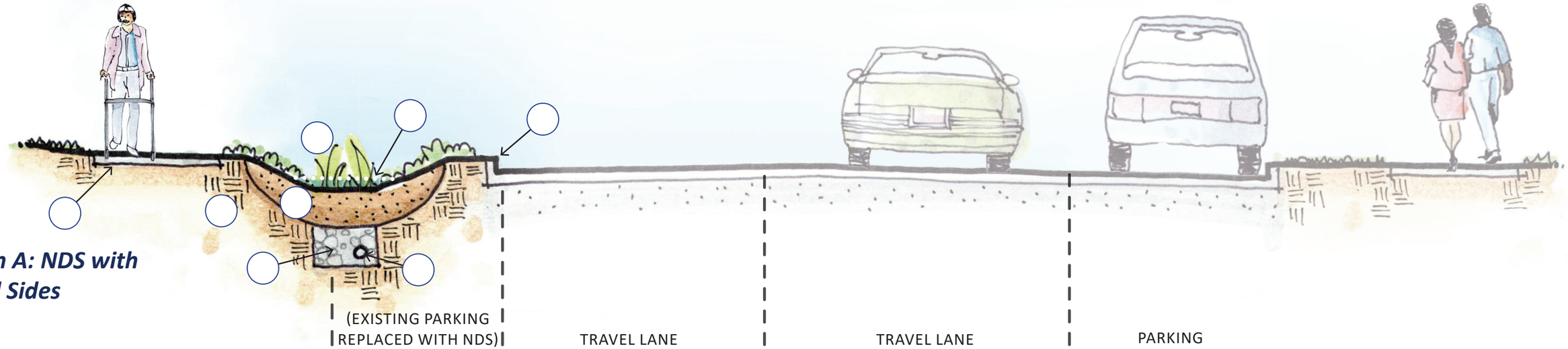
Structural soil cells are crate like structures that provide support for the sidewalk and create space for soil, tree roots, and stormwater. In water quality infrastructure applications, they enhance water infiltration and improve tree growth.



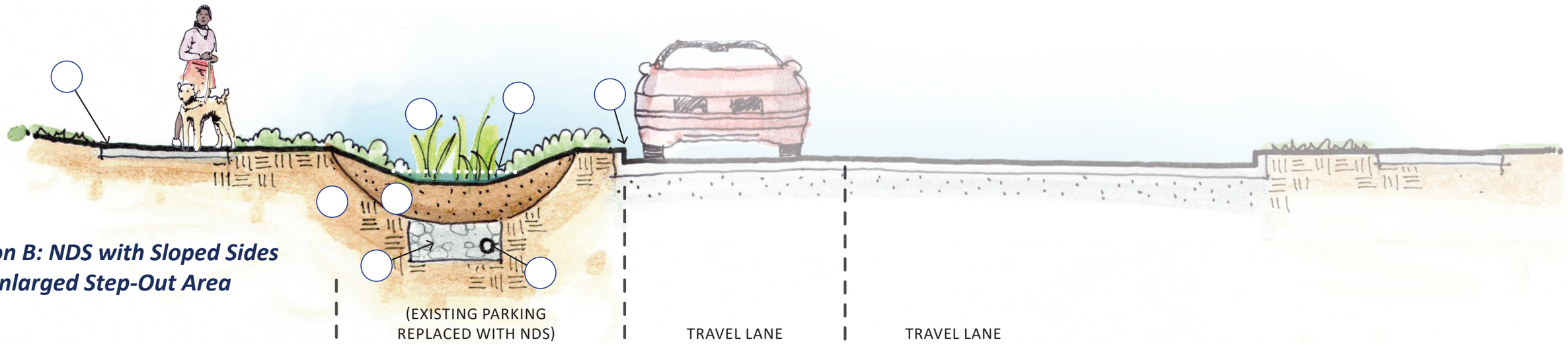
Horizontal elements distribute weight and support other elements

Vertical elements provide structural support

Space between horizontal and vertical elements receives stormwater, holds uncompacted soil and supports healthy tree roots



Section A: NDS with Sloped Sides

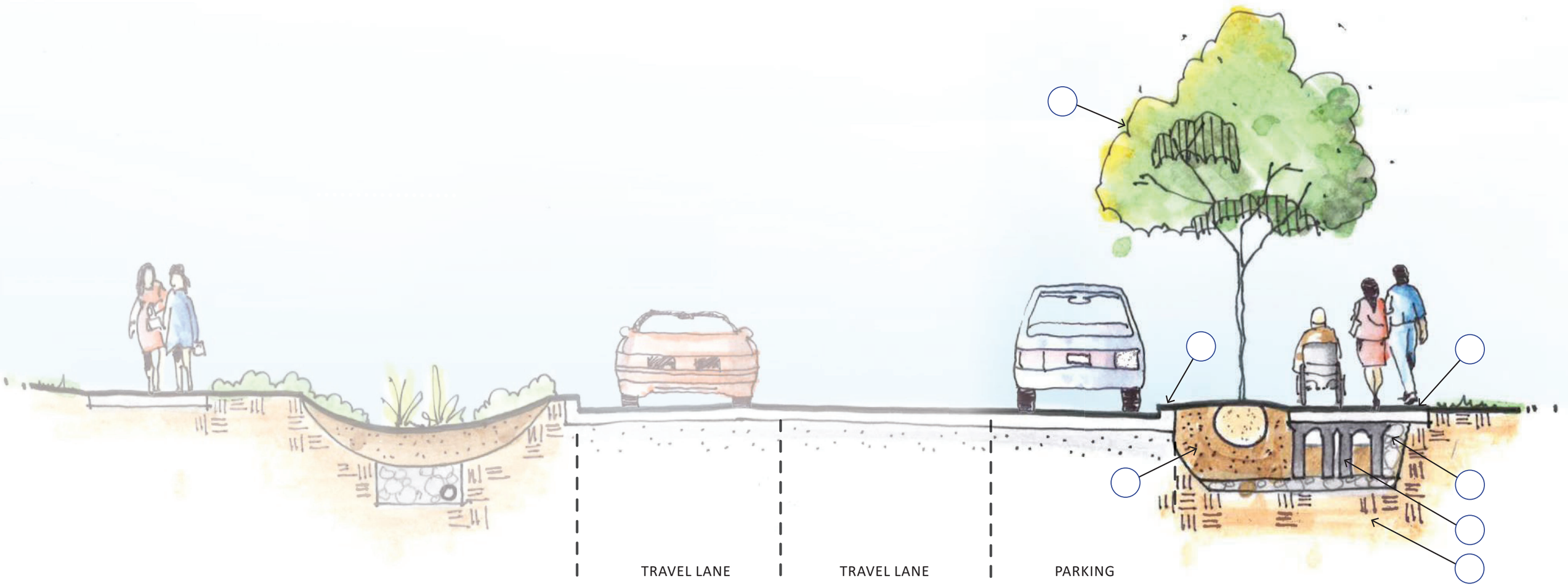


Section B: NDS with Sloped Sides and Enlarged Step-Out Area

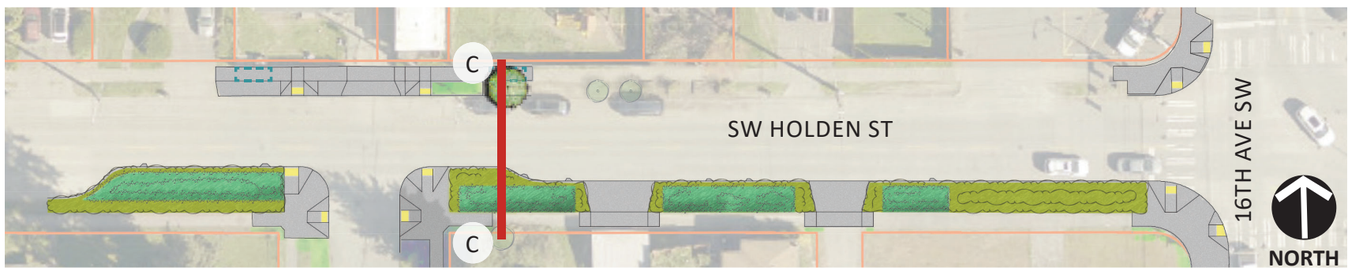
LEGEND

- Sidewalk
- NDS planting
- Filtering soil
- Existing soil
- Drainage rock
- Typical temporary ponding depth (typically drains within 24 hours after the end of a rain storm)
- Curb and roadway
- Underdrain

NATURAL DRAINAGE SYSTEM (NDS): SECTIONS



Section C: Water Quality Infrastructure with Tree



LEGEND

- Tree for water quality infrastructure
- Curb and roadway
- Sidewalk
- Filtering soil
- Drainage rock
- Structural soil cell and water quality infrastructure
- Existing soil