

IMPROVING OUR COMMUNITIES with Natural Drainage Systems (NDS)

What are Natural Drainage Systems?

When it rains in Northeast Seattle, pollution from our streets runs directly into Thornton Creek untreated. Untreated runoff is not healthy for Thornton Creek, the Salish Sea, or people. **The good news is: there is something we can do.**

Natural Drainage Systems consist of shallow depressions built in the roadway shoulder (the space between the street edge and the property line) and are filled with deep-rooted plants and spongy soils that temporarily hold and clean polluted stormwater from streets. These features capture and clean pollutants before they can reach Thornton Creek.



Seattle Public Utilities (SPU) is planning to build natural drainage systems in your neighborhood in 2022.

Community benefits

Natural Drainage Systems offer multiple benefits to local neighborhoods and ecosystems, including:

- Lower risk of flooding
- Healthier creek ecosystems
- Increased landscaping
- Creation of habitat along our streets
- Traffic calming
- More street trees



What is the NDS Program?

The 2016-2024 Natural Drainage Systems Program is a SPU multi-year capital improvement program focused on Longfellow, Piper's, and Thornton Creek watersheds.

The program's goal is to construct street-side natural drainage systems that filter and manage stormwater and improve neighborhoods with street trees and traffic calming patterns. All projects include plants that help the natural drainage systems do their jobs: infiltrate and clean stormwater.

This project is being led by SPU and includes funding from the King County Flood Control District.

Learn more online at: www.seattle.gov/utilities/SouthThorntonNDS



PROJECT TIMELINE

Where we are now and where we are going

The South Thornton Natural Drainage System (NDS) Project has completed preliminary planning and field investigations.

At the **30% Design Phase** we present potential street and drainage improvements to the community, answer questions, and gather community concerns as we work toward finalizing the project scope based on regulatory requirements and project funding.

30% INPUTS

- Neighborhood priorities
- Current drainage conditions
- Location of utilities
- Local topography + mature trees
- Rainfall runoff patterns along the street
- Soil testing + analysis
- Location of homes + paths
- Location of driveways
- On-street parking patterns
- City right-of-way impacts
- Zoning code
- Projected construction costs
- Maintenance of NDS
- Permitting
- Community concerns

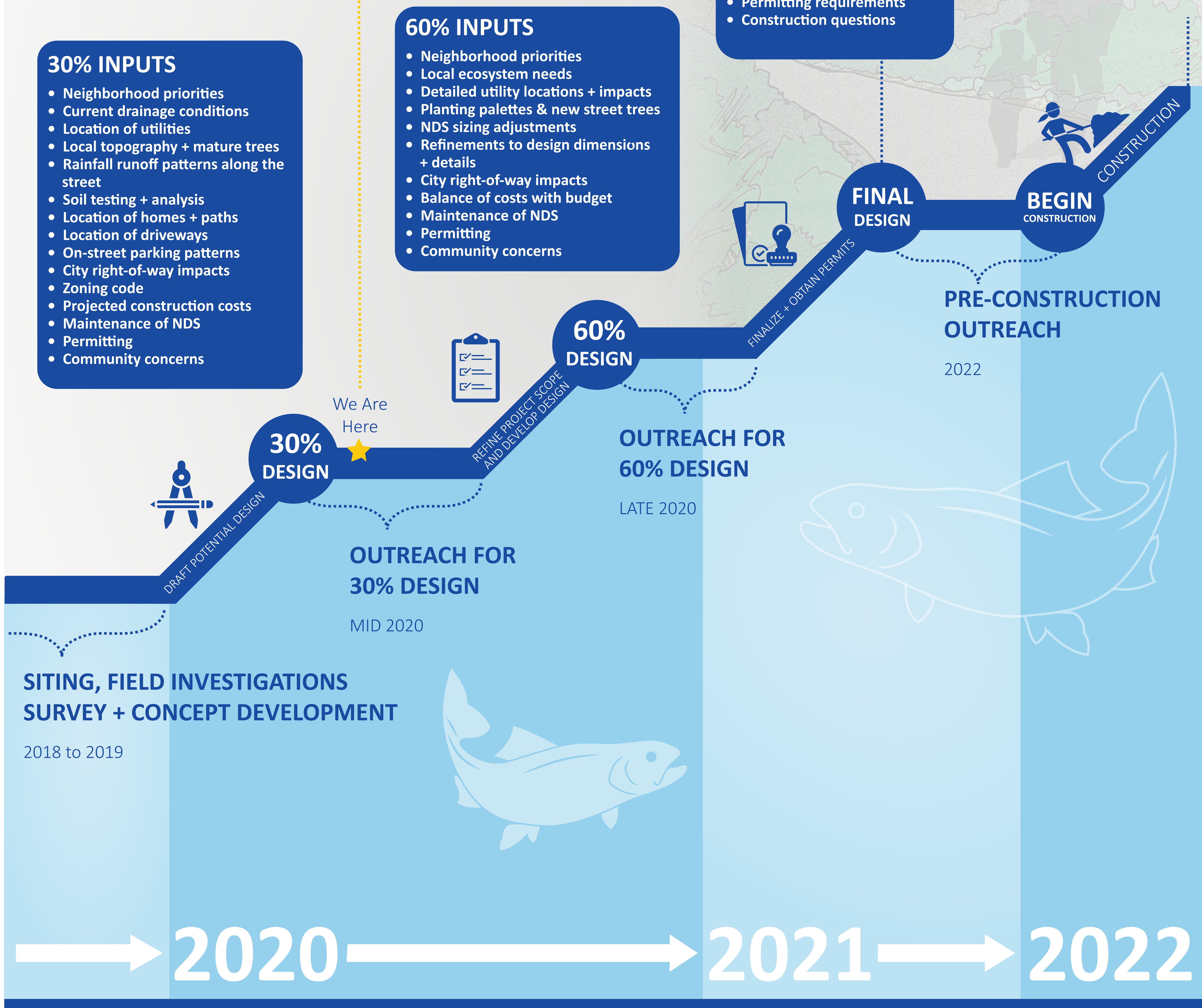
60% INPUTS

- Neighborhood priorities
- Local ecosystem needs
- Detailed utility locations + impacts
- Planting palettes & new street trees
- NDS sizing adjustments
- Refinements to design dimensions + details
- City right-of-way impacts
- Balance of costs with budget
- Maintenance of NDS
- Permitting
- Community concerns

FINAL INPUTS

- Accessibility impacts
- Construction costs + impacts
- Ongoing maintenance costs + responsibility
- Permitting requirements
- Construction questions

A Healthier & Safer Thornton Creek!



Seattle Public Utilities

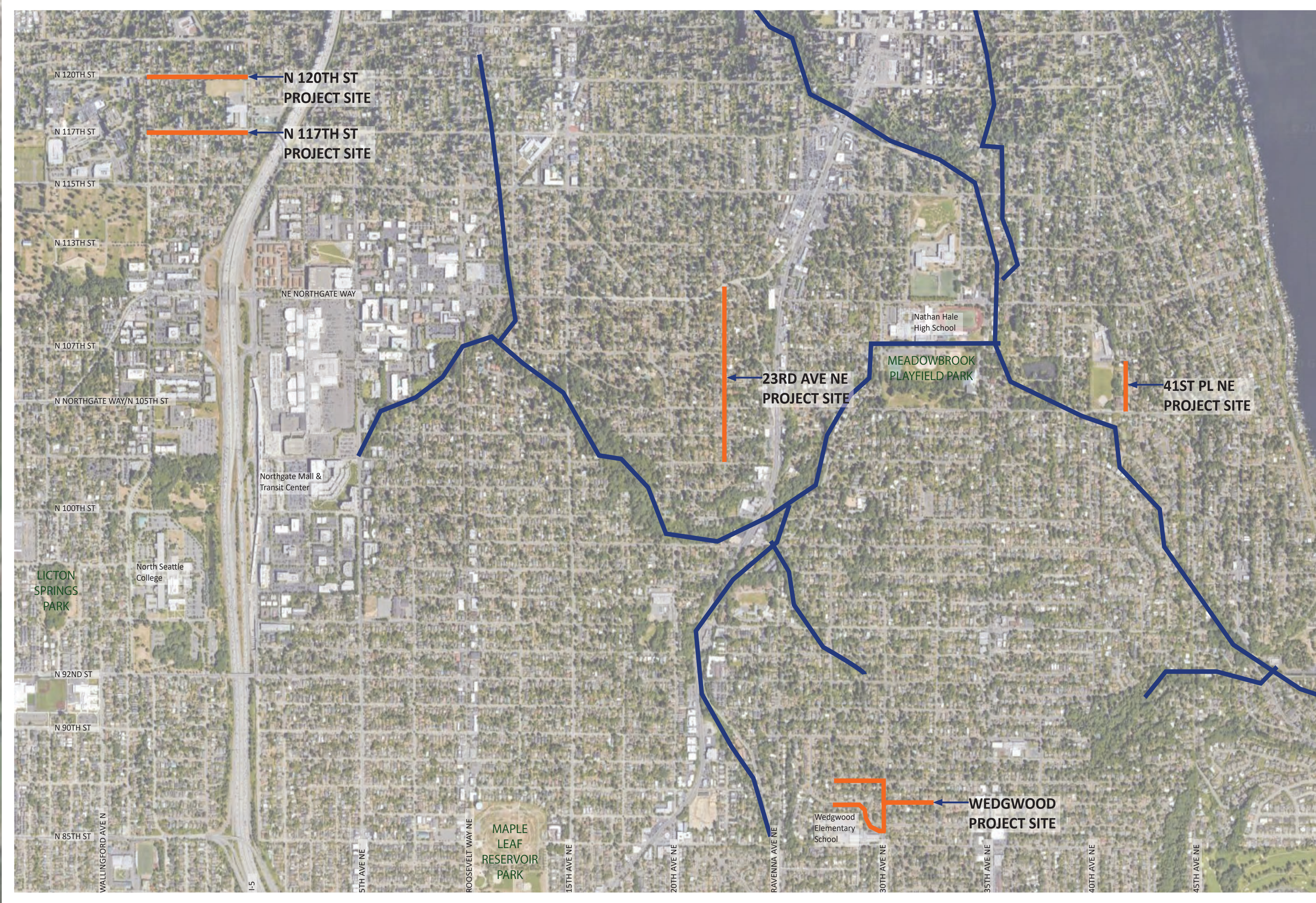


KING COUNTY FLOOD CONTROL DISTRICT

AUGUST 2020

30% DESIGN PHASE

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS) Project Area Map



LEGEND

- WATERSHED AREA FLOWING INTO THORNTON CREEK
- THORNTON CREEK
- THORNTON CREEK (PIPED)
- NDS SITE

The Site Selection Process: How we got here

SPU completed the initial analysis and selected locations for NDS in the Thornton Creek Basin based on a variety of factors, including community input, recurring drainage and flooding issues, and existing soil conditions. SPU selected sites that are technically feasible for the project that are optimal for flood mitigation and drainage issues.



Identified blocks that could include natural drainage systems.



Asked a large pool of residents about interest in these projects.



Selected project sites based on ability to optimize drainage benefits, clean water, and support from the community.

What we've heard:

The Thornton Creek community is interested in...

Improving
water quality
in the
neighborhood

Roadway
parking
changes

Pedestrian
safety

Reinforcing the
public right-of-
way in the
project area

Addressing
drainage and
flooding issues
in Northeast
Seattle



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KING COUNTY
FLOOD CONTROL
DISTRICT

AUGUST 2020
30% DESIGN PHASE

WHAT TO EXPECT

How a typical NDS planting installation changes over time



BEFORE



NEWLY PLANTED

~1 year



GROWING

~5 years



MATURE



Seattle
Public
Utilities



KING COUNTY
FLOOD CONTROL
DISTRICT

AUGUST 2020

30% DESIGN PHASE

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 117th St

NATURAL DRAINAGE SYSTEMS N 117TH ST: MERIDIAN AVE N TO 1ST AVE NE (30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED) STREET RIGHT OF WAY UTILIZATION KEY



KEY

- INFORMAL PEDESTRIAN ZONE
- ////// INFORMAL PARKING/PEDESTRIAN ZONE
- ON-STREET PARKING ZONE
- NO PARKING
- NATURAL DRAINAGE SYSTEM & PLANTING ZONE
- SDOT ASPHALT SIDEWALK

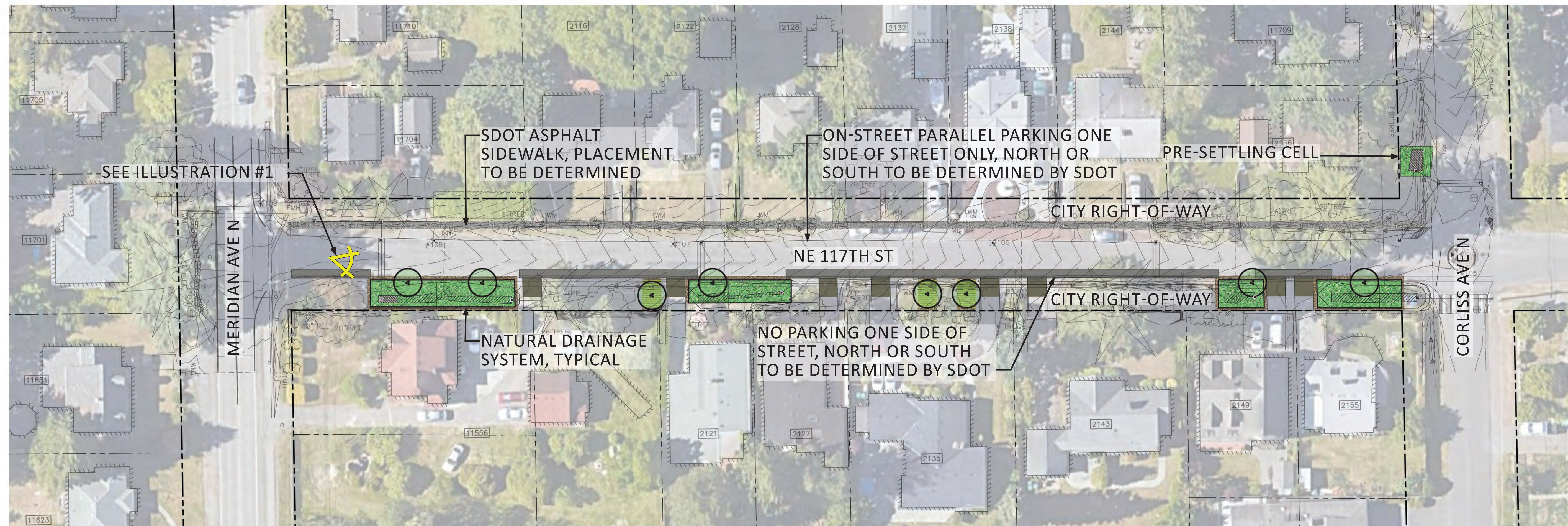
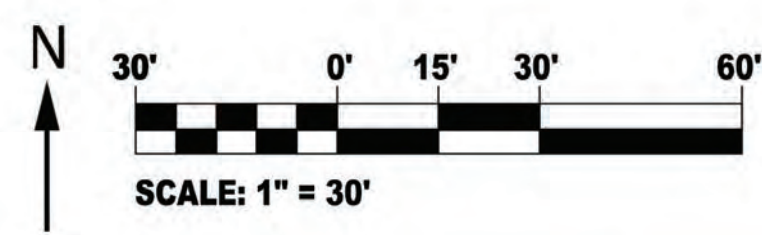
NOTES:

1. IMPROVEMENTS AND ON STREET PARKING WILL NOT BLOCK RESIDENTIAL DRIVEWAYS OR WALKWAYS.
2. PARALLEL PARKING WILL BE ON ONE SIDE OF THE STREET ONLY AND IS SHOWN HERE ON THE NORTH SIDE. HOWEVER, SDOT IS REVIEWING THE PROJECT AND WILL DETERMINE WHETHER PARALLEL PARKING WILL END UP ON THE NORTH SIDE OR THE SOUTH SIDE OF THE STREET.










SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 117th St

NATURAL DRAINAGE SYSTEMS N 117TH ST: MERIDIAN AVE N TO CORLISS AVE N (30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)



KEY

-  SDOT ASPHALT SIDEWALK
-  MULCH
-  10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
-  NEW STORM DRAINAGE PIPES
-  NEW STREET TREE
-  NATURAL DRAINAGE SYSTEM (NDS)
-  PLANTING AREA
-  ILLUSTRATION MARKER
-  REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING

CURRENT PARKING CAPACITY*: 36
PEAK WEEKDAY USAGE**: 12
PARKING CAPACITY PER IMPROVEMENT PLANS: 17

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

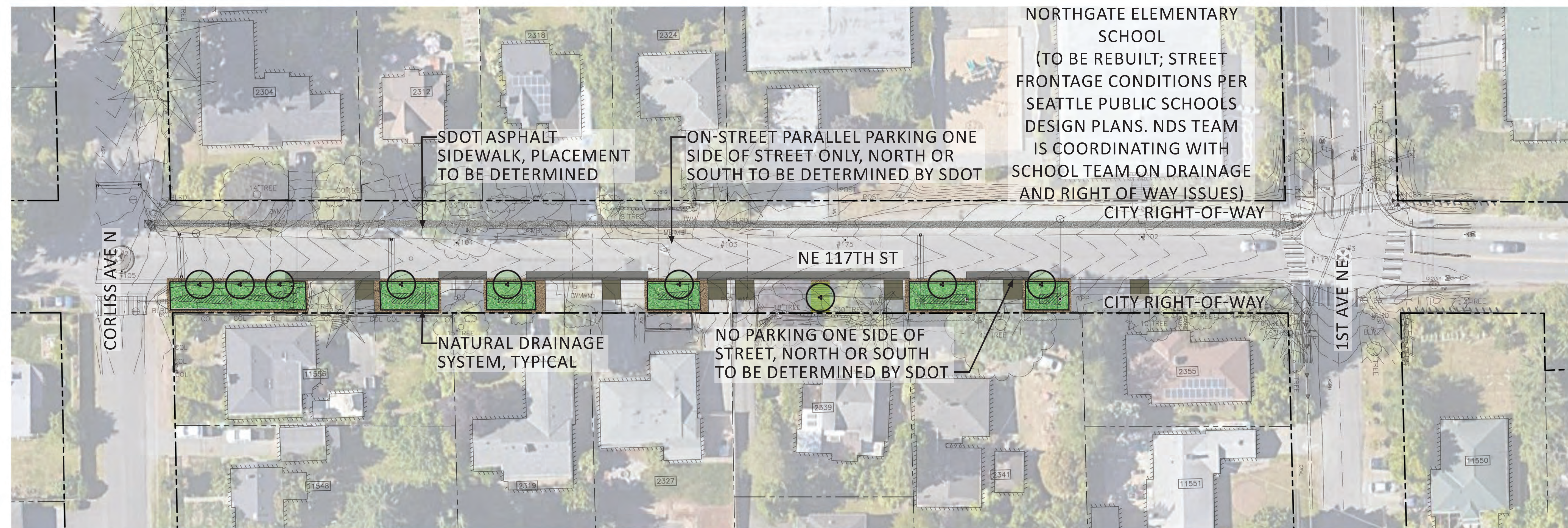
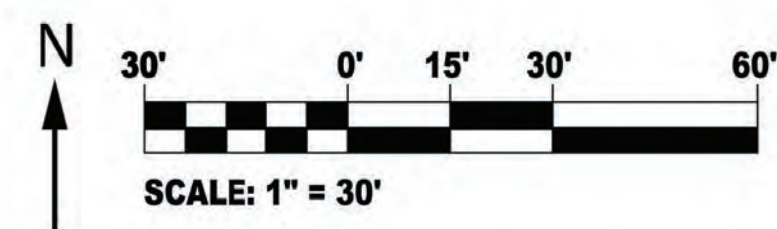
** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)




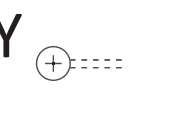





N 117th St

NATURAL DRAINAGE SYSTEMS N 117TH ST: CORLISS AVE N TO 1ST AVE NE

(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)



KEY

-  SDOT ASPHALT SIDEWALK
-  MULCH
-  10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
-  NEW STORM DRAINAGE PIPES
-  NEW STREET TREE
-  NATURAL DRAINAGE SYSTEM (NDS)
-  PLANTING AREA
-  ILLUSTRATION MARKER
-  REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING

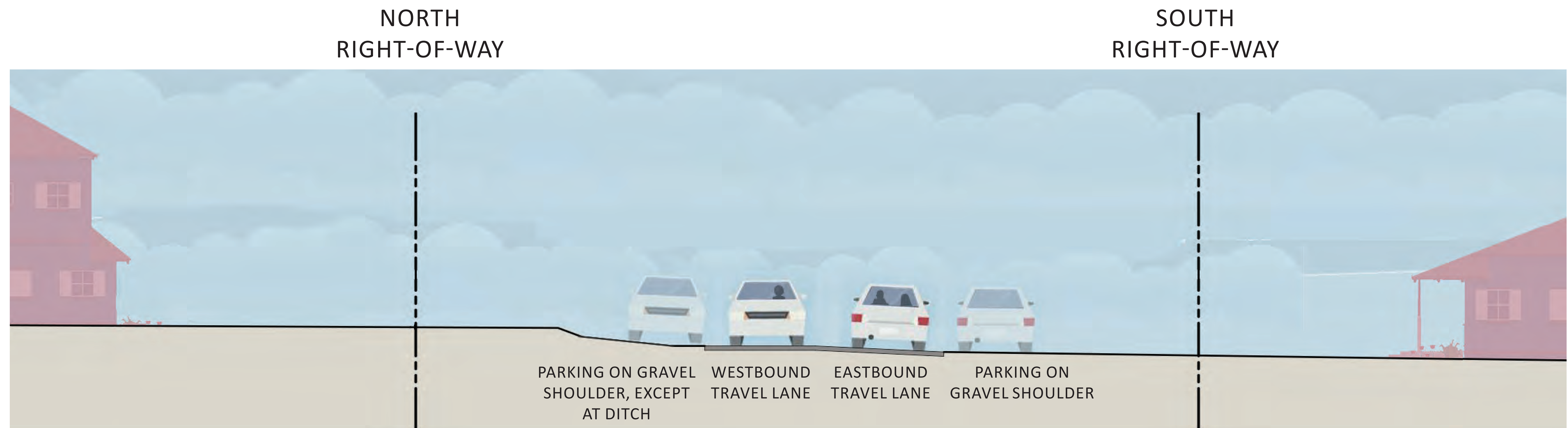
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 PEAK WEEKDAY USAGE**: 10
 PARKING CAPACITY PER IMPROVEMENT PLANS: 22

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

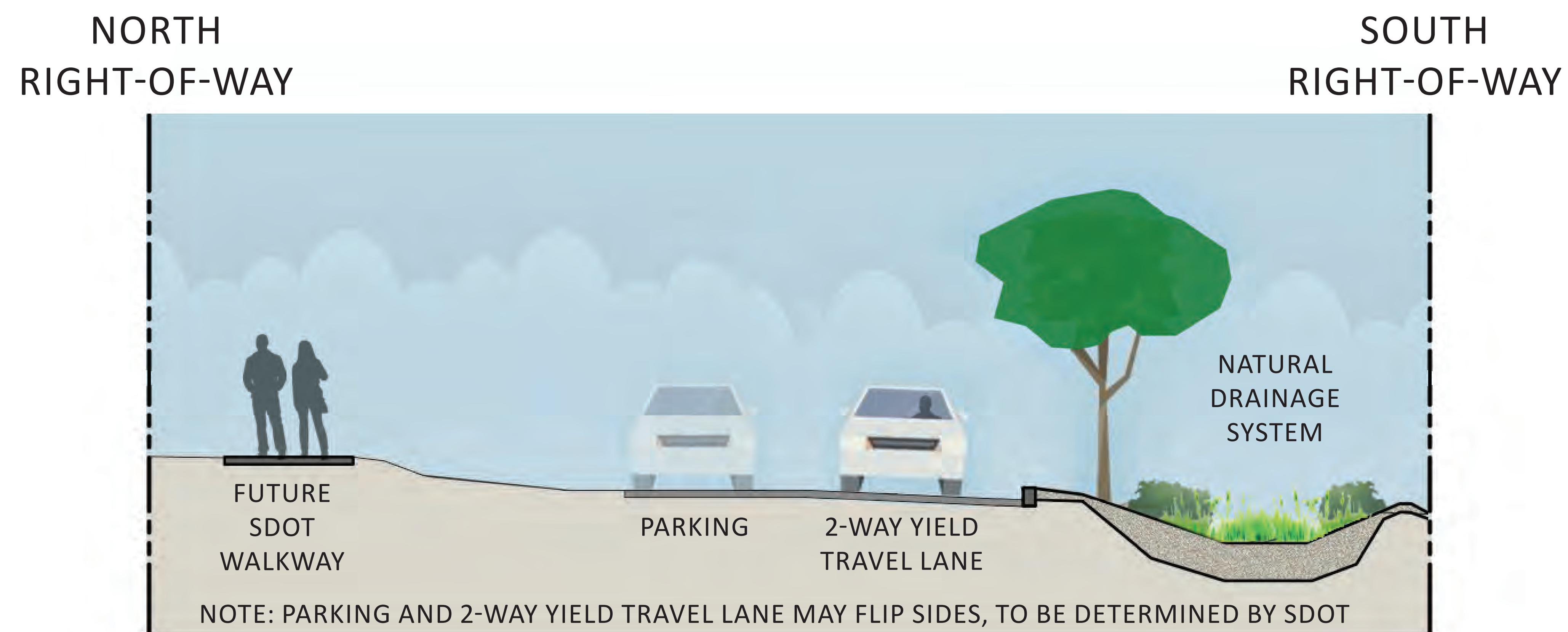
** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 117th St



EXISTING STREET SECTION
N 117TH ST



TYPICAL STREET SECTION - NEW VERTICAL CURBING AND NATURAL DRAINAGE SYSTEM
SECTION BETWEEN MERIDIAN & 1ST
N 117TH ST

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 117th St



ILLUSTRATION #1

LOOKING EAST FROM MERIDIAN AVE N
N 117TH ST

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St

SPU and SDOT are balancing on-street parking and pedestrian safety priorities while designing the 120th and 117th sites.

NATURAL DRAINAGE SYSTEMS
N 120TH ST: MERIDIAN AVE N TO 1ST AVE NE
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)
STREET RIGHT OF WAY UTILIZATION KEY



KEY

- INFORMAL PEDESTRIAN ZONE
- ////// INFORMAL PARKING/PEDESTRIAN ZONE
- ON-STREET PARKING ZONE
- NO PARKING
- NATURAL DRAINAGE SYSTEM & PLANTING ZONE
- SIDEWALK

NOTE: IMPROVEMENTS AND ON STREET PARKING WILL NOT BLOCK RESIDENTIAL DRIVEWAYS OR WALKWAYS

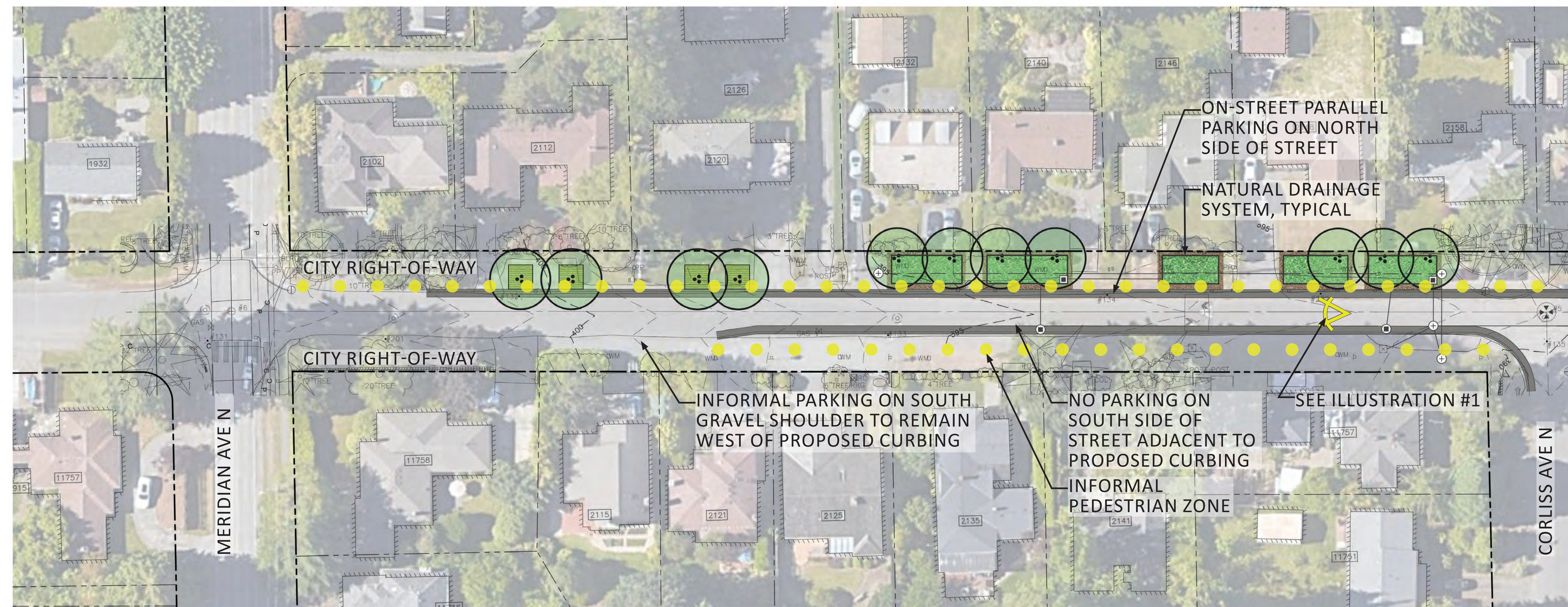
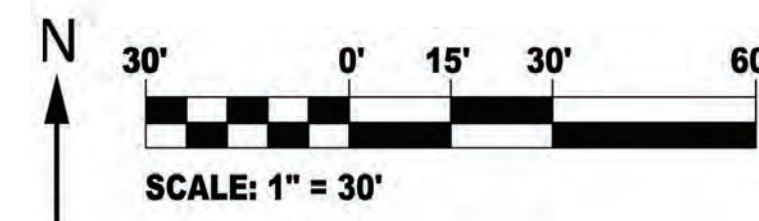
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St

NATURAL DRAINAGE SYSTEMS

N 120TH ST: MERIDIAN AVE N TO CORLISS AVE N

(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)



KEY

-  MULCH
-  NATURAL DRAINAGE SYSTEM (NDS)
-  REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.
-  10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
-  PLANTING AREA
-  NEW STORM DRAINAGE PIPES
-  ILLUSTRATION MARKER

RIGHT-OF-WAY PARKING

CURRENT PARKING CAPACITY*: 34
 PEAK WEEKDAY USAGE**: 17-18
 PARKING CAPACITY PER IMPROVEMENT PLANS: 24

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

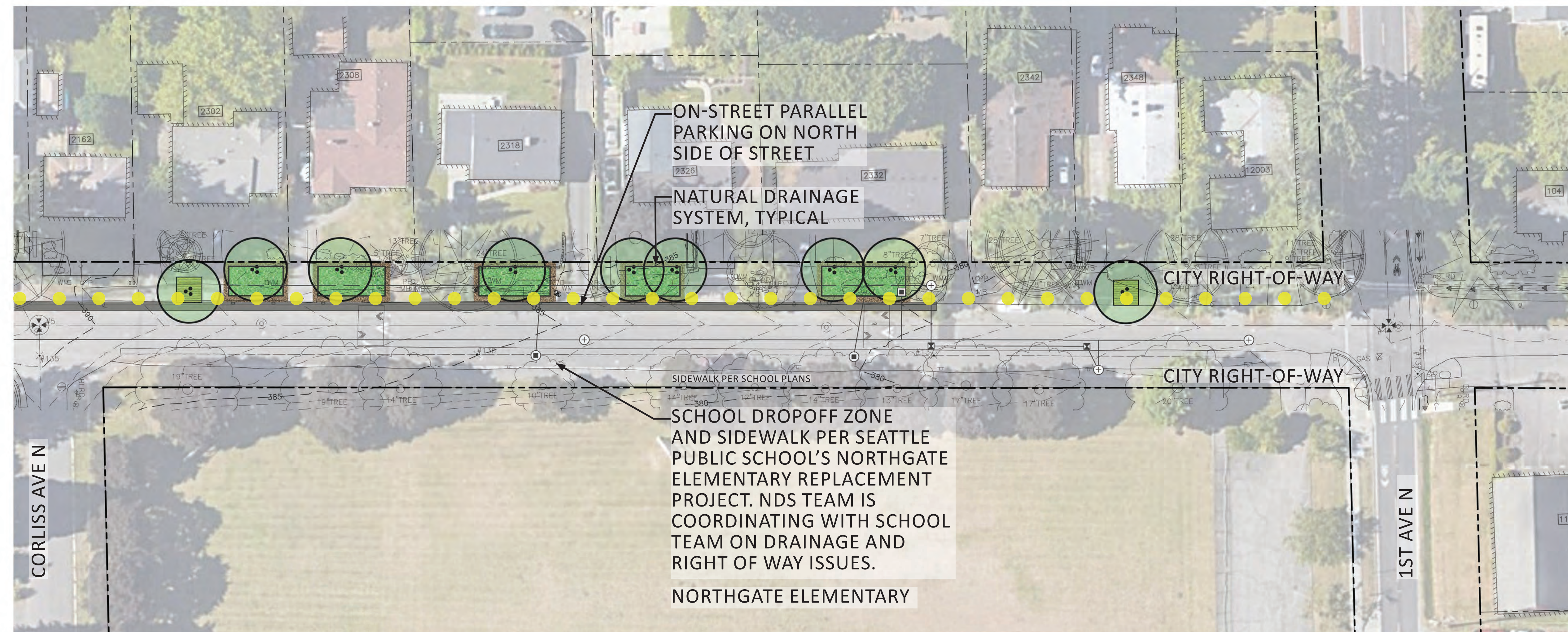
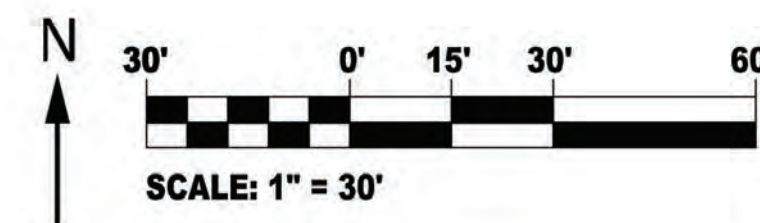
** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St

NATURAL DRAINAGE SYSTEMS N 120TH ST: CORLISS AVE N TO 1ST AVE NE

(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)



RIGHT-OF-WAY PARKING

CURRENT PARKING CAPACITY*: 16*
PEAK WEEKDAY USAGE**: 10-11
PARKING CAPACITY PER IMPROVEMENT PLANS: 13*

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.

* PARKING SPACES IN SCHOOL LOADING ZONE NOT INCLUDED.

KEY

MULCH

NATURAL DRAINAGE SYSTEM (NDS)

REPLACED PAVEMENT EDGE WITH CURBING. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)

PLANTING AREA

NEW STORM DRAINAGE PIPES

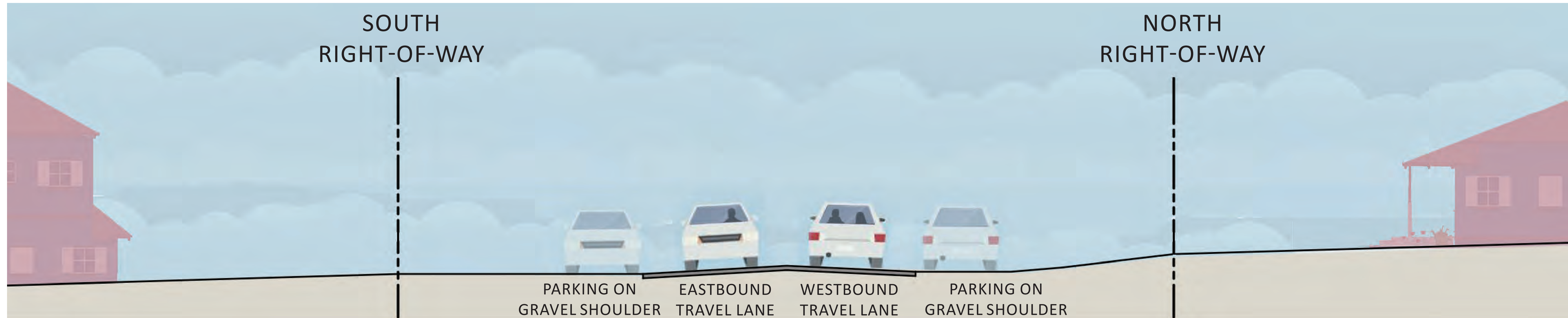
ILLUSTRATION MARKER

NEW STREET TREE

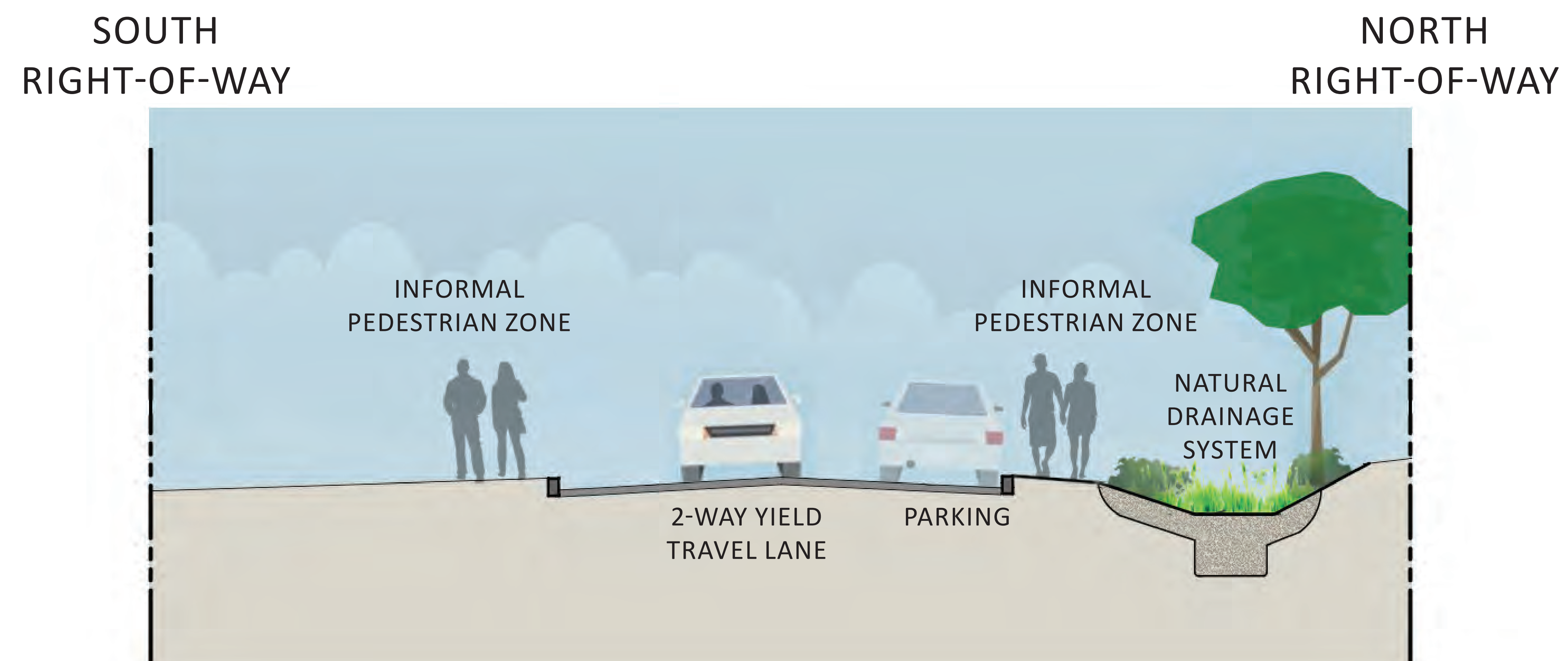
INFORMAL PEDESTRIAN ZONE

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St



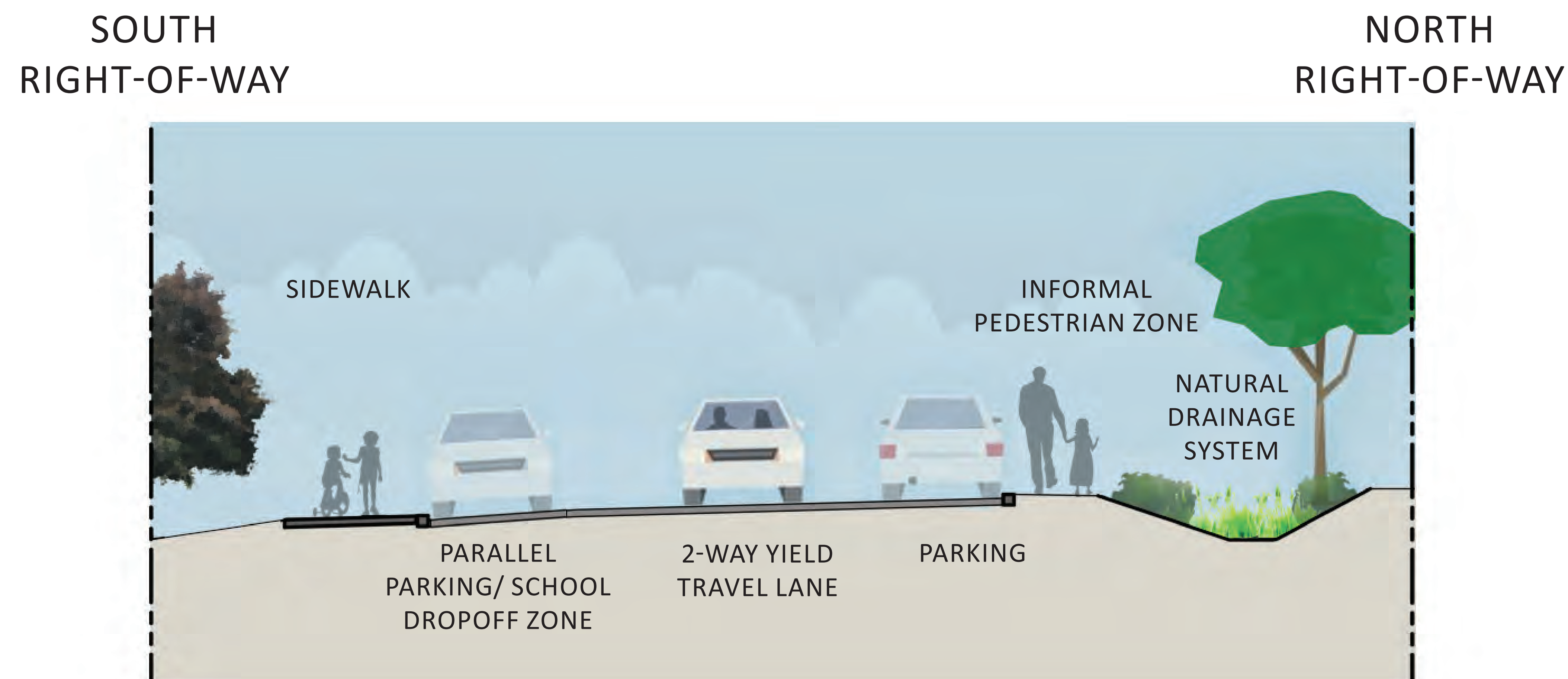
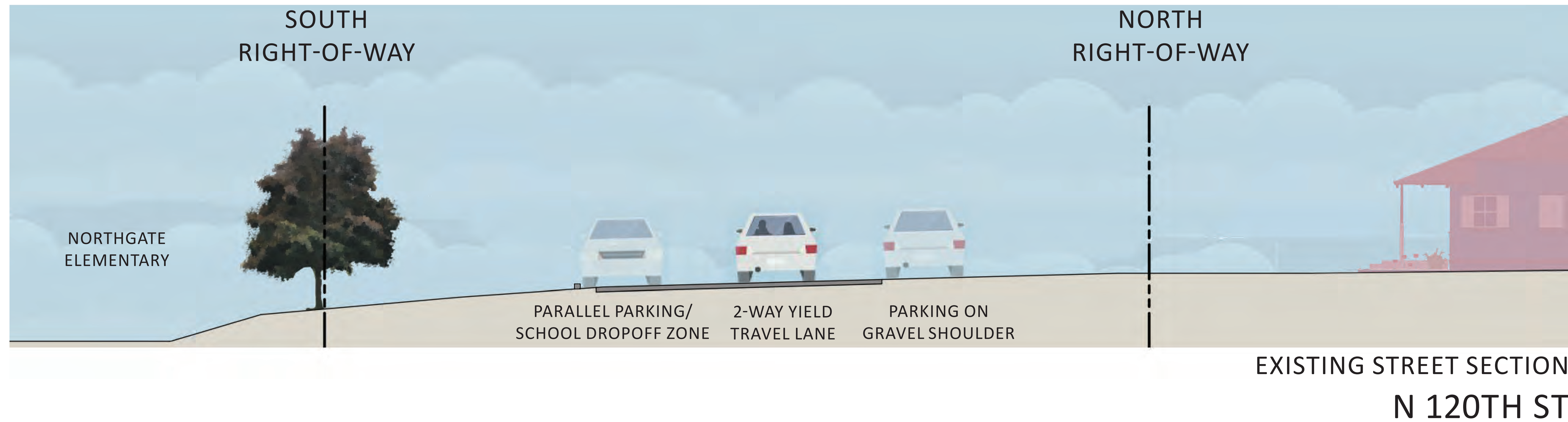
EXISTING STREET SECTION
N 120TH ST



TYPICAL STREET SECTION - NEW VERTICAL CURBING BOTH SIDES AND NATURAL DRAINAGE SYSTEM
N 120TH BETWEEN MERIDIAN & CORLISS
N 120TH ST

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St



TYPICAL STREET SECTION - NEW VERTICAL CURBING BOTH SIDES AND NATURAL DRAINAGE SYSTEM
N 120TH BETWEEN CORLISS & 1ST
N 120TH ST

SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

N 120th St



ILLUSTRATION #1

LOOKING WEST
N 120TH ST